



Victorian Distillery and Silos Owners Consortium

Detailed Site Investigation

21 Northumberland and 26 Wellington
Streets, Collingwood, VIC, 3066

January 2019



Victorian Distillery and Silos Owners Consortium
Soil and Soil Vapour Assessment Report
21 Northumberland and 26 Wellington Streets, Collingwood, 3066
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Executive Summary

Edge Group Pty Ltd (Edge) was commissioned by Best Hooper Lawyers (Best Hooper) to conduct a Detailed Site Investigation (DSI) in October 2018 at 21 Northumberland and 26 Wellington Streets, Collingwood, (the Site).

Edge understands the Victorian Distillery and Silos Owners Consortium (VDSOC) (the Client) is considering an amendment request to the Council to enable the land to be permitted for residential use (dwellings) under the Planning Scheme.

A Preliminary Site Investigation previously conducted by Edge at the site concluded that, although there was a high risk of potential contamination at the site based on historical site use and surrounding land use Edge considered the preliminary environmental risk to current Site users to be low in the current Site setting. Edge suggested a Detailed Site Investigation (DSI) be undertaken to further assess the environmental condition and to affirm the current suitability of the Site for residential land use.

The primary purpose of the works was to provide further information and understanding of potential risks to human health and the environment posed by on-site contamination.

The majority of the site is sealed with concrete or asphalt with some small outdoor landscaped areas. Fill, over varying quality, underlies the surface up to depths of 1.5mbgl and comprised of silty clay with gravels and some wood and plastic fragments, and natural silty clay beneath to the depth of the investigation.

A total of 30 soil samples were collected from nine soil bores advanced across the Site, with 17 of these soil samples selected for analysis. Two soil vapour bores and three Soil Vapour Pin™ locations were installed at the site with a SV sample collected and analysed from each of the locations.

Lead and benzo(a)pyrene were detected in the fill layer in two soil bores (SB08 and SB02 respectively) at concentrations greater than the soil assessment criteria (NEPM HIL-B). The reported exceedances of the soil assessment criteria were all noted in the uppermost 0.7 m of the Fill soil profile, either beneath the concrete slab (benzo(a)pyrene in SB02) or beneath a layer of pebble gravel (lead in SB08). Direct human contact with impacted soils is considered unlikely to occur, and Edge considers that there is no unacceptable risk to current Site users. However, consideration may be given to removing and replacing the impacted soil or installing an improved barrier to prevent soil access.

A total of five soil vapour samples were collected from three soil vapour pins (SVP01-SVP03) and two soil vapour bores (SVB01 & SVB02).

The soil vapour assessment indicated the presence of two contaminants of potential concern (CoPC) which required further assessment (Bromodichloromethane in SVP03 and Chloroform in SVB01, SVB02 & SVP03). A specialist risk assessor (EnRiskS) indicated that there was no concern for the use of the site for high density residential purposes in the current site setting.

The Site in its current layout is considered suitable for commercial/industrial and residential use. Should any changes to the Site layout occur then an updated assessment of risk would be required.

1. Introduction

1.1 General

Edge Group Pty Ltd (Edge) was commissioned by Victorian Distillery and Silos Owners Consortium (VDSOC) to conduct a DSI at 21 Northumberland and 26 Wellington Streets Collingwood site (the Site). The location of the Site is provided in **Figure 1**.

The purpose of this report is to document the soil and SV assessment at the Site in order to assess the environmental condition and to determine the current suitability of the Site for residential land use.

1.2 Background

The Site comprises multiple lots (approximately 2,875 m² combined total area), which were redeveloped for partial commercial and partial residential land uses. A large portion of the ground floor is used for car parking, see **Figure 1** for the Site Layout.

Edge understands that the Site requires an amendment to the Planning Scheme to allow the Site to be permitted for residential use (dwellings).

A PSI (which should be read in conjunction with the DSI) was conducted previously by Edge which identified:

- The Site has been used previously as a Distillery from the mid-1800s to 1992 where it has since (1997) been redeveloped for commercial land use with the potential for residential dwellings.
- Key items of current and historical information indicate the potential for contamination of soil, groundwater and/or soil vapour sourced from on-Site activities:
 - Use of the Site as a distillery from mid-1800s to 1992;
 - Identification of a 'Tank' (unknown to be UST or AST) historically in the north west corner of the Site; and
 - Potential presence of imported fill.
- Key items of current and historical information indicate the potential for contamination of soil, groundwater and/or soil vapour sourced from off-Site activities:
 - Historical Brewers and Grain Merchants located to the west, east and south of the Site;
 - Historical Electrical Welders and Oxy-acetylene previously located west of the Site; and
 - Historical Textile Manufacturers located to the west of the Site.
- The PSI identified a high potential for impacted soil to be present on site, however in the current site setting there is considered to be a low risk to current site users.

1.3 Objectives and Purpose

The PSI identified a high potential for contamination, however a low risk to site occupants, A scope of work was developed based on existing site layout and use which considered the key potential risk to be soil contamination and vapour intrusion.

This scope of the investigation was not developed to quantify all risks to all receptors, e.g. Offsite groundwater.

In order to achieve this objective, the aims of the soil investigation works included:

- Investigate the potential for unacceptable risk to human health and/or the environment from the presence of potentially impacted soils.

- Investigate the potential for unacceptable risk to human health and/or the environment from the presence of potentially impacted SV.

1.4 Scope of Work

To achieve the objectives detailed above, the following scope of work was implemented:

- Bore logging and soil sampling at nine soil bore locations.
- Installation of three SV pins in concrete slabs around the Site.
- Installation of two Soil Vapour Bores (SVBs) on Site.
- Laboratory analysis of selected soil and SV samples for identified and potential CoPCs associated with the historical use of the Site and neighbouring premises.
- Preparation of this report detailing the findings of the DSI.

All soil investigation works at the Site were conducted in general accordance with the following environmental legislation and guidelines:

- Standards Australia, *Australian Standard 4439.2-1997 Wastes, sediments and contaminated soils. Part 2: Preparation of Leachates – Zero headspace procedure*, 1997 (AS4439.2-1997).
- Standards Australia, *Australian Standard 4482.1-2005 Guide to the investigation and Sampling of Sites with Potentially Contaminated Soil. Part 1: Non-volatile and semi-volatile compounds*, 2005 (AS4482.1-2005).
- Standards Australia, *Australian Standard 4482.2-1999 Guide to the investigation and Sampling of Sites with Potentially Contaminated Soil. Part 2: Volatile Substances*, 1999 (AS4482.2-1999).
- Victorian Government, *Environment Protection Act*, 1970 (EP Act)
- EPA Victoria, *Publication 759.3: Environmental Auditor (Contaminated Land): Guidelines for Issue of Certificates and Statements of Environmental Audit*, December 2015.
- Victorian Government, *State Environment Protection Policy Prevention and Management of Contaminated Land*, 2002 (as gazetted in 2013) (Land SEPP).
- National Environment Protection Council (NEPC), *National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013 (No.1) – Amendment of the National Environment Protection (Assessment of Site Contamination) Measure (NEPM)*, 1999 (NEPM 2013);

The soil vapour investigation works at the Site were conducted in general accordance with the following environmental legislation and guidelines:

- Cox-Colvin & Associates Inc. *Standard Operating Procedures (SOPs) for the installation and sampling of Vapor Pins™* (www.vaporpin.coxcolvin.com);
- CRC CARE, *Technical Report 13 – Field Assessment of Vapours*, August 2009; and
- CRC CARE, *Technical Report 23 – Petroleum Hydrocarbon Vapour Intrusion Assessment – Australian Guidance*, July 2013 (relevant sections to general SV assessment techniques); and
- U.S. Environmental Protection Agency (USEPA), *Compendium Method TO-15 – Determination of Volatile Organic Compounds (VOCs) in Air Collected In Specially-Prepared Canisters and Analyzed by Gas Chromatography/ Mass Spectrometry (GC/MS)*, 1999 (USEPA TO-15 1999).

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2. Methodology

2.1 Soil Sampling Methodology

2.1.1 Soil Sample Locations

The soil assessment involved the collection of representative soil samples from nine soil bore locations (SVB01/SB01, SB02 – SB09) advanced across the surface of the Site undertaken on 24 and 25 November (as shown in **Figure 2**).

Soil bores locations were targeted at areas of potential impact and potential ground floor residences (based on the outcomes of the PSI Report). Soil bores were terminated upon intersection with natural soils to provide an indication of the potential for impacts in the fill soils at the Site.

Five soil bores (SVB01/SB01, SB02, SB04 – SB06, and SB09) were concrete cored through the concrete slab, then advanced through the fill material present beneath the concrete slab into the underlying natural clay, using hand auger methods. The remaining four soil bores (SVB02/SB07, SB03, and SB08) were advanced using the same method but no concrete was encountered at these locations. Given the variable depth to the natural clays beneath the Site, soil bores were advanced to between 0.3 m and 1.8 m below ground level (mbgl).

Locations SVB01/SB01, SB02, SB04, and SB09 were installed in concrete sealed, sheltered car parks around the Site. Remaining locations, SB03, SB05, SB06, SVB02/SB07, and SB08, were installed in outdoor areas.

2.1.2 Soil Sampling Methodology

The following methodology was adopted during the soil sampling:

- All soil samples collected were subject to screening in the field for the presence of volatile organic compounds (VOCs) using initial visual and olfactory assessment (including visual screen for the presence of potential asbestos containing materials), and subsequent screen using a calibrated 10.6 eV lamp photo-ionisation detector (PID).
- Soil samples were collected directly from the hand auger using a clean pair of disposable nitrile gloves for each sample, with a primary sub-sample then placed into lab provided and prepared sample containers with Teflon® sealed lids;
- A secondary sub-sample was placed into a Ziploc bag, labelled with the location and depth details, sealed and set aside, allowing sufficient airspace above the sample to collect a headspace VOC sample using the PID. The sample was left to equilibrate with the headspace for 5-10 minutes, after which the bag will be pierced using the tip of the PID (which was running constantly to provide a measure of potentially hazardous atmospheres during sampling) and a field measurement of VOC concentration was taken and recorded on the field sheets and bore logs. This sub-sample was returned to the completed borehole, following completion of the PID headspace test;
- All primary and secondary soil samples were identified with a unique sample identifier, which was documented on: the sample label; bore log; and chain of custody form;
- A soil bore log (included as **Appendix A**) was completed for each soil bore including: a description of materials encountered; olfactory and visual evidence of contamination; PID readings; moisture content and encountered water levels (where applicable); sample intervals; and sample identifiers.

- All primary (and Quality control/Quality Assurance (QA/QC)) soil samples were placed in an ice-cooled storage box (e.g. Esky®) immediately after collection and transported under chain of custody documentation to the analytical laboratory.
- All field sampling equipment was decontaminated prior to use at each soil bore location to limit the potential for cross-contamination. Decontamination of field equipment involved: wash with clean potable water; scrubbing in a detergent solution (Decon® 90) and potable water; and a final rinse in deionised water.

2.2 Soil Vapour Sampling Methodology

Soil Vapor Pins™ are routinely installed in concrete slabs to provide an assessment of soil vapours immediately beneath buildings (where the SVP is placed at least 5m from the edge of the concrete slab and any large cracks, to prevent atmospheric intrusion into the sample), whereas the SVBs were installed to greater depths than the SVPs to reduce the potential for atmospheric intrusion into the sample.

2.2.1 Soil Vapor Pin™ Installation Methodology

The SV assessment included the installation of three Soil Vapor Pins™ (SVP01 – SVP03), using the following methodology:

- The SVPs were installed at the Site within concrete hardcover.
- The SVPs were installed in the concrete slab using concrete breaker drill with 38 mm and then a 16 mm concrete auger drill bit, in accordance with the manufacturers' standard operating procedure (SOP).
- The SVP locations were installed as a semi-permanent sample point with a flush mount stainless steel cover, so that additional rounds of SV sampling could be completed at the Site, if required.
- A stainless steel VP was used to minimize the potential for corrosion of the SVPs and to provide a harder wearing installation should sampling be required over an extended period.

2.2.2 Soil Vapor Pin™ Sample Collection Methodology

A total of three SV samples were collected from the Soil Vapour Pins a week after installation to allow the SVP to equilibrate with surrounding soil vapour following installation. The sample was collected using 1.2 L vacuum canisters (either Summa® or Silonite® type) fitted with SV flow restrictors set for a flow rate of 60mL/minute.

Prior to completing SV sampling at the SVP locations, Edge field staff conducted leak testing using a water leak test, following the manufacturer's SOP. Due to the deployment of the SVPs in a countersunk hole, water was poured directly into the concrete surrounding the SVP in order to test for leaks rather than using a water dam.

The general sampling methodology used for the SV sampling was as follows:

- Prior to sampling, the flush mount stainless steel cover and dust cap fitted to the VP during install was removed
- The SVP was then connected to a length of dedicated certified clean Teflon® tubing with a 3-way Swagelok® ball valve to control and isolate SV flow from the SVP;
- The SVP concrete cavity was then filled with water to concrete level around the connected Teflon® tubing and remained in place throughout sampling – the integrity of the SVP was assessed through monitoring of the water level drop/drawdown. If the water level did not change during sampling it was considered that the SVP was not leaking;

- A PID with a 10.6 eV lamp was then be attached to a port on the ball valve;
- The 3-way ball valve was then opened and the PID used to complete a short pre-screen of VOCs in the sub-slab vapour (20 seconds max) – this was not to purge the SVP;
- Once the initial VOC pre-screen was completed, the ball valve was closed prior to stopping the PID pump to complete a shut-in test. If no leaks were present in the sample train above SVP, the vacuum alarm sounds on the PID, indicating that the PID was experiencing vacuum conditions, indicating that there are no significant leaks in the sampling train itself;
- After completion of the VOC pre-screen and shut in test the PID was disconnected from the sampling train;
- The initial pressure of the lab supplied vacuum canister was confirmed using a lab supplied vacuum check gauge to confirm that it was still under the lab induced vacuum conditions (typically > -30" Hg);
- Once pressure checks were completed the lab supplied SV flow restrictors and manifold were connected to the opposite side of the closed ball valve used for the PID, again using dedicated certified clean Teflon® tubing, air tight Swagelok® fittings and Teflon® ferrules;
- The vacuum canisters were then connected to the flow restrictor and manifold, the ball valve opened and sampling commenced. The flow restrictor and manifold pressure gauges were carefully monitored and the vacuum allowed to reduce to approximately -5" Hg during sampling;
- Once the vacuum gauge reached approximately -5" Hg the ball valve was closed and the canister detached from the flow restrictor and manifold, which was then detached from the sampling train;
- Once sampling was completed, a GA5000 landfill gas analyser was connected to the sampling train, the ball valve opened and the SVP screened for general gases (CH₄, CO₂ and O₂) in SV, with the atmospheric pressure and relative pressure recorded. Screening continued until readings stabilised and/or a maximum of 180 seconds elapsed; and
- Once the GA5000 screening was completed the sampling train, water and all associated fittings was removed from the SVP, the dust cap replaced and the flush mount stainless steel cover replaced, sealing the SVP.
- All SV samples were identified with a unique sample identifier, which was documented on: the sample label and chain of custody form;

Field observations (leak test results, PID readings, GA5000 readings, canister number, flow restrictor and manifold number, etc.) were recorded for the SVP on a SV sampling sheet (see **Appendix B**).

Note – In accordance with the manufacturers' SOP and available published literature, there is no requirement for the purging of SVP locations prior to sampling due to the very small internal volume of the VPs themselves, and the fact that sub-slab soil vapour is typically in equilibrium with this internal volume and the minimal disturbance of the SV during installation.

2.3 Soil Vapour Bore Sampling Methodology

2.3.1 Soil Vapour Bore Installation Methodology

Edge installed two SVBs (SVB01/SB01 – SVB02/SB07) at the Site to a depth of 1.8 m below ground level (mbgl).

The SVB locations were installed with a 150 mm long perforated stainless-steel SV implant tip with Swagelok® fittings, connected to certified clean ¼ inch Teflon® tubing which extended above ground level. Each SVB location was installed as follows:

- 0.05 m graded filter sand below the implant tip to act as a moisture sump and prevent 'flooding' of sample train during subsequent sampling;
- 0.3 m graded filter sand from base of implant tip to 0.05 m above to act as SV filter pack;
- 0.05 m dry powdered cement installed above sand to act as moisture barrier and seal above implant tip;
- hydrated bentonite chips installed to a minimum thickness of 0.35 mbgl to provide a solid seal around the Teflon® tubing and the bore walls;
- A minimum of 0.20 m quick set concrete plug to ground surface with standard 50 mm groundwater well Gatic cover (with rubber/silicone o-ring seal) installed; and
- The Teflon® tubing was sealed using a stopper and approximately 0.5 m of tubing coiled inside the Gatic cover for subsequent sampling.

A bore log was completed for each SVB location including a description of materials encountered, olfactory and visual evidence of contamination, PID readings (a PID with an 10.6. eV lamp was used during installation of the SVBs), moisture conditions and water levels, sample intervals and numbers, and bore construction details. Borelogs for each of the SVBs are provided in **Appendix A**.

2.3.1 Soil Vapour Bore Sample Collection Methodology

Soil vapour samples were collected from the each of the SVBs using individually numbered, dedicated vacuum canisters and flow restrictors. All vacuum canisters and flow restrictors supplied by Envirolab were supplied with certificates showing that they were cleaned and confirmed to be VOC free prior to shipment (see **Appendix C**).

Each installed SVB was subject to leak testing during the SVME. Leak testing; using IPA tracer, was conducted using a large vapour shroud which covered the entirety of the monument cover. The large vapour shroud acted to contain the IPA vapour around the SVB headworks during the leak testing.

The methodology used to conduct the leak testing was as follows:

- The sampling train was connected to the SVB tubing and this passed out through the shroud via a sampling port to connect to the field equipment and/or sampling train via a three-way Swagelok® ball valve to control and isolate SV flow from the bore. The ball valve was set closed so that no ambient air entered the SVB and no SV escaped;
- A clean cloth was then doused with high purity IPA, supplied by Envirolab as the primary analytical laboratory, and placed within the monument headworks (around the SVB tubing), and left for a period of 60 seconds to allow the IPA to volatilise and saturate the atmosphere inside the shroud;
- The saturation of the shroud was confirmed via a second sampling port open to the shroud interior, using a PID with a 10.6 eV lamp calibrated for IPA, with the reported concentration of IPA (assumed in the absence of background VOCs) in the shroud recorded on the field sheets;
- Following receipt of the laboratory analytical results, the reported concentrations of IPA in the samples were compared to the PID readings taken in the field to determine if unacceptable leakage had occurred (see **Section 6.7**).

Following the completion of the leak test the general sampling methodology used for the SVB locations was as follows:

- Once leak testing was completed, the three-way ball valve was closed prior to stopping the PID pump to complete a 'shut-in' test. Where no leaks were present in the sample train the vacuum alarm sounded on the PID, indicating that the PID was experiencing vacuum conditions and that there were no significant leaks in the sampling train itself;
- The initial pressure of the lab supplied vacuum canister was confirmed using a lab supplied vacuum check gauge, to confirm that they were still under lab induced vacuum conditions;
- Once pressure checks were completed, the lab supplied SV flow restrictor and manifold was connected to the opposite side of the closed three-way ball valve, again using dedicated certified clean Teflon® tubing, air tight Swagelok® fittings and Teflon® ferrules;
- Sampling commenced by opening the ball valve to the SVB. The flow restrictor and manifold pressure gauge were carefully monitored and the vacuum allowed to reduce to approximately -5 "Hg during sampling;
- Once the vacuum gauge reached approximately -5 "Hg the ball valve was closed and the canister detached from the flow restrictor and manifold, and then detached from the sampling train;
- Once sampling was completed, a GA5000 landfill gas analyser was connected to the sampling train, the ball valve opened and the SVB screened for general gases (CH₄, CO₂ and O₂) in SV, with the atmospheric pressure and relative pressure recorded. Screening continued until readings stabilised **or** until 180 seconds elapsed;
- Once the GA5000 screening was completed, the sampling train, and all associated fittings were removed from the SVB and the blanking nut replaced, sealing the SVB.

2.4 Sample Analysis

All soil and SV primary and QA/QC samples were submitted to a National Association of Testing Authorities (NATA) accredited laboratory for analysis for the presence of the identified CoPC.

2.4.1 Soil Sample Analysis

Table 1 below details the analytical schedule completed for the samples.

Table 1– Soil Sample Analysis

Location-Depth (mbgl)	Strata	No. Samples	Analytes
SVB01-0.7; SVB01-1.5; SB02-0.7; SB03-0.3; SB04-0.2; SB04-1.2; SB05-0.2; SB05-1.1; SB06-0.8; SB07-0.5; SB07-2.0; SB08-1.0; SB09-1.1	Fill & Natural Material	13	Metals, BTEXN, TRH, PAH, & MAH
SB01-0.7; SB05-0.2; SB06-0.8; SB09-0.2		4	Nutrients
SB02-1.5; SB09-0.2		2	NEPM Suite
SB09-0.2		1	pH and Sulphate
Sample Type	Frequency	No. Samples	Analytes
Field Duplicate (intra-laboratory)	1/20 samples	1	Metals, BTEXN, TRH, PAH, & MAH
Field Split Duplicate (inter-laboratory)		1	

Location-Depth (mbgl)	Strata	No. Samples	Analytes
Rinsate Blank	1/day	1	BTEXN & TRH C ₆ -C ₉ & Metals
Trip Blank	1/batch	1	BTEXN & TRH C ₆ -C ₉

Notes

VOCs = Includes all key project CoPC (PCE, TCE, DCE and VC) + a broad screen for general VOCs.

NEPM 13 metals = As, Be, B, Cd, Co, Cr (CrIII and CrVI), Cu, Pb, Hg, Mn, Ni, Se and Zn

BTEXN = Benzene Toluene Ethylbenzene Xylenes and Naphthlene

TRH = Total Recoverable Hydrocarbons

PAH = Polycyclic Aromatic Hydrocarbons

MAH = Monocyclic Aromatic Hydrocarbons

2.4.2 Soil Vapour Sample Analysis

Table 2 details the analytical schedule completed for the SV assessment works.

Table 2 – Soil Vapour Sample Analysis

Location	Depths (mbgl)	No. Samples	Analytes
SVP01; SVP02; SVP03; SVB01; SVB02	Sub-Slab	5	USEPA TO-15 VOC TPH, CH ₄ CO ₂ O ₂
Sub total		5	
Field Split (interlab) Duplicate	1/20 samples	1	USEPA TO-15 VOC TPH, CH ₄ CO ₂ O ₂
Sub total		1	
TOTAL		6	

Notes

USEPA TO-15 VOC = Includes all key project CoPC (PCE, TCE, DCE and VC) + a broad screen for general VOCs.

No trip blanks are required for active SV samples collected using vacuum canisters. Instead, vacuum is measured at completion of sampling and upon receipt to assess potential for leakage.

Dedicated vacuum cans and sampling equipment were used at all SV locations.

3. Field Observations

The soil and soil vapour assessment was completed at the Site on 24, 25 and 31 November 2018 in accordance with the methodology discussed in **Section 2**.

A suitably qualified and experienced Edge Environmental Scientist was present on-site at all times during the works to manage health, safety and environmental issues; conduct hand auger soil sampling; record the lithological profile; and make field observations of visual and olfactory evidence of contamination.

The majority of the surface of the Site was covered by concrete hardstand, with the exception of three locations (SB03, SB07, and SB08) which were covered with gravel. The general stratigraphy encountered during the soil investigation works at the Site can be summarised as:

- **0.0 – 0.4m:** Concrete Slab or 0.0 – 0.1m gravel;
- **0.1 – 1.5m:** Fill – Silty clay, low plasticity, with gravels and/or sand, mottled brown and/or orange, increasing in plasticity with depth, some wood and plastic fragments;
- **+0.6m:** Natural – Silty Clay, brown, medium plasticity, soft, trace and silt.

Representative soil samples were collected from the fill and natural soil profile as encountered. Detailed soil bore logs associated with the soil investigation works undertaken are included in **Appendix C**.

Field screening identified an unidentified odour at SB02 at a depth of 1.5m, no further evidence of contaminant impacts were identified. PID readings recorded on the bore logs ranged from 0.0 to 2.2 ppm.

Additionally, no asbestos or ACM were encountered during the soil assessment works at the Site.

A total of 30 primary soil samples were collected, of which 17 were analysed from the nine boreholes (SVB01/SB01, and SB02 – SB09). The locations of the soil boreholes are presented in **Figure 2**.

4. Adopted Soil Assessment Criteria

4.1 Soil Assessment Criteria

The Land SEPP provides a framework for the protection of land and associated beneficial uses in Victoria. The Land SEPP defines land use categories and associated beneficial uses of land to be protected. Beneficial uses of land are considered to be precluded when relevant soil quality objectives set out in the Land SEPP have been exceeded.

The land use at the Site includes one or more of the following beneficial uses of land:

- Commercial; and
- High density residential.

The beneficial uses of land requiring protection depending on the proposed land use are presented in **Table 3**.

Table 3– Land SEPP Protected Beneficial Uses

Beneficial Uses	Land Use						
	Parks & Reserves	Agricultural	Sensitive Use		Recreational / Open space	Commercial	Industrial
			High Density	Other			
Maintenance of Ecosystems: Natural Ecosystems	✓						
Maintenance of Ecosystems: Modified Ecosystems	✓	✓		✓	✓		
Maintenance of Ecosystems: Highly Modified Ecosystems		✓	✓	✓	✓	✓	✓
Human Health	✓	✓	✓	✓	✓	✓	✓
Buildings and Structures	✓	✓	✓	✓	✓	✓	✓
Aesthetics	✓	✓	✓	✓	✓	✓	
Production of Food, Flora & Fibre	✓	✓		✓			

Notes

Table reproduced from Land SEPP.

✓ - Indicates beneficial uses to be protected applicable to the Site.

Shading denotes the most relevant land use category for the Site. Other beneficial uses have been considered in the context of determining whether land at the Site would be suitable for any beneficial use.

The assessment criteria relevant to this soil investigation for the protection of beneficial uses of land are summarised in **Table 4**.

Chemical concentrations above the respective applicable investigation/screening levels would not automatically trigger remedial action, but should be considered to be indicative of the potential need for further assessment and/or investigation and evaluation of potential risks. Concentrations of potential contaminants above the investigation levels are not intended to be

clean-up levels. A decision as to whether clean-up is required would be based on site-specific assessment triggered by exceedances of the adopted investigation / screening levels.

Table 4 – Adopted Soil Assessment Criteria

Protected Beneficial Use	Adopted Soil Assessment Criteria
Human Health	- NEPM 2013 - Health Investigation Levels (HILs) have been adopted to assess potential risk to human health for a range of beneficial uses. The adopted HILs are: - HIL-B applicable to high-density residential developments without accessible soil. - HIL-D applicable to commercial/industrial land uses such as shops, offices, factories and industrial sites. - NEPM 2013 - Health Screening Levels (HSLs) have been adopted to assess potential risk to human health from the migration of hydrocarbon vapours from a vapour source within soil. HSLs applicable to volatile petroleum hydrocarbons have been adopted. The adopted HSLs are: - HSL-B for vapour intrusion for high density residential assume residential occupation of the ground floor. - HSL-D applicable to commercial / industrial developments. - United States Environmental Protection Agency, <i>Region 3, 6 and 9 – Regional Screening Levels for Resident Soil (THQ=1.0)</i>, 2018 (USEPA RSLs).

4.2 Soil Vapour Assessment Criteria

Edge has adopted the soil vapour assessment criteria detailed in **Table 5**.

Table 5 – Adopted Soil Vapour Assessment Criteria

CoPC	Adopted Assessment Criteria (mg/m ³)			
CHCs	NEPM 2013 Interim HIL-A/B		NEPM 2013 Interim HIL-D	
PCE	2		8	
TCE	0.02		0.08	
cis-1,2-DCE	0.08		0.3	
VC	0.03		0.1	
1,1,1-trichloroethane (1,1,1-TCA)	60		230	
Petroleum Hydrocarbons	NEPM 2013			
	HSL A and B – Sand (0- <1m)*	HSL A and B – Clay (0-<1m)	HSL-D– Sand (0-<1m)*	HSL-D – Clay (0-<1m)
Benzene	1	1	4	5
Toluene	1,300	1,600	4,800	6,500
Ethylbenzene	330	420	1,300	1,800
Xylenes	220	280	840	1,200
Naphthalene	0.8	1	3	4
F1 (TRH C ₆ -C ₁₀ – BTEX)	180	230	680	1,000
F2 (TRH C ₁₀ -C ₁₀ – naphthalene)	130	180	500	800

Notes

* Sand was selected as the applied HSL as it the most conservative assessment criteria

In the absence of either interim HIL or HSL criteria for a selection of other VOC analytes reported in the SV results for the SVME, Edge has also applied the United States Environmental Protection Agency Regional Screening Levels (USEPA RSL) (THQ=1.0) criteria for indoor air at residential sites, corrected using the generic NEPM 2013 SV to indoor air attenuation factor of 0.1, as per NEPM 2013 (Schedule B1, Page 51, Table 1A (2), Note 2).

For simplicity, only the residential overseas soil vapour assessment criteria have been applied, as the exposure assumptions for residential receptors are more conservative than industrial receptors. As such, consideration and discussion of USEPA RSL modified soil vapour assessment criteria exceedances in **Sections 5.2** and **7.2** also addresses the potential vapour intrusion risk to commercial workers at the Site.

5. Results

5.1 Soil Assessment Analytical Results

The soil sample analytical results identified exceedances of one or more adopted criteria at two of the nine (22%) soil borehole locations, all of which were noted in samples of fill material.

Table 6 provides a summary of the identified exceedances of the adopted soil criteria. This information is also presented in **Figure 3**.

A detailed summary of the soil analytical results for all soil samples collected during the soil assessment is presented in **Table 1** in **Appendix D**. Copies of the NATA accredited laboratory reports are provided in **Appendix E**.

Table 6 – Summary of Exceedances of Soil Assessment Criteria

Location	Analyte	Concentration (mg/kg)	Highest Criterion Exceeded
SB02 (0.7 mbgl)	B(a)P	4.3 (TEQ zero)	NEPM 2013 HIL-B – 4 mg/kg
SB08 (0.3 mbgl)	Lead	1,280	NEPM 2013 HIL-B – 1,200 mg/kg

Notes

B(a)P = Benzo(a)Pyrene

For consistency shading in cells matches the shading in **Appendix D**.

5.2 Soil Vapour Assessment Analytical Results

The soil vapour analytical results identified exceedances of one or more adopted criteria at three of the five (60%) soil vapour locations. **Table 7** provides a summary of the identified exceedances of the adopted soil vapour assessment criteria, detailed results are provided in **Table 1** in **Appendix F**. Copies of NATA accredited laboratory reports are provided in **Appendix G**.

Table 7 – Summary of Exceedances of Soil Vapour Assessment Criteria

Location	Analyte	Concentration (µg/m³)	Highest Criterion Exceeded
SVP03	Bromodichloromethane	30	USEPA RSLs Resident Air (THQ =1.0) – 7.6
SVB01	Chloroform	190	USEPA RSLs Resident Air (THQ =1.0) – 12
SVB02		26	
		20	

6. Analytical Data Validation

6.1 Duplicate Samples

6.1.1 Soil Duplicates

A total of 17 primary soil samples were submitted for laboratory analysis as part of the soil assessment.

One Field Duplicate (intra-laboratory) and one Field Split Duplicate (inter-laboratory) sample were collected in addition to the primary samples.

Table 8 details the duplicate samples collected and submitted for laboratory analysis as part of the soil investigation works completed at the Site for the Soil and Soil Vapour Assessment.

Table 8 – Soil Duplicate Samples

Sample ID	Type	Primary Sample ID	Laboratory	Analytes
FD01	Field Duplicate (intra-laboratory)	SB05-0.2	Envirolab	Metals, BTEXN, TRH, PAH & MAH
FS01	Field Split Duplicate (inter-laboratory)		ALS	

6.1.2 Soil Vapour Duplicate

A single primary SV sample was submitted for laboratory analysis as part of the SV assessment.

One Field Split Duplicate (inter-lab) sample was collected in addition to the primary sample.

Table 9 details the duplicate sample collected and submitted for laboratory analysis as part of the SV investigation works.

Table 9 – Soil Vapour Duplicate Sample

Sample ID	Type	Primary Sample ID	Laboratory	Analytes
FS01	Inter-Laboratory Duplicate	SVP01	Envirolab	USEPA TO-15 VOC TPH, CH ₄ , CO ₂ , and O ₂

6.2 Relative Percentage Difference

A relative percentage difference (RPD) was calculated for each intra-laboratory duplicate and inter-laboratory duplicate pair to obtain a quantitative measure of the accuracy of the results obtained. A RPD range of 30% to 50% is generally considered acceptable, as outlined in AS4482.1-2005 and NEPM 2013. The RPD data is provided in **Appendix D & F**.

