Report

Stage 2 Detailed Site Investigation (Limited)

Proposed Development
International Chinese School
211 Pacific Highway
St Leonards NSW 2065

Lot 101 DP 791327
(Ref.02787.08.19.Stage2DSI.REV.1)

Prepared for:
Stanton Dahl Architects

AIRSAFE

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Document Information	
Client:	Stanton Dahl Architects
Title:	Stage 1 Preliminary Site Investigation
Report Number:	02787.08.19.Stage2.DSI.REV.1
Issue Date:	16/08/19

Document Control			
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Revisions	Revision #1 – REV.1 : 22 August 2019

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ABBREVIATIONS

Abbreviations	
ACM	Asbestos Cement Material
mAHD	metres Australian Height Datum
As	Arsenic
B(a)P	Benzo (a) pyrene (a component of PAHs)
BTEX	Benzene, Toluene, Ethylbenzene, Xylene
BH	Borehole
Cd	Cadmium
Cr	Chromium
EPA (NSW)	Environmental Protection Agency (NSW)
DECCW(NSW)	Dept. Environment, Climate Change & Water (NSW)
Hg	Mercury
MAH	Mono Aromatic Hydrocarbons
NEHF	National Environment Health Forum
Ni	Nickel
OCPs	Organochlorin pesticides
OPPs	Organophosphate Pesticides
PCBs	Poly Cyclic Biphenyls
PCM	Potentially Contaminated Media
PAH	Polycyclic Aromatic Hydrocarbons
Pb	Lead
PID	Photo Ionisation Detector
QA/QC	Quality Assurance and Quality Control
RAP	Remedial Action Plan
RPD	Relative Percentage Difference
TCLP	Toxicity Characteristics Leaching Procedure
TRH	Total Recoverable Hydrocarbons
UST	Underground storage tank
VOCs	Volatile Organic Compounds

EXECUTIVE SUMMARY

ES-1 Background

This investigation was authorized by the client Stanton Dahl Architects. The on-site soil sampling was conducted on 1 August 2018. The property is located on the 88 metre AHD map contour. The site is located on a medium slope facing northeast. The surface water is expected to flow north east.

ES-2 Discussion

This report has been conducted in accordance with:

- *National Environment Protection (Assessment of Site Contamination) Measure (NEPM)*, (1999 amended 2013
- *State Environmental Planning Policy No. 55 – Remediation of Land (SEPP 55)*
- *EPA NSW Guidelines for Consultants Reporting on Contaminated Sites* (November 1997),

The general conclusions of the report are outlined below:

- The Stage 1 PSI report recommended that a Stage 2 detailed site investigation (DSI) be carried out on site due to potential contamination identified on site.
- AIRSAFE was engaged by the client to undertake the DSI. The Stage 2 DSI sampling was carried out on 1 August 2019. The investigation area was limited due to on-going construction activities (concrete slabs, metal framework on grassed areas etc). Mechanical investigation procedures (drill rig, excavator etc) were not practicable or possible in most areas. Samples were taken using a hand augur and hand effort (shovel & mattock). The depth of sampling was limited by the nature of the subsurface with respect to this sampling procedure (stiff clays and rock floaters). Other site limitations included:
    - East Proposed Playground Area: Tree root preservation are in footprint of fig tree. Subsurface digging allowed.
    - Western Boundary – no digging along this boundary due to proximity to historic graves.
    - Northern Boundary – between footpath and slab area. Tree root preservation are in footprint of fig tree. Subsurface digging allowed.
    - Along Southern Boundary – hand augur sampling not possible due to palm roots and surface vegetation.
- Due to the potential data gaps caused by the limited accessibility to the soil, AIRSAFE requested that the client engage an EPA accredited Site Auditor for advice during the investigation, assess the results of the investigation and present a report to the client on the suitability of the site for the proposed use as a (new) school.
- With respect to the investigation, the seven-step DQO process (defined in Section 5) as outlined in the *NEPM 2013* was employed to assess the property in regard to contamination of the soil.

- The soil analysis results were assessed against the appropriate Health-based Investigation for the proposed landuse (school) listed in the *National Environment Protection (Assessment of Site Contamination) Measure (NEPM*) – Schedule B1 (1999 amended 2013): Residential HIL A: *Residential with garden/accessible soil also includes childcare centres, preschool and primary schools.*
- The analysis results for the majority of analytes (organics) were all below detection. The analysis results for most metals were above background levels. While the 'lead' results were marginally elevated, the statistical interpretation of the metal results found that they did not exceed the HIL A.
- In general, the soil sample laboratory analysis results confirm that metals (x8) (95% UCL), PAH, TRH, BTEX, OCPs, OPPs and PCBs analysis results did not exceed the HIL A criteria for in accordance with the *NEPM 2013*. (ie: Listed in Section 6).
- Al results (not including BaP) did nit exceed the Ecological Investigation Levels (EILs) or Ecological Screening Levels (ESLs). **Note:** The concentration of BaP at three location (BH5: 1.9 mg/kg @ 0.3m, BH8: 0.9 mg/kg @ 0.1m and BH9: 1.4 mg/kg @ 0.3m) exceeded the ESL of 0.7 mg/kg for urban residential landuse. The exceedance was not significant, and is not suspected to affect the current development.
- Asbestos ID - NATA: No asbestos fibres were detected within the soil at reporting limit of 0.1g/kg, and no respirable fibres detected in the samples analysed.
- Asbestos ID – NEPM: A small bundle of fibres were detected in sample 02787/BH1/0.1 (Airsafe-46809-10). The measured weight of the bundle was 0.0012 g. The total weight of the sample media was 725.7 g. The estimated FA and AF (w/w) was 0.000165%. This w/w was below the NEPM health screening level of 0.001%.
- This investigation has a total area of approximately 1,600 m^2 and entailed the collection of samples from 11 sampling points and 4 stockpile locations. This exceeded the minimum of 7 sampling points listed in EPA NSW Sampling EPA NSW Design Guidelines (Sept 1995) to characterise a site between 1000 - 2000 m^2.
- The investigation concludes that a health risk was not identified with respect to the proposed landuse (*Residential HIL A: Residential with garden/accessible soil also includes childcare centres, preschool and primary schools).*
- The conclusions above are presented on the understanding that site conditions remain static, and the current concrete slab for the building (including the semi subsurface basement), remain intact. If conditions change or the integrity of the concrete slab is compromised a further assessment of the (exposed) soil with respect to historical contamination, shall need to be undertaken.

SECTION 1: INTRODUCTION

1.1 AUTHORIZATION

This investigation was authorized by the client Stanton Dahl Architects. The on-site soil sampling was conducted on 1 August 2018.

1.2 SCOPE OF WORK - CONSULTANTS BRIEF

The Stage 1 Preliminary Site Investigation was carried out by AIRSAFE in June & July 2019 (Rpt ID: 02660.Stage1.PSI.06.19). The following scope of works were undertaken:

- Review of available Council documentation, aerial photographs, legal title information, EPA records and Heritage records to identify areas of environmental concern (AECs) and associated contaminants of potential concern (COPCs);
- Review of site setting including topography, hydrology, hydrogeology and geology; Review of records of environmental incidents or former environmental licences held by the NSW EPA;
- A detailed site inspection of accessible areas to identify potential Areas of Environmental Concern (AECs) and Contaminants of Potential Concern (COPC) not identified in the historical record review;
- Development and documentation of a conceptual site model (CSM) based on available information; Preparation of the PSI report in general accordance with guidelines issued and approved by the NSW EPA.

The Stage 1 PSI report recommended that a Stage 2 detailed site investigation (DSI) be carried out on site due to potential contamination identified on site.

AIRSAFE was engaged by the client to undertake the DSI. The Stage 2 DSI sampling was carried out on 1 August 2019. The investigation area was limited due to on-going construction activities (concrete slabs, metal framework on grassed areas etc). Mechanical investigation procedures (drill rig, excavator etc) were not practicable or possible in most areas. Samples were taken using a hand augur and hand effort (shovel & mattock). The depth of sampling was limited by the nature of the subsurface with respect to this sampling procedure (stiff clays and rock floaters). Other limitations were also in place with respect to tree root preservation areas and restrictions along boundaries adjacent to historical grave sites (See report for details).

Due to the potential data gaps caused by the limited accessibility to the soil, AIRSAFE requested that the client engage an EPA accredited Site Auditor for advice during the investigation, assess the results of the investigation and present a report to the client on the suitability of the site for the proposed use as a (new) school.

The results of the sampling and analysis are documented within this report.

1.3 LIMITATIONS OF THE REPORT

This report has been prepared to meet the requirements outlined in the scope of work. It does not include evaluation of any other issues. Airsafe performed the services in a professional manner, in accordance with relevant guidelines and standards, and generally accepted industry practices. Airsafe does not make any other warranty, expressed or implied, as to the professional advice contained in this report.

Within the guidelines set down for this survey, every effort has been made to give an accurate assessment of the property identified in this document. Airsafe does not accept any responsibility for any contamination that may exist in the area now or in the future. Airsafe accepts no liability for the use of this document by any other person other than the client. This report is based on current and historical information available at the time of writing.

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SECTION 2: PHYSICAL & SITE INFORMATION

2.1 SITE IDENTIFICATION

ADDRESS	211 Pacific Highway, St Leonards NSW 2065
LOCAL GOVERNMENT AUTHORITY	Willoughby Council
LOT & DEPOSITED PLAN	Lot 101 DP791327
PARISH	Willoughby
COUNTY	Cumberland
COUNCIL LAND ZONING	SP1 – Special Activities - Cemetery (Willoughby Local Environmental Plan 2012)
SITE AREA	Approx. 1,600 sqm

2.2 SOIL LANDSCAPE & GEOLOGY

Soil Landscapes:

Soils Landscapes Data Source : NSW Office of Environment and Heritage. Creative Commons 3.0 © Commonwealth of Australia: http://creativecommons.org/licenses/by/3.0/au/deed.en

The site is characterised by the 'Glenorie' soil landscape which occurs north of the Parramatta River.

- Landscape: Undulating to rolling low hills on Wianamatta Group shales. Local relief 50-80 m, slopes 5-20%. Narrow ridges, hillcrests and valleys. Extensively cleared tall open-forest (wet sclerophyll forest).
- Soils: Shallow to moderately deep (<100 cm) Red Podzolic Soils on crests, moderately deep (70-150cm) Red and Brown Podzolic Soils on upper slopes., deep (>200 cm) Yellow Podzolic Soils on lower slopes.

Sydney – Soil Landscape Series – Sheet 9130 (4th Edition) – DECCW NSW (*Soil Landscapes of the Sydney 1:100 000 sheet,* Chapman, G.A and Murphy, C.L (1989). Soil Conservation Service of NSW, Sydney).

Geology:

Geological Data Source : NSW Department of Industry, Resources & Energy: The site is located within the Ashfield Shale (Rwa) of the Wianamatta Group, geological : *Black to dark grey shale and laminate.* The Ashfield Shale of Triassic age, and sit conformably above the Hawkesbury Sandstone.

2.3 TOPOGRAPHY AND HYDROGEOLOGY

The property is located on the 88 metre AHD map contour. The site is located on a medium slope facing northeast. The surface water is expected to flow north east. A groundwater bore search was carried out by Lotsearch. The report is dated 28 May 2019. 21 GW bores were located within a 2 km radius. A registered groundwater bore is located 501 metres north east of the site (GW0724430) with relevant drillers log information and standing water level.

Groundwater Bore No.	GW072478
Licence No	-
Owner Type	Bore
Purpose	Domestic
Standing water Level	48 metres
Date Completed	10/01/1995
Bore Depth	180.5 metres
Driller's Log	
	0.00m-2.50m CONCRETE OVERBURDEN 2.50m-5.10m MOIST CLAY 5.10m-28.70m L/G MED. GRAIN SANDSTONE 28.70m-30.10m LIGHT GREY MED. GRAIN S/STONE QUARTZ MATRIX 30.10m-35.90m L/GREY GRAIN SANDSTONE 35.90m-37.20m L/GREY MED GRAIN S/STONE QUARTZ MATRIX 37.20m-45.30m L/GREY MED GRAIN S/STONE 45.30m-54.30m DARK GREY SHALE 54.30m-72.40m L/GREY CEMENTED S/STONE 72.40m-75.40m DARK GREY SHALE 75.40m-109.70m L/GREY MED GRAIN S/STONE 109.70m-110.60m QUARTZ LAYER 110.60m-121.80m L/GREY MED GRAIN S/STONE 121.80m-123.30m DARK GREY SHALE 123.30m-135.40m L/GREY MED GRAIN S/STONE 135.40m-138.00m L/GREY MED GRAIN S/STONE QUARTZ MATRIX 138.00m-139.80m WATER BEARING QUARTZ 139.80m-143.80m L/GREY MED GRAIN S/STONE QUARTZ MATRIX 143.80m-144.40m WATER BEARING QUARTZ 144.40m-154.10m L/GREY CEMENTED SANDSTONE 154.10m-163.70m L/GREY MED GRAIN S/STONE QUARTZ MATRIX 163.70m-166.90m QUARTZ LAYER 166.90m-168.70m GREY MED GRAIN S/STONE 168.70m-180.50m L/GREY MED GRAIN SANDSTONE

2.4 ACID SULFATE SOIL RISK

The Acid Sulfate Data Source Accessed 07/10/2016: NSW Crown Copyright - Planning and Environment - Creative Commons 3.0 (© Commonwealth of Australia) was consulted.

Soil Class	Description	LEP
5	Works within 500 metres of adjacent Class 1, 2, 3, or 4 land that is below 5 metres AHD and by which the watertable is likely to be lowered below 1 metre AHD on adjacent Class 1, 2, 3 or 4 land, present an environmental risk	Willoughby Local Environmental Plan 2012

It is our opinion that PASS (potential acid sulfate soils) shall not be an issue affecting the site.

2.5 ZONED LAND USE

Willoughby Local Environmental Plan 2012: The site is within the:

- SP1 Special Activities – Cemetery

2.6 DRYLAND SALINITY

Salinity is not expected to be an issue affecting the development.

2.7 SITE TITLE HISTORY

SUMMARY OF PROPRIETORS: Lot 101 DP 791327	
YEAR	PROPRIETOR
	(Lot 101 DP 791327)
1989 – todate	Gore Hill Memorial Cemetery Trust
(1990 – todate)	(current lease to Edwards, Madigan, Torzillo, Briggs International Pty. Limited shown on Folio Identifier 101/791327)
(Lot 1118 DP 48218)	
1988 – 1989	Gore Hill Memorial Cemetery Trust (Lot 1118 DP 48218 – CTVol 15451 Fol 52)
1988 – 1988	Gore Hill Memorial Cemetery Trust (vide Dedication as Historic Cemetery)
1986 – 1988	The Council of the Municipality of Willoughby
(Part General Cemetery Parish Willoughby – Area 2 Roods)	
Prior – 1986	Crown Land
(1867 – 1986)	(General Cemetery's Caretakers Residence)

2.8 EPA PFAS* INVESTIGATION PROGRAM

The NSW Environment Protection Authority (EPA) is undertaking an investigation program to assess the legacy of *per- and poly- fluoroalkyl substances (PFAS) use across NSW.

PFAS are a group of chemicals that include perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA). They have many specialty applications and are widely used in a range of products in Australia and internationally.

PFAS are an emerging contaminant, which means that their ecological and/or human health effects are unclear. The EPA is investigating to better understand the extent of PFAS use and contamination in NSW. This will enable the EPA to be better prepared to respond if any health and environmental impacts become known.

The site was not located within the PFAS Investigation Zone.

2.9 TITLE, BUSINESS AND AIR PHOTO DISCUSSION

Data Sources: Historical Aerials: © Land and Property Information (a division of the Department of Finance and Services)

1868	Dedication of first part of Gore Hill cemetery
1887 - 1986	Caretakers cottage (Dexton's Cottage) built (General Cemetery's Caretakers Residence) – title attached to cemetery. New Sexton's Cottage built 1949.
Prior 1986	Crown land
1986 - 1988	Lot 101 sub-divided off from main cemetery - Council of Municipality of Willoughby
1989 - date	Gore Hill Memorial Cemetery Trust (Still Zoned Special Interest – Cemetery)

2.10 EPA NSW CONTAMINATED LAND DATABASE

A search of the OE&H contaminated land database was carried out via the internet for the LGA of Willoughby. The site in question was not listed.

SUBURB	ADDRESS	SITE NAME	NOTICES RELATED TO THIS SITE
CHATSWOOD	607 Pacific HIGHWAY	Former Caltex Chatswood Service Station	8 former
CHATSWOOD WEST	728 Pacific HIGHWAY	Chatswood Toyota	6 former

2.11 PROPOSED DEVELOPMENT

The existing building is to be partly demolished. The 'International Chinese School' is to be built on site (with some use of the existing infrastructure).

2.12 LGA (WILLOUGHBY) PLANNING CERTIFICATE

Willoughby Council - *Planning Certificate Under Section 10.7 Environmental Planning and Assessment Act 1979 - Cert No: 43514* – Date 04/06/2019 was supplied for assessment. Many items were not included in the certificate.

Matters arising Section 59(2) of the Contaminated Lands Management Act 1997 were not included:

(a) Is not significantly contaminated land (or part of the land) within the meaning of the Contaminated Lands Management Act 1997 at the date when the certificate is issued.

This information is documented by the EPA NSW. The lot and DP is not noted on the EPA NSW Contaminated Land Database for the LGA of Willoughby.

(b) The land is not subject to a management order within the meaning of the Contaminated Lands Management Act 1997 at the date when the certificate is issued.

This information is documented by the EPA NSW. The lot and DP is not noted on the EPA NSW Contaminated Land Database for the LGA of Willoughby.

(c) The land is not the subject of an approved voluntary management proposal within the meaning of the Contaminated Lands Management Act 1997 at the date when the certificate is issued.

This information is documented by the EPA NSW. The lot and DP is not noted on the EPA NSW Contaminated Land Database for the LGA of Willoughby.

(d) The land is not subject to an ongoing maintenance order within the meaning of the Contaminated Lands Management Act 1997 at the date when the certificate is issued.

Unknown. This information is prescribed *Under Section 10.7 Environmental Planning and Assessment Act 1979* to be specified in the Planning Certificate. This information is supplied via the Planning Certificate to inform the owners (and therefore potential buyers and lessees) whether an ongoing Maintenance Order (Environmental Management Plan) is attached to the title. The EMP would inform of past remediation activities and may document encapsulated contaminated areas not able to be remediated for various reasons. This information was not supplied. The LGA was contacted and under instruction of legal advice the information could not be supplied.

(e) The land is not subject to a site audit statement within the meaning of the Contaminated Lands Management Act 1997.

Unknown. This information is prescribed *Under Section 10.7 Environmental Planning and Assessment Act 1979* to be specified in the Planning Certificate. This information is supplied via the Planning Certificate to inform the owners (and therefore potential buyers and lessees) whether the site was being investigated for site contamination and that a SAS (site audit statement) had been requested as a signoff by the LGA (Council). This information was not supplied. The LGA was contacted and under instruction of legal advice the information could not be supplied.

2.13 SITE INSPECTION

A site inspection was carried out on 7 June 2019.The site consists of one lot identified as Lot 101 DP 791327. The current commercial style building is in a state of demolition. The total area of the property (Lot 101) is approximately 1,600 square metres. The footprint of the buildings and associated structures occupy approximately 50% of the site. The areas around the building/s are paved, concreted or grassed with surrounding trees and scrubs. The vegetation appears to be in good condition with no areas of stress. Odours or hydrocarbon style staining were not identified. No surface signs that the area has been used as for illegal tipping

The exact nature of the sub-surface material is not known. However the land does not seem to be consistent with the natural levels of the surrounding area. There is an indication that fill (unknown) may have been imported onto the block, or fill moved from another area of the parcel of land.

No underground tanks or waste storage tanks were located during the inspection

SECTION 3: CONCEPTUAL SITE MODEL

3.1 POTENTIAL RECEPTORS

The site inspection revealed a number of potential receptors for off site migration of potential contamination:

- Gore Hill Oval.
- Royal North Shore Hospital
- Berrys Creek (approx. 0.6 km to the southeast).

3.2 POTENTIAL SOURCES AND CONTAMINANTS OF CONCERN

HISTORICAL ACTIVITY	CONTAMINATING ACTIVITY	CONTAMINANTS OF CONCERN	LIKELIHOOD
Vacant land – prior to cemetery use	Fill	Rubbish	Unknown (prior 1868)
Fill material	Imported fill	Ash or building waste (common fill within inner Sydney) (PAH)	Possible – the site does not appear to follow the natural elevation for the regional area.
Residential Buildings	Use of asbestos or lead paint	Asbestos, lead	Possible – but this is common to all residential buildings and identified and dealt with prior to demolition.
Historical commercial (special) activity	Use as infrastructure associated with a cemetery	Unknown	Likely

3.3 POTENTIALLY AFFECTED MEDIA (PCM)

The potentially contaminated media on site are:

- Soil/Fill material around buildings, under the concrete hardstand and paving
- Groundwater :
    - Significant basement excavations or foundations deeper than already undertaken are not currently planned.
    - Taking into account the elevation of the property, it is expected groundwater to be at some depth below the current surface (SWL for GW bore 500 metres from site was 48m)

  Considering the above, it is not suspected that groundwater shall be an issue affecting the current development.

3.4 POTENTIAL EXPOSURE PATHWAYS

PATHWAY	CONTAMINANTS	LIKELIHOOD
Airborne contaminant particles	Heavy metals, volatile components	Unlikely – no PCM located
Dermal contact	Heavy metals, hydrocarbons, other chemicals etc	Possible
Airborne vapours	Volatile contaminants	Unlikely – no PCM located

3.5 HUMAN AND ECOLOGICAL RECEPTORS

TYPE	RECEPTORS	LIKELIHOOD
HUMAN	Current and future occupants and landholders	Possible (the site is to be used as a school)
	Construction and maintenance workers particularly involved in potential excavation works	Possible – the material shall be sampled for waste classification prior to any major excavation works
	Adjoining park land and commercial properties	Unlikely
ECOLOGICAL	Berrys Creek	<0.6 km from site – Unlikely
	Adjacent commercial properties	<0.1 km from site – Unlikely
	Adjacent gardens, trees and scrubs	<0.1 km from site – not considered likely

3.6 ASSESSMENT OF DATA GAPS

DATA GAPS	COMMENTS
Status of soil with respect to sub-surface fill material	Historical contaminating activities: The site has historical connection to the adjacent cemetery. Cemetery maintenance sheds may have been located on site. Quantities of imported fill or fill moved from other parts of the site is possible.
Groundwater sampling	Not considered an issue. Groundwater encountered during in-excavation should be assessed if identified.
Potential vapour (VOC)	Not suspected

accumulation	

SECTION 4: DATA QUALITY OBJECTIVES (DQO) & ASSESSMENT

4.1 DATA QUALITY OBJECTIVES (DQO)

4.1.1 Outline of DQO Process

The EPA NSW *Guidelines for the NSW Site Auditor Scheme* (2nd Edition – April 2006) describes the DQO process thus:

The process used to define the type, quantity and quality of data needed to support decisions relating to the environmental condition of the site. The DQOs provide a systematic approach for defining the criteria that a data collection design should satisfy, including when, where and how to collect samples or measurements; determination of tolerable decision error rates; and the number of samples or measurements that should be collected.

The DQOs are achieved by employing a seven-step process:

Table 1

	STEP	SECTION
1	Define the Problem	Section 5.1 1.2 Consultants Brief & Scope of Works
2	Identify the Decisions	Section 6.1.3 Sections 2 : Physical & Site Info Section 2.11: Proposed Development Sections 6.1: Purpose and Aims
3	Identify the Inputs to the Decision	Section 4.1.4 Sections 4 & 5: Section 7: Soil Contaminant Threshold Concentrations Sections 8: Soil Laboratory Results
4	Define the Study Boundaries	Section 5.4 2.1 Site Identification 2.2 Soil Landscape & Geology 2.3 Topography & Hydrogeology
5	Develop a Decision Rule	Section 5.5 Section 2.12: Proposed Development
6	Specify Limits of Decision Errors	Section 5.6 Section 4: Data Quality Objectives (DQO) & Assessment
7	Optimise the Design for Obtaining Data	Section 4.1.8 Section 2.11: Proposed Development Sections 6.1: Soil Sampling – Aims & Methodology

4.1.2 Step 1 - Define the Problem

As there is a possibility that the past land uses may have impacted on the sub-soil, a Stage 2 soil and groundwater sampling programme and analysis was carried out.

See:

- *Sections 2 : Physical & Site Info*
- *Section 2.12: Proposed Development*
- *Section 2.10: Title & Air Photo Discussion*
- Section 4: Conceptual Site Model

4.1.3 Step 2 - Identify the Decisions

The primary decision statement that this report shall attempt to resolve is:

Analysed samples taken from the property shall be assessed against the maximum criteria from the landuse as defined by *National Environment Protection (Assessment of Site Contamination) Measure (NEPM)* 1999 (Amended 2013*) for Residential A Landuse.* By using the results and guidelines the consultant shall make a decision if the property is suitable for the proposed landuse, and if not, the appropriate management or remediation necessary to achieve this end.

See:

- *2.3 Topography & Hydrogeology*
- *2.7 Site Title History*
- *Sect. 3.0 Site Inspection*

4.1.4 Step 3 – Identify the Inputs to the Decision

The primary inputs used to assess the contamination were:

- Define the site boundaries by the use of survey maps and site inspection.
- Review of the site history and site conditions, including the geology, hydrogeology and topography.
- Assessing contamination identified with the Phase 2 report to facilitate the remediation procedures.
- Using appropriate soil sampling procedures to ensure correct representative data.
- Using correct analytical methods (NATA etc) with quantitation limits below the site assessment criteria.

See:

- *2.1 Site Identification*
- *2.2 Geology, Hydrogeology & Topography*

4.1.5 Step 4 – Define the Study Boundaries

The boundaries of the site are documented in *2.1 Site Identification*. The sub surface study boundaries within the above site boundary shall be within the fill down to natural material.

See:

- *Section 2.12: Proposed Development*
- *2.2 Soil Landscape & Geology*
- *2.3 Topography & Hydrogeology*

4.1.6 Step 5 – Develop a Decision Rule

The purpose of this step was to define the parameter of interest, specify the action level and combine the outputs of the previous steps into an "if …….., then….." decision rule that defines the conditions that would cause the decision maker to choose alternative actions.

The following decisions rules may be applied:

- Comparison of the results of the validation samples to the criteria (ie: '**If** the results are above criteria **then** extra remediation may be necessary')
- **If** field QA/QC samples (blanks, spikes etc) are found to contain chemicals of concern **then** further action extra sampling, investigation of procedure shall be undertaken.
- **If** the laboratory QA/QC samples (matrix spikes, reagent blanks) fall outside the acceptance criteria (See 2.7 - DQI) **then** the laboratory shall be contacted and/or the *samples shall be re-analysed.*

4.1.7 Step 6 – Specify Acceptable Limits on Decision Errors – Data Quality Indicators (DQIs)

The project DQIs address 'Step 6', and have been established to set acceptance limits on field and laboratory data collected as part of the investigation (Note: No soil sampling and analysis undertaken).

Table 2

DQI	FIELD	LABORATORY	ACCEPTANCE LIMITS
Accuracy	Procedures standard Rinsate blanks	Analysis of: Rinsate blanks Matrix spike Lab control sample Lab duplicate <5xPQL Lab duplicate >5xPQL	As per SGS Procedures Not detect 70 to 130% 70 to 130% Any RPD is acceptable 0-50% RPD is acceptable
Precision	Standard procedures appropriate to job and applied Collection of split (Inter-lab) duplicate and field (Intra-lab) duplicate	Analysis of: Field (Intra-lab) duplicate Split (Inter-lab) duplicate	 0-50% RPD is acceptable 0-50% RPD is acceptable
Represent-ativeness	Correct material sampled as per RAP or ESA All material needing to be sampled was sampled	All samples analysed in accordance with 'Chain of Custody'	
Compara-bility	Correct sampling protocol applied Sampler appropriately trained Similar climate conditions	Standard procedures used for all labs Similar analytical methods employed by all labs involved	As per NATA requirements As per AIRSAFE and DECCW requirements
Complete-ness	All critical locations sampled Samples collected from surface or depth where appropriate	All samples analysed according to procedures Correct methods employed Correct PQLs employed Chain of custody requirements acted upon Lab holding times appropriate	As per appropriate regulations and guidelines

- PQLs – Practical Quantitation Limits
- RPD – Relative Percentage Difference
- RAP – Remedial Action Plan

4.1.8 Step 7 - Optimise the Design for Obtaining Data

EPA (2006) - *Identify the most resource-effective sampling and analysis design for general data that are expected to satisfy the DQOs.*

4.2 DATA QUALITY ASSESSMENT – FIELD QA/QC

4.2.1 Soil Sampling

- All sampling (digging) equipment was washed with 'Decon 90' and water. The equipment was then rinsed with distilled water between each sampling to avoid cross contamination.
- The samples were collected using a clean disposable nitrile glove.
- The jars and bottles were sealed with a teflon lid and stored and transported in a temperature insulated container cooled with 'ice-bricks'.
- The container was transported to a NATA registered laboratory and analysed as described.
- The relevant "Chain of Custody Form" is included in Appendix D.
- All washed, teflon lidded jars were obtained from SGS.
- Each container was labeled with a unique job and sample No.
- All soil samples were transported to SGS Services under refrigerated conditions, using Chain-of-Custody procedures.
- Inter-laboratory duplicate (ILD) sample was forwarded to SGS (Sydney) and then onto SGS (Cairns) for inter-laboratory QA/QC analysis.
- The laboratory analyses were conducted on discrete un-composited samples.

4.2.2 Intra-Laboratory Duplicate

An intra-laboratory duplicate is a QC sample that is used to determine the precision associated with all or part of the sample collection. Field duplicates are two independent samples that are collected from the same point at the same time and used to assess the homogeneity and reproducibility of the sampling technique. The precision, or reproducibility is measured from the differences observed in the analysis of duplicate samples. The precision, or reproducibility is measured from the differences observed in the analysis of duplicate samples.

1 Intra-laboratory duplicate was collected and analysis undertaken. This complies with NEPM 2013 frequency requirement of 5% (ie: 1 in 20 primary samples):

•Sample 02787/BH4/DupIntra was a field duplicate of primary sample 02787/BH4/0.15.

Where samples are analysed in duplicate, the quality of the results is assessed by calculating the relative percent difference (RPD) between the reported and repeated results.

