PHASE 2 ENVIRONMENTAL SITE ASSESSMENT

Black Mountain Peninsula
Acton ACT 2601
(Blocks 11, 12 and 13 Section 67, Acton)

January 2015

Client: Rowing ACT
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EXECUTIVE SUMMARY

Rowing ACT engaged Robson Environmental Pty Ltd (Robson) in April 2014 to undertake a Phase 2 environmental site assessment (ESA) at the site located on the Black Mountain Peninsula at Blocks 11, 12 and 13, Acton ACT 2602, herein referred to as 'the site'. The site is located on the western side of Black Mountain Peninsula, a peninsula that extends to the south into Lake Burley Griffin. The site contains three (3) blocks having a combined area of approximately 2,808 square metres (m^2). The site is comprised of an open area vegetated with grass and trees, with a portion of the site (east side) being crossed by an asphalt bike / walking path. Street frontage and vehicle access to the site is via John Cardiff Close which is located along the east site boundary. The shoreline of Lake Burley Griffin is located approximately 16 metres (m) west of the site.

Robson previously undertook a Phase 1 ESA of the site, the results of which were discussed in the assessment report titled '*Phase 1 Environmental Site Assessment, Black Mountain Peninsula, Acton ACT 2601 (Blocks 11, 12 and 13, Section 67, Acton),* (Robson reference 9605_EAR_P1ESA_20140804, dated 8 April 2014), In this report, Robson concluded that there were two (2) areas of environmental concern (AECs) that could compromise the suitability of the site (from an environmental perspective) for the proposed land use. The AECs include a historic municipal landfill, and an area impacted by builder's rubble (including asbestos) and household rubbish.

Consequently, a Phase 2 ESA was undertaken on 10 September 2014 to assess the site for suitability (from an environmental perspective) compatible with its current zoning of '*Open Space*' which was determined by the NCA. It is noted that Rowing ACT plans to build a boat shed, storage shed and administration building on the site. The assessment works were undertaken in general accordance with the ACT legislation and ACT EPA endorsed guidelines.

The objective of the Phase 2 ESA was to assess the soil within the Site for potential contaminants of concern commonly associated with landfill materials (known to be present adjacent the site) to determine whether the site would be suitable for its current site use as 'Open Space' (ASC NEPM HIL 'C').

In summary, the assessment comprised the following:

- Fieldwork including the excavation, logging, and collection of eighteen (18) primary soil samples, and two (2) triplicate samples from nine (9) test pits (TP);
- Laboratory analysis of selected soil samples for contaminants of potential concern (COPC);
- Review and interpretation of the field and laboratory results.

Based on the results of the field works and laboratory analysis, Robson concludes the following:

- The general soil texture consisted of brown silty clay topsoil from 0 to approximately 0.2 metres below ground level (mbgl). The topsoil was underlain

by orange brown clayey sand fill to a depth of between 1 and 3 mbgl. The colour of the clayey sand graded to grey with depth. The clayey sand fill contained varying amounts of anthropogenic landfill material such as ash, slag, glass, metal, wood, bone, organic material and fabric. The anthropogenic landfill material composed approximately 40% of the fill material in test pit (TP) TP-9. Groundwater was encountered at depths ranging between 1 and 1.7 mbgl in test pits TP-2, TP-4, TP-6, TP-7, TP-8 and TP-9;

- A rotting organic odour was observed in test pit TP-7 at a depth of 1 mbgl. No odours were observed at the other test pit locations;
- The results of the photoionisation detector (PID) screening of the soil samples indicated negligible potential for the presence of volatile ionisable hydrocarbon species;
- Air monitoring did not detect asbestos fibres during the field work at the site;
- Fragments of asbestos containing material (ACM) were observed in test pits TP1 (1.9-2.0) and TP5 (0.4-0.5), located near the northeast and southeastern areas of the site, respectively. The asbestos fragment from test pit TP1 (1.9-2.0) was composed of chrysotile, amosite and crocodilote asbestos fibres while the sample from test pit TP5 (0.4-0.5) was composed of chrysotile asbestos fibres. The soil concentration of bonded asbestos containing material (ACM) in soil exceeded the Assessment of Site Contamination National Environmental Protection Measure (ASC NEPM) 2013 criteria (0.02 % (weight / weight (w/w)) for parks, public open space and playing fields (Western Australia Department of Health (WADOH), 2009) in sample TP1 (1.9-2.0) but was not in TP5 (0.4-0.5). The ASC NEPM (2013) asbestos fines criteria (0.001 % w/w) was not exceeded in either sample;
- The analytes total recoverable hydrocarbons (TRH), benzene, toluene, ethylbenzene and xylenes (BTEX), polycyclic aromatic hydrocarbons (PAHs), phenols, pesticides, polychlorinated biphenyls (PCBs), volatile organic carbon (VOCs), metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc) were analysed in soil samples collected from the nine (9) test pits. None of these analytes exceeded the adopted assessment criteria;
- Based upon observations during the excavation of the test pits, ash, slag, glass, metal, wood, bone, organic material was present in eight (8) of the nine (9) test pits to a depth ranging between 0.1 and 3.0m, therefore it is concluded that the site is underlain by landfill material. This observation is consistent with previous observations of landfill material located to the north and south of the site.

Given that the landfill is so widespread and the nature of the surface rubbish would pose an aesthetic issue as opposed to a human health risk or environmental risk, remediation of the site is considered to be impractical. It is noted that the single occurrence of asbestos that exceeded the guideline was observed at a depth of 1.9-2.0 m in test pit TP1.

Based on the results of the assessment, Robson considers the site to be suitable for the proposed rowing facility and boat house provided the following conditions are met:

- Areas of high pedestrian traffic are sealed;
- A construction environmental management plan is prepared and endorsed by the ACT EPA prior to any construction activities at the site;
- A long term environmental management plan is prepared and endorsed by the ACT EPA prior to site occupancy. The EMP would be subject to an Environmental Protection Agreement with the ACT EPA.

Recommendations

To fulfil the conditions of the site suitability, Robson makes the following recommendations:

- To prevent exposure from the landfill material in the future, Robson recommends that areas where high traffic is anticipated (e.g around buildings etc.) are sealed surfaces (such as concrete or paving) in areas where there would be high pedestrian traffic to minimize exposure to asbestos or physical hazards such as glass found within the landfill material. Robson also recommends that the ground surface in areas between the boat houses and the water be sealed where users may access by foot;
- To manage the possible exposure risks to asbestos and other rubbish during the construction of the proposed boat shed, storage shed and administration building at the site a Contaminant Environmental Management Plan (CEMP) should be prepared and endorsed by the ACT EPA to provide information to workers about possible contamination on the site. The CEMP should provide an unexpected finds protocol and present information about managing contaminated soil and its associated risks;
- To manage risks to the public and workers at the site during future use of the site, Robson recommends that an Environmental Management Plan (EMP) be developed. The EMP will also provide a protocol for how the custodians of the site will respond to unexpected finds and will provide guidance on how to manage the long term risks associated with the asbestos and physical hazards associated with the landfill material observed at the site;
- To ensure the management provisions identified in the CEMP and EMP are legally enforced, Robson recommends that the site owners agree to enter an Environmental Protection Agreement with the ACT EPA.

INTRODUCTION

1.1 Background

Rowing ACT engaged Robson Environmental Pty Ltd (Robson) in April 2014 to undertake a Phase 2 environmental site assessment (ESA), of Blocks 11, 12 and 13, Section 67, Acton, Australian Capital Territory (ACT) (herein referred to as 'the site'). These three (3) blocks have a combined area of approximately 2,808 square metres (m^2). Each of the three (3) blocks is battle-axe in shape and accessed from John Cardiff Close. Further, Blocks 11 and 12 are adjacent to each other, while Block 13 is located in close proximity to the south of the other two (2) blocks, being separated by a portion of Block 17 Section 67 Acton. The location of the site is shown in **Figure 1** and the location of the blocks that comprise the site are shown in **Figure 2.**

Robson understands that the assessment is being undertaken as part of the required due diligence related to Rowing ACT's plan to build a boat shed, storage shed and administration building.

Robson previously undertook a Phase 1 ESA of the site, the results of which were discussed in the assessment report titled '*Phase 1 Environmental Site Assessment, Black Mountain Peninsula, Acton ACT 2601 (Blocks 11, 12 and 13, Section 67, Acton),* (Robson reference 9605_EAR_P1ESA_20140804, dated 8 April 2014), which is discussed in detail in **Section 3**.

The Phase 1 ESA identified two (2) areas of environmental concern (AECs) present on the site, each of which was assessed to have the potential to impact the suitability of the site, from a contamination perspective, for the current and future land uses. The two (2) AECs are the landfill containing household rubbish located northwest of the site (AEC 1) and the historic municipal landfill composed of builder's rubble located south of the site (AEC 2). The locations of the two (2) AECs are shown on **Figure 3**.

As a consequence of the recommendations of the Phase 1 ESA, Rowing ACT requested that Robson prepare a SAQP for a Phase 2 ESA to assess if the AECs have impacted the site. In July 2014, Robson completed the SAQP report which was titled '*Sampling and Analysis Quality Plan For a Phase 2 Environmental Site Assessment Black Mountain Peninsula Acton ACT 2601 (Blocks 11, 12 and 13 Section 67, Acton)*' (Robson reference 960501_EAR_SAQP_20140717, dated 17 July 2014). The SAQP was subsequently endorsed by the ACT EPA in a letter dated 23 July 2014 (**Appendix A**).The Phase 2 ESA assessment works, which included targeted soil sampling of the AECs identified during the previous Phase 1 ESA, were completed in general accordance with the following ACT EPA endorsed guidelines:

- ACT *Environment Protection Act 1997*;
- ACT *Environment Protection Regulation 2005*;

- ACT Environmental Protection Authority (EPA) (2009) '*Contaminated Sites – Environment Protection Policy*';
- National Environmental Protection Council (NEPC) (1999) '*National Environment Protection (Assessment of Site Contamination) Measure 1999*' (amended 2013, and herein referred to as ASC NEPM (2013));
- NSW EPA (1995) '*Sampling Design Guidelines*';
- NSW Office of Environment and Heritage (OEH) (OEH (2011) '*Guidelines for Consultants Reporting on Contaminated Sites*'.

1.2 Objective

The objective of the environmental works discussed in this report was to assess the suitability of the site from an environmental perspective, for the land use permitted by the current zoning.

1.3 Scope of Work

To assess the suitability of the site for the land uses permitted within the sites zoning, nine (9) test pits (TP1 to TP9) were excavated. The scope of work for the assessment of soil was as follows:

- Prepare a Safe Work Method Statement (SWMS) which was adhered to by Robson staff and sub-contractors undertaking works on the site;
- Engaged a Telstra accredited service locator to undertake an underground service location survey to clear the proposed test-pit locations for underground services (for example underground power, gas, water, communications etc.) prior to excavation of test pits for sampling purposes;
- Engaged a suitably qualified and licensed contractor to excavate test pits;
- Log and collect soil samples from nine (9) test pit locations across the site. The number of proposed sample locations was based upon a combined site area of 2,808 m^2 and Table A of the NSW EPA (1995) '*Sampling Design Guidelines*';
- Due to the potential for asbestos to be present while the soil is being disturbed, air monitoring was performed in accordance with the National Occupational Health and Safety (NOHSC):3003 (2005) '*Guidance Note on The Membrane Filter Method for Estimating Airborne Asbestos Fibres 2nd Edition'* ;
- Soil samples were collected from each test pit at the surface (or directly beneath concrete surfaces), at 0.5 mbgl, 1.0 mbgl and then each metre thereafter until the target depth, groundwater was encountered or refusal of the excavator;
- Field QA/QC samples were collected and analysed in general accordance with Australian Standard AS4482.1 '*Guide to the Investigation and Sampling of Sites with Potentially Contaminated Soil – Part 1: Non-Volatile and Semi-Volatile Compounds*';
- Duplicate soil samples were collected and field screened for volatile organic compounds (VOCs) using a photo-ionisation detector (PID);

- Soil samples were submitted to National Association of Testing Authorities (NATA) accredited laboratories for the analysis of samples in accordance with the sample plan presented in **Table K**;
- If ACM was not observed during the screening of the soil samples, soil samples from the same sample location were not analysed for asbestos. When ACM was detected during screening, the samples were analysed for friable asbestos;
- Preparation of this Phase 2 ESA report.

2 SITE DETAILS

2.1 Site Identification and Land Uses

General details regarding the site are summarised in **Table A** below.

Table A: Summary of Site Details.

Site Location	West side of Black Mountain Peninsula.
Client and Name of Site Lessee	Rowing ACT.
Block and Section	Blocks 11, 12 and 13; Section 67, Acton, ACT.
Site Zoning	According to the ACT Territory Plan which is administered by the ACT Planning and Land Authority (ACTPLA) and the ACTMapi website, the current zoning of the blocks forming the site is '*DES: Designated'* and is land which is administered by the National Capital Authority (NCA). Figure 17 (titled '*The Central National Area (Lake Burley Griffin & Foreshores)*') of the '*Consolidated National Capital Plan*' (NCA, 2012) indicates that the site is designated as 'Open Space'.
Site Area	According to the ACTPLA managed ACTMapi website (www.actmapi.act.gov.au), the total area of the site is approximately 2,808 m^2. The areas of the three (3) individual blocks comprising the site are: • Block 11 Section 67 – 1,089 m^2; • Block 12 Section 67 – 879 m^2; • Block 13 Section 67 – 840 m^2.
Site Assessor	Robson Environmental Pty Ltd Unit 1, 140 Gladstone Street Fyshwick ACT 2609
Current Site Use	Open space.
Proposed Site Use	Boat shed, storage shed and administration building.

2.2 Site Description

The site is made up of three (3) blocks and has a combined area of approximately 2,808 m^2. Each of the three (3) blocks is battle-axe in shape and accessed from John Cardiff Close. Further, Blocks 11 and 12 are adjacent to each other, while Block 13 is located in close proximity to the south of the other two (2) blocks, being separated by a portion of Block 17 Section 67, Acton.

The site is comprised of an open area vegetated with grass and trees, with a portion of the site (east side) being crossed by an asphalt bike / walking path. Street frontage and vehicle access to the site is via John Cardiff Close which is located along the east site boundary. The shoreline of Lake Burley Griffin is located approximately 16 metres (m) west of the site. A detailed site plan is provided in **Figure 2**.

2.3 Topography

Reference to the Land and Property Information New South Wales (2003) 1:25,000 scale Topographic & Orthophoto Map Sheet '*Canberra 8727-3N'* indicates that the site is on a peninsula at an elevation of approximately 560 m above Australian Height Datum (mAHD) within an area of relatively flat terrain which slopes slightly to the west. The nearest major water body is Lake Burley Griffin which is located approximately 16 m to the west of the site.

2.4 Geology

Reference to the Bureau of Mineral Resources, Geology and Geophysics (1992) 1:100,000 scale Geological Series Sheet '*Canberra*' (Sheet 8727, 1992), indicates that the site is underlain by both the Middle to Late Ordovician aged Pittman Formation, and the Early Silurian aged State Circle Shale. The Pittman Formation consists of inter-bedded sandstone, siltstone shale and minor black shale, chert and impure calcareous sandstone, whereas the State Circle Shale is comprised of shale, mudstone, siltstone, and minor sandstone. The contact between the two (2) formations is indicated to be an inferred fault trending across the Black Mountain Peninsula in a northwest - southeast orientation.

2.5 Hydrogeology

Reference to the Bureau of Mineral Resources, Geology and Geophysics (1984) 1:100,000 scale map of the '*Hydrogeology of the Australian Capital Territory and Environs'*, indicates that the water bearing units underlying the site exist within the Ordovician to late Early Silurian rocks described as quartz arenite, siltstone, shale, sandstone, greywacke, minor black shale, quartzite, chert and granitoids.

The map also indicates there is one (1) groundwater bore located approximately 1.5 kilometres (km) east of the site on Acton Peninsula, and another bore located approximately 1.5 km south of the site in the suburb of Yarralumla. No details regarding these bores were available.

The groundwater yield in this area is indicated to be less than 0.5 litres per second (L/sec*)* and 1.0 L/sec, and the quality of the groundwater is indicated to have a total dissolved solid (TDS) content of less than 500 milligrams per litre (mg/L).

The direction of groundwater flow is uncertain but it is expected to follow the natural regional topographic gradient to the west towards Lake Burley Griffin. Based on the proximity to Lake Burley Griffin, it is estimated that the depth to groundwater beneath the site is approximately 1 to 2 metres below ground level (mbgl).

3 BACKGROUND

One (1) previous environmental assessment was undertaken for the site, the results of which were documented in the report titled '*Phase 1 Environmental Site Assessment, Black Mountain Peninsula, Acton, ACT (Blocks 11, 12 and 13, Section 67, Acton*' (Robson reference 9605_EAR_P1ESA_20140804, dated 8 April 2014).

In that previous report, Robson concluded that there were two (2) AECs that could compromise the suitability of the site (from an environmental perspective) for the proposed land use. The AECs included a historic municipal landfill, and an area impacted by builder's rubble (including asbestos) and household rubbish. Information provided by the ACT Environment Protection Authority (EPA) indicates that the AECs are off-site but in close proximity. It is noted however that the boundaries of the impacted areas that were provided by the EPA were only '*inferred*', and the results of the other site history enquiries and the site walkover suggest that there is the potential for the AECs to extend onto the site. Even if the AECs do not directly extend onto the site, they may still act as a source for contamination to migrate onto the site via the movement of impacted soil, groundwater, surface water and vapours. Potential organic and inorganic contaminants associated with the AECs TRH, BTEX, PAHs, phenols, pesticides, PCBs, heavy metals and asbestos.

From the results of the Phase 1 ESA it was assessed that it was not possible to conclude whether or not the site was suitable (from a contamination perspective) for the proposed land use. As a result, several recommendations were provided relating to further environmental assessment and / or management of encountered contamination.

It was also noted that asbestos and household rubbish has been found associated with builder's waste to the south of the site, and an asbestos management plan (AMP) was prepared and implemented for development works in that area. Under the precautionary principle areas impacted by uncontrolled landfilling and dumping of waste would be considered potentially contaminated and should be subject to assessment and audit should development of the site be proposed. In light of this, Robson recommended that a Phase 2 intrusive investigation be undertaken to assess whether landfilling is present on the site, and if so, to assess the human health and environmental risks associated with such material. As a first step, this could be undertaken by excavating and sampling several test pits across the site and analysing soil samples for a broad screen of contaminants typically associated with landfill and waste material.

The report was reviewed and endorsed by the EPA in a letter dated 23 July 2014. A copy of the EPA review letter is provided in **Appendix A**.

4 DATA QUALITY OBJECTIVES

The DQO process is a seven (7) step process used to aid the planning of environmental investigations by providing a structured methodology for assessing the environmental data collection processes, identification of sample locations, number of samples required, sampling techniques and defining acceptable assessment criteria.

The DQO process applied to this SAQP has been prepared in general accordance with the Appendix B of Schedule B2 of the ASC NEPM (2013), Appendix C of the Australian Standard AS4482.1-2005 '*Guide to the Investigation and Sampling of Sites with Potentially Contaminated Soil – Part 1: Non-Volatile and Semi-Volatile Compounds*', and the United States Environmental Protection Agency (US EPA, 2000) '*Data Quality Objectives Process for Hazardous Waste Site Investigation*' (US EPA QA/G-4HW).

4.1 State the Problem

Description of the Problem

The Robson Phase 1 ESA identified two (2) AEC's adjacent to the site, which are summarised below in **Table B**. The objective of the proposed Phase 2 ESA is to assess whether contaminants are present at the site, and if so whether further investigation and / or remediation is warranted.

Table B: Summary of AECs Identified by Robson.

AEC	Description
AEC 1	An historic municipal landfill that is located offsite to the northwest.
AEC 2	An area impacted by builder's rubble (including asbestos) and household rubbish located south of the site.

Project Team

A summary of the project team is presented overleaf in **Table C**.

Table C: Project Team.

Organisation	Contact	Contact number		Role
		Office	Mobile	
Rowing ACT	Michael Cusack	-	0406 376 666	Client representative
Robson	Andrew Roberts	6171 4641	0437 009 369	Phase 2 ESA Field Investigation
Robson	Mark Laidlaw	6171 4641	0481 382 074	Preparation of SAQP, and Phase 2 ESA Project Management and Reporting
Robson	Ben Kendon	6171 4623	0437 008 278	Report Reviewing

4.2 Identify the Decision / Goal of the Study

The previous Phase 1 ESA identified AECs with the potential to impact the suitability of the site (from an environmental perspective) for the land uses compatibly with its current zoning of '*Open Space*' which was determined by the NCA. It is noted that the current owner plans to build a boat shed, storage shed and administration building on the site.

The principal study questions for the proposed detailed assessment works are:

- *Has the suitability of the site (from an environmental perspective) been impacted by previous site usages, and if so has the impact been adequately characterised?*
- *If contamination is identified then do the concentrations of contaminants present a health and / or environmental risk to potential on-site and off-site receptors?*

The alternative actions in response to these questions are:

- *The environmental impacts from previous site usages have been adequately characterised, and the contamination present (if any) does not present a health and / or environmental risk to potential on-site and off-site receptors*;
- *The environmental impacts from previous site usages have been adequately characterised, and the contamination identified presents an unacceptable risk to human health and/or the environment, and further assessment and / or remediation may be required*;

- *The information is insufficient to characterise the environmental impacts from previous site usages and / or to determine if the contaminants identified pose an unacceptable risk to human health and / or the environment, and further assessment may be required*.

4.3 Identify the Information Inputs

Data Inputs

A variety of data inputs have been identified to allow an informed and measured decision regarding the proposed investigative works to assess the suitability of the site. A summary of the considered inputs is provided below in **Table D**.

Table D: Identified Data Inputs for the Assessment.

Data Input	Adequacy of Information
Identification of AEC's	**Adequate** – AECs include the following: • AEC 1 – An historic municipal landfill that is located offsite to the northwest; • AEC 2 – An area impacted by builder's rubble (including asbestos) and household rubbish located south of the site. There is a potential of either of the AEC's to extend onto the site.
Potential Off-site Sources of Impact	**Adequate** – Both AEC 1 and AEC 2 are potential off-site sources.
Identification of Contaminants	**Adequate** – With regards to AECs 1 and 2, it is considered that a broad screen of potential organic and inorganic contaminants should be assessed for (that is, TRH, BTEX, PAHs, phenols, pesticides, PCBs, metals and asbestos).
Quantification of Contaminants in Soil	**Inadequate** – There is uncertainty regarding the lateral and vertical extent of soil impacts (if any) at the site.

Site Assessment Criteria

Based upon the identified goal of the assessment, it is considered that the applicable criteria to be used during the soil assessment are those sourced from the ASC NEPM (2013).

According to the ACT Territory Plan and the ACTMapi website which is administered by the ACTPLA, the current zoning of the blocks forming the site is '*DES: Designated'* and is land which is administered by the NCA. Figure 17 (titled '*The Central National Area (Lake Burley Griffin & Foreshores)*') of the '*Consolidated National Capital Plan*' (NCA, 2012) indicates that the site is designated as '*Open Space*'.

With regards to Table 1A(1), Schedule B1 of the ASC NEPM (2013), the applicable 'health-based investigation levels' (HIL) are considered to be HIL 'C' *'public open space such as parks, playgrounds, playing fields, secondary schools and footpaths'.*

With regards to Table 1A(3), Schedule B1 of the NEPM ASC (2013) the 'health screening levels' (HSLs) that are appropriate are using the '*Recreational Open Space*' (HSL C) exposure setting.

With regards to Table 1 B(7) Schedule B1 of the ASC NEPM (2013), the 'management limits' (ML) for petroleum hydrocarbon compounds for the '*residential, parkland and public open space*' were also considered applicable.

With regards to Table 7 Schedule B1 of the ASC NEPM (2013), the levels for asbestos contamination in soil were selected using the '*Recreational C'* exposure setting.

A summary of the proposed soil assessment criteria are presented below in **Table E**. Note that some of the assessment criteria for the ecological investigation levels (EILs), ecological screening levels (ESLs), health screening levels (HSLs) and management levels (MLs) presented in the ASC NEPM (2013) are dependent on site specific physiochemical parameters and cannot be presented until the physiochemical site specific parameters have been assessed during the proposed site investigation.

Table E: Proposed Soil Assessment Criteria.

Analyte	HIL C [1] (mg/kg)	HSL C [2] (mg/kg)	ML [3] (mg/kg)
Asbestos[4]			
Bonded ACM	0.02 % w/w	NA	NA
FA and AF	0.001 %	NA	NA
Organics			
Toluene	NA	NL	NE
Ethylbenzene	NA	NL	NE
Xylene	NA	NL	NE
Napthalene	NA	NA	NA
Benzene	NA	NL	NA

Analyte	HIL C [1] (mg/kg)	HSL C [2] (mg/kg)	ML [3] (mg/kg)
F1 (TRH C_6-C_{10} minus BTEX)	NA	NL	700
F2 (TRH >C_{10} –C_{16} minus naphthalene)	NA	NL	1,000
F3 (>C_{16}-C_{34})	NA	NA	2,500
F4 (>C_{34}-C_{40})	NA	NA	10,000
DDT + DDE + DDD	400	NA	NA
DDT	NA	NA	NA
Aldrin and dieldrin	10	NA	NA
Chlordane	70	NA	NA
Endosulfan	340	NA	NA
Endrin	20	NA	NA
Heptachlor	10	NA	NA
HCB	10	NA	NA
Methoxychlor	400	NA	NA
Carcinogenic PAHs (as B(a)P TEQ)	3	NA	NA
Total PAHs	300	NA	NA
Phenol	40,000	NA	NA
PCBs (Sum of total)	1	NA	NA
Inorganics			
Arsenic	300	NA	NA

Analyte	HIL C [1] (mg/kg)	HSL C [2] (mg/kg)	ML [3] (mg/kg)
Cadmium	90	NA	NA
Chromium (VI)	300	NA	NA
Chromium (III)	NA	NA	NA
Copper	17,000	NA	NA
Lead	600	NA	NA
Mercury	80	NA	NA
Nickel	1,200	NA	NA
Zinc	30,000	NA	NA

Notes: NE: Not established, mg/kg = milligrams per kilogram, w/w = weight per weight, FA = fibrous asbestos, AF = asbestos fines, B(a)P = Benzo(a)pyrene, TEQ = toxicity equivalent quotient, NA = Not Applicable, ACM = asbestos containing material, mg/kg = milligrams per kilogram, % percent, w/w weight per weight, NL = Non Limiting.

1. ASC NEPM (2013), Table 1A(1) – '*Health investigation levels for soil contaminants'* - HIL-C Recreational C exposure setting.

2. ASC NEPM (2013), Table 1A(3) – '*Soil HSLs for vapour intrusion'* - HSL-C Recreational / Open Space exposure setting. Site-specific texture.

3. ASC NEPM (2013), Table 1B(7) – '*Management Limits for TPH fractions F1-F4 in soil'* Residential, parkland and public open space exposure setting. Site specific texture.

4. ASC NEPM (2013), Table 7 – '*Health screening levels for asbestos contamination in soil'* Recreational C exposure setting.

Note that the EIL guidelines are not being adopted because the site is located in the middle of a landfill and the intended use of the site is to build a boat shed, storage shed and administration building on a cement slab. The land-use at the site has previously been used as parkland and the landfill does not appear to have impacted the ecological functioning of the site as evidenced by healthy vegetation and abundant wildlife.

4.4 Define the Study Boundaries

Site Boundaries

The site is located in Blocks 11, 12 and 13 Section 67, Acton, ACT and has a combined area of approximately 2,808 m^2. Each of the three (3) blocks is battle-axe in shape being accessed by John Cardiff Close. Further, Blocks 11 and 12 are

adjacent to each other, while Block 13 is located in close proximity to the south of the other two (2) blocks, being separated by a portion of Block 17 Section 67, Acton.

Lateral Boundaries of AECs

Advice provide by the EPA indicates that the AECs are off-site but in very close proximity to the site (**Figure 3**). It is also noted that the boundaries of the AECs that were provided by the EPA were only 'inferred', and the results of the other site history enquiries and the site walkover suggest that there is the potential for the AECs to actually extend onto the site. Even if the AECs do not directly extend onto the site, they may still act as a source or contamination to migrate onto the site via the movement of impacted soil, groundwater, surface water and vapours.

This assessment is focussed towards the assessment of soil. The assessment of soil vapour and / or groundwater would occur at a later date if warranted.

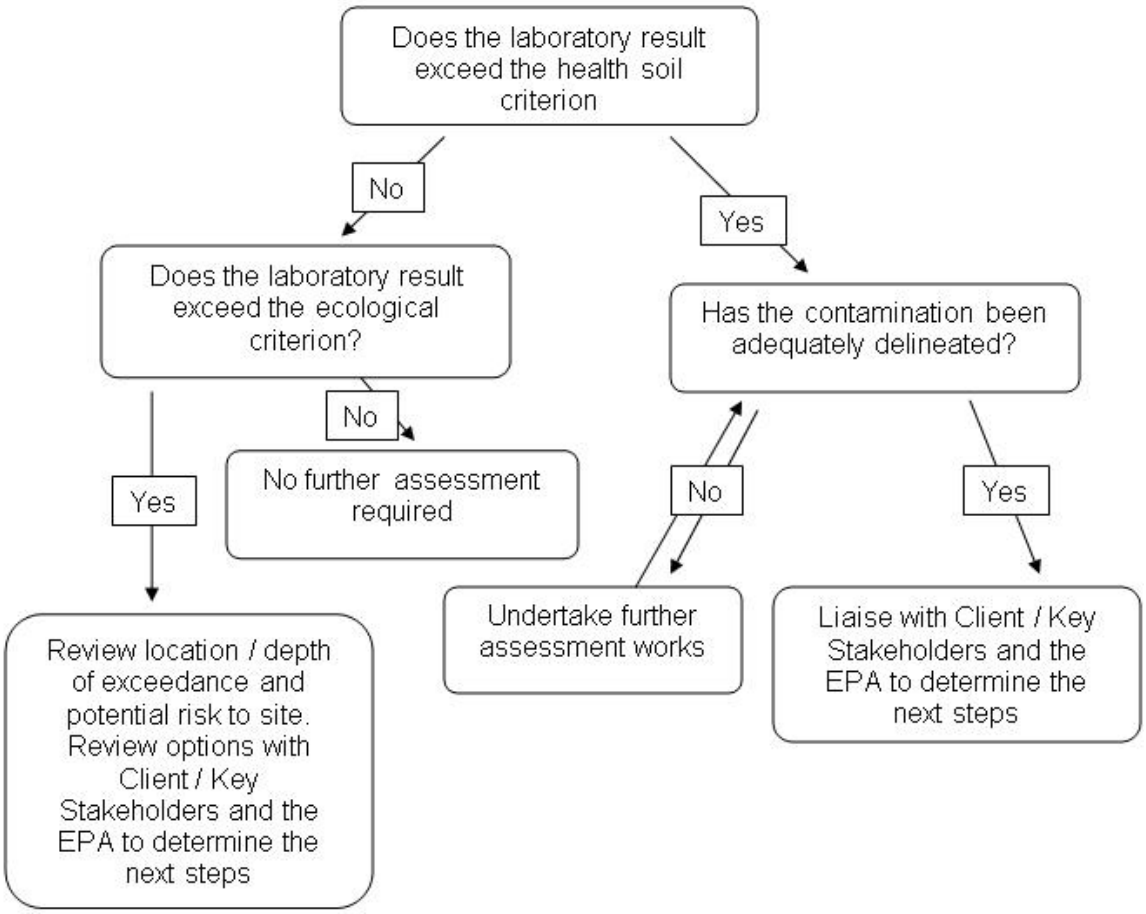
Vertical Boundaries of AECs

Test pit excavations indicate that landfill fill material was present to a depth of at least 3.0 mbgl. The groundwater table was encountered at depths between 1.0 mbgl and 1.8 mbgl. Therefore, a large portion of the landfill material is saturated. The maximum vertical extent of the landfill material below a depth of 3.0 m has not been defined.

4.5 Establish the Analytical Approach / Decision Rule

Comparison of Laboratory Results Against Adopted Criteria

The decision rule for the comparison of laboratory analytical results with the proposed assessment criteria is presented overleaf in the following flow chart:



Statistical Analysis

In addition to the above, it is proposed to statistically analyse the soil laboratory results by calculating the 95 percent (%) upper confidence limit (UCL) for each analyte with concentrations above the laboratory limit of reporting (LOR) to assess the suitability of the site. The statistical analysis would be undertaken with the aid of the US EPA developed statistical program ProUCL (v4.0).

For the site to be considered suitable for the proposed land use, the following statistical rules are applicable:

- The calculated 95 % UCL must be less than the respective health-based investigation criteria for each contaminant of potential concern;
- No individual value shall exceed 250 % of the respective health-based investigation criteria;
- The calculated standard deviation (SD) for the site would be less than 50 % of the respective health-based investigation criteria;
- The population of data shall originate from the same stratigraphic horizon (for example samples collected from fill material would not be used to calculate the 95% UCL of natural material and vice versa);
- A minimum of ten (10) samples would be used to calculate the 95% UCL.

In the event that sample results do not conform to the above rules, a more detailed assessment of the results would be undertaken. The proposed actions should samples not conform are presented below in **Table F**.

Table F: Proposed Actions Should Soil Samples Not Conform to the Rules for the Calculation of the 95% UCL.

Rule	Action
Sample value greater than 250 % of the site assessment criteria	Further sampling of the area where the exceedance occurs to delineate the extent of potential contamination may be required. Remediation of the area may also be required.
SD greater than 50 % of the site assessment criteria	Further assessment of areas where the difference between the concentration of a contaminant and arithmetic mean of the contaminant are greatest. Further sampling and remediation may be required.
95 % UCL greater than site assessment criteria	Further assessment of areas where the greatest contaminant concentrations were located. Additional sampling or remediation may be required.

4.6 Specify the Performance or Acceptance Criteria

Identification of Decision Errors

Two (2) primary decision errors may occur which would affect the outcome of the assessment. The errors and their associated consequences are presented in **Table G** below.

Table G: Identified Decision Errors and Associated Consequences.

Error	Consequences
Contamination, either identified or not identified, is assessed to not affect site suitability for the proposed land use when it actually does.	Contamination is present on-site and / or off-site that may pose a risk to human health and / or the environment.
Contamination is assessed to adversely affect site suitability for the proposed land use when it actually does not.	Financial consequences associated with unnecessary assessment, management and / or remediation works.