Validation and interpretation of the QA/QC data was undertaken by calculating the RPD for each duplicate pair. The RPD values were calculated using the formula:

$$RPD\% = \frac{(X_1 - X_2)}{M} \times 100$$

Where:

X₁ = primary sample result

X₂ = duplicate sample result

M = mean result of parent and duplicate

6.2.1 Soil RPD Results

A summary of those RPD results for soil samples which fell outside of the acceptable RPD range is provided in **Table 10**. The following observations were made regarding the soil RPDs:

- RPD results for the Field Duplicate (intra-laboratory) samples identified that 31 of the total 33 RPD values were below 50%, with an overall acceptable precision of 94%.
- RPD results for the Field Split Duplicate (inter-laboratory) samples identified that 32 of the total 33 RPD values were below 50%, with an overall acceptable precision of 97%.

As the duplicate sample was collected from fill material, the RPD exceedances noted may be partially attributed to the heterogeneous nature of the fill at the site.

Table 10 – Summary of Intra-laboratory & Inter-laboratory RPD Exceedance Results for Soils

Analyte	Primary Conc (mg/kg)	Duplicate Conc (mg/kg)	RPD%	Discussion
Field (Intra-Laboratory) Duplicate				
Copper	19	78	122	Not Significant - While the RPD was outside the acceptable range, the results are still well below the most sensitive adopted criterion (6,000 mg/kg). Therefore, the high RPD is considered unlikely to affect the outcomes of the investigation
Manganese	58	108	60	Not Significant – While the RPD was outside the acceptable range, both results were below the most sensitive adopted criterion (3,800 mg/kg). Therefore, the high RPD is considered unlikely to affect the outcomes of the investigation
Field Split (Inter-Laboratory) Duplicate				
Nickel	24	13	59	Not Significant - While the RPD was outside the acceptable range, the overall variation is within the same order of magnitude and the highest reported result was two orders of magnitude below the most sensitive adopted criterion (400 mg/kg). Therefore, the high RPD is considered unlikely to affect the outcomes of the investigation.

6.2.2 Soil Vapour Relative Percent Difference

All RPD results for the intra-laboratory soil vapour sample were within the acceptable RPD range.

6.3 Laboratory Limit of Reporting (LOR)

6.3.1 Soil LORs

All of the LORs for analytes in soil with an applicable assessment level were sufficiently low to allow comparison against those assessment levels. Therefore, the sensitivity of the laboratory method for soil is considered sufficient.

6.3.2 Soil Vapour LORs

A number of laboratory LORs were reported at higher concentrations than adopted assessment criteria. Laboratory LOR exceedances of adopted assessment criteria may result in a non-detect being dismissed as insignificant, however that analyte could be present at concentrations that

exceed relevant assessment criteria and pose a risk to human health. **Table 11** details those LOR that exceeded and applicable assessment criterion.

Table 11 – SV Laboratory Limit of Reporting Issues

Chemgroup	Analyte	Assessment Criteria (µg/m ³)	Laboratory LOR	Sample Locations Affected
		USEPA RSL Residential (THQ=1.0)		
Chlorinated Hydrocarbons	1,1,2-trichloroethane	2.1	2.7	All Locations
Aldehydes	Acrolein	0.21	1.1	All Locations
Halogenated Hydrocarbons	1,2-dibromoethane	0.47	3.8	All Locations

As shown in **Table 11** the laboratory LORs are, in some instances, slightly higher than the adopted assessment criteria. Given that only 3 of the 73 analytes in the soil vapour analytical suite exhibited this issue, the isolated, slightly raised LORs are not considered to significantly affect the confidence in the sensitivity of the analytical methods.

6.4 Laboratory QA/QC

Table 12 - Laboratory QA/QC Samples

Lab	Lab Report	Holding Time	Quality Control Frequency	Surrogate Spike Recovery %	Lab Control Spike Recovery %	Matrix Spike Recovery %	Method Blank
ALS	EM1817333 (Soil and Rinsate)	✓	✓ ¹	✓	✓	✓ ²	✓
EnviroLab	150752 (Soil)	✓	✓	✓	✓	✓	✓
	15250 (Soil Vapour)	✓	✓	✓	✓	✓	✓

Notes

✓ Acceptable ✗ Not acceptable, requires further discussion when interpreting results

N/A No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported for vapour samples

¹ Quality Control Frequency is discussed below.

² MS recoveries are discussed below

The quality control samples submitted to the primary laboratory reported a Quality Control Sample Frequency Outlier with the Actual Rate of 4.88% compared to the Expected Rate of 5%. Edge is satisfied that the small percentage difference is not significant enough to impact confidence in the laboratory QA/QC program.

The matrix spike recovery for cyanide in soil was less than the data quality objective, in one of the soil samples. For cyanide, the laboratory is confident that because all other laboratory QC on this work passed, that the matrix effect on this sample was the contributing factor in the low recovery (28.8%). Only one primary soil sample was analysed for cyanide (SB09-0.2) and the reported concentration was less than the limit of reporting (1 mg/kg). The soil assessment criteria for cyanide is 23 mg/kg (USEPA RSLs, 2018) and as it is 23 times higher than the LOR, it is

considered unlikely that cyanide was present in SB09-0.2 at concentrations that may have exceeded the soil assessment criteria.

The matrix spike recovery for nitrate was not determined as the background level was greater than or equal to 4x the spike level. Given the laboratory control spike recovery was acceptable for nitrate, the analytical method is considered acceptable.

6.5 Soil Trip Blank Sample

One trip blank sample was collected and submitted for analysis during the execution of the soil assessment works.

Analytical results of trip blank samples are provided in **Table 2** of **Appendix D**.

Laboratory analytical results indicated analyte concentrations were below the respective laboratory reporting limits in the trip blank sample, indicating cross-contamination during sample collection, storage and transport is unlikely to have occurred.

6.6 Soil Rinsate Blank Samples

Two rinsate blank samples were collected from the field sampling equipment and submitted for analysis during the execution of the soil assessment.

Analytical results for the trip blank sample are provided in **Table 2** of **Appendix D**.

Laboratory analytical results indicated analyte concentrations were below the respective laboratory reporting limits in the rinsate blank sample, indicating cross-contamination during sample collection is unlikely to have occurred.

6.7 SV Leak Testing Assessment

Leak tests are conducted on SVBs and SVPs to demonstrate that the bore or pin has been installed appropriately, that the SVB/SVP retains its integrity, that ambient air is not infiltrating and diluting SV in the bore, that all sample connections are tight and that the sample is representative of 'real' SV sample at the sampling location.

6.7.1 SVB Leak Testing

Table 13 details the leak test assessment level applicable to each SVB i.e. 10% of the field measured maximum PID result in the shroud. A pass or fail is determined if the laboratory IPA result is below or above the 10% value.

The indicative IPA concentration measured in the shroud, the calculated assessment level, and laboratory IPA concentration at both SVBs sampled are summarised in **Table 13**. The results confirm that all SVBs tested passed the leak test as concentrations were below the adopted assessment value for each location (i.e. <10% of the shroud IPA concentration).

Table 13 – SVB Leak Test

Location	Date	PID in Shroud (ppm) ¹	10% Fail Value (IPA ppm)	Leak Tested?	Laboratory IPA Concentrations (ppm) ²	Pass or Fail
SVB01	31/10/2018	3,210	321.0	Yes	0.16	Pass
SVB02	31/10/2018	1,422	142.2	Yes	0.04	Pass

Notes:

1 – The PID instrument was calibrated to isobutylene gas, but to report the PID reading as IPA, it should be multiplied by 6 (in accordance with instructions from the instrument provider)

2 – The laboratory reported IPA concentrations in $\mu\text{g}/\text{m}^3$, to convert these concentrations to ppm for comparison against the 10% IPA Fail Value, Edge used a conversion spreadsheet (www.gasdetection.com/calculator/mic2ppm.xls) that takes into account the molecular weight (60.1 g/mol) of IPA.

6.7.2 SVP Leak Testing Assessment

In accordance with the methodology outlined in **Section 2.2.2** the SVP concrete cavity was filled with water to the concrete level around the tubing and remained there during sample, if the water level did not drop during this time the SVP was determined to be not leaking.

As documented in the field sheets in **Appendix B** the water levels did not fall at any locations and all SVPs passed the leak test.

6.8 Data Validation Summary

The results of the QA/QC program were considered to provide an acceptable degree of confidence in the analytical program completed. Overall, the analytical data set was considered to be valid and acceptable for the purposes of the Soil and Soil Vapour Assessment.

7. Discussion

7.1 Soils

The laboratory analytical results indicated that concentrations of CoPC were generally below the respective adopted assessment criteria in the majority of soil samples collected and analysed. No exceedances of any assessment levels were observed in the natural soils underlying the fill material at the Site. The soil assessment criteria exceedances are outlined below and **Figure 2** shows the distribution of soil impacts at the Site.

7.1.1 Metals

Lead was detected in two soil samples collected from SB08 (SB08-0.3 and SB08-1.0) at concentrations (1,280 mg/kg and 636 mg/kg respectively) that exceeded the soil assessment criteria (NEPM HIL-B - 1,200 mg/kg). The lead detected in the deeper sample (SB08-0.7) did not exceed the NEPM HIL-B soil assessment criteria.

Elevated concentrations of lead were not encountered at any other sample location at the site.

Given that the ground surface in the vicinity of SB08 is currently covered with a layer of pebble gravel, direct human contact with impacted soils is considered unlikely to occur, and Edge considers there to be no unacceptable risk to current Site users. However, consideration may be given to removing and replacing the contaminated soils, or installation of an improved barrier to prevent soil access (e.g. stainless steel cover, astroturf or geotextile).

7.1.2 PAHs

The concentration of the PAH benzo(a)pyrene Toxic Equivalency Quotient (B(a)P TEQ) was reported (4.3 mg/kg) in excess of the adopted assessment criterion (NEPM HILs A/B, 3mg/kg and 4mg/kg respectively) in one sample collected from fill (SB02-0.7). All other soil samples collected at the Site reported concentrations of PAHs below the soil assessment criteria.

Given that concentrations of PAHs were not reported above the respective laboratory limits of reporting in the soil sample collected beneath SB02-0.7 (SB02-1.5), it appears that the impact reported in SB02-0.7 is likely restricted to the shallow fill material. Furthermore, as the Site surface in the vicinity of SB02 is currently sealed with a concrete slab, direct human contact with impacted soils is considered unlikely to occur at present.

Edge considers there to be no current unacceptable risk to human health from the presence of PAH impacted fill soils at the Site.

It is considered likely, given the site history, that the PAH noted in the fill soils at the Site are present due to the use of imported contaminated fill soils or with the former burner operations on site.

7.2 Soil Vapour

In order to address the soil vapour detections outlined in **Section 5.2** Edge appointed a specialist risk assessor to undertake a Tier 2 Risk Assessment, the risk assessment is provided in **Appendix H**.

EnRiskS provided Edge with a risk assessment relating to the use of the site for high density residential purposes which identified no concern for the use of the site for high density residential purposes in the current site setting.

8. Conclusions

Based on the findings of the Soil and Soil Vapour Assessment completed at the 21 Northumberland and 26 Wellington Streets, Collingwood, VIC, 3066 (the Site) completed in November 2018, as detailed in this report, Edge draws the following conclusions:

Edge conducted the following scope of works:

- Bore logging and soil sampling at nine soil bore locations.
- Installation of three SV pins in concrete slabs around the Site.
- Installation of two Soil Vapour Bores (SVBs) on Site.
- Laboratory analysis of selected soil and SV samples for identified and potential CoPCs associated with the historical use of the Site and neighbouring premises.

Information obtained from this DSI and the PSI indicates the following:

- It is considered likely, given the site history, that the impacts noted in the fill soils at the Site may be attributed to the use of imported contaminated fill soils or historic Site use.
- The results of the soil analysis indicated exceedances of the high-density residential soil assessment criteria in two soil bores (SB03 – benzo(a)pyrene and SB08 – lead).
- Soil assessment criteria exceedances are located in areas sealed with concrete (SB02) or pebble gravel (SB08) at the surface and as such interaction is considered unlikely in the current Site layout.
- Soil vapour assessment criteria were exceeded for chloroform (SVB01, SVB02 & SVP03) and bromodichloromethane (SVP03).
- Due to the soil vapour exceedances of the human health criteria, Edge appointed a specialist Risk Assessor to provide a Risk Assessment which determined that the COPCs detected in soil vapour would not be considered of concern for the use of the site for high-density residential purposes in the current Site layout (or by extension, the less sensitive land use of commercial/industrial).
- The Site in its current layout is considered suitable for commercial/industrial and residential use. Should any changes to the Site layout occur then an updated assessment of risk would be required.
- Given that the ground surface in the vicinity of SB08 is currently covered with a layer of pebble gravel, direct human contact with impacted soils is considered unlikely to occur, and Edge considers there to be no unacceptable risk to current Site users. However, consideration may be given to either removing and replacing the contaminated soils, or installation of an improved barrier to prevent soil access (e.g. stainless steel cover, AstroTurf or geotextile).

Based upon the above conclusions, further assessment is not required at the Site.

10. References

Australian Standard 4482.1-2005 *Guide to the investigation and Sampling of Sites with Potentially Contaminated Soil. Part 1: Non-volatile and semi-volatile compounds* (AS4482.1-2005).

Australian Standard 4482.2-1999 *Guide to the investigation and Sampling of Sites with Potentially Contaminated Soil. Part 2: Volatile Substances* (AS4482.2-1999).

Department of Sustainability and Environment (DSE) *General Practice Note: Potentially Contaminated Land* (June 2005).

Edge Group Pty Ltd, *Preliminary Site Investigation, 21 Northumberland and 26 Wellington Streets, Collingwood, VIC, 3066* (March 2018).

Environment Protection Act (1970);

EPA Victoria Industrial Waste Resource Guidelines Publication 621 (June 2009) - *Soil Hazard Categorisation and Management* (IWRG 621).

EPA Victoria Industrial Waste Resource Guidelines Publication 631 (June 2009) – *Solid Industrial Waste Hazard Categorisation and Management* (IWRG 631).

EPA Victoria Industrial Waste Resource Guidelines Publication 701 (June 2009) – *Sampling and Analysis of Waters, Wastewaters, Soils and Wastes*.

EPA Victoria Industrial Waste resource Guidelines Publication 702 (June 2009) – *Soil Sampling* (IWRG702).

EPA Victoria Publication 759.3 (December 2015) *Environmental Auditor (Contaminated Land): Guidelines for Issue of Certificates and Statements of Environmental Audit*.

EPA Victoria State Environment Protection Policy *Prevention and Management of Contaminated Land*, 2002 (as gazetted in 2013) (Land SEPP)

National Environment Protection Council (NEPC) *Assessment of Site Contamination National Environment Protection Measure 1999* (as amended in 2013).

United States Environment Protection Agency, Compendium Method TO-15 – Determination of Volatile Organic Compounds (VOCs) in Air Collected In Specially-Prepared Canisters and Analyzed by Gas Chromatography/ Mass Spectrometry (GC/MS), 1999 (USEPA TO-15 1999).

United States Environment Protection Agency, Region 3, 6 and 9 – Regional Screening Levels (Industrial and Residential Sites), 2015 (USEPA RSLs).

9. Limitations

The findings of this Soil and Soil Vapour Assessment Report are based on the Proposal (Ref: **20170561-P-02**). Edge performed the services in a manner consistent with the expected level of care and expertise exercised by those in the environmental profession.

This report has been prepared for: Victorian Distillery and Silos Owners Consortium; for the purpose of assessing the current status of the Site.

No other warranty, expressed or implied, is made as to the professional advice included in this report. This report is prepared in accordance with the scope of work and for the purpose outlined.

Although normal standards of professional practice have been applied, the methodology adopted and sources of information used by Edge are outlined in this report. Edge has made no independent verification of this information beyond the agreed scope of works and assumes no responsibility for any inaccuracies or omissions. No indications were found during our investigations that information contained in this report as provided to Edge was false.

This report was prepared during December 2018 and is based on the conditions encountered and information reviewed at the time of preparation.

All conclusions and recommendations made in the report are the professional opinions of the Edge personnel involved with the project and, while normal checking of the accuracy of data has been conducted, Edge assumes no responsibility or liability for errors in data obtained from regulatory agencies or any other external sources, nor from occurrences outside the scope of this project.

Figures



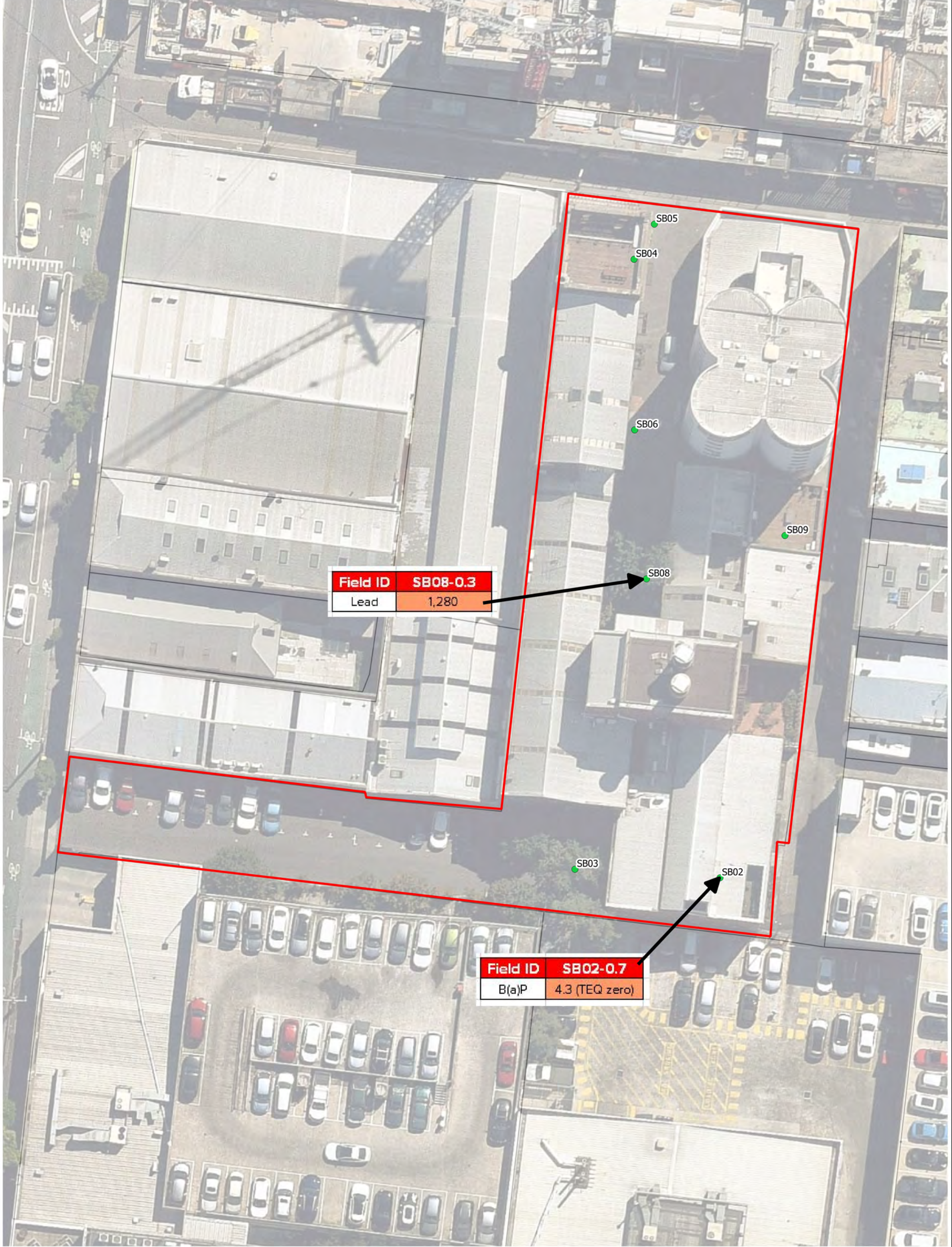
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		Groundfloor Residences
		Groundfloor Parking, Residences Above
		Groundfloor Parking, Commercial Above
		Groundfloor Commercial

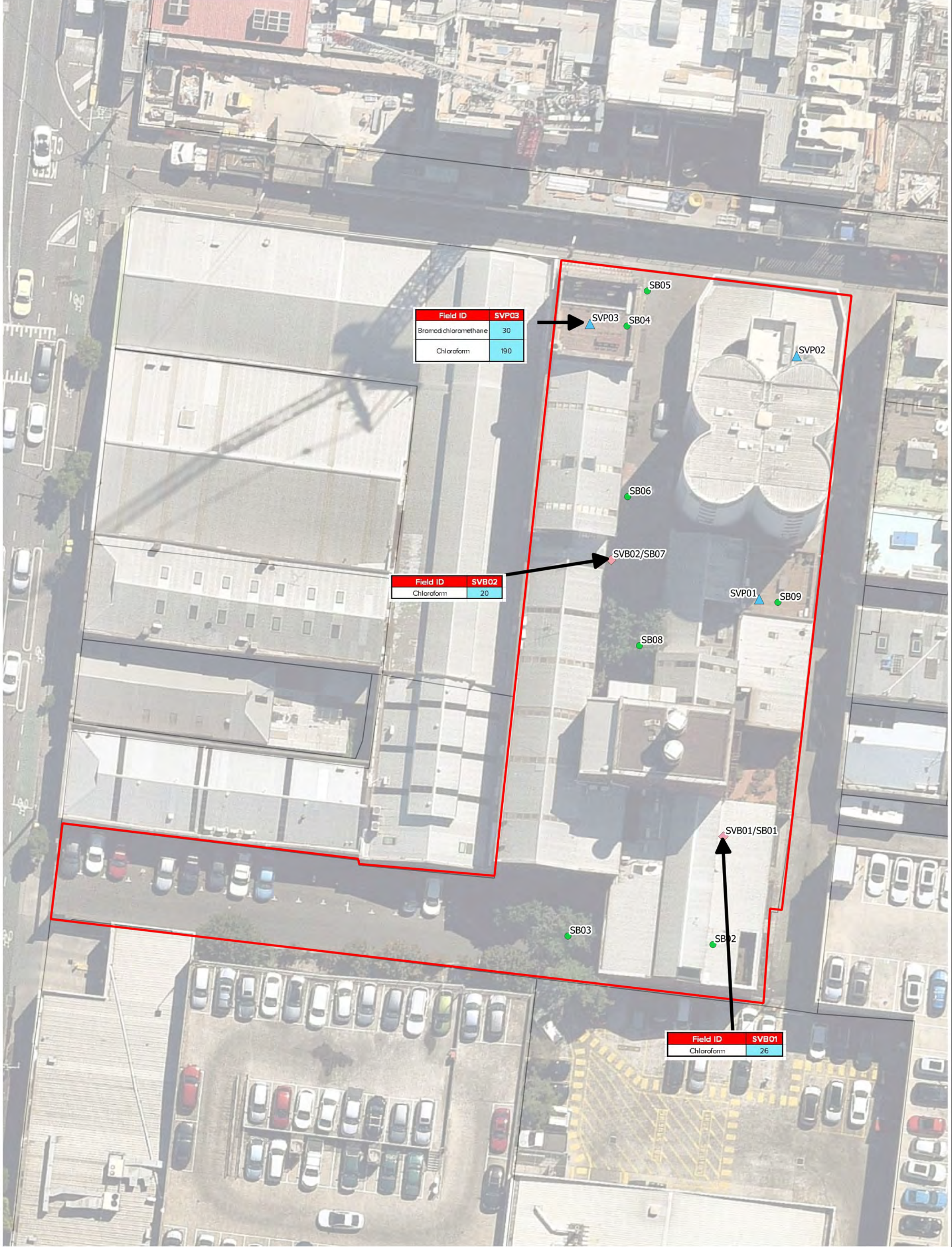


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Title: Site Layout Project: Vic Distillery & Silos Owners Consortium Site Address: 21 Northumberland & 26 Wellington Streets, Collinwood.			Figure 1
A3	Drawn: / Rev.:	Date: 13/12/18 Project No.: 20170561	







Field ID	SVP03
Bromodichloromethane	30
Chloroform	190

Field ID	SVB02
Chloroform	20

Field ID	SVB01
Chloroform	26



Appendix A

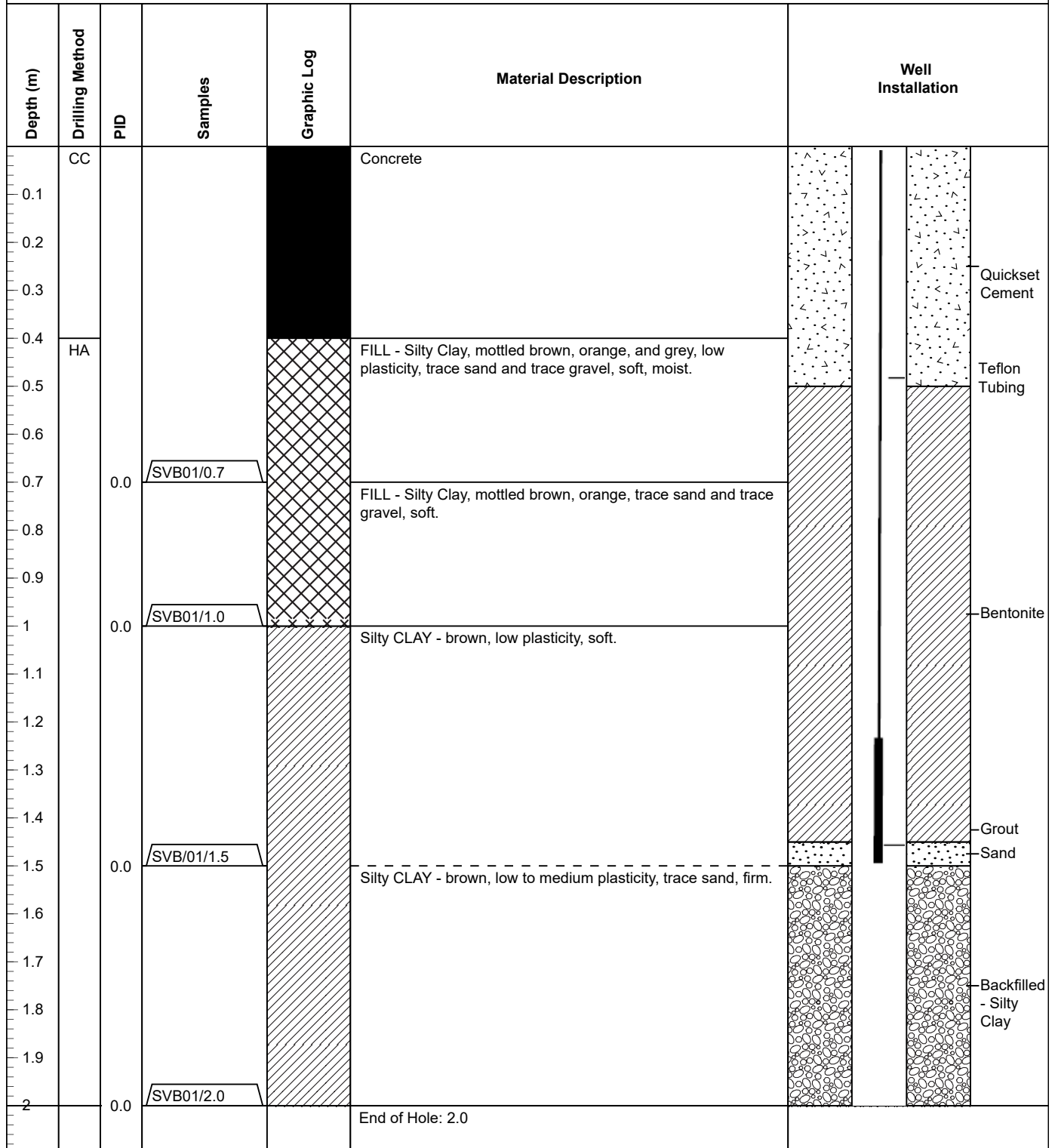
Soil Bore Logs

SOIL BORE SB01/SVB01

PROJECT NUMBER 20170561
PROJECT NAME Vic Distillery
CLIENT Best Hoopers
ADDRESS 21 Northumberland and 26 Wellington St Collingwood

DRILLING COMPANY Rockwell
DRILLER Simon
DRILLING METHOD Hand Auger
TOTAL DEPTH 2.0

COMMENTS HA - Hand Auger, CC - Concrete Corer



Disclaimer This bore log is intended for environmental not geotechnical purposes.

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SOIL BORE SB02

PROJECT NUMBER 20170561
PROJECT NAME Vic Distillery
CLIENT Best Hoopers
ADDRESS 21 Northumberland and 26 Wellington St Collingwood

DRILLING COMPANY Rockwell
DRILLER Simon
DRILLING METHOD Hand Auger
TOTAL DEPTH 1.5

COMMENTS HA - Hand Auger, CC - Concrete Corer

Depth (m)	Drilling Method	PID	Samples	Graphic Log	Material Description	Well Installation
0.1	CC				Concrete	
0.2						
0.3	HA	0.0	SB02/1.0		FILL - Silty Clay, brown mottled, very soft, minor coarse grained, fine grain, moist.	
0.4						
0.5						
0.6						
0.7		0.0	SB02/0.7		FILL - Silty Clay, brown mottled, very soft, minor coarse grained, fine grain, moist.	
0.8						
0.9						
1.0		0.0	SB02/1.0		FILL - Sandy gravel, low plasticity, black, increased moisture, coarse grain sand, strange odour.	
1.1						
1.2						
1.3						
1.4						
1.5		0.1	SB02/1.5			
1.6						
1.7						
1.8						
1.9						
2.0						

Disclaimer This bore log is intended for environmental not geotechnical purposes.

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PROJECT NUMBER 20170561
PROJECT NAME Vic Distillery
CLIENT Best Hoopers
ADDRESS 21 Northumberland and 26 Wellington St Collingwood

DRILLING COMPANY Rockwell
DRILLER Simon
DRILLING METHOD Hand Auger
TOTAL DEPTH 0.5

COMMENTS HA - Hand Auger, CC - Concrete Corer

Depth (m)	Drilling Method	PID	Samples	Graphic Log	Material Description	Well Installation
0.1	HA				Sandy SILT - Brown, fine grained, dry	
0.2						
0.3		0.0	SB03/0.3			
0.4						
0.5					Refusal at 0.5	
0.6						
0.7						
0.8						
0.9						
1						
1.1						
1.2						
1.3						
1.4						
1.5						
1.6						
1.7						
1.8						
1.9						
2						

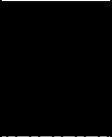
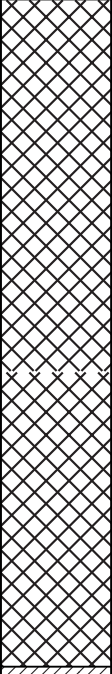
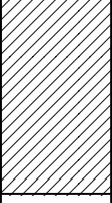
Disclaimer This bore log is intended for environmental not geotechnical purposes.

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PROJECT NUMBER 20170561
PROJECT NAME Vic Distillery
CLIENT Best Hoopers
ADDRESS 21 Northumberland and 26 Wellington St Collingwood

DRILLING COMPANY Rockwell
DRILLER Simon
DRILLING METHOD Hand Auger
TOTAL DEPTH 1.5

COMMENTS HA - Hand Auger, CC - Concrete Corer

Depth (m)	Drilling Method	PID	Samples	Graphic Log	Material Description	Well Installation
0.1	HA	0.0	/SB04/0.2		Bricks	
0.2					FILL - Silty Clay, with timber, medium plasticity, moist, black wood, soft, some plastics, metal, rope fragments.	
0.3		0.1	/SB04/0.6		FILL - Silty Clay, with timber, medium plasticity, moist, black wood, soft, some plastics, metal, rope fragments, increase in stiffness.	
0.4						
0.5		0.0	/SB04/1.2		Silty Clay - Brown, low plasticity, trace silt, quite dry, rope fragments.	
0.6						
0.7						
0.8						
0.9						
1.0						
1.1						
1.2						
1.3						
1.4						
1.5						
1.6						
1.7						
1.8						
1.9						
2.0						

Disclaimer This bore log is intended for environmental not geotechnical purposes.