The RPD is calculated as follow:

$$RPD = 200 * |X_1 - X_2| / X_1 + X_2$$

Where X_1 and X_2 are the results obtained for the samples and its duplicate, and $|X_1 - X_2|$ is the absolute difference between the duplicate samples.

A relative level of difference up to 50% is considered acceptable. Where the results are below the detection limits a calculation was not possible. All RPDs for the samples were 50% or below indicating an acceptable level of precision and reproducibility for the laboratory analysis.

Analyte - METALS	Units	02787/BH4/0.15	02787/BH4/ Dup Intra	% RPD
Arsenic	mg/kg	5	6	18%
Cadmium	mg/kg	<0.3	<0.3	-
Chromium	mg/kg	32	35	9%
Copper	mg/kg	16	17	6%
Lead	mg/kg	100	110	10%
Mercury	mg/kg	0.06	0.09	13%
Nickel	mg/kg	1.7	1.8	6%
Zinc	mg/kg	52	54	4%

4.2.3 Inter-Laboratory Duplicate

An inter laboratory duplicate is a sample taken from the same point and the same time as the other samples and analysed by a separate and independent laboratory. This provides some degree of confidence that the analyses conducted by the main laboratory has been undertaken according to acceptable reproducible standards. Where samples are analysed in duplicate, the quality of the results is assessed by calculating the relative percent difference (RPD) between the primary, and duplicate laboratory results.

1 Inter-laboratory duplicate was collected and analysis undertaken. This complies with NEPM 2013 frequency requirement of 5% (ie: 1 in 20 primary samples)

•Sample 02787/BH7/Dup Inter (a duplicate of sample 02787/BH7/0.3) was the field duplicate as described above.

The 'inter-laboratory' samples was sent to SGS (Cairns) and analysed for heavy metals. Where samples are analysed in duplicate, the quality of the results is assessed by calculating the relative percent difference (RPD) between the primary and duplicate laboratory results.

The RPD is calculated as follows:

$$RPD = 200 * X1 - X2 / X1 + X2$$

Where X1 and X2 are the results obtained for the samples and its duplicate, and X1 - X2 is the absolute difference between the duplicate samples. A relative level of difference up to 50% is considered acceptable. Most RPDs were less than 50%. The duplicate result for nickel analysed by SGS Cairns of 11

mg/kg far exceeded the SGS Sydney primary analysis of 1.9 mg/mg. Considering the remaining primary/duplicate results were similar it is suspected that a small fragment of nickel containing foreign material was included within the collected sample (non-homogenous media).

Analyte - METALS	Units	02787/BH7/0.3	02787/BH7/ Dup Inter	% RPD
Arsenic	mg/kg	7	7.2	3%
Cadmium	mg/kg	<0.3	0.3	-
Chromium	mg/kg	31	42	3%
Copper	mg/kg	23	24	4%
Lead	mg/kg	71	67	1%
Mercury	mg/kg	0.06	0.05	18%
Nickel	mg/kg	1.9	11	**141%**
Zinc	mg/kg	85	90	6%

4.2.4 Equipment Rinsate Samples

An equipment rinsate sample is a sample of demineralised water that is poured over or through field sampling equipment that is considered ready to collect. The purpose of the rinsate is to assess the adequacy of the decontamination process and/or the cleanliness of the sampling equipment. The sample may also provide information ensuring that there is no cross contamination of the substances from the sampling equipment used.

One rinsate water sample (02787/RIN) was collected. This was analysed for heavy metals. The analysis revealed that all analytes were below the detectable limits and confirmed that adequate equipment decontamination procedures were undertaken.

4.2.5 Trip Blank

A laboratory prepared clean glass jar is filled with clean soil supplied by the analysing laboratory and is stored within the sample 'esky' and transported to the laboratory with the other samples. The purpose of the trip blank is to detect any sample contamination due to transport activities. One Trip Blank sample (02787/TB) was analysed for metals x8. The results were mostly below detection and confirm that the sample(s) were not compromised during transport. (Nickel was reported as 0.7 mg/kg).

4.3 DATA QUALITY ASSESSMENT – LABORATORY QA/QC

4.3.1 NATA Registration of Laboratories

The analysis of the primary samples was undertaken by SGS (Sydney), and the analysis of the secondary samples (inter-lab duplicate) was analysed by SGS (Cairns). These laboratories are accredited by the National Association of Testing Authorities, NATA. The Laboratories maintain an extensive NATA accreditation, and methodology testing and development is performed in accordance with NATA requirements. NATA accreditation includes compliance with ISO Guide 25 "General Requirements for the Technical Competence of Testing Laboratories".

Laboratories meeting the requirements of this guide comply, for calibration and testing activities, with the relevant requirements for the ISO 9000 series of standards, including those of the model described in ISO 9002 (AS 3902 is the Australian equivalent) when they are acting as suppliers producing calibration and test results. All analyses are performed in accordance with Australian Standards ("AS"), American Public Health Association ("APHA"), US-EPA or other standards meeting the NEPM 2013 criteria.

4.3.2 Objectives of Analysis Laboratory Quality Assurance Procedures

All laboratories used in this project utilized their own QA procedures for analysis. The objectives of the laboratory internal QA programme was to provide data on the accuracy and precision of the analytical results. A description of the methods is listed below:

Reagent Blank: Sample free agents carried through the preparation / digestion procedure and analysed at the beginning of every sample batch analysis. For larger projects, a reagent blank is prepared and analysed with every 20 samples.

Matrix Spike Duplicates: Sample replicates spiked with identical concentrations of target analyte(s). The spiking occurs during the sample preparation and prior to the extraction / digestion procedure. They are used to document the precision and bias of a method in a given sample matrix. Where there is not enough sample available to prepare a spiked sample, another known soil/sand or water may be used. (It is usual for a duplicate spiked sample to be prepared at least every 20 samples).

Surrogate Spike: Added to all samples requiring analysis for organics (where relevant) prior to extraction. Used to determine the extraction efficiency. They are organic compounds which are similar to the target analyte(s) in chemical composition and behaviour in the analytical process, but which are not normally found in environmental samples.

Internal Standard: Added to all samples requiring analysis for organics (where relevant) after extraction process; the compounds serve to give a standard of retention time and response, which is invariant from run to run with the instruments.

Duplicate: A separate portion of a sample being analysed which is treated the same as the other samples in the batch. Usually a duplicate is prepared at least every 20 samples.

Control Standards: Prepared from a source independent of the calibration standards. At least one control standard is included in each run to confirm calibration validity.

Laboratory Reporting: For laboratories with appropriate QA, the reagent blank, duplicates, matrix spikes and surrogate spikes are reported along with the results. The targeted recovery range for the laboratory spikes, controls and surrogates shall be 70% to 130% of the known addition.

4.3.3 Review of Laboratory QA/QC

The primary laboratory used for chemical analysis of the validation samples was SGS. SGS are a NATA accredited laboratory. All laboratory QA/QC results are attached. The laboratory QA/QC data as supplied for each analysis confirm acceptable precision and accuracy of the analytical result for SGS.

4.3.4 Data Completeness Evaluation

Completeness is a quality assurance/quality control term and is defined as the measure of the amount of valid data obtained from a measurement system compared to the amount that was expected to be obtained under normal conditions. The goals for this project shall be 95% completeness. Completeness is assessed or calculated with respect to the following equation:

C = 100 x (V/N)

where: C = percent completeness

V = number of measurements judged valid

N = total number of measurements.

1. Sample Collection: 18 primary samples and 4 QA/QC samples were collected as specified within the proposal. All samples were delivered to the laboratory successfully using appropriate Chain of Custody procedures.

2. Sample Analysis: All primary and the QA/QC sample were successfully analysed and results received from SGS Services.

3. Duplicate/Primary Sample Assessment: The data completeness was calculated on the duplicate, where the high (>50%) samples were discarded.

All RPDs were less than 50% for the intra laboratory duplicate.

With respect to the above comments, all the valid data expected to be obtained, was able to be used to assess the 'completeness of data'.

In Summary: *Data Completeness was 100%.*

SECTION 5: SOIL SAMPLING – AIMS AND METHODOLOGY

5.1 PURPOSE AND AIMS

The lot has a total area of approximately 1,600 m2. According to EPA NSW Sampling EPA NSW Design Guidelines (Sept 1995), a minimum of 7 sampling points is required to characterise a site between 1000 - 2000 m2. This is based on a 95% confidence to detect a hot spot with a 19.9 metre circumference for a site up to 2000 sq/m.

The investigation area was limited due to on-going construction activities (concrete slabs, metal framework on grassed areas etc). Due to the potential data gaps caused by the limited accessibility to the soil, extra sampling points were undertaken:

- 11 general sampling points;
- 3 of these points were taken down to depth 0.6 – 1.0 metres;
- 3 stockpiles were also sampled.

5.2 SAMPLING PROCEDURE

On the 1 August 2019, 18 primary soil samples were collected from the 11 sampling points (boreholes) and 3 stockpiles. The sampling also included 4 QA/QC samples (x1 Inter-laboratory, x1 Intra-laboratory, x1 Water rinsate, x1 Trip Blank).

The locations of the boreholes are shown in *Figure 2 - 02787-F02 (Appendix A)*.

5.2.1 Primary Samples

The collected soil samples were analysed for:

Table 7

ANALYSIS FREQUENCY	ANALYTE	ANALYTE ABBREVIATION
All samples	Heavy metals x8	As, Cd, Cu, Cr, Ni, Hg & Zn
Selected samples	Polycyclic Aromatic Hydrocarbons	PAHs
Selected samples	Total Recoverable Hydrocarbons	TRHs
Selected samples	Benzene, Toluene, Ethylbenzene, Xylene	BTEX
Selected samples	Polychlorinated biphenyl	PCBs
Selected samples	Organochlorine pesticides	OCPs
Selected samples	Organophosphate pesticides	OPPs
Selected sample	Acidity	pH
Selected samples	Asbestos fibre	-

5.2.2 QA/QC

1. One intra-laboratory QA/QC sample was taken as a duplicate of the respective primary sample. This was sent to the same laboratory (SGS Sydney) as the primary sample for analysis.

2. One inter-laboratory QA/QC sample was taken as a duplicate of the respective primary sample. This was sent to a secondary laboratory (SGS Cairns) for analysis.

3. One equipment water rinsate QA/QC sample was taken and analysed.

4. One trip blank. This is a laboratory prepared clean glass jar is filled with clean soil supplied by the analysing laboratory and is stored within the sample 'esky' and transported to the laboratory with the other samples.

5.4 SAMPLE DETAILS AND LOCATIONS (METALS & ORGANICS) – SEE 02787/F02

Table 8

NO	SAMPLE ID#	BH	DEPTH (M)	SUB-SOIL CONDITIONS	ANALYSIS
1	02787/BH1/0.1	1	0.1	FILL - brown topsoil fill with small pebbles and debris	Metals (x8), PAH, TRH+BTEX, Phenol, OCP, OPP, PCB
2	02787/BH1/0.6	1	0.6	FILL – brown/tan silty clay	Metals (x8), PAH
3	02787/BH2/0.1	2	0.1	FILL - brown topsoil fill with small pebbles and debris	Metals (x8), PAH, TRH+BTEX, Phenol, OCP, OPP, PCB
4	02787/BH3/0.1	3	0.1	FILL - brown topsoil fill with small pebbles and debris	Metals (x8), PAH, TRH+BTEX, Phenol, OCP, OPP, PCB
5	02787/BH4/0.15	4	0.15	FILL - brown topsoil fill with small pebbles and debris	Metals (x8), PAH, TRH+BTEX, Phenol, OCP, OPP, PCB
6	02787/BH4/Dup Intra	4	0.15	Intra laboratory duplicate of sample 02787/BH4/0.15	Metals (x8)
7	02787/BH5/0.2	5	0.2	FILL - brown topsoil fill	Metals (x8), PAH, TRH+BTEX, Phenol, OCP, OPP, PCB
8	02787/BH5/0.6	5	0.6	FILL – brown/tan silty clay	Metals (x8), PAH
9	02787/BH6/0.2	6	0.2	FILL - brown topsoil fill	Metals (x8), PAH, TRH+BTEX, Phenol, OCP, OPP, PCB
10	02787/BH7/0.3	7	0.3	FILL - brown topsoil fill	Metals (x8), PAH, TRH+BTEX, Phenol, OCP, OPP, PCB
11	02787/BH7/Dup Inter	7	0.3	Inter laboratory duplicate of sample 02787/BH7/0.3	Metals (x8)
12	02787/BH8/0.1	8	0.1	FILL - brown topsoil fill with small pebbles and debris	Metals (x8), PAH, TRH+BTEX, Phenol, OCP, OPP, PCB

NO	SAMPLE ID#	BH	DEPTH (M)	SUB-SOIL CONDITIONS	ANALYSIS
13	02787/BH9/0.3	9	0.3	FILL – brown/tan silty clay	Metals (x8), PAH
14	02787/BH10/0.1	10	0.1	FILL - brown topsoil fill with small pebbles and debris	Metals (x8), PAH
15	02787/BH11/0.15	11	0.15	FILL – brown/tan silty clay	Metals (x8), PAH
16	02787/BH11/1.0	11	1.0	FILL - brown topsoil fill with small pebbles and debris	Metals (x8), PAH
17	02787/SP1	-	-	Stockpile #1 – mixed fill and silty tan clays	Metals (x8), PAH
18	02787/SP2	-	-	Stockpile #2 – mixed fill and silty tan clays	Metals (x8), PAH
19	02787/SP3	-	-	Stockpile #3 – mixed fill and silty tan clays	Metals (x8), PAH
20	02787/SP4	-	-	Stockpile #4 – mixed fill and silty tan clays	Metals (x8), PAH
21	02787/TB	-	-	Trip Blank	Metals (x8)
22	02787/RIN	-	-	Equipment water rinsate	Metals (x8)

5.4 SAMPLE DETAILS AND LOCATIONS (ASBESTOS) - SEE 02787/F02

NO	SAMPLE ID#	BH	DEPTH (M)	SUB-SOIL CONDITIONS	ANALYSIS
1	02787/BH1/0.1	1	0.1	FILL - brown topsoil fill with small pebbles and debris	Asbestos
2	02787/BH2/0.1	2	0.1	FILL - brown topsoil fill with small pebbles and debris	Asbestos
3	02787/BH3/0.1	3	0.1	FILL - brown topsoil fill with small pebbles and debris	Asbestos
4	02787/BH4/0.1	4	0.1	FILL - brown topsoil fill with small pebbles and debris	Asbestos
5	02787/BH5/0.1	5	0.1	FILL - brown topsoil fill with small pebbles and debris	Asbestos
6	02787/BH6/0.1	6	0.1	FILL - brown topsoil fill with small pebbles and debris	Asbestos
7	02787/BH7/0.1	7	0.1	FILL - brown topsoil fill with small pebbles and debris	Asbestos
8	02787/BH8/0.1	8	0.1	FILL - brown topsoil fill with small pebbles and debris	Asbestos
9	02787/BH9/0.1	9	0.1	FILL - brown topsoil fill with small pebbles and debris	Asbestos
10	02787/BH10/0.1	10	0.1	FILL - brown topsoil fill with small pebbles and debris	Asbestos
11	02787/BH11/0.1	11	0.1	FILL - brown topsoil fill with small pebbles and debris	Asbestos
12	02787/SP1/0.2	-	0.2	Stockpile #1 - FILL - brown topsoil fill with small pebbles and debris	Asbestos
13	02787/SP2/0.2	-	0.2	Stockpile #2 - FILL - brown topsoil fill with small pebbles and debris	Asbestos
14	02787/SP3/0.2	-	0.2	Stockpile #3 - FILL - brown topsoil fill with small pebbles and debris	Asbestos
15	02787/SP4/0.2	-	0.2	Stockpile #4 - FILL - brown topsoil fill with small pebbles and debris	Asbestos

SECTION 6: SOIL SAMPLING – AIMS AND METHODOLOGY

6.1 HEALTH INVESTIGATION LEVELS (HILS)

The sample results were assessed against the soil contaminant threshold concentrations set at levels appropriate to the proposed *residential* landuse. The results are therefore assessed against the Health Investigation Levels (HILs) listed in the *National Environment Protection (Assessment of Site Contamination) Measure (NEPM*) – Schedule B1 (1999 amended 2013). Residential HIL A:

- *Residential with garden/accessible soil also includes childcare centres, preschool and primary schools.*

Table 1A(1) – NEPM 2013

	Health Investigation Levels - HILs			
Substance All values in mg/kg	**HIL A Residential A**	**HIL B Residential B**	**HIL C Recreational**	**HIL D Commercial/ Industrial**
Metals & metalloids (NEPM 2013)				
Arsenic	100	500	300	3 000
Beryllium	60	90	90	500
Cadmium	20	150	90	900
Chromium (VI)	100	500	300	3600
Cobalt	100	600	300	4000
Copper	6,000	30,000	17,000	240,000
Lead	300	1,200	600	1 500
Manganese	3,800	14,000	19,000	60,000
Mercury (inorganic)	40	120	80	730
Nickel	400	1,200	1,200	6,000
Zinc	7,400	60,000	30,000	400,000
Organics				
Aldrin + Dieldrin	6	10	10	45
Chlordane	50	90	70	530
DDT+DDD+DDE	240	600	400	3,600
PAHs (total)	300	400	300	4,000
Benzo(a)pyrene TEC	3	4	3	40
Other (NEPM 2013)				
Phenol	3000	45,000	40,000	240,000
PCBs	1	1	1	7

6.2 SOIL INVESTIGATION LEVELS FOR VAPOUR INTRUSION

National Environment Protection (Assessment of Site Contamination) Measure (NEPM) – Schedule B1 (1999 amended 2013).] : Soil Investigation Levels for vapour intrusion (mg/kg). As a conservative measure the *HSL-A&B for sand geology at depths of 0 m to <1 m* were adopted.

Table 1A(3) – NEPM 2013

	Residential A & B - HSL A & HSL B – Low to high density residential			
Chemical	0 m to <1 m	1 m to <2 m	2 m to <4 m	4 m +
SAND				
Toluene	160	220	310	540
Ethylbenzene	55	NL	NL	NL
Xylenes	40	60	95	170
Naphthalene	3	NL	NL	NL
Benzene	0.5	0.5	0.5	0.5
F1	45	70	110	200
F2	110	240	440	NL
SILT				
Toluene	390	NL	NL	NL
Ethylbenzene	NL	NL	NL	NL
Xylenes	95	210	NL	NL
Naphthalene	4	NL	NL	NL
Benzene	0.6	0.7	1	2
F1	40	65	100	190
F2	230	NL	NL	NL
CLAY				
Toluene	480	NL	NL	NL
Ethylbenzene	NL	310	NL	NL
Xylenes	110	NL	NL	NL
Naphthalene	5	NL	NL	NL
Benzene	0.7	1	2	3
F1	50	90	150	290
F2	280	NL	NL	NL

F1 – To obtain F1 subtract the sum of BTEX concentration from the C6-C10 fraction.
F2 – To obtain F2 subtract naphthalene from the >C10-C16 fraction

6.3 SITE SPECIFIC - ECOLOGICAL INVESTIGATION LEVELS (EILS)

Levels have been derived for selected metals and organic compounds and are applicable for assessing risk to terrestrial ecosystems (NEPM, 2013). EILs depend on specific soil physiochemical properties and land use scenarios and generally apply to the top 2 m of soil, which corresponds to the root zone and habitation zone of many species. The EIL is determined for a contaminant based on the sum of the ambient background concentration (ABC) and an added contaminant limit (ACL). The ABC of a contaminant is the soil concentration in a specific locality that is the sum of naturally occurring background levels and the contaminants levels that have been introduced from diffuse or non-point sources (e.g. motor vehicle emissions). The ACL is the added concentration (above the ABC) of a contaminant above which further appropriate investigation and evaluation of the impact on ecological values is required.

The EIL is calculated using the formula : EIL = ABC + ACL.

The adopted EIL, derived from *Schedule B1 of NEPM (2013)* and the Excel Spreadsheet – *eil-calculation-spreadsheet-December-2010(1)* are shown below. The following site specific data and assumptions have been used to determine the EILs:

- a protection level of 80%.
- the EILs will apply to the top 2 m.
- considering the historical site use/fill, the contamination is considered as “aged” (>2 years);

ABCs have been derived using the Interactive (Excel) Calculation Spreadsheet using input parameters of NSW and for high for traffic volumes.

Site specific pH values have been used to calculate the input parameter for the Interactive (Excel) Calculation Spreadsheet. The average pH value for filling samples was used, being a pH of 6.8 (based on measured pH values between 5.8 and 7.6 in filing soils);

Analytical Parameters:

pH – average pH between 5.8 to 7.6	6.8
Cation Exchange Capacity (CEC) – meq/100g	10
Clays in Soil % (est)	10

Sample 02700/BH3/1.0 clay content value of 11% has been used as input parameters in the Interactive (Excel) Calculation Spreadsheet considering the fill soil is generally comprised of clayey silty sand topsoil.

The above CEC value of 10% and the average pH of 6.8 has been used for the input parameters in the Excel Spreadsheet – *eil-calculation-spreadsheet-December-2010(1)*.

Derived Ecological Investigation Levels (EIL) in mg/kg for Urban residential and open public spaces		
METALS		
	FRESH	AGED
Arsenic	50	100
Copper	120	210
Nickel	80	170
Chromium III	230	410
Lead	270	1100
Zinc	190	480
PAH		
Naphthalene	170	170
OCP		
DDT	180	180

6.4 GENERIC - ECOLOGICAL SCREENING LEVELS (ESL)

NEPM 2013 – B(1): Table 1B(6) ESLs for TPH fractions F1 - F4, BTEX and benzo(a)pyrene in soil

CHEMICAL	Soil texture	ESLs (mg/kg dry soil)		
		Areas of ecological significance	Urban residential and public open space	Commercial and industrial
F1 C_6-C_{10}	*Coarse*	125*	180*	215*
F2 >C_{10}-C_{16}	*Fine*	25*	120*	170*
F3 >C_{16}-C_{34}	*Coarse*	-	300	1700
	Fine	-	1300	2500
F4 >C_{34}-C_{40}	*Coarse*	-	2800	3300
	Fine	-	5600	6600
Benzene	*Coarse*	10	50	75
	Fine	10	65	95
Toluene	*Coarse*	10	85	135
	Fine	65	105	135
Ethylbenzene	*Coarse*	1.5	70	165
	Fine	40	125	185
Xylenes	*Coarse*	10	105	180
	Fine	1.6	45	95
Benzo(a)pyrene	*Coarse*	0.7	0.7	0.7
	Fine	0.7	0.7	0.7

Notes:

(1)ESLs are of low reliability except where indicated by * which indicates that the ESL is of moderate reliability.

(2)'-' indicates that insufficient data was available to derive a value.

(3)To obtain F1, subtract the sum of BTEX concentrations from C_6-C_{10} fraction and subtract naphthalene from >C_{10}-C_{16} to obtain F2.

6.5 GENERIC – MANAGEMENT LIMITS : PETROLEUM HYDROCARBONS

NEPM 2013 – B(1): Table 1 B(7) Management Limits for TPH fractions F1-F4 in soil

TPH fraction	Soil texture	Management Limits[1] (mg/kg dry soil)	
		Residential, parkland and public open space	Commercial and industrial
F1[2] C6-C10	*Coarse*	700	700
	Fine	800	800
F2[2] >C10-	*Coarse*	1000	1000
	Fine	1000	1000
F3 >C16-C34	*Coarse*	2500	3500
	Fine	3500	5000
F4 >C34-C40	*Coarse*	10 000	10 000
	Fine	10 000	10 000

[1] Management limits are applied after consideration of relevant ESLs and HSLs
[2] Separate management limits for BTEX and naphthalene are not available hence these should not be subtracted from the relevant fractions to obtain F1 and F2

6.6 ASBESTOS ID IN SOILS – NEPM 2013

Health Screening Levels for Asbestos Contamination in Soil (NEPM 2013)

Form of asbestos	Health Screening Level (w/w)			
	Residential A[1]	Residential B[2]	Recreational C[3]	Commercial / Industrial D[4]
Bonded (non-friable) ACM	0.01%	0.04%	0.02%	0.05%
FA and AF (friable asbestos)	0.001%			
All forms of asbestos	No visible asbestos for surface soil			

- Residential A with garden/accessible soil also includes children's day care centres, preschools and primary schools.
- Residential B with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments.
- Recreational C includes public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools and unpaved footpaths.
- Commercial/industrial D includes premises such as shops, offices, factories and industrial sites.

SECTION 7: LABORATORY ANALYSIS RESULTS

See *Appendix B : Summary of Results.* Results compared against the NEPM 2013 criteria: HIL A, EILs etc as cited in Section 4.

7.1 METALS

7.1.1 Metals - Health Investigation Levels (HILs)

While some metal (x8) sample results exceeded the suspected background levels, the levels did not exceed the Health Investigation Levels *Residential A (HIL A).* It was noted that lead levels were elevated in numerous samples particularly in areas not disturbed during the current construction works. The 95% Upper Confidence Limit (UCL) of the arithmetic average concentration was calculated for each metal (x8). The 95% UCL for each was well below the HIL A levels. The results are presented below:

Metal	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
NEPM HIL A	**100**	**20**	**100**	**6K**	**300**	**40**	**400**	**74K**
Calculated 95% UCL in mg/kg	6.2	0.3	34.4	29.5	103.7	0.1	3.7	102.6

7.1.2 Metals – Derived Ecological Investigation Levels (EILs)

All metal (x8) analysis results did not exceed the 'aged' *Derived Ecological Investigation Levels (EIL) in mg/kg for urban residential land use,* as calculated in Section 6.3.

7.2 PETROLEUM HYDROCARBONS (TRH & BTEX)

All BTEX were below detection levels. A number TRH concentrations (F3) were above detection levels. The TRH above detection levels did not exceed the HSLs and ESLs criteria or the Management Limits for TRH.

7.3 POLYAROMATIC HYDROCARBONS (PAH)

While some benzo-a-pyrene TEQ and total PAH levels sample results exceeded the suspected background levels, the levels did not exceed the Health Investigation Levels *Residential A (HIL A)* and Ecological Investigation Levels (EILs) criteria. The 95% Upper Confidence Limit (UCL) of the arithmetic average concentration was calculated for benzo-a-pyrene TEQ and total PAH. The 95% UCL for each was well below the HIL A levels. The results are presented below:

Metal	TOTAL PAH	BENZO(A)PYRENE TEQ
NEPM HIL A	**300**	**3**
Calculated 95% UCL in mg/kg	4.8	0.67

Note the concentration of BaP at three location (BH5: 1.9 mg/kg @ 0.3m, BH8: 0.9 mg/kg @ 0.1m and BH9: 1.4 mg/kg @ 0.3m) exceeded the ESL of 0.7 mg/kg for urban residential landuse. The exceedance were not significant and is not suspected to affect the current development.

7.4 ORGANOCHLORINE PESTICIDES (OCPS)

The OCPs were below detection levels, and as such results did not exceed the *Residential A (HIL A)* and Ecological Investigation Levels (EILs for DDT) criteria.

7.5 ORGANOPHOSPHATE PESTICIDES (OPPS)

The OPPs were below detection levels, and as such results did not exceed the *Residential A (HIL A)* and Ecological Investigation Levels criteria.

7.6 POLYCHLORINATED BIPHENYLS (PCBS)

The PCBs were below detection levels, and as such results did not exceed the *Residential A (HIL A).*.

7.7 ACIDITY (PH)

The pH varied with levels from 5.8 and 7.6 pH Units.

7.8 ASBESTOS ID IN SOILS

Considering the site has been occupied since the mid 1800s and two cottages have been built and demolished prior to 1990s asbestos has been regarded as a potential contaminant during the investigation. The material recovered during the hand auguring and the stockpiled material were inspected for asbestos fragments. No asbestos fragments were observed throughout the investigation.

Fifteen (15) samples of soil were analysed for asbestos content:

- Asbestos ID in soils (NATA Accredited)*: Asbestos was not detected in the fifteen samples at reporting limit of 0.1 g/kg (NATA). No respirable fibres detected. and
- Asbestos ID in soils (NEPM 2013)** (including estimation of FA and AF (w/w) : Asbestos was not detected in fourteen samples. A small bundle of fibres were detected in sample 02787/BH1/0.1 (Airsafe-46809-10). The measured weight of the bundle was 0.0012 g. The total weight of the sample media was 725.7 g. The estimated FA and AF (w/w) was 0.000165%. This w/w was below the NEPM health screening level of 0.001%.

* Asbestos ID - Soils – Samples have been analysed using polarised light microscopy including dispersion staining in accordance with the Method for the qualitative identification of asbestos in bulk samples [AS 4964 – 2004] and in-house method AS102 - Method for the Qualitative Identification of Asbestos in Bulk Samples. This method has a calculated practical detection limit of 0.1 g/kg, equivalent to 0.01% weight for weight (w/w).

** Asbestos ID - Soils NEPM – There is no accepted valid analytical method in Australia for estimating the concentration of asbestos in soil. NATA does not accredit facilities for the estimation of the concentration of ACM or free asbestos fibres in soil. These quantitative results are not covered by the scope of NATA accreditation. A minimum 500 mL soil sample has been analysed. This report is consistent with the analytical procedures and reporting recommendations in Schedule B1 – Guideline on Investigation Levels for Soil and Groundwater [National Environment Protection (Assessment of Site Contamination) Measure 1999 (April 2013)] and the Western Australia *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia – May 2009*. The screening level of 0.001% w/w asbestos in soil for FA and AF only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. All calculations of percentage asbestos under this method are approximate and should be used as a guide only. These results should not be used in place of field evaluations.

7.9 PHOTO IONISATION DETECTOR (PID) - VOLATILES

Headspace screening of excavated materials for VOCs using a portable photo ionisation detector (PID) was undertaken. A duplicate of the sample was taken, (jar half full with soil) and then covered with aluminum foil and left in the sun for 10 minutes. The PID nozzle was then inserted through the foil and the VOCs measured. Any headspace VOC concentrations exceeding 30ppm was noted and the sample analysed for VOCs. The PID readings did not exceed the action level of 30ppm (See Appendix B). The PID calibration sheet is included in Appendix A.

7.10 FIELD OBSERVATIONS

The sub surface investigation identified two relatively distinct stratigraphic layers:

- *FILL - brown topsoil fill with small pebbles and debris* : From surface down to a depth of 0.3-0.4 metres. Disturbed and mixed topsoil, foreign gravel/pebbles with anthropogenic debris (small fragments of concrete, bricks, glass) randomly scattered through the material. It is

suspected that the material was sourced from on-site and used as backfill during the construction of the original offices in 1990.