The consequences of assessing the site as suitable when it is in fact unsuitable is considered to be more significant than the consequences if the site was assessed as unsuitable when it was in fact suitable.

Factors that may contribute to the above decision error include:

- Sampling design errors – may be attributed to too few sample locations, inappropriate sample locations, high variability of the contaminant dispersion or volatile loss due to the disturbed nature of the sample;
- Measurement errors – may be attributed to inadequately calibrated field meters, poor sampling methods, sample collection techniques, poor sample handling, poor sample preparation or analytical errors;
- Interpretive error – data is interpreted incorrectly.

The strategy to minimise the risk of a decision error from occurring is presented below in **Table H**.

Table H: Strategy for Minimising the Risk of a Decision Error from Occurring.

Factor Contributing to Error	Type of Error	Actions to Minimise Risk of Occurring
Sample Design Error	Insufficient Sampling	Sampling design to be conducted in general accordance with the ASC NEPM (2013) and the NSW EPA (1995) '*Sampling Design Guidelines*'. A summary of the number of samples proposed is presented in **Table K** of **Section 5.2**.
	Contaminant Variability	Appropriate number of primary and QA/QC samples to be collected in accordance with the ASC NEPM (2013) and AS4482.1-2005 '*Guide to the investigation and sampling of sites with potentially contaminated soil – Part 1: Non-volatile and semi-volatile compounds*'.
	Sampling for Inappropriate Analytes	Soil and QA/QC water samples will be analysed in accordance with the ASC NEPM (2013) guidelines.
	Incorrect Sampling Method	Soil samples will be collected in accordance with ACT EPD referenced guidelines including the ASC NEPM (2013) and AS4482.1-2005.
	Sample Collection Techniques	Soil samples will be collected in accordance with ACT EPD referenced guidelines including the ASC NEPM (2013) and AS4482.1-2005.
	Volatile Loss	Soil samples will be immediately placed into clean laboratory supplied glass jars, sealed with teflon-lined lids and stored in an ice cooled container.

Factor Contributing to Error	Type of Error	Actions to Minimise Risk of Occurring
	Poor Sample Handling	Samples to be stored and transported in ice cooled eskies under Chain of Custody (COC) conditions immediately after collection.
	Poor sample preparation and analytical error	Field QA/QC duplicate and triplicate samples to be collected to assess reproducibility of sample results. Laboratory QA/QC to be reviewed to assess laboratory quality.
	Failure to use a NATA accredited lab	A National Association of Testing Authorities (NATA) accredited lab will be used to analyse all samples.
Interpretive Error	Incorrect interpretation leading to error	All reports and correspondence to be peer reviewed, and final report to be reviewed and endorsed by the EPA.

Evaluation of Assessment Criteria

Envirolab Pty Ltd (Envirolab) is the primary laboratory, while SGS is the secondary laboratory. Both laboratories are NATA accredited for the proposed analytical suite.

The LORs (also referred to as practical quantitation limits (PQL) for the analytical methods used by the laboratory were compared with the proposed assessment criteria. This was to ensure that the assessment criteria values exceeded the laboratory LOR. The results of the comparison are presented below in **Table I** for soil. In summary, with the exception of asbestos the LORs were below the adopted assessment criteria.

Table I: Comparison of the Laboratory LOR with the Proposed Assessment Criteria.

Analyte	Laboratory LOR (mg/kg)	Assessment Criteria [1] (mg/kg)
Asbestos		
FA and AF	0.1 g/kg	0.001 %
Organics		
F1 (TRH C_6-C_{10} minus BTEX)	25	700
F2 (TRH >C_{10} –C_{16} minus naphthalene)	50	1,000

Analyte	Laboratory LOR (mg/kg)	Assessment Criteria [1] (mg/kg)
F3 ($>C_{16}$-C_{34})	100	2,500
F4 ($>C_{34}$-C_{40})	100	10,000
DDT + DDE + DDD	0.1	400
Aldrin and dieldrin	0.1	10
Chlordane	0.1	70
Endosulfan	0.1	340
Endrin	0.1	20
Heptachlor	0.1	10
HCB	0.1	10
Methoxychlor	0.1	400
B(a)P	0.05	3
Carcinogenic PAHs (as B(a)P TEQ)	-	3
Total PAHs	1	300
Phenol	0.2	40,000
PCBs (Sum of total)	0.1	1
Inorganics		
Arsenic	4	300
Cadmium	0.4	90
Chromium (VI)	1	300
Chromium (III)	1	NA
Copper	1	17,000
Lead	1	600
Mercury	0.1	80
Nickel	1	1,200

Analyte	Laboratory LOR (mg/kg)	Assessment Criteria [1] (mg/kg)
Zinc	1	30,000

Notes: Lower of the criteria presented in **Table I**.

With regards to the above asbestos criteria, it is noted that the PQL for standard polarised-light microscopy (PLM) and dispersion staining analysis of asbestos in soil, as defined by Australian Standard AS4964-2004 '*Method for the Qualitative Identification of Asbestos in Bulk Samples*', is in the range 0.1 % to 0.01 % w/w. That is, the current NATA accredited PQLs exceed the guideline criteria and any reporting of concentrations below 0.01 % w/w will be outside the NATA conditions of accreditation. Although NATA may not consider such results reliable, it is nevertheless considered that results reported to concentrations below 0.01 % w/w will provide a useful indication of the level of asbestos contamination. It is further noted that the laboratories are required to state whether asbestos was detected or not detected, regardless of form. For the purpose of the assessment works, a precautionary approach will be adopted and a positive result will therefore be considered to indicate that the sample exceeds the 0.001% w/w criterion.

In addition, the standard laboratory analysis for chromium provides a total concentration (that is, the result is unspeciated for chromium (III) and chromium (VI)). As the adopted assessment criterion for chromium (VI) is 1 mg/kg, it is considered that should the measured concentration of total chromium exceed this, then the sample would be re-analysed and speciated to measure the chromium (VI) concentration.

Evaluation of Field Quality Control Samples

Results of duplicate and triplicate samples would be evaluated by calculating the relative percent difference (RPD) between the quality control sample and the related primary sample. The RPD is a method of normalising two (2) values and allow a comparison between values and represents the difference between the primary and QC sample, divided by the average of the two (2) results expressed as a percentage. The RPD is calculated with the following formula:

$$RPD = \frac{\text{Result No. 1} - \text{Result No.2}}{\text{Mean Result}} \times 100$$

Calculated RPD results would be considered acceptable when the value is less than 50%. Should the RPD value exceed 50%, then further investigation to the cause of the difference between the primary and QC results would be undertaken.

Rinsate samples assess the decontamination procedures used during the sample collection process. Laboratory results for the rinsate sample should be less than the LOR for each analyte.

The trip blank samples are used to assess the potential for volatile cross contamination during sample transportation decontamination. Similar to the rinsate samples, the laboratory results for the rinsate samples should be less than the LOR for each analyte.

Evaluation of Internal Laboratory QA/QC

Internal laboratory QA/QC results would be reviewed to assess the reliability of the analytical methods used and include the following samples:

- Laboratory surrogate spikes;
- Laboratory matrix spikes;
- Laboratory internal duplicate samples;
- Laboratory method blank samples.

The tolerances for the evaluation of the internal laboratory quality control samples are based on the laboratory's acceptance criteria. The tolerances for the laboratory quality control samples are summarised below in **Table J**.

Table J: Limits for the Assessment of Internal Laboratory Quality Control Samples.

Sample Type	Acceptable Limits
Surrogate Spikes	60% - 140%
Duplicate Sample	0% - 50% (if result is five (5) times greater than LOR)
Matrix Spikes	70% - 130% (metals) and 60% - 140% (organics)
Method Blanks	Less than LOR

Should the results of the internal laboratory QA/QC exceed the acceptable limits, then investigation of the laboratory methods would be undertaken to assess whether the reliability of laboratory results is compromised and how the laboratory results may affect the decision making process outcomes of the assessment.

4.7 Optimise the Plan for Obtaining Data

The aims of the proposed sample design are to assess for contamination associated with the two (2) identified AECs.

To meet the project objectives the following work was conducted:

- A Telstra accredited service locator undertook an underground service location survey to clear the proposed test-pit locations for underground services (for example underground power, gas, water, communications etc.) prior to excavation of test pits for sampling purposes;
- Air monitoring was performed in accordance with the National Occupational Health and Safety (NOHSC):3003 (2005) '*Guidance Note on The Membrane Filter Method for Estimating Airborne Asbestos Fibres 2nd Edition'* ;

- Nine (9) test pits were excavated across the site using a back-hoe to a maximum depth of 3 m. Each test pit was excavated to a depth of at least 1 m below observed contamination (where possible), or until bedrock or the water table was encountered, whichever was shallower. The maximum depth target depth for each test pit was 3 mbgl (practical extent of excavator arm). The number of proposed sample locations was based upon a combined site area of 2,808 m^2 and Table A of the NSW EPA (1995) '*Sampling Design Guidelines*';
- Soil samples were collected from each test pit at the surface (or directly beneath concrete surfaces), at 0-0.1 mbgl, 0.5 mbgl, 1.0 mbgl and then each metre thereafter until the target depth or refusal of the excavator / hand auger method;
- Two primary (2) soil samples were collected per test pit and were submitted to NATA accredited laboratories and submitted for laboratory analysis of asbestos (as required), TRH, BTEX, PAHs, polychlorinated PCBs, phenols, OCPs, and eight (8) metals. Only one (1) soil sample per test pit was analysed for VOCs. Soil samples were collected and field screened for VOCs using a photo-ionisation detector (PID);
- Two (2) soil triplicates, one (1) rinsate, and one (1) trip blank (quality assurance / quality control (QA/QC) samples) were collected;
- If ACM was not observed during the screening of the soil samples, soil samples from the same sample location were not analysed for asbestos. When ACM was observed during screening, the samples were analysed for asbestos fines (AF) and friable asbestos (FA);

With regards to sampling of soil material for asbestos, the sampling methodology was undertaken in accordance with Section 4.10, Schedule B1 and Section 11, Schedule B2 of the ASC NEPM (2013), and Section 4.1 of the WA Guidelines. In summary, one (1) 10 litre (L) sample was collected be collected from each sample depth, with discretionary samples from other suspected spots. The sample was sieved through a 7 mm sieve. Identified ACM and FA were collected and weighed, and the asbestos concentration in soil at each location was calculated using the formula:

$$\% \text{ Soil Asbestos} = \frac{\% \text{ Asbestos Content} \times \text{ACM (kg)}}{\text{Soil Volume (L)} \times \text{Soil Density (kg/L)}}$$

To assess for AF, at each sample location one (1) wetted 500 mL volume sample would was collected and placed within a zip-lock plastic bag. This bag was then placed into another bag (that is, double bagged). These samples were then dispatched to NATA accredited laboratory for analysis for asbestos in accordance with procedures outlined in Section 4.1.8 of the WA Guideline.

A summary of the proposed sample and analysis plan is presented in **Table K** in **Section 5.1**.

5 FIELDWORK AND LABORATORY ANALYSIS

5.1 Sampling Methods

Soil samples were collected in general accordance with Robson Standard Operating Procedure (SOP) *'Soil Sampling and Logging'* (EAR-SOP003). In general, each of the sample locations was excavated to the groundwater table, or a depth of 3 m, whichever came first. At each sample location, primary soil samples were generally collected at the near surface (0.0-0.1 mbgl), 0.4-0.5 mbgl, and 0.9-1.0 mbgl and at each metre thereafter.

Soil samples were collected from the test pits with the assistance of a backhoe. Samples were collected from soil in the centre of the bucket as this was unlikely to have come into contact with the bucket, thereby reducing the likelihood of possible contamination.

Each sample was collected using a new, clean pair of nitrile gloves. Each soil sample was placed into a clean laboratory-supplied 250 millilitre (mL) glass jar for analysis. The jars were marked with unique sample identifiers and sealed with a Teflon-lined lid. The samples were then immediately placed into an ice-cooled container for transport to a NATA accredited laboratory. COC documentation was completed and accompanied the samples to the laboratory.

A sub-sample of each primary soil sample was screened in the field with a portable hand-held PID to assess the potential for ionisable volatile compounds in soil. The sensitivity of the PID is dependent on the organic compound and varies for different mixtures of hydrocarbons. The PID was calibrated prior to use with a standard reference gas of known concentration (isobutylene 100 parts per million (ppm)) and fresh air. Calibration records for the PID are presented in **Appendix B**.

For QA/QC purposes, triplicate samples were collected and analysed at a rate of a minimum of one (1) in ten (10) as per AS4482.1-2005. The triplicate samples test the accuracy and are analysed by a secondary laboratory. Duplicate samples were not analysed due to an error. Duplicate samples test the reproducibility of the analytical results. QC samples were labelled with no reference to the primary sample on the sample container or COC to ensure analytical results were not biased by the laboratory. A rinsate sample was also collected to assess the effectiveness of the decontamination procedures used for re-useable equipment, and that these procedures were adequate. In addition, a trip blank was submitted to the laboratory with the samples to assess for potential cross contamination during transportation.

5.2 Analytical Schedule

Soil samples were submitted to Envirolab Services Pty Ltd (Envirolab), Chatswood, NSW and SGS Pty Ltd (SGS), Alexandria NSW for analysis. The analytical procedures undertaken by the laboratories are described in the certified laboratory reports presented in **Appendix C** which also contains the sample receipt advice and COC documents.

The sampling areas, number of samples and analytes are presented in **Table L**, below.

Table K: Sampling and Analysis Plan

Area to be Assessed	No. of Samples Proposed	Analytes
AEC 1 & 2 (Blocks 11, 12 and 13)	Two (2) samples per test pit. Total no. of primary soil samples: eighteen (18)	Asbestos, TRH, BTEX, PAHs, PCBs, phenols, OCPs, VOCs[1] and eight (8) metals[2].
QA/QC Samples	Two (2) duplicate and two (2) triplicate samples Total no. of field QA/QC samples: four (4)	Asbestos, TRH, BTEX, PAHs, PCBs, phenols, OCPs, VOCs and 8 heavy metals[1].
	One (1) rinsate blank	TRH, BTEX, PAHs, PCBs, phenols, OCPs, VOCs
	One (1) trip blank	TRH C_6-C_9 and BTEX

[1]VOCs were only analysed in one sample per borehole.
[2]Arsenic, cadmium, chromium (III + VI), copper, lead, mercury, nickel and zinc.

6 FIELDWORK

Sampling of the site was undertaken on 10 September 2014 by a suitably qualified and experienced Robson environmental scientist. Clearance of the proposed test pit locations for underground services (for example underground power, gas, water, communications etc.) were undertaken on 10 September 2014 by a Telstra accredited services locator. The test pit excavations were undertaken by an experienced excavator subcontractor. A copy of the test pit logs is provided in **Appendix D** and a selection of site photographs is provided in **Appendix E**.

Soil sampling was undertaken from nine (9) test pit locations. These locations are shown on **Figure 4**, and a summary of the fieldwork activities and observations is provided below:

- The general soil texture consisted of brown silty clay topsoil from 0 to approximately 0.2 mbgl. The topsoil was underlain by orange brown clayey sand fill to a depth of between 1.0 and 3.0 mbgl. The colour of the clayey sand graded to grey with depth. The clayey sand fill contained varying amounts of anthropogenic landfill material such as ash, slag, glass, metal, wood, bone, organic material and fabric;
- The landfill material was observed in all test pits except test pit TP6, located on the northwest portion of the site. Bonded fragments of ACM were observed in test-pit samples (TP1 (1.9-2.0) and TP5 (0.4-0.5), located near the northeast and south of the site, respectively (**Figure 5**);
- The anthropogenic landfill material composed approximately 40% of the fill material in test pit TP-9. Groundwater was encountered at depths ranging between 1.0 and 1.7 mbgl in test pits TP-2, TP-4, TP-6, TP-7, TP-8 and TP-9;
- No sheens were observed in the groundwater that entered the test-pits;
- A cross section Lines of Section map displaying the lines of section used in three (3) cross sections is presented as **Figure 6** and the three (3) cross sections showing the vertical distributions of the landfill material and asbestos fragments are shown on **Figure 7**. A rotting organic odour was noted in test pit TP-7 at a depth of 1 mbgl. No odours were observed at the other test pit locations;
- Glass fragments were observed in the near the surface soil in six (6) out of nine (9) test pits;
- PID readings taken from a sub-sample of each soil sample ranged between 0.0 ppm and 4.2 ppm (TP4) which indicates negligible potential for the presence of volatile ionisable compounds. The PID analytical results are presented on the test-pit logs in **Appendix D**;

In addition to the soil sampling, the following work was conducted:

- Air monitoring was conducted during sampling on 10 September 2014.

7 LABORATORY ANALYSIS AND ANALYTICAL RESULTS

7.1 Analytical Results

The analytical results are summarised in **Table 1** to **Table 3** and the laboratory analytical reports, COC documents and sample receipts are included in **Appendix C**.

In summary, results for all samples analysed returned concentrations for contaminants of potential concern (COPC) below the adopted ASC NEPM (revised 2013) HIL, HSL and ML guidelines for the public open space exposure scenario.

Note that chromium VI was analysed in sample TP4 (1.9-2.0) and results indicated that its concentration was below the limit of reporting (LOR) (**Appendix C**).

The asbestos fragment from test-pit TP1 (1.9-2.0) was composed of chrysotile, amosite and crocidolite asbestos fibres while the sample from test-pit TP5 (0.4-0.5) was composed of chrysotile asbestos fibres. The Robson *Fibre Identification Certificate of Analys*is report is presented in **Asbestos F**. The concentration of bonded asbestos containing material (ACM) in soil exceeded the ASC NEPM (2013) criteria concentration of 0.02 % (weight / weight (w/w)) for parks, public open space and playing fields in sample TP1 (1.9-2.0) but was not exceeded in TP5 (0.4-0.5). The ASC NEPM (2013) asbestos fines criteria (0.001 % w/w) was not exceeded for either sample. The NATA accredited asbestos fines analytical report is presented in **Appendix C**.

7.2 Air Monitoring Results

Air monitoring was conducted during sampling conducted on 10 September 2014. Results indicated that asbestos was not detected in any of the air samples (**Appendix G**).

7.3 Quality Assurance and Quality Control Results.

Field QA/QC

The fieldwork was undertaken by an experienced and suitably qualified Robson environmental scientist in general accordance with endorsed guidelines and Section 8 Quality Assurance of Australian Standard AS 4482.1-2005 *'Guide to the sampling and investigation of potentially contaminated soil – Part 1: Non-volatile and Semi-Volatile compounds'.*

Field QA/QC procedures comprised the collection of two (2) duplicate and two (2) triplicate samples. Triplicate and duplicate samples were collected at a rate of two (2) for every twenty (20) primary samples collected. The two (2) triplicate and duplicate samples were sent to the laboratories for analysis. In this case the primary samples related to the duplicates were not submitted for analysis due to an error. However the primary samples related to the triplicates were analysed and therefore the RPD data could be assessed.

The triplicate samples analysed were:

- QC1 (primary) and QC2 (triplicate) of TP3 (0-0.1);
- QC3 (primary) and QC4 (triplicate) of TP5 (0-0.1);

The triplicates for all analytes were within the acceptable limits.

Analytes for the COPCs in QA/QC samples were below detection limits and all metal concentrations were below the adopted assessment criteria.

Laboratory Quality Control

The results of the laboratory internal quality control program are included along with the laboratory reports in **Appendix C**. A review of the laboratory QA/QC results indicated the following:

Given that all the analytes (except metals) were below the LOR or below the assessment criteria, and triplicate samples were below the limits for the assessment of internal laboratory quality control samples, the identified quality control issues should not effect the interpretation of the results. Robson considers the analytical results provided in the laboratory reports to be acceptable for the purposes of this assessment.

8 DISCUSSION

Nine (9) test-pits (TP-1 to TP-9) were excavated across the site at depths ranging between 1.0 and 3.0 mbgl. Fill material was encountered at all sample locations and ranged in depth from 0.1 m to 3.0 mbgl.

Based upon observations made during the excavation of the test pits, ash, slag, glass, metal, wood, bone and organic material were noted within the soil profile in eight (8) out of nine (9) test-pits at depths depth ranging between 0.1 m and 3.0 m. Based on these observations, the site is underlain by landfill material and this observation is consistent with previous observations of landfill material located north and south of the site.

No olfactory indications of chemical contaminants were noted at the test pit locations, with the exception of a rotting organic odour in test pit TP-7 at a depth of 1 mbgl. In addition, the results of the PID screening of the collected soil samples indicated negligible potential for the presence of volatile ionisable hydrocarbon species.

The analytical results for all test pit samples returned concentrations for COPC below the adopted ASC NEPM (revised 2013) HIL, HSL, and ML guidelines (**Appendix C** and **Tables 1** to **2),** with the exception of asbestos**.**

Bonded asbestos fragments were observed in test pit samples (TP1 (1.9-2.0) and TP5 (0.4-0.5), located near the northeast and south of the site, respectively. The asbestos fragment from test pit TP1 (1.9-2.0) was composed of chrysotile, amosite and crocidolite asbestos fibres while the sample from test pit TP5 (0.4-0.5) was composed of chrysotile asbestos fibres (**Appendix F**). The concentration of bonded asbestos containing material (ACM) (0.02 % (weight / weight (w/w)) exceeded the assessment criteria in sample TP1 (1.9-2.0). The ASC NEPM (2013) asbestos fines criteria (0.001 % w/w) was not exceeded in any of the samples analysed.

Asbestos was not detected in air monitoring samples collected during field work activities on 10 September 2014 (**Appendix H**).

Based on the field observations and analytical results bonded asbestos in the form of sheet fragments have the potential to be present in the fill across the ‘Site’. Also, due to the presence of glass, metal etc in the fill there is also an occupational health and safety risk to future occupants of the site.

9 CONCLUSIONS

The objective of the Phase 2 ESA was to assess the soil within the Site for potential contaminants of concern commonly associated with landfill materials (known to be present adjacent the site) to determine whether the site would be suitable for its current site use as 'Open Space' (ASC NEPM HIL 'C').

Based on the results of the assessment, Robson considers the site to be suitable for the proposed rowing facility and boat house provided the following conditions are met:

- Areas of high pedestrian traffic are sealed;
- A construction environmental management plan is prepared and endorsed by the ACT EPA prior to any construction activities at the site;
- A long term environmental management plan is prepared and endorsed by the ACT EPA prior to site occupancy. The EMP would be subject to an Environmental Protection Agreement with the ACT EPA.

10 RECOMMENDATIONS

To fulfil the conditions of the site suitability, Robson makes the following recommendations:

- To prevent exposure from the landfill material in the future, Robson recommends that areas where high traffic is anticipated (e.g around buildings etc.) are sealed surfaces (such as concrete or paving) in areas where there would be high pedestrian traffic to minimize exposure to asbestos or physical hazards such as glass found within the landfill material. Robson also recommends that the ground surface in areas between the boat houses and the water be sealed where users may access by foot;

- To manage the possible exposure risks to asbestos and other rubbish during the construction of the proposed boat shed, storage shed and administration building at the site a Contaminant Environmental Management Plan (CEMP) should be prepared and endorsed by the ACT EPA to provide information to workers about possible contamination on the site. The CEMP should provide an unexpected finds protocol and present information about managing contaminated soil and its associated risks;

- To manage risks to the public and workers at the site during future use of the site, Robson recommends that an Environmental Management Plan (EMP) be developed. The EMP will also provide a protocol for how the custodians of the site will respond to unexpected finds and will provide guidance on how to manage the long term risks associated with the asbestos and physical hazards associated with the landfill material observed at the site;

- To ensure the management provisions identified in the CEMP and EMP are legally enforced, Robson recommends that the site owners agree to enter an Environmental Protection Agreement with the ACT EPA.

STATEMENT OF LIMITATIONS

This Phase 2 ESA was undertaken to assess the soil for contaminants of potential concern (COPC) within Blocks 11, 12 and 13. The findings contained within this report are the result of the interpretation of discrete/specific sampling methodologies used in accordance with normal practices and standards.

To the best of Robson's knowledge, our assessment of the data represents a reasonable interpretation of the general condition of the site. Under no circumstances, however, can it be considered that these findings represent the actual state of the entire site. In addition, the assessment did not include the direct sampling and analysis of soil vapour or groundwater.

THIS REPORT MUST NOT BE REPRODUCED EXCEPT IN FULL AND MUST BE READ IN CONJUNCTION WITH THE REPORT TERMS AND CONDITIONS INCLUDED AFTER THE ABBREVIATIONS SECTION THIS REPORT.

11 REFERENCES

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Robson (2014) '*Phase 1 Environmental Site Assessment, Black Mountain Peninsula, Acton ACT 2601 (Blocks 11, 12 and 13, Section 67, Acton),* (Robson reference 9605_EAR_P1ESA_20140804, dated 8 April 2014),

Robson (2012) '*Soil Sampling and Logging*' (Robson reference EAR-SOP003).

WA DoH (2009) '*Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia*' (WA Guidelines).

12 ABBREVIATIONS

ACM	Asbestos Containing Material
ACT	Australian Capital Territory
ACTPLA	ACT Planning and Land Authority
AEC	Area of Environmental Concern
AF	Asbestos Fines
B(a)P	Benzo(a)pyrene
AS	Australian Standards
BTEX	Benzene, toluene, ethylbenzene and xylenes
CMP	Contaminant Management Plan
COC	Chain of Custody
COPC	Contaminants of Potential Concern
DOH	Department of Health
DQO	Data Quality Objectives
EAR	Environment and Remediation
EPA	Environment Protection Authority
EQL	Equivalent Quantitation Limit
ESA	Environmental Site Assessment
ES	Environmental Standards
FA	Fibrous Abestos
HA	Hand Auger
HIL	Health-based Investigation Level
HSL	Health Screening Level
LOR	Limit of Reporting
L/S	Litres per second
m	Metres
m^2	Square Metres
mAHD	Metres above Australian Height Datum
mbgl	Metres below ground level
mg/kg	Milligrams per kilogram
mg/L	Milligrams per Litre
mL	Millilitre
ML	Management Limit
NATA	National Association of Testing Authorities
NCA	National Capital Authority

NE	Guideline Not Established
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measure
NL	Non-limiting
NOHSC	National Occupational Health and Safety
NSW	New South Wales
OCP	Organochlorine Pesticide
OEH	Office of Environment and Heritage
PCB	Polychlorinated Biphenyls
PAH	Polycyclic Aromatic Hydrocarbons
PID	Photoionisation Detector
ppm	Parts per million
PLM	Polarised Light Microscopy
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance / Quality Control
R	Rinsate
RAP	Remedial Action Plan
RPD	Relative Percent Difference
SAQP	Sampling and Analysis Quality Plan
SD	Standard Deviation
SOP	Standard Operating Procedure
TB	Trip Blank
TEQ	Toxicity Equivalent Quotient
TP	Test pit
TRH	Total Recoverable Hydrocarbons
UCL	Upper Confidence Limit
US EPA	United States Environmental Protection Agency
µg/L	Micrograms per Litre
VOC	Volatile Organic Compound
WA	Western Australia
w/w	Weight per weight

TABLES

Tables 1 to 3

TABLE 1
960502 - PHASE 2 ESA SOIL ANALYTICAL RESULTS
Black Mountain Peninsula, Acton ACT 2601
(Blocks 11, 12 and 13 Section 67, Acton)
(September 2014)
(All results in mg/kg unless otherwise noted)

Sample Identification						TP1	TP1	TP2	TP2	TP3	TP3	TP4	TP4	TP5	TP5	TP6	TP6	TP7	TP7	TP8	TP8	TP9	TP9
Sample Depth						0.4-0.5	1.9-2.0	0.4-0.5	1.9-2.0	0.9-1.0	2.9-3.0	0.9-1.0	1.9-2.0	0.4-0.5	2.9-3.0	0.4-0.5	0.9-1.0	0.4-0.5	1.7-1.8	0.9-1.0	1.4-1.5	0.4-0.5	1.5-1.6
Laboratory Identification						116058-1	116058-2	116058-3	116058-4	116058-5	116058-6	116058-7	116058-8	116058-9	116058-10	116058-11	116058-12	116058-13	116058-14	116058-15	116058-16	116058-17	116058-18
Sample Collection Date						10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014
Chemical Group	**Chemical Name**	**Units**	**LOR**	**HIL C[1]/HSLs[2]**	**ML's[3]**																		
BTEX	Benzene	mg/kg	0.2	NE	NE	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Ethylbenzene	mg/kg	1	NE	NE	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Toluene	mg/kg	0.5	NE	NE	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Xylene (m & p)	mg/kg	2	NE	NE	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Xylene (o)	mg/kg	1	NE	NE	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	C6-C10 less BTEX (F1)	mg/kg	25	NE	NE	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
Metals	Arsenic	mg/kg	4	300[1]	NE	<4	**52**	<4	<4	<4	**5**	<4	**20**	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
	Cadmium	mg/kg	0.4	90[1]	NE	<0.4	**0.7**	<0.4	<0.4	<0.4	<0.4	<0.4	**1**	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	**1**
	Chromium (III+VI)	mg/kg	1	300[1]	NE	**12**	**52**	**10**	**12**	**20**	**21**	**12**	**410** [4]	**13**	**10**	**12**	**11**	**11**	**12**	**12**	**11**	**11**	**170**
	Copper	mg/kg	1	17,000[1]	NE	**8**	**230**	**6**	**7**	**14**	**50**	**6**	**35**	**8**	**5**	**6**	**6**	**14**	**13**	**7**	**5**	**6**	**210**
	Lead	mg/kg	1	600[1]	NE	**10**	**250**	**7**	**12**	**220**	**85**	**8**	**68**	**13**	**6**	**9**	**6**	**11**	**27**	**9**	**7**	**7**	**83**
	Mercury	mg/kg	0.1	80[1]	NE	<0.1	**1.4**	<0.1	<0.1	<0.1	<0.1	<0.1	**1.6**	<0.1	<0.1	<0.1	<0.1	<0.1	0.4	<0.1	<0.1	<0.1	**0.4**
	Nickel	mg/kg	1	1,200[1]	NE	**7**	**92**	**5**	**6**	**9**	**18**	**6**	**9**	**6**	**5**	**6**	**5**	**6**	**7**	**7**	**5**	**6**	**8**
	Zinc	mg/kg	1	600[1]	NE	**21**	**480**	**15**	**21**	**96**	**250**	**18**	**210**	**27**	**12**	**22**	**17**	**36**	**36**	**30**	**24**	**16**	**160**
OCP	4,4-DDE	mg/kg	0.1	400[1]	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	DDD	mg/kg	0.1		NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	DDT	mg/kg	0.1		NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	a-BHC	mg/kg	0.1	NE	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Aldrin	mg/kg	0.1	10[1]	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Dieldrin	mg/kg	0.1		NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	b-BHC	mg/kg	0.1	NE	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Chlordane (cis)	mg/kg	0.1	70[1]	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Chlordane (trans)	mg/kg	0.1		NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	d-BHC	mg/kg	0.1	NE	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Endosulfan I	mg/kg	0.1	340[1]	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Endosulfan II	mg/kg	0.1		NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Endosulfan sulphate	mg/kg	0.1		NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Endrin	mg/kg	0.1	20[1]	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Endrin aldehyde	mg/kg	0.1	NE	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	g-BHC (Lindane)	mg/kg	0.1	NE	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Heptachlor	mg/kg	0.1	10[1]	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Heptachlor epoxide	mg/kg	0.1	NE	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Methoxychlor	mg/kg	0.1	400[1]	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Notes:

NE = Guideline not established
NL = Non-limiting
BTEX = Benzene, toluene, ethylbenzene, xylenes
OCP = Organochlorine pesticides
OPP = Organophosphorous Pesticides
PAH's = Polycyclic aromatic hydrocarbons
PCB's = Polychlorinated biphenyls
TRH = Total recoverable hydrocarbons

EQL = Equivalent Quantitation Limit
< = Less than

mg/kg = milligrams per kilogram
NA = Not Analysed

RESULT Result exceeds HSL/HIL Criteria
RESULT Result exceeds ML Criteria

Nominated Investigation Levels:

[1] ASC NEPM (2013) HIL C - Public spaces such as parks, playgrounds, playing fields (e.g. Ovals), secondary schools and footpaths.

[2] ASC NEPM (2013) Health Screening Levels (HSL) - recreational / open space exposure setting. Soil texture = sand.

[3] ASC NEPM (2013) Management Limits (ML's) - Residential, parkland and open space exposure setting. Soil texture = course.

[4] Note that sample TP4 (1.9-2.0) was analysed for chromium VI and the result was less than the limit of reporting (LOR) of 1 mg/kg which is below the 300 mg/kg assessment criteria for chromium VI.

