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**Due Diligence Soil Contamination Assessment and Indicative Waste
Classification: Proposed Development at Kent Road Public School – 126
Kent Road, Marsfield, NSW**

Dear Mark,

1 BACKGROUND & INTRODUCTION

Arcadis Australia Pacific Pty Ltd (Arcadis) was commissioned by Asset Geotechnical Engineering Pty Ltd (Asset) to complete a due diligence soil contamination assessment, including an indicative waste classification, within the proposed development area at Kent Road Public School (the site). The site is located at 126 Kent Road, Marsfield, NSW. The site location is provided in **Figure 1, Appendix A** and the proposed development areas are shown on **Figure 2, Appendix A**.

A Preliminary Site Investigation (PSI) was previously completed by Arcadis (April 2018; ref: 10019954RP01) which concluded that there was Low Risk for potential contamination. Whilst there was a Low Risk, a due diligence limited soil assessment was recommended to be completed within the footprint of the proposed development due to the identification of the following:

- Likely presence of fill materials of unknown origin, in particular within raised garden beds and the fill mound identified in the eastern portion of the site;
- Building materials containing asbestos;
- Lead paint; and
- Site history as a former market garden and orchard.

The proposed development area on the site occupies an approximate area of 5,500m².

The objective of the due diligence soil contamination assessment was to provide an indication of soil quality within the footprint of the proposed development areas and the likelihood of potential risk to human health (both workers and occupants/students) and ecological receptors.

Further, as the exact locations and volumes of any development excavations are unknown, the objective of this letter report was also to provide an indicative in-situ waste classification of the soils which may require excavation and offsite disposal to a licenced landfill facility. Arcadis note that this letter does not constitute a complete waste classification certificate, but only provides information on the likely waste classification of the materials for due diligence purposes.

All materials requiring removal from the site will need to be classified in accordance with Waste Classification Guidelines (NSW EPA, 2014).

2 SCOPE OF WORKS

The following scope of work was completed to achieve the due diligence soil contamination assessment and indicative in-situ waste classification of the material within the footprint of the proposed development areas:

- Eight boreholes were completed using a hand auger to a maximum depth of 0.3m below ground level (bgl) by a qualified and suitably experienced environmental scientist. Boreholes locations were selected using mixture of both targeted judgemental approach (based on the findings of the PSI) and a general systematic grid approach in accessible locations of the development area;
- Each soil sample location was logged in general accordance with the Unified Soil Classification System (USCS). Each soil sample collected was screened with a Photo-ionisation Detector (PID) to detect the potential presence of volatile organic compounds (VOCs);
- One soil sample of the fill/near surface material (0.2m bgl) from each borehole location was submitted to the NATA accredited laboratory Envirolab for analysis of:
 - Total recoverable hydrocarbons (TRH);
 - Benzene, toluene, ethyl benzene, xylenes and naphthalene (BTEXN);
 - Polycyclic aromatic hydrocarbons (PAHs);
 - Eight Priority Heavy Metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc);
 - Organochlorine/organophosphate pesticides (OCP/OPPs)
 - Polychlorinated Biphenyls (PCBs); and
 - Asbestos (WA/NEPM 2013).
- For quality assurance / quality control (QA/QC) purposes, an intra-laboratory (DUP1) and an inter-laboratory (TRIP1) duplicate sample was collected at a rate of 1:20 and analysed for the above analytes. A trip blank (FB) was also submitted with samples and analysed for selective VOC analytes;
- One (1) 10L sample from each of the eight borehole locations was collected from representative borehole location for assessment of Asbestos Containing Materials (ACM) in accordance with NEPC (2013) NEPM:
- Sample screened manually on-site through a < 7 mm sieve or spread out for inspection on a contrasting colour material (recommended for FA).
- Identified ACM and Friable Asbestos (FA) weighed to calculate asbestos soil concentration for individual samples as per NEPC (2013) NEPM.
- Collection of a 500mL soil sample and submitted for laboratory analysis of asbestos as FA and asbestos fines (AF).
- Comparison of results against the relevant NEPC (2013) NEPM HIL-A, HSL-A&B and EIL/ESL/ML urban residential guidelines (adopted as a screening level for primary schools and workers in a trench), and the NSW EPA (2014) Waste Classification Guidelines; and
- Preparation of a brief due diligence letter report detailing the findings for the soil assessment, including an indication of soil quality within the footprint of the proposed development areas, the likely waste classification and the likelihood of the potential risk to human health (both workers and occupants/students) and ecological receptors.

3 LIMITATIONS

The findings of this report are based on the scope of work outlined in **Section 2**. Arcadis performed its services in a manner consistent with the normal level of care and expertise exercised by members of the environmental assessment profession. No warranties, expressed or implied are made.

Subject to the scope of work, Arcadis' assessment was limited strictly to identifying the environmental conditions associated with the subject property and does not include evaluation of any other issues. The absence of any identified hazardous or toxic materials should not be interpreted as a guarantee that such materials do not exist on the subject property.

This report does not comment on any regulatory obligations based on the findings. This report relates only to the objectives stated and does not relate to any other work undertaken for the Client. It is a report based on the results and conclusions for the concentrations of contaminants observed in soil at the time of the sample collection. These conditions may change with time and space.

All conclusions and recommendations regarding the property are the professional opinions of Arcadis personnel involved with the project, subject to the qualifications made above. While normal assessments of data reliability have been made, Arcadis assumes no responsibility or liability for errors in any data obtained from regulatory agencies, statements or sources outside of Arcadis, or developments resulting from situations outside the scope of this project.

Arcadis is not engaged in environmental assessment and reporting for the purpose of advertising sales promoting, or endorsement of any client interests, including raising investment capital, recommending investment decisions, or other publicity purposes. The client acknowledges that this report is for the exclusive use of the client.

This investigation and scope of classification has necessarily been limited to the specified depth of final sampling per borehole. Materials at depths greater than the classification depth, in adjacent areas, or inconsistent with the soil descriptions above are not included within the scope of this report and are subject to separate classification. The client must take care when excavating the soil materials to not contaminate the soil materials with materials not included within the scope of this report.

4 IN SITU SOIL SAMPLING METHODOLOGY

The fieldwork was undertaken on 13 July 2018 by Arcadis' Environmental Scientist Jack O'Shaughnessy and included subsurface investigation at eight pre-determined locations within the footprint of the proposed development areas.

Eight boreholes (SB01 – SB08) were completed using a hand auger to a maximum investigation depth of 0.3m below ground level (bgl). Borehole and soil sampling locations are illustrated in **Figure 2, Appendix A**. Copies of the borelogs are provided in **Appendix B**.

The following procedures were followed during fieldwork to ensure quality control:

- Encountered borehole lithology was described in general accordance with the Unified Soil Classification System (USCS) and details of any discolouration, staining, odours or other indicators of contamination were also noted.
- The soil samples were collected directly from the hand auger. Efforts were made to minimise disturbance of the material being sampled to the extent practicable. Such techniques included significantly reducing the rotational speed of the augers as the target sampling depth was being approached, sampling only from the bottom of the auger and removing the outside layer of material, to prevent cross-contamination and minimise the potential for loss of volatile organic compounds (VOCs).

- Samples were collected from the hand auger using clean new nitrile gloves to prevent cross-contamination.
- Part of the soil sample was placed into snap lock plastic bag for screening with a photo-ionisation detector (PID) and the other being placed directly into a laboratory prepared 250ml glass jar with the details of the sample, including the sample name, the job number, the date of sample and the sample depth. A separate 500mL sample was placed into snap lock plastic bag for laboratory analysis of asbestos in accordance with the NEPM (1999) as amended 2013.
- One intra-laboratory duplicate sample (DUP1) and one inter-laboratory duplicated sample (TRIP1) was collected from primary sample location SB01 (0.2m).
- Sample preservation was undertaken in accordance with NEPC (2013), with samples immediately placed and stored in an ice filled esky to keep them chilled, prior to being couriered to the laboratory under a signed chain of custody (COC) form filled out with the required analysis.
- At each borehole location, a 10L bulk sample was also collected from the near surface (0.1-0.3m depth) and screened through a 7mm sieve. The material remaining in the sieve was inspected for bonded ACM and weighed (if any).
- Samples were transferred to the laboratory under a completed Chain-of-Custody.

In summary, soil samples were collected in accordance with Arcadis standard operating procedures which are based on the NEPM, Australian Standard AS4482.1-2005 and AS4482.2-1999 and OEH requirements.

5 DATA QUALITY ASSESSMENT

Field QA/QC - Statement of Duplicate Frequency:

The following intra-laboratory duplicates and inter-laboratory duplicates were collected within the field during effluent sampling along with their associated parent sample:

- QA/QC samples DUP1 and TRIP1 was collected from parent sample SB01 (0.2m).

Soil sample field duplicates were collected at 1:8 sample frequency, which is within the recommended 1:20 QA/QC frequency.

Laboratory QA/QC:

- Holding Times: Holding times are included on the laboratory reports in **Appendix D**. All samples were received and analysed within the specified holding times.
- Laboratory Accreditation for Analytical Methods Used: The primary laboratory used was Envirolab Sydney, which is NATA accredited to ISO 17025. The secondary laboratory used for analysis was ALS Environmental, which is also NATA accredited.
- Percent Recoveries of Spikes and Surrogates: All matrix spikes and sample surrogate recoveries were within acceptable ranges.
- Standard solution results: All standard solution (or LCS – laboratory control sample) were within acceptable ranges.
- Laboratory duplicate results: All laboratory duplicates were within acceptable ranges.
- Laboratory blank results: All laboratory blank results were within acceptable ranges.

QA/QC Data Evaluation:

- Documentation completeness:
 - Chain-of-custody forms were completed and appropriate.
- Data completeness:

- All samples were received by the laboratories and analytical results reported including laboratory QA/QC.
- Data comparability:
 - Arcadis standard operating procedures (SOPs), Australian Standards and industry best practice were followed during sampling.
 - Consistent field conditions and staff were used during sampling.
 - Standard analytical methods were used by the laboratories for all analyses.
 - The limits of reporting are appropriate and consistent from each laboratory.
 - All samples were collected using the same method over the sampling event.
- Data representativeness:
 - The frequency of laboratory blanks was acceptable and the results were within specified ranges.
- Precision:
 - Field duplicates were collected at a rate of 1:8 for soil samples. These rates are within the Australian Standard (AS1482.1 1997) and Arcadis' QA frequency ranges.
 - Inter-laboratory duplicates were collected at the same rate as intra-laboratory duplicates.
 - Laboratory duplicates were collected at the expected rate. The laboratory duplicate RPDs were within acceptable ranges.

Data Precision - Relative Percentage Difference:

Relative percent difference (RPD) between primary samples and complementary field and laboratory duplicates shall be within appropriate limits. Precision is measured using the standard deviation 'SD' or '%RPD'. Replicate data for field duplicates of organics is expected to be as follows:

- RPD criteria of 50% or less, for concentrations $\geq$ 10 times EQL;
- RPD criteria of 75% or less, for concentrations between 5 and 10 times the EQL; and
- RPD criteria of 100% or less, for concentrations $<$ 5 times EQL.

Replicate data for field duplicates for inorganics, including metals is expected to be as follows:

- RPD criteria of 30% or less, for concentrations $\geq$ 10 times EQL;
- RPD criteria of 75% or less, for concentrations between 5 and 10 times the EQL; and
- RPD criteria of 100% or less, for concentrations $<$ 5 times EQL.

A summary of the RPDs calculations are presented in Table 3, **Appendix C**. Arcadis notes that RPDs were only calculated for groups of physicochemical compounds with detections above the laboratory detection limits.

Calculated RPDs were reported within the acceptable range for all primary, duplicate and triplicate samples.

Considering that the RPDs were within the acceptable range the sampling or analysis techniques, and consequently the analytical results are considered appropriate for the purposes of this report.

6 FIELD OBSERVATIONS

The general site soil lithology encountered during borehole investigation was as follows:

- **0.0 to 0.05m bgl:** Grass or Bark-chip surface cover.
- **0.05 to 0.3m bgl:** Silty Clay, brown, dry and hard. Some locations had some minor sand/gravel and organic inclusions.

No odours or staining were observed in any of the samples, with PID measurements reported below 0.3ppm.

No ACM was observed in any of the boreholes during sampling. No ACM was observed following sieving of the 10L sample.

Bore logs are provided in **Appendix B**.

7 ANALYTICAL RESULTS

7.1.1 Development Area Suitability

The summary of the soil sample laboratory results compared against land use suitability assessment criteria are shown in **Table 1, Appendix C**. The laboratory certificates are provided in **Appendix D**.

Soils collected were compared against the relevant NEPC (2013) NEPM HIL-A, HSL-A&B and EIL/ESL/ML urban residential guidelines to determine the potential risk to human health and environmental receptors.

Concentrations of BTEX, PAHs, OCPs, OPPs, PCBs and eight priority heavy metals were reported below the adopted NEPC (2013) NEPM HIL-A, HSL-A&B and EIL/ESL/ML urban residential guidelines. Additionally, there was no asbestos detected in any of the soil samples analysed.

The following exceedances of the adopted soil criteria were reported:

- Concentrations of TRH F2 (>C₁₀-C₁₆ minus naphthalene) were reported exceeding the tier 1 NEPC (2013) NEPM HSL A&B criteria of 230mg/kg in the soil samples SB03-0.2 (410mg/kg) and SB07-0.2 (270mg/kg).
- Concentrations of TRH F2 (>C₁₀-C₁₆) were reported exceeding the tier 1 NEPC (2013) NEPM ESL criteria of 120mg/kg in the soil samples SB03-0.2 (410mg/kg), SB07-0.2 (270mg/kg) and SB08-0.2 (150mg/kg). Concentrations of TRH F3 (>C₁₆-C₃₄) were reported exceeding the tier 1 NEPC (2013) NEPM ESL criteria of 1300mg/kg in the soil sample SB03-0.2 (3,000mg/kg).

7.1.2 Indicative Waste Classification

The summary of the soil sample laboratory results compared against the NSW EPA (2014) *Waste Classification Guidelines Part 1: Classifying Waste* are shown in **Table 2, Appendix C**. The laboratory certificates are provided in **Appendix D**.

All samples reported concentrations of TPH, BTEX, PAHs, OCPs, OPPs, PCBs and eight priority heavy metals below the CT1 General Solid Waste criteria. No asbestos was reported above the laboratory limit of detection.

As such, the indicative in-situ waste classification of the proposed fill material is:

- **General Solid Waste (Non Putrescible).**

8 CONCLUSIONS AND RECOMMENDATIONS

Based on the above key findings, the following conclusions and recommendations are made:

Development Area Land Use Suitability:

- The reported TRH F2 (>C₁₀-C₁₆ minus naphthalene) tier 1 NEPC (2013) NEPM HSL A&B exceedances in soil samples SB03-0.2 and SB07-0.2 indicate that there is a potential risk to human health via the vapour intrusion pathway if buildings were located over these locations. Arcadis note that both these samples were collected from the raised garden beds, which are understood to be comprised of imported materials.
- Further assessment, delineation and/or remediation of these soils should be completed to ensure that there is no unacceptable risk to human health for the proposed development.
- Arcadis note that these soils within the garden beds may be removed during the proposed development. If these soils are removed from site during development, validation samples of the raised garden bed footprint should be completed once removed to ensure that any underlying remaining soils do not pose an unacceptable risk to human health.
- If these soils will remain with the proposed development, further assessment may include (but not limited to):
 - Re-sampling and analysis for TRH with Silica Gel Clean-up analysis to determine if the reported TRH F2 is of a petrochemical origin or if its natural biological origin which are generally considered much less toxic to humans.
 - Collection of additional soil samples in the development area to increase the data set so that statistical analysis can be applied to determine the 95% UCL and compared against the NEPC (2013) NEPM HSL A&B criteria.
- The reported TRH F2 and F3 tier 1 NEPC (2013) NEPM ESL exceedances indicate that there is potential risk to territorial ecology, which may impact the growth of plants/vegetation and sub-surface organisms. Arcadis notes that there was no obvious signs of plant or vegetation stress at the exceedance locations.
 - As above, depending on the layout of the proposed development, further assessment, delineation and/or remediation of these soils may be completed to ensure that there is no unacceptable risk to ecological receptors.
 - Generally, the NEPC (2013) NEPM ESL only apply in areas where soils are accessible for plant/vegetation. They generally do not apply in areas covered by hardstand or building footprint, or where planter boxes are used. Therefore, further assessment or remediation will only be required if these exceedances are located outside of building or hardstand footprints.
- The soil results indicated that there is no unexpected risk to human health for construction or maintenance workers. As the base of potential fill material was not encountered during the current investigation, potential exists for fill material of different type or quality to exist beyond 0.3m bgl. Therefore, indication of soil quality and the likelihood of a potential risk to human health (both workers and occupants) is recommended should excavation depth exceed 0.3m bgl.

Based on the above, Arcadis consider that the site can be made suitable for the proposed development, subject to the implementation of further soil assessment and/or soil remediation and validation works.

Indicative Waste Classification:

- Based on the results of this assessment, the soil is the indicative in-situ waste classification of the proposed fill material is:
- **General Solid Waste (Non Putrescible)**
- Further characterisation of the material must be completed prior to classification for offsite waste disposal purposes or for reuse onsite. Arcadis note that this letter does not constitute a complete waste classification certificate, but only provides information on the likely waste classification of the materials for due diligence purposes
- All materials requiring removal from the site will need to be classified in accordance with NSW EPA (2014) Waste Classification Guidelines. A suitable sampling density should be adopted, appropriate to fully characterise the actual volume of material to be removed. This material should only be transported offsite to an appropriately licensed landfill for disposal or to an appropriately licenced recycling facility which is licenced to receive this material, and waste disposal dockets kept for 'cradle to grave' waste tracking purposes.
- The material must not contain any asbestos containing material, if asbestos containing material is observed within the material during excavation, then the waste classification would also be Special Waste Asbestos.
- If any indication of other contaminants such as anthropogenic inclusions or chemical odours are noted during disturbance or removal of the soil, further advice must be obtained from a suitably qualified environmental consultant prior to offsite disposal.

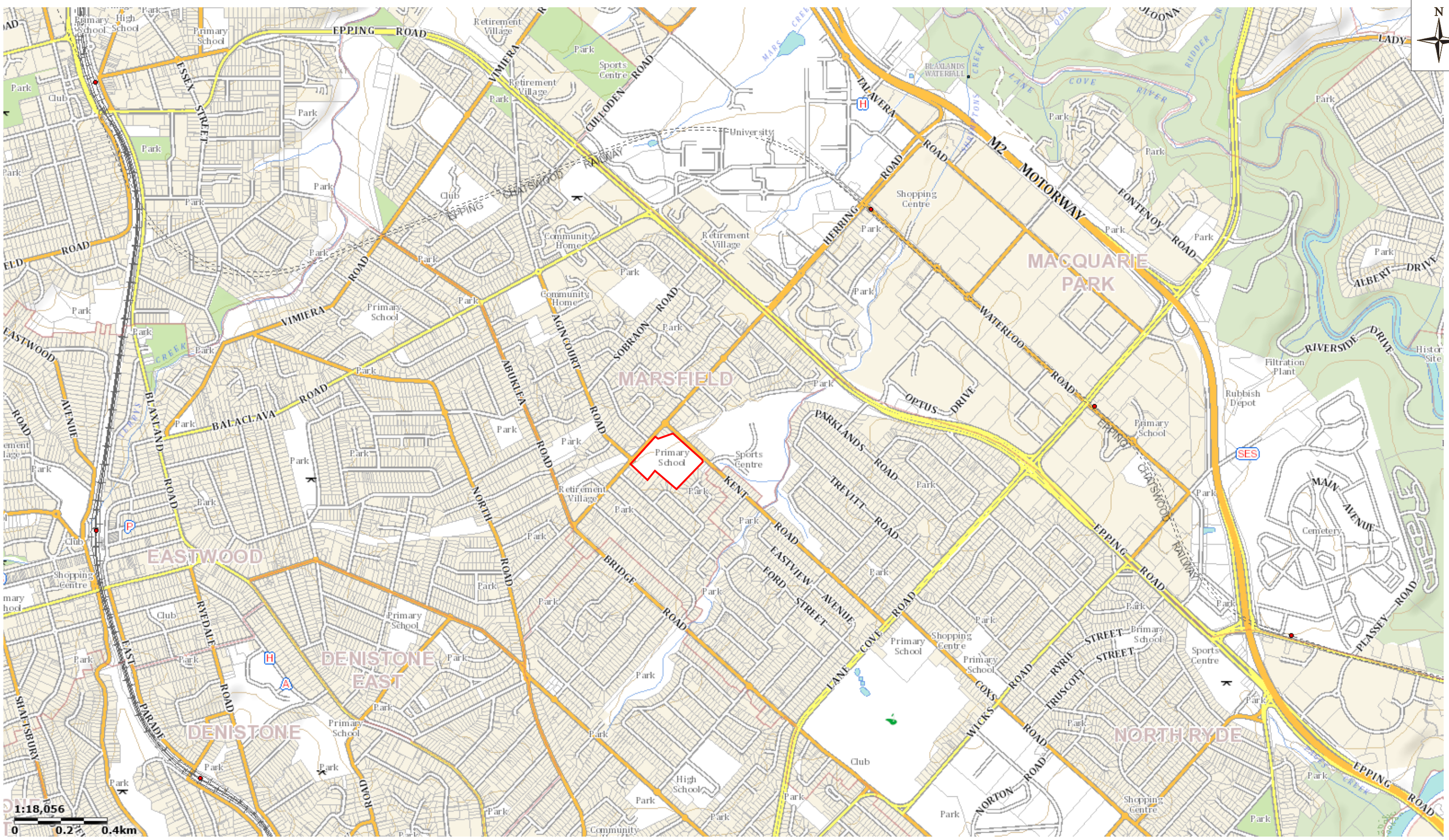
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Should you have any questions or require further information, please contact the undersigned.

Yours sincerely,



Lee Douglass
Principal Hydrogeologist – Environmental Restoration
0412 625 989



— Site Boundary



- Site Boundary
- Proposed Development Footprint (Study Area)
- ✚ Borehole Location

Kent Road Borehole Logs

Borehole ID	Depth (mbgl)	Description	PID (ppm)	Field Sieve Results from 10L sample >7mm Asbestos
SB01	0.0-0.05	Grass and Topsoil, organic material inclusions, Silty Clay, dry. No ACM, odour or staining observed.	0.2	
	0.05-0.3	Silty Clay, brown, dry, hard, some organic material inclusions. No odour or staining.	0.1	No ACM observed in sample
SB02	0.0-0.1	Bark-chips (Garden bed). No ACM, odour or staining observed.	0.1	
	0.1-0.3	Silty Clay, brown, dry, with some sand. No odour or staining.	0.2	No ACM observed in sample
SB03	0.0-0.1	Bark-chips (Garden bed) and some organic material inclusions. No ACM, odour or staining observed.	0.1	
	0.1-0.3	Silty Clay, brown, dry, some organic material inclusions, soft. No odour or staining.	0.2	No ACM observed in sample
SB04	0.0-0.05	Grass, organic material. No ACM, odour or staining observed.	0.0	
	0.05-0.3	Silty Clay, brown, dry, soft, with some sand. No odour or staining.	0.1	No ACM observed in sample
SB05	0.0-0.05	Silty Clay, brown, soft, dry, with some coarse-grained sands and some organic material inclusions. No ACM, odour or staining observed.	0.2	
	0.05-0.3	Silty Clay, brown, soft, dry. No odour or staining.	0.1	No ACM observed in sample
SB06	0.0-0.05	Grass, organic material. No ACM, odour or staining observed.	0.0	
	0.05-0.3	Silty Clay, brown, soft, dry, with some coarse-grained sands and some organic material inclusions. No odour or staining.	0.3	No ACM observed in sample
SB07	0.0-0.05	Bark-chips (Garden bed) and some organic material inclusions. No ACM, odour or staining observed.	0.2	
	0.05-0.3	Silty Clay, brown, dry, soft.	0.2	No ACM observed in sample
SB08	0.0-0.05	Bark-chips (Garden bed) and some organic material inclusions. No ACM, odour or staining observed.	0.0	
	0.05-0.3	Silty Clay, brown, soft, dry, with some coarse-grained sands. No odour or staining.	0.1	No ACM observed in sample

Table 1: Summary Result Table - Human Health and Environmental Soil Assessment Criteria
Kent Road Public School

[illegible]

Env Stds Description
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil: Management limits are applied after consideration of relevant ESLs and HSLs

Env Stds Comments

#1:PCBs: HIL refers to non-dioxin like PCBs only. Where PCB source is known, or suspected at a site, a site-specific assessment of exposure to all PCBs (inc dioxin like PCBs) should be undertaken

#2:Arсенic: HIL assumes 70% oral bioavailability. Site-specific bioavailability maybe important and should be considered where appropriate (refer Schedule B7).

#3:Lead: HILs A,B,C based on blood lead levels (IEUBK & HIL D on adult lead model for where 50% bioavailability considered. Site-specific bioavailability should be considered where appropriate.

#4:Elemental mercury: HIL does not address elemental mercury, a site specific assessment should be considered if elemental mercury is present, or suspected to be present.

#5:Total PAHs: Based on sum of 16 most common reported (WHO 98). HIL application should consider presence of carcinogenic PAHs (should meet BaP TEQ HIL) & naphthalene (should meet relevant HSL)

#6:Derived soil HSL exceeds soil saturation concentration

#7:To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.

#8:To obtain F2 subtract naphthalene from the >C10 - C16 fraction.

#9:Moderate reliability. To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.

#10:Moderate reliability. To obtain F2 subtract naphthalene from the >C10 - C16 fraction.

#11:Separate management limits for BTEX & naphthalene are not available hence should not be subtracted from the relevant fractions to obtain F1 & F2

Table 1: Summary Result Table - Human Health and Environmental Soil Assessment Criteria
Kent Road Public School

			PAH																Organochlorine Pesticides																							
			Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benz(a,h)perylene	Benz(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	PAHs (sum of total)	Phenanthrene	Pyrene	4,4-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	chlordane	Chlordane (cis)	Chlordane (trans)	d-BHC	DDD	DDT	DDT+DDE+DDD	Dieldrin	Endosulfan	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	
EQL			0.1	0.1	0.1	0.1	0.05	0.1	0.5	0.1	0.1	0.1	0.1	0.1	0.5	0.1	0.1	50	50	50	0.05	50	50	50	50	50	50	50	100	50	50	50	50	50	50	50	50	50	50	50	50	50
NEPM 2013 Table 1A(1) HILs Res A Soil															300 ⁴⁵					6		50000							240000		270000				10000					6000		
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Silt 0-1m														4																												
NEPM 2013 EIL for Urban Residential / Public Open Space (pH=5.5, CEC=5cmol/kg, clay=5%, no ABC)														170														180														
NEPM 2013 Table 1B(6) ESLs for Urban Res, Fine Soil 0-2m							0.7																																			
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil																																										
Sample ID	Sample Date	Sample Depth																																								
DUP	13-Jul-18	0.2	<0.1	<0.1	<0.1	0.2	0.2	0.1	-	0.2	<0.1	0.4	<0.1	<0.1	<0.1	-	0.1	0.3	<100	<100	<100	-	<100	-	<100	<100	<100	<100	<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100	<100	<100	
SB01	13-Jul-18	0.2	<0.1	<0.1	<0.1	0.1	0.1	0.1	-	0.2	<0.1	0.4	<0.1	<0.1	<0.1	-	0.1	0.3	<100	<100	<100	-	<100	-	<100	<100	<100	<100	<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100	<100	<100	
SB02	13-Jul-18	0.2	<0.1	<0.1	<0.1	<0.1	0.07	<0.1	-	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	-	<0.1	0.1	<100	<100	<100	-	<100	-	<100	<100	<100	<100	<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100	<100	<100	
SB03	13-Jul-18	0.2	<0.1	<0.1	<0.1	<0.1	0.4	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<1000	<1000	<1000	-	<1000	-	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	-	<1000	<1000	<1000	<1000	<1000	<1000	<1000		
SB04	13-Jul-18	0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<100	<100	<100	-	<100	-	<100	<100	<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100	<100	<100	<100		
SB05	13-Jul-18	0.2	<0.1	<0.1	<0.1	0.2	0.2	0.1	-	0.2	<0.1	0.4	<0.1	0.1	<0.1	-	0.1	0.4	<100	<100	<100	-	<100	-	<100	<100	<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100	<100	<100	<100		
SB06	13-Jul-18	0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<100	<100	<100	-	<100	-	<100	<100	<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100	<100	<100	<100		
SB07	13-Jul-18	0.2	<0.1	<0.1	<0.1	<0.1	0.07	<0.1	-	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	-	<0.1	0.1	<1000	<1000	<1000	-	<1000	-	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	-	<1000	<1000	<1000	<1000	<1000	<1000	<1000		
SB08	13-Jul-18	0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<1000	<1000	<1000	-	<1000	-	<1000	<1000	<1000	<1000	<1000	<1000	<1000	-	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000		
TRIP	13-Jul-18	0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	1.1	<0.5	0.5	<50	<50	<50	<0.05	<50	<50	<50	<50	<50	<50	<200	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	
Statistical Summary																																										
Number of Results			10	10	10	10	10	10	1	10	10	10	10	10	10	1	10	10	10	10	10	1	10	1	10	10	10	10	10	10	10	1	10	10	10	10	10	10	10	10	10	
Number of Detects			0	0	0	3	6	3	0	3	0	6	0	1	0	1	3	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Minimum Concentration			<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1.1	<0.1	<0.1	<50	<50	<50	<0.05	<50	<50	<50	<50	<50	<50	<100	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50		
Minimum Detect			ND	ND	ND	0.1	0.07	0.1	ND	0.2	ND	0.1	ND	0.1	ND	1.1	0.1	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Maximum Concentration			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	1.1	<0.5	0.5	<1000	<1000	<1000	<0.05	<1000	<50	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<50	<1000	<1000	<1000	<1000	<50	<1000	<1000	<1000		
Maximum Detect			ND	ND	ND	0.2	0.4	0.1	ND	0.2	ND	0.6	ND	0.1	ND	1.1	0.1	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Average Concentration			0.07	0.07	0.07	0.11	0.14	0.085		0.12	0.07	0.22	0.07	0.075	0.07		0.085	0.19	183	183	183		183		183	183	183	183	190	183	183		183	183	183	183		183	183	183		
Median Concentration			0.05	0.05	0.05	0.05	0.085	0.05	0.25	0.05	0.05	0.1	0.05	0.05	0.05	1.1	0.05	0.1	50	50	50	0.025	50	25	50	50	50	50	50	50	25	50	50	50	50	25	50	50	50			
Standard Deviation			0.063	0.063	0.063	0.08	0.12	0.063		0.085	0.063	0.21	0.063	0.063	0.063		0.063	0.17	219	219	219		219		219	219	219	219	219	219		219	219	219	219		219	219	219			
Number of Guideline Exceedances			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0			
Number of Guideline Exceedances(Detects Only)			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
% of Results at or above the Detect Limit			0	0	0	30	60	30	0	30	0	60	0	10	0	100	30	60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
% of Results below the Detect Limit			100	100	100	70	40	70	100	70	100	40	100	90	100	0	70	40	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100		
% of Detects at or above Guidelines			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
% of Results Below Guidelines or Non-Detect			100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100		

Env Stds Description

NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil:Management limits are applied after consideration of relevant ESLs and HSLs

Env Stds Comments

- #1:PCBs: HIL refers to non-dioxin like PCBs only. Where PCB source is known, or suspected at a site, a site-specific assessment of exposure to all PCBs (inc
- #2:Arsenic: HIL assumes 70% oral bioavailability. Site-specific bioavailability maybe important and should be considered where appropriate (refer Sheduli
- #3:Lead: HILs A,B,C based on blood lead models (IEUBK & HIL D on adult lead model for where 50% bioavailability considered. Site-specific bioavailability
- #4:Elemental mercury: HIL does not address elemental mercury. a site specific assessment should be considered if elemental mercury is present, or susp
- #5:Total PAHs: Based on sum of 16 most common reported (WHO 98). HIL application should consider presence of carcinogenic PAHs (should meet BaP T
- #6:Derived soil HSL exceeds soil saturation concentraton
- #7:To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
- #8:To obtain F2 subtract naphthalene from the >C10 - C16 fraction.
- #9:Moderate reliability. To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
- #10:Moderate reliability. To obtain F2 subtract naphthalene from the >C10 - C16 fraction.
- #11:Separate management limits for BTEX & napthalene are not

Table 1: Summary Result Table - Human Health and Environmental Soil Assessment Criteria
Kent Road Public School

			Organophosphorous Pesticides																			Pesticides				Halogenated Benzenes	Asbestos			
			Methoxychlor	Azinophos methyl	Bromophos-ethyl	Carbophenothion	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenitrothion	Fenthion	Malathion	Methyl parathion	Monocrotophos	Prothiofos	Ronnel	Demeton-S-methyl	Fenamiphos	Parathion	Primphos-ethyl	Hexachlorobenzene	Bonded ACM Asbestos ID in Soil (AS4964)	FA and AF (Friable Asbestos)	Asbestos ID in Soil (AS4964)	Trace Analysis	
			µg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg	%w/w	%w/w	g/kg	-	
EQL			100	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.05	0.2	0.2	0.05	0.1	0.05	0.05	0.1	0.05	50	0.01	0.001	0.1	-	
NEPM 2013 Table 1A(1) HILs Res A Soil			300000					160																	10000	0.01	0.001	-	-	
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Silt 0-1m																														
NEPM 2013 EIL for Urban Residential / Public Open Space (pH=5.5, CEC=5cmol/kg, clay=5%, no ABC)																														
NEPM 2013 Table 1B(6) ESLs for Urban Res, Fine Soil 0-2m																														
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil																														
Sample ID	Sample Date	Sample Depth																												
DUP	13-Jul-18	0.2	<100	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	-	-	<0.1	-	-	<0.1	-	<100	<0.01	<0.001	<0.1	No Asbestos Detected	
SB01	13-Jul-18	0.2	<100	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	-	-	<0.1	-	-	<0.1	-	<100	<0.01	<0.001	<0.1	No Asbestos Detected	
SB02	13-Jul-18	0.2	<100	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	-	-	<0.1	-	-	<0.1	-	<100	<0.01	<0.001	<0.1	No Asbestos Detected	
SB03	13-Jul-18	0.2	<1000	<1	<1	-	-	<1	<1	<1	<1	<1	<1	<1	-	<1	-	-	-	<1	-	-	<1	-	<1000	<0.01	<0.001	<0.1	No Asbestos Detected	
SB04	13-Jul-18	0.2	<100	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	-	-	<0.1	-	-	<0.1	-	<100	<0.01	<0.001	<0.1	No Asbestos Detected	
SB05	13-Jul-18	0.2	<100	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	-	-	<0.1	-	-	<0.1	-	<100	<0.01	<0.001	<0.1	No Asbestos Detected	
SB06	13-Jul-18	0.2	<100	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	-	-	<0.1	-	-	<0.1	-	<100	<0.01	<0.001	<0.1	No Asbestos Detected	
SB07	13-Jul-18	0.2	<1000	<1	<1	-	-	<1	<1	<1	<1	<1	<1	<1	-	<1	-	-	-	<1	-	-	<1	-	<1000	<0.01	<0.001	<0.1	No Asbestos Detected	
SB08	13-Jul-18	0.2	<1000	<1	<1	-	-	<1	<1	<1	<1	<1	<1	<1	-	<1	-	-	-	<1	-	-	<1	-	<1000	<0.01	<0.001	<0.1	No Asbestos Detected	
TRIP	13-Jul-18	0.2	<200	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.2	<0.2	<0.05	-	<0.05	<0.05	<0.2	<0.05	<50	-	-	-	-	
Statistical Summary																														
Number of Results			10	10	10	1	1	10	10	10	10	10	10	9	1	10	1	1	1	9	1	1	10	1	10					
Number of Detects			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
Minimum Concentration			<100	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.2	<0.2	<0.05	<0.1	<0.05	<0.05	<0.1	<0.05	<50					
Minimum Detect			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND					
Maximum Concentration			<1000	<1	<1	<0.05	<0.05	<1	<1	<1	<1	<1	<1	<1	<0.05	<1	<0.2	<0.2	<0.05	<1	<0.05	<0.05	<1	<0.05	<1000					
Maximum Detect			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND					
Average Concentration			190	0.18	0.18			0.18	0.18	0.18	0.18	0.18	0.18	0.2		0.18				0.2			0.19		183					
Median Concentration			50	0.05	0.05	0.025	0.025	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.025	0.05	0.1	0.1	0.025	0.05	0.025	0.025	0.05	0.025	50					
Standard Deviation			214	0.22	0.22			0.22	0.22	0.22	0.22	0.22	0.22	0.23		0.22				0.23			0.21		219					
Number of Guideline Exceedances			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
Number of Guideline Exceedances(Detects Only)			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
% of Results at or above the Detect Limit			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
% of Results below the Detect Limit			100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100				
% of Detects at or above Guidelines			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
% of Results Below Guidelines or Non-Detect			100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100				

Env Stds Description
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil:Management limits are applied after consideration of relevant ESLs and HSLs

Env Stds Comments
#1:PCBs: HIL refers to non-dioxin like PCBs only. Where PCB source is known, or suspected at a site, a site-specific assessment of exposure to all PCBs (inc
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#3:Lead: HILs A,B,C based on blood lead models (IEUBK & HIL D on adult lead model for where 50% bioavailability considered. Site-specific bioavailability
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#5:Total PAHs: Based on sum of 16 most common reported (WHO 98). HIL application should consider presence of carcinogenic PAHs (should meet BaP T
#6:Derived soil HSL exceeds soil saturation concentratoin
#7:To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
#8:To obtain F2 subtract naphthalene from the >C10 - C16 fraction.
#9:Moderate reliability. To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
#10:Moderate reliability. To obtain F2 subtract naphthalene from the >C10 - C16 fraction.
#11:Separate management limits for BTEX & naphthalene are not available hence should not be subtracted from the relevant fractions to obtain F1 & F2

Table 2: Summary Result Table - Indicative Waste Classification
Kent Road Public School

ARCADIS Design & Consultancy for natural and built assets	PCBs								TPH					Metals								BTEX								TRH														
	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Sum of total)	C6 - C9	C10 - C14	C15 - C28	C29-C36	C10 - C36 (Sum of total)	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	Total BTEX	C6-C10	>C6-C10 less BTEX (F1)	C10-C16	>C10-C16 less Napht halene (F2)	C16-C34	C34-C40	>C10 - C40 (Sum of total)	Total Positive PAHs	Benzo(a)pyrene TEQ calc (Half)	Benzo(b)+j+k fluoranthene	Benzo(a)pyrene TEQ calc (Zero)					
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg				
EQL	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	10	50	100	100	50	4	0.4	1	1	1	0.1	1	1	0.2	0.5	0.5	0.5	0.5	0.5	0.2	10	10	50	50	100	100	50	0.05	0.5	0.2	0.5					
NSW 2014 General Solid Waste CT1 (No Leaching)								<50	650				10000	100	20	100		100	4	40		10	288	600		1000										200								
NSW 2014 Restricted Solid Waste CT2 (No Leaching)								<50	2600				40000	400	80	400		400	16	160		40	1152	2400			4000									800								
Sample ID	Sample Date	Sample Depth																																										
DUP	13-Jul-18	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<250	5	<0.4	15	15	44	<0.1	5	35	<0.2	<0.5	<1	<2	<1	<1	-	<25	<25	<50	<50	<100	<100	<50	1.8	<0.5	0.3	<0.5
SB01	13-Jul-18	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<250	5	<0.4	15	12	42	<0.1	6	34	<0.2	<0.5	<1	<2	<1	<1	-	<25	<25	<50	<50	<100	<100	<50	1.6	<0.5	0.3	<0.5
SB02	13-Jul-18	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<250	4	<0.4	12	28	37	<0.1	7	100	<0.2	<0.5	<1	<2	<1	<1	-	<25	<25	<50	<50	<100	<100	<50	0.3	<0.5	<0.2	<0.5
SB03	13-Jul-18	0.2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<25	210	1600	1800	1990	11	<0.4	23	24	24	<0.1	7	92	<0.2	<0.5	<1	<2	<1	<1	-	<25	<25	410	410	3000	790	4200	0.4	<0.5	<0.2	<0.5
SB04	13-Jul-18	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<250	6	<0.4	19	14	33	<0.1	9	55	<0.2	<0.5	<1	<2	<1	<1	-	<25	<25	<50	<50	<100	<100	<50	<0.05	<0.5	<0.2	<0.5
SB05	13-Jul-18	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<250	6	<0.4	21	18	30	<0.1	7	25	<0.2	<0.5	<1	<2	<1	<1	-	<25	<25	<50	<50	<100	<100	<50	2	<0.5	0.4	<0.5
SB06	13-Jul-18	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<250	6	<0.4	18	18	47	<0.1	10	89	<0.2	<0.5	<1	<2	<1	<1	-	<25	<25	<50	<50	120	<100	120	<0.05	<0.5	<0.2	<0.5
SB07	13-Jul-18	0.2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<25	78	660	610	1348	10	<0.4	15	28	23	<0.1	8	49	<0.2	<0.5	<1	<2	<1	<1	-	<25	<25	270	270	980	330	1600	0.4	<0.5	<0.2	<0.5
SB08	13-Jul-18	0.2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<25	100	470	780	1350	<4	<0.4	10	21	33	<0.1	4	88	<0.2	<0.5	<1	<2	<1	<1	-	<25	<25	150	150	1100	360	1600	<0.05	<0.5	<0.2	<0.5
TRIP	13-Jul-18	0.2	-	-	-	-	-	-	<0.1	<10	<50	<100	<100	<50	<5	<1	12	11	42	<0.1	5	31	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	<10	<50	<50	<100	<100	<50	1.1	0.6	-	<0.5			
Statistical Summary																																												
Number of Results	9	9	9	9	9	9	9	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	1	10	10	10	10	10	10	10	10	10	10	10				
Number of Detects	0	0	0	0	0	0	0	0	0	3	3	3	3	8	0	10	10	10	0	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	4	3	4	7	1	3	0	
Minimum Concentration	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<10	<50	<100	<100	<50	<4	<0.4	10	11	23	<0.1	4	25	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	<10	<50	<50	<100	<100	<50	<0.05	<0.5	<0.2	<0.5				
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	78	470	610	1348	4	ND	10	11	23	ND	4	25	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	150	150	120	330	120	0.3	0.6	0.3	ND			
Maximum Concentration	<1	<1	<1	<1	<1	<1	<1	<1	<25	210	1600	1800	1990	11	<1	23	28	47	<0.1	10	100	<0.2	<0.5	<1	<2	<1	<1	<0.2	<25	<25	410	410	3000	790	4200	2	0.6	0.4	<0.5					
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	210	1600	1800	1990	11	ND	23	28	47	ND	10	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	410	410	3000	790	4200	2	0.6	0.4	ND			
Average Concentration	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.19	12	56	308	354	546	5.8	0.23	16	19	36	0.05	6.8	60	0.1	0.25	0.48	0.93	0.48	0.48		12	12	101	101	550	183	767	0.77	0.29	0.18	0.25					
Median Concentration	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	12.5	25	50	50	125	5.5	0.2	15	18	35	0.05	7	52	0.1	0.25	0.5	1	0.5	0.5	0.1	12.5	12.5	25	25	50	50	25	0.4	0.25	0.1	0.25					
Standard Deviation	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.22	2.4	60	504	576	723	2.9	0.095	4.2	6.2	8.3	0	1.9	29	0	0	0.079	0.24	0.079	0.079		2.4	2.4	136	136	953	246	1370	0.78	0.11	0.12	0					
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
% of Results at or above the Detect Limit	0	0	0	0	0	0	0	0	0	30	30	30	30	80	0	100	100	100	0	100	100	0	0	0	0	0	0	0	0	0	0	0	30	30	40	30	40	70	10	33	0			
% of Results below the Detect Limit	100	100	100	100	100	100	100	100	100	70	70	70	70	20	100	0	0	0	100	0	0	100	100	100	100	100	100	100	100	100	100	70	70	60	70	60	30	90	67	100				
% of Detects at or above Guidelines	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
% of Results Below Guidelines or Non-Detect	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			

Env Stds Comments
#1:Endosulfan means the total of Endosulfan I, Endosulfan II and Endosulfan sulfate.

Table 2: Summary Result Table - Indicative Waste Classification
Kent Road Public School

		PAH																	Organochlorine Pesticides																						
		Benzo(b,j)fluoranthene	Benzo(a)pyrene TEQ (LOR)	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a) pyrene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	4,4-DDE	α-BHC	Aldrin	Aldrin + Dieldrin	β-BHC	chlordane	Chlordane (cis)	Chlordane (trans)	d-BHC	DDD	DDT	DDT+DDE+DDD	Dieldrin	Endosulfan	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone			
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg	µg/kg	µg/kg	mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg		
EQL		0.5	0.5	0.1	0.1	0.1	0.1	0.05	0.1	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	50	50	50	0.05	50	50	50	50	50	50	100	50	50		60000 ^{#1}	50	50	50	50	50	50		
NSW 2014 General Solid Waste CT1 (No Leaching)								0.8																																	
NSW 2014 Restricted Solid Waste CT2 (No Leaching)								3.2																																	
Sample ID	Sample Date	Sample Depth	-	<0.5	<0.1	<0.1	<0.1	0.2	0.2	0.1	-	0.2	<0.1	0.4	<0.1	<0.1	<0.1	0.1	0.3	<100	<100	<100	-	<100	-	<100	<100	<100	<100	<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100	-
DUP	13-Jul-18	0.2	-	<0.5	<0.1	<0.1	<0.1	0.1	0.1	0.1	-	0.2	<0.1	0.4	<0.1	<0.1	<0.1	0.1	0.3	<100	<100	<100	-	<100	-	<100	<100	<100	<100	<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100	-
SB01	13-Jul-18	0.2	-	<0.5	<0.1	<0.1	<0.1	0.1	0.1	0.1	-	0.2	<0.1	0.4	<0.1	<0.1	<0.1	0.1	0.3	<100	<100	<100	-	<100	-	<100	<100	<100	<100	<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100	-
SB02	13-Jul-18	0.2	-	<0.5	<0.1	<0.1	<0.1	<0.1	0.07	<0.1	-	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	0.1	<100	<100	<100	-	<100	-	<100	<100	<100	<100	<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100	-
SB03	13-Jul-18	0.2	-	0.6	<0.1	<0.1	<0.1	<0.1	0.4	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1000	<1000	<1000	-	<1000	-	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	-	<1000	<1000	<1000	<1000	<1000	-
SB04	13-Jul-18	0.2	-	<0.5	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<100	<100	<100	-	<100	-	<100	<100	<100	<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100	-	
SB05	13-Jul-18	0.2	-	<0.5	<0.1	<0.1	<0.1	0.2	0.2	0.1	-	0.2	<0.1	0.4	<0.1	0.1	<0.1	0.1	0.4	<100	<100	<100	-	<100	-	<100	<100	<100	<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100	-	
SB06	13-Jul-18	0.2	-	<0.5	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<100	<100	<100	-	<100	-	<100	<100	<100	<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100	-	
SB07	13-Jul-18	0.2	-	<0.5	<0.1	<0.1	<0.1	<0.1	0.07	<0.1	-	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	0.1	<1000	<1000	<1000	-	<1000	-	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	-	<1000	<1000	<1000	<1000	<1000	-	
SB08	13-Jul-18	0.2	-	<0.5	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<1000	<1000	<1000	-	<1000	-	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	-	<1000	<1000	<1000	<1000	<1000	-	
TRIP	13-Jul-18	0.2	<0.5	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	0.5	<50	<50	<50	<0.05	<50	<50	<50	<50	<50	<50	<200	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50		
Statistical Summary																																									
Number of Results	1	10	10	10	10	10	10	10	10	1	10	10	10	10	10	10	10	10	10	10	10	1	10	1	10	10	10	10	10	10	10	1	10	10	10	10	10	10	1		
Number of Detects	0	2	0	0	0	3	6	3	0	3	0	6	0	1	0	3	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Minimum Concentration	<0.5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<50	<50	<50	<0.05	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50			
Minimum Detect	ND	0.6	ND	ND	ND	0.1	0.07	0.1	ND	0.2	ND	0.1	ND	0.1	ND	0.1	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
Maximum Concentration	<0.5	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<1000	<1000	<1000	<0.05	<1000	<50	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<1000	<50	<1000	<1000	<1000	<1000	<50			
Maximum Detect	ND	1.2	ND	ND	ND	0.2	0.4	0.1	ND	0.2	ND	0.6	ND	0.1	ND	0.1	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Average Concentration		0.38	0.07	0.07	0.07	0.11	0.14	0.085		0.12	0.07	0.22	0.07	0.075	0.07	0.085	0.19	183	183	183		183		183	183	183	183	183	190	183	183		183	183	183	183	183				
Median Concentration	0.25	0.25	0.05	0.05	0.05	0.05	0.085	0.05	0.25	0.05	0.05	0.1	0.05	0.05	0.05	0.05	0.1	50	50	50	0.025	50	25	50	50	50	50	50	50	50	50	25	50	50	50	50	50	25			
Standard Deviation		0.31	0.063	0.063	0.063	0.08	0.12	0.063		0.085	0.063	0.21	0.063	0.063	0.063	0.063	0.17	219	219	219		219		219	219	219	219	219	214	219	219		219	219	219	219	219				
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
% of Results at or above the Detect Limit	0	20	0	0	0	0	30	60	30	0	30	0	60	0	10	0	30	60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
% of Results below the Detect Limit	100	80	100	100	100	70	40	70	100	70	100	40	100	90	100	70	40	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
% of Detects at or above Guidelines	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
% of Results Below Guidelines or Non-Detect	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			

Env Stds Comments
#1:Endosulfan means the total of Endosulfan I, Endosulfan II and Endosulfan s

Table 2: Summary Result Table - Indicative Waste Classification
Kent Road Public School

				Organophosphorous Pesticides																		Pesticides				Halogenated Benzenes	Asbestos						
				g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor	Azinophos methyl	Bromophos-ethyl	Carbophenothion	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenitrothion	Fenthion	Malathion	Methyl parathion	Monocrotophos	Prothiofos	Rommel	Demeton-S-methyl	Fenamiphos	Parathion	Pirimphos-ethyl	Hexachlorobenzene	Bonded ACMAsbestos ID in Soil (AS4964)	FA and AF (Friable Asbestos)	Asbestos ID in Soil (AS4964)	Trace Analysis
				µg/kg	µg/kg	µg/kg	µg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg	%w/w	%w/w	g/kg	-		
EQL				50	50	50	100	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.05	0.2	0.2	0.05	0.1	0.05	0.05	0.1	0.05	50	0.01	0.001	0.1	-		
NSW 2014 General Solid Waste CT1 (No Leaching)											4																						
NSW 2014 Restricted Solid Waste CT2 (No Leaching)											16																						
Sample ID	Sample Date	Sample Depth	<100	<100	<100	<100	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	-	-	-	<0.1	-	-	<0.1	-	<100	<0.01	<0.001	<0.1	No Asbestos Detected		
DUP	13-Jul-18	0.2	<100	<100	<100	<100	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	-	-	<0.1	-	-	<0.1	-	<100	<0.01	<0.001	<0.1	No Asbestos Detected		
SB01	13-Jul-18	0.2	<100	<100	<100	<100	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	-	-	<0.1	-	-	<0.1	-	<100	<0.01	<0.001	<0.1	No Asbestos Detected		
SB02	13-Jul-18	0.2	<100	<100	<100	<100	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	-	-	<0.1	-	-	<0.1	-	<100	<0.01	<0.001	<0.1	No Asbestos Detected		
SB03	13-Jul-18	0.2	<1000	<1000	<1000	<1000	<1	<1	-	-	<1	<1	<1	<1	<1	<1	-	<1	-	-	-	<1	-	-	<1	-	<1000	<0.01	<0.001	<0.1	No Asbestos Detected		
SB04	13-Jul-18	0.2	<100	<100	<100	<100	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	-	-	<0.1	-	-	<0.1	-	<100	<0.01	<0.001	<0.1	No Asbestos Detected		
SB05	13-Jul-18	0.2	<100	<100	<100	<100	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	-	-	<0.1	-	-	<0.1	-	<100	<0.01	<0.001	<0.1	No Asbestos Detected		
SB06	13-Jul-18	0.2	<100	<100	<100	<100	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	-	-	<0.1	-	-	<0.1	-	<100	<0.01	<0.001	<0.1	No Asbestos Detected		
SB07	13-Jul-18	0.2	<1000	<1000	<1000	<1000	<1	<1	-	-	<1	<1	<1	<1	<1	<1	-	<1	-	-	-	<1	-	-	<1	-	<1000	<0.01	<0.001	<0.1	No Asbestos Detected		
SB08	13-Jul-18	0.2	<1000	<1000	<1000	<1000	<1	<1	-	-	<1	<1	<1	<1	<1	<1	-	<1	-	-	-	<1	-	-	<1	-	<1000	<0.01	<0.001	<0.1	No Asbestos Detected		
TRIP	13-Jul-18	0.2	<50	<50	<50	<200	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.2	<0.2	<0.05	-	<0.05	<0.05	<0.2	<0.05	<50	-	-	-	-		
Statistical Summary																																	
Number of Results	10	10	10	10	10	10	1	1	10	10	10	10	10	10	9	1	10	1	1	1	9	1	1	10	1	10	-	-	-	-			
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-			
Minimum Concentration	<50	<50	<50	<100	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.2	<0.2	<0.05	<0.1	<0.05	<0.05	<0.1	<0.05	<50	-	-	-	-		
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-	-		
Maximum Concentration	<1000	<1000	<1000	<1000	<1	<1	<0.05	<0.05	<1	<1	<1	<1	<1	<1	<1	<0.05	<1	<0.2	<0.2	<0.05	<1	<0.05	<0.05	<1	<0.05	<1000	-	-	-	-			
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-	-		
Average Concentration	183	183	183	190	0.18	0.18			0.18	0.18	0.18	0.18	0.18	0.18	0.2		0.18				0.2			0.19		183	-	-	-	-			
Median Concentration	50	50	50	50	0.05	0.05	0.025	0.025	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.025	0.05	0.1	0.1	0.025	0.05	0.025	0.05	0.025	50	-	-	-	-				
Standard Deviation	219	219	219	214	0.22	0.22			0.22	0.22	0.22	0.22	0.22	0.22	0.23		0.22				0.23			0.21		219	-	-	-	-			
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-			
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-			
% of Results at or above the Detect Limit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-			
% of Results below the Detect Limit	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	-	-	-	-		
% of Detects at or above Guidelines	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-		
% of Results Below Guidelines or Non-Detect	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	-	-	-	-		

Env Stds Comments
#1:Endosulfan means the total of Endosulfan I, Endosulfan II and Endosulfan s

Table 3: Relative Percent Difference Results
Kent Road Public School

			SDG	ENVIROLAB 2018-07-13T00:00:00	ENVIROLAB 2018-07-13T00:00:00	ENVIROLAB 2018-07-13T00:00:00	ALSE-Sydney 16-Jul-18
			Field ID	SB01	DUP	RPD	SB01
			Sampled Date/Time	13/07/2018	13/07/2018		TRIP
							13/07/2018
ChemName	Units	EQL					
Arochlor 1016	mg/kg	0.1		<0.1	<0.1	0	<0.1
Arochlor 1221	mg/kg	0.1		<0.1	<0.1	0	<0.1
Arochlor 1232	mg/kg	0.1		<0.1	<0.1	0	<0.1
Arochlor 1242	mg/kg	0.1		<0.1	<0.1	0	<0.1
Arochlor 1248	mg/kg	0.1		<0.1	<0.1	0	<0.1
Arochlor 1254	mg/kg	0.1		<0.1	<0.1	0	<0.1
Arochlor 1260	mg/kg	0.1		<0.1	<0.1	0	<0.1
PCBs (Sum of total)	mg/kg	0.1		<0.1	<0.1	0	<0.1
C6 - C9	mg/kg	25 : 10 (Interlab)		<25	<25	0	<25
C10 - C14	mg/kg	50		<50	<50	0	<50
C15 - C28	mg/kg	100		<100	<100	0	<100
C29-C36	mg/kg	100		<100	<100	0	<100
Arsenic	mg/kg	4 : 5 (Interlab)		5	5	0	5
Cadmium	mg/kg	0.4 : 1 (Interlab)		<0.4	<0.4	0	<0.4
Chromium (III+VI)	mg/kg	1 : 2 (Interlab)		15	15	0	15
Copper	mg/kg	1 : 5 (Interlab)		12	15	22	12
Lead	mg/kg	1 : 5 (Interlab)		42	44	5	42
Mercury	mg/kg	0.1		<0.1	<0.1	0	<0.1
Nickel	mg/kg	1 : 2 (Interlab)		6	5	18	6
Zinc	mg/kg	1 : 5 (Interlab)		34	35	3	34
Moisture	%	0.1		18	19	5	18
Benzene	mg/kg	0.2		<0.2	<0.2	0	<0.2
Toluene	mg/kg	0.5		<0.5	<0.5	0	<0.5
Ethylbenzene	mg/kg	1 : 0.5 (Interlab)		<1	<1	0	<1
Xylene (m & p)	mg/kg	2 : 0.5 (Interlab)		<2	<2	0	<2
Xylene (o)	mg/kg	1 : 0.5 (Interlab)		<1	<1	0	<1
Xylene Total	mg/kg	1 : 0.5 (Interlab)		<1	<1	0	<1
C6-C10	mg/kg	25 : 10 (Interlab)		<25	<25	0	<25
>C6-C10 less BTEX (F1)	mg/kg	25 : 10 (Interlab)		<25	<25	0	<25
C10-C16	mg/kg	50		<50	<50	0	<50
>C10-C16 less Naphthalene (F2)	mg/kg	50		<50	<50	0	<50
C16-C34	mg/kg	100		<100	<100	0	<100
C34-C40	mg/kg	100		<100	<100	0	<100
>C10 - C40 (Sum of total)	mg/kg	50		<50	<50	0	<50
Total Positive PAHs	mg/kg	0.05		1.6	1.8	12	1.6
Benzo(a)pyrene TEQ calc (Half)	mg/kg	0.5		<0.5	<0.5	0	<0.5
Benzo(b+j+k)fluoranthene	mg/kg	0.2		0.3	0.3	0	0.3
Benzo(a)pyrene TEQ calc (Zero)	mg/kg	0.5		<0.5	<0.5	0	<0.5
Benzo(a)pyrene TEQ (LOR)	mg/kg	0.5		<0.5	<0.5	0	<0.5
Acenaphthene	mg/kg	0.1 : 0.5 (Interlab)		<0.1	<0.1	0	<0.1
Acenaphthylene	mg/kg	0.1 : 0.5 (Interlab)		<0.1	<0.1	0	<0.1
Anthracene	mg/kg	0.1 : 0.5 (Interlab)		<0.1	<0.1	0	<0.1
Benzo(a)anthracene	mg/kg	0.1 : 0.5 (Interlab)		0.1	0.2	67	0.1
Benzo(a) pyrene	mg/kg	0.05 : 0.5 (Interlab)		0.1	0.2	67	0.1
Benzo(g,h,i)perylene	mg/kg	0.1 : 0.5 (Interlab)		0.1	0.1	0	0.1
Chrysene	mg/kg	0.1 : 0.5 (Interlab)		0.2	0.2	0	0.2
Dibenz(a,h)anthracene	mg/kg	0.1 : 0.5 (Interlab)		<0.1	<0.1	0	<0.1
Fluoranthene	mg/kg	0.1 : 0.5 (Interlab)		0.4	0.4	0	0.4
Fluorene	mg/kg	0.1 : 0.5 (Interlab)		<0.1	<0.1	0	<0.1</

CERTIFICATE OF ANALYSIS 196252

Client Details

Client	Arcadis Australia Pacific Pty Ltd
Attention	Lee Douglass, Jack O'Shaughnessy
Address	Level 16, 580 George St, Sydney, NSW, 2000

Sample Details

Your Reference	10023978
Number of Samples	9 SOIL, 1 WATER
Date samples received	13/07/2018
Date completed instructions received	13/07/2018

Analysis Details

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

Report Details

Date results requested by	20/07/2018
Date of Issue	19/07/2018
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Asbestos Approved By

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

Results Approved By

Dragana Tomas, Senior Chemist
 Leon Ow, Chemist
 Lucy Zhu, Asbestos Analyst
 Steven Luong, Senior Chemist

Authorised By



Jacinta Hurst, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil

Our Reference		196252-1	196252-2	196252-3	196252-4	196252-5
Your Reference	UNITS	SB01	SB02	SB03	SB04	SB05
Depth		0.2	0.2	0.2	0.2	0.2
Date Sampled		13/07/2018	13/07/2018	13/07/2018	13/07/2018	13/07/2018
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Date analysed	-	17/07/2018	17/07/2018	17/07/2018	17/07/2018	17/07/2018
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	136	98	97	96	94

vTRH(C6-C10)/BTEXN in Soil

Our Reference		196252-6	196252-7	196252-8	196252-9
Your Reference	UNITS	SB06	SB07	SB08	DUP
Depth		0.2	0.2	0.2	0.2
Date Sampled		13/07/2018	13/07/2018	13/07/2018	13/07/2018
Type of sample		SOIL	SOIL	SOIL	SOIL
Date extracted	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Date analysed	-	17/07/2018	17/07/2018	17/07/2018	17/07/2018
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	106	103	106	104

svTRH (C10-C40) in Soil						
Our Reference		196252-1	196252-2	196252-3	196252-4	196252-5
Your Reference	UNITS	SB01	SB02	SB03	SB04	SB05
Depth		0.2	0.2	0.2	0.2	0.2
Date Sampled		13/07/2018	13/07/2018	13/07/2018	13/07/2018	13/07/2018
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Date analysed	-	17/07/2018	17/07/2018	17/07/2018	17/07/2018	17/07/2018
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	210	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	1,600	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	1,800	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	410	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	410	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	3,000	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	790	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	4,200	<50	<50
Surrogate o-Terphenyl	%	95	94	135	94	92

svTRH (C10-C40) in Soil					
Our Reference		196252-6	196252-7	196252-8	196252-9
Your Reference	UNITS	SB06	SB07	SB08	DUP
Depth		0.2	0.2	0.2	0.2
Date Sampled		13/07/2018	13/07/2018	13/07/2018	13/07/2018
Type of sample		SOIL	SOIL	SOIL	SOIL
Date extracted	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Date analysed	-	17/07/2018	17/07/2018	17/07/2018	17/07/2018
TRH C ₁₀ - C ₁₄	mg/kg	<50	78	100	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	660	470	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	610	780	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	270	150	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	270	150	<50
TRH >C ₁₆ -C ₃₄	mg/kg	120	980	1,100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	330	360	<100
Total +ve TRH (>C10-C40)	mg/kg	120	1,600	1,600	<50
Surrogate o-Terphenyl	%	94	106	110	91

PAHs in Soil						
Our Reference		196252-1	196252-2	196252-3	196252-4	196252-5
Your Reference	UNITS	SB01	SB02	SB03	SB04	SB05
Depth		0.2	0.2	0.2	0.2	0.2
Date Sampled		13/07/2018	13/07/2018	13/07/2018	13/07/2018	13/07/2018
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Date analysed	-	17/07/2018	17/07/2018	17/07/2018	17/07/2018	17/07/2018
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.4	0.1	<0.1	<0.1	0.4
Pyrene	mg/kg	0.3	0.1	<0.1	<0.1	0.4
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	0.2
Chrysene	mg/kg	0.2	<0.1	<0.1	<0.1	0.2
Benzo(b,j+k)fluoranthene	mg/kg	0.3	<0.2	<0.2	<0.2	0.4
Benzo(a)pyrene	mg/kg	0.1	0.07	0.4	<0.05	0.2
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	0.1
Total +ve PAH's	mg/kg	1.6	0.3	0.4	<0.05	2.0
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	0.6	<0.5	<0.5
Surrogate <i>p</i> -Terphenyl-d14	%	99	95	104	108	98

PAHs in Soil					
Our Reference		196252-6	196252-7	196252-8	196252-9
Your Reference	UNITS	SB06	SB07	SB08	DUP
Depth		0.2	0.2	0.2	0.2
Date Sampled		13/07/2018	13/07/2018	13/07/2018	13/07/2018
Type of sample		SOIL	SOIL	SOIL	SOIL
Date extracted	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Date analysed	-	17/07/2018	17/07/2018	17/07/2018	17/07/2018
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	0.1	<0.1	0.4
Pyrene	mg/kg	<0.1	0.1	<0.1	0.3
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	0.2
Chrysene	mg/kg	<0.1	<0.1	<0.1	0.2
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	0.3
Benzo(a)pyrene	mg/kg	<0.05	0.07	<0.05	0.2
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	0.1
Total +ve PAH's	mg/kg	<0.05	0.4	<0.05	1.8
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5
Surrogate <i>p</i> -Terphenyl-d14	%	96	103	105	101

Organochlorine Pesticides in soil						
Our Reference		196252-1	196252-2	196252-3	196252-4	196252-5
Your Reference	UNITS	SB01	SB02	SB03	SB04	SB05
Depth		0.2	0.2	0.2	0.2	0.2
Date Sampled		13/07/2018	13/07/2018	13/07/2018	13/07/2018	13/07/2018
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Date analysed	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018	16/07/2018
HCB	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Surrogate TCMX	%	108	107	88	112	116

Organochlorine Pesticides in soil					
Our Reference		196252-6	196252-7	196252-8	196252-9
Your Reference	UNITS	SB06	SB07	SB08	DUP
Depth		0.2	0.2	0.2	0.2
Date Sampled		13/07/2018	13/07/2018	13/07/2018	13/07/2018
Type of sample		SOIL	SOIL	SOIL	SOIL
Date extracted	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Date analysed	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018
HCB	mg/kg	<0.1	<1	<1	<0.1
alpha-BHC	mg/kg	<0.1	<1	<1	<0.1
gamma-BHC	mg/kg	<0.1	<1	<1	<0.1
beta-BHC	mg/kg	<0.1	<1	<1	<0.1
Heptachlor	mg/kg	<0.1	<1	<1	<0.1
delta-BHC	mg/kg	<0.1	<1	<1	<0.1
Aldrin	mg/kg	<0.1	<1	<1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<1	<1	<0.1
gamma-Chlordane	mg/kg	<0.1	<1	<1	<0.1
alpha-chlordane	mg/kg	<0.1	<1	<1	<0.1
Endosulfan I	mg/kg	<0.1	<1	<1	<0.1
pp-DDE	mg/kg	<0.1	<1	<1	<0.1
Dieldrin	mg/kg	<0.1	<1	<1	<0.1
Endrin	mg/kg	<0.1	<1	<1	<0.1
pp-DDD	mg/kg	<0.1	<1	<1	<0.1
Endosulfan II	mg/kg	<0.1	<1	<1	<0.1
pp-DDT	mg/kg	<0.1	<1	<1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<1	<1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<1	<1	<0.1
Methoxychlor	mg/kg	<0.1	<1	<1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<1	<1	<0.1
Surrogate TCMX	%	101	80	128	99

Organophosphorus Pesticides

Our Reference		196252-1	196252-2	196252-3	196252-4	196252-5
Your Reference	UNITS	SB01	SB02	SB03	SB04	SB05
Depth		0.2	0.2	0.2	0.2	0.2
Date Sampled		13/07/2018	13/07/2018	13/07/2018	13/07/2018	13/07/2018
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Date analysed	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Chlorpyrifos	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Surrogate TCMX	%	108	107	88	112	116

Organophosphorus Pesticides

Our Reference		196252-6	196252-7	196252-8	196252-9
Your Reference	UNITS	SB06	SB07	SB08	DUP
Depth		0.2	0.2	0.2	0.2
Date Sampled		13/07/2018	13/07/2018	13/07/2018	13/07/2018
Type of sample		SOIL	SOIL	SOIL	SOIL
Date extracted	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Date analysed	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Azinphos-methyl (Guthion)	mg/kg	<0.1	<1	<1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<1	<1	<0.1
Chlorpyrifos	mg/kg	<0.1	<1	<1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<1	<1	<0.1
Diazinon	mg/kg	<0.1	<1	<1	<0.1
Dichlorvos	mg/kg	<0.1	<1	<1	<0.1
Dimethoate	mg/kg	<0.1	<1	<1	<0.1
Ethion	mg/kg	<0.1	<1	<1	<0.1
Fenitrothion	mg/kg	<0.1	<1	<1	<0.1
Malathion	mg/kg	<0.1	<1	<1	<0.1
Parathion	mg/kg	<0.1	<1	<1	<0.1
Ronnel	mg/kg	<0.1	<1	<1	<0.1
Surrogate TCMX	%	101	88	128	99

PCBs in Soil						
Our Reference		196252-1	196252-2	196252-3	196252-4	196252-5
Your Reference	UNITS	SB01	SB02	SB03	SB04	SB05
Depth		0.2	0.2	0.2	0.2	0.2
Date Sampled		13/07/2018	13/07/2018	13/07/2018	13/07/2018	13/07/2018
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Date analysed	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Aroclor 1016	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Surrogate TCLMX	%	108	107	88	112	116

PCBs in Soil					
Our Reference		196252-6	196252-7	196252-8	196252-9
Your Reference	UNITS	SB06	SB07	SB08	DUP
Depth		0.2	0.2	0.2	0.2
Date Sampled		13/07/2018	13/07/2018	13/07/2018	13/07/2018
Type of sample		SOIL	SOIL	SOIL	SOIL
Date extracted	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Date analysed	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Aroclor 1016	mg/kg	<0.1	<1	<1	<0.1
Aroclor 1221	mg/kg	<0.1	<1	<1	<0.1
Aroclor 1232	mg/kg	<0.1	<1	<1	<0.1
Aroclor 1242	mg/kg	<0.1	<1	<1	<0.1
Aroclor 1248	mg/kg	<0.1	<1	<1	<0.1
Aroclor 1254	mg/kg	<0.1	<1	<1	<0.1
Aroclor 1260	mg/kg	<0.1	<1	<1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<1	<1	<0.1
Surrogate TCLMX	%	101	88	128	99

Acid Extractable metals in soil

Our Reference		196252-1	196252-2	196252-3	196252-4	196252-5
Your Reference	UNITS	SB01	SB02	SB03	SB04	SB05
Depth		0.2	0.2	0.2	0.2	0.2
Date Sampled		13/07/2018	13/07/2018	13/07/2018	13/07/2018	13/07/2018
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Date analysed	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Arsenic	mg/kg	5	4	11	6	6
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	15	12	23	19	21
Copper	mg/kg	12	28	24	14	18
Lead	mg/kg	42	37	24	33	30
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	6	7	7	9	7
Zinc	mg/kg	34	100	92	55	25

Acid Extractable metals in soil

Our Reference		196252-6	196252-7	196252-8	196252-9
Your Reference	UNITS	SB06	SB07	SB08	DUP
Depth		0.2	0.2	0.2	0.2
Date Sampled		13/07/2018	13/07/2018	13/07/2018	13/07/2018
Type of sample		SOIL	SOIL	SOIL	SOIL
Date prepared	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Date analysed	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Arsenic	mg/kg	6	10	<4	5
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	18	15	10	15
Copper	mg/kg	18	28	21	15
Lead	mg/kg	47	23	33	44
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	10	8	4	5
Zinc	mg/kg	89	49	88	35

Moisture						
Our Reference	UNITS	196252-1	196252-2	196252-3	196252-4	196252-5
Your Reference		SB01	SB02	SB03	SB04	SB05
Depth		0.2	0.2	0.2	0.2	0.2
Date Sampled		13/07/2018	13/07/2018	13/07/2018	13/07/2018	13/07/2018
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Date analysed	-	17/07/2018	17/07/2018	17/07/2018	17/07/2018	17/07/2018
Moisture	%	18	15	29	14	16

Moisture					
Our Reference	UNITS	196252-6	196252-7	196252-8	196252-9
Your Reference		SB06	SB07	SB08	DUP
Depth		0.2	0.2	0.2	0.2
Date Sampled		13/07/2018	13/07/2018	13/07/2018	13/07/2018
Type of sample		SOIL	SOIL	SOIL	SOIL
Date prepared	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Date analysed	-	17/07/2018	17/07/2018	17/07/2018	17/07/2018
Moisture	%	12	16	20	19

Asbestos ID - soils NEPM - ASB-001

Our Reference		196252-1	196252-2	196252-3	196252-4	196252-5
Your Reference	UNITS	SB01	SB02	SB03	SB04	SB05
Depth		0.2	0.2	0.2	0.2	0.2
Date Sampled		13/07/2018	13/07/2018	13/07/2018	13/07/2018	13/07/2018
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date analysed	-	19/07/2018	19/07/2018	19/07/2018	19/07/2018	19/07/2018
Sample mass tested	g	647.36	218.52	351.41	481.79	586.07
Sample Description	-	Brown coarse-grained soil & rocks	Brown soil & organic debris	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos ^{#1}	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	—	—	—	—	—
FA and AF Estimation*	g	—	—	—	—	—
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM - ASB-001				
Our Reference		196252-6	196252-7	196252-8
Your Reference	UNITS	SB06	SB07	SB08
Depth		0.2	0.2	0.2
Date Sampled		13/07/2018	13/07/2018	13/07/2018
Type of sample		SOIL	SOIL	SOIL
Date analysed	-	19/07/2018	19/07/2018	19/07/2018
Sample mass tested	g	543.87	264.94	225.29
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown soil & organic debris
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos ^{#1}	g/kg	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	—	—	—
FA and AF Estimation*	g	—	—	—
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001

Asbestos ID - soils		
Our Reference		196252-9
Your Reference	UNITS	DUP
Depth		0.2
Date Sampled		13/07/2018
Type of sample		SOIL
Date analysed	-	19/07/2018
Sample mass tested	g	Approx. 30g
Sample Description	-	Brown coarse-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected

BTEX in Water		
Our Reference		196252-10
Your Reference	UNITS	FB
Depth		-
Date Sampled		13/07/2018
Type of sample		WATER
Date extracted	-	13/07/2018
Date analysed	-	16/07/2018
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Surrogate Dibromofluoromethane	%	96
Surrogate toluene-d8	%	95
Surrogate 4-BFB	%	92

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
ASB-001	Asbestos ID - Identification of asbestos in soil samples using Polarised Light Microscopy and Dispersion Staining Techniques. Minimum 500mL soil sample was analysed as recommended by "National Environment Protection (Assessment of site contamination) Measure, Schedule B1 and "The Guidelines from the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia - May 2009" with a reporting limit of 0.1g/kg (0.01% w/w) as per Australian Standard AS4964-2004. Results reported denoted with * are outside our scope of NATA accreditation. NOTE #1 Total Asbestos g/kg was analysed and reported as per Australian Standard AS4964 (This is the sum of ACM >7mm, <7mm and FA/AF) NOTE #2 The screening level of 0.001% w/w asbestos in soil for FA and AF only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. Estimation = Estimated asbestos weight Results reported with "--" is equivalent to no visible asbestos identified using Polarised Light microscopy and Dispersion Staining Techniques.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.

Method ID	Methodology Summary
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-008	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL' values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero' values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL' values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	196252-2
Date extracted	-			16/07/2018	1	16/07/2018	16/07/2018		16/07/2018	16/07/2018
Date analysed	-			17/07/2018	1	17/07/2018	17/07/2018		17/07/2018	17/07/2018
TRH C ₆ - C ₉	mg/kg	25	Org-016	<25	1	<25	<25	0	97	89
TRH C ₆ - C ₁₀	mg/kg	25	Org-016	<25	1	<25	<25	0	97	89
Benzene	mg/kg	0.2	Org-016	<0.2	1	<0.2	<0.2	0	86	78
Toluene	mg/kg	0.5	Org-016	<0.5	1	<0.5	<0.5	0	92	83
Ethylbenzene	mg/kg	1	Org-016	<1	1	<1	<1	0	99	92
m+p-xylene	mg/kg	2	Org-016	<2	1	<2	<2	0	105	95
o-Xylene	mg/kg	1	Org-016	<1	1	<1	<1	0	97	89
naphthalene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	103	1	136	94	37	109	96

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	196252-2
Date extracted	-			16/07/2018	1	16/07/2018	16/07/2018		16/07/2018	16/07/2018
Date analysed	-			16/07/2018	1	17/07/2018	17/07/2018		16/07/2018	17/07/2018
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-003	<50	1	<50	<50	0	117	119
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-003	<100	1	<100	<100	0	97	123
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-003	<100	1	<100	<100	0	92	#
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-003	<50	1	<50	<50	0	117	119
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-003	<100	1	<100	<100	0	97	123
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-003	<100	1	<100	<100	0	92	#
Surrogate o-Terphenyl	%		Org-003	91	1	95	93	2	95	94

QUALITY CONTROL: PAHs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	196252-2
Date extracted	-			16/07/2018	1	16/07/2018	16/07/2018		16/07/2018	16/07/2018
Date analysed	-			17/07/2018	1	17/07/2018	17/07/2018		17/07/2018	17/07/2018
Naphthalene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	111	98
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	116	98
Phenanthrene	mg/kg	0.1	Org-012	<0.1	1	0.1	0.1	0	107	97
Anthracene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	<0.1	1	0.4	0.3	29	104	96
Pyrene	mg/kg	0.1	Org-012	<0.1	1	0.3	0.3	0	111	102
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	1	0.1	0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	<0.1	1	0.2	0.2	0	101	93
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	<0.2	1	0.3	0.3	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	1	0.1	0.1	0	103	92
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	1	0.1	0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	100	1	99	99	0	120	118

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	196252-2
Date extracted	-			16/07/2018	1	16/07/2018	16/07/2018		16/07/2018	16/07/2018
Date analysed	-			16/07/2018	1	16/07/2018	16/07/2018		16/07/2018	16/07/2018
HCB	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	84	85
gamma-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	86	82
Heptachlor	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	90	89
delta-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	93	88
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	91	92
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	96	92
Dieldrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	105	101
Endrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	92	89
pp-DDD	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	92	89
Endosulfan II	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	77	94
Methoxychlor	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-005	113	1	108	108	0	119	114

QUALITY CONTROL: Organophosphorus Pesticides					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	196252-2
Date extracted	-			16/07/2018	1	16/07/2018	16/07/2018		16/07/2018	16/07/2018
Date analysed	-			16/07/2018	1	16/07/2018	16/07/2018		16/07/2018	16/07/2018
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	86	84
Chlorpyrifos-methyl	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	90	89
Dimethoate	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	89	85
Fenitrothion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	88	87
Malathion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	76	89
Parathion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	94	94
Ronnel	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	95	89
Surrogate TCMX	%		Org-008	113	1	108	108	0	110	105

QUALITY CONTROL: PCBs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	196252-2
Date extracted	-			16/07/2018	1	16/07/2018	16/07/2018		16/07/2018	16/07/2018
Date analysed	-			16/07/2018	1	16/07/2018	16/07/2018		16/07/2018	16/07/2018
Aroclor 1016	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	101	104
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCLMX	%		Org-006	113	1	108	108	0	110	105

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	196252-2
Date prepared	-			16/07/2018	1	16/07/2018	16/07/2018		16/07/2018	16/07/2018
Date analysed	-			16/07/2018	1	16/07/2018	16/07/2018		16/07/2018	16/07/2018
Arsenic	mg/kg	4	Metals-020	<4	1	5	5	0	112	98
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	104	92
Chromium	mg/kg	1	Metals-020	<1	1	15	14	7	110	102
Copper	mg/kg	1	Metals-020	<1	1	12	14	15	114	107
Lead	mg/kg	1	Metals-020	<1	1	42	49	15	108	94
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	104	98
Nickel	mg/kg	1	Metals-020	<1	1	6	7	15	111	99
Zinc	mg/kg	1	Metals-020	<1	1	34	42	21	107	78

QUALITY CONTROL: BTEX in Water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			13/07/2018	[NT]	[NT]	[NT]	[NT]	13/07/2018	[NT]
Date analysed	-			16/07/2018	[NT]	[NT]	[NT]	[NT]	16/07/2018	[NT]
Benzene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Toluene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Ethylbenzene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	103	[NT]
m+p-xylene	µg/L	2	Org-016	<2	[NT]	[NT]	[NT]	[NT]	102	[NT]
o-xylene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Surrogate Dibromofluoromethane	%		Org-016	97	[NT]	[NT]	[NT]	[NT]	99	[NT]
Surrogate toluene-d8	%		Org-016	104	[NT]	[NT]	[NT]	[NT]	109	[NT]
Surrogate 4-BFB	%		Org-016	94	[NT]	[NT]	[NT]	[NT]	102	[NT]

Result Definitions

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

Quality Control Definitions

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

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

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

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

Report Comments

TRH Soil C10-C40 NEPM - # Percent recovery is not possible to report due to interference from analytes (other than those being tested) in sample 2.

OC's, OP and PCB in Soil - PQL has been raised due to interference from analytes (other than those being tested) in samples 3, 7, and 8.

Asbestos-ID in soil: NEPM

This report is consistent with the reporting recommendations in the National Environment Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013.

This is reported outside our scope of NATA accreditation.

Note: All samples analysed as received. However, samples 196252-2-4 & 7 are below the minimum 500mL sample volume as per National Environment Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013.

Asbestos: A portion of the supplied sample was sub-sampled for asbestos analysis according to Envirolab procedures.

We cannot guarantee that this sub-sample is indicative of the entire sample.

Envirolab recommends supplying 40-50g of sample in its own container.

Note: Sample 196252-9 was sub-sampled from a jar provided by the client.



CHAIN OF CUSTODY - Client

ENVIROLAB GROUP - National phone number 1300 42 43 44

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12 Ashley St, Chatswood, NSW 2067
Ph 02 9910 6200 / sydney@envirolab.com.au

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Adelaide Office - Envirolab Services
7a The Parade, Norwood, SA 5067
Ph 0406 350 706 / adelaide@envirolab.com.au

Client: Arcadis	Client Project Name / Number / Site etc (ie report title):
Contact Person: Lee Douglass	Asset Geotechnical-126 Kent Road, Marsfield
Project Mgr: Lee Douglass	PO No.:
Sampler: Jack O'Shaughnessy	Envirolab Quote No. :
Address: Level 16, 580 George Street, Sydney, NSW, 2000	Date results required:
	Or choose: standard <i>Note: Inform lab in advance if urgent turnaround is required - surcharges apply</i>
Phone:	Mob: 0403481503
Email:	Report format: esdat / equis /
jack.o'shaughnessy@arcadis.com lee.douglass@arcadis.com.au	Lab Comments:

Sample information					Tests Required										Comments	
Envirolab Sample ID	Client Sample ID or information	Depth	Date sampled	Type of sample	Combo 6	Adh (W/A)	Box									Provide as much information about the sample as you can
1 13	SB01	0-2	13/7/18	Soil	X	X										
2 14	SB02				X											
3 15	SB03				X											
4 16	SB04				X											
5 17	SB05				X											
6 18	SB06				X											
7 19	SB07				X											
8 20	SB40 (SB08)				X											
9 21	AD				X											
	TLID	↓	↓	↓	X											
10 22	FL6		↓	WAT	X		X									
					X											
					X											

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 130252

Date Received: 13/7/18

Time Received: 12:30

Received By: KM

Temp: Cool/Ambient

Cooling: Ice/icepack

Security: Intact/Broken/None

SEND TO HCS ✓

Relinquished by (Company): Arcadis	Received by (Company):	Lab use only:
Print Name: J. O'Shaughnessy	Print Name: KM	Samples Received: Cool or Ambient (circle one)
Date & Time: 13.7.18	Date & Time: 13/7/18 12:30	Temperature Received at: (if applicable)
Signature:	Signature:	Transported by: Hand delivered / courier

CERTIFICATE OF ANALYSIS

Work Order : **ES1820957**
Client : **ARCADIS AUSTRALIA PACIFIC PTY LTD**
Contact : **MR LEE DOUGLASS**
Address : **L16, 480 GEORGE STREET**
SYDNEY NSW 2000
Telephone : **+61 02 8907 9000**
Project : **Asset Geotechnical-126 Kent Road,Marsfield**
Order number :
C-O-C number :
Sampler : **JACK O SHAUGHNESSY**
Site :
Quote number : **EN/333/17 - Secondary Work**
No. of samples received : **1**
No. of samples analysed : **1**

Page : 1 of 7
Laboratory : Environmental Division Sydney
Contact : Chloe Leong
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61-2-8784 8555
Date Samples Received : 16-Jul-2018 17:14
Date Analysis Commenced : 17-Jul-2018
Issue Date : 20-Jul-2018 18:47



Accreditation No. 825
 Accredited for compliance with
 ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Rassem Ayoubi	Senior Organic Chemist	Sydney Organics, Smithfield, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP080: Poor matrix spike recovery due to sample matrix. Confirmed by re-analysis.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenzo(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR.
Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TRIP 0.2m	----	----	----	----
Client sampling date / time					13-Jul-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1820957-001	-----	-----	-----	-----
				Result	----	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		18.3	----	----	----	----
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	----	----	----	----
Cadmium	7440-43-9	1	mg/kg		<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg		12	----	----	----	----
Copper	7440-50-8	5	mg/kg		11	----	----	----	----
Lead	7439-92-1	5	mg/kg		42	----	----	----	----
Nickel	7440-02-0	2	mg/kg		5	----	----	----	----
Zinc	7440-66-6	5	mg/kg		31	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg		<0.05	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg		<0.05	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg		<0.05	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg		<0.05	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg		<0.05	----	----	----	----
4,4`-DDE	72-55-9	0.05	mg/kg		<0.05	----	----	----	----
Endrin	72-20-8	0.05	mg/kg		<0.05	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		<0.05	----	----	----	----
4,4`-DDD	72-54-8	0.05	mg/kg		<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	----	----	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				TRIP 0.2m	----	----	----	----
Client sampling date / time				13-Jul-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1820957-001	-----	-----	-----	-----
Result				----	----	----	----	----
EP068A: Organochlorine Pesticides (OC) - Continued								
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5 0-2	0.05	mg/kg	<0.05	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	<0.05	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	<0.05	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	<0.05	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	<0.05	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	<0.2	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	<0.05	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	0.6	----	----	----	----



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				TRIP 0.2m	----	----	----	----
Client sampling date / time				13-Jul-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1820957-001	-----	-----	-----	-----
Result				----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Pyrene	129-00-0	0.5	mg/kg	0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	1.1	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TRIP 0.2m	----	----	----	----
Client sampling date / time					13-Jul-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1820957-001	-----	-----	-----	-----
				Result	----	----	----	----	----
EP080: BTEXN - Continued									
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg		<0.2	----	----	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	----	----	----	----
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		101	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		79.0	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		67.0	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		67.6	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		71.4	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.5	%		67.7	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		82.1	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%		79.7	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		76.0	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		103	----	----	----	----
Toluene-D8	2037-26-5	0.2	%		101	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		106	----	----	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	39	149
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	49	147
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	35	143
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2,4,6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130

QUALITY CONTROL REPORT

Work Order	: ES1820957	Page	: 1 of 11
Client	: ARCADIS AUSTRALIA PACIFIC PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR LEE DOUGLASS	Contact	: Chloe Leong
Address	: L16, 480 GEORGE STREET SYDNEY NSW 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 8907 9000	Telephone	: +61-2-8784 8555
Project	: Asset Geotechnical-126 Kent Road,Marsfield	Date Samples Received	: 16-Jul-2018
Order number	: ----	Date Analysis Commenced	: 17-Jul-2018
C-O-C number	: ----	Issue Date	: 20-Jul-2018
Sampler	: JACK O SHAUGHNESSY		
Site	: ----		
Quote number	: EN/333/17 - Secondary Work		
No. of samples received	: 1		
No. of samples analysed	: 1		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Rassem Ayoubi	Senior Organic Chemist	Sydney Organics, Smithfield, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP068A: Organochlorine Pesticides (OC) (QC Lot: 1805068) - continued									
ES1820944-001	Anonymous	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: 4,4'-DDT	50-29-3	0.2	mg/kg	<0.5	<0.5	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.5	<0.5	0.00	No Limit
ES1820956-001	Anonymous	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP068A: Organochlorine Pesticides (OC) (QC Lot: 1805068) - continued									
ES1820956-001	Anonymous	EP068: 4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 1805068)									
ES1820944-001	Anonymous	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.5	<0.5	0.00	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.5	<0.5	0.00	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.5	<0.5	0.00	No Limit
ES1820956-001	Anonymous	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 1805068) - continued									
ES1820956-001	Anonymous	EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1805067)									
ES1820944-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<2.0	<2.0	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<2.0	<2.0	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<2.0	<2.0	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<2.0	<2.0	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<2.0	<2.0	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<2.0	<2.0	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<2.0	<2.0	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<2.0	<2.0	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<2.0	<2.0	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<2.0	<2.0	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<2.0	<2.0	0.00	No Limit
			205-82-3						
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<2.0	<2.0	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<2.0	<2.0	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<2.0	<2.0	0.00	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<2.0	<2.0	0.00	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<2.0	<2.0	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<1.0	<1.0	0.00	No Limit
ES1820956-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			205-82-3						
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 1805067) - continued									
ES1820956-001	Anonymous	EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1805066)									
ES1820944-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	14400	14800	2.99	0% - 20%
		EP071: C29 - C36 Fraction	----	100	mg/kg	1940	2480	24.5	0% - 50%
		EP071: C10 - C14 Fraction	----	50	mg/kg	<110	<110	0.00	No Limit
ES1820956-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	1590	1500	5.82	0% - 50%
		EP071: C29 - C36 Fraction	----	100	mg/kg	950	1140	18.4	0% - 50%
		EP071: C10 - C14 Fraction	----	50	mg/kg	120	110	11.3	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1805345)									
ES1820944-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
ES1820956-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1805066)									
ES1820944-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	15800	16800	6.09	0% - 20%
		EP071: >C34 - C40 Fraction	----	100	mg/kg	1900	1420	28.7	0% - 50%
		EP071: >C10 - C16 Fraction	----	50	mg/kg	120	<110	0.00	No Limit
ES1820956-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	2100	2080	1.14	0% - 20%
		EP071: >C34 - C40 Fraction	----	100	mg/kg	790	1060	28.7	0% - 50%
		EP071: >C10 - C16 Fraction	----	50	mg/kg	300	280	6.86	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1805345)									
ES1820944-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
ES1820956-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	15	39.9	No Limit
EP080: BTEXN (QC Lot: 1805345)									
ES1820944-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	0.9	0.8	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
ES1820956-001	Anonymous	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
		EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1809732)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	99.2	86	126
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	103	83	113
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	91.7	76	128
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	102	86	120
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	99.1	80	114
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	102	87	123
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	104	80	122
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1809733)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	73.2	70	105
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1805069)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	88.0	62	126
EP068A: Organochlorine Pesticides (OC) (QCLot: 1805068)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	92.8	69	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	86.8	65	117
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	87.1	67	119
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	105	68	116
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	90.4	65	117
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	100	67	115
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	94.6	69	115
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	91.7	62	118
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	87.0	63	117
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	94.9	66	116
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	92.6	64	116
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	92.3	66	116
EP068: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	89.8	67	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	87.7	67	123
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	87.7	69	115
EP068: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	84.9	69	121
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	83.1	56	120
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	90.1	62	124
EP068: 4,4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	86.6	66	120
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	87.2	64	122
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	78.8	54	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 1805068)								



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP068B: Organophosphorus Pesticides (OP) (QCLot: 1805068) - continued								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	91.0	59	119
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	94.2	62	128
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	84.3	54	126
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	82.4	67	119
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	100	70	120
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	90.3	72	120
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	84.0	68	120
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	84.1	68	122
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	87.7	69	117
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	90.3	76	118
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	80.1	64	122
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	81.6	70	116
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	79.1	69	121
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	83.4	66	118
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	78.8	68	124
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	92.1	62	112
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	85.5	68	120
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	90.5	65	127
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	67.3	41	123
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1805067)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	116	77	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	111	72	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	110	73	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	114	72	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	116	75	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	117	77	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	117	73	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	120	74	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	105	69	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	113	75	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	6 mg/kg	101	68	116
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	116	74	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	116	70	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	104	61	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	105	62	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	104	63	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1805066)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	101	75	129

Method Blank (MB) Report

Spike

Spike Recovery (%)

Recovery Limits (%)

Matrix Spike (MS) Report

Sub-Matrix: **SOIL**

Matrix Spike (MS) Report

Spike

SpikeRecovery(%)

Recovery Limits (%)

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 1809732)							
ES1820937-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	97.5	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	93.5	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	91.9	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	99.3	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	96.1	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	94.9	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	98.4	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1809733)							
ES1820937-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	95.3	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1805069)							



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 1805069) - continued							
ES1820944-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	80.0	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 1805068)							
ES1820944-001	Anonymous	EP068: gamma-BHC	58-89-9	0.5 mg/kg	81.7	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	83.8	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	78.1	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	87.2	70	130
		EP068: Endrin	72-20-8	2 mg/kg	80.8	70	130
		EP068: 4.4`-DDT	50-29-3	2 mg/kg	80.4	70	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 1805068)							
ES1820944-001	Anonymous	EP068: Diazinon	333-41-5	0.5 mg/kg	74.6	70	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	72.4	70	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	72.5	70	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	87.7	70	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	75.5	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 1805067)							
ES1820944-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	90.3	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	104	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1805066)							
ES1820944-001	Anonymous	EP071: C10 - C14 Fraction	----	523 mg/kg	96.9	73	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	124	53	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	119	52	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1805345)							
ES1820944-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	# 68.0	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1805066)							
ES1820944-001	Anonymous	EP071: >C10 - C16 Fraction	----	860 mg/kg	97.5	73	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	115	53	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	115	52	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1805345)							
ES1820944-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	# 67.2	70	130
EP080: BTEXN (QCLot: 1805345)							
ES1820944-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	# 61.0	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	# 65.6	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	# 68.2	70	130
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	# 68.1	70	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	# 68.0	70	130



Sub-Matrix: SOIL

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080: BTEXN (QCLot: 1805345) - continued							
ES1820944-001	Anonymous	EP080: Naphthalene	91-20-3	2.5 mg/kg	# 65.9	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES1820957	Page	: 1 of 5
Client	: ARCADIS AUSTRALIA PACIFIC PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR LEE DOUGLASS	Telephone	: +61-2-8784 8555
Project	: Asset Geotechnical-126 Kent Road,Marsfield	Date Samples Received	: 16-Jul-2018
Site	: ----	Issue Date	: 20-Jul-2018
Sampler	: JACK O SHAUGHNESSY	No. of samples received	: 1
Order number	:	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP080/071: Total Petroleum Hydrocarbons	ES1820944--001	Anonymous	C6 - C9 Fraction	----	68.0 %	70-130%	Recovery less than lower data quality objective
EP080/071: Total Recoverable Hydrocarbons - NEPM 2	ES1820944--001	Anonymous	C6 - C10 Fraction	C6_C10	67.2 %	70-130%	Recovery less than lower data quality objective
EP080: BTEXN	ES1820944--001	Anonymous	Benzene	71-43-2	61.0 %	70-130%	Recovery less than lower data quality objective
EP080: BTEXN	ES1820944--001	Anonymous	Toluene	108-88-3	65.6 %	70-130%	Recovery less than lower data quality objective
EP080: BTEXN	ES1820944--001	Anonymous	Ethylbenzene	100-41-4	68.2 %	70-130%	Recovery less than lower data quality objective
EP080: BTEXN	ES1820944--001	Anonymous	meta- & para-Xylene	108-38-3 106-42-3	68.1 %	70-130%	Recovery less than lower data quality objective
EP080: BTEXN	ES1820944--001	Anonymous	ortho-Xylene	95-47-6	68.0 %	70-130%	Recovery less than lower data quality objective
EP080: BTEXN	ES1820944--001	Anonymous	Naphthalene	91-20-3	65.9 %	70-130%	Recovery less than lower data quality objective

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055) TRIP - 0.2m	13-Jul-2018	----	----	----	17-Jul-2018	27-Jul-2018	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T) TRIP - 0.2m	13-Jul-2018	18-Jul-2018	09-Jan-2019	✓	18-Jul-2018	09-Jan-2019	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T) TRIP - 0.2m	13-Jul-2018	18-Jul-2018	10-Aug-2018	✓	19-Jul-2018	10-Aug-2018	✓



Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved (EP066) TRIP - 0.2m	13-Jul-2018	17-Jul-2018	27-Jul-2018	✓	18-Jul-2018	26-Aug-2018	✓
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved (EP068) TRIP - 0.2m	13-Jul-2018	17-Jul-2018	27-Jul-2018	✓	18-Jul-2018	26-Aug-2018	✓
EP068B: Organophosphorus Pesticides (OP)							
Soil Glass Jar - Unpreserved (EP068) TRIP - 0.2m	13-Jul-2018	17-Jul-2018	27-Jul-2018	✓	18-Jul-2018	26-Aug-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM)) TRIP - 0.2m	13-Jul-2018	17-Jul-2018	27-Jul-2018	✓	18-Jul-2018	26-Aug-2018	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080) TRIP - 0.2m	13-Jul-2018	17-Jul-2018	27-Jul-2018	✓	18-Jul-2018	27-Jul-2018	✓
Soil Glass Jar - Unpreserved (EP071) TRIP - 0.2m	13-Jul-2018	17-Jul-2018	27-Jul-2018	✓	19-Jul-2018	26-Aug-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080) TRIP - 0.2m	13-Jul-2018	17-Jul-2018	27-Jul-2018	✓	18-Jul-2018	27-Jul-2018	✓
Soil Glass Jar - Unpreserved (EP071) TRIP - 0.2m	13-Jul-2018	17-Jul-2018	27-Jul-2018	✓	19-Jul-2018	26-Aug-2018	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080) TRIP - 0.2m	13-Jul-2018	17-Jul-2018	27-Jul-2018	✓	18-Jul-2018	27-Jul-2018	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification	
Analytical Methods	Method	QC	Regular	Actual	Expected		Evaluation
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 504,505)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM amended 2013.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM amended 2013.
Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na ₂ SO ₄ and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

ES18 20957



CHAIN OF CUSTODY - Client

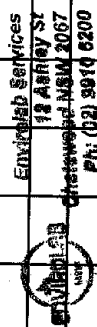
ENVIROLAB GROUP - National phone number 1300 42 43 44

Client: Arcadis
Contact Person: Lee Douglass
Project Mgr: Lee Douglass
Sampler: Jack O'Shaughnessy
Address: Level 16, 580 George Street, Sydney, NSW, 2000
Phone: **Mob:** 0403481503
Email: jack.o'shaughnessy@arcadis.com lee.douglass@arcadis.com.au

Client Project Name / Number / Site etc (ie report title):
Asset Geotechnical-126 Kent Road, Marsfield
PO No.:
Envirolab Quote No.:
Date results required:
Or choose: standard
Note: Inform lab in advance if urgent turnaround is required - surcharges apply
Report format: esdat / equis /
Lab Comments:

- Sydney Lab - Envirolab Services
12 Ashley St, Chatswood, NSW 2067
Ph 02 9910 6200 / sydney@envirolab.com.au
- Perth Lab - MPL Laboratories
16-18 Hayden Crt Myaree, WA 6154
Ph 08 9317 2505 / lab@mpl.com.au
- Melbourne Lab - Envirolab Services
1A Dalmore Drive Scoresby VIC 3179
Ph 03 9763 2500 / melbourne@envirolab.com.au
- Brisbane Office - Envirolab Services
20a, 10-20 Depot St, Banyo, QLD 4014
Ph 07 3266 9532 / brisbane@envirolab.com.au
- Adelaide Office - Envirolab Services
7a The Parade, Norwood, SA 5067
Ph 0406 350 706 / adelaide@envirolab.com.au

Sample information				Tests Required									
Envirolab Sample ID	Client Sample ID or information	Depth	Date sampled	Type of sample	Combo 6	Ad (L/A)	Ad (L/A)	Ad (L/A)	Ad (L/A)	Ad (L/A)	Ad (L/A)	Ad (L/A)	Ad (L/A)
1 13	5001	6.2	18/7/18	Soil	X	X							
2 14	5602				X								
3 15	5603				X								
4 16	5604				X								
5 17	5605				X								
6 18	5606				X								
7 19	5607				X								
8 20	5608				X								
9 21	241				X								
10 22	FL6				X								



Job No: 190252
Date Received: 13/7/18
Time Received: 12:30
Received By: K. V.
Temp: 20°C Ambient
Cooling: Icepack
Security: Intact/Broken/None



Environmental Division
Sydney
Work Order Reference
ES1820957

Telephone : + 61-2-8784 8655

ANDREW
16/7/18
3:14PM

Send to KLS ✓

Relinquished by (Company): Arcadis
Print Name: Jack O'Shaughnessy
Date & Time: 17.7.18 16/7/18 13:00
Signature: [Signature]

Received by (Company):
Print Name: KLS
Date & Time: 13/7/18 10:30
Signature: [Signature]

Lab use only:
Samples Received: Cool or Ambient (circle one)
Temperature Received at: (if applicable)
Transported by: Hand delivered / courier