- *FILL – brown/tan silty clay* : Deeper disturbed clays. Suspected to be sourced from on-site and dislocated during the 1990 construction phase.

Four stockpiles of material were sampled. The locations and marked on Figure No.2 – 02787-F02 in Appendix A. Stockpiles 1, 2 & 4 consisted of dark topsoil material (each stockpile <10 m^2). Stockpile #4 consisted of deeper excavated tan clays from adjacent foundation excavation down to 1.5 mbgl.

SECTION 8: DISCUSSION & CONCLUSIONS

This report has been conducted in accordance with:

- *National Environment Protection (Assessment of Site Contamination) Measure (NEPM)*, (1999 amended 2013
- *State Environmental Planning Policy No. 55 – Remediation of Land (SEPP 55)*
- *EPA NSW Guidelines for Consultants Reporting on Contaminated Sites* (November 1997),

The general conclusions of the report are outlined below:

- The Stage 1 PSI report recommended that a Stage 2 detailed site investigation (DSI) be carried out on site due to potential contamination identified on site.
- AIRSAFE was engaged by the client to undertake the DSI. The Stage 2 DSI sampling was carried out on 1 August 2019. The investigation area was limited due to on-going construction activities (concrete slabs, metal framework on grassed areas etc). Mechanical investigation procedures (drill rig, excavator etc) were not practicable or possible in most areas. Samples were taken using a hand augur and hand effort (shovel & mattock). The depth of sampling was limited by the nature of the subsurface with respect to this sampling procedure (stiff clays and rock floaters). Other site limitations included:
    - East Proposed Playground Area: Tree root preservation are in footprint of fig tree. Subsurface digging allowed.
    - Western Boundary – no digging along this boundary due to proximity to historic graves.
    - Northern Boundary – between footpath and slab area. Tree root preservation are in footprint of fig tree. Subsurface digging allowed.
    - Along Southern Boundary – hand augur sampling not possible due to palm roots and surface vegetation.
- Due to the potential data gaps caused by the limited accessibility to the soil, AIRSAFE requested that the client engage an EPA accredited Site Auditor for advice during the investigation, assess the results of the investigation and present a report to the client on the suitability of the site for the proposed use as a (new) school.
- With respect to the investigation, the seven-step DQO process (defined in Section 5) as outlined in the *NEPM 2013* was employed to assess the property in regard to contamination of the soil.

- The soil analysis results were assessed against the appropriate Health-based Investigation for the proposed landuse (school) listed in the *National Environment Protection (Assessment of Site Contamination) Measure (NEPM*) – Schedule B1 (1999 amended 2013): Residential HIL A: *Residential with garden/accessible soil also includes childcare centres, preschool and primary schools.*
- The analysis results for the majority of analytes (organics) were all below detection. The analysis results for most metals were above background levels. While the 'lead' results were marginally elevated, the statistical interpretation of the metal results found that they did not exceed the HIL A.
- In general, the soil sample laboratory analysis results confirm that metals (x8) (95% UCL), PAH, TRH, BTEX, OCPs, OPPs and PCBs analysis results did not exceed the HIL A criteria for in accordance with the *NEPM 2013*. (ie: Listed in Section 6).
- Al results (not including BaP) did nit exceed the Ecological Investigation Levels (EILs) or Ecological Screening Levels (ESLs). **Note:** The concentration of BaP at three location (BH5: 1.9 mg/kg @ 0.3m, BH8: 0.9 mg/kg @ 0.1m and BH9: 1.4 mg/kg @ 0.3m) exceeded the ESL of 0.7 mg/kg for urban residential landuse. The exceedance was not significant and is not suspected to affect the current development.
- Asbestos ID - NATA: No asbestos fibres were detected within the soil at reporting limit of 0.1g/kg, and no respirable fibres detected in the samples analysed.
- Asbestos ID – NEPM: A small bundle of fibres were detected in sample 02787/BH1/0.1 (Airsafe-46809-10). The measured weight of the bundle was 0.0012 g. The total weight of the sample media was 725.7 g. The estimated FA and AF (w/w) was 0.000165%. This w/w was below the NEPM health screening level of 0.001%.
- This investigation has a total area of approximately 1,600 m^2 and entailed the collection of samples from 11 sampling points and 4 stockpile locations. This exceeded the minimum of 7 sampling points listed in EPA NSW Sampling EPA NSW Design Guidelines (Sept 1995) to characterise a site between 1000 - 2000 m^2.
- The investigation concludes that a health risk was not identified with respect to the proposed landuse (*Residential HIL A: Residential with garden/accessible soil also includes childcare centres, preschool and primary schools).*

- The conclusions above are presented on the understanding that site conditions remain static, and the current concrete slab for the building (including the semi subsurface basement), remain intact. If conditions change or the integrity of the concrete slab is compromised a further assessment of the (exposed) soil with respect to historical contamination, shall need to be undertaken.

SECTION 9. REFERENCES AND LEGISLATION

- *Soils Landscapes Data Source : NSW Office of Environment and Heritage*
- *Property Boundaries & Topographic Data: Land and Property Information 2017*
- *National Environment Protection (Assessment of Site Contamination) Measure (NEPM*) – Schedule B2 (1999 amended 2013)
- *EPA NSW Waste Classification Guidelines (Part 1 : Classifying Waste - (*Nov 2014).
- *EPA NSW Guidelines for the NSW Site Auditor Scheme* (2nd Edition – April 2006).
- *NSW Contaminated Land Management Act 2008* No.11.
- *Managing Land Contamination – Planning Guidelines SEPP 55 – Remediation of Land* – Dept. of Urban Affairs & Planning and EPA NSW 1998.
- *Guideline on Investigation Levels for Soil & Groundwater : Schedule B1* – National Environment Protection Measure (NEPM) April 2011.
- *Australian and New Zealand Guidelines from the Protection of Aquatic Organisms* – 95% Protection of Species for Fresh and Marine Water (ANZECC 2000).
- *EPA NSW Sampling Design Guidelines* September 1995.
- *Virgin excavated natural material (DECC 2008/447)* Fact Sheet 2008.
- *DEC NSW Guidelines for Assessing Former Orchards & Market Gardens* June 2005.
- *OEH NSW Guidelines for Consultants Reporting on Contaminated Sites* 1997, 2000. Reprinted August 2011.

APPENDIX A:

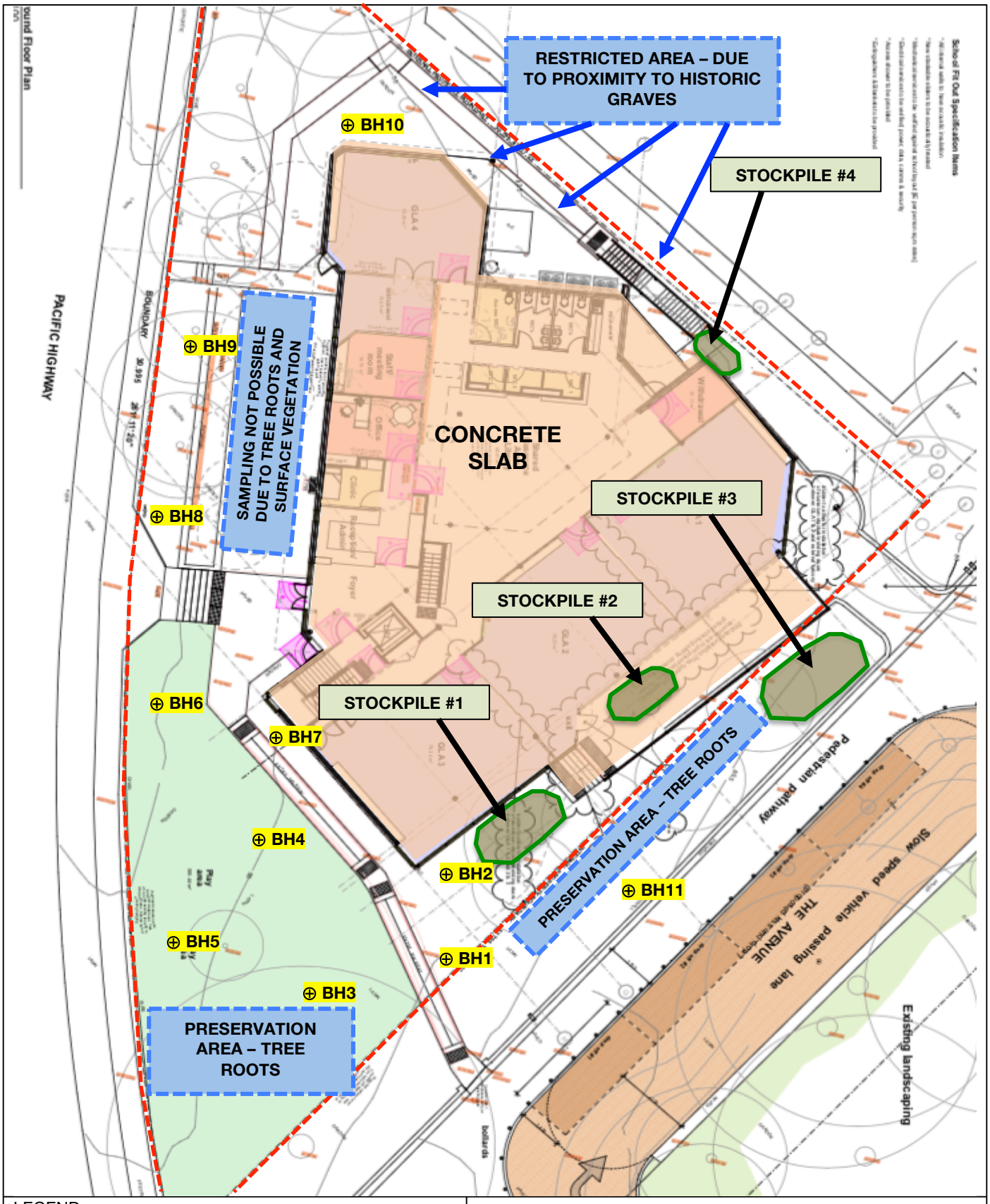
- SITE BOUNDARIES (FIGURE NO 1: 02787-F01)
- BOREHOLE LOCATIONS (FIGURE NO 2: 02787-F02)
- PHOTOGRAPHS
- PID CALIBRATION CERTIFICATE

LEGEND:

- SITE BOUNDARIES

AIRSAFE

FIG NO.	FIGURE NO. 1 : 02787-F01	LOCATION	211 PACIFIC HIGHWAY ST LEONARDS NSW 2065
SOURCE	NEARMAP - IMAGERY 2016 CNES / ASTRIUM, DIGITALGLOBE	CLIENT	STANTON DAHL ARCHITECTS
DRAWN	M.E	PROJECT	STAGE 2 DETAILED SITE INVESTIGATION
APPROVED	M.E	TITLE	SITE BOUNDARIES



LEGEND:

- SITE BOUNDARIES

⊕ BH# - BOREHOLE LOCATIONS

AIRSAFE

FIG NO.	FIGURE NO. 2 : 02787-F02	LOCATION	211 PACIFIC HIGHWAY ST LEONARDS NSW 2065
SOURCE	NEARMAP - IMAGERY 2016 CNES / ASTRIUM, DIGITALGLOBE	CLIENT	STANTON DAHL ARCHITECTS
DRAWN	M.E	PROJECT	STAGE 2 DETAILED SITE INVESTIGATION
APPROVED	M.E	TITLE	SAMPLING LOCATIONS

APPENDIX A: PHOTOGRAPHS

Stage 2 Detailed Site Investigation [Ref.02787.08.19.Stage2DSI]
211 Pacific Highway, St Leonards NSW 2039

Stockpile #3

Stockpile #2

Excavation cutting northern boundary

Borehole #11

Stockpile #1

Borehole #9

Stockpile #3

Borehole #8

APPENDIX A: PHOTOGRAPHS

Stage 2 Detailed Site Investigation [Ref.02787.08.19.Stage2DSI]
211 Pacific Highway, St Leonards NSW 2039

Borehole #7

Borehole #5

Borehole #6

Borehole #10

PID Calibration Certificate

Instrument **PhoCheck Tiger**
Serial No. **T-105867**

airmet

Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	✓	
	Recharge OK?	✓	
Switch/keypad	Operation	✓	
Display	Intensity	✓	
	Operat on (segments)	✓	
Grill Filter	Condition	✓	
	Seal	✓	
Pump	Operation	✓	
	Filter	✓	
	Flow	✓	
	Valves, Diaphragm	✓	
PCB	Condition	✓	
Connectors	Condition	✓	
Sensor	PID	✓	10.6 ev
Alarms	Beeper	✓	
	Settings	✓	
Software	Version	✓	
Data logger	Operation	✓	
Download	Operation	✓	
Other tests:			

Low	High	TWA	STEL
50ppm	100ppm		

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Diffusion mode Aspirated mode

Sensor	Serial no	Calibration gas and concentration	Certified	Gas bottle No		Instrument Reading
PID Lamp		92 ppm Isobutylene	NATA	SY245		92.2ppm

Calibrated by: Sarah Lian **Sarah Lian**

Calibration date: **31/07/2019**

Next calibration due: **27/01/2020**

APPENDIX B:

SUMMARY OF RESULTS

APPENDIX B: Summary of Results - Stage 2 DSI (Limited) : 211 Pacific Hwy, St Leonards NSW (EBG-02787.08.19.Stage2.DSI)
SUMMARY RESULTS – SAMPLING 1 August 2019

		METALS (mg/kg)								PAH (mg/kg)		OTHER (mg/mg)					
		As	Cd	Cr	Cu	Pb	Hg	Ni	Zn	Tot. PAH	BaP TEQ						
NEPM HIL A		100	20	100	6K	300	40	400	7.4K	300	3	PCB	PID ppm	OCP	OPP	Asbestos ID in Soils	Asbestos ID NEPM Est. of FA & AF (w/w) %
1	0.1	5	<0.3	20	14	25	<0.05	1.8	36	<0.8	<0.2	<DL	2.3	<DL	<DL	ND	0.0000%
1	0.6	3	<0.3	44	10	63	0.08	1.7	97	<0.8	<0.2	-	5.5	-	-		
2	0.1	5	<0.3	24	19	44	<0.05	2.6	60	4.6	0.6	<DL	1.1	<DL	<DL	ND	0.0000%
3	0.1	8	<0.3	17	19	100	0.07	3.2	100	3.4	0.5	<DL	1.7	<DL	<DL	ND	0.0000%
4	0.15	5	<0.3	32	16	100	0.06	1.7	52	1.4	0.2	<DL	2.8	<DL	<DL	ND	0.0000%
4	Dup Intra	6	<0.3	35	17	110	0.09	1.8	54	-		-	-	-	-		
5	0.2	9	<0.3	23	45	200	0.26	4.3	140	13	1.9	<DL	2.2	<DL	<DL	ND	0.0000%
5	0.6	5	<0.3	43	2.3	19	0.06	0.8	7.2	<0.8	<0.2	-	4.5	-	-		
6	0.2	5	<0.3	19	23	74	0.05	3	74	2.7	0.4	<DL	5.4	<DL	<DL	ND	0.0000%
7	0.3	7	<0.3	31	23	71	0.06	1.9	85	2.5	0.4	<DL	1.0	<DL	<DL	ND	0.0000%
7	Dup Inter	7.2	0.3	42	24	67	0.05	11	90				-				
8	0.1	7	<0.3	25	57	93	0.1	3.9	110	6.0	0.9	<DL	2.5	<DL	<DL	ND	0.0000%
9	0.3	5	<0.3	29	23	86	0.06	2.3	76	12	1.4	-	1.4	-	-	ND	0.0000%
10	0.1	4	<0.3	40	23	130	0.1	1.9	170	3.3	0.5	-	1.1	-	-	ND	**0.000165%**
11	0.15	4	<0.3	9.4	24	34	0.06	3.3	52	<0.8	<0.2	<DL	4.3	<DL	<DL	ND	0.0000%
11	1.0	5	<0.3	51	1.9	18	<0.05	0.6	7.8	<0.8	<0.2	-	6.7	-	-	-	
Stockpile #1		8	0.5	24	62	90	0.07	2.8	98	1.7	0.3	-	-	-	-	ND	0.0000%
Stockpile #2		6	<0.3	30	29	110	0.1	2.9	140	1.4	<0.2	-	-	-	-	ND	0.0000%
Stockpile #3		3	<0.3	40	15	88	0.07	2.4	160	1.5	<0.2	-	-	-	-	ND	0.0000%
Stockpile #4		4	<0.3	27	23	180	0.07	3.9	94	1.6	<0.2	-	-	-	-	ND	0.0000%
No. of Samples		20	20	20	20	20	20	20	20	18	18						
Mean		5.56	0.3	30.27	23.51	85.1	0.078	2.89	85.15	3.28	0.48						
Standard Deviation		1.68	0	10.63	15.39	48.08	0.046	2.15	45.04	3.65	0.47						
95% UCL (mg/kg)		**6.2**	**0.3**	**34.4**	**29.5**	**103.7**	**0.1**	**3.7**	**102.6**	**4.8**	**0.67**						

METALS (mg/kg)											PAH (mg/kg)			OTHER (mg/mg)						
		As	Cd	Cr	Cu	Pb	Hg	Ni	Zn		Tot. PAH	BaP TEQ		PCB	PID ppm	OCP	OPP	Asbestos ID in Soils	Asbestos ID NEPM Est. of FA & AF (w/w) %	
NEPM HIL A		100	20	100	6K	300	40	400	7.4K		300	3								
RIN	ug/L	1	<0.1	<1	<1	<1	<0.0001	<1	<5											
TB	Mg/kg	<1	<0.3	<0.5	<0.5	<1	<0.05	0.7	<2											

DL - Detection Limit ND – Not detected

PETROLEUM HYDROCARBONS																		
		BTEX (benzene, toluene, ethylbenzene, xylene)+Naphthalene (mg/kg)							TRH (total recoverable hydrocarbons) (mg/kg)								
BH	DEPTH (m)	F1	B	T	E	X	N		C6-C9	C6-C10	C10-C14	C15-C28	C29-C36	F2	C16-C34 (F3)	C34-C40 (F4)	Total TRH C10-C40
1	0.1	<25	<0.1	<0.1	<0.1	<0.2	<0.1		<20	<25	<20	<45	<45	<25	<90	<120	<210
2	0.1	<25	<0.1	<0.1	<0.1	<0.2	<0.1		<20	<25	<20	**72**	**120**	<25	**150**	<120	<210
3	0.1	<25	<0.1	<0.1	<0.1	<0.2	<0.1		<20	<25	<20	**45**	<45	<25	<90	<120	<210
4	0.15	<25	<0.1	<0.1	<0.1	<0.2	<0.1		<20	<25	<20	<45	<45	<25	<90	<120	<210
5	0.2	<25	<0.1	<0.1	<0.1	<0.2	<0.1		<20	<25	<20	**50**	<45	<25	<90	<120	<210
6	0.2	<25	<0.1	<0.1	<0.1	<0.2	<0.1		<20	<25	<20	<45	<45	<25	<90	<120	<210
7	0.3	<25	<0.1	<0.1	<0.1	<0.2	<0.1		<20	<25	<20	**150**	**120**	<25	**220**	<120	**220**
8	0.1	<25	<0.1	<0.1	<0.1	<0.2	<0.1		<20	<25	<20	**69**	**79**	<25	**110**	<120	<210
11	0.15	<25	<0.1	<0.1	<0.1	<0.2	<0.1		<20	<25	<20	<45	<45	<25	<90	<120	<210

APPENDIX C:

BOREHOLE LOGS (FOR AT DEPTH SAMPLES)

EBG Environmental Geoscience
(Edwards Blasche Group Pty Ltd ABN 54 085 829 250)

Environmental Borehole Log

Client: Stanton Dahl Architects
Project: Stage 2 Detailed Site Investigation
Location: 211 Pacific Hwy, St Leonards NSW
Rpt ID: 02787.08.19.Stage2DSI

Borehole No: 1
Sheet: 1
Date: 1/8/19
Logged By: ME

RL	Depth (m)	Graphic Log	Description of Strata	Sampling & In Situ Testi: Type	Depth	Sample	Results & Comments	Moisture		Observations & Sampling Details
-	0.1		FILL - brown topsoil fill with small pebbles and		0.1		PID: 2.3 ppm		-	02787/BH1/0.1
-	0.2		anthropogenic debris (small fragments of		0.2				-	
-	0.3		concrete, bricks, glass).		0.3		M		-	
-	0.4		No cement sheeting fragments observed		0.4				-	
-	0.5				0.5		M		-	
-	0.6		FILL – brown/tan silty clay (suspected relocated		0.6		PID: 5.5 ppm		-	02787/BH1/0.6
-	0.7		clays from prior on-site building works)		0.7		st		-	
-	0.8				0.8				-	
-	0.9		END		0.9				-	
-	**1**				1				-	
-	1.1				1.1				-	
-	1.2				1.2				-	
-	1.3				1.3				-	
-	1.4				1.4				-	
-	1.5				1.5				-	
-	1.6				1.6				-	
-	1.7				1.7				-	
-	1.8				1.8				-	
-	1.9				1.9				-	
-	**2**				2				-	
-	2.1				2.1				-	
-	2.2				2.2				-	
-	2.3				2.3				-	
-	2.4				2.4				-	
-	2.5				2.5				-	
-	2.6				2.6				-	
-	2.7				2.7				-	
-	2.8				2.8				-	
-	2.9				2.9				-	
-	**3**				3				-	
-	3.1				3.1				-	
-	3.2				3.2				-	
-	3.3				3.3				-	
-	3.4				3.4				-	
-	3.5				3.5				-	
-	3.6				3.6				-	
-	3.7				3.7				-	
-	3.8				3.8				-	
-	3.9				3.9				-	
-	**4**				4				-	
-	4.1				4.1				-	
-	4.2				4.2				-	
-	4.3				4.3				-	
-	4.4				4.4				-	
-	4.5				4.5				-	
-	4.6				4.6				-	
-	4.7				4.7				-	
-	4.8				4.8				-	
-	4.9				4.9				-	
-	**5**				5				-	

WEATHERING	NOTES			CONSISTENCY / DENSITY INDEX	
Fr - fresh	US - undisturbed sample	MOISTURE	STRENGTH	fb - friable	vs - very soft
SW - slightly weathered	DS - disturbed sample	D - dry	els - ext low	vl - very loose	s - soft
MW - mod weathered	N - stan. pen. test	M - moist	vls- very low	l - loose	ff - firm
HW - highly weathered	NS - spt + sample	W - wet	ls - low	md - med dense	st - stiff
EW - extremely weathered	NC - cone pntmeter		ms - med	d - dense	vst - very stiff
			hs - high	d - dense	h - hard
			vhs - very high	vd - very dense	
			ehs - ext high		

EBG Environmental Geoscience
(Edwards Blasche Group Pty Ltd ABN 54 085 829 250)

Environmental Borehole Log

Client: Stanton Dahl Architects
Project: Stage 2 Detailed Site Investigation
Location: 211 Pacific Hwy, St Leonards NSW
Rpt ID: 02787.08.19.Stage2DSI

Borehole No: 5
Sheet: 1
Date: 1/8/19
Logged By: ME

RL	Depth (m)	Graphic Log	Description of Strata	Sampling & In Situ Testi: Type	Depth	Sample	Results & Comments	Moisture		Observations & Sampling Details
-	0.1		FILL - brown topsoil fill with small pebbles and		0.1		PID: 2.2 ppm		-	02787/BH5/0.1
-	0.2		anthropogenic debris (small fragments of		0.2				-	
-	0.3		concrete, bricks, glass).		0.3		M		-	
-	0.4		No cement sheeting fragments observed		0.4				-	
-	0.5				0.5		M		-	
-	0.6		FILL – brown/tan silty clay (suspected relocated		0.6		PID: 4.5 ppm		-	02787/BH5/0.6
-	0.7		clays from prior on-site building works)		0.7		st		-	
-	0.8				0.8				-	
-	0.9				0.9				-	
-	**1**				1				-	
-	1.1				1.1				-	
-	1.2				1.2				-	
-	1.3				1.3				-	
-	1.4				1.4				-	
-	1.5				1.5				-	
-	1.6				1.6				-	
-	1.7				1.7				-	
-	1.8				1.8				-	
-	1.9				1.9				-	
-	**2**				2				-	
-	2.1				2.1				-	
-	2.2				2.2				-	
-	2.3				2.3				-	
-	2.4				2.4				-	
-	2.5				2.5				-	
-	2.6				2.6				-	
-	2.7				2.7				-	
-	2.8				2.8				-	
-	2.9				2.9				-	
-	**3**				3				-	
-	3.1				3.1				-	
-	3.2				3.2				-	
-	3.3				3.3				-	
-	3.4				3.4				-	
-	3.5				3.5				-	
-	3.6				3.6				-	
-	3.7				3.7				-	
-	3.8				3.8				-	
-	3.9				3.9				-	
-	**4**				4				-	
-	4.1				4.1				-	
-	4.2				4.2				-	
-	4.3				4.3				-	
-	4.4				4.4				-	
-	4.5				4.5				-	
-	4.6				4.6				-	
-	4.7				4.7				-	
-	4.8				4.8				-	
-	4.9				4.9				-	
-	**5**				5				-	

WEATHERING	NOTES			CONSISTENCY / DENSITY INDEX	
Fr - fresh	US - undisturbed sample	MOISTURE	STRENGTH	fb - friable	vs - very soft
SW - slightly weathered	DS - disturbed sample	D - dry	els - ext low	vl - very loose	s - soft
MW - mod weathered	N - stan. pen. test	M - moist	vls- very low	l - loose	ff - firm
HW - highly weathered	NS - spt + sample	W - wet	ls - low	md - med dense	st - stiff
EW - extremely weathered	NC - cone pntmeter		ms - med	d - dense	vst - very stiff
			hs - high	d - dense	h - hard
			vhs - very high	vd - very dense	
			ehs - ext high		

EBG Environmental Geoscience
(Edwards Blasche Group Pty Ltd ABN 54 085 829 250)

Environmental Borehole Log

Client: Stanton Dahl Architects
Project: Stage 2 Detailed Site Investigation
Location: 211 Pacific Hwy, St Leonards NSW
Rpt ID: 02787.08.19.Stage2DSI

Borehole No: 11
Sheet: 1
Date: 1/8/19
Logged By: ME

RL	Depth (m)	Graphic Log	Description of Strata	Sampling & In Situ Testi: Type	Depth	Sample	Results & Comments	Moisture		Observations & Sampling Details
-	0.1		FILL - brown topsoil fill with small pebbles and		0.1		PID: 4.3 ppm		-	02787/BH11/0.15
-	0.2		anthropogenic debris (small fragments of		0.2				-	
-	0.3		concrete, bricks, glass).		0.3		M		-	
-	0.4		No cement sheeting fragments observed		0.4				-	
-	0.5				0.5		M + st		-	
-	0.6				0.6		PID: 6.7 ppm		-	
-	0.7		FILL – brown/tan silty clay (suspected relocated		0.7				-	
-	0.8		clays from prior on-site building works)		0.8				-	
-	0.9				0.9		D + st		-	
-	**1**				1				-	02787/BH11/1.0
-	1.1				1.1				-	
-	1.2		END		1.2				-	
-	1.3				1.3				-	
-	1.4				1.4				-	
-	1.5				1.5				-	
-	1.6				1.6				-	
-	1.7				1.7				-	
-	1.8				1.8				-	
-	1.9				1.9				-	
-	**2**				2				-	
-	2.1				2.1				-	
-	2.2				2.2				-	
-	2.3				2.3				-	
-	2.4				2.4				-	
-	2.5				2.5				-	
-	2.6				2.6				-	
-	2.7				2.7				-	
-	2.8				2.8				-	
-	2.9				2.9				-	
-	**3**				3				-	
-	3.1				3.1				-	
-	3.2				3.2				-	
-	3.3				3.3				-	
-	3.4				3.4				-	
-	3.5				3.5				-	
-	3.6				3.6				-	
-	3.7				3.7				-	
-	3.8				3.8				-	
-	3.9				3.9				-	
-	**4**				4				-	
-	4.1				4.1				-	
-	4.2				4.2				-	
-	4.3				4.3				-	
-	4.4				4.4				-	
-	4.5				4.5				-	
-	4.6				4.6				-	
-	4.7				4.7				-	
-	4.8				4.8				-	
-	4.9				4.9				-	
-	**5**				5				-	

WEATHERING	NOTES			CONSISTENCY / DENSITY INDEX	
Fr - fresh	US - undisturbed sample	MOISTURE	STRENGTH	fb - friable	vs - very soft
SW - slightly weathered	DS - disturbed sample	D - dry	els - ext low	vl - very loose	s - soft
MW - mod weathered	N - stan. pen. test	M - moist	vls- very low	l - loose	ff - firm
HW - highly weathered	NS - spt + sample	W - wet	ls - low	md - med dense	st - stiff
EW - extremely weathered	NC - cone pntmeter		ms - med	d - dense	vst - very stiff
			hs - high	d - dense	h - hard
			vhs - very high	vd - very dense	
			ehs - ext high		

APPENDIX D:

CHAIN OF CUSTODY AND LABORATORY RESULTS

AIRSAFE

Beattie Street Balmain NSW 2041 Australia
info@airsafe.net.au | www.airsafe.net.au

1 of 3

CHAIN OF CUSTODY

QUOTE NO:

PROJECT NAME:	Stage 2 DSI - 211 Pacific Hwy, St Leonards
JOB NO:	02787.07.19
CONTACT:	Simon Gorham
REPORT TO:	info@airsafe.net.au
PRIOR STORAGE:	Esky / Fridge / Ice

TO: SGS Australia Pty Ltd
Environmental Services
Unit 16/33 Maddox Street
Alexandria NSW 2015

CONTACT: T. 02 8594 0400
F. 02 8594 0499
E: au.samplereciept.sydney@sgs.com

	Sample Information				Tests Required											Comments
					Inorganics		Organics					Cont. Suites / Other				Provide as much information as possible
	Sample ID	Date Sampled	Sampled By	Sample Type	Metals x8	Pb	BTEX	TRH	PAHs	OC/OP Pest	PCBs	Suite: CL17				
1	02787/BH1/0.1	1/8/19	ME	Soil								X				
2	02787/BH1/0.6				X				X							
3	02787/BH2/0.1											X				
4	02787/BH3/0.1											X				
5	02787/BH4/0.15											X				
6	02787/BH4/0.P Intai				X											
7	02787/BH5/0.2											X				
8	02787/BH5/0.6				X				X							
9	02787/BH6/0.2											X				
10	02787/BH7/0.3											X				