TABLE 1
960502 - PHASE 2 ESA SOIL ANALYTICAL RESULTS
Black Mountain Peninsula, Acton ACT 2601
(Blocks 11, 12 and 13 Section 67, Acton)
(September 2014)
(All results in mg/kg unless otherwise noted)

Sample Identification						TP1	TP1	TP2	TP2	TP3	TP3	TP4	TP4	TP5	TP5	TP6	TP6	TP7	TP7	TP8	TP8	TP9	TP9
Sample Depth						0.4-0.5	1.9-2.0	0.4-0.5	1.9-2.0	0.9-1.0	2.9-3.0	0.9-1.0	1.9-2.0	0.4-0.5	2.9-3.0	0.4-0.5	0.9-1.0	0.4-0.5	1.7-1.8	0.9-1.0	1.4-1.5	0.4-0.5	1.5-1.6
Laboratory Identification						116058-1	116058-2	116058-3	116058-4	116058-5	116058-6	116058-7	116058-8	116058-9	116058-10	116058-11	116058-12	116058-13	116058-14	116058-15	116058-16	116058-17	116058-18
Sample Collection Date						10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014
Chemical Group	**Chemical Name**	**Units**	**LOR**	**HIL C[1]/HSLs[4]**	**ML's**																		
OPP's	Diazinon	mg/kg	0.1	NE	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Dimethoate	mg/kg	0.1	NE	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Chlorpyriphos-methyl	mg/kg	0.1	NE	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Ronnel	mg/kg	0.1	NE	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Chlorpyriphos	mg/kg	0.1	250[1]	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Fenitrothion	mg/kg	0.1	NE	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Bromophos-ethyl	mg/kg	0.1	NE	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Ethion	mg/kg	0.1	NE	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
PAH's	Acenaphthene	mg/kg	0.1	NE	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Acenaphthylene	mg/kg	0.1	NE	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Anthracene	mg/kg	0.1	NE	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Benz(a)anthracene	mg/kg	0.1	NE	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Benzo(a) pyrene	mg/kg	0.05	NE	NE	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Benzo(b)&(k)fluoranthene	mg/kg	0.2	NE	NE	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Benzo(g,h,i)perylene	mg/kg	0.1	NE	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Chrysene	mg/kg	0.1	NE	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Dibenz(a,h)anthracene	mg/kg	0.1	NE	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Fluoranthene	mg/kg	0.1	NE	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Fluorene	mg/kg	0.1	NE	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	NE	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Naphthalene	mg/kg	0.1	NL	NL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Phenanthrene	mg/kg	0.1	NE	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Pyrene	mg/kg	0.1	NE	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	PAHs (Sum of total)	mg/kg	#	300[1]	NE	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#
Total Phenolics	Total Phenolics	mg/kg	5	NE	NE	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
PCB's	Arochlor 1016	mg/kg	0.1	NE	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Arochlor 1221	mg/kg	0.1	NE	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Arochlor 1232	mg/kg	0.1	NE	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Arochlor 1242	mg/kg	0.1	NE	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Arochlor 1248	mg/kg	0.1	NE	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Arochlor 1254	mg/kg	0.1	NE	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Arochlor 1260	mg/kg	0.1	NE	NE	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	PCBs (Sum of total)	mg/kg	#	1[1]	NE	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#
TRH	C6-C9	mg/kg	25	NE	NE	<25	<25	**65**	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
	C6-C10	mg/kg	25	NE	NE	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
	C6-C10 less BTEX (F1)	mg/kg	25	NE	700	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
	C10-C14	mg/kg	50	NE	NE	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
	C15-C28	mg/kg	100	NE	NE	<100	**310**	**1200**	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
	C29-C36	mg/kg	100	NE	NE	<100	**350**	**1600**	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
	C10-C16	mg/kg	50	NE	NE	<50	<50	**150**	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
	C10-C16 Less Naphthalene (F2	mg/kg	50	NE	1,000	<50	<50	**150**	<50	<50	<50	<50	150	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
	F3 > C16-C34	mg/kg	100	NE	2,500	<100	**590**	**2300**	<100	<100	<100	<100	2300	<100	<100	<100	<100	<100	<100	<100	**110**	<100	<100
	F4 > C34-C40	mg/kg	100	NE	10,000	<100	**160**	**930**	<100	<100	<100	<100	930	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100

Notes:

NE = Guideline not established
NL = Non-limiting
BTEX = Benzene, toluene, ethylbenzene, xylenes
OCP = Organochlorine pesticides
OPP = Organophosphorous Pesticides
PAH's = Polycyclic aromatic hydrocarbons
PCB's = Polychlorinated biphenyls
TRH = Total recoverable hydrocarbons

EQL = Equivalent Quantitation Limit
< = Less than

mg/kg = milligrams per kilogram
NA = Not Analysed

RESULT Result exceeds HSL/HIL Criteria
RESULT Result exceeds ML Criteria

Nominated Investigation Levels:

[1] ASC NEPM (2013) HIL C - Public spaces such as parks, playgrounds, playing fields (e.g. Ovals), secondary schools and footpaths.

[2] ASC NEPM (2013) Health Screening Levels (HSL) - recreational / open space exposure setting. Soil texture = sand.

[3] ASC NEPM (2013) Management Limits (ML's) - Residential, parkland and open space exposure setting. Soil texture = course.

960502 - TABLE 2
SOIL QA/QC RESULTS
Black Mountain Peninsula, Acton ACT 2601
(Blocks 11, 12 and 13 Section 67, Acton)
(September 2014)
(All results in mg/kg unless otherwise noted)

Sample Identification						**QC1**	**QC2**	**RPD %**	**QC3**	**QC4**	**RPD %**
Sample Depth						**0-0.1**	**0-0.1**		**0-0.1**	**0-0.1**	
Laboratory Identification						116059-19	SE131298.00		116059-20	SE131298.002	
Sample Collection Date						10/09/2014	10/09/2014		10/09/2014	10/09/2014	
Chemical Group	**Chemical Name**	**Units**	**LOR**	**HIL C[1]/HSLs[2]**	**ML's[3]**	Primary Sample - TP3 (0-0.1)	Triplicate of QC1		Primary Sample TP5 (0-0.1)	Triplicate of QC3	
BTEX	Benzene	mg/kg	Primary 0.2; Interlab 0.1	NE	NE	<0.2	<0.1	0	<0.2	<0.1	0
	Ethylbenzene	mg/kg	Primary 1; Interlab 0.1	NE	NE	<1	<0.1	0	<1	<0.1	0
	Toluene	mg/kg	Primary 0.5; Interlab 0.1	NE	NE	<0.5	<0.1	0	<0.5	<0.1	0
	Xylene (m & p)	mg/kg	Primary 2; Interlab 0.2	NE	NE	<2	<0.2	0	<2	<0.2	0
	Xylene (o)	mg/kg	Primary 1; Interlab 0.1	NE	NE	<1	<0.1	0	<1	<0.1	0
	C6-C10 less BTEX (F1)	mg/kg	25	NE	NE	<25	-	-	<25	-	-
Metals	Arsenic	mg/kg	Primary 4; Interlab 3	300[1]	NE	<0.4	**4**	**-**	**4**	**8**	**-**
	Cadmium	mg/kg	Primary 0.4; Interlab 0.3	90[1]	NE	<0.4	<0.3	**-**	<0.4	<0.3	**-**
	Chromium (III+VI)	mg/kg	Primary 1; Interlab 0.3	300[1]	NE	**15**	**15**	**0**	**18**	**13**	**32**
	Copper	mg/kg	Primary 1; Interlab 0.5	17,000[1]	NE	**8**	**8**	**5**	**12**	**12**	**0**
	Lead	mg/kg	1	600[1]	NE	**13**	**14**	**7**	**23**	**23**	**0**
	Mercury	mg/kg	Primary 0.1; Interlab 0.01	80[1]	NE	<0.1	**0.02**	**-**	**<0.1**	**0.04**	**-**
	Nickel	mg/kg	Primary 1; Interlab 0.5	1,200[1]	NE	**7**	**6**	**11**	**7**	**8**	**13**
	Zinc	mg/kg	Primary 1; Interlab 0.5	600[1]	NE	**33**	**30**	**10**	**33**	**62**	**61**
OCP	4,4-DDE	mg/kg	0.1	400[1]	NE	<0.1	-	-	<0.1	-	-
	DDD	mg/kg	0.1		NE	<0.1	-	-	<0.1	-	-
	DDT	mg/kg	0.1		NE	<0.1	-	-	<0.1	-	-
	a-BHC	mg/kg	0.1	NE	NE	<0.1	<0.1	0	<0.1	<0.1	0
	Aldrin	mg/kg	0.1	10[1]	NE	<0.1	<0.1	0	<0.1	<0.1	0
	Dieldrin	mg/kg	Primary 0.1; Interlab 0.2		NE	<0.1	<0.2	0	<0.1	<0.2	0
	b-BHC	mg/kg	0.1	NE	NE	<0.1	<0.1	0	<0.1	<0.1	0
	Chlordane (cis)	mg/kg	0.1	70[1]	NE	<0.1	-	-	<0.1	-	-
	Chlordane (trans)	mg/kg	0.1		NE	<0.1	-	-	<0.1	-	-
	d-BHC	mg/kg	0.1	NE	NE	<0.1	<0.1	0	<0.1	<0.1	0
	Endosulfan I	mg/kg	0.1	340[1]	NE	<0.1	-	-	<0.1	-	-
	Endosulfan II	mg/kg	0.1		NE	<0.1	-	-	<0.1	-	-
	Endosulfan sulphate	mg/kg	0.1		NE	<0.1	<0.1	0	<0.1	<0.1	0
	Endrin	mg/kg	Primary 0.1; Interlab 0.2	20[1]	NE	<0.1	<0.2	0	<0.1	<0.2	0
	Endrin aldehyde	mg/kg	0.1	NE	NE	<0.1	-	-	<0.1	-	-
	g-BHC (Lindane)	mg/kg	0.1	NE	NE	<0.1	-	-	<0.1	-	-
	Heptachlor	mg/kg	0.1	10[1]	NE	<0.1	<0.1	0	<0.1	<0.1	0
	Heptachlor epoxide	mg/kg	0.1	NE	NE	<0.1	-	-	<0.1	-	0
	Methoxychlor	mg/kg	0.1	400[1]	NE	<0.1	<0.1	-	<0.1	<0.1	0

Notes:

NE = Guideline not established
NL = Non-limiting
BTEX = Benzene, toluene, ethylbenzene, xyleenes
OCP = Organochlorine pesticides
PAH's = Polycyclic aromatic hydrocarbons
PCB's = Polychlorinated biphenyls
TRH = Total recoverable hydrocarbons

EQL = Equivalent Quantitation Limit
< = Less than

mg/kg = milligrams per kilogram
'-' = Not Analysed

RESULT Result exceeds HSL/HIL Criteria
RESULT Result exceeds ML Criteria

RESULTS High RPDs are in bold (Acceptable RPDs 0-50 (greater than 5 x LOR))

Nominated Investigation Levels:

[1] ASC NEPM (2013) HIL C - Commercial / industrial exposure setting, includes premises such as shops, offices, factories and industrial sites.
[2] ASC NEPM (2013) Health Screening Levels (HSL) - recreational / open space exposure setting. Soil texture = sand.
[3] ASC NEPM (2013) Management Limits (ML's) - Residential, parkland and open space exposure setting. Soil texture = course.
Note - Due to an error, the primary QA/QC samples were not analysed, therfore duplicate RPDs could not be calculated.

960502 - TABLE 2
SOIL QA/QC RESULTS
Black Mountain Peninsula, Acton ACT 2601
(Blocks 11, 12 and 13 Section 67, Acton)
(September 2014)
(All results in mg/kg unless otherwise noted)

Sample Identification						**QC1**	**QC2**	**RPD %**	**QC3**	**RPD %**	**QC4**	**RPD %**
Sample Depth						**0-0.1**	**0-0.1**		**0-0.1**		**0-0.1**	
Laboratory Identification						116059-19	SE131298.001		116059-20		SE131298.002	
Sample Collection Date						10/09/2014	10/09/2014		10/09/2014		10/09/2014	
Chemical Group	**Chemical Name**	**Units**	**LOR**	**HIL C[1]/HSLs[2]**	**ML's[3]**	Primary Sample - TP3 (0-0.1)	Triplicate of QC1		Primary Sample TP5 (0-0.1)		Triplicate of QC3	
OPPs	Diazinon	mg/kg	Primary 0.1; Interlab 0.5	NE	NE	<0.1	<0.5	0	<0.1	0	<0.5	0
	Dimethoate	mg/kg	Primary 0.1; Interlab 0.5	NE	NE	<0.1	<0.5	0	<0.1	0	<0.5	0
	Chlorpyriphos-methyl	mg/kg	Primary 0.1; Interlab 0.5	NE	NE	<0.1	<0.5	0	<0.1	0	<0.5	0
	Ronnel	mg/kg	Primary 0.1; Interlab 0.5	NE	NE	<0.1	<0.5	0	<0.1	0	<0.5	0
	Chlorpyriphos	mg/kg	Primary 0.1; Interlab 0.5	250[1]	NE	<0.1	<0.5	0	<0.1	0	<0.5	0
	Fenitrothion	mg/kg	Primary 0.1; Interlab 0.5	NE	NE	<0.1	<0.5	0	<0.1	0	<0.5	0
	Bromophos-ethyl	mg/kg	Primary 0.1; Interlab 0.5	NE	NE	<0.1	<0.5	0	<0.1	0	<0.5	0
	Ethion	mg/kg	Primary 0.1; Interlab 0.5	NE	NE	<0.1	<0.5	0	<0.1	0	<0.5	0
PAH's	Acenaphthene	mg/kg	0.1	NE	NE	<0.1	<1	0	<0.1	0	<1	0
	Acenaphthylene	mg/kg	0.1	NE	NE	<0.1	<1	0	<0.1	0	<1	0
	Anthracene	mg/kg	0.1	NE	NE	<0.1	<1	0	<0.1	0	<1	0
	Benz(a)anthracene	mg/kg	0.1	NE	NE	<0.1	<1	0	<0.1	0	<1	0
	Benzo(a) pyrene	mg/kg	Primary 0.05; Interlab 1	NE	NE	<0.05	<1	0	<0.05	0	<1	0
	Benzo(b)&(k)fluoranthene	mg/kg	Primary 0.2; interlab 2	NE	NE	<0.2	2	0	<0.2	0	2	0
	Benzo(g,h,i)perylene	mg/kg	0.1	NE	NE	<0.1	<1	0	<0.1	0	<1	0
	Chrysene	mg/kg	0.1	NE	NE	<0.1	<1	0	<0.1	0	<1	0
	Dibenz(a,h)anthracene	mg/kg	0.1	NE	NE	<0.1	<1	0	<0.1	0	<1	0
	Fluoranthene	mg/kg	Primary 0.1; Interlab 1	NE	NE	<0.1	<1	0	<0.1	0	<1	0
	Fluorene	mg/kg	Primary 0.1; Interlab 1	NE	NE	<0.1	<1	0	<0.1	0	<1	0
	Indeno(1,2,3-c,d)pyrene	mg/kg	Primary 0.1; Interlab 1	NE	NE	<0.1	<1	0	<0.1	0	<1	0
	Naphthalene	mg/kg	Primary 0.1; Interlab 1	NL	NL	<0.1	<1	0	<0.1	0	<1	0
	Phenanthrene	mg/kg	Primary 0.1; Interlab 1	NE	NE	<0.1	<1	0	<0.1	0	<1	0
	Pyrene	mg/kg	Primary 0.1; Interlab 1	NE	NE	<0.1	<1	0	<0.1	0	<1	0
	Benzo(a)pyrene TEQ	mg/kg	Primary 0.5; Interlab 5	3[1]	NE	-	<5	-	-	-	<5	-
	PAHs (Sum of total)	mg/kg	#	300[1]	#	#	#	0	#	0	#	0
Total Phenolics	Total Phenolics	mg/kg	Primary 5; Interlab 0.1	NE	NE	<5	<0.1	-	<5	0	<0.1	0
PCB's	Arochlor 1016	mg/kg	Primary 0.1; Interlab 0.2	NE	NE	<0.1	<0.2	0	<0.1	0	<0.2	0
	Arochlor 1221	mg/kg	Primary 0.1; Interlab 0.2	NE	NE	<0.1	<0.2	0	<0.1	0	<0.2	0
	Arochlor 1232	mg/kg	Primary 0.1; Interlab 0.2	NE	NE	<0.1	<0.2	0	<0.1	0	<0.2	0
	Arochlor 1242	mg/kg	Primary 0.1; Interlab 0.2	NE	NE	<0.1	<0.2	0	<0.1	0	<0.2	0
	Arochlor 1248	mg/kg	Primary 0.1; Interlab 0.2	NE	NE	<0.1	<0.2	0	<0.1	0	<0.2	0
	Arochlor 1254	mg/kg	Primary 0.1; Interlab 0.2	NE	NE	<0.1	<0.2	0	<0.1	0	<0.2	0
	Arochlor 1260	mg/kg	Primary 0.1; Interlab 0.2	NE	NE	<0.1	<0.2	0	<0.1	0	<0.2	0
	PCBs (Sum of total)	mg/kg	#	1[1]	NE	#	#	#	#	0	#	0
TRH	C6-C9	mg/kg	Primary 25; Interlab 20	NE	NE	<25	<20	0	<25	0	<20	0
	C6-C10	mg/kg	25	NE	NE	<25	<25	0	<25	0	<25	0
	C6-C10 less BTEX (F1)	mg/kg	25	NE	700	<25	-	-	<25	0	-	-
	C10-C14	mg/kg	Primary 50; Interlab 20	NE	NE	<50	<20	0	<50	0	<20	0
	C15-C28	mg/kg	Primary 100; Interlab 45	NE	NE	<100	<45	0	<100	0	<45	0
	C29-C36	mg/kg	Primary 100; Interlab 45	NE	NE	<100	<45	0	<100	0	<45	0
	C10-C16	mg/kg	Primary 50; Interlab 25	NE	NE	<50	<25	0	<50	0	<25	0
	C10-C16 Less Naphthalene (F2)	mg/kg	50	NE	1,000	<50	-	-	<50	0	-	-
	F3 > C16-C34	mg/kg	Primary 100; Interlab 90	NE	2,500	<100	<90	0	<100	0	<90	0
	F4 > C34-C40	mg/kg	Primary 100; Interlab 120	NE	10,000	<100	<120	0	<100	0	<120	0

Notes:

NE = Guideline not established
NL = Non-limiting
BTEX = Benzene, toluene, ethylbenzene, xyleenes
OCP = Organochlorine pesticides
PAH's = Polycyclic aromatic hydrocarbons
PCB's = Polychlorinated biphenyls
TRH = Total recoverable hydrocarbons

EQL = Equivalent Quantitation Limit
< = Less than

mg/kg = milligrams per kilogram
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RESULT Result exceeds HSL/HIL Criteria
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RESULTS High RPDs are in bold (Acceptable RPDs 0-50 (greater than 5 x LOR))

Nominated Investigation Levels:

[1] ASC NEPM (2013) HIL C - Public spaces such as parks, playgrounds, playing fields (e.g. Ovals), secondary schools and footpaths.
[2] ASC NEPM (2013) Health Screening Levels (HSL) - recreational / open space exposure setting. Soil texture = sand.
[3] ASC NEPM (2013) Management Limits (ML's) - Residential, parkland and open space exposure setting. Soil texture = course.

Note - Due to an error, the primary QA/QC samples were not analysed, therfore duplicate RPDs could not be calculated.

TABLE 3
960502 - PHASE 2 ESA RINSATE AND TRIP BLANK ANALYTICAL RESULTS
Black Mountain Peninsula, Acton ACT 2601
(Blocks 11, 12 and 13 Section 67, Acton)
(September 2014)
(All results in µg/L unless otherwise noted)

Laboratory ID	116059-21	116059-22
Sample ID	R1	TB1
Sampled Date	10/09/2014	10/09/2014

Chemical Group	Analyte	Units	EQL		
BTEX	Benzene	µg/L	1	<1	<1
	Ethylbenzene	µg/L	1	<1	<1
	Toluene	µg/L	1	<1	<1
	Xylene (m & p)	µg/L	2	<2	<2
	Xylene (o)	µg/L	1	<1	<1
	Xylene Total	µg/L	-	#	#
TRH	C6-C9	µg/L	<10	<10	<10
	C6-C10	µg/L	<10	<10	<10
	C6-C10 less BTEX (F1)	µg/L	<10	<10	<10
	C10-C14	µg/L	<50	<50	-
	C15-C28	µg/L	<100	<100	-
	C29-C36	µg/L	<100	<100	-
	C10-C16	µg/L	<50	<50	-
	C10-C16 Less Naphthalene (F2)	µg/L	<50	<50	-
	C16-C34	µg/L	<100	<100	-
	C34- C40	µg/L	<100	<100	-
Metals	Arsenic	mg/L	0.05	<0.05	-
	Cadmium	mg/L	0.01	<0.01	-
	Chromium (III+VI)	mg/L	0.01	<0.01	-
	Copper	mg/L	0.01	<0.01	-
	Lead	mg/L	0.03	<0.03	-
	Mercury	mg/L	0.0005	<0.0005	-
	Nickel	mg/L	0.02	<0.02	-
	Zinc	mg/L	0.02	<0.02	-
OCP	HCB	µg/L	0.2	<0.2	-
	alpha-BHC	µg/L	0.2	<0.2	-
	gamma-BHC	µg/L	0.2	<0.2	-
	beta-BHC	µg/L	0.2	<0.2	-
	Heptachlor	µg/L	0.2	<0.2	-
	delta-BHC	µg/L	0.2	<0.2	-
	Aldrin	µg/L	0.2	<0.2	-
	Heptachlor Epoxide	µg/L	0.2	<0.2	-
	gamma-Chlordane	µg/L	0.2	<0.2	-
	alpha-chlordane	µg/L	0.2	<0.2	-
	Endosulfan I	µg/L	0.2	<0.2	-
	pp-DDE	µg/L	0.2	<0.2	-
	Dieldrin	µg/L	0.2	<0.2	-
	Endrin	µg/L	0.2	<0.2	-
	pp-DDD	µg/L	0.2	<0.2	-
	Endosulfan II	µg/L	0.2	<0.2	-
	pp-DDT	µg/L	0.2	<0.2	-
	Endrin Aldehyde	µg/L	0.2	<0.2	-
	Endosulfan Sulphate	µg/L	0.2	<0.2	-
	Methoxychlor	µg/L	0.2	<0.2	-
PAH/Phenols	Acenaphthene	µg/L	1	<1	-
	Acenaphthylene	µg/L	1	<1	-
	Anthracene	µg/L	1	<1	-
	Benz(a)anthracene	µg/L	1	<1	-
	Benzo(a) pyrene	µg/L	1	<1	-
	Benzo(b)&(k)fluoranthene	µg/L	2	<2	-
	Benzo(g,h,i)perylene	µg/L	1	<1	-
	Chrysene	µg/L	1	<1	-
	Dibenz(a,h)anthracene	µg/L	1	<1	-
	Fluoranthene	µg/L	1	<1	-
	Fluorene	µg/L	1	<1	-
	Indeno(1,2,3-c,d)pyrene	µg/L	1	<1	-
	Naphthalene	µg/L	1	<1	-
	Phenanthrene	µg/L	1	<1	-
	Pyrene	µg/L	1	<1	-
	PAH (Sum of total)	µg/L	#	#	-
	Phenolics (Total)	mg/L	0.05	<0.05	-
PCBs	Arochlor 1016	µg/L	2	<2	-
	Arochlor 1221	µg/L	2	<2	-
	Arochlor 1232	µg/L	2	<2	-
	Arochlor 1242	µg/L	2	<2	-
	Arochlor 1248	µg/L	2	<2	-
	Arochlor 1254	µg/L	2	<2	-
	Arochlor 1260	µg/L	2	<2	-
	PCB's (Sum of totals)	µg/L	2	#	-

Notes

'-' = Not Analysed

- No individual species detected

'-' = Not Analysed

RESULT Result exceeds EQL

BTEX = Benzene, toluene, ethylbenzene, xylenes
OCP = Organochlorine pesticides
PAH's = Polycyclic aromatic hydrocarbons
PCB's = Polychlorinated biphenyls
TRH = Total recoverable hydrocarbons
R1 = Rinsate
TB1 = Trip Blank
EQL = Estimated Quantitation Limit

TABLE 3
960502 - PHASE 2 ESA RINSATE AND TRIP BLANK ANALYTICAL RESULTS
Black Mountain Peninsula, Acton ACT 2601
(Blocks 11, 12 and 13 Section 67, Acton)
(September 2014)
(All results in µg/L unless otherwise noted)

Laboratory ID	116059-21	116059-22
Sample ID	R1	TB1
Sampled Date	10/09/2014	10/09/2014

Chemical Group	Analyte	Units	EQL		
VOCs	Dichlorodifluoromethane	µg/L	10	<10	<10
	Chloromethane	µg/L	10	<10	<10
	Vinyl Chloride	µg/L	10	<10	<10
	Bromomethane	µg/L	10	<10	<10
	Chloroethane	µg/L	10	<10	<10
	Trichlorofluoromethane	µg/L	10	<10	<10
	1,1-Dichloroethene	µg/L	1	<1	<1
	trans-1,2-dichloroethene	µg/L	1	<1	<1
	1,1-dichloroethane	µg/L	1	<1	<1
	cis-1,2-dichloroethene	µg/L	1	<1	<1
	bromochloromethane	µg/L	1	<1	<1
	chloroform	µg/L	1	<1	<1
	2,2-dichloropropane	µg/L	1	<1	<1
	1,2-dichloroethane	µg/L	1	<1	<1
	1,1,1-trichloroethane	µg/L	1	<1	<1
	1,1-dichloropropene	µg/L	1	<1	<1
	Cyclohexane	µg/L	1	<1	<1
	carbon tetrachloride	µg/L	1	<1	<1
	Benzene	µg/L	1	<1	<1
	dibromomethane	µg/L	1	<1	<1
	1,2-dichloropropane	µg/L	1	<1	<1
	trichloroethene	µg/L	1	<1	<1
	bromodichloromethane	µg/L	1	<1	<1
	trans-1,3-dichloropropene	µg/L	1	<1	<1
	cis-1,3-dichloropropene	µg/L	1	<1	<1
	1,1,2-trichloroethane	µg/L	1	<1	<1
	Toluene	µg/L	1	<1	<1
	1,3-dichloropropane	µg/L	1	<1	<1
	dibromochloromethane	µg/L	1	<1	<1
	1,2-dibromoethane	µg/L	1	<1	<1
	tetrachloroethene	µg/L	1	<1	<1
	1,1,1,2-tetrachloroethane	µg/L	1	<1	<1
	chlorobenzene	µg/L	1	<1	<1
	Ethylbenzene	µg/L	1	<1	<1
	bromoform	µg/L	1	<1	<1
	m+p-xylene	µg/L	2	<2	<2
	styrene	µg/L	1	<1	<1
	1,1,2,2-tetrachloroethane	µg/L	1	<1	<1
	o-Xylene	µg/L	1	<1	<1
	1,2,3-trichloropropane	µg/L	1	<1	<1
	isopropylbenzene	µg/L	1	<1	<1
	bromobenzene	µg/L	1	<1	<1
	n-propyl benzene	µg/L	1	<1	<1
	2-chlorotoluene	µg/L	1	<1	<1
	4-chlorotoluene	µg/L	1	<1	<1
	1,3,5-trimethyl benzene	µg/L	1	<1	<1
	tert-butyl benzene	µg/L	1	<1	<1
	1,2,4-trimethyl benzene	µg/L	1	<1	<1
	1,3-dichlorobenzene	µg/L	1	<1	<1
	sec-butyl benzene	µg/L	1	<1	<1
	1,4-dichlorobenzene	µg/L	1	<1	<1
	4-isopropyl toluene	µg/L	1	<1	<1
	1,2-dichlorobenzene	µg/L	1	<1	<1
	n-butyl benzene	µg/L	1	<1	<1
	1,2-dibromo-3-chloropropane	µg/L	1	<1	<1
	1,2,4-trichlorobenzene	µg/L	1	<1	<1
	hexachlorobutadiene	µg/L	1	<1	<1

Notes

RESULT Result exceeds EQL

'-' = Not Analysed
- No individual species detected
'-' = Not Analysed
BTEX = Benzene, toluene, ethylbenzene, xylenes
OCP = Organochlorine pesticides
PAH's = Polycyclic aromatic hydrocarbons
PCB's = Polychlorinated biphenyls
TRH = Total recoverable hydrocarbons
R1 = Rinsate
TB1 = Trip Blank
EQL = Estimated Quantitation Limit

FIGURES

Figures 1 to 7

APPENDICES

Appendices A to H

Appendix A

SAQP Endorsement Letter

Mark Laidlaw

From: Heckenberg, Mark [Mark.Heckenberg@act.gov.au]
Sent: Wednesday, 23 July 2014 11:06 AM
To: Mark Laidlaw
Subject: SAQP Blocks 11, 12 and 13 Section 67 Acton

Dear Mr Laidlaw,

Environmental Standards (ES) has reviewed the document titled "Sampling and Analysis Quality Plan For a Phase 2 Environmental Site Assessment Black Mountain Peninsula Action ACT 2601 (Blocks 11, 12 and 13 Section 67, Acton)" dated July 2014 by Robson Environmental Pty Ltd and generally supports the proposed plan subject to the following comment:

- Given the combined sampling strategy utilised should impacts be identified on any of the Blocks further sampling in accordance with the guidelines endorsed by the Environment Protection Authority must be undertaken.

Regards

Mark Heckenberg
Contaminated Sites Officer | **Environmental Standards**| Environment Protection & Water Regulation | Environment and Planning | **ACT Government**
Phone: +61 2 6207 2151 | Fax: +61 2 6207 6084 | email: mark.heckenberg@act.gov.au
Level 2 North - Dame Pattie Menzies House| 16 Challis Street Dickson | GPO BOX 158 | CANBERRA ACT 2601 | www.act.gov.au

Appendix B

PID Calibration Records and Certificates

Copy

AES
ACTIVE ENVIRONMENTAL SOLUTIONS

Calibration and Service Report – PID

Company:	Robson Environmental Pty Ltd	**Manufacturer:**	Drager	**Serial #:**	110-900758
Contact:	Kimberley Chia	**Instrument:**	MiniRAE 2000 - 110-900758	**Asset #:**	
Address:	PO Box 112 FYSHWICK, ACT	**Model:**		**Part #:**	011-0201-100
		Configuration:		**Sold:**	15.08.2006
Phone:	02 6239 5656	**Wireless:**		**Last Cal:**	13.11.2013
Fax:	02 6239 5669	**Network ID:**		**Job #:**	727
Email:	kimberley@robsonenviro.com.au	**Unit ID:**		**Cal Spec:**	
		Details:		**Order #:**	36702

Item	Test	Pass/Fail	Comments	Serial Number
Battery	NiCd, NiMH, Dry cell, LiIon	P		
Charger	Power Supply	-		
	Cradle, Travel Charger	-		
Pump	Flow	P	> 400ml/min	
Filter	Filter, fitting, etc	F	Fitted filter	002-3022-000
Alarms	Audible, visual, vibration	P		
Display	Operation	P		
Switches	Operation	P		
PCB	Operation	P		
Connectors	Condition	P		
Firmware	Version	-		
Datalogger	Operation	P		
Monitor Housing	Condition	P		
Case	Condition / Type	P		
Sensors				
PID	Lamp 10.6eV	P		
PID	Sensor	P		
THP		P		

Engineer's Report

Service and calibration.

AES
ACTIVE ENVIRONMENTAL SOLUTIONS

Calibration Certificate

Sensor	Type	Serial No.	Span Gas	Concentration	Traceability Lot #	CF	Reading	
							Zero	Span
PID	10.6ev		Isobutylene	100ppm	S21306		0	100

Calibrated/Repaired by: BILL KNOBEL Date: 23.05.2014 Next Due: 23.11.2014

Field Calibration Register

Issued Date 5/11/13
Doc No: EAR-F005
Printed: 9/09/2014 3:43 PM

Electronic version current

Uncontrolled copy valid only at time of printing

Project Number and Name: 960502 - Soil Assessment
Client: ALT Rowing
Location: Black Mountain Peninsula
Project Manager: ML
Field Personnel: AR
Date: 10/9/14
Work Description (ESA, TEA, GME): Testpitting

Photoionisation Detector (PID)

Equipment Serial/ID Number: 110-900758
Equipment Description: mini RAE 2000

Calibration and Service Details

Frequency required by manufacturer: 6 months
Date last calibration (by qualified technician): 23/5/14
Calibrated by (personnel and company name): Bill Knobel - AES.
Calibration (Fresh Air): 0ppm
Calibration (Span Gas - Isobutylene): 100ppm

Field Challenge Details

Date	Time	Zero-Fresh Air	Span-Isobutylene	Date	Time	Zero-Fresh Air	Span-Isobutylene
10/9/14	7:15am	0ppm	100ppm				

Water Quality Meter (WQM)

Equipment Serial/ID Number:
Equipment Description:

Calibration and Service Details

Frequency required by manufacturer:
Date last calibration (by qualified technician):
Calibrated by (personnel and company name):
Calibration standard / Comments:

Field Challenge Details

Date	Time	pH	EC (ms/cm)(µScm)	DO (%) (ppm)	Redox - ORP (mV)

Interface Probe (IP)

Equipment Serial/ID Number:
Equipment Description:

Maintenance Details

Frequency required by manufacturer:
Date last maintained (by qualified technician):
Maintained by (personnel and company name):
Comments:

Field Maintenance Details

Date	Time	Cleaning Method

Gas Monitor (CO_2, H_2S, LEL, O_2)

Equipment Serial/ID Number:
Equipment Description:

Calibration and Service Details

Frequency required by manufacturer:
Date last calibration (by qualified technician):
Calibrated by (personnel and company name):
Calibration standard / Comments:

Field Challenge Details

Date	Time	CO	H_2S	LEL	O_2

Appendix C

Sample Receipts, COC Documentation and Laboratory Reports

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

SAMPLE RECEIPT ADVICE

Client:

Robson Environmental Pty Ltd
PO Box 112
Fyshwick ACT 2609

ph: 02 6239 5656
Fax: 02 6239 5669

Attention: Mark Laidlaw

Sample log in details:

Your reference:	**960502**
Envirolab Reference:	**116059**
Date received:	12/09/14
Date results expected to be reported:	**19/09/14**

Samples received in appropriate condition for analysis:	YES
No. of samples provided	2 waters, 20 soils
Turnaround time requested:	Standard
Temperature on receipt (°C)	13.0
Cooling Method:	Ice
Sampling Date Provided:	YES

Comments:

If there is sufficient sample after testing, samples will be held for the following time frames from date of receipt of samples:
Water samples - 1 month
Soil and other solid samples - 2 months
Samples collected in canisters - 1 week. Canisters will then be cleaned.
All other samples are not retained after analysis
If you require samples to be retained for longer periods then retention fees will apply as per our pricelist.

