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DETAILED SITE INVESTIGATION

January 2019
J160656

GROUP GSA

Proposed Alex Avenue Public School,
Schofields NSW

C122140 : NB

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Executive Summary

Greencap Pty Ltd (Greencap) was engaged by Richard Crookes Construction ('RCC') to undertake a Detailed Site Investigation (DSI) at the site of proposed school: Alex Avenue Public School ('the site').

This Detailed Site Investigation report has been prepared by Greencap Pty Ltd ('Greencap') on behalf of Schools Infrastructure NSW (SINSW) (the Applicant). It accompanies an Environmental Impact Statement (EIS) in support of State Significant Development Application (SSD 18_9368) for the new Alex Avenue Public School at the corner of Farmland Drive and future realignment of Pelican Road in Schofields (the site). The site is legally described as proposed Lots 1 and 2, being part of existing Lot 4 in DP1208329 and Lot 121 in DP1203646.

Refer to Figure 1, Appendix A for site location and boundary. Alex Avenue Public School is the proposed to be constructed on the approximately 2.5 ha site.

Richard Crookes has been appointed by SINSW as the head contractor for the project, as of January 2019.

Objective and Scope

The purpose of this DSI is to identify potential sources of contamination and contaminants of concern on the site, evaluate the presence of contamination in the identified areas of concern, close out any data gaps specified in the Preliminary Site Investigation (PSI) report for the site and assess site suitability for its intended use as a Primary School. This report will subsequently also provide recommendations for remediation actions and/or further investigations if required.

To achieve the above-mentioned project objectives, the following scope was undertaken: a desktop study and review of previously developed PSI Report, a site walkover, soil sampling, laboratory analysis, and preparation of this report.

Chemical results obtained from these investigations were compared with applicable human health and ecological criteria and regulation threshold levels for further investigation and corrective action. Consequently, the site Conceptual Site Model (CSM) was updated to inform the decision-making process for further investigations and remedial actions. Specifically, this DSI provides conclusions regarding the suitability of the land for future land use consistent with *Residential A* defined in the National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013 (No.1) ('NEPM', NEPC, 2013), which includes Children's day care centres, preschools and Primary Schools.

Response to SEARs

This DSI is required by the Secretary's Environmental Assessment Requirements (SEARs) for SSD 18_9368. The table below identifies the SEARs and relevant reference within this report.

Table 1: SEARs and Relevant Reference

SEARs Item	Relevant report Reference
12. Contamination Assess and quantify any **soil** and groundwater contamination and demonstrate that the site is suitable for the proposed use in accordance with SEPP 55	Soil contamination: This DSI including attached Salinity Report (Appendix B)

While no significant potential sources of groundwater contamination were identified as a result of this DSI, groundwater testing was outside the scope of this investigation. For information specific to groundwater and groundwater contamination, other reports prepared for the site may be referred to, none of which Greencap was involved in preparing.

Findings and Conclusion

This DSI report satisfies the conditions of Clause 7 (subclause 3) of SEPP 55 (Remediation of Land).

The results of this investigation indicated the surface soil quality on site satisfied the land use standards for its intended use as a Primary School. This Detailed Site Investigation did not identify any unacceptable human health or ecological risk associated with the surface soil quality.

This investigation did not reveal any analysis results that require further investigation. All analysis results for the contaminants of potential concern were below applicable criteria for the site. Furthermore, the findings of the soil salinity report identified no evidence of any current existing significant salinity hazard/risk on the site. Therefore, the site is considered suitable for the intended land use as the Proposed Alex Avenue Public School, consistent with '*Residential A'* land use as defined in the NEPM.

Recommendations

As a result of the findings of this investigation, Greencap recommends the following action:

- Any material to be taken off-site must be classified in accordance with the NSW EPA Waste Classification Guidelines (2014).

Detailed Site Investigation

Group GSA c/o Richard Crookes Construction

Cnr of Farmland Drive & future realignment of Pelican Road, Schofields NSW

Table of Contents

1 Introduction and Background

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This Detailed Site Investigation report has been prepared by Greencap Pty Ltd ('Greencap') on behalf of Schools Infrastructure NSW (SINSW) (the Applicant). Richard Crookes has since been appointed by SINSW as the head contractor for the project, as of January 2019. This report accompanies an Environmental Impact Statement (EIS) in support of State Significant Development Application (SSD 18_9368) for the new Alex Avenue Public School at the corner of Farmland Drive and future realignment of Pelican Road in Schofields (the site). The site is legally described as proposed Lots 1 and 2, being part of existing Lot 4 in DP1208329 and Lot 121 in DP1203646.

The new school will cater for approximately 1,000 primary school students and 70 full-time staff upon completion. The proposal seeks consent for:

- Construction of a 2-storey library, administration and staff building (Block A) comprising:
    - School administrative spaces including reception;
    - Library with reading nooks, makers space and research pods;
    - Staff rooms and offices;
    - Special programs rooms;
    - Amenities;
    - Canteen;
    - Interview rooms; and
    - Presentation spaces.
- Construction of four 2-storey classroom buildings (Block B) containing 40 home-bases comprising:
    - Collaborative learning spaces;
    - Learning studios;
    - Covered outdoor learning spaces;
    - Practical activity areas; and
    - Amenities.
- Construction of a single storey assembly hall (Block C) with a performance stage and integrated covered outdoor learning area (COLA). The assembly hall will have OOSH facilities, store room areas and amenities;
- Associated site landscaping and open space including associated fences throughout and games courts;
- Pedestrian access points along both Farmland Drive and the future Pelican Road;
- Substation on the north-east corner of the site; and
- School signage to the front entrance.

All proposed school buildings will be connected by a covered walkway providing integrated covered outdoor learning areas (COLAs). School staff will use the Council car park for the adjacent sports fields pursuant to a Joint Use agreement. The proposed School pick up and drop off zone will also be contained within the future shared car park and will be accessed via Farmland Drive.

2 Project Objectives

This DSI provides further assessment of the site following a Preliminary Site Investigation (PSI) previously prepared for the site by Environmental Investigation Services (EIS, August 2017).

The purpose of this DSI report is to identify potential sources of contamination and contaminants of concern on the site, evaluate the presence of contamination in the identified areas of concern, close out any data gaps specified in the Preliminary Site Investigation (PSI) report for the site, and assess site suitability for its intended use as a Primary School. This report will subsequently also provide recommendations for remediation actions and/or further investigations if required.

In particular, this DSI provides conclusions regarding the suitability of the land for future land use consistent with *Residential A* defined in the National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013 (No.1) ('NEPM', NEPC, 2013), which includes Children's day care centres, preschools and Primary Schools.

3 Response to SEARs

This DSI is required by the Secretary's Environmental Assessment Requirements (SEARs) for SSD 18_9368. The table below identifies the SEARs and relevant reference within this report.

Table 1: SEARs and Relevant Reference

SEARs Item	Relevant report Reference
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While no significant potential sources of groundwater contamination were identified as a result of this DSI, groundwater testing was outside the scope of this investigation. For information specific to groundwater and groundwater contamination, other reports prepared for the site may be referred to, none of which Greencap was involved in preparing.

4 Project Scope

To achieve the above project objectives, the following scope of work was undertaken. Where relevant, the scope was undertaken with reference to the *National Environmental Protection (Assessment of Site Contamination) Measure 1999* (2013 amendment, referred to here as the 'NEPM') as well as other relevant guidance;

4.1 Desktop Review

A desktop review was undertaken, which encompassed the following:

- Review of the Preliminary Site Investigation (PSI) previously prepared for the site by Environmental Investigation Services (EIS, August 2017).
- Review of Council records and aerial photographs to help identify landfilling, including potential asbestos landfill;
- Review of available references relating to the local topography, geology, hydrogeology, acid sulfate soils risks, and salinity risks; and
- Preparation of relevant safety information (JSEA and SWMS) and requesting underground service plans from Dial Before You Dig data base.

4.2 Site Walkover and Soil Contamination Investigation

A detailed site walkover was undertaken on the 16th November 2016, by suitably qualified Greencap scientists to identify: key site features, any visible Asbestos Containing Materials (ACM) on surface soils and any visible signs of possible salinity effects.

Soil sampling and analysis was undertaken for the site, which involved the following:

- Engagement of an excavation sub-contractor for test pitting;

- Soil sampling consisting of the following:
  - Test pitting, soil logging and soil sampling at 15 locations to a depth of maximum 1 metres below ground level (mBGL) or 0.5 mBGL into natural soil profile (whichever is encountered first)—*applies to the fill area noted in the PSI Report* (EIS, 2017);
  - Test pitting, soil logging and soil sampling at 20 locations to a depth of maximum 0.5 mBGL—*applies to the rest of the site for sampling density coverage*.
- At each sample location, a field log was completed by a suitably qualified Greencap scientist, detailing a description of the soil texture, odours, pH and any other notable inclusions;
- Quality Assurance and Quality Control (QA/QC) samples were collected at a rate of 1 duplicate sample per 10 primary samples. Eurofins Australia was used as the primary laboratory (approx. 1 in 20 intra-laboratory duplicates), while ALS was used as the secondary laboratory (1 in 20 inter-laboratory duplicates);
- Soil sample submission to a NATA-Accredited laboratory for chemical analysis of relevant combinations of the following Chemicals of Potential Concern (CoPC):
  - Total Recoverable Hydrocarbons (TRH);
  - Benzene, toluene, ethylbenzene, xylene and naphthalene (BTEXN);
  - Heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc)
  - Polycyclic Aromatic Hydrocarbons (PAH);
  - Organochlorine pesticides (OCPs)
  - Organophosphate pesticides (OPPs);
  - Polychlorinated biphenyls (PCBs);
  - Asbestos in soils (presence/ absence); and
  - Salinity Characteristics (total soluble salts, soluble chloride, electrical conductivity, saturated resistivity).

4.3 Reporting

Reporting scope included the following:

- Preparation of this DSI Report evaluating the overall site condition including the contamination concerns identified in the PSI and laboratory results of the analysed soil samples. This report has been prepared in accordance with the NSW EPA (2011) '*Guidelines for Consultants Reporting on Contaminated Sites'* and relevant schedules from the NEPM.
- Preparation of a Salinity Report in accordance with the Department of Land and Water Conservation (2002) *Site investigation for urban salinity* (refer to Appendix B).

5 Site Description Summary

The site location and boundary are depicted in Figure 1, Appendix A. The site is currently vacant vegetation-covered land, zoned as "R3: Infrastructure: Educational Establishment". The site covers a surface area of approximately 2.5ha and is currently in initial planning stages of development as a Primary School site consisting of several buildings and both sealed and unsealed outdoor areas.

The site occupies the northern portion of Lot 4 in Deposited Plan (DP) 1208329 (hereafter referred to as 'proposed Lot 2') and a small area of Lot 121 DP1203646 (hereafter referred to as 'proposed Lot 1').

General site information is provided in Table 12. Site locality and layout maps are provided in Figure 1 and Figure 2.

Table 1: Site Information		
Site Address:	Corner of Farmland Drive and future realignment of Pelican Road, Schofields NSW 2762	
Property Identification:	Proposed Lot 2: Part of Lot 4 DP1208329	
	Proposed Lot 1: Part of Lot 121 DP1203646	
Local Government Area	City of Blacktown	
Approximate Area:	~2.5ha	
Current Zoning:	SP2: Infrastructure: Educational Establishment	
Current Site Use:	Vacant land	
Proposed Site Use:	Primary School – Alex Avenue Public School	
Surrounding Site Use:	**North**	Under construction during the investigation
	East	Under construction during the investigation
	South	Vacant grass and vegetation-covered land
	West	Vacant grass-covered land (to be future road: planned realignment of Pelican Road)
Surface Water Bodies:	**West/South-west**	An unnamed creek is located approximately 275m south of the site.

5.1 Site Surrounds and Sensitive Receptors

During the time of this investigation, the site was bound to the south and west by vacant land, occupied by grass and sparse vegetation. Information provided by Hayball Pty Ltd indicates that the area directly east of the site is a council park under construction at the time of this investigation. Multi-unit residential development is to be built west of the site, in addition to the planned realignment of Pelican Road. The areas to the north was observed to be under construction, presumably for medium-density (single-dwelling) residential development. Further west of the site, Schofields Zone Substation was located to the north-west whole. An unnamed creek was located to the far south-west, south of Lot 4 DP1208329.

5.1.1 On-Site Receptors

While no existing human receptors were identified on-site during the investigation, during development of the site, on-site human receptors will include civil workers and other personnel involved in the site construction works.

Following the completion and occupation of the Primary School, human sensitive receptors on site will include: school staff (including teaching and administrative staff and cleaners), students and other temporary visitors to the site such as parents, maintenance workers, as well as workers involved in any future development work on the site.

No ecological receptors were identified on the site.

5.1.2 Off-Site Receptors

Off-site human receptors include residents and visitors of the neighbouring residential areas to the north and east of the site. No human offsite receptors were identified to the site's immediate south and west due to the absence of any information regarding proposed uses of these areas, and at the time of this investigation both areas consist of vacant, grass-covered land.

The unnamed creek located down-gradient, approximately 460m south-west of the site is considered to be the nearest potential ecological receptor.

5.2 Site Setting

The site is underlain by Middle Triassic Bringelly Shale of the Wianamatta Group. This is characterised by shale, carbonaceous claystone, claystone, laminate, fine-to medium-grained lithic sandstone and rare coal and tuff. The site soil landscape is the Blacktown Residual soil landscape. Fill material was noted in the site PSI, consisting of two small stockpiles identified in the central area of the site (less than 1 tonne each) (EIS, 2017).

The elevation of the site ranges generally between 37-43 mAHD. The site slopes down-gradient towards the south, with the highest elevation at the north-eastern corner of the site. Topographic contours are presented in the PSI Appendix (EIS, 2017).

Based on site topography, surface water runoff is expected flow in a southern direction, towards the unnamed creek south of the site. Infiltration into on-site aquifers is also expected across the site due to the absence of any sealed surfaces or built structures. The PSI identified porous, extensive aquifers of low to moderate productivity on the site. Regional groundwater is expected to flow in a southern/south-western direction consistent with the regional topography. However, the possibility remains that groundwater flow may not follow this expected direction, particularly as groundwater data and water table depth were not available for the site and its surrounds, therefore further investigation would be required for confirmation.

6 Summary of Key Findings of the PSI (EIS, 2017)

A stage 1 Preliminary Site Investigation (PSI) was undertaken by EIS in August 2017.

The PSI identified three potential contamination sources on the site:

- Fill material identified on site during the site walkover;
- Former agricultural land use in the northern portion of the site; and
- The general use of pesticides on the site.

It was noted that based on the scope of works undertaken as part of the assessment, that the historical land uses and these potential sources of contamination would not preclude the proposed development of the school.

Based on review of historical information collected as part of the assessment, the site has remained largely vacant from 1956 to present. Surrounding areas appeared to be used for rural and agricultural purposes such as grazing. During the site walkover conducted by EIS no visible or olfactory indicators of contamination were identified, with the exception of two small stockpiles identified in the central area of the site (less than 1 tonne each).

The PSI recommended the following:

- Assessment of soil contamination conditions on the site, including soil sampling and analysis; and
- A Stage 2 Detailed Site Investigation (DSI) if the site following review of the findings.

The PSI identified areas of high risk dryland salinity directly west-adjacent to the site, with minor overlap onto the site's far south-western corner.

The PSI also included review of Australian Dryland Salinity Assessment 2000. Based on the derived maps of "Australia, Forecast Areas Containing Land of High Hazard or Risk of Dryland Salinity from 2000 to 2050", the land directly west-adjacent to the site were identified as areas of high salinity hazard/risk, with minor overlap along the site's lower western boundary and far south-western corner.

6.1 PSI Site boundary

It should be noted that the site boundary for which the PSI pertains, has since been changed and finalised, and as a result, the PSI does not encompass the entirety of the site.

The site boundary for which the PSI pertains to, consisted of Proposed Lot 2 of the site, but did not include proposed lot 1. Furthermore, the PSI site boundary extended further south, past the finalised/actual site southern boundary.

The finalised site boundary (to which this DSI pertains) has since been expanded to include both proposed lots, and also does not extend as far south as was originally marked as part of the PSI investigation.

7 Sampling Density and Rationale

Total area of the open surfaces at the School was estimated as ~ 2.5 ha. In order to comply with the sampling density requirements for systematic assessment provided in NSW EPA (1995) 'Sampling Design Guidelines', a minimum of 35 investigation locations were required for the soil assessment. This sampling density corresponds to 14 points per hectare and is designed to capture a hotspot with a diameter greater than or equal to 31.5 m with 95% confidence. The vertical extent of the investigation targeted the depth of fill material (where encountered). Test pits were terminated with the observation/ sampling of natural material (maximum 1.0 m into natural soil).

In the scope of this assessment 35 surface samples were collected and analysed. As depicted in Figure 2, sample locations were selected in a grid pattern to ensure adequate site coverage.

8 Field Investigations

8.1 Site Walkover

A site walkover was conducted on the 16th November 2018 and 10th December 2018 by qualified Greencap consultants to visually inspect the site, corroborate site features with those identified in the PSI report, and assess the proposed site sampling design prior to beginning soil sampling. Photographs from the site inspection are provided in Appendix C.

Site observations made during the walkover were consistent with those detailed in the PSI. The site was confirmed to be vacant land, dominated by grass-covered land with sparse tree cover clustered in the south-western corner of the site, with no sealed surfaces or built structures observed on the site. (Refer to Photos 1-8). Local site topography was observed to slop generally to the south (refer to photos 3, 4 & 5), with small mounds/undulating areas along the southern boundary, presumed to be areas of fill material (refer to photo 3). Based on the observed topography and observed site surfaces, surface water drainage on the site is expected to be dominated by infiltration, with excess water runoff directed south of the site, towards a natural drainage channel identified far south of the site.

A visual inspection of surface soil conditions and the presence of any potential asbestos-containing material (ACM) on the site ground-surface was undertaken. There was no visual evidence of potential asbestos containing materials (ACM) observed on the surface of the Site and no ACM fragments were encountered at

any of the 35 test pit locations during excavation. It is noted that due to dense vegetation coverage in the far south-east of the site obscuring soil visibility, some areas of surface soil could be visually assessed.

The following observations were made during the site walkover:

- There was no olfactory evidence of odours detected on the site;
- There was no visual evidence of chemical spillage or surface staining observed on the site;
- There were no sealed surfaces or built structures (permanent or temporary) present on the site;
- There was no visual evidence of underground storage tanks (e.g. fill points, dip points, breather lines) or above ground storage tanks observed;
- The two stockpiles of fill material identified in the PSI report were located as described. Refer to Figure 3 for stockpile locations;
- There was no visual evidence of phytotoxic impact (i.e. plant stress or dieback) observed on the site with the exception of the bare patch of, otherwise-grass-covered, soil within proposed Lot 1, described below (refer to Photo 11);
- No visible indicators of salinity were identified on proposed Lot 2 of the site such as bare and scaled soil patches, visible salt crystals or white crusts, black soil staining or salt-impacted vegetation growth; and
- A visible indicator of salinity was identified on proposed Lot 1 of the site in the form of a bare/scaled patch of soil at test pit location TP29A (refer to Figure 2 for test pit locations), suggesting dryland salinity impact to vegetation growth. However, no visible salt crystals, white crusts, or black soil staining was observed in this location, nor on the remainder of the site. Vegetation growth immediately surrounding the observed clear patch appeared consistent with the remainder of the site vegetation type, and did not suggest salt-impacted vegetation species occurrence (refer to Photo 11).

8.2 Observed Soil Stratigraphy

The soil profiles encountered across the site were relatively consistent. Surface soils generally consisted of silt material followed by clay.

Below the silt material (natural top soils or fill material) was firm to stiff, red clay with moderate to high plasticity, generally mottled orange/yellow and grey, with grey mottling increasing with depth. Natural clay was generally encountered at depths between 0.2-0.3m Below Ground Level (BGL) across all sample locations.

All test pits were terminated in presumed natural material.

The visible soil profiles encountered are presented in Photos 10-12 Appendix C. Material descriptions of the soil encountered at each sample location are provided in the borehole logs presented in Appendix D.

8.2.1 Fill Material Encountered on Site

Fill material consisted of brown clay-silt or silt and contained some organic plant root material and foreign material such as ceramic, plastic and bituminous asphalt fragments. The surface silt material encountered in the following test pits was deemed to be fill material: TP1, TP2, TP4, TP8, TP9 and TP12. Refer to Figure 2, Appendix A.

8.2.2 Natural Soils

In all remaining test pits, only natural clay-silt or clay soils was encountered, with no evidence to suggest it was fill material.

9 Assessment Criteria

An assessment criterion has been selected to provide an appropriate indication of the environmental status and suitability of the site for the intended land use as a primary school. Greencap refers to the National Environment Protection Council (NEPC) (2013) - *National Environment Protection (Assessment of Site Contamination) Amendment Measure, 1999* (ASC NEPM, 2013) for site assessment criteria.

Typically for contaminant concentration to be considered acceptable for the respective land use criteria, the data set must conform to the following requirements:

- 95% upper confidence limit (UCL) of the arithmetic mean of analytical results is below the site criteria.
- Arithmetic (or geometric in cases where the data is log normally distributed) mean is below the site criteria.
- Standard deviation is less than 50% of the site criteria.
- No single sample analytical result is greater than 250% of the site criteria.

9.1 Investigation Levels

The investigation levels presented in this section are derived from toxicity of substances and estimated exposure of humans under the specified land use scenario.

9.1.1 Health Investigation Levels for Soil

The applicable health-based investigation levels (HILs) for this investigation will include the following:

- HIL A – Residential with garden/accessible soil (home grown produce <10% fruit and vegetable intake, (no poultry), also includes children's day care centres, preschools and primary schools.

These HILs are taken from the NEPM (2013) and are presented for reference in Table 2. These HILs will be applied to the open surfaces of the site.

Table 2: HILs for Soil Contaminant

Chemical	HIL A [1] (mg/kg)
Metals	
Arsenic [2]	100
Cadmium	20
Chromium (VI)	100
Copper	6,000
Lead [3]	300
Mercury (inorganic)	40
Nickel	400
Zinc	7,400
PAH	
Carcinogenic PAHs (as BaP TEQ) [4]	3
Total PAHs [5]	300

Notes:

1. Generic land uses are described in detail in Schedule B7 Section 3 of the NEPM 2013
2. Arsenic: HIL assumes 70% oral bioavailability. Site-specific bioavailability may be important and should be considered where appropriate (refer Schedule B7).

3. Lead: HIL is based on blood lead models (IEUBK for HILs A, B and C and adult lead model for HIL D where 50% oral bioavailability has been considered. Site-specific bioavailability may be important and should be considered where appropriate).
4. Carcinogenic PAHs: HIL is based on the 8 carcinogenic PAHs and their TEFs (potency relative to B(a)P) adopted by CCME 2008 (refer Schedule B7). The B(a)P TEQ is calculated by multiplying the concentration of each carcinogenic PAH in the sample by its B(a)P TEF, given below, and summing these products.

PAH species	TEF	PAH species	TEF
Benzo(a)anthracene	0.1	Benzo(g,h,i)perylene	0.01
Benzo(a)pyrene	1	Chrysene	0.01
Benzo(b+j)fluoranthene	0.1	Dibenz(a,h)anthracene	1
Benzo(k)fluoranthene	0.1	Indeno(1,2,3-c,d)pyrene	0.1

5. Total PAHs: HIL is based on the sum of the 16 PAHs most commonly reported for contaminated sites (WHO 1998). The application of the total PAH HIL should consider the presence of carcinogenic PAHs and naphthalene (the most volatile PAH). Carcinogenic PAHs reported in the total PAHs should meet the B(a)P TEQ HIL. Naphthalene reported in the total PAHs should meet the relevant HSL.

9.1.2 Ecological Investigation Levels for Soil

The ecological investigation levels (EILs) assigned by the ASC NEPC (2013) *Schedule B5c - EILs for As, Cr, Cu, DDT, Pb, Naphthalene, Ni and Zn* are adopted for this assessment. This guideline presents the methodology for deriving terrestrial EILs using both fresh and aged (i.e. > 2 years old) contamination for soil with the following land use types:

- Areas of ecological significance;
- Urban residential / public open space; and
- Commercial / industrial.

The methodology has been developed to protect soil processes, soil biota (flora and fauna) and terrestrial invertebrates and vertebrates. The current land use on site is primary school and hence the EILs for "Urban residential / public open space" have been adopted for this assessment.

The values presented for zinc, chromium (III), copper and lead are added contaminant limits (ACL) based on added concentrations.

The EIL is calculated from the sum of the ACL and the ambient background concentration (ABC) to derive the site-specific soil quality guideline (SQG) taking into account the effect caused by pH, exchangeable cations, iron and total organic carbon in soil that can affect concentration toxicity data. ACLs are based on soil characteristics of pH, CEC and clay content. Values presented for arsenic and naphthalene are generic EILs based on total concentrations and fresh contaminants. The EIL for lead has been calculated using the most conservative SQG value based upon the reported pH and exchangeable cation values. A summary of the EILs for aged contamination in soil (>2 years) for the current land use are presented in Table 3.

Table 3: Site Specific EILs			
Analyte	Ambient background concentration (mg/kg)[1]	Added contaminant limit (mg/kg)	EIL – Urban residential and public open space (mg/kg)
Arsenic [2]	13	100	113
Naphthalene	ND	170	170
Chromium (III)	17	400	417
Copper	9.4	190	199
Lead	19	1,100	1,119
Nickel	< 5	170	170
Zinc	11	270	281

Notes:

1. Ambient background concentrations (ABC) were determined using natural soil samples analysed from TP23 during this investigation.
2. Added contaminant limits were determined using Tables 1B(1-5), Schedule B1, NEPC (2013); and the following sample analysis results: pH of 5.5 and CEC of 10meq/100g. >10% clay content.

9.2 Screening Levels

9.2.1 Health screening levels (HSLs) for soil

For petroleum hydrocarbons, health screening levels (HSLs) have been derived in ASC NEPM (2013) based upon fraction ranges of hydrocarbons together with soil texture classes. The applied soil texture class is determined according to the observed stratigraphy during field assessment.

Soils encountered on site consisted of clay-silt and clay. In order to safely cover the risks associated with the fill material, a conservative approach was taken and silt soil texture was used for the selection of HSLs to be applied.

The HSL criteria, whilst non-limiting (NL) for vapour intrusion, are provided to prevent the occurrence of phase-separated hydrocarbons (PSH). Fractions F3 (>C16-C34) and F4 (>C34-C40) are semi-volatile and are not of concern for vapour intrusion, however, exposure to human receptors can occur via direct pathways such as dermal contact. The HSL criteria are summarised below in Table 4.

9.2.2 Ecological screening levels (ESLs) for soil

For petroleum hydrocarbons, ESLs have been derived in ASC NEPM (2013) based upon fraction ranges of hydrocarbons, BTEXN and benzo(a)pyrene (BaP) components together with soil texture classes. These ESLs are of low reliability except for the volatile and semi-volatile hydrocarbon fractions which are of moderate reliability. Nonetheless the ESLs will be adopted for the investigation due to the sensitivity of the proposed site use as a primary school.

The adopted ESLs are designed to be protective of soil fauna, soil processes, and plants. The ASC NEPM (2013) states that these factors only apply within the rhizome (i.e. zone in the top two metres of soil) and as such ESL criteria need not be applied to chemical results below this depth. These ESL values are included below in Table 4.

9.2.3 Management limits for hydrocarbon fractions F1-F4 in soil

Management limits for F1 and F2 are applied after consideration of relevant ESL and HSL criteria and are generally to be protective for dermal contact risk. The adopted management limits are based on fine grained soils with criteria summarised below in Table 4.

Table 4: Management Limits, ESLs and HSLs (mg/kg Dry Soil)				
Analyte	Soil Texture	HSL A/ B	ESLs	Management Limits
Land use: Residential				
F1 (C_6- C_{10})	Coarse	40 (0 - < 1m) 65 (1 - < 2m) 100 (2 - < 4m) 190 (4m+)	180 *	700
	Fine			800
F2 (>C_{10}-C_{16})	Coarse	230 (0 - < 1m)	120 *	1,000
	Fine			
F3 (>C_{16}-C_{34})	Coarse	----	300	2,500
	Fine		1,300	3,500
F4 (>C_{34}-C_{40})	Coarse	----	2,800	10,000
	Fine		5,600	
Benzene	Coarse	0.6 (0 - < 1m) 0.7 (1 - < 2m) 1 (2 - < 4m) 2 (4m+)	50	----
	Fine		65	
Toluene	Coarse	390 (0 - < 1m)	85	----
	Fine		105	
Ethyl-benzene	Coarse	----	70	----
	Fine		125	
Xylenes	Coarse	95 (0 - < 1m) 210 (1 - < 2m)	105	----
	Fine		45	
Naphthalene	Coarse	4 (0 - < 1m)	170	----
	Fine			
Benzo(a)pyrene	Coarse	----	0.7	----
	Fine		0.7	

Note: 1. * Moderate reliability criteria

10 Results

10.1 Analytical Schedule

Soil samples were submitted to a NATA-Accredited laboratory *Eurofins* for chemical analysis of relevant combinations of the following Chemicals of Potential Concern (CoPC):

- Total Recoverable Hydrocarbons (TRH);
- Benzene, toluene, ethylbenzene, xylene and naphthalene (BTEXN);
- Heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc)
- Polycyclic Aromatic Hydrocarbons (PAH);
- Organochlorine pesticides (OCPs)
- Organophosphate pesticides (OPPs);
- Polychlorinated biphenyls (PCBs);
- Asbestos in soils (presence/ absence); and
- Salinity Characteristics (total soluble salts, soluble chloride, electrical conductivity, saturated resistivity).

10.2 Soil Results

Analytical results for soil samples were compared against the assessment criteria (refer to Section 8) and presented on the results summary table in Appendix E (refer to Appendix F for laboratory transcripts). All analysis results were either non-detect (ND; not detected to the Limit of reporting) or below the applicable human health and ecological criteria for all samples.

10.3 Salinity

Due to the relatively consistent soils encountered across the site, the analysed samples are assumed to be characteristic of the soils at similar depths across the site. All samples were classed as non-saline (salinity effects mostly negligible) and non-aggressive for steel and concrete corrosivity according to applicable Australian standards and guidelines.

While the shallow soils sampled were all classified as non-sodic or sodic, the sample taken from depth 0.8-0.9m BGL was classified as highly sodic based on analysis results.

Further details of salinity investigation conducted as part of this DSI are detailed in the Salinity report attached in Appendix B.

10.4 Asbestos in soils

There was no visual evidence of potential asbestos containing materials (ACM) observed on the surface of the Site and no ACM fragments were encountered at any of the 35 test pit locations during excavation.

All soil samples analysed for asbestos by a NATA-Accredited Laboratory, returned negative results for asbestos detected at the reporting limit of 0.01% w/w, and no respirable fibres detected. Refer to Appendix E: Sample Analysis Summary.

10.5 QA/QC Procedures

The evaluation of the QA/QC procedures (refer to Appendix G) demonstrate that the established measurement data quality objectives for this project have been met and the data set is considered to be reliable.

Chain-of-Custody documentation for sample transfer from the site to the laboratory can be found in Appendix F.

11 Conceptual Site Model

A Conceptual Site Model (CSM) of the site can be formed by considering the geophysical characteristics of the site, the contaminant source, potential receptors to site contamination, and the pathways to the receptors. The CSM, as required by the NEPC (2013), is an iterative process constantly being updated during the investigation process as more information becomes available. The following CSM is presented based on the results of this DSI.

11.1 Sources

No on-site sources of contamination were identified on the site as a result of this investigation. The soil on site, however, shall be noted as a potential source of dust.

11.1.1 Chemicals of Potential Concern

Sample analysis results indicated no elevated levels of any of the chemical analytes listed in Section 9.1. However, there is always a possibility (for any site) to encounter contamination outside of the investigation points.

11.2 Pathways

Pathways identified for the fill material:

- Inhalation, ingestion, and dermal contact with contaminants in soil by utility workers during services works; and
- Creation of dust/vapour during potential demolition, excavation or development works where soils are disturbed.

11.3 Receptors

During development of the site, human receptors on site will include civil workers and other personnel involved in the site construction works.

Following the completion and occupation of the Primary School, human sensitive receptors on site will include: school staff (including teaching and administrative staff and cleaners), students and other temporary visitors to the site such as parents, maintenance workers, as well as workers involved in any future development work on the site.

Off-site human receptors include construction workers, residents and visitors of the neighbouring properties.

11.4 Source, Pathway, and Receptor Analysis

As a result of this investigation a CSM has been developed to assess actual or potential risks to human health and the environment. In this scope, a contaminant source, pathway and receptor analysis has been conducted with no identified linkages for the site. This excludes general considerations that are relevant to dust and unexpected finds.

12 Conclusions

This Detailed Site Investigation did not identify any unacceptable human health or ecological risk associated with the surface soil quality. Therefore, it can be concluded that the surface soil within the site boundary is suitable for its intended use as a primary school, consistent with '*Residential A'* land use as defined in the NEPM. This DSI report satisfies the conditions of Clause 7 (subclause 3) of SEPP 55 (Remediation of Land).

This investigation revealed no evidence to suggest a requirement for remediation of the site with respect to land contamination, for its intended use.

13 Recommendations

As a result of the findings of this investigation, Greencap recommends the following:

- Any material to be taken off-site must be classified in accordance with the NSW EPA Waste Classification Guidelines (2014).

14 References

- NEPC (1999), *National Environment Protection (Assessment of Site Contamination) Amendment Measure (ASC NEPM. 2013 amendment).*
- NSW OEH (2011), *Guidelines for Consultants Reporting on Contaminated Sites.*
- Department of Primary industries NSW (2014) *Salinity training Manual – Salinity Identification, Causes and Management.*
- Environmental Investigation Services (EIS*) (2017) Report to Hayball on Preliminary Environmental Site Assessment for Proposed New Primary School Development at 34-38 Schofields Rd, Schofields NSW.* (EIS PSI)
- Department of Land and Water Conservation (2002), '*Site investigations for Urban Salinity'*
- *AS 2159-2009: Australian Standard – Piling – Design and Installation* (Amendment No.1).

January 2019

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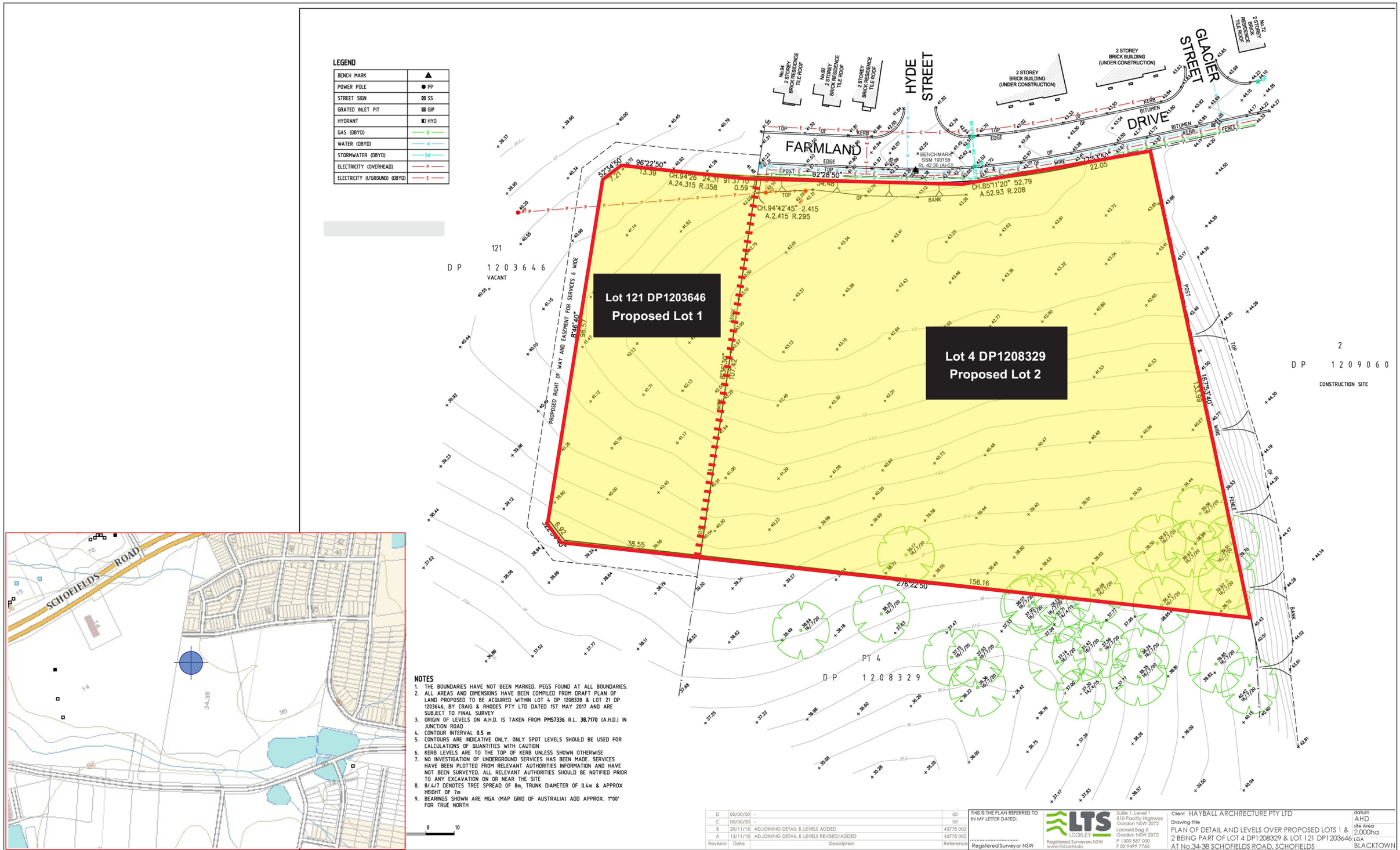
Detailed Site Investigation

Group GSA

Cnr of Farmland Dr & the future realignment of Pelican Rd, Schofields NSW 2762

Appendix A: Figures



Legend:

Site Boundary

Metres
0 25 50

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Client Number:	C107881	Project Number: J160656			
Project Description:	Detailed Site Assessment				
Address:	Cnr Farmland Dr & future realignment of Pelican Rd, Schofields NSW 2762				
Prepared:	NXB	Reviewed:	MB	Date:	21/01/2019
Figure 1	Site Location and Regional Context				

Legend:

- Site Boundary
- Test-pit Sample Locations

Metres

0 25 50

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Prepared:	NXB	Reviewed:	MB	Date:	21/01/2019
Figure 1	Sample Locations				

Legend:

- Site Boundary
- Test-pit Sample Locations
- Locations of Salinity Tested Samples
- Test-pit Locations Containing Fill Material

Metres
0 25 50

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Client Name:	Group GSA (c/o Richard Crookes Construction)				
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Project Description:	Detailed Site Assessment				
Address:	Cnr Farmland Dr & future realignment of Pelican Rd, Schofields NSW 2762				
Prepared:	NXB	Reviewed:	MB	Date:	21/01/2019
Figure 1	Locations Samples Tested for Salinity & Encountered Fill Material				

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Detailed Site Investigation

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Appendix B: Salinity Report

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SALINITY REPORT

January 2019
J160656

GROUP GSA

Proposed Alex Avenue Public School, Schofields NSW

C107881: NXB

Document Control

Document Quality Management Details		
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Site Details:	Cnr Farmland Dr and future realignment of Pelican Rd, Schofields NSW 2762	
Project Number:	J160656	
Client Name:	Group GSA c/o Richard Crookes Construction	
Client Number:	C107881	
Signatures:	Prepared By:  Nicole Boukarim **Consultant -** Environment	Authorised By:  Matthew Barberson **Team Manager -** Environment

Issue Status

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No of Copies	Type	Customer Name	Company & Position
1	Electronic	Frederic Terreaux	Associate Director – Group GSA

Salinity Report

Group GSA c/o Richard Crookes Construction

Cnr Farmland Dr and future realignment of Pelican Rd, Schofields NSW

Table of Contents

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1. Introduction and Background

Greencap Pty Ltd ('Greencap') was engaged by Richard Crookes Construction (RCC) on behalf of the NSW Department of Education to undertake a Detailed Site Investigation (DSI) for the property at the Cnr Farmland Dr and future realignment of Pelican Rd, Schofields NSW 2762 ('the site'). The site is currently undeveloped and occupies the northern portion of Lot 4 in Deposited Plan (DP) 1208329 (proposed Lot 2) and a small area of Lot 121 DP1203646 (proposed Lot 1). A salinity report was required as part of the DSI, following the findings of a Preliminary Site Investigation (PSI) previously prepared for the site by Environmental Investigation Services (EIS, August 2017). The PSI identified a small portion of the western side of the site as an area of potentially high hazard/risk of dryland salinity.

A proposed Primary School – Alex Avenue Public School – is to be constructed on the 25,250 m^2 site, consisting of several buildings and both sealed and unsealed outdoor areas. Site location and boundary is depicted in Figure 1 in the Figures section of the DSI Report.

This Salinity Report should be read in conjunction with the DSI report it is an attachment of.

2. Project Objective

The objective of this report was to address the PSI salinity findings of the Preliminary Site investigation conducted by EIS (EIS PSI) in 2017 and assess dryland salinity risk on site. The Site was identified to be directly adjacent to area classified as high hazard or risk defined for years 2000, 2010, 2050 by a Dryland Salinity Assessment, Land and Property information (a division of the department of Finance and Services) 2017 in the EIS PSI, 2017.

3. Methodology and Scope of Work

In order to achieve the above objectives, the following scope of works was undertaken, by taking into consideration the NSW Department of Primary Industries' *Salinity Training Manual* (2014) and the *Site investigations for Urban Salinity* (Department of Land and Water Conservation, 2002), referred to herein as "DPI Salinity Manual" and "The SIUS" respectively:

- A desktop review of site history and environmental context, including review of PSI report (reference here), particularly local topography, geology and hydrogeology, as well as salinity findings;
- A detailed site walkover and surface soil assessment was carried out to evaluate current site use, condition, visible signs of salinity (e.g. bare soil patches, plant dieback etc.), and surrounding site uses.
- Greencap conducted salinity analytical testing at 5 locations across the site. These locations were selected based on the results of the initial surface walkover inspection, as well as for the purposes of ensuring adequate coverage of the site and the encountered soil-types. Field logs from each test pit and borehole location are included in Appendix D and contain a description of the soil profile material, odours, and any other pertinent information. Test pit locations are indicated on Figure 2.
- The analytical analysis was conducted by a NATA-Accredited laboratory, Eurofins mgt., and the samples were analysed for the following analytes:
  - Chloride
  - Conductivity (1:5 aqueous extract at 25°C)
  - Exchangeable Sodium Percentage (ESP)
  - pH (1:5 Aqueous extract at 25°C)
  - Resistivity

- Sulphate (as SO_4)
- Magnesium (exchangeable)
- Potassium (exchangeable)
- Sodium (exchangeable)
- Calcium (exchangeable)
- Cation Exchange Capacity

- Following the receipt of final laboratory results Greencap prepared this report in accordance with *Site investigations for Urban Salinity* (Department of Land and Water Conservation, 2002), stating our findings providing recommendations for further work and management if required.

Further detail on the methodology is provided in section 7.3 of the DSI Report.

3.1 Assessment Criteria and Sample Design

Sampling density was determined using the SIUS recommendations for land use deemed to be moderately intensive construction. Total area of the site is estimated to be ~25,500 m^2.

Five samples were collected and analysed, in accordance with the recommended sampling density of 0.5-4 laboratory samples per km^2 including (<1 per type profile)[1]. Two soil profiles were encountered across the site with shallow layers consisting generally of a silt or clay-silt, and deeper soil profile consisting of natural clay. Accordingly, at least two samples were taken of each profile, and sample locations were selected to ensure adequate site coverage. Care was also taken to target the western side of the site (TP16 and TP29A) in order to target the mapped dryland salinity hazard potential identified in the PSI. Areas in which any visual indicators of salinity were observed were also targeted for sampling (TP29A).

4. Site Description

The site is underlain by Middle Triassic Bringelly Shale of the Wianamatta Group. This is characterised by shale, carbonaceous claystone, claystone, laminate, fine-to medium-grained lithic sandstone and rare coal and tuff. The site soil landscape is the Blacktown Residual soil landscape. Fill material was noted in the site PSI, consisting of two small stockpiles identified in the central area of the site (less than 1 tonne each) (EIS, 2017).

The elevation of the site ranges generally between 37-43 mAHD. The site slopes down-gradient towards the south, with the highest elevation at the north-eastern corner of the site. Topographic contours are presented in the PSI Appendix (EIS, 2017).

Based on site topography, surface water runoff is expected flow in a southern direction, towards the unnamed creek south of the site. Infiltration into on-site aquifers is also expected across the site due to the absence of any sealed surfaces or built structures. The PSI identified porous, extensive aquifers of low to moderate productivity on the site. Regional groundwater is expected to flow in a southern/south-western direction consistent with the regional topography. However, the possibility remains that groundwater flow may not follow this expected direction, particularly as groundwater data and water table depth were not available for the site and its surrounds.

[1] Table 1. Recommended Levels of Site Description, *Site investigations for Urban Salinity* (Department of Land and Water Conservation, 2002).

4.1 Salinity Mapping

The EIS PSI included review of Australian Dryland Salinity Assessment 2000.

This Assessment included mapping of dryland salinity risk and hazard mapping for 2000, 2020 and 2050 within NSW. Areas of risk are based on groundwater levels and air photo interpretation. Based on the derived maps "Australia, Forecast Areas Containing Land of High Hazard or Risk of Dryland Salinity from 2000 to 2050", the land directly west-adjacent to the site were identified as areas of high salinity hazard/risk, with minor overlap along the site's lower western boundary and far south-western corner.

Dryland salinity occurs when deep-rooted native vegetation is replaced with shallow-rooted annuals, leading to increased water leakage to the groundwater system. As a result, the rise in groundwater level brings salt to the soil surface.

Refer to EIS Appendix A, for the Dryland Salinity findings and mapping.

5. Field Observations

5.1 Site Walkover

A site walkover was conducted on the 16th November 2018 and 10th December 2018, by qualified Greencap consultants. Photographs from the site walkovers are provided in Appendix C of the DSI.

During the site walkover, an inspection of any visible indicators of salinity on the site was undertaken. The following observations were made during the site walkover:

Proposed Lot 1 of the site:

- There was no visual evidence of salt crystals or white crusts on any soil surfaces;
- There was no visual evidence of black staining on soils;
- There was no visual evidence of puffy soil surfaces;
- There was no visual evidence of phytotoxic impact (i.e. plant stress or dieback) observed on the site with the exception of the bare patch of otherwise-grass-covered soil in proposed Lot 1, described below (refer to Photo 11); and
- One bare/scaled patch of soil was identified at test pit location TP29A (refer to Figure 2 for test pit locations), suggesting potential dryland salinity impact to vegetation growth. However, no additional indicators (e.g. salt crystals, black soil staining etc) were observed in this location. Vegetation growth immediately surrounding the observed clear patch appeared consistent with the remainder of the site vegetation type, and did not suggest salt-impacted vegetation species occurrence (refer to Photo 11).

Proposed Lot 2 of the site:

- There was no visual evidence of bare and scaled soil patches;
- There was no visual evidence of salt crystals or white crusts on any soil surfaces;
- There was no visual evidence of black staining on soils;
- There was no visual evidence of puffy soil surfaces; and
- There was no visual evidence of phytotoxic impact (i.e. plant stress or dieback) observed to trees or grasses.

For further general site observations noted during the site inspection, refer to section 7 of the DSI report.

5.2 Field observations of soil

The soil profiles encountered across the site were relatively consistent. Surface soils generally consisted of silt material followed by clay. Below top soils or fill material was firm to stiff, red clay with moderate to high plasticity, generally mottled orange/yellow and grey, with grey mottling increasing with depth. Natural clay was generally encountered at depths between 0.2-0.3m Below Ground Level (BGL) across all sample locations.

All soil layers sampled for salinity testing are considered to have been naturally-occurring soils.

The visible soil profiles encountered are presented in Photos 10-12 Appendix C. Material descriptions of the soil encountered at each sample location are provided in the borehole logs presented in Appendix D.

6. Soil Analysis Results

6.1 Results summary

Table 1. Summary of Salinity Lab Analysis Results

Analyte	LOR	Units	TP2	TP15	TP16	TP24	TP29A
			0.60-0.70	0.80-0.90	0.10-0.30	0.10-0.20	0.15-0.30
Chloride	5	ppm	24	46	< 5	14	170
Conductivity (1:5 aqueous extract at 25°C)	10	uS/cm	47	87	11	100	97
Exchangeable Sodium Percentage (ESP)	0.1	%	7.9	20	2	5.8	9.1
pH (1:5 Aqueous extract at 25°C)	0.1	pH units	5.7	5.2	6.1	5.4	6.8
Resistivity*	0.5	ohm.m	210	110	940	93	100
Sulphate (as SO4)	30	ppm	140	82	< 30	52	<30
Magnesium (exchangeable)	0.5	meq/100g	5.7	9.2	3.2	7.1	6.7
Potassium (exchangeable)	0.1	meq/100g	0.4	0.6	0.2	0.3	0.5
Sodium (exchangeable)	0.1	meq/100g	0.8	2.8	0.2	1	1.4
Calcium (exchangeable)	0.1	meq/100g	3.5	1.0	5.3	8.2	6.3
Cation Exchange Capacity	0.05	meq/100g	10	14	8.8	16	15

7. Key Findings & Discussion

7.1 Soil Salinity

Using the electrical conductivity (1:5) results, EC_e values were determined using a correction factor of soil texture to determine the soil salinity class for each sample, tabulated below.

Soil texture was determined using the field testing methods outlined the DPI Salinity Manual.

All analysed samples are classed as non-saline, including samples TP16 and TP29A which were sampled from the area identified by the PSI as a forecasted area of high hazard/risk (Refer to Section 4.1 of this report). In addition, sample TP29A was observed to be an area bare of vegetation and was targeted as a possible salinity-impacted area.

Table 2. Calculated Soil Salinity Classifications					
Sample ID	**Sample depth (m)**	**Soil Type[2]**	**Conversion factor[3]**	**EC_e (dS/m)**	**Soil Salinity Class**
TP2	0.60-0.70	Heavy clay	6.7	0.32	Non-saline (1.5-2 dS/m)
TP15	0.80-0.90	Medium clay	6.7	0.58	Non-saline (1.5-2 dS/m)
TP16	0.10-0.30	Clay loam	8.6	0.95	Non-saline (1.5-2 dS/m)
TP24	0.10-0.20	Clay loam	8.6	0.86	Non-saline (1.5-2 dS/m)
TP29A	0.15-0.3	Loam	9.5	0.92	Non-saline (1.5-2 dS/m)

7.2 Sodicity and Permeability

Sodicity relates to the likely dispersion on wetting, and soil shrinking/swelling properties. When wet, sodic soils create impermeable layers and impeding water movement in the soil.

Sodicity is expressed as the Exchangeable Sodium Percentage (ESP). While saline soils are high in total soluble salts, including any combination of ions (e.g. sodium, calcium or magnesium etc), sodic soils are exclusively high in exchangeable sodium ions.

Using the guidelines for categorising soil sodicity provided in the DPI Salinity Manual, the Sodicity of the analysed samples are summarised below. Refer to Figure 2 for sample locations.

Table 3. Sodicity rating of analysed samples			
Sample ID	**Sample depth (m)**	**ESP (%)**	**Sodicity Rating[4]**
TP2	0.60-0.70	7.9	Sodic (6-15%)
TP15	0.80-0.90	20	Highly Sodic (> 15%)
TP16	0.10-0.30	2	Non-sodic (< 6%)
TP24	0.10-0.20	5.8	Non-sodic (< 6%)
TP29A	0.15-0.3	9.1	Sodic (6-15%)

[2] Soil texture was determined using the field testing methods outlined in Chapter 12 of the DPI Salinity Manual (2014).

[3] Conversions made using *Table 12.4*: *Conversion factors for soil groups,* DPI Salinity Manual (2014), adapted from Slavich and Petterson (1993).

[4] Source: Northcote and Skene (1992), cited in DPI Manual.

Sodicity is the presence of a high amount exchangeable sodium ions relative to other exchangeable cations (positively charged ions) in soil.

Based on the above, the sample taken from TP15 is notably sodic (although not saline). The high sodium in sodic soils may cause poor drainage issues, as water infiltration is likely to be impeded at this depth, which may lead to potential tunnel erosion. Waterlogging is common in sodic soils as swelling and dispersion of clay particles clog pores and hence reduce internal drainage of the soil.

These results are likely to be characteristic of the clay encountered throughout the site at this depth. Similarly, the non-sodic surface layers in samples TP16-TP9A were also encountered at the majority of test pits and can be assumed to be characteristic of the surface soils on the site.

7.3 Corrosivity

All soil samples returned results consistent with AS2159 for soils classified as non-aggressive for concrete and steel corrosivity.

Table 4. Results Comparison with AS2159 Exposure Conditions for **Non-aggressive soils**

Analyte	Units	Exposure conditions for Steel	Exposure conditions for Concrete	TP2	TP15	TP16	TP24	TP29A
				0.60-0.70	0.80-0.90	0.10-0.30	0.10-0.20	0.15-0.3
Chloride	ppm	<5000	–	24	46	< 5	14	170
pH (1:5 Aqueous extract at 25°C)	pH units	>5	>5.5	5.7	5.2	6.1	5.4	6.8
Resistivity	ohm.m	<5000	<5000	210	110	940	93	100
Sulphate (as SO4)	ppm	<5000	–	140	82	< 30	52	< 30

Although the pH of TP15 exceeded the exposure limit for non-aggressive soils for concrete, (to 'moderate aggressiveness'), all other variables for this sample were below the non-aggressive soil exposure conditions, and this condition on its own does not pose a concrete corrosivity risk.
Furthermore, chloride concentration, which is useful indicator subsoil salinity, was notably well below chloride toxicity critical levels[5] provided in the DPI Salinity Manual for all samples.

7.4 Evaluation and Management

This soil salinity assessment did not reveal any analysis results that require further investigation, nor any that would require specific management of salinity risk or corrosivity risk.

All samples were classed as non-saline (salinity effects mostly negligible) and non-aggressive for steel and concrete corrosivity according to the SIUS and AS2159 respectively.

While the shallow soils sampled were all classified as non-sodic or sodic, sample TP15, taken from depth 0.8-0.9m BGL was classified as highly sodic based on analysis results. Due to the relatively consistent soils encountered across the site, the high sodicity of sample TP15 is likely to be characteristic of other soils at similar depths across the site. However, due to the depth of this highly sodic material (0.8-0.9m BGL), the risk of potential impact on development is decreased provided that an upper non-sodic surface layer of silt is not completely removed. According to site plans it the area that TP15 was taken from corresponds to the location of the "shared plaza area" east-adjacent to Block C. Therefore, risks associated with potential decreased soil structure in this area, caused by the deeper soil's sodicity, as well as potential for concrete corrosivity is also reduced. Further risk is also minimised if infiltration of water of effluent is designed to suit the site conditions.

[5] Levels of chloride toxicity in subsoil for sensitive species: Non-toxic: <300 mg/kg, and toxic: <600 mg/kg.

Dryland salinity occurs due to rising groundwater levels bringing salt to the soil surface, often as a result of the removal of deep-rooted native vegetation, causing increased water infiltration into groundwater systems. Due to the future presence of sealed surfaces that will be on the site following construction of the primary school, the risk of increased water infiltration on the site is reduced. However, consideration may be given to the vegetation present on the site post-development.

8. Data Gaps

Data gaps identified in this investigation are noted to include water table depth, and groundwater data including data regarding the identified on-site aquifer, which were not available for review for the site and its surrounds.

9. Conclusions & Recommendations

The investigation did not reveal any analysis results that require further investigation, nor any significant soil salinity contamination or sources of salinity on the site. The findings of this assessment identified no evidence of any current existing significant salinity contamination or risk on the site. Therefore, the site is considered suitable for the intended land use as a primary school and is unlikely to require significant salinity-specific management.

Potential data gaps are noted to include groundwater data and water table depth which were not available for the site and its surrounds.

As a result of this investigation, Greencap recommends maintenance of proper drainage controls on the site during site development/construction.

10. References

- NSW Department of Primary Industries (2014) '*Salinity Training Manual*: Salinity Identification, causes and Management';
- Department of Land and Water Conservation (2002), '*Site investigations for Urban Salinity';*
- *AS 2159-2009: Australian Standard – Piling – Design and Installation* (Amendment No.1); and
- NSW OEH (2011), Guidelines for Consultants Reporting on Contaminated Sites.

January 2019

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Going Further in Managing Risk

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Detailed Site Investigation

Group GSA

Cnr of Farmland Dr & the future realignment of Pelican Rd, Schofields NSW 2762

Appendix C: Field Photographs

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Site Photographs: 16 November & 10 December 2018

Photo 1. Northern boundary of site along Schofields Road, view east.

Photo 2. Proposed Lot 1, view north-east.

Photo 3. Proposed Lot 2, view north-west

Photo 4. Proposed Lot 2, south of the site, view north

Photo 5. Proposed Lot 2, view south.

Photo 6. Two stockpiles observed on proposed Lot 2, corresponding to description and location of those identified in the PSI.

Photo 7. Proposed Lot 1, view west.

Photo 8. Proposed Lot 1 (and Lot 21), view north-east.

Photo 9. Identified path of bare soil, indicating potential dryland salinity impact, view north.

Photo 10. TP3 with visible soil profile transition on the right-hand side from silt to clay.

Photo 11. TP6 – minimal upper layer of silt, followed by clay characteristic of the site.

Photo 12. TP15, red clay followed by red and grey mottled clay

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Appendix D: Borehole Logs

TEST PIT NUMBER TP1

GREENCAP

CLIENT C107881 - Richard Crookes Construction **PROJECT NAME** Detailed Site Investigation

PROJECT NUMBER J160656 **PROJECT LOCATION** 34-38 Schofields Road, Schofields NSW

DATE STARTED 16/11/18 **COMPLETED** 16/11/18 **R.L. SURFACE** _____ **DATUM** _____

EXCAVATION CONTRACTOR McMahons **SLOPE** --- **BEARING** -

EQUIPMENT Excavator **TEST PIT LOCATION** _____

TEST PIT SIZE ~1m **LOGGED BY** NXB/JG **CHECKED BY** MB

NOTES _____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Material Description	Samples Tests Remarks	Additional Observations
E	None Observed					Grass FILL: Firm, brown, clayey SILT, rootlets, bitumen fragments 1cm diameter ~ <0.5%	TP1 (0.1-0.2)	No olfactory evidence of contamination Moisture (D) PID (0.1)
			0.5			NATURAL: Firm, orange/red, silty CLAY, yellow mottling, high plasticity, increases in grey mottling with depth	TP2 (0.5-0.6)	Moisture (DM) PID (0.1)
			1.0			Borehole TP1 terminated at 1m (Target depth reached)		
			1.5					
			2.0					
			2.5					

TEST PIT NUMBER TP2

GREENCAP

CLIENT C107881 - Richard Crookes Construction **PROJECT NAME** Detailed Site Investigation

PROJECT NUMBER J160656 **PROJECT LOCATION** 34-38 Schofields Road, Schofields NSW

DATE STARTED 16/11/18 **COMPLETED** 16/11/18 **R.L. SURFACE** _____ **DATUM** _____

EXCAVATION CONTRACTOR McMahons **SLOPE** --- **BEARING** -

EQUIPMENT Excavator **TEST PIT LOCATION** _____

TEST PIT SIZE ~1m **LOGGED BY** NXB/JG **CHECKED BY** MB

NOTES _____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Material Description	Samples Tests Remarks	Additional Observations
E	None Observed		0.0			Grass FILL: Firm, light brown, clayey silty SAND, low plasticity, rock fragments approximately 1cm diameter, rootlets	TP2 (0.01-0.2)	No olfactory evidence of contamination Moisture (D) PID (0.0)
			0.5			NATURAL: Firm, orange/red sandy CLAY, red mottling, high plasticity, grey mottling with depth	TP2 (0.6-0.7)	Moisture (DM) PID (0.0)
			1.0			Borehole TP2 terminated at 1m (Target depth reached)		
			1.5					
			2.0					
			2.5					

TEST PIT NUMBER TP3

GREENCAP

CLIENT C107881 - Richard Crookes Construction **PROJECT NAME** Detailed Site Investigation

PROJECT NUMBER J160656 **PROJECT LOCATION** 34-38 Schofields Road, Schofields NSW

DATE STARTED 16/11/18 **COMPLETED** 16/11/18 **R.L. SURFACE** _____ **DATUM** _____

EXCAVATION CONTRACTOR McMahons **SLOPE** --- **BEARING** -

EQUIPMENT Excavator **TEST PIT LOCATION** _____

TEST PIT SIZE ~1m **LOGGED BY** NXB/JG **CHECKED BY** MB

NOTES _____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Material Description	Samples Tests Remarks	Additional Observations
E	None Observed		0.0			Grass NATURAL: Firm, high density, clayey SILT, with rootlets and other organic matter		No olfactory evidence of contamination
							TP3 (0.1-0.2)	Moisture (D) PID (0.1)
			0.5			NATURAL: Red/orange, CLAY, medium density, high plasticity, increase in grey and yellow mottling with dapth		
							TP3 (0.7-0.8)	Moisture (DM) PID (0.2)
			1.0			Borehole TP3 terminated at 1m (Target depth reached)		
			1.5					
			2.0					
			2.5					

TEST PIT NUMBER TP4

GREENCAP

CLIENT C107881 - Richard Crookes Construction **PROJECT NAME** Detailed Site Investigation

PROJECT NUMBER J160656 **PROJECT LOCATION** 34-38 Schofields Road, Schofields NSW

DATE STARTED 16/11/18 **COMPLETED** 16/11/18 **R.L. SURFACE** _____ **DATUM** _____

EXCAVATION CONTRACTOR McMahons **SLOPE** --- **BEARING** -

EQUIPMENT Excavator **TEST PIT LOCATION** _____

TEST PIT SIZE ~1m **LOGGED BY** NXB/JG **CHECKED BY** MB

NOTES _____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Material Description	Samples Tests Remarks	Additional Observations
E	None Observed		0.0			Grass FILL: Firm, light brown, clayey silty SAND, low plasticity, wood chips and roots ~3%		No olfactory evidence of contamination
							TP4 (0.1-0.2)	Moisture (D) PID (0.1)
			0.5					
							TP4 (0.8-0.9)	Moisture (DM) PID (0.0)
			1.0			Borehole TP4 terminated at 1m (Target depth reached)		
			1.5					
			2.0					
			2.5					

TEST PIT NUMBER TP5

GREENCAP

CLIENT C107881 - Richard Crookes Construction **PROJECT NAME** Detailed Site Investigation

PROJECT NUMBER J160656 **PROJECT LOCATION** 34-38 Schofields Road, Schofields NSW

DATE STARTED 16/11/18 **COMPLETED** 16/11/18 **R.L. SURFACE** _____ **DATUM** _____

EXCAVATION CONTRACTOR McMahons **SLOPE** --- **BEARING** -

EQUIPMENT Excavator **TEST PIT LOCATION** _____

TEST PIT SIZE ~1m **LOGGED BY** NXB/JG **CHECKED BY** MB

NOTES _____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Material Description	Samples Tests Remarks	Additional Observations
E	None Observed					NATURAL: Loose, brown, gravelly sandy SILT, gravel is ~ 2cm diameter subrounded sandstone		No olfactory evidence of contamination
							TP5 (0.1-0.2)	Moisture (DM) PID (0.0)
						NATURAL: Stiff, red, CLAY		
			0.5				TP5 (0.5-0.6)	Moisture (M) PID (0.0)
						Borehole TP5 terminated at 0.5m (Target depth reached)		
			1.0					
			1.5					
			2.0					
			2.5					

TEST PIT NUMBER TP6

GREENCAP

CLIENT C107881 - Richard Crookes Construction **PROJECT NAME** Detailed Site Investigation

PROJECT NUMBER J160656 **PROJECT LOCATION** 34-38 Schofields Road, Schofields NSW

DATE STARTED 16/11/18 **COMPLETED** 16/11/18 **R.L. SURFACE** _____ **DATUM** _____

EXCAVATION CONTRACTOR McMahons **SLOPE** --- **BEARING** -

EQUIPMENT Excavator **TEST PIT LOCATION** _____

TEST PIT SIZE ~1m **LOGGED BY** NXB/JG **CHECKED BY** MB

NOTES _____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Material Description	Samples Tests Remarks	Additional Observations
E	None Observed		0.0			Grass NATURAL: Still, brown clayey SILT with grass roots (no observed rocks)	TP6 (0.0-0.2)	No olfactory evidence of contamination Moisture (DM) PID (0.2)
						NATURAL: Firm, red and yellow mottled CLAY, medium plasticity, yellow mottling increases with depth		
			0.5				TP6 (0.5-0.6)	Moisture (M) PID (0.1)
			1.0			Borehole TP6 terminated at 1m (Target depth reached)		
			1.5					
			2.0					
			2.5					

TEST PIT NUMBER TP7

GREENCAP

CLIENT C107881 - Richard Crookes Construction **PROJECT NAME** Detailed Site Investigation

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DATE STARTED 16/11/18 **COMPLETED** 16/11/18 **R.L. SURFACE** _____ **DATUM** _____

EXCAVATION CONTRACTOR McMahons **SLOPE** --- **BEARING** -

EQUIPMENT Excavator **TEST PIT LOCATION** _____

TEST PIT SIZE ~1m **LOGGED BY** NXB/JG **CHECKED BY** MB

NOTES _____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Material Description	Samples Tests Remarks	Additional Observations
E	None Observed		0.0			Grass NATURAL: Soft to firm CLAY with organic matter (roots)	TP7 (0.1-0.2)	No olfactory evidence of contamination Moisture (D) PID (0.1)
						NATURAL: Firm, red, CLAY, low plasticity, roots	TP7 (0.3-0.4)	Moisture (DM) PID (0.0)
			0.5			Yellow mottling & high plasticity with depth		
			1.0			Borehole TP7 terminated at 1m (Target depth reached)		
			1.5					
			2.0					
			2.5					

TEST PIT NUMBER TP8

GREENCAP

CLIENT C107881 - Richard Crookes Construction **PROJECT NAME** Detailed Site Investigation

PROJECT NUMBER J160656 **PROJECT LOCATION** 34-38 Schofields Road, Schofields NSW

DATE STARTED 16/11/18 **COMPLETED** 16/11/18 **R.L. SURFACE** _____ **DATUM** _____

EXCAVATION CONTRACTOR McMahons **SLOPE** --- **BEARING** -

EQUIPMENT Excavator **TEST PIT LOCATION** _____

TEST PIT SIZE ~1m **LOGGED BY** NXB/JG **CHECKED BY** MB

NOTES _____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Material Description	Samples Tests Remarks	Additional Observations
E	None Observed		0.0			FILL: Loose, brown, sandy SILT with pieces of wood (15%)		No olfactory evidence of contamination
							TP8 (0.1-0.2)	Moisture (DM) PID (0.0)
			0.5			NATURAL: Firm, red, CLAY		
							TP8 (0.7-0.8)	Moisture (M) PID (0.1)
			1.0			Borehole TP8 terminated at 1m (Target depth reached)		
			1.5					
			2.0					
			2.5					

TEST PIT NUMBER TP9

GREENCAP

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PROJECT NUMBER J160656 **PROJECT LOCATION** 34-38 Schofields Road, Schofields NSW

DATE STARTED 16/11/18 **COMPLETED** 16/11/18 **R.L. SURFACE** _____ **DATUM** _____

EXCAVATION CONTRACTOR McMahons **SLOPE** --- **BEARING** -

EQUIPMENT Excavator **TEST PIT LOCATION** _____

TEST PIT SIZE ~1m **LOGGED BY** NXB/JG **CHECKED BY** MB

NOTES _____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Material Description	Samples Tests Remarks	Additional Observations
E	None Observed					FILL: Soft, brown, salny SILT with rootlets and wood pieces		No olfactory evidence of contamination
							TP9 (0.1-0.3)	Moisture (DM) PID (0.3)
						NATURAL: Firm, red, CLAY		Metal spool noted @0.3m
			0.5				TP9 (0.4-0.6)	Moisture (M) PID (0.0) Natural black coal inclusions noted (2%) @0.5m
						Borehole TP9 terminated at 0.6m (Target depth reached)		
			1.0					
			1.5					
			2.0					
			2.5					

TEST PIT NUMBER TP10

GREENCAP

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EXCAVATION CONTRACTOR McMahons **SLOPE** --- **BEARING** -

EQUIPMENT Excavator **TEST PIT LOCATION** _____

TEST PIT SIZE ~1m **LOGGED BY** NXB/JG **CHECKED BY** MB

NOTES _____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Material Description	Samples Tests Remarks	Additional Observations
E	None Observed					Grass NATURAL: Firm, dark brown silty SAND, organis matter (grass roots)		No olfactory evidence of contamination
							TP10 (0.2-0.3)	Moisture (D) PID (0.2)
			0.5			NATURAL: Firm, red CLAY, grey/yellow mottling which increases with depth, low plasticity, @ 0.5-0.5 large light grey boulder encountered - flat, angular fine grained sandstone		
							TP10 (0.6-0.7)	Moisture (M) PID (0.3)
			1.0			Borehole TP10 terminated at 1m (Target depth reached)		
			1.5					
			2.0					
			2.5					

TEST PIT NUMBER TP11

GREENCAP

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EXCAVATION CONTRACTOR McMahons **SLOPE** --- **BEARING** -

EQUIPMENT Excavator **TEST PIT LOCATION** _____

TEST PIT SIZE ~1m **LOGGED BY** NXB/JG **CHECKED BY** MB

NOTES _____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Material Description	Samples Tests Remarks	Additional Observations
E	None Observed		0.0			Grass		No olfactory evidence of contamination
						NATURAL: Loose, light brown, clayey silty SAND, low plasticity	TP11 (0.1-0.3)	Moisture (D) PID (0.1) FD2 taken @ 0.1-0.3
			0.5			NATURAL: Firm, red/brown CLAY, clay grades to yellow/orange @ 0.7m	TP11 (0.6-0.7)	Moisture (DM) PID (0.3)
			1.0			Borehole TP11 terminated at 1m (Target depth reached)		
			1.5					
			2.0					
			2.5					

TEST PIT NUMBER TP12

GREENCAP

CLIENT C107881 - Richard Crookes Construction **PROJECT NAME** Detailed Site Investigation

PROJECT NUMBER J160656 **PROJECT LOCATION** 34-38 Schofields Road, Schofields NSW

DATE STARTED 16/11/18 **COMPLETED** 16/11/18 **R.L. SURFACE** _____ **DATUM** _____

EXCAVATION CONTRACTOR McMahons **SLOPE** --- **BEARING** -

EQUIPMENT Excavator **TEST PIT LOCATION** _____

TEST PIT SIZE ~1m **LOGGED BY** NXB/JG **CHECKED BY** MB

NOTES _____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Material Description	Samples Tests Remarks	Additional Observations
E	None Observed		0.5			FILL: Loose, light brown, gravelly SAND. Gravel is ~1-5cm diameter sub rounded rock, plastic pipe and golf ball noted ~0.5m	TP12 (0.3-0.5)	2m3 soil mound No odour Moisture (D) PID (0.4) FD1 taken @ 0.3-0.5
			1.0			NATURAL: Firm, red, CLAY with white mottling	TP12 (1.3-1.4)	Moisture (DM) PID (0.1)
			1.5			Borehole TP12 terminated at 1.5m (Target depth reached)		
			2.0					
			2.5					

TEST PIT NUMBER TP13

GREENCAP

CLIENT C107881 - Richard Crookes Construction **PROJECT NAME** Detailed Site Investigation

PROJECT NUMBER J160656 **PROJECT LOCATION** 34-38 Schofields Road, Schofields NSW

DATE STARTED 16/11/18 **COMPLETED** 16/11/18 **R.L. SURFACE** _____ **DATUM** _____

EXCAVATION CONTRACTOR McMahons **SLOPE** --- **BEARING** -

EQUIPMENT Excavator **TEST PIT LOCATION** _____

TEST PIT SIZE ~1m **LOGGED BY** NXB/JG **CHECKED BY** MB

NOTES _____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Material Description	Samples Tests Remarks	Additional Observations
E	None Observed		0.0			Grass FILL: Loose, light brown clayey silty SAND, low plasticity, rock fragments 3cm diameter ~5%	TP13 (0.01-0.1)	No olfactory evidence of contamination Moisture (D) PID (0.0)
			0.5			NATURAL: Firm, red CLAY, high plasticity, orange mottling increases with depth, minor natural coal lens 0.5%, grey mottling at 0.8m	TP13 (0.3-0.5)	Moisture (DM) PID (0.0)
			1.0			Borehole TP13 terminated at 1m (Target depth reached)		
			1.5					
			2.0					
			2.5					

TEST PIT NUMBER TP14

GREENCAP

CLIENT C107881 - Richard Crookes Construction **PROJECT NAME** Detailed Site Investigation

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DATE STARTED 16/11/18 **COMPLETED** 16/11/18 **R.L. SURFACE** _____ **DATUM** _____

EXCAVATION CONTRACTOR McMahons **SLOPE** --- **BEARING** -

EQUIPMENT Excavator **TEST PIT LOCATION** _____

TEST PIT SIZE ~1m **LOGGED BY** NXB/JG **CHECKED BY** MB

NOTES _____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Material Description	Samples Tests Remarks	Additional Observations
E	None Observed					NATURAL: Loose, brown, SILT with rootlets	TP14 (0-0.1)	No olfactory evidence of contamination Moisture (DM)
						NATURAL: Stiff, red CLAY		PID (0.0)
			0.5				TP14 (0.4-0.6)	Moisture (M) PID (0.0)
						Borehole TP14 terminated at 0.6m (Target depth reached)		
			1.0					
			1.5					
			2.0					
			2.5					

TEST PIT NUMBER TP15

GREENCAP

CLIENT C107881 - Richard Crookes Construction **PROJECT NAME** Detailed Site Investigation

PROJECT NUMBER J160656 **PROJECT LOCATION** 34-38 Schofields Road, Schofields NSW

DATE STARTED 16/11/18 **COMPLETED** 16/11/18 **R.L. SURFACE** _____ **DATUM** _____

EXCAVATION CONTRACTOR McMahons **SLOPE** --- **BEARING** -

EQUIPMENT Excavator **TEST PIT LOCATION** _____

TEST PIT SIZE ~1m **LOGGED BY** NXB/JG **CHECKED BY** MB

NOTES _____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Material Description	Samples Tests Remarks	Additional Observations
E	None Observed		0.0			Grass FILL: Stiff, dark brown clayey SILT with roots, no rocks	TP15 (0.1-0.2)	No olfactory evidence of contamination Moisture (D) PID (0.0)
			0.5			NATURAL: Stiff, red CLAY with grey and yellow mottling, medium plasticity, rootlets		
			1.0			NATURAL: Grey CLAY with yellow mottling, firm, high plasticity, rootlets	TP15 (0.8-0.9)	Moisture (DM) PID (0.0)
			1.5			Borehole TP15 terminated at 1m (Target depth reached)		
			2.0					
			2.5					

TEST PIT NUMBER TP16

GREENCAP

CLIENT C107881 - Richard Crookes Construction **PROJECT NAME** Detailed Site Investigation

PROJECT NUMBER J160656 **PROJECT LOCATION** 34-38 Schofields Road, Schofields NSW

DATE STARTED 16/11/18 **COMPLETED** 16/11/18 **R.L. SURFACE** _____ **DATUM** _____

EXCAVATION CONTRACTOR McMahons **SLOPE** --- **BEARING** -

EQUIPMENT Excavator **TEST PIT LOCATION** _____

TEST PIT SIZE ~1m **LOGGED BY** NXB/JG **CHECKED BY** MB

NOTES _____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Material Description	Samples Tests Remarks	Additional Observations
E	None Observed		0.0			Grass NATURAL: Firm, light brown, sandy clayey SILT, low plasticity		No olfactory evidence of contamination Moisture (DM) PID (0.2)
						NATURAL: Firm, red/orange CLAY, orange increases with depth	TP16 (0.1-0.3)	
			1.0			Borehole TP16 terminated at 1m (Target depth reached)		

BOREHOLE / TEST PIT J160656 - SCHOFIELDS DSI (TEST PITTING).GPJ TESTING TEMPLATE.GDT 23/1/19

TEST PIT NUMBER TP17

GREENCAP

CLIENT C107881 - Richard Crookes Construction **PROJECT NAME** Detailed Site Investigation

PROJECT NUMBER J160656 **PROJECT LOCATION** 34-38 Schofields Road, Schofields NSW

DATE STARTED 16/11/18 **COMPLETED** 16/11/18 **R.L. SURFACE** _____ **DATUM** _____

EXCAVATION CONTRACTOR McMahons **SLOPE** --- **BEARING** -

EQUIPMENT Excavator **TEST PIT LOCATION** _____

TEST PIT SIZE ~1m **LOGGED BY** NXB/JG **CHECKED BY** MB

NOTES _____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Material Description	Samples Tests Remarks	Additional Observations
E	None Observed					Grass		No olfactory evidence of contamination
						FILL: Firm, brown, clayey SILT with rootlets	TP17 (0.25-0.35)	Moisture (D) PID (0.0)
			0.5			NATURAL: Stiff, orange-gold CLAY with black mottling (minor), low plasticity, some white/cream mottline (minor)	TP17 (0.85-0.95)	Moisture (D) PID (0.0)
			1.0			Borehole TP17 terminated at 1m (Target depth reached)		
			1.5					
			2.0					
			2.5					

TEST PIT NUMBER TP18

GREENCAP

CLIENT C107881 - Richard Crookes Construction **PROJECT NAME** Detailed Site Investigation

PROJECT NUMBER J160656 **PROJECT LOCATION** 34-38 Schofields Road, Schofields NSW

DATE STARTED 16/11/18 **COMPLETED** 16/11/18 **R.L. SURFACE** _____ **DATUM** _____

EXCAVATION CONTRACTOR McMahons **SLOPE** --- **BEARING** -

EQUIPMENT Excavator **TEST PIT LOCATION** _____

TEST PIT SIZE ~1m **LOGGED BY** NXB/JG **CHECKED BY** MB

NOTES _____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Material Description	Samples Tests Remarks	Additional Observations
E	None Observed		0.0			REWORKED NATURAL: Brown, SILT, medium density, tree and grass roots	TP18 (0.1-0.2)	No olfactory evidence of contamination Moisture (DM) PID (0.0)
			0.5			NATURAL: Stiff red/orange and gret nottled CLAY, low plasticity		
			1.0			Borehole TP18 terminated at 1m (Target depth reached)		
			1.5					
			2.0					
			2.5					

TEST PIT NUMBER TP19

GREENCAP

CLIENT C107881 - Richard Crookes Construction **PROJECT NAME** Detailed Site Investigation

PROJECT NUMBER J160656 **PROJECT LOCATION** 34-38 Schofields Road, Schofields NSW

DATE STARTED 16/11/18 **COMPLETED** 16/11/18 **R.L. SURFACE** _____ **DATUM** _____

EXCAVATION CONTRACTOR McMahons **SLOPE** --- **BEARING** -

EQUIPMENT Excavator **TEST PIT LOCATION** _____

TEST PIT SIZE ~1m **LOGGED BY** NXB/JG **CHECKED BY** MB

NOTES _____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Material Description	Samples Tests Remarks	Additional Observations
E	None Observed					NATURAL: Loose, brown, clayey SILT with rootlets		No olfactory evidence of contamination
						NATURAL: Stiff, red, CLAY	TP19 (0.3-0.3)	Moisture (M) PID (0.0)
			0.5			Borehole TP19 terminated at 0.5m (Target depth reached)		
			1.0					
			1.5					
			2.0					
			2.5					

TEST PIT NUMBER TP20

GREENCAP

CLIENT C107881 - Richard Crookes Construction **PROJECT NAME** Detailed Site Investigation

PROJECT NUMBER J160656 **PROJECT LOCATION** 34-38 Schofields Road, Schofields NSW

DATE STARTED 16/11/18 **COMPLETED** 16/11/18 **R.L. SURFACE** _____ **DATUM** _____

EXCAVATION CONTRACTOR McMahons **SLOPE** --- **BEARING** -

EQUIPMENT Excavator **TEST PIT LOCATION** _____

TEST PIT SIZE ~1m **LOGGED BY** NXB/JG **CHECKED BY** MB

NOTES _____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Material Description	Samples Tests Remarks	Additional Observations
E	None Observed		0.0			Grass FILL: Loose light brown, clayey SILT, low plasticity	TP20 (0.01-0.1)	No olfactory evidence of contamination Moisture (DM) PID (0.1)
			0.5			NATURAL: Red/orange CLAY, orange mottling increases with depth		
			1.0			Borehole TP20 terminated at 1m (Target depth reached)		
			1.5					
			2.0					
			2.5					

TEST PIT NUMBER TP21

GREENCAP

CLIENT C107881 - Richard Crookes Construction **PROJECT NAME** Detailed Site Investigation

PROJECT NUMBER J160656 **PROJECT LOCATION** 34-38 Schofields Road, Schofields NSW

DATE STARTED 16/11/18 **COMPLETED** 16/11/18 **R.L. SURFACE** _____ **DATUM** _____

EXCAVATION CONTRACTOR McMahons **SLOPE** --- **BEARING** -

EQUIPMENT Excavator **TEST PIT LOCATION** _____

TEST PIT SIZE ~1m **LOGGED BY** NXB/JG **CHECKED BY** MB

NOTES _____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Material Description	Samples Tests Remarks	Additional Observations
E	None Observed		0.0			Grass NATURAL: Loose light brown sandy clayey SILT		No olfactory evidence of contamination
						NATURAL: Firm yellow/orange CLAY, yellow mottling, yellow content increase with depth	TP21 (0.2-0.3)	Moisture (M) PID (0.0)
			0.5					
						NATURAL: Grey weathered shale, minor natural coal inclusions		
			1.0			Borehole TP21 terminated at 1m (Target depth reached)		
			1.5					
			2.0					
			2.5					

TEST PIT NUMBER TP22

GREENCAP

CLIENT C107881 - Richard Crookes Construction **PROJECT NAME** Detailed Site Investigation

PROJECT NUMBER J160656 **PROJECT LOCATION** 34-38 Schofields Road, Schofields NSW

DATE STARTED 16/11/18 **COMPLETED** 16/11/18 **R.L. SURFACE** _____ **DATUM** _____

EXCAVATION CONTRACTOR McMahons **SLOPE** --- **BEARING** -

EQUIPMENT Excavator **TEST PIT LOCATION** _____

TEST PIT SIZE ~1m **LOGGED BY** NXB/JG **CHECKED BY** MB

NOTES _____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Material Description	Samples Tests Remarks	Additional Observations
E	None Observed		0.5			Grass		No olfactory evidence of contamination
						NATURAL: Loose light brown, clayey SILT, minor rock fragments, diameter 0.5cm ~0.1%, rootlets	TP22 (0.1-0.2)	Moisture (D)
			1.0			NATURAL: Firm red/orange CLAY, clay grades lighter with depth, grey mottling increases with depth		PID (0.0)
			1.5			Borehole TP22 terminated at 1m (Target depth reached)		
			2.0					
			2.5					

TEST PIT NUMBER TP23

GREENCAP

CLIENT C107881 - Richard Crookes Construction **PROJECT NAME** Detailed Site Investigation

PROJECT NUMBER J160656 **PROJECT LOCATION** 34-38 Schofields Road, Schofields NSW

DATE STARTED 16/11/18 **COMPLETED** 16/11/18 **R.L. SURFACE** _____ **DATUM** _____

EXCAVATION CONTRACTOR McMahons **SLOPE** --- **BEARING** -

EQUIPMENT Excavator **TEST PIT LOCATION** _____

TEST PIT SIZE ~1m **LOGGED BY** NXB/JG **CHECKED BY** MB

NOTES _____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Material Description	Samples Tests Remarks	Additional Observations
E	None Observed		0.0			Grass		No olfactory evidence of contamination
						NATURAL: Loose yellow/light brown clayey SILT	TP23 (0.1-0.2)	Moisture (D)
			0.5			NATURAL: Firm orange/red CLAY, grades to red with depth		PID (0.1)
			1.0			Borehole TP23 terminated at 1m (Target depth reached)		
			1.5					
			2.0					
			2.5					

TEST PIT NUMBER TP24

GREENCAP

CLIENT C107881 - Richard Crookes Construction **PROJECT NAME** Detailed Site Investigation

PROJECT NUMBER J160656 **PROJECT LOCATION** 34-38 Schofields Road, Schofields NSW

DATE STARTED 16/11/18 **COMPLETED** 16/11/18 **R.L. SURFACE** _____ **DATUM** _____

EXCAVATION CONTRACTOR McMahons **SLOPE** --- **BEARING** -

EQUIPMENT Excavator **TEST PIT LOCATION** _____

TEST PIT SIZE ~1m **LOGGED BY** NXB/JG **CHECKED BY** MB

NOTES _____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Material Description	Samples Tests Remarks	Additional Observations
E	None Observed		0.0			Grass NATURAL: Firm brown clayey SILT, low plasticity		No olfactory evidence of contamination
			0.5			NATURAL: Firm red CLAY, high plasticity, orange mottling increasing with depth	TP24 (0.1-0.2)	Moisture (DM) PID (0.2)
			1.0			Borehole TP24 terminated at 1m (Target depth reached)		
			1.5					
			2.0					
			2.5					

TEST PIT NUMBER TP25A

GREENCAP

CLIENT C107881 - Richard Crookes Construction **PROJECT NAME** Detailed Site Investigation

PROJECT NUMBER J160656 **PROJECT LOCATION** 34-38 Schofields Road, Schofields NSW

DATE STARTED 10/12/18 **COMPLETED** 10/12/18 **R.L. SURFACE** **DATUM**

EXCAVATION CONTRACTOR **SLOPE** --- **BEARING** ---

EQUIPMENT Manual **TEST PIT LOCATION** Proposed Lot 1 of site

TEST PIT SIZE **LOGGED BY** MB **CHECKED BY** GB

NOTES

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Material Description	Samples Tests Remarks	Additional Observations
						NATURAL: Brown silty clay with rootlets		No olfactory evidence of contamination
						NATURAL: Red, stiff clay	TP25A(0.2-0.3)	
			0.5			Borehole TP25A terminated at 0.3m (Target depth reached)		
			1.0					
			1.5					

TEST PIT NUMBER TP26A

GREENCAP

CLIENT C107881 - Richard Crookes Construction **PROJECT NAME** Detailed Site Investigation

PROJECT NUMBER J160656 **PROJECT LOCATION** 34-38 Schofields Road, Schofields NSW

DATE STARTED 10/12/18 **COMPLETED** 10/12/18 **R.L. SURFACE** **DATUM**

EXCAVATION CONTRACTOR **SLOPE** --- **BEARING** ---

EQUIPMENT Manual **TEST PIT LOCATION** Proposed Lot 1 of site

TEST PIT SIZE **LOGGED BY** MB **CHECKED BY** GB

NOTES

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Material Description	Samples Tests Remarks	Additional Observations
						NATURAL: Brown silty clay with rootlets		No olfactory evidence of contamination
						NATURAL: Red/brown, stiff clay	TP26A(0.1-0.3)	
			0.5			Borehole TP26A terminated at 0.3m (Target depth reached)		
			1.0					
			1.5					

TEST PIT NUMBER TP27A

GREENCAP

CLIENT C107881 - Richard Crookes Construction **PROJECT NAME** Detailed Site Investigation

PROJECT NUMBER J160656 **PROJECT LOCATION** 34-38 Schofields Road, Schofields NSW

DATE STARTED 10/12/18 **COMPLETED** 10/12/18 **R.L. SURFACE** **DATUM**

EXCAVATION CONTRACTOR **SLOPE** --- **BEARING** ---

EQUIPMENT Manual **TEST PIT LOCATION** Proposed Lot 1 of site

TEST PIT SIZE **LOGGED BY** MB **CHECKED BY** GB

NOTES

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Material Description	Samples Tests Remarks	Additional Observations
						NATURAL: Brown silty clay with rootlets		No olfactory evidence of contamination
						NATURAL: Red/brown, stiff clay	TP27A(0.2-0.3)	
			0.5			Borehole TP27A terminated at 0.3m (Target depth reached)		
			1.0					
			1.5					

TEST PIT NUMBER TP28A

GREENCAP

CLIENT C107881 - Richard Crookes Construction **PROJECT NAME** Detailed Site Investigation

PROJECT NUMBER J160656 **PROJECT LOCATION** 34-38 Schofields Road, Schofields NSW

DATE STARTED 10/12/18 **COMPLETED** 10/12/18 **R.L. SURFACE** _____ **DATUM** _____

EXCAVATION CONTRACTOR _____ **SLOPE** --- **BEARING** ---

EQUIPMENT Manual **TEST PIT LOCATION** Proposed Lot 1 of site

TEST PIT SIZE _____ **LOGGED BY** MB **CHECKED BY** GB

NOTES _____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Material Description	Samples Tests Remarks	Additional Observations
						NATURAL: Brown, firm gravelly clay-silt. Gravel is shale: 1-3cm diameter, flat (15%)	TP28A(0.2-0.4)	No olfactory evidence of contamination
			0.5			Borehole TP28A terminated at 0.4m (Target depth reached)		
			1.0					
			1.5					

TEST PIT NUMBER TP29A

GREENCAP

CLIENT C107881 - Richard Crookes Construction **PROJECT NAME** Detailed Site Investigation

PROJECT NUMBER J160656 **PROJECT LOCATION** 34-38 Schofields Road, Schofields NSW

DATE STARTED 10/12/18 **COMPLETED** 10/12/18 **R.L. SURFACE** **DATUM**

EXCAVATION CONTRACTOR **SLOPE** --- **BEARING** ---

EQUIPMENT Manual **TEST PIT LOCATION** Proposed Lot 1 of site

TEST PIT SIZE **LOGGED BY** MB **CHECKED BY** GB

NOTES

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Material Description	Samples Tests Remarks	Additional Observations
						NATURAL: Red and grey stiff clay	TP29A(0.15-0.3)	No olfactory evidence of contamination
			0.5			Borehole TP29A terminated at 0.3m (Target depth reached)		
			1.0					
			1.5					

TEST PIT NUMBER TP30A

GREENCAP

CLIENT C107881 - Richard Crookes Construction **PROJECT NAME** Detailed Site Investigation

PROJECT NUMBER J160656 **PROJECT LOCATION** 34-38 Schofields Road, Schofields NSW

DATE STARTED 10/12/18 **COMPLETED** 10/12/18 **R.L. SURFACE** **DATUM**

EXCAVATION CONTRACTOR **SLOPE** --- **BEARING** ---

EQUIPMENT Manual **TEST PIT LOCATION** Proposed Lot 1 of site

TEST PIT SIZE **LOGGED BY** MB **CHECKED BY** GB

NOTES

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Material Description	Samples Tests Remarks	Additional Observations
						NATURAL: Brown silty clay with rootlets		No olfactory evidence of contamination
						NATURAL: Brown/red, stiff clay	TP30A(0.2-0.3)	
			0.5			Borehole TP30A terminated at 0.3m (Target depth reached)		
			1.0					
			1.5					

TEST PIT NUMBER TP31A

GREENCAP

CLIENT C107881 - Richard Crookes Construction **PROJECT NAME** Detailed Site Investigation

PROJECT NUMBER J160656 **PROJECT LOCATION** 34-38 Schofields Road, Schofields NSW

DATE STARTED 10/12/18 **COMPLETED** 10/12/18 **R.L. SURFACE** **DATUM**

EXCAVATION CONTRACTOR **SLOPE** --- **BEARING** ---

EQUIPMENT Manual **TEST PIT LOCATION** Proposed Lot 1 of site

TEST PIT SIZE **LOGGED BY** MB **CHECKED BY** GB

NOTES

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Material Description	Samples Tests Remarks	Additional Observations
						NATURAL: Brown-red stiff clay	TP31A(0.1-0.2)	No olfactory evidence of contamination
			0.5			Borehole TP31A terminated at 0.3m (Target depth reached)		
			1.0					
			1.5					

TEST PIT NUMBER TP32A

GREENCAP

CLIENT C107881 - Richard Crookes Construction **PROJECT NAME** Detailed Site Investigation

PROJECT NUMBER J160656 **PROJECT LOCATION** 34-38 Schofields Road, Schofields NSW

DATE STARTED 10/12/18 **COMPLETED** 10/12/18 **R.L. SURFACE** **DATUM**

EXCAVATION CONTRACTOR **SLOPE** --- **BEARING** ---

EQUIPMENT Manual **TEST PIT LOCATION** Proposed Lot 1 of site

TEST PIT SIZE **LOGGED BY** MB **CHECKED BY** GB

NOTES

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Material Description	Samples Tests Remarks	Additional Observations
						NATURAL: Red stuff clay	TP32A(0.2-0.3)	No olfactory evidence of contamination
			0.5			Borehole TP32A terminated at 0.3m (Target depth reached)		
			1.0					
			1.5					

TEST PIT NUMBER TP33A

GREENCAP

CLIENT C107881 - Richard Crookes Construction **PROJECT NAME** Detailed Site Investigation

PROJECT NUMBER J160656 **PROJECT LOCATION** 34-38 Schofields Road, Schofields NSW

DATE STARTED 10/12/18 **COMPLETED** 10/12/18 **R.L. SURFACE** **DATUM**

EXCAVATION CONTRACTOR **SLOPE** --- **BEARING** ---

EQUIPMENT Manual **TEST PIT LOCATION** Proposed Lot 1 of site

TEST PIT SIZE **LOGGED BY** MB **CHECKED BY** GB

NOTES

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Material Description	Samples Tests Remarks	Additional Observations
						NATURAL: Brown firm, silty clay with rootlets		No olfactory evidence of contamination
						NATURAL: Red/brown stiff clay		
							TP33A(0.2-0.25)	
			0.5			Borehole TP33A terminated at 0.3m (Target depth reached)		
			1.0					
			1.5					

TEST PIT NUMBER TP34A

GREENCAP

CLIENT C107881 - Richard Crookes Construction **PROJECT NAME** Detailed Site Investigation

PROJECT NUMBER J160656 **PROJECT LOCATION** 34-38 Schofields Road, Schofields NSW

DATE STARTED 10/12/18 **COMPLETED** 10/12/18 **R.L. SURFACE** _____ **DATUM** _____

EXCAVATION CONTRACTOR _____ **SLOPE** --- **BEARING** ---

EQUIPMENT Manual **TEST PIT LOCATION** Proposed Lot 1 of site

TEST PIT SIZE _____ **LOGGED BY** MB **CHECKED BY** GB

NOTES _____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Material Description	Samples Tests Remarks	Additional Observations
						NATURAL: Red stiff clay	TP34A(0.1-0.2) & Field Dupliacte Sample FD2A	No olfactory evidence of contamination
			0.5			Borehole TP34A terminated at 0.3m (Target depth reached)		
			1.0					
			1.5					

TEST PIT NUMBER TP35A

GREENCAP

CLIENT C107881 - Richard Crookes Construction **PROJECT NAME** Detailed Site Investigation

PROJECT NUMBER J160656 **PROJECT LOCATION** 34-38 Schofields Road, Schofields NSW

DATE STARTED 10/12/18 **COMPLETED** 10/12/18 **R.L. SURFACE** **DATUM**

EXCAVATION CONTRACTOR **SLOPE** --- **BEARING** ---

EQUIPMENT Manual **TEST PIT LOCATION** Proposed Lot 1 of site

TEST PIT SIZE **LOGGED BY** MB **CHECKED BY** GB

NOTES

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification	Material Description	Samples Tests Remarks	Additional Observations
						NATURAL: Brown firm silty clay with rootlets		No olfactory evidence of contamination
						NATURAL: Red stiff clay with yellow/brown mottling	TP35A(0.15-0.25)	
			0.5			Borehole TP35A terminated at 0.3m (Target depth reached)		
			1.0					
			1.5					

January 2019

GREENCAP
Going Further in Managing Risk

Detailed Site Investigation

Group GSA

Cnr of Farmland Dr & the future realignment of Pelican Rd, Schofields NSW 2762

Appendix E: Sample Analysis Results Summary Table

GREENCAP
Going Further in Managing Risk

J160656
Alex Ave Public School, Schofields
Detailed Site Investigation
Soil Analysis Data Summary

December 2018

	Sample ID						TP1	TP2	TP2	TP3	TP4	TP5	TP6	TP7	TP8	TP9	TP10	TP11	TP12	TP13
	Sample Depth (m)						0.1-0.2	0.01-0.2	0.6-0.7	0.1-0.2	0.1-0.2	0.1-0.2	0.0-0.2	0.1-0.2	0.1-0.2	0.1-0.3	0.2-0.3	0.1-0.3	0.3-0.5	0.01-0.1
	Sample Date						16/11/18	16/11/18	16/11/18	16/11/18	16/11/18	16/11/18	16/11/18	16/11/18	16/11/18	16/11/18	16/11/18	16/11/18	16/11/18	16/11/18
Analyte	Units	LOR	(HIL-A)	HSL - A/B 0 - <1m	EIL	ESL - R (coarse)	ML (coarse)													
BTEX																				
Benzene	mg/kg	0.1		0.6		50		< 0.1	< 0.1	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	mg/kg	0.1		-		-		< 0.1	< 0.1	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	mg/kg	0.2		-		-		< 0.2	< 0.2	-	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	mg/kg	0.1		-		-		< 0.1	< 0.1	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	mg/kg	0.1		390		85		< 0.1	< 0.1	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	mg/kg	0.3		-		105		< 0.3	< 0.3	-	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Heavy Metals																				
Arsenic	mg/kg	2	100		113			12	14	-	7.8	8.6	9.8	10	8.7	5.2	8.5	7.3	10	4.5	8.4
Cadmium	mg/kg	0.4	20		-			< 0.4	< 0.4	-	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	mg/kg	5	100		417			18	12	-	9.3	9.1	13	13	11	7.7	12	7.9	13	15	12
Copper	mg/kg	5	6000		199			11	11	-	15	17	15	15	11	7.2	12	15	16	17	14
Lead	mg/kg	5	300		1,119			27	18	-	24	21	15	18	29	10	26	20	31	36	22
Mercury	mg/kg	0.1	40		-			< 0.1	< 0.1	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	mg/kg	5	400		170			7.2	5.9	-	6.6	7.7	< 5	8.7	6.9	< 5	5.8	8.3	7.1	9.4	6.4
Zinc	mg/kg	5	7400		281			31	25	-	38	43	29	44	31	21	30	42	43	99	26
Organochlorine Pesticides																				
4.4'-DDD	mg/kg	0.05						-	< 0.05	-	-	< 0.05	-	-	< 0.05	-	< 0.05	-	-	-	-
4.4'-DDE	mg/kg	0.05						-	< 0.05	-	-	< 0.05	-	-	< 0.05	-	< 0.05	-	-	-	-
4.4'-DDT	mg/kg	0.05						-	< 0.05	-	-	< 0.05	-	-	< 0.05	-	< 0.05	-	-	-	-
a-BHC	mg/kg	0.05						-	< 0.05	-	-	< 0.05	-	-	< 0.05	-	< 0.05	-	-	-	-
Aldrin	mg/kg	0.05						-	< 0.05	-	-	< 0.05	-	-	< 0.05	-	< 0.05	-	-	-	-
Aldrin and Dieldrin (Total)	mg/kg	0.05						-	< 0.05	-	-	< 0.05	-	-	< 0.05	-	< 0.05	-	-	-	-
b-BHC	mg/kg	0.1						-	< 0.05	-	-	< 0.05	-	-	< 0.05	-	< 0.05	-	-	-	-
Chlordanes - Total	mg/kg	0.05						-	< 0.1	-	-	< 0.1	-	-	< 0.1	-	< 0.1	-	-	-	-
d-BHC	mg/kg	0.05						-	< 0.05	-	-	< 0.05	-	-	< 0.05	-	< 0.05	-	-	-	-
DDT + DDE + DDD (Total)	mg/kg	0.05						-	< 0.05	-	-	< 0.05	-	-	< 0.05	-	< 0.05	-	-	-	-
Dieldrin	mg/kg	0.05						-	< 0.05	-	-	< 0.05	-	-	< 0.05	-	< 0.05	-	-	-	-
Endosulfan I	mg/kg	0.05						-	< 0.05	-	-	< 0.05	-	-	< 0.05	-	< 0.05	-	-	-	-
Endosulfan II	mg/kg	0.05						-	< 0.05	-	-	< 0.05	-	-	< 0.05	-	< 0.05	-	-	-	-
Endosulfan sulphate	mg/kg	0.05						-	< 0.05	-	-	< 0.05	-	-	< 0.05	-	< 0.05	-	-	-	-
Endrin	mg/kg	0.05						-	< 0.05	-	-	< 0.05	-	-	< 0.05	-	< 0.05	-	-	-	-
Endrin aldehyde	mg/kg	0.05						-	< 0.05	-	-	< 0.05	-	-	< 0.05	-	< 0.05	-	-	-	-
Endrin ketone	mg/kg	0.05						-	< 0.05	-	-	< 0.05	-	-	< 0.05	-	< 0.05	-	-	-	-
g-BHC (Lindane)	mg/kg	0.05						-	< 0.05	-	-	< 0.05	-	-	< 0.05	-	< 0.05	-	-	-	-
Heptachlor	mg/kg	0.05						-	< 0.05	-	-	< 0.05	-	-	< 0.05	-	< 0.05	-	-	-	-
Heptachlor epoxide	mg/kg	0.05						-	< 0.05	-	-	< 0.05	-	-	< 0.05	-	< 0.05	-	-	-	-
Hexachlorobenzene	mg/kg	0.05						-	< 0.05	-	-	< 0.05	-	-	< 0.05	-	< 0.05	-	-	-	-
Methoxychlor	mg/kg	0.05						-	< 0.05	-	-	< 0.05	-	-	< 0.05	-	< 0.05	-	-	-	-
Toxaphene	mg/kg	1						-	< 1	-	-	< 1	-	-	< 1	-	< 1	-	-	-	-
Vic EPA IWRG 621 OCP (Total)	mg/kg	0.1						-	< 0.1	-	-	< 0.1	-	-	< 0.1	-	< 0.1	-	-	-	-
Vic EPA IWRG 621 Other OCP (Total)	mg/kg	0.1						-	< 0.1	-	-	< 0.1	-	-	< 0.1	-	< 0.1	-	-	-	-
Physical Properties																				
Moisture	%	1						7.8	9	12	11	10	14	9.1	8	20	11	9.7	10	8.7	11
Organophosphorus Pesticides																				
Azinphos-methyl	mg/kg	0.2						-	< 0.2	-	-	< 0.2	-	-	< 0.2	-	< 0.2	-	-	-	-
Bolstar	mg/kg	0.2						-	< 0.2	-	-	< 0.2	-	-	< 0.2	-	< 0.2	-	-	-	-
Chlorfenvinphos	mg/kg	0.2						-	< 0.2	-	-	< 0.2	-	-	< 0.2	-	< 0.2	-	-	-	-
Chlorpyrifos	mg/kg	0.2						-	< 0.2	-	-	< 0.2	-	-	< 0.2	-	< 0.2	-	-	-	-
Chlorpyrifos-methyl	mg/kg	0.2						-	< 0.2	-	-	< 0.2	-	-	< 0.2	-	< 0.2	-	-	-	-
Coumaphos	mg/kg	2						-	< 2	-	-	< 2	-	-	< 2	-	< 2	-	-	-	-
Demeton-O	mg/kg	0.2						-	< 0.2	-	-	< 0.2	-	-	< 0.2	-	< 0.2	-	-	-	-
Demeton-S	mg/kg	0.2						-	< 0.2	-	-	< 0.2	-	-	< 0.2	-	< 0.2	-	-	-	-
Diazinon	mg/kg	0.2						-	< 0.2	-	-	< 0.2	-	-	< 0.2	-	< 0.2	-	-	-	-
Dichlorvos	mg/kg	0.2						-	< 0.2	-	-	< 0.2	-	-	< 0.2	-	< 0.2	-	-	-	-
Dimethoate	mg/kg	0.2						-	< 0.2	-	-	< 0.2	-	-	< 0.2	-	< 0.2	-	-	-	-
Disulfoton	mg/kg	0.2						-	< 0.2	-	-	< 0.2	-	-	< 0.2	-	< 0.2	-	-	-	-
EPN	mg/kg	0.2						-	< 0.2	-	-	< 0.2	-	-	< 0.2	-	< 0.2	-	-	-	-
Ethion	mg/kg	0.2						-	< 0.2	-	-	< 0.2	-	-	< 0.2	-	< 0.2	-	-	-	-
Ethoprop	mg/kg	0.2						-	< 0.2	-	-	< 0.2	-	-	< 0.2	-	< 0.2	-	-	-	-
Ethyl parathion	mg/kg	0.2						-	< 0.2	-	-	< 0.2	-	-	< 0.2	-	< 0.2	-	-	-	-
Fenitrothion	mg/kg	0.2						-	< 0.2	-	-	< 0.2	-	-	< 0.2	-	< 0.2	-	-	-	-
Fensulfothion	mg/kg	0.2						-	< 0.2	-	-	< 0.2	-	-	< 0.2	-	< 0.2	-	-	-	-
Fenthion	mg/kg	0.2						-	< 0.2	-	-	< 0.2	-	-	< 0.2	-	< 0.2	-	-	-	-
Malathion	mg/kg	0.2						-	< 0.2	-	-	< 0.2	-	-	< 0.2	-	< 0.2	-	-	-	-
Merphos	mg/kg	0.2						-	< 0.2	-	-	< 0.2	-	-	< 0.2	-	< 0.2	-	-	-	-
Methyl parathion	mg/kg	0.2						-	< 0.2	-	-	< 0.2	-	-	< 0.2	-	< 0.2	-	-	-	-
Mevinphos	mg/kg	0.2						-	< 0.2	-	-	< 0.2	-	-	< 0.2	-	< 0.2	-	-	-	-
Monocrotophos	mg/kg	2						-	< 2	-	-	< 2	-	-	< 2	-	< 2	-	-	-	-
Naled	mg/kg	0.2						-	< 0.2	-	-	< 0.2	-	-	< 0.2	-	< 0.2	-	-	-	-
Omethoate	mg/kg	2						-	< 2	-	-	< 2	-	-	< 2	-	< 2	-	-	-	-
Phorate	mg/kg	0.2						-	< 0.2	-	-	< 0.2	-	-	< 0.2	-	< 0.2	-	-	-	-
Pirimiphos-methyl	mg/kg	0.2						-	< 0.2	-	-	< 0.2	-	-	< 0.2	-	< 0.2	-	-	-	-
Pyrazophos	mg/kg	0.2						-	< 0.2	-	-	< 0.2	-	-	< 0.2	-	< 0.2	-	-	-	-
Ronnel	mg/kg	0.2						-	< 0.2	-	-	< 0.2	-	-	< 0.2	-	< 0.2	-	-	-	-
Terbufos	mg/kg	0.2						-	< 0.2	-	-	< 0.2	-	-	< 0.2	-	< 0.2	-	-	-	-
Tetrachlorvinphos	mg/kg	0.2						-	< 0.2	-	-	< 0.2	-	-	< 0.2	-	< 0.2	-	-	-	-
Tokuthion	mg/kg	0.2						-	< 0.2	-	-	< 0.2	-	-	< 0.2	-	< 0.2	-	-	-	-
Trichloronate	mg/kg	0.2						-	< 0.2	-	-	< 0.2	-	-	< 0.2	-	< 0.2	-	-	-	-
Polychlorinated Biphenyls																				
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 PCB	mg/kg	0.1						-	< 0.1	-	-	< 0.1	-	-	< 0.1	-	< 0.1	-	-	-	-
Polycyclic Aromatic Hydrocarbons																				
Acenaphthene	mg/kg	0.5	-			-		< 0.5	-	-	-	< 0.5	-	< 0.5	-	< 0.5	-	-	-	-	-
Acenaphthylene	mg/kg	0.5	-			-		< 0.5	-	-	-	< 0.5	-	< 0.5	-	< 0.5	-	-	-	-	-
Anthracene	mg/kg	0.5	-			-		< 0.5	-	-	-	< 0.5	-	< 0.5	-	< 0.5	-	-	-	-	-
Benz(a)anthracene	mg/kg	0.5	3			-		< 0.5	-	-	-	< 0.5	-	< 0.5	-	< 0.5	-	-	-	-	-
Benzo(a)pyrene	mg/kg	0.5	3			0.7		< 0.5	-	-	-	< 0.5	-	< 0.5	-	< 0.5	-	-	-	-	-
Benzo(a)pyrene TEQ (lower bound)	mg/kg	0.5	-			-		< 0.5	-	-	-	< 0.5	-	< 0.5	-	< 0.5	-	-	-	-	-
Benzo(a)pyrene TEQ (medium bound)	mg/kg	0.6	-			-		0.6	-	-	-	0.6	-	0.6	-	0.6	-	-	-	-	-
Benzo(a)pyrene TEQ (upper bound)	mg/kg	1.2	-			-		1.2	-	-	-	1.2	-	1.2	-	1.2	-	-	-	-	-
Benzo(b&j)fluoranthene	mg/kg	0.5	3			-		< 0.5	-	-	-	< 0.5	-	< 0.5	-	< 0.5	-	-	-	-	-
Benzo(g.h.i)perylene	mg/kg	0.5	-			-		< 0.5	-	-	-	< 0.5	-	< 0.5	-	< 0.5	-	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.5	3			-		< 0.5	-	-	-	< 0.5	-	< 0.5	-	< 0.5	-	-	-	-	-
Chrysene	mg/kg	0.5	-			-		< 0.5	-	-	-	< 0.5	-	< 0.5	-	< 0.5	-	-	-	-	-
Dibenz(a.h)anthracene	mg/kg	0.5	-			-		< 0.5	-	-	-	< 0.5	-	< 0.5	-	< 0.5	-	-	-	-	-
Fluoranthene	mg/kg	0.5	-			-		< 0.5	-	-	-	< 0.5	-	< 0.5	-	< 0.5	-	-	-	-	-
Fluorene	mg/kg	0.5	-			-		< 0.5	-	-	-	< 0.5	-	< 0.5	-	< 0.5	-	-	-	-	-
Indeno(1.2.3-cd)pyrene	mg/kg	0.5	-			-		< 0.5	-	-	-	< 0.5	-	< 0.5	-	< 0.5	-	-	-	-	-
Naphthalene	mg/kg	0.5	-	4	170	170	-	< 0.5	-	-	-	< 0.5	-	< 0.5	-	< 0.5	-	-	-	-	-
Phenanthrene	mg/kg	0.5	-			-		< 0.5	-	-	-	< 0.5	-	< 0.5	-	< 0.5	-	-	-	-	-
Pyrene	mg/kg	0.5	-			-		< 0.5	-	-	-	< 0.5	-	< 0.5	-	< 0.5	-	-	-	-	-
Total PAH	mg/kg	0.5	300			-		< 0.5	-	-	-	< 0.5	-	< 0.5	-	< 0.5	-	-	-	-	-
Total Recoverable Hydrocarbons - 1999 NEPM Fractions																				
TRH C10-36 (Total)	mg/kg	50						< 50	< 50	-	< 50	< 50	< 50	< 50	< 50	50	< 50	< 50	< 50	< 50	< 50
TRH C10-C14	mg/kg	20						< 20	< 20	-	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
TRH C15-C28	mg/kg	50						< 50	< 50	-	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
TRH C29-C36	mg/kg	50						< 50	< 50	-	< 50	< 50	< 50	< 50	< 50	50	< 50	< 50	< 50	< 50	< 50
TRH C6-C9	mg/kg	20						< 20	< 20	-	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20

Total Recoverable Hydrocarbons - 2013 NEPM Fractions																				
Naphthalene	mg/kg	0.5				170	-	< 0.5	< 0.5	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16	mg/kg	50				120	1,000	< 50	< 50	-	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)	mg/kg	50				-	-	< 50	< 50	-	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
TRH >C10-C40 (total)*	mg/kg	100				-	-	< 100	< 100	-	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
TRH >C16-C34	mg/kg	100				300	2,500	< 100	< 100	-	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
TRH >C34-C40	mg/kg	100				2,800	10,000	< 100	< 100	-	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
TRH C6-C10	mg/kg	20				180	700	< 20	< 20	-	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)	mg/kg	20				-	-	< 20	< 20	-	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Asbestos																				
Asbestos	g/g	0.01% w/w						<0.01%	-	-	<0.01%	-	<0.01%	<0.01%	-	-	<0.01%	<0.01%	-	<0.01%	-
Respirable fibres		ND						ND*	-	-	ND*	-	ND*	ND*	-	-	ND*	ND*	-	ND*	-
Salinity																				
Chloride	mg/kg	5						-	-	24	-	-	-	-	-	-	-	-	-	-
Conductivity (1:5 aqueous extract at 25°C)	uS/cm	10						-	-	47	-	-	-	-	-	-	-	-	-	-
Exchangeable Sodium Percentage (ESP)	%	0.1						-	-	7.9	-	-	-	-	-	-	-	-	-	-
Magnesium (exchangeable)	meq/100g	0.1						-	-	5.7	-	-	-	-	-	-	-	-	-	-
pH (1:5 Aqueous extract at 25°C)	pH units	0.1						-	-	5.7	-	-	-	-	-	-	-	-	-	-
Potassium (exchangeable)	meq/100g	0.1						-	-	0.4	-	-	-	-	-	-	-	-	-	-
Resistivity	ohm.m	0.5						-	-	210	-	-	-	-	-	-	-	-	-	-
Sodium (exchangeable)	meq/100g	0.1						-	-	0.8	-	-	-	-	-	-	-	-	-	-
Sulphate (as SO4)	mg/kg	30						-	-	140	-	-	-	-	-	-	-	-	-	-
Cation Exchange Capacity																				
Calcium (exchangeable)	meq/100g	0.1						-	-	3.5	-	-	-	-	-	-	-	-	-	-
Cation Exchange Capacity	meq/100g	0.05						-	-	10	-	-	-	-	-	-	-	-	-	-

GREENCAP
Going Further in Managing Risk

J160656
Alex Ave Public School, Schofields
Detailed Site Investigation
Soil Analysis Data Summary

December 2018

		Sample ID						TP14	TP15	TP15	TP16	TP17	TP18	TP19	TP21	TP23	TP24	FD01	FD02
		Sample Depth (m)						0.0-0.1	0.1-0.2	0.8-0.9	0.1-0.3	0.25-0.35	0.1-0.2	0.2-0.3	0.2-0.3	0.2-0.3	0.1-0.2	FD01	FD02
		Sample Date						16/11/18	16/11/18	16/11/18	16/11/18	16/11/18	16/11/18	16/11/18	16/11/18	16/11/18	16/11/18	16/11/18	16/11/18
Analyte	Units	LOR	(HIL-A)	HSL - A/B 0 - <1m	EIL	ESL - R (coarse)	ML (coarse)												
BTEX																			
Benzene	mg/kg	0.1		0.6		50		< 0.1	< 0.1	-	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	mg/kg	0.1		-		-		< 0.1	< 0.1	-	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	mg/kg	0.2		-		-		< 0.2	< 0.2	-	-	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	mg/kg	0.1		-		-		< 0.1	< 0.1	-	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	mg/kg	0.1		390		85		< 0.1	< 0.1	-	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	mg/kg	0.3		-		105		< 0.3	< 0.3	-	-	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Heavy Metals																			
Arsenic	mg/kg	2	100		113			8.9	28	-	-	40	19	28	12	13	19	4.2	7.6
Cadmium	mg/kg	0.4	20		-			< 0.4	< 0.4	-	-	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	mg/kg	5	100		417			13	17	-	-	11	17	31	9.2	17	15	17	7.8
Copper	mg/kg	5	6000		199			15	21	-	-	28	18	25	33	9.4	34	27	12
Lead	mg/kg	5	300		1,119			26	27	-	-	33	23	31	13	19	17	43	22
Mercury	mg/kg	0.1	40		-			< 0.1	< 0.1	-	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	mg/kg	5	400		170			6	7.8	-	-	17	9	12	11	< 5	9.2	8.8	5.5
Zinc	mg/kg	5	7400		281			28	51	-	-	77	25	37	67	11	66	140	35
Organochlorine Pesticides																			
4.4'-DDD	mg/kg	0.05						-	-	-	-	< 0.05	-	-	-	-	-	-	-
4.4'-DDE	mg/kg	0.05						-	-	-	-	< 0.05	-	-	-	-	-	-	-
4.4'-DDT	mg/kg	0.05						-	-	-	-	< 0.05	-	-	-	-	-	-	-
a-BHC	mg/kg	0.05						-	-	-	-	< 0.05	-	-	-	-	-	-	-
Aldrin	mg/kg	0.05						-	-	-	-	< 0.05	-	-	-	-	-	-	-
Aldrin and Dieldrin (Total)	mg/kg	0.05						-	-	-	-	< 0.05	-	-	-	-	-	-	-
b-BHC	mg/kg	0.1						-	-	-	-	< 0.05	-	-	-	-	-	-	-
Chlordanes - Total	mg/kg	0.05						-	-	-	-	< 0.1	-	-	-	-	-	-	-
d-BHC	mg/kg	0.05						-	-	-	-	< 0.05	-	-	-	-	-	-	-
DDT + DDE + DDD (Total)	mg/kg	0.05						-	-	-	-	< 0.05	-	-	-	-	-	-	-
Dieldrin	mg/kg	0.05						-	-	-	-	< 0.05	-	-	-	-	-	-	-
Endosulfan I	mg/kg	0.05						-	-	-	-	< 0.05	-	-	-	-	-	-	-
Endosulfan II	mg/kg	0.05						-	-	-	-	< 0.05	-	-	-	-	-	-	-
Endosulfan sulphate	mg/kg	0.05						-	-	-	-	< 0.05	-	-	-	-	-	-	-
Endrin	mg/kg	0.05						-	-	-	-	< 0.05	-	-	-	-	-	-	-
Endrin aldehyde	mg/kg	0.05						-	-	-	-	< 0.05	-	-	-	-	-	-	-
Endrin ketone	mg/kg	0.05						-	-	-	-	< 0.05	-	-	-	-	-	-	-
g-BHC (Lindane)	mg/kg	0.05						-	-	-	-	< 0.05	-	-	-	-	-	-	-
Heptachlor	mg/kg	0.05						-	-	-	-	< 0.05	-	-	-	-	-	-	-
Heptachlor epoxide	mg/kg	0.05						-	-	-	-	< 0.05	-	-	-	-	-	-	-
Hexachlorobenzene	mg/kg	0.05						-	-	-	-	< 0.05	-	-	-	-	-	-	-
Methoxychlor	mg/kg	0.05						-	-	-	-	< 0.05	-	-	-	-	-	-	-
Toxaphene	mg/kg	1						-	-	-	-	< 1	-	-	-	-	-	-	-
Vic EPA IWRG 621 OCP (Total)	mg/kg	0.1						-	-	-	-	< 0.1	-	-	-	-	-	-	-
Vic EPA IWRG 621 Other OCP (Total)	mg/kg	0.1						-	-	-	-	< 0.1	-	-	-	-	-	-	-
Physical Properties																			
Moisture	%	1						14	15	18	11	12	11	15	19	6.9	14	8.9	9.8
Organophosphorus Pesticides																			
Azinphos-methyl	mg/kg	0.2						-	-	-	-	< 0.2	-	-	-	-	-	-	-
Bolstar	mg/kg	0.2						-	-	-	-	< 0.2	-	-	-	-	-	-	-
Chlorfenvinphos	mg/kg	0.2						-	-	-	-	< 0.2	-	-	-	-	-	-	-
Chlorpyrifos	mg/kg	0.2						-	-	-	-	< 0.2	-	-	-	-	-	-	-
Chlorpyrifos-methyl	mg/kg	0.2						-	-	-	-	< 0.2	-	-	-	-	-	-	-
Coumaphos	mg/kg	2						-	-	-	-	< 2	-	-	-	-	-	-	-
Demeton-O	mg/kg	0.2						-	-	-	-	< 0.2	-	-	-	-	-	-	-
Demeton-S	mg/kg	0.2						-	-	-	-	< 0.2	-	-	-	-	-	-	-
Diazinon	mg/kg	0.2						-	-	-	-	< 0.2	-	-	-	-	-	-	-
Dichlorvos	mg/kg	0.2						-	-	-	-	< 0.2	-	-	-	-	-	-	-
Dimethoate	mg/kg	0.2						-	-	-	-	< 0.2	-	-	-	-	-	-	-
Disulfoton	mg/kg	0.2						-	-	-	-	< 0.2	-	-	-	-	-	-	-
EPN	mg/kg	0.2						-	-	-	-	< 0.2	-	-	-	-	-	-	-
Ethion	mg/kg	0.2						-	-	-	-	< 0.2	-	-	-	-	-	-	-
Ethoprop	mg/kg	0.2						-	-	-	-	< 0.2	-	-	-	-	-	-	-
Ethyl parathion	mg/kg	0.2						-	-	-	-	< 0.2	-	-	-	-	-	-	-
Fenitrothion	mg/kg	0.2						-	-	-	-	< 0.2	-	-	-	-	-	-	-
Fensulfothion	mg/kg	0.2						-	-	-	-	< 0.2	-	-	-	-	-	-	-
Fenthion	mg/kg	0.2						-	-	-	-	< 0.2	-	-	-	-	-	-	-
Malathion	mg/kg	0.2						-	-	-	-	< 0.2	-	-	-	-	-	-	-
Merphos	mg/kg	0.2						-	-	-	-	< 0.2	-	-	-	-	-	-	-
Methyl parathion	mg/kg	0.2						-	-	-	-	< 0.2	-	-	-	-	-	-	-
Mevinphos	mg/kg	0.2						-	-	-	-	< 0.2	-	-	-	-	-	-	-
Monocrotophos	mg/kg	2						-	-	-	-	< 2	-	-	-	-	-	-	-
Naled	mg/kg	0.2						-	-	-	-	< 0.2	-	-	-	-	-	-	-
Omethoate	mg/kg	2						-	-	-	-	< 2	-	-	-	-	-	-	-
Phorate	mg/kg	0.2						-	-	-	-	< 0.2	-	-	-	-	-	-	-
Pirimiphos-methyl	mg/kg	0.2						-	-	-	-	< 0.2	-	-	-	-	-	-	-
Pyrazophos	mg/kg	0.2						-	-	-	-	< 0.2	-	-	-	-	-	-	-
Ronnel	mg/kg	0.2						-	-	-	-	< 0.2	-	-	-	-	-	-	-
Terbufos	mg/kg	0.2						-	-	-	-	< 0.2	-	-	-	-	-	-	-
Tetrachlorvinphos	mg/kg	0.2						-	-	-	-	< 0.2	-	-	-	-	-	-	-
Tokuthion	mg/kg	0.2						-	-	-	-	< 0.2	-	-	-	-	-	-	-
Trichloronate	mg/kg	0.2						-	-	-	-	< 0.2							
Polychlorinated Biphenyls																			
Aroclor-1016	mg/kg	0.1						-	-	-	-	< 0.1	-	-	-	-	-	-	-
Aroclor-1221	mg/kg	0.1						-	-	-	-	< 0.1	-	-	-	-	-	-	-
Aroclor-1232	mg/kg	0.1						-	-	-	-	< 0.1	-	-	-	-	-	-	-
Aroclor-1242	mg/kg	0.1						-	-	-	-	< 0.1	-	-	-	-	-	-	-
Aroclor-1248	mg/kg	0.1						-	-	-	-	< 0.1	-	-	-	-	-	-	-
Aroclor-1254	mg/kg	0.1						-	-	-	-	< 0.1	-	-	-	-	-	-	-
Aroclor-1260	mg/kg	0.1						-	-	-	-	< 0.1	-	-	-	-	-	-	-
Total PCB	mg/kg	0.1						-	-	-	-	< 0.1	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons																			
Acenaphthene	mg/kg	0.5	-			-		-	-	-	-	-	< 0.5	-	-	-	-	-	-
Acenaphthylene	mg/kg	0.5	-			-		-	-	-	-	-	< 0.5	-	-	-	-	-	-
Anthracene	mg/kg	0.5	-			-		-	-	-	-	-	< 0.5	-	-	-	-	-	-
Benz(a)anthracene	mg/kg	0.5	3			-		-	-	-	-	-	< 0.5	-	-	-	-	-	-
Benzo(a)pyrene	mg/kg	0.5	3			0.7		-	-	-	-	-	< 0.5	-	-	-	-	-	-
Benzo(a)pyrene TEQ (lower bound)	mg/kg	0.5	-			-		-	-	-	-	-	< 0.5	-	-	-	-	-	-
Benzo(a)pyrene TEQ (medium bound)	mg/kg	0.6	-			-		-	-	-	-	-	0.6	-	-	-	-	-	-
Benzo(a)pyrene TEQ (upper bound)	mg/kg	1.2	-			-		-	-	-	-	-	1.2	-	-	-	-	-	-
Benzo(b&j)fluoranthene	mg/kg	0.5	3			-		-	-	-	-	-	< 0.5	-	-	-	-	-	-
Benzo(g.h.i)perylene	mg/kg	0.5	-			-		-	-	-	-	-	< 0.5	-	-	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.5	3			-		-	-	-	-	-	< 0.5	-	-	-	-	-	-
Chrysene	mg/kg	0.5	-			-		-	-	-	-	-	< 0.5	-	-	-	-	-	-
Dibenz(a.h)anthracene	mg/kg	0.5	-			-		-	-	-	-	-	< 0.5	-	-	-	-	-	-
Fluoranthene	mg/kg	0.5	-			-		-	-	-	-	-	< 0.5	-	-	-	-	-	-
Fluorene	mg/kg	0.5	-			-		-	-	-	-	-	< 0.5	-	-	-	-	-	-
Indeno(1.2.3-cd)pyrene	mg/kg	0.5	-			-		-	-	-	-	-	< 0.5	-	-	-	-	-	-
Naphthalene	mg/kg	0.5	-	4	170	170	-	-	-	-	-	-	< 0.5	-	-	-	-	-	-
Phenanthrene	mg/kg	0.5	-			-		-	-	-	-	-	< 0.5	-	-	-	-	-	-
Pyrene	mg/kg	0.5	-			-		-	-	-	-	-	< 0.5	-	-	-	-	-	-
Total PAH	mg/kg	0.5	300			-		-	-	-	-	-	< 0.5	-	-	-	-	-	-
Total Recoverable Hydrocarbons - 1999 NEPM Fractions																			
TRH C10-36 (Total)	mg/kg	50						< 50	< 50	-	-	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
TRH C10-C14	mg/kg	20						< 20	< 20	-	-	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
TRH C15-C28	mg/kg	50						< 50	< 50	-	-	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
TRH C29-C36	mg/kg	50						< 50	< 50	-	-	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
TRH C6-C9	mg/kg	20						< 20	< 20	-	-	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20

Total Recoverable Hydrocarbons - 2013 NEPM Fractions																			
Naphthalene	mg/kg	0.5				170	-	< 0.5	< 0.5	-	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16	mg/kg	50				120	1,000	< 50	< 50	-	-	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)	mg/kg	50				-	-	< 50	< 50	-	-	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
TRH >C10-C40 (total)*	mg/kg	100				-	-	< 100	< 100	-	-	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
TRH >C16-C34	mg/kg	100				300	2,500	< 100	< 100	-	-	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
TRH >C34-C40	mg/kg	100				2,800	10,000	< 100	< 100	-	-	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
TRH C6-C10	mg/kg	20				180	700	< 20	< 20	-	-	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)	mg/kg	20				-	-	< 20	< 20	-	-	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Asbestos																			
Asbestos	g/g	0.01% w/w						-	<0.01%	-	-	-	-	-	-	<0.01%	-	-	-
Respirable fibres		ND						-	ND*	-	-	-	-	-	-	ND*	-	-	-
Salinity																			
Chloride	mg/kg	5						-	-	46	< 5	-	-	-	-	-	100	-	-
Conductivity (1:5 aqueous extract at 25°C)	uS/cm	10						-	-	87	11	-	-	-	-	-	110	-	-
Exchangeable Sodium Percentage (ESP)	%	0.1						-	-	21	2	-	-	-	-	-	5.8	-	-
Magnesium (exchangeable)	meq/100g	0.1						-	-	9.2	3.2	-	-	-	-	-	7.1	-	-
pH (1:5 Aqueous extract at 25°C)	pH units	0.1						-	-	5.2	6.1	-	-	-	-	-	5.4	-	-
Potassium (exchangeable)	meq/100g	0.1						-	-	0.6	0.2	-	-	-	-	-	0.3	-	-
Resistivity	ohm.m	0.5						-	-	110	940	-	-	-	-	-	93	-	-
Sodium (exchangeable)	meq/100g	0.1						-	-	2.8	0.2	-	-	-	-	-	1	-	-
Sulphate (as SO4)	mg/kg	30						-	-	82	< 30	-	-	-	-	-	52	-	-
Cation Exchange Capacity																			
Calcium (exchangeable)	meq/100g	0.1						-	-	1	5.3	-	-	-	-	-	8.2	-	-
Cation Exchange Capacity	meq/100g	0.05						-	-	14	8.8	-	-	-	-	-	16	-	-

GREENCAP
Going Further in Managing Risk

J160656
Alex Ave Public School, Schofields
Detailed Site Investigation
Soil Analysis Data Summary

December 2018

				Sample ID				TP25A	TP26A	TP27A	TP28A	TP29A	TP30A	TP31A	TP32A	TP33A	TP34A	TP35A	FD01A
				Sample Depth (m)				0.2-0.3	0.1-0.3	0.2-0.3	0.2-0.4	0.1-0.3	0.2-0.3	0.1-0.2	0.2-0.3	0.2-0.25	0.1-0.2	0.15-0.25	(TP34A)
				Sample Date				10/12/18	10/12/18	10/12/18	10/12/18	10/12/18	10/12/18	10/12/18	10/12/18	10/12/18	10/12/18	10/12/18	10/12/18
Analyte	Units	LOR	(HIL-A)	HSL - A/B 0 - <1m	EIL	ESL - R (coarse)	ML (coarse)												
BTEX																			
Benzene	mg/kg	0.1		0.6		50		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	mg/kg	0.1		-		-		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	mg/kg	0.2		-		-		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	mg/kg	0.1		-		-		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	mg/kg	0.1		390		85		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	mg/kg	0.3		-		105		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Heavy Metals																			
Arsenic	mg/kg	2	100		113			7.6	9.7	14	28	19	12	20	9.3	8.2	7.7	5.8	13
Cadmium	mg/kg	0.4	20		-			< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	mg/kg	5	100		417			10	11	19	9	17	14	18	11	10	12	9.8	13
Copper	mg/kg	5	6000		199			14	16	17	22	41	27	20	16	18	15	13	20
Lead	mg/kg	5	300		1,119			22	21	19	22	22	19	39	21	23	23	17	14
Mercury	mg/kg	0.1	40		-			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	mg/kg	5	400		170			8.1	9.1	9.6	23	7.9	12	14	12	13	8.6	5.7	6.3
Zinc	mg/kg	5	7400		281			49	180	87	74	41	58	59	51	63	52	32	28
Organochlorine Pesticides																			
4.4'-DDD	mg/kg	0.05						-	-	-	-	-	-	-	-	-	-	-	-
4.4'-DDE	mg/kg	0.05						-	-	-	-	-	-	-	-	-	-	-	-
4.4'-DDT	mg/kg	0.05						-	-	-	-	-	-	-	-	-	-	-	-
a-BHC	mg/kg	0.05						-	-	-	-	-	-	-	-	-	-	-	-
Aldrin	mg/kg	0.05						-	-	-	-	-	-	-	-	-	-	-	-
Aldrin and Dieldrin (Total)	mg/kg	0.05						-	-	-	-	-	-	-	-	-	-	-	-
b-BHC	mg/kg	0.1						-	-	-	-	-	-	-	-	-	-	-	-
Chlordanes - Total	mg/kg	0.05						-	-	-	-	-	-	-	-	-	-	-	-
d-BHC	mg/kg	0.05						-	-	-	-	-	-	-	-	-	-	-	-
DDT + DDE + DDD (Total)	mg/kg	0.05						-	-	-	-	-	-	-	-	-	-	-	-
Dieldrin	mg/kg	0.05						-	-	-	-	-	-	-	-	-	-	-	-
Endosulfan I	mg/kg	0.05						-	-	-	-	-	-	-	-	-	-	-	-
Endosulfan II	mg/kg	0.05						-	-	-	-	-	-	-	-	-	-	-	-
Endosulfan sulphate	mg/kg	0.05						-	-	-	-	-	-	-	-	-	-	-	-
Endrin	mg/kg	0.05						-	-	-	-	-	-	-	-	-	-	-	-
Endrin aldehyde	mg/kg	0.05						-	-	-	-	-	-	-	-	-	-	-	-
Endrin ketone	mg/kg	0.05						-	-	-	-	-	-	-	-	-	-	-	-
g-BHC (Lindane)	mg/kg	0.05						-	-	-	-	-	-	-	-	-	-	-	-
Heptachlor	mg/kg	0.05						-	-	-	-	-	-	-	-	-	-	-	-
Heptachlor epoxide	mg/kg	0.05						-	-	-	-	-	-	-	-	-	-	-	-
Hexachlorobenzene	mg/kg	0.05						-	-	-	-	-	-	-	-	-	-	-	-
Methoxychlor	mg/kg	0.05						-	-	-	-	-	-	-	-	-	-	-	-
Toxaphene	mg/kg	1						-	-	-	-	-	-	-	-	-	-	-	-
Vic EPA IWRG 621 OCP (Total)	mg/kg	0.1						-	-	-	-	-	-	-	-	-	-	-	-
Vic EPA IWRG 621 Other OCP (Total)	mg/kg	0.1						-	-	-	-	-	-	-	-	-	-	-	-
Physical Properties																			
Moisture	%	1						8.2	7.8	9.7	8.6	6.4	12	9.4	9.7	10	12	6	6.3
Organophosphorus Pesticides																			
Azinphos-methyl	mg/kg	0.2						-	-	-	-	-	-	-	-	-	-	-	-
Bolstar	mg/kg	0.2						-	-	-	-	-	-	-	-	-	-	-	-
Chlorfenvinphos	mg/kg	0.2						-	-	-	-	-	-	-	-	-	-	-	-
Chlorpyrifos	mg/kg	0.2						-	-	-	-	-	-	-	-	-	-	-	-
Chlorpyrifos-methyl	mg/kg	0.2						-	-	-	-	-	-	-	-	-	-	-	-
Coumaphos	mg/kg	2						-	-	-	-	-	-	-	-	-	-	-	-
Demeton-O	mg/kg	0.2						-	-	-	-	-	-	-	-	-	-	-	-
Demeton-S	mg/kg	0.2						-	-	-	-	-	-	-	-	-	-	-	-
Diazinon	mg/kg	0.2						-	-	-	-	-	-	-	-	-	-	-	-
Dichlorvos	mg/kg	0.2						-	-	-	-	-	-	-	-	-	-	-	-
Dimethoate	mg/kg	0.2						-	-	-	-	-	-	-	-	-	-	-	-
Disulfoton	mg/kg	0.2						-	-	-	-	-	-	-	-	-	-	-	-
EPN	mg/kg	0.2						-	-	-	-	-	-	-	-	-	-	-	-
Ethion	mg/kg	0.2						-	-	-	-	-	-	-	-	-	-	-	-
Ethoprop	mg/kg	0.2						-	-	-	-	-	-	-	-	-	-	-	-
Ethyl parathion	mg/kg	0.2						-	-	-	-	-	-	-	-	-	-	-	-
Fenitrothion	mg/kg	0.2						-	-	-	-	-	-	-	-	-	-	-	-
Fensulfothion	mg/kg	0.2						-	-	-	-	-	-	-	-	-	-	-	-
Fenthion	mg/kg	0.2						-	-	-	-	-	-	-	-	-	-	-	-
Malathion	mg/kg	0.2						-	-	-	-	-	-	-	-	-	-	-	-
Merphos	mg/kg	0.2						-	-	-	-	-	-	-	-	-	-	-	-
Methyl parathion	mg/kg	0.2						-	-	-	-	-	-	-	-	-	-	-	-
Mevinphos	mg/kg	0.2						-	-	-	-	-	-	-	-	-	-	-	-
Monocrotophos	mg/kg	2						-	-	-	-	-	-	-	-	-	-	-	-
Naled	mg/kg	0.2						-	-	-	-	-	-	-	-	-	-	-	-
Omethoate	mg/kg	2						-	-	-	-	-	-	-	-	-	-	-	-
Phorate	mg/kg	0.2						-	-	-	-	-	-	-	-	-	-	-	-
Pirimiphos-methyl	mg/kg	0.2						-	-	-	-	-	-	-	-	-	-	-	-
Pyrazophos	mg/kg	0.2						-	-	-	-	-	-	-	-	-	-	-	-
Ronnel	mg/kg	0.2						-	-	-	-	-	-	-	-	-	-	-	-
Terbufos	mg/kg	0.2						-	-	-	-	-	-	-	-	-	-	-	-
Tetrachlorvinphos	mg/kg	0.2						-	-	-	-	-	-	-	-	-	-	-	-
Tokuthion	mg/kg	0.2						-	-	-	-	-	-	-	-	-	-	-	-
Trichloronate	mg/kg	0.2						-	-	-	-	-							
Polychlorinated Biphenyls																			
Aroclor-1016	mg/kg	0.1						-	-	-	-	-	-	-	-	-	-	-	-
Aroclor-1221	mg/kg	0.1						-	-	-	-	-	-	-	-	-	-	-	-
Aroclor-1232	mg/kg	0.1						-	-	-	-	-	-	-	-	-	-	-	-
Aroclor-1242	mg/kg	0.1						-	-	-	-	-	-	-	-	-	-	-	-
Aroclor-1248	mg/kg	0.1						-	-	-	-	-	-	-	-	-	-	-	-
Aroclor-1254	mg/kg	0.1						-	-	-	-	-	-	-	-	-	-	-	-
Aroclor-1260	mg/kg	0.1						-	-	-	-	-	-	-	-	-	-	-	-
Total PCB	mg/kg	0.1						-	-	-	-	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons																			
Acenaphthene	mg/kg	0.5	-			-		-	-	-	< 0.5	-	-	-	-	-	-	-	-
Acenaphthylene	mg/kg	0.5	-			-		-	-	-	< 0.5	-	-	-	-	-	-	-	-
Anthracene	mg/kg	0.5	-			-		-	-	-	< 0.5	-	-	-	-	-	-	-	-
Benz(a)anthracene	mg/kg	0.5	3			-		-	-	-	< 0.5	-	-	-	-	-	-	-	-
Benzo(a)pyrene	mg/kg	0.5	3			0.7		-	-	-	< 0.5	-	-	-	-	-	-	-	-
Benzo(a)pyrene TEQ (lower bound)	mg/kg	0.5	-			-		-	-	-	< 0.5	-	-	-	-	-	-	-	-
Benzo(a)pyrene TEQ (medium bound)	mg/kg	0.6	-			-		-	-	-	0.6	-	-	-	-	-	-	-	-
Benzo(a)pyrene TEQ (upper bound)	mg/kg	1.2	-			-		-	-	-	1.2	-	-	-	-	-	-	-	-
Benzo(b&j)fluoranthene	mg/kg	0.5	3			-		-	-	-	< 0.5	-	-	-	-	-	-	-	-
Benzo(g.h.i)perylene	mg/kg	0.5	-			-		-	-	-	< 0.5	-	-	-	-	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.5	3			-		-	-	-	< 0.5	-	-	-	-	-	-	-	-
Chrysene	mg/kg	0.5	-			-		-	-	-	< 0.5	-	-	-	-	-	-	-	-
Dibenz(a.h)anthracene	mg/kg	0.5	-			-		-	-	-	< 0.5	-	-	-	-	-	-	-	-
Fluoranthene	mg/kg	0.5	-			-		-	-	-	< 0.5	-	-	-	-	-	-	-	-
Fluorene	mg/kg	0.5	-			-		-	-	-	< 0.5	-	-	-	-	-	-	-	-
Indeno(1.2.3-cd)pyrene	mg/kg	0.5	-			-		-	-	-	< 0.5	-	-	-	-	-	-	-	-
Naphthalene	mg/kg	0.5	-	4	170	170	-	-	-	-	< 0.5	-	-	-	-	-	-	-	-
Phenanthrene	mg/kg	0.5	-			-		-	-	-	< 0.5	-	-	-	-	-	-	-	-
Pyrene	mg/kg	0.5	-			-		-	-	-	< 0.5	-	-	-	-	-	-	-	-
Total PAH	mg/kg	0.5	300			-		-	-	-	< 0.5	-	-	-	-	-	-	-	-
Total Recoverable Hydrocarbons - 1999 NEPM Fractions																			
TRH C10-36 (Total)	mg/kg	50						< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	83	< 50
TRH C10-C14	mg/kg	20						< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
TRH C15-C28	mg/kg	50						< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
TRH C29-C36	mg/kg	50						< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	83	< 50
TRH C6-C9	mg/kg	20						< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20

Total Recoverable Hydrocarbons - 2013 NEPM Fractions																			
Naphthalene	mg/kg	0.5				170	-	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16	mg/kg	50				120	1,000	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)	mg/kg	50				-	-	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
TRH >C10-C40 (total)*	mg/kg	100				-	-	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
TRH >C16-C34	mg/kg	100				300	2,500	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
TRH >C34-C40	mg/kg	100				2,800	10,000	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
TRH C6-C10	mg/kg	20				180	700	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)	mg/kg	20				-	-	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Asbestos																			
Asbestos	g/g	0.01% w/w						-	-	-	-	-	-	-	-	-	-	-	-
Respirable fibres								-	-	-	-	-	-	-	-	-	-	-	-
Salinity																			
Chloride	mg/kg	5						-	-	-	-	170	-	-	-	-	-	-	-
Conductivity (1:5 aqueous extract at 25°C)	uS/cm	10						-	-	-	-	97	-	-	-	-	-	-	-
Exchangeable Sodium Percentage (ESP)	%	0.1						-	-	-	-	9.1	-	-	-	-	-	-	-
Magnesium (exchangeable)	meq/100g	0.1						-	-	-	-	6.7	-	-	-	-	-	-	-
pH (1:5 Aqueous extract at 25°C)	pH units	0.1						-	-	-	-	6.8	-	-	-	-	-	-	-
Potassium (exchangeable)	meq/100g	0.1						-	-	-	-	0.5	-	-	-	-	-	-	-
Resistivity	ohm.m	0.5						-	-	-	-	100	-	-	-	-	-	-	-
Sodium (exchangeable)	meq/100g	0.1						-	-	-	-	1.4	-	-	-	-	-	-	-
Sulphate (as SO4)	mg/kg	30						-	-	-	-	< 30	-	-	-	-	-	-	-
Cation Exchange Capacity																			
Calcium (exchangeable)	meq/100g	0.1						-	-	-	-	6.3	-	-	-	-	-	-	-
Cation Exchange Capacity	meq/100g	0.05						-	-	-	-	15	-	-	-	-	-	-	-

January 2019

GREENCAP
Going Further in Managing Risk

Detailed Site Investigation

Group GSA

Cnr of Farmland Dr & the future realignment of Pelican Rd, Schofields NSW 2762

Appendix F: Laboratory Analysis Reports & CoCs

Greencap NSW P/L
Level 2/11 Khartoum Road
North Ryde
NSW 2113

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Matthew Barberson**

Report **628453-S-V2**
Project name DSI - SCHOFIELDS
Project ID J157372
Received Date Nov 19, 2018

Client Sample ID			**TP1 0.1-0.2**	**TP2 0.01-0.2**	**TP2 0.6-0.7**	**TP3 0.1-0.2**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S18-No24369**	**S18-No24370**	**S18-No24371**	**S18-No24372**
Date Sampled			**Nov 16, 2018**	**Nov 16, 2018**	**Nov 16, 2018**	**Nov 16, 2018**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	-	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	-	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	-	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	-	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	-	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	-	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	-	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	-	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	-	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	-	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	-	< 0.3
4-Bromofluorobenzene (surr.)	1	%	54	56	-	59
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	-	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	-	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	-	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	-	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	-	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	-	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	-	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	-	-	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	-	-	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	-	-	-
Acenaphthene	0.5	mg/kg	< 0.5	-	-	-
Acenaphthylene	0.5	mg/kg	< 0.5	-	-	-
Anthracene	0.5	mg/kg	< 0.5	-	-	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	-	-	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	-	-	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	-	-	-
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	-	-	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	-	-	-
Chrysene	0.5	mg/kg	< 0.5	-	-	-

Client Sample ID			TP1 0.1-0.2	TP2 0.01-0.2	TP2 0.6-0.7	TP3 0.1-0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-No24369	S18-No24370	S18-No24371	S18-No24372
Date Sampled			Nov 16, 2018	Nov 16, 2018	Nov 16, 2018	Nov 16, 2018
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	-	-	-
Fluoranthene	0.5	mg/kg	< 0.5	-	-	-
Fluorene	0.5	mg/kg	< 0.5	-	-	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	-	-	-
Naphthalene	0.5	mg/kg	< 0.5	-	-	-
Phenanthrene	0.5	mg/kg	< 0.5	-	-	-
Pyrene	0.5	mg/kg	< 0.5	-	-	-
Total PAH*	0.5	mg/kg	< 0.5	-	-	-
2-Fluorobiphenyl (surr.)	1	%	94	-	-	-
p-Terphenyl-d14 (surr.)	1	%	77	-	-	-
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	-	< 0.1	-	-
4.4'-DDD	0.05	mg/kg	-	< 0.05	-	-
4.4'-DDE	0.05	mg/kg	-	< 0.05	-	-
4.4'-DDT	0.05	mg/kg	-	< 0.05	-	-
a-BHC	0.05	mg/kg	-	< 0.05	-	-
Aldrin	0.05	mg/kg	-	< 0.05	-	-
b-BHC	0.05	mg/kg	-	< 0.05	-	-
d-BHC	0.05	mg/kg	-	< 0.05	-	-
Dieldrin	0.05	mg/kg	-	< 0.05	-	-
Endosulfan I	0.05	mg/kg	-	< 0.05	-	-
Endosulfan II	0.05	mg/kg	-	< 0.05	-	-
Endosulfan sulphate	0.05	mg/kg	-	< 0.05	-	-
Endrin	0.05	mg/kg	-	< 0.05	-	-
Endrin aldehyde	0.05	mg/kg	-	< 0.05	-	-
Endrin ketone	0.05	mg/kg	-	< 0.05	-	-
g-BHC (Lindane)	0.05	mg/kg	-	< 0.05	-	-
Heptachlor	0.05	mg/kg	-	< 0.05	-	-
Heptachlor epoxide	0.05	mg/kg	-	< 0.05	-	-
Hexachlorobenzene	0.05	mg/kg	-	< 0.05	-	-
Methoxychlor	0.05	mg/kg	-	< 0.05	-	-
Toxaphene	1	mg/kg	-	< 1	-	-
Aldrin and Dieldrin (Total)*	0.05	mg/kg	-	< 0.05	-	-
DDT + DDE + DDD (Total)*	0.05	mg/kg	-	< 0.05	-	-
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	-	< 0.1	-	-
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	-	< 0.1	-	-
Dibutylchlorendate (surr.)	1	%	-	87	-	-
Tetrachloro-m-xylene (surr.)	1	%	-	65	-	-
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	-	< 0.2	-	-
Bolstar	0.2	mg/kg	-	< 0.2	-	-
Chlorfenvinphos	0.2	mg/kg	-	< 0.2	-	-
Chlorpyrifos	0.2	mg/kg	-	< 0.2	-	-
Chlorpyrifos-methyl	0.2	mg/kg	-	< 0.2	-	-
Coumaphos	2	mg/kg	-	< 2	-	-
Demeton-S	0.2	mg/kg	-	< 0.2	-	-
Demeton-O	0.2	mg/kg	-	< 0.2	-	-
Diazinon	0.2	mg/kg	-	< 0.2	-	-
Dichlorvos	0.2	mg/kg	-	< 0.2	-	-

Client Sample ID			TP1 0.1-0.2	TP2 0.01-0.2	TP2 0.6-0.7	TP3 0.1-0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-No24369	S18-No24370	S18-No24371	S18-No24372
Date Sampled			Nov 16, 2018	Nov 16, 2018	Nov 16, 2018	Nov 16, 2018
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Dimethoate	0.2	mg/kg	-	< 0.2	-	-
Disulfoton	0.2	mg/kg	-	< 0.2	-	-
EPN	0.2	mg/kg	-	< 0.2	-	-
Ethion	0.2	mg/kg	-	< 0.2	-	-
Ethoprop	0.2	mg/kg	-	< 0.2	-	-
Ethyl parathion	0.2	mg/kg	-	< 0.2	-	-
Fenitrothion	0.2	mg/kg	-	< 0.2	-	-
Fensulfothion	0.2	mg/kg	-	< 0.2	-	-
Fenthion	0.2	mg/kg	-	< 0.2	-	-
Malathion	0.2	mg/kg	-	< 0.2	-	-
Merphos	0.2	mg/kg	-	< 0.2	-	-
Methyl parathion	0.2	mg/kg	-	< 0.2	-	-
Mevinphos	0.2	mg/kg	-	< 0.2	-	-
Monocrotophos	2	mg/kg	-	< 2	-	-
Naled	0.2	mg/kg	-	< 0.2	-	-
Omethoate	2	mg/kg	-	< 2	-	-
Phorate	0.2	mg/kg	-	< 0.2	-	-
Pirimiphos-methyl	0.2	mg/kg	-	< 0.2	-	-
Pyrazophos	0.2	mg/kg	-	< 0.2	-	-
Ronnel	0.2	mg/kg	-	< 0.2	-	-
Terbufos	0.2	mg/kg	-	< 0.2	-	-
Tetrachlorvinphos	0.2	mg/kg	-	< 0.2	-	-
Tokuthion	0.2	mg/kg	-	< 0.2	-	-
Trichloronate	0.2	mg/kg	-	< 0.2	-	-
Triphenylphosphate (surr.)	1	%	-	74	-	-
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	-	< 0.1	-	-
Aroclor-1221	0.1	mg/kg	-	< 0.1	-	-
Aroclor-1232	0.1	mg/kg	-	< 0.1	-	-
Aroclor-1242	0.1	mg/kg	-	< 0.1	-	-
Aroclor-1248	0.1	mg/kg	-	< 0.1	-	-
Aroclor-1254	0.1	mg/kg	-	< 0.1	-	-
Aroclor-1260	0.1	mg/kg	-	< 0.1	-	-
Total PCB*	0.1	mg/kg	-	< 0.1	-	-
Dibutylchlorendate (surr.)	1	%	-	87	-	-
Tetrachloro-m-xylene (surr.)	1	%	-	65	-	-
Chloride	5	mg/kg	-	-	24	-
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	-	-	47	-
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	-	-	5.7	-
Resistivity*	0.5	ohm.m	-	-	210	-
Sulphate (as SO4)	30	mg/kg	-	-	140	-
Exchangeable Sodium Percentage (ESP)	0.1	%	-	-	7.9	-
Magnesium (exchangeable)	0.1	meq/100g	-	-	5.7	-
Potassium (exchangeable)	0.1	meq/100g	-	-	0.4	-
Sodium (exchangeable)	0.1	meq/100g	-	-	0.8	-
% Moisture	1	%	7.8	9.0	12	11

Client Sample ID			TP1 0.1-0.2	TP2 0.01-0.2	TP2 0.6-0.7	TP3 0.1-0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-No24369	S18-No24370	S18-No24371	S18-No24372
Date Sampled			Nov 16, 2018	Nov 16, 2018	Nov 16, 2018	Nov 16, 2018
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	12	14	-	7.8
Cadmium	0.4	mg/kg	< 0.4	< 0.4	-	< 0.4
Chromium	5	mg/kg	18	12	-	9.3
Copper	5	mg/kg	11	11	-	15
Lead	5	mg/kg	27	18	-	24
Mercury	0.1	mg/kg	< 0.1	< 0.1	-	< 0.1
Nickel	5	mg/kg	7.2	5.9	-	6.6
Zinc	5	mg/kg	31	25	-	38
Cation Exchange Capacity						
Calcium (exchangeable)	0.1	meq/100g	-	-	3.5	-
Cation Exchange Capacity	0.05	meq/100g	-	-	10	-

Client Sample ID			TP4 0.1-0.2	TP5 0.1-0.2	TP6 0.0-0.2	TP7 0.1-0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-No24373	S18-No24374	S18-No24375	S18-No24376
Date Sampled			Nov 16, 2018	Nov 16, 2018	Nov 16, 2018	Nov 16, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	61	57	63	56
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	-	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	-	1.2	-
Acenaphthene	0.5	mg/kg	< 0.5	-	< 0.5	-
Acenaphthylene	0.5	mg/kg	< 0.5	-	< 0.5	-
Anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-

Client Sample ID			TP4 0.1-0.2	TP5 0.1-0.2	TP6 0.0-0.2	TP7 0.1-0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-No24373	S18-No24374	S18-No24375	S18-No24376
Date Sampled			Nov 16, 2018	Nov 16, 2018	Nov 16, 2018	Nov 16, 2018
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	-	< 0.5	-
Chrysene	0.5	mg/kg	< 0.5	-	< 0.5	-
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Fluoranthene	0.5	mg/kg	< 0.5	-	< 0.5	-
Fluorene	0.5	mg/kg	< 0.5	-	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Naphthalene	0.5	mg/kg	< 0.5	-	< 0.5	-
Phenanthrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Pyrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Total PAH*	0.5	mg/kg	< 0.5	-	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	96	-	98	-
p-Terphenyl-d14 (surr.)	1	%	97	-	68	-
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	-	-	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	-	-	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	-	-	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	-	-	< 0.05
a-BHC	0.05	mg/kg	< 0.05	-	-	< 0.05
Aldrin	0.05	mg/kg	< 0.05	-	-	< 0.05
b-BHC	0.05	mg/kg	< 0.05	-	-	< 0.05
d-BHC	0.05	mg/kg	< 0.05	-	-	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	-	-	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	-	-	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	-	-	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	-	-	< 0.05
Endrin	0.05	mg/kg	< 0.05	-	-	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	-	-	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	-	-	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	-	-	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	-	-	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	-	-	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	-	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	-	-	< 0.05
Toxaphene	1	mg/kg	< 1	-	-	< 1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	-	-	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	-	-	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	-	-	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	-	-	< 0.1
Dibutylchlorendate (surr.)	1	%	80	-	-	85
Tetrachloro-m-xylene (surr.)	1	%	76	-	-	85
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	< 0.2	-	-	< 0.2
Bolstar	0.2	mg/kg	< 0.2	-	-	< 0.2
Chlorfenvinphos	0.2	mg/kg	< 0.2	-	-	< 0.2
Chlorpyrifos	0.2	mg/kg	< 0.2	-	-	< 0.2
Chlorpyrifos-methyl	0.2	mg/kg	< 0.2	-	-	< 0.2

Client Sample ID			TP4 0.1-0.2	TP5 0.1-0.2	TP6 0.0-0.2	TP7 0.1-0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-No24373	S18-No24374	S18-No24375	S18-No24376
Date Sampled			Nov 16, 2018	Nov 16, 2018	Nov 16, 2018	Nov 16, 2018
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Coumaphos	2	mg/kg	< 2	-	-	< 2
Demeton-S	0.2	mg/kg	< 0.2	-	-	< 0.2
Demeton-O	0.2	mg/kg	< 0.2	-	-	< 0.2
Diazinon	0.2	mg/kg	< 0.2	-	-	< 0.2
Dichlorvos	0.2	mg/kg	< 0.2	-	-	< 0.2
Dimethoate	0.2	mg/kg	< 0.2	-	-	< 0.2
Disulfoton	0.2	mg/kg	< 0.2	-	-	< 0.2
EPN	0.2	mg/kg	< 0.2	-	-	< 0.2
Ethion	0.2	mg/kg	< 0.2	-	-	< 0.2
Ethoprop	0.2	mg/kg	< 0.2	-	-	< 0.2
Ethyl parathion	0.2	mg/kg	< 0.2	-	-	< 0.2
Fenitrothion	0.2	mg/kg	< 0.2	-	-	< 0.2
Fensulfothion	0.2	mg/kg	< 0.2	-	-	< 0.2
Fenthion	0.2	mg/kg	< 0.2	-	-	< 0.2
Malathion	0.2	mg/kg	< 0.2	-	-	< 0.2
Merphos	0.2	mg/kg	< 0.2	-	-	< 0.2
Methyl parathion	0.2	mg/kg	< 0.2	-	-	< 0.2
Mevinphos	0.2	mg/kg	< 0.2	-	-	< 0.2
Monocrotophos	2	mg/kg	< 2	-	-	< 2
Naled	0.2	mg/kg	< 0.2	-	-	< 0.2
Omethoate	2	mg/kg	< 2	-	-	< 2
Phorate	0.2	mg/kg	< 0.2	-	-	< 0.2
Pirimiphos-methyl	0.2	mg/kg	< 0.2	-	-	< 0.2
Pyrazophos	0.2	mg/kg	< 0.2	-	-	< 0.2
Ronnel	0.2	mg/kg	< 0.2	-	-	< 0.2
Terbufos	0.2	mg/kg	< 0.2	-	-	< 0.2
Tetrachlorvinphos	0.2	mg/kg	< 0.2	-	-	< 0.2
Tokuthion	0.2	mg/kg	< 0.2	-	-	< 0.2
Trichloronate	0.2	mg/kg	< 0.2	-	-	< 0.2
Triphenylphosphate (surr.)	1	%	83	-	-	85
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 0.1	-	-	< 0.1
Aroclor-1221	0.1	mg/kg	< 0.1	-	-	< 0.1
Aroclor-1232	0.1	mg/kg	< 0.1	-	-	< 0.1
Aroclor-1242	0.1	mg/kg	< 0.1	-	-	< 0.1
Aroclor-1248	0.1	mg/kg	< 0.1	-	-	< 0.1
Aroclor-1254	0.1	mg/kg	< 0.1	-	-	< 0.1
Aroclor-1260	0.1	mg/kg	< 0.1	-	-	< 0.1
Total PCB*	0.1	mg/kg	< 0.1	-	-	< 0.1
Dibutylchlorendate (surr.)	1	%	80	-	-	85
Tetrachloro-m-xylene (surr.)	1	%	76	-	-	85
% Moisture	1	%	10	14	9.1	8.0
Heavy Metals						
Arsenic	2	mg/kg	8.6	9.8	10	8.7
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	9.1	13	13	11
Copper	5	mg/kg	17	15	15	11
Lead	5	mg/kg	21	15	18	29

Client Sample ID			TP4 0.1-0.2	TP5 0.1-0.2	TP6 0.0-0.2	TP7 0.1-0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-No24373	S18-No24374	S18-No24375	S18-No24376
Date Sampled			Nov 16, 2018	Nov 16, 2018	Nov 16, 2018	Nov 16, 2018
Test/Reference	LOR	Unit				
Heavy Metals						
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	7.7	< 5	8.7	6.9
Zinc	5	mg/kg	43	29	44	31

Client Sample ID			TP8 0.1-0.2	TP9 0.1-0.3	TP10 0.2-0.3	TP11 0.1-0.3
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-No24377	S18-No24378	S18-No24379	S18-No24380
Date Sampled			Nov 16, 2018	Nov 16, 2018	Nov 16, 2018	Nov 16, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	53	62	96	87
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	-	-	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	-	-	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	-	-	-
Acenaphthene	0.5	mg/kg	< 0.5	-	-	-
Acenaphthylene	0.5	mg/kg	< 0.5	-	-	-
Anthracene	0.5	mg/kg	< 0.5	-	-	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	-	-	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	-	-	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	-	-	-
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	-	-	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	-	-	-
Chrysene	0.5	mg/kg	< 0.5	-	-	-
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	-	-	-
Fluoranthene	0.5	mg/kg	< 0.5	-	-	-
Fluorene	0.5	mg/kg	< 0.5	-	-	-

Client Sample ID			TP8 0.1-0.2	TP9 0.1-0.3	TP10 0.2-0.3	TP11 0.1-0.3
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-No24377	S18-No24378	S18-No24379	S18-No24380
Date Sampled			Nov 16, 2018	Nov 16, 2018	Nov 16, 2018	Nov 16, 2018
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	-	-	-
Naphthalene	0.5	mg/kg	< 0.5	-	-	-
Phenanthrene	0.5	mg/kg	< 0.5	-	-	-
Pyrene	0.5	mg/kg	< 0.5	-	-	-
Total PAH*	0.5	mg/kg	< 0.5	-	-	-
2-Fluorobiphenyl (surr.)	1	%	98	-	-	-
p-Terphenyl-d14 (surr.)	1	%	71	-	-	-
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	-	< 0.1	-	-
4.4'-DDD	0.05	mg/kg	-	< 0.05	-	-
4.4'-DDE	0.05	mg/kg	-	< 0.05	-	-
4.4'-DDT	0.05	mg/kg	-	< 0.05	-	-
a-BHC	0.05	mg/kg	-	< 0.05	-	-
Aldrin	0.05	mg/kg	-	< 0.05	-	-
b-BHC	0.05	mg/kg	-	< 0.05	-	-
d-BHC	0.05	mg/kg	-	< 0.05	-	-
Dieldrin	0.05	mg/kg	-	< 0.05	-	-
Endosulfan I	0.05	mg/kg	-	< 0.05	-	-
Endosulfan II	0.05	mg/kg	-	< 0.05	-	-
Endosulfan sulphate	0.05	mg/kg	-	< 0.05	-	-
Endrin	0.05	mg/kg	-	< 0.05	-	-
Endrin aldehyde	0.05	mg/kg	-	< 0.05	-	-
Endrin ketone	0.05	mg/kg	-	< 0.05	-	-
g-BHC (Lindane)	0.05	mg/kg	-	< 0.05	-	-
Heptachlor	0.05	mg/kg	-	< 0.05	-	-
Heptachlor epoxide	0.05	mg/kg	-	< 0.05	-	-
Hexachlorobenzene	0.05	mg/kg	-	< 0.05	-	-
Methoxychlor	0.05	mg/kg	-	< 0.05	-	-
Toxaphene	1	mg/kg	-	< 1	-	-
Aldrin and Dieldrin (Total)*	0.05	mg/kg	-	< 0.05	-	-
DDT + DDE + DDD (Total)*	0.05	mg/kg	-	< 0.05	-	-
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	-	< 0.1	-	-
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	-	< 0.1	-	-
Dibutylchlorendate (surr.)	1	%	-	74	-	-
Tetrachloro-m-xylene (surr.)	1	%	-	69	-	-
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	-	< 0.2	-	-
Bolstar	0.2	mg/kg	-	< 0.2	-	-
Chlorfenvinphos	0.2	mg/kg	-	< 0.2	-	-
Chlorpyrifos	0.2	mg/kg	-	< 0.2	-	-
Chlorpyrifos-methyl	0.2	mg/kg	-	< 0.2	-	-
Coumaphos	2	mg/kg	-	< 2	-	-
Demeton-S	0.2	mg/kg	-	< 0.2	-	-
Demeton-O	0.2	mg/kg	-	< 0.2	-	-
Diazinon	0.2	mg/kg	-	< 0.2	-	-
Dichlorvos	0.2	mg/kg	-	< 0.2	-	-
Dimethoate	0.2	mg/kg	-	< 0.2	-	-
Disulfoton	0.2	mg/kg	-	< 0.2	-	-
EPN	0.2	mg/kg	-	< 0.2	-	-

Client Sample ID			TP8 0.1-0.2	TP9 0.1-0.3	TP10 0.2-0.3	TP11 0.1-0.3
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-No24377	S18-No24378	S18-No24379	S18-No24380
Date Sampled			Nov 16, 2018	Nov 16, 2018	Nov 16, 2018	Nov 16, 2018
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Ethion	0.2	mg/kg	-	< 0.2	-	-
Ethoprop	0.2	mg/kg	-	< 0.2	-	-
Ethyl parathion	0.2	mg/kg	-	< 0.2	-	-
Fenitrothion	0.2	mg/kg	-	< 0.2	-	-
Fensulfothion	0.2	mg/kg	-	< 0.2	-	-
Fenthion	0.2	mg/kg	-	< 0.2	-	-
Malathion	0.2	mg/kg	-	< 0.2	-	-
Merphos	0.2	mg/kg	-	< 0.2	-	-
Methyl parathion	0.2	mg/kg	-	< 0.2	-	-
Mevinphos	0.2	mg/kg	-	< 0.2	-	-
Monocrotophos	2	mg/kg	-	< 2	-	-
Naled	0.2	mg/kg	-	< 0.2	-	-
Omethoate	2	mg/kg	-	< 2	-	-
Phorate	0.2	mg/kg	-	< 0.2	-	-
Pirimiphos-methyl	0.2	mg/kg	-	< 0.2	-	-
Pyrazophos	0.2	mg/kg	-	< 0.2	-	-
Ronnel	0.2	mg/kg	-	< 0.2	-	-
Terbufos	0.2	mg/kg	-	< 0.2	-	-
Tetrachlorvinphos	0.2	mg/kg	-	< 0.2	-	-
Tokuthion	0.2	mg/kg	-	< 0.2	-	-
Trichloronate	0.2	mg/kg	-	< 0.2	-	-
Triphenylphosphate (surr.)	1	%	-	96	-	-
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	-	< 0.1	-	-
Aroclor-1221	0.1	mg/kg	-	< 0.1	-	-
Aroclor-1232	0.1	mg/kg	-	< 0.1	-	-
Aroclor-1242	0.1	mg/kg	-	< 0.1	-	-
Aroclor-1248	0.1	mg/kg	-	< 0.1	-	-
Aroclor-1254	0.1	mg/kg	-	< 0.1	-	-
Aroclor-1260	0.1	mg/kg	-	< 0.1	-	-
Total PCB*	0.1	mg/kg	-	< 0.1	-	-
Dibutylchlorendate (surr.)	1	%	-	74	-	-
Tetrachloro-m-xylene (surr.)	1	%	-	69	-	-
% Moisture	1	%	20	11	9.7	10
Heavy Metals						
Arsenic	2	mg/kg	5.2	8.5	7.3	10
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	7.7	12	7.9	13
Copper	5	mg/kg	7.2	12	15	16
Lead	5	mg/kg	10	26	20	31
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	5.8	8.3	7.1
Zinc	5	mg/kg	21	30	42	43

Client Sample ID			TP12 0.3-0.5	TP13 0.01-0.1	TP14 0.0-0.1	TP15 0.1-0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-No24381	S18-No24382	S18-No24383	S18-No24384
Date Sampled			Nov 16, 2018	Nov 16, 2018	Nov 16, 2018	Nov 16, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	91	53	61	55
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
% Moisture	1	%	8.7	11	14	15
Heavy Metals						
Arsenic	2	mg/kg	4.5	8.4	8.9	28
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	15	12	13	17
Copper	5	mg/kg	17	14	15	21
Lead	5	mg/kg	36	22	26	27
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	9.4	6.4	6.0	7.8
Zinc	5	mg/kg	99	26	28	51

Client Sample ID			TP15 0.8-0.9	TP16 0.1-0.3	TP17 0.25-0.35	TP18 0.1-0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-No24385	S18-No24386	S18-No24387	S18-No24388
Date Sampled			Nov 16, 2018	Nov 16, 2018	Nov 16, 2018	Nov 16, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	-	< 20	< 20
TRH C10-C14	20	mg/kg	-	-	< 20	< 20
TRH C15-C28	50	mg/kg	-	-	< 50	< 50
TRH C29-C36	50	mg/kg	-	-	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	-	-	< 50	< 50

Client Sample ID			TP15 0.8-0.9	TP16 0.1-0.3	TP17 0.25-0.35	TP18 0.1-0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-No24385	S18-No24386	S18-No24387	S18-No24388
Date Sampled			Nov 16, 2018	Nov 16, 2018	Nov 16, 2018	Nov 16, 2018
Test/Reference	LOR	Unit				
BTEX						
Benzene	0.1	mg/kg	-	-	< 0.1	< 0.1
Toluene	0.1	mg/kg	-	-	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	-	-	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	-	-	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	-	-	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	-	-	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	-	62	69
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	-	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	-	-	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	-	< 20	< 20
TRH >C10-C16	50	mg/kg	-	-	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	-	< 50	< 50
TRH >C16-C34	100	mg/kg	-	-	< 100	< 100
TRH >C34-C40	100	mg/kg	-	-	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	-	-	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	-	-	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	-	-	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	-	-	1.2
Acenaphthene	0.5	mg/kg	-	-	-	< 0.5
Acenaphthylene	0.5	mg/kg	-	-	-	< 0.5
Anthracene	0.5	mg/kg	-	-	-	< 0.5
Benz(a)anthracene	0.5	mg/kg	-	-	-	< 0.5
Benzo(a)pyrene	0.5	mg/kg	-	-	-	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	-	-	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	-	-	-	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	-	-	-	< 0.5
Chrysene	0.5	mg/kg	-	-	-	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	-	-	-	< 0.5
Fluoranthene	0.5	mg/kg	-	-	-	< 0.5
Fluorene	0.5	mg/kg	-	-	-	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	-	< 0.5
Naphthalene	0.5	mg/kg	-	-	-	< 0.5
Phenanthrene	0.5	mg/kg	-	-	-	< 0.5
Pyrene	0.5	mg/kg	-	-	-	< 0.5
Total PAH*	0.5	mg/kg	-	-	-	< 0.5
2-Fluorobiphenyl (surr.)	1	%	-	-	-	83
p-Terphenyl-d14 (surr.)	1	%	-	-	-	88
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	-	-	< 0.1	-
4.4'-DDD	0.05	mg/kg	-	-	< 0.05	-
4.4'-DDE	0.05	mg/kg	-	-	< 0.05	-
4.4'-DDT	0.05	mg/kg	-	-	< 0.05	-
a-BHC	0.05	mg/kg	-	-	< 0.05	-
Aldrin	0.05	mg/kg	-	-	< 0.05	-
b-BHC	0.05	mg/kg	-	-	< 0.05	-
d-BHC	0.05	mg/kg	-	-	< 0.05	-
Dieldrin	0.05	mg/kg	-	-	< 0.05	-

Client Sample ID			TP15 0.8-0.9	TP16 0.1-0.3	TP17 0.25-0.35	TP18 0.1-0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-No24385	S18-No24386	S18-No24387	S18-No24388
Date Sampled			Nov 16, 2018	Nov 16, 2018	Nov 16, 2018	Nov 16, 2018
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Endosulfan I	0.05	mg/kg	-	-	< 0.05	-
Endosulfan II	0.05	mg/kg	-	-	< 0.05	-
Endosulfan sulphate	0.05	mg/kg	-	-	< 0.05	-
Endrin	0.05	mg/kg	-	-	< 0.05	-
Endrin aldehyde	0.05	mg/kg	-	-	< 0.05	-
Endrin ketone	0.05	mg/kg	-	-	< 0.05	-
g-BHC (Lindane)	0.05	mg/kg	-	-	< 0.05	-
Heptachlor	0.05	mg/kg	-	-	< 0.05	-
Heptachlor epoxide	0.05	mg/kg	-	-	< 0.05	-
Hexachlorobenzene	0.05	mg/kg	-	-	< 0.05	-
Methoxychlor	0.05	mg/kg	-	-	< 0.05	-
Toxaphene	1	mg/kg	-	-	< 1	-
Aldrin and Dieldrin (Total)*	0.05	mg/kg	-	-	< 0.05	-
DDT + DDE + DDD (Total)*	0.05	mg/kg	-	-	< 0.05	-
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	-	-	< 0.1	-
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	-	-	< 0.1	-
Dibutylchlorendate (surr.)	1	%	-	-	80	-
Tetrachloro-m-xylene (surr.)	1	%	-	-	77	-
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	-	-	< 0.2	-
Bolstar	0.2	mg/kg	-	-	< 0.2	-
Chlorfenvinphos	0.2	mg/kg	-	-	< 0.2	-
Chlorpyrifos	0.2	mg/kg	-	-	< 0.2	-
Chlorpyrifos-methyl	0.2	mg/kg	-	-	< 0.2	-
Coumaphos	2	mg/kg	-	-	< 2	-
Demeton-S	0.2	mg/kg	-	-	< 0.2	-
Demeton-O	0.2	mg/kg	-	-	< 0.2	-
Diazinon	0.2	mg/kg	-	-	< 0.2	-
Dichlorvos	0.2	mg/kg	-	-	< 0.2	-
Dimethoate	0.2	mg/kg	-	-	< 0.2	-
Disulfoton	0.2	mg/kg	-	-	< 0.2	-
EPN	0.2	mg/kg	-	-	< 0.2	-
Ethion	0.2	mg/kg	-	-	< 0.2	-
Ethoprop	0.2	mg/kg	-	-	< 0.2	-
Ethyl parathion	0.2	mg/kg	-	-	< 0.2	-
Fenitrothion	0.2	mg/kg	-	-	< 0.2	-
Fensulfothion	0.2	mg/kg	-	-	< 0.2	-
Fenthion	0.2	mg/kg	-	-	< 0.2	-
Malathion	0.2	mg/kg	-	-	< 0.2	-
Merphos	0.2	mg/kg	-	-	< 0.2	-
Methyl parathion	0.2	mg/kg	-	-	< 0.2	-
Mevinphos	0.2	mg/kg	-	-	< 0.2	-
Monocrotophos	2	mg/kg	-	-	< 2	-
Naled	0.2	mg/kg	-	-	< 0.2	-
Omethoate	2	mg/kg	-	-	< 2	-
Phorate	0.2	mg/kg	-	-	< 0.2	-
Pirimiphos-methyl	0.2	mg/kg	-	-	< 0.2	-
Pyrazophos	0.2	mg/kg	-	-	< 0.2	-
Ronnel	0.2	mg/kg	-	-	< 0.2	-

Client Sample ID			TP15 0.8-0.9	TP16 0.1-0.3	TP17 0.25-0.35	TP18 0.1-0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-No24385	S18-No24386	S18-No24387	S18-No24388
Date Sampled			Nov 16, 2018	Nov 16, 2018	Nov 16, 2018	Nov 16, 2018
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Terbufos	0.2	mg/kg	-	-	< 0.2	-
Tetrachlorvinphos	0.2	mg/kg	-	-	< 0.2	-
Tokuthion	0.2	mg/kg	-	-	< 0.2	-
Trichloronate	0.2	mg/kg	-	-	< 0.2	-
Triphenylphosphate (surr.)	1	%	-	-	78	-
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	-	-	< 0.1	-
Aroclor-1221	0.1	mg/kg	-	-	< 0.1	-
Aroclor-1232	0.1	mg/kg	-	-	< 0.1	-
Aroclor-1242	0.1	mg/kg	-	-	< 0.1	-
Aroclor-1248	0.1	mg/kg	-	-	< 0.1	-
Aroclor-1254	0.1	mg/kg	-	-	< 0.1	-
Aroclor-1260	0.1	mg/kg	-	-	< 0.1	-
Total PCB*	0.1	mg/kg	-	-	< 0.1	-
Dibutylchlorendate (surr.)	1	%	-	-	80	-
Tetrachloro-m-xylene (surr.)	1	%	-	-	77	-
Chloride	5	mg/kg	46	< 5	-	-
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	87	11	-	-
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	5.2	6.1	-	-
Resistivity*	0.5	ohm.m	110	940	-	-
Sulphate (as SO4)	30	mg/kg	82	< 30	-	-
Exchangeable Sodium Percentage (ESP)	0.1	%	21	2.0	-	-
Magnesium (exchangeable)	0.1	meq/100g	9.2	3.2	-	-
Potassium (exchangeable)	0.1	meq/100g	0.6	0.2	-	-
Sodium (exchangeable)	0.1	meq/100g	2.8	0.2	-	-
% Moisture	1	%	18	11	12	11
Heavy Metals						
Arsenic	2	mg/kg	-	-	40	19
Cadmium	0.4	mg/kg	-	-	< 0.4	< 0.4
Chromium	5	mg/kg	-	-	11	17
Copper	5	mg/kg	-	-	28	18
Lead	5	mg/kg	-	-	33	23
Mercury	0.1	mg/kg	-	-	< 0.1	< 0.1
Nickel	5	mg/kg	-	-	17	9.0
Zinc	5	mg/kg	-	-	77	25
Cation Exchange Capacity						
Calcium (exchangeable)	0.1	meq/100g	1.0	5.3	-	-
Cation Exchange Capacity	0.05	meq/100g	14	8.8	-	-

Client Sample ID			TP19 0.2-0.3	TP21 0.2-0.3	TP23 0.2-0.3	TP24 0.1-0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-No24389	S18-No24390	S18-No24391	S18-No24392
Date Sampled			Nov 16, 2018	Nov 16, 2018	Nov 16, 2018	Nov 16, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	54	56	112	53
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
Chloride	5	mg/kg	-	-	-	100
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	-	-	-	110
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	-	-	-	5.4
Resistivity*	0.5	ohm.m	-	-	-	93
Sulphate (as SO4)	30	mg/kg	-	-	-	52
Exchangeable Sodium Percentage (ESP)	0.1	%	-	-	-	5.8
Magnesium (exchangeable)	0.1	meq/100g	-	-	-	7.1
Potassium (exchangeable)	0.1	meq/100g	-	-	-	0.3
Sodium (exchangeable)	0.1	meq/100g	-	-	-	1.0
% Moisture	1	%	15	19	6.9	14
Heavy Metals						
Arsenic	2	mg/kg	28	12	13	19
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	31	9.2	17	15
Copper	5	mg/kg	25	33	9.4	34
Lead	5	mg/kg	31	13	19	17
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	12	11	< 5	9.2
Zinc	5	mg/kg	37	67	11	66
Cation Exchange Capacity						
Calcium (exchangeable)	0.1	meq/100g	-	-	-	8.2
Cation Exchange Capacity	0.05	meq/100g	-	-	-	16

Client Sample ID			FD01	FD02
Sample Matrix			Soil	Soil
Eurofins | mgt Sample No.			S18-No24405	S18-No24406
Date Sampled			Nov 16, 2018	Nov 16, 2018
Test/Reference	LOR	Unit		
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				
TRH C6-C9	20	mg/kg	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50
BTEX				
Benzene	0.1	mg/kg	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	72	74
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100
% Moisture	1	%	8.9	9.8
Heavy Metals				
Arsenic	2	mg/kg	4.2	7.6
Cadmium	0.4	mg/kg	< 0.4	< 0.4
Chromium	5	mg/kg	17	7.8
Copper	5	mg/kg	27	12
Lead	5	mg/kg	43	22
Mercury	0.1	mg/kg	< 0.1	< 0.1
Nickel	5	mg/kg	8.8	5.5
Zinc	5	mg/kg	140	35

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins | mgt Suite B6			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Nov 23, 2018	14 Day
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Melbourne	Nov 23, 2018	14 Day
- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Nov 23, 2018	14 Day
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Nov 23, 2018	14 Day
- Method: LTM-ORG-2010 TRH C6-C40			
Metals M8	Melbourne	Nov 23, 2018	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Eurofins | mgt Suite B7			
Polycyclic Aromatic Hydrocarbons	Melbourne	Nov 23, 2018	14 Day
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Eurofins | mgt Suite B15			
Organochlorine Pesticides	Melbourne	Nov 23, 2018	14 Day
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Organophosphorus Pesticides	Melbourne	Nov 23, 2018	14 Day
- Method: LTM-ORG-2200 Organophosphorus Pesticides by GC-MS			
Polychlorinated Biphenyls	Melbourne	Nov 23, 2018	28 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Chloride	Melbourne	Nov 23, 2018	28 Day
- Method: LTM-INO-4090 Chloride by Discrete Analyser			
pH (1:5 Aqueous extract at 25°C as rec.)	Melbourne	Nov 23, 2018	7 Day
- Method: LTM-GEN-7090 pH in soil by ISE			
Sulphate (as SO4)	Melbourne	Nov 23, 2018	28 Day
- Method: LTM-INO-4110 Sulfate by Discrete Analyser			
Conductivity (1:5 aqueous extract at 25°C as rec.)	Melbourne	Nov 23, 2018	7 Day
- Method: LTM-INO-4030 Conductivity			
Magnesium (exchangeable)	Melbourne	Nov 24, 2018	180 Days
- Method: LTM-MET-3060 Cation Exchange Capacity and ESP			
Potassium (exchangeable)	Melbourne	Nov 24, 2018	180 Days
- Method: LTM-MET-3060 Cation Exchange Capacity and ESP			
Sodium (exchangeable)	Melbourne	Nov 24, 2018	180 Days
- Method: LTM-MET-3060 Cation Exchange Capacity and ESP			
Cation Exchange Capacity	Melbourne	Nov 24, 2018	180 Days
- Method: LTM-MET-3060 Cation Exchange Capacity by bases & Exchangeable Sodium Percentage			
Exchangeable Sodium Percentage (ESP)	Melbourne	Nov 24, 2018	28 Day
- Method: LTM-MET-3060 - Cation Exchange Capacity (CEC) & Exchangeable Sodium Percentage (ESP)			
% Moisture	Melbourne	Nov 19, 2018	14 Day
- Method: LTM-GEN-7080 Moisture			

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4.4'-DDD	mg/kg	< 0.05			0.05	Pass	
4.4'-DDE	mg/kg	< 0.05			0.05	Pass	
4.4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-BHC	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-BHC	mg/kg	< 0.05			0.05	Pass	
d-BHC	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-BHC (Lindane)	mg/kg	< 0.05			0.05	Pass	
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.05			0.05	Pass	
Toxaphene	mg/kg	< 1			1	Pass	
Method Blank							
Organophosphorus Pesticides							
Azinphos-methyl	mg/kg	< 0.2			0.2	Pass	
Bolstar	mg/kg	< 0.2			0.2	Pass	
Chlorfenvinphos	mg/kg	< 0.2			0.2	Pass	
Chlorpyrifos	mg/kg	< 0.2			0.2	Pass	
Chlorpyrifos-methyl	mg/kg	< 0.2			0.2	Pass	
Coumaphos	mg/kg	< 2			2	Pass	
Demeton-S	mg/kg	< 0.2			0.2	Pass	
Demeton-O	mg/kg	< 0.2			0.2	Pass	
Diazinon	mg/kg	< 0.2			0.2	Pass	
Dichlorvos	mg/kg	< 0.2			0.2	Pass	
Dimethoate	mg/kg	< 0.2			0.2	Pass	
Disulfoton	mg/kg	< 0.2			0.2	Pass	
EPN	mg/kg	< 0.2			0.2	Pass	
Ethion	mg/kg	< 0.2			0.2	Pass	
Ethoprop	mg/kg	< 0.2			0.2	Pass	
Ethyl parathion	mg/kg	< 0.2			0.2	Pass	
Fenitrothion	mg/kg	< 0.2			0.2	Pass	
Fensulfothion	mg/kg	< 0.2			0.2	Pass	
Fenthion	mg/kg	< 0.2			0.2	Pass	
Malathion	mg/kg	< 0.2			0.2	Pass	
Merphos	mg/kg	< 0.2			0.2	Pass	
Methyl parathion	mg/kg	< 0.2			0.2	Pass	
Mevinphos	mg/kg	< 0.2			0.2	Pass	
Monocrotophos	mg/kg	< 2			2	Pass	
Naled	mg/kg	< 0.2			0.2	Pass	
Omethoate	mg/kg	< 2			2	Pass	
Phorate	mg/kg	< 0.2			0.2	Pass	
Pirimiphos-methyl	mg/kg	< 0.2			0.2	Pass	
Pyrazophos	mg/kg	< 0.2			0.2	Pass	
Ronnel	mg/kg	< 0.2			0.2	Pass	
Terbufos	mg/kg	< 0.2			0.2	Pass	
Tetrachlorvinphos	mg/kg	< 0.2			0.2	Pass	
Tokuthion	mg/kg	< 0.2			0.2	Pass	
Trichloronate	mg/kg	< 0.2			0.2	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/kg	< 0.1			0.1	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.1			0.1	Pass	
Aroclor-1242	mg/kg	< 0.1			0.1	Pass	
Aroclor-1248	mg/kg	< 0.1			0.1	Pass	
Aroclor-1254	mg/kg	< 0.1			0.1	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Aroclor-1260	mg/kg	< 0.1			0.1	Pass	
Total PCB*	mg/kg	< 0.1			0.1	Pass	
Method Blank							
Exchangeable Sodium Percentage (ESP)	%	< 0.1			0.1	Pass	
Magnesium (exchangeable)	meq/100g	< 0.1			0.1	Pass	
Potassium (exchangeable)	meq/100g	< 0.1			0.1	Pass	
Sodium (exchangeable)	meq/100g	< 0.1			0.1	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
Method Blank							
Cation Exchange Capacity							
Calcium (exchangeable)	meq/100g	< 0.1			0.1	Pass	
Cation Exchange Capacity	meq/100g	< 0.05			0.05	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	84			70-130	Pass	
TRH C10-C14	%	83			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	87			70-130	Pass	
Toluene	%	84			70-130	Pass	
Ethylbenzene	%	81			70-130	Pass	
m&p-Xylenes	%	78			70-130	Pass	
Xylenes - Total	%	79			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	99			70-130	Pass	
TRH C6-C10	%	79			70-130	Pass	
TRH >C10-C16	%	83			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	89			70-130	Pass	
Acenaphthylene	%	90			70-130	Pass	
Anthracene	%	77			70-130	Pass	
Benz(a)anthracene	%	120			70-130	Pass	
Benzo(a)pyrene	%	92			70-130	Pass	
Benzo(b&j)fluoranthene	%	95			70-130	Pass	
Benzo(g.h.i)perylene	%	80			70-130	Pass	
Benzo(k)fluoranthene	%	108			70-130	Pass	
Chrysene	%	111			70-130	Pass	
Dibenz(a.h)anthracene	%	94			70-130	Pass	
Fluoranthene	%	97			70-130	Pass	
Fluorene	%	89			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	77			70-130	Pass	
Naphthalene	%	98			70-130	Pass	
Phenanthrene	%	77			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Pyrene	%	97			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
4.4'-DDD	%	79			70-130	Pass	
4.4'-DDE	%	99			70-130	Pass	
4.4'-DDT	%	88			70-130	Pass	
a-BHC	%	92			70-130	Pass	
Aldrin	%	90			70-130	Pass	
b-BHC	%	88			70-130	Pass	
d-BHC	%	86			70-130	Pass	
Dieldrin	%	107			70-130	Pass	
Endosulfan I	%	103			70-130	Pass	
Endosulfan II	%	98			70-130	Pass	
Endosulfan sulphate	%	98			70-130	Pass	
Endrin	%	115			70-130	Pass	
Endrin aldehyde	%	95			70-130	Pass	
Endrin ketone	%	95			70-130	Pass	
g-BHC (Lindane)	%	92			70-130	Pass	
Heptachlor	%	85			70-130	Pass	
Heptachlor epoxide	%	104			70-130	Pass	
Hexachlorobenzene	%	81			70-130	Pass	
Methoxychlor	%	75			70-130	Pass	
LCS - % Recovery							
Organophosphorus Pesticides							
Diazinon	%	72			70-130	Pass	
Dimethoate	%	71			70-130	Pass	
Ethion	%	99			70-130	Pass	
Fenitrothion	%	79			70-130	Pass	
Methyl parathion	%	74			70-130	Pass	
Mevinphos	%	71			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls							
Aroclor-1260	%	82			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	105			80-120	Pass	
Cadmium	%	103			80-120	Pass	
Chromium	%	109			80-120	Pass	
Copper	%	112			80-120	Pass	
Lead	%	106			80-120	Pass	
Mercury	%	87			75-125	Pass	
Nickel	%	109			80-120	Pass	
Zinc	%	104			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	M18-No26616	NCP	%	94			70-130	Pass	
Acenaphthylene	M18-No26616	NCP	%	99			70-130	Pass	
Anthracene	M18-No26616	NCP	%	90			70-130	Pass	
Benz(a)anthracene	M18-No26616	NCP	%	100			70-130	Pass	
Benzo(a)pyrene	M18-No26616	NCP	%	88			70-130	Pass	
Benzo(b&j)fluoranthene	M18-No26616	NCP	%	75			70-130	Pass	
Benzo(g.h.i)perylene	M18-No26616	NCP	%	83			70-130	Pass	
Benzo(k)fluoranthene	M18-No26616	NCP	%	88			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chrysene	M18-No26616	NCP	%	103			70-130	Pass	
Dibenz(a.h)anthracene	M18-No26616	NCP	%	80			70-130	Pass	
Fluoranthene	M18-No26616	NCP	%	87			70-130	Pass	
Fluorene	M18-No26616	NCP	%	100			70-130	Pass	
Indeno(1.2.3-cd)pyrene	M18-No26616	NCP	%	71			70-130	Pass	
Naphthalene	M18-No26616	NCP	%	100			70-130	Pass	
Phenanthrene	M18-No26616	NCP	%	88			70-130	Pass	
Pyrene	M18-No26616	NCP	%	89			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S18-No24370	CP	%	86			70-130	Pass	
TRH C10-C14	S18-No24370	CP	%	74			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S18-No24370	CP	%	79			70-130	Pass	
Toluene	S18-No24370	CP	%	79			70-130	Pass	
Ethylbenzene	S18-No24370	CP	%	79			70-130	Pass	
m&p-Xylenes	S18-No24370	CP	%	77			70-130	Pass	
o-Xylene	S18-No24370	CP	%	78			70-130	Pass	
Xylenes - Total	S18-No24370	CP	%	77			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S18-No24370	CP	%	97			70-130	Pass	
TRH C6-C10	S18-No24370	CP	%	82			70-130	Pass	
TRH >C10-C16	S18-No24370	CP	%	72			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
4.4'-DDD	M18-No22489	NCP	%	128			70-130	Pass	
4.4'-DDE	M18-No22489	NCP	%	128			70-130	Pass	
4.4'-DDT	M18-No22489	NCP	%	106			70-130	Pass	
a-BHC	M18-No22489	NCP	%	77			70-130	Pass	
Aldrin	M18-No22489	NCP	%	98			70-130	Pass	
b-BHC	M18-No22489	NCP	%	102			70-130	Pass	
d-BHC	M18-No22489	NCP	%	96			70-130	Pass	
Dieldrin	M18-No22489	NCP	%	96			70-130	Pass	
Endosulfan I	M18-No22489	NCP	%	99			70-130	Pass	
Endosulfan II	M18-No22489	NCP	%	82			70-130	Pass	
Endosulfan sulphate	M18-No22489	NCP	%	88			70-130	Pass	
Endrin	M18-No22489	NCP	%	104			70-130	Pass	
Endrin aldehyde	M18-No22489	NCP	%	83			70-130	Pass	
Endrin ketone	M18-No22489	NCP	%	101			70-130	Pass	
g-BHC (Lindane)	M18-No22489	NCP	%	87			70-130	Pass	
Heptachlor	M18-No22489	NCP	%	98			70-130	Pass	
Heptachlor epoxide	M18-No22489	NCP	%	96			70-130	Pass	
Hexachlorobenzene	M18-No22489	NCP	%	85			70-130	Pass	
Methoxychlor	M18-No22489	NCP	%	117			70-130	Pass	
Spike - % Recovery									
Organophosphorus Pesticides				Result 1					
Diazinon	M18-No28383	NCP	%	95			70-130	Pass	
Dimethoate	M18-No28383	NCP	%	78			70-130	Pass	
Ethion	M18-No28383	NCP	%	122			70-130	Pass	
Fenitrothion	M18-No28383	NCP	%	79			70-130	Pass	
Methyl parathion	M18-No28383	NCP	%	72			70-130	Pass	
Mevinphos	M18-No28383	NCP	%	88			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Polychlorinated Biphenyls				Result 1					
Aroclor-1260	M18-No30380	NCP	%	100			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S18-No24370	CP	%	105			75-125	Pass	
Cadmium	S18-No24370	CP	%	108			75-125	Pass	
Chromium	S18-No24370	CP	%	109			75-125	Pass	
Copper	S18-No24370	CP	%	122			75-125	Pass	
Lead	S18-No24370	CP	%	104			75-125	Pass	
Mercury	S18-No24370	CP	%	89			70-130	Pass	
Nickel	S18-No24370	CP	%	121			75-125	Pass	
Zinc	S18-No24370	CP	%	121			75-125	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S18-No24381	CP	%	119			70-130	Pass	
TRH C10-C14	S18-No24381	CP	%	70			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S18-No24381	CP	%	85			70-130	Pass	
Toluene	S18-No24381	CP	%	90			70-130	Pass	
Ethylbenzene	S18-No24381	CP	%	100			70-130	Pass	
m&p-Xylenes	S18-No24381	CP	%	96			70-130	Pass	
o-Xylene	S18-No24381	CP	%	98			70-130	Pass	
Xylenes - Total	S18-No24381	CP	%	97			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S18-No24381	CP	%	80			70-130	Pass	
TRH C6-C10	S18-No24381	CP	%	106			70-130	Pass	
TRH >C10-C16	S18-No24381	CP	%	78			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S18-No24381	CP	%	114			75-125	Pass	
Cadmium	S18-No24381	CP	%	103			75-125	Pass	
Chromium	S18-No24381	CP	%	124			75-125	Pass	
Copper	S18-No24381	CP	%	135			75-125	Fail	Q08
Lead	S18-No24381	CP	%	113			75-125	Pass	
Nickel	S18-No24381	CP	%	123			75-125	Pass	
Zinc	S18-No24381	CP	%	148			75-125	Fail	Q08
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S18-No24393	CP	%	95			70-130	Pass	
TRH C10-C14	S18-No24393	CP	%	82			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S18-No24393	CP	%	86			70-130	Pass	
Toluene	S18-No24393	CP	%	84			70-130	Pass	
Ethylbenzene	S18-No24393	CP	%	86			70-130	Pass	
m&p-Xylenes	S18-No24393	CP	%	83			70-130	Pass	
o-Xylene	S18-No24393	CP	%	84			70-130	Pass	
Xylenes - Total	S18-No24393	CP	%	84			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S18-No24393	CP	%	98			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
TRH C6-C10	S18-No24393	CP	%	90			70-130	Pass	
TRH >C10-C16	S18-No24393	CP	%	79			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S18-No24393	CP	%	106			75-125	Pass	
Cadmium	S18-No24393	CP	%	102			75-125	Pass	
Chromium	S18-No24393	CP	%	104			75-125	Pass	
Copper	S18-No24393	CP	%	110			75-125	Pass	
Lead	S18-No24393	CP	%	92			75-125	Pass	
Mercury	S18-No24393	CP	%	84			70-130	Pass	
Nickel	S18-No24393	CP	%	108			75-125	Pass	
Zinc	S18-No24393	CP	%	121			75-125	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S18-No24403	CP	%	109			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S18-No24403	CP	%	97			70-130	Pass	
Toluene	S18-No24403	CP	%	113			70-130	Pass	
Ethylbenzene	S18-No24403	CP	%	123			70-130	Pass	
m&p-Xylenes	S18-No24403	CP	%	125			70-130	Pass	
o-Xylene	S18-No24403	CP	%	123			70-130	Pass	
Xylenes - Total	S18-No24403	CP	%	124			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S18-No24403	CP	%	70			70-130	Pass	
TRH C6-C10	S18-No24403	CP	%	106			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S18-No24369	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S18-No24369	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S18-No24369	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S18-No24369	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S18-No24369	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S18-No24369	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S18-No24369	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S18-No24369	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S18-No24369	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S18-No24369	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S18-No24369	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S18-No24369	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	S18-No24369	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S18-No24369	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S18-No24369	CP	mg/kg	< 100	< 100	<1	30%	Pass	

Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S18-No24369	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S18-No24369	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S18-No24369	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S18-No24369	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S18-No24369	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S18-No24369	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S18-No24369	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S18-No24369	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S18-No24369	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S18-No24369	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S18-No24369	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S18-No24369	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S18-No24369	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S18-No24369	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S18-No24369	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S18-No24369	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Organophosphorus Pesticides				Result 1	Result 2	RPD			
Azinphos-methyl	S18-No24369	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Bolstar	S18-No24369	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Chlorfenvinphos	S18-No24369	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Chlorpyrifos	S18-No24369	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Chlorpyrifos-methyl	S18-No24369	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Coumaphos	S18-No24369	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Demeton-S	S18-No24369	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Demeton-O	S18-No24369	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Diazinon	S18-No24369	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Dichlorvos	S18-No24369	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Dimethoate	S18-No24369	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Disulfoton	S18-No24369	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
EPN	S18-No24369	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ethion	S18-No24369	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ethoprop	S18-No24369	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ethyl parathion	S18-No24369	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Fenitrothion	S18-No24369	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Fensulfothion	S18-No24369	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Fenthion	S18-No24369	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Malathion	S18-No24369	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Merphos	S18-No24369	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Methyl parathion	S18-No24369	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Mevinphos	S18-No24369	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Monocrotophos	S18-No24369	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Naled	S18-No24369	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Omethoate	S18-No24369	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Phorate	S18-No24369	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Pirimiphos-methyl	S18-No24369	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Pyrazophos	S18-No24369	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ronnel	S18-No24369	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Terbufos	S18-No24369	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Tetrachlorvinphos	S18-No24369	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Tokuthion	S18-No24369	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Trichloronate	S18-No24369	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S18-No24369	CP	%	7.8	8.5	8.0	30%	Pass	

Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S18-No24369	CP	mg/kg	12	12	<1	30%	Pass	
Cadmium	S18-No24369	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S18-No24369	CP	mg/kg	18	15	18	30%	Pass	
Copper	S18-No24369	CP	mg/kg	11	13	15	30%	Pass	
Lead	S18-No24369	CP	mg/kg	27	28	4.0	30%	Pass	
Mercury	S18-No24369	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S18-No24369	CP	mg/kg	7.2	7.0	3.0	30%	Pass	
Zinc	S18-No24369	CP	mg/kg	31	36	13	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	M18-No25615	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	M18-No25615	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	M18-No25615	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	M18-No25615	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	M18-No25615	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	M18-No25615	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	M18-No25615	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	M18-No25615	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	M18-No25615	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	M18-No25615	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	M18-No25615	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	M18-No25615	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	M18-No25615	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	M18-No25615	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	M18-No25615	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	M18-No25615	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	M18-No25615	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	M18-No25615	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	M18-No25615	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	M18-No25615	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Toxaphene	M18-No25615	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Duplicate									
Organophosphorus Pesticides				Result 1	Result 2	RPD			
Azinphos-methyl	S18-No24710	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Bolstar	S18-No24710	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Chlorfenvinphos	S18-No24710	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Chlorpyrifos	S18-No24710	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Chlorpyrifos-methyl	S18-No24710	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Coumaphos	S18-No24710	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Demeton-S	S18-No24710	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Demeton-O	S18-No24710	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Diazinon	S18-No24710	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Dichlorvos	S18-No24710	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Dimethoate	S18-No24710	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Disulfoton	S18-No24710	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
EPN	S18-No24710	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ethion	S18-No24710	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ethoprop	S18-No24710	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ethyl parathion	S18-No24710	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Fenitrothion	S18-No24710	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Fensulfothion	S18-No24710	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Fenthion	S18-No24710	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Malathion	S18-No24710	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Merphos	S18-No24710	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	

Duplicate									
Organophosphorus Pesticides				Result 1	Result 2	RPD			
Methyl parathion	S18-No24710	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Mevinphos	S18-No24710	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Monocrotophos	S18-No24710	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Naled	S18-No24710	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Omethoate	S18-No24710	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Phorate	S18-No24710	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Pirimiphos-methyl	S18-No24710	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Pyrazophos	S18-No24710	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ronnel	S18-No24710	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Terbufos	S18-No24710	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Tetrachlorvinphos	S18-No24710	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Tokuthion	S18-No24710	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Trichloronate	S18-No24710	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Duplicate									
Polychlorinated Biphenyls				Result 1	Result 2	RPD			
Aroclor-1016	M18-No25615	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1221	M18-No25615	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1232	M18-No25615	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1242	M18-No25615	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1248	M18-No25615	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1254	M18-No25615	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1260	M18-No25615	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Total PCB*	M18-No25615	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S18-No24370	CP	mg/kg	14	15	4.0	30%	Pass	
Cadmium	S18-No24370	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S18-No24370	CP	mg/kg	12	12	2.0	30%	Pass	
Copper	S18-No24370	CP	mg/kg	11	11	2.0	30%	Pass	
Lead	S18-No24370	CP	mg/kg	18	19	3.0	30%	Pass	
Mercury	S18-No24370	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S18-No24370	CP	mg/kg	5.9	6.1	4.0	30%	Pass	
Zinc	S18-No24370	CP	mg/kg	25	27	6.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
Chloride	M18-No26700	NCP	mg/kg	14	13	12	30%	Pass	
Sulphate (as SO4)	M18-No26700	NCP	mg/kg	140	130	3.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S18-No24379	CP	%	9.7	9.6	1.0	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S18-No24380	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S18-No24380	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S18-No24380	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S18-No24380	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S18-No24380	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S18-No24380	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S18-No24380	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S18-No24380	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S18-No24380	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S18-No24380	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	

Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S18-No24380	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S18-No24380	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	S18-No24380	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S18-No24380	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S18-No24380	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S18-No24380	CP	mg/kg	10	10	2.0	30%	Pass	
Cadmium	S18-No24380	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S18-No24380	CP	mg/kg	13	11	15	30%	Pass	
Copper	S18-No24380	CP	mg/kg	16	13	17	30%	Pass	
Lead	S18-No24380	CP	mg/kg	31	26	18	30%	Pass	
Mercury	S18-No24380	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S18-No24380	CP	mg/kg	7.1	7.0	2.0	30%	Pass	
Zinc	S18-No24380	CP	mg/kg	43	37	17	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S18-No24381	CP	mg/kg	4.5	4.4	2.0	30%	Pass	
Cadmium	S18-No24381	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S18-No24381	CP	mg/kg	15	14	<1	30%	Pass	
Copper	S18-No24381	CP	mg/kg	17	17	1.0	30%	Pass	
Lead	S18-No24381	CP	mg/kg	36	36	1.0	30%	Pass	
Mercury	S18-No24381	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S18-No24381	CP	mg/kg	9.4	9.2	2.0	30%	Pass	
Zinc	S18-No24381	CP	mg/kg	99	100	2.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S18-No24389	CP	%	15	16	4.0	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S18-No24392	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S18-No24392	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S18-No24392	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S18-No24392	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S18-No24392	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S18-No24392	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S18-No24392	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S18-No24392	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S18-No24392	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S18-No24392	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S18-No24392	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S18-No24392	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	S18-No24392	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S18-No24392	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S18-No24392	CP	mg/kg	< 100	< 100	<1	30%	Pass	

Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S18-No24392	CP	mg/kg	19	18	3.0	30%	Pass	
Cadmium	S18-No24392	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S18-No24392	CP	mg/kg	15	13	11	30%	Pass	
Copper	S18-No24392	CP	mg/kg	34	31	7.0	30%	Pass	
Lead	S18-No24392	CP	mg/kg	17	16	5.0	30%	Pass	
Mercury	S18-No24392	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S18-No24392	CP	mg/kg	9.2	8.6	7.0	30%	Pass	
Zinc	S18-No24392	CP	mg/kg	66	61	7.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S18-No24393	CP	mg/kg	10	10	<1	30%	Pass	
Cadmium	S18-No24393	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S18-No24393	CP	mg/kg	13	13	1.0	30%	Pass	
Copper	S18-No24393	CP	mg/kg	14	14	<1	30%	Pass	
Lead	S18-No24393	CP	mg/kg	47	47	1.0	30%	Pass	
Mercury	S18-No24393	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S18-No24393	CP	mg/kg	5.7	5.7	<1	30%	Pass	
Zinc	S18-No24393	CP	mg/kg	48	48	1.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S18-No24399	CP	%	15	14	6.0	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S18-No24402	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S18-No24402	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S18-No24402	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S18-No24402	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S18-No24402	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S18-No24402	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S18-No24402	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S18-No24402	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S18-No24402	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S18-No24402	CP	mg/kg	18	18	1.0	30%	Pass	
Cadmium	S18-No24402	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S18-No24402	CP	mg/kg	24	23	2.0	30%	Pass	
Copper	S18-No24402	CP	mg/kg	22	21	2.0	30%	Pass	
Lead	S18-No24402	CP	mg/kg	22	21	2.0	30%	Pass	
Mercury	S18-No24402	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S18-No24402	CP	mg/kg	17	16	2.0	30%	Pass	
Zinc	S18-No24402	CP	mg/kg	39	40	2.0	30%	Pass	

Comments

This report has been revised (V2) to exclude samples S18-No24393 - S18-No24404 as per client's request.

Eurofins | mgt accreditation number 1261, corporate site 1254 and 14271 is currently in progress of a controlled transition to a new custom built location at 6 Monterey Road, Dandenong South, Victoria 3175. All results on this report denoted as being performed by Eurofins | mgt 2-5 Kingston Town Close, Oakleigh Victoria 3166 corporate site 1254, will have been performed on either Oakleigh or new Dandenong South site.

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference

Authorised By

Nibha Vaidya	Analytical Services Manager
Chris Bennett	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Julie Kay	Senior Analyst-Inorganic (VIC)
Nibha Vaidya	Senior Analyst-Asbestos (NSW)

Glenn Jackson

General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025–Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Greencap NSW P/L
Level 2/11 Khartoum Road
North Ryde
NSW 2113

Attention:	Matthew Barberson
Report	628453-V2-AID
Project Name	DSI - SCHOFIELDS
Project ID	J157372
Received Date	Nov 19, 2018
Date Reported	Nov 27, 2018

Methodology:

Asbestos Fibre Identification	Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion staining (DS) techniques. *NOTE: Positive Trace Analysis results indicate the sample contains detectable respirable fibres.*
Unknown Mineral Fibres	Mineral fibres of unknown type, as determined by PLM with DS, may require another analytical technique, such as Electron Microscopy, to confirm unequivocal identity. *NOTE: While Actinolite, Anthophyllite and Tremolite asbestos may be detected by PLM with DS, due to variability in the optical properties of these materials, AS4964 requires that these are reported as UMF unless confirmed by an independent technique.*
Subsampling Soil Samples	The whole sample submitted is first dried and then passed through a 10mm sieve followed by a 2mm sieve. All fibrous matter greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) is employed. *NOTE: Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis, in accordance with AS 4964-2004.*
Bonded asbestos-containing material (ACM)	The material is first examined and any fibres isolated for identification by PLM and DS. Where required, interfering matrices may be removed by disintegration using a range of heat, chemical or physical treatments, possibly in combination.The resultant material is then further examined in accordance with AS 4964 - 2004. *NOTE: Even after disintegration it may be difficult to detect the presence of asbestos in some asbestos-containing bulk materials using PLM and DS. This is due to the low grade or small length or diameter of the asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials. Vinyl/asbestos floor tiles, some asbestos-containing sealants and mastics, asbestos-containing epoxy resins and some ore samples are examples of these types of material, which are difficult to analyse.*
Limit of Reporting	The performance limitation of the AS 4964 (2004) method for non-homogeneous samples is around 0.1 g/kg (equivalent to 0.01% (w/w)). Where no asbestos is found by PLM and DS, including Trace Analysis, this is considered to be at the nominal reporting limit of 0.01% (w/w). The NEPM screening level of 0.001% (w/w) is intended as an on-site determination, not a laboratory Limit of Reporting (LOR), per se. Examination of a large sample size (e.g. 500 mL) may improve the likelihood of detecting asbestos, particularly AF, to aid assessment against the NEPM criteria. Gravimetric determinations to this level of accuracy are outside of AS 4964 and hence NATA Accreditation does not cover the performance of this service (non-NATA results shown with an asterisk). *NOTE: NATA News March 2014, p.7, states in relation to AS 4964: "This is a qualitative method with a nominal reporting limit of 0.01 % " and that currently in Australia "there is no validated method available for the quantification of asbestos".This report is consistent with the analytical procedures and reporting recommendations in the NEPM and the WA DoH.*

Project Name DSI - SCHOFIELDS
Project ID J157372
Date Sampled Nov 16, 2018
Report 628453-V2-AID

Client Sample ID	Eurofins | mgt Sample No.	Date Sampled	Sample Description	Result
TP1 0.1-0.2	18-No24369	Nov 16, 2018	Approximate Sample 72g Sample consisted of: Brown coarse-grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
TP3 0.1-0.2	18-No24372	Nov 16, 2018	Approximate Sample 69g Sample consisted of: Brown coarse-grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
TP5 0.1-0.2	18-No24374	Nov 16, 2018	Approximate Sample 81g Sample consisted of: Brown coarse-grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
TP6 0.0-0.2	18-No24375	Nov 16, 2018	Approximate Sample 61g Sample consisted of: Brown coarse-grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
TP9 0.1-0.3	18-No24378	Nov 16, 2018	Approximate Sample 56g Sample consisted of: Brown coarse-grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
TP10 0.2-0.3	18-No24379	Nov 16, 2018	Approximate Sample 66g Sample consisted of: Brown coarse-grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
TP12 0.3-0.5	18-No24381	Nov 16, 2018	Approximate Sample 88g Sample consisted of: Brown coarse-grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
TP15 0.1-0.2	18-No24384	Nov 16, 2018	Approximate Sample 60g Sample consisted of: Brown coarse-grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.

Client Sample ID	Eurofins | mgt Sample No.	Date Sampled	Sample Description	Result
TP23 0.2-0.3	18-No24391	Nov 16, 2018	Approximate Sample 62g Sample consisted of: Brown coarse-grained soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Asbestos - LTM-ASB-8020	Sydney	Nov 19, 2018	Indefinite

Internal Quality Control Review and Glossary

General

1. QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Samples were analysed on an 'as received' basis.
4. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

Units

% w/w: weight for weight basis	grams per kilogram
Filter loading:	fibres/100 graticule areas
Reported Concentration:	fibres/mL
Flowrate:	L/min

Terms

Dry	Sample is dried by heating prior to analysis
LOR	Limit of Reporting
COC	Chain of Custody
SRA	Sample Receipt Advice
ISO	International Standards Organisation
AS	Australian Standards
WA DOH	Reference document for the NEPM. Government of Western Australia, Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia (2009), including supporting document Recommended Procedures for Laboratory Analysis of Asbestos in Soil (2011)
NEPM	National Environment Protection (Assessment of Site Contamination) Measure, 2013 (as amended)
ACM	Asbestos Containing Materials. Asbestos contained within a non-asbestos matrix, typically presented in bonded and/or sound condition. For the purposes of the NEPM, ACM is generally restricted to those materials that do not pass a 7mm x 7mm sieve.
AF	Asbestos Fines. Asbestos containing materials, including friable, weathered and bonded materials, able to pass a 7mm x 7mm sieve. Considered under the NEPM as equivalent to “non-bonded / friable”.
FA	Fibrous Asbestos. Asbestos containing materials in a friable and/or severely weathered condition. For the purposes of the NEPM, FA is generally restricted to those materials that do not pass a 7mm x 7mm sieve.
Friable	Asbestos-containing materials of any size that may be broken or crumbled by hand pressure. For the purposes of the NEPM, this includes both AF and FA. It is outside of the laboratory’s remit to assess degree of friability.
Trace Analysis	Analytical procedure used to detect the presence of respirable fibres in the matrix.

Greencap NSW P/L
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NSW 2113

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Matthew Barberson**

Report **632214-S**
Project name
Project ID J157372
Received Date Dec 10, 2018

Client Sample ID			**TP25A**	**TP26A**	**TP27A**	**TP28A**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S18-De12277**	**S18-De12278**	**S18-De12279**	**S18-De12280**
Date Sampled			**Dec 10, 2018**	**Dec 10, 2018**	**Dec 10, 2018**	**Dec 10, 2018**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	105	98	91	97
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	-	-	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	-	-	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	-	-	1.2
Acenaphthene	0.5	mg/kg	-	-	-	< 0.5
Acenaphthylene	0.5	mg/kg	-	-	-	< 0.5
Anthracene	0.5	mg/kg	-	-	-	< 0.5
Benz(a)anthracene	0.5	mg/kg	-	-	-	< 0.5
Benzo(a)pyrene	0.5	mg/kg	-	-	-	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	-	-	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	-	-	-	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	-	-	-	< 0.5
Chrysene	0.5	mg/kg	-	-	-	< 0.5

Client Sample ID			TP25A	TP26A	TP27A	TP28A
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-De12277	S18-De12278	S18-De12279	S18-De12280
Date Sampled			Dec 10, 2018	Dec 10, 2018	Dec 10, 2018	Dec 10, 2018
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Dibenz(a.h)anthracene	0.5	mg/kg	-	-	-	< 0.5
Fluoranthene	0.5	mg/kg	-	-	-	< 0.5
Fluorene	0.5	mg/kg	-	-	-	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	-	< 0.5
Naphthalene	0.5	mg/kg	-	-	-	< 0.5
Phenanthrene	0.5	mg/kg	-	-	-	< 0.5
Pyrene	0.5	mg/kg	-	-	-	< 0.5
Total PAH*	0.5	mg/kg	-	-	-	< 0.5
2-Fluorobiphenyl (surr.)	1	%	-	-	-	76
p-Terphenyl-d14 (surr.)	1	%	-	-	-	73
% Moisture	1	%	8.2	7.8	9.7	8.6
Heavy Metals						
Arsenic	2	mg/kg	7.6	9.7	14	28
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	10	11	19	9.0
Copper	5	mg/kg	14	16	17	22
Lead	5	mg/kg	22	21	19	22
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	8.1	9.1	9.6	23
Zinc	5	mg/kg	49	180	87	74

Client Sample ID			TP29A	TP30A	TP31A	TP32A
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-De12281	S18-De12282	S18-De12283	S18-De12284
Date Sampled			Dec 10, 2018	Dec 10, 2018	Dec 10, 2018	Dec 10, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	70	53	67	68
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100

Client Sample ID			TP29A	TP30A	TP31A	TP32A
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-De12281	S18-De12282	S18-De12283	S18-De12284
Date Sampled			Dec 10, 2018	Dec 10, 2018	Dec 10, 2018	Dec 10, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
Salinity* (1:5 aqueous extract calc. from EC at 25C)	1	mg/kg	68	-	-	-
% Moisture	1	%	6.4	12	9.4	9.7
Heavy Metals						
Arsenic	2	mg/kg	19	12	20	9.3
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	17	14	18	11
Copper	5	mg/kg	41	27	20	16
Lead	5	mg/kg	22	19	39	21
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	7.9	12	14	12
Zinc	5	mg/kg	41	58	59	51

Client Sample ID			TP33A	TP34A	TP35A	FD1A
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S18-De12285	S18-De12286	S18-De12287	S18-De12288
Date Sampled			Dec 10, 2018	Dec 10, 2018	Dec 10, 2018	Dec 10, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	83	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	83	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	62	68	75	92
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
% Moisture	1	%	10	12	6.0	6.3

Client Sample ID			TP33A	TP34A	TP35A	FD1A
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S18-De12285**	**S18-De12286**	**S18-De12287**	**S18-De12288**
Date Sampled			**Dec 10, 2018**	**Dec 10, 2018**	**Dec 10, 2018**	**Dec 10, 2018**
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	8.2	7.7	5.8	13
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	10	12	9.8	13
Copper	5	mg/kg	18	15	13	20
Lead	5	mg/kg	23	23	17	14
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	13	8.6	5.7	6.3
Zinc	5	mg/kg	63	52	32	28

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins | mgt Suite B6			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Dec 17, 2018	14 Day
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Melbourne	Dec 17, 2018	14 Day
- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Dec 17, 2018	14 Day
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Dec 17, 2018	14 Day
- Method: LTM-ORG-2010 TRH C6-C40			
Metals M8	Melbourne	Dec 17, 2018	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Eurofins | mgt Suite B7			
Polycyclic Aromatic Hydrocarbons	Melbourne	Dec 16, 2018	14 Day
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Salinity* (1:5 aqueous extract calc. from EC at 25C)	Melbourne	Dec 16, 2018	21 Day
- Method: LTM-INO-4030			
% Moisture	Melbourne	Dec 10, 2018	14 Day
- Method: LTM-GEN-7080 Moisture			

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NATA # 1261 Site # 20794

Perth
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Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name: Greencap NSW P/L
Address: Level 2/11 Khartoum Road
North Ryde
NSW 2113

Project Name:
Project ID: J157372

Order No.:
Report #: 632214
Phone: 02 9889 1800
Fax: 02 9889 1811

Received: Dec 10, 2018 7:39 PM
Due: Dec 17, 2018
Priority: 5 Day
Contact Name: Matthew Barberson

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						HOLD	Salinity* (1:5 aqueous extract calc. from EC at 25C)	Moisture Set	Eurofins | mgt Suite B7	Eurofins | mgt Suite B6
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X
Sydney Laboratory - NATA Site # 18217										
Brisbane Laboratory - NATA Site # 20794										
Perth Laboratory - NATA Site # 23736										
External Laboratory										
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**					
1	TP25A	Dec 10, 2018		Soil	S18-De12277			X		X
2	TP26A	Dec 10, 2018		Soil	S18-De12278			X		X
3	TP27A	Dec 10, 2018		Soil	S18-De12279			X		X
4	TP28A	Dec 10, 2018		Soil	S18-De12280			X	X	
5	TP29A	Dec 10, 2018		Soil	S18-De12281		X	X		X
6	TP30A	Dec 10, 2018		Soil	S18-De12282			X		X
7	TP31A	Dec 10, 2018		Soil	S18-De12283			X		X
8	TP32A	Dec 10, 2018		Soil	S18-De12284			X		X
9	TP33A	Dec 10, 2018		Soil	S18-De12285			X		X

eurofins | mgt

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Sample Detail						HOLD	Salinity* (1:5 aqueous extract calc. from EC at 25C)	Moisture Set	Eurofins | mgt Suite B7	Eurofins | mgt Suite B6
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X
Sydney Laboratory - NATA Site # 18217										
Brisbane Laboratory - NATA Site # 20794										
Perth Laboratory - NATA Site # 23736										
10	TP34A	Dec 10, 2018		Soil	S18-De12286			X		X
11	TP35A	Dec 10, 2018		Soil	S18-De12287			X		X
12	FD1A	Dec 10, 2018		Soil	S18-De12288			X		X
13	FD2A	Dec 10, 2018		Soil	S18-De12289	X				
Test Counts						1	1	12	1	11

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	116			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
TRH C10-C14	%	79			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	105			70-130	Pass	
Toluene	%	114			70-130	Pass	
Ethylbenzene	%	114			70-130	Pass	
m&p-Xylenes	%	110			70-130	Pass	
Xylenes - Total	%	111			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	99			70-130	Pass	
TRH C6-C10	%	110			70-130	Pass	
TRH >C10-C16	%	79			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	93			70-130	Pass	
Acenaphthylene	%	106			70-130	Pass	
Anthracene	%	104			70-130	Pass	
Benz(a)anthracene	%	111			70-130	Pass	
Benzo(a)pyrene	%	91			70-130	Pass	
Benzo(b&j)fluoranthene	%	88			70-130	Pass	
Benzo(g.h.i)perylene	%	93			70-130	Pass	
Benzo(k)fluoranthene	%	116			70-130	Pass	
Chrysene	%	107			70-130	Pass	
Dibenz(a.h)anthracene	%	109			70-130	Pass	
Fluoranthene	%	109			70-130	Pass	
Fluorene	%	104			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	100			70-130	Pass	
Naphthalene	%	95			70-130	Pass	
Phenanthrene	%	98			70-130	Pass	
Pyrene	%	105			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	105			80-120	Pass	
Cadmium	%	101			80-120	Pass	
Chromium	%	119			80-120	Pass	
Copper	%	102			80-120	Pass	
Lead	%	116			80-120	Pass	
Mercury	%	119			75-125	Pass	
Nickel	%	104			80-120	Pass	
Zinc	%	102			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	M18-De15719	NCP	%	101			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	M18-De15719	NCP	%	102			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S18-De12278	CP	%	102			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S18-De12278	CP	%	93			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Toluene	S18-De12278	CP	%	93			70-130	Pass	
Ethylbenzene	S18-De12278	CP	%	108			70-130	Pass	
m&p-Xylenes	S18-De12278	CP	%	111			70-130	Pass	
o-Xylene	S18-De12278	CP	%	110			70-130	Pass	
Xylenes - Total	S18-De12278	CP	%	111			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S18-De12278	CP	%	92			70-130	Pass	
TRH C6-C10	S18-De12278	CP	%	98			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S18-De12278	CP	%	110			75-125	Pass	
Cadmium	S18-De12278	CP	%	102			75-125	Pass	
Chromium	S18-De12278	CP	%	117			75-125	Pass	
Copper	S18-De12278	CP	%	102			75-125	Pass	
Lead	S18-De12278	CP	%	116			75-125	Pass	
Mercury	S18-De12278	CP	%	113			70-130	Pass	
Nickel	S18-De12278	CP	%	104			75-125	Pass	
Zinc	S18-De12278	CP	%	80			75-125	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	M18-De15980	NCP	%	94			70-130	Pass	
Acenaphthylene	M18-De15980	NCP	%	100			70-130	Pass	
Anthracene	M18-De15980	NCP	%	101			70-130	Pass	
Benz(a)anthracene	M18-De15980	NCP	%	106			70-130	Pass	
Benzo(a)pyrene	M18-De15980	NCP	%	117			70-130	Pass	
Benzo(b&j)fluoranthene	M18-De15980	NCP	%	109			70-130	Pass	
Benzo(g.h.i)perylene	M18-De15980	NCP	%	80			70-130	Pass	
Benzo(k)fluoranthene	M18-De15980	NCP	%	117			70-130	Pass	
Chrysene	M18-De15980	NCP	%	109			70-130	Pass	
Dibenz(a.h)anthracene	M18-De15980	NCP	%	87			70-130	Pass	
Fluoranthene	M18-De15980	NCP	%	109			70-130	Pass	
Fluorene	M18-De15980	NCP	%	101			70-130	Pass	
Indeno(1.2.3-cd)pyrene	M18-De15980	NCP	%	83			70-130	Pass	
Naphthalene	M18-De15980	NCP	%	93			70-130	Pass	
Phenanthrene	M18-De15980	NCP	%	93			70-130	Pass	
Pyrene	M18-De15980	NCP	%	106			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S18-De12277	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	M18-De16559	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	M18-De16559	NCP	mg/kg	110	90	16	30%	Pass	
TRH C29-C36	M18-De16559	NCP	mg/kg	190	160	18	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S18-De12277	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S18-De12277	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S18-De12277	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S18-De12277	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S18-De12277	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S18-De12277	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	

Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S18-De12277	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S18-De12277	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	M18-De16559	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S18-De12277	CP	mg/kg	7.6	7.3	4.0	30%	Pass	
Cadmium	S18-De12277	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S18-De12277	CP	mg/kg	10	11	4.0	30%	Pass	
Copper	S18-De12277	CP	mg/kg	14	13	11	30%	Pass	
Lead	S18-De12277	CP	mg/kg	22	20	9.0	30%	Pass	
Mercury	S18-De12277	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S18-De12277	CP	mg/kg	8.1	7.5	8.0	30%	Pass	
Zinc	S18-De12277	CP	mg/kg	49	44	10	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S18-De12278	CP	mg/kg	9.7	9.9	2.0	30%	Pass	
Cadmium	S18-De12278	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S18-De12278	CP	mg/kg	11	11	<1	30%	Pass	
Copper	S18-De12278	CP	mg/kg	16	16	1.0	30%	Pass	
Lead	S18-De12278	CP	mg/kg	21	21	1.0	30%	Pass	
Mercury	S18-De12278	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S18-De12278	CP	mg/kg	9.1	9.2	1.0	30%	Pass	
Zinc	S18-De12278	CP	mg/kg	180	180	1.0	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S18-De12280	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S18-De12280	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S18-De12280	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S18-De12280	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S18-De12280	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S18-De12280	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S18-De12280	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S18-De12280	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S18-De12280	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S18-De12280	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S18-De12280	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S18-De12280	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S18-De12280	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S18-De12280	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S18-De12280	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S18-De12280	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S18-De12281	CP	%	6.4	6.4	<1	30%	Pass	

Comments

Eurofins | mgt accreditation number 1261, corporate site 1254 and 14271 is currently in progress of a controlled transition to a new custom built location at 6 Monterey Road, Dandenong South, Victoria 3175. All results on this report denoted as being performed by Eurofins | mgt 2-5 Kingston Town Close, Oakleigh Victoria 3166 corporate site 1254, will have been performed on either Oakleigh or new Dandenong South site.

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

Authorised By

Nibha Vaidya	Analytical Services Manager
Joseph Edouard	Senior Analyst-Organic (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Julie Kay	Senior Analyst-Inorganic (VIC)
Chris Bennett	Senior Analyst-Metal (VIC)

Glenn Jackson

General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

January 2019

GREENCAP
Going Further in Managing Risk

Detailed Site Investigation

Group GSA

Cnr of Farmland Dr & the future realignment of Pelican Rd, Schofields NSW 2762

Appendix G: QA-QC Procedures

Appendix E – QA/QC Procedures

Table of Contents

1 Introduction

The aim of quality control and quality assurance (QA/QC) is to deliver data that is:

- Representative of what is sampled;
- Precise;
- Accurate; and
- Reproducible.

As investigations involve both field and laboratory QA/QC, these are similarly divided. The objective of this document is to evaluate and identify the data quality objectives (DQOs) and the data quality indicators (DQIs), which are used to assess whether the DQOs have been met.

The NSW guideline documents used in the evaluation of the data set for this investigation are:

- NSW Department of Environment and Conservation (DEC) (2006). Contaminated sites: Guidelines for NSW Site Auditors Scheme (2nd edition);
- National Environment Protection Council (NEPC) (2013). National Environment Protection (Assessment of Site Contamination) Amendment Measure;
- NSW Environment Protection Authority (EPA) (1995). Contaminated Sites: Sampling design guidelines; and
- NSW Office of Environment and Heritage (OEH) (2011). Contaminated sites: Guidelines for consultants reporting on contaminated sites.

Data quality is typically discussed in terms of precision, accuracy, representativeness, comparability and completeness. These are referred to as the PARCC parameters. The PARCC (and additional QA) parameters are discussed within this report.

The following items form part of the QA/QC appendix:

- Repeatability;
- Precision;
- Accuracy;
- Representativeness;
- Completeness;
- Comparability;
- Sensitivity;
- Holding times;
- Procedures for anomalous samples and confirmation checking.

Quality Assurance (QA) is "a *set of activities intended to establish confidence that quality requirements will be met*" (AS/NZS ISO 9000:2005).

This encompasses all actions, procedures, checks and decisions undertaken to ensure the accuracy and reliability of analysis results. It includes routine procedures which ensure proper sample control, data transfer, instrument calibration, the decisions required to select and properly train staff, select equipment

and analytical methods, and the day to day judgments resulting from regular scrutiny and maintenance of the laboratory system.

Quality Control (QC) is "*a set of activities intended to ensure that quality requirements are actually being met*" (AS/NZS ISO 9000:2005). In other words, the operational techniques and activities used to fulfill the requirements for quality.

These are the components of QA which serve to monitor and measure the effectiveness of other QA procedures by comparison with previously decided objectives. They include measurement of the quality of reagents, cleanliness of apparatus, accuracy and precision of methods and instrumentation, and reliability of all of these factors as implemented in a given laboratory from day to day.

A complete discussion of either of these terms or the steps for implementing them is beyond the scope of this document. It is widely recognised, however, that adoption of sound laboratory QA and QC procedures is essential and readers are referred to documentation available from the National Association of Testing Authorities (NATA), if further information is required.

2 Data Quality Objectives

The Data Quality Objectives (DQOs) process is a systematic approach used to define the type, quantity and quality of data supporting decisions which relate to the environmental condition of a site. Undertaking DQOs for site assessment and remediation is a requirement of the DEC (2006). *Contaminated sites: Guidelines for NSW Site Auditors Scheme*. The DQO process was formulated by the US EPA and provides sound guidance for a consistent approach to understanding site assessment and remediation.

The DQOs are defined in a series of seven steps, outlined and addressed in Table 1.

Table 1. Data Quality Objectives

Step	Description	Comment
1	**State the problem**	There may be a potential for human health and environmental risk associated with the surface soils at the site.
2	**Identify the decision**	Results of the Detailed Site Investigation (DSI) undertaken, provide sufficient data to inform the decision-making process for further investigations and remedial actions (if required).
3	**Identify the inputs for the decision**	Inputs to the decision will include the scientific data collected during the soil assessment, as part of the DSI. This will include but not be limited to: • Borehole logs and observations made by the field scientist; and • Laboratory analysis results of sampled site soils.
4	**Define the boundaries for the study**	Site boundaries are indicated in Figure 1, Appendix A. The horizontal boundary is limited to the provided site boundary of the proposed development on the site (a primary school). The vertical boundary was limited to the first 1m of the surface soils. The temporal boundary of the project is restricted to the timing of the investigations.
5	**Develop a decision rule**	The following decision rules are identified for the DSI: Chemicals of potential concern do not exist in any of the sampled soil material at concentrations which exceed the adopted site criteria. If systematic or judgmental samples fail these decision rules, then further assessment or remediation will be required.

6	**Specify tolerable limits on decision error**	Potential for decision errors will be minimised through an analysis of a site specific worst case scenario. In this context maximum values and peak concentrations of contaminants will be used for comparison against the acceptance criteria threshold concentrations.
7	**Optimise the design for obtaining data**	The following sampling design has been developed to provide the most resource-effective sampling and analysis: Total area of the open surfaces at the site is approximately 2.5 ha. To comply with the sampling density requirements for systematic assessment provided in NSW EPA (1995) 'Sampling Design Guidelines', a minimum of 35 investigation locations were required for the soil assessment. This sampling density corresponds to 14 points per hectare and is designed to capture a hotspot with a diameter greater than or equal to 31.5 m with 95% confidence.

The following measurement data quality indicators (MDQIs) have been established, based on the DQOs of this investigation, provided in Table 2 below.

Table 2. Measurement Data Quality Indicators (MDQIS)

Parameter	Procedure	Minimum Frequency	Criteria	
			(5 to 10x LOR[4])	>10x LOR
Precision	Field Duplicates	1 in 20 - metals	<80 RPD	<50 RPD
		1 in 20 - semi-volatiles	<100 RPD	<80 RPD
		1 in 20 - volatiles	<150 RPD	<130 RPD
	Lab Replicate*	1 in 20	<50 RPD	<30 RPD
Accuracy*	Reference Material	1 in 10	60% to 140%R	80% to 120%R
	Matrix spikes			
	Surrogate spikes			
Representativeness*	Reagent Blanks	1 per batch	No detection	
	Holding Times*	Every sample	-	
Blanks**	Trip Blank	1 per batch	No detection	
Sensitivity	Limit of Reporting	Every sample	LOR < ½ site criteria	

Notes:

1. RPD – relative percentage difference
2. %R – percent recovery
3. LOR – limit of reporting
4. 4 no limit at <5x LOR
5. * the MDQI is usually specified in the standard method. If not, use the default values set out in this table
6. ** only necessary when measuring dissolved metals and volatile organic compounds in water samples. It is noted that dedicated sampling equipment was utilised, therefore rinsate blanks were not required.

Standards Australia (AS4482.1) specifies that typical MDQIs for precision should be ≤50% RPD, although low concentrations and organic compounds in particular can be acceptably outside this range. The standard stipulates that ≤50% RPD be used as a 'trigger' and values above this level of repeatability must be noted and explained.

3 Quality Control and Quality Assurance

3.1 Measurement Data Quality Objectives

Step 7 of the DQO process is a focus on the quality of the information by measurement, that is, measurement data quality objectives (MDQOs). The aim of a quality control and quality assurance (QA/QC) is to deliver data that is representative of what is sampled, precise, accurate and reproducible. As investigations involve both field and laboratory QA/QC, these are similarly divided. The objective of this section is to provide the MDQOs and the measurement data quality indicators (MDQIs), which will be used to establish whether the DQOs have been met.

All soil sampling procedures need to be undertaken according to a standard procedure, for example those procedures set out in:

- NSW Environment Protection Authority (EPA) (1995). *Contaminated sites: Sampling design guidelines*;
- NSW OEH (2011). *Contaminated sites: Guidelines for consultants reporting on contaminated sites*;
- Standards Australia (2005). *Guide to the investigation and sampling of sites with potentially contaminated soil, Part 1: Non-volatile and semi-volatile compounds, (AS 4482.1)*; and
- Standards Australia (1999). *Guide to the investigation and sampling of sites with potentially contaminated soil, Part 2: Volatile substances, (AS 4482.2*).

The laboratories used should be NATA-accredited for the analytical methods performed. Containers, sample preservation (if necessary) and holding times should be consistent with industry practices as set out in NEPM and as defined by ASTM.

Measurement data quality is typically discussed in terms of precision, accuracy, representativeness, comparability and completeness. Although not necessarily considered in list order, the following items should form part of the QA/QC data evaluation:

- Measured Parameters: precision, accuracy, repeatability (comparability), blanks; and
- Assessed Parameters: completeness, representative of site conditions, sensitivity, and holding times.

These QA parameters and the criteria used to evaluate the analytical data obtained as a result of this investigation, are addressed below.

3.2 Repeatability (Field collected intra-laboratory duplicates)

These samples provide a check on the analytical performance of the laboratory. At least 5 percent of samples (1 in 20) per day of sampling from a site are collected in duplicate. For comparability of data, it is important that there is little delay in the sample submission. For split samples, due to error associated with field splitting, an RPD of between 80 and 150% (depending on the substance) will be allowed as the MDQI.

Any value >50% RPD will be noted and discussed, as per Standards Australia requirements, with respect to its acceptability for inclusion in the data-set.

3.3 Precision

Precision is a measure of the reproducibility of results, and is assessed on the basis of agreement between a set of replicate results obtained from duplicate analyses. The precision of a duplicate determination can be measured as relative percentage difference (RPD), and is calculated from the following equation:

$$RPD = \left| \frac{X1 - X2}{\left(\frac{X1 + X2}{2} \right)} \right| \times 100$$

where: X1 is the first duplicate value
X2 is the second duplicate value

The field duplicate (FD1) and inter lab duplicate (FT1) results and calculated RPDs are presented in the following reports. All results are within the acceptable range, RPD calculations area available in the Attachment (RPD Table) of this report.

3.4 Accuracy

Accuracy is a measure of the agreement between an experimental determination and the true value of the parameter being measured. The determination of accuracy can be achieved through the analysis of known reference materials or assessed by the analysis of matrix spikes. Accuracy is measured in terms of percentage recovery as defined by the following equation:

$$\%R = \frac{SSR - SR}{SA} \times 100$$

where: %R = percentage recovery of the spike
SSR = spiked sample result
SR = sample result (native)
SA = spike added

Laboratories calculate percentage recoveries of spiked compounds, which are evaluated against control or acceptance limits taken from the appropriate method or the Contract Laboratory Program Statement of Work. If the spike recovery for a sample does not fall within the prescribed control limits, laboratory based corrective action is required.

Surrogate spikes consist of spiking non-target compounds into the sample prior to analysis. The spiked compounds are expected to behave during analysis in the same way as the target compounds. Every sample is spiked prior to extraction or analysis with surrogate compounds that are representative of the analysis. If surrogate spike recovery does not meet the prescribed control limits, samples should be reanalysed.

Spike recover results and surrogate spike recover results are available in the Laboratory Analysis Reports (Appendix F).

3.5 Representativeness

3.5.1 Data Point Evaluation

Representativeness expresses the degree to which sample data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, or an environmental condition.

Representativeness is primarily dependent on the design and implementation of the sampling program. Representativeness of the data is partially ensured by the avoidance of contamination, adherence to sample handling and analysis protocols, and use of proper chain-of-custody and documentation procedures. Blanks, holding times and field duplicates are all QA parameters that can assist in the analysis of representativeness for data point evaluation and will need to be analysed as part of the measurement data quality assessment.

3.5.2 Data Set Evaluation

Whether the data is representative of the site is checked in part by undertaking an evaluation of the whole data set to establish the data is compatible. Data compatibility is authenticated by confirming that the laws of chemistry are upheld (i.e. nitrate is not present when Eh is -250 mV), that intra-laboratory analysis relationships are consistent (i.e. BTEX is a subset of the TPH C_6-C_9 fraction), that observations and field measurements are in agreement with other field data and the laboratory data and that results are consistent with the geology, history and logic.

3.6 Completeness

The following information is required to check for completeness of data sets:

- chain-of-custody forms (completed by Greencap and the laboratory);
- sample receipt forms;
- all requested sample results reported;
- all blank data reported;
- all laboratory duplicates reported and relative percent differences (RPDs) calculated;
- all surrogate spike data reported;
- all matrix spike data reported; and
- NATA stamp on reports.

3.7 Comparability

Comparability is the evaluation of the similarity of conditions (e.g. sample depth, sample homogeneity, sampling procedures) under which separate sets of data are produced to ensure minimal common error. Data comparability should be demonstrated by the use of standardised sampling and analysis procedures. Data comparability was maintained by undertaking the investigations as follows:

- sampling during the monitoring program was conducted by trained Greencap field team using Greencap's standard operating procedures; and
- the same laboratories (Eurofins and Envirolab) were used for organic and inorganic analysis for all relevant samples using the same NATA approved analytical methods.

3.8 Sensitivity

When interferences are present in the sample, a loss of sensitivity can occur resulting in an increase in the method detection limit. In some instances (e.g. where one or more compounds have particularly high concentrations) the sample must be diluted for analysis. This increases the method detection limit by the dilution factor.

The detection limits achieved by the laboratory, when adjusted for interferences from the presence of other chemicals within the sampled matrix, must be less than half the site criteria for all analytes tested (i.e. 2 x LOR <site criteria).

3.9 Blanks

To meet the QC acceptance criteria, laboratory blanks should have no detectable concentrations of the target compounds.

3.10 Holding Times

Where standard holding times are exceeded, a discussion, using professional judgement, as to the integrity of the data will be required, taking into account such factors as field storage, laboratory storage and even sample jar characteristics.

3.11 Confirmation Checking

For blind duplicates, if one sample has more than two analytes exceeding the data quality objectives, the sample is carefully checked. If the error is not apparent, the sample is rejected. If more than three samples are rejected all the samples collected at that time are rejected. These samples are then re-sampled and reanalysed.

3.12 Field QA/QC

3.12.1 Details of Sampling Team

All fieldwork was conducted by qualified and experienced Greencap scientists trained in hazardous field investigation techniques and health and safety procedures.

3.12.2 Sampling Controls

Soil sampling for chemical analyses and the completion of field documentation entailing sample locations, soil borelogs and general field observations were conducted using Greencap standard operating procedures, and in accordance with the *Sampling Design Guidelines* (NSW EPA, 1995), NEPM (NEPC, 2013), AS4482.1-2005.

Boreholes were advanced by an excavator, allowing for ample collection using a decontaminated trowel. All sampling implements were cleaned between sampling locations, and gloves changed between sampling locations. Once collected, the samples were immediately transferred to laboratory-supplied air-tight sample containers of appropriate composition. These containers were then promptly stored on ice, to prevent the loss of potential volatile components and transported to a NATA accredited laboratory.

Samples were delivered to NATA accredited laboratories (Eurofins and Envirolab) under a completed Chain of Custody (CoC). Copies of the CoC documentation and laboratory analysis reports are provided in Appendix F of the main DSI report.

3.13 Laboratory QA/QC

3.13.1 Holding time

All analysed primary samples were extracted and analysed within acceptable holding times as defined in AS4482.1-2005.

As appropriate sampling procedure was followed and samples were kept refrigerated. No significant degradation to samples has been deemed to have occurred.

3.1 QA/QC Data Evaluation

RPD values for soil samples are tabulated in the attachment section of this report (QA/QC Attachment – RPD Tables). All RPD values for intra- and inter-laboratory samples were within the acceptable criteria defined in Table 2. Data quality objectives for all analysis undertaken on this project are reliable and accurate.

Extraction and analysis of primary samples were within the relevant prescribed holding times. As appropriate sampling procedure was followed and samples were kept refrigerated no significant degradation to samples is thought to have occurred.

The internal laboratory control results (blanks, duplicates and spikes) are considered to be acceptable. All results adhered to chemical laws or were not outside logical explanation. Based on information presented in Section 3 it can be confidently stated that the MDQO's for this project have been met and the data set is considered to be reliable.

4 QAQC Appendix References

- American Public Health Association (APHA) 2005, *Standard methods for the examination of water and waste-water*, 21st edition, APHA, Washington DC.
- Australian and New Zealand Environment and Conservation Council 1992, *Australian and New Zealand Guidelines for the assessment and management of contaminated sites,* Australia and New Zealand Environment Council, National Health and Medical Research Council, Melbourne, Victoria.
- Australian/New Zealand Standard 2008, *Quality management systems - Requirements* (AS/NZS ISO 9001:2008) Standards Australia/Standards New Zealand, Sydney/Wellington.
- International Organisation for Standardisation 2005, *Quality management systems – Fundamentals and vocabulary*, (ISO 9000:2005).Lock, WH 1996, *Composite sampling*, National Environmental Health Forum (NEHF), Adelaide, SA.
- National Environment Protection Council (NEPC) 1999, *National environment protection (assessment of site contamination) measure*, National Environment Protection Council, Adelaide, SA.
- NSW Department of Environment and Conservation (2006), Contaminated sites: Guidelines for NSW Site Auditors Scheme (2nd edition).
- NSW Environment Protection Authority (EPA) 1995, *Contaminated sites: Sampling design guidelines,* EPA NSW, Chatswood, NSW.
- NSW EPA 2011, *Contaminated sites: Guidelines for consultants reporting on contaminated sites,* EPA NSW, Chatswood, NSW.
- Rayment, GE & Higginson, FR 1992, Australian laboratory handbook of soil and water chemical methods, Inkarta Press, Melbourne.

5 QA/QC Attachment – RPD Table

SAMPLE BATCH DATA QA SUMMARY SHEET

Project Name: Detailed Site Assessment	**34-38 Schofields Road, Schofields**	**Project Number:**	**J157372 (J160656)**
Primary Laboratory:	**Eurofins**	**Lab Certificate Number:**	**628453-S & 632214-S**
Secondary Laboratory:	**Envirolab**	**Lab Certificate Number:**	**205951**
Date Sampled:	**16/12/2018**	**Sample Medium:**	**Soil**

Sample Information

Number of Primary Samples:	**2**	**Number of Triplicate (Interlab dup) Samples:**	**1**
Number of Duplicate Samples:	**2**	**Number of Other Field QAQC Samples:**	**0**

Documentation and Sample Handling Information

	Y/N	Comments
COC completed properly?	Y	Signed by both field scientists and labs personnel.
All requested analysis completed?	Y	
Samples received in appropriate condition for analysis?	Y	
Samples analysed within appropriate holding times?	Y	
Sample volumes sufficient for QC analysis?	Y	
Are there non-NATA accredited methods used?	N	
Chromatograms supplied as appropriate?	N/A	Not required
Laboratory reports signed by authorised personnel?	Y	

QAQC Sample Information (Method Blank - MB, Rinsate Blank - RB, Field Blank - FB, Trip Blank - TB)

Type	Sample ID	Comments
Lab Method Blanks	Method Blank	All results less than Limit Of Reporting (LOR)
Trip Blank	TB	All results less than Limit Of Reporting (LOR)

Trip Spike Information (BTEX)

Analyte	Spike Concentrations	Recovery Concentration	% Recovery	Comments
Benzene	-	-	105	Trip spike recoveries all pass lab control limits
Toluene	-	-	114	
Ethylbenzene	-	-	114	
meta- & para-Xylene	-	-	110	
Lead	-	-	116	

Laboratory Control Spike (LCS) Analyses

Analyte Group	Comments
TRH, BTEXN, Metals	All recoveries are within lab control limits

Matrix Spike (MS) Analyses

Analyte Group	Comments
TRH, BTEXN, Metals	All recoveries are within lab control limits

Laboratory Duplicates (LD) Analyses

Analyte Group	Comments
TRH, BTEXN, Metals	All values are within 30% acceptance limits

Field Duplicates (FD) Analyses

Analyte Group	Primary ID	Duplicate ID	Comments
TRH, Metals, BTEX	TP12 (0.3-0.5)	FD01	All FD1 RPD results within acceptable RPD criteria. TRH BTEX within acceptable RDP range. Elevated metal RPD. Results less than 5 times LOR, therefore considered acceptable.
TRH, Metals, BTEX	TP11 (0.1-0.3)	FD02	All FD1 RPD results within acceptable RPD criteria. TRH BTEX within acceptable RDP range. Elevated metal RPD. Results less than 5 times LOR, therefore considered acceptable.
TRH, Metals, BTEX	TP34A (0.1-0.2)	FD01A	All FD1 RPD results within acceptable RPD criteria. TRH BTEX within acceptable RDP range. Elevated metal RPD. Results less than 5 times LOR, therefore considered acceptable.

Inter-Lab Duplicates Analyses

Analyte Group	Primary ID	Duplicate ID	Comments
TRH, Metals, BTEX	TP05 (0.5-0.6)	FT1	All FT1 RPD results within acceptable RPD criteria

Surrogate Compound Monitoring Analyses

Analyte Group	Sample ID	Comments
TRH, Metals, BTEX	Primary Samples	For all regular sample matrices, NO surrogate recovery outliers occur.

Overall Comments

This batch has been validated and is considered suitable for interpretive use and site assessment

Note: Data validation assesses each analyte in terms of all the data validation variables and only the exceedances and outliers are reported in this form.
*When concentrations are less than the LOR for both primary and duplicate/triplicate results, not all RPDs are calculated

Performed By: **Nicole Boukarim** **Checked By: Matthew Barberson**
Date: **20/12/2018** **Date: 20/12/2018**

J157372
Field Duplicate/Triplicate RPDs
Detailed Site Assessment: 34-38 Schofields Road, Schofields NSW

							FD1	FT1
Our Label			**TP5 (0.5-0.6)**	**FT1**	**TP12(0.3-0.5)**	**FD01**		
Laboratory Label			S18-No24374	205951-1	S18-No24381	S18-No24405	**RPD Primary vs Duplicate**	**RPD Primary vs Interlab**
Sample Date			16/11/2018	16/11/2018	16/11/201	16/11/2018		
Sample Type			**PS**	**IL**	**PS**	**FD**		
Analyte	**Units**	**LOR**	**Result**					
BTEX								
Benzene	mg/kg	0.1	< 0.1	<0.2	< 0.1	< 0.1	N/A	N/A
Ethylbenzene	mg/kg	0.1	< 0.1	<1	< 0.1	< 0.1	N/A	N/A
m&p-Xylenes	mg/kg	0.1	< 0.2	<2	< 0.2	< 0.2	N/A	N/A
o-Xylene	mg/kg	0.2	< 0.1	<1	< 0.1	< 0.1	N/A	N/A
Toluene	mg/kg	0.1	< 0.1	<0.5	< 0.1	< 0.1	N/A	N/A
Xylenes - Total	mg/kg	0.3	< 0.3	<1	< 0.3	< 0.3	N/A	N/A
Heavy Metals								
Arsenic	mg/kg	2	9.8	7	4.5	4.2	7%	33%
Cadmium	mg/kg	0.4	< 0.4	<0.4	< 0.4	< 0.4	N/A	N/A
Chromium	mg/kg	5	13	9	15	17	13%	36%
Copper	mg/kg	5	15	8	17	27	45%	61%
Lead	mg/kg	5	15	17	36	43	18%	13%
Mercury	mg/kg	0.1	< 0.1	<0.1	< 0.1	< 0.1	N/A	N/A
Nickel	mg/kg	5	< 5	8	9.4	8.8	7%	N/A
Zinc	mg/kg	5	29	38	99	140	34%	27%
Total Recoverable Hydrocarbons - 1999 NEPM Fractions								
TRH C10-36 (Total)	mg/kg	< 50	< 50	<50	< 50	< 50	N/A	N/A
TRH C10-C14	mg/kg	< 20	< 20	<50	< 20	< 20	N/A	N/A
TRH C15-C28	mg/kg	< 50	< 50	<100	< 50	< 50	N/A	N/A
TRH C29-C36	mg/kg	< 50	< 50	<100	< 50	< 50	N/A	N/A
TRH C6-C9	mg/kg	< 20	< 20	<25	< 20	< 20	N/A	N/A
Total Recoverable Hydrocarbons - 2013 NEPM Fractions								
Naphthalene	mg/kg	0.5	< 0.5	<1	< 0.5	< 0.5	N/A	N/A
TRH >C10-C16	mg/kg	50	< 50	<50	< 50	< 50	N/A	N/A
TRH >C10-C16 less Naphthalene (F2)	mg/kg	50	< 50	<50	< 50	< 50	N/A	N/A
TRH >C10-C40 (total)*	mg/kg	100	< 100	<50	< 100	< 100	N/A	N/A
TRH >C16-C34	mg/kg	100	< 100	<100	< 100	< 100	N/A	N/A
TRH >C34-C40	mg/kg	100	< 100	<100	< 100	< 100	N/A	N/A
TRH C6-C10	mg/kg	20	< 20	<25	< 20	< 20	N/A	N/A
TRH C6-C10 less BTEX (F1)	mg/kg	20	< 20	<25	< 20	< 20	N/A	N/A

-: Not analysed
PS: Primary Sample
FD: Field Duplicate TP5 (1.4-1.5)
IL: Inter-Laboratory Duplicate
N/A: Not Applicable (RPDs not calculated where one or more result <PQL)

Acceptable RPDs:			<5 x LOR	
			>5 x LOR	

Acceptable RPD limits reached

J157372
Field Duplicate/Triplicate RPDs
Detailed Site Assessment: 34-38 Schofields Road, Schofields NSW

							FD2	FD01A
Our Label			**TP11 (0.1-0.3)**	**FD02**	**TP34A (0.1-0.2)**	**FD01A**		
Laboratory Label			S18-No24380	S18-No24406	S18-De12286	S18-De12288	**RPD**	**RPD**
Sample Date			16/11/2018	16/11/2018	10/12/2018	10/12/2018	**Primary vs**	**Primary vs**
Sample Type			**PS**	**FD**	**PS**	**FD**	**Duplicate**	**Duplicate**
Analyte	**Units**	**LOR**	**Result**					
BTEX								
Benzene	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	N/A	N/A
Ethylbenzene	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	N/A	N/A
m&p-Xylenes	mg/kg	0.1	< 0.2	< 0.2	< 0.2	< 0.2	N/A	N/A
o-Xylene	mg/kg	0.2	< 0.1	< 0.1	< 0.1	< 0.1	N/A	N/A
Toluene	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	N/A	N/A
Xylenes - Total	mg/kg	0.3	< 0.3	< 0.3	< 0.3	< 0.3	N/A	N/A
Heavy Metals								
Arsenic	mg/kg	2	10	7.6	7.7	13	27%	51%
Cadmium	mg/kg	0.4	< 0.4	< 0.4	< 0.4	< 0.4	N/A	N/A
Chromium	mg/kg	5	13	7.8	12	13	50%	10%
Copper	mg/kg	5	16	12	15	20	N/A	N/A
Lead	mg/kg	5	31	22	23	14	34%	40%
Mercury	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	N/A	N/A
Nickel	mg/kg	5	7.1	5.5	8.6	6.3	N/A	N/A
Zinc	mg/kg	5	43	35	52	28	21%	39%
Total Recoverable Hydrocarbons - 1999 NEPM Fractions								
TRH C10-36 (Total)	mg/kg		< 50	< 50	< 50	< 50	N/A	N/A
TRH C10-C14	mg/kg		< 20	< 20	< 20	< 20	N/A	N/A
TRH C15-C28	mg/kg		< 50	< 50	< 50	< 50	N/A	N/A
TRH C29-C36	mg/kg		< 50	< 50	< 50	< 50	N/A	N/A
TRH C6-C9	mg/kg		< 20	< 20	< 20	< 20	N/A	N/A
Total Recoverable Hydrocarbons - 2013 NEPM Fractions								
Naphthalene	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	N/A	N/A
TRH >C10-C16	mg/kg	50	< 50	< 50	< 50	< 50	N/A	N/A
TRH >C10-C16 less Naphthalene (F2)	mg/kg	50	< 50	< 50	< 50	< 50	N/A	N/A
TRH >C10-C40 (total)*	mg/kg	100	< 100	< 100	< 100	< 100	N/A	N/A
TRH >C16-C34	mg/kg	100	< 100	< 100	< 100	< 100	N/A	N/A
TRH >C34-C40	mg/kg	100	< 100	< 100	< 100	< 100	N/A	N/A
TRH C6-C10	mg/kg	20	< 20	< 20	< 20	< 20	N/A	N/A
TRH C6-C10 less BTEX (F1)	mg/kg	20	< 20	< 20	< 20	< 20	N/A	N/A

-: Not analysed
PS: Primary Sample
FD: Field Duplicate TP5 (1.4-1.5)
IL: Inter-Laboratory Duplicate
N/A: Not Applicable (RPDs not calculated where one or more result <PQL)

Acceptable	<5 x LOR	Any RPD acceptable
RPDs:	>5 x LOR	0 - 50% RPD acceptable

Acceptable RPD limits reached