SGS EHS Alexandria Laboratory
SE195986 COC
Received: 01-Aug-2019

Relinquished By (Company): Airsafe OHC Pty Ltd	Received By (Company):	Turnaround Time:	24 hour	
Print Name: Benjamin Willetts	Print Name: Suba		24-36 hours	
Date and Time:	Date and Time: 01/08/19 @ 4.~		36-48 hours	
Signature:	Signature:		3 days	
			Standard	X

AIRSAFE

93 Beattie Street Balmain NSW 2041 Australia
T 02 9555 9034 | F 02 9555 9035
info@airsafe.net.au | www.airsafe.net.au

CHAIN OF CUSTODY

QUOTE NO:

PROJECT NAME: Stage 2 DSI - 211 Pacific Hwy, St Leonards
JOB NO: 02787.07.19

CONTACT: Simon Gorham

REPORT TO: info@airsafe.net.au

PRIOR STORAGE: Esky / Fridge / Ice

TO: SGS Australia Pty Ltd
Environmental Services
Unit 16/33 Maddox Street
Alexandria NSW 2015

CONTACT:
T. 02 8594 0400
F. 02 8594 0499
E: au.samplereciept.sydney@sgs.com

	Sample Information				Tests Required											Comments
					Inorganics		Organics					Cont. Suites / Other				Provide as much information as possible
	Sample ID	Date Sampled	Sampled By	Sample Type	Metals x8	Pb	BTEX	TRH	PAHs	OC/OP Pest	PCBs	Suite: CL17				
11	02787/BH8/0.1	1/8/19	ME	Soil								X				
12	02787/BH9/0.3	↓	↓	↓	X				X							
13	02787/BH10/0.1				X				X							
14	02787/BH11/0.15											X				
15	02787/BH11/1.0				X				X							
16	02787/SP1				X				X							
17	02787/SP2				X				X							
18	02787/SP3				X				X							
19	02787/SP4				X				X							
20	02787/TB				X											

Relinquished By (Company): Airsafe OHC Pty Ltd ME	Received By (Company):	Turnaround Time:	24 hour	
Print Name: Benjamin Willetts	Print Name: Suba		24-36 hours	
Date and Time:	Date and Time: 01/08/19 @ 4—		36-48 hours	
Signature:	Signature: [signature]		3 days	
			Standard	X

93 Beattie Street Balmain NSW 2041 Australia
T. 02 9555 9064 | F. 02 9555 9035
info@airsafe.net.au | www.airsafe.net.au
ABN 56 002 474 948

3 of 3

CHAIN OF CUSTODY

PROJECT NAME: Stage 2 DSI - 211 Pacific Hwy, St Leonards
JOB NO: 02787.07.19

CONTACT: Simon Gorham

REPORT TO: info@airsafe.net.au

PRIOR STORAGE: Esky / Fridge / Ice

QUOTE NO:

TO: SGS Australia Pty Ltd
Environmental Services
Unit 16/33 Maddox Street
Alexandria NSW 2015

CONTACT: T. 02 8594 0400
F. 02 8594 0499
E: au.samplereciept.sydney@sgs.com

Sample Information				Tests Required											Comments
Sample ID	Date Sampled	Sampled By	Sample Type	Inorganics		Organics					Cont. Suites / Other				Provide as much information as possible
				Metals x8	Pb	BTEX	TRH	PAHs	OC/OP Pest	PCBs	Suite: CL17				
21 02787/AIN	1/8/19	ME	Water	X											

Relinquished By (Company): Airsafe OHC Pty Ltd ME	Received By (Company):	Turnaround Time:	24 hour	
Print Name: Benjamin Willetts	Print Name: Suba		24-36 hours	
Date and Time:	Date and Time: 01/08/19 @ 4 ~		36-48 hours	
Signature:	Signature:		3 days	
			Standard	X

SAMPLE RECEIPT ADVICE

SE195986

CLIENT DETAILS

Contact	Simon Gorham
Client	AIRSAFE OHC PTY LTD
Address	93 BEATTIE STREET BALMAIN NSW 2041
Telephone	61 2 95559034
Facsimile	(Not specified)
Email	info@airsafe.net.au
Project	**02787.07.19 Stage 2 DSI-211 Pacific Hwy**
Order Number	**02787.07.19**
Samples	21

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	Thu 1/8/2019
Report Due	Thu 8/8/2019
SGS Reference	**SE195986**

SUBMISSION DETAILS

This is to confirm that 21 samples were received on Thursday 1/8/2019. Results are expected to be ready by COB Thursday 8/8/2019. Please quote SGS reference SE195986 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	20 Soil, 1 Water
Date documentation received	1/8/2019	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	5.4°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

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

COMMENTS

SAMPLE RECEIPT ADVICE

SE195986

CLIENT DETAILS

Client AIRSAFE OHC PTY LTD

Project 02787.07.19 Stage 2 DSI-211 Pacific Hwy

SUMMARY OF ANALYSIS

No.	Sample ID	OC Pesticides in Soil	OP Pesticides in Soil	PAH (Polynuclear Aromatic Hydrocarbons) in Soil	PCBs in Soil	Total Recoverable Elements in Soil/Waste	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
001	02787/BH1/0.1	29	14	26	11	7	10	11	7
002	02787/BH1/0.6	-	-	26	-	7	-	-	-
003	02787/BH2/0.1	29	14	26	11	7	10	11	7
004	02787/BH3/0.1	29	14	26	11	7	10	11	7
005	02787/BH4/0.15	29	14	26	11	7	10	11	7
006	02787/BH4/Dup Intra	-	-	-	-	7	-	-	-
007	02787/BH5/0.2	29	14	26	11	7	10	11	7
008	02787/BH5/0.6	-	-	26	-	7	-	-	-
009	02787/BH6/0.2	29	14	26	11	7	10	11	7
010	02787/BH7/0.3	29	14	26	11	7	10	11	7
011	02787/BH8/0.1	29	14	26	11	7	10	11	7
012	02787/BH9/0.3	-	-	26	-	7	-	-	-
013	02787/BH10/0.1	-	-	26	-	7	-	-	-
014	02787/BH11/0.15	29	14	26	11	7	10	11	7
015	02787/BH11/0.10	-	-	26	-	7	-	-	-
016	02787/SP1	-	-	26	-	7	-	-	-
017	02787/SP2	-	-	26	-	7	-	-	-
018	02787/SP3	-	-	26	-	7	-	-	-
019	02787/SP4	-	-	26	-	7	-	-	-
020	02787/TB	-	-	-	-	7	-	-	-

CONTINUED OVERLEAF

The above table represents SGS' 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

SE195986

CLIENT DETAILS

Client AIRSAFE OHC PTY LTD

Project 02787.07.19 Stage 2 DSI-211 Pacific Hwy

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury (dissolved) in Water	Mercury in Soil	Moisture Content	Trace Metals (Dissolved) in Water by ICPMS
001	02787/BH1/0.1	-	1	1	-
002	02787/BH1/0.6	-	1	1	-
003	02787/BH2/0.1	-	1	1	-
004	02787/BH3/0.1	-	1	1	-
005	02787/BH4/0.15	-	1	1	-
006	02787/BH4/Dup Intra	-	1	1	-
007	02787/BH5/0.2	-	1	1	-
008	02787/BH5/0.6	-	1	1	-
009	02787/BH6/0.2	-	1	1	-
010	02787/BH7/0.3	-	1	1	-
011	02787/BH8/0.1	-	1	1	-
012	02787/BH9/0.3	-	1	1	-
013	02787/BH10/0.1	-	1	1	-
014	02787/BH11/0.15	-	1	1	-
015	02787/BH11/0.10	-	1	1	-
016	02787/SP1	-	1	1	-
017	02787/SP2	-	1	1	-
018	02787/SP3	-	1	1	-
019	02787/SP4	-	1	1	-
020	02787/TB	-	1	1	-
021	02787/RIN	1	-	-	7

The above table represents SGS' 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

Accreditation No. 2562

CLIENT DETAILS		LABORATORY DETAILS	
Contact	Simon Gorham	Manager	Huong Crawford
Client	AIRSAFE OHC PTY LTD	Laboratory	SGS Alexandria Environmental
Address	93 BEATTIE STREET BALMAIN NSW 2041	Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	61 2 95559034	Telephone	+61 2 8594 0400
Facsimile	(Not specified)	Facsimile	+61 2 8594 0499
Email	info@airsafe.net.au	Email	au.environmental.sydney@sgs.com
Project	**02787.07.19 Stage 2 DSI-211 Pacific Hwy**	SGS Reference	**SE195986 R1**
Order Number	**02787.07.19**	Date Received	01 Aug 2019
Samples	21	Date Reported	14 Aug 2019

COMMENTS

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

This report cancels and supersedes the report No.SE195986 R0 dated 09/08/19 issued by SGS Environment, Health and Safety due to amended sample description for sample #15 as per COC.

SIGNATORIES

Akheeqar Beniameen
Chemist

Bennet Lo
Senior Organic Chemist/Metals Chemis

Dong Liang
Metals/Inorganics Team Leader

Kamrul Ahsan
Senior Chemist

Ly Kim Ha
Organic Section Head

Parameter	Units	LOR	Sample Number: SE195986.001 Sample Matrix: Soil Sample Date: 01 Aug 2019 Sample Name: 02787/BH1/0.1	SE195986.002 Soil 01 Aug 2019 02787/BH1/0.6	SE195986.003 Soil 01 Aug 2019 02787/BH2/0.1	SE195986.004 Soil 01 Aug 2019 02787/BH3/0.1
VOC's in Soil Method: AN433 Tested: 2/8/2019						
Monocyclic Aromatic Hydrocarbons						
Benzene	mg/kg	0.1	<0.1	-	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	-	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	-	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	-	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	-	<0.1	<0.1
Polycyclic VOCs						
Naphthalene	mg/kg	0.1	<0.1	-	<0.1	<0.1
Surrogates						
d4-1,2-dichloroethane (Surrogate)	%	-	**121**	-	**126**	**121**
d8-toluene (Surrogate)	%	-	**98**	-	**97**	**97**
Bromofluorobenzene (Surrogate)	%	-	**93**	-	**94**	**91**
Totals						
Total Xylenes	mg/kg	0.3	<0.3	-	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	-	<0.6	<0.6
Volatile Petroleum Hydrocarbons in Soil Method: AN433 Tested: 2/8/2019						
TRH C6-C10	mg/kg	25	<25	-	<25	<25
TRH C6-C9	mg/kg	20	<20	-	<20	<20
Surrogates						
d4-1,2-dichloroethane (Surrogate)	%	-	**121**	-	**126**	**121**
d8-toluene (Surrogate)	%	-	**98**	-	**97**	**97**
Bromofluorobenzene (Surrogate)	%	-	**93**	-	**94**	**91**
VPH F Bands						
Benzene (F0)	mg/kg	0.1	<0.1	-	<0.1	<0.1
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	-	<25	<25

Parameter	Units	LOR	Sample Number: SE195986.001 Sample Matrix: Soil Sample Date: 01 Aug 2019 Sample Name: 02787/BH1/0.1	SE195986.002 Soil 01 Aug 2019 02787/BH1/0.6	SE195986.003 Soil 01 Aug 2019 02787/BH2/0.1	SE195986.004 Soil 01 Aug 2019 02787/BH3/0.1
TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403 Tested: 2/8/2019						
TRH C10-C14	mg/kg	20	<20	-	<20	<20
TRH C15-C28	mg/kg	45	<45	-	**72**	**45**
TRH C29-C36	mg/kg	45	<45	-	**120**	<45
TRH C37-C40	mg/kg	100	<100	-	<100	<100
TRH C10-C36 Total	mg/kg	110	<110	-	**190**	<110
TRH C10-C40 Total (F bands)	mg/kg	210	<210	-	<210	<210
TRH F Bands						
TRH >C10-C16	mg/kg	25	<25	-	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	-	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	-	**150**	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	-	<120	<120
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 Tested: 2/8/2019						
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	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	**0.3**	**0.2**
Anthracene	mg/kg	0.1	<0.1	<0.1	**0.1**	<0.1
Fluoranthene	mg/kg	0.1	**0.2**	**0.1**	**0.8**	**0.6**
Pyrene	mg/kg	0.1	**0.2**	**0.1**	**0.9**	**0.6**
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	**0.4**	**0.3**
Chrysene	mg/kg	0.1	<0.1	<0.1	**0.4**	**0.3**
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	**0.4**	**0.4**
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	**0.3**	**0.2**
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	**0.5**	**0.4**
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	**0.2**	**0.2**
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	**0.2**	**0.2**
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	**0.6**	**0.5**
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	**0.7**	**0.6**
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	**0.6**	**0.5**
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	**4.6**	**3.4**
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	**4.6**	**3.4**
Surrogates						
d5-nitrobenzene (Surrogate)	%	-	**90**	**80**	**86**	**88**
2-fluorobiphenyl (Surrogate)	%	-	**88**	**82**	**88**	**92**
d14-p-terphenyl (Surrogate)	%	-	**88**	**82**	**86**	**90**
OC Pesticides in Soil Method: AN420 Tested: 2/8/2019						
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	-	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	-	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	-	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	-	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	-	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	-	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	-	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	-	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	-	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	-	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	-	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	-	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	-	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	-	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	-	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	-	<0.2	<0.2

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name SE195986.001 Soil 01 Aug 2019 02787/BH1/0.1	SE195986.002 Soil 01 Aug 2019 02787/BH1/0.6	SE195986.003 Soil 01 Aug 2019 02787/BH2/0.1	SE195986.004 Soil 01 Aug 2019 02787/BH3/0.1
OC Pesticides in Soil Method: AN420 Tested: 2/8/2019 (continued)						
o,p'-DDD	mg/kg	0.1	<0.1	-	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	-	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	-	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	-	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	-	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	-	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	-	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	-	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	-	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	-	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	-	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	-	<1	<1
Surrogates						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	**92**	-	**93**	**91**
OP Pesticides in Soil Method: AN420 Tested: 2/8/2019						
Dichlorvos	mg/kg	0.5	<0.5	-	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	-	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	-	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	-	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	-	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	-	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	-	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	-	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	-	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	-	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	-	<0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7	-	<1.7	<1.7
Surrogates						
2-fluorobiphenyl (Surrogate)	%	-	**88**	-	**88**	**92**
d14-p-terphenyl (Surrogate)	%	-	**88**	-	**86**	**90**
PCBs in Soil Method: AN420 Tested: 2/8/2019						
Arochlor 1016	mg/kg	0.2	<0.2	-	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	-	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	-	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	-	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	-	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	-	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	-	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	-	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	-	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	-	<1	<1
Surrogates						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	**92**	-	**93**	**91**

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name SE195986.001 Soil 01 Aug 2019 02787/BH1/0.1	SE195986.002 Soil 01 Aug 2019 02787/BH1/0.6	SE195986.003 Soil 01 Aug 2019 02787/BH2/0.1	SE195986.004 Soil 01 Aug 2019 02787/BH3/0.1
Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES Method: AN040/AN320 Tested: 5/8/2019						
Arsenic, As	mg/kg	1	**5**	**3**	**5**	**8**
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	**20**	**44**	**24**	**17**
Copper, Cu	mg/kg	0.5	**14**	**10**	**19**	**19**
Nickel, Ni	mg/kg	0.5	**1.8**	**1.7**	**2.6**	**3.2**
Lead, Pb	mg/kg	1	**25**	**63**	**44**	**100**
Zinc, Zn	mg/kg	2	**36**	**97**	**60**	**100**
Mercury in Soil Method: AN312 Tested: 5/8/2019						
Mercury	mg/kg	0.05	<0.05	**0.08**	<0.05	**0.07**
Moisture Content Method: AN002 Tested: 2/8/2019						
% Moisture	%w/w	0.5	**22**	**22**	**20**	**22**
Trace Metals (Dissolved) in Water by ICPMS Method: AN318 Tested: 5/8/2019						
Arsenic, As	µg/L	1	-	-	-	-
Cadmium, Cd	µg/L	0.1	-	-	-	-
Chromium, Cr	µg/L	1	-	-	-	-
Copper, Cu	µg/L	1	-	-	-	-
Lead, Pb	µg/L	1	-	-	-	-
Nickel, Ni	µg/L	1	-	-	-	-
Zinc, Zn	µg/L	5	-	-	-	-
Mercury (dissolved) in Water Method: AN311(Perth)/AN312 Tested: 2/8/2019						
Mercury	mg/L	0.0001	-	-	-	-

Parameter	Units	LOR	Sample Number: SE195986.005 Sample Matrix: Soil Sample Date: 01 Aug 2019 Sample Name: 02787/BH4/0.15	SE195986.006 Soil 01 Aug 2019 02787/BH4/Dup Intra	SE195986.007 Soil 01 Aug 2019 02787/BH5/0.2	SE195986.008 Soil 01 Aug 2019 02787/BH5/0.6
VOC's in Soil Method: AN433 Tested: 2/8/2019						
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	-
o-xylene	mg/kg	0.1	<0.1	-	<0.1	-
Polycyclic VOCs						
Naphthalene	mg/kg	0.1	<0.1	-	<0.1	-
Surrogates						
d4-1,2-dichloroethane (Surrogate)	%	-	**127**	-	**117**	-
d8-toluene (Surrogate)	%	-	**100**	-	**99**	-
Bromofluorobenzene (Surrogate)	%	-	**94**	-	**93**	-
Totals						
Total Xylenes	mg/kg	0.3	<0.3	-	<0.3	-
Total BTEX	mg/kg	0.6	<0.6	-	<0.6	-
Volatile Petroleum Hydrocarbons in Soil Method: AN433 Tested: 2/8/2019						
TRH C6-C10	mg/kg	25	<25	-	<25	-
TRH C6-C9	mg/kg	20	<20	-	<20	-
Surrogates						
d4-1,2-dichloroethane (Surrogate)	%	-	**127**	-	**117**	-
d8-toluene (Surrogate)	%	-	**100**	-	**99**	-
Bromofluorobenzene (Surrogate)	%	-	**94**	-	**93**	-
VPH F Bands						
Benzene (F0)	mg/kg	0.1	<0.1	-	<0.1	-
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	-	<25	-

Parameter	Units	LOR	Sample Number: SE195986.005 Sample Matrix: Soil Sample Date: 01 Aug 2019 Sample Name: 02787/BH4/0.15	SE195986.006 Soil 01 Aug 2019 02787/BH4/Dup Intra	SE195986.007 Soil 01 Aug 2019 02787/BH5/0.2	SE195986.008 Soil 01 Aug 2019 02787/BH5/0.6
TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403 Tested: 2/8/2019						
TRH C10-C14	mg/kg	20	<20	-	<20	-
TRH C15-C28	mg/kg	45	<45	-	**50**	-
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 (F bands)	mg/kg	210	<210	-	<210	-
TRH F Bands						
TRH >C10-C16	mg/kg	25	<25	-	<25	-
TRH >C10-C16 - Naphthalene (F2)	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 Tested: 2/8/2019						
Naphthalene	mg/kg	0.1	<0.1	-	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	-	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	-	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	-	**0.2**	<0.1
Acenaphthene	mg/kg	0.1	<0.1	-	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	-	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	-	**0.9**	<0.1
Anthracene	mg/kg	0.1	<0.1	-	**0.2**	<0.1
Fluoranthene	mg/kg	0.1	**0.3**	-	**2.2**	**0.2**
Pyrene	mg/kg	0.1	**0.3**	-	**2.1**	**0.2**
Benzo(a)anthracene	mg/kg	0.1	**0.1**	-	**1.1**	**0.1**
Chrysene	mg/kg	0.1	**0.1**	-	**1.1**	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	**0.2**	-	**1.5**	**0.1**
Benzo(k)fluoranthene	mg/kg	0.1	**0.1**	-	**0.7**	<0.1
Benzo(a)pyrene	mg/kg	0.1	**0.2**	-	**1.4**	**0.1**
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	**0.1**	-	**0.8**	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	-	**0.1**	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	-	**0.7**	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	**0.2**	-	**1.9**	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	**0.3**	-	**1.9**	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	**0.3**	-	**1.9**	<0.2
Total PAH (18)	mg/kg	0.8	**1.4**	-	**13**	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	**1.4**	-	**13**	<0.8
Surrogates						
d5-nitrobenzene (Surrogate)	%	-	**92**	-	**82**	**90**
2-fluorobiphenyl (Surrogate)	%	-	**94**	-	**88**	**92**
d14-p-terphenyl (Surrogate)	%	-	**90**	-	**82**	**88**
OC Pesticides in Soil Method: AN420 Tested: 2/8/2019						
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	-

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name SE195986.005 Soil 01 Aug 2019 02787/BH4/0.15	SE195986.006 Soil 01 Aug 2019 02787/BH4/Dup Intra	SE195986.007 Soil 01 Aug 2019 02787/BH5/0.2	SE195986.008 Soil 01 Aug 2019 02787/BH5/0.6
OC Pesticides in Soil Method: AN420 Tested: 2/8/2019 (continued)						
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	-
Total CLP OC Pesticides	mg/kg	1	<1	-	<1	-
Surrogates						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	**89**	-	**99**	-
OP Pesticides in Soil Method: AN420 Tested: 2/8/2019						
Dichlorvos	mg/kg	0.5	<0.5	-	<0.5	-
Dimethoate	mg/kg	0.5	<0.5	-	<0.5	-
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	-	<0.5	-
Fenitrothion	mg/kg	0.2	<0.2	-	<0.2	-
Malathion	mg/kg	0.2	<0.2	-	<0.2	-
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	-	<0.2	-
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	-	<0.2	-
Bromophos Ethyl	mg/kg	0.2	<0.2	-	<0.2	-
Methidathion	mg/kg	0.5	<0.5	-	<0.5	-
Ethion	mg/kg	0.2	<0.2	-	<0.2	-
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	-	<0.2	-
Total OP Pesticides*	mg/kg	1.7	<1.7	-	<1.7	-
Surrogates						
2-fluorobiphenyl (Surrogate)	%	-	**94**	-	**88**	-
d14-p-terphenyl (Surrogate)	%	-	**90**	-	**82**	-
PCBs in Soil Method: AN420 Tested: 2/8/2019						
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	-
Surrogates						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	**89**	-	**99**	-

Parameter	Units	LOR	Sample Number: SE195986.005 Sample Matrix: Soil Sample Date: 01 Aug 2019 Sample Name: 02787/BH4/0.15	SE195986.006 Soil 01 Aug 2019 02787/BH4/Dup Intra	SE195986.007 Soil 01 Aug 2019 02787/BH5/0.2	SE195986.008 Soil 01 Aug 2019 02787/BH5/0.6
Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES Method: AN040/AN320 Tested: 5/8/2019						
Arsenic, As	mg/kg	1	**5**	**6**	**9**	**5**
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	**32**	**35**	**23**	**43**
Copper, Cu	mg/kg	0.5	**16**	**17**	**45**	**2.3**
Nickel, Ni	mg/kg	0.5	**1.7**	**1.8**	**4.3**	**0.8**
Lead, Pb	mg/kg	1	**100**	**110**	**200**	**19**
Zinc, Zn	mg/kg	2	**52**	**54**	**140**	**7.2**
Mercury in Soil Method: AN312 Tested: 5/8/2019						
Mercury	mg/kg	0.05	**0.06**	**0.09**	**0.26**	**0.06**
Moisture Content Method: AN002 Tested: 2/8/2019						
% Moisture	%w/w	0.5	**21**	**23**	**22**	**23**
Trace Metals (Dissolved) in Water by ICPMS Method: AN318 Tested: 5/8/2019						
Arsenic, As	µg/L	1	-	-	-	-
Cadmium, Cd	µg/L	0.1	-	-	-	-
Chromium, Cr	µg/L	1	-	-	-	-
Copper, Cu	µg/L	1	-	-	-	-
Lead, Pb	µg/L	1	-	-	-	-
Nickel, Ni	µg/L	1	-	-	-	-
Zinc, Zn	µg/L	5	-	-	-	-
Mercury (dissolved) in Water Method: AN311(Perth)/AN312 Tested: 2/8/2019						
Mercury	mg/L	0.0001	-	-	-	-

Parameter	Units	LOR	Sample Number: SE195986.009 Sample Matrix: Soil Sample Date: 01 Aug 2019 Sample Name: 02787/BH6/0.2	SE195986.010 Soil 01 Aug 2019 02787/BH7/0.3	SE195986.011 Soil 01 Aug 2019 02787/BH8/0.1	SE195986.012 Soil 01 Aug 2019 02787/BH9/0.3
VOC's in Soil Method: AN433 Tested: 2/8/2019						
Monocyclic Aromatic Hydrocarbons						
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	-
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	-
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	-
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	-
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	-
Polycyclic VOCs						
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	-
Surrogates						
d4-1,2-dichloroethane (Surrogate)	%	-	**117**	**150**	**102**	-
d8-toluene (Surrogate)	%	-	**103**	**100**	**96**	-
Bromofluorobenzene (Surrogate)	%	-	**94**	**88**	**87**	-
Totals						
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	-
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	-
Volatile Petroleum Hydrocarbons in Soil Method: AN433 Tested: 2/8/2019						
TRH C6-C10	mg/kg	25	<25	<25	<25	-
TRH C6-C9	mg/kg	20	<20	<20	<20	-
Surrogates						
d4-1,2-dichloroethane (Surrogate)	%	-	**117**	**150**	**102**	-
d8-toluene (Surrogate)	%	-	**103**	**100**	**96**	-
Bromofluorobenzene (Surrogate)	%	-	**94**	**88**	**87**	-
VPH F Bands						
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	-
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	-

Parameter	Units	LOR	Sample Number: SE195986.009 Sample Matrix: Soil Sample Date: 01 Aug 2019 Sample Name: 02787/BH6/0.2	SE195986.010 Soil 01 Aug 2019 02787/BH7/0.3	SE195986.011 Soil 01 Aug 2019 02787/BH8/0.1	SE195986.012 Soil 01 Aug 2019 02787/BH9/0.3
TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403 Tested: 2/8/2019						
TRH C10-C14	mg/kg	20	<20	<20	<20	-
TRH C15-C28	mg/kg	45	<45	**150**	**69**	-
TRH C29-C36	mg/kg	45	<45	**120**	**79**	-
TRH C37-C40	mg/kg	100	<100	<100	<100	-
TRH C10-C36 Total	mg/kg	110	<110	**280**	**150**	-
TRH C10-C40 Total (F bands)	mg/kg	210	<210	**220**	<210	-
TRH F Bands						
TRH >C10-C16	mg/kg	25	<25	<25	<25	-
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	-
TRH >C16-C34 (F3)	mg/kg	90	<90	**220**	**110**	-
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	-
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 Tested: 2/8/2019						
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	**0.3**
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	**0.2**	**0.1**	**0.3**	**1.3**
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	**0.4**
Fluoranthene	mg/kg	0.1	**0.4**	**0.4**	**1.0**	**2.0**
Pyrene	mg/kg	0.1	**0.5**	**0.4**	**1.0**	**1.9**
Benzo(a)anthracene	mg/kg	0.1	**0.2**	**0.2**	**0.6**	**0.9**
Chrysene	mg/kg	0.1	**0.3**	**0.2**	**0.6**	**0.9**
Benzo(b&j)fluoranthene	mg/kg	0.1	**0.3**	**0.3**	**0.9**	**1.2**
Benzo(k)fluoranthene	mg/kg	0.1	**0.2**	**0.2**	**0.4**	**0.5**
Benzo(a)pyrene	mg/kg	0.1	**0.3**	**0.3**	**0.7**	**1.1**
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	**0.2**	**0.2**	**0.4**	**0.6**
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	**0.2**	**0.2**	**0.4**	**0.5**
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	**0.4**	**0.4**	**0.9**	**1.4**
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	**0.5**	**0.5**	**1.0**	**1.5**
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	**0.4**	**0.4**	**1.0**	**1.5**
Total PAH (18)	mg/kg	0.8	**2.7**	**2.5**	**6.0**	**12**
Total PAH (NEPM/WHO 16)	mg/kg	0.8	**2.7**	**2.5**	**6.0**	**12**
Surrogates						
d5-nitrobenzene (Surrogate)	%	-	**88**	**90**	**90**	**86**
2-fluorobiphenyl (Surrogate)	%	-	**90**	**90**	**90**	**88**
d14-p-terphenyl (Surrogate)	%	-	**84**	**86**	**82**	**80**
OC Pesticides in Soil Method: AN420 Tested: 2/8/2019						
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	-
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	-
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1	-
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	-
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	-
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	-
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	-
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	-
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	-
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	-
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	-
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	-
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	-
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	-
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2	-
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	-

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name SE195986.009 Soil 01 Aug 2019 02787/BH6/0.2	SE195986.010 Soil 01 Aug 2019 02787/BH7/0.3	SE195986.011 Soil 01 Aug 2019 02787/BH8/0.1	SE195986.012 Soil 01 Aug 2019 02787/BH9/0.3
OC Pesticides in Soil Method: AN420 Tested: 2/8/2019 (continued)						
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	-
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	-
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	-
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	-
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	-
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	-
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	-
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	-
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1	-
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	-
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	-
Total CLP OC Pesticides	mg/kg	1	<1	<1	<1	-
Surrogates						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	**93**	**95**	**96**	-
OP Pesticides in Soil Method: AN420 Tested: 2/8/2019						
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	-
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	-
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	-
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	-
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	-
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	-
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	-
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	-
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	-
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	-
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	-
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	<1.7	-
Surrogates						
2-fluorobiphenyl (Surrogate)	%	-	**90**	**90**	**90**	-
d14-p-terphenyl (Surrogate)	%	-	**84**	**86**	**82**	-
PCBs in Soil Method: AN420 Tested: 2/8/2019						
Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2	-
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2	-
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2	-
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2	-
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2	-
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2	-
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2	-
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2	-
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2	-
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1	-
Surrogates						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	**93**	**95**	**96**	-

Parameter	Units	LOR	Sample Number: SE195986.009 Sample Matrix: Soil Sample Date: 01 Aug 2019 Sample Name: 02787/BH6/0.2	SE195986.010 Soil 01 Aug 2019 02787/BH7/0.3	SE195986.011 Soil 01 Aug 2019 02787/BH8/0.1	SE195986.012 Soil 01 Aug 2019 02787/BH9/0.3
Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES Method: AN040/AN320 Tested: 5/8/2019						
Arsenic, As	mg/kg	1	**5**	**7**	**7**	**5**
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	**19**	**31**	**25**	**29**
Copper, Cu	mg/kg	0.5	**23**	**23**	**57**	**23**
Nickel, Ni	mg/kg	0.5	**3.0**	**1.9**	**3.9**	**2.3**
Lead, Pb	mg/kg	1	**74**	**71**	**93**	**86**
Zinc, Zn	mg/kg	2	**74**	**85**	**110**	**76**
Mercury in Soil Method: AN312 Tested: 5/8/2019						
Mercury	mg/kg	0.05	**0.05**	**0.06**	**0.10**	**0.08**
Moisture Content Method: AN002 Tested: 2/8/2019						
% Moisture	%w/w	0.5	**16**	**21**	**18**	**14**
Trace Metals (Dissolved) in Water by ICPMS Method: AN318 Tested: 5/8/2019						
Arsenic, As	µg/L	1	-	-	-	-
Cadmium, Cd	µg/L	0.1	-	-	-	-
Chromium, Cr	µg/L	1	-	-	-	-
Copper, Cu	µg/L	1	-	-	-	-
Lead, Pb	µg/L	1	-	-	-	-
Nickel, Ni	µg/L	1	-	-	-	-
Zinc, Zn	µg/L	5	-	-	-	-
Mercury (dissolved) in Water Method: AN311(Perth)/AN312 Tested: 2/8/2019						
Mercury	mg/L	0.0001	-	-	-	-

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name SE195986.013 Soil 01 Aug 2019 02787/BH10/0.1	SE195986.014 Soil 01 Aug 2019 02787/BH11/0.15	SE195986.015 Soil 01 Aug 2019 02787/BH11/1.0	SE195986.016 Soil 01 Aug 2019 02787/SP1
VOC's in Soil Method: AN433 Tested: 6/8/2019						
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	-	-
o-xylene	mg/kg	0.1	-	<0.1	-	-
Polycyclic VOCs						
Naphthalene	mg/kg	0.1	-	<0.1	-	-
Surrogates						
d4-1,2-dichloroethane (Surrogate)	%	-	-	**127**	-	-
d8-toluene (Surrogate)	%	-	-	**97**	-	-
Bromofluorobenzene (Surrogate)	%	-	-	**95**	-	-
Totals						
Total Xylenes	mg/kg	0.3	-	<0.3	-	-
Total BTEX	mg/kg	0.6	-	<0.6	-	-
Volatile Petroleum Hydrocarbons in Soil Method: AN433 Tested: 6/8/2019						
TRH C6-C10	mg/kg	25	-	<25	-	-
TRH C6-C9	mg/kg	20	-	<20	-	-
Surrogates						
d4-1,2-dichloroethane (Surrogate)	%	-	-	**127**	-	-
d8-toluene (Surrogate)	%	-	-	**97**	-	-
Bromofluorobenzene (Surrogate)	%	-	-	**95**	-	-
VPH F Bands						
Benzene (F0)	mg/kg	0.1	-	<0.1	-	-
TRH C6-C10 minus BTEX (F1)	mg/kg	25	-	<25	-	-

Parameter	Units	LOR	Sample Number: SE195986.013 Sample Matrix: Soil Sample Date: 01 Aug 2019 Sample Name: 02787/BH10/0.1	SE195986.014 Soil 01 Aug 2019 02787/BH11/0.15	SE195986.015 Soil 01 Aug 2019 02787/BH11/1.0	SE195986.016 Soil 01 Aug 2019 02787/SP1
TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403 Tested: 2/8/2019						
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	-	-
TRH C10-C40 Total (F bands)	mg/kg	210	-	<210	-	-
TRH F Bands						
TRH >C10-C16	mg/kg	25	-	<25	-	-
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	-	<25	-	-
TRH >C16-C34 (F3)	mg/kg	90	-	<90	-	-
TRH >C34-C40 (F4)	mg/kg	120	-	<120	-	-
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 Tested: 2/8/2019						
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	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	**0.2**	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	**0.5**	<0.1	<0.1	**0.3**
Pyrene	mg/kg	0.1	**0.5**	<0.1	<0.1	**0.3**
Benzo(a)anthracene	mg/kg	0.1	**0.3**	<0.1	<0.1	**0.2**
Chrysene	mg/kg	0.1	**0.3**	<0.1	<0.1	**0.2**
Benzo(b&j)fluoranthene	mg/kg	0.1	**0.4**	<0.1	<0.1	**0.2**
Benzo(k)fluoranthene	mg/kg	0.1	**0.2**	<0.1	<0.1	**0.1**
Benzo(a)pyrene	mg/kg	0.1	**0.4**	<0.1	<0.1	**0.2**
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	**0.2**	<0.1	<0.1	**0.1**
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	**0.2**	<0.1	<0.1	**0.1**
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	**0.5**	<0.2	<0.2	**0.3**
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	**0.6**	<0.3	<0.3	**0.4**
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	**0.6**	<0.2	<0.2	**0.3**
Total PAH (18)	mg/kg	0.8	**3.3**	<0.8	<0.8	**1.7**
Total PAH (NEPM/WHO 16)	mg/kg	0.8	**3.3**	<0.8	<0.8	**1.7**
Surrogates						
d5-nitrobenzene (Surrogate)	%	-	**90**	**86**	**94**	**70**
2-fluorobiphenyl (Surrogate)	%	-	**92**	**88**	**96**	**74**
d14-p-terphenyl (Surrogate)	%	-	**90**	**84**	**94**	**70**
OC Pesticides in Soil Method: AN420 Tested: 2/8/2019						
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	-	-
o,p'-DDE	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	-	-
trans-Nonachlor	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	-	-

Parameter	Units	LOR	Sample Number: SE195986.013 Sample Matrix: Soil Sample Date: 01 Aug 2019 Sample Name: 02787/BH10/0.1	SE195986.014 Soil 01 Aug 2019 02787/BH11/0.15	SE195986.015 Soil 01 Aug 2019 02787/BH11/1.0	SE195986.016 Soil 01 Aug 2019 02787/SP1
OC Pesticides in Soil Method: AN420 Tested: 2/8/2019 (continued)						
o,p'-DDD	mg/kg	0.1	-	<0.1	-	-
o,p'-DDT	mg/kg	0.1	-	<0.1	-	-
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	-	-
Total CLP OC Pesticides	mg/kg	1	-	<1	-	-
Surrogates						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	-	**101**	-	-
OP Pesticides in Soil Method: AN420 Tested: 2/8/2019						
Dichlorvos	mg/kg	0.5	-	<0.5	-	-
Dimethoate	mg/kg	0.5	-	<0.5	-	-
Diazinon (Dimpylate)	mg/kg	0.5	-	<0.5	-	-
Fenitrothion	mg/kg	0.2	-	<0.2	-	-
Malathion	mg/kg	0.2	-	<0.2	-	-
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	-	<0.2	-	-
Parathion-ethyl (Parathion)	mg/kg	0.2	-	<0.2	-	-
Bromophos Ethyl	mg/kg	0.2	-	<0.2	-	-
Methidathion	mg/kg	0.5	-	<0.5	-	-
Ethion	mg/kg	0.2	-	<0.2	-	-
Azinphos-methyl (Guthion)	mg/kg	0.2	-	<0.2	-	-
Total OP Pesticides*	mg/kg	1.7	-	<1.7	-	-
Surrogates						
2-fluorobiphenyl (Surrogate)	%	-	-	**88**	-	-
d14-p-terphenyl (Surrogate)	%	-	-	**84**	-	-
PCBs in Soil Method: AN420 Tested: 2/8/2019						
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	-	-
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)	%	-	-	**101**	-	-

Parameter	Units	LOR	Sample Number: SE195986.013 Sample Matrix: Soil Sample Date: 01 Aug 2019 Sample Name: 02787/BH10/0.1	SE195986.014 Soil 01 Aug 2019 02787/BH11/0.15	SE195986.015 Soil 01 Aug 2019 02787/BH11/1.0	SE195986.016 Soil 01 Aug 2019 02787/SP1
Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES Method: AN040/AN320 Tested: 5/8/2019						
Arsenic, As	mg/kg	1	**4**	**4**	**5**	**8**
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	**0.5**
Chromium, Cr	mg/kg	0.5	**40**	**9.4**	**51**	**24**
Copper, Cu	mg/kg	0.5	**23**	**24**	**1.9**	**62**
Nickel, Ni	mg/kg	0.5	**1.9**	**3.3**	**0.6**	**2.8**
Lead, Pb	mg/kg	1	**130**	**34**	**18**	**90**
Zinc, Zn	mg/kg	2	**170**	**52**	**7.8**	**98**
Mercury in Soil Method: AN312 Tested: 5/8/2019						
Mercury	mg/kg	0.05	**0.10**	**0.06**	<0.05	**0.07**
Moisture Content Method: AN002 Tested: 2/8/2019						
% Moisture	%w/w	0.5	**16**	**20**	**23**	**26**
Trace Metals (Dissolved) in Water by ICPMS Method: AN318 Tested: 5/8/2019						
Arsenic, As	µg/L	1	-	-	-	-
Cadmium, Cd	µg/L	0.1	-	-	-	-
Chromium, Cr	µg/L	1	-	-	-	-
Copper, Cu	µg/L	1	-	-	-	-
Lead, Pb	µg/L	1	-	-	-	-
Nickel, Ni	µg/L	1	-	-	-	-
Zinc, Zn	µg/L	5	-	-	-	-
Mercury (dissolved) in Water Method: AN311(Perth)/AN312 Tested: 2/8/2019						
Mercury	mg/L	0.0001	-	-	-	-

Parameter	Units	LOR	Sample Number: SE195986.017 Sample Matrix: Soil Sample Date: 01 Aug 2019 Sample Name: 02787/SP2	SE195986.018 Soil 01 Aug 2019 02787/SP3	SE195986.019 Soil 01 Aug 2019 02787/SP4	SE195986.020 Soil 01 Aug 2019 02787/TB
VOC's in Soil Method: AN433 Tested: 6/8/2019						
Monocyclic Aromatic Hydrocarbons						
Benzene	mg/kg	0.1	-	-	-	-
Toluene	mg/kg	0.1	-	-	-	-
Ethylbenzene	mg/kg	0.1	-	-	-	-
m/p-xylene	mg/kg	0.2	-	-	-	-
o-xylene	mg/kg	0.1	-	-	-	-
Polycyclic VOCs						
Naphthalene	mg/kg	0.1	-	-	-	-
Surrogates						
d4-1,2-dichloroethane (Surrogate)	%	-	-	-	-	-
d8-toluene (Surrogate)	%	-	-	-	-	-
Bromofluorobenzene (Surrogate)	%	-	-	-	-	-
Totals						
Total Xylenes	mg/kg	0.3	-	-	-	-
Total BTEX	mg/kg	0.6	-	-	-	-
Volatile Petroleum Hydrocarbons in Soil Method: AN433 Tested: 6/8/2019						
TRH C6-C10	mg/kg	25	-	-	-	-
TRH C6-C9	mg/kg	20	-	-	-	-
Surrogates						
d4-1,2-dichloroethane (Surrogate)	%	-	-	-	-	-
d8-toluene (Surrogate)	%	-	-	-	-	-
Bromofluorobenzene (Surrogate)	%	-	-	-	-	-
VPH F Bands						
Benzene (F0)	mg/kg	0.1	-	-	-	-
TRH C6-C10 minus BTEX (F1)	mg/kg	25	-	-	-	-

Parameter	Units	LOR	Sample Number: SE195986.017 Sample Matrix: Soil Sample Date: 01 Aug 2019 Sample Name: 02787/SP2	SE195986.018 Soil 01 Aug 2019 02787/SP3	SE195986.019 Soil 01 Aug 2019 02787/SP4	SE195986.020 Soil 01 Aug 2019 02787/TB
TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403 Tested: 2/8/2019						
TRH C10-C14	mg/kg	20	-	-	-	-
TRH C15-C28	mg/kg	45	-	-	-	-
TRH C29-C36	mg/kg	45	-	-	-	-
TRH C37-C40	mg/kg	100	-	-	-	-
TRH C10-C36 Total	mg/kg	110	-	-	-	-
TRH C10-C40 Total (F bands)	mg/kg	210	-	-	-	-
TRH F Bands						
TRH >C10-C16	mg/kg	25	-	-	-	-
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	-	-	-	-
TRH >C16-C34 (F3)	mg/kg	90	-	-	-	-
TRH >C34-C40 (F4)	mg/kg	120	-	-	-	-
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 Tested: 2/8/2019						
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	-
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	-
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	-
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	-
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	-
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	-
Phenanthrene	mg/kg	0.1	**0.1**	**0.1**	**0.1**	-
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	-
Fluoranthene	mg/kg	0.1	**0.3**	**0.3**	**0.3**	-
Pyrene	mg/kg	0.1	**0.3**	**0.3**	**0.3**	-
Benzo(a)anthracene	mg/kg	0.1	**0.1**	**0.1**	**0.2**	-
Chrysene	mg/kg	0.1	**0.2**	**0.2**	**0.2**	-
Benzo(b&j)fluoranthene	mg/kg	0.1	**0.2**	**0.2**	**0.2**	-
Benzo(k)fluoranthene	mg/kg	0.1	**0.1**	**0.1**	**0.1**	-
Benzo(a)pyrene	mg/kg	0.1	**0.1**	**0.1**	**0.1**	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	**0.1**	-
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	-
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	-
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	-
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	-
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	**0.2**	**0.2**	**0.2**	-
Total PAH (18)	mg/kg	0.8	**1.4**	**1.5**	**1.6**	-
Total PAH (NEPM/WHO 16)	mg/kg	0.8	**1.4**	**1.5**	**1.6**	-
Surrogates						
d5-nitrobenzene (Surrogate)	%	-	**88**	**88**	**90**	-
2-fluorobiphenyl (Surrogate)	%	-	**92**	**92**	**88**	-
d14-p-terphenyl (Surrogate)	%	-	**92**	**90**	**88**	-
OC Pesticides in Soil Method: AN420 Tested: 2/8/2019						
Hexachlorobenzene (HCB)	mg/kg	0.1	-	-	-	-
Alpha BHC	mg/kg	0.1	-	-	-	-
Lindane	mg/kg	0.1	-	-	-	-
Heptachlor	mg/kg	0.1	-	-	-	-
Aldrin	mg/kg	0.1	-	-	-	-
Beta BHC	mg/kg	0.1	-	-	-	-
Delta BHC	mg/kg	0.1	-	-	-	-
Heptachlor epoxide	mg/kg	0.1	-	-	-	-
o,p'-DDE	mg/kg	0.1	-	-	-	-
Alpha Endosulfan	mg/kg	0.2	-	-	-	-
Gamma Chlordane	mg/kg	0.1	-	-	-	-
Alpha Chlordane	mg/kg	0.1	-	-	-	-
trans-Nonachlor	mg/kg	0.1	-	-	-	-
p,p'-DDE	mg/kg	0.1	-	-	-	-
Dieldrin	mg/kg	0.2	-	-	-	-
Endrin	mg/kg	0.2	-	-	-	-

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name SE195986.017 Soil 01 Aug 2019 02787/SP2	SE195986.018 Soil 01 Aug 2019 02787/SP3	SE195986.019 Soil 01 Aug 2019 02787/SP4	SE195986.020 Soil 01 Aug 2019 02787/TB
OC Pesticides in Soil Method: AN420 Tested: 9/8/2019 (continued)						
o,p'-DDD	mg/kg	0.1	-	-	-	-
o,p'-DDT	mg/kg	0.1	-	-	-	-
Beta Endosulfan	mg/kg	0.2	-	-	-	-
p,p'-DDD	mg/kg	0.1	-	-	-	-
p,p'-DDT	mg/kg	0.1	-	-	-	-
Endosulfan sulphate	mg/kg	0.1	-	-	-	-
Endrin Aldehyde	mg/kg	0.1	-	-	-	-
Methoxychlor	mg/kg	0.1	-	-	-	-
Endrin Ketone	mg/kg	0.1	-	-	-	-
Isodrin	mg/kg	0.1	-	-	-	-
Mirex	mg/kg	0.1	-	-	-	-
Total CLP OC Pesticides	mg/kg	1	-	-	-	-
Surrogates						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	-	-	-	-
OP Pesticides in Soil Method: AN420 Tested: 2/8/2019						
Dichlorvos	mg/kg	0.5	-	-	-	-
Dimethoate	mg/kg	0.5	-	-	-	-
Diazinon (Dimpylate)	mg/kg	0.5	-	-	-	-
Fenitrothion	mg/kg	0.2	-	-	-	-
Malathion	mg/kg	0.2	-	-	-	-
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	-	-	-	-
Parathion-ethyl (Parathion)	mg/kg	0.2	-	-	-	-
Bromophos Ethyl	mg/kg	0.2	-	-	-	-
Methidathion	mg/kg	0.5	-	-	-	-
Ethion	mg/kg	0.2	-	-	-	-
Azinphos-methyl (Guthion)	mg/kg	0.2	-	-	-	-
Total OP Pesticides*	mg/kg	1.7	-	-	-	-
Surrogates						
2-fluorobiphenyl (Surrogate)	%	-	-	-	-	-
d14-p-terphenyl (Surrogate)	%	-	-	-	-	-
PCBs in Soil Method: AN420 Tested: 2/8/2019						
Arochlor 1016	mg/kg	0.2	-	-	-	-
Arochlor 1221	mg/kg	0.2	-	-	-	-
Arochlor 1232	mg/kg	0.2	-	-	-	-
Arochlor 1242	mg/kg	0.2	-	-	-	-
Arochlor 1248	mg/kg	0.2	-	-	-	-
Arochlor 1254	mg/kg	0.2	-	-	-	-
Arochlor 1260	mg/kg	0.2	-	-	-	-
Arochlor 1262	mg/kg	0.2	-	-	-	-
Arochlor 1268	mg/kg	0.2	-	-	-	-
Total PCBs (Arochlors)	mg/kg	1	-	-	-	-
Surrogates						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	-	-	-	-

Parameter	Units	LOR	Sample Number: SE195986.017 Sample Matrix: Soil Sample Date: 01 Aug 2019 Sample Name: 02787/SP2	SE195986.018 Soil 01 Aug 2019 02787/SP3	SE195986.019 Soil 01 Aug 2019 02787/SP4	SE195986.020 Soil 01 Aug 2019 02787/TB
Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES Method: AN040/AN320 Tested: 5/8/2019						
Arsenic, As	mg/kg	1	**6**	**3**	**4**	<1
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	**30**	**40**	**27**	<0.5
Copper, Cu	mg/kg	0.5	**29**	**15**	**23**	<0.5
Nickel, Ni	mg/kg	0.5	**2.9**	**2.4**	**3.9**	**0.7**
Lead, Pb	mg/kg	1	**110**	**88**	**180**	<1
Zinc, Zn	mg/kg	2	**140**	**160**	**94**	<2.0
Mercury in Soil Method: AN312 Tested: 5/8/2019						
Mercury	mg/kg	0.05	**0.10**	**0.07**	**0.07**	<0.05
Moisture Content Method: AN002 Tested: 2/8/2019						
% Moisture	%w/w	0.5	**20**	**23**	**18**	<0.5
Trace Metals (Dissolved) in Water by ICPMS Method: AN318 Tested: 5/8/2019						
Arsenic, As	µg/L	1	-	-	-	-
Cadmium, Cd	µg/L	0.1	-	-	-	-
Chromium, Cr	µg/L	1	-	-	-	-
Copper, Cu	µg/L	1	-	-	-	-
Lead, Pb	µg/L	1	-	-	-	-
Nickel, Ni	µg/L	1	-	-	-	-
Zinc, Zn	µg/L	5	-	-	-	-
Mercury (dissolved) in Water Method: AN311(Perth)/AN312 Tested: 2/8/2019						
Mercury	mg/L	0.0001	-	-	-	-

Parameter	Units	LOR	Sample Number SE195986.021 Sample Matrix Water Sample Date 01 Aug 2019 Sample Name 02787/RIN
VOC's in Soil Method: AN433 Tested: 6/8/2019			
Monocyclic Aromatic Hydrocarbons			
Benzene	mg/kg	0.1	-
Toluene	mg/kg	0.1	-
Ethylbenzene	mg/kg	0.1	-
m/p-xylene	mg/kg	0.2	-
o-xylene	mg/kg	0.1	-
Polycyclic VOCs			
Naphthalene	mg/kg	0.1	-
Surrogates			
d4-1,2-dichloroethane (Surrogate)	%	-	-
d8-toluene (Surrogate)	%	-	-
Bromofluorobenzene (Surrogate)	%	-	-
Totals			
Total Xylenes	mg/kg	0.3	-
Total BTEX	mg/kg	0.6	-
Volatile Petroleum Hydrocarbons in Soil Method: AN433 Tested: 6/8/2019			
TRH C6-C10	mg/kg	25	-
TRH C6-C9	mg/kg	20	-
Surrogates			
d4-1,2-dichloroethane (Surrogate)	%	-	-
d8-toluene (Surrogate)	%	-	-
Bromofluorobenzene (Surrogate)	%	-	-

Parameter	Units	LOR	Sample Number SE195986.021 Sample Matrix Water Sample Date 01 Aug 2019 Sample Name 02787/RIN
Volatile Petroleum Hydrocarbons in Soil Method: AN433 Tested: 6/8/2019 (continued)			
VPH F Bands			
Benzene (F0)	mg/kg	0.1	-
TRH C6-C10 minus BTEX (F1)	mg/kg	25	-
TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403 Tested: 5/8/2019			
TRH C10-C14	mg/kg	20	-
TRH C15-C28	mg/kg	45	-
TRH C29-C36	mg/kg	45	-
TRH C37-C40	mg/kg	100	-
TRH C10-C36 Total	mg/kg	110	-
TRH C10-C40 Total (F bands)	mg/kg	210	-
TRH F Bands			
TRH >C10-C16	mg/kg	25	-
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	-
TRH >C16-C34 (F3)	mg/kg	90	-
TRH >C34-C40 (F4)	mg/kg	120	-
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 Tested: 9/8/2019			
Naphthalene	mg/kg	0.1	-
2-methylnaphthalene	mg/kg	0.1	-
1-methylnaphthalene	mg/kg	0.1	-
Acenaphthylene	mg/kg	0.1	-
Acenaphthene	mg/kg	0.1	-
Fluorene	mg/kg	0.1	-
Phenanthrene	mg/kg	0.1	-
Anthracene	mg/kg	0.1	-
Fluoranthene	mg/kg	0.1	-
Pyrene	mg/kg	0.1	-
Benzo(a)anthracene	mg/kg	0.1	-
Chrysene	mg/kg	0.1	-
Benzo(b&j)fluoranthene	mg/kg	0.1	-
Benzo(k)fluoranthene	mg/kg	0.1	-
Benzo(a)pyrene	mg/kg	0.1	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	-
Dibenzo(ah)anthracene	mg/kg	0.1	-
Benzo(ghi)perylene	mg/kg	0.1	-
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	-
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	-
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	-
Total PAH (18)	mg/kg	0.8	-
Total PAH (NEPM/WHO 16)	mg/kg	0.8	-

Parameter	Units	LOR	Sample Number SE195986.021 Sample Matrix Water Sample Date 01 Aug 2019 Sample Name 02787/RIN
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 Tested: 9/8/2019 (continued)			
Surrogates			
d5-nitrobenzene (Surrogate)	%	-	-
2-fluorobiphenyl (Surrogate)	%	-	-
d14-p-terphenyl (Surrogate)	%	-	-
OC Pesticides in Soil Method: AN420 Tested: 9/8/2019			
Hexachlorobenzene (HCB)	mg/kg	0.1	-
Alpha BHC	mg/kg	0.1	-
Lindane	mg/kg	0.1	-
Heptachlor	mg/kg	0.1	-
Aldrin	mg/kg	0.1	-
Beta BHC	mg/kg	0.1	-
Delta BHC	mg/kg	0.1	-
Heptachlor epoxide	mg/kg	0.1	-
o,p'-DDE	mg/kg	0.1	-
Alpha Endosulfan	mg/kg	0.2	-
Gamma Chlordane	mg/kg	0.1	-
Alpha Chlordane	mg/kg	0.1	-
trans-Nonachlor	mg/kg	0.1	-
p,p'-DDE	mg/kg	0.1	-
Dieldrin	mg/kg	0.2	-
Endrin	mg/kg	0.2	-
o,p'-DDD	mg/kg	0.1	-
o,p'-DDT	mg/kg	0.1	-
Beta Endosulfan	mg/kg	0.2	-
p,p'-DDD	mg/kg	0.1	-
p,p'-DDT	mg/kg	0.1	-
Endosulfan sulphate	mg/kg	0.1	-
Endrin Aldehyde	mg/kg	0.1	-
Methoxychlor	mg/kg	0.1	-
Endrin Ketone	mg/kg	0.1	-
Isodrin	mg/kg	0.1	-
Mirex	mg/kg	0.1	-
Total CLP OC Pesticides	mg/kg	1	-
Surrogates			
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	-

Parameter	Units	LOR	Sample Number SE195986.021 Sample Matrix Water Sample Date 01 Aug 2019 Sample Name 02787/RIN
OP Pesticides in Soil Method: AN420 Tested: 9/8/2019			
Dichlorvos	mg/kg	0.5	-
Dimethoate	mg/kg	0.5	-
Diazinon (Dimpylate)	mg/kg	0.5	-
Fenitrothion	mg/kg	0.2	-
Malathion	mg/kg	0.2	-
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	-
Parathion-ethyl (Parathion)	mg/kg	0.2	-
Bromophos Ethyl	mg/kg	0.2	-
Methidathion	mg/kg	0.5	-
Ethion	mg/kg	0.2	-
Azinphos-methyl (Guthion)	mg/kg	0.2	-
Total OP Pesticides*	mg/kg	1.7	-
Surrogates			
2-fluorobiphenyl (Surrogate)	%	-	-
d14-p-terphenyl (Surrogate)	%	-	-
PCBs in Soil Method: AN420 Tested: 9/8/2019			
Arochlor 1016	mg/kg	0.2	-
Arochlor 1221	mg/kg	0.2	-
Arochlor 1232	mg/kg	0.2	-
Arochlor 1242	mg/kg	0.2	-
Arochlor 1248	mg/kg	0.2	-
Arochlor 1254	mg/kg	0.2	-
Arochlor 1260	mg/kg	0.2	-
Arochlor 1262	mg/kg	0.2	-
Arochlor 1268	mg/kg	0.2	-
Total PCBs (Arochlors)	mg/kg	1	-
Surrogates			
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	-

Parameter	Units	LOR	Sample Number: SE195986.021 Sample Matrix: Water Sample Date: 01 Aug 2019 Sample Name: 02787/RIN
Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES Method: AN040/AN320 Tested: 8/8/2019			
Arsenic, As	mg/kg	1	-
Cadmium, Cd	mg/kg	0.3	-
Chromium, Cr	mg/kg	0.5	-
Copper, Cu	mg/kg	0.5	-
Nickel, Ni	mg/kg	0.5	-
Lead, Pb	mg/kg	1	-
Zinc, Zn	mg/kg	2	-
Mercury in Soil Method: AN312 Tested: 8/8/2019			
Mercury	mg/kg	0.05	-
Moisture Content Method: AN002 Tested: 5/8/2019			
% Moisture	%w/w	0.5	-
Trace Metals (Dissolved) in Water by ICPMS Method: AN318 Tested: 5/8/2019			
Arsenic, As	µg/L	1	<1
Cadmium, Cd	µg/L	0.1	<0.1
Chromium, Cr	µg/L	1	<1
Copper, Cu	µg/L	1	<1
Lead, Pb	µg/L	1	<1
Nickel, Ni	µg/L	1	<1
Zinc, Zn	µg/L	5	<5
Mercury (dissolved) in Water Method: AN311(Perth)/AN312 Tested: 2/8/2019			
Mercury	mg/L	0.0001	<0.0001

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 (dissolved) in Water **Method: ME-(AU)-[ENV]AN311(Perth)/AN312**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	MS %Recovery
Mercury	LB180006	mg/L	0.0001	<0.0001	24%	94%

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

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Mercury	LB180154	mg/kg	0.05	<0.05	7%	115%	115%

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

Parameter	QC Reference	Units	LOR	DUP %RPD
% Moisture	LB180074	%w/w	0.5	0 - 2%

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

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Hexachlorobenzene (HCB)	LB180072	mg/kg	0.1	<0.1	0%	NA	NA
Alpha BHC	LB180072	mg/kg	0.1	<0.1	0%	NA	NA
Lindane	LB180072	mg/kg	0.1	<0.1	0%	NA	NA
Heptachlor	LB180072	mg/kg	0.1	<0.1	0%	117%	124%
Aldrin	LB180072	mg/kg	0.1	<0.1	0%	123%	100%
Beta BHC	LB180072	mg/kg	0.1	<0.1	0%	NA	NA
Delta BHC	LB180072	mg/kg	0.1	<0.1	0%	121%	113%
Heptachlor epoxide	LB180072	mg/kg	0.1	<0.1	0%	NA	NA
o,p'-DDE	LB180072	mg/kg	0.1	<0.1	0%	NA	NA
Alpha Endosulfan	LB180072	mg/kg	0.2	<0.2	0%	NA	NA
Gamma Chlordane	LB180072	mg/kg	0.1	<0.1	0%	NA	NA
Alpha Chlordane	LB180072	mg/kg	0.1	<0.1	0%	NA	NA
trans-Nonachlor	LB180072	mg/kg	0.1	<0.1	0%	NA	NA
p,p'-DDE	LB180072	mg/kg	0.1	<0.1	0%	NA	NA
Dieldrin	LB180072	mg/kg	0.2	<0.2	0%	115%	67%
Endrin	LB180072	mg/kg	0.2	<0.2	0%	113%	117%
o,p'-DDD	LB180072	mg/kg	0.1	<0.1	0%	NA	NA
o,p'-DDT	LB180072	mg/kg	0.1	<0.1	0%	NA	NA
Beta Endosulfan	LB180072	mg/kg	0.2	<0.2	0%	NA	NA
p,p'-DDD	LB180072	mg/kg	0.1	<0.1	0%	NA	NA
p,p'-DDT	LB180072	mg/kg	0.1	<0.1	0%	90%	110%
Endosulfan sulphate	LB180072	mg/kg	0.1	<0.1	0%	NA	NA
Endrin Aldehyde	LB180072	mg/kg	0.1	<0.1	0%	NA	NA
Methoxychlor	LB180072	mg/kg	0.1	<0.1	0%	NA	NA
Endrin Ketone	LB180072	mg/kg	0.1	<0.1	0%	NA	NA
Isodrin	LB180072	mg/kg	0.1	<0.1	0%	NA	NA
Mirex	LB180072	mg/kg	0.1	<0.1	0%	NA	NA
Total CLP OC Pesticides	LB180072	mg/kg	1	<1	0%	NA	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Tetrachloro-m-xylene (TCMX) (Surrogate)	LB180072	%	-	124%	14%	125%	125%

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.

OP Pesticides in Soil Method: ME-(AU)-[ENV]AN420

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Dichlorvos	LB180072	mg/kg	0.5	<0.5	0%	84%	89%
Dimethoate	LB180072	mg/kg	0.5	<0.5	0%	NA	NA
Diazinon (Dimpylate)	LB180072	mg/kg	0.5	<0.5	0%	81%	94%
Fenitrothion	LB180072	mg/kg	0.2	<0.2	0%	NA	NA
Malathion	LB180072	mg/kg	0.2	<0.2	0%	NA	NA
Chlorpyrifos (Chlorpyrifos Ethyl)	LB180072	mg/kg	0.2	<0.2	0%	84%	100%
Parathion-ethyl (Parathion)	LB180072	mg/kg	0.2	<0.2	0%	NA	NA
Bromophos Ethyl	LB180072	mg/kg	0.2	<0.2	0%	NA	NA
Methidathion	LB180072	mg/kg	0.5	<0.5	0%	NA	NA
Ethion	LB180072	mg/kg	0.2	<0.2	0%	75%	118%
Azinphos-methyl (Guthion)	LB180072	mg/kg	0.2	<0.2	0%	NA	NA
Total OP Pesticides*	LB180072	mg/kg	1.7	<1.7	0%	NA	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
2-fluorobiphenyl (Surrogate)	LB180072	%	-	90%	12%	88%	86%
d14-p-terphenyl (Surrogate)	LB180072	%	-	98%	10%	90%	90%

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

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Naphthalene	LB180072	mg/kg	0.1	<0.1	0%	101%	101%
2-methylnaphthalene	LB180072	mg/kg	0.1	<0.1	0%	NA	NA
1-methylnaphthalene	LB180072	mg/kg	0.1	<0.1	0%	NA	NA
Acenaphthylene	LB180072	mg/kg	0.1	<0.1	0%	100%	107%
Acenaphthene	LB180072	mg/kg	0.1	<0.1	0%	102%	94%
Fluorene	LB180072	mg/kg	0.1	<0.1	0%	NA	NA
Phenanthrene	LB180072	mg/kg	0.1	<0.1	0 - 10%	114%	120%
Anthracene	LB180072	mg/kg	0.1	<0.1	0%	118%	107%
Fluoranthene	LB180072	mg/kg	0.1	<0.1	0 - 25%	119%	107%
Pyrene	LB180072	mg/kg	0.1	<0.1	0 - 23%	122%	116%
Benzo(a)anthracene	LB180072	mg/kg	0.1	<0.1	0 - 4%	NA	NA
Chrysene	LB180072	mg/kg	0.1	<0.1	0 - 6%	NA	NA
Benzo(b&j)fluoranthene	LB180072	mg/kg	0.1	<0.1	0 - 3%	NA	NA
Benzo(k)fluoranthene	LB180072	mg/kg	0.1	<0.1	0 - 13%	NA	NA
Benzo(a)pyrene	LB180072	mg/kg	0.1	<0.1	0 - 7%	112%	108%
Indeno(1,2,3-cd)pyrene	LB180072	mg/kg	0.1	<0.1	0 - 6%	NA	NA
Dibenzo(ah)anthracene	LB180072	mg/kg	0.1	<0.1	0%	NA	NA
Benzo(ghi)perylene	LB180072	mg/kg	0.1	<0.1	0 - 13%	NA	NA
Carcinogenic PAHs, BaP TEQ <LOR=0	LB180072	TEQ (mg/kg)	0.2	<0.2	0 - 6%	NA	NA
Carcinogenic PAHs, BaP TEQ <LOR=LOR	LB180072	TEQ (mg/kg)	0.3	<0.3	0 - 5%	NA	NA
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	LB180072	TEQ (mg/kg)	0.2	<0.2	0 - 5%	NA	NA
Total PAH (18)	LB180072	mg/kg	0.8	<0.8	0 - 23%	NA	NA
Total PAH (NEPM/WHO 16)	LB180072	mg/kg	0.8	<0.8			

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
d5-nitrobenzene (Surrogate)	LB180072	%	-	86%	9 - 12%	82%	88%
2-fluorobiphenyl (Surrogate)	LB180072	%	-	90%	7 - 12%	88%	86%
d14-p-terphenyl (Surrogate)	LB180072	%	-	98%	4 - 10%	90%	90%

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.

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

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Arochlor 1016	LB180072	mg/kg	0.2	<0.2	0%	NA	NA
Arochlor 1221	LB180072	mg/kg	0.2	<0.2	0%	NA	NA
Arochlor 1232	LB180072	mg/kg	0.2	<0.2	0%	NA	NA
Arochlor 1242	LB180072	mg/kg	0.2	<0.2	0%	NA	NA
Arochlor 1248	LB180072	mg/kg	0.2	<0.2	0%	NA	NA
Arochlor 1254	LB180072	mg/kg	0.2	<0.2	0%	NA	NA
Arochlor 1260	LB180072	mg/kg	0.2	<0.2	0%	105%	93%
Arochlor 1262	LB180072	mg/kg	0.2	<0.2	0%	NA	NA
Arochlor 1268	LB180072	mg/kg	0.2	<0.2	0%	NA	NA
Total PCBs (Arochlors)	LB180072	mg/kg	1	<1	0%	NA	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Tetrachloro-m-xylene (TCMX) (Surrogate)	LB180072	%	-	124%	14%	115%	119%

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES **Method: ME-(AU)-[ENV]AN040/AN320**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Arsenic, As	LB180151	mg/kg	1	<1	13%	104%
Cadmium, Cd	LB180151	mg/kg	0.3	<0.3	0%	102%
Chromium, Cr	LB180151	mg/kg	0.5	<0.5	7%	101%
Copper, Cu	LB180151	mg/kg	0.5	<0.5	12%	93%
Nickel, Ni	LB180151	mg/kg	0.5	<0.5	1%	93%
Lead, Pb	LB180151	mg/kg	1	<1	2%	93%
Zinc, Zn	LB180151	mg/kg	2	<2.0	6%	99%

Trace Metals (Dissolved) in Water by ICPMS **Method: ME-(AU)-[ENV]AN318**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Arsenic, As	LB180103	µg/L	1	<1	0 - 2%	97%
Cadmium, Cd	LB180103	µg/L	0.1	<0.1	0%	97%
Chromium, Cr	LB180103	µg/L	1	<1	0%	114%
Copper, Cu	LB180103	µg/L	1	<1	0%	108%
Lead, Pb	LB180103	µg/L	1	<1	0%	97%
Nickel, Ni	LB180103	µg/L	1	<1	0%	104%
Zinc, Zn	LB180103	µg/L	5	<5	0 - 5%	104%

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.

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

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
TRH C10-C14	LB180072	mg/kg	20	<20	0%	113%	113%
TRH C15-C28	LB180072	mg/kg	45	<45	0 - 50%	110%	118%
TRH C29-C36	LB180072	mg/kg	45	<45	0%	98%	18%
TRH C37-C40	LB180072	mg/kg	100	<100	0%	NA	NA
TRH C10-C36 Total	LB180072	mg/kg	110	<110	0%	NA	NA
TRH C10-C40 Total (F bands)	LB180072	mg/kg	210	<210	0%	NA	NA

TRH F Bands

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
TRH >C10-C16	LB180072	mg/kg	25	<25	0%	115%	118%
TRH >C10-C16 - Naphthalene (F2)	LB180072	mg/kg	25	<25	0%	NA	NA
TRH >C16-C34 (F3)	LB180072	mg/kg	90	<90	0 - 4%	110%	55%
TRH >C34-C40 (F4)	LB180072	mg/kg	120	<120	0%	95%	NA

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

Monocyclic Aromatic Hydrocarbons

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Benzene	LB180071	mg/kg	0.1	<0.1	0%	76%	84%
Toluene	LB180071	mg/kg	0.1	<0.1	0%	67%	80%
Ethylbenzene	LB180071	mg/kg	0.1	<0.1	0%	72%	80%
m/p-xylene	LB180071	mg/kg	0.2	<0.2	0%	75%	81%
o-xylene	LB180071	mg/kg	0.1	<0.1	0%	71%	80%

Polycyclic VOCs

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Naphthalene	LB180071	mg/kg	0.1	<0.1	0%	NA	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
d4-1,2-dichloroethane (Surrogate)	LB180071	%	-	82%	4 - 25%	83%	105%
d8-toluene (Surrogate)	LB180071	%	-	81%	0 - 1%	80%	91%
Bromofluorobenzene (Surrogate)	LB180071	%	-	89%	4 - 10%	89%	95%

Totals

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Total Xylenes	LB180071	mg/kg	0.3	<0.3	0%	NA	NA
Total BTEX	LB180071	mg/kg	0.6	<0.6	0%	NA	NA

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.

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

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
TRH C6-C10	LB180071	mg/kg	25	<25	0%	91%	66%
TRH C6-C9	LB180071	mg/kg	20	<20	0%	93%	65%

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
d4-1,2-dichloroethane (Surrogate)	LB180071	%	-	82%	4 - 25%	83%	105%
d8-toluene (Surrogate)	LB180071	%	-	81%	0 - 1%	80%	91%
Bromofluorobenzene (Surrogate)	LB180071	%	-	89%	4 - 10%	89%	95%

VPH F Bands

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Benzene (F0)	LB180071	mg/kg	0.1	<0.1	0%	NA	NA
TRH C6-C10 minus BTEX (F1)	LB180071	mg/kg	25	<25	0%	136%	117%

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.
AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
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 analysis 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.
AN311(Perth)/AN312	Mercury by Cold Vapour AAS in Waters: 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.
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
AN318	Determination of elements at trace level in waters by ICP-MS technique, in accordance with USEPA 6020A.
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 Recoverable Hydrocarbons - Silica (TRH-Si) 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, dependent 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	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.

FOOTNOTES

IS	Insufficient sample for analysis.	LOR	Limit of Reporting
LNR	Sample listed, but not received.	↑↓	Raised or Lowered Limit of Reporting
*	NATA accreditation does not cover the performance of this service.	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
		NVL	Not Validated

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calcuated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the " Total" LOR will be the sum of those two LORs.

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

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:

a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au.pv.sgsvr/en-gb/environment.

STATEMENT OF QA/QC PERFORMANCE

SE195986 R0

CLIENT DETAILS

Contact	Simon Gorham
Client	AIRSAFE OHC PTY LTD
Address	93 BEATTIE STREET BALMAIN NSW 2041
Telephone	61 2 95559034
Facsimile	(Not specified)
Email	info@airsafe.net.au
Project	**02787.07.19 Stage 2 DSI-211 Pacific Hwy**
Order Number	**02787.07.19**
Samples	21

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
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Email	au.environmental.sydney@sgs.com
SGS Reference	**SE195986 R0**
Date Received	01 Aug 2019
Date Reported	09 Aug 2019

COMMENTS

All the laboratory data for each environmental matrix was compared to SGS' 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.
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 with the exception of the following:

Surrogate	VOC's in Soil	1 item
	Volatile Petroleum Hydrocarbons in Soil	1 item
Matrix Spike	TRH (Total Recoverable Hydrocarbons) in Soil	2 items

SAMPLE SUMMARY

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	20 Soil, 1 Water
Date documentation received	1/8/2019	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	5.4°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

HOLDING TIME SUMMARY

SE195986 R0

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 (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
02787/RIN	SE195986.021	LB180006	01 Aug 2019	01 Aug 2019	29 Aug 2019	02 Aug 2019	29 Aug 2019	02 Aug 2019

Mercury in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
02787/BH1/0.1	SE195986.001	LB180154	01 Aug 2019	01 Aug 2019	29 Aug 2019	05 Aug 2019	29 Aug 2019	08 Aug 2019
02787/BH1/0.6	SE195986.002	LB180154	01 Aug 2019	01 Aug 2019	29 Aug 2019	05 Aug 2019	29 Aug 2019	08 Aug 2019
02787/BH2/0.1	SE195986.003	LB180154	01 Aug 2019	01 Aug 2019	29 Aug 2019	05 Aug 2019	29 Aug 2019	08 Aug 2019
02787/BH3/0.1	SE195986.004	LB180154	01 Aug 2019	01 Aug 2019	29 Aug 2019	05 Aug 2019	29 Aug 2019	08 Aug 2019
02787/BH4/0.15	SE195986.005	LB180154	01 Aug 2019	01 Aug 2019	29 Aug 2019	05 Aug 2019	29 Aug 2019	08 Aug 2019
02787/BH4/Dup Intra	SE195986.006	LB180154	01 Aug 2019	01 Aug 2019	29 Aug 2019	05 Aug 2019	29 Aug 2019	08 Aug 2019
02787/BH5/0.2	SE195986.007	LB180154	01 Aug 2019	01 Aug 2019	29 Aug 2019	05 Aug 2019	29 Aug 2019	08 Aug 2019
02787/BH5/0.6	SE195986.008	LB180154	01 Aug 2019	01 Aug 2019	29 Aug 2019	05 Aug 2019	29 Aug 2019	08 Aug 2019
02787/BH6/0.2	SE195986.009	LB180154	01 Aug 2019	01 Aug 2019	29 Aug 2019	05 Aug 2019	29 Aug 2019	08 Aug 2019
02787/BH7/0.3	SE195986.010	LB180154	01 Aug 2019	01 Aug 2019	29 Aug 2019	05 Aug 2019	29 Aug 2019	08 Aug 2019
02787/BH8/0.1	SE195986.011	LB180154	01 Aug 2019	01 Aug 2019	29 Aug 2019	05 Aug 2019	29 Aug 2019	08 Aug 2019
02787/BH9/0.3	SE195986.012	LB180154	01 Aug 2019	01 Aug 2019	29 Aug 2019	05 Aug 2019	29 Aug 2019	08 Aug 2019
02787/BH10/0.1	SE195986.013	LB180154	01 Aug 2019	01 Aug 2019	29 Aug 2019	05 Aug 2019	29 Aug 2019	08 Aug 2019
02787/BH11/0.15	SE195986.014	LB180154	01 Aug 2019	01 Aug 2019	29 Aug 2019	05 Aug 2019	29 Aug 2019	08 Aug 2019
02787/BH11/0.10	SE195986.015	LB180154	01 Aug 2019	01 Aug 2019	29 Aug 2019	05 Aug 2019	29 Aug 2019	08 Aug 2019
02787/SP1	SE195986.016	LB180154	01 Aug 2019	01 Aug 2019	29 Aug 2019	05 Aug 2019	29 Aug 2019	08 Aug 2019
02787/SP2	SE195986.017	LB180154	01 Aug 2019	01 Aug 2019	29 Aug 2019	05 Aug 2019	29 Aug 2019	08 Aug 2019
02787/SP3	SE195986.018	LB180154	01 Aug 2019	01 Aug 2019	29 Aug 2019	05 Aug 2019	29 Aug 2019	08 Aug 2019
02787/SP4	SE195986.019	LB180154	01 Aug 2019	01 Aug 2019	29 Aug 2019	05 Aug 2019	29 Aug 2019	08 Aug 2019
02787/TB	SE195986.020	LB180154	01 Aug 2019	01 Aug 2019	29 Aug 2019	05 Aug 2019	29 Aug 2019	08 Aug 2019

Moisture Content

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
02787/BH1/0.1	SE195986.001	LB180074	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	07 Aug 2019	06 Aug 2019
02787/BH1/0.6	SE195986.002	LB180074	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	07 Aug 2019	06 Aug 2019
02787/BH2/0.1	SE195986.003	LB180074	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	07 Aug 2019	06 Aug 2019
02787/BH3/0.1	SE195986.004	LB180074	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	07 Aug 2019	06 Aug 2019
02787/BH4/0.15	SE195986.005	LB180074	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	07 Aug 2019	06 Aug 2019
02787/BH4/Dup Intra	SE195986.006	LB180074	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	07 Aug 2019	06 Aug 2019
02787/BH5/0.2	SE195986.007	LB180074	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	07 Aug 2019	06 Aug 2019
02787/BH5/0.6	SE195986.008	LB180074	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	07 Aug 2019	06 Aug 2019
02787/BH6/0.2	SE195986.009	LB180074	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	07 Aug 2019	06 Aug 2019
02787/BH7/0.3	SE195986.010	LB180074	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	07 Aug 2019	06 Aug 2019
02787/BH8/0.1	SE195986.011	LB180074	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	07 Aug 2019	06 Aug 2019
02787/BH9/0.3	SE195986.012	LB180074	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	07 Aug 2019	06 Aug 2019
02787/BH10/0.1	SE195986.013	LB180074	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	07 Aug 2019	06 Aug 2019
02787/BH11/0.15	SE195986.014	LB180074	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	07 Aug 2019	06 Aug 2019
02787/BH11/0.10	SE195986.015	LB180074	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	07 Aug 2019	06 Aug 2019
02787/SP1	SE195986.016	LB180074	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	07 Aug 2019	06 Aug 2019
02787/SP2	SE195986.017	LB180074	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	07 Aug 2019	06 Aug 2019
02787/SP3	SE195986.018	LB180074	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	07 Aug 2019	06 Aug 2019
02787/SP4	SE195986.019	LB180074	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	07 Aug 2019	06 Aug 2019
02787/TB	SE195986.020	LB180074	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	07 Aug 2019	06 Aug 2019

OC Pesticides in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
02787/BH1/0.1	SE195986.001	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH1/0.6	SE195986.002	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH2/0.1	SE195986.003	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH3/0.1	SE195986.004	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH4/0.15	SE195986.005	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH5/0.2	SE195986.007	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH5/0.6	SE195986.008	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH6/0.2	SE195986.009	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH7/0.3	SE195986.010	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH8/0.1	SE195986.011	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019

HOLDING TIME SUMMARY

SE195986 R0

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.

OC Pesticides in Soil (continued)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
02787/BH9/0.3	SE195986.012	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH10/0.1	SE195986.013	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH11/0.15	SE195986.014	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH11/0.10	SE195986.015	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/SP1	SE195986.016	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/SP2	SE195986.017	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/SP3	SE195986.018	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/SP4	SE195986.019	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019

OP Pesticides in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
02787/BH1/0.1	SE195986.001	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH1/0.6	SE195986.002	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH2/0.1	SE195986.003	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH3/0.1	SE195986.004	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH4/0.15	SE195986.005	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH5/0.2	SE195986.007	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH5/0.6	SE195986.008	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH6/0.2	SE195986.009	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH7/0.3	SE195986.010	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH8/0.1	SE195986.011	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH9/0.3	SE195986.012	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH10/0.1	SE195986.013	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH11/0.15	SE195986.014	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH11/0.10	SE195986.015	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/SP1	SE195986.016	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/SP2	SE195986.017	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/SP3	SE195986.018	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/SP4	SE195986.019	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019

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
02787/BH1/0.1	SE195986.001	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH1/0.6	SE195986.002	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH2/0.1	SE195986.003	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH3/0.1	SE195986.004	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH4/0.15	SE195986.005	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH5/0.2	SE195986.007	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH5/0.6	SE195986.008	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH6/0.2	SE195986.009	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH7/0.3	SE195986.010	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH8/0.1	SE195986.011	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH9/0.3	SE195986.012	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH10/0.1	SE195986.013	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH11/0.15	SE195986.014	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH11/0.10	SE195986.015	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/SP1	SE195986.016	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/SP2	SE195986.017	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/SP3	SE195986.018	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/SP4	SE195986.019	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019

PCBs in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
02787/BH1/0.1	SE195986.001	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH1/0.6	SE195986.002	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH2/0.1	SE195986.003	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH3/0.1	SE195986.004	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH4/0.15	SE195986.005	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH5/0.2	SE195986.007	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH5/0.6	SE195986.008	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH6/0.2	SE195986.009	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019

HOLDING TIME SUMMARY

SE195986 R0

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.

PCBs in Soil (continued)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
02787/BH7/0.3	SE195986.010	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH8/0.1	SE195986.011	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH9/0.3	SE195986.012	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH10/0.1	SE195986.013	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH11/0.15	SE195986.014	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/BH11/0.10	SE195986.015	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/SP1	SE195986.016	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/SP2	SE195986.017	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/SP3	SE195986.018	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019
02787/SP4	SE195986.019	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	09 Aug 2019

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
02787/BH1/0.1	SE195986.001	LB180151	01 Aug 2019	01 Aug 2019	28 Jan 2020	05 Aug 2019	28 Jan 2020	08 Aug 2019
02787/BH1/0.6	SE195986.002	LB180151	01 Aug 2019	01 Aug 2019	28 Jan 2020	05 Aug 2019	28 Jan 2020	08 Aug 2019
02787/BH2/0.1	SE195986.003	LB180151	01 Aug 2019	01 Aug 2019	28 Jan 2020	05 Aug 2019	28 Jan 2020	08 Aug 2019
02787/BH3/0.1	SE195986.004	LB180151	01 Aug 2019	01 Aug 2019	28 Jan 2020	05 Aug 2019	28 Jan 2020	08 Aug 2019
02787/BH4/0.15	SE195986.005	LB180151	01 Aug 2019	01 Aug 2019	28 Jan 2020	05 Aug 2019	28 Jan 2020	08 Aug 2019
02787/BH4/Dup Intra	SE195986.006	LB180151	01 Aug 2019	01 Aug 2019	28 Jan 2020	05 Aug 2019	28 Jan 2020	08 Aug 2019
02787/BH5/0.2	SE195986.007	LB180151	01 Aug 2019	01 Aug 2019	28 Jan 2020	05 Aug 2019	28 Jan 2020	08 Aug 2019
02787/BH5/0.6	SE195986.008	LB180151	01 Aug 2019	01 Aug 2019	28 Jan 2020	05 Aug 2019	28 Jan 2020	08 Aug 2019
02787/BH6/0.2	SE195986.009	LB180151	01 Aug 2019	01 Aug 2019	28 Jan 2020	05 Aug 2019	28 Jan 2020	08 Aug 2019
02787/BH7/0.3	SE195986.010	LB180151	01 Aug 2019	01 Aug 2019	28 Jan 2020	05 Aug 2019	28 Jan 2020	08 Aug 2019
02787/BH8/0.1	SE195986.011	LB180151	01 Aug 2019	01 Aug 2019	28 Jan 2020	05 Aug 2019	28 Jan 2020	08 Aug 2019
02787/BH9/0.3	SE195986.012	LB180151	01 Aug 2019	01 Aug 2019	28 Jan 2020	05 Aug 2019	28 Jan 2020	08 Aug 2019
02787/BH10/0.1	SE195986.013	LB180151	01 Aug 2019	01 Aug 2019	28 Jan 2020	05 Aug 2019	28 Jan 2020	08 Aug 2019
02787/BH11/0.15	SE195986.014	LB180151	01 Aug 2019	01 Aug 2019	28 Jan 2020	05 Aug 2019	28 Jan 2020	08 Aug 2019
02787/BH11/0.10	SE195986.015	LB180151	01 Aug 2019	01 Aug 2019	28 Jan 2020	05 Aug 2019	28 Jan 2020	08 Aug 2019
02787/SP1	SE195986.016	LB180151	01 Aug 2019	01 Aug 2019	28 Jan 2020	05 Aug 2019	28 Jan 2020	08 Aug 2019
02787/SP2	SE195986.017	LB180151	01 Aug 2019	01 Aug 2019	28 Jan 2020	05 Aug 2019	28 Jan 2020	08 Aug 2019
02787/SP3	SE195986.018	LB180151	01 Aug 2019	01 Aug 2019	28 Jan 2020	05 Aug 2019	28 Jan 2020	08 Aug 2019
02787/SP4	SE195986.019	LB180151	01 Aug 2019	01 Aug 2019	28 Jan 2020	05 Aug 2019	28 Jan 2020	08 Aug 2019
02787/TB	SE195986.020	LB180151	01 Aug 2019	01 Aug 2019	28 Jan 2020	05 Aug 2019	28 Jan 2020	08 Aug 2019

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
02787/RIN	SE195986.021	LB180103	01 Aug 2019	01 Aug 2019	28 Jan 2020	05 Aug 2019	28 Jan 2020	05 Aug 2019

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
02787/BH1/0.1	SE195986.001	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	06 Aug 2019
02787/BH1/0.6	SE195986.002	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	06 Aug 2019
02787/BH2/0.1	SE195986.003	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	06 Aug 2019
02787/BH3/0.1	SE195986.004	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	06 Aug 2019
02787/BH4/0.15	SE195986.005	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	06 Aug 2019
02787/BH5/0.2	SE195986.007	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	06 Aug 2019
02787/BH5/0.6	SE195986.008	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	06 Aug 2019
02787/BH6/0.2	SE195986.009	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	06 Aug 2019
02787/BH7/0.3	SE195986.010	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	06 Aug 2019
02787/BH8/0.1	SE195986.011	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	06 Aug 2019
02787/BH9/0.3	SE195986.012	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	06 Aug 2019
02787/BH10/0.1	SE195986.013	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	06 Aug 2019
02787/BH11/0.15	SE195986.014	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	06 Aug 2019
02787/BH11/0.10	SE195986.015	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	06 Aug 2019
02787/SP1	SE195986.016	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	06 Aug 2019
02787/SP2	SE195986.017	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	06 Aug 2019
02787/SP3	SE195986.018	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	06 Aug 2019
02787/SP4	SE195986.019	LB180072	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	06 Aug 2019

VOC's in Soil

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

Sample Name	Sample No.	QC Ref

HOLDING TIME SUMMARY

SE195986 R0

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.

VOC's in Soil (continued)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
02787/BH1/0.1	SE195986.001	LB180071	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	06 Aug 2019
02787/BH2/0.1	SE195986.003	LB180071	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	06 Aug 2019
02787/BH3/0.1	SE195986.004	LB180071	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	06 Aug 2019
02787/BH4/0.15	SE195986.005	LB180071	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	06 Aug 2019
02787/BH5/0.2	SE195986.007	LB180071	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	06 Aug 2019
02787/BH6/0.2	SE195986.009	LB180071	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	06 Aug 2019
02787/BH7/0.3	SE195986.010	LB180071	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	06 Aug 2019
02787/BH8/0.1	SE195986.011	LB180071	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	06 Aug 2019
02787/BH11/0.15	SE195986.014	LB180071	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	06 Aug 2019

Volatile Petroleum Hydrocarbons in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
02787/BH1/0.1	SE195986.001	LB180071	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	06 Aug 2019
02787/BH2/0.1	SE195986.003	LB180071	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	06 Aug 2019
02787/BH3/0.1	SE195986.004	LB180071	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	06 Aug 2019
02787/BH4/0.15	SE195986.005	LB180071	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	06 Aug 2019
02787/BH5/0.2	SE195986.007	LB180071	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	06 Aug 2019
02787/BH6/0.2	SE195986.009	LB180071	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	06 Aug 2019
02787/BH7/0.3	SE195986.010	LB180071	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	06 Aug 2019
02787/BH8/0.1	SE195986.011	LB180071	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	06 Aug 2019
02787/BH11/0.15	SE195986.014	LB180071	01 Aug 2019	01 Aug 2019	15 Aug 2019	02 Aug 2019	11 Sep 2019	06 Aug 2019

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]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	02787/BH1/0.1	SE195986.001	%	60 - 130%	92
	02787/BH2/0.1	SE195986.003	%	60 - 130%	93
	02787/BH3/0.1	SE195986.004	%	60 - 130%	91
	02787/BH4/0.15	SE195986.005	%	60 - 130%	89
	02787/BH5/0.2	SE195986.007	%	60 - 130%	99
	02787/BH6/0.2	SE195986.009	%	60 - 130%	93
	02787/BH7/0.3	SE195986.010	%	60 - 130%	95
	02787/BH8/0.1	SE195986.011	%	60 - 130%	96
	02787/BH11/0.15	SE195986.014	%	60 - 130%	101

OP Pesticides in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	02787/BH1/0.1	SE195986.001	%	60 - 130%	88
	02787/BH2/0.1	SE195986.003	%	60 - 130%	88
	02787/BH3/0.1	SE195986.004	%	60 - 130%	92
	02787/BH4/0.15	SE195986.005	%	60 - 130%	94
	02787/BH5/0.2	SE195986.007	%	60 - 130%	88
	02787/BH6/0.2	SE195986.009	%	60 - 130%	90
	02787/BH7/0.3	SE195986.010	%	60 - 130%	90
	02787/BH8/0.1	SE195986.011	%	60 - 130%	90
	02787/BH11/0.15	SE195986.014	%	60 - 130%	88
d14-p-terphenyl (Surrogate)	02787/BH1/0.1	SE195986.001	%	60 - 130%	88
	02787/BH2/0.1	SE195986.003	%	60 - 130%	86
	02787/BH3/0.1	SE195986.004	%	60 - 130%	90
	02787/BH4/0.15	SE195986.005	%	60 - 130%	90
	02787/BH5/0.2	SE195986.007	%	60 - 130%	82
	02787/BH6/0.2	SE195986.009	%	60 - 130%	84
	02787/BH7/0.3	SE195986.010	%	60 - 130%	86
	02787/BH8/0.1	SE195986.011	%	60 - 130%	82
	02787/BH11/0.15	SE195986.014	%	60 - 130%	84

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	02787/BH1/0.1	SE195986.001	%	70 - 130%	88
	02787/BH1/0.6	SE195986.002	%	70 - 130%	82
	02787/BH2/0.1	SE195986.003	%	70 - 130%	88
	02787/BH3/0.1	SE195986.004	%	70 - 130%	92
	02787/BH4/0.15	SE195986.005	%	70 - 130%	94
	02787/BH5/0.2	SE195986.007	%	70 - 130%	88
	02787/BH5/0.6	SE195986.008	%	70 - 130%	92
	02787/BH6/0.2	SE195986.009	%	70 - 130%	90
	02787/BH7/0.3	SE195986.010	%	70 - 130%	90
	02787/BH8/0.1	SE195986.011	%	70 - 130%	90
	02787/BH9/0.3	SE195986.012	%	70 - 130%	88
	02787/BH10/0.1	SE195986.013	%	70 - 130%	92
	02787/BH11/0.15	SE195986.014	%	70 - 130%	88
	02787/BH11/0.10	SE195986.015	%	70 - 130%	96
	02787/SP1	SE195986.016	%	70 - 130%	74
	02787/SP2	SE195986.017	%	70 - 130%	92
	02787/SP3	SE195986.018	%	70 - 130%	92
	02787/SP4	SE195986.019	%	70 - 130%	88
d14-p-terphenyl (Surrogate)	02787/BH1/0.1	SE195986.001	%	70 - 130%	88
	02787/BH1/0.6	SE195986.002	%	70 - 130%	82
	02787/BH2/0.1	SE195986.003	%	70 - 130%	86
	02787/BH3/0.1	SE195986.004	%	70 - 130%	90
	02787/BH4/0.15	SE195986.005	%	70 - 130%	90
	02787/BH5/0.2	SE195986.007	%	70 - 130%	82
	02787/BH5/0.6	SE195986.008	%	70 - 130%	88
	02787/BH6/0.2	SE195986.009	%	70 - 130%	84
	02787/BH7/0.3	SE195986.010	%	70 - 130%	86
	02787/BH8/0.1	SE195986.011	%	70 - 130%	82
	02787/BH9/0.3	SE195986.012	%	70 - 130%	80

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.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d14-p-terphenyl (Surrogate)	02787/BH10/0.1	SE195986.013	%	70 - 130%	90
	02787/BH11/0.15	SE195986.014	%	70 - 130%	84
	02787/BH11/0.10	SE195986.015	%	70 - 130%	94
	02787/SP1	SE195986.016	%	70 - 130%	70
	02787/SP2	SE195986.017	%	70 - 130%	92
	02787/SP3	SE195986.018	%	70 - 130%	90
	02787/SP4	SE195986.019	%	70 - 130%	88
d5-nitrobenzene (Surrogate)	02787/BH1/0.1	SE195986.001	%	70 - 130%	90
	02787/BH1/0.6	SE195986.002	%	70 - 130%	80
	02787/BH2/0.1	SE195986.003	%	70 - 130%	86
	02787/BH3/0.1	SE195986.004	%	70 - 130%	88
	02787/BH4/0.15	SE195986.005	%	70 - 130%	92
	02787/BH5/0.2	SE195986.007	%	70 - 130%	82
	02787/BH5/0.6	SE195986.008	%	70 - 130%	90
	02787/BH6/0.2	SE195986.009	%	70 - 130%	88
	02787/BH7/0.3	SE195986.010	%	70 - 130%	90
	02787/BH8/0.1	SE195986.011	%	70 - 130%	90
	02787/BH9/0.3	SE195986.012	%	70 - 130%	86
	02787/BH10/0.1	SE195986.013	%	70 - 130%	90
	02787/BH11/0.15	SE195986.014	%	70 - 130%	86
	02787/BH11/0.10	SE195986.015	%	70 - 130%	94
	02787/SP1	SE195986.016	%	70 - 130%	70
	02787/SP2	SE195986.017	%	70 - 130%	88
	02787/SP3	SE195986.018	%	70 - 130%	88
	02787/SP4	SE195986.019	%	70 - 130%	90

PCBs in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	02787/BH1/0.1	SE195986.001	%	60 - 130%	92
	02787/BH2/0.1	SE195986.003	%	60 - 130%	93
	02787/BH3/0.1	SE195986.004	%	60 - 130%	91
	02787/BH4/0.15	SE195986.005	%	60 - 130%	89
	02787/BH5/0.2	SE195986.007	%	60 - 130%	99
	02787/BH6/0.2	SE195986.009	%	60 - 130%	93
	02787/BH7/0.3	SE195986.010	%	60 - 130%	95
	02787/BH8/0.1	SE195986.011	%	60 - 130%	96
	02787/BH11/0.15	SE195986.014	%	60 - 130%	101

VOC's in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	02787/BH1/0.1	SE195986.001	%	60 - 130%	93
	02787/BH2/0.1	SE195986.003	%	60 - 130%	94
	02787/BH3/0.1	SE195986.004	%	60 - 130%	91
	02787/BH4/0.15	SE195986.005	%	60 - 130%	94
	02787/BH5/0.2	SE195986.007	%	60 - 130%	93
	02787/BH6/0.2	SE195986.009	%	60 - 130%	94
	02787/BH7/0.3	SE195986.010	%	60 - 130%	88
	02787/BH8/0.1	SE195986.011	%	60 - 130%	87
	02787/BH11/0.15	SE195986.014	%	60 - 130%	95
d4-1,2-dichloroethane (Surrogate)	02787/BH1/0.1	SE195986.001	%	60 - 130%	121
	02787/BH2/0.1	SE195986.003	%	60 - 130%	126
	02787/BH3/0.1	SE195986.004	%	60 - 130%	121
	02787/BH4/0.15	SE195986.005	%	60 - 130%	127
	02787/BH5/0.2	SE195986.007	%	60 - 130%	117
	02787/BH6/0.2	SE195986.009	%	60 - 130%	117
	02787/BH7/0.3	SE195986.010	%	60 - 130%	150 ①
	02787/BH8/0.1	SE195986.011	%	60 - 130%	102
	02787/BH11/0.15	SE195986.014	%	60 - 130%	127
d8-toluene (Surrogate)	02787/BH1/0.1	SE195986.001	%	60 - 130%	98
	02787/BH2/0.1	SE195986.003	%	60 - 130%	97
	02787/BH3/0.1	SE195986.004	%	60 - 130%	97
	02787/BH4/0.15	SE195986.005	%	60 - 130%	100

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.

VOC's in Soil (continued)

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d8-toluene (Surrogate)	02787/BH5/0.2	SE195986.007	%	60 - 130%	99
	02787/BH6/0.2	SE195986.009	%	60 - 130%	103
	02787/BH7/0.3	SE195986.010	%	60 - 130%	100
	02787/BH8/0.1	SE195986.011	%	60 - 130%	96
	02787/BH11/0.15	SE195986.014	%	60 - 130%	97

Volatile Petroleum Hydrocarbons in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	02787/BH1/0.1	SE195986.001	%	60 - 130%	93
	02787/BH2/0.1	SE195986.003	%	60 - 130%	94
	02787/BH3/0.1	SE195986.004	%	60 - 130%	91
	02787/BH4/0.15	SE195986.005	%	60 - 130%	94
	02787/BH5/0.2	SE195986.007	%	60 - 130%	93
	02787/BH6/0.2	SE195986.009	%	60 - 130%	94
	02787/BH7/0.3	SE195986.010	%	60 - 130%	88
	02787/BH8/0.1	SE195986.011	%	60 - 130%	87
	02787/BH11/0.15	SE195986.014	%	60 - 130%	95
d4-1,2-dichloroethane (Surrogate)	02787/BH1/0.1	SE195986.001	%	60 - 130%	121
	02787/BH2/0.1	SE195986.003	%	60 - 130%	126
	02787/BH3/0.1	SE195986.004	%	60 - 130%	121
	02787/BH4/0.15	SE195986.005	%	60 - 130%	127
	02787/BH5/0.2	SE195986.007	%	60 - 130%	117
	02787/BH6/0.2	SE195986.009	%	60 - 130%	117
	02787/BH7/0.3	SE195986.010	%	60 - 130%	150 ①
	02787/BH8/0.1	SE195986.011	%	60 - 130%	102
	02787/BH11/0.15	SE195986.014	%	60 - 130%	127
d8-toluene (Surrogate)	02787/BH1/0.1	SE195986.001	%	60 - 130%	98
	02787/BH2/0.1	SE195986.003	%	60 - 130%	97
	02787/BH3/0.1	SE195986.004	%	60 - 130%	97
	02787/BH4/0.15	SE195986.005	%	60 - 130%	100
	02787/BH5/0.2	SE195986.007	%	60 - 130%	99
	02787/BH6/0.2	SE195986.009	%	60 - 130%	103
	02787/BH7/0.3	SE195986.010	%	60 - 130%	100
	02787/BH8/0.1	SE195986.011	%	60 - 130%	96
	02787/BH11/0.15	SE195986.014	%	60 - 130%	97

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 (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Sample Number	Parameter	Units	LOR	Result
LB180006.001	Mercury	mg/L	0.0001	<0.0001

Mercury in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB180154.001	Mercury	mg/kg	0.05	<0.05

OC Pesticides in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB180072.001		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)	%	-	124

OP Pesticides in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB180072.001		Dichlorvos	mg/kg	0.5	<0.5
		Dimethoate	mg/kg	0.5	<0.5
		Diazinon (Dimpylate)	mg/kg	0.5	<0.5
		Fenitrothion	mg/kg	0.2	<0.2
		Malathion	mg/kg	0.2	<0.2
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2
		Bromophos Ethyl	mg/kg	0.2	<0.2
		Methidathion	mg/kg	0.5	<0.5
		Ethion	mg/kg	0.2	<0.2
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2
	Surrogates	2-fluorobiphenyl (Surrogate)	%	-	90
		d14-p-terphenyl (Surrogate)	%	-	98

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB180072.001	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

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.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

Sample Number		Parameter	Units	LOR	Result
LB180072.001		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(ah)anthracene	mg/kg	0.1	<0.1
		Benzo(ghi)perylene	mg/kg	0.1	<0.1
		Total PAH (18)	mg/kg	0.8	<0.8
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	86
		2-fluorobiphenyl (Surrogate)	%	-	90
		d14-p-terphenyl (Surrogate)	%	-	98

PCBs in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB180072.001		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
		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)	%	-	124

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

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

Sample Number	Parameter	Units	LOR	Result
LB180151.001	Arsenic, As	mg/kg	1	<1
	Cadmium, Cd	mg/kg	0.3	<0.3
	Chromium, Cr	mg/kg	0.5	<0.5
	Copper, Cu	mg/kg	0.5	<0.5
	Nickel, Ni	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Zinc, Zn	mg/kg	2	<2.0

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result
LB180103.001	Arsenic, As	µg/L	1	<1
	Cadmium, Cd	µg/L	0.1	<0.1
	Chromium, Cr	µg/L	1	<1
	Copper, Cu	µg/L	1	<1
	Lead, Pb	µg/L	1	<1
	Nickel, Ni	µg/L	1	<1
	Zinc, Zn	µg/L	5	<5

TRH (Total Recoverable Hydrocarbons) in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB180072.001	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

Sample Number		Parameter	Units	LOR	Result
LB180071.001	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
		o-xylene	mg/kg	0.1	<0.1
	Polycyclic VOCs	Naphthalene	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

Sample Number		Parameter	Units	LOR	Result
LB180071.001	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	82
		d8-toluene (Surrogate)	%	-	81
		Bromofluorobenzene (Surrogate)	%	-	89
	Totals	Total BTEX	mg/kg	0.6	<0.6

Volatile Petroleum Hydrocarbons in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB180071.001		TRH C6-C9	mg/kg	20	<20
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	82
		d8-toluene (Surrogate)	%	-	81

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 (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195986.021	LB180006.020	Mercury	µg/L	0.0001	<0.0001	0.0001	82	24

Mercury in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195986.010	LB180154.014	Mercury	mg/kg	0.05	0.06	0.06	117	7

Moisture Content

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195986.007	LB180074.011	% Moisture	%w/w	0.5	22	23	34	2
SE195986.017	LB180074.022	% Moisture	%w/w	0.5	20	20	35	0
SE196023.003	LB180074.031	% Moisture	%w/w	0.5	7.9	7.0	43	12

OC Pesticides in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195986.014	LB180072.039		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	<0.2	<0.2	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
			Total CLP OC Pesticides	mg/kg	1	<1	<1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.15	0.13	30	14

OP Pesticides in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195986.009	LB180072.038	Dichlorvos	mg/kg	0.5	<0.5	<0.5	200	0
		Dimethoate	mg/kg	0.5	<0.5	<0.5	200	0
		Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	200	0
		Fenitrothion	mg/kg	0.2	<0.2	<0.2	200	0
		Malathion	mg/kg	0.2	<0.2	<0.2	200	0
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	200	0
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	200	0
		Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	200	0
		Methidathion	mg/kg	0.5	<0.5	<0.5	200	0
		Ethion	mg/kg	0.2	<0.2	<0.2	200	0
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	200	0
		Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	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.

OP Pesticides in Soil (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195986.009	LB180072.038	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.4	30	12
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	10

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195986.009	LB180072.038		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	0.2	0.2	89	0
			Anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluoranthene	mg/kg	0.1	0.4	0.5	51	15
			Pyrene	mg/kg	0.1	0.5	0.5	52	0
			Benzo(a)anthracene	mg/kg	0.1	0.2	0.2	74	4
			Chrysene	mg/kg	0.1	0.3	0.3	68	0
			Benzo(b&j)fluoranthene	mg/kg	0.1	0.3	0.3	61	3
			Benzo(k)fluoranthene	mg/kg	0.1	0.2	0.2	93	13
			Benzo(a)pyrene	mg/kg	0.1	0.3	0.3	66	7
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	0.2	0.2	87	6
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(ghi)perylene	mg/kg	0.1	0.2	0.2	93	13
			Carcinogenic PAHs, BaP TEQ <LOR=0	mg/kg	0.2	0.4	0.4	64	6
				TEQ (mg/kg)	0.2	0.4	0.4	64	6
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	mg/kg	0.3	0.5	0.5	73	5
				TEQ (mg/kg)	0.3	0.5	0.5	73	5
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	mg/kg	0.2	0.4	0.4	57	5
				TEQ (mg/kg)	0.2	0.4	0.4	57	5
			Total PAH (18)	mg/kg	0.8	2.7	2.7	60	0
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.4	30	12
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.4	30	12
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	10
SE195986.019	LB180072.037		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	148	10
			Anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluoranthene	mg/kg	0.1	0.3	0.3	65	25
			Pyrene	mg/kg	0.1	0.3	0.3	63	23
			Benzo(a)anthracene	mg/kg	0.1	0.2	0.2	93	0
			Chrysene	mg/kg	0.1	0.2	0.2	91	6
			Benzo(b&j)fluoranthene	mg/kg	0.1	0.2	0.2	83	0
			Benzo(k)fluoranthene	mg/kg	0.1	0.1	0.1	130	0
			Benzo(a)pyrene	mg/kg	0.1	0.1	0.2	99	7
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	0.1	<0.1	135	0
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	141	0
			Carcinogenic PAHs, BaP TEQ <LOR=0	mg/kg	0.2	<0.2	<0.2	111	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	mg/kg	0.3	<0.3	0.3	109	3
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	mg/kg	0.2	0.2	0.3	90	2
			Total PAH (18)	mg/kg	0.8	1.6	1.3	84	23
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.4	30	9
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	5
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	30	4
SE196023.003	LB180072.034		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

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.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196023.003	LB180072.034		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	200	0
			Anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			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(ah)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, BaP TEQ <LOR=0	mg/kg	0.2	<0.2	<0.2	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	mg/kg	0.3	<0.3	<0.3	134	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	mg/kg	0.2	<0.2	<0.2	175	0
			Total PAH (18)	mg/kg	0.8	<0.8	<0.8	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.5	30	7
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	30	7
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	10

PCBs in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195986.014	LB180072.035		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	14

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195986.010	LB180151.014	Arsenic, As	mg/kg	1	7	8	43	13
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.5	31	29	32	7
		Copper, Cu	mg/kg	0.5	23	21	32	12
		Nickel, Ni	mg/kg	0.5	1.9	1.9	57	1
		Lead, Pb	mg/kg	1	71	73	31	2
		Zinc, Zn	mg/kg	2	85	90	32	6

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195996.001	LB180103.014	Arsenic, As	µg/L	1	3	3	49	2
		Cadmium, Cd	µg/L	0.1	<0.1	<0.1	200	0
		Chromium, Cr	µg/L	1	<1	<1	200	0
		Copper, Cu	µg/L	1	<1	<1	200	0
		Lead, Pb	µg/L	1	<1	<1	200	0
		Nickel, Ni	µg/L	1	<1	<1	200	0
		Zinc, Zn	µg/L	5	15	14	49	5
SE196025.010	LB180103.021	Arsenic, As	µg/L	1	<1	<1	200	0
		Cadmium, Cd	µg/L	0.1	<0.1	<0.1	200	0
		Chromium, Cr	µg/L	1	<1	<1	200	0
		Copper, Cu	µg/L	1	<1	<1	200	0
		Lead, Pb	µg/L	1	<1	<1	200	0
		Nickel, Ni	µg/L	1	<1	<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.

Trace Metals (Dissolved) in Water by ICPMS (continued)

Method: ME-(AU)-[ENV]AN318

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196025.010	LB180103.021		Zinc, Zn	µg/L	5	<5	<5	200	0

TRH (Total Recoverable Hydrocarbons) in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195986.009	LB180072.014		TRH C10-C14	mg/kg	20	<20	<20	200	0
			TRH C15-C28	mg/kg	45	<45	75	115	50
			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 (F bands)	mg/kg	210	<210	<210	200	0
		TRH F Bands	TRH >C10-C16	mg/kg	25	<25	<25	200	0
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	94	148	4
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0
SE196023.003	LB180072.034		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 (F bands)	mg/kg	210	<210	<210	200	0
		TRH F Bands	TRH >C10-C16	mg/kg	25	<25	<25	200	0
			TRH >C10-C16 - Naphthalene (F2)	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

VOC's in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195986.011	LB180071.014	Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
		Aromatic	Toluene	mg/kg	0.1	<0.1	<0.1	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.1	6.6	50	25
			d8-toluene (Surrogate)	mg/kg	-	4.8	4.8	50	1
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.4	4.8	50	10
		Totals	Total Xylenes	mg/kg	0.3	<0.3	<0.3	200	0
			Total BTEX	mg/kg	0.6	<0.6	<0.6	200	0
SE196023.003	LB180071.021	Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
		Aromatic	Toluene	mg/kg	0.1	<0.1	<0.1	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.4	4.6	50	4
			d8-toluene (Surrogate)	mg/kg	-	4.2	4.2	50	0
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.6	4.4	50	4
		Totals	Total Xylenes	mg/kg	0.3	<0.3	<0.3	200	0
			Total BTEX	mg/kg	0.6	<0.6	<0.6	200	0

Volatile Petroleum Hydrocarbons in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195986.011	LB180071.014		TRH C6-C10	mg/kg	25	<25	<25	200	0
			TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.1	6.6	30	25
			d8-toluene (Surrogate)	mg/kg	-	4.8	4.8	30	1
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.4	4.8	30	10
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0
SE196023.003	LB180071.021		TRH C6-C10	mg/kg	25	<25	<25	200	0
			TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.4	4.6	30	4

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.

Volatile Petroleum Hydrocarbons in Soil (continued) — **Method: ME-(AU)-[ENV]AN433**

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE196023.003	LB180071.021	Surrogates	d8-toluene (Surrogate)	mg/kg	-	4.2	4.2	30	0
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.6	4.4	30	4
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	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 %
LB180154.002	Mercury	mg/kg	0.05	0.23	0.2	70 - 130	115

OC Pesticides in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180072.002		Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	117
		Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	123
		Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	121
		Dieldrin	mg/kg	0.2	0.2	0.2	60 - 140	115
		Endrin	mg/kg	0.2	0.2	0.2	60 - 140	113
		p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	90
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.19	0.15	40 - 130	125

OP Pesticides in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180072.002		Dichlorvos	mg/kg	0.5	1.7	2	60 - 140	84
		Diazinon (Dimpylate)	mg/kg	0.5	1.6	2	60 - 140	81
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	1.7	2	60 - 140	84
		Ethion	mg/kg	0.2	1.5	2	60 - 140	75
	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	88
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	90

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180072.002		Naphthalene	mg/kg	0.1	4.1	4	60 - 140	101
		Acenaphthylene	mg/kg	0.1	4.0	4	60 - 140	100
		Acenaphthene	mg/kg	0.1	4.1	4	60 - 140	102
		Phenanthrene	mg/kg	0.1	4.6	4	60 - 140	114
		Anthracene	mg/kg	0.1	4.7	4	60 - 140	118
		Fluoranthene	mg/kg	0.1	4.8	4	60 - 140	119
		Pyrene	mg/kg	0.1	4.9	4	60 - 140	122
		Benzo(a)pyrene	mg/kg	0.1	4.5	4	60 - 140	112
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	82
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	88
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	90

PCBs in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180072.002	Arochlor 1260	mg/kg	0.2	0.4	0.4	60 - 140	105

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180151.002	Arsenic, As	mg/kg	1	350	336.32	79 - 120	104
	Cadmium, Cd	mg/kg	0.3	430	416.6	69 - 131	102
	Chromium, Cr	mg/kg	0.5	35	35.2	80 - 120	101
	Copper, Cu	mg/kg	0.5	340	370.46	80 - 120	93
	Nickel, Ni	mg/kg	0.5	200	210.88	79 - 120	93
	Lead, Pb	mg/kg	1	100	107.87	79 - 120	93
	Zinc, Zn	mg/kg	2	300	301.27	80 - 121	99

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180103.002	Arsenic, As	µg/L	1	19	20	80 - 120	97
	Cadmium, Cd	µg/L	0.1	19	20	80 - 120	97
	Chromium, Cr	µg/L	1	23	20	80 - 120	114
	Copper, Cu	µg/L	1	22	20	80 - 120	108
	Lead, Pb	µg/L	1	19	20	80 - 120	97
	Nickel, Ni	µg/L	1	21	20	80 - 120	104
	Zinc, Zn	µg/L	5	21	20	80 - 120	104

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.

TRH (Total Recoverable Hydrocarbons) in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180072.002		TRH C10-C14	mg/kg	20	45	40	60 - 140	113
		TRH C15-C28	mg/kg	45	<45	40	60 - 140	110
		TRH C29-C36	mg/kg	45	<45	40	60 - 140	98
	TRH F Bands	TRH >C10-C16	mg/kg	25	46	40	60 - 140	115
		TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	110
		TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	95

VOC's in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180071.002	Monocyclic	Benzene	mg/kg	0.1	2.2	2.9	60 - 140	76
	Aromatic	Toluene	mg/kg	0.1	1.9	2.9	60 - 140	67
		Ethylbenzene	mg/kg	0.1	2.1	2.9	60 - 140	72
		m/p-xylene	mg/kg	0.2	4.3	5.8	60 - 140	75
		o-xylene	mg/kg	0.1	2.1	2.9	60 - 140	71
	Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.2	5	60 - 140	83
		d8-toluene (Surrogate)	mg/kg	-	4.0	5	60 - 140	80
		Bromofluorobenzene (Surrogate)	mg/kg	-	4.4	5	60 - 140	89

Volatile Petroleum Hydrocarbons in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180071.002		TRH C6-C10	mg/kg	25	<25	24.65	60 - 140	91
		TRH C6-C9	mg/kg	20	22	23.2	60 - 140	93
	Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.2	5	60 - 140	83
		d8-toluene (Surrogate)	mg/kg	-	4.0	5	60 - 140	80
		Bromofluorobenzene (Surrogate)	mg/kg	-	4.4	5	60 - 140	89
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	7.25	60 - 140	136

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 (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE195924.001	LB180006.005	Mercury	mg/L	0.0001	0.0076	<0.0001	0.008	94

Mercury in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE195986.001	LB180154.004	Mercury	mg/kg	0.05	0.27	<0.05	0.2	115

OC Pesticides in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE195943.001	LB180072.004		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	0.2	<0.1	0.2	124
			Aldrin	mg/kg	0.1	0.5	0.3	0.2	100
			Beta BHC	mg/kg	0.1	<0.1	<0.1	-	-
			Delta BHC	mg/kg	0.1	0.2	<0.1	0.2	113
			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	1.6	1.5	0.2	67
			Endrin	mg/kg	0.2	0.2	<0.2	0.2	117
			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	110
			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	-	-
			Total CLP OC Pesticides	mg/kg	1	<1	2	-	-
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.19	0.18	-	125

OP Pesticides in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE195943.001	LB180072.036		Dichlorvos	mg/kg	0.5	1.8	<0.5	2	89
			Dimethoate	mg/kg	0.5	<0.5	<0.5	-	-
			Diazinon (Dimpylate)	mg/kg	0.5	1.9	<0.5	2	94
			Fenitrothion	mg/kg	0.2	<0.2	<0.2	-	-
			Malathion	mg/kg	0.2	<0.2	<0.2	-	-
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	2.0	<0.2	2	100
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	-	-
			Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	-	-
			Methidathion	mg/kg	0.5	<0.5	<0.5	-	-
			Ethion	mg/kg	0.2	2.4	<0.2	2	118
			Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	-	-
			Total OP Pesticides*	mg/kg	1.7	8.0	<1.7	-	-
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	-	86
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.4	-	90

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR

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.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE195943.001	LB180072.036		Naphthalene	mg/kg	0.1	4.2	0.2	4	101
			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	5.1	0.9	4	107
			Acenaphthene	mg/kg	0.1	3.8	<0.1	4	94
			Fluorene	mg/kg	0.1	0.5	0.4	-	-
			Phenanthrene	mg/kg	0.1	9.0	4.2	4	120
			Anthracene	mg/kg	0.1	5.4	1.1	4	107
			Fluoranthene	mg/kg	0.1	9.4	5.1	4	107
			Pyrene	mg/kg	0.1	9.2	4.6	4	116
			Benzo(a)anthracene	mg/kg	0.1	2.3	2.4	-	-
			Chrysene	mg/kg	0.1	1.6	1.8	-	-
			Benzo(b&j)fluoranthene	mg/kg	0.1	2.2	2.4	-	-
			Benzo(k)fluoranthene	mg/kg	0.1	1.0	1.0	-	-
			Benzo(a)pyrene	mg/kg	0.1	6.5	2.2	4	108
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	1.1	1.2	-	-
			Dibenzo(ah)anthracene	mg/kg	0.1	0.1	0.1	-	-
			Benzo(ghi)perylene	mg/kg	0.1	0.8	0.8	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	7.3	3.0	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	7.3	3.0	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	7.3	3.0	-	-
			Total PAH (18)	mg/kg	0.8	62	28	-	-
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.4	-	88
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	-	86
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.4	-	90

PCBs in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE195943.001	LB180072.004		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	0.4	<0.2	0.4	93
			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	-	-
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	-	119

TRH (Total Recoverable Hydrocarbons) in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE195943.001	LB180072.035		TRH C10-C14	mg/kg	20	45	<20	40	113
			TRH C15-C28	mg/kg	45	160	120	40	118
			TRH C29-C36	mg/kg	45	67	60	40	18 ⑤
			TRH C37-C40	mg/kg	100	<100	<100	-	-
			TRH C10-C36 Total	mg/kg	110	280	180	-	-
			TRH C10-C40 Total (F bands)	mg/kg	210	230	<210	-	-
		TRH F Bands	TRH >C10-C16	mg/kg	25	47	<25	40	118
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	47	<25	-	-
			TRH >C16-C34 (F3)	mg/kg	90	190	170	40	55 ⑤
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	-	-

VOC's in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE195943.001	LB180071.004	Monocyclic	Benzene	mg/kg	0.1	2.4	<0.1	2.9	84
		Aromatic	Toluene	mg/kg	0.1	2.3	<0.1	2.9	80
			Ethylbenzene	mg/kg	0.1	2.3	<0.1	2.9	80
			m/p-xylene	mg/kg	0.2	4.7	<0.2	5.8	81
			o-xylene	mg/kg	0.1	2.3	<0.1	2.9	80
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.3	6.0	-	105

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.

VOC's in Soil (continued)

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE195943.001	LB180071.004	Surrogates	d8-toluene (Surrogate)	mg/kg	-	4.5	5.2	-	91
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.7	5.1	-	95
		Totals	Total Xylenes	mg/kg	0.3	7.0	<0.3	-	-
			Total BTEX	mg/kg	0.6	14	<0.6	-	-

Volatile Petroleum Hydrocarbons in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE195943.001	LB180071.004		TRH C6-C10	mg/kg	25	<25	<25	24.65	66
			TRH C6-C9	mg/kg	20	21	<20	23.2	65
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.3	6.0	-	105
			d8-toluene (Surrogate)	mg/kg	-	4.5	5.2	-	91
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.7	5.1	-	95
		VPH F	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	7.25	117

MATRIX SPIKE DUPLICATES

SE195986 R0

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.

No matrix spike duplicates were required for this job.

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: https://www.sgs.com.au/~/media/Local/Australia/Documents/Technical Documents/MP-AU-ENV-QU-022 QA QC Plan.pdf

*	NATA accreditation does not cover the performance of this service.
**	Indicative data, theoretical holding time exceeded.
-	Sample not analysed for this analyte.
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.

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Simon Gorham
Client	AIRSAFE OHC PTY LTD
Address	93 BEATTIE STREET BALMAIN NSW 2041
Telephone	61 2 95559034
Facsimile	(Not specified)
Email	info@airsafe.net.au
Project	**02787.07.19 Stage 2 DSI-211 Pacific Hwy**
Order Number	**02787.07.19**
Samples	21

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
SGS Reference	**SE195986A R0**
Date Received	12 Aug 2019
Date Reported	15 Aug 2019

COMMENTS

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

SIGNATORIES

Bennet Lo
Senior Organic Chemist/Metals Chemis

Dong Liang
Metals/Inorganics Team Leader

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE195986A.001 Soil 01 Aug 2019 02787/BH1/0.1	SE195986A.002 Soil 01 Aug 2019 02787/BH1/0.6	SE195986A.003 Soil 01 Aug 2019 02787/BH2/0.1	SE195986A.004 Soil 01 Aug 2019 02787/BH3/0.1
pH in soil (1:5) Method: AN101 Tested: 14/8/2019							
pH	pH Units	0.1		**6.7**	-	-	-
Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) Method: AN122 Tested: 15/8/2019							
Exchangeable Sodium, Na	mg/kg	2		-	-	-	-
Exchangeable Sodium, Na	meq/100g	0.01		-	-	-	-
Exchangeable Sodium Percentage*	%	0.1		-	-	-	-
Exchangeable Potassium, K	mg/kg	2		-	-	-	-
Exchangeable Potassium, K	meq/100g	0.01		-	-	-	-
Exchangeable Potassium Percentage*	%	0.1		-	-	-	-
Exchangeable Calcium, Ca	mg/kg	2		-	-	-	-
Exchangeable Calcium, Ca	meq/100g	0.01		-	-	-	-
Exchangeable Calcium Percentage*	%	0.1		-	-	-	-
Exchangeable Magnesium, Mg	mg/kg	2		-	-	-	-
Exchangeable Magnesium, Mg	meq/100g	0.02		-	-	-	-
Exchangeable Magnesium Percentage*	%	0.1		-	-	-	-
Cation Exchange Capacity	meq/100g	0.02		-	-	-	-

Parameter	Units	LOR	Sample Number: SE195986A.005 Sample Matrix: Soil Sample Date: 01 Aug 2019 Sample Name: 02787/BH4/0.15	SE195986A.006 Soil 01 Aug 2019 02787/BH4/Dup Intra	SE195986A.007 Soil 01 Aug 2019 02787/BH5/0.2	SE195986A.008 Soil 01 Aug 2019 02787/BH5/0.6
pH in soil (1:5) Method: AN101 Tested: 14/8/2019						
pH	pH Units	0.1	**5.8**	-	-	-
Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) Method: AN122 Tested: 13/8/2019						
Exchangeable Sodium, Na	mg/kg	2	**56**	-	-	-
Exchangeable Sodium, Na	meq/100g	0.01	**0.24**	-	-	-
Exchangeable Sodium Percentage*	%	0.1	**2.4**	-	-	-
Exchangeable Potassium, K	mg/kg	2	**73**	-	-	-
Exchangeable Potassium, K	meq/100g	0.01	**0.19**	-	-	-
Exchangeable Potassium Percentage*	%	0.1	**1.9**	-	-	-
Exchangeable Calcium, Ca	mg/kg	2	**1600**	-	-	-
Exchangeable Calcium, Ca	meq/100g	0.01	**8.0**	-	-	-
Exchangeable Calcium Percentage*	%	0.1	**79.6**	-	-	-
Exchangeable Magnesium, Mg	mg/kg	2	**200**	-	-	-
Exchangeable Magnesium, Mg	meq/100g	0.02	**1.6**	-	-	-
Exchangeable Magnesium Percentage*	%	0.1	**16.1**	-	-	-
Cation Exchange Capacity	meq/100g	0.02	**10**	-	-	-

Parameter	Units	LOR	Sample Number: SE195986A.009 Sample Matrix: Soil Sample Date: 01 Aug 2019 Sample Name: 02787/BH6/0.2	SE195986A.010 Soil 01 Aug 2019 02787/BH7/0.3	SE195986A.011 Soil 01 Aug 2019 02787/BH8/0.1	SE195986A.012 Soil 01 Aug 2019 02787/BH9/0.3
pH in soil (1:5) Method: AN101 Tested: 15/8/2019						
pH	pH Units	0.1	-	-	**7.6**	-
Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) Method: AN122 Tested: 15/8/2019						
Exchangeable Sodium, Na	mg/kg	2	-	-	-	-
Exchangeable Sodium, Na	meq/100g	0.01	-	-	-	-
Exchangeable Sodium Percentage*	%	0.1	-	-	-	-
Exchangeable Potassium, K	mg/kg	2	-	-	-	-
Exchangeable Potassium, K	meq/100g	0.01	-	-	-	-
Exchangeable Potassium Percentage*	%	0.1	-	-	-	-
Exchangeable Calcium, Ca	mg/kg	2	-	-	-	-
Exchangeable Calcium, Ca	meq/100g	0.01	-	-	-	-
Exchangeable Calcium Percentage*	%	0.1	-	-	-	-
Exchangeable Magnesium, Mg	mg/kg	2	-	-	-	-
Exchangeable Magnesium, Mg	meq/100g	0.02	-	-	-	-
Exchangeable Magnesium Percentage*	%	0.1	-	-	-	-
Cation Exchange Capacity	meq/100g	0.02	-	-	-	-

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name SE195986A.013 Soil 01 Aug 2019 02787/BH10/0.1	SE195986A.014 Soil 01 Aug 2019 02787/BH11/0.15	SE195986A.015 Soil 01 Aug 2019 02787/BH11/0.10	SE195986A.016 Soil 01 Aug 2019 02787/SP1
pH in soil (1:5) Method: AN101 Tested: 14/8/2019						
pH	pH Units	0.1	**7.0**	-	-	-
Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) Method: AN122 Tested: 15/8/2019						
Exchangeable Sodium, Na	mg/kg	2	-	-	-	-
Exchangeable Sodium, Na	meq/100g	0.01	-	-	-	-
Exchangeable Sodium Percentage*	%	0.1	-	-	-	-
Exchangeable Potassium, K	mg/kg	2	-	-	-	-
Exchangeable Potassium, K	meq/100g	0.01	-	-	-	-
Exchangeable Potassium Percentage*	%	0.1	-	-	-	-
Exchangeable Calcium, Ca	mg/kg	2	-	-	-	-
Exchangeable Calcium, Ca	meq/100g	0.01	-	-	-	-
Exchangeable Calcium Percentage*	%	0.1	-	-	-	-
Exchangeable Magnesium, Mg	mg/kg	2	-	-	-	-
Exchangeable Magnesium, Mg	meq/100g	0.02	-	-	-	-
Exchangeable Magnesium Percentage*	%	0.1	-	-	-	-
Cation Exchange Capacity	meq/100g	0.02	-	-	-	-

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE195986A.017 Soil 01 Aug 2019 02787/SP2	SE195986A.018 Soil 01 Aug 2019 02787/SP3	SE195986A.019 Soil 01 Aug 2019 02787/SP4	SE195986A.020 Soil 01 Aug 2019 02787/TB
pH in soil (1:5) Method: AN101 Tested: 15/8/2019							
pH	pH Units	0.1		-	-	-	-
Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) Method: AN122 Tested: 15/8/2019							
Exchangeable Sodium, Na	mg/kg	2		-	-	-	-
Exchangeable Sodium, Na	meq/100g	0.01		-	-	-	-
Exchangeable Sodium Percentage*	%	0.1		-	-	-	-
Exchangeable Potassium, K	mg/kg	2		-	-	-	-
Exchangeable Potassium, K	meq/100g	0.01		-	-	-	-
Exchangeable Potassium Percentage*	%	0.1		-	-	-	-
Exchangeable Calcium, Ca	mg/kg	2		-	-	-	-
Exchangeable Calcium, Ca	meq/100g	0.01		-	-	-	-
Exchangeable Calcium Percentage*	%	0.1		-	-	-	-
Exchangeable Magnesium, Mg	mg/kg	2		-	-	-	-
Exchangeable Magnesium, Mg	meq/100g	0.02		-	-	-	-
Exchangeable Magnesium Percentage*	%	0.1		-	-	-	-
Cation Exchange Capacity	meq/100g	0.02		-	-	-	-

Parameter	Units	LOR	Sample Number: SE195986A.021 Sample Matrix: Water Sample Date: 01 Aug 2019 Sample Name: 02787/RIN
pH in soil (1:5) Method: AN101 Tested: 15/8/2019			
pH	pH Units	0.1	-
Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) Method: AN122 Tested: 15/8/2019			
Exchangeable Sodium, Na	mg/kg	2	-
Exchangeable Sodium, Na	meq/100g	0.01	-
Exchangeable Sodium Percentage*	%	0.1	-
Exchangeable Potassium, K	mg/kg	2	-
Exchangeable Potassium, K	meq/100g	0.01	-
Exchangeable Potassium Percentage*	%	0.1	-
Exchangeable Calcium, Ca	mg/kg	2	-
Exchangeable Calcium, Ca	meq/100g	0.01	-
Exchangeable Calcium Percentage*	%	0.1	-
Exchangeable Magnesium, Mg	mg/kg	2	-
Exchangeable Magnesium, Mg	meq/100g	0.02	-
Exchangeable Magnesium Percentage*	%	0.1	-
Cation Exchange Capacity	meq/100g	0.02	-

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.

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) **Method: ME-(AU)-[ENV]AN122**

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Exchangeable Sodium, Na	LB180841	mg/kg	2		102%
Exchangeable Sodium, Na	LB180841	meq/100g	0.01	<0.01	NA
Exchangeable Sodium Percentage*	LB180841	%	0.1		NA
Exchangeable Potassium, K	LB180841	mg/kg	2		105%
Exchangeable Potassium, K	LB180841	meq/100g	0.01	<0.01	NA
Exchangeable Potassium Percentage*	LB180841	%	0.1		NA
Exchangeable Calcium, Ca	LB180841	mg/kg	2		93%
Exchangeable Calcium, Ca	LB180841	meq/100g	0.01	<0.01	NA
Exchangeable Calcium Percentage*	LB180841	%	0.1		NA
Exchangeable Magnesium, Mg	LB180841	mg/kg	2		90%
Exchangeable Magnesium, Mg	LB180841	meq/100g	0.02	<0.02	NA
Exchangeable Magnesium Percentage*	LB180841	%	0.1		NA
Cation Exchange Capacity	LB180841	meq/100g	0.02	<0.02	NA

pH in soil (1:5) **Method: ME-(AU)-[ENV]AN101**

Parameter	QC Reference	Units	LOR	DUP %RPD	LCS %Recovery
pH	LB180927	pH Units	0.1	3%	101%

METHOD SUMMARY

METHOD	METHODOLOGY SUMMARY
AN101	pH in Soil Sludge Sediment and Water: pH is measured electrometrically using a combination electrode and is calibrated against 3 buffers purchased commercially. For soils, sediments and sludges, an extract with water (or 0.01M CaCl2) is made at a ratio of 1:5 and the pH determined and reported on the extract. Reference APHA 4500-H+.
AN122	Exchangeable Cations, CEC and ESP: Soil sample is extracted in 1 M Ammonium Acetate at pH=7 (or 1M Ammonium Chloride at pH=7) with cations (Na, K, Ca & Mg) then determined by ICP OES/ICP MS and reported as Exchangeable Cations. For saline soils, these results can be corrected for water soluble cations and reported as Exchangeable cations in meq/100g or soil can be pre-treated (aqueous ethanol/aqueous glycerol) prior to extraction. Cation Exchange Capacity (CEC) is the sum of the exchangeable cations in meq/100g.
AN122	The Exchangeable Sodium Percentage (ESP) is calculated as the exchangeable sodium divided by the CEC (all in meq/100g) times 100. ESP can be used to categorise the sodicity of the soil as below: ESP < 6% non-sodic ESP 6-15% sodic ESP >15% strongly sodic Method is referenced to Rayment and Lyons, 2011, sections 15D3 and 15N1.-

FOOTNOTES

IS	Insufficient sample for analysis.	LOR	Limit of Reporting
LNR	Sample listed, but not received.	↑↓	Raised or Lowered Limit of Reporting
*	NATA accreditation does not cover the performance of this service.	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
		NVL	Not Validated

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calcuated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the " Total" LOR will be the sum of those two LORs.

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

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:

a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au.pv.sgsvr/en-gb/environment.

AIRSAFE
93 Beattie Street Balmain NSW 2041 Australia
T. 02 9555 9034 | F. 02 9555 9035
info@airsafe.net.au | www.airsafe.net.au
ABN 36 609 424 946

CHAIN OF CUSTODY

PROJECT NAME: **211 Pacific Hwy, St. Leonards**

JOB NO: **46809**

CONTACT: **Simon Gorham**

REPORT TO: info@airsafe.net.au

PRIOR STORAGE: Esky / Fridge / Ice

TO: Airsafe OHC Pty Ltd
93 Beattie Street
BALMAIN NSW 2041

CONTACT: T. 02 9555 9034
F. 02 9555 9035

ATTENTION: Simon Gorham
info@airsafe.net.au

Sample Information				Tests Required																Comments
				Inorganics								Organics					Other			
Sample ID	Date Sampled	Sampled By	Sample Type	As	Cd	Cr	Cu	Pb	Ni	Zn	Hg	BTEX	TRH	PAHs	OC/OP Pesticides	PCBs	TCLP (PAHs)	TCLP (Metals)	Asbestos		Provide as much information as possible
46809-01	01/08/19	LM	SOIL																X		
46809-02	01/08/19	LM	SOIL																X		
46809-03	01/08/19	LM	SOIL																X		
46809-04	01/08/19	LM	SOIL																X		
46809-05	01/08/19	LM	SOIL																X		
46809-06	01/08/19	LM	SOIL																X		
46809-07	01/08/19	LM	SOIL																X		
46809-08	01/08/19	LM	SOIL																X		
46809-09	01/08/19	LM	SOIL																X		
46809-10	01/08/19	LM	SOIL																X		

Relinquished By (Company): AIRSAFE	**Received By (Company):**	**Turnaround Time:**	Same Day	
Print Name: LIAM MATTHEWS	**Print Name:**		1 Day	
Date and Time: 01/08/19 14:00	**Date and Time:**		2 Day	
Signature:	**Signature:**		3 Day	
			Standard	X

AIRSAFE
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PRIOR STORAGE: Esky / Fridge / Ice

TO: Airsafe OHC Pty Ltd
93 Beattie Street
BALMAIN NSW 2041

CONTACT: T. 02 9555 9034
F. 02 9555 9035

ATTENTION: Simon Gorham
info@airsafe.net.au

Sample Information				Tests Required																Comments
				Inorganics								Organics					Other			
Sample ID	Date Sampled	Sampled By	Sample Type	As	Cd	Cr	Cu	Pb	Ni	Zn	Hg	BTEX	TRH	PAHs	OC/OP Pesticides	PCBs	TCLP (PAHs)	TCLP (Metals)	Asbestos		Provide as much information as possible
46809-11	01/08/19	LM	SOIL																X		
46809-12	01/08/19	LM	SOIL																X		
46809-13	01/08/19	LM	SOIL																X		
46809-14	01/08/19	LM	SOIL																X		
46809-15	01/08/19	LM	SOIL																X		

Relinquished By (Company): AIRSAFE	**Received By (Company):**	LM	Same Day	
			1 Day	
Print Name: LIAM MATTHEWS	**Print Name:**		2 Day	
Date and Time: 01/08/19 14:00	**Date and Time:**		3 Day	
Signature:	**Signature:**		Standard	X

93 Beattie Street Balmain NSW 2041 Australia
T. 02 9555 9034 | F. 02 9555 9035
info@airsafe.net.au | www.airsafe.net.au
ABN 36 609 424 946

SAMPLE RECEIPT ADVICE

COMPANY NAME:	Airsafe
PROJECT NAME:	211 Pacific Highway, St Leonards
PROJECT ID:	02787
COC NUMBER:	N/A
TURN AROUND:	Standard
DATE/TIME RECIEVED:	01/08/2019 12:00PM
AIRSAFE REFERENCE	46809

SAMPLE INFORMATION:

All samples have been received as described on the above COC	Yes / No / NA
COC has been completed correctly	Yes / No
Attempt to chill was evident	Yes / No
Appropriately preserved sample containers have been used	Yes / No
All samples were received in good condition	Yes / No
Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times	Yes / No / NA
Appropriate sample containers have been used	Yes / No
Sample containers for volatile analysis received with zero headspace	Yes / No / NA
Some samples have been subcontracted	Yes / No
Custody Seals intact (if used)	Yes / No / NA
OTHER:	

CONTACT NOTES:

If you have any questions with respect to these samples please contact	
MATTHEW SHAW: 02 9555 9034 or matthew.shaw@airsafe.net.au	
REPORT DUE:	August 8, 2019

SUMMARY OF ANALYSIS:

	Asbestos ID - Soils NEPM
	15

AIRSAFE

ASBESTOS SAMPLE ANALYSIS REQUEST

DATE: 01/08/19

CUSTOMER DETAILS:

COMPANY NAME:	Airsafe
ADDRESS:	93 Beattie Street, Balmain
CONTACT NAME:	Simon Gorham
SITE ADDRESS:	211 Pacific Highway, St Leonards NSW 2065
PHONE:	0419 997 778
EMAIL:	info@airsafe.net.au
REQUESTED BY: (CIRCLE)	Phone / Person / Mail / Email / Fax

OFFICE USE ONLY:

JOB NUMBER:	46809	CONSULTANT:		LM		EXPRESS? (Please add time)		
JOB TYPE:	Bulk Sample	Callout	Survey	Clearance	HazMat	Specs	WAC	Other (Turn Over)
	X	☐	☐	☐	☐	☐	☐	☐

SAMPLE NUMBER	LOCATION / REFERENCE
46809-01	02787/BH1/0.1
46809-02	02787/BH2/0.1
46809-03	02787/BH3/0.1
46809-04	02787/BH4/0.1
46809-05	02787/BH5/0.1
46809-06	02787/BH6/0.1
46809-07	02787/BH7/0.1
46809-08	02787/BH8/0.1

SAMPLE NUMBER	LOCATION / REFERENCE
46809-09	02787/BH9/0.1
46809-10	02787/BH10/0.1
46809-11	02787/BH11/0.1
46809-12	02787/SP1/0.2
46809-13	02787/SP2/0.2
46809-14	02787/SP3/0.2
46809-15	02787/SP4/0.2

REPORTING:

FORM OF DELIVERY (CIRCLE)	Collected / Mailed / Faxed / Emailed
CONTACT DETAILS FOR DELIVERY:	Send to Liam
COMMENTS:	NEPM

93 Beattie Street Balmain NSW 2041 Australia
T. 02 9555 9034 | F. 02 9555 9035
info@airsafe.net.au | www.airsafe.net.au
ABN 36 609 424 946

TEST REPORT

August 12, 2019

Airsafe
93 Beattie Street
BALMAIN NSW 2041

Your Reference: 211 Pacific Highway, St Leonards
Job Number: 46809

Attention: Simon Gorham

Dear Simon,

In accordance with your instructions, Airsafe tested samples from the above site for asbestos content.

The following samples were processed on the dates indicated.

Samples:	15 Soil Samples
Date of Sample Receipt:	01/08/19
Date of Sample Analysis:	08/08/19 - 09/08/19
Date of Preliminary Report Sent:	Not Issued

The results are contained in the following pages of this report.

Should you have any queries regarding this report please contact the undersigned.

Yours faithfully
AIRSAFE OHC PTY LTD

Matthew Shaw
Approved Identifier and Signatory

PROJECT: 211 Pacific Highway, St Leonards **JOB NO: 46809**

ASBESTOS ID - SOILS			
Sample No:	46809-1	46809-2	46809-3
Location / Reference:	02787/BH1/0.1	02787/BH2/0.1	02787/BH3/0.1
Sample Mass:	803.9 g	658.0 g	576.6 g
Sample Description:	Soil, rocks & debris	Soil, rocks & debris	Soil, rocks & debris
Asbestos ID - Soil	No asbestos found at reporting limit of 0.1 g/kg Organic fibres detected	No asbestos found at reporting limit of 0.1 g/kg Organic fibres detected	No asbestos found at reporting limit of 0.1 g/kg Organic fibres detected
Trace Analysis	No Respirable fibres detected	No Respirable fibres detected	No Respirable fibres detected
ASBESTOS ID – SOILS NEPM *			
Total Asbestos *	0.0000 g/kg	0.0000 g/kg	0.0000 g/kg
Estimation of ACM > 7mm *	0.0000 g	0.0000 g	0.0000 g
Estimation of FA and AF *	0.0000 g	0.0000 g	0.0000 g
Estimation of FA and AF (w/w) *	0.0000 %	0.0000 %	0.0000 %

ASBESTOS ID - SOILS			
Sample No:	46809-4	46809-5	46809-6
Location / Reference:	02787/BH4/0.1	02787/BH5/0.1	02787/BH6/0.1
Sample Mass:	485.0 g	500.1 g	774.4 g
Sample Description:	Soil, rocks & debris	Soil, rocks & debris	Soil, rocks & debris
Asbestos ID - Soil	No asbestos found at reporting limit of 0.1 g/kg Organic fibres detected	No asbestos found at reporting limit of 0.1 g/kg Organic fibres detected	No asbestos found at reporting limit of 0.1 g/kg Organic fibres detected
Trace Analysis	No Respirable fibres detected	No Respirable fibres detected	No Respirable fibres detected
ASBESTOS ID – SOILS NEPM *			
Total Asbestos *	0.0000 g/kg	0.0000 g/kg	0.0000 g/kg
Estimation of ACM > 7mm *	0.0000 g	0.0000 g	0.0000 g
Estimation of FA and AF *	0.0000 g	0.0000 g	0.0000 g
Estimation of FA and AF (w/w) *	0.0000 %	0.0000 %	0.0000 %

PROJECT: 211 Pacific Highway, St Leonards **JOB NO:** 46809

ASBESTOS ID - SOILS			
Sample No:	46809-7	46809-8	46809-9
Location / Reference:	02787/BH7/0.1	02787/BH8/0.1	02787/BH9/0.1
Sample Mass:	605.2 g	746.8 g	729.2 g
Sample Description:	Soil, rocks & debris	Soil, rocks & debris	Soil, rocks & debris
Asbestos ID - Soil	No asbestos found at reporting limit of 0.1 g/kg Organic fibres detected Synthetic Mineral Fibres Detected	No asbestos found at reporting limit of 0.1 g/kg Organic fibres detected	No asbestos found at reporting limit of 0.1 g/kg Organic fibres detected
Trace Analysis	No Respirable fibres detected	No Respirable fibres detected	No Respirable fibres detected
ASBESTOS ID – SOILS NEPM *			
Total Asbestos *	0.0000 g/kg	0.0000 g/kg	0.0000 g/kg
Estimation of ACM > 7mm *	0.0000 g	0.0000 g	0.0000 g
Estimation of FA and AF *	0.0000 g	0.0000 g	0.0000 g
Estimation of FA and AF (w/w) *	0.0000 %	0.0000 %	0.0000 %

ASBESTOS ID - SOILS			
Sample No:	46809-10	46809-11	46809-12
Location / Reference:	02787/BH10/0.1	02787/BH11/0.1	02787/SP1/0.2
Sample Mass:	725.7 g	414.1 g	602.1 g
Sample Description:	Soil, rocks & debris	Soil, rocks & debris	Soil, rocks & debris
Asbestos ID - Soil	No asbestos found at reporting limit of 0.1 g/kg Organic fibres detected	No asbestos found at reporting limit of 0.1 g/kg Organic fibres detected	No asbestos found at reporting limit of 0.1 g/kg Organic fibres detected
Trace Analysis	No Respirable fibres detected	No Respirable fibres detected	No Respirable fibres detected
ASBESTOS ID – SOILS NEPM *			
Total Asbestos *	0.00165 g/kg	0.0000 g/kg	0.0000 g/kg
Estimation of ACM > 7mm *	0.0000 g	0.0000 g	0.0000 g
Estimation of FA and AF *	0.0012 g	0.0000 g	0.0000 g
Estimation of FA and AF (w/w) *	0.000165 %	0.0000 %	0.0000 %

AIRSAFE

PROJECT: 211 Pacific Highway, St Leonards **JOB NO: 46809**

ASBESTOS ID - SOILS			
Sample No:	46809-13	46809-14	46809-15
Location / Reference:	02787/SP2/0.2	02787/SP3/0.2	02787/SP4/0.2
Sample Mass:	693.5 g	669.7 g	894.2 g
Sample Description:	Soil, rocks & debris	Soil, rocks & debris	Soil, rocks & debris
Asbestos ID - Soil	No asbestos found at reporting limit of 0.1 g/kg Organic fibres detected	No asbestos found at reporting limit of 0.1 g/kg Organic fibres detected	No asbestos found at reporting limit of 0.1 g/kg Organic fibres detected
Trace Analysis	No Respirable fibres detected	No Respirable fibres detected	No Respirable fibres detected
ASBESTOS ID – SOILS NEPM *			
Total Asbestos *	0.0000 g/kg	0.0000 g/kg	0.0000 g/kg
Estimation of ACM > 7mm *	0.0000 g	0.0000 g	0.0000 g
Estimation of FA and AF *	0.0000 g	0.0000 g	0.0000 g
Estimation of FA and AF (w/w) *	0.0000 %	0.0000 %	0.0000 %

Method: Asbestos ID - Soils – Samples have been analysed using polarised light microscopy including dispersion staining in accordance with the Method for the qualitative identification of asbestos in bulk samples [AS 4964 – 2004] and in-house method AS102 - Method for the Qualitative Identification of Asbestos in Bulk Samples. This method has a calculated practical detection limit of 0.1 g/kg, equivalent to 0.01% weight for weight (w/w).

Asbestos ID - Soils NEPM – There is no accepted valid analytical method in Australia for estimating the concentration of asbestos in soil. NATA does not accredit facilities for the estimation of the concentration of ACM or free asbestos fibres in soil. These quantitative results are not covered by the scope of NATA accreditation. A minimum 500 mL soil sample has been analysed. This report is consistent with the analytical procedures and reporting recommendations in Schedule B1 – Guideline on Investigation Levels for Soil and Groundwater [National Environment Protection (Assessment of Site Contamination) Measure 1999 (April 2013)] and the Western Australia *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia – May 2009*. The screening level of 0.001% w/w asbestos in soil for FA and AF only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. All calculations of percentage asbestos under this method are approximate and should be used as a guide only. These results should not be used in place of field evaluations.

Sampling: Samples have been analysed on an "as received" basis.

Codes:

*	:	Results not covered by scope of NATA accreditation.
ACM	:	Asbestos-Containing Material
AF	:	Asbestos Fines
FA	:	Fibrous Asbestos

Comments:

46809-10: Chrysotile asbestos found loose within soil sample as Asbestos Fines (below the 0.001 % (w/w) reporting limit).

Disclaimer: Approximate sample weights and size only – not covered as part of the scope of accreditation.

Note: The results relate only to the samples tested.

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

Airsafe shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Airsafe be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report.

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ABN 36 609 424 946

CHAIN OF CUSTODY

PROJECT NAME: Stage 2 DSI - 211 Pacific Hwy, St Leonards
JOB NO: 02787.07.19
CONTACT: Simon Gorham
REPORT TO: info@airsafe.net.au
PRIOR STORAGE: Esky / Fridge / Ice

* Inter Lab Duplicate
Secondary Lab

QUOTE NO:

TO: SGS Australia Pty Ltd
Environmental Services
Unit 16/33 Maddox Street
Alexandria NSW 2015

CONTACT:
T. 02 8594 0400
F. 02 8594 0499
E: au.samplereciept.sydney@sgs.com

Sample Information				Tests Required											Comments
				Inorganics		Organics					Cont. Suites / Other				
Sample ID	Date Sampled	Sampled By	Sample Type	Metals x8	Pb	BTEX	TRH	PAHs	OC/OP Pest	PCBs	Suite: CL17				Provide as much information as possible
02787/BH7/DUP Inter	1/8/19	ME	Soil	X											

SGS Cairns Environmental
CE141185 COC
Received: 05 – Aug – 2019

Relinquished By (Company): Airsafe OHC Pty Ltd ME	Received By (Company): SGS CNS	Turnaround Time:	24 hour
Print Name: Benjamin Willetts	Print Name: J ZANETICH		24-36 hours
Date and Time:	Date and Time:		36-48 hours
Signature:	Signature:		3 days
			Standard X

SAMPLE RECEIPT ADVICE

CE141185

CLIENT DETAILS

Contact	Simon Gorham
Client	AIRSAFE OHC PTY LTD
Address	93 BEATTIE STREET BALMAIN NSW 2041
Telephone	61 2 95559034
Facsimile	(Not specified)
Email	info@airsafe.net.au
Project	**Stage 2 DSI-211 Pacific Hwy St Leonards**
Order Number	(Not specified)
Samples	1

LABORATORY DETAILS

Manager	Anthony Nilsson
Laboratory	SGS Cairns Environmental
Address	Unit 2, 58 Comport St Portsmith QLD 4870
Telephone	+61 07 4035 5111
Facsimile	+61 07 4035 5122
Email	AU.Environmental.Cairns@sgs.com
Samples Received	Mon 5/8/2019
Report Due	Mon 12/8/2019
SGS Reference	**CE141185**

SUBMISSION DETAILS

This is to confirm that 1 sample was received on Monday 5/8/2019. Results are expected to be ready by COB Monday 12/8/2019. Please quote SGS reference CE141185 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	1x Soil
Date documentation received	5/8/2019	Type of documentation received	COC
Number of eskies/boxes received	1	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	Chilled
Sufficient sample for analysis	Yes	Turnaround time requested	Standard

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

COMMENTS

SAMPLE RECEIPT ADVICE

CE141185

CLIENT DETAILS

Client AIRSAFE OHC PTY LTD

Project Stage 2 DSI-211 Pacific Hwy St Leonards

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury in Soil	Total Recoverable Elements in Soil/Waste
001	02787/BH7/DUPINTER	1	7

The above table represents SGS' 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

Accreditation No. 2562

CLIENT DETAILS		LABORATORY DETAILS	
Contact	Simon Gorham	Manager	Anthony Nilsson
Client	AIRSAFE OHC PTY LTD	Laboratory	SGS Cairns Environmental
Address	93 BEATTIE STREET BALMAIN NSW 2041	Address	Unit 2, 58 Comport St Portsmith QLD 4870
Telephone	61 2 95559034	Telephone	+61 07 4035 5111
Facsimile	(Not specified)	Facsimile	+61 07 4035 5122
Email	info@airsafe.net.au	Email	AU.Environmental.Cairns@sgs.com
Project	**Stage 2 DSI-211 Pacific Hwy St Leonards**	SGS Reference	**CE141185 R0**
Order Number	(Not specified)	Date Received	05 Aug 2019
Samples	1	Date Reported	12 Aug 2019

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(3146).

SIGNATORIES

Anthony Nilsson
Operations Manager

Jon Dicker
Manager Northern QLD

Maristela Ganzan
Metals Team Leader

Parameter	Units	LOR	Sample Number: CE141185.001 Sample Matrix: Soil Sample Date: 01 Aug 2019 Sample Name: 02787/BH7/DUP INTER
Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES Method: AN040/AN320 Tested: 9/8/2019			
Arsenic, As	mg/kg	0.5	**7.2**
Cadmium, Cd	mg/kg	0.1	**0.3**
Chromium, Cr	mg/kg	0.5	**42**
Copper, Cu	mg/kg	0.5	**24**
Nickel, Ni	mg/kg	0.5	**11**
Lead, Pb	mg/kg	0.5	**67**
Zinc, Zn	mg/kg	0.5	**90**
Mercury in Soil Method: AN312 Tested: 9/8/2019			
Mercury	mg/kg	0.01	**0.05**

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	LCS %Recovery
Mercury	LB070363	mg/kg	0.01	<0.01	101%

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES **Method: ME-(AU)-[ENV]AN040/AN320**

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Arsenic, As	LB070365	mg/kg	0.5	<0.5	NA
Cadmium, Cd	LB070365	mg/kg	0.1	<0.1	NA
Chromium, Cr	LB070365	mg/kg	0.5	<0.5	NA
Copper, Cu	LB070365	mg/kg	0.5	<0.5	NA
Nickel, Ni	LB070365	mg/kg	0.5	<0.5	NA
Lead, Pb	LB070365	mg/kg	0.5	<0.5	NA
Zinc, Zn	LB070365	mg/kg	0.5	<0.5	NA

METHOD SUMMARY

METHOD	METHODOLOGY SUMMARY
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.
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

FOOTNOTES

IS	Insufficient sample for analysis.	LOR	Limit of Reporting
LNR	Sample listed, but not received.	↑↓	Raised or Lowered Limit of Reporting
*	NATA accreditation does not cover the performance of this service.	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
		NVL	Not Validated

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calcuated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the " Total" LOR will be the sum of those two LORs.

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

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:

a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au.pv.sgsvr/en-gb/environment.