Contact details:

Please direct any queries to Aileen Hie or Jacinta Hurst
ph: 02 9910 6200 fax: 02 9910 6201
email: ahie@envirolabservices.com.au or jhurst@envirolabservices.com.au

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

CERTIFICATE OF ANALYSIS 116059

Client:
Robson Environmental Pty Ltd
PO Box 112
Fyshwick
ACT 2609

Attention: Mark Laidlaw

Sample log in details:

Your Reference:	**960502**
No. of samples:	2 waters, 20 soils
Date samples received / completed instructions received	12/09/14 / 12/09/14

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

Report Details:

Date results requested by: / Issue Date:	19/09/14 / 19/09/14
Date of Preliminary Report:	Not Issued

NATA accreditation number 2901. This document shall not be reproduced except in full.
Accredited for compliance with ISO/IEC 17025. **Tests not covered by NATA are denoted with *.**

Results Approved By:

Jacinta Hurst
Laboratory Manager

VOCs in soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	116059-2 TP1 1.9-2.0 10/09/2014 Soil	116059-4 TP2 1.9-2.0 10/09/2014 Soil	116059-6 TP3 2.9-3.0 10/09/2014 Soil	116059-8 TP4 1.9-2.0 10/09/2014 Soil	116059-10 TP5 2.9-3.0 10/09/2014 Soil
Date extracted	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Date analysed	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Dichlorodifluoromethane	mg/kg	<1	<1	<1	<1	<1
Chloromethane	mg/kg	<1	<1	<1	<1	<1
Vinyl Chloride	mg/kg	<1	<1	<1	<1	<1
Bromomethane	mg/kg	<1	<1	<1	<1	<1
Chloroethane	mg/kg	<1	<1	<1	<1	<1
Trichlorofluoromethane	mg/kg	<1	<1	<1	<1	<1
1,1-Dichloroethene	mg/kg	<1	<1	<1	<1	<1
trans-1,2-dichloroethene	mg/kg	<1	<1	<1	<1	<1
1,1-dichloroethane	mg/kg	<1	<1	<1	<1	<1
cis-1,2-dichloroethene	mg/kg	<1	<1	<1	<1	<1
bromochloromethane	mg/kg	<1	<1	<1	<1	<1
chloroform	mg/kg	<1	<1	<1	<1	<1
2,2-dichloropropane	mg/kg	<1	<1	<1	<1	<1
1,2-dichloroethane	mg/kg	<1	<1	<1	<1	<1
1,1,1-trichloroethane	mg/kg	<1	<1	<1	<1	<1
1,1-dichloropropene	mg/kg	<1	<1	<1	<1	<1
Cyclohexane	mg/kg	<1	<1	<1	<1	<1
carbon tetrachloride	mg/kg	<1	<1	<1	<1	<1
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
dibromomethane	mg/kg	<1	<1	<1	<1	<1
1,2-dichloropropane	mg/kg	<1	<1	<1	<1	<1
trichloroethene	mg/kg	<1	<1	<1	<1	<1
bromodichloromethane	mg/kg	<1	<1	<1	<1	<1
trans-1,3-dichloropropene	mg/kg	<1	<1	<1	<1	<1
cis-1,3-dichloropropene	mg/kg	<1	<1	<1	<1	<1
1,1,2-trichloroethane	mg/kg	<1	<1	<1	<1	<1
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,3-dichloropropane	mg/kg	<1	<1	<1	<1	<1
dibromochloromethane	mg/kg	<1	<1	<1	<1	<1
1,2-dibromoethane	mg/kg	<1	<1	<1	<1	<1
tetrachloroethene	mg/kg	<1	<1	<1	<1	<1
1,1,1,2-tetrachloroethane	mg/kg	<1	<1	<1	<1	<1
chlorobenzene	mg/kg	<1	<1	<1	<1	<1
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
bromoform	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
styrene	mg/kg	<1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	mg/kg	<1	<1	<1	<1	<1
o-Xylene	mg/kg	<1	<1	<1	<1	<1

VOCs in soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ---------- 	116059-2 TP1 1.9-2.0 10/09/2014 Soil	116059-4 TP2 1.9-2.0 10/09/2014 Soil	116059-6 TP3 2.9-3.0 10/09/2014 Soil	116059-8 TP4 1.9-2.0 10/09/2014 Soil	116059-10 TP5 2.9-3.0 10/09/2014 Soil
1,2,3-trichloropropane	mg/kg	<1	<1	<1	<1	<1
isopropylbenzene	mg/kg	<1	<1	<1	<1	<1
bromobenzene	mg/kg	<1	<1	<1	<1	<1
n-propyl benzene	mg/kg	<1	<1	<1	<1	<1
2-chlorotoluene	mg/kg	<1	<1	<1	<1	<1
4-chlorotoluene	mg/kg	<1	<1	<1	<1	<1
1,3,5-trimethyl benzene	mg/kg	<1	<1	<1	<1	<1
tert-butyl benzene	mg/kg	<1	<1	<1	<1	<1
1,2,4-trimethyl benzene	mg/kg	<1	<1	<1	<1	<1
1,3-dichlorobenzene	mg/kg	<1	<1	<1	<1	<1
sec-butyl benzene	mg/kg	<1	<1	<1	<1	<1
1,4-dichlorobenzene	mg/kg	<1	<1	<1	<1	<1
4-isopropyl toluene	mg/kg	<1	<1	<1	<1	<1
1,2-dichlorobenzene	mg/kg	<1	<1	<1	<1	<1
n-butyl benzene	mg/kg	<1	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	mg/kg	<1	<1	<1	<1	<1
1,2,4-trichlorobenzene	mg/kg	<1	<1	<1	<1	<1
hexachlorobutadiene	mg/kg	<1	<1	<1	<1	<1
1,2,3-trichlorobenzene	mg/kg	<1	<1	<1	<1	<1
Surrogate Dibromofluorometha	%	105	106	105	107	103
Surrogate aaa-Trifluorotoluene	%	102	104	105	99	103
Surrogate Toluene-d_8	%	94	95	95	94	94
Surrogate 4-Bromofluorobenzene	%	83	84	84	88	83

VOCs in soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	116059-12 TP6 0.9-1.0 10/09/2014 Soil	116059-14 TP7 1.7-1.8 10/09/2014 Soil	116059-16 TP8 1.4-1.5 10/09/2014 Soil	116059-18 TP9 1.5-1.6 10/09/2014 Soil	116059-19 QC1 - 10/09/2014 Soil
Date extracted	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Date analysed	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Dichlorodifluoromethane	mg/kg	<1	<1	<1	<1	<1
Chloromethane	mg/kg	<1	<1	<1	<1	<1
Vinyl Chloride	mg/kg	<1	<1	<1	<1	<1
Bromomethane	mg/kg	<1	<1	<1	<1	<1
Chloroethane	mg/kg	<1	<1	<1	<1	<1
Trichlorofluoromethane	mg/kg	<1	<1	<1	<1	<1
1,1-Dichloroethene	mg/kg	<1	<1	<1	<1	<1
trans-1,2-dichloroethene	mg/kg	<1	<1	<1	<1	<1
1,1-dichloroethane	mg/kg	<1	<1	<1	<1	<1
cis-1,2-dichloroethene	mg/kg	<1	<1	<1	<1	<1
bromochloromethane	mg/kg	<1	<1	<1	<1	<1
chloroform	mg/kg	<1	<1	<1	<1	<1
2,2-dichloropropane	mg/kg	<1	<1	<1	<1	<1
1,2-dichloroethane	mg/kg	<1	<1	<1	<1	<1
1,1,1-trichloroethane	mg/kg	<1	<1	<1	<1	<1
1,1-dichloropropene	mg/kg	<1	<1	<1	<1	<1
Cyclohexane	mg/kg	<1	<1	<1	<1	<1
carbon tetrachloride	mg/kg	<1	<1	<1	<1	<1
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
dibromomethane	mg/kg	<1	<1	<1	<1	<1
1,2-dichloropropane	mg/kg	<1	<1	<1	<1	<1
trichloroethene	mg/kg	<1	<1	<1	<1	<1
bromodichloromethane	mg/kg	<1	<1	<1	<1	<1
trans-1,3-dichloropropene	mg/kg	<1	<1	<1	<1	<1
cis-1,3-dichloropropene	mg/kg	<1	<1	<1	<1	<1
1,1,2-trichloroethane	mg/kg	<1	<1	<1	<1	<1
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,3-dichloropropane	mg/kg	<1	<1	<1	<1	<1
dibromochloromethane	mg/kg	<1	<1	<1	<1	<1
1,2-dibromoethane	mg/kg	<1	<1	<1	<1	<1
tetrachloroethene	mg/kg	<1	<1	<1	<1	<1
1,1,1,2-tetrachloroethane	mg/kg	<1	<1	<1	<1	<1
chlorobenzene	mg/kg	<1	<1	<1	<1	<1
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
bromoform	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
styrene	mg/kg	<1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	mg/kg	<1	<1	<1	<1	<1
o-Xylene	mg/kg	<1	<1	<1	<1	<1
1,2,3-trichloropropane	mg/kg	<1	<1	<1	<1	<1

VOCs in soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	116059-12 TP6 0.9-1.0 10/09/2014 Soil	116059-14 TP7 1.7-1.8 10/09/2014 Soil	116059-16 TP8 1.4-1.5 10/09/2014 Soil	116059-18 TP9 1.5-1.6 10/09/2014 Soil	116059-19 QC1 - 10/09/2014 Soil
isopropylbenzene	mg/kg	<1	<1	<1	<1	<1
bromobenzene	mg/kg	<1	<1	<1	<1	<1
n-propyl benzene	mg/kg	<1	<1	<1	<1	<1
2-chlorotoluene	mg/kg	<1	<1	<1	<1	<1
4-chlorotoluene	mg/kg	<1	<1	<1	<1	<1
1,3,5-trimethyl benzene	mg/kg	<1	<1	<1	<1	<1
tert-butyl benzene	mg/kg	<1	<1	<1	<1	<1
1,2,4-trimethyl benzene	mg/kg	<1	<1	<1	<1	<1
1,3-dichlorobenzene	mg/kg	<1	<1	<1	<1	<1
sec-butyl benzene	mg/kg	<1	<1	<1	<1	<1
1,4-dichlorobenzene	mg/kg	<1	<1	<1	<1	<1
4-isopropyl toluene	mg/kg	<1	<1	<1	<1	<1
1,2-dichlorobenzene	mg/kg	<1	<1	<1	<1	<1
n-butyl benzene	mg/kg	<1	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	mg/kg	<1	<1	<1	<1	<1
1,2,4-trichlorobenzene	mg/kg	<1	<1	<1	<1	<1
hexachlorobutadiene	mg/kg	<1	<1	<1	<1	<1
1,2,3-trichlorobenzene	mg/kg	<1	<1	<1	<1	<1
Surrogate Dibromofluorometha	%	104	107	105	105	104
Surrogate aaa-Trifluorotoluene	%	101	106	99	104	104
Surrogate Toluene-d_8	%	94	95	94	95	95
Surrogate 4-Bromofluorobenzene	%	83	82	83	86	82

VOCs in soil		
Our Reference:	UNITS	116059-20
Your Reference	----------	QC3
Depth	----------	-
Date Sampled		10/09/2014
Type of sample		Soil
Date extracted	-	15/09/2014
Date analysed	-	15/09/2014
Dichlorodifluoromethane	mg/kg	<1
Chloromethane	mg/kg	<1
Vinyl Chloride	mg/kg	<1
Bromomethane	mg/kg	<1
Chloroethane	mg/kg	<1
Trichlorofluoromethane	mg/kg	<1
1,1-Dichloroethene	mg/kg	<1
trans-1,2-dichloroethene	mg/kg	<1
1,1-dichloroethane	mg/kg	<1
cis-1,2-dichloroethene	mg/kg	<1
bromochloromethane	mg/kg	<1
chloroform	mg/kg	<1
2,2-dichloropropane	mg/kg	<1
1,2-dichloroethane	mg/kg	<1
1,1,1-trichloroethane	mg/kg	<1
1,1-dichloropropene	mg/kg	<1
Cyclohexane	mg/kg	<1
carbon tetrachloride	mg/kg	<1
Benzene	mg/kg	<0.2
dibromomethane	mg/kg	<1
1,2-dichloropropane	mg/kg	<1
trichloroethene	mg/kg	<1
bromodichloromethane	mg/kg	<1
trans-1,3-dichloropropene	mg/kg	<1
cis-1,3-dichloropropene	mg/kg	<1
1,1,2-trichloroethane	mg/kg	<1
Toluene	mg/kg	<0.5
1,3-dichloropropane	mg/kg	<1
dibromochloromethane	mg/kg	<1
1,2-dibromoethane	mg/kg	<1
tetrachloroethene	mg/kg	<1
1,1,1,2-tetrachloroethane	mg/kg	<1
chlorobenzene	mg/kg	<1
Ethylbenzene	mg/kg	<1
bromoform	mg/kg	<1
m+p-xylene	mg/kg	<2
styrene	mg/kg	<1
1,1,2,2-tetrachloroethane	mg/kg	<1
o-Xylene	mg/kg	<1
1,2,3-trichloropropane	mg/kg	<1

VOCs in soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	116059-20 QC3 - 10/09/2014 Soil
isopropylbenzene	mg/kg	<1
bromobenzene	mg/kg	<1
n-propyl benzene	mg/kg	<1
2-chlorotoluene	mg/kg	<1
4-chlorotoluene	mg/kg	<1
1,3,5-trimethyl benzene	mg/kg	<1
tert-butyl benzene	mg/kg	<1
1,2,4-trimethyl benzene	mg/kg	<1
1,3-dichlorobenzene	mg/kg	<1
sec-butyl benzene	mg/kg	<1
1,4-dichlorobenzene	mg/kg	<1
4-isopropyl toluene	mg/kg	<1
1,2-dichlorobenzene	mg/kg	<1
n-butyl benzene	mg/kg	<1
1,2-dibromo-3-chloropropane	mg/kg	<1
1,2,4-trichlorobenzene	mg/kg	<1
hexachlorobutadiene	mg/kg	<1
1,2,3-trichlorobenzene	mg/kg	<1
Surrogate Dibromofluorometha	%	104
Surrogate aaa-Trifluorotoluene	%	107
Surrogate Toluene-d_8	%	94
Surrogate 4-Bromofluorobenzene	%	81

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	116059-1	116059-2	116059-3	116059-4	116059-5
Your Reference	----------	TP1	TP1	TP2	TP2	TP3
Depth	----------	0.4-0.5	1.9-2.0	0.4-0.5	1.9-2.0	0.9-1.0
Date Sampled		10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Date analysed	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
TRHC$_6$ - C$_9$	mg/kg	<25	<25	<25	<25	<25
TRHC$_6$ - C$_{10}$	mg/kg	<25	<25	<25	<25	<25
vTPHC$_6$ - C$_{10}$ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	111	102	88	104	91

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	116059-6	116059-7	116059-8	116059-9	116059-10
Your Reference	----------	TP3	TP4	TP4	TP5	TP5
Depth	----------	2.9-3.0	0.9-1.0	1.9-2.0	0.4-0.5	2.9-3.0
Date Sampled		10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Date analysed	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
TRHC$_6$ - C$_9$	mg/kg	<25	<25	<25	<25	<25
TRHC$_6$ - C$_{10}$	mg/kg	<25	<25	<25	<25	<25
vTPHC$_6$ - C$_{10}$ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	105	91	99	97	103

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	116059-11	116059-12	116059-13	116059-14	116059-15
Your Reference	----------	TP6	TP6	TP7	TP7	TP8
Depth	----------	0.4-0.5	0.9-1.0	0.4-0.5	1.7-1.8	0.9-1.0
Date Sampled		10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Date analysed	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
TRHC$_6$ - C$_9$	mg/kg	<25	<25	<25	<25	<25
TRHC$_6$ - C$_{10}$	mg/kg	<25	<25	<25	<25	<25
vTPHC$_6$ - C$_{10}$ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	89	101	90	106	89

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	116059-16	116059-17	116059-18	116059-19	116059-20
Your Reference	----------	TP8	TP9	TP9	QC1	QC3
Depth	----------	1.4-1.5	0.4-0.5	1.5-1.6	-	-
Date Sampled		10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Date analysed	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
TRHC$_6$ - C$_9$	mg/kg	<25	<25	<25	<25	<25
TRHC$_6$ - C$_{10}$	mg/kg	<25	<25	<25	<25	<25
vTPHC$_6$ - C$_{10}$ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	99	95	104	104	107

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	116059-1	116059-2	116059-3	116059-4	116059-5
Your Reference	----------	TP1	TP1	TP2	TP2	TP3
Depth	----------	0.4-0.5	1.9-2.0	0.4-0.5	1.9-2.0	0.9-1.0
Date Sampled		10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Date analysed	-	16/09/2014	16/09/2014	16/09/2014	16/09/2014	16/09/2014
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	310	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	350	<100	<100	<100
TRH>C$_{10}$-C$_{16}$	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	<100	590	<100	<100	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100	160	<100	<100	<100
Surrogate o-Terphenyl	%	81	87	81	84	81

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	116059-6	116059-7	116059-8	116059-9	116059-10
Your Reference	----------	TP3	TP4	TP4	TP5	TP5
Depth	----------	2.9-3.0	0.9-1.0	1.9-2.0	0.4-0.5	2.9-3.0
Date Sampled		10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Date analysed	-	16/09/2014	16/09/2014	16/09/2014	16/09/2014	16/09/2014
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	65	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	<100	1,200	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	<100	1,600	<100	<100
TRH>C$_{10}$-C$_{16}$	mg/kg	<50	<50	150	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50	<50	150	<50	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	<100	<100	2,300	<100	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100	<100	930	<100	<100
Surrogate o-Terphenyl	%	84	81	93	81	79

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	116059-11	116059-12	116059-13	116059-14	116059-15
Your Reference	----------	TP6	TP6	TP7	TP7	TP8
Depth	----------	0.4-0.5	0.9-1.0	0.4-0.5	1.7-1.8	0.9-1.0
Date Sampled		10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Date analysed	-	16/09/2014	16/09/2014	16/09/2014	16/09/2014	17/09/2014
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	<100	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	<100	<100	<100	<100
TRH>C$_{10}$-C$_{16}$	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	<100	<100	<100	<100	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	80	81	81	86	80

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	116059-16	116059-17	116059-18	116059-19	116059-20
Your Reference	----------	TP8	TP9	TP9	QC1	QC3
Depth	----------	1.4-1.5	0.4-0.5	1.5-1.6	-	-
Date Sampled		10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Date analysed	-	17/09/2014	17/09/2014	17/09/2014	17/09/2014	17/09/2014
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	<100	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	<100	<100	<100	<100
TRH>C$_{10}$-C$_{16}$	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	110	<100	<100	<100	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	83	83	79	83	79

PAHs in Soil						
Our Reference:	UNITS	116059-1	116059-2	116059-3	116059-4	116059-5
Your Reference	----------	TP1	TP1	TP2	TP2	TP3
Depth	----------	0.4-0.5	1.9-2.0	0.4-0.5	1.9-2.0	0.9-1.0
Date Sampled		10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Date analysed	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ NEPM B1	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Total Positive PAHs	mg/kg	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	98	102	101	100	96

PAHs in Soil						
Our Reference:	UNITS	116059-6	116059-7	116059-8	116059-9	116059-10
Your Reference	----------	TP3	TP4	TP4	TP5	TP5
Depth	----------	2.9-3.0	0.9-1.0	1.9-2.0	0.4-0.5	2.9-3.0
Date Sampled		10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Date analysed	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Naphthalene	mg/kg	<0.1	<0.1	0.2	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	0.2	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ NEPM B1	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Total Positive PAHs	mg/kg	NIL (+)VE	NIL (+)VE	0.51	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	98	98	102	103	100

PAHs in Soil						
Our Reference:	UNITS	116059-11	116059-12	116059-13	116059-14	116059-15
Your Reference	----------	TP6	TP6	TP7	TP7	TP8
Depth	----------	0.4-0.5	0.9-1.0	0.4-0.5	1.7-1.8	0.9-1.0
Date Sampled		10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Date analysed	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ NEPM B1	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Total Positive PAHs	mg/kg	NIL (+)VE	NIL (+)VE	NIL (+)VE	0.10	NIL (+)VE
Surrogate p-Terphenyl-d14	%	100	97	96	104	102

PAHs in Soil						
Our Reference:	UNITS	116059-16	116059-17	116059-18	116059-19	116059-20
Your Reference	----------	TP8	TP9	TP9	QC1	QC3
Depth	----------	1.4-1.5	0.4-0.5	1.5-1.6	-	-
Date Sampled		10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Date analysed	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ NEPM B1	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Total Positive PAHs	mg/kg	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	102	103	90	109	102

Organochlorine Pesticides in soil						
Our Reference:	UNITS	116059-1	116059-2	116059-3	116059-4	116059-5
Your Reference	----------	TP1	TP1	TP2	TP2	TP3
Depth	----------	0.4-0.5	1.9-2.0	0.4-0.5	1.9-2.0	0.9-1.0
Date Sampled		10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Date analysed	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	86	90	87	89	86

Organochlorine Pesticides in soil						
Our Reference:	UNITS	116059-6	116059-7	116059-8	116059-9	116059-10
Your Reference	----------	TP3	TP4	TP4	TP5	TP5
Depth	----------	2.9-3.0	0.9-1.0	1.9-2.0	0.4-0.5	2.9-3.0
Date Sampled		10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Date analysed	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	86	86	93	82	85

Organochlorine Pesticides in soil						
Our Reference:	UNITS	116059-11	116059-12	116059-13	116059-14	116059-15
Your Reference	----------	TP6	TP6	TP7	TP7	TP8
Depth	----------	0.4-0.5	0.9-1.0	0.4-0.5	1.7-1.8	0.9-1.0
Date Sampled		10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Date analysed	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	86	85	87	91	85

Organochlorine Pesticides in soil						
Our Reference:	UNITS	116059-16	116059-17	116059-18	116059-19	116059-20
Your Reference	----------	TP8	TP9	TP9	QC1	QC3
Depth	----------	1.4-1.5	0.4-0.5	1.5-1.6	-	-
Date Sampled		10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Date analysed	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	89	92	83	91	85

PCBs in Soil						
Our Reference:	UNITS	116059-1	116059-2	116059-3	116059-4	116059-5
Your Reference	----------	TP1	TP1	TP2	TP2	TP3
Depth	----------	0.4-0.5	1.9-2.0	0.4-0.5	1.9-2.0	0.9-1.0
Date Sampled		10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Date analysed	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Arochlor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	86	90	87	89	86

PCBs in Soil						
Our Reference:	UNITS	116059-6	116059-7	116059-8	116059-9	116059-10
Your Reference	----------	TP3	TP4	TP4	TP5	TP5
Depth	----------	2.9-3.0	0.9-1.0	1.9-2.0	0.4-0.5	2.9-3.0
Date Sampled		10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Date analysed	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Arochlor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	86	86	84	82	85

PCBs in Soil						
Our Reference:	UNITS	116059-11	116059-12	116059-13	116059-14	116059-15
Your Reference	----------	TP6	TP6	TP7	TP7	TP8
Depth	----------	0.4-0.5	0.9-1.0	0.4-0.5	1.7-1.8	0.9-1.0
Date Sampled		10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Date analysed	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Arochlor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	86	85	87	91	85

PCBs in Soil						
Our Reference:	UNITS	116059-16	116059-17	116059-18	116059-19	116059-20
Your Reference	----------	TP8	TP9	TP9	QC1	QC3
Depth	----------	1.4-1.5	0.4-0.5	1.5-1.6	-	-
Date Sampled		10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Date analysed	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Arochlor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Arochlor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	89	92	83	91	85

Total Phenolics in Soil						
Our Reference:	UNITS	116059-1	116059-2	116059-3	116059-4	116059-5
Your Reference	----------	TP1	TP1	TP2	TP2	TP3
Depth	----------	0.4-0.5	1.9-2.0	0.4-0.5	1.9-2.0	0.9-1.0
Date Sampled		10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Date analysed	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Total Phenolics in Soil						
Our Reference:	UNITS	116059-6	116059-7	116059-8	116059-9	116059-10
Your Reference	----------	TP3	TP4	TP4	TP5	TP5
Depth	----------	2.9-3.0	0.9-1.0	1.9-2.0	0.4-0.5	2.9-3.0
Date Sampled		10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Date analysed	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Total Phenolics in Soil						
Our Reference:	UNITS	116059-11	116059-12	116059-13	116059-14	116059-15
Your Reference	----------	TP6	TP6	TP7	TP7	TP8
Depth	----------	0.4-0.5	0.9-1.0	0.4-0.5	1.7-1.8	0.9-1.0
Date Sampled		10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Date analysed	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Total Phenolics in Soil						
Our Reference:	UNITS	116059-16	116059-17	116059-18	116059-19	116059-20
Your Reference	----------	TP8	TP9	TP9	QC1	QC3
Depth	----------	1.4-1.5	0.4-0.5	1.5-1.6	-	-
Date Sampled		10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Date analysed	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Acid Extractable metals in soil						
Our Reference:	UNITS	116059-1	116059-2	116059-3	116059-4	116059-5
Your Reference	----------	TP1	TP1	TP2	TP2	TP3
Depth	----------	0.4-0.5	1.9-2.0	0.4-0.5	1.9-2.0	0.9-1.0
Date Sampled		10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Date analysed	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Arsenic	mg/kg	<4	52	<4	<4	<4
Cadmium	mg/kg	<0.4	0.7	<0.4	<0.4	<0.4
Chromium	mg/kg	12	52	10	12	20
Copper	mg/kg	8	230	6	7	14
Lead	mg/kg	10	250	7	12	220
Mercury	mg/kg	<0.1	1.4	<0.1	<0.1	<0.1
Nickel	mg/kg	7	92	5	6	9
Zinc	mg/kg	21	480	15	21	96

Acid Extractable metals in soil						
Our Reference:	UNITS	116059-6	116059-7	116059-8	116059-9	116059-10
Your Reference	----------	TP3	TP4	TP4	TP5	TP5
Depth	----------	2.9-3.0	0.9-1.0	1.9-2.0	0.4-0.5	2.9-3.0
Date Sampled		10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Date analysed	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Arsenic	mg/kg	5	<4	20	<4	<4
Cadmium	mg/kg	<0.4	<0.4	1	<0.4	<0.4
Chromium	mg/kg	21	12	410	13	10
Copper	mg/kg	50	6	35	8	5
Lead	mg/kg	85	8	68	13	6
Mercury	mg/kg	<0.1	<0.1	1.6	<0.1	<0.1
Nickel	mg/kg	18	6	9	6	5
Zinc	mg/kg	250	18	210	27	12

Acid Extractable metals in soil						
Our Reference:	UNITS	116059-11	116059-12	116059-13	116059-14	116059-15
Your Reference	----------	TP6	TP6	TP7	TP7	TP8
Depth	----------	0.4-0.5	0.9-1.0	0.4-0.5	1.7-1.8	0.9-1.0
Date Sampled		10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Date analysed	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	12	11	11	12	12
Copper	mg/kg	6	6	14	13	7
Lead	mg/kg	9	6	11	27	9
Mercury	mg/kg	<0.1	<0.1	<0.1	0.4	<0.1
Nickel	mg/kg	6	5	6	7	7
Zinc	mg/kg	22	17	36	36	30

Acid Extractable metals in soil						
Our Reference:	UNITS	116059-16	116059-17	116059-18	116059-19	116059-20
Your Reference	----------	TP8	TP9	TP9	QC1	QC3
Depth	----------	1.4-1.5	0.4-0.5	1.5-1.6	-	-
Date Sampled		10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Date analysed	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Arsenic	mg/kg	<4	<4	<4	<4	4
Cadmium	mg/kg	<0.4	<0.4	1	<0.4	<0.4
Chromium	mg/kg	11	11	170	15	18
Copper	mg/kg	5	6	210	8	12
Lead	mg/kg	7	7	83	13	23
Mercury	mg/kg	<0.1	<0.1	0.4	<0.1	<0.1
Nickel	mg/kg	5	6	8	7	9
Zinc	mg/kg	24	16	160	33	69

Acid Extractable metals in soil		
Our Reference:	UNITS	116059-23
Your Reference	----------	TP1 - TRIPLICATE
Depth	----------	1.9-2.0
Date Sampled		10/09/2014
Type of sample		Soil
Date digested	-	15/09/2014
Date analysed	-	15/09/2014
Arsenic	mg/kg	20
Cadmium	mg/kg	0.4
Chromium	mg/kg	30
Copper	mg/kg	98
Lead	mg/kg	280
Mercury	mg/kg	0.9
Nickel	mg/kg	39
Zinc	mg/kg	430

Moisture						
Our Reference:	UNITS	116059-1	116059-2	116059-3	116059-4	116059-5
Your Reference	----------	TP1	TP1	TP2	TP2	TP3
Depth	----------	0.4-0.5	1.9-2.0	0.4-0.5	1.9-2.0	0.9-1.0
Date Sampled		10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Date analysed	-	16/09/2014	16/09/2014	16/09/2014	16/09/2014	16/09/2014
Moisture	%	6.2	21	8.0	18	12

Moisture						
Our Reference:	UNITS	116059-6	116059-7	116059-8	116059-9	116059-10
Your Reference	----------	TP3	TP4	TP4	TP5	TP5
Depth	----------	2.9-3.0	0.9-1.0	1.9-2.0	0.4-0.5	2.9-3.0
Date Sampled		10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Date analysed	-	16/09/2014	16/09/2014	16/09/2014	16/09/2014	16/09/2014
Moisture	%	17	11	37	11	12

Moisture						
Our Reference:	UNITS	116059-11	116059-12	116059-13	116059-14	116059-15
Your Reference	----------	TP6	TP6	TP7	TP7	TP8
Depth	----------	0.4-0.5	0.9-1.0	0.4-0.5	1.7-1.8	0.9-1.0
Date Sampled		10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Date analysed	-	16/09/2014	16/09/2014	16/09/2014	16/09/2014	16/09/2014
Moisture	%	10	15	9.9	14	12

Moisture						
Our Reference:	UNITS	116059-16	116059-17	116059-18	116059-19	116059-20
Your Reference	----------	TP8	TP9	TP9	QC1	QC3
Depth	----------	1.4-1.5	0.4-0.5	1.5-1.6	-	-
Date Sampled		10/09/2014	10/09/2014	10/09/2014	10/09/2014	10/09/2014
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	15/09/2014	15/09/2014	15/09/2014	15/09/2014	15/09/2014
Date analysed	-	16/09/2014	16/09/2014	16/09/2014	16/09/2014	16/09/2014
Moisture	%	17	8.8	24	8.9	16

Asbestos ID - soils NEPM*			
Our Reference:	UNITS	116059-2	116059-9
Your Reference	----------	TP1	TP5
Depth	----------	1.9-2.0	0.4-0.5
Date Sampled		10/09/2014	10/09/2014
Type of sample		Soil	Soil
Date analysed	-	18/09/2014	18/09/2014
Sample mass tested	g	521.61g	484.58g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg
Trace Analysis	-	No asbestos detected	No asbestos detected
ACM>7mm*	-	-	-
ACM<7mm*	-	-	-
Fibrous Asb(FA)/Asb Fines(AF)	-	-	-
Asbestos ww%* Note	-	<0.001	<0.001
Comments	-	See back page	See back page

CEC Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- ----------	116059-4 TP2 1.9-2.0 10/09/2014 Soil	116059-12 TP6 0.9-1.0 10/09/2014 Soil	116059-16 TP8 1.4-1.5 10/09/2014 Soil
Date extracted	-	17/09/2014	17/09/2014	17/09/2014
Date analysed	-	18/09/2014	18/09/2014	18/09/2014
Exchangeable Ca	meq/100g	1.4	0.5	3.3
Exchangeable K	meq/100g	0.5	0.4	0.4
Exchangeable Mg	meq/100g	0.94	0.51	0.78
Exchangeable Na	meq/100g	0.12	0.27	0.18
Cation Exchange Capacity	meq/100g	2.9	1.7	4.7

Miscellaneous Inorg - soil				
Our Reference:	UNITS	116059-4	116059-12	116059-16
Your Reference	----------	TP2	TP6	TP8
Depth	----------	1.9-2.0	0.9-1.0	1.4-1.5
Date Sampled		10/09/2014	10/09/2014	10/09/2014
Type of sample		Soil	Soil	Soil
Date prepared	-	15/09/2014	15/09/2014	15/09/2014
Date analysed	-	16/09/2014	16/09/2014	16/09/2014
pH 1:5 soil:water	pH Units	8.3	8.2	8.5
Clay in soils <2um	% (w/w)	14	12	14

VOCs in water		
Our Reference:	UNITS	116059-21
Your Reference	----------	R1
Depth	----------	-
Date Sampled		10/09/2014
Type of sample		water
Date extracted	-	12/09/2014
Date analysed	-	12/09/2014
Dichlorodifluoromethane	µg/L	<10
Chloromethane	µg/L	<10
Vinyl Chloride	µg/L	<10
Bromomethane	µg/L	<10
Chloroethane	µg/L	<10
Trichlorofluoromethane	µg/L	<10
1,1-Dichloroethene	µg/L	<1
Trans-1,2-dichloroethene	µg/L	<1
1,1-dichloroethane	µg/L	<1
Cis-1,2-dichloroethene	µg/L	<1
Bromochloromethane	µg/L	<1
Chloroform	µg/L	<1
2,2-dichloropropane	µg/L	<1
1,2-dichloroethane	µg/L	<1
1,1,1-trichloroethane	µg/L	<1
1,1-dichloropropene	µg/L	<1
Cyclohexane	µg/L	<1
Carbon tetrachloride	µg/L	<1
Benzene	µg/L	<1
Dibromomethane	µg/L	<1
1,2-dichloropropane	µg/L	<1
Trichloroethene	µg/L	<1
Bromodichloromethane	µg/L	<1
trans-1,3-dichloropropene	µg/L	<1
cis-1,3-dichloropropene	µg/L	<1
1,1,2-trichloroethane	µg/L	<1
Toluene	µg/L	<1
1,3-dichloropropane	µg/L	<1
Dibromochloromethane	µg/L	<1
1,2-dibromoethane	µg/L	<1
Tetrachloroethene	µg/L	<1
1,1,1,2-tetrachloroethane	µg/L	<1
Chlorobenzene	µg/L	<1
Ethylbenzene	µg/L	<1
Bromoform	µg/L	<1
m+p-xylene	µg/L	<2
Styrene	µg/L	<1
1,1,2,2-tetrachloroethane	µg/L	<1
o-xylene	µg/L	<1
1,2,3-trichloropropane	µg/L	<1