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SOIL BORE SB05

PROJECT NUMBER 20170561
PROJECT NAME Vic Distillery
CLIENT Best Hoopers
ADDRESS 21 Northumberland and 26 Wellington St Collingwood

DRILLING COMPANY Rockwell
DRILLER Simon
DRILLING METHOD Hand Auger
TOTAL DEPTH 1.5

COMMENTS HA - Hand Auger, CC - Concrete Corer

Depth (m)	Drilling Method	PID	Samples	Graphic Log	Material Description	Well Installation
0.1	CC				Concrete	
0.2	HA		SB05/0.2		Silty CLAY - brown, low plasticity, trace silt, moist	
0.3		0.0				
0.4						
0.5						
0.6			SB05/0.6		CLAY - with some sand, brown, low plasticity, mottled black, slightly drier, trace sand and silt.	
0.7		0.0				
0.8						
0.9						
1.0		0.0	SB05/1.1		CLAY - with some sand, brown, low plasticity, mottled black, drier, trace sand and siltier.	
1.1						
1.2						
1.3						
1.4						
1.5		0.1	SB05/1.5			
1.6						
1.7						
1.8						
1.9						
2.0						

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PROJECT NUMBER 20170561
PROJECT NAME Vic Distillery
CLIENT Best Hoopers
ADDRESS 21 Northumberland and 26 Wellington St Collingwood

DRILLING COMPANY Rockwell
DRILLER Simon
DRILLING METHOD Hand Auger
TOTAL DEPTH 1.5

COMMENTS HA - Hand Auger, CC - Concrete Corer

Depth (m)	Drilling Method	PID	Samples	Graphic Log	Material Description	Well Installation
0.1	CC				Asphalt	
0.2	HA		SB06/0.2			
0.3		0.0			FILL - Silty Clay with sand, and brick, brown, mottled orange, grey, red, black, dry, low plasticity, fine grain, soft.	
0.4						
0.5						
0.6						
0.7		0.0				
0.8			SB06/0.8			
0.9					FILL - Silty Clay some brick, brown, mottled orange, moist, med plasticity, trace silt, soft.	
1.0		0.0				
1.1						
1.2						
1.3			SB06/1.3			
1.4					Silty CLAY - brown, very moist, medium plasticity, soft.	
1.5		0.0			Refusal - piece of metal	
1.6						
1.7						
1.8						
1.9						
2.0						

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PROJECT NUMBER 20170561

PROJECT NAME Vic Distillery

CLIENT Best Hoopers

ADDRESS 21 Northumberland and 26 Wellington St Collingwood

DRILLING COMPANY Rockwell

DRILLER Simon

DRILLING METHOD Hand Auger

TOTAL DEPTH 2.0

COMMENTS HA - Hand Auger, CC - Concrete Corer

Depth (m)	Drilling Method	PID	Samples	Graphic Log	Material Description	Well Installation
0.0	HA				Gravel at surface	
0.2		0.0	SB07/0.2		FILL - Silty Clay, gravels, low plasticity, brown, mottled orange, grey, firm, trace silt and gravel, fine silt, dry.	
0.4		0.0	SB07/0.5			
0.6					FILL - Silty Clay, low plasticity, brown, grey, soft, trace silt, dry, possible gravel (may be falling in from surface).	
0.8						
1.0						
1.2		0.0	SB07/1.2		Silty CLAY - brown, mottled black, soft, trace silt, dry, tree roots throughout.	
1.4						
1.6						
1.8					Silty CLAY - brown, trace silt, soft, low plasticity, dry.	
2.0		0.0	SB07/2.0			
2.2						
2.4						

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PROJECT NUMBER 20170561

PROJECT NAME Vic Distillery

CLIENT Best Hoopers

ADDRESS 21 Northumberland and 26 Wellington St Collingwood

DRILLING COMPANY Rockwell

DRILLER Simon

DRILLING METHOD Hand Auger

TOTAL DEPTH 1.0

COMMENTS HA - Hand Auger, CC - Concrete Corer

Depth (m)	Drilling Method	PID	Samples	Graphic Log	Material Description	Well Installation
0.0	HA				Gravel at surface	
0.1					FILL - Sandy silt, with gravel, brown, fine grained, tree roots, dry.	
0.2						
0.3		0.0	SB08/0.3		FILL - Silty silt, gravel, brown, fine grained, bricks and roots, dry.	
0.4						
0.5						
0.6						
0.7		0.0	SB08/0.7		FILL - Sandy silt, gravel, brown, fine grained, bricks and roots, dry.	
0.8						
0.9						
1.0		0.0	SB08/1.0			
1.1						
1.2						
1.3						
1.4						
1.5						

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PROJECT NUMBER 20170561
PROJECT NAME Vic Distillery
CLIENT Best Hoopers
ADDRESS 21 Northumberland and 26 Wellington St Collingwood

DRILLING COMPANY Rockwell
DRILLER Simon
DRILLING METHOD Hand Auger
TOTAL DEPTH 1.5

COMMENTS HA - Hand Auger, CC - Concrete Corer

Depth (m)	Drilling Method	PID	Samples	Graphic Log	Material Description	Well Installation
0.1	CC				Concrete	
0.2	HA	0.0	SB09/0.2		FILL - Silty clay, medium plasticity, brown mottled orange, grey, minor silt, moist, soft.	
0.3						
0.4						
0.5						
0.6						
0.7		0.0	SB09/0.7		Silty CLAY - medium plasticity, brown, minor silt, fine grain, moist, soft.	
0.8						
0.9						
1						
1.1		0.0	SB09/1.1		Silty CLAY - medium plasticity, brown, mottled grey, tree roots, moist, soft.	
1.2						
1.3						
1.4						
1.5		0.0	SB09/1.5			
1.6						
1.7						
1.8						
1.9						
2						

Disclaimer This bore log is intended for environmental not geotechnical purposes.

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Appendix B

Soil Vapour Sample Sheets

Project Name	Vic Dist	Canister Flow Control Rate: 60ml/min
Project number	20170561	Notes: Condensation on inside of well.
Field Staff	CP, SD, MT	No condensation in tube - SVB02
Date	31/10/18	SV03 - Water drained from hole
Site Location	Collingwood	
Weather Conditions	Cool, Dry	
Temperature/Humidity/Pressure	Day Start: 16.9/74.1/1021 hpa Day End:	

Bore ID	Can S/N.	Flow Control Serial No.	PID in Shroud (SVBs) (ppm)	PRE-SAMPLE Purge/Leak Test			SAMPLING						POST-SAMPLE General Gases Screen						
				PID Purge Peak/Stable (ppm)	PID Duration (secs)	Leak Test (Pass / Fail)	Initial Canister Vacuum	Start Time	Finish Time	Duration (mins)	Final Canister Vacuum	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	Bal (%)	CO	H ₂ S	Air Press (mb)	
SVB02	2416	2082	148273	6.9	5.5	60	Pass	-30	9:14	10:44	75	-5	0.0	10.7	8.1	81.2	0	0	-3.75
SVP02	2548	2078	-	2.9	1.9	20	Pass	-49.30	11:30	11:44	14	-5	0.0	1.1	18.8	80.0	0	0	0.09
SVP03	2545	2078	-	1.7	1.7	20	Pass	-30	12:54	13:08	14	-5	0.0	0.9	19.2	79.9	0	0	0.31

Document Title	Document Number	Approved By	Version Date	Page
Active Soil Vapour Sampling Log	IMSF22		29 October 2018	1 of

UNCONTROLLED WHEN PRINTED

Project Name			Canister Flow Control Rate: 60ml/m
Project number	20170561		Notes:
Field Staff	SD, CP, MT		
Date	31/10/18		
Site Location	Collingwood		
Weather Conditions	Cool, Overcast		
Temperature/Humidity/Pressure	Day Start:	Day End: 17.9/72.7/1019.7 hpa	

Bore ID	Can S/N.	Flow Control Serial No.	PID in Shroud (SVBs)	PRE-SAMPLE Purge/Leak Test			SAMPLING					POST-SAMPLE General Gases Screen							
				PID Purge Peak/Stable (ppm)		PID Duration (secs)	Leak Test (Pass / Fail)	Initial Canister Vacuum	Start Time	Finish Time	Duration (mins)	Final Canister Vacuum	CH ₄ (%)	CO ₂ (%)	O ₂ (%)	Bal (%)	CO	H ₂ S	Air Press. (mb)
SVPO1	1695	2083	—	2.4	2.4	20	P ₂ H ₂ O Exp 1cm	-30	10:49	11:16		-5	0.0	1.3	19.7	79.0	0	0	1019
FD01	2553	2083						-29	10:49	11:16		-5							
SVB01	1697	626	535	8.1 ~~6.0~~	6.0	60	P	-30	12:41	13:03		-5	0.3	7.5	1.6	90.5	2	0	1017



Appendix C

Calibration Certificates

Equipment Calibration Form

MiniRAE 3000 PID



Enqip #: 7620
Company: Edge Group Pty Ltd
Consultant: Scott Davis
PO #: 20170561
Certificate #: 10353

INSTRUMENT IDENTIFICATION

Model Number: PGM 7320
Serial Number: 592-911125

INSPECTION RECORD

Flow Rate: PASS
Buzzer: PASS
Date & Time: PASS

CALIBRATION DETAILS

Parameters	Standard	Result
Air	0.0 ppm	0.0 ppm
Isobutylene	100.0 ppm	100.0 ppm

Alarm Limits: High 100 Low 50

Calibration Successful: YES

Calibrated By: Andrea Hill

Test Date: 29/10/2018



116 Thistlethwaite St, South Melbourne 3205
P 1300 218 987

E info@enqip.com.au | W www.enqip.com.au

Equipment Calibration Form

GA5000



RESULT#13

Enqip #: 7620
Company: Edge Group Pty Ltd
Consultant: Scott Davis
PO #: 20170561
Certificate #: 10354

INSTRUMENT IDENTIFICATION

Model Number: GA5KA0F-100
Serial Number: GA500129
Instrument Type: GTI - GA5000

INSPECTION RECORD

Date & Time: PASS
Flow Rate: 620 mL/min

CALIBRATION DETAILS

Sensor	Standard	Reading	Traceability Lot #
CH ₄	N ₂ UHP	0 %	901331
	2.5 %	2.5 %	811847
	60 %	60.0 %	923048
CO ₂	5 %	5.0 %	762650
	40 %	40.0 %	923048
O ₂	N ₂ UHP	0 %	901331
	20.9 %	20.9 %	N/A
CO	N ₂ UHP	0 ppm	901331
	100 ppm	100 ppm	811847
H ₂ S	N ₂ UHP	0 ppm	901331
	25 ppm	25 ppm	972407

Calibration Successful: YES

Calibrated By: Andrea Hill

Test Date: 29/10/2018



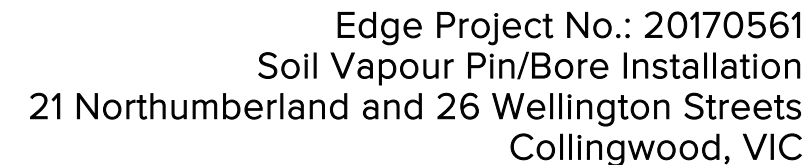
116 Thistlethwaite St, South Melbourne 3205
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Appendix D

Soil Analytical Results Table



LOR = Limit of Reporting
 <# Result is less than the LOR
 * No Relevant Criteria
 - Analysis not performed
 1- NEPM 2013 - Health Investigation Levels: Residential A (Low density) and Residential B (Medium/High Density) (Table 1A(1))
 2- NEPM 2013 - Health Screening Levels: Residential A (Low density) and Residential B (Medium/High Density) (Table 1A(3)).
 3- CRC Care 2011 - Health Screening Levels for Direct Contact: Commercial/Industrial D (Table 4).
 4 - USEPA May 2018 - Regional Screening Levels: Resident Soil THQ^a 1.0. *Carcinogenic screening levels in italics.*



Appendix 1D - Soil Analytical Results

Edge Project No.: 20170561
Soil Vapour Pin/Bore Installation
21 Northumberland and 26 Wellington Streets
Collingwood, VIC

			Sample Code						EM1817333001	EM1817333004	EM1817333006	EM1817333008	EM1817333009	EM1817333010	EM1817333012	EM1817333013	EM1817333015	EM1817333018	EM1817333019	EM1817333021	EM1817333023	EM1817333024	EM1817333026	EM1817333027	EM1817333029		
			Field ID						SB01-0.7	SB01-2.0	SB02-0.7	SB02-1.5	SB03-0.3	SB04-0.2	SB04-1.2	SB05-0.2	SB05-1.1	SB06-0.8	SB06-1.3	SB07-0.5	SB07-2.0	SB08-0.3	SB08-1.0	SB09-0.2	SB09-1.1		
			Matrix Type						soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil	soil		
			Date						24/10/2018	24/10/2018	24/10/2018	24/10/2018	24/10/2018	24/10/2018	24/10/2018	25/10/2018	25/10/2018	25/10/2018	25/10/2018	25/10/2018	25/10/2018	25/10/2018	25/10/2018	25/10/2018	25/10/2018		
			Depth (m)						0.7	2	0.7	1.5	0.3	0.2	1.2	0.2	1.1	0.8	1.3	0.5	2	0.3	1	0.2	1.1		
			NEPM HILs ¹			HSLs ²			USEPA RSLs ⁴																		
Analyte	Unit	LOR	Residential A	Residential B	Commercial / Industrial D	NEPM Residential A/B for Vapour Intrusion, Clay		CRC Care HSL-D ³ Commercial / Industrial	Resident Soil THQ>1.0																		
						0-1m	1-2m																				
Inorganics																											
Ammonia as N	mg/kg	20	*	*	*	*	*	*	*	<20	-	-	-	-	-	<20	-	20	-	-	-	-	-	<20	-		
Kjeldahl Nitrogen Total	mg/kg	20	*	*	*	*	*	*	*	480	-	-	-	-	-	490	-	420	-	-	-	-	-	480	-		
Nitrate (as N)	mg/kg	0.1	*	*	*	*	*	*	*	5	-	-	-	-	-	0.2	-	0.1	-	-	-	-	-	15.9	-		
Nitrogen (Total Oxidised)	mg/kg	0.1	*	*	*	*	*	*	*	5	-	-	-	-	-	0.2	-	0.5	-	-	-	-	-	16	-		
Nitrogen (Total)	mg/kg	20	*	*	*	*	*	*	*	480	-	-	-	-	-	490	-	420	-	-	-	-	-	500	-		
Nitrite (as N)	mg/kg	0.1	*	*	*	*	*	*	*	<0.1	-	-	-	-	-	<0.1	-	0.4	-	-	-	-	-	0.1	-		
Phosphorus	mg/kg	2	*	*	*	*	*	*	*	1,220	-	-	-	-	-	323	-	91	-	-	-	-	-	377	-		
Reactive Phosphorus as P	mg/kg	0.1	*	*	*	*	*	*	*	21	-	-	-	-	-	0.4	-	0.8	-	-	-	-	-	3.7	-		
Sulphate	mg/kg	50	*	*	*	*	*	*	*	-	-	-	-	-	-	70	-	-	-	-	-	-	-	110	-		
MAH																											
1,2,4-trimethylbenzene	mg/kg	0.5	*	*	*	*	*	*	*	300	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5		
1,3,5-trimethylbenzene	mg/kg	0.5	*	*	*	*	*	*	*	270	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5		
Isopropylbenzene	mg/kg	0.5	*	*	*	*	*	*	*	1,900	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5		
n-butylbenzene	mg/kg	0.5	*	*	*	*	*	*	*	3,900	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5		
n-propylbenzene	mg/kg	0.5	*	*	*	*	*	*	*	3,800	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5		
p-isopropyltoluene	mg/kg	0.5	*	*	*	*	*	*	*	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5		
sec-butylbenzene	mg/kg	0.5	*	*	*	*	*	*	*	7,800	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5		
Styrene	mg/kg	0.5	*	*	*	*	*	*	*	6,000	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5		
tert-butylbenzene	mg/kg	0.5	*	*	*	*	*	*	*	7,800	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5		
Cyanides																											
Cyanide (WAD)	mg/kg	1	*	*	*	*	*	*	*	23	-	-	-	<1	-	-	-	-	-	-	-	-	-	<1	-		
NA																											
Moisture Content	%	1	*	*	*	*	*	*	*	-	18.3	24	16.6	23.1	11.2	6.5	20.5	13.7	18.6	16.5	21.7	14	23.7	11.4	12.7	18	24.8
Organophosphorous Pesticides																											
Azinphos methyl	mg/kg	0.05	*	*	*	*	*	*	*	190	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	<0.05	-		
Bromophos-ethyl	mg/kg	0.05	*	*	*	*	*	*	*	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	<0.05	-		
Carbophenothion	mg/kg	0.05	*	*	*	*	*	*	*	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	<0.05	-		
Chlorfenvinphos	mg/kg	0.05	*	*	*	*	*	*	*	44	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	<0.05	-		
Chlorpyrifos	mg/kg	0.05	160	340	2000	*	*	*	*	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	<0.05	-		
Chlorpyrifos-methyl	mg/kg	0.05	*	*	*	*	*	*	*	630	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	<0.05	-		
Diazinon	mg/kg	0.05	*	*	*	*	*	*	*	44	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	<0.05	-		
Dichlorvos	mg/kg	0.05	*	*	*	*	*	*	*	79	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	<0.05	-		
Dimethoate	mg/kg	0.05	*	*	*	*	*	*	*	140	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	<0.05	-		
Ethion	mg/kg	0.05	*	*	*	*	*	*	*	32	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	<0.05	-		
Fenthion	mg/kg	0.05	*	*	*	*	*	*	*	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	<0.05	-		
Malathion	mg/kg	0.05	*	*	*	*	*	*	*	1,300	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	<0.05	-		
Methyl parathion	mg/kg	0.2	*	*	*	*	*	*	*	16	-	-	-	<0.2	-	-	-	-	-	-	-	-	-	<0.2	-		
Monocrotophos	mg/kg	0.2	*	*	*	*	*	*	*	-	-	-	-	<0.2	-	-	-	-	-	-	-	-	-	<0.2	-		
Prothiofos	mg/kg	0.05	*	*	*	*	*	*	*	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	<0.05	-		
Pesticides																											
Bifenthrin	mg/kg	0.05	600	840	*	*	*	*	*	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	<0.05	-		
Demeton-S-methyl	mg/kg	0.05	*	*	*	*	*	*	*	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	<0.05	-		
Fenamiphos	mg/kg	0.05	*	*	*	*	*	*	*	16	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	<0.05	-		
Mirex	mg/kg	0.2	10	20	*	*	*	*	*	-	-	-	-	<0.20	-	-	-	-	-	-	-	-	-	<0.20	-		
Parathion	mg/kg	0.2	*	*	*	*	*	*	*	380	-	-	-	<0.2	-	-	-	-	-	-	-	-	-	<0.2	-		
Primphos-ethyl	mg/kg	0.05	*	*	*	*	*	*	*	-	-	-	-	<0.05	-	-	-	-	-	-	-	-	-	<0.05	-		

Notes
LOR = Limit of Reporting
<# Result is less than the LOR
* No Relevant Criteria
- Analysis not performed
1 - NEPM 2013 - Health Investigation Levels: Residential A (Low density) and Residential B (Medium/High Density) (Table 1A(1)).
2 - NEPM 2013 - Health Screening Levels: Residential A (Low density) and Residential B (Medium/High Density) (Table 1A(3)).
3 - CRC Care 2011 - Health Screening Levels for Direct Contact: Commercial/Industrial D (Table 4).
4 - USEPA May 2018 - Regional Screening Levels: Resident Soil THQ>1.0. *Carcinogenic screening levels in italics.*



Appendix 2D - Blanks Results

Edge Project No.: 20170561
Soil Vapour Pin/Bore Installation
21 Northumberland and
26 Wellington Streets
Collingwood, VIC

		Rinsate Blanks		Trip Blank
	Sample Code	EM1817333034	EM1817333035	EM1817333033
	Field ID	RB01	RB02	TB01
	Matrix Type	water	water	water
	Date	24/10/2018	25/10/2018	25/10/2018
Analyte	Unit			
TPH				
C ₆ -C ₁₀	mg/L	<0.02	<0.02	<0.02
F1 minus BTEX	mg/L	<0.02	<0.02	<0.02
C ₆ -C ₉	µg/L	<20	<20	<20
BTEX				
Benzene	µg/L	<1	<1	<1
Toluene	µg/L	<2	<2	<2
Ethylbenzene	µg/L	<2	<2	<2
Xylene (m & p)	µg/L	<2	<2	<2
Xylene (o)	µg/L	<2	<2	<2
Xylene Total	µg/L	<2	<2	<2
Total BTEX	mg/L	<0.001	<0.001	<0.001
PAH				
Naphthalene	µg/L	<5	<5	<5
Metals				
Arsenic	mg/L	<0.001	<0.001	-
Barium	mg/L	<0.001	<0.001	-
Beryllium	mg/L	<0.001	<0.001	-
Boron	mg/L	<0.05	<0.05	-
Cadmium	mg/L	<0.0001	<0.0001	-
Chromium (III+VI)	mg/L	<0.001	<0.001	-
Cobalt	mg/L	<0.001	<0.001	-
Copper	mg/L	<0.001	<0.001	-
Lead	mg/L	<0.001	<0.001	-
Manganese	mg/L	<0.001	<0.001	-
Mercury	mg/L	<0.0001	<0.0001	-
Nickel	mg/L	<0.001	<0.001	-
Selenium	mg/L	<0.01	<0.01	-
Vanadium	mg/L	<0.01	<0.01	-
Zinc	mg/L	<0.005	<0.005	-

Notes
LOR - Laboratory Limit of Reporting
RPD - Relative Percentage Difference
Grey shading indicates RPD exceedance (>50%)



Appendix E

Soil Laboratory Reports

CERTIFICATE OF ANALYSIS

Work Order : **EM1817333**
Client : **EDGE GROUP PTY LTD**
Contact : Carly Powell
Address : 423 CITY ROAD
 SOUTH MELBOURNE VIC 3205
Telephone : ----
Project : 20170561
Order number : 20170561
C-O-C number : ----
Sampler : Carly Powell
Site : ----
Quote number : ME/795/18
No. of samples received : 36
No. of samples analysed : 21

Page : 1 of 24
Laboratory : Environmental Division Melbourne
Contact : Kane Vorwerk
Address : 4 Westall Rd Springvale VIC Australia 3171
Telephone : +6138549 9652
Date Samples Received : 26-Oct-2018 12:45
Date Analysis Commenced : 29-Oct-2018
Issue Date : 02-Nov-2018 16:11



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.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC



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.

- EK028SF: EM1817333-027 Poor matrix spike recovery for FCN due to matrix effects. This has been 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.

Sub-Matrix: SOIL (Matrix: SOIL)		Client sample ID		SB01-0.7	SB01-2.0	SB02-0.7	SB02-1.5	SB03-0.3
Client sampling date / time				24-Oct-2018 00:00	24-Oct-2018 00:00	24-Oct-2018 00:00	24-Oct-2018 00:00	24-Oct-2018 00:00
Compound	CAS Number	LOR	Unit	EM1817333-001	EM1817333-004	EM1817333-006	EM1817333-008	EM1817333-009
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	18.3	24.0	16.6	23.1	11.2
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	11	7	10	10	<5
Barium	7440-39-3	10	mg/kg	140	260	140	160	70
Beryllium	7440-41-7	1	mg/kg	<1	1	1	<1	<1
Boron	7440-42-8	50	mg/kg	<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	30	30	33	17	13
Cobalt	7440-48-4	2	mg/kg	12	8	18	7	5
Copper	7440-50-8	5	mg/kg	168	21	62	27	47
Lead	7439-92-1	5	mg/kg	231	32	230	202	140
Manganese	7439-96-5	5	mg/kg	332	128	259	212	172
Nickel	7440-02-0	2	mg/kg	35	18	56	26	21
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg	48	50	29	28	26
Zinc	7440-66-6	5	mg/kg	230	30	253	81	379
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	1.2	<0.1	0.5	1.3	0.3
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
EG049: Trivalent Chromium								
Trivalent Chromium	16065-83-1	2	mg/kg	30	30	33	----	13
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser								
Weak Acid Dissociable Cyanide	----	1	mg/kg	----	----	----	<1	----
EK055: Ammonia as N								
Ammonia as N	7664-41-7	20	mg/kg	<20	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	<0.1	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N (Sol.)	14797-55-8	0.1	mg/kg	5.0	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	5.0	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SB01-0.7	SB01-2.0	SB02-0.7	SB02-1.5	SB03-0.3
Client sampling date / time					24-Oct-2018 00:00	24-Oct-2018 00:00	24-Oct-2018 00:00	24-Oct-2018 00:00	24-Oct-2018 00:00
Compound	CAS Number	LOR	Unit		EM1817333-001	EM1817333-004	EM1817333-006	EM1817333-008	EM1817333-009
					Result	Result	Result	Result	Result
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser - Continued									
Total Kjeldahl Nitrogen as N	----	20	mg/kg		480	----	----	----	----
EK062: Total Nitrogen as N (TKN + NOx)									
^ Total Nitrogen as N	----	20	mg/kg		480	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg		1220	----	----	----	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.1	mg/kg		2.1	----	----	----	----
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	----
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	----
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	----
Mirex	2385-85-5	0.20	mg/kg		----	----	----	<0.20	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		----	----	----	<0.05	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SB01-0.7	SB01-2.0	SB02-0.7	SB02-1.5	SB03-0.3
Client sampling date / time					24-Oct-2018 00:00	24-Oct-2018 00:00	24-Oct-2018 00:00	24-Oct-2018 00:00	24-Oct-2018 00:00
Compound	CAS Number	LOR	Unit		EM1817333-001	EM1817333-004	EM1817333-006	EM1817333-008	EM1817333-009
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
^ 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	----
EP068C: Triazines									
Atrazine	1912-24-9	0.05	mg/kg		----	----	----	<0.05	----
EP068D: Pyrethroids									
Bifenthrin	82657-04-3	0.05	mg/kg		----	----	----	<0.05	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	----	<0.5
Isopropylbenzene	98-82-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	<0.5
n-Propylbenzene	103-65-1	0.5	mg/kg		<0.5	<0.5	<0.5	----	<0.5
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	<0.5
sec-Butylbenzene	135-98-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	<0.5
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg		<0.5	<0.5	<0.5	----	<0.5
tert-Butylbenzene	98-06-6	0.5	mg/kg		<0.5	<0.5	<0.5	----	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SB01-0.7	SB01-2.0	SB02-0.7	SB02-1.5	SB03-0.3
Client sampling date / time					24-Oct-2018 00:00	24-Oct-2018 00:00	24-Oct-2018 00:00	24-Oct-2018 00:00	24-Oct-2018 00:00
Compound	CAS Number	LOR	Unit		EM1817333-001	EM1817333-004	EM1817333-006	EM1817333-008	EM1817333-009
					Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
p-Isopropyltoluene	99-87-6	0.5	mg/kg		<0.5	<0.5	<0.5	----	<0.5
n-Butylbenzene	104-51-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	<0.5
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		----	----	----	<0.5	----
2-Chlorophenol	95-57-8	0.5	mg/kg		----	----	----	<0.5	----
2-Methylphenol	95-48-7	0.5	mg/kg		----	----	----	<0.5	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		----	----	----	<1	----
2-Nitrophenol	88-75-5	0.5	mg/kg		----	----	----	<0.5	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg		----	----	----	<0.5	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg		----	----	----	<0.5	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg		----	----	----	<0.5	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		----	----	----	<0.5	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg		----	----	----	<0.5	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg		----	----	----	<0.5	----
Pentachlorophenol	87-86-5	2	mg/kg		----	----	----	<2	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	2.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	0.6	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	6.0	<0.5	0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	6.0	<0.5	0.6
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	3.2	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	2.8	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	4.1	<0.5	0.8
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	1.7	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	3.2	<0.5	0.6
Indeno(1,2,3-cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	1.6	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	1.8	<0.5	0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	33.5	<0.5	3.0
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	4.3	<0.5	0.7

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SB01-0.7	SB01-2.0	SB02-0.7	SB02-1.5	SB03-0.3
Client sampling date / time				24-Oct-2018 00:00	24-Oct-2018 00:00	24-Oct-2018 00:00	24-Oct-2018 00:00	24-Oct-2018 00:00	
Compound	CAS Number	LOR	Unit	EM1817333-001	EM1817333-004	EM1817333-006	EM1817333-008	EM1817333-009	
				Result	Result	Result	Result	Result	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	4.6	0.6	1.0	
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	4.8	1.2	1.3	
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10	
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50	
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10	
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10	
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50	
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50	
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1	
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	----	70.9	----	
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	89.4	----	
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%	----	----	----	72.9	----	
EP074S: VOC Surrogates									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SB01-0.7	SB01-2.0	SB02-0.7	SB02-1.5	SB03-0.3
Client sampling date / time					24-Oct-2018 00:00	24-Oct-2018 00:00	24-Oct-2018 00:00	24-Oct-2018 00:00	24-Oct-2018 00:00
Compound	CAS Number	LOR	Unit		EM1817333-001	EM1817333-004	EM1817333-006	EM1817333-008	EM1817333-009
					Result	Result	Result	Result	Result
EP074S: VOC Surrogates - Continued									
1,2-Dichloroethane-D4	17060-07-0	0.5	%		93.4	90.6	91.0	----	83.9
Toluene-D8	2037-26-5	0.5	%		102	104	91.9	----	87.0
4-Bromofluorobenzene	460-00-4	0.5	%		109	98.8	102	----	86.8
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		93.4	103	92.4	89.2	78.4
2-Chlorophenol-D4	93951-73-6	0.5	%		85.5	95.0	84.2	82.2	82.1
2,4,6-Tribromophenol	118-79-6	0.5	%		61.8	70.9	67.6	66.5	44.7
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		103	102	101	89.6	74.1
Anthracene-d10	1719-06-8	0.5	%		108	110	99.1	98.3	75.9
4-Terphenyl-d14	1718-51-0	0.5	%		103	107	99.9	96.4	69.4
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		87.0	85.0	85.3	68.1	78.9
Toluene-D8	2037-26-5	0.2	%		92.9	94.8	83.9	68.2	79.4
4-Bromofluorobenzene	460-00-4	0.2	%		90.4	93.5	88.7	88.7	86.5

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID		SB04-0.2	SB04-1.2	SB05-0.2	SB05-1.1	SB06-0.8
Client sampling date / time				24-Oct-2018 00:00		24-Oct-2018 00:00	25-Oct-2018 00:00	25-Oct-2018 00:00	25-Oct-2018 00:00	25-Oct-2018 00:00
Compound		CAS Number	LOR	Unit	EM1817333-010	EM1817333-012	EM1817333-013	EM1817333-015	EM1817333-018	
					Result	Result	Result	Result	Result	
EA001: pH in soil using 0.01M CaCl extract										
pH (CaCl2)		----	0.1	pH Unit	----	----	7.1	----	----	
EA055: Moisture Content (Dried @ 105-110°C)										
Moisture Content		----	1.0	%	6.5	20.5	13.7	18.6	16.5	
ED040N: Sulfate - Calcium Phosphate Soluble (NEPM)										
Sulfate as SO4 2-		14808-79-8	50	mg/kg	----	----	70	----	----	
EG005T: Total Metals by ICP-AES										
Arsenic		7440-38-2	5	mg/kg	7	22	6	19	5	
Barium		7440-39-3	10	mg/kg	280	150	160	270	30	
Beryllium		7440-41-7	1	mg/kg	<1	1	<1	2	<1	
Boron		7440-42-8	50	mg/kg	<50	<50	<50	<50	<50	
Cadmium		7440-43-9	1	mg/kg	<1	<1	<1	<1	<1	
Chromium		7440-47-3	2	mg/kg	49	35	17	30	18	
Cobalt		7440-48-4	2	mg/kg	10	8	8	9	2	
Copper		7440-50-8	5	mg/kg	50	10	19	7	<5	
Lead		7439-92-1	5	mg/kg	83	24	168	39	10	
Manganese		7439-96-5	5	mg/kg	396	128	58	56	26	
Nickel		7440-02-0	2	mg/kg	29	14	24	14	5	
Selenium		7782-49-2	5	mg/kg	<5	<5	<5	<5	<5	
Vanadium		7440-62-2	5	mg/kg	82	112	26	98	38	
Zinc		7440-66-6	5	mg/kg	155	165	60	9	<5	
EG035T: Total Recoverable Mercury by FIMS										
Mercury		7439-97-6	0.1	mg/kg	<0.1	<0.1	0.8	<0.1	<0.1	
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium		18540-29-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
EG049: Trivalent Chromium										
Trivalent Chromium		16065-83-1	2	mg/kg	49	35	17	30	18	
EK055: Ammonia as N										
Ammonia as N		7664-41-7	20	mg/kg	----	----	<20	----	20	
EK057G: Nitrite as N by Discrete Analyser										
Nitrite as N (Sol.)		14797-65-0	0.1	mg/kg	----	----	<0.1	----	0.4	
EK058G: Nitrate as N by Discrete Analyser										
Nitrate as N (Sol.)		14797-55-8	0.1	mg/kg	----	----	0.2	----	0.1	
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser										



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SB04-0.2	SB04-1.2	SB05-0.2	SB05-1.1	SB06-0.8
Client sampling date / time					24-Oct-2018 00:00	24-Oct-2018 00:00	25-Oct-2018 00:00	25-Oct-2018 00:00	25-Oct-2018 00:00
Compound	CAS Number	LOR	Unit		EM1817333-010	EM1817333-012	EM1817333-013	EM1817333-015	EM1817333-018
					Result	Result	Result	Result	Result
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser - Continued									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg		----	----	0.2	----	0.5
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	20	mg/kg		----	----	490	----	420
EK062: Total Nitrogen as N (TKN + NOx)									
^ Total Nitrogen as N	----	20	mg/kg		----	----	490	----	420
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg		----	----	323	----	91
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.1	mg/kg		----	----	0.4	----	0.8
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Isopropylbenzene	98-82-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
n-Propylbenzene	103-65-1	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
sec-Butylbenzene	135-98-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
tert-Butylbenzene	98-06-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
p-Isopropyltoluene	99-87-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
n-Butylbenzene	104-51-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		1.0	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		1.1	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		0.8	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		0.8	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		1.2	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		0.8	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SB04-0.2	SB04-1.2	SB05-0.2	SB05-1.1	SB06-0.8
Client sampling date / time					24-Oct-2018 00:00	24-Oct-2018 00:00	25-Oct-2018 00:00	25-Oct-2018 00:00	25-Oct-2018 00:00
Compound	CAS Number	LOR	Unit		EM1817333-010	EM1817333-012	EM1817333-013	EM1817333-015	EM1817333-018
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg		0.6	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		6.3	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		1.0	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		1.3	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.6	1.2	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.5	%		88.1	85.4	83.8	86.7	85.8
Toluene-D8	2037-26-5	0.5	%		93.3	87.1	81.4	93.4	92.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SB04-0.2	SB04-1.2	SB05-0.2	SB05-1.1	SB06-0.8
Client sampling date / time					24-Oct-2018 00:00	24-Oct-2018 00:00	25-Oct-2018 00:00	25-Oct-2018 00:00	25-Oct-2018 00:00
Compound	CAS Number	LOR	Unit		EM1817333-010	EM1817333-012	EM1817333-013	EM1817333-015	EM1817333-018
					Result	Result	Result	Result	Result
EP074S: VOC Surrogates - Continued									
4-Bromofluorobenzene	460-00-4	0.5	%		96.1	83.7	89.9	92.0	92.6
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		93.2	95.8	77.3	96.4	91.2
2-Chlorophenol-D4	93951-73-6	0.5	%		85.5	88.0	79.0	86.3	83.0
2,4,6-Tribromophenol	118-79-6	0.5	%		72.0	76.1	55.7	69.2	66.8
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		102	97.4	70.6	105	99.8
Anthracene-d10	1719-06-8	0.5	%		101	107	82.1	107	101
4-Terphenyl-d14	1718-51-0	0.5	%		102	105	77.4	103	97.6
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		82.2	80.2	78.2	80.8	80.6
Toluene-D8	2037-26-5	0.2	%		84.9	79.6	74.4	84.6	84.5
4-Bromofluorobenzene	460-00-4	0.2	%		88.3	92.4	82.3	92.2	84.8



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SB06-1.3	SB07-0.5	SB07-2.0	SB08-0.3	SB08-1.0
Client sampling date / time					25-Oct-2018 00:00	25-Oct-2018 00:00	25-Oct-2018 00:00	25-Oct-2018 00:00	25-Oct-2018 00:00
Compound	CAS Number	LOR	Unit		EM1817333-019	EM1817333-021	EM1817333-023	EM1817333-024	EM1817333-026
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		21.7	14.0	23.7	11.4	12.7
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		13	<5	7	12	10
Barium	7440-39-3	10	mg/kg		140	20	230	160	130
Beryllium	7440-41-7	1	mg/kg		2	<1	1	1	1
Boron	7440-42-8	50	mg/kg		<50	<50	<50	<50	<50
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		41	21	36	25	24
Cobalt	7440-48-4	2	mg/kg		13	3	5	9	9
Copper	7440-50-8	5	mg/kg		10	<5	7	121	55
Lead	7439-92-1	5	mg/kg		17	10	16	1280	636
Manganese	7439-96-5	5	mg/kg		77	35	126	156	180
Nickel	7440-02-0	2	mg/kg		23	6	14	22	21
Selenium	7782-49-2	5	mg/kg		<5	<5	<5	<5	<5
Vanadium	7440-62-2	5	mg/kg		75	32	52	34	33
Zinc	7440-66-6	5	mg/kg		10	<5	10	217	252
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	0.5	0.3
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EG049: Trivalent Chromium									
Trivalent Chromium	16065-83-1	2	mg/kg		41	21	36	25	24
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Isopropylbenzene	98-82-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
n-Propylbenzene	103-65-1	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
sec-Butylbenzene	135-98-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
tert-Butylbenzene	98-06-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
p-Isopropyltoluene	99-87-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
n-Butylbenzene	104-51-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				SB06-1.3	SB07-0.5	SB07-2.0	SB08-0.3	SB08-1.0
Client sampling date / time				25-Oct-2018 00:00	25-Oct-2018 00:00	25-Oct-2018 00:00	25-Oct-2018 00:00	25-Oct-2018 00:00
Compound	CAS Number	LOR	Unit	EM1817333-019	EM1817333-021	EM1817333-023	EM1817333-024	EM1817333-026
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50



Analytical Results

Sub-Matrix: SOIL
 (Matrix: SOIL)

Client sample ID

				SB06-1.3	SB07-0.5	SB07-2.0	SB08-0.3	SB08-1.0
Client sampling date / time				25-Oct-2018 00:00	25-Oct-2018 00:00	25-Oct-2018 00:00	25-Oct-2018 00:00	25-Oct-2018 00:00
Compound	CAS Number	LOR	Unit	EM1817333-019	EM1817333-021	EM1817333-023	EM1817333-024	EM1817333-026
				Result	Result	Result	Result	Result
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP074S: VOC Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.5	%	89.0	85.9	82.1	73.6	83.2
Toluene-D8	2037-26-5	0.5	%	95.0	89.9	86.6	78.8	88.6
4-Bromofluorobenzene	460-00-4	0.5	%	97.6	86.7	84.3	82.1	88.8
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	92.2	96.2	75.7	86.5	81.0
2-Chlorophenol-D4	93951-73-6	0.5	%	85.1	87.4	68.3	77.8	73.0
2,4,6-Tribromophenol	118-79-6	0.5	%	64.4	66.2	50.4	55.3	58.0
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	92.0	105	84.2	96.1	89.2
Anthracene-d10	1719-06-8	0.5	%	103	110	89.2	96.4	90.7
4-Terphenyl-d14	1718-51-0	0.5	%	99.7	104	81.1	92.5	87.6
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.2	%	83.4	80.6	76.9	68.6	78.0
Toluene-D8	2037-26-5	0.2	%	85.9	82.2	79.1	71.8	80.8
4-Bromofluorobenzene	460-00-4	0.2	%	89.3	84.0	81.9	73.6	96.5

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SB09-0.2	SB09-1.1	FD01	----	----
Client sampling date / time					25-Oct-2018 00:00	25-Oct-2018 00:00	25-Oct-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1817333-027	EM1817333-029	EM1817333-031	-----	-----	
				Result	Result	Result	----	----	
EA001: pH in soil using 0.01M CaCl extract									
pH (CaCl2)	----	0.1	pH Unit	7.9	----	----	----	----	
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%	18.0	24.8	16.4	----	----	
ED040N: Sulfate - Calcium Phosphate Soluble (NEPM)									
Sulfate as SO4 2-	14808-79-8	50	mg/kg	110	----	----	----	----	
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg	13	5	10	----	----	
Barium	7440-39-3	10	mg/kg	190	220	120	----	----	
Beryllium	7440-41-7	1	mg/kg	<1	1	<1	----	----	
Boron	7440-42-8	50	mg/kg	<50	<50	<50	----	----	
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	----	----	
Chromium	7440-47-3	2	mg/kg	23	40	19	----	----	
Cobalt	7440-48-4	2	mg/kg	5	6	6	----	----	
Copper	7440-50-8	5	mg/kg	29	9	78	----	----	
Lead	7439-92-1	5	mg/kg	189	12	139	----	----	
Manganese	7439-96-5	5	mg/kg	101	76	108	----	----	
Nickel	7440-02-0	2	mg/kg	15	12	17	----	----	
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	----	----	
Vanadium	7440-62-2	5	mg/kg	30	54	28	----	----	
Zinc	7440-66-6	5	mg/kg	129	13	85	----	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	0.5	<0.1	1.1	----	----	
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----	
EG049: Trivalent Chromium									
Trivalent Chromium	16065-83-1	2	mg/kg	----	40	19	----	----	
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser									
Weak Acid Dissociable Cyanide	----	1	mg/kg	<1	----	----	----	----	
EK055: Ammonia as N									
Ammonia as N	7664-41-7	20	mg/kg	<20	----	----	----	----	
EK057G: Nitrite as N by Discrete Analyser									
Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	0.1	----	----	----	----	
EK058G: Nitrate as N by Discrete Analyser									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SB09-0.2	SB09-1.1	FD01	----	----
Client sampling date / time					25-Oct-2018 00:00	25-Oct-2018 00:00	25-Oct-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1817333-027	EM1817333-029	EM1817333-031	-----	-----
					Result	Result	Result	----	----
EK058G: Nitrate as N by Discrete Analyser - Continued									
Nitrate as N (Sol.)	14797-55-8	0.1	mg/kg		15.9	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg		16.0	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	20	mg/kg		480	----	----	----	----
EK062: Total Nitrogen as N (TKN + NOx)									
^ Total Nitrogen as N	----	20	mg/kg		500	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	2	mg/kg		377	----	----	----	----
EK071G: Reactive Phosphorus as P by discrete analyser									
Reactive Phosphorus as P	14265-44-2	0.1	mg/kg		3.7	----	----	----	----
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	----	----	----	----
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	----	----	----	----
4,4`-DDT	50-29-3	0.2	mg/kg		<0.2	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SB09-0.2	SB09-1.1	FD01	----	----
Client sampling date / time					25-Oct-2018 00:00	25-Oct-2018 00:00	25-Oct-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1817333-027	EM1817333-029	EM1817333-031	-----	-----
					Result	Result	Result	----	----
EP068A: Organochlorine Pesticides (OC) - Continued									
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	----	----	----	----
Mirex	2385-85-5	0.20	mg/kg		<0.20	----	----	----	----
^ 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	----	----	----	----
EP068C: Triazines									
Atrazine	1912-24-9	0.05	mg/kg		<0.05	----	----	----	----
EP068D: Pyrethroids									
Bifenthrin	82657-04-3	0.05	mg/kg		<0.05	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons									
Styrene	100-42-5	0.5	mg/kg		----	<0.5	<0.5	----	----
Isopropylbenzene	98-82-8	0.5	mg/kg		----	<0.5	<0.5	----	----
n-Propylbenzene	103-65-1	0.5	mg/kg		----	<0.5	<0.5	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SB09-0.2	SB09-1.1	FD01	----	----
Client sampling date / time					25-Oct-2018 00:00	25-Oct-2018 00:00	25-Oct-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1817333-027	EM1817333-029	EM1817333-031	-----	-----
					Result	Result	Result	----	----
EP074A: Monocyclic Aromatic Hydrocarbons - Continued									
1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg		----	<0.5	<0.5	----	----
sec-Butylbenzene	135-98-8	0.5	mg/kg		----	<0.5	<0.5	----	----
1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg		----	<0.5	<0.5	----	----
tert-Butylbenzene	98-06-6	0.5	mg/kg		----	<0.5	<0.5	----	----
p-Isopropyltoluene	99-87-6	0.5	mg/kg		----	<0.5	<0.5	----	----
n-Butylbenzene	104-51-8	0.5	mg/kg		----	<0.5	<0.5	----	----
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		<0.5	----	----	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg		<0.5	----	----	----	----
2-Methylphenol	95-48-7	0.5	mg/kg		<0.5	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	----	----	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg		<0.5	----	----	----	----
2,4-Dimethylphenol	105-67-9	0.5	mg/kg		<0.5	----	----	----	----
2,4-Dichlorophenol	120-83-2	0.5	mg/kg		<0.5	----	----	----	----
2,6-Dichlorophenol	87-65-0	0.5	mg/kg		<0.5	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		<0.5	----	----	----	----
2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg		<0.5	----	----	----	----
2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg		<0.5	----	----	----	----
Pentachlorophenol	87-86-5	2	mg/kg		<2	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(b+j)fluoranthene	205-99-2	205-82-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	----	----

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID		SB09-0.2		SB09-1.1		FD01		----		----	
Client sampling date / time				25-Oct-2018 00:00		25-Oct-2018 00:00		25-Oct-2018 00:00		----		----			
Compound		CAS Number	LOR	Unit	EM1817333-027		EM1817333-029		EM1817333-031		-----		-----		
					Result		Result		Result		----		----		
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued															
Dibenz(a,h)anthracene		53-70-3	0.5	mg/kg	<0.5		<0.5		<0.5		----		----		
Benzo(g,h,i)perylene		191-24-2	0.5	mg/kg	<0.5		<0.5		<0.5		----		----		
^ Sum of polycyclic aromatic hydrocarbons		----	0.5	mg/kg	<0.5		<0.5		<0.5		----		----		
^ Benzo(a)pyrene TEQ (zero)		----	0.5	mg/kg	<0.5		<0.5		<0.5		----		----		
^ Benzo(a)pyrene TEQ (half LOR)		----	0.5	mg/kg	0.6		0.6		0.6		----		----		
^ Benzo(a)pyrene TEQ (LOR)		----	0.5	mg/kg	1.2		1.2		1.2		----		----		
EP080/071: Total Petroleum Hydrocarbons															
C6 - C9 Fraction		----	10	mg/kg	<10		<10		<10		----		----		
C10 - C14 Fraction		----	50	mg/kg	<50		<50		<50		----		----		
C15 - C28 Fraction		----	100	mg/kg	<100		<100		<100		----		----		
C29 - C36 Fraction		----	100	mg/kg	<100		<100		<100		----		----		
^ C10 - C36 Fraction (sum)		----	50	mg/kg	<50		<50		<50		----		----		
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions															
C6 - C10 Fraction		C6_C10	10	mg/kg	<10		<10		<10		----		----		
^ C6 - C10 Fraction minus BTEX (F1)		C6_C10-BTEX	10	mg/kg	<10		<10		<10		----		----		
>C10 - C16 Fraction		----	50	mg/kg	<50		<50		<50		----		----		
>C16 - C34 Fraction		----	100	mg/kg	<100		<100		<100		----		----		
>C34 - C40 Fraction		----	100	mg/kg	<100		<100		<100		----		----		
^ >C10 - C40 Fraction (sum)		----	50	mg/kg	<50		<50		<50		----		----		
^ >C10 - C16 Fraction minus Naphthalene (F2)		----	50	mg/kg	<50		<50		<50		----		----		
EP080: BTEXN															
Benzene		71-43-2	0.2	mg/kg	<0.2		<0.2		<0.2		----		----		
Toluene		108-88-3	0.5	mg/kg	<0.5		<0.5		<0.5		----		----		
Ethylbenzene		100-41-4	0.5	mg/kg	<0.5		<0.5		<0.5		----		----		
meta- & para-Xylene		108-38-3 106-42-3	0.5	mg/kg	<0.5		<0.5		<0.5		----		----		
ortho-Xylene		95-47-6	0.5	mg/kg	<0.5		<0.5		<0.5		----		----		
^ Sum of BTEX		----	0.2	mg/kg	<0.2		<0.2		<0.2		----		----		
^ Total Xylenes		----	0.5	mg/kg	<0.5		<0.5		<0.5		----		----		
Naphthalene		91-20-3	1	mg/kg	<1		<1		<1		----		----		
EP066S: PCB Surrogate															
Decachlorobiphenyl		2051-24-3	0.1	%	70.4		----		----		----		----		
EP068S: Organochlorine Pesticide Surrogate															



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SB09-0.2	SB09-1.1	FD01	----	----
Client sampling date / time					25-Oct-2018 00:00	25-Oct-2018 00:00	25-Oct-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1817333-027	EM1817333-029	EM1817333-031	-----	-----
					Result	Result	Result	----	----
EP068S: Organochlorine Pesticide Surrogate - Continued									
Dibromo-DDE	21655-73-2	0.05	%		91.5	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		71.3	----	----	----	----
EP074S: VOC Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.5	%		----	88.7	82.8	----	----
Toluene-D8	2037-26-5	0.5	%		----	95.8	86.8	----	----
4-Bromofluorobenzene	460-00-4	0.5	%		----	96.0	90.1	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		94.9	92.3	84.0	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		87.0	83.8	76.4	----	----
2,4,6-Tribromophenol	118-79-6	0.5	%		73.7	71.9	67.9	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		95.3	101	92.2	----	----
Anthracene-d10	1719-06-8	0.5	%		108	106	95.0	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		104	102	90.5	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		71.9	83.0	77.4	----	----
Toluene-D8	2037-26-5	0.2	%		75.0	87.4	79.2	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		101	86.7	85.0	----	----



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				TB01	RB01	RB02	----	----
Client sampling date / time				25-Oct-2018 00:00	24-Oct-2018 00:00	25-Oct-2018 00:00	----	----
Compound	CAS Number	LOR	Unit	EM1817333-033	EM1817333-034	EM1817333-035	-----	-----
				Result	Result	Result	----	----
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	----	<0.001	<0.001	----	----
Boron	7440-42-8	0.05	mg/L	----	<0.05	<0.05	----	----
Barium	7440-39-3	0.001	mg/L	----	<0.001	<0.001	----	----
Beryllium	7440-41-7	0.001	mg/L	----	<0.001	<0.001	----	----
Cadmium	7440-43-9	0.0001	mg/L	----	<0.0001	<0.0001	----	----
Cobalt	7440-48-4	0.001	mg/L	----	<0.001	<0.001	----	----
Chromium	7440-47-3	0.001	mg/L	----	<0.001	<0.001	----	----
Copper	7440-50-8	0.001	mg/L	----	<0.001	<0.001	----	----
Manganese	7439-96-5	0.001	mg/L	----	<0.001	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L	----	<0.001	<0.001	----	----
Lead	7439-92-1	0.001	mg/L	----	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	----	<0.01	<0.01	----	----
Vanadium	7440-62-2	0.01	mg/L	----	<0.01	<0.01	----	----
Zinc	7440-66-6	0.005	mg/L	----	<0.005	<0.005	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	----	<0.0001	<0.0001	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	----	----
Toluene	108-88-3	2	µg/L	<2	<2	<2	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	----	----
^ Total Xylenes	----	2	µg/L	<2	<2	<2	----	----
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	----	----
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	101	108	103	----	----
Toluene-D8	2037-26-5	2	%	93.1	100.0	97.0	----	----

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 Work Order : EM1817333
 Client : EDGE GROUP PTY LTD
 Project : 20170561



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	TB01	RB01	RB02	----	----
Client sampling date / time					25-Oct-2018 00:00	24-Oct-2018 00:00	25-Oct-2018 00:00	----	----
Compound	CAS Number	LOR	Unit		EM1817333-033	EM1817333-034	EM1817333-035	-----	-----
					Result	Result	Result	----	----
EP080S: TPH(V)/BTEX Surrogates - Continued									
4-Bromofluorobenzene	460-00-4	2	%		106	110	110	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	36	140
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	38	128
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	33	139
EP074S: VOC Surrogates			
1,2-Dichloroethane-D4	17060-07-0	62	122
Toluene-D8	2037-26-5	64	120
4-Bromofluorobenzene	460-00-4	66	124
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	54	125
2-Chlorophenol-D4	93951-73-6	65	123
2,4,6-Tribromophenol	118-79-6	34	122
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	61	125
Anthracene-d10	1719-06-8	62	130
4-Terphenyl-d14	1718-51-0	67	133
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	51	125
Toluene-D8	2037-26-5	55	125
4-Bromofluorobenzene	460-00-4	56	124

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

QUALITY CONTROL REPORT

Work Order	: EM1817333	Page	: 1 of 20
Client	: EDGE GROUP PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: Carly Powell	Contact	: Kane Vorwerk
Address	: 423 CITY ROAD SOUTH MELBOURNE VIC 3205	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +6138549 9652
Project	: 20170561	Date Samples Received	: 26-Oct-2018
Order number	: 20170561	Date Analysis Commenced	: 29-Oct-2018
C-O-C number	: ----	Issue Date	: 02-Nov-2018
Sampler	: Carly Powell		
Site	: ----		
Quote number	: ME/795/18		
No. of samples received	: 36		
No. of samples analysed	: 21		



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>
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC



General Comments

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

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

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

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA001: pH in soil using 0.01M CaCl extract (QC Lot: 2009817)									
EM1817330-001	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	10.8	10.8	0.00	0% - 20%
EM1817391-001	Anonymous	EA001: pH (CaCl ₂)	----	0.1	pH Unit	8.9	8.9	0.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2008454)									
EM1817330-001	Anonymous	EA055: Moisture Content	----	0.1	%	6.2	6.3	2.91	No Limit
EM1817330-010	Anonymous	EA055: Moisture Content	----	0.1	%	1.3	1.2	10.4	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2008455)									
EM1817333-013	SB05-0.2	EA055: Moisture Content	----	0.1	%	13.7	16.2	16.2	0% - 50%
EM1817333-031	FD01	EA055: Moisture Content	----	0.1	%	16.4	15.9	3.52	0% - 50%
ED040N: Sulfate - Calcium Phosphate Soluble (NEPM) (QC Lot: 2011709)									
EM1817333-013	SB05-0.2	ED040N: Sulfate as SO ₄ 2-	14808-79-8	50	mg/kg	70	70	0.00	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 2007321)									
EM1817333-010	SB04-0.2	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	280	270	6.16	0% - 20%
		EG005T: Chromium	7440-47-3	2	mg/kg	49	46	6.28	0% - 20%
		EG005T: Cobalt	7440-48-4	2	mg/kg	10	17	45.7	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	29	33	14.1	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	6	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	50	57	13.6	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	83	82	1.50	0% - 50%
		EG005T: Manganese	7439-96-5	5	mg/kg	396	387	2.26	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	82	79	3.77	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	155	150	3.53	0% - 20%



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 2007321) - continued									
EM1817333-010	SB04-0.2	EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.00	No Limit
EM1817333-031	FD01	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	120	130	0.00	0% - 50%
		EG005T: Chromium	7440-47-3	2	mg/kg	19	18	7.10	No Limit
		EG005T: Cobalt	7440-48-4	2	mg/kg	6	6	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	17	18	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	10	11	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	78	86	9.62	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	139	142	2.16	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	108	115	6.84	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	28	27	5.82	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	85	89	4.58	0% - 50%
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.00	No Limit
EG005T: Total Metals by ICP-AES (QC Lot: 2009675)									
EM1817255-001	Anonymous	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	70	80	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	30	32	7.99	0% - 50%
		EG005T: Cobalt	7440-48-4	2	mg/kg	16	16	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	45	38	16.5	0% - 20%
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	16	17	8.26	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	42	38	9.57	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	357	358	0.00	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	40	45	10.8	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	39	42	7.69	No Limit
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.00	No Limit
EM1817330-006	Anonymous	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	<10	<10	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	4	3	0.00	No Limit
		EG005T: Cobalt	7440-48-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	19	11	50.5	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
EG005T: Manganese	7439-96-5	5	mg/kg	7	8	17.1	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 (%)
EG005T: Total Metals by ICP-AES (QC Lot: 2009675) - continued									
EM1817330-006	Anonymous	EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Vanadium	7440-62-2	5	mg/kg	24	14	50.2	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Boron	7440-42-8	50	mg/kg	<50	<50	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 2007320)									
EM1817244-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1817333-010	SB04-0.2	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 2007322)									
EM1817333-031	FD01	EG035T: Mercury	7439-97-6	0.1	mg/kg	1.1	1.0	10.8	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 2009676)									
EM1817255-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1817330-006	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 2007384)									
EM1817315-011	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1817333-018	SB06-0.8	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 2009822)									
EM1817233-002	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1817330-007	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser (QC Lot: 2012064)									
EM1817333-008	SB02-1.5	EK028SF: Weak Acid Dissociable Cyanide	----	1	mg/kg	<1	<1	0.00	No Limit
EK055: Ammonia as N (QC Lot: 2007117)									
EM1817254-015	Anonymous	EK055: Ammonia as N	7664-41-7	20	mg/kg	<20	<20	0.00	No Limit
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 2007378)									
EM1817333-001	SB01-0.7	EK057G: Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 2007379)									
EM1817333-001	SB01-0.7	EK059G: Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	5.0	5.0	0.00	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 2007110)									
EM1817333-001	SB01-0.7	EK061G: Total Kjeldahl Nitrogen as N	----	20	mg/kg	480	480	0.00	0% - 20%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 2007109)									
EM1817333-001	SB01-0.7	EK067G: Total Phosphorus as P	----	2	mg/kg	1220	1200	1.76	0% - 20%
EK071G: Reactive Phosphorus as P by discrete analyser (QC Lot: 2007382)									
EM1817333-001	SB01-0.7	EK071G: Reactive Phosphorus as P	14265-44-2	0.1	mg/kg	2.1	2.1	0.00	0% - 20%
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 2008505)									
EM1817333-008	SB02-1.5	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 2008506)									
EM1817333-008	SB02-1.5	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



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: 2008506) - continued									
EM1817333-008	SB02-1.5	EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Mirex	2385-85-5	0.05	mg/kg	<0.20	<0.20	0.00	No Limit
		EP068: 4,4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 2008506)									
EM1817333-008	SB02-1.5	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion	56-38-2	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 (%)
EP068C: Triazines (QC Lot: 2008506)									
EM1817333-008	SB02-1.5	EP068: Atrazine	1912-24-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP068D: Pyrethroids (QC Lot: 2008506)									
EM1817333-008	SB02-1.5	EP068: Bifenthrin	82657-04-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 2007222)									
EM1817333-001	SB01-0.7	EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM1817333-021	SB07-0.5	EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: 1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 2008503)									
EM1817333-019	SB06-1.3	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.00	No Limit
EM1817333-008	SB02-1.5	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2,4-Dimethylphenol	105-67-9	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)A: Phenolic Compounds (QC Lot: 2008503) - continued									
EM1817333-008	SB02-1.5	EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 2008503)									
EM1817333-019	SB06-1.3	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
EM1817333-008	SB02-1.5	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



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: 2008503) - continued									
EM1817333-008	SB02-1.5	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
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2007223)									
EM1817333-001	SB01-0.7	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1817333-021	SB07-0.5	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2007254)									
EM1817333-008	SB02-1.5	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EM1817360-078	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2008504)									
EM1817333-019	SB06-1.3	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
		EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit
EM1817333-008	SB02-1.5	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
		EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2007223)									
EM1817333-001	SB01-0.7	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EM1817333-021	SB07-0.5	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2007254)									
EM1817333-008	SB02-1.5	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EM1817360-078	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2008504)									
EM1817333-019	SB06-1.3	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
		EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit
EM1817333-008	SB02-1.5	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
		EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit
EP080: BTEXN (QC Lot: 2007223)									
EM1817333-001	SB01-0.7	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	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	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 (%)
EP080: BTEXN (QC Lot: 2007223) - continued									
EM1817333-001	SB01-0.7	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1817333-021	SB07-0.5	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
EP080: BTEXN (QC Lot: 2007254)									
EM1817333-008	SB02-1.5	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
EM1817360-078	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
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 2010835)									
EM1817291-026	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.162	0.162	0.00	0% - 20%
		EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Barium	7440-39-3	0.001	mg/L	0.043	0.044	3.02	0% - 20%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Cobalt	7440-48-4	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.033	0.034	4.22	0% - 20%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.184	0.190	2.93	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.012	0.012	0.00	0% - 50%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.068	0.072	5.79	0% - 50%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Vanadium	7440-62-2	0.01	mg/L	0.01	0.01	0.00	No Limit
		EG020A-T: Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	0.00	No Limit



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 2010835) - continued									
EM1817291-038	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.284	0.293	3.14	0% - 20%
		EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Barium	7440-39-3	0.001	mg/L	0.042	0.045	7.16	0% - 20%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Cobalt	7440-48-4	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.004	0.004	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.177	0.178	0.00	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.010	0.010	0.00	0% - 50%
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.021	0.022	0.00	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Vanadium	7440-62-2	0.01	mg/L	0.02	0.02	0.00	No Limit
		EG020A-T: Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 2009336)									
EM1817062-022	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EM1817414-004	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0005	<0.0005	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2008052)									
EM1817062-022	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM1817368-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2008052)									
EM1817062-022	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM1817368-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 2008052)									
EM1817062-022	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EM1817368-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	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.

Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
	Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
<50	3000 mg/kg	95.7	87	116
<5	21.7 mg/kg	100	78	107
<10	143 mg/kg	91.4	76	110
<1	5.63 mg/kg	108	84	113
<50	33.2 mg/kg	116	84	126
<1	4.64 mg/kg	96.4	76	108
<2	43.9 mg/kg	105	78	110
<2	16 mg/kg	104	78	112
<5	32 mg/kg	102	78	108
<5	40 mg/kg	104	78	106
<5	130 mg/kg	104	81	110
<2	55 mg/kg	106	80	109
<5	5.37 mg/kg	97.0	92	110
<5	29.6 mg/kg	104	78	106
<5	60.8 mg/kg	101	79	110
<5	21.7 mg/kg	88.0	78	107
<10	143 mg/kg	90.5	76	110
<1	5.63 mg/kg	90.0	84	113
<50	33.2 mg/kg	99.6	84	126
<1	4.64 mg/kg	81.3	76	108
<2	43.9 mg/kg	83.5	78	110
<2	16 mg/kg	84.5	78	112
<5	32 mg/kg	83.5	78	108
<5	40 mg/kg	85.2	78	106
<5	130 mg/kg	87.1	81	110
<2	55 mg/kg	90.9	80	109
<5	5.37 mg/kg	96.8	92	110
<5	29.6 mg/kg	86.8	78	106
<5	60.8 mg/kg	86.3	79	110
<0.1	2.57 mg/kg	96.1	77	104



Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2007322) - continued								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	98.6	77	104
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2009676)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	92.4	77	104
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 2007384)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	77.0	75	112
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 2009822)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	40 mg/kg	86.2	75	112
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser (QCLot: 2012064)								
EK028SF: Weak Acid Dissociable Cyanide	----	1	mg/kg	<1	20 mg/kg	92.8	83	114
EK055: Ammonia as N (QCLot: 2007117)								
EK055: Ammonia as N	7664-41-7	20	mg/kg	<20	25 mg/kg	96.8	83	108
EK057G: Nitrite as N by Discrete Analyser (QCLot: 2007378)								
EK057G: Nitrite as N (Sol.)	14797-65-0	0.1	mg/kg	<0.1	2.5 mg/kg	100	87	119
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 2007379)								
EK059G: Nitrite + Nitrate as N (Sol.)	----	0.1	mg/kg	<0.1	2.5 mg/kg	103	92	123
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 2007110)								
EK061G: Total Kjeldahl Nitrogen as N	----	20	mg/kg	<20	500 mg/kg	84.5	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 2007109)								
EK067G: Total Phosphorus as P	----	2	mg/kg	<2	221 mg/kg	93.5	78	127
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 2007382)								
EK071G: Reactive Phosphorus as P	14265-44-2	0.1	mg/kg	<0.1	2.5 mg/kg	99.4	84	121
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 2008505)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	77.3	63	115
EP068A: Organochlorine Pesticides (OC) (QCLot: 2008506)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	73.2	65	120
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	85.1	68	121
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	89.5	70	121
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	89.5	64	119
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	78.4	56	121
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	88.6	63	114
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	89.7	64	121
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	77.7	68	120
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	81.9	72	124
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	88.7	69	125
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	80.8	71	123
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	88.5	59	123
EP068: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	90.2	70	123



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				
EP068A: Organochlorine Pesticides (OC) (QCLot: 2008506) - continued								
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	77.5	64	119
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	95.4	69	124
EP068: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	79.7	66	128
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	88.6	62	121
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	95.3	57	124
EP068: 4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	84.5	60	124
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	82.6	73	120
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	83.2	61	121
EP068: Mirex	2385-85-5	0.05	mg/kg	<0.05	0.5 mg/kg	96.1	69	123
EP068B: Organophosphorus Pesticides (OP) (QCLot: 2008506)								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	92.4	63	127
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	78.1	53	137
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	44.8	10	136
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	75.7	56	127
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	101	70	120
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	86.7	70	120
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	80.6	50	132
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	74.6	63	122
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	88.7	70	122
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	75.9	58	123
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	84.7	56	119
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	79.2	68	119
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	69.1	45	122
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	77.6	67	116
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	75.2	50	127
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	74.3	68	121
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	73.8	60	123
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	85.4	68	122
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	71.1	24	113
EP068C: Triazines (QCLot: 2008506)								
EP068: Atrazine	1912-24-9	0.05	mg/kg	<0.05	0.5 mg/kg	87.2	73	122
EP068D: Pyrethroids (QCLot: 2008506)								
EP068: Bifenthrin	82657-04-3	0.05	mg/kg	<0.05	0.5 mg/kg	95.6	65	123
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 2007222)								
EP074: Styrene	100-42-5	0.5	mg/kg	<0.5	1 mg/kg	88.5	77	118
EP074: Isopropylbenzene	98-82-8	0.5	mg/kg	<0.5	1 mg/kg	91.7	77	116
EP074: n-Propylbenzene	103-65-1	0.5	mg/kg	<0.5	1 mg/kg	91.5	68	111
EP074: 1,3,5-Trimethylbenzene	108-67-8	0.5	mg/kg	<0.5	1 mg/kg	92.0	71	111



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				
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 2007222) - continued								
EP074: sec-Butylbenzene	135-98-8	0.5	mg/kg	<0.5	1 mg/kg	91.6	69	113
EP074: 1,2,4-Trimethylbenzene	95-63-6	0.5	mg/kg	<0.5	1 mg/kg	90.0	72	108
EP074: tert-Butylbenzene	98-06-6	0.5	mg/kg	<0.5	1 mg/kg	93.8	73	111
EP074: p-Isopropyltoluene	99-87-6	0.5	mg/kg	<0.5	1 mg/kg	89.2	70	115
EP074: n-Butylbenzene	104-51-8	0.5	mg/kg	<0.5	1 mg/kg	85.2	60	110
EP075(SIM)A: Phenolic Compounds (QCLot: 2008503)								
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	3 mg/kg	91.5	70	125
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	3 mg/kg	91.6	74	128
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	3 mg/kg	90.3	76	123
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	6 mg/kg	89.7	70	128
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	3 mg/kg	67.5	56	114
EP075(SIM): 2,4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	3 mg/kg	87.4	70	122
EP075(SIM): 2,4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	3 mg/kg	84.3	70	121
EP075(SIM): 2,6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	3 mg/kg	95.8	70	126
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	3 mg/kg	88.8	67	120
EP075(SIM): 2,4,6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	3 mg/kg	84.8	63	121
EP075(SIM): 2,4,5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	3 mg/kg	94.6	71	133
EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	6 mg/kg	36.5	20	110
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2008503)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	3 mg/kg	106	75	131
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	3 mg/kg	91.7	70	132
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	3 mg/kg	94.0	80	128
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	3 mg/kg	88.9	70	128
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	3 mg/kg	94.5	80	128
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	3 mg/kg	96.7	72	126
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	3 mg/kg	94.6	70	128
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	3 mg/kg	98.9	80	125
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	3 mg/kg	91.7	70	130
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	3 mg/kg	100	80	126
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	3 mg/kg	85.2	71	124
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	3 mg/kg	93.9	75	125
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	3 mg/kg	76.7	70	125
EP075(SIM): Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	3 mg/kg	77.7	71	128
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	3 mg/kg	72.0	72	126
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	3 mg/kg	81.5	68	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2007223)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	36 mg/kg	89.4	70	127



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				
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2007254)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	36 mg/kg	85.1	70	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2008504)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	806 mg/kg	81.2	80	120
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	3006 mg/kg	93.6	84	115
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	1584 mg/kg	87.9	80	112
EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2007223)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	45 mg/kg	88.3	68	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2007254)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	45 mg/kg	84.6	68	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2008504)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	1160 mg/kg	83.6	83	117
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	3978 mg/kg	92.7	82	114
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	313 mg/kg	74.4	73	115
EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
EP080: BTEXN (QCLot: 2007223)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	2 mg/kg	95.3	74	124
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	2 mg/kg	93.3	77	125
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2 mg/kg	93.9	73	125
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4 mg/kg	93.0	77	128
	106-42-3							
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2 mg/kg	90.9	81	128
EP080: Naphthalene	91-20-3	1	mg/kg	<1	0.5 mg/kg	95.7	66	130
EP080: BTEXN (QCLot: 2007254)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	2 mg/kg	81.8	74	124
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	2 mg/kg	85.9	77	125
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2 mg/kg	83.8	73	125
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4 mg/kg	88.8	77	128
	106-42-3							
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2 mg/kg	88.4	81	128
EP080: Naphthalene	91-20-3	1	mg/kg	<1	0.5 mg/kg	82.4	66	130

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit			Result	LCS	Low
EG020T: Total Metals by ICP-MS (QCLot: 2010835)								
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	103	90	110
EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	0.1 mg/L	105	88	113



Sub-Matrix: **WATER**

Sub-Matrix: WATER				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				
EG020T: Total Metals by ICP-MS (QCLot: 2010835) - continued								
EG020A-T: Barium	7440-39-3	0.001	mg/L	<0.001	0.1 mg/L	101	88	112
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	108	86	111
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	95.0	87	109
EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	0.1 mg/L	101	88	113
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	97.5	87	108
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	96.9	88	109
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	98.7	88	111
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	102	87	111
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	102	85	113
EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	0.1 mg/L	94.8	88	112
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	99.4	87	113
EG020A-T: Boron	7440-42-8	0.05	mg/L	<0.05	0.5 mg/L	105	88	118
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2009336)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	102	76	115
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2008052)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	98.8	68	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2008052)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	97.5	66	123
EP080: BTEXN (QCLot: 2008052)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	96.6	74	123
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	99.6	77	128
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	98.6	73	126
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	40 µg/L	103	72	131
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	105	74	131
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	83.1	74	124

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	Spike Recovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
ED040N: Sulfate - Calcium Phosphate Soluble (NEPM) (QCLot: 2011709)							
EM1817333-027	SB09-0.2	ED040N: Sulfate as SO4 2-	14808-79-8	3000 mg/kg	93.3	84	116
EG005T: Total Metals by ICP-AES (QCLot: 2007321)							
EM1817310-008	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	100	78	124



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
EG005T: Total Metals by ICP-AES (QCLot: 2007321) - continued							
EM1817310-008	Anonymous	EG005T: Barium	7440-39-3	50 mg/kg	91.2	71	135
		EG005T: Beryllium	7440-41-7	50 mg/kg	110	85	125
		EG005T: Cadmium	7440-43-9	50 mg/kg	104	84	116
		EG005T: Chromium	7440-47-3	50 mg/kg	103	79	121
		EG005T: Copper	7440-50-8	50 mg/kg	108	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	102	76	124
		EG005T: Manganese	7439-96-5	50 mg/kg	113	68	136
		EG005T: Nickel	7440-02-0	50 mg/kg	101	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	92.6	71	125
		EG005T: Vanadium	7440-62-2	50 mg/kg	102	76	124
		EG005T: Zinc	7440-66-6	50 mg/kg	105	74	128
EG005T: Total Metals by ICP-AES (QCLot: 2009675)							
EM1817283-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	98.2	78	124
		EG005T: Barium	7440-39-3	50 mg/kg	100	71	135
		EG005T: Beryllium	7440-41-7	50 mg/kg	94.6	85	125
		EG005T: Cadmium	7440-43-9	50 mg/kg	85.7	84	116
		EG005T: Chromium	7440-47-3	50 mg/kg	87.7	79	121
		EG005T: Copper	7440-50-8	50 mg/kg	101	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	92.4	76	124
		EG005T: Manganese	7439-96-5	50 mg/kg	106	68	136
		EG005T: Nickel	7440-02-0	50 mg/kg	89.7	78	120
		EG005T: Selenium	7782-49-2	50 mg/kg	90.1	71	125
		EG005T: Vanadium	7440-62-2	50 mg/kg	88.4	76	124
		EG005T: Zinc	7440-66-6	50 mg/kg	98.4	74	128
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2007320)							
EM1817279-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	100	76	116
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2009676)							
EM1817283-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	93.9	76	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 2007384)							
EM1817333-001	SB01-0.7	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	79.1	58	114
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 2009822)							
EM1817233-047	Anonymous	EG048G: Hexavalent Chromium	18540-29-9	40 mg/kg	62.3	58	114
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser (QCLot: 2012064)							
EM1817333-027	SB09-0.2	EK028SF: Weak Acid Dissociable Cyanide	----	20 mg/kg	# 28.8	70	130
EK055: Ammonia as N (QCLot: 2007117)							
EM1817255-001	Anonymous	EK055: Ammonia as N	7664-41-7	50 mg/kg	101	80	110



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
EK057G: Nitrite as N by Discrete Analyser (QCLot: 2007378)							
EM1817142-055	Anonymous	EK057G: Nitrite as N (Sol.)	14797-65-0	2.5 mg/kg	88.8	84	128
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 2007379)							
EM1817142-055	Anonymous	EK059G: Nitrite + Nitrate as N (Sol.)	----	2.5 mg/kg	# Not Determined	70	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 2007110)							
EM1817333-013	SB05-0.2	EK061G: Total Kjeldahl Nitrogen as N	----	500 mg/kg	82.0	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 2007109)							
EM1817333-013	SB05-0.2	EK067G: Total Phosphorus as P	----	200 mg/kg	74.2	70	130
EK071G: Reactive Phosphorus as P by discrete analyser (QCLot: 2007382)							
EM1817333-013	SB05-0.2	EK071G: Reactive Phosphorus as P	14265-44-2	2.5 mg/kg	109	73	133
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 2008505)							
EM1817333-027	SB09-0.2	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	75.1	44	144
EP068A: Organochlorine Pesticides (OC) (QCLot: 2008506)							
EM1817333-027	SB09-0.2	EP068: gamma-BHC	58-89-9	0.5 mg/kg	87.8	22	139
		EP068: Heptachlor	76-44-8	0.5 mg/kg	78.7	18	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	96.2	23	136
		EP068: Dieldrin	60-57-1	0.5 mg/kg	98.9	42	136
		EP068: Endrin	72-20-8	0.5 mg/kg	79.1	23	146
		EP068: 4,4'-DDT	50-29-3	0.5 mg/kg	51.2	20	133
EP068B: Organophosphorus Pesticides (OP) (QCLot: 2008506)							
EM1817333-027	SB09-0.2	EP068: Diazinon	333-41-5	0.5 mg/kg	98.0	49	135
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	77.7	41	127
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	81.3	47	133
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	69.6	45	133
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	78.0	40	128
EP075(SIM)A: Phenolic Compounds (QCLot: 2008503)							
EM1817333-006	SB02-0.7	EP075(SIM): Phenol	108-95-2	3 mg/kg	92.2	63	117
		EP075(SIM): 2-Chlorophenol	95-57-8	3 mg/kg	89.4	65	123
		EP075(SIM): 2-Nitrophenol	88-75-5	3 mg/kg	66.8	40	134
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	3 mg/kg	83.8	56	122
		EP075(SIM): Pentachlorophenol	87-86-5	3 mg/kg	48.9	15	139
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2008503)							
EM1817333-006	SB02-0.7	EP075(SIM): Acenaphthene	83-32-9	3 mg/kg	95.2	67	117
		EP075(SIM): Pyrene	129-00-0	3 mg/kg	122	52	148
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2007223)							
EM1817333-004	SB01-2.0	EP080: C6 - C9 Fraction	----	28 mg/kg	63.7	42	131

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
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2007254)							
EM1817333-027	SB09-0.2	EP080: C6 - C9 Fraction	----	28 mg/kg	80.1	42	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2008504)							
EM1817333-004	SB01-2.0	EP071: C10 - C14 Fraction	----	806 mg/kg	72.8	53	123
		EP071: C15 - C28 Fraction	----	3006 mg/kg	95.2	70	124
		EP071: C29 - C36 Fraction	----	1584 mg/kg	89.8	64	118
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2007223)							
EM1817333-004	SB01-2.0	EP080: C6 - C10 Fraction	C6_C10	33 mg/kg	62.1	39	129
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2007254)							
EM1817333-027	SB09-0.2	EP080: C6 - C10 Fraction	C6_C10	33 mg/kg	77.3	39	129
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2008504)							
EM1817333-004	SB01-2.0	EP071: >C10 - C16 Fraction	----	1160 mg/kg	79.6	65	123
		EP071: >C16 - C34 Fraction	----	3978 mg/kg	94.5	67	121
		EP071: >C34 - C40 Fraction	----	313 mg/kg	76.4	44	126
EP080: BTEXN (QCLot: 2007223)							
EM1817333-004	SB01-2.0	EP080: Benzene	71-43-2	2 mg/kg	88.7	50	136
		EP080: Toluene	108-88-3	2 mg/kg	82.9	56	139
EP080: BTEXN (QCLot: 2007254)							
EM1817333-027	SB09-0.2	EP080: Benzene	71-43-2	2 mg/kg	90.6	50	136
		EP080: Toluene	108-88-3	2 mg/kg	97.4	56	139

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 2010835)							
EM1817291-026	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	98.2	82	118
		EG020A-T: Beryllium	7440-41-7	1 mg/L	103	79	121
		EG020A-T: Barium	7440-39-3	1 mg/L	98.4	80	114
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	102	75	129
		EG020A-T: Chromium	7440-47-3	1 mg/L	91.0	80	118
		EG020A-T: Cobalt	7440-48-4	1 mg/L	94.8	82	120
		EG020A-T: Copper	7440-50-8	1 mg/L	92.7	81	115
		EG020A-T: Lead	7439-92-1	1 mg/L	94.0	83	121
		EG020A-T: Manganese	7439-96-5	1 mg/L	91.5	73	123
		EG020A-T: Nickel	7440-02-0	1 mg/L	95.5	80	118
		EG020A-T: Vanadium	7440-62-2	1 mg/L	90.6	81	119
		EG020A-T: Zinc	7440-66-6	1 mg/L	91.6	74	116
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2009336)							

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 Work Order : EM1817333
 Client : EDGE GROUP PTY LTD
 Project : 20170561



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2009336) - continued							
EM1817291-001	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	102	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2008052)							
EM1817324-001	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	73.5	43	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2008052)							
EM1817324-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	73.3	44	122
EP080: BTEXN (QCLot: 2008052)							
EM1817324-001	Anonymous	EP080: Benzene	71-43-2	20 µg/L	95.0	68	130
		EP080: Toluene	108-88-3	20 µg/L	96.1	72	132

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EM1817333	Page	: 1 of 15
Client	: EDGE GROUP PTY LTD	Laboratory	: Environmental Division Melbourne
Contact	: Carly Powell	Telephone	: +6138549 9652
Project	: 20170561	Date Samples Received	: 26-Oct-2018
Site	: ----	Issue Date	: 02-Nov-2018
Sampler	: Carly Powell	No. of samples received	: 36
Order number	: 20170561	No. of samples analysed	: 21

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

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



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							
EK028SF: Weak Acid Dissociable CN by Segmented F	EM1817333--027	SB09-0.2	Weak Acid Dissociable Cyanide	----	28.8 %	70-130%	Recovery less than lower data quality objective
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Ar	EM1817142--055	Anonymous	Nitrite + Nitrate as N (Sol.)	----	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Matrix Spikes (MS)					
Total Mercury by FIMS	2	41	4.88	5.00	NEPM 2013 B3 & ALS QC Standard

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	
EA001: pH in soil using 0.01M CaCl extract								
Soil Glass Jar - Unpreserved (EA001)								
SB05-0.2, SB09-0.2	25-Oct-2018	31-Oct-2018	01-Nov-2018	✓	31-Oct-2018	31-Oct-2018	✓	
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055)								
SB01-0.7, SB02-0.7, SB03-0.3, SB04-1.2	24-Oct-2018	----	----	----	30-Oct-2018	07-Nov-2018	✓	
Soil Glass Jar - Unpreserved (EA055)								
SB05-0.2, SB06-0.8, SB07-0.5, SB08-0.3, SB09-0.2, FD01	25-Oct-2018	----	----	----	30-Oct-2018	08-Nov-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
ED040N: Sulfate - Calcium Phosphate Soluble (NEPM)								
Soil Glass Jar - Unpreserved (ED040N)								
SB05-0.2,	SB09-0.2	25-Oct-2018	31-Oct-2018	23-Apr-2019	✓	01-Nov-2018	23-Apr-2019	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)								
SB01-0.7,	SB01-2.0,	24-Oct-2018	30-Oct-2018	22-Apr-2019	✓	31-Oct-2018	22-Apr-2019	✓
SB02-0.7,	SB03-0.3,							
SB04-0.2,	SB04-1.2							
Soil Glass Jar - Unpreserved (EG005T)								
SB02-1.5		24-Oct-2018	31-Oct-2018	22-Apr-2019	✓	01-Nov-2018	22-Apr-2019	✓
Soil Glass Jar - Unpreserved (EG005T)								
SB05-0.2,	SB05-1.1,	25-Oct-2018	30-Oct-2018	23-Apr-2019	✓	31-Oct-2018	23-Apr-2019	✓
SB06-0.8,	SB06-1.3,							
SB07-0.5,	SB07-2.0,							
SB08-0.3,	SB08-1.0,							
SB09-1.1,	FD01							
Soil Glass Jar - Unpreserved (EG005T)								
SB09-0.2		25-Oct-2018	31-Oct-2018	23-Apr-2019	✓	01-Nov-2018	23-Apr-2019	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)								
SB01-0.7,	SB01-2.0,	24-Oct-2018	30-Oct-2018	21-Nov-2018	✓	31-Oct-2018	21-Nov-2018	✓
SB02-0.7,	SB03-0.3,							
SB04-0.2,	SB04-1.2							
Soil Glass Jar - Unpreserved (EG035T)								
SB02-1.5		24-Oct-2018	31-Oct-2018	21-Nov-2018	✓	31-Oct-2018	21-Nov-2018	✓
Soil Glass Jar - Unpreserved (EG035T)								
SB05-0.2,	SB05-1.1,	25-Oct-2018	30-Oct-2018	22-Nov-2018	✓	31-Oct-2018	22-Nov-2018	✓
SB06-0.8,	SB06-1.3,							
SB07-0.5,	SB07-2.0,							
SB08-0.3,	SB08-1.0,							
SB09-1.1,	FD01							
Soil Glass Jar - Unpreserved (EG035T)								
SB09-0.2		25-Oct-2018	31-Oct-2018	22-Nov-2018	✓	31-Oct-2018	22-Nov-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
EG048: Hexavalent Chromium (Alkaline Digest)								
Soil Glass Jar - Unpreserved (EG048G) SB01-0.7, SB02-0.7, SB04-0.2,	SB01-2.0, SB03-0.3, SB04-1.2	24-Oct-2018	29-Oct-2018	21-Nov-2018	✔	30-Oct-2018	05-Nov-2018	✔
Soil Glass Jar - Unpreserved (EG048G) SB02-1.5		24-Oct-2018	31-Oct-2018	21-Nov-2018	✔	31-Oct-2018	07-Nov-2018	✔
Soil Glass Jar - Unpreserved (EG048G) SB05-0.2, SB06-0.8, SB07-0.5, SB08-0.3, SB09-1.1,	SB05-1.1, SB06-1.3, SB07-2.0, SB08-1.0, FD01	25-Oct-2018	29-Oct-2018	22-Nov-2018	✔	30-Oct-2018	05-Nov-2018	✔
Soil Glass Jar - Unpreserved (EG048G) SB09-0.2		25-Oct-2018	31-Oct-2018	22-Nov-2018	✔	31-Oct-2018	07-Nov-2018	✔
EK028SF: Weak Acid Dissociable CN by Segmented Flow Analyser								
Soil Glass Jar - Unpreserved (EK028SF) SB02-1.5		24-Oct-2018	31-Oct-2018	07-Nov-2018	✔	01-Nov-2018	14-Nov-2018	✔
Soil Glass Jar - Unpreserved (EK028SF) SB09-0.2		25-Oct-2018	31-Oct-2018	08-Nov-2018	✔	01-Nov-2018	14-Nov-2018	✔
EK055: Ammonia as N								
Soil Glass Jar - Unpreserved (EK055) SB01-0.7		24-Oct-2018	----	----	----	29-Oct-2018	22-Apr-2019	✔
Soil Glass Jar - Unpreserved (EK055) SB05-0.2, SB09-0.2	SB06-0.8,	25-Oct-2018	----	----	----	29-Oct-2018	23-Apr-2019	✔
EK057G: Nitrite as N by Discrete Analyser								
Soil Glass Jar - Unpreserved (EK057G) SB01-0.7		24-Oct-2018	30-Oct-2018	22-Apr-2019	✔	31-Oct-2018	22-Apr-2019	✔
Soil Glass Jar - Unpreserved (EK057G) SB05-0.2, SB09-0.2	SB06-0.8,	25-Oct-2018	30-Oct-2018	23-Apr-2019	✔	31-Oct-2018	23-Apr-2019	✔
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Soil Glass Jar - Unpreserved (EK059G) SB01-0.7		24-Oct-2018	30-Oct-2018	22-Apr-2019	✔	31-Oct-2018	22-Apr-2019	✔
Soil Glass Jar - Unpreserved (EK059G) SB05-0.2, SB09-0.2	SB06-0.8,	25-Oct-2018	30-Oct-2018	23-Apr-2019	✔	31-Oct-2018	23-Apr-2019	✔



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
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Soil Glass Jar - Unpreserved (EK061G) SB01-0.7	24-Oct-2018	30-Oct-2018	22-Apr-2019	✓	31-Oct-2018	22-Apr-2019	✓
Soil Glass Jar - Unpreserved (EK061G) SB05-0.2, SB06-0.8, SB09-0.2	25-Oct-2018	30-Oct-2018	23-Apr-2019	✓	31-Oct-2018	23-Apr-2019	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Soil Glass Jar - Unpreserved (EK067G) SB01-0.7	24-Oct-2018	30-Oct-2018	22-Apr-2019	✓	31-Oct-2018	22-Apr-2019	✓
Soil Glass Jar - Unpreserved (EK067G) SB05-0.2, SB06-0.8, SB09-0.2	25-Oct-2018	30-Oct-2018	23-Apr-2019	✓	31-Oct-2018	23-Apr-2019	✓
EK071G: Reactive Phosphorus as P by discrete analyser							
Soil Glass Jar - Unpreserved (EK071G) SB01-0.7	24-Oct-2018	30-Oct-2018	22-Apr-2019	✓	31-Oct-2018	22-Apr-2019	✓
Soil Glass Jar - Unpreserved (EK071G) SB05-0.2, SB06-0.8, SB09-0.2	25-Oct-2018	30-Oct-2018	23-Apr-2019	✓	31-Oct-2018	23-Apr-2019	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved (EP066) SB02-1.5	24-Oct-2018	31-Oct-2018	07-Nov-2018	✓	31-Oct-2018	10-Dec-2018	✓
Soil Glass Jar - Unpreserved (EP066) SB09-0.2	25-Oct-2018	31-Oct-2018	08-Nov-2018	✓	31-Oct-2018	10-Dec-2018	✓
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved (EP068) SB02-1.5	24-Oct-2018	31-Oct-2018	07-Nov-2018	✓	31-Oct-2018	10-Dec-2018	✓
Soil Glass Jar - Unpreserved (EP068) SB09-0.2	25-Oct-2018	31-Oct-2018	08-Nov-2018	✓	31-Oct-2018	10-Dec-2018	✓
EP068B: Organophosphorus Pesticides (OP)							
Soil Glass Jar - Unpreserved (EP068) SB02-1.5	24-Oct-2018	31-Oct-2018	07-Nov-2018	✓	31-Oct-2018	10-Dec-2018	✓
Soil Glass Jar - Unpreserved (EP068) SB09-0.2	25-Oct-2018	31-Oct-2018	08-Nov-2018	✓	31-Oct-2018	10-Dec-2018	✓
EP068C: Triazines							
Soil Glass Jar - Unpreserved (EP068) SB02-1.5	24-Oct-2018	31-Oct-2018	07-Nov-2018	✓	31-Oct-2018	10-Dec-2018	✓
Soil Glass Jar - Unpreserved (EP068) SB09-0.2	25-Oct-2018	31-Oct-2018	08-Nov-2018	✓	31-Oct-2018	10-Dec-2018	✓
EP068D: Pyrethroids							
Soil Glass Jar - Unpreserved (EP068) SB02-1.5	24-Oct-2018	31-Oct-2018	07-Nov-2018	✓	31-Oct-2018	10-Dec-2018	✓
Soil Glass Jar - Unpreserved (EP068) SB09-0.2	25-Oct-2018	31-Oct-2018	08-Nov-2018	✓	31-Oct-2018	10-Dec-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	
EP074A: Monocyclic Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP074) SB01-0.7, SB02-0.7, SB04-0.2, SB01-2.0, SB03-0.3, SB04-1.2	24-Oct-2018	29-Oct-2018	31-Oct-2018	✓	30-Oct-2018	31-Oct-2018	✓	
Soil Glass Jar - Unpreserved (EP074) SB05-0.2, SB06-0.8, SB07-0.5, SB08-0.3, SB09-1.1, SB05-1.1, SB06-1.3, SB07-2.0, SB08-1.0, FD01	25-Oct-2018	29-Oct-2018	01-Nov-2018	✓	30-Oct-2018	01-Nov-2018	✓	
EP075(SIM)A: Phenolic Compounds								
Soil Glass Jar - Unpreserved (EP075(SIM)) SB02-1.5	24-Oct-2018	31-Oct-2018	07-Nov-2018	✓	31-Oct-2018	10-Dec-2018	✓	
Soil Glass Jar - Unpreserved (EP075(SIM)) SB09-0.2	25-Oct-2018	31-Oct-2018	08-Nov-2018	✓	31-Oct-2018	10-Dec-2018	✓	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM)) SB01-0.7, SB02-0.7, SB03-0.3, SB04-1.2, SB01-2.0, SB02-1.5, SB04-0.2	24-Oct-2018	31-Oct-2018	07-Nov-2018	✓	31-Oct-2018	10-Dec-2018	✓	
Soil Glass Jar - Unpreserved (EP075(SIM)) SB05-0.2, SB06-0.8, SB07-0.5, SB08-0.3, SB09-0.2, FD01, SB05-1.1, SB06-1.3, SB07-2.0, SB08-1.0, SB09-1.1	25-Oct-2018	31-Oct-2018	08-Nov-2018	✓	31-Oct-2018	10-Dec-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	
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP080)								
SB01-0.7, SB02-0.7, SB03-0.3, SB04-1.2	SB01-2.0, SB02-1.5, SB04-0.2,	24-Oct-2018	29-Oct-2018	07-Nov-2018	✔	30-Oct-2018	07-Nov-2018	✔
Soil Glass Jar - Unpreserved (EP071)								
SB01-0.7, SB02-0.7, SB03-0.3, SB04-1.2	SB01-2.0, SB02-1.5, SB04-0.2,	24-Oct-2018	31-Oct-2018	07-Nov-2018	✔	31-Oct-2018	10-Dec-2018	✔
Soil Glass Jar - Unpreserved (EP080)								
SB05-0.2, SB06-0.8, SB07-0.5, SB08-0.3, SB09-0.2, FD01	SB05-1.1, SB06-1.3, SB07-2.0, SB08-1.0, SB09-1.1,	25-Oct-2018	29-Oct-2018	08-Nov-2018	✔	30-Oct-2018	08-Nov-2018	✔
Soil Glass Jar - Unpreserved (EP071)								
SB05-0.2, SB06-0.8, SB07-0.5, SB08-0.3, SB09-0.2, FD01	SB05-1.1, SB06-1.3, SB07-2.0, SB08-1.0, SB09-1.1,	25-Oct-2018	31-Oct-2018	08-Nov-2018	✔	31-Oct-2018	10-Dec-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
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP080)		24-Oct-2018	29-Oct-2018	07-Nov-2018	✔	30-Oct-2018	07-Nov-2018	✔
SB01-0.7,	SB01-2.0,							
SB02-0.7,	SB02-1.5,							
SB03-0.3,	SB04-0.2,							
SB04-1.2								
Soil Glass Jar - Unpreserved (EP071)		24-Oct-2018	31-Oct-2018	07-Nov-2018	✔	31-Oct-2018	10-Dec-2018	✔
SB01-0.7,	SB01-2.0,							
SB02-0.7,	SB02-1.5,							
SB03-0.3,	SB04-0.2,							
SB04-1.2								
Soil Glass Jar - Unpreserved (EP080)		25-Oct-2018	29-Oct-2018	08-Nov-2018	✔	30-Oct-2018	08-Nov-2018	✔
SB05-0.2,	SB05-1.1,							
SB06-0.8,	SB06-1.3,							
SB07-0.5,	SB07-2.0,							
SB08-0.3,	SB08-1.0,							
SB09-0.2,	SB09-1.1,							
FD01								
Soil Glass Jar - Unpreserved (EP071)		25-Oct-2018	31-Oct-2018	08-Nov-2018	✔	31-Oct-2018	10-Dec-2018	✔
SB05-0.2,	SB05-1.1,							
SB06-0.8,	SB06-1.3,							
SB07-0.5,	SB07-2.0,							
SB08-0.3,	SB08-1.0,							
SB09-0.2,	SB09-1.1,							
FD01								
EP080: BTEXN								
Soil Glass Jar - Unpreserved (EP080)		24-Oct-2018	29-Oct-2018	07-Nov-2018	✔	30-Oct-2018	07-Nov-2018	✔
SB01-0.7,	SB01-2.0,							
SB02-0.7,	SB02-1.5,							
SB03-0.3,	SB04-0.2,							
SB04-1.2								
Soil Glass Jar - Unpreserved (EP080)		25-Oct-2018	29-Oct-2018	08-Nov-2018	✔	30-Oct-2018	08-Nov-2018	✔
SB05-0.2,	SB05-1.1,							
SB06-0.8,	SB06-1.3,							
SB07-0.5,	SB07-2.0,							
SB08-0.3,	SB08-1.0,							
SB09-0.2,	SB09-1.1,							
FD01								

Matrix: **WATER**

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



Matrix: **WATER**

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
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) RB01	24-Oct-2018	31-Oct-2018	22-Apr-2019	✓	31-Oct-2018	22-Apr-2019	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) RB02	25-Oct-2018	31-Oct-2018	23-Apr-2019	✓	31-Oct-2018	23-Apr-2019	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) RB01	24-Oct-2018	----	----	----	30-Oct-2018	21-Nov-2018	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) RB02	25-Oct-2018	----	----	----	30-Oct-2018	22-Nov-2018	✓
EP080/071: Total Petroleum Hydrocarbons							
Clear glass VOC vial - HCl (EP080) RB01	24-Oct-2018	30-Oct-2018	07-Nov-2018	✓	30-Oct-2018	07-Nov-2018	✓
Clear glass VOC vial - HCl (EP080) TB01, RB02	25-Oct-2018	30-Oct-2018	08-Nov-2018	✓	30-Oct-2018	08-Nov-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Clear glass VOC vial - HCl (EP080) RB01	24-Oct-2018	30-Oct-2018	07-Nov-2018	✓	30-Oct-2018	07-Nov-2018	✓
Clear glass VOC vial - HCl (EP080) TB01, RB02	25-Oct-2018	30-Oct-2018	08-Nov-2018	✓	30-Oct-2018	08-Nov-2018	✓
EP080: BTEXN							
Clear glass VOC vial - HCl (EP080) RB01	24-Oct-2018	30-Oct-2018	07-Nov-2018	✓	30-Oct-2018	07-Nov-2018	✓
Clear glass VOC vial - HCl (EP080) TB01, RB02	25-Oct-2018	30-Oct-2018	08-Nov-2018	✓	30-Oct-2018	08-Nov-2018	✓



Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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)							
Buchi Ammonia	EK055	1	6	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	EK059G	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Soluble by Discrete Analyser	EK057G	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH in soil using a 0.01M CaCl2 extract	EA001	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-Soluble By Discrete Analyser	EK071G	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate - Calcium Phosphate Soluble	ED040N	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TKN as N By Discrete Analyser	EK061G	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	5	41	12.20	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	4	38	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus By Discrete Analyser	EK067G	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	4	30	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
WAD Cyanide by Segmented Flow Analyser	EK028SF	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Buchi Ammonia	EK055	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	4	40	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	EK059G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Soluble by Discrete Analyser	EK057G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-Soluble By Discrete Analyser	EK071G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate - Calcium Phosphate Soluble	ED040N	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TKN as N By Discrete Analyser	EK061G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	3	41	7.32	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus By Discrete Analyser	EK067G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard



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 Control Samples (LCS) - Continued							
TRH Volatiles/BTEX	EP080	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
WAD Cyanide by Segmented Flow Analyser	EK028SF	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Buchi Ammonia	EK055	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	EK059G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Soluble by Discrete Analyser	EK057G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-Soluble By Discrete Analyser	EK071G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate - Calcium Phosphate Soluble	ED040N	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TKN as N By Discrete Analyser	EK061G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	3	41	7.32	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus By Discrete Analyser	EK067G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
WAD Cyanide by Segmented Flow Analyser	EK028SF	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Buchi Ammonia	EK055	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	40	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	EK059G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N - Soluble by Discrete Analyser	EK057G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Reactive Phosphorus as P-Soluble By Discrete Analyser	EK071G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate - Calcium Phosphate Soluble	ED040N	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TKN as N By Discrete Analyser	EK061G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	41	4.88	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	38	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus By Discrete Analyser	EK067G	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	30	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard



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

Quality Control Sample Type	Method	Count		Rate (%)		Evaluation	Quality Control Specification
Analytical Methods		QC	Reaular	Actual	Expected		
Matrix Spikes (MS) - Continued							
WAD Cyanide by Segmented Flow Analyser	EK028SF	1	2	50.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard

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

Quality Control Sample Type	Method	Count		Rate (%)		Evaluation	Quality Control Specification
Analytical Methods		QC	Reaular	Actual	Expected		
Laboratory Duplicates (DUP)							
Total Mercury by FIMS	EG035T	2	10	20.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	17	11.76	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Total Mercury by FIMS	EG035T	1	10	10.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Total Mercury by FIMS	EG035T	1	10	10.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Total Mercury by FIMS	EG035T	1	10	10.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
pH in soil using a 0.01M CaCl ₂ extract	EA001	SOIL	In house: Referenced to Rayment and Lyons (2011) 4B3 (mod.) or 4B4 (mod.) 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3)
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).
Sulfate - Calcium Phosphate Soluble	ED040N	SOIL	In house: The sample is extracted with a calcium phosphate solution. The phosphate ion displaces the adsorbed sulfate while calcium ions depress the extraction of interfering S from soil organic matter. SO ₄ in the extract is determined by ICPAES and reported as dry weight in the original soil. This method is compliant with NEPM (2013) Schedule B(3) (Method 406)
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)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060A. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Trivalent Chromium by Alkaline Digestion and DA Finish	EG049G-Alk	SOIL	In house: Referenced to APHA 3500 Cr-A&B & 3120 and USEPA USEPA SW846, Method 3060A. The difference between Total and Hexavalent Chromium. The total Chromium is determined by ICPAES and the Hexavalent chromium is extracted by alkaline digestion and the digest is determined by photometrically by automatic discrete analyser. The instrument uses colour development using dephenylcarbazide. This method is compliant with NEPM (2013) Schedule B(3)
WAD Cyanide by Segmented Flow Analyser	EK028SF	SOIL	In house: Referenced to APHA 4500-CN-O. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Hydrogen cyanide is liberated from a slightly acidified (pH 4.5) and is dialysed. Tight cyanide complexes that would not be amenable to oxidation by chlorine are not converted. Iron cyanide complexes are precipitated with zinc acetate. Liberated HCN diffuses through a membrane into a stream of sodium hydroxide where it is carried as CN- The cyanide in caustic solution is buffered to pH 5.2 and further converted to cyanogen chloride by reaction with chloramine-T. Cyanogen chloride subsequently reacts with 4-pyridine carboxylic and 1,3-dimethylbarbituric acids to give a red colour complex. This colour is measured at 600 nm. This method is compliant with NEPM (2013) Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
Buchi Ammonia	EK055	SOIL	In house: Referenced to APHA 4500-NH3 B&G, H Samples are steam distilled (Buchi) prior to analysis and quantified using titration, FIA or Discrete Analyser.
Nitrite as N - Soluble by Discrete Analyser	EK057G	SOIL	In house: Referenced to APHA 4500-NO3- B. Nitrite in a water extract is determined by direct colourimetry by Discrete Analyser.
Nitrate as N - Soluble by Discrete Analyser	EK058G	SOIL	In house: Referenced to APHA 4500-NO3- F. Nitrate in the 1:5 soil:water extract is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined separately by direct colourimetry and result for Nitrate calculated as the difference between the two results.
Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	EK059G	SOIL	In house: Thermo Scientific Method D08727 and NEMI (National Environmental Method Index) Method ID: 9171. This method covers the determination of total oxidised nitrogen (NOx-N) and nitrate (NO3-N) by calculation, Combined oxidised Nitrogen (NO2+NO3) in a water extract is determined by direct colourimetry by Discrete Analyser.
TKN as N By Discrete Analyser	EK061G	SOIL	In house: Referenced to APHA 4500-Norg-D Soil samples are digested using Kjeldahl digestion followed by determination by Discrete Analyser.
Total Nitrogen as N (TKN + NOx) By Discrete Analyser	EK062G	SOIL	In house: Referenced to APHA 4500 Norg/NO3- Total Nitrogen is determined as the sum of TKN and Oxidised Nitrogen, each determined separately as N.
Total Phosphorus By Discrete Analyser	EK067G	SOIL	In house: Referenced to APHA 4500 P-B&F This procedure involves sulfuric acid digestion and quantification using Discrete Analyser.
Reactive Phosphorus as P-Soluble By Discrete Analyser	EK071G	SOIL	In house: Referenced to APHA 4500 P-F Ammonium molybdate and potassium antimonyl tartrate reacts in acid medium with orthophosphate to form a heteropoly acid -phosphomolybdic acid - which is reduced to intensely coloured molybdenum blue by ascorbic acid. Quantification is by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3) (
Polychlorinated Biphenyls (PCB)	EP066	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 504,505)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM amended 2013.
Volatile Organic Compounds	EP074	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM amended 2013.



Analytical Methods	Method	Matrix	Method Descriptions
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	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. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The 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)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
pH in soil using a 0.01M CaCl ₂ extract	EA001-PR	SOIL	In house: Referenced to Rayment and Higginson 4B1, 10 g of soil is mixed with 50 mL of 0.01M CaCl ₂ and tumbled end over end for 1 hour. pH is measured from the continuous suspension. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Calcium Phosphate Extraction for Sulphate as SO ₄ 2-	ED040NPR	SOIL	The sample is extracted with a calcium phosphate solution. The phosphate ion displaces the adsorbed sulphate while calcium ions depress the extraction of interfering S from soil organic matter. SO ₄ in the extract is determined by ICPAES and reported as dry weight in the original soil. This method is compliant with NEPM (2013) Schedule B(3) (Method 406)
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
TKN/TP Digestion	EK061/EK067	SOIL	In house: Referenced to APHA 4500 Norg- D; APHA 4500 P - H. Macro Kjeldahl digestion.
1:5 solid / water leach for soluble analytes	EN34	SOIL	10 g of soil is mixed with 50 mL of reagent grade water and tumbled end over end for 1 hour. Water soluble salts are leached from the soil by the continuous suspension. Samples are settled and the water filtered off for analysis.
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.
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CERTIFICATE OF ANALYSIS 15250

Client Details

Client	Edge Group Pty Ltd
Attention	Carly Powell
Address	Level 1, 423 City Road, South Melbourne, VIC, 3205

Sample Details

Your Reference	<u>20170561</u>
Number of Samples	1 Soil
Date samples received	30/10/2018
Date completed instructions received	30/10/2018

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.

Report Details

Date results requested by	07/11/2018
Date of Issue	07/11/2018
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
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Results Approved By

Chris De Luca, Senior Chemist

Authorised By

P. Adams.

Pamela Adams, Laboratory Manager

MAH's in soil		
Our Reference		15250-1
Your Reference	UNITS	FS01
Date Sampled		25/10/2018
Type of sample		Soil
Date extracted	-	01/11/2018
Date analysed	-	01/11/2018
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<0.5
m+p-xylene	mg/kg	<1
o-Xylene	mg/kg	<0.5
styrene	mg/kg	<0.5
isopropylbenzene	mg/kg	<0.5
n-propyl benzene	mg/kg	<0.5
1,3,5-trimethyl benzene	mg/kg	<0.5
tert-butyl benzene	mg/kg	<0.5
1,2,4-trimethyl benzene	mg/kg	<0.5
sec-butyl benzene	mg/kg	<0.5
4-isopropyl toluene	mg/kg	<0.5
n-butyl benzene	mg/kg	<0.5
Surrogate Dibromofluoromethane	%	104
Surrogate Toluene-d ₈	%	99
Surrogate aaa-Trifluorotolue	%	92
Surrogate 4-Bromofluorobenzene	%	90

vTRH(C6-C10)/BTEXN in Soil		
Our Reference		15250-1
Your Reference	UNITS	FS01
Date Sampled		25/10/2018
Type of sample		Soil
Date extracted	-	01/11/2018
Date analysed	-	01/11/2018
vTRH C ₆ - C ₉	mg/kg	<25
vTRH C ₆ - C ₁₀	mg/kg	<25
TRH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
Naphthalene	mg/kg	<1
Total +ve Xylenes	mg/kg	<1
Surrogate aaa-Trifluorotoluene	%	97

TRH Soil C10-C40 NEPM		
Our Reference		15250-1
Your Reference	UNITS	FS01
Date Sampled		25/10/2018
Type of sample		Soil
Date extracted	-	01/11/2018
Date analysed	-	01/11/2018
TRH C ₁₀ - C ₁₄	mg/kg	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100
Total +ve TRH (C10-C36)	mg/kg	<50
TRH >C ₁₀ -C ₁₆	mg/kg	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100
Total +ve TRH (>C10-C40)	mg/kg	<50
Surrogate o-Terphenyl	%	84

PAHs in Soil		
Our Reference		15250-1
Your Reference	UNITS	FS01
Date Sampled		25/10/2018
Type of sample		Soil
Date extracted	-	01/11/2018
Date analysed	-	01/11/2018
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	<0.1
Pyrene	mg/kg	<0.1
Benzo(a)anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo(b,j&k)fluoranthene	mg/kg	<0.2
Benzo(a)pyrene	mg/kg	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1
Total +ve PAH's	mg/kg	<0.05
Benzo(a)pyrene TEQ calc (Zero)	mg/kg	0
Benzo(a)pyrene TEQ calc (Half)	mg/kg	0.1
Benzo(a)pyrene TEQ calc (PQL)	mg/kg	0.2
Surrogate <i>p</i> -Terphenyl-d ₁₄	%	102

17 metals in soil		
Our Reference		15250-1
Your Reference	UNITS	FS01
Date Sampled		25/10/2018
Type of sample		Soil
Date digested	-	01/11/2018
Date analysed	-	01/11/2018
Arsenic	mg/kg	6
Beryllium	mg/kg	<1
Boron	mg/kg	5
Cadmium	mg/kg	<0.4
Cobalt	mg/kg	5
Chromium	mg/kg	15
Copper	mg/kg	18
Lead	mg/kg	130
Mercury	mg/kg	0.5
Manganese	mg/kg	47
Nickel	mg/kg	13
Selenium	mg/kg	<2
Zinc	mg/kg	44
Trivalent Cr	mg/kg	15

Hexavalent Cr		
Our Reference		15250-1
Your Reference	UNITS	FS01
Date Sampled		25/10/2018
Type of sample		Soil
Date prepared	-	01/11/2018
Date analysed	-	02/11/2018
Hexavalent Chromium, Cr ⁶⁺	mg/kg	<1

Moisture		
Our Reference	UNITS	15250-1
Your Reference		FS01
Date Sampled		25/10/2018
Type of sample		Soil
Date prepared	-	01/11/2018
Date analysed	-	01/11/2018
Moisture	%	11

Method ID	Methodology Summary
Inorg-008	Moisture content determined by heating at 105 deg C for a minimum of 12 hours.
Inorg-024	Hexavalent Chromium (Cr6+) - determined colourimetrically by discrete analyser.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021 CV-AAS	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. 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-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. 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: MAH's in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	15250-1
Date extracted	-			01/11/2018	1	01/11/2018	01/11/2018		01/11/2018	01/11/2018
Date analysed	-			01/11/2018	1	01/11/2018	01/11/2018		01/11/2018	01/11/2018
Benzene	mg/kg	0.2	Org-014	<0.2	1	<0.2	<0.2	0	81	80
Toluene	mg/kg	0.5	Org-014	<0.5	1	<0.5	<0.5	0	81	79
Ethylbenzene	mg/kg	0.5	Org-014	<0.5	1	<0.5	<0.5	0	76	75
m+p-xylene	mg/kg	1	Org-014	<1	1	<1	<1	0	83	82
o-Xylene	mg/kg	0.5	Org-014	<0.5	1	<0.5	<0.5	0	78	78
styrene	mg/kg	0.5	Org-014	<0.5	1	<0.5	<0.5	0	76	76
isopropylbenzene	mg/kg	0.5	Org-014	<0.5	1	<0.5	<0.5	0	76	77
n-propyl benzene	mg/kg	0.5	Org-014	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
1,3,5-trimethyl benzene	mg/kg	0.5	Org-014	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
tert-butyl benzene	mg/kg	0.5	Org-014	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
1,2,4-trimethyl benzene	mg/kg	0.5	Org-014	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
sec-butyl benzene	mg/kg	0.5	Org-014	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
4-isopropyl toluene	mg/kg	0.5	Org-014	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
n-butyl benzene	mg/kg	0.5	Org-014	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-014	104	1	104	104	0	102	104
Surrogate Toluene-d ₈	%		Org-014	98	1	99	99	0	98	99
Surrogate aaa-Trifluorotolue	%		Org-014	101	1	92	94	2	97	98
Surrogate 4-Bromofluorobenzene	%		Org-014	91	1	90	91	1	93	94

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			01/11/2018	1	01/11/2018	01/11/2018		01/11/2018	[NT]
Date analysed	-			01/11/2018	1	01/11/2018	01/11/2018		01/11/2018	[NT]
vTRH C ₆ - C ₉	mg/kg	25	Org-016	<25	1	<25	<25	0	84	[NT]
vTRH C ₆ - C ₁₀	mg/kg	25	Org-016	<25	1	<25	<25	0	84	[NT]
Benzene	mg/kg	0.2	Org-016	<0.2	1	<0.2	<0.2	0	90	[NT]
Toluene	mg/kg	0.5	Org-016	<0.5	1	<0.5	<0.5	0	89	[NT]
Ethylbenzene	mg/kg	1	Org-016	<1	1	<1	<1	0	81	[NT]
m+p-xylene	mg/kg	2	Org-016	<2	1	<2	<2	0	80	[NT]
o-Xylene	mg/kg	1	Org-016	<1	1	<1	<1	0	80	[NT]
Naphthalene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	101	1	97	98	1	101	[NT]

QUALITY CONTROL: TRH Soil C10-C40 NEPM					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			01/11/2018	[NT]	[NT]	[NT]	[NT]	01/11/2018	[NT]
Date analysed	-			01/11/2018	[NT]	[NT]	[NT]	[NT]	01/11/2018	[NT]
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	80	[NT]
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	85	[NT]
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	93	[NT]
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	80	[NT]
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	85	[NT]
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	93	[NT]
Surrogate o-Terphenyl	%		Org-003	88	[NT]	[NT]	[NT]	[NT]	83	[NT]

QUALITY CONTROL: PAHs in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			01/11/2018	[NT]	[NT]	[NT]	[NT]	01/11/2018	[NT]
Date analysed	-			01/11/2018	[NT]	[NT]	[NT]	[NT]	01/11/2018	[NT]
Naphthalene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	80	[NT]
Acenaphthene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Phenanthrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	72	[NT]
Anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	80	[NT]
Pyrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	76	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Benzo(b,j&k)fluoranthene	mg/kg	0.2	Org-012	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	[NT]	[NT]	[NT]	[NT]	68	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d ₁₄	%		Org-012	106	[NT]	[NT]	[NT]	[NT]	108	[NT]

QUALITY CONTROL: 17 metals in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date digested	-			01/11/2018	1	01/11/2018	01/11/2018		01/11/2018	[NT]
Date analysed	-			01/11/2018	1	01/11/2018	01/11/2018		01/11/2018	[NT]
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	1	6	9	40	104	[NT]
Beryllium	mg/kg	1	Metals-020 ICP-AES	<1	1	<1	<1	0	109	[NT]
Boron	mg/kg	3	Metals-020 ICP-AES	<3	1	5	5	0	99	[NT]
Cadmium	mg/kg	0.4	Metals-020 ICP-AES	<0.4	1	<0.4	<0.4	0	107	[NT]
Cobalt	mg/kg	1	Metals-020 ICP-AES	<1	1	5	5	0	100	[NT]
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	1	15	14	7	104	[NT]
Copper	mg/kg	1	Metals-020 ICP-AES	<1	1	18	20	11	103	[NT]
Lead	mg/kg	1	Metals-020 ICP-AES	<1	1	130	150	14	103	[NT]
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	1	0.5	0.7	33	108	[NT]
Manganese	mg/kg	1	Metals-020 ICP-AES	<1	1	47	52	10	107	[NT]
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	1	13	12	8	102	[NT]
Selenium	mg/kg	2	Metals-020 ICP-AES	<2	1	<2	<2	0	103	[NT]
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	1	44	43	2	101	[NT]
Trivalent Cr	mg/kg	1	Inorg-024	<1	1	15	14	7	[NT]	[NT]

QUALITY CONTROL: Hexavalent Cr					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			01/11/2018	[NT]	[NT]	[NT]	[NT]	01/11/2018	[NT]
Date analysed	-			02/11/2018	[NT]	[NT]	[NT]	[NT]	02/11/2018	[NT]
Hexavalent Chromium, Cr ⁶⁺	mg/kg	1	Inorg-024	<1	[NT]	[NT]	[NT]	[NT]	106	[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: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

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

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.



DATA QUALITY ASSESSMENT SUMMARY

Report Details	
Envirolab Report Reference	15250
Client ID	Edge Group Pty Ltd
Project Reference	20170561
Date Issued	07/11/2018

QC DATA

All laboratory QC data was within the Envirolab Group's specifications.

HOLDING TIME COMPLIANCE EVALUATION

All preservation / holding times (based on AS/ASPHA/ISO/NEPM/USEPA reference documents and standards) are compliant.

Certain analyses have had their recommended technical holding times elongated by filtering and/or freezing on receipt at the laboratory (e.g. BOD, chlorophyll/Pheophytin, nutrients and acid sulphate soil tests).

COMPLIANCE TO QC FREQUENCY (NEPM)

Internal laboratory QC rate complies with NEPM requirements (LCS/MB/MS 1 in 20, Duplicates 1 in 10 samples). Note, samples are batched together with other sample consignments in order to assign QC sample frequency.

QC Evaluation	
Duplicate(s) was performed as per NEPM frequency	✓
Laboratory Control Sample(s) were analysed with the samples received	✓
A Method Blank was performed with the samples received	✓
Matrix spike(s) was performed as per NEPM frequency	✓

Refer to Certificate of Analysis for all Quality Control data.



Appendix F

Soil Vapour Analytical Results Tables

			Sample Code											204647-1	204647-3	204647-4	204647-5	204647-6
			Field ID											SVP01	SVP02	SVP03	SVB01	SVB02
			Matrix Type											gas	gas	gas	gas	gas
			Date											31/10/2018	31/10/2018	31/10/2018	31/10/2018	31/10/2018
			NEPM Interim SV HILs ¹		NEPM HSLs ² for Vapour Intrusion						USEPA RSLs ³							
Analyte	Unit	LOR	Residential A/B	Commercial / Industrial D	Residential A/B, Clay		Commercial / Industrial D, Clay		Resident Air THQ=0.1									
					0-1m	1-2m	0-1m	1-2m										
TPH																		
F1 (C ₆ -C ₁₀ minus BTEX)	µg/m ³	200	*	*	230,000	4,200,000	1,000,000	19,000,000	*	<200	<200	<200	2,400	2,600				
F2 (C ₁₀ -C ₁₆ minus Naphthalene)	µg/m ³	40	*	*	180,000	3,800,000	800,000	*	*	<40	<40	<40	980	50				
TPH C ₅ - C ₈ Aliphatic	µg/m ³	200	*	*	*	*	*	*	*	<200	<200	<200	2,900	4,100				
TPH C ₉ - C ₁₀ Aromatic	µg/m ³	100	*	*	*	*	*	*	*	<100	<100	<100	390	<100				
TPH C ₉ - C ₁₂ Aliphatic	µg/m ³	50	*	*	*	*	*	*	*	<50	<50	<50	310	<50				
BTEX																		
Benzene	µg/m ³	1.6	*	*	1,000	15,000	5,000	80,000	*	<1.6	<1.6	<1.6	6	2				
Toluene	µg/m ³	1.9	*	*	1,600,000	23,000,000	6,500,000	100,000,000	*	<1.9	3	2	81	36				
Ethylbenzene	µg/m ³	2.2	*	*	420,000	6,800,000	1,800,000	31,000,000	*	<2.2	<2.2	<2.2	20	3				
Xylene (m & p)	µg/m ³	4.3	*	*	*	*	*	*	*	<4.3	<4.3	<4.3	40	10				
Xylene (o)	µg/m ³	2.2	*	*	*	*	*	*	100	<2.2	<2.2	<2.2	31	6				
PAH																		
Naphthalene	µg/m ³	2.6	*	*	1,000	20,000	4,000	85,000	*	<2.6	<2.6	<2.6	7	<2.6				
Chlorinated Hydrocarbons																		
Tetrachloroethene	µg/m ³	3.4	2,000	8,000	*	*	*	*	*	<3.4	<3.4	<3.4	<3.4	<3.4				
Trichloroethene	µg/m ³	2.7	20	80	*	*	*	*	*	<2.7	<2.7	<2.7	<2.7	<2.7				
1,1-dichloroethene	µg/m ³	2	*	*	*	*	*	*	210	<2	<2	<2	<2	<2				
cis-1,2-dichloroethene	µg/m ³	2	80	300	*	*	*	*	*	<2	<2	<2	<2	<2				
trans-1,2-dichloroethene	µg/m ³	2	*	*	*	*	*	*	*	<2	<2	<2	<2	<2				
Vinyl chloride	µg/m ³	1.3	30	100	*	*	*	*	*	<1.3	<1.3	<1.3	<1.3	<1.3				
1,1,1-trichloroethane	µg/m ³	2.7	60,000	230,000	*	*	*	*	*	<2.7	<2.7	<2.7	<2.7	<2.7				
1,1,2,2-tetrachloroethane	µg/m ³	3.4	*	*	*	*	*	*	4.8	<3.4	<3.4	<3.4	<3.4	<3.4				
1,1,2-trichloroethane	µg/m ³	2.7	*	*	*	*	*	*	0.21	<2.7	<2.7	<2.7	<2.7	<2.7				
1,1-dichloroethane	µg/m ³	2	*	*	*	*	*	*	180	<2	<2	<2	<2	<2				
1,2-dichloroethane	µg/m ³	2	*	*	*	*	*	*	11	<2	<2	<2	<2	<2				
1,2-dichloropropane	µg/m ³	2.3	*	*	*	*	*	*	4.2	<2.3	<2.3	<2.3	<2.3	<2.3				
Benzyl chloride	µg/m ³	2.6	*	*	*	*	*	*	5.7	<2.6	<2.6	<2.6	<2.6	<2.6				
Bromodichloromethane	µg/m ³	3.4	*	*	*	*	*	*	7.6	<3.4	<3.4	30	3	5				
Bromoform	µg/m ³	5.2	*	*	*	*	*	*	260	<5.2	<5.2	<5.2	<5.2	<5.2				
Carbon tetrachloride	µg/m ³	3.1	*	*	*	*	*	*	47	<3.1	<3.1	<3.1	<3.1	<3.1				
Chlorodibromomethane	µg/m ³	1.6	*	*	*	*	*	*	*	<1.6	<1.6	<1.6	<1.6	<1.6				
Chloroethane	µg/m ³	1.3	*	*	*	*	*	*	10,000	<1.3	<1.3	<1.3	<1.3	<1.3				
Chloroform	µg/m ³	2.4	*	*	*	*	*	*	12	<2.4	<2.4	190	26	20				
Chloromethane	µg/m ³	1	*	*	*	*	*	*	94	<1	<1	<1	<1	<1				
cis-1,3-dichloropropene	µg/m ³	2.3	*	*	*	*	*	*	20	<2.3	<2.3	<2.3	<2.3	<2.3				
trans-1,3-dichloropropene	µg/m ³	2.3	*	*	*	*	*	*	20	<2.3	<2.3	<2.3	<2.3	<2.3				
Dichloromethane	µg/m ³	20	*	*	*	*	*	*	630	<17	<17	<17	<17	<17				
Hexachlorobutadiene	µg/m ³	5.3	*	*	*	*	*	*	13	<5.3	<5.3	<5.3	<5.3	<5.3				
MAH																		
1,2,4-trimethylbenzene	µg/m ³	2.5	*	*	*	*	*	*	63	<2.5	<2.5	<2.5	75	4				
1,3,5-trimethylbenzene	µg/m ³	2.5	*	*	*	*	*	*	63	<2.5	<2.5	<2.5	46	<2.5				
1-methyl-4 ethyl benzene	µg/m ³	2.5	*	*	*	*	*	*	*	<2.5	<2.5	<2.5	10	<2.5				
Styrene	µg/m ³	2.1	*	*	*	*	*	*	1,000	<2.1	<2.1	<2.1	<2.1	<2.1				
VOCs																		
1,3-Butadiene	µg/m ³	1.1	*	*	*	*	*	*	2.1	<1.1	<1.1	<1.1	<1.1	<1.1				
Acrolein	µg/m ³	1.1	*	*	*	*	*	*	0.021	<1.1	<1.1	<1.1	<1.1	<1.1				
Acrylates																		
Methyl Methacrylate	µg/m ³	2	*	*	*	*	*	*	730	<2	<2	<2	<2	<2				
NA																		
Freon 114	µg/m ³		*	*	*	*	*	*	*	<2.5	<2.5	<2.5	<2.5	<2.5				
Freon 113	µg/m ³	3.8	*	*	*	*	*	*	*	<3.8	<3.8	<3.8	<3.8	<3.8				
Propene	µg/m ³	0.9	*	*	*	*	*	*	3,100	<0.9	<0.9	<0.9	400	290				
Halogenated Benzenes																		
1,2,4-trichlorobenzene	µg/m ³	3.7	*	*	*	*	*	*	2.1	<3.7	<3.7	<3.7	<3.7	<3.7				
1,2-dichlorobenzene	µg/m ³	3	*	*	*	*	*	*	210	<3	<3	<3	<3	<3				
1,3-dichlorobenzene	µg/m ³	3	*	*	*	*	*	*	*	<3	<3	<3	<3	<3				
1,4-dichlorobenzene	µg/m ³	3	*	*	*	*	*	*	26	<3	<3	<3	<3	<3				
Chlorobenzene	µg/m ³	2.3	*	*	*	*	*	*	52	<2.3	<2.3	<2.3	<2.3	<2.3				
Halogenated Hydrocarbons																		
1,2-dibromoethane	µg/m ³	3.8	*	*	*	*	*	*	0.47	<3.8	<3.8	<3.8	<3.8	<3.8				
Bromomethane	µg/m ³	1.9	*	*	*	*	*	*	5.2	<1.9	<1.9	<1.9	<1.9	<1.9				
Dichlorodifluoromethane	µg/m ³	2.5	*	*	*	*	*	*	100	<2.5	<2.5	<2.5	<2.5	2				
Trichlorofluoromethane	µg/m ³	2.8	*	*	*	*	*	*	*	<2.8	<2.8	<2.8	<2.8	<2.8				
General Gases																		
Carbon Dioxide	% by Vol	0.01	*	*	*	*	*	*	*	1.3	0.73	0.61	6.8	11				
Oxygen	% by Vol	0.01	*	*	*	*	*	*	*	19	19	20	3.4	7.5				
Methane	%		*	*	*	*	*	*	*	<0.01	<0.01	<0.01	0.3	<0.01				
Hydrogen sulfide	µg/m ³	7	*	*	*	*	*	*	2.1	-	-	-	<7	-				
Solvents																		
1,4-Dioxane	µg/m ³	1.8	*	*	*	*	*	*	56	<1.8	<1.8	<1.8	<1.8	<1.8				
Methyl Ethyl Ketone	µg/m ³	1.5	*	*	*	*	*	*	5,200	<1.5	<1.5	<1.5	<1.5	7				
2-hexanone (MBK)	µg/m ³	2	*	*	*	*	*	*	31	<2	<2	<2	<2	<2				
4-Methyl-2-pentanone	µg/m ³	2	*	*	*	*	*	*	3,100	<2	<2	<2	<2	<2				
Acetone	µg/m ³	11.9	*	*	*	*	*	*	32,000	<12	20	<12	20	50				
Carbon disulfide	µg/m ³	1.6	*	*	*	*	*	*	730	<1.6	<1.6	<1.6	94	43				
Cyclohexane	µg/m ³	1.7	*	*	*	*	*	*	6,300	<1.7	<1.7	<1.7	37	72				
Ethanol	µg/m ³	9	*	*	*	*	*	*	*	<9.4	70	10	<9.4	<9.4				
Ethyl acetate	µg/m ³	1.8	*	*	*	*	*	*	73	<1.8	<1.8	<1.8	<1.8	<1.8				
Heptane	µg/m ³	2	*	*	*	*	*	*	420	<2	<2	<2	29	5				
Hexane	µg/m ³	1.8	*	*	*	*	*	*	730	3	10	<1.8	130	150				
MTBE	µg/m ³	1.8	*	*	*	*	*	*	1,100	<1.8	<1.8	<1.8	<1.8	<1.8				
Isopropyl alcohol (2-Propanol)	µg/m ³	12	*	*	*	*	*	*	210	<12	<12	20	390	90				
Tetrahydrofuran	µg/m ³	1.5	*	*	*	*	*	*	2,100	<1.5	<1.5	<1.5	<1.5	<1.5				
Vinyl acetate	µg/m ³	1.8	*	*	*	*	*	*	210	<1.8	<1.8	<1.8	<1.8	<1.8				

Notes
LOR = Limit of Reporting
<## Result is less than the LOR
* No Relevant Criteria
- Analysis not performed
1 - NEPM 2013 - Interim Health Investigation Levels: Residential A (Low density), Residential B (Medium/High Density) and Commercial/Industrial D (Table 1A(2)).
2 - NEPM 2013 - Health Screening Levels: Residential A (Low density), Residential B (Medium/High Density) and Commercial/Industrial D (Table 1A(5)).
3 - USEPA May 2018 - Regional Screening Levels: Resident Air THQ=0.1. *Carcinogenic screening levels in italics.*



Appendix 2F -
Soil Vapour RPD Results

Edge Project No.: 20170561 Soil
Vapour Monitoring Event 21
Northumberland and
26 Wellington Streets
Collingwood, VIC

		Intralab			
		Sample Code	204647-1	204647-2	RPD
		Field ID	SVP01	FD01	
		Matrix Type	gas	gas	
		Date	31/10/2018	31/10/2018	
Analyte	Unit	LOR			
TPH					
F1 minus BTEX	µg/m ³	0.2	<0.2	<0.2	0
F2 minus Naphthalene	µg/m ³	40	<40	<40	0
TPH C ₅ - C ₈ Aliphatic	µg/m ³	200	<200	<200	0
TPH C ₉ - C ₁₀ Aromatic	µg/m ³	100	<100	<100	0
TPH C ₉ - C ₁₂ Aliphatic	µg/m ³	50	<50	<50	0
BTEX					
Benzene	µg/m ³	1.6	<1.6	<1.6	0
Toluene	µg/m ³	1.9	<1.9	<1.9	0
Ethylbenzene	µg/m ³	2.2	<2.2	<2.2	0
Xylene (m & p)	µg/m ³	4.3	<4.3	<4.3	0
Xylene (o)	µg/m ³	2.2	<2.2	<2.2	0
PAH					
Naphthalene	µg/m ³	2.6	<2.6	<2.6	0
Chlorinated Hydrocarbons					
Tetrachloroethene	µg/m ³	3.4	<3.4	<3.4	0
Trichloroethene	µg/m ³	2.7	<2.7	<2.7	0
1,1-dichloroethene	µg/m ³	2	<2	<2	0
cis-1,2-dichloroethene	µg/m ³	2	<2	<2	0
trans-1,2-dichloroethene	µg/m ³	2	<2	<2	0
Vinyl chloride	µg/m ³	1.3	<1.3	<1.3	0
1,1,1-trichloroethane	µg/m ³	2.7	<2.7	<2.7	0
1,1,2,2-tetrachloroethane	µg/m ³	3.4	<3.4	<3.4	0
1,1,2-trichloroethane	µg/m ³	2.7	<2.7	<2.7	0
1,1-dichloroethane	µg/m ³	2	<2	<2	0
1,2-dichloroethane	µg/m ³	2	<2	<2	0
1,2-dichloropropane	µg/m ³	2.3	<2.3	<2.3	0
Benzyl chloride	µg/m ³	2.6	<2.6	<2.6	0
Bromodichloromethane	µg/m ³	3.4	<3.4	<3.4	0
Bromoform	µg/m ³	5.2	<5.2	<5.2	0
Carbon tetrachloride	µg/m ³	3.1	<3.1	<3.1	0
Chlorodibromomethane	µg/m ³	1.6	<1.6	<1.6	0
Chloroethane	µg/m ³	1.3	<1.3	<1.3	0
Chloroform	µg/m ³	2.4	<2.4	<2.4	0
Chloromethane	µg/m ³	1	<1	<1	0
cis-1,3-dichloropropene	µg/m ³	2.3	<2.3	<2.3	0
Dichloromethane	µg/m ³	20	<17	<17	0
Hexachlorobutadiene	µg/m ³	5.3	<5.3	<5.3	0
trans-1,3-dichloropropene	µg/m ³	2.3	<2.3	<2.3	0
MAH					
1,2,4-trimethylbenzene	µg/m ³	2.5	<2.5	<2.5	0
1,3,5-trimethylbenzene	µg/m ³	2.5	<2.5	<2.5	0
1-methyl-4 ethyl benzene	µg/m ³	2.5	<2.5	<2.5	0
Styrene	µg/m ³	2.1	<2.1	<2.1	0
VOCs					
1,3-Butadiene	µg/m ³	1.1	<1.1	<1.1	0
Acrolein	µg/m ³	1.1	<1.1	<1.1	0
Acrylates					
Methyl Methacrylate	µg/m ³	2	<2	<2	0
NA					
Freon 114	µg/m ³		<2.5	<2.5	0
Freon 113	µg/m ³	3.8	<3.8	<3.8	0
Propene	µg/m ³	0.9	<0.9	<0.9	0
Halogenated Benzenes					
1,2,4-trichlorobenzene	µg/m ³	3.7	<3.7	<3.7	0
1,2-dichlorobenzene	µg/m ³	3	<3	<3	0
1,3-dichlorobenzene	µg/m ³	3	<3	<3	0
1,4-dichlorobenzene	µg/m ³	3	<3	<3	0
Chlorobenzene	µg/m ³	2.3	<2.3	<2.3	0
Halogenated Hydrocarbons					
1,2-dibromoethane	µg/m ³	3.8	<3.8	<3.8	0
Bromomethane	µg/m ³	1.9	<1.9	<1.9	0
Dichlorodifluoromethane	µg/m ³	2.5	<2.5	<2.5	0
Trichlorofluoromethane	µg/m ³	2.8	<2.8	<2.8	0
Organic					
Methane	%		<0.01	<0.01	0
Other					
Carbon Dioxide	% by Vol	0.01	1.3	1.3	0
Oxygen	% by Vol	0.01	19	19	0
Solvents					
1,4-Dioxane	µg/m ³	1.8	<1.8	<1.8	0
Methyl Ethyl Ketone	µg/m ³	1.5	<1.5	<1.5	0
2-hexanone (MBK)	µg/m ³	2	<2	<2	0
4-Methyl-2-pentanone	µg/m ³	2	<2	<2	0
Acetone	µg/m ³	11.9	<12	<12	0
Carbon disulfide	µg/m ³	1.6	<1.6	<1.6	0
Cyclohexane	µg/m ³	1.7	<1.7	<1.7	0
Ethanol	µg/m ³	9	<9.4	<9.4	0
Ethyl acetate	µg/m ³	1.8	<1.8	<1.8	0
Heptane	µg/m ³	2	<2	<2	0
Hexane	µg/m ³	1.8	3	3	0
MTBE	µg/m ³	1.8	<1.8	<1.8	0
2-Propanol	µg/m ³	12	<12	<12	0
Tetrahydrofuran	µg/m ³	1.5	<1.5	<1.5	0
Vinyl acetate	µg/m ³	1.8	<1.8	<1.8	0

Notes
LOR - Laboratory Limit of Reporting
RPD - Relative Percentage Difference



Appendix G

Soil Vapour Laboratory Reports

CERTIFICATE OF ANALYSIS 204647

Client Details

Client	Edge Group
Attention	Scott Davis, Carley Powell
Address	Level 1, 423 City Road, South Melbourne, VIC, 3205

Sample Details

Your Reference	<u>20170561, Melbourne</u>
Number of Samples	6xAir
Date samples received	02/11/2018
Date completed instructions received	02/11/2018

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.

Report Details

Date results requested by	09/11/2018
Date of Issue	07/11/2018
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Results Approved By

Chris Guo, Senior Chemist, Air

Authorised By



Jacinta Hurst, Laboratory Manager

TPH Air/ Air Phase Hydrocarbon						
Our Reference	UNITS	204647-1	204647-2	204647-3	204647-4	204647-5
Your Reference		SVP01	FD01	SVP02	SVP03	SVB01
Date Sampled		31/10/2018	31/10/2018	31/10/2018	31/10/2018	31/10/2018
Type of sample		AIR	AIR	AIR	AIR	AIR
Air Kit Security No.		1695	2553	2548	2545	1697
Date prepared	-	02/11/2018	02/11/2018	02/11/2018	02/11/2018	02/11/2018
Date analysed	-	02/11/2018	02/11/2018	02/11/2018	02/11/2018	02/11/2018
TPH C ₅ - C ₈ Aliphatic	µg/m ³	<200	<200	<200	<200	2,900
TPH C ₉ - C ₁₂ Aliphatic	µg/m ³	<50	<50	<50	<50	310
TPH C ₉ - C ₁₀ Aromatic	µg/m ³	<100	<100	<100	<100	390
TPH C ₆ - C ₁₀ - BTEX (F1)	µg/m ³	<200	<200	<200	<200	2,400
TPH >C ₁₀ - C ₁₂ - Naphthalene (F2)	µg/m ³	<40	<40	<40	<40	980

TPH Air/ Air Phase Hydrocarbon		
Our Reference	UNITS	204647-6
Your Reference		SVB02
Date Sampled		31/10/2018
Type of sample		AIR
Air Kit Security No.		2476
Date prepared	-	02/11/2018
Date analysed	-	02/11/2018
TPH C ₅ - C ₈ Aliphatic	µg/m ³	4,100
TPH C ₉ - C ₁₂ Aliphatic	µg/m ³	<50
TPH C ₉ - C ₁₀ Aromatic	µg/m ³	<100
TPH C ₆ - C ₁₀ - BTEX (F1)	µg/m ³	2,600
TPH >C ₁₀ - C ₁₂ - Naphthalene (F2)	µg/m ³	50

Permanent Gas analysis						
Our Reference	UNITS	204647-1	204647-2	204647-3	204647-4	204647-5
Your Reference		SVP01	FD01	SVP02	SVP03	SVB01
Date Sampled		31/10/2018	31/10/2018	31/10/2018	31/10/2018	31/10/2018
Type of sample		AIR	AIR	AIR	AIR	AIR
Air Kit Security No.		1695	2553	2548	2545	1697
Date prepared	-	02/11/2018	02/11/2018	02/11/2018	02/11/2018	02/11/2018
Date analysed	-	02/11/2018	02/11/2018	02/11/2018	02/11/2018	02/11/2018
Methane (CH ₄)	%	<0.01	<0.01	<0.01	<0.01	0.30
Carbon Dioxide (CO ₂)	%	1.3	1.3	0.73	0.61	6.8
Oxygen (O ₂)	%	19	19	19	20	3.4

Permanent Gas analysis		
Our Reference	UNITS	204647-6
Your Reference		SVB02
Date Sampled		31/10/2018
Type of sample		AIR
Air Kit Security No.		2476
Date prepared	-	02/11/2018
Date analysed	-	02/11/2018
Methane (CH ₄)	%	<0.01
Carbon Dioxide (CO ₂)	%	11
Oxygen (O ₂)	%	7.5

Sulphur spec'n in cans/bags		
Our Reference	UNITS	204647-5
Your Reference		SVB01
Date Sampled		31/10/2018
Type of sample		AIR
Air Kit Security No.		1697
Date prepared	-	05/11/2018
Date analysed	-	05/11/2018
Hydrogen Sulphide	ppbv	<5

Sulphur spec'n in cans/bags		
Our Reference	UNITS	204647-5
Your Reference		SVB01
Date Sampled		31/10/2018
Type of sample		AIR
Air Kit Security No.		1697
Date prepared	-	05/11/2018
Date analysed	-	05/11/2018
Hydrogen Sulphide	µg/m ³	<7

TO15 in Canisters + ug/m3 calc

Our Reference		204647-1	204647-2	204647-3	204647-4	204647-5
Your Reference	UNITS	SVP01	FD01	SVP02	SVP03	SVB01
Date Sampled		31/10/2018	31/10/2018	31/10/2018	31/10/2018	31/10/2018
Type of sample		AIR	AIR	AIR	AIR	AIR
Air Kit Security No.		1695	2553	2548	2545	1697
Vacuum before Shipment	Hg"	-30	-30	-30	-30	-30
Vacuum before Analysis	Hg"	-4	-4	-4	-4	-4
Date prepared	-	02/11/2018	02/11/2018	02/11/2018	02/11/2018	02/11/2018
Date analysed	-	02/11/2018	02/11/2018	02/11/2018	02/11/2018	02/11/2018
Propylene	ppbv	<0.5	<0.5	<0.5	<0.5	230
Dichlorodifluoromethane	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
Chloromethane	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichlorotetrafluoroethane	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
Vinyl chloride	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
1,3-Butadiene	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
Bromomethane	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
Chloroethane	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
Ethanol	ppbv	<5	<5	40	6	<5
Acrolein	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
Trichlorofluoromethane (Freon 11)	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
Acetone	ppbv	<5	<5	7	<5	10
Isopropyl Alcohol	ppbv	<5	<5	<5	7	160
1,1-Dichloroethene	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,2-Trichlorotrifluoroethane	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
Methylene chloride (Dichloromethane)	ppbv	<5	<5	<5	<5	<5
Carbon Disulfide	ppbv	<0.5	<0.5	<0.5	<0.5	30
trans-1,2-dichloroethene	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
MTBE	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
1,1- Dichloroethane	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
Vinyl Acetate	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
MEK	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
Hexane	ppbv	0.7	0.9	3	<0.5	38
cis-1,2-Dichloroethene	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
Ethyl Acetate	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
Chloroform	ppbv	<0.5	<0.5	<0.5	38	5.3
Tetrahydrofuran	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloroethane	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
Benzene	ppbv	<0.5	<0.5	<0.5	<0.5	2
Carbon tetrachloride	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
Cyclohexane	ppbv	<0.5	<0.5	<0.5	<0.5	11

TO15 in Canisters + ug/m3 calc

Our Reference		204647-1	204647-2	204647-3	204647-4	204647-5
Your Reference	UNITS	SVP01	FD01	SVP02	SVP03	SVB01
Date Sampled		31/10/2018	31/10/2018	31/10/2018	31/10/2018	31/10/2018
Type of sample		AIR	AIR	AIR	AIR	AIR
Air Kit Security No.		1695	2553	2548	2545	1697
Heptane	ppbv	<0.5	<0.5	<0.5	<0.5	7.1
Trichloroethene	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichloropropane	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
1,4-Dioxane	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
Bromodichloromethane	ppbv	<0.5	<0.5	<0.5	4	0.5
Methyl Methacrylate	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
MIBK	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
cis-1,3-Dichloropropene	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
trans-1,3-Dichloropropene	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	ppbv	<0.5	<0.5	0.7	0.6	21
1,1,2-Trichloroethane	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
Methyl Butyl Ketone	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
Dibromochloromethane	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
Tetrachloroethene	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dibromoethane	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorobenzene	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	ppbv	<0.5	<0.5	<0.5	<0.5	4
m-& p-Xylene	ppbv	<1	<1	<1	<1	10
Styrene	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
o-Xylene	ppbv	<0.5	<0.5	<0.5	<0.5	7.0
Bromoform	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
1,1,2,2-Tetrachloroethane	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
4-ethyl toluene	ppbv	<0.5	<0.5	<0.5	<0.5	3
1,3,5-Trimethylbenzene	ppbv	<0.5	<0.5	<0.5	<0.5	9.4
1,2,4-Trimethylbenzene	ppbv	<0.5	<0.5	<0.5	<0.5	15
1,3-Dichlorobenzene	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
Benzyl chloride	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
1,4-Dichlorobenzene	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
1,2-Dichlorobenzene	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
1,2,4-Trichlorobenzene	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	ppbv	<0.5	<0.5	<0.5	<0.5	1
Hexachloro- 1,3-butadiene	ppbv	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate-Bromochloromethane	% rec	99	98	100	94	96
Surrogate -1,4-Difluorobenzene	% rec	92	91	91	90	97
Surrogate-Chlorobenzene-D5	% rec	77	77	75	75	92

TO15 in Canisters + ug/m3 calc		
Our Reference		204647-6
Your Reference	UNITS	SVB02
Date Sampled		31/10/2018
Type of sample		AIR
Air Kit Security No.		2476
Vacuum before Shipment	Hg"	-30
Vacuum before Analysis	Hg"	-4
Date prepared	-	02/11/2018
Date analysed	-	02/11/2018
Propylene	ppbv	170
Dichlorodifluoromethane	ppbv	0.5
Chloromethane	ppbv	<0.5
1,2-Dichlorotetrafluoroethane	ppbv	<0.5
Vinyl chloride	ppbv	<0.5
1,3-Butadiene	ppbv	<0.5
Bromomethane	ppbv	<0.5
Chloroethane	ppbv	<0.5
Ethanol	ppbv	<5
Acrolein	ppbv	<0.5
Trichlorofluoromethane (Freon 11)	ppbv	<0.5
Acetone	ppbv	20
Isopropyl Alcohol	ppbv	40
1,1-Dichloroethene	ppbv	<0.5
1,1,2-Trichlorotrifluoroethane	ppbv	<0.5
Methylene chloride (Dichloromethane)	ppbv	<5
Carbon Disulfide	ppbv	14
trans-1,2-dichloroethene	ppbv	<0.5
MTBE	ppbv	<0.5
1,1- Dichloroethane	ppbv	<0.5
Vinyl Acetate	ppbv	<0.5
MEK	ppbv	2
Hexane	ppbv	43
cis-1,2-Dichloroethene	ppbv	<0.5
Ethyl Acetate	ppbv	<0.5
Chloroform	ppbv	5
Tetrahydrofuran	ppbv	<0.5
1,1,1-Trichloroethane	ppbv	<0.5
1,2-Dichloroethane	ppbv	<0.5
Benzene	ppbv	0.6
Carbon tetrachloride	ppbv	<0.5
Cyclohexane	ppbv	21

TO15 in Canisters + ug/m3 calc		
Our Reference		204647-6
Your Reference	UNITS	SVB02
Date Sampled		31/10/2018
Type of sample		AIR
Air Kit Security No.		2476
Heptane	ppbv	1
Trichloroethene	ppbv	<0.5
1,2-Dichloropropane	ppbv	<0.5
1,4-Dioxane	ppbv	<0.5
Bromodichloromethane	ppbv	0.7
Methyl Methacrylate	ppbv	<0.5
MIBK	ppbv	<0.5
cis-1,3-Dichloropropene	ppbv	<0.5
trans-1,3-Dichloropropene	ppbv	<0.5
Toluene	ppbv	9.5
1,1,2-Trichloroethane	ppbv	<0.5
Methyl Butyl Ketone	ppbv	<0.5
Dibromochloromethane	ppbv	<0.5
Tetrachloroethene	ppbv	<0.5
1,2-Dibromoethane	ppbv	<0.5
Chlorobenzene	ppbv	<0.5
Ethylbenzene	ppbv	0.7
m-& p-Xylene	ppbv	2
Styrene	ppbv	<0.5
o-Xylene	ppbv	1
Bromoform	ppbv	<0.5
1,1,2,2-Tetrachloroethane	ppbv	<0.5
4-ethyl toluene	ppbv	<0.5
1,3,5-Trimethylbenzene	ppbv	<0.5
1,2,4-Trimethylbenzene	ppbv	0.8
1,3-Dichlorobenzene	ppbv	<0.5
Benzyl chloride	ppbv	<0.5
1,4-Dichlorobenzene	ppbv	<0.5
1,2-Dichlorobenzene	ppbv	<0.5
1,2,4-Trichlorobenzene	ppbv	<0.5
Naphthalene	ppbv	<0.5
Hexachloro- 1,3-butadiene	ppbv	<0.5
Surrogate-Bromochloromethane	% rec	97
Surrogate -1,4-Difluorobenzene	% rec	98
Surrogate-Chlorobenzene-D5	% rec	88

TO15 in Canisters ug/m3

Our Reference		204647-1	204647-2	204647-3	204647-4	204647-5
Your Reference	UNITS	SVP01	FD01	SVP02	SVP03	SVB01
Date Sampled		31/10/2018	31/10/2018	31/10/2018	31/10/2018	31/10/2018
Type of sample		AIR	AIR	AIR	AIR	AIR
Air Kit Security No.		1695	2553	2548	2545	1697
Vacuum before Shipment	Hg"	-30	-30	-30	-30	-30
Vacuum before Analysis	Hg"	-4	-4	-4	-4	-4
Date prepared	-	02/11/2018	02/11/2018	02/11/2018	02/11/2018	02/11/2018
Date analysed	-	02/11/2018	02/11/2018	02/11/2018	02/11/2018	02/11/2018
Propylene	µg/m ³	<0.9	<0.9	<0.9	<0.9	400
Dichlorodifluoromethane	µg/m ³	<2.5	<2.5	<2.5	<2.5	<2.5
Chloromethane	µg/m ³	<1	<1	<1	<1	<1
1,2-Dichlorotetrafluoroethane	µg/m ³	<2.5	<2.5	<2.5	<2.5	<2.5
Vinyl chloride	µg/m ³	<1.3	<1.3	<1.3	<1.3	<1.3
1,3-Butadiene	µg/m ³	<1.1	<1.1	<1.1	<1.1	<1.1
Bromomethane	µg/m ³	<1.9	<1.9	<1.9	<1.9	<1.9
Chloroethane	µg/m ³	<1.3	<1.3	<1.3	<1.3	<1.3
Ethanol	µg/m ³	<9.4	<9.4	70	10	<9.4
Acrolein	µg/m ³	<1.1	<1.1	<1.1	<1.1	<1.1
Trichlorofluoromethane (Freon 11)	µg/m ³	<2.8	<2.8	<2.8	<2.8	<2.8
Acetone	µg/m ³	<12	<12	20	<12	20
Isopropyl Alcohol	µg/m ³	<12	<12	<12	20	390
1,1-Dichloroethene	µg/m ³	<2	<2	<2	<2	<2
1,1,2-Trichlorotrifluoroethane	µg/m ³	<3.8	<3.8	<3.8	<3.8	<3.8
Methylene chloride (Dichloromethane)	µg/m ³	<17	<17	<17	<17	<17
Carbon Disulfide	µg/m ³	<1.6	<1.6	<1.6	<1.6	94
trans-1,2-dichloroethene	µg/m ³	<2	<2	<2	<2	<2
MTBE	µg/m ³	<1.8	<1.8	<1.8	<1.8	<1.8
1,1- Dichloroethane	µg/m ³	<2	<2	<2	<2	<2
Vinyl Acetate	µg/m ³	<1.8	<1.8	<1.8	<1.8	<1.8
MEK	µg/m ³	<1.5	<1.5	<1.5	<1.5	<1.5
Hexane	µg/m ³	3	3	10	<1.8	130
cis-1,2-Dichloroethene	µg/m ³	<2	<2	<2	<2	<2
Ethyl Acetate	µg/m ³	<1.8	<1.8	<1.8	<1.8	<1.8
Chloroform	µg/m ³	<2.4	<2.4	<2.4	190	26
Tetrahydrofuran	µg/m ³	<1.5	<1.5	<1.5	<1.5	<1.5
1,1,1-Trichloroethane	µg/m ³	<2.7	<2.7	<2.7	<2.7	<2.7
1,2-Dichloroethane	µg/m ³	<2	<2	<2	<2	<2
Benzene	µg/m ³	<1.6	<1.6	<1.6	<1.6	6
Carbon tetrachloride	µg/m ³	<3.1	<3.1	<3.1	<3.1	<3.1
Cyclohexane	µg/m ³	<1.7	<1.7	<1.7	<1.7	37

TO15 in Canisters ug/m3						
Our Reference		204647-1	204647-2	204647-3	204647-4	204647-5
Your Reference	UNITS	SVP01	FD01	SVP02	SVP03	SVB01
Date Sampled		31/10/2018	31/10/2018	31/10/2018	31/10/2018	31/10/2018
Type of sample		AIR	AIR	AIR	AIR	AIR
Air Kit Security No.		1695	2553	2548	2545	1697
Heptane	µg/m ³	<2	<2	<2	<2	29
Trichloroethene	µg/m ³	<2.7	<2.7	<2.7	<2.7	<2.7
1,2-Dichloropropane	µg/m ³	<2.3	<2.3	<2.3	<2.3	<2.3
1,4-Dioxane	µg/m ³	<1.8	<1.8	<1.8	<1.8	<1.8
Bromodichloromethane	µg/m ³	<3.4	<3.4	<3.4	30	3
Methyl Methacrylate	µg/m ³	<2	<2	<2	<2	<2
MIBK	µg/m ³	<2	<2	<2	<2	<2
cis-1,3-Dichloropropene	µg/m ³	<2.3	<2.3	<2.3	<2.3	<2.3
trans-1,3-Dichloropropene	µg/m ³	<2.3	<2.3	<2.3	<2.3	<2.3
Toluene	µg/m ³	<1.9	<1.9	3	2	81
1,1,2-Trichloroethane	µg/m ³	<2.7	<2.7	<2.7	<2.7	<2.7
Methyl Butyl Ketone	µg/m ³	<2	<2	<2	<2	<2
Dibromochloromethane	µg/m ³	<1.6	<1.6	<1.6	<1.6	<1.6
Tetrachloroethene	µg/m ³	<3.4	<3.4	<3.4	<3.4	<3.4
1,2-Dibromoethane	µg/m ³	<3.8	<3.8	<3.8	<3.8	<3.8
Chlorobenzene	µg/m ³	<2.3	<2.3	<2.3	<2.3	<2.3
Ethylbenzene	µg/m ³	<2.2	<2.2	<2.2	<2.2	20
m-& p-Xylene	µg/m ³	<4.3	<4.3	<4.3	<4.3	40
Styrene	µg/m ³	<2.1	<2.1	<2.1	<2.1	<2.1
o-Xylene	µg/m ³	<2.2	<2.2	<2.2	<2.2	31
Bromoform	µg/m ³	<5.2	<5.2	<5.2	<5.2	<5.2
1,1,2,2-Tetrachloroethane	µg/m ³	<3.4	<3.4	<3.4	<3.4	<3.4
4-ethyl toluene	µg/m ³	<2.5	<2.5	<2.5	<2.5	10
1,3,5-Trimethylbenzene	µg/m ³	<2.5	<2.5	<2.5	<2.5	46
1,2,4-Trimethylbenzene	µg/m ³	<2.5	<2.5	<2.5	<2.5	75
1,3-Dichlorobenzene	µg/m ³	<3	<3	<3	<3	<3
Benzyl chloride	µg/m ³	<2.6	<2.6	<2.6	<2.6	<2.6
1,4-Dichlorobenzene	µg/m ³	<3	<3	<3	<3	<3
1,2-Dichlorobenzene	µg/m ³	<3	<3	<3	<3	<3
1,2,4-Trichlorobenzene	µg/m ³	<3.7	<3.7	<3.7	<3.7	<3.7
Naphthalene	µg/m ³	<2.6	<2.6	<2.6	<2.6	7
Hexachloro- 1,3-butadiene	µg/m ³	<5.3	<5.3	<5.3	<5.3	<5.3
Surrogate-Bromochloromethane	% rec	99	98	100	94	96
Surrogate -1,4-Difluorobenzene	% rec	92	91	91	90	97
Surrogate-Chlorobenzene-D5	% rec	77	77	75	75	92

TO15 in Canisters ug/m3		
Our Reference		204647-6
Your Reference	UNITS	SVB02
Date Sampled		31/10/2018
Type of sample		AIR
Air Kit Security No.		2476
Vacuum before Shipment	Hg"	-30
Vacuum before Analysis	Hg"	-4
Date prepared	-	02/11/2018
Date analysed	-	02/11/2018
Propylene	µg/m ³	290
Dichlorodifluoromethane	µg/m ³	2
Chloromethane	µg/m ³	<1
1,2-Dichlorotetrafluoroethane	µg/m ³	<2.5
Vinyl chloride	µg/m ³	<1.3
1,3-Butadiene	µg/m ³	<1.1
Bromomethane	µg/m ³	<1.9
Chloroethane	µg/m ³	<1.3
Ethanol	µg/m ³	<9.4
Acrolein	µg/m ³	<1.1
Trichlorofluoromethane (Freon 11)	µg/m ³	<2.8
Acetone	µg/m ³	50
Isopropyl Alcohol	µg/m ³	90
1,1-Dichloroethene	µg/m ³	<2
1,1,2-Trichlorotrifluoroethane	µg/m ³	<3.8
Methylene chloride (Dichloromethane)	µg/m ³	<17
Carbon Disulfide	µg/m ³	43
trans-1,2-dichloroethene	µg/m ³	<2
MTBE	µg/m ³	<1.8
1,1- Dichloroethane	µg/m ³	<2
Vinyl Acetate	µg/m ³	<1.8
MEK	µg/m ³	7
Hexane	µg/m ³	150
cis-1,2-Dichloroethene	µg/m ³	<2
Ethyl Acetate	µg/m ³	<1.8
Chloroform	µg/m ³	20
Tetrahydrofuran	µg/m ³	<1.5
1,1,1-Trichloroethane	µg/m ³	<2.7
1,2-Dichloroethane	µg/m ³	<2
Benzene	µg/m ³	2
Carbon tetrachloride	µg/m ³	<3.1
Cyclohexane	µg/m ³	72

TO15 in Canisters ug/m3		
Our Reference		204647-6
Your Reference	UNITS	SVB02
Date Sampled		31/10/2018
Type of sample		AIR
Air Kit Security No.		2476
Heptane	µg/m ³	5
Trichloroethene	µg/m ³	<2.7
1,2-Dichloropropane	µg/m ³	<2.3
1,4-Dioxane	µg/m ³	<1.8
Bromodichloromethane	µg/m ³	5
Methyl Methacrylate	µg/m ³	<2
MIBK	µg/m ³	<2
cis-1,3-Dichloropropene	µg/m ³	<2.3
trans-1,3-Dichloropropene	µg/m ³	<2.3
Toluene	µg/m ³	36
1,1,2-Trichloroethane	µg/m ³	<2.7
Methyl Butyl Ketone	µg/m ³	<2
Dibromochloromethane	µg/m ³	<1.6
Tetrachloroethene	µg/m ³	<3.4
1,2-Dibromoethane	µg/m ³	<3.8
Chlorobenzene	µg/m ³	<2.3
Ethylbenzene	µg/m ³	3
m-& p-Xylene	µg/m ³	10
Styrene	µg/m ³	<2.1
o-Xylene	µg/m ³	6
Bromoform	µg/m ³	<5.2
1,1,2,2-Tetrachloroethane	µg/m ³	<3.4
4-ethyl toluene	µg/m ³	<2.5
1,3,5-Trimethylbenzene	µg/m ³	<2.5
1,2,4-Trimethylbenzene	µg/m ³	4
1,3-Dichlorobenzene	µg/m ³	<3
Benzyl chloride	µg/m ³	<2.6
1,4-Dichlorobenzene	µg/m ³	<3
1,2-Dichlorobenzene	µg/m ³	<3
1,2,4-Trichlorobenzene	µg/m ³	<3.7
Naphthalene	µg/m ³	<2.6
Hexachloro- 1,3-butadiene	µg/m ³	<5.3
Surrogate-Bromochloromethane	% rec	97
Surrogate -1,4-Difluorobenzene	% rec	98
Surrogate-Chlorobenzene-D5	% rec	88

Method ID	Methodology Summary
AT-003	Gases determined by GC-FID/TCD using methods ASTM 1945, 1946 and USEPA 3C.
AT-004	Sulphur Compounds in Cansiters and Air Bags, determined by GC-SCD based on methods:- ASTM 5504, USEPA TO15 and USEPA m18
AT-005	Measurement of Air-Phase Petroleum Hydrocarbons and Ozone Precursors by GC/MS
TO15	USEPA TO15 - Analysis of VOC's in air following USEPA TO15 protocols
USEPA 18	Measurement of Gaseous Organic Compound Emissions by Gas Chromatography using USEPA m18.

QUALITY CONTROL: TPH Air/ Air Phase Hydrocarbon						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			02/11/2018	1	02/11/2018	02/11/2018		02/11/2018	[NT]
Date analysed	-			02/11/2018	1	02/11/2018	02/11/2018		02/11/2018	[NT]
TPH C ₅ - C ₈ Aliphatic	µg/m ³	200	AT-005	<200	1	<200	<200	0	91	[NT]
TPH C ₉ - C ₁₂ Aliphatic	µg/m ³	50	AT-005	<50	1	<50	<50	0	[NT]	[NT]
TPH C ₉ - C ₁₀ Aromatic	µg/m ³	100	AT-005	<100	1	<100	<100	0	96	[NT]
TPH C ₆ - C ₁₀ - BTEX (F1)	µg/m ³	200	TO15	<200	1	<200	<200	0	95	[NT]
TPH >C ₁₀ - C ₁₂ - Naphthalene (F2)	µg/m ³	40	TO15	<40	1	<40	<40	0	93	[NT]

QUALITY CONTROL: Permanent Gas analysis					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			02/11/2018	1	02/11/2018	02/11/2018		02/11/2018	[NT]
Date analysed	-			02/11/2018	1	02/11/2018	02/11/2018		02/11/2018	[NT]
Methane (CH ₄)	%	0.01	AT-003	<0.01	1	<0.01	<0.01	0	97	[NT]
Carbon Dioxide (CO ₂)	%	0.01	AT-003	<0.01	1	1.3	1.3	0	98	[NT]
Oxygen (O ₂)	%	0.01	AT-003	<0.01	1	19	19	0	101	[NT]

QUALITY CONTROL: Sulphur spec'n in cans/bags					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			05/11/2018	5	05/11/2018	05/11/2018		05/11/2018	[NT]
Date analysed	-			05/11/2018	5	05/11/2018	05/11/2018		05/11/2018	[NT]
Hydrogen Sulphide	ppbv	5	AT-004	<5	5	<5	<5	0	113	[NT]

QUALITY CONTROL: Sulphur spec'n in cans/bags						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			05/11/2018	5	05/11/2018	05/11/2018		[NT]	[NT]
Date analysed	-			05/11/2018	5	05/11/2018	05/11/2018		[NT]	[NT]
Hydrogen Sulphide	µg/m³	7	AT-004	<7	5	<7	<7	0	[NT]	[NT]

QUALITY CONTROL: TO15 in Canisters + ug/m3 calc						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Vacuum before Shipment	Hg"			[NT]	1	-30	-30	0	[NT]	[NT]
Vacuum before Analysis	Hg"			[NT]	1	-4	-4	0	[NT]	[NT]
Date prepared	-			02/11/2018	1	02/11/2018	02/11/2018		02/11/2018	[NT]
Date analysed	-			02/11/2018	1	02/11/2018	02/11/2018		02/11/2018	[NT]
Propylene	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	115	[NT]
Dichlorodifluoromethane	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
Chloromethane	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
1,2-Dichlorotetrafluoroethane	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
Vinyl chloride	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
1,3-Butadiene	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
Bromomethane	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
Chloroethane	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
Ethanol	ppbv	5	TO15	<5	1	<5	<5	0	[NT]	[NT]
Acrolein	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
Trichlorofluoromethane (Freon 11)	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
Acetone	ppbv	5	TO15	<5	1	<5	<5	0	[NT]	[NT]
Isopropyl Alcohol	ppbv	5	TO15	<5	1	<5	<5	0	[NT]	[NT]
1,1-Dichloroethene	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
1,1,2-Trichlorotrifluoroethane	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
Methylene chloride (Dichloromethane)	ppbv	5	TO15	<5	1	<5	<5	0	[NT]	[NT]
Carbon Disulfide	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
trans-1,2-dichloroethene	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
MTBE	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
1,1- Dichloroethane	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
Vinyl Acetate	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
MEK	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
Hexane	ppbv	0.5	TO15	<0.5	1	0.7	0.7	0	100	[NT]
cis-1,2-Dichloroethene	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
Ethyl Acetate	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
Chloroform	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
Tetrahydrofuran	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
1,1,1-Trichloroethane	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
1,2-Dichloroethane	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
Benzene	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	95	[NT]
Carbon tetrachloride	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
Cyclohexane	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	112	[NT]
Heptane	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	107	[NT]
Trichloroethene	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]

QUALITY CONTROL: TO15 in Canisters + ug/m3 calc					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
1,2-Dichloropropane	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
1,4-Dioxane	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
Bromodichloromethane	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
Methyl Methacrylate	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
MIBK	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
cis-1,3-Dichloropropene	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
trans-1,3-Dichloropropene	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
Toluene	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	105	[NT]
1,1,2-Trichloroethane	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
Methyl Butyl Ketone	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
Dibromochloromethane	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
Tetrachloroethene	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
1,2-Dibromoethane	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
Chlorobenzene	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	112	[NT]
m- & p-Xylene	ppbv	1	TO15	<1	1	<1	<1	0	117	[NT]
Styrene	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	114	[NT]
o-Xylene	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	114	[NT]
Bromoform	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
1,1,2,2-Tetrachloroethane	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
4-ethyl toluene	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	112	[NT]
1,3,5-Trimethylbenzene	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	104	[NT]
1,2,4-Trimethylbenzene	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	119	[NT]
1,3-Dichlorobenzene	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
Benzyl chloride	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
1,4-Dichlorobenzene	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
1,2-Dichlorobenzene	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
1,2,4-Trichlorobenzene	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
Naphthalene	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
Hexachloro- 1,3-butadiene	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
Surrogate-Bromochloromethane	% rec		TO15	91	1	99	99	0	114	[NT]
Surrogate -1,4-Difluorobenzene	% rec		TO15	88	1	92	91	1	109	[NT]
Surrogate-Chlorobenzene-D5	% rec		TO15	72	1	77	76	1	112	[NT]

QUALITY CONTROL: TO15 in Canisters ug/m3						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Vacuum before Shipment	Hg"			[NT]	1	-30	-30	0	[NT]	[NT]
Vacuum before Analysis	Hg"			[NT]	1	-4	-4	0	[NT]	[NT]
Date prepared	-			02/11/2018	1	02/11/2018	02/11/2018		[NT]	[NT]
Date analysed	-			02/11/2018	1	02/11/2018	02/11/2018		[NT]	[NT]
Propylene	µg/m³	0.9	TO15	<0.9	1	<0.9	<0.9	0	[NT]	[NT]
Dichlorodifluoromethane	µg/m³	2.5	TO15	<2.5	1	<2.5	<2.5	0	[NT]	[NT]
Chloromethane	µg/m³	1.0	TO15	<1.0	1	<1	<1	0	[NT]	[NT]
1,2-Dichlorotetrafluoroethane	µg/m³	2.5	TO15	<2.5	1	<2.5	<2.5	0	[NT]	[NT]
Vinyl chloride	µg/m³	1.3	TO15	<1.3	1	<1.3	<1.3	0	[NT]	[NT]
1,3-Butadiene	µg/m³	1.1	TO15	<1.1	1	<1.1	<1.1	0	[NT]	[NT]
Bromomethane	µg/m³	1.9	TO15	<1.9	1	<1.9	<1.9	0	[NT]	[NT]
Chloroethane	µg/m³	1.3	TO15	<1.3	1	<1.3	<1.3	0	[NT]	[NT]
Ethanol	µg/m³	9	TO15	<9	1	<9.4	<9.4	0	[NT]	[NT]
Acrolein	µg/m³	1.1	TO15	<1.1	1	<1.1	<1.1	0	[NT]	[NT]
Trichlorofluoromethane (Freon 11)	µg/m³	2.8	TO15	<2.8	1	<2.8	<2.8	0	[NT]	[NT]
Acetone	µg/m³	11.9	TO15	<11.9	1	<12	<12	0	[NT]	[NT]
Isopropyl Alcohol	µg/m³	12	TO15	<12	1	<12	<12	0	[NT]	[NT]
1,1-Dichloroethene	µg/m³	2.0	TO15	<2.0	1	<2	<2	0	[NT]	[NT]
1,1,2-Trichlorotrifluoroethane	µg/m³	3.8	TO15	<3.8	1	<3.8	<3.8	0	[NT]	[NT]
Methylene chloride (Dichloromethane)	µg/m³	20	USEPA 18	<20	1	<17	<17	0	[NT]	[NT]
Carbon Disulfide	µg/m³	1.6	TO15	<1.6	1	<1.6	<1.6	0	[NT]	[NT]
trans-1,2-dichloroethene	µg/m³	2.0	TO15	<2.0	1	<2	<2	0	[NT]	[NT]
MTBE	µg/m³	1.8	TO15	<1.8	1	<1.8	<1.8	0	[NT]	[NT]
1,1- Dichloroethane	µg/m³	2.0	TO15	<2.0	1	<2	<2	0	[NT]	[NT]
Vinyl Acetate	µg/m³	1.8	TO15	<1.8	1	<1.8	<1.8	0	[NT]	[NT]
MEK	µg/m³	1.5	TO15	<1.5	1	<1.5	<1.5	0	[NT]	[NT]
Hexane	µg/m³	1.8	TO15	<1.8	1	3	2	40	[NT]	[NT]
cis-1,2-Dichloroethene	µg/m³	2.0	TO15	<2.0	1	<2	<2	0	[NT]	[NT]
Ethyl Acetate	µg/m³	1.8	TO15	<1.8	1	<1.8	<1.8	0	[NT]	[NT]
Chloroform	µg/m³	2.4	TO15	<2.4	1	<2.4	<2.4	0	[NT]	[NT]
Tetrahydrofuran	µg/m³	1.5	TO15	<1.5	1	<1.5	<1.5	0	[NT]	[NT]
1,1,1-Trichloroethane	µg/m³	2.7	TO15	<2.7	1	<2.7	<2.7	0	[NT]	[NT]
1,2-Dichloroethane	µg/m³	2.0	TO15	<2.0	1	<2	<2	0	[NT]	[NT]
Benzene	µg/m³	1.6	TO15	<1.6	1	<1.6	<1.6	0	[NT]	[NT]
Carbon tetrachloride	µg/m³	3.1	TO15	<3.1	1	<3.1	<3.1	0	[NT]	[NT]
Cyclohexane	µg/m³	1.7	TO15	<1.7	1	<1.7	<1.7	0	[NT]	[NT]
Heptane	µg/m³	2.0	TO15	<2.0	1	<2	<2	0	[NT]	[NT]
Trichloroethene	µg/m³	2.7	TO15	<2.7	1	<2.7	<2.7	0	[NT]	[NT]

QUALITY CONTROL: TO15 in Canisters ug/m3						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
1,2-Dichloropropane	µg/m³	2.3	TO15	<2.3	1	<2.3	<2.3	0	[NT]	[NT]
1,4-Dioxane	µg/m³	1.8	TO15	<1.8	1	<1.8	<1.8	0	[NT]	[NT]
Bromodichloromethane	µg/m³	3.4	TO15	<3.4	1	<3.4	<3.4	0	[NT]	[NT]
Methyl Methacrylate	µg/m³	2.0	TO15	<2.0	1	<2	<2	0	[NT]	[NT]
MIBK	µg/m³	2.0	TO15	<2.0	1	<2	<2	0	[NT]	[NT]
cis-1,3-Dichloropropene	µg/m³	2.3	TO15	<2.3	1	<2.3	<2.3	0	[NT]	[NT]
trans-1,3-Dichloropropene	µg/m³	2.3	TO15	<2.3	1	<2.3	<2.3	0	[NT]	[NT]
Toluene	µg/m³	1.9	TO15	<1.9	1	<1.9	<1.9	0	[NT]	[NT]
1,1,2-Trichloroethane	µg/m³	2.7	TO15	<2.7	1	<2.7	<2.7	0	[NT]	[NT]
Methyl Butyl Ketone	µg/m³	2.0	TO15	<2.0	1	<2	<2	0	[NT]	[NT]
Dibromochloromethane	µg/m³	1.6	TO15	<1.6	1	<1.6	<1.6	0	[NT]	[NT]
Tetrachloroethene	µg/m³	3.4	TO15	<3.4	1	<3.4	<3.4	0	[NT]	[NT]
1,2-Dibromoethane	µg/m³	3.8	TO15	<3.8	1	<3.8	<3.8	0	[NT]	[NT]
Chlorobenzene	µg/m³	2.3	TO15	<2.3	1	<2.3	<2.3	0	[NT]	[NT]
Ethylbenzene	µg/m³	2.2	TO15	<2.2	1	<2.2	<2.2	0	[NT]	[NT]
m-& p-Xylene	µg/m³	4.3	TO15	<4.3	1	<4.3	<4.3	0	[NT]	[NT]
Styrene	µg/m³	2.1	TO15	<2.1	1	<2.1	<2.1	0	[NT]	[NT]
o-Xylene	µg/m³	2.2	TO15	<2.2	1	<2.2	<2.2	0	[NT]	[NT]
Bromoform	µg/m³	5.2	TO15	<5.2	1	<5.2	<5.2	0	[NT]	[NT]
1,1,2,2-Tetrachloroethane	µg/m³	3.4	TO15	<3.4	1	<3.4	<3.4	0	[NT]	[NT]
4-ethyl toluene	µg/m³	2.5	TO15	<2.5	1	<2.5	<2.5	0	[NT]	[NT]
1,3,5-Trimethylbenzene	µg/m³	2.5	TO15	<2.5	1	<2.5	<2.5	0	[NT]	[NT]
1,2,4-Trimethylbenzene	µg/m³	2.5	TO15	<2.5	1	<2.5	<2.5	0	[NT]	[NT]
1,3-Dichlorobenzene	µg/m³	3.0	TO15	<3.0	1	<3	<3	0	[NT]	[NT]
Benzyl chloride	µg/m³	2.6	TO15	<2.6	1	<2.6	<2.6	0	[NT]	[NT]
1,4-Dichlorobenzene	µg/m³	3.0	TO15	<3.0	1	<3	<3	0	[NT]	[NT]
1,2-Dichlorobenzene	µg/m³	3.0	TO15	<3.0	1	<3	<3	0	[NT]	[NT]
1,2,4-Trichlorobenzene	µg/m³	3.7	TO15	<3.7	1	<3.7	<3.7	0	[NT]	[NT]
Naphthalene	µg/m³	2.6	TO15	<2.6	1	<2.6	<2.6	0	[NT]	[NT]
Hexachloro- 1,3-butadiene	µg/m³	5.3	TO15	<5.3	1	<5.3	<5.3	0	[NT]	[NT]
Surrogate-Bromochloromethane	% rec		TO15	91	1	99	99	0	[NT]	[NT]
Surrogate -1,4-Difluorobenzene	% rec		TO15	88	1	92	91	1	[NT]	[NT]
Surrogate-Chlorobenzene-D5	% rec		TO15	72	1	77	76	1	[NT]	[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: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

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

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

CANISTER CHAIN OF CUSTODY RECORD

Page _____ of _____

Client Name		BOST WOODER EDGE		Project Contact		Carly Powell		Quote No		18M106V2	
Client Address		423 CITY ROAD SOUTH MELBOURNE		Contact Phone No		03 8625 9696		Date Results Required		1 day / 2 days / 3 days / Standard	
Project Name		20170561		Results Required by		Standard JAT		E-mail Report To		SCOTT.D@EDGEGROUP.NET.AU Carly.Powell@edgegroup.net.au	
Site Location		MELBOURNE		Sampled by		CP		PO No		20170561	

Client sample ID (Field location)	Canister #	Soil gas train / Mass flow controller #	Leak Test Passed	PID Reading (ppmv)	Date of Collection	Collection Time		Canister vacuum (Hg")		Analysis requested						
						Time on	Time off	Initial	Final	TO-15	TPH	5-Sulfides	Ozone precursors	general gases *	RGA full list	H ₂ S
1 SVPO1	1695	2083	Y	2.4	31/10/18	10:49	11:16	-30	-5	X	X			X		
2 FDO1	2553	2083	Y		31/10/18	10:49	11:16	-29	-5	X	X			X		
3 SVPO2	2548	2078	Y	2.9	31/10/18	11:50	11:44	-30	-5	X	X			X		
4 SVPO3	2545	2078	Y	1.7	31/10/18	12:54	13:08	-30	-5	X	X			X		
5 SVB01	1697	626	Y	8.1	31/10/18	12:41	13:03	-30	-5	X	X			X		X
6 SVB02	2478	2082	Y	6.9	31/10/18	9:14	10:44	-30	-5	X	X			X		
Please tick for general gases 1) Methane, oxygen, carbon dioxide, carbon monoxide, nitrogen, or CH₄ CO₂ O₂ 2) Methane, oxygen, carbon dioxide, carbon monoxide, helium, hydrogen or 3) Specify analytes (NB: If nitrogen and helium/hydrogen are required, please contact ELS.): Envirolab Services 12 Ashley St Chatswood NSW 2067 Ph: (02) 9910 6200 Job No: 204647 Date Received: 2/11/2018 Time Received: 10:00 am Received By: [Signature] Temp: Cool/Ambient Cooling: Ice/Leakpack Security: Intact/Broken/None																
Relinquished by		Date & Time		Received by		Lab		Date & Time		Notes:						
Print Name		Signature		Print Name		Signature		Signature								



Appendix H

Risk Assessment



12 December 2018

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423 City Road
South Melbourne, VIC, 3205

Environmental Risk Sciences Pty Ltd
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Carlingford Court NSW 2118

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Attention: Scott Davis

Advice: Soil vapour risks

1.0 Introduction

Environmental Risk Sciences Pty Ltd (enRiskS) has been commissioned by Edge Group Pty Ltd (Edge) to provide advice in relation to the interpretation and assessment of potential soil vapour risk issues for a site located in Melbourne. It is understood that Edge conducted soil vapour sampling from 5 locations, SVP01-SVP03 and SVB01 and SVB02 (refer to figure in **Attachment A**). This review has not evaluated any aspects associated with the installation or sampling of soil vapour from these locations.

The soil vapour data relevant to these wells (from sampling undertaken on 31 October 2018) is included in **Attachment A**.

The available results have been further evaluated on the basis of a screening level review. The screening assessment undertaken and presented in this letter relates to the data collected on 31 October 2018 and the use of the site for high density residential purposes.

2.0 Screening level vapour risk assessment

Where the site is to be used for high density residential purposes, the available soil vapour data has been screened to determine if there is the potential for vapours to be present in the subsurface at concentrations high enough to pose a vapour inhalation risk for future occupants.

The site currently comprises multiple lots (approximately 2,875 m² combined total area), which is currently occupied by a number of personnel operating in offices of the ground floor, with residential dwellings on both the ground floor and upper levels. A large portion of the ground floor is used for car parking. The site requires an amendment to the Planning Scheme to allow for residential use.

For the purpose of this assessment residential units are assumed to be present on the ground floor and the soil vapour data is assumed to be representative of levels that may be present between 0 and 1 m below the building foundation.

Table 1 presents a summary of the soil vapour concentrations reported. These have been screened against soil vapour screening criteria that are derived from the following guidelines:

- NEPM interim Health Investigation Levels (i-HILs) and Health Screening Levels (HSLs) for soil vapour, relevant to high density residential land use (CRC CARE 2011; NEPC 1999 amended 2013a, 1999 amended 2013b). It is noted that where HSLs have been used, the values adopted relate to soil vapour that is 0 to 1m depth with sand as the dominant soil type between the soil vapour measurement and the building foundation. Where the building may have car parking on the lower



levels, use of residential i-HILs or HSLs is conservative. Guidance from CRC CARE (2011) indicates that where car parking is on the lower floors, commercial/industrial criteria can be adopted for the purpose of screening. It is noted that consistent with guidance available in the NEPM (NEPC 1999 amended 2013c) the i-HILs and HSLs relate to target individual risk levels of 1×10^{-5} for non-threshold risk and a HI = 1.

- Where a soil vapour i-HILs or HSLs are not available from the above, ambient air guidelines have been used, along with a soil vapour to indoor air attenuation factor of 10-fold, consistent with the approach adopted in the NEPM for the derivation of the interim HILs for CHCs. The ambient air guidelines adopted for this assessment have been obtained from relevant and current guidance from the WHO and/or USEPA, that are relevant to protecting vapour inhalation exposures by all members of the public for a lifetime. The ambient air guidelines adopted relate to the same target non-threshold risk of 1×10^{-5} and threshold HI of 1 used in the development of the i-HILs and HSLs, and consistent with guidance from the NEPM (NEPC 1999 amended 2013c). An attenuation factor of 10 fold has been used. This relates to the attenuation of vapours from the subsurface to indoor air, and the value of 10 fold is considered to be conservative, but appropriate for screening, particularly for non-petroleum VOCs.

Based on the screening level assessment undertaken and presented in **Table 1**, there are no VOCs detected in soil vapour that would be considered to be of concern for the use of the site for high-density residential purposes in the current site setting.

Table 1: Screening level assessment of soil vapour data

VOC detected in soil vapour	Maximum concentration reported ($\mu\text{g}/\text{m}^3$)	SV Screening criteria for residential use ($\mu\text{g}/\text{m}^3$)	
		i-HIL or HSL	Modified ambient air criteria*
TRH F1	2600	180000	
TRH F2	980	130000	
Benzene	6	1000	
Toluene	81	1300000	
Ethylbenzene	20	330000	
Xylenes	71	220000	
Naphthalene	7	800	
Chloroform	190		1400 ^W
Bromodichloromethane	30		
1,2,4-Trimethylbenzene#	75		630 ^U
1,3,5-Trimethylbenzene#	46		
1-Methyl-4-ethyltoluene#	10		330000 (based on ethylbenzene as a surrogate)
Propene#	400		31000 ^U
Dichlorodifluoromethane	2		1000 ^U
Methyl ethyl ketone	7		52000 ^U
Acetone	50		320000 ^U
Carbon disulfide	94		200 ^W
Cyclohexane#	72		63000 ^U
Ethanol	70		1000000 ^O
Heptane#	29		4200 ^U
Hexane#	150		7300 ^U
Isopropyl alcohol#	390		2100 ^U

Notes:

* Screening criteria is 10 times higher than the adopted ambient air guideline (as referenced) to address attenuation from soil vapour to indoor air

Individual petroleum hydrocarbons which would be included in the TRH analysis, and also captured in the screening level review of TRH. The individual TRH compounds have also been assessed separately which results in some double counting

W = screening guideline based on WHO ambient/indoor air guideline (multiplied by a 10 fold attenuation factor). WHO air guidelines adopted for the assessment of chloroform (WHO 2004) and carbon disulfide (WHO 2000). Chloroform and bromodichloromethane have been assessed as a sum as these are trihalomethanes where the toxicity is assessed as a group where present in drinking water (NHMRC 2011 updated 2018). There are no inhalation specific data for bromodichloromethane and hence it has been considered as a sum with chloroform

U = screening guideline based on USEPA Regional Screening Level for residential air (USEPA 2018) (multiplied by a 10 fold attenuation factor)

O = screening guideline for ethanol available from OEHHA (OEHHA 1999)



3.0 Limitations

Environmental Risk Sciences Pty Ltd has prepared this report for the use of Edge Group Pty Ltd (Edge) in accordance with the usual care and thoroughness of the consulting profession. It is based on generally accepted practices and standards at the time it was prepared. No other warranty, expressed or implied, is made as to the professional advice included in this report.

It is prepared in accordance with the scope of work and for the purpose outlined in the **Section 1** of this report.

The methodology adopted and sources of information used are outlined in this report. Environmental Risk Sciences has made no independent verification of this information beyond the agreed scope of works and assumes no responsibility for any inaccuracies or omissions. No indications were found that information contained in information provided for use in this assessment was false.

This report was prepared in December 2018 and is based on the information provided and reviewed at that time. Environmental Risk Sciences disclaims responsibility for any changes that may have occurred after this time.

This report should be read in full. No responsibility is accepted for use of any part of this report in any other context or for any other purpose or by third parties. This report does not purport to give legal advice. Legal advice can only be given by qualified legal practitioners.

If you require any additional information or if you wish to discuss any aspect of this letter please do not hesitate to contact me on (02) 9614 0297 or 0425 206 295.

Yours sincerely,

Dr Jackie Wright
Principal/Director
Environmental Risk Sciences Pty Ltd



References

CRC CARE 2011, *Health screening levels for petroleum hydrocarbons in soil and groundwater. Part 1: Technical development document*, CRC for Contamination Assessment and Remediation of the Environment, CRC CARE Technical Report no. 10. Adelaide. <<http://www.crccare.com/products-and-services/health-screening-levels>>.

NEPC 1999 amended 2013a, *Schedule B1, Guideline on Investigation Levels For Soil and Groundwater, National Environment Protection (Assessment of Site Contamination) Measure*, National Environment Protection Council. <<http://scew.gov.au/nepms/assessment-site-contamination>>.

NEPC 1999 amended 2013b, *Schedule B7, Guideline on Health-Based Investigation Levels, National Environment Protection (Assessment of Site Contamination) Measure*, National Environment Protection Council. <<http://scew.gov.au/nepms/assessment-site-contamination>>.

NEPC 1999 amended 2013c, *Schedule B4, Guideline on Health Risk Assessment Methodology, National Environment Protection (Assessment of Site Contamination) Measure*, National Environment Protection Council. <<http://scew.gov.au/nepms/assessment-site-contamination>>.

NHMRC 2011 updated 2018, *Australian Drinking Water Guidelines 6, Version 3.5 Updated August 2018, National Water Quality Management Strategy*, National Health and Medical Research Council, National Resource Management Ministerial Council. Canberra.

OEHHA 1999, *Potential Health Risks of Ethanol in Gasoline*, Office of Environmental Health Hazard Assessment, California Environmental Protection Agency. <<http://oehha.ca.gov/air/etoh/ETOHfin2.html>>.

USEPA 2018, *Regional Screening Levels (RSLs)*, November 2018, United States Environmental Protection Agency.

WHO 2000, *Air Quality Guidelines for Europe, Second Edition*, Copenhagen. <<http://www.euro.who.int/en/publications/abstracts/air-quality-guidelines-for-europe>>.

WHO 2004, *Concise International Chemical Assessment Document No. 58 Chloroform*, World Health Organisation. <<http://incchem.org/documents/cicads/cicads/cicad58.htm>>.



Attachment A Soil vapour data and figure





Appendix 1F - Soil Vapour Analytical Results

Edge Project No.: 20170561
Soil Vapour Monitoring Event
21 Northumberland and 26 Wellington Streets
Collingwood, VIC

									Sample Code	204647-1	204647-3	204647-4	204647-5	204647-6
									Field ID	SVP01	SVP02	SVP03	SVB01	SVB02
									Matrix Type	gas	gas	gas	gas	gas
									Date	31/10/2018	31/10/2018	31/10/2018	31/10/2018	31/10/2018
			NEPM Interim SV HILs ¹		NEPM HSLs ² for Vapour Intrusion				USEPA RSLs ³					
Analyte	Unit	LOR	Residential A/B	Commercial / Industrial D	Residential A/B, Clay		Commercial / Industrial D, Clay		Resident Air THQ=1.0					
					0-1m	1-2m	0-1m	1-2m						
TPH														
F1 (C ₆ -C ₁₀ minus BTEX)	µg/m ³	200	*	*	230,000	4,200,000	1,000,000	19,000,000	*	<200	<200	<200	2,400	2,600
F2 (C ₁₀ -C ₁₆ minus Naphthalene)	µg/m ³	40	*	*	180,000	3,800,000	800,000	*	*	<40	<40	<40	980	50
TPH C ₅ - C ₈ Aliphatic	µg/m ³	200	*	*	*	*	*	*	*	<200	<200	<200	2,900	4,100
TPH C ₉ - C ₁₀ Aromatic	µg/m ³	100	*	*	*	*	*	*	*	<100	<100	<100	390	<100
TPH C ₉ - C ₁₂ Aliphatic	µg/m ³	50	*	*	*	*	*	*	*	<50	<50	<50	310	<50
BTEX														
Benzene	µg/m ³	1.6	*	*	1,000	15,000	5,000	80,000	*	<1.6	<1.6	<1.6	6	2
Toluene	µg/m ³	1.9	*	*	1,600,000	23,000,000	6,500,000	100,000,000	*	<1.9	3	2	81	36
Ethylbenzene	µg/m ³	2.2	*	*	420,000	6,800,000	1,800,000	31,000,000	*	<2.2	<2.2	<2.2	20	3
Xylene (m & p)	µg/m ³	4.3	*	*	*	*	*	*	*	<4.3	<4.3	<4.3	40	10
Xylene (o)	µg/m ³	2.2	*	*	*	*	*	*	1,000	<2.2	<2.2	<2.2	31	6
PAH														
Naphthalene	µg/m ³	2.6	*	*	1,000	20,000	4,000	85,000	*	<2.6	<2.6	<2.6	7	<2.6
Chlorinated Hydrocarbons														
Tetrachloroethene	µg/m ³	3.4	2,000	8,000	*	*	*	*	*	<3.4	<3.4	<3.4	<3.4	<3.4
Trichloroethene	µg/m ³	2.7	20	80	*	*	*	*	*	<2.7	<2.7	<2.7	<2.7	<2.7
1,1-dichloroethene	µg/m ³	2	*	*	*	*	*	*	2,100	<2	<2	<2	<2	<2
cis-1,2-dichloroethene	µg/m ³	2	80	300	*	*	*	*	*	<2	<2	<2	<2	<2
trans-1,2-dichloroethene	µg/m ³	2	*	*	*	*	*	*	*	<2	<2	<2	<2	<2
Vinyl chloride	µg/m ³	1.3	30	100	*	*	*	*	*	<1.3	<1.3	<1.3	<1.3	<1.3
1,1,1-trichloroethane	µg/m ³	2.7	60,000	230,000	*	*	*	*	*	<2.7	<2.7	<2.7	<2.7	<2.7
1,1,2,2-tetrachloroethane	µg/m ³	3.4	*	*	*	*	*	*	4.8	<3.4	<3.4	<3.4	<3.4	<3.4
1,1,2-trichloroethane	µg/m ³	2.7	*	*	*	*	*	*	2.1	<2.7	<2.7	<2.7	<2.7	<2.7
1,1-dichloroethane	µg/m ³	2	*	*	*	*	*	*	180	<2	<2	<2	<2	<2
1,2-dichloroethane	µg/m ³	2	*	*	*	*	*	*	11	<2	<2	<2	<2	<2
1,2-dichloropropane	µg/m ³	2.3	*	*	*	*	*	*	4.2	<2.3	<2.3	<2.3	<2.3	<2.3
Benzyl chloride	µg/m ³	2.6	*	*	*	*	*	*	5.7	<2.6	<2.6	<2.6	<2.6	<2.6
Bromodichloromethane	µg/m ³	3.4	*	*	*	*	*	*	7.6	<3.4	<3.4	30	3	5
Bromoform	µg/m ³	5.2	*	*	*	*	*	*	260	<5.2	<5.2	<5.2	<5.2	<5.2
Carbon tetrachloride	µg/m ³	3.1	*	*	*	*	*	*	47	<3.1	<3.1	<3.1	<3.1	<3.1
Chlorodibromomethane	µg/m ³	1.6	*	*	*	*	*	*	*	<1.6	<1.6	<1.6	<1.6	<1.6
Chloroethane	µg/m ³	1.3	*	*	*	*	*	*	100,000	<1.3	<1.3	<1.3	<1.3	<1.3
Chloroform	µg/m ³	2.4	*	*	*	*	*	*	12	<2.4	<2.4	190	26	20
Chloromethane	µg/m ³	1	*	*	*	*	*	*	940	<1	<1	<1	<1	<1
cis-1,3-dichloropropene	µg/m ³	2.3	*	*	*	*	*	*	70	<2.3	<2.3	<2.3	<2.3	<2.3
trans-1,3-dichloropropene	µg/m ³	2.3	*	*	*	*	*	*	70	<2.3	<2.3	<2.3	<2.3	<2.3
Dichloromethane	µg/m ³	20	*	*	*	*	*	*	6,300	<17	<17	<17	<17	<17
Hexachlorobutadiene	µg/m ³	5.3	*	*	*	*	*	*	13	<5.3	<5.3	<5.3	<5.3	<5.3
MAH														
1,2,4-trimethylbenzene	µg/m ³	2.5	*	*	*	*	*	*	630	<2.5	<2.5	<2.5	75	4
1,3,5-trimethylbenzene	µg/m ³	2.5	*	*	*	*	*	*	630	<2.5	<2.5	<2.5	46	<2.5
1-methyl-4 ethyl benzene	µg/m ³	2.5	*	*	*	*	*	*	*	<2.5	<2.5	<2.5	10	<2.5
Styrene	µg/m ³	2.1	*	*	*	*	*	*	10,000	<2.1	<2.1	<2.1	<2.1	<2.1
VOCS														
1,3-Butadiene	µg/m ³	1.1	*	*	*	*	*	*	9.4	<1.1	<1.1	<1.1	<1.1	<1.1
Acrolein	µg/m ³	1.1	*	*	*	*	*	*	0.21	<1.1	<1.1	<1.1	<1.1	<1.1
Acrylates														
Methyl Methacrylate	µg/m ³	2	*	*	*	*	*	*	7,300	<2	<2	<2	<2	<2
NA														
Freon 114	µg/m ³		*	*	*	*	*	*	*	<2.5	<2.5	<2.5	<2.5	<2.5
Freon 113	µg/m ³	3.8	*	*	*	*	*	*	*	<3.8	<3.8	<3.8	<3.8	<3.8
Propene	µg/m ³	0.9	*	*	*	*	*	*	31,000	<0.9	<0.9	<0.9	400	290
Halogenated Benzenes														
1,2,4-trichlorobenzene	µg/m ³	3.7	*	*	*	*	*	*	21	<3.7	<3.7	<3.7	<3.7	<3.7
1,2-dichlorobenzene	µg/m ³	3	*	*	*	*	*	*	2,100	<3	<3	<3	<3	<3
1,3-dichlorobenzene	µg/m ³	3	*	*	*	*	*	*	*	<3	<3	<3	<3	<3
1,4-dichlorobenzene	µg/m ³	3	*	*	*	*	*	*	26	<3	<3	<3	<3	<3
Chlorobenzene	µg/m ³	2.3	*	*	*	*	*	*	520	<2.3	<2.3	<2.3	<2.3	<2.3
Halogenated Hydrocarbons														
1,2-dibromoethane	µg/m ³	3.8	*	*	*	*	*	*	0.47	<3.8	<3.8	<3.8	<3.8	<3.8
Bromomethane	µg/m ³	1.9	*	*	*	*	*	*	52	<1.9	<1.9	<1.9	<1.9	<1.9
Dichlorodifluoromethane	µg/m ³	2.5	*	*	*	*	*	*	1,000	<2.5	<2.5	<2.5	<2.5	2
Trichlorofluoromethane	µg/m ³	2.8	*	*	*	*	*	*	*	<2.8	<2.8	<2.8	<2.8	<2.8
General Gases														
Carbon Dioxide	% by Vol	0.01	*	*	*	*	*	*	*	1.3	0.73	0.61	6.8	11
Oxygen	% by Vol	0.01	*	*	*	*	*	*	*	19	19	20	3.4	7.5
Methane	%		*	*	*	*	*	*	*	<0.01	<0.01	<0.01	0.3	<0.01
Hydrogen sulfide	µg/m ³	7	*	*	*	*	*	*	21	-	-	-	<7	-
Solvents														
1,4-Dioxane	µg/m ³	1.8	*	*	*	*	*	*	56	<1.8	<1.8	<1.8	<1.8	<1.8
Methyl Ethyl Ketone	µg/m ³	1.5	*	*	*	*	*	*	52,000	<1.5	<1.5	<1.5	<1.5	7
2-hexanone (MBK)	µg/m ³	2	*	*	*	*	*	*	310	<2	<2	<2	<2	<2
4-Methyl-2-pentanone	µg/m ³	2	*	*	*	*	*	*	31,000	<2	<2	<2	<2	<2
Acetone	µg/m ³	11.9	*	*	*	*	*	*	320,000	<12	20	<12	20	50
Carbon disulfide	µg/m ³	1.6	*	*	*	*	*	*	7,300	<1.6	<1.6	<1.6	94	43
Cyclohexane	µg/m ³	1.7	*	*	*	*	*	*	63,000	<1.7	<1.7	<1.7	37	72
Ethanol	µg/m ³	9	*	*	*	*	*	*	*	<9.4	70	10	<9.4	<9.4
Ethyl acetate	µg/m ³	1.8	*	*	*	*	*	*	730	<1.8	<1.8	<1.8	<1.8	<1.8
Heptane	µg/m ³	2	*	*	*	*	*	*	4,200	<2	<2	<2	29	5
Hexane	µg/m ³	1.8	*	*	*	*	*	*	7,300	3	10	<1.8	130	150
MTBE	µg/m ³	1.8	*	*	*	*	*	*	1,100	<1.8	<1.8	<1.8	<1.8	<1.8
Isopropyl alcohol (2-Propanol)	µg/m ³	12	*	*	*	*	*	*	2,100	<12	<12	20	390	90
Tetrahydrofuran	µg/m ³	1.5	*	*	*	*	*	*	21,000	<1.5	<1.5	<1.5	<1.5	<1.5
Vinyl acetate	µg/m ³	1.8	*	*	*	*	*	*	2,100	<1.8	<1.8	<1.8	<1.8	<1.8

Notes

- LOR = Limit of Reporting
<## Result is less than the LOR
* No Relevant Criteria
- Analysis not performed
1 - NEPM 2013 - Interim Health Investigation Levels: Residential A (Low density), Residential B (Medium/High Density) and Commercial/Industrial D (Table 1A(2)).
2 - NEPM 2013 - Health Screening Levels: Residential A (Low density), Residential B (Medium/High Density) and Commercial/Industrial D (Table 1A(5)).
3 - USEPA May 2018 - Regional Screening Levels: Resident Air THQ=0.1. *Carcinogenic screening levels in italics.*