VOCs in water		
Our Reference:	UNITS	116059-21
Your Reference	----------	R1
Depth	----------	-
Date Sampled		10/09/2014
Type of sample		water
Isopropylbenzene	µg/L	<1
Bromobenzene	µg/L	<1
n-propyl benzene	µg/L	<1
2-chlorotoluene	µg/L	<1
4-chlorotoluene	µg/L	<1
1,3,5-trimethyl benzene	µg/L	<1
Tert-butyl benzene	µg/L	<1
1,2,4-trimethyl benzene	µg/L	<1
1,3-dichlorobenzene	µg/L	<1
Sec-butyl benzene	µg/L	<1
1,4-dichlorobenzene	µg/L	<1
4-isopropyl toluene	µg/L	<1
1,2-dichlorobenzene	µg/L	<1
n-butyl benzene	µg/L	<1
1,2-dibromo-3-chloropropane	µg/L	<1
1,2,4-trichlorobenzene	µg/L	<1
Hexachlorobutadiene	µg/L	<1
1,2,3-trichlorobenzene	µg/L	<1
Surrogate Dibromofluoromethane	%	105
Surrogate toluene-d8	%	102
Surrogate 4-BFB	%	103

vTRH(C6-C10)/BTEXN in Water			
Our Reference:	UNITS	116059-21	116059-22
Your Reference	----------	R1	TB1
Depth	----------	-	-
Date Sampled		10/09/2014	10/09/2014
Type of sample		water	water
Date extracted	-	12/09/2014	12/09/2014
Date analysed	-	12/09/2014	12/09/2014
$TRHC_6$ - C_9	µg/L	<10	<10
$TRHC_6$ - C_{10}	µg/L	<10	<10
$TRHC_6$ - C_{10} less BTEX (F1)	µg/L	<10	<10
Benzene	µg/L	<1	<1
Toluene	µg/L	<1	<1
Ethylbenzene	µg/L	<1	<1
m+p-xylene	µg/L	<2	<2
o-xylene	µg/L	<1	<1
Naphthalene	µg/L	<1	<1
Surrogate Dibromofluoromethane	%	105	125
Surrogate toluene-d8	%	102	94
Surrogate 4-BFB	%	103	96

svTRH (C10-C40) in Water		
Our Reference:	UNITS	116059-21
Your Reference	----------	R1
Depth	----------	-
Date Sampled		10/09/2014
Type of sample		water
Date extracted	-	15/09/2014
Date analysed	-	16/09/2014
TRHC$_{10}$ - C$_{14}$	µg/L	<50
TRHC$_{15}$ - C$_{28}$	µg/L	<100
TRHC$_{29}$ - C$_{36}$	µg/L	<100
TRH>C$_{10}$ - C$_{16}$	µg/L	59
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	µg/L	59
TRH>C$_{16}$ - C$_{34}$	µg/L	<100
TRH>C$_{34}$ - C$_{40}$	µg/L	<100
Surrogate o-Terphenyl	%	134

PAHs in Water		
Our Reference:	UNITS	116059-21
Your Reference	----------	R1
Depth	----------	-
Date Sampled		10/09/2014
Type of sample		water
Date extracted	-	15/09/2014
Date analysed	-	15/09/2014
Naphthalene	µg/L	<1
Acenaphthylene	µg/L	<1
Acenaphthene	µg/L	<1
Fluorene	µg/L	<1
Phenanthrene	µg/L	<1
Anthracene	µg/L	<1
Fluoranthene	µg/L	<1
Pyrene	µg/L	<1
Benzo(a)anthracene	µg/L	<1
Chrysene	µg/L	<1
Benzo(b,j+k)fluoranthene	µg/L	<2
Benzo(a)pyrene	µg/L	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1
Dibenzo(a,h)anthracene	µg/L	<1
Benzo(g,h,i)perylene	µg/L	<1
Benzo(a)pyrene TEQ	µg/L	<5
Total +ve PAH's	µg/L	NIL (+)VE
Surrogate p-Terphenyl-d14	%	140

Total Phenolics in Water		
Our Reference:	UNITS	116059-21
Your Reference	----------	R1
Depth	----------	-
Date Sampled		10/09/2014
Type of sample		water
Date extracted	-	15/09/2014
Date analysed	-	15/09/2014
Total Phenolics (as Phenol)	mg/L	<0.05

OCP in water		
Our Reference:	UNITS	116059-21
Your Reference	----------	R1
Depth	----------	-
Date Sampled		10/09/2014
Type of sample		water
Date extracted	-	15/09/2014
Date analysed	-	15/09/2014
HCB	µg/L	<0.2
alpha-BHC	µg/L	<0.2
gamma-BHC	µg/L	<0.2
beta-BHC	µg/L	<0.2
Heptachlor	µg/L	<0.2
delta-BHC	µg/L	<0.2
Aldrin	µg/L	<0.2
Heptachlor Epoxide	µg/L	<0.2
gamma-Chlordane	µg/L	<0.2
alpha-Chlordane	µg/L	<0.2
Endosulfan I	µg/L	<0.2
pp-DDE	µg/L	<0.2
Dieldrin	µg/L	<0.2
Endrin	µg/L	<0.2
pp-DDD	µg/L	<0.2
Endosulfan II	µg/L	<0.2
pp-DDT	µg/L	<0.2
Endrin Aldehyde	µg/L	<0.2
Endosulfan Sulphate	µg/L	<0.2
Methoxychlor	µg/L	<0.2
Surrogate TCMX	%	122

PCBs in Water		
Our Reference:	UNITS	116059-21
Your Reference	----------	R1
Depth	----------	-
Date Sampled		10/09/2014
Type of sample		water
Date extracted	-	15/09/2014
Date analysed	-	15/09/2014
Arochlor 1016	µg/L	<2
Arochlor 1221	µg/L	<2
Arochlor 1232	µg/L	<2
Arochlor 1242	µg/L	<2
Arochlor 1248	µg/L	<2
Arochlor 1254	µg/L	<2
Arochlor 1260	µg/L	<2
Surrogate TCLMX	%	122

Method ID	Methodology Summary
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)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-012 subset	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.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Inorg-031	Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish). Solids are extracted in a caustic media prior to analysis.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Inorg-008	Moisture content determined by heating at 105+/-5 deg C for a minimum of 12 hours.
ASB-007	Asbestos ID - Identification of asbestos in soil samples using Polarised Light Microscopy and Dispersion Staining Techniques. Minimum 500mL soil sample was analysed as recommended by "National Environment Protection (Assessment of site contamination) Measure, Schedule B1 and "The Guidelines from the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia - May 2009" with a reporting limit between 0.01g/kg (0.001% w/w) to 0.1g/kg (0.01% w/w). This form of analysis is outside the scope of NATA accreditation. Note: The screening level of 0.001% w/w asbestos in soil for FA and AF (i.e. non-bonded/friable asbestos) only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres.
Metals-009	Determination of exchangeable cations and cation exchange capacity in soil based on Rayment and Lyons 2011.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
AS1289.3.6.3	Determination Particle Size Analysis using AS1289.3.6.3 and AS1289.3.6.1 and in house method INORG-107. Clay fraction at <2um reported.
Org-013	Water samples are analysed directly by purge and trap GC-MS.

QUALITY CONTROL VOCs in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			15/09/2014	116059-2	15/09/2014 || 15/09/2014	LCS-4	15/09/2014
Date analysed	-			15/08/2014	116059-2	15/09/2014 || 15/09/2014	LCS-4	15/09/2014
Dichlorodifluoromethane	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
Chloromethane	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
Vinyl Chloride	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
Bromomethane	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
Chloroethane	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
Trichlorofluoromethane	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
1,1-Dichloroethene	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
trans-1,2-dichloroethene	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
1,1-dichloroethane	mg/kg	1	Org-014	<1	116059-2	<1 || <1	LCS-4	97%
cis-1,2-dichloroethene	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
bromochloromethane	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
chloroform	mg/kg	1	Org-014	<1	116059-2	<1 || <1	LCS-4	102%
2,2-dichloropropane	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
1,2-dichloroethane	mg/kg	1	Org-014	<1	116059-2	<1 || <1	LCS-4	98%
1,1,1-trichloroethane	mg/kg	1	Org-014	<1	116059-2	<1 || <1	LCS-4	94%
1,1-dichloropropene	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
Cyclohexane	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
carbon tetrachloride	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
Benzene	mg/kg	0.2	Org-014	<0.2	116059-2	<0.2 || <0.2	[NR]	[NR]
dibromomethane	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
1,2-dichloropropane	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
trichloroethene	mg/kg	1	Org-014	<1	116059-2	<1 || <1	LCS-4	84%
bromodichloromethane	mg/kg	1	Org-014	<1	116059-2	<1 || <1	LCS-4	97%
trans-1,3-dichloropropene	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
cis-1,3-dichloropropene	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
1,1,2-trichloroethane	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
Toluene	mg/kg	0.5	Org-014	<0.5	116059-2	<0.5 || <0.5	[NR]	[NR]
1,3-dichloropropane	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
dibromochloromethane	mg/kg	1	Org-014	<1	116059-2	<1 || <1	LCS-4	88%
1,2-dibromoethane	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
tetrachloroethene	mg/kg	1	Org-014	<1	116059-2	<1 || <1	LCS-4	87%
1,1,1,2-tetrachloroethane	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
chlorobenzene	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
Ethylbenzene	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
bromoform	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
m+p-xylene	mg/kg	2	Org-014	<2	116059-2	<2 || <2	[NR]	[NR]
styrene	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
1,1,2,2-tetrachloroethane	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
o-Xylene	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
1,2,3-trichloropropane	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]

Client Reference: 960502

QUALITY CONTROL VOCs in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
isopropylbenzene	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
bromobenzene	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
n-propyl benzene	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
2-chlorotoluene	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
4-chlorotoluene	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
1,3,5-trimethyl benzene	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
tert-butyl benzene	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
1,2,4-trimethyl benzene	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
1,3-dichlorobenzene	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
sec-butyl benzene	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
1,4-dichlorobenzene	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
4-isopropyl toluene	mg/kg	1	Org-014	<1	116059-2	<1 || 1	[NR]	[NR]
1,2-dichlorobenzene	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
n-butyl benzene	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
1,2-dibromo-3-chloropropane	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
1,2,4-trichlorobenzene	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
hexachlorobutadiene	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
1,2,3-trichlorobenzene	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
Surrogate Dibromofluorometha	%		Org-014	104	116059-2	105 || 104 || RPD: 1	LCS-4	104%
Surrogate aaa-Trifluorotoluene	%		Org-014	108	116059-2	102 || 100 || RPD: 2	LCS-4	106%
Surrogate Toluene-d_8	%		Org-014	94	116059-2	94 || 94 || RPD: 0	LCS-4	94%
Surrogate 4-Bromofluorobenzene	%		Org-014	84	116059-2	83 || 84 || RPD: 1	LCS-4	95%

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			15/09/2014	116059-2	15/09/2014 || 15/09/2014	LCS-4	15/09/2014
Date analysed	-			15/09/2014	116059-2	15/09/2014 || 15/09/2014	LCS-4	15/09/2014
TRHC6 - C9	mg/kg	25	Org-016	<25	116059-2	<25 || <25	LCS-4	113%
TRHC6 - C10	mg/kg	25	Org-016	<25	116059-2	<25 || <25	LCS-4	113%
Benzene	mg/kg	0.2	Org-016	<0.2	116059-2	<0.2 || <0.2	LCS-4	115%
Toluene	mg/kg	0.5	Org-016	<0.5	116059-2	<0.5 || <0.5	LCS-4	111%
Ethylbenzene	mg/kg	1	Org-016	<1	116059-2	<1 || <1	LCS-4	112%
m+p-xylene	mg/kg	2	Org-016	<2	116059-2	<2 || <2	LCS-4	114%
o-Xylene	mg/kg	1	Org-016	<1	116059-2	<1 || <1	LCS-4	112%
naphthalene	mg/kg	1	Org-014	<1	116059-2	<1 || <1	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		Org-016	113	116059-2	102 || 100 || RPD: 2	LCS-4	109%

QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			15/09/2014	116059-2	15/09/2014 || 15/09/2014	LCS-4	15/09/2014
Date analysed	-			16/09/2014	116059-2	16/09/2014 || 16/09/2014	LCS-4	16/09/2014
TRHC10 - C14	mg/kg	50	Org-003	<50	116059-2	<50 || <50	LCS-4	92%
TRHC15 - C28	mg/kg	100	Org-003	<100	116059-2	310 || 230 || RPD: 30	LCS-4	105%
TRHC29 - C36	mg/kg	100	Org-003	<100	116059-2	350 || 310 || RPD: 12	LCS-4	103%
TRH>C10-C16	mg/kg	50	Org-003	<50	116059-2	<50 || <50	LCS-4	92%
TRH>C16-C34	mg/kg	100	Org-003	<100	116059-2	590 || 480 || RPD: 21	LCS-4	105%
TRH>C34-C40	mg/kg	100	Org-003	<100	116059-2	160 || 120 || RPD: 29	LCS-4	103%
Surrogate o-Terphenyl	%		Org-003	85	116059-2	87 || 84 || RPD: 4	LCS-4	94%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			15/09/2014	116059-2	15/09/2014 || 15/09/2014	LCS-4	15/09/2014
Date analysed	-			15/09/2014	116059-2	15/09/2014 || 15/09/2014	LCS-4	15/09/2014
Naphthalene	mg/kg	0.1	Org-012 subset	<0.1	116059-2	<0.1 || 0.1	LCS-4	103%
Acenaphthylene	mg/kg	0.1	Org-012 subset	<0.1	116059-2	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012 subset	<0.1	116059-2	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012 subset	<0.1	116059-2	<0.1 || <0.1	LCS-4	101%
Phenanthrene	mg/kg	0.1	Org-012 subset	<0.1	116059-2	<0.1 || <0.1	LCS-4	105%
Anthracene	mg/kg	0.1	Org-012 subset	<0.1	116059-2	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012 subset	<0.1	116059-2	<0.1 || <0.1	LCS-4	106%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Pyrene	mg/kg	0.1	Org-012 subset	<0.1	116059-2	<0.1 || <0.1	LCS-4	109%
Benzo(a)anthracene	mg/kg	0.1	Org-012 subset	<0.1	116059-2	<0.1 || <0.1	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012 subset	<0.1	116059-2	<0.1 || <0.1	LCS-4	85%
Benzo(b,j+k) fluoranthene	mg/kg	0.2	Org-012 subset	<0.2	116059-2	<0.2 || <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	Org-012 subset	<0.05	116059-2	<0.05 || <0.05	LCS-4	117%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012 subset	<0.1	116059-2	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012 subset	<0.1	116059-2	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012 subset	<0.1	116059-2	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012 subset	108	116059-2	102 || 97 || RPD: 5	LCS-4	98%
QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			15/09/2014	116059-2	15/09/2014 || 15/09/2014	LCS-4	15/09/2014
Date analysed	-			15/09/2014	116059-2	15/09/2014 || 15/09/2014	LCS-4	15/09/2014
HCB	mg/kg	0.1	Org-005	<0.1	116059-2	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	116059-2	<0.1 || <0.1	LCS-4	82%
gamma-BHC	mg/kg	0.1	Org-005	<0.1	116059-2	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	0.1	Org-005	<0.1	116059-2	<0.1 || <0.1	LCS-4	89%
Heptachlor	mg/kg	0.1	Org-005	<0.1	116059-2	<0.1 || <0.1	LCS-4	86%
delta-BHC	mg/kg	0.1	Org-005	<0.1	116059-2	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	0.1	Org-005	<0.1	116059-2	<0.1 || <0.1	LCS-4	87%
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	116059-2	<0.1 || <0.1	LCS-4	87%
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	116059-2	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	116059-2	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	116059-2	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	0.1	Org-005	<0.1	116059-2	<0.1 || <0.1	LCS-4	85%
Dieldrin	mg/kg	0.1	Org-005	<0.1	116059-2	<0.1 || <0.1	LCS-4	87%
Endrin	mg/kg	0.1	Org-005	<0.1	116059-2	<0.1 || <0.1	LCS-4	87%
pp-DDD	mg/kg	0.1	Org-005	<0.1	116059-2	<0.1 || <0.1	LCS-4	92%
Endosulfan II	mg/kg	0.1	Org-005	<0.1	116059-2	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	0.1	Org-005	<0.1	116059-2	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	116059-2	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	116059-2	<0.1 || <0.1	LCS-4	89%
Methoxychlor	mg/kg	0.1	Org-005	<0.1	116059-2	<0.1 || <0.1	[NR]	[NR]
Surrogate TCMX	%		Org-005	90	116059-2	90 || 95 || RPD: 5	LCS-4	86%

QUALITY CONTROL PCBs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			15/09/2014	116059-2	15/09/2014 || 15/09/2014	LCS-4	15/09/2014
Date analysed	-			15/09/2014	116059-2	15/09/2014 || 15/09/2014	LCS-4	15/09/2014
Arochlor 1016	mg/kg	0.1	Org-006	<0.1	116059-2	<0.1 || <0.1	[NR]	[NR]
Arochlor 1221	mg/kg	0.1	Org-006	<0.1	116059-2	<0.1 || <0.1	[NR]	[NR]
Arochlor 1232	mg/kg	0.1	Org-006	<0.1	116059-2	<0.1 || <0.1	[NR]	[NR]
Arochlor 1242	mg/kg	0.1	Org-006	<0.1	116059-2	<0.1 || <0.1	[NR]	[NR]
Arochlor 1248	mg/kg	0.1	Org-006	<0.1	116059-2	<0.1 || <0.1	[NR]	[NR]
Arochlor 1254	mg/kg	0.1	Org-006	<0.1	116059-2	<0.1 || <0.1	LCS-4	105%
Arochlor 1260	mg/kg	0.1	Org-006	<0.1	116059-2	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%		Org-006	90	116059-2	90 || 95 || RPD: 5	LCS-4	93%

QUALITY CONTROL Total Phenolics in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			18/09/2014	116059-1	15/09/2014 || 15/09/2014	LCS-1	18/09/2014
Date analysed	-			18/09/2014	116059-1	15/09/2014 || 15/09/2014	LCS-1	18/09/2014
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	<5	116059-1	<5 || <5	LCS-1	102%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date digested	-			15/09/2014	116059-2	15/09/2014 || 15/09/2014	LCS-2	15/09/2014
Date analysed	-			15/09/2014	116059-2	15/09/2014 || 15/09/2014	LCS-2	15/09/2014
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	116059-2	52 || 40 || RPD: 26	LCS-2	91%
Cadmium	mg/kg	0.4	Metals-020 ICP-AES	<0.4	116059-2	0.7 || 2 || RPD: 96	LCS-2	100%
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	116059-2	52 || 41 || RPD: 24	LCS-2	97%
Copper	mg/kg	1	Metals-020 ICP-AES	<1	116059-2	230 || 190 || RPD: 19	LCS-2	95%
Lead	mg/kg	1	Metals-020 ICP-AES	<1	116059-2	250 || 190 || RPD: 27	LCS-2	95%
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	116059-2	1.4 || 1.5 || RPD: 7	LCS-2	112%
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	116059-2	92 || 68 || RPD: 30	LCS-2	97%
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	116059-2	480 || 460 || RPD: 4	LCS-2	97%

QUALITY CONTROL CEC	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			17/09/2014	116059-4	17/09/2014 || 17/09/2014	LCS-1	17/09/2014
Date analysed	-			18/09/2014	116059-4	18/09/2014 || 18/09/2014	LCS-1	18/09/2014
Exchangeable Ca	meq/100g	0.1	Metals-009	<0.1	116059-4	1.4 || 1.4 || RPD: 0	LCS-1	103%
Exchangeable K	meq/100g	0.1	Metals-009	<0.1	116059-4	0.5 || 0.5 || RPD: 0	LCS-1	99%
Exchangeable Mg	meq/100g	0.1	Metals-009	<0.1	116059-4	0.94 || 0.90 || RPD: 4	LCS-1	103%
Exchangeable Na	meq/100g	0.1	Metals-009	<0.1	116059-4	0.12 || 0.12 || RPD: 0	LCS-1	102%
Cation Exchange Capacity	meq/100g	1	Metals-009	<1.0	116059-4	2.9 || 2.9 || RPD: 0	[NR]	[NR]
QUALITY CONTROL Miscellaneous Inorg - soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			[NT]	[NT]	[NT]	LCS-1	15/09/2014
Date analysed	-			[NT]	[NT]	[NT]	LCS-1	16/09/2014
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	[NT]	[NT]	LCS-1	102%
Clay in soils <2um	% (w/w)		AS1289.3.6.3	[NT]	[NT]	[NT]	[NR]	[NR]
QUALITY CONTROL VOCs in water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			12/09/2014	[NT]	[NT]	LCS-W2	12/09/2014
Date analysed	-			12/09/2014	[NT]	[NT]	LCS-W2	12/09/2014
Dichlorodifluoromethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
Chloromethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
Vinyl Chloride	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
Bromomethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
Chloroethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
Trichlorofluoromethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NR]	[NR]
1,1-Dichloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Trans-1,2-dichloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,1-dichloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W2	93%
Cis-1,2-dichloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Bromochloromethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Chloroform	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W2	105%
2,2-dichloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2-dichloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W2	122%
1,1,1-trichloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W2	109%
1,1-dichloropropene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Cyclohexane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Carbon tetrachloride	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]

QUALITY CONTROL VOCs in water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Dibromomethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2-dichloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Trichloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W2	90%
Bromodichloromethane	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W2	99%
trans-1,3-dichloropropene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
cis-1,3-dichloropropene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,1,2-trichloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Toluene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,3-dichloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Dibromochloromethane	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W2	93%
1,2-dibromoethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Tetrachloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	LCS-W2	91%
1,1,1,2-tetrachloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Chlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Ethylbenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Bromoform	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
m+p-xylene	µg/L	2	Org-013	<2	[NT]	[NT]	[NR]	[NR]
Styrene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,1,2,2-tetrachloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
o-xylene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2,3-trichloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Isopropylbenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Bromobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
n-propyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
2-chlorotoluene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
4-chlorotoluene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,3,5-trimethyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Tert-butyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2,4-trimethyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,3-dichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Sec-butyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,4-dichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
4-isopropyl toluene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2-dichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
n-butyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2-dibromo-3-chloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2,4-trichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Hexachlorobutadiene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
1,2,3-trichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Surrogate Dibromofluoromethane	%		Org-013	109	[NT]	[NT]	LCS-W2	99%
Surrogate toluene-d8	%		Org-013	101	[NT]	[NT]	LCS-W2	97%

QUALITY CONTROL VOCs in water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Surrogate 4-BFB	%		Org-013	100	[NT]	[NT]	LCS-W2	87%
QUALITY CONTROL vTRH(C6-C10)/BTEXN in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			12/09/2014	[NT]	[NT]	LCS-W2	12/09/2014
Date analysed	-			12/09/2014	[NT]	[NT]	LCS-W2	12/09/2014
TRHC$_6$ - C$_9$	µg/L	10	Org-016	<10	[NT]	[NT]	LCS-W2	96%
TRHC$_6$ - C$_{10}$	µg/L	10	Org-016	<10	[NT]	[NT]	LCS-W2	96%
Benzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W2	108%
Toluene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W2	100%
Ethylbenzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W2	90%
m+p-xylene	µg/L	2	Org-016	<2	[NT]	[NT]	LCS-W2	90%
o-xylene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W2	90%
Naphthalene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Surrogate Dibromofluoromethane	%		Org-016	109	[NT]	[NT]	LCS-W2	99%
Surrogate toluene-d8	%		Org-016	101	[NT]	[NT]	LCS-W2	97%
Surrogate 4-BFB	%		Org-016	100	[NT]	[NT]	LCS-W2	87%
QUALITY CONTROL svTRH (C10-C40) in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			16/09/2014	[NT]	[NT]	LCS-W1	16/09/2014
Date analysed	-			16/09/2014	[NT]	[NT]	LCS-W1	16/09/2014
TRHC$_{10}$ - C$_{14}$	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-W1	131%
TRHC$_{15}$ - C$_{28}$	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	129%
TRHC$_{29}$ - C$_{36}$	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	105%
TRH>C$_{10}$ - C$_{16}$	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-W1	131%
TRH>C$_{16}$ - C$_{34}$	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	129%
TRH>C$_{34}$ - C$_{40}$	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W1	105%
Surrogate o-Terphenyl	%		Org-003	116	[NT]	[NT]	LCS-W1	111%

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QUALITY CONTROL PAHs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			15/09/2014	[NT]	[NT]	LCS-W2	15/09/2014
Date analysed	-			15/09/2014	[NT]	[NT]	LCS-W2	15/09/2014
Naphthalene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W2	116%
Acenaphthylene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Fluorene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W2	108%
Phenanthrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W2	93%
Anthracene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W2	106%
Pyrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W2	105%
Benzo(a)anthracene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Chrysene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W2	102%
Benzo(b,j+k) fluoranthene	µg/L	2	Org-012 subset	<2	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	LCS-W2	106%
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	µg/L	1	Org-012 subset	<1	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012 subset	140	[NT]	[NT]	LCS-W2	130%

QUALITY CONTROL Total Phenolics in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			15/09/2014	[NT]	[NT]	LCS-W1	15/09/2014
Date analysed	-			15/09/2014	[NT]	[NT]	LCS-W1	15/09/2014
Total Phenolics (as Phenol)	mg/L	0.05	Inorg-031	<0.05	[NT]	[NT]	LCS-W1	99%
QUALITY CONTROL OCP in water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			15/09/2014	[NT]	[NT]	LCS-W1	15/09/2014
Date analysed	-			15/09/2014	[NT]	[NT]	LCS-W1	15/09/2014
HCB	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NR]	[NR]
alpha-BHC	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	LCS-W1	100%
gamma-BHC	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NR]	[NR]
beta-BHC	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	LCS-W1	110%
Heptachlor	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	LCS-W1	101%
delta-BHC	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NR]	[NR]
Aldrin	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	LCS-W1	102%
Heptachlor Epoxide	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	LCS-W1	102%
gamma-Chlordane	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NR]	[NR]
alpha-Chlordane	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NR]	[NR]
Endosulfan I	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NR]	[NR]
pp-DDE	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	LCS-W1	97%
Dieldrin	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	LCS-W1	103%
Endrin	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	LCS-W1	104%
pp-DDD	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	LCS-W1	96%
Endosulfan II	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NR]	[NR]
pp-DDT	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NR]	[NR]
Endrin Aldehyde	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NR]	[NR]
Endosulfan Sulphate	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	LCS-W1	106%
Methoxychlor	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NR]	[NR]
Surrogate TCMX	%		Org-005	91	[NT]	[NT]	LCS-W1	103%

QUALITY CONTROL PCBs in Water	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			15/09/2014	[NT]	[NT]	LCS-W1	15/09/2014
Date analysed	-			15/09/2014	[NT]	[NT]	LCS-W1	15/09/2014
Arochlor 1016	µg/L	2	Org-006	<2	[NT]	[NT]	[NR]	[NR]
Arochlor 1221	µg/L	2	Org-006	<2	[NT]	[NT]	[NR]	[NR]
Arochlor 1232	µg/L	2	Org-006	<2	[NT]	[NT]	[NR]	[NR]
Arochlor 1242	µg/L	2	Org-006	<2	[NT]	[NT]	[NR]	[NR]
Arochlor 1248	µg/L	2	Org-006	<2	[NT]	[NT]	[NR]	[NR]
Arochlor 1254	µg/L	2	Org-006	<2	[NT]	[NT]	LCS-W1	93%
Arochlor 1260	µg/L	2	Org-006	<2	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%		Org-006	91	[NT]	[NT]	LCS-W1	116%

QUALITY CONTROL VOCs in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	116059-14	15/09/2014 || 15/09/2014	116059-4	15/09/2014
Date analysed	-	116059-14	15/09/2014 || 15/09/2014	116059-4	15/09/2014
Dichlorodifluoromethane	mg/kg	116059-14	<1 || <1	[NR]	[NR]
Chloromethane	mg/kg	116059-14	<1 || <1	[NR]	[NR]
Vinyl Chloride	mg/kg	116059-14	<1 || <1	[NR]	[NR]
Bromomethane	mg/kg	116059-14	<1 || <1	[NR]	[NR]
Chloroethane	mg/kg	116059-14	<1 || <1	[NR]	[NR]
Trichlorofluoromethane	mg/kg	116059-14	<1 || <1	[NR]	[NR]
1,1-Dichloroethene	mg/kg	116059-14	<1 || <1	[NR]	[NR]
trans-1,2-dichloroethene	mg/kg	116059-14	<1 || <1	[NR]	[NR]
1,1-dichloroethane	mg/kg	116059-14	<1 || <1	116059-4	97%
cis-1,2-dichloroethene	mg/kg	116059-14	<1 || <1	[NR]	[NR]
bromochloromethane	mg/kg	116059-14	<1 || <1	[NR]	[NR]
chloroform	mg/kg	116059-14	<1 || <1	116059-4	103%
2,2-dichloropropane	mg/kg	116059-14	<1 || <1	[NR]	[NR]
1,2-dichloroethane	mg/kg	116059-14	<1 || <1	116059-4	98%
1,1,1-trichloroethane	mg/kg	116059-14	<1 || <1	116059-4	94%
1,1-dichloropropene	mg/kg	116059-14	<1 || <1	[NR]	[NR]
Cyclohexane	mg/kg	116059-14	<1 || <1	[NR]	[NR]
carbon tetrachloride	mg/kg	116059-14	<1 || <1	[NR]	[NR]
Benzene	mg/kg	116059-14	<0.2 || <0.2	[NR]	[NR]
dibromomethane	mg/kg	116059-14	<1 || <1	[NR]	[NR]
1,2-dichloropropane	mg/kg	116059-14	<1 || <1	[NR]	[NR]
trichloroethene	mg/kg	116059-14	<1 || <1	116059-4	84%
bromodichloromethane	mg/kg	116059-14	<1 || <1	116059-4	98%
trans-1,3-dichloropropene	mg/kg	116059-14	<1 || <1	[NR]	[NR]
cis-1,3-dichloropropene	mg/kg	116059-14	<1 || <1	[NR]	[NR]
1,1,2-trichloroethane	mg/kg	116059-14	<1 || <1	[NR]	[NR]
Toluene	mg/kg	116059-14	<0.5 || <0.5	[NR]	[NR]

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QUALITY CONTROL VOCs in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
1,3-dichloropropane	mg/kg	116059-14	<1 || <1	[NR]	[NR]
dibromochloromethane	mg/kg	116059-14	<1 || <1	116059-4	87%
1,2-dibromoethane	mg/kg	116059-14	<1 || <1	[NR]	[NR]
tetrachloroethene	mg/kg	116059-14	<1 || <1	116059-4	86%
1,1,1,2-tetrachloroethane	mg/kg	116059-14	<1 || <1	[NR]	[NR]
chlorobenzene	mg/kg	116059-14	<1 || <1	[NR]	[NR]
Ethylbenzene	mg/kg	116059-14	<1 || <1	[NR]	[NR]
bromoform	mg/kg	116059-14	<1 || <1	[NR]	[NR]
m+p-xylene	mg/kg	116059-14	<2 || <2	[NR]	[NR]
styrene	mg/kg	116059-14	<1 || <1	[NR]	[NR]
1,1,2,2-tetrachloroethane	mg/kg	116059-14	<1 || <1	[NR]	[NR]
o-Xylene	mg/kg	116059-14	<1 || <1	[NR]	[NR]
1,2,3-trichloropropane	mg/kg	116059-14	<1 || <1	[NR]	[NR]
isopropylbenzene	mg/kg	116059-14	<1 || <1	[NR]	[NR]
bromobenzene	mg/kg	116059-14	<1 || <1	[NR]	[NR]
n-propyl benzene	mg/kg	116059-14	<1 || <1	[NR]	[NR]
2-chlorotoluene	mg/kg	116059-14	<1 || <1	[NR]	[NR]
4-chlorotoluene	mg/kg	116059-14	<1 || <1	[NR]	[NR]
1,3,5-trimethyl benzene	mg/kg	116059-14	<1 || <1	[NR]	[NR]
tert-butyl benzene	mg/kg	116059-14	<1 || <1	[NR]	[NR]
1,2,4-trimethyl benzene	mg/kg	116059-14	<1 || <1	[NR]	[NR]
1,3-dichlorobenzene	mg/kg	116059-14	<1 || <1	[NR]	[NR]
sec-butyl benzene	mg/kg	116059-14	<1 || <1	[NR]	[NR]
1,4-dichlorobenzene	mg/kg	116059-14	<1 || <1	[NR]	[NR]
4-isopropyl toluene	mg/kg	116059-14	<1 || <1	[NR]	[NR]
1,2-dichlorobenzene	mg/kg	116059-14	<1 || <1	[NR]	[NR]
n-butyl benzene	mg/kg	116059-14	<1 || <1	[NR]	[NR]
1,2-dibromo-3-chloropropane	mg/kg	116059-14	<1 || <1	[NR]	[NR]
1,2,4-trichlorobenzene	mg/kg	116059-14	<1 || <1	[NR]	[NR]
hexachlorobutadiene	mg/kg	116059-14	<1 || <1	[NR]	[NR]
1,2,3-trichlorobenzene	mg/kg	116059-14	<1 || <1	[NR]	[NR]
Surrogate Dibromofluorometha	%	116059-14	107 || 107 || RPD: 0	116059-4	104%
Surrogate aaa-Trifluorotoluene	%	116059-14	106 || 105 || RPD: 1	116059-4	102%
Surrogate Toluene-d_8	%	116059-14	95 || 95 || RPD: 0	116059-4	94%
Surrogate 4-Bromofluorobenzene	%	116059-14	82 || 89 || RPD: 8	116059-4	94%

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	116059-14	15/09/2014 || 15/09/2014	116059-4	15/09/2014
Date analysed	-	116059-14	15/09/2014 || 15/09/2014	116059-4	15/09/2014
TRHC6 - C9	mg/kg	116059-14	<25 || <25	116059-4	93%
TRHC6 - C10	mg/kg	116059-14	<25 || <25	116059-4	93%
Benzene	mg/kg	116059-14	<0.2 || <0.2	116059-4	94%
Toluene	mg/kg	116059-14	<0.5 || <0.5	116059-4	93%
Ethylbenzene	mg/kg	116059-14	<1 || <1	116059-4	91%
m+p-xylene	mg/kg	116059-14	<2 || <2	116059-4	93%
o-Xylene	mg/kg	116059-14	<1 || <1	116059-4	93%
naphthalene	mg/kg	116059-14	<1 || <1	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%	116059-14	106 || 105 || RPD: 1	116059-4	102%
QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	116059-14	15/09/2014 || 15/09/2014	116059-4	15/09/2014
Date analysed	-	116059-14	16/09/2014 || 17/09/2014	116059-4	16/09/2014
TRHC10 - C14	mg/kg	116059-14	<50 || <50	116059-4	88%
TRHC15 - C28	mg/kg	116059-14	<100 || <100	116059-4	99%
TRHC29 - C36	mg/kg	116059-14	<100 || <100	116059-4	75%
TRH>C10-C16	mg/kg	116059-14	<50 || <50	116059-4	88%
TRH>C16-C34	mg/kg	116059-14	<100 || <100	116059-4	99%
TRH>C34-C40	mg/kg	116059-14	<100 || <100	116059-4	75%
Surrogate o-Terphenyl	%	116059-14	86 || 79 || RPD: 8	116059-4	92%
QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	116059-14	15/09/2014 || 15/09/2014	116059-4	15/09/2014
Date analysed	-	116059-14	15/09/2014 || 15/09/2014	116059-4	15/09/2014
Naphthalene	mg/kg	116059-14	<0.1 || <0.1	116059-4	103%
Acenaphthylene	mg/kg	116059-14	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	116059-14	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	116059-14	<0.1 || <0.1	116059-4	103%
Phenanthrene	mg/kg	116059-14	0.1 || <0.1	116059-4	105%
Anthracene	mg/kg	116059-14	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	116059-14	<0.1 || <0.1	116059-4	106%
Pyrene	mg/kg	116059-14	<0.1 || <0.1	116059-4	107%
Benzo(a)anthracene	mg/kg	116059-14	<0.1 || <0.1	[NR]	[NR]
Chrysene	mg/kg	116059-14	<0.1 || <0.1	116059-4	82%
Benzo(b,j+k)fluoranthene	mg/kg	116059-14	<0.2 || <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	116059-14	<0.05 || <0.05	116059-4	105%
Indeno(1,2,3-c,d)pyrene	mg/kg	116059-14	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	116059-14	<0.1 || <0.1	[NR]	[NR]

QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Benzo(g,h,i)perylene	mg/kg	116059-14	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d14	%	116059-14	104 || 93 || RPD: 11	116059-4	99%
QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	116059-8	15/09/2014 || 15/09/2014	116059-4	15/09/2014
Date analysed	-	116059-8	15/09/2014 || 15/09/2014	116059-4	15/09/2014
HCB	mg/kg	116059-8	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	116059-8	<0.1 || <0.1	116059-4	81%
gamma-BHC	mg/kg	116059-8	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	116059-8	<0.1 || <0.1	116059-4	87%
Heptachlor	mg/kg	116059-8	<0.1 || <0.1	116059-4	85%
delta-BHC	mg/kg	116059-8	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	116059-8	<0.1 || <0.1	116059-4	85%
Heptachlor Epoxide	mg/kg	116059-8	<0.1 || <0.1	116059-4	86%
gamma-Chlordane	mg/kg	116059-8	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	116059-8	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	116059-8	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	116059-8	<0.1 || <0.1	116059-4	84%
Dieldrin	mg/kg	116059-8	<0.1 || <0.1	116059-4	85%
Endrin	mg/kg	116059-8	<0.1 || <0.1	116059-4	76%
pp-DDD	mg/kg	116059-8	0.1 || 0.2 || RPD: 67	116059-4	78%
Endosulfan II	mg/kg	116059-8	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	116059-8	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	116059-8	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	116059-8	<0.1 || <0.1	116059-4	86%
Methoxychlor	mg/kg	116059-8	<0.1 || <0.1	[NR]	[NR]
Surrogate TCMX	%	116059-8	93 || 106 || RPD: 13	116059-4	85%

QUALITY CONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	116059-14	15/09/2014 || 15/09/2014	116059-2	15/09/2014
Date analysed	-	116059-14	15/09/2014 || 15/09/2014	116059-2	15/09/2014
Arochlor 1016	mg/kg	116059-14	<0.1 || <0.1	[NR]	[NR]
Arochlor 1221	mg/kg	116059-14	<0.1 || <0.1	[NR]	[NR]
Arochlor 1232	mg/kg	116059-14	<0.1 || <0.1	[NR]	[NR]
Arochlor 1242	mg/kg	116059-14	<0.1 || <0.1	[NR]	[NR]
Arochlor 1248	mg/kg	116059-14	<0.1 || <0.1	[NR]	[NR]
Arochlor 1254	mg/kg	116059-14	<0.1 || <0.1	116059-2	107%
Arochlor 1260	mg/kg	116059-14	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%	116059-14	91 || 83 || RPD: 9	116059-2	94%
QUALITY CONTROL Total Phenolics in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	116059-11	15/09/2014 || 15/09/2014	116059-2	18/09/2014
Date analysed	-	116059-11	15/09/2014 || 15/09/2014	116059-2	18/09/2014
Total Phenolics (as Phenol)	mg/kg	116059-11	<5 || <5	116059-2	95%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	116059-14	15/09/2014 || 15/09/2014	LCS-3	15/09/2014
Date analysed	-	116059-14	15/09/2014 || 15/09/2014	LCS-3	15/09/2014
Arsenic	mg/kg	116059-14	<4 || <4	LCS-3	98%
Cadmium	mg/kg	116059-14	<0.4 || <0.4	LCS-3	102%
Chromium	mg/kg	116059-14	12 || 12 || RPD: 0	LCS-3	100%
Copper	mg/kg	116059-14	13 || 13 || RPD: 0	LCS-3	98%
Lead	mg/kg	116059-14	27 || 32 || RPD: 17	LCS-3	99%
Mercury	mg/kg	116059-14	0.4 || 0.2 || RPD: 67	LCS-3	114%
Nickel	mg/kg	116059-14	7 || 7 || RPD: 0	LCS-3	101%
Zinc	mg/kg	116059-14	36 || 45 || RPD: 22	LCS-3	102%
QUALITY CONTROL PAHs in Water	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	116059-21	15/09/2014
Date analysed	-	[NT]	[NT]	116059-21	15/09/2014
Naphthalene	µg/L	[NT]	[NT]	116059-21	114%
Acenaphthylene	µg/L	[NT]	[NT]	[NR]	[NR]
Acenaphthene	µg/L	[NT]	[NT]	[NR]	[NR]
Fluorene	µg/L	[NT]	[NT]	116059-21	100%
Phenanthrene	µg/L	[NT]	[NT]	116059-21	95%
Anthracene	µg/L	[NT]	[NT]	[NR]	[NR]
Fluoranthene	µg/L	[NT]	[NT]	116059-21	108%
Pyrene	µg/L	[NT]	[NT]	116059-21	107%
Benzo(a)anthracene	µg/L	[NT]	[NT]	[NR]	[NR]
Chrysene	µg/L	[NT]	[NT]	116059-21	99%

QUALITY CONTROL PAHs in Water	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Benzo(b,j+k)fluoranthene	µg/L	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	µg/L	[NT]	[NT]	116059-21	107%
Indeno(1,2,3-c,d)pyrene	µg/L	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	µg/L	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	µg/L	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d14	%	[NT]	[NT]	116059-21	140%
QUALITY CONTROL OCP in water	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	116059-21	15/09/2014
Date analysed	-	[NT]	[NT]	116059-21	15/09/2014
HCB	µg/L	[NT]	[NT]	[NR]	[NR]
alpha-BHC	µg/L	[NT]	[NT]	116059-21	101%
gamma-BHC	µg/L	[NT]	[NT]	[NR]	[NR]
beta-BHC	µg/L	[NT]	[NT]	116059-21	100%
Heptachlor	µg/L	[NT]	[NT]	116059-21	93%
delta-BHC	µg/L	[NT]	[NT]	[NR]	[NR]
Aldrin	µg/L	[NT]	[NT]	116059-21	96%
Heptachlor Epoxide	µg/L	[NT]	[NT]	116059-21	97%
gamma-Chlordane	µg/L	[NT]	[NT]	[NR]	[NR]
alpha-Chlordane	µg/L	[NT]	[NT]	[NR]	[NR]
Endosulfan I	µg/L	[NT]	[NT]	[NR]	[NR]
pp-DDE	µg/L	[NT]	[NT]	116059-21	91%
Dieldrin	µg/L	[NT]	[NT]	116059-21	98%
Endrin	µg/L	[NT]	[NT]	116059-21	95%
pp-DDD	µg/L	[NT]	[NT]	116059-21	92%
Endosulfan II	µg/L	[NT]	[NT]	[NR]	[NR]
pp-DDT	µg/L	[NT]	[NT]	[NR]	[NR]
Endrin Aldehyde	µg/L	[NT]	[NT]	[NR]	[NR]
Endosulfan Sulphate	µg/L	[NT]	[NT]	116059-21	97%
Methoxychlor	µg/L	[NT]	[NT]	[NR]	[NR]
Surrogate TCMX	%	[NT]	[NT]	116059-21	105%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date extracted	-	116059-14	15/09/2014 || 15/09/2014
Date analysed	-	116059-14	15/09/2014 || 15/09/2014
HCB	mg/kg	116059-14	<0.1 || <0.1
alpha-BHC	mg/kg	116059-14	<0.1 || <0.1
gamma-BHC	mg/kg	116059-14	<0.1 || <0.1
beta-BHC	mg/kg	116059-14	<0.1 || <0.1
Heptachlor	mg/kg	116059-14	<0.1 || <0.1
delta-BHC	mg/kg	116059-14	<0.1 || <0.1
Aldrin	mg/kg	116059-14	<0.1 || <0.1
Heptachlor Epoxide	mg/kg	116059-14	<0.1 || <0.1
gamma-Chlordane	mg/kg	116059-14	<0.1 || <0.1
alpha-chlordane	mg/kg	116059-14	<0.1 || <0.1
Endosulfan I	mg/kg	116059-14	<0.1 || <0.1
pp-DDE	mg/kg	116059-14	<0.1 || <0.1
Dieldrin	mg/kg	116059-14	<0.1 || <0.1
Endrin	mg/kg	116059-14	<0.1 || <0.1
pp-DDD	mg/kg	116059-14	<0.1 || <0.1
Endosulfan II	mg/kg	116059-14	<0.1 || <0.1
pp-DDT	mg/kg	116059-14	<0.1 || <0.1
Endrin Aldehyde	mg/kg	116059-14	<0.1 || <0.1
Endosulfan Sulphate	mg/kg	116059-14	<0.1 || <0.1
Methoxychlor	mg/kg	116059-14	<0.1 || <0.1
Surrogate TCMX	%	116059-14	91 || 83 || RPD: 9

QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date digested	-	[NT]	[NT]	116059-4	15/09/2014
Date analysed	-	[NT]	[NT]	116059-4	15/09/2014
Arsenic	mg/kg	[NT]	[NT]	116059-4	83%
Cadmium	mg/kg	[NT]	[NT]	116059-4	93%
Chromium	mg/kg	[NT]	[NT]	116059-4	87%
Copper	mg/kg	[NT]	[NT]	116059-4	92%
Lead	mg/kg	[NT]	[NT]	116059-4	83%
Mercury	mg/kg	[NT]	[NT]	116059-4	112%
Nickel	mg/kg	[NT]	[NT]	116059-4	87%
Zinc	mg/kg	[NT]	[NT]	116059-4	81%
QUALITY CONTROL svTRH (C10-C40) in Water	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	116059-21	16/09/2014
Date analysed	-	[NT]	[NT]	116059-21	16/09/2014
TRHC$_{10}$ - C$_{14}$	µg/L	[NT]	[NT]	116059-21	116%
TRHC$_{15}$ - C$_{28}$	µg/L	[NT]	[NT]	116059-21	104%
TRHC$_{29}$ - C$_{36}$	µg/L	[NT]	[NT]	116059-21	125%
TRH>C$_{10}$ - C$_{16}$	µg/L	[NT]	[NT]	116059-21	116%
TRH>C$_{16}$ - C$_{34}$	µg/L	[NT]	[NT]	116059-21	104%
TRH>C$_{34}$ - C$_{40}$	µg/L	[NT]	[NT]	116059-21	125%
Surrogate o-Terphenyl	%	[NT]	[NT]	116059-21	93%

Report Comments:

Acid Extractable Metals in Soil: The laboratory RPD acceptance criteriae has been exceeded for 116059-2 for Cd. Therefore a triplicate result has been issued as laboratory sample number 16059-23.

sTRH in water: Rinsate positive due to a single peak found when the rinsate has been sitting around for a prolonged period. We recommend ordering a smaller amount of rinsate more often, and discarding old rinsate.

This report is consistent with the analytical procedures and reporting recommendations in the National Environment Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013. This is reported outside our scope of NATA accreditation.

Note: All samples analysed as received. However, sample 116059-9 are below the minimum 500mL sample volume as per National Environment Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013.

Asbestos ID was analysed by Approved Identifier: Paul Ching
Asbestos ID was authorised by Approved Signatory: Paul Ching

INS: Insufficient sample for this test
NA: Test not required
<: Less than

PQL: Practical Quantitation Limit
RPD: Relative Percent Difference
>: Greater than

NT: Not tested
NA: Test not required
LCS: Laboratory Control Sample

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.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.
Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.
Spikes for Physical and Aggregate Tests are not applicable.
For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC 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.

Robson ENVIRONMENTAL

Occupational Hygiene
Health Safety &
Environmental Consulting

CHAIN OF CUSTODY FORM

Job No.: 960502

From: Robson Environmental Pty Ltd
PO Box 112 Fyshwick ACT 2609
Unit 1, 140 Gladstone Street
Fyshwick ACT 2609
ABN: 55 008 660 900

Contact: Mark Laidlaw
Phone: (02) 6171 4641
Mobile: 481282074
Fax: (02) 6239 5669
Email: results@robsonenviro.com.au
Mark@robsonenviro.com.au
Mark@robsonenviro.com.au

Client Information: Rowing ACT

Site Address: Black Mountain Peninsula
Acton ACT

Sampled by: AR

Job Name: P2 ESA

ESDAT Files Required
YES NO

Required Turnaround Time:
24hr; 36hr; 48hr; 72hr & **5 to 7 Days**

Doc No: EAR-F014 Revision No: 2
Date Issued: 5/11/13
Next Review Date: 05/11/15

To:
Envirolab
12 Ashley Street
Chatswood NSW 2607

Contact:Jacinta
Phone: (02) 9910 6200
Mobile:
Fax: (02) 9910 6201
Email:
ABN: 91 004 591 664

Lab ID	Sample ID	Date Sampled	Sample Location	No. of Sample Jars	Sample Type	Sample Preservation (Ice, Acid, Ambient)	Analysis Required	Comments
1	**TP1: 0.4-0.5**	10/09/2014		1		Ice Blocks	TRH, BTEX, PAHs, PCBs, phenols, OCPs, VOCs and eight (8) metals.	
2	**TP1: 1.9-2.0**	10/09/2014		1		Ice Blocks	TRH, BTEX, PAHs, PCBs, phenols, OCPs, VOCs and eight (8) metals, **Asbestos - WA Guidelines**.	
3	**TP2: 0.4-0.5**	10/09/2014		1		Ice Blocks	TRH, BTEX, PAHs, PCBs, phenols, OCPs, VOCs and eight (8) metals,.	
4	**TP2: 1.9-2.0**	10/09/2014		1		Ice Blocks	TRH, BTEX, PAHs, PCBs, phenols, OCPs, VOCs and eight (8) metals, **pH, CEC and % clay**.	
5	**TP3: 0.9-1.0**	10/09/2014		1		Ice Blocks	TRH, BTEX, PAHs, PCBs, phenols, OCPs, VOCs and eight (8) metals.	
6	**TP3: 2.9-3.0**	10/09/2014		1		Ice Blocks	TRH, BTEX, PAHs, PCBs, phenols, OCPs, VOCs and eight (8) metals.	
7	**TP4: 0.9-1.0**	10/09/2014		1		Ice Blocks	TRH, BTEX, PAHs, PCBs, phenols, OCPs, VOCs and eight (8) metals.	
8	**TP4: 1.9-2.0**	10/09/2014		1		Ice Blocks	TRH, BTEX, PAHs, PCBs, phenols, OCPs, VOCs and eight (8) metals.	
9	**TP5: 0.4-0.5**	10/09/2014		1		Ice Blocks	TRH, BTEX, PAHs, PCBs, phenols, OCPs, VOCs and eight (8) metals.	
10	**TP5: 2.9-3.0**	10/09/2014		1		Ice Blocks	TRH, BTEX, PAHs, PCBs, phenols, OCPs, VOCs and eight (8) metals, **Asbestos - WA Guidelines**.	
11	**TP6: 0.4-0.5**	10/09/2014		1		Ice Blocks	TRH, BTEX, PAHs, PCBs, phenols, OCPs, VOCs and eight (8) metals.	
12	**TP6: 0.9-1.0**	10/09/2014		1		Ice Blocks	TRH, BTEX, PAHs, PCBs, phenols, OCPs, VOCs and eight (8) metals, .	
13	**TP7: 0.4-0.5**	10/09/2014		1		Ice Blocks	TRH, BTEX, PAHs, PCBs, phenols, OCPs, VOCs and eight (8) metals, **pH, CEC and % clay**.	
14	**TP7: 1.7-1.8**	10/09/2014		1		Ice Blocks	TRH, BTEX, PAHs, PCBs, phenols, OCPs, VOCs and eight (8) metals.	
				1		Ice Blocks	TRH, BTEX, PAHs, PCBs, phenols, OCPs, VOCs and eight (8) metals.	

Relinquished by: ~~KD~~ ML	Date: ~~20/09/2014~~ 11/9/14		Time: ~~4pm~~ 2 pm	Received by:	Time:
Relinquished by:	Date:		Time:	Received by:	Time:
Relinquished by:	Date:		Time:	Received by:	Time:

ENVIROLAB GROUP

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

Job No: 116059
Date Received: 11/9/14
Time Received: 9:00
Received by: LSB
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Robson ENVIRONMENTAL

Occupational Hygiene
Health Safety &
Environmental Consulting

CHAIN OF CUSTODY FORM

Job No.: 960502

From: Robson Environmental Pty Ltd
PO Box 112 Fyshwick ACT 2609
Unit 1, 140 Gladstone Street
Fyshwick ACT 2609
ABN: 55 008 660 900

Contact: Mark Laidlaw

Phone: (02) 6171 4641
Mobile: 481282074
Fax: (02) 6239 5669
Email: results@robsonenviro.com.au
Mark@robsonenviro.com.au

Client Information: Rowing ACT

Site Address: Black Mountain Peninsula
Acton ACT

Sampled by: AR

ESDAT Files Required **YES** NO

Job Name: P2 ESA

Required Turnaround Time:
24hr; 36hr; 48hr; 72hr & **5 to 7 Days**

Doc No: EAR-F014 Revision No: 2
Date Issued: 5/11/13
Next Review Date: 05/11/15

To:
Envirolab
12 Ashley Street
Chatswood NSW 2607

Contact:Jacinta
Phone: (02) 9910 6200
Mobile:
Fax: (02) 9910 6201
Email:
ABN: 91 004 591 664

Lab ID	Sample ID	Date Sampled	Sample Location	No. of Sample Jars	Sample Type	Sample Preservation (Ice, Acid, Ambient)	Analysis Required	Comments
15	**TP8: 0.9-1.0**	10/09/2014		1	soil	Ice Block	TRH, BTEX, PAHs, PCBs, phenols, OCPs, VOCs and eight (8) metals1.	
16	**TP8: 1.4-1.5**	10/09/2014		1	soil	Ice Block	TRH, BTEX, PAHs, PCBs, phenols, OCPs, VOCs and eight (8) metals, **pH, CEC and % clay.**.	
17	**TP9: 0.4-0.5**	10/09/2014		1	soil	Ice Block	TRH, BTEX, PAHs, PCBs, phenols, OCPs, VOCs and eight (8) metals1.	
18	**TP9: 1.5-1.6**	10/09/2014		1	soil	Ice Block	TRH, BTEX, PAHs, PCBs, phenols, OCPs, VOCs and eight (8) metals1.	
19	**QC1**	10/09/2014		1	soil	Ice Block	TRH, BTEX, PAHs, PCBs, phenols, OCPs, VOCs and eight (8) metals1.	
20	**QC3**	10/09/2014		1	soil	Ice Block	TRH, BTEX, PAHs, PCBs, phenols, OCPs, VOCs and eight (8) metals1.	
21	**R1**	10/09/2014		1	water	Ice Block	TRH, BTEX, PAHs, PCBs, phenols, OCPs, VOCs	
22	**TB1**	10/09/2014		1	water	Ice Block	TRH C6-C9 and BTEX	
MB	11/9/14							

Relinquished by: ~~KG~~	Date: ~~29/05/2014~~		Time: ~~4pm~~ 2pm	Received by:	Time:
Relinquished by:	Date:		Time:	Received by:	Time:
Relinquished by:	Date:		Time:	Received by:	Time:

SAMPLE RECEIPT ADVICE

SE131298

CLIENT DETAILS

Contact	Mark Laidlaw
Client	Robson Environmental Pty Ltd
Address	140 Gladstone Street, FYSHWICK PO Box 112, FYSHWICK ACT 2609
Telephone	(02) 6239 5656
Facsimile	(02) 6239 5669
Email	mark@robsonenviro.com.au
Project	**960502- P2 ESA- Black Mountain Peninsula**
Order Number	(Not specified)
Samples	2

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Fri 12/9/2014
Report Due	Fri 19/9/2014
SGS Reference	**SE131298**

SUBMISSION DETAILS

This is to confirm that 2 samples were received on Friday 12/9/2014. Results are expected to be ready by Friday 19/9/2014. Please quote SGS reference SE131298 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Sample counts by matrix	2 Soils	Type of documentation received	COC
Date documentation received	12/9/2014	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	4.0°C
Sample container provider	Other Lab	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		

Samples will be held for one month for water samples and two months for soil samples from date of report, unless otherwise instructed.

COMMENTS

Please note that samples will be analysed outside of holding times.

SAMPLE RECEIPT ADVICE

SE131298

CLIENT DETAILS

Client Robson Environmental Pty Ltd

Project 960502- P2 ESA- Black Mountain Peninsula

SUMMARY OF ANALYSIS

No.	Sample ID	OC Pesticides in Soil	PAH (Polynuclear Aromatic Hydrocarbons) in Soil	PCBs in Soil	Total Phenolics in Soil	Total Recoverable Metals in Soil by ICPOES from	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
001	QC2	28	25	11	1	7	10	79	8
002	QC4	28	25	11	1	7	10	79	8

CONTINUED OVERLEAF

The above table represents SGS Environmental Services' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

SAMPLE RECEIPT ADVICE

SE131298

CLIENT DETAILS

Client Robson Environmental Pty Ltd

Project 960502- P2 ESA- Black Mountain Peninsula

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury in Soil	Moisture Content
001	QC2	1	1
002	QC4	1	1

The above table represents SGS Environmental Services' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

ANALYTICAL REPORT

WORLD RECOGNISED ACCREDITATION

CLIENT DETAILS		LABORATORY DETAILS	
Contact	Mark Laidlaw	Manager	Huong Crawford
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Project	**960502- P2 ESA- Black Mountain Peninsula**	SGS Reference	**SE131298 R1**
Order Number	(Not specified)	Report Number	0000091676
Samples	2	Date Reported	22 Sep 2014
Date Started	15 Sep 2014	Date Received	12 Sep 2014

COMMENTS

Accredited for compliance with ISO/IEC 17025. NATA accredited laboratory 2562(4354).

This report cancels and supersedes the report No.SE131298 R0 dated 19/09/2014 issued by SGS Environmental Services due to correcting the sample dates.

SIGNATORIES

Andy Sutton
Senior Organic Chemist

Dong Liang
Metals/Inorganics Team Leader

Jaimie Cheung
Metals Chemist

Parameter	Units	LOR	Sample Number: SE131298.001 Sample Matrix: Soil Sample Date: 10 Sep 2014 Sample Name: QC2	Sample Number: SE131298.002 Sample Matrix: Soil Sample Date: 10 Sep 2014 Sample Name: QC4
VOC's in Soil Method: AN433/AN434				
Fumigants				
2,2-dichloropropane	mg/kg	0.1	<0.1	<0.1
1,2-dichloropropane	mg/kg	0.1	<0.1	<0.1
cis-1,3-dichloropropene	mg/kg	0.1	<0.1	<0.1
trans-1,3-dichloropropene	mg/kg	0.1	<0.1	<0.1
1,2-dibromoethane (EDB)	mg/kg	0.1	<0.1	<0.1
Halogenated Aliphatics				
Dichlorodifluoromethane (CFC-12)	mg/kg	1	<1	<1
Chloromethane	mg/kg	1	<1	<1
Vinyl chloride (Chloroethene)	mg/kg	0.1	<0.1	<0.1
Bromomethane	mg/kg	1	<1	<1
Chloroethane	mg/kg	1	<1	<1
Trichlorofluoromethane	mg/kg	1	<1	<1
Iodomethane	mg/kg	5	<5	<5
1,1-dichloroethene	mg/kg	0.1	<0.1	<0.1
Dichloromethane (Methylene chloride)	mg/kg	0.5	<0.5	<0.5
Allyl chloride	mg/kg	0.1	<0.1	<0.1
trans-1,2-dichloroethene	mg/kg	0.1	<0.1	<0.1
1,1-dichloroethane	mg/kg	0.1	<0.1	<0.1
cis-1,2-dichloroethene	mg/kg	0.1	<0.1	<0.1
Bromochloromethane	mg/kg	0.1	<0.1	<0.1
1,2-dichloroethane	mg/kg	0.1	<0.1	<0.1
1,1,1-trichloroethane	mg/kg	0.1	<0.1	<0.1
1,1-dichloropropene	mg/kg	0.1	<0.1	<0.1
Carbon tetrachloride	mg/kg	0.1	<0.1	<0.1
Dibromomethane	mg/kg	0.1	<0.1	<0.1
Trichloroethene (Trichloroethylene -TCE)	mg/kg	0.1	<0.1	<0.1
1,1,2-trichloroethane	mg/kg	0.1	<0.1	<0.1
1,3-dichloropropane	mg/kg	0.1	<0.1	<0.1
Tetrachloroethene (Perchloroethylene,PCE)	mg/kg	0.1	<0.1	<0.1
1,1,1,2-tetrachloroethane	mg/kg	0.1	<0.1	<0.1
cis-1,4-dichloro-2-butene	mg/kg	1	<1	<1
1,1,2,2-tetrachloroethane	mg/kg	0.1	<0.1	<0.1
1,2,3-trichloropropane	mg/kg	0.1	<0.1	<0.1
trans-1,4-dichloro-2-butene	mg/kg	1	<1	<1
1,2-dibromo-3-chloropropane	mg/kg	0.1	<0.1	<0.1
Hexachlorobutadiene	mg/kg	0.1	<0.1	<0.1
Halogenated Aromatics				
Chlorobenzene	mg/kg	0.1	<0.1	<0.1
Bromobenzene	mg/kg	0.1	<0.1	<0.1
2-chlorotoluene	mg/kg	0.1	<0.1	<0.1
4-chlorotoluene	mg/kg	0.1	<0.1	<0.1
1,3-dichlorobenzene	mg/kg	0.1	<0.1	<0.1
1,4-dichlorobenzene	mg/kg	0.1	<0.1	<0.1
1,2-dichlorobenzene	mg/kg	0.1	<0.1	<0.1
1,2,4-trichlorobenzene	mg/kg	0.1	<0.1	<0.1
1,2,3-trichlorobenzene	mg/kg	0.1	<0.1	<0.1
Monocyclic Aromatic Hydrocarbons				
Benzene	mg/kg	0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2
Styrene (Vinyl benzene)	mg/kg	0.1	<0.1	<0.1
o-xylene	mg/kg	0.1	<0.1	<0.1
Isopropylbenzene (Cumene)	mg/kg	0.1	<0.1	<0.1
n-propylbenzene	mg/kg	0.1	<0.1	<0.1

Parameter	Units	LOR	Sample Number: SE131298.001 Sample Matrix: Soil Sample Date: 10 Sep 2014 Sample Name: QC2	Sample Number: SE131298.002 Sample Matrix: Soil Sample Date: 10 Sep 2014 Sample Name: QC4
VOC's in Soil Method: AN433/AN434 (continued)				
1,3,5-trimethylbenzene	mg/kg	0.1	<0.1	<0.1
tert-butylbenzene	mg/kg	0.1	<0.1	<0.1
1,2,4-trimethylbenzene	mg/kg	0.1	<0.1	<0.1
sec-butylbenzene	mg/kg	0.1	<0.1	<0.1
p-isopropyltoluene	mg/kg	0.1	<0.1	<0.1
n-butylbenzene	mg/kg	0.1	<0.1	<0.1
Nitrogenous Compounds				
Acrylonitrile	mg/kg	0.1	<0.1	<0.1
2-nitropropane	mg/kg	10	<10	<10
Oxygenated Compounds				
Acetone (2-propanone)	mg/kg	10	<10	<10
MtBE (Methyl-tert-butyl ether)	mg/kg	0.1	<0.1	<0.1
Vinyl acetate	mg/kg	10	<10	<10
MEK (2-butanone)	mg/kg	10	<10	<10
MIBK (4-methyl-2-pentanone)	mg/kg	1	<1	<1
2-hexanone (MBK)	mg/kg	5	<5	<5
Polycyclic VOCs				
Naphthalene	mg/kg	0.1	<0.1	<0.1
Sulphonated Compounds				
Carbon disulfide	mg/kg	0.5	<0.5	<0.5
Surrogates				
Dibromofluoromethane (Surrogate)	%	-	**119**	**97**
d4-1,2-dichloroethane (Surrogate)	%	-	**113**	**116**
d8-toluene (Surrogate)	%	-	**116**	**100**
Bromofluorobenzene (Surrogate)	%	-	**120**	**105**
Totals				
Total Xylenes*	mg/kg	0.3	<0.3	<0.3
Total BTEX*	mg/kg	0.6	<0.6	<0.6
Total VOC*	mg/kg	24	-	-
Trihalomethanes				
Chloroform	mg/kg	0.1	<0.1	<0.1
Bromodichloromethane	mg/kg	0.1	<0.1	<0.1
Chlorodibromomethane	mg/kg	0.1	<0.1	<0.1
Bromoform	mg/kg	0.1	<0.1	<0.1

Parameter	Units	LOR	Sample Number: SE131298.001 Sample Matrix: Soil Sample Date: 10 Sep 2014 Sample Name: QC2	Sample Number: SE131298.002 Sample Matrix: Soil Sample Date: 10 Sep 2014 Sample Name: QC4
Volatile Petroleum Hydrocarbons in Soil Method: AN433/AN434/AN410				
TRH C6-C10	mg/kg	25	<25	<25
TRH C6-C9	mg/kg	20	<20	<20
Surrogates				
Dibromofluoromethane (Surrogate)	%	-	**117**	**96**
d4-1,2-dichloroethane (Surrogate)	%	-	**107**	**101**
d8-toluene (Surrogate)	%	-	**121**	**113**
Bromofluorobenzene (Surrogate)	%	-	**112**	**109**
VPH F Bands				
Benzene (F0)	mg/kg	0.1	<0.1	<0.1
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25
TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403				
TRH C10-C14	mg/kg	20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100
TRH C10-C36 Total	mg/kg	110	<110	<110
TRH C10-C40 Total	mg/kg	210	<210	<210
TRH F Bands				
TRH >C10-C16 (F2)	mg/kg	25	<25	<25
TRH >C10-C16 (F2) minus Naphthalene	mg/kg	25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420				
Naphthalene	mg/kg	0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1
Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1
Carcinogenic PAHs (as BaP TEQ)-assume results <LOR=0*	TEQ	0.2	<0.2	<0.2
Carcinogenic PAHs (as BaP TEQ)-assume results <LOR=LOR*	TEQ (mg/kg)	0.3	<0.3	<0.3
Carcinogenic PAHs (as BaP TEQ)-assume results <LOR=LOR/2*	TEQ (mg/kg)	0.2	<0.2	<0.2
Total PAH	mg/kg	0.8	<0.8	<0.8

Parameter	Units	LOR	Sample Number: SE131298.001 Sample Matrix: Soil Sample Date: 10 Sep 2014 Sample Name: QC2	Sample Number: SE131298.002 Sample Matrix: Soil Sample Date: 10 Sep 2014 Sample Name: QC4
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 (continued)				
Surrogates				
d5-nitrobenzene (Surrogate)	%	-	**98**	**96**
2-fluorobiphenyl (Surrogate)	%	-	**86**	**86**
d14-p-terphenyl (Surrogate)	%	-	**102**	**100**
OC Pesticides in Soil Method: AN400/AN420				
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1
Surrogates				
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	**102**	**100**
PCBs in Soil Method: AN400/AN420				
Arochlor 1016	mg/kg	0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1

Parameter	Units	LOR	Sample Number: SE131298.001 Sample Matrix: Soil Sample Date: 10 Sep 2014 Sample Name: QC2	Sample Number: SE131298.002 Sample Matrix: Soil Sample Date: 10 Sep 2014 Sample Name: QC4
PCBs in Soil Method: AN400/AN420 (continued)				
Surrogates				
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	**102**	**100**
Total Phenolics in Soil Method: AN289				
Total Phenols	mg/kg	0.1	<0.1	<0.1
Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: AN040/AN320				
Arsenic, As	mg/kg	3	**4**	**5**
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.3	**15**	**13**
Copper, Cu	mg/kg	0.5	**7.6**	**12**
Lead, Pb	mg/kg	1	**14**	**23**
Nickel, Ni	mg/kg	0.5	**6.3**	**8.0**
Zinc, Zn	mg/kg	0.5	**30**	**62**
Mercury in Soil Method: AN312				
Mercury	mg/kg	0.01	**0.02**	**0.04**
Moisture Content Method: AN002				
% Moisture	%	0.5	**16**	**17**

QC SUMMARY

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula : *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

Mercury in Soil **Method: ME-(AU)-[ENV]AN312**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Mercury	LB064107	mg/kg	0.01	<0.01	0%	103%	94%

Moisture Content **Method: ME-(AU)-[ENV]AN002**

Parameter	QC Reference	Units	LOR	DUP %RPD
% Moisture	LB064166	%	0.5	5 - 7%

OC Pesticides in Soil **Method: ME-(AU)-[ENV]AN400/AN420**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery	MSD %RPD
Hexachlorobenzene (HCB)	LB063933	mg/kg	0.1	<0.1	0%	NA	NA	NA
Alpha BHC	LB063933	mg/kg	0.1	<0.1	0%	NA	NA	NA
Lindane	LB063933	mg/kg	0.1	<0.1	0%	NA	NA	NA
Heptachlor	LB063933	mg/kg	0.1	<0.1	0%	121%	132%	2%
Aldrin	LB063933	mg/kg	0.1	<0.1	0%	127%	137%	1%
Beta BHC	LB063933	mg/kg	0.1	<0.1	0%	NA	NA	NA
Delta BHC	LB063933	mg/kg	0.1	<0.1	0%	115%	129%	0%
Heptachlor epoxide	LB063933	mg/kg	0.1	<0.1	0%	NA	NA	NA
o,p'-DDE	LB063933	mg/kg	0.1	<0.1	0%	NA	NA	NA
Alpha Endosulfan	LB063933	mg/kg	0.2	<0.2	0%	NA	NA	NA
Gamma Chlordane	LB063933	mg/kg	0.1	<0.1	0%	NA	NA	NA
Alpha Chlordane	LB063933	mg/kg	0.1	<0.1	0%	NA	NA	NA
trans-Nonachlor	LB063933	mg/kg	0.1	<0.1	0%	NA	NA	NA
p,p'-DDE	LB063933	mg/kg	0.1	<0.1	0%	NA	NA	NA
Dieldrin	LB063933	mg/kg	0.2	<0.2	0%	117%	128%	1%
Endrin	LB063933	mg/kg	0.2	<0.2	0%	123%	133%	1%
o,p'-DDD	LB063933	mg/kg	0.1	<0.1	0%	NA	NA	NA
o,p'-DDT	LB063933	mg/kg	0.1	<0.1	0%	NA	NA	NA
Beta Endosulfan	LB063933	mg/kg	0.2	<0.2	0%	NA	NA	NA
p,p'-DDD	LB063933	mg/kg	0.1	<0.1	0%	NA	NA	NA
p,p'-DDT	LB063933	mg/kg	0.1	<0.1	0%	110%	117%	0%
Endosulfan sulphate	LB063933	mg/kg	0.1	<0.1	0%	NA	NA	NA
Endrin Aldehyde	LB063933	mg/kg	0.1	<0.1	0%	NA	NA	NA
Methoxychlor	LB063933	mg/kg	0.1	<0.1	0%	NA	NA	NA
Endrin Ketone	LB063933	mg/kg	0.1	<0.1	0%	NA	NA	NA
Isodrin	LB063933	mg/kg	0.1	<0.1	0%	NA	NA	NA
Mirex	LB063933	mg/kg	0.1	<0.1	0%	NA	NA	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery	MSD %RPD
Tetrachloro-m-xylene (TCMX) (Surrogate)	LB063933	%	-	97%	1 - 2%	96%	105%	1%

QC SUMMARY

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula : *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil **Method: ME-(AU)-[ENV]AN420**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Naphthalene	LB063933	mg/kg	0.1	<0.1	0%	93%
2-methylnaphthalene	LB063933	mg/kg	0.1	<0.1	0%	NA
1-methylnaphthalene	LB063933	mg/kg	0.1	<0.1	0%	NA
Acenaphthylene	LB063933	mg/kg	0.1	<0.1	0%	95%
Acenaphthene	LB063933	mg/kg	0.1	<0.1	0%	93%
Fluorene	LB063933	mg/kg	0.1	<0.1	0%	NA
Phenanthrene	LB063933	mg/kg	0.1	<0.1	0%	96%
Anthracene	LB063933	mg/kg	0.1	<0.1	0%	95%
Fluoranthene	LB063933	mg/kg	0.1	<0.1	0%	101%
Pyrene	LB063933	mg/kg	0.1	<0.1	18%	91%
Benzo(a)anthracene	LB063933	mg/kg	0.1	<0.1	0%	NA
Chrysene	LB063933	mg/kg	0.1	<0.1	0%	NA
Benzo(b&j)fluoranthene	LB063933	mg/kg	0.1	<0.1	0%	NA
Benzo(k)fluoranthene	LB063933	mg/kg	0.1	<0.1	0%	NA
Benzo(a)pyrene	LB063933	mg/kg	0.1	<0.1	0%	106%
Indeno(1,2,3-cd)pyrene	LB063933	mg/kg	0.1	<0.1	0%	NA
Dibenzo(a&h)anthracene	LB063933	mg/kg	0.1	<0.1	0%	NA
Benzo(ghi)perylene	LB063933	mg/kg	0.1	<0.1	0%	NA
Carcinogenic PAHs (as BaP TEQ)-assume results <LOR=0*	LB063933	TEQ	0.2	<0.2	0%	NA
Carcinogenic PAHs (as BaP TEQ)-assume results <LOR=LOR*	LB063933	TEQ (mg/kg)	0.3	<0.3	0%	NA
Carcinogenic PAHs (as BaP TEQ)-assume results <LOR=LOR/2*	LB063933	TEQ (mg/kg)	0.2	<0.2	0%	NA
Total PAH	LB063933	mg/kg	0.8	<0.8	0%	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
d5-nitrobenzene (Surrogate)	LB063933	%	-	108%	0%	86%
2-fluorobiphenyl (Surrogate)	LB063933	%	-	100%	2%	80%
d14-p-terphenyl (Surrogate)	LB063933	%	-	112%	0%	92%

PCBs in Soil **Method: ME-(AU)-[ENV]AN400/AN420**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Arochlor 1016	LB063933	mg/kg	0.2	<0.2	0%	NA
Arochlor 1221	LB063933	mg/kg	0.2	<0.2	0%	NA
Arochlor 1232	LB063933	mg/kg	0.2	<0.2	0%	NA
Arochlor 1242	LB063933	mg/kg	0.2	<0.2	0%	NA
Arochlor 1248	LB063933	mg/kg	0.2	<0.2	0%	NA
Arochlor 1254	LB063933	mg/kg	0.2	<0.2	0%	NA
Arochlor 1260	LB063933	mg/kg	0.2	<0.2	0%	105%
Arochlor 1262	LB063933	mg/kg	0.2	<0.2	0%	NA
Arochlor 1268	LB063933	mg/kg	0.2	<0.2	0%	NA
Total PCBs (Arochlors)	LB063933	mg/kg	1	<1	0%	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Tetrachloro-m-xylene (TCMX) (Surrogate)	LB063933	%	-	97%	2%	97%

QC SUMMARY

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula : *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

Total Phenolics in Soil **Method: ME-(AU)-[ENV]AN289**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Total Phenols	LB063963	mg/kg	0.1	<0.1	0%	101%

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest **Method: ME-(AU)-[ENV]AN040/AN320**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Arsenic, As	LB064103	mg/kg	3	<1	0 - 7%	101%	83%
Cadmium, Cd	LB064103	mg/kg	0.3	<0.3	0 - 14%	104%	87%
Chromium, Cr	LB064103	mg/kg	0.3	<0.5	9 - 22%	102%	91%
Copper, Cu	LB064103	mg/kg	0.5	<0.5	12 - 21%	101%	88%
Lead, Pb	LB064103	mg/kg	1	<1	4 - 6%	101%	81%
Nickel, Ni	LB064103	mg/kg	0.5	<0.5	3 - 18%	103%	86%
Zinc, Zn	LB064103	mg/kg	0.5	<2.0	5 - 7%	103%	83%

TRH (Total Recoverable Hydrocarbons) in Soil **Method: ME-(AU)-[ENV]AN403**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
TRH C10-C14	LB063933	mg/kg	20	<20	0%	88%
TRH C15-C28	LB063933	mg/kg	45	<45	0%	90%
TRH C29-C36	LB063933	mg/kg	45	<45	0%	75%
TRH C37-C40	LB063933	mg/kg	100	<100	0%	NA
TRH C10-C36 Total	LB063933	mg/kg	110	<110	0%	NA
TRH C10-C40 Total	LB063933	mg/kg	210	<210	0%	NA

TRH F Bands

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
TRH >C10-C16 (F2)	LB063933	mg/kg	25	<25	0%	88%
TRH >C10-C16 (F2) minus Naphthalene	LB063933	mg/kg	25	<25	0%	NA
TRH >C16-C34 (F3)	LB063933	mg/kg	90	<90	0%	85%
TRH >C34-C40 (F4)	LB063933	mg/kg	120	<120	0%	75%

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula : *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

VOC's in Soil **Method: ME-(AU)-[ENV]AN433/AN434**

Fumigants

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
2,2-dichloropropane	LB063918	mg/kg	0.1	<0.1	NA
1,2-dichloropropane	LB063918	mg/kg	0.1	<0.1	NA
cis-1,3-dichloropropene	LB063918	mg/kg	0.1	<0.1	NA
trans-1,3-dichloropropene	LB063918	mg/kg	0.1	<0.1	NA
1,2-dibromoethane (EDB)	LB063918	mg/kg	0.1	<0.1	NA

Halogenated Aliphatics

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Dichlorodifluoromethane (CFC-12)	LB063918	mg/kg	1	<1	NA
Chloromethane	LB063918	mg/kg	1	<1	NA
Vinyl chloride (Chloroethene)	LB063918	mg/kg	0.1	<0.1	NA
Bromomethane	LB063918	mg/kg	1	<1	NA
Chloroethane	LB063918	mg/kg	1	<1	NA
Trichlorofluoromethane	LB063918	mg/kg	1	<1	NA
Iodomethane	LB063918	mg/kg	5	<5	NA
1,1-dichloroethene	LB063918	mg/kg	0.1	<0.1	114%
Dichloromethane (Methylene chloride)	LB063918	mg/kg	0.5	<0.5	NA
Allyl chloride	LB063918	mg/kg	0.1	<0.1	NA
trans-1,2-dichloroethene	LB063918	mg/kg	0.1	<0.1	NA
1,1-dichloroethane	LB063918	mg/kg	0.1	<0.1	NA
cis-1,2-dichloroethene	LB063918	mg/kg	0.1	<0.1	NA
Bromochloromethane	LB063918	mg/kg	0.1	<0.1	NA
1,2-dichloroethane	LB063918	mg/kg	0.1	<0.1	106%
1,1,1-trichloroethane	LB063918	mg/kg	0.1	<0.1	NA
1,1-dichloropropene	LB063918	mg/kg	0.1	<0.1	NA
Carbon tetrachloride	LB063918	mg/kg	0.1	<0.1	NA
Dibromomethane	LB063918	mg/kg	0.1	<0.1	NA
Trichloroethene (Trichloroethylene -TCE)	LB063918	mg/kg	0.1	<0.1	73%
1,1,2-trichloroethane	LB063918	mg/kg	0.1	<0.1	NA
1,3-dichloropropane	LB063918	mg/kg	0.1	<0.1	NA
Tetrachloroethene (Perchloroethylene,PCE)	LB063918	mg/kg	0.1	<0.1	NA
1,1,1,2-tetrachloroethane	LB063918	mg/kg	0.1	<0.1	NA
cis-1,4-dichloro-2-butene	LB063918	mg/kg	1	<1	NA
1,1,2,2-tetrachloroethane	LB063918	mg/kg	0.1	<0.1	NA
1,2,3-trichloropropane	LB063918	mg/kg	0.1	<0.1	NA
trans-1,4-dichloro-2-butene	LB063918	mg/kg	1	<1	NA
1,2-dibromo-3-chloropropane	LB063918	mg/kg	0.1	<0.1	NA
Hexachlorobutadiene	LB063918	mg/kg	0.1	<0.1	NA

Halogenated Aromatics

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Chlorobenzene	LB063918	mg/kg	0.1	<0.1	98%
Bromobenzene	LB063918	mg/kg	0.1	<0.1	NA
2-chlorotoluene	LB063918	mg/kg	0.1	<0.1	NA
4-chlorotoluene	LB063918	mg/kg	0.1	<0.1	NA
1,3-dichlorobenzene	LB063918	mg/kg	0.1	<0.1	NA
1,4-dichlorobenzene	LB063918	mg/kg	0.1	<0.1	NA
1,2-dichlorobenzene	LB063918	mg/kg	0.1	<0.1	NA
1,2,4-trichlorobenzene	LB063918	mg/kg	0.1	<0.1	NA
1,2,3-trichlorobenzene	LB063918	mg/kg	0.1	<0.1	NA

Monocyclic Aromatic Hydrocarbons

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula : *the absolute difference of the two results divided by the average of the two results as a percentage.* Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

VOC's in Soil Method: ME-(AU)-[ENV]AN433/AN434 (continued)

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Benzene	LB063918	mg/kg	0.1	<0.1	87%
Toluene	LB063918	mg/kg	0.1	<0.1	86%
Ethylbenzene	LB063918	mg/kg	0.1	<0.1	87%
m/p-xylene	LB063918	mg/kg	0.2	<0.2	89%
Styrene (Vinyl benzene)	LB063918	mg/kg	0.1	<0.1	NA
o-xylene	LB063918	mg/kg	0.1	<0.1	90%
Isopropylbenzene (Cumene)	LB063918	mg/kg	0.1	<0.1	NA
n-propylbenzene	LB063918	mg/kg	0.1	<0.1	NA
1,3,5-trimethylbenzene	LB063918	mg/kg	0.1	<0.1	NA
tert-butylbenzene	LB063918	mg/kg	0.1	<0.1	NA
1,2,4-trimethylbenzene	LB063918	mg/kg	0.1	<0.1	NA
sec-butylbenzene	LB063918	mg/kg	0.1	<0.1	NA
p-isopropyltoluene	LB063918	mg/kg	0.1	<0.1	NA
n-butylbenzene	LB063918	mg/kg	0.1	<0.1	NA

Nitrogenous Compounds

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Acrylonitrile	LB063918	mg/kg	0.1	<0.1	NA
2-nitropropane	LB063918	mg/kg	10	<10	NA

Oxygenated Compounds

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Acetone (2-propanone)	LB063918	mg/kg	10	<10	NA
MtBE (Methyl-tert-butyl ether)	LB063918	mg/kg	0.1	<0.1	NA
Vinyl acetate	LB063918	mg/kg	10	<10	NA
MEK (2-butanone)	LB063918	mg/kg	10	<10	NA
MIBK (4-methyl-2-pentanone)	LB063918	mg/kg	1	<1	NA
2-hexanone (MBK)	LB063918	mg/kg	5	<5	NA

Polycyclic VOCs

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Naphthalene	LB063918	mg/kg	0.1	<0.1	NA

Sulphonated Compounds

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Carbon disulfide	LB063918	mg/kg	0.5	<0.5	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Dibromofluoromethane (Surrogate)	LB063918	%	-	111%	119%
d4-1,2-dichloroethane (Surrogate)	LB063918	%	-	123%	124%
d8-toluene (Surrogate)	LB063918	%	-	107%	104%
Bromofluorobenzene (Surrogate)	LB063918	%	-	111%	117%

Totals

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Total Xylenes*	LB063918	mg/kg	0.3	<0.3	NA
Total BTEX*	LB063918	mg/kg	0.6	<0.6	NA

Trihalomethanes

QC SUMMARY

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula : *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

VOC's in Soil Method: ME-(AU)-[ENV]AN433/AN434 (continued)

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Chloroform	LB063918	mg/kg	0.1	<0.1	88%
Bromodichloromethane	LB063918	mg/kg	0.1	<0.1	NA
Chlorodibromomethane	LB063918	mg/kg	0.1	<0.1	NA
Bromoform	LB063918	mg/kg	0.1	<0.1	NA

Volatile Petroleum Hydrocarbons in Soil Method: ME-(AU)-[ENV]AN433/AN434/AN410

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
TRH C6-C10	LB063918	mg/kg	25	<25	90%
TRH C6-C9	LB063918	mg/kg	20	<20	90%

Surrogates

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Dibromofluoromethane (Surrogate)	LB063918	%	-	108%	115%
d4-1,2-dichloroethane (Surrogate)	LB063918	%	-	107%	115%
d8-toluene (Surrogate)	LB063918	%	-	112%	114%
Bromofluorobenzene (Surrogate)	LB063918	%	-	116%	111%

VPH F Bands

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Benzene (F0)	LB063918	mg/kg	0.1	<0.1	NA
TRH C6-C10 minus BTEX (F1)	LB063918	mg/kg	25	<25	101%

METHOD SUMMARY

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analsysis by ASS or ICP as per USEPA Method 200.8.
AN040/AN320	A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
AN088	Orbital rolling for Organic pollutants are extracted from soil/sediment by transferring an appropriate mass of sample to a clear soil jar and extracting with 1:1 Dichloromethane/Acetone. Orbital Rolling method is intended for the extraction of semi-volatile organic compounds from soil/sediment samples, and is based somewhat on USEPA method 3570 (Micro Organic extraction and sample preparation). Method 3700.
AN289	Analysis of Total Phenols in Soil Sediment and Water: Steam distillable phenols react with 4-aminoantipyrine at pH 7.9±0.1 in the presence of potassium ferricyanide to form a coloured antipyrine dye analysed by Discrete Analyser. Reference APHA 5530 B/D.
AN312	Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid, mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500
AN400	OC and OP Pesticides by GC-ECD: The determination of organochlorine (OC) and organophosphorus (OP) pesticides and polychlorinated biphenyls (PCBs) in soils, sludges and groundwater. (Based on USEPA methods 3510, 3550, 8140 and 8080.)
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is reported directly and also corrected by subtracting Naphthalene (from VOC method AN433) where available.
AN403	Additionally, the volatile C6-C9 fraction may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Petroleum Hydrocarbons (TPH) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents .
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependant on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN420	SVOC Compounds: Semi-Volatile Organic Compounds (SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).

METHOD SUMMARY

METHOD	METHODOLOGY SUMMARY
AN433/AN434	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.
AN433/AN434/AN410	VOCs and C6-C9/C6-C10 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.

FOOTNOTES

IS	Insufficient sample for analysis.	LOR	Limit of Reporting
LNR	Sample listed, but not received.	↑↓	Raised or Lowered Limit of Reporting
*	This analysis is not covered by the scope of accreditation.	QFH	QC result is above the upper tolerance
		QFL	QC result is below the lower tolerance
**	Indicative data, theoretical holding time exceeded.	-	The sample was not analysed for this analyte
^	Performed by outside laboratory.	NVL	Not Validated

Samples analysed as received.
Solid samples expressed on a dry weight basis.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: http://www.sgs.com.au/~/media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf

STATEMENT OF QA/QC PERFORMANCE

SE131298 R1

CLIENT DETAILS

Contact	Mark Laidlaw
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Telephone	(02) 6239 5656
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Email	mark@robsonenviro.com.au
Project	**960502- P2 ESA- Black Mountain Peninsula**
Order Number	(Not specified)
Samples	2

LABORATORY DETAILS

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SGS Reference	SE131298 R1
Report Number	0000091677
Date Reported	22 Sep 2014

COMMENTS

All the laboratory data for each environmental matrix was compared to SGS Environmental Services' stated Data Quality Objectives (DQO). Comments arising from the comparison were made and are reported below.

The data relating to sampling was taken from the Chain of Custody document and was supplied by the Client.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met (within the SGS Alexandria Environmental laboratory).

SAMPLE SUMMARY

Sample counts by matrix	2 Soils	Type of documentation received	COC
Date documentation received	12/9/2014	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	4.0°C
Sample container provider	Other Lab	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		

HOLDING TIME SUMMARY

SE131298 R1

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS “Field Sampling Guide for Containers and Holding Time” (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QC2	SE131298.001	LB064107	10 Sep 2014	12 Sep 2014	08 Oct 2014	17 Sep 2014	08 Oct 2014	19 Sep 2014
QC4	SE131298.002	LB064107	10 Sep 2014	12 Sep 2014	08 Oct 2014	17 Sep 2014	08 Oct 2014	19 Sep 2014

Moisture Content

Method: ME-(AU)-[ENV]AN002

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QC2	SE131298.001	LB064166	10 Sep 2014	12 Sep 2014	24 Sep 2014	18 Sep 2014	23 Sep 2014	19 Sep 2014
QC4	SE131298.002	LB064166	10 Sep 2014	12 Sep 2014	24 Sep 2014	18 Sep 2014	23 Sep 2014	19 Sep 2014

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QC2	SE131298.001	LB063933	10 Sep 2014	12 Sep 2014	24 Sep 2014	15 Sep 2014	25 Oct 2014	19 Sep 2014
QC4	SE131298.002	LB063933	10 Sep 2014	12 Sep 2014	24 Sep 2014	15 Sep 2014	25 Oct 2014	19 Sep 2014

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QC2	SE131298.001	LB063933	10 Sep 2014	12 Sep 2014	24 Sep 2014	15 Sep 2014	25 Oct 2014	19 Sep 2014
QC4	SE131298.002	LB063933	10 Sep 2014	12 Sep 2014	24 Sep 2014	15 Sep 2014	25 Oct 2014	19 Sep 2014

PCBs in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QC2	SE131298.001	LB063933	10 Sep 2014	12 Sep 2014	24 Sep 2014	15 Sep 2014	25 Oct 2014	19 Sep 2014
QC4	SE131298.002	LB063933	10 Sep 2014	12 Sep 2014	24 Sep 2014	15 Sep 2014	25 Oct 2014	19 Sep 2014

Total Phenolics in Soil

Method: ME-(AU)-[ENV]AN289

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QC2	SE131298.001	LB063963	10 Sep 2014	12 Sep 2014	24 Sep 2014	15 Sep 2014	24 Sep 2014	19 Sep 2014
QC4	SE131298.002	LB063963	10 Sep 2014	12 Sep 2014	24 Sep 2014	15 Sep 2014	24 Sep 2014	19 Sep 2014

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

Method: ME-(AU)-[ENV]AN040/AN320

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QC2	SE131298.001	LB064103	10 Sep 2014	12 Sep 2014	09 Mar 2015	17 Sep 2014	09 Mar 2015	19 Sep 2014
QC4	SE131298.002	LB064103	10 Sep 2014	12 Sep 2014	09 Mar 2015	17 Sep 2014	09 Mar 2015	19 Sep 2014

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QC2	SE131298.001	LB063933	10 Sep 2014	12 Sep 2014	24 Sep 2014	15 Sep 2014	25 Oct 2014	19 Sep 2014
QC4	SE131298.002	LB063933	10 Sep 2014	12 Sep 2014	24 Sep 2014	15 Sep 2014	25 Oct 2014	19 Sep 2014

VOC's in Soil

Method: ME-(AU)-[ENV]AN433/AN434

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QC2	SE131298.001	LB063918	10 Sep 2014	12 Sep 2014	24 Sep 2014	15 Sep 2014	25 Oct 2014	19 Sep 2014
QC4	SE131298.002	LB063918	10 Sep 2014	12 Sep 2014	24 Sep 2014	15 Sep 2014	25 Oct 2014	19 Sep 2014

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QC2	SE131298.001	LB063918	10 Sep 2014	12 Sep 2014	24 Sep 2014	15 Sep 2014	25 Oct 2014	19 Sep 2014
QC4	SE131298.002	LB063918	10 Sep 2014	12 Sep 2014	24 Sep 2014	15 Sep 2014	25 Oct 2014	19 Sep 2014

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	QC2	SE131298.001	%	60 - 130%	102
	QC4	SE131298.002	%	60 - 130%	100

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	QC2	SE131298.001	%	60 - 130%	86
	QC4	SE131298.002	%	60 - 130%	86
d14-p-terphenyl (Surrogate)	QC2	SE131298.001	%	60 - 130%	102
	QC4	SE131298.002	%	60 - 130%	100
d5-nitrobenzene (Surrogate)	QC2	SE131298.001	%	60 - 130%	98
	QC4	SE131298.002	%	60 - 130%	96

PCBs in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	QC2	SE131298.001	%	60 - 130%	102
	QC4	SE131298.002	%	60 - 130%	100

VOC's in Soil

Method: ME-(AU)-[ENV]AN433/AN434

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	QC2	SE131298.001	%	60 - 130%	120
	QC4	SE131298.002	%	60 - 130%	105
d4-1,2-dichloroethane (Surrogate)	QC2	SE131298.001	%	60 - 130%	113
	QC4	SE131298.002	%	60 - 130%	116
d8-toluene (Surrogate)	QC2	SE131298.001	%	60 - 130%	116
	QC4	SE131298.002	%	60 - 130%	100
Dibromofluoromethane (Surrogate)	QC2	SE131298.001	%	60 - 130%	119
	QC4	SE131298.002	%	60 - 130%	97

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	QC2	SE131298.001	%	60 - 130%	112
	QC4	SE131298.002	%	60 - 130%	109
d4-1,2-dichloroethane (Surrogate)	QC2	SE131298.001	%	60 - 130%	107
	QC4	SE131298.002	%	60 - 130%	101
d8-toluene (Surrogate)	QC2	SE131298.001	%	60 - 130%	121
	QC4	SE131298.002	%	60 - 130%	113
Dibromofluoromethane (Surrogate)	QC2	SE131298.001	%	60 - 130%	117
	QC4	SE131298.002	%	60 - 130%	96

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result
LB064107.001	Mercury	mg/kg	0.01	<0.01

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number		Parameter	Units	LOR	Result
LB063933.001		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1
		Alpha BHC	mg/kg	0.1	<0.1
		Lindane	mg/kg	0.1	<0.1
		Heptachlor	mg/kg	0.1	<0.1
		Aldrin	mg/kg	0.1	<0.1
		Beta BHC	mg/kg	0.1	<0.1
		Delta BHC	mg/kg	0.1	<0.1
		Heptachlor epoxide	mg/kg	0.1	<0.1
		Alpha Endosulfan	mg/kg	0.2	<0.2
		Gamma Chlordane	mg/kg	0.1	<0.1
		Alpha Chlordane	mg/kg	0.1	<0.1
		p,p'-DDE	mg/kg	0.1	<0.1
		Dieldrin	mg/kg	0.2	<0.2
		Endrin	mg/kg	0.2	<0.2
		Beta Endosulfan	mg/kg	0.2	<0.2
		p,p'-DDD	mg/kg	0.1	<0.1
		p,p'-DDT	mg/kg	0.1	<0.1
		Endosulfan sulphate	mg/kg	0.1	<0.1
		Endrin Aldehyde	mg/kg	0.1	<0.1
		Methoxychlor	mg/kg	0.1	<0.1
		Endrin Ketone	mg/kg	0.1	<0.1
		Isodrin	mg/kg	0.1	<0.1
		Mirex	mg/kg	0.1	<0.1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	97

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB063933.001		Naphthalene	mg/kg	0.1	<0.1
		2-methylnaphthalene	mg/kg	0.1	<0.1
		1-methylnaphthalene	mg/kg	0.1	<0.1
		Acenaphthylene	mg/kg	0.1	<0.1
		Acenaphthene	mg/kg	0.1	<0.1
		Fluorene	mg/kg	0.1	<0.1
		Phenanthrene	mg/kg	0.1	<0.1
		Anthracene	mg/kg	0.1	<0.1
		Fluoranthene	mg/kg	0.1	<0.1
		Pyrene	mg/kg	0.1	<0.1
		Benzo(a)anthracene	mg/kg	0.1	<0.1
		Chrysene	mg/kg	0.1	<0.1
		Benzo(a)pyrene	mg/kg	0.1	<0.1
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1
		Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1
		Benzo(ghi)perylene	mg/kg	0.1	<0.1
		Total PAH	mg/kg	0.8	<0.8
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	108
		2-fluorobiphenyl (Surrogate)	%	-	100
		d14-p-terphenyl (Surrogate)	%	-	112

PCBs in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number	Parameter	Units	LOR	Result
LB063933.001	Arochlor 1016	mg/kg	0.2	<0.2
	Arochlor 1221	mg/kg	0.2	<0.2
	Arochlor 1232	mg/kg	0.2	<0.2
	Arochlor 1242	mg/kg	0.2	<0.2
	Arochlor 1248	mg/kg	0.2	<0.2
	Arochlor 1254	mg/kg	0.2	<0.2

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

PCBs in Soil (continued)

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number		Parameter	Units	LOR	Result
LB063933.001		Arochlor 1260	mg/kg	0.2	<0.2
		Arochlor 1262	mg/kg	0.2	<0.2
		Arochlor 1268	mg/kg	0.2	<0.2
		Total PCBs (Arochlors)	mg/kg	1	<1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	97

Total Phenolics in Soil

Method: ME-(AU)-[ENV]AN289

Sample Number	Parameter	Units	LOR	Result
LB063963.001	Total Phenols	mg/kg	0.1	<0.1

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result
LB064103.001	Arsenic, As	mg/kg	3	<1
	Cadmium, Cd	mg/kg	0.3	<0.3
	Chromium, Cr	mg/kg	0.3	<0.5
	Copper, Cu	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Nickel, Ni	mg/kg	0.5	<0.5
	Zinc, Zn	mg/kg	0.5	<2.0

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR	Result
LB063933.001	TRH C10-C14	mg/kg	20	<20
	TRH C15-C28	mg/kg	45	<45
	TRH C29-C36	mg/kg	45	<45
	TRH C37-C40	mg/kg	100	<100
	TRH C10-C36 Total	mg/kg	110	<110

VOC's in Soil

Method: ME-(AU)-[ENV]AN433/AN434

Sample Number		Parameter	Units	LOR	Result
LB063918.001	Fumigants	2,2-dichloropropane	mg/kg	0.1	<0.1
		1,2-dichloropropane	mg/kg	0.1	<0.1
		cis-1,3-dichloropropene	mg/kg	0.1	<0.1
		trans-1,3-dichloropropene	mg/kg	0.1	<0.1
		1,2-dibromoethane (EDB)	mg/kg	0.1	<0.1
	Halogenated Aliphatics	Dichlorodifluoromethane (CFC-12)	mg/kg	1	<1
		Chloromethane	mg/kg	1	<1
		Vinyl chloride (Chloroethene)	mg/kg	0.1	<0.1
		Bromomethane	mg/kg	1	<1
		Chloroethane	mg/kg	1	<1
		Trichlorofluoromethane	mg/kg	1	<1
		Iodomethane	mg/kg	5	<5
		1,1-dichloroethene	mg/kg	0.1	<0.1
		Dichloromethane (Methylene chloride)	mg/kg	0.5	<0.5
		Allyl chloride	mg/kg	0.1	<0.1
		trans-1,2-dichloroethene	mg/kg	0.1	<0.1
		1,1-dichloroethane	mg/kg	0.1	<0.1
		cis-1,2-dichloroethene	mg/kg	0.1	<0.1
		Bromochloromethane	mg/kg	0.1	<0.1
		1,2-dichloroethane	mg/kg	0.1	<0.1
		1,1,1-trichloroethane	mg/kg	0.1	<0.1
		1,1-dichloropropene	mg/kg	0.1	<0.1
		Carbon tetrachloride	mg/kg	0.1	<0.1
		Dibromomethane	mg/kg	0.1	<0.1
		Trichloroethene (Trichloroethylene -TCE)	mg/kg	0.1	<0.1
		1,1,2-trichloroethane	mg/kg	0.1	<0.1
		1,3-dichloropropane	mg/kg	0.1	<0.1
		Tetrachloroethene (Perchloroethylene,PCE)	mg/kg	0.1	<0.1
		1,1,1,2-tetrachloroethane	mg/kg	0.1	<0.1
		cis-1,4-dichloro-2-butene	mg/kg	1	<1
		1,1,2,2-tetrachloroethane	mg/kg	0.1	<0.1

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

VOC's in Soil (continued)

Method: ME-(AU)-[ENV]AN433/AN434

Sample Number		Parameter	Units	LOR	Result
LB063918.001	Halogenated Aliphatics	1,2,3-trichloropropane	mg/kg	0.1	<0.1
		trans-1,4-dichloro-2-butene	mg/kg	1	<1
		1,2-dibromo-3-chloropropane	mg/kg	0.1	<0.1
		Hexachlorobutadiene	mg/kg	0.1	<0.1
	Halogenated Aromatics	Chlorobenzene	mg/kg	0.1	<0.1
		Bromobenzene	mg/kg	0.1	<0.1
		2-chlorotoluene	mg/kg	0.1	<0.1
		4-chlorotoluene	mg/kg	0.1	<0.1
		1,3-dichlorobenzene	mg/kg	0.1	<0.1
		1,4-dichlorobenzene	mg/kg	0.1	<0.1
		1,2-dichlorobenzene	mg/kg	0.1	<0.1
		1,2,4-trichlorobenzene	mg/kg	0.1	<0.1
		1,2,3-trichlorobenzene	mg/kg	0.1	<0.1
	Monocyclic Aromatic Hydrocarbons	Benzene	mg/kg	0.1	<0.1
		Toluene	mg/kg	0.1	<0.1
		Ethylbenzene	mg/kg	0.1	<0.1
		m/p-xylene	mg/kg	0.2	<0.2
		Styrene (Vinyl benzene)	mg/kg	0.1	<0.1
		o-xylene	mg/kg	0.1	<0.1
		Isopropylbenzene (Cumene)	mg/kg	0.1	<0.1
		n-propylbenzene	mg/kg	0.1	<0.1
		1,3,5-trimethylbenzene	mg/kg	0.1	<0.1
		tert-butylbenzene	mg/kg	0.1	<0.1
		1,2,4-trimethylbenzene	mg/kg	0.1	<0.1
		sec-butylbenzene	mg/kg	0.1	<0.1
		p-isopropyltoluene	mg/kg	0.1	<0.1
		n-butylbenzene	mg/kg	0.1	<0.1
	Nitrogenous Compounds	Acrylonitrile	mg/kg	0.1	<0.1
		2-nitropropane	mg/kg	10	<10
	Oxygenated Compounds	Acetone (2-propanone)	mg/kg	10	<10
		MtBE (Methyl-tert-butyl ether)	mg/kg	0.1	<0.1
		Vinyl acetate	mg/kg	10	<10
		MEK (2-butanone)	mg/kg	10	<10
		MIBK (4-methyl-2-pentanone)	mg/kg	1	<1
		2-hexanone (MBK)	mg/kg	5	<5
	Polycyclic VOCs	Naphthalene	mg/kg	0.1	<0.1
	Sulphonated	Carbon disulfide	mg/kg	0.5	<0.5
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	111
		d4-1,2-dichloroethane (Surrogate)	%	-	123
		d8-toluene (Surrogate)	%	-	107
		Bromofluorobenzene (Surrogate)	%	-	111
	Totals	Total BTEX*	mg/kg	0.6	<0.6
	Trihalomethanes	Chloroform	mg/kg	0.1	<0.1
		Bromodichloromethane	mg/kg	0.1	<0.1
		Chlorodibromomethane	mg/kg	0.1	<0.1
		Bromoform	mg/kg	0.1	<0.1

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Number		Parameter	Units	LOR	Result
LB063918.001		TRH C6-C9	mg/kg	20	<20
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	108
		d4-1,2-dichloroethane (Surrogate)	%	-	107
		d8-toluene (Surrogate)	%	-	112

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131322.003	LB064107.014	Mercury	mg/kg	0.01	<0.01	<0.01	200	0
SE131322.030	LB064107.024	Mercury	mg/kg	0.01	0.02	0.02	200	0

Moisture Content

Method: ME-(AU)-[ENV]AN002

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131379.001	LB064166.011	% Moisture	%w/w	0.5	12.7	13.4	38	5
SE131379.002	LB064166.013	% Moisture	%	0.5	19.7	21.2	35	7

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131322.030	LB063933.012		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Lindane	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor	mg/kg	0.1	<0.1	<0.1	200	0
			Aldrin	mg/kg	0.1	<0.1	<0.1	200	0
			Beta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Delta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Dieldrin	mg/kg	0.2	<0.05	<0.05	200	0
			Endrin	mg/kg	0.2	<0.2	<0.2	200	0
			o,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	200	0
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Ketone	mg/kg	0.1	<0.1	<0.1	200	0
			Isodrin	mg/kg	0.1	<0.1	<0.1	200	0
			Mirex	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.15	0.16	30	2
SE131322.068	LB063933.023		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Lindane	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor	mg/kg	0.1	<0.1	<0.1	200	0
			Aldrin	mg/kg	0.1	<0.1	<0.1	200	0
			Beta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Delta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Dieldrin	mg/kg	0.2	<0.05	<0.05	200	0
			Endrin	mg/kg	0.2	<0.2	<0.2	200	0
			o,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

OC Pesticides in Soil (continued)

Method: ME-(AU)-[ENV]AN400/AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131322.068	LB063933.023		Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	200	0
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Ketone	mg/kg	0.1	<0.1	<0.1	200	0
			Isodrin	mg/kg	0.1	<0.1	<0.1	200	0
			Mirex	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.17	0.17	30	1

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131322.052	LB063933.014		Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthylene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluorene	mg/kg	0.1	<0.1	<0.1	200	0
			Phenanthrene	mg/kg	0.1	<0.1	<0.1	197	0
			Anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluoranthene	mg/kg	0.1	0.1	<0.1	155	0
			Pyrene	mg/kg	0.1	0.1	<0.1	135	18
			Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Chrysene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	200	0
			Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.2	<0.2	<0.2	200	0
			Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.3	<0.3	<0.3	134	0
			Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.2	<0.2	<0.2	175	0
			Total PAH	mg/kg	0.8	<0.8	<0.8	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.4	30	0
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	2
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	0

PCBs in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131322.030	LB063933.010		Arochlor 1016	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1221	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1232	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1242	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1248	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1254	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1260	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1262	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1268	mg/kg	0.2	<0.2	<0.2	200	0
			Total PCBs (Arochlors)	mg/kg	1	<1	<1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	30	2

Total Phenolics in Soil

Method: ME-(AU)-[ENV]AN289

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131298.001	LB063963.004	Total Phenols	mg/kg	0.1	<0.1	<0.1	200	0

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

Method: ME-(AU)-[ENV]AN040/AN320

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131322.003	LB064103.014	Arsenic, As	mg/kg	3	4	4	57	7
		Cadmium, Cd	mg/kg	0.3	0.3	<0.3	123	14
		Chromium, Cr	mg/kg	0.3	34	27	32	22
		Copper, Cu	mg/kg	0.5	46	57	31	21

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest (continued) — **Method: ME-(AU)-[ENV]AN040/AN320**

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131322.003	LB064103.014	Lead, Pb	mg/kg	1	15	16	36	6
		Nickel, Ni	mg/kg	0.5	44	36	31	18
		Zinc, Zn	mg/kg	0.5	69	73	33	5
SE131322.030	LB064103.024	Arsenic, As	mg/kg	3	11	11	39	0
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	147	0
		Chromium, Cr	mg/kg	0.3	14	12	34	9
		Copper, Cu	mg/kg	0.5	21	24	32	12
		Lead, Pb	mg/kg	1	18	18	36	4
		Nickel, Ni	mg/kg	0.5	9.3	9.0	35	3
		Zinc, Zn	mg/kg	0.5	94	100	32	7

TRH (Total Recoverable Hydrocarbons) in Soil — **Method: ME-(AU)-[ENV]AN403**

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131322.052	LB063933.014		TRH C10-C14	mg/kg	20	<20	<20	200	0
			TRH C15-C28	mg/kg	45	<45	<45	200	0
			TRH C29-C36	mg/kg	45	<45	<45	200	0
			TRH C37-C40	mg/kg	100	<100	<100	200	0
			TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
			TRH C10-C40 Total	mg/kg	210	<210	<210	200	0
		TRH F Bands	TRH >C10-C16 (F2)	mg/kg	25	<25	<25	200	0
			TRH >C10-C16 (F2) minus Naphthalene	mg/kg	25	<25	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB064107.002	Mercury	mg/kg	0.01	0.21	0.2	70 - 130	103

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB063933.002		Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	121
		Aldrin	mg/kg	0.1	0.3	0.2	60 - 140	127
		Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	115
		Dieldrin	mg/kg	0.2	0.2	0.2	60 - 140	117
		Endrin	mg/kg	0.2	0.2	0.2	60 - 140	123
		p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	110
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.14	0.15	40 - 130	96

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB063933.002		Naphthalene	mg/kg	0.1	3.7	4	60 - 140	93
		Acenaphthylene	mg/kg	0.1	3.8	4	60 - 140	95
		Acenaphthene	mg/kg	0.1	3.7	4	60 - 140	93
		Phenanthrene	mg/kg	0.1	3.8	4	60 - 140	96
		Anthracene	mg/kg	0.1	3.8	4	60 - 140	95
		Fluoranthene	mg/kg	0.1	4.1	4	60 - 140	101
		Pyrene	mg/kg	0.1	3.6	4	60 - 140	91
		Benzo(a)pyrene	mg/kg	0.1	4.2	4	60 - 140	106
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	86
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	80
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	92

PCBs in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB063933.002	Arochlor 1260	mg/kg	0.2	0.4	0.4	60 - 140	105

Total Phenolics in Soil

Method: ME-(AU)-[ENV]AN289

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB063963.002	Total Phenols	mg/kg	0.1	2.5	2.5	70 - 130	101

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB064103.002	Arsenic, As	mg/kg	3	51	50	80 - 120	101
	Cadmium, Cd	mg/kg	0.3	52	50	80 - 120	104
	Chromium, Cr	mg/kg	0.3	51	50	80 - 120	102
	Copper, Cu	mg/kg	0.5	50	50	80 - 120	101
	Lead, Pb	mg/kg	1	51	50	80 - 120	101
	Nickel, Ni	mg/kg	0.5	51	50	80 - 120	103
	Zinc, Zn	mg/kg	0.5	51	50	80 - 120	103

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB063933.002		TRH C10-C14	mg/kg	20	35	40	60 - 140	88
		TRH C15-C28	mg/kg	45	<45	40	60 - 140	90
		TRH C29-C36	mg/kg	45	<45	40	60 - 140	75
	TRH F Bands	TRH >C10-C16 (F2)	mg/kg	25	35	40	60 - 140	88
		TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	85
		TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	75

VOC's in Soil

Method: ME-(AU)-[ENV]AN433/AN434

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB063918.002	Halogenated	1,1-dichloroethene	mg/kg	0.1	2.9	2.56	60 - 140	114
	Aliphatics	1,2-dichloroethane	mg/kg	0.1	2.7	2.56	60 - 140	106
		Trichloroethene (Trichloroethylene -TCE)	mg/kg	0.1	1.9	2.56	60 - 140	73

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

VOC's in Soil (continued)

Method: ME-(AU)-[ENV]AN433/AN434

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB063918.002	Halogenated	Chlorobenzene	mg/kg	0.1	2.5	2.56	60 - 140	98
	Monocyclic	Benzene	mg/kg	0.1	2.5	2.9	60 - 140	87
	Aromatic	Toluene	mg/kg	0.1	2.5	2.9	60 - 140	86
		Ethylbenzene	mg/kg	0.1	2.5	2.9	60 - 140	87
		m/p-xylene	mg/kg	0.2	5.1	5.8	60 - 140	89
		o-xylene	mg/kg	0.1	2.6	2.9	60 - 140	90
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	6.0	5	60 - 140	119
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	6.2	5	60 - 140	124
		d8-toluene (Surrogate)	mg/kg	-	5.2	5	60 - 140	104
		Bromofluorobenzene (Surrogate)	mg/kg	-	5.8	5	60 - 140	117
	Trihalomethan	Chloroform	mg/kg	0.1	2.2	2.56	60 - 140	88

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB063918.002		TRH C6-C10	mg/kg	25	<25	24.65	60 - 140	90
		TRH C6-C9	mg/kg	20	21	23.2	60 - 140	90
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	5.7	5	60 - 140	115
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.7	5	60 - 140	115
		d8-toluene (Surrogate)	mg/kg	-	5.7	5	60 - 140	114
		Bromofluorobenzene (Surrogate)	mg/kg	-	5.5	5	60 - 140	111
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	7.25	60 - 140	101

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE131298.001	LB064107.004	Mercury	mg/kg	0.01	0.21	0.02	0.2	94

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE131322.029	LB063933.009		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha BHC	mg/kg	0.1	<0.1	<0.1	-	-
			Lindane	mg/kg	0.1	<0.1	<0.1	-	-
			Heptachlor	mg/kg	0.1	0.3	<0.1	0.2	132
			Aldrin	mg/kg	0.1	0.3	<0.1	0.2	137
			Beta BHC	mg/kg	0.1	<0.1	<0.1	-	-
			Delta BHC	mg/kg	0.1	0.3	<0.1	0.2	129
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	-	-
			o,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	-	-
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
			Dieldrin	mg/kg	0.2	0.3	<0.05	0.2	128
			Endrin	mg/kg	0.2	0.3	<0.2	0.2	133
			o,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
			o,p'-DDT	mg/kg	0.1	<0.1	<0.1	-	-
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
			p,p'-DDT	mg/kg	0.1	0.2	<0.1	0.2	117
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	-	-
			Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	-	-
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	-	-
			Endrin Ketone	mg/kg	0.1	<0.1	<0.1	-	-
			Isodrin	mg/kg	0.1	<0.1	<0.1	-	-
			Mirex	mg/kg	0.1	<0.1	<0.1	-	-
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.16	0.16	-	105

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

Method: ME-(AU)-[ENV]AN040/AN320

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE131298.001	LB064103.004	Arsenic, As	mg/kg	3	46	4	50	83
		Cadmium, Cd	mg/kg	0.3	44	<0.3	50	87
		Chromium, Cr	mg/kg	0.3	60	15	50	91
		Copper, Cu	mg/kg	0.5	52	7.6	50	88
		Lead, Pb	mg/kg	1	54	14	50	81
		Nickel, Ni	mg/kg	0.5	50	6.3	50	86
		Zinc, Zn	mg/kg	0.5	71	30	50	83

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The original result is the analyte concentration of the matrix spike. The Duplicate result is the analyte concentration of the matrix spike duplicate.

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

OC Pesticides in Soil — **Method: ME-(AU)-[ENV]AN400/AN420**

QC Sample	Sample Number		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE131322.029	LB063933.010		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	-
			Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	-
			Lindane	mg/kg	0.1	<0.1	<0.1	200	-
			Heptachlor	mg/kg	0.1	0.3	0.3	68	2
			Aldrin	mg/kg	0.1	0.3	0.3	66	1
			Beta BHC	mg/kg	0.1	<0.1	<0.1	200	-
			Delta BHC	mg/kg	0.1	0.3	0.3	69	0
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	-
			o,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	-
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	200	-
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	-
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	-
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	-
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	-
			Dieldrin	mg/kg	0.2	0.3	0.3	69	1
			Endrin	mg/kg	0.2	0.3	0.3	68	1
			o,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	-
			o,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	-
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	-
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	-
			p,p'-DDT	mg/kg	0.1	0.2	0.2	73	0
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	-
			Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	200	-
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	-
			Endrin Ketone	mg/kg	0.1	<0.1	<0.1	200	-
			Isodrin	mg/kg	0.1	<0.1	<0.1	200	-
			Mirex	mg/kg	0.1	<0.1	<0.1	200	-
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.16	0.16	30	1

Samples analysed as received.

Solid samples expressed on a dry weight basis.

QC criteria are subject to internal review according to the SGS QA/QC plan and may be provided on request or alternatively can be found here:
http://www.sgs.com.au/~/media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf

*	Non-accredited analysis.
-	Sample not analysed for this analyte.
^	Analysis performed by external laboratory.

IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.

①	At least 2 of 3 surrogates are within acceptance criteria.
②	RPD failed acceptance criteria due to sample heterogeneity.
③	Results less than 5 times LOR preclude acceptance criteria for RPD.
④	Recovery failed acceptance criteria due to matrix interference.
⑤	Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
⑥	LOR was raised due to sample matrix interference.
⑦	LOR was raised due to dilution of significantly high concentration of analyte in sample.
⑧	Reanalysis of sample in duplicate confirmed sample heterogeneity and inconsistency of results.
⑨	Recovery failed acceptance criteria due to sample heterogeneity.
⑩	LOR was raised due to high conductivity of the sample (required dilution).
†	Refer to Analytical Report comments for further information.

Robson ENVIRONMENTAL

Occupational Hygiene
Health Safety &
Environmental Consulting

CHAIN OF CUSTODY FORM

Job No.: 960502

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Client Information: Rowing ACT

Site Address: Black Mountain Peninsula
Acton ACT

Sampled by: AR

ESDAT Files Required
YES NO

Job Name: P2 ESA

Required Turnaround Time:
24hr; 36hr; 48hr; 72hr & **5 to 7 Days**

Doc No: EAR-F013 Revision No: 2
Date Issued: 5/11/13
Next Review Date: 05/11/15

To:
SGS
33 Maddox Street
Alexandria NSW 2015

Contact: Matthew
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ABN:44 000 964 278

Lab ID	Sample ID	Date Sampled	Sample Location	No. of Sample Jars	Sample Type	Sample Preservation (Ice, Acid, Ambient)	Analysis Required	Comments
1	QC2	27/05/2014	Quality Control	1	Soil	Ice	TRH, BTEX, PAHs, PCBs, phenols, OCPs, VOCs and eight (8) metals.	
2	QC4	27/05/2014	Quality Control	1	Soil	Ice	TRH, BTEX, PAHs, PCBs, phenols, OCPs, VOCs and eight (8) metals.	

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12 SEP 2014
SS 131198

Relinquished by: KD MK	Date: ~~29/5/14~~ 11/9/14	Time: 2 PM	Received by:	Time: 9 am	
Relinquished by:	Date:	Time:	Received by:	Time:	
Relinquished by:	Date:	Time:	Received by:	Time:	

SGS

Job: SE131298

Matrix	250 JAR	125 JAR	BAG	1L UP P	500 UP P	250 ZnAcetate P	250 / 500 NaOH BP	125 / 250 UP P	125 / 250 Metal Total*	125 / 250 Metal Filtered*	125 HCl P	1L UP AG	500 / 1L H_2SO_4 AG	125 / 250 H_2SO_4 P	100 / 200 UP AG	40 NaThio GV	250 UP OPAQUE P	500 NaThio STERILE P	200 NaThio STERILE P	Storage Location	Bottles Supplied By	Comment	Cooling Method
																							Ice/Pack
S	1																			STR	Client	FULL	Temp
																							4°C
																							Good Order
																							Y / N
																							Clearly Labelled
																							Y / N
																							Correct Pres.
																							Y / N
																							No Head-space
																							Y / N / NA
																							Sufficient Vol
																							Y / N
																							Doc Date
																							12/09
																							Doc Type
																							CoC
																							Complete Docs
																							Y / N
																							Requested TAT
																							Std

Appendix D

Test pit Logs

TEST PIT NUMBER TP1

Robson Environmental
140 Gladstone Street, Fyshwick
Canberra, ACT, 2609
Telephone: 0261714632

CLIENT ACT Rowing **PROJECT NAME** Black Mountain Peninsula

PROJECT NUMBER 960502 **PROJECT LOCATION** Black Mountain Peninsula

DATE STARTED 10/9/14 **COMPLETED** 10/9/14 **R.L. SURFACE** _____ **DATUM** _____

EXCAVATION CONTRACTOR Peter Valtonen **SLOPE** --- **BEARING** ---

EQUIPMENT Backhoe **TEST PIT LOCATION** Black Mountain Peninsula

TEST PIT SIZE _____ **LOGGED BY** AR **CHECKED BY** ML

NOTES _____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
BH					CL	Topsoil - Silty CLAY: brown, medium plasticity, moist.	14,362g, No ACM. PID: 0.2	Root Fibres
					SC	Clayey SAND: Orange/brown, medium grained.		
			0.5				12,012g, No ACM. PID: 0.0	
			1.0				12,204g, No ACM. PID: 0.0	
			1.5					
					SC	Clayey SAND: Grey, medium grained.		Slag, glass, metal, plate, bone, and wood fragments
			2.0				9,980g, ACM Present. PID: 0.0	
			2.5					
					SC	Sandy CLAY: Grey, medium plasticity		
			3.0				11,921g, No ACM. PID: 0.0	
						Borehole TP1 terminated at 3m		
			3.5					

TEST PIT NUMBER TP2

Robson Environmental
140 Gladstone Street, Fyshwick
Canberra, ACT, 2609
Telephone: 0261714632

CLIENT ACT Rowing **PROJECT NAME** Black Mountain Peninsula

PROJECT NUMBER 960502 **PROJECT LOCATION** Black Mountain Peninsula

DATE STARTED 10/9/14 **COMPLETED** 10/9/14 **R.L. SURFACE** _____ **DATUM** _____

EXCAVATION CONTRACTOR Peter Valtonen **SLOPE** --- **BEARING** ---

EQUIPMENT Backhoe **TEST PIT LOCATION** Black Mountain Peninsula

TEST PIT SIZE _____ **LOGGED BY** AR **CHECKED BY** ML

NOTES _____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
BH			0.0		CL	Topsoil - Silty CLAY: Brown, medium plasticity.	16,436g, No ACM. PID: 0.0	Root fibres
					SC	Fill - Clayey SAND: Orange/brown.		
			0.5				16,628g, No ACM. PID: 0.0	
			1.0				14,644g, No ACM. PID: 0.0	Glass, plate, metal and wood fragments
			1.5					
	▶				SC	Fill - Clayey SAND: Grey, fine grained.		Metal Fragments
			2.0				19,392g, No ACM. PID: 0.0	
						Borehole TP2 terminated at 2m		
			2.5					
			3.0					
			3.5					

TEST PIT NUMBER TP3

Robson Environmental
140 Gladstone Street, Fyshwick
Canberra, ACT, 2609
Telephone: 0261714632

CLIENT ACT Rowing **PROJECT NAME** Black Mountain Peninsula

PROJECT NUMBER 960502 **PROJECT LOCATION** Black Mountain Peninsula

DATE STARTED 10/9/14 **COMPLETED** 10/9/14 **R.L. SURFACE** _____ **DATUM** _____

EXCAVATION CONTRACTOR Peter Valtonen **SLOPE** --- **BEARING** ---

EQUIPMENT Backhoe **TEST PIT LOCATION** Black Mountain Peninsula

TEST PIT SIZE _____ **LOGGED BY** AR **CHECKED BY** ML

NOTES _____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
BH					CL	Topsoil - Silty CLAY: Brown, medium plasticity.	15,483g, No ACM. PID: 0.0	Root fibres
			0.5		SC	Fill - Clayey SAND: Orange-brown, medium grained.	16,903g, No ACM. PID: 0.0	
			1.0		SC	Fill - Clayey SAND: Orange-brown, medium grained.	14,530g, No ACM. PID: 0.0	Porcelain, glass, metal, and plate fragments
			1.5		SC	Fill - Clayey SAND: Grey-brown, medium grained.		Porcelain, glass, metal, and plate fragments and some ash.
			2.0				15,568g, No ACM. PID: 0.0	
			2.5					
			3.0				8,010g, No ACM. PID: 0.0	
						Borehole TP3 terminated at 3m		
			3.5					

TEST PIT NUMBER TP4

Robson Environmental
140 Gladstone Street, Fyshwick
Canberra, ACT, 2609
Telephone: 0261714632

CLIENT ACT Rowing **PROJECT NAME** Black Mountain Peninsula

PROJECT NUMBER 960502 **PROJECT LOCATION** Black Mountain Peninsula

DATE STARTED 10/9/14 **COMPLETED** 10/9/14 **R.L. SURFACE** _____ **DATUM** _____

EXCAVATION CONTRACTOR Peter Valtonen **SLOPE** --- **BEARING** ---

EQUIPMENT Backhoe **TEST PIT LOCATION** Black Mountain Peninsula

TEST PIT SIZE _____ **LOGGED BY** AR **CHECKED BY** ML

NOTES _____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
BH					CL	Topsoil - Silty CLAY: Brown, medium plasticity/	15,740g, NO ACM.	Root fibres.
					SC	Fill - Clayey SAND: Orange-brown, medium grained,		
			0.5				17,056g, No ACM.	
			1.0		SC	Fill - Clayey SAND: Orange-brown, medium grained.	15,381g, No ACM. PID: 0.0	Glass, plate, metal, fabric, and wood fragments.
	▼		1.5					
			2.0				15,849g, No ACM. PID: 4.2	
						Borehole TP4 terminated at 2m		Some Organic Matter.
			2.5					
			3.0					
			3.5					

TEST PIT NUMBER TP5

Robson Environmental
140 Gladstone Street, Fyshwick
Canberra, ACT, 2609
Telephone: 0261714632

CLIENT ACT Rowing **PROJECT NAME** Black Mountain Peninsula

PROJECT NUMBER 960502 **PROJECT LOCATION** Black Mountain Peninsula

DATE STARTED 10/9/14 **COMPLETED** 10/9/14 **R.L. SURFACE** _____ **DATUM** _____

EXCAVATION CONTRACTOR Peter Valtonen **SLOPE** --- **BEARING** ---

EQUIPMENT Backhoe **TEST PIT LOCATION** Black Mountain Peninsula

TEST PIT SIZE _____ **LOGGED BY** AR **CHECKED BY** ML

NOTES _____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
BH					CL	Topsoil - Silty CLAY: Brown, medium plasticity.	15,570g, No ACM. PID: 0.0	Root fibres.
					SC	Fill - Clayey SAND: Orange-brown, medium grained.		
			0.5				15,874g, ACM Present. PID: 0.0	Fragment of potential ACM
			1.0				16,969g, No ACM. PID: 0.0	
			1.5					
			2.0				15,269g, No ACM. PID: 0.0	
			2.5		SC	Fill - Clayey SAND: Orange-brown.		Glass, and wood fragments.
			3.0				18,700g, No ACM. PID: 0.0	
						Borehole TP5 terminated at 3m		
			3.5					

TEST PIT NUMBER TP6

Robson Environmental
140 Gladstone Street, Fyshwick
Canberra, ACT, 2609
Telephone: 0261714632

CLIENT ACT Rowing **PROJECT NAME** Black Mountain Peninsula

PROJECT NUMBER 960502 **PROJECT LOCATION** Black Mountain Peninsula

DATE STARTED 10/9/14 **COMPLETED** 10/9/14 **R.L. SURFACE** _____ **DATUM** _____

EXCAVATION CONTRACTOR Peter Valtonen **SLOPE** --- **BEARING** ---

EQUIPMENT Backhoe **TEST PIT LOCATION** Black Mountain Peninsula

TEST PIT SIZE _____ **LOGGED BY** AR **CHECKED BY** ML

NOTES _____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
BH					CL	Fill - Silty CLAY: Brown, medium plasticity.	17,924g, No ACM. PID: 0.0	Root fibres.
					SC	Fill - Clayey SAND: Orange-brown, low plasticity.		Organic material.
			0.5				17,982g, No ACM. PID: 0.3	
					SC	Clayey SAND: Grey, low plasticity		
	▶		1.0				20,922g, No ACM. PID: 0.0	
						Borehole TP6 terminated at 1m		
			1.5					
			2.0					
			2.5					
			3.0					
			3.5					

TEST PIT NUMBER TP7

Robson Environmental
140 Gladstone Street, Fyshwick
Canberra, ACT, 2609
Telephone: 0261714632

CLIENT ACT Rowing **PROJECT NAME** Black Mountain Peninsula

PROJECT NUMBER 960502 **PROJECT LOCATION** Black Mountain Peninsula

DATE STARTED 10/9/14 **COMPLETED** 10/9/14 **R.L. SURFACE** **DATUM**

EXCAVATION CONTRACTOR Peter Valtonen **SLOPE** --- **BEARING** ---

EQUIPMENT Backhoe **TEST PIT LOCATION** Black Mountain Peninsula

TEST PIT SIZE **LOGGED BY** AR **CHECKED BY** ML

NOTES

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
BH					CL	Topsoil - Silty CLAY: Brown.	15,662g, No ACM. PID: 0.0	Glass, ash, and metal.
					SC	Clayey SAND: Grey-brown.		Glass fragments.
			0.5				18,502g, No ACM. PID: 0.0	
					SC	Clayey SAND: Grey		
			1.0				17,948g, No ACM. PID: 0.0	
	▶		1.5				21,020g, No ACM. PID: 0.0	
						Borehole TP7 terminated at 1.8m		
			2.0					
			2.5					
			3.0					
			3.5					

TEST PIT NUMBER TP8

Robson Environmental
140 Gladstone Street, Fyshwick
Canberra, ACT, 2609
Telephone: 0261714632

CLIENT ACT Rowing **PROJECT NAME** Black Mountain Peninsula

PROJECT NUMBER 960502 **PROJECT LOCATION** Black Mountain Peninsula

DATE STARTED 10/9/14 **COMPLETED** 10/9/14 **R.L. SURFACE** _____ **DATUM** _____

EXCAVATION CONTRACTOR Peter Valtonen **SLOPE** --- **BEARING** ---

EQUIPMENT Backhoe **TEST PIT LOCATION** Black Mountain Peninsula

TEST PIT SIZE _____ **LOGGED BY** AR **CHECKED BY** ML

NOTES _____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
BH					CL	Topsoil - Silty CLAY: Brown, medium plasticity.	15,416g, No ACM. PID: 0.0	Glass fragments
					SC	Fill - Clayey SAND: Orange-brown, low plasticity		
			0.5				15,786g, No ACM. PID: 0.0	
					SC	Fill - Clayey SAND: Brown-grey, low plasticity		Ash, slag, and glass fragments
			1.0				16,422g, No ACM. PID: 0.0	
					SC	Fill - Clayey SAND: Grey, low plasticity.		Plastic, rubber, metal glass fragments, and organic material
	▶		1.5				19,254g, No ACM. PID: 0.0	
			2.0			Borehole TP8 terminated at 2m		
			2.5					
			3.0					
			3.5					

TEST PIT NUMBER TP9

Robson Environmental
140 Gladstone Street, Fyshwick
Canberra, ACT, 2609
Telephone: 0261714632

CLIENT ACT Rowing **PROJECT NAME** Black Mountain Peninsula

PROJECT NUMBER 960502 **PROJECT LOCATION** Black Mountain Peninsula

DATE STARTED 10/9/14 **COMPLETED** 10/9/14 **R.L. SURFACE** _____ **DATUM** _____

EXCAVATION CONTRACTOR Peter Valtonen **SLOPE** --- **BEARING** ---

EQUIPMENT Backhoe **TEST PIT LOCATION** Black Mountain Peninsula

TEST PIT SIZE _____ **LOGGED BY** AR **CHECKED BY** ML

NOTES _____

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
BH			0.0		CL	Topsoil - Silty CLAY: Brown, medium plasticity.	15,800g, No ACM. PID: 0.0	Root fibres, and organic matter
			0.5		SC	Fill - Clayey SAND: Brown, dry, low plasticity, some ash	17,436g, No ACM. PID: 0.0	Ash
			1.0		SC	Fill - Clayey SAND: Grey, dry, low plasticity, some metal, wood and glass fragments, some ash, and organic matter.	17,570g, No ACM.	Metal, wood and glass fragments, some ash, and organic matter.
	▼		1.5				Unable to Sieve, No ACM. PID: 0.0	Approximately 40% of total soil material composed of: Metal, wood and glass fragments, some ash, and organic matter.
			2.0			Borehole TP9 terminated at 2m		
			2.5					
			3.0					
			3.5					

Appendix E

Site Photographs

Photograph 1: View of test pit TP-1 from the south.

Photograph 2: View of test pit TP-1 temporary soil stockpile.

Photograph 3: View of test pit TP-5 temporary soil stockpile.

Photograph 4: View of test pit TP-6 excavation.

Photograph 5: View of the test pit TP-7 temporary soil stockpile.

Appendix F

Asbestos Fibre Identification Certificate of Analysis

Fibre Identification Certificate of Analysis

Report Number: 960502 Date of Report: 18.09.2014 Samples Taken by: Robson Environmental

Client Details		Laboratory Details	
Client:	ACT Rowing	Address:	140 Gladstone Street, Fyshwick, Canberra 2609
Attention:	Michael Cussak	Manager:	Ged Keane
Received:	12.09.2014	Telephone:	02 6239 5656
Client Reference:	Black Mountain Peninsular, Acton, ACT	Fax:	02 6239 5669
Email:	N/A	Email:	hazmat@robsonenviro.com.au

Test Specification(s) Employed: AS4964 (2004) & In-House Procedure No.2

Methodology Summary

Samples of material are examined to determine the presence of asbestos fibres using AS4964 (2004) & In-House Procedure No.2 i.e. Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by **Polarised Light Microscopy** (**PLM**) in conjunction with **Dispersion Staining** (**DS**). Unequivocal identification of asbestos minerals present is made by assessing fibre properties to see whether the values are typical and consistent with published data. This provides a reasonable degree of certainty to determine whether a fibre under investigation is asbestiform or not. Careful application of the test procedure provides sufficient diagnostic clues to allow unequivocal identification of asbestos types, and so, to determine whether a sample contains asbestos or not. If sufficient diagnostic clues are absent, then positive identification of fibrous asbestos is not possible.

Client Supplied Samples

Robson Environmental is not responsible for the accuracy or competence of sampling carried by third parties. Sample location(s) and/or sample type(s) of third party samples delivered to the laboratory are given by the client at the time of delivery. Under these circumstances, Robson Environmental cannot be held responsible for the interpretation of the results shown. When the test certificate indicates that bulk samples were taken by the client, they are outside the scope of our NATA Accreditation for sampling. Robson Environmental takes responsibility of information reported only when a staff member takes the sample(s).

Reporting of Results

'Asbestos Detected': Asbestos detected by **Polarised Light Microscopy** (PLM), including **Dispersion Staining** (**DS**)
'No Asbestos Detected': No Asbestos detected by **Polarised Light Microscopy** (PLM), including **Dispersion Staining** (**DS**)
'UMF Detected': Mineral fibres of unknown type detected by **Polarised Light Microscopy** (PLM), including **Dispersion Staining** (**DS**). Confirmation by another independent analytical technique may be necessary.
"Hand-picked" refers to small discrete amounts of asbestos unevenly distributed in a large body of non-asbestos material.

Limit of Detection & Reporting Limit

Known limitations of the test procedure using **Polarised Light Microscopy** (**PLM**) are:

- **PLM** is a qualitative technique only;
- It does not cover identification of airborne or water-borne asbestos;
- The less encountered asbestos mineral fibres actinolite, anthophyllite and tremolite exhibit a wide range of optical properties that preclude unequivocal identification by **PLM** and **Dispersion Staining** (DS). Thus, the method is used to positively identify the three major asbestos minerals: amosite ("brown"), chrysotile ("white") and crocidolite ("blue");
- Valid identification requires that the sample material contains a sufficient quantity of the unknown fibres in excess of the practical detection limit used (in this case, **PLM** and **Dispersion Staining**, which has a calculated practical detection limit of 0.01-0.1% equivalent to 0.1-1g/kg (AS4946-2004:App. A4).

Results relate only to the sample(s) submitted for testing.
Test report must not be reproduced except in full.
Test report **Accredited for compliance with ISO/IEC 17025**

Sample No.	Client Ref.	Location	Physical Structure	Sample Description	Analysis of Fibrous Content
TP1 (1.9-2.0)	N/A	Test pit 1	Debris	50grams	Amosite Asbestos Detected Chrysotile Asbestos Detected Crocidolite Asbestos Detected
TP5 (0.4-0.5)	N/A	Test pit 5	Debris	28grams	Chrysotile Asbestos Detected

Morgan Leech
Approved Identifier

No. 3181

Morgan Leech
Approved Identifier

Robson Environmental Pty Ltd
p: 02 6239 5656 ~ **f:** 02 6239 5669
PO Box 112 Fyshwick ACT 2609
admin@robsonenviro.com.au
www.robsonenviro.com.au
ABN: 55 008 660 900

Appendix G

Asbestos Air Monitoring Results

Robson ENVIRONMENTAL
Effective Environmental Solutions

140 Gladstone Street
Fyshwick ACT 2609
P: 02 6239 5656 F:02 6239 5669
E: admin@robsonenviro.com.au
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Respirable Fibre Estimation Test Report

Report No.: 960501 **Sampling Date:** 10 Sept 2014 **Report Issued:** 11 Sept 2014

Monitoring Location: Black Mountain Peninsula, Acton

Client Name & Address: Rowing ACT

Work in Progress: Assessment of asbestos impacted soil

Asbestos Removalist: none

Test Specification(s) Employed: NOHSC: Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres [NOHSC: 3003 (2005)], & In-House Procedure No. 1

Sample No.	Sampling Location	Time On	Time Off	Av. Flowrate	No. of Fields Counted	No. of Fibres Counted	Airborne Fibre Conc. (fibres/mL)
960501-1	South boundary of assessment area	0658	1408	2000	100	2	< 0.01
960501-2	East boundary of assessment area	0701	1411	2000	100	1	< 0.01
960501-3	North boundary of assessment area	0704	1415	2000	100	1	< 0.01
960501-4	West boundary of assessment area	0708	1403	2000	100	2	< 0.01
960501-5	Backhoe cabin	0655	1405	2000	100	1	< 0.01
960501-6	Field Blank	-	-	-	100	0	-

Field blanks and samples taken in direct flow of negative air units are reported as a fibre count only

The Detection Limit of the analytical method is 0.01 fibres/mL
The *NOHSC: 2002 (2005)* recommended Control Level for all forms of asbestos is 0.01 fibres/mL
Worksafe Australia's recommended Exposure Standard for all forms of asbestos is 0.1 fibres/mL

Robson Approved Signatory
Leo Menssen

NATA
No. 3181

NATA Approved Counter
Leo Menssen

Accredited for compliance with ISO/IEC 17025

The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards