AUSTRALIAN GEOTECHNICAL

GEOTECHNICAL & ENVIRONMENTAL SERVICES

Detailed Site Investigation

Prepared For: Architecture Design Studio Pty Ltd
Address: 4-8 Hoxton Park Road, Liverpool, NSW, 2170
Job No: AG-369_1
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Australian Geotechnical Pty Ltd
ABN 27 611 088 192
Email: info@austgeo.com.au

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List of Abbreviations

A list of the common abbreviations used throughout this report is provided below.

ACM - Asbestos Containing Material
AEC - Area of Environmental Concern
AGST - Above Ground Storage Tank
AHD - Australian Height Datum
bgs - Below ground surface
CSM - Conceptual site model
BTEX - Benzene, toluene, ethylbenzene and xylenes
B(a)P - Benzo(a)pyrene
CCA - Copper Chromate Arsenate
COC - Contaminants of Concern
AG - Australian Geotechnical Pty Ltd
DEC - NSW Department of Environment and Conservation
DECCW - NSW Department of Environment, Climate Change and Water
DQI - Data quality indicator
DQOs - Data Quality Objectives
DWE - NSW Department of Water and Energy
EPA - NSW Environment Protection Authority
ESA - Environmental Site Assessment
ha - Hectare
HIL - Health based investigation level
ESL - Ecological Screening Level
HSL - Health Screening Level
LOR - Limit of Reporting
OEH - Office of Environment and Heritage
PAHs - Polycyclic aromatic hydrocarbons
PID - Photo-ionisation Detector
PCB - Polychlorinated Biphenyl
PQL - Practical Quantitation Limit
QA/QC - Quality Assurance/Quality Control
RPD - Relative Percentage Difference
SAQP - Sampling, Analysis and Quality Plan
TRH - Total Recoverable Hydrocarbons (previously Total Petroleum Hydrocarbons)
TSS - Total Suspended Solids
UST - Underground Storage Tank
VOC - Volatile Organic Compound

Executive summary

This executive summary presents a synopsis of the Detailed Site Investigation Assessment for Architecture Design Studio Pty Ltd at the site; 4-8 Hoxton Park Road, Liverpool, NSW, 2170. This report has been prepared to assess the suitability of the site which will comprise demolition of the existing structure to allow for construction of a mixed-use development comprising of residential and commercial spaces together with two (2) to (3) levels of basement car parking.

The object of the Detailed Site Investigation was to ascertain whether the site presents a risk to human health and/or the environment arising from any past/present activities at the site or neighbouring properties. Laboratory testing was undertaken to re-inforce the results of the desktop study. The scope of work included a documentary review and a site investigation, chemical analyses of twelve (12) samples together with preparation of this report.

Based on historical information reviewed, the site comprised of vacant land until receiving a residential cottage in the 1940s, since then the site was developed in the 1970s with a commercial structure constructed in conjunction with concrete/asphaltic concrete cover. Since being developed the land is likely to have been used for commercial purposes (motorcycle sales, hire store and motor mechanic).

The following areas were identified in the conceptual site model as areas of environmental concern;

- Potential importation of uncontrolled fill that may contain various contaminants;
- Car park areas where leaks and spills from cars may have occurred;
- Building degradation which includes potential lead and asbestos contamination.

No records are held by the EPA of known or regulated contaminated sites in the vicinity (200m) of the subject site.

Search of Protection of the Environment Operations Public Register (POEO) revealed no licensed and delicensed premises in the vicinity (200m) of the subject site.

An intrusive soil investigation was conducted on the site. A total of seven (7) bore holes were excavated across the site in a systematic based pattern. Soil samples were collected from each borehole location. Selected samples were analysed for a range of analytes outlined within section 6.0 of this report. These samples were selected based on site observations (odour, staining etc), and their position within the borehole (i.e. fill or natural).

Eleven (11) soil samples and one (1) rinsate water sample was recovered and sent to a NATA accredited laboratory for analysis. The concentrations of samples analysed revealed levels above the relevant assessment criteria.

The results of the chemical analyses indicate that the site does not present a risk to human health and the environment. The site can be made suitable for the proposed construction of a mixed-use development comprising of residential and commercial spaces together with two (2) to (3) levels of basement car parking, subject to the following recommendations:

- Confirm that the location of samples numbered E2, E3 and E6 which presented slightly elevated heavy metal and TRH contamination above the EIL/ESL guideline values, are not located within deep soil or vegetated areas post development.

- Undertake a hazardous material assessment (HAZMAT) report to confirm the presence/absence of hazardous materials within site features. Hazardous material must be removed by a competent and fully licensed contractor with a clearance certificate undertaken from a licensed asbestos assessor; and

- Investigation has not been undertaken in the existing sheds and structures, beneath concrete slabs and other site feature footprints. It is recommended that validation of the soils beneath the dwellings, sheds and site features is undertaken, by an appropriately qualified environmental consultant, following demolition and removal of the concrete slab to assess the potential for impact.

This report was carried out in accordance with current NSW EPA guidelines, however, it is possible that further contaminated soils may be present between sampling locations.

1.0 INTRODUCTION

1.1 Overview

Australian Geotechnical (AG) have undertaken a Detailed Site Investigation with testing and analysis as requested by Architecture Design Studio Pty Ltd at the site; 4-8 Hoxton Park Road, Liverpool, 2170, NSW. This report has been prepared to assess the suitability of the site which will comprise construction of a mixed-use development comprising of residential and commercial spaces together with two (2) to (3) levels of basement car parking.

2.0 SCOPE OF WORK

This Contamination Assessment has been prepared in general accordance with the following regulatory framework:

- NSW Environment Protection Authority (EPA) "Guidelines for Consultants Reporting on Contaminated Sites" (2011);
- NEPM (2013), Schedule B2 – Guideline on Site Characterisation;
- State Environment Protection Policy 55 (SEPP 55). Remediation of Land Under the Environmental Planning and Assessment Act 1997; and
- National Environment Protection (Assessment of Site Contamination) Measure – National Environmental Protection Council 2013.

The following scope of work was conducted as part of this assessment:

- Review of desktop study report to assist in identification of potential contamination issues:
  - Data from Environment Protection Authority.
  - Data from the Protection of the Environment Operations Public Register (POEO) .
  - Current and past zoning of the land.
- Review of soils and geological maps;
- Review of previous reporting at the site;
- Site Inspection by a representative from AG to ascertain current activities, and any visible signs of contamination;
- Collection of soil samples according to a sampling plan;
- Review and summarise previous reporting undertaken at the site;
- Chemical analysis by a NATA accredited laboratory;
- Assessment of the results of the chemical analysis against the appropriate guidelines; and
- Preparation of a Detailed Site Investigation Report.

3.0 SITE DESCRIPTION AND AESTHETICS

The subject sites are rectangular, legally defined as Lot 1 (No 8) in Deposited Plan 860799. The site is bounded by Lot 71 DP1004792 to the east and south, Gillespie Street to the west with Hoxton Park Road situated to the north. The site measures approximately 35m along the Hoxton Park Road frontage and up to 47.7m deep, encompassing a total area of approximately 1,682m^2.

At the time of the site inspection, the following observations were made:

- A commercial structure occupies the site, constructed mainly of metal cladding, brick and glass;
- Concrete slabs at the site were generally in good condition with minor cracks and heavy staining noticed;
- The site is approximately 95% concrete/asphaltic concrete covered;
- No access was available to the internals of the existing structure;
- No surface standing water was noticed at the site; and
- There were no indicators of underground storage tanks within the site.

4.0 SITE HISTORY

In order to ascertain the site history, a documentary review of past and present land use at the subject site and the surrounding area has been undertaken by AG, the veracity of the information collected is considered to be relatively high, as the majority of the information was obtained from government sources where possible. The information is summarised as follows:

4.1 Previous Land Use and Review of Historical Photographs

Aerial Photographs were obtained by this office from the NSW Department of Lands Office. The aerial photographs were reviewed to assess the likely past uses of the site with the findings summarised below;

1947 - A small cottage can be seen at the northern side of the site, Gillespie Street to the east and Hoxton park Road to the north have been formed. The surrounding area is generally being utilised for residential purposes.

1960s – No changes to the site. However, the site appears to be utilised as a vehicle storage area.

1970s – The current structure appears to have been constructed. Significant development has occurred around the subject site. Residential dwellings can still be seen south of the structure.

1980s – No significant changes.

Current – Significantly more development has occurred around the subject site. The structure appears to have been extended to the south.

4.2 Historic land titles

A review of historical transactions and titles held at the NSW Department of Lands offices was conducted by AG to identify the land owners and potential land uses with regards to possible contamination. The current registered proprietors have been owners since 2013, therefore an interview with the current owner/s was not considered necessary as part of the historical review. The results of the title searches are summarised below in table 1 below;

Table 1 – Land Title Transactions Lot 1 (No 8) in Deposited Plan 860799

Date of acquisition and held term	Registed proprietor(s) & occupations where available
2013-Current	ZHC Investments Pty Ltd
2013	Grattack Pty Ltd
1988	Highside Motorcycles
1984-1988	Beaconril Developments Pty Ltd

4.3 Search of Contaminated Land Management Register (NSW EPA)

A summary of the search of the NSW EPA Contaminated Land Management record of notices for the Liverpool area can be found. No notices have been issued to the subject site. Furthermore, the listed sites on the register are situated at such a distance (greater than 200m), that they are not believed to have provided a potential contamination risk to the subject property.

4.4 Search of Protection of the Environment Operations Public Register (POEO) of Licensed and Delicensed Premises

A search of the POEO public register of licensed and delicensed premises (DECC) indicated that no licensed or delicensed premises were located within the immediate surrounding area of the site (within 200m).

4.5 Work Cover NSW Records

A search of the records held by SafeWork NSW did not locate any records relating to any information on Storage of Hazardous Chemicals for the site.

4.6 Product Spill & Loss History

No external information was provided for any product spill and loss. However, based on the site inspection, no signs of chemical staining was observed.

4.7 Section 149 Certificates

At the time of reporting, this office could not access The Planning Certificate – Section 149 of the Environmental Planning & Assessment Act 1979.

4.8 Land Zoning

This office understands that the subject site is currently zoned as R4 – High Density Residential.

4.9 Regional Geology and Topography

The Soil Landscape Map of Sydney (soil Landscape Series Sheet 9030bt, Scale 1:100,000, 2002), prepared by the Soil Conservation Service of NSW, indicates that the site is located within the Blacktown geological unit. This units generally comprises of *Wianamatta Group—Ashfield Shale consisting of laminite and dark grey siltstone, Bringelly Shale which consists of shale with occasional calcareous claystone, laminite and infrequent coal, and Minchinbury Sandstone consisting of fine to medium-grained quartz lithic sandstone.*

Gently undulating rises on Wianamatta Shale with local relief 10–30 m and slopes generally >5% but occasionally up to 10%. Crests and ridges are broad (200–600 m) and rounded with convex upper slopes grading into concave lower slopes. Outcrops of shale do not occur naturally on the surface. They may occur, however, where soils have been removed.

4.10 Groundwater and Meteorology

A search of the NSW Department of Primary Industries Office of Water registered groundwater bores was undertaken by AG, with a search radius of 500m around the site. No groundwater bores were registered within the search radius. However, based on local groundwater knowledge, it is anticipated that the groundwater seepage may be in the order of 4.0m-8.0m below surface level in the form of seepage through the bedrock weathering.

Key meteorological data for the Milperra Bridge weather station available on the Bureau of Meteorology (BOM) website has been reviewed and AG note the following:

- The highest mean rainfall occurs in February, with a total of 87.1mm; and
- The lowest mean rainfall occurs in July, with a total of 23.0cm.

4.11 Acid Sulfate Soil

To determine whether there is a potential for acid sulfate soils to be present at the site, reference was made to the NSW Office of Environment and Heritage (OEH), eSPADE map viewer. A review of the map indicated that the site is in an area of "No known occurrence" in regards to Acid Sulfate Soil.

5.0 SITE CONDITION AND SURROUNDING ENVIRONMENT

A site investigation was conducted on 5th May 2019. The field observations are summarized in table 2 below:

Table 2 – Summary of Field Observations

Parameter	Observation
Visible observations on soil contamination	Small areas of staining within historical car parking and workshop areas were observed. No odours were documented.
Presence of drums, fill or waste materials	None observed. No visible indicators of underground fuel tanks (bowsers or venting pipes).
Presence of fill	Minor fill was evident across the entire site
Flood potential	Not evident.
Relevant sensitive environments	The nearest surface water body is Georges River situated 815m, down gradient, east of the subject site.
Asbestos	No visual asbestos identified

6.0 AREAS OF ENVIRONMENTAL CONCERN

Based on historical information reviewed, the site comprised of vacant land until receiving a residential cottage in the 1940s, since then the site was developed in the 1970s with a commercial structure constructed in conjunction with concrete/asphaltic concrete cover. Since being developed the land is likely to have been used for commercial purposes (motorcycle sales, hire store and motor mechanic).

The potential for the site to be contaminated from on-site sources and off-site sources was considered by AG. Based on the findings of our site inspection and site history review actual or potential contamination sources were identified as low. Based on the site inspection, site history, previous reporting and review of available information from the desktop study, the potential Areas of Environmental Concern (AEC) and their associated Contaminants of Concern (CoCs) for the site were identified. These are summarised in the conceptual site model in table 3 below;

Table 3 – Contaminants of Concern

Potential AEC	Potentially contaminating activity	Likelihood of Site Impact	Potential CoCs	Comments
Entire Site	Importation of fill material from unknown origin.	Low	Metals, TPH, BTEX, PAH, OCP, OPP, PCB, Asbestos, Phenols, Cyanide	Based on observations and site topography, the presence of imported fill material is likely to be minimal
Dwellings and garage/ garden shed	Building degradation	Low	Heavy metals & Asbestos	These structures were in fair to good condition. Therefore, the potential asbestos contamination in the surficial soil layer is considered to be low
Car Parking Areas and previous site use as a motor mechanic	Leaks from vehicles	Low	TPH, Metals, BTEX, PAH	Car parking surfaces were generally in good condition, however some staining and bare patches were observed

7.0 CONCEPTUAL SITE MODEL

In accordance with NEPM (2013), *Schedule B2 – Guideline on Site Characterisation* and to assist in collecting data for the site. The Conceptual Site Model (CSM) detailed in table 4 below considers the potential risks associated with the plausible pollution linkages between the following features:

- Potential human receptors that may be impacted by site contamination are current and future occupants at the site, excavation/construction and maintenance workers during demolition and construction phase of the project and the general public within close proximity to the site;
- Potential sources of contamination, location and the contaminants of concern identified are presented in Section 6.0. Only potential areas of concern with a likelihood of site impact rating of low to high are included;
- Potential exposure pathways;
- Whether the linkage between each source-pathway-receptor is complete, based on our current site inspection, historical information presented and proposed future site condition;

- Potential pollution of surface water could occur through downward and lateral migration of leachable/soluble contaminants. However, this linkage is considered to be unlikely given the low risks to groundwater; and
- The site is not in an area of putrescible waste landfill, 'Inert' waste landfill, uncontrolled fill, reclaimed wetlands and mangroves, organic waste disposal, coal workings, burial grounds or petroleum and coal-seam gas exploration, therefore a risk assessment of bulk ground gases in not considered necessary.

Table 4 – Conceptual Site Model

Potential Sources	Potential Receptor	Exposure Pathway	Complete Linkages	Risk	Justification
Importation of fill material from unknown origin. Building degradation Leaks from vehicles and previous site use as a motor mechanic	Site Users, General Public, Construction Workers	Dermal Contact, Inhalation of Dust. Volatilisation and migration of volatile organic contaminants through the unsaturated zone of soil leading to indoor inhalation. This pathway is considered to be open within future landscaping areas	Yes (current)	Moderate	Direct contact with soil outside of hardstand areas
			Yes (future)	Low to Moderate	Fill material of unknown origin will remain in future open space areas with direct soil access. Dermal contact, incidental ingestion and VOCs will be limited to landscaped areas post development.
	Georges River	Offsite migration of impacted groundwater	No (current)	Negligible	Georges River is down gradient from the subject site. Soil landscapes indicates that the upper residual soil horizon is generally impervious, therefore offsite migration is deemed negligible.

8.0 SAMPLING & ANALYSIS PLAN AND SAMPLING METHODOLOGY

Sampling and analysis was undertaken in order to assess the nature, location and likely distribution of any contamination present at the subject site specifically within areas identified by AG, and also any potential risk posed to human health or the environment. Test results were compared to the relevant New South Wales Environment Protection Authority (NSW EPA) criteria.

The guidelines produced by NSW EPA, 1995 'Sampling Design Guidelines for Contaminated Sites', state that a minimum of seven (7) sampling locations is required for a site with an area of 1682m^2. Hence, Seven (7) boreholes were excavated across the site in an approximate grid pattern (see Figure 1). Eleven (11) soil samples and one (1) rinsate water sample was sent to a NATA accredited laboratory. Samples were selected based on site observations (odour, staining etc), and their position within the borehole (i.e. fill or natural).

8.1 Data Quality Objectives (DQO)

Data Quality Objectives (DQO) are qualitative and quantitative criteria that:

(a) Clarify study objectives.

(b) Define appropriate types of data to collect.

(c) Specify the tolerable levels of potential decision making errors.

The purpose of the DQO process is to ensure that the data collection activities are focused on:

(a) collecting the information needed to make decisions; and

(b) answering the relevant questions leading up to such decisions.

8.2 DQO Process

The DQO process consists of seven distinct steps:

- **State the Problem**

  - As identified in section 7.0 above, the site has multiple potential sources of contamination. The problem is that, due to the potential contamination, an investigation is required to assess whether fill material and underlying natural soils have been contaminated by past/present activities. The objective is to provide information on concentrations of the identified contaminants of concern in the site soils in order to assess sites suitability for the proposed development.

- **Identify the Decision**

  - If contamination is detected, what is the extent of the impact, are levels detected above relevant assessment criteria, does the site pose a risk to human health and/or the environment, how can the risk be managed?

- **Identify Inputs to the Decision**

  The input into the decision process is as follows:

  - Site and historical observations as detailed in sections 3.0 to 7.0 of this report;
  - Soil laboratory analytical data collected, field observations and measurements made during field work;
  - A NATA accredited laboratory to test the potential contaminates of concern identified in section 6.0 of this report;
  - Photo-Ionised Detector (PID) for recovered soil samples;
  - AG compared the results obtained from material sampled to:
    - NEPM 2013, HIL Table 1A, Column B (HIL's);
    - Environmental Investigation Levels (EIL's);
    - Ecological Screening Levels (ESLs);
    - Health Screening Levels (HSL's); and
    - For asbestos, the assessed soil must not contain bonded asbestos containing material (ACM) in excess of 0.01% w/w and surface soils within the site is free of visible ACM.

- **Define the Study Boundaries**

  - Site investigation was limited to the site boundaries Lot 1 (No 8) in Deposited Plan 860799 with samples collected to a maximum depth of 1000mm below existing surface level, terminated within the natural soil horizon.

- **Develop a Decision Rule**

  - If levels of contamination exceed the relevant assessment criteria and pose a risk to human health and/or the environment, a remedial action plan and validation assessment will be required;

  - The acceptable limits for the QA/QC samples collected during the investigation are presented in Appendix B;

  - Acceptable QA/QC data is presented in Appendix C;

  - To conclude the decision, the assessment decision rules must be met. The results of sampling and analysis of soil must meet the following criteria:
    - The calculated 95% Upper Confidence Level value (95% UCL) for COPCs do not exist in soil samples at concentrations in excess Assessment Criteria;
    - The standard deviation of the results should be less than 50% of the relevant investigation or screening level; and
    - No single analytical result for a COPC should exceed 250% of the relevant investigation level or screening level.

- **Specify Limits on Decision Errors**

  This step involves specifying the decision-maker's acceptable limits on decision errors.

  - The acceptable limits on decision error to be applied in the investigation have been developed based on Data Quality Indicators of precision, accuracy, representativeness, comparability and completeness;

  - The tolerable limits on decision errors are the probability that 95% of data will satisfy the DQI's, therefore a limit on the decision error will be 5% that a conclusive statement may be incorrect; and

  - The potential for significant decision errors can be minimised by completing a robust Quality Analysis and Quality Control (QA/QC) program and by designing a sampling programme that includes appropriate sampling and analytical density for the purposes of the investigation.

- **Optimize the Design for Obtaining Data**

    - Samples are to be collected within the proposed development area to assess potential contamination.

8.3 Sampling Methodology

Each sample location was excavated utilising a 4WD mounted, 100mm, solid flight drilling rig to a depth of up to 1000mm. Samples was collected directly from the auger using disposable nitrile gloves by Nathan Smith (Principal). At each sampling depth, two (2) samples were recovered, one half for laboratory analysis and the other half ulilised for head space screening using a calibrated PID, for the presence of VOC. The PID readings are presented in Appendix B within the borehole logs.

Auger excavations were terminated at between 0.5m and 1.0m below existing surface level. Auger excavations generally revealed the following subsurface conditions;

The samples were placed in 250g laboratory prepared glass jars which were capped using teflon-sealed screw caps with samples for asbestos analysis placed in separate asbestos bags following field screening. The samples were then placed in a chilled ice box to maintain samples at a temperature below approximately 4°C which were then transported to SGS Pty Ltd (NATA accredited laboratory) under stringent chain of custody (COC) procedures.

A rinsate water sample was collected and placed in a glass bottle, plastic bottle and vials supplied by the laboratory at the end of field work. The fully filled bottles and vials were labelled and also placed in the chilled ice box. The samples were forwarded to SGS environmental for analysis along with a Chain of Custody which was subsequently returned to confirm the receipt of all samples.

9.0 FIELD QUALITY ASSURANCE AND QUALITY CONTROL

The field sampling was undertaken by AG. An Environmental Consultant from AG sampled from the test locations and supervised excavation of each borehole.

9.1 Decontamination Procedures

Soil samples were collected using a 4WD mounted, 100mm, solid flight drilling rig. The equipment was decontaminated between sampling events using the following procedure:

1) Soil was removed from the auger by scrubbing with a brush;

2) The auger was washed with phosphate free detergent in a bucket;

3) The auger was then rinsed in distilled water in another bucket;

4) Steps 2 and 3 were repeated; and

5) The auger was then dried with a clean disposable towel

A sample was then obtained from the final rinsate water composite to be analysed for Petroleum Hydrocarbons (analysed as TRH), Benzene, Toluene, Ethyl Benzene and Xylenes (BTEX), Polycyclic Aromatic Hydrocarbons (PAHs), Arsenic, Cadmium, Copper, Lead, Mercury and Zinc (common metals). The results are presented as an attachment in Appendix B. All results were below the LOR therefore, it is concluded that cross-contamination artefacts associated with sampling equipment was not present.

9.2 Duplicate Sampling

A blind duplicate sample was prepared in the field in order to determine the accuracy of the analytical programs. One blind duplicate was required to meet the 5% duplicate sampling frequency in accordance with NEPM 2013 SchB3. The blind duplicate and split sample was analysed for a Petroleum Hydrocarbons (analysed as TRH), Benzene, Toluene, Ethyl Benzene and Xylenes (BTEX), Polycyclic Aromatic Hydrocarbons (PAHs), Arsenic, Cadmium, Copper, Lead, Mercury and Zinc (common metals).

Approximately twice the normal amount of soil was collected and placed in a decontaminated stainless steel bowl. The sample was split into 2 portions. One portion was placed in a 250g laboratory prepared glass jar, capped using Teflon-sealed screw cap and then labelled sample E5. The second portion was placed into a second identical jar, labelled SPLIT respectively. Samples were forwarded to SGS Sydney.

Table 5 – Field Split & Duplicates

Laboratory	QC Type	No. of samples	RPD %	QC Acceptance Criteria
SGS Sydney	Blind Duplicate samples	1	• 0 – 100% RPD (When the average concentration is < 5 times the LOR/EQL) •0 – 75% RPD (When the average concentration is 5 to 10 times the LOR/EQL) •0 – 50% RPD (When the average concentration is > 10 times the LOR/EQL)	Achieved

The comparisons between the split and corresponding original sample indicated generally acceptable RPD overall. Higher RPD were computed for some samples, mainly due to heterogeneity of the soil horizon. Based on the above, the variations are not considered critical and overall the duplicate sample comparisons indicate that the test results provided by the primary laboratory can be relied upon for this assessment. A Chain of Custody (COC) for samples sent to the primary and secondary laboratory is attached in Appendix B, showing the sampler, sampling time and date, receipt of samples at the laboratory, analyses to be performed and sample preservation method.

9.3 Trip Spike

Trip spikes are obtained from the laboratory on a regular basis. The Laboratory prepares VOC spikes comprising of sand spiked with known concentrations of BTEX. The purpose of the trip spike is to detect any loss of volatiles from the soil samples during field work, transportation, sample extraction or testing. Laboratory prepared trip spike should be included at a rate of one per batch. One trip spike (TS1) was forwarded to the primary laboratory for BTEX analysis with resulting concentrations compared with the concentrations of the known additions. Test results show a good recovery of the spike concentrations (ranging from 96% to 104%), therefore it is considered that any loss of volatiles from the recovered samples that might have occurred would not affect the outcome or conclusion of this report. Laboratory test certificates are presented in Appendix B.

10.0 LABORATORY QUALITY ASSURANCE AND QUALITY CONTROL

10.1 Laboratory Accreditation

SGS Australia Pty Ltd is accredited by the National Association of Testing Authorities (NATA) for the analysis carried out and are also accredited for compliance with ISO/IEC 17025.

10.2 Sample Holding Times

The holding times for samples at SGS are presented in table 6 below, along with the allowable holding time, detailed in Schedule B (3) of the National Environment Protection (Assessment of Site Contamination) Measure (NEPM, 2013):

Table 6 – Holding Times

Laboratory	Analyte	Date Sampled	Date Received	Date of Extraction/ Analysis	Holding Time	Allowable Holding Time
SGS	Metals	05-04-19	05-04-19	09-04-19 & 12-04-19	5-7 days	6 months*
	Organochloride Pesticides (OCP)					14 days
	Organophosphorus Pesticides (OPP)					14 days
	Total Petroleum Hydrocarbons (TPH), PAH, BTEX, Cyanide, Phenols & PCB					14 days

Note 1: (*) Metals excludes Mercury which has a holding time of 28 days.
Note 2: The soil sample analyses were conducted within the relevant allowable holding time.

10.3 Analytical Methods Used and Practical Quantitation Limits

The analytical methods and practical quantitation limits (PQL)/level of reporting (LOR) used by SGS are indicated on the test certificates located in Appendix B.

10.4 Laboratory Quality Control

SGS carry out in-house Quality Control testing. This provides the laboratory information regarding the accuracy of testing carried out. The RPD (relative percent difference) results for SGS are within the acceptance criteria adopted by the laboratory (see QC attached in Appendix B). If RPDs are in excess of 30%, the higher concentration is adopted as a conservative measure to identify any contamination present onsite. The results with the exception of 3 duplicates and 2 matrix spikes, met the criteria and are tabulated below in table 7:

Table 7 – RPDs

Laboratory	QC Type	QC Outliners Occur	QC Acceptance Criteria
SGS	Laboratory Blanks	No	Achieved
SGS	Laboratory Duplicates	No	Achieved
SGS	Matrix Spikes	No	Achieved
SGS	Surrogate Spikes	No	Achieved

11.0 QUALITY ASSESSMENT AND QUALITY CONTROL DATA EVALUATION

Quality Assessment and Quality Control have been achieved through the following procedures.

11.1 Document Completeness

- Preparation of chain of custody records;
- Laboratory confirmation of receipt of intact samples and relevant chain of custody;
- Laboratory provision of NATA accredited results certificates.

11.2 Data Completeness

- Analysis of contaminants of concern;
- Duplicate and split samples within numbers recommended by NEPM.

11.3 Data Representativeness

This is achieved by the following:

- Representative sampling of potential contaminants based on the site history and site activities;
- Sufficient duplicate and split sample numbers complying with NEPM;
- Adequate laboratory internal QA and QC methods complying with NEPM.

11.4 Data Comparability

- Use of consistent sampling personnel and methodologies;
- Use of NATA accredited laboratories;
- Use of consistent test methods between selected laboratories;
- Use of consistent test methods between samples;
- Acceptable RPD between original samples and duplicate sample results.

11.5 Data Precision and Accuracy

- The use of NATA accredited laboratories – a requirement of which is adequately trained and experienced staff;
- The use of appropriate and validated laboratory test methods;
- The analysis of duplicate and split samples;
- Acceptable RPD for duplicate and split samples overall;
- Acceptable laboratory performance based on results of blank, matrix spike, control, duplicate and surrogate samples.

11.6 Data Evaluation

Based on the above information regarding quality assurance and quality control, it is considered that the quality objectives for field procedures and laboratory results are reliable for this assessment.

Table 8 – Data Evaluation Summary

Data Quality Objectives	Field Considerations	Laboratory Considerations	QC Acceptance Criteria
Completeness	Achieved	Achieved	Achieved
Comparability	Achieved	Achieved	Achieved
Representativeness	Achieved	Achieved	Achieved
Precision	Achieved	Achieved	Achieved
Accuracy	Achieved	Achieved	Achieved

12.0 BASIS FOR ASSESSMENT CRITERIA

The Assessment criteria used in this investigation have been obtained from the following guideline documents to form the Site Assessment Criteria (SAC) for the site:

- The National Environment Protection (Assessment of Site Contamination) Measure (NEPM, 2013). This document presents risk-based Health Investigation Levels based on a variety of exposure settings for a number of organic and inorganic contaminants. To assess the risk to human health the results of the laboratory analysis are compared against the Health Investigation Levels (“HIL B”) for the exposure setting; Residential with minimal opportunities for soil access which includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments

- Ecological Investigation Levels (EIL's) for metals are applicable for assessing the risk to terrestrial ecosystems. For arsenic and lead, generic EIL are adopted for urban residential land use for aged contamination. For other metals, where available, EIL are calculated using the EIL calculator developed by CSIRO for NEPC. For this assessment, the analytical results were assessed against the available SQG/EIL for urban residential land use for aged contamination.

- Health Screening Levels (HSL's) have been developed for selected petroleum compounds and fractions and are applicable to assessing human health risk via the inhalation and direct contact pathways. The HSL's depend on specific soil physicochemical properties, land use scenarios, and the characteristics of building structure.

- Ecological screening levels (ESL's) have been developed for selected petroleum hydrocarbon compounds and total petroleum hydrocarbon (TPH) fractions and are applicable for assessing risk to terrestrial ecosystems. ESL's broadly apply to coarse and fine grained soils and various land uses. They are generally applicable to the top 2m of soil. Urban Residential and Public Open Space guidelines were adopted from NEPM Schedule B1, table 1B (5).

- The site does not have history with manufacture of non-stick cookware; fabric, furniture and carpet stain protection applications; food packaging; industrial processes; or fire-fighting foam. Therefore, potential for per-and poly-fluoroalkyl substances (PFAS) was not considered necessary as part of this detailed site investigation.

Table 9 – Basis of Assessment

Contaminant	Site Assessment Criteria (SAC) mg/kg			
	Health Based Investigation Level (HIL'B')	**Ecological Investigation Levels (EIL's)*** **	**Health Screening Levels (HSL's)***	**Ecological screening levels (ESL's)**
Inorganics				
(Heavy Metals)				
Arsenic (total)	500	20		
Cadmium	150	3		
Chromium (vI)	500	400		
Copper	30000	100		
Lead	1200	600		
Mercury	120	1		
Nickel	1200	60		
Zinc	60000	200		
Organics				
TPH				
C6 to C10			50	180
>C10 to C16			130	120
>C16 to C34				300
>C34				2800
Benzene			0.6	50
Toulene			190	85
Ethylbenzene			390	70
BaP				0.7
BaP (TEQ)	4			
Xylene			45	105
Napthalene		170	3	
Phenol	45000			
PAH	400			
OCP				
Aldrin + Dieldrin	10			
Chlordane	90			
Heptachlor	10			
DDD+DDE+DDT	600	180^		
OPP				
Diazinon	-			
Ethion	-			
Fenitrothion	-			
PCB	1			
Cyanide	45000			
Asbestos	0.01% bonded ACM	-	-	

Notes: * Sandy texture 0m-0.5m has been adopted for assessing the upper fill soil horizon.
*** Conservative and generic EIL adopted.
^DDT only

13.0 LABORATORY TEST RESULTS

Test results are tabulated and presented below (tables 10) along with the relevant assessment criteria. Laboratory test certificates are located in Appendix B.

Table 10 – Laboratory Test Results

Contaminant	Maximum Concentration mg/kg	Health Based Investigation Levels HIL 'B' mg/kg	Ecological Investigation Levels (EIL) mg/kg	Ecological and Health Screening Levels (ESL/HSL) mg/kg	Absolute Maximum Analyte Criteria ENM Order 2014 mg/kg	95% Upper Confidence Limit (UCL)
Arsenic	9	500	20	-	40	<SAC
Cadmium	0.8	150	3	-	1	<SAC
Chromium	34	500	400	-	150	<SAC
Lead	400	30000	600	-	100	<SAC
Mercury	0.49	1200	1	-	1	<SAC
Nickel	40	120	60	-	60	<SAC
Zinc	1100	1200	200	-	300	<SAC
Copper	100	60000	100	-	200	<SAC
Benzene	<0.1	4	-	0.6	0.5	<SAC
Toluene	<0.1	NA	-	85	65	<SAC
Ethyl Benzene	<0.1	NA	-	70	25	<SAC
Xylenes (total)	<0.3	NA	-		NA	<SAC
Benzo (a) Pyrene	1.6			0.7		<SAC
BaP (TEQ)	2.5	3	-	-	-	<SAC
Polynuclear Aromatic Hydrocarbons (PAH's)	17	300	-	-	40	<SAC
TPH C6-10	<25	-	-	50	NA	<SAC
TPH C10 to C16	<25	-	-	120	-	<SAC
TPH >C34	<120	-	-	2800	-	<SAC
TPH C16-34	450	-	-	300	500	<SAC
Phenol	0.6	3000	-	-	-	<SAC
Cyanide	<0.5	250				<SAC
Aldrin + Dieldrin	<0.2	7				<SAC
Chlordane	<0.1	50				<SAC
Heptachlor	<0.1	6				<SAC
DDD+DDE+DDT	<0.1	260	180			<SAC
Total PCBs	<1	1	-	-	-	<SAC
Asbestos	No	0.01%	-	-	-	-

13.1 Heavy Metals

Heavy metal concentrations for Arsenic, Cadmium, Copper, Zinc, Chromium, Lead, Mercury, and Nickel are presented in Table 10. The concentrations of all metals were below the relevant assessment criteria (HILs B, EIL). With the exception of samples numbered E2 and E6 which exceeded the EIL maximum concentration of 200mg/kg, for Zinc.

13.2 OCP, OPP, PCB, Cyanide and Phenols

The OCP and PCB concentrations, presented in Table 10, were less than the relevant assessment criteria adopted, and therefore the chemical analyses indicate that the site is not contaminated with OCP, OPP, PCB, Cyanide and Phenols.

13.3 Total Petroleum Hydrocarbons (TPH), Polycyclic Aromatic Hydrocarbons (PAH) and BTEX

The TPH, PAH and BTEX concentrations, presented in Table 10, were less than the relevant assessment criteria adopted, with the exception of the sample numbered E3 which exceeded the ESL maximum criteria on the TPH C^{10} to C^{16} fraction, achieving 450 mg/kg.

13.4 Asbestos Test Results

The Asbestos test results are presented in table 10. Asbestos was not detected in any fill samples provided to the laboratory for analysis.

14.0 DISCUSSION

The site is characterized as follows, as a result of the information obtained through this assessment:

- The site is proposed for construction of a mixed-use development comprising of residential and commercial spaces together with two (2) to (3) levels of basement car parking.

- Twelve (16) soil samples were recovered and sent to a NATA accredited laboratory for analysis. The concentrations of samples analyzed revealed levels generally below the relevant assessment criteria;

- Slightly elevated levels of heavy metal and TRH contamination above the EIL/ESL guidelines values may present a risk of phytotoxicity to plants and vegetation which could prevent growth. It is assumed that the location of samples numbered E2, E3 and E6 will be excavated as part of bulk excavation for basement carparking, therefore elevated levels of heavy metal and TRH are not considered relevant with regards to the proposed development. However, review of the final architectural drawings are required in order to confirm that the location of samples numbered E2, E3 and E6 are located outside areas of deep soil or vegetated zones post development.

15.0 VALIDATION

A systematic sampling methodology was chosen for this site, this was done to:

- Select statistically unbiased sampling locations
- Provide sampling locations at regular intervals, spaced evenly across the site.

The samples collected were compared against the Health Investigation Levels (HIL) for the exposure setting; 'HIL B'. The 95% upper confidence limit (UCL) average was also compared to the HIL guidelines.

16.0 CONCLUSION AND RECOMMENDATIONS

The results of the chemical analyses indicate that the site does not present a risk to human health and the environment. The site can be made suitable for the proposed construction of a mixed-use development comprising of residential and commercial spaces together with two (2) to (3) levels of basement car parking, subject to the following recommendations:

- Confirm that the location of samples numbered E2, E3 and E6 which presented slightly elevated heavy metal and TRH contamination above the EIL/ESL guideline values, are not located within deep soil or vegetated areas post development.

- Undertake a hazardous material assessment (HAZMAT) report to confirm the presence/absence of hazardous materials within site features. Hazardous material must be removed by a competent and fully licensed contractor with a clearance certificate undertaken from a licensed asbestos assessor; and

- Investigation has not been undertaken in the existing sheds and structures, beneath concrete slabs and other site feature footprints. It is recommended that validation of the soils beneath the dwellings, sheds and site features is undertaken, by an appropriately qualified environmental consultant, following demolition and removal of the concrete slab to assess the potential for impact.

This report was carried out in accordance with current NSW EPA guidelines, however, it is possible that further contaminated soils may be present between sampling locations.

Should you have any queries, please do not hesitate to contact the undersigned.

For and on behalf of
Australian Geotechnical Pty Ltd

N.Smith
Principal

References

- Contaminated Sites – Guidelines for Consultants Reporting on Contaminated Sites. NSW Environment Protection Authority (EPA) 2000.
- Contaminated Sites – Sampling Design Guidelines. NSW Environment Protection Authority (EPA) 1995
- National Environment Protection (Assessment of Site Contamination) Measure – National Environmental Protection Council 2013.
- NEPC, 1999: National Environment Protection Council (1999). National Environment Protection (Assessment of Site Contamination) Measure. Schedule B(3)
- NEPC, 1999: National Environment Protection Council (1999). National Environment Protection (Assessment of Site Contamination) Measure. Schedule B(2) Guideline on Site Characterisation
- ANZECC (2000) Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Environmental and Conservation Council
- Guidelines for the Assessment and Management of Sites Impacted by Hazardous Ground Gases (NSW EPA 2012)
- Guidelines for the Assessment and Management of Groundwater Contamination (NSW DEC 2007)
- Guidelines for Assessing Former Orchards and Market Garden (NSW EPA 2005)
- Designing Sampling Programs for Sites Potentially Contaminated by PFAS (EPA 2016)
- Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997 (NSW EPA 2015).

Limitations

This report has been prepared for use by the client who commissioned the works in accordance with the project brief and based on information provided by the client. The advice contained in this report relates only to the current project and all results, conclusions and recommendations should be reviewed by a competent person with experience in environmental investigations before being used for any other purpose. Australian Geotechnical Pty Ltd (AG) accepts no liability for use or interpretation by any person or body other than the client. This report must not be reproduced except in full and must not be amended in any way without prior approval by the client and AG.

The extent of sampling and analysis of soils has been undertaken targeting areas of environmental concern, targeting specific soil strata from where contamination is considered most likely to occur based on knowledge of site history and visual inspection. This approach has been adopted in order to maximise the probability of identifying contaminants, however the approach may not identify contamination that occurs in unexpected locations or from unexpected sources.

Furthermore, soil, rock and aquifer conditions are variable, resulting in the heterogeneous distribution of contaminants across the site. Contaminants have been identified at discrete locations; however conditions between sample locations have been inferred based on estimated geological and hydrogeological conditions, the nature and extent of identified contamination. Boundaries between zones of variable contamination are generally unclear and have been interpreted based on available data and professional judgement. The accuracy with which subsurface conditions have been characterised depends on the frequency of sampling, field and laboratory methods, the uniformity of the substrate and is therefore limited by the scope of works undertaken.

This report is based on targeted sampling and does not provide a complete assessment of the environmental status of the site and is limited to the scope defined therein. Should information become available regarding conditions at the site including previously unknown sources of contamination, AG reserves the right to review the report in the context of the additional information.

APPENDIX A

FIGURES

Bore Hole Location Plan and Borehole Logs

AUSTRALIAN GEOTECHNICAL	Borehole Locations	**Architecture Design Studio Pty Ltd** 4-8 Hoxton Park Road, Liverpool		Job No	AG-369_1
				Drawing No	AG-369-1DWG
		Drawn By	NS	Ref No	
		Approved By	NS	Scale	Not to scale

AUSTRALIAN GEOTECHNICAL	Borehole Locations	**Architecture Design Studio Pty Ltd**		Job No	AG-369_1
		4-8 Hoxton Park Road, Liverpool		Drawing No	AG-369-1DWG
		Drawn By	NS	Ref No	
		Approved By	NS	Scale	Not to scale

SITE LOCATION: 4-8 Hoxton Park Road, Liverpool, NSW

WATER	DEPTH (m)	UNIFIED CLASSIFICATION	SOIL DESCRIPTION (*SOIL TYPE, COLOUR, MOISTURE, CONSISTENCY*)	Sample	PID (ppm)	REMARKS
Borehole No 1						
NIL	0.0m		Concrete			Fill
	0.5m	SM	Silty Sand some fine to coarse Gravel dark grey Moist, low plasticity	E1	0.0	Fill
	1.0m		End Bore 0.7m			
Borehole No 2						
NIL	0.0m		Asphaltic Concrete			
	0.5m	CH	Silty Clay some fine to coarse Gravel moist, dark grey	E2	0.0	Fill
	1.0m	CH	Silty Clay some ironstone subangular Gravel inclusions, Brown, Moist, High Plasticity			Residual
			End Bore 1.0m			
Borehole No 3						
NIL	0.0m		Concrete			Fill
	0.5m	CH	Silty Clay some fine to coarse Gravel moist, dark grey	E3	0.5	
	1.0m		End Bore 1.0m			

Method: *Trailer mounted, 100mm, solid flight auger drilling rig and hand equipment*
Date : *5/04/2019*
Logged By: *NS and AS*
Weather/Time: *Fine/from 7am*

SITE LOCATION: 4-8 Hoxton Park Road, Liverpool, NSW

WATER	DEPTH (m)	UNIFIED CLASSIFICATION	SOIL DESCRIPTION (*SOIL TYPE, COLOUR, MOISTURE, CONSISTENCY*)	Sample	PID (ppm)	REMARKS
Borehole No 4						
NIL	0.0m	SM	Silty Sand some fine to coarse Gravel dark grey Moist, low plasticity	E4	0.0	Fill
	0.5m	CH	Silty Clay some ironstone subangular Gravel inclusions, Brown Red and grey Moist, High Plasticity	E5		
	1.0m		End bore 0.8m			
Borehole No 5						
NIL	0.0m	CH	Silty Clay some fine to coarse Gravel moist, dark grey	E6	0.1	Fill
	0.5m		End bore 0.5m			
	1.0m					
Borehole No 6						
NIL	0.0m		Concrete			Fill
	0.5m	CH	Silty Clay some fine to coarse Gravel moist, dark grey	E7	0.0	
	1.0m	CH	Silty Clay some ironstone subangular Gravel inclusions, Brown Red and grey	E8		
			End Bore 1.0m			

Method: *Trailer mounted, 100mm, solid flight auger drilling rig and hand equipment*
Date : *5/04/2019*
Logged By: *NS and AS*
Weather/Time: *Fine/from 7am*

APPENDIX B

LABORATORY TEST CERTIFICATES

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Nathan Smith
Client	AUSTRALIAN GEOTECHNICAL PTY LTD
Address	2 SHIRLEY STREET ROSEHILL NSW 2144
Telephone	(Not specified)
Facsimile	(Not specified)
Email	nathan@austgeo.com.au
Project	**AG-369**
Order Number	**AG-369_1**
Samples	13

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	**SE191305 R0**
Date Received	5/4/2019
Date Reported	12/4/2019

COMMENTS

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

No respirable fibres detected in all soil samples using trace analysis technique.

Asbestos analysed by Approved Identifier Ravee Sivasubramaniam .

SIGNATORIES

Akheeqar Beniameen
Chemist

Dong Liang
Metals/Inorganics Team Leader

Kamrul Ahsan
Senior Chemist

Ly Kim Ha
Organic Section Head

Ravee Sivasubramaniam
Hygiene Team Leader

VOC's in Soil [AN433] Tested: 9/4/2019

PARAMETER	UOM	LOR	E1 SOIL - 4/4/2019 SE191305.001	E2 SOIL - 4/4/2019 SE191305.002	E3 SOIL - 4/4/2019 SE191305.003	E4 SOIL - 4/4/2019 SE191305.004	E5 SOIL - 4/4/2019 SE191305.005
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

PARAMETER	UOM	LOR	E6 SOIL - 4/4/2019 SE191305.006	E7 SOIL - 4/4/2019 SE191305.007	E8 SOIL - 4/4/2019 SE191305.008	E9 SOIL - 4/4/2019 SE191305.009	Split SOIL - 4/4/2019 SE191305.011
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

PARAMETER	UOM	LOR	Trip Spike SOIL - 4/4/2019 SE191305.012	Trip Blank SOIL - 4/4/2019 SE191305.013
Benzene	mg/kg	0.1	[96%]	<0.1
Toluene	mg/kg	0.1	[101%]	<0.1
Ethylbenzene	mg/kg	0.1	[102%]	<0.1
m/p-xylene	mg/kg	0.2	[104%]	<0.2
o-xylene	mg/kg	0.1	[103%]	<0.1
Total Xylenes	mg/kg	0.3	-	<0.3
Total BTEX	mg/kg	0.6	-	<0.6
Naphthalene	mg/kg	0.1	-	<0.1

Volatile Petroleum Hydrocarbons in Soil [AN433] Tested: 9/4/2019

PARAMETER	UOM	LOR	E1 SOIL - 4/4/2019 SE191305.001	E2 SOIL - 4/4/2019 SE191305.002	E3 SOIL - 4/4/2019 SE191305.003	E4 SOIL - 4/4/2019 SE191305.004	E5 SOIL - 4/4/2019 SE191305.005
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	E6 SOIL - 4/4/2019 SE191305.006	E7 SOIL - 4/4/2019 SE191305.007	E8 SOIL - 4/4/2019 SE191305.008	E9 SOIL - 4/4/2019 SE191305.009	Split SOIL - 4/4/2019 SE191305.011
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	Trip Blank SOIL - 4/4/2019 SE191305.013
TRH C6-C9	mg/kg	20	<20
Benzene (F0)	mg/kg	0.1	<0.1
TRH C6-C10	mg/kg	25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25

TRH (Total Recoverable Hydrocarbons) in Soil [AN403] Tested: 9/4/2019

PARAMETER	UOM	LOR	E1 SOIL - 4/4/2019 SE191305.001	E2 SOIL - 4/4/2019 SE191305.002	E3 SOIL - 4/4/2019 SE191305.003	E4 SOIL - 4/4/2019 SE191305.004	E5 SOIL - 4/4/2019 SE191305.005
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	**360**	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	**170**	**58**	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	**450**	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	**530**	<110	<110
TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	**450**	<210	<210

PARAMETER	UOM	LOR	E6 SOIL - 4/4/2019 SE191305.006	E7 SOIL - 4/4/2019 SE191305.007	E8 SOIL - 4/4/2019 SE191305.008	E9 SOIL - 4/4/2019 SE191305.009	Split SOIL - 4/4/2019 SE191305.011
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	**54**	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	**72**	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	**120**	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	**130**	<110	<110	<110	<110
TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210	<210

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 9/4/2019

PARAMETER	UOM	LOR	E1 SOIL - 4/4/2019 SE191305.001	E2 SOIL - 4/4/2019 SE191305.002	E3 SOIL - 4/4/2019 SE191305.003	E4 SOIL - 4/4/2019 SE191305.004	E5 SOIL - 4/4/2019 SE191305.005
Naphthalene	mg/kg	0.1	<0.1	<0.1	**0.1**	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	**0.3**	<0.1	**1.9**	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	**0.6**	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	**0.5**	<0.1	<0.1
Fluoranthene	mg/kg	0.1	**0.2**	<0.1	**1.0**	<0.1	<0.1
Pyrene	mg/kg	0.1	**0.2**	<0.1	**1.8**	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	**0.1**	<0.1	**0.6**	<0.1	<0.1
Chrysene	mg/kg	0.1	**0.1**	<0.1	**0.9**	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	**0.2**	<0.1	**1.4**	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	**0.5**	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	**0.2**	<0.1	**1.6**	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	**0.3**	<0.1	**2.3**	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	**0.4**	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	**0.6**	<0.1	**3.2**	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	**0.3**	<0.2	**2.5**	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	**0.4**	<0.3	**2.5**	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	**0.3**	<0.2	**2.5**	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	**2.1**	<0.8	**17**	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	**2.1**	<0.8	**17**	<0.8	<0.8

PARAMETER	UOM	LOR	E6 SOIL - 4/4/2019 SE191305.006	E7 SOIL - 4/4/2019 SE191305.007	E8 SOIL - 4/4/2019 SE191305.008	E9 SOIL - 4/4/2019 SE191305.009	Split SOIL - 4/4/2019 SE191305.011
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	**0.1**	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	**0.1**	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	**0.1**	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<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	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<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	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8

OC Pesticides in Soil [AN420] Tested: 9/4/2019

PARAMETER	UOM	LOR	E1 SOIL - 4/4/2019 SE191305.001	E4 SOIL - 4/4/2019 SE191305.004	E9 SOIL - 4/4/2019 SE191305.009
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
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

OP Pesticides in Soil [AN420] Tested: 9/4/2019

PARAMETER	UOM	LOR	E1 SOIL - 4/4/2019 SE191305.001	E4 SOIL - 4/4/2019 SE191305.004	E9 SOIL - 4/4/2019 SE191305.009
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

PCBs in Soil [AN420] Tested: 9/4/2019

PARAMETER	UOM	LOR	E1 SOIL - 4/4/2019 SE191305.001	E4 SOIL - 4/4/2019 SE191305.004	E9 SOIL - 4/4/2019 SE191305.009
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

Total Phenolics in Soil [AN289] Tested: 11/4/2019

PARAMETER	UOM	LOR	E1 SOIL - 4/4/2019 SE191305.001	E5 SOIL - 4/4/2019 SE191305.005	E9 SOIL - 4/4/2019 SE191305.009
Total Phenols	mg/kg	0.1	**0.1**	**0.4**	**0.6**

Total Cyanide in soil by Discrete Analyser (Aquakem) [AN077/AN287] Tested: 12/4/2019

PARAMETER	UOM	LOR	E1 SOIL - 4/4/2019 SE191305.001
Total Cyanide	mg/kg	0.5	<0.5

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 9/4/2019

PARAMETER	UOM	LOR	E1 SOIL - 4/4/2019 SE191305.001	E2 SOIL - 4/4/2019 SE191305.002	E3 SOIL - 4/4/2019 SE191305.003	E4 SOIL - 4/4/2019 SE191305.004	E5 SOIL - 4/4/2019 SE191305.005
Arsenic, As	mg/kg	1	2	4	2	3	4
Cadmium, Cd	mg/kg	0.3	<0.3	0.8	0.4	<0.3	<0.3
Chromium, Cr	mg/kg	0.3	8.3	34	11	5.5	3.7
Copper, Cu	mg/kg	0.5	43	100	82	61	7.8
Lead, Pb	mg/kg	1	14	69	82	5	9
Nickel, Ni	mg/kg	0.5	23	37	26	40	0.8
Zinc, Zn	mg/kg	2	130	1100	180	30	7.6

PARAMETER	UOM	LOR	E6 SOIL - 4/4/2019 SE191305.006	E7 SOIL - 4/4/2019 SE191305.007	E8 SOIL - 4/4/2019 SE191305.008	E9 SOIL - 4/4/2019 SE191305.009	Split SOIL - 4/4/2019 SE191305.011
Arsenic, As	mg/kg	1	7	9	4	6	5
Cadmium, Cd	mg/kg	0.3	0.4	0.3	0.6	<0.3	<0.3
Chromium, Cr	mg/kg	0.3	14	15	4.7	14	2.8
Copper, Cu	mg/kg	0.5	40	46	17	33	7.8
Lead, Pb	mg/kg	1	300	400	8	240	6
Nickel, Ni	mg/kg	0.5	5.9	12	1.2	13	<0.5
Zinc, Zn	mg/kg	2	210	170	11	140	6.6

Mercury in Soil [AN312] Tested: 9/4/2019

PARAMETER	UOM	LOR	E1 SOIL - 4/4/2019 SE191305.001	E2 SOIL - 4/4/2019 SE191305.002	E3 SOIL - 4/4/2019 SE191305.003	E4 SOIL - 4/4/2019 SE191305.004	E5 SOIL - 4/4/2019 SE191305.005
Mercury	mg/kg	0.05	<0.05	0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	E6 SOIL - 4/4/2019 SE191305.006	E7 SOIL - 4/4/2019 SE191305.007	E8 SOIL - 4/4/2019 SE191305.008	E9 SOIL - 4/4/2019 SE191305.009	Split SOIL - 4/4/2019 SE191305.011
Mercury	mg/kg	0.05	0.21	0.49	<0.05	0.29	<0.05

Moisture Content [AN002] Tested: 9/4/2019

PARAMETER	UOM	LOR	E1 SOIL - 4/4/2019 SE191305.001	E2 SOIL - 4/4/2019 SE191305.002	E3 SOIL - 4/4/2019 SE191305.003	E4 SOIL - 4/4/2019 SE191305.004	E5 SOIL - 4/4/2019 SE191305.005
% Moisture	%w/w	0.5	4.0	8.5	7.8	7.5	15

PARAMETER	UOM	LOR	E6 SOIL - 4/4/2019 SE191305.006	E7 SOIL - 4/4/2019 SE191305.007	E8 SOIL - 4/4/2019 SE191305.008	E9 SOIL - 4/4/2019 SE191305.009	Split SOIL - 4/4/2019 SE191305.011
% Moisture	%w/w	0.5	18	21	21	8.3	16

PARAMETER	UOM	LOR	Trip Blank SOIL - 4/4/2019 SE191305.013
% Moisture	%w/w	0.5	<0.5

Fibre Identification in soil [AN602] Tested: 11/4/2019

PARAMETER	UOM	LOR	E1 SOIL - 4/4/2019 SE191305.001	E2 SOIL - 4/4/2019 SE191305.002	E3 SOIL - 4/4/2019 SE191305.003	E4 SOIL - 4/4/2019 SE191305.004	E6 SOIL - 4/4/2019 SE191305.006
Asbestos Detected	No unit	-	No	No	No	No	No
Estimated Fibres*	%w/w	0.01	<0.01	<0.01	<0.01	<0.01	<0.01

PARAMETER	UOM	LOR	E7 SOIL - 4/4/2019 SE191305.007	E9 SOIL - 4/4/2019 SE191305.009
Asbestos Detected	No unit	-	No	No
Estimated Fibres*	%w/w	0.01	<0.01	<0.01

VOCs in Water [AN433] Tested: 10/4/2019

PARAMETER	UOM	LOR	Rin -1 WATER - 4/4/2019 SE191305.010
Benzene	µg/L	0.5	<0.5
Toluene	µg/L	0.5	<0.5
Ethylbenzene	µg/L	0.5	<0.5
m/p-xylene	µg/L	1	<1
o-xylene	µg/L	0.5	<0.5
Total Xylenes	µg/L	1.5	<1.5
Total BTEX	µg/L	3	<3
Naphthalene	µg/L	0.5	<0.5

Volatile Petroleum Hydrocarbons in Water [AN433] Tested: 10/4/2019

PARAMETER	UOM	LOR	Rin -1 WATER - 4/4/2019 SE191305.010
TRH C6-C9	µg/L	40	<40
Benzene (F0)	µg/L	0.5	<0.5
TRH C6-C10	µg/L	50	<50
TRH C6-C10 minus BTEX (F1)	µg/L	50	<50

TRH (Total Recoverable Hydrocarbons) in Water [AN403] Tested: 8/4/2019

PARAMETER	UOM	LOR	Rin -1 WATER - 4/4/2019 SE191305.010
TRH C10-C14	µg/L	50	<50
TRH C15-C28	µg/L	200	<200
TRH C29-C36	µg/L	200	<200
TRH C37-C40	µg/L	200	<200
TRH >C10-C16	µg/L	60	<60
TRH >C16-C34 (F3)	µg/L	500	<500
TRH >C34-C40 (F4)	µg/L	500	<500
TRH C10-C36	µg/L	450	<450
TRH C10-C40	µg/L	650	<650
TRH >C10-C16 - Naphthalene (F2)	µg/L	60	<60

PAH (Polynuclear Aromatic Hydrocarbons) in Water [AN420] Tested: 8/4/2019

PARAMETER	UOM	LOR	Rin -1 WATER - 4/4/2019 SE191305.010
Naphthalene	µg/L	0.1	<0.1
2-methylnaphthalene	µg/L	0.1	<0.1
1-methylnaphthalene	µg/L	0.1	<0.1
Acenaphthylene	µg/L	0.1	<0.1
Acenaphthene	µg/L	0.1	<0.1
Fluorene	µg/L	0.1	<0.1
Phenanthrene	µg/L	0.1	<0.1
Anthracene	µg/L	0.1	<0.1
Fluoranthene	µg/L	0.1	<0.1
Pyrene	µg/L	0.1	<0.1
Benzo(a)anthracene	µg/L	0.1	<0.1
Chrysene	µg/L	0.1	<0.1
Benzo(b&j)fluoranthene	µg/L	0.1	<0.1
Benzo(k)fluoranthene	µg/L	0.1	<0.1
Benzo(a)pyrene	µg/L	0.1	<0.1
Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1
Dibenzo(ah)anthracene	µg/L	0.1	<0.1
Benzo(ghi)perylene	µg/L	0.1	<0.1
Total PAH (18)	µg/L	1	<1

Trace Metals (Dissolved) in Water by ICPMS [AN318] Tested: 10/4/2019

PARAMETER	UOM	LOR	Rin -1 WATER - 4/4/2019 SE191305.010
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 [AN311(Perth)/AN312] Tested: 10/4/2019

PARAMETER	UOM	LOR	Rin -1 WATER - 4/4/2019 SE191305.010
Mercury	mg/L	0.0001	<0.0001

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/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.
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.
AN077	Hydrogen cyanide is liberated from an acidified alkali soil extract by distillation and purging with air. The hydrogen cyanide gas is then collected by passing it through a sodium hydroxide scrubbing solution. The scrubbing solution will then be analysed for cyanide by the appropriate method.
AN287	A buffered distillate or water sample is treated with chloramine/barbituric acid reagents and the intensity of the colour developed is proportional to the cyanide concentration by Aquakem DA .
AN289	Analysis of Total Phenols in Soil Sediment and Water: Steam distillable phenols react with 4-aminoantipyrine at pH 7.9±0.1 in the presence of potassium ferricyanide to form a coloured antipyrine dye analysed by Discrete Analyser. Reference APHA 5530 B/D.
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).
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.
AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.

AN602	Fibres/material that cannot be unequivocably identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf) The fibres detected may or may not be asbestos fibres.
AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples, Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection limit of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."
AN602	The sample can be reported “no asbestos found at the reporting limit of 0.1 g/kg” (<0.01%w/w) where AN602 section 4.5 of this method has been followed, and if- (a) no trace asbestos fibres have been detected (i.e. no ‘respirable’ fibres): (b) the estimated weight of non-respirable asbestos fibre bundles and/or the estimated weight of asbestos in asbestos-containing materials are found to be less than 0.1g/kg: and (c) these non-respirable asbestos fibre bundles and/or the asbestos containing materials are only visible under stereo-microscope viewing conditions.

FOOTNOTES

*	NATA accreditation does not cover the performance of this service.	-	Not analysed.	UOM	Unit of Measure.
		NVL	Not validated.	LOR	Limit of Reporting.
**	Indicative data, theoretical holding time exceeded.	IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
		LNR	Sample listed, but not received.		

Unless it is reported that sampling has been perfomed 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 calculated 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.

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Nathan Smith
Client	AUSTRALIAN GEOTECHNICAL PTY LTD
Address	2 SHIRLEY STREET ROSEHILL NSW 2144
Telephone	(Not specified)
Facsimile	(Not specified)
Email	nathan@austgeo.com.au
Project	**AG-369**
Order Number	**AG-369_1**
Samples	7

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	**SE191305 R0**
Date Received	05 Apr 2019
Date Reported	12 Apr 2019

COMMENTS

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

No respirable fibres detected in all soil samples using trace analysis technique.

Asbestos analysed by Approved Identifier Ravee Sivasubramaniam.

SIGNATORIES

Akheeqar Beniameen
Chemist

Dong Liang
Metals/Inorganics Team Leader

Kamrul Ahsan
Senior Chemist

Ly Kim Ha
Organic Section Head

Ravee Sivasubramaniam
Hygiene Team Leader

ANALYTICAL REPORT

SE191305 R0

RESULTS

Fibre Identification in soil — Method AN602

Laboratory Reference	Client Reference	Matrix	Sample Description	Date Sampled	Fibre Identification	Est.%w/w*
SE191305.001	E1	Soil	257g Clay,Soil,Rocks	04 Apr 2019	No Asbestos Found	<0.01
SE191305.002	E2	Soil	309g Clay,Soil,Rocks	04 Apr 2019	No Asbestos Found	<0.01
SE191305.003	E3	Soil	261g Clay,Soil,Rocks	04 Apr 2019	No Asbestos Found	<0.01
SE191305.004	E4	Soil	274g Clay,Soil,Rocks	04 Apr 2019	No Asbestos Found	<0.01
SE191305.006	E6	Soil	281g Clay,Soil,Rocks	04 Apr 2019	No Asbestos Found	<0.01
SE191305.007	E7	Soil	161g Clay,Soil,Rocks	04 Apr 2019	No Asbestos Found	<0.01
SE191305.009	E9	Soil	164g Clay,Soil,Rocks	04 Apr 2019	No Asbestos Found	<0.01

METHOD SUMMARY

SE191305 R0

METHOD	METHODOLOGY SUMMARY
AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602	Fibres/material that cannot be unequivocably identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf) The fibres detected may or may not be asbestos fibres.
AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples , Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection limit of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."
AN602	The sample can be reported “no asbestos found at the reporting limit of 0.1 g/kg” (<0.01%w/w) where AN602 section 4.5 of this method has been followed, and if- (a) no trace asbestos fibres have been detected (i.e. no ‘respirable’ fibres): (b) the estimated weight of non-respirable asbestos fibre bundles and/or the estimated weight of asbestos in asbestos-containing materials are found to be less than 0.1g/kg: and (c) these non-respirable asbestos fibre bundles and/or the asbestos containing materials are only visible under stereo-microscope viewing conditions.

FOOTNOTES

Amosite	-	Brown Asbestos	NA	-	Not Analysed
Chrysotile	-	White Asbestos	LNR	-	Listed, Not Required
Crocidolite	-	Blue Asbestos	*	-	NATA accreditation does not cover the performance of this service .
Amphiboles	-	Amosite and/or Crocidolite	**	-	Indicative data, theoretical holding time exceeded.

(In reference to soil samples only) This report does not comply with the analytical reporting recommendations in the Western Australian Department of Health Guidelines for the Assessment and Remediation and Management of Asbestos Contaminated sites in Western Australia - May 2009.

Unless it is reported that sampling has been perfomed by SGS, the samples have been analysed as received.

Where reported: 'Asbestos Detected': Asbestos detected by polarised light microscopy, including dispersion staining.
Where reported: 'No Asbestos Found': No Asbestos Found by polarised light microscopy, including dispersion staining.
Where reported: 'UMF Detected': Mineral fibres of unknown type detected by polarised light microscopy, including dispersion staining. Confirmation by another independent analytical technique may be necessary.

Even after disintegration it can be very difficult, or impossible, to detect the presence of asbestos in some asbestos -containing bulk materials using polarised light microscopy. This is due to the low grade or small length or diameter of asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials.

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

SE191305 R0

CLIENT DETAILS

Contact	Nathan Smith
Client	AUSTRALIAN GEOTECHNICAL PTY LTD
Address	2 SHIRLEY STREET ROSEHILL NSW 2144
Telephone	(Not specified)
Facsimile	(Not specified)
Email	nathan@austgeo.com.au
Project	**AG-369**
Order Number	**AG-369_1**
Samples	13

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	**SE191305 R0**
Date Received	05 Apr 2019
Date Reported	12 Apr 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:

Duplicate	Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES	3 items
Matrix Spike	Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES	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	12 Soil, 1 Water
Date documentation received	5/4/2019	Type of documentation received	COC
Number of eskies/boxes received		Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	13.8°C
Sufficient sample for analysis	Yes	Turnaround time requested	Standard

HOLDING TIME SUMMARY

SE191305 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.

Fibre Identification in soil

Method: ME-(AU)-[ENV]AN602

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
E1	SE191305.001	LB171275	04 Apr 2019	05 Apr 2019	03 Apr 2020	11 Apr 2019	03 Apr 2020	12 Apr 2019
E2	SE191305.002	LB171275	04 Apr 2019	05 Apr 2019	03 Apr 2020	11 Apr 2019	03 Apr 2020	12 Apr 2019
E3	SE191305.003	LB171275	04 Apr 2019	05 Apr 2019	03 Apr 2020	11 Apr 2019	03 Apr 2020	12 Apr 2019
E4	SE191305.004	LB171275	04 Apr 2019	05 Apr 2019	03 Apr 2020	11 Apr 2019	03 Apr 2020	12 Apr 2019
E6	SE191305.006	LB171275	04 Apr 2019	05 Apr 2019	03 Apr 2020	11 Apr 2019	03 Apr 2020	12 Apr 2019
E7	SE191305.007	LB171275	04 Apr 2019	05 Apr 2019	03 Apr 2020	11 Apr 2019	03 Apr 2020	12 Apr 2019
E9	SE191305.009	LB171275	04 Apr 2019	05 Apr 2019	03 Apr 2020	11 Apr 2019	03 Apr 2020	12 Apr 2019

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
Rin -1	SE191305.010	LB171109	04 Apr 2019	05 Apr 2019	02 May 2019	10 Apr 2019	02 May 2019	11 Apr 2019

Mercury in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
E1	SE191305.001	LB171091	04 Apr 2019	05 Apr 2019	02 May 2019	09 Apr 2019	02 May 2019	12 Apr 2019
E2	SE191305.002	LB171091	04 Apr 2019	05 Apr 2019	02 May 2019	09 Apr 2019	02 May 2019	12 Apr 2019
E3	SE191305.003	LB171091	04 Apr 2019	05 Apr 2019	02 May 2019	09 Apr 2019	02 May 2019	12 Apr 2019
E4	SE191305.004	LB171091	04 Apr 2019	05 Apr 2019	02 May 2019	09 Apr 2019	02 May 2019	12 Apr 2019
E5	SE191305.005	LB171091	04 Apr 2019	05 Apr 2019	02 May 2019	09 Apr 2019	02 May 2019	12 Apr 2019
E6	SE191305.006	LB171091	04 Apr 2019	05 Apr 2019	02 May 2019	09 Apr 2019	02 May 2019	12 Apr 2019
E7	SE191305.007	LB171091	04 Apr 2019	05 Apr 2019	02 May 2019	09 Apr 2019	02 May 2019	12 Apr 2019
E8	SE191305.008	LB171091	04 Apr 2019	05 Apr 2019	02 May 2019	09 Apr 2019	02 May 2019	12 Apr 2019
E9	SE191305.009	LB171091	04 Apr 2019	05 Apr 2019	02 May 2019	09 Apr 2019	02 May 2019	12 Apr 2019
Split	SE191305.011	LB171091	04 Apr 2019	05 Apr 2019	02 May 2019	09 Apr 2019	02 May 2019	12 Apr 2019

Moisture Content

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
E1	SE191305.001	LB171089	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	14 Apr 2019	12 Apr 2019
E2	SE191305.002	LB171089	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	14 Apr 2019	12 Apr 2019
E3	SE191305.003	LB171089	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	14 Apr 2019	12 Apr 2019
E4	SE191305.004	LB171089	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	14 Apr 2019	12 Apr 2019
E5	SE191305.005	LB171089	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	14 Apr 2019	12 Apr 2019
E6	SE191305.006	LB171089	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	14 Apr 2019	12 Apr 2019
E7	SE191305.007	LB171089	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	14 Apr 2019	12 Apr 2019
E8	SE191305.008	LB171089	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	14 Apr 2019	12 Apr 2019
E9	SE191305.009	LB171089	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	14 Apr 2019	12 Apr 2019
Split	SE191305.011	LB171089	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	14 Apr 2019	12 Apr 2019
Trip Blank	SE191305.013	LB171089	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	14 Apr 2019	12 Apr 2019

OC Pesticides in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
E1	SE191305.001	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	11 Apr 2019
E2	SE191305.002	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019
E3	SE191305.003	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019
E4	SE191305.004	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	11 Apr 2019
E5	SE191305.005	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019
E6	SE191305.006	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019
E7	SE191305.007	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019
E8	SE191305.008	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019
E9	SE191305.009	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	11 Apr 2019
Split	SE191305.011	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019

OP Pesticides in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
E1	SE191305.001	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019
E2	SE191305.002	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019
E3	SE191305.003	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019
E4	SE191305.004	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019
E5	SE191305.005	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019
E6	SE191305.006	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019
E7	SE191305.007	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019

HOLDING TIME SUMMARY

SE191305 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.

OP Pesticides in Soil (continued)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
E8	SE191305.008	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019
E9	SE191305.009	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019
Split	SE191305.011	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 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
E1	SE191305.001	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019
E2	SE191305.002	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019
E3	SE191305.003	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019
E4	SE191305.004	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019
E5	SE191305.005	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019
E6	SE191305.006	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019
E7	SE191305.007	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019
E8	SE191305.008	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019
E9	SE191305.009	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019
Split	SE191305.011	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Rin -1	SE191305.010	LB170986	04 Apr 2019	05 Apr 2019	11 Apr 2019	08 Apr 2019	18 May 2019	12 Apr 2019

PCBs in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
E1	SE191305.001	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019
E2	SE191305.002	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019
E3	SE191305.003	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019
E4	SE191305.004	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019
E5	SE191305.005	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019
E6	SE191305.006	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019
E7	SE191305.007	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019
E8	SE191305.008	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019
E9	SE191305.009	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019
Split	SE191305.011	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019

Total Cyanide in soil by Discrete Analyser (Aquakem)

Method: ME-(AU)-[ENV]AN077/AN287

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
E1	SE191305.001	LB171340	04 Apr 2019	05 Apr 2019	18 Apr 2019	12 Apr 2019	18 Apr 2019	12 Apr 2019

Total Phenolics in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
E1	SE191305.001	LB171234	04 Apr 2019	05 Apr 2019	18 Apr 2019	11 Apr 2019	18 Apr 2019	12 Apr 2019
E5	SE191305.005	LB171234	04 Apr 2019	05 Apr 2019	18 Apr 2019	11 Apr 2019	18 Apr 2019	12 Apr 2019
E9	SE191305.009	LB171234	04 Apr 2019	05 Apr 2019	18 Apr 2019	11 Apr 2019	18 Apr 2019	12 Apr 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
E1	SE191305.001	LB171090	04 Apr 2019	05 Apr 2019	01 Oct 2019	09 Apr 2019	01 Oct 2019	12 Apr 2019
E2	SE191305.002	LB171090	04 Apr 2019	05 Apr 2019	01 Oct 2019	09 Apr 2019	01 Oct 2019	12 Apr 2019
E3	SE191305.003	LB171090	04 Apr 2019	05 Apr 2019	01 Oct 2019	09 Apr 2019	01 Oct 2019	12 Apr 2019
E4	SE191305.004	LB171090	04 Apr 2019	05 Apr 2019	01 Oct 2019	09 Apr 2019	01 Oct 2019	12 Apr 2019
E5	SE191305.005	LB171090	04 Apr 2019	05 Apr 2019	01 Oct 2019	09 Apr 2019	01 Oct 2019	12 Apr 2019
E6	SE191305.006	LB171090	04 Apr 2019	05 Apr 2019	01 Oct 2019	09 Apr 2019	01 Oct 2019	12 Apr 2019
E7	SE191305.007	LB171090	04 Apr 2019	05 Apr 2019	01 Oct 2019	09 Apr 2019	01 Oct 2019	12 Apr 2019
E8	SE191305.008	LB171090	04 Apr 2019	05 Apr 2019	01 Oct 2019	09 Apr 2019	01 Oct 2019	12 Apr 2019
E9	SE191305.009	LB171090	04 Apr 2019	05 Apr 2019	01 Oct 2019	09 Apr 2019	01 Oct 2019	12 Apr 2019
Split	SE191305.011	LB171090	04 Apr 2019	05 Apr 2019	01 Oct 2019	09 Apr 2019	01 Oct 2019	12 Apr 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
Rin -1	SE191305.010	LB171101	04 Apr 2019	05 Apr 2019	01 Oct 2019	10 Apr 2019	01 Oct 2019	10 Apr 2019

HOLDING TIME SUMMARY

SE191305 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.

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
E1	SE191305.001	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019
E2	SE191305.002	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	11 Apr 2019
E3	SE191305.003	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019
E4	SE191305.004	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019
E5	SE191305.005	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	11 Apr 2019
E6	SE191305.006	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019
E7	SE191305.007	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	11 Apr 2019
E8	SE191305.008	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	11 Apr 2019
E9	SE191305.009	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	11 Apr 2019
Split	SE191305.011	LB171088	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	11 Apr 2019

TRH (Total Recoverable Hydrocarbons) in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Rin -1	SE191305.010	LB170986	04 Apr 2019	05 Apr 2019	11 Apr 2019	08 Apr 2019	18 May 2019	12 Apr 2019

VOC's in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
E1	SE191305.001	LB171087	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	11 Apr 2019
E2	SE191305.002	LB171087	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	11 Apr 2019
E3	SE191305.003	LB171087	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	11 Apr 2019
E4	SE191305.004	LB171087	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	11 Apr 2019
E5	SE191305.005	LB171087	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	11 Apr 2019
E6	SE191305.006	LB171087	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	11 Apr 2019
E7	SE191305.007	LB171087	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	11 Apr 2019
E8	SE191305.008	LB171087	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	11 Apr 2019
E9	SE191305.009	LB171087	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	11 Apr 2019
Split	SE191305.011	LB171087	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	11 Apr 2019
Trip Spike	SE191305.012	LB171087	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	11 Apr 2019
Trip Blank	SE191305.013	LB171087	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	11 Apr 2019

VOCs in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Rin -1	SE191305.010	LB171142	04 Apr 2019	05 Apr 2019	11 Apr 2019	10 Apr 2019	20 May 2019	11 Apr 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
E1	SE191305.001	LB171087	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	11 Apr 2019
E2	SE191305.002	LB171087	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	11 Apr 2019
E3	SE191305.003	LB171087	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	11 Apr 2019
E4	SE191305.004	LB171087	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	11 Apr 2019
E5	SE191305.005	LB171087	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	11 Apr 2019
E6	SE191305.006	LB171087	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	11 Apr 2019
E7	SE191305.007	LB171087	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	11 Apr 2019
E8	SE191305.008	LB171087	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	11 Apr 2019
E9	SE191305.009	LB171087	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	11 Apr 2019
Split	SE191305.011	LB171087	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	11 Apr 2019
Trip Spike	SE191305.012	LB171087	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	12 Apr 2019
Trip Blank	SE191305.013	LB171087	04 Apr 2019	05 Apr 2019	18 Apr 2019	09 Apr 2019	19 May 2019	11 Apr 2019

Volatile Petroleum Hydrocarbons in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Rin -1	SE191305.010	LB171142	04 Apr 2019	05 Apr 2019	11 Apr 2019	10 Apr 2019	20 May 2019	11 Apr 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)	E1	SE191305.001	%	60 - 130%	108
	E4	SE191305.004	%	60 - 130%	117
	E9	SE191305.009	%	60 - 130%	99

OP Pesticides in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	E1	SE191305.001	%	60 - 130%	92
	E4	SE191305.004	%	60 - 130%	90
	E9	SE191305.009	%	60 - 130%	86
d14-p-terphenyl (Surrogate)	E1	SE191305.001	%	60 - 130%	90
	E4	SE191305.004	%	60 - 130%	86
	E9	SE191305.009	%	60 - 130%	92

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	E1	SE191305.001	%	70 - 130%	92
	E2	SE191305.002	%	70 - 130%	92
	E3	SE191305.003	%	70 - 130%	96
	E4	SE191305.004	%	70 - 130%	90
	E5	SE191305.005	%	70 - 130%	78
	E6	SE191305.006	%	70 - 130%	78
	E7	SE191305.007	%	70 - 130%	94
	E8	SE191305.008	%	70 - 130%	86
	E9	SE191305.009	%	70 - 130%	86
	Split	SE191305.011	%	70 - 130%	80
d14-p-terphenyl (Surrogate)	E1	SE191305.001	%	70 - 130%	90
	E2	SE191305.002	%	70 - 130%	90
	E3	SE191305.003	%	70 - 130%	88
	E4	SE191305.004	%	70 - 130%	86
	E5	SE191305.005	%	70 - 130%	88
	E6	SE191305.006	%	70 - 130%	86
	E7	SE191305.007	%	70 - 130%	96
	E8	SE191305.008	%	70 - 130%	84
	E9	SE191305.009	%	70 - 130%	92
	Split	SE191305.011	%	70 - 130%	92
d5-nitrobenzene (Surrogate)	E1	SE191305.001	%	70 - 130%	84
	E2	SE191305.002	%	70 - 130%	80
	E3	SE191305.003	%	70 - 130%	82
	E4	SE191305.004	%	70 - 130%	88
	E5	SE191305.005	%	70 - 130%	78
	E6	SE191305.006	%	70 - 130%	82
	E7	SE191305.007	%	70 - 130%	94
	E8	SE191305.008	%	70 - 130%	78
	E9	SE191305.009	%	70 - 130%	90
	Split	SE191305.011	%	70 - 130%	86

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	Rin -1	SE191305.010	%	40 - 130%	60
d14-p-terphenyl (Surrogate)	Rin -1	SE191305.010	%	40 - 130%	76
d5-nitrobenzene (Surrogate)	Rin -1	SE191305.010	%	40 - 130%	54

PCBs in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	E1	SE191305.001	%	60 - 130%	108
	E4	SE191305.004	%	60 - 130%	117
	E9	SE191305.009	%	60 - 130%	99

VOC's in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	E1	SE191305.001	%	60 - 130%	78
	E2	SE191305.002	%	60 - 130%	78
	E3	SE191305.003	%	60 - 130%	78

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.

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VOC's in Soil (continued)

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	E4	SE191305.004	%	60 - 130%	83
	E5	SE191305.005	%	60 - 130%	77
	E6	SE191305.006	%	60 - 130%	77
	E7	SE191305.007	%	60 - 130%	75
	E8	SE191305.008	%	60 - 130%	81
	E9	SE191305.009	%	60 - 130%	76
	Split	SE191305.011	%	60 - 130%	74
	Trip Spike	SE191305.012	%	60 - 130%	83
	Trip Blank	SE191305.013	%	60 - 130%	81
d4-1,2-dichloroethane (Surrogate)	E1	SE191305.001	%	60 - 130%	105
	E2	SE191305.002	%	60 - 130%	95
	E3	SE191305.003	%	60 - 130%	115
	E4	SE191305.004	%	60 - 130%	107
	E5	SE191305.005	%	60 - 130%	98
	E6	SE191305.006	%	60 - 130%	92
	E7	SE191305.007	%	60 - 130%	100
	E8	SE191305.008	%	60 - 130%	99
	E9	SE191305.009	%	60 - 130%	88
	Split	SE191305.011	%	60 - 130%	104
	Trip Spike	SE191305.012	%	60 - 130%	94
	Trip Blank	SE191305.013	%	60 - 130%	110
d8-toluene (Surrogate)	E1	SE191305.001	%	60 - 130%	82
	E2	SE191305.002	%	60 - 130%	80
	E3	SE191305.003	%	60 - 130%	79
	E4	SE191305.004	%	60 - 130%	90
	E5	SE191305.005	%	60 - 130%	70
	E6	SE191305.006	%	60 - 130%	80
	E7	SE191305.007	%	60 - 130%	85
	E8	SE191305.008	%	60 - 130%	78
	E9	SE191305.009	%	60 - 130%	74
	Split	SE191305.011	%	60 - 130%	79
	Trip Spike	SE191305.012	%	60 - 130%	77
	Trip Blank	SE191305.013	%	60 - 130%	84
Dibromofluoromethane (Surrogate)	E1	SE191305.001	%	60 - 130%	74
	E2	SE191305.002	%	60 - 130%	78
	E3	SE191305.003	%	60 - 130%	78
	E4	SE191305.004	%	60 - 130%	84
	E5	SE191305.005	%	60 - 130%	76
	E6	SE191305.006	%	60 - 130%	79
	E7	SE191305.007	%	60 - 130%	77
	E8	SE191305.008	%	60 - 130%	80
	E9	SE191305.009	%	60 - 130%	78
	Split	SE191305.011	%	60 - 130%	76
	Trip Spike	SE191305.012	%	60 - 130%	75
	Trip Blank	SE191305.013	%	60 - 130%	77

VOCs in Water

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	Rin -1	SE191305.010	%	40 - 130%	96
d4-1,2-dichloroethane (Surrogate)	Rin -1	SE191305.010	%	40 - 130%	98
d8-toluene (Surrogate)	Rin -1	SE191305.010	%	40 - 130%	99
Dibromofluoromethane (Surrogate)	Rin -1	SE191305.010	%	40 - 130%	111

Volatile Petroleum Hydrocarbons in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	E1	SE191305.001	%	60 - 130%	78
	E2	SE191305.002	%	60 - 130%	78
	E3	SE191305.003	%	60 - 130%	78
	E4	SE191305.004	%	60 - 130%	83
	E5	SE191305.005	%	60 - 130%	77
	E6	SE191305.006	%	60 - 130%	77
	E7	SE191305.007	%	60 - 130%	75

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.

Volatile Petroleum Hydrocarbons in Soil (continued)

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	E8	SE191305.008	%	60 - 130%	81
	E9	SE191305.009	%	60 - 130%	76
	Split	SE191305.011	%	60 - 130%	74
	Trip Blank	SE191305.013	%	60 - 130%	81
d4-1,2-dichloroethane (Surrogate)	E1	SE191305.001	%	60 - 130%	105
	E2	SE191305.002	%	60 - 130%	95
	E3	SE191305.003	%	60 - 130%	115
	E4	SE191305.004	%	60 - 130%	107
	E5	SE191305.005	%	60 - 130%	98
	E6	SE191305.006	%	60 - 130%	92
	E7	SE191305.007	%	60 - 130%	100
	E8	SE191305.008	%	60 - 130%	99
	E9	SE191305.009	%	60 - 130%	88
	Split	SE191305.011	%	60 - 130%	104
	Trip Blank	SE191305.013	%	60 - 130%	110
d8-toluene (Surrogate)	E1	SE191305.001	%	60 - 130%	82
	E2	SE191305.002	%	60 - 130%	80
	E3	SE191305.003	%	60 - 130%	79
	E4	SE191305.004	%	60 - 130%	90
	E5	SE191305.005	%	60 - 130%	70
	E6	SE191305.006	%	60 - 130%	80
	E7	SE191305.007	%	60 - 130%	85
	E8	SE191305.008	%	60 - 130%	78
	E9	SE191305.009	%	60 - 130%	74
	Split	SE191305.011	%	60 - 130%	79
	Trip Blank	SE191305.013	%	60 - 130%	84
Dibromofluoromethane (Surrogate)	E1	SE191305.001	%	60 - 130%	74
	E2	SE191305.002	%	60 - 130%	78
	E3	SE191305.003	%	60 - 130%	78
	E4	SE191305.004	%	60 - 130%	84
	E5	SE191305.005	%	60 - 130%	76
	E6	SE191305.006	%	60 - 130%	79
	E7	SE191305.007	%	60 - 130%	77
	E8	SE191305.008	%	60 - 130%	80
	E9	SE191305.009	%	60 - 130%	78
	Split	SE191305.011	%	60 - 130%	76
	Trip Blank	SE191305.013	%	60 - 130%	77

Volatile Petroleum Hydrocarbons in Water

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	Rin -1	SE191305.010	%	40 - 130%	96
d4-1,2-dichloroethane (Surrogate)	Rin -1	SE191305.010	%	60 - 130%	98
d8-toluene (Surrogate)	Rin -1	SE191305.010	%	40 - 130%	99
Dibromofluoromethane (Surrogate)	Rin -1	SE191305.010	%	40 - 130%	111

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
LB171109.001	Mercury	mg/L	0.0001	<0.0001

Mercury in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB171091.001	Mercury	mg/kg	0.05	<0.05

OC Pesticides in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB171088.001		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)	%	-	102

OP Pesticides in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB171088.001		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)	%	-	82
		d14-p-terphenyl (Surrogate)	%	-	92

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB171088.001	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
LB171088.001		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)	%	-	82
		d14-p-terphenyl (Surrogate)	%	-	92

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Sample Number		Parameter	Units	LOR	Result
LB170986.001		Naphthalene	µg/L	0.1	<0.1
		2-methylnaphthalene	µg/L	0.1	<0.1
		1-methylnaphthalene	µg/L	0.1	<0.1
		Acenaphthylene	µg/L	0.1	<0.1
		Acenaphthene	µg/L	0.1	<0.1
		Fluorene	µg/L	0.1	<0.1
		Phenanthrene	µg/L	0.1	<0.1
		Anthracene	µg/L	0.1	<0.1
		Fluoranthene	µg/L	0.1	<0.1
		Pyrene	µg/L	0.1	<0.1
		Benzo(a)anthracene	µg/L	0.1	<0.1
		Chrysene	µg/L	0.1	<0.1
		Benzo(a)pyrene	µg/L	0.1	<0.1
		Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1
		Dibenzo(ah)anthracene	µg/L	0.1	<0.1
		Benzo(ghi)perylene	µg/L	0.1	<0.1
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	64
		2-fluorobiphenyl (Surrogate)	%	-	66
		d14-p-terphenyl (Surrogate)	%	-	78

PCBs in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB171088.001		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)	%	-	102

Total Cyanide in soil by Discrete Analyser (Aquakem)

Method: ME-(AU)-[ENV]AN077/AN287

Sample Number	Parameter	Units	LOR	Result
LB171340.001	Total Cyanide	mg/kg	0.5	<0.5

Total Phenolics in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB171234.001	Total Phenols	mg/kg	0.1	<0.1

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

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

Sample Number	Parameter	Units	LOR

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.

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES (continued)

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

Sample Number	Parameter	Units	LOR	Result
LB171090.001	Arsenic, As	mg/kg	1	<1
	Cadmium, Cd	mg/kg	0.3	<0.3
	Chromium, Cr	mg/kg	0.3	<0.3
	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
LB171101.001	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
LB171088.001	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

TRH (Total Recoverable Hydrocarbons) in Water

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

Sample Number	Parameter	Units	LOR	Result
LB170986.001	TRH C10-C14	µg/L	50	<50
	TRH C15-C28	µg/L	200	<200
	TRH C29-C36	µg/L	200	<200
	TRH C37-C40	µg/L	200	<200

VOC's in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB171087.001	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
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	83
		d4-1,2-dichloroethane (Surrogate)	%	-	104
		d8-toluene (Surrogate)	%	-	94
		Bromofluorobenzene (Surrogate)	%	-	80
	Totals	Total BTEX	mg/kg	0.6	<0.6

VOCs in Water

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

Sample Number		Parameter	Units	LOR	Result
LB171142.001	Monocyclic Aromatic Hydrocarbons	Benzene	µg/L	0.5	<0.5
		Toluene	µg/L	0.5	<0.5
		Ethylbenzene	µg/L	0.5	<0.5
		m/p-xylene	µg/L	1	<1
		o-xylene	µg/L	0.5	<0.5
	Polycyclic VOCs	Naphthalene	µg/L	0.5	<0.5
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	108
		d4-1,2-dichloroethane (Surrogate)	%	-	95
		d8-toluene (Surrogate)	%	-	99
		Bromofluorobenzene (Surrogate)	%	-	95

Volatile Petroleum Hydrocarbons in Soil

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

Sample Number	Parameter	Units	LOR

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.

Volatile Petroleum Hydrocarbons in Soil (continued)

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

Sample Number		Parameter	Units	LOR	Result
LB171087.001		TRH C6-C9	mg/kg	20	<20
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	83
		d4-1,2-dichloroethane (Surrogate)	%	-	104
		d8-toluene (Surrogate)	%	-	94

Volatile Petroleum Hydrocarbons in Water

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

Sample Number		Parameter	Units	LOR	Result
LB171142.001		TRH C6-C9	µg/L	40	<40
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	108
		d4-1,2-dichloroethane (Surrogate)	%	-	95
		d8-toluene (Surrogate)	%	-	99
		Bromofluorobenzene (Surrogate)	%	-	95

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 %
SE191296.009	LB171109.014	Mercury	µg/L	0.0001	0.00356	0.00518	200	37

Mercury in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE191305.002	LB171091.014	Mercury	mg/kg	0.05	0.05	0.06	122	11
SE191305.011	LB171091.023	Mercury	mg/kg	0.05	<0.05	<0.05	200	0

Moisture Content

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE191305.013	LB171089.022	% Moisture	%w/w	0.5	<0.5	<0.5	200	0

OC Pesticides in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE191305.004	LB171088.024		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	0	200	0
			Alpha BHC	mg/kg	0.1	<0.1	0	200	0
			Lindane	mg/kg	0.1	<0.1	0	200	0
			Heptachlor	mg/kg	0.1	<0.1	0	200	0
			Aldrin	mg/kg	0.1	<0.1	0	200	0
			Beta BHC	mg/kg	0.1	<0.1	0	200	0
			Delta BHC	mg/kg	0.1	<0.1	0	200	0
			Heptachlor epoxide	mg/kg	0.1	<0.1	0	200	0
			o,p'-DDE	mg/kg	0.1	<0.1	0	200	0
			Alpha Endosulfan	mg/kg	0.2	<0.2	0	200	0
			Gamma Chlordane	mg/kg	0.1	<0.1	0	200	0
			Alpha Chlordane	mg/kg	0.1	<0.1	0	200	0
			trans-Nonachlor	mg/kg	0.1	<0.1	0	200	0
			p,p'-DDE	mg/kg	0.1	<0.1	0	200	0
			Dieldrin	mg/kg	0.2	<0.2	0	200	0
			Endrin	mg/kg	0.2	<0.2	0	200	0
			o,p'-DDD	mg/kg	0.1	<0.1	0	200	0
			o,p'-DDT	mg/kg	0.1	<0.1	0	200	0
			Beta Endosulfan	mg/kg	0.2	<0.2	0	200	0
			p,p'-DDD	mg/kg	0.1	<0.1	0	200	0
			p,p'-DDT	mg/kg	0.1	<0.1	0	200	0
			Endosulfan sulphate	mg/kg	0.1	<0.1	0	200	0
			Endrin Aldehyde	mg/kg	0.1	<0.1	0	200	0
			Methoxychlor	mg/kg	0.1	<0.1	0	200	0
			Endrin Ketone	mg/kg	0.1	<0.1	0	200	0
			Isodrin	mg/kg	0.1	<0.1	0	200	0
			Mirex	mg/kg	0.1	<0.1	0	200	0
			Total CLP OC Pesticides	mg/kg	1	<1	0	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.18	0.17	30	3

OP Pesticides in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE191305.004	LB171088.025	Dichlorvos	mg/kg	0.5	<0.5	0	200	0
		Dimethoate	mg/kg	0.5	<0.5	0.01	200	0
		Diazinon (Dimpylate)	mg/kg	0.5	<0.5	0	200	0
		Fenitrothion	mg/kg	0.2	<0.2	0.01	200	0
		Malathion	mg/kg	0.2	<0.2	0.04	200	0
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	0.02	200	0
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	0.03	200	0
		Bromophos Ethyl	mg/kg	0.2	<0.2	0.03	200	0
		Methidathion	mg/kg	0.5	<0.5	0	200	0
		Ethion	mg/kg	0.2	<0.2	0.01	200	0
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	0.09	200	0
		Total OP Pesticides*	mg/kg	1.7	<1.7	0	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 %
SE191305.004	LB171088.025	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.45	30	0
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.43	30	0

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE191305.004	LB171088.025		Naphthalene	mg/kg	0.1	<0.1	0.01	200	0
			2-methylnaphthalene	mg/kg	0.1	<0.1	0	200	0
			1-methylnaphthalene	mg/kg	0.1	<0.1	0.01	200	0
			Acenaphthylene	mg/kg	0.1	<0.1	0.08	148	0
			Acenaphthene	mg/kg	0.1	<0.1	0	200	0
			Fluorene	mg/kg	0.1	<0.1	0.01	200	0
			Phenanthrene	mg/kg	0.1	<0.1	0.04	200	0
			Anthracene	mg/kg	0.1	<0.1	0.04	200	0
			Fluoranthene	mg/kg	0.1	<0.1	0.01	200	0
			Pyrene	mg/kg	0.1	<0.1	0.03	200	0
			Benzo(a)anthracene	mg/kg	0.1	<0.1	0.04	200	0
			Chrysene	mg/kg	0.1	<0.1	0.05	200	0
			Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	0.03	200	0
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	0.03	200	0
			Benzo(a)pyrene	mg/kg	0.1	<0.1	0.02	200	0
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	0.04	200	0
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	0.01	200	0
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	0.03	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=0	mg/kg	0.2	<0.2	0	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	mg/kg	0.3	<0.3	0.242	134	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	mg/kg	0.2	<0.2	0.121	175	0
			Total PAH (18)	mg/kg	0.8	<0.8	0	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.43	30	2
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.45	30	0
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.43	30	0
SE191305.011	LB171088.023		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	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	0.4	30	0
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	2
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	2

PCBs in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE191305.004	LB171088.024		Arochlor 1016	mg/kg	0.2	<0.2	0	200	0
			Arochlor 1221	mg/kg	0.2	<0.2	0	200	0
			Arochlor 1232	mg/kg	0.2	<0.2	0	200	0
			Arochlor 1242	mg/kg	0.2	<0.2	0	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.

PCBs in Soil (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE191305.004	LB171088.024		Arochlor 1248	mg/kg	0.2	<0.2	0	200	0
			Arochlor 1254	mg/kg	0.2	<0.2	0	200	0
			Arochlor 1260	mg/kg	0.2	<0.2	0	200	0
			Arochlor 1262	mg/kg	0.2	<0.2	0	200	0
			Arochlor 1268	mg/kg	0.2	<0.2	0	200	0
			Total PCBs (Arochlors)	mg/kg	1	<1	0	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0.17	30	3

Total Phenolics in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE191305.001	LB171234.004	Total Phenols	mg/kg	0.1	0.1	0.1	93	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 %
SE191305.002	LB171090.014	Arsenic, As	mg/kg	1	4	4	54	5
		Cadmium, Cd	mg/kg	0.3	0.8	1.1	62	28
		Chromium, Cr	mg/kg	0.3	34	37	31	8
		Copper, Cu	mg/kg	0.5	100	130	30	21
		Nickel, Ni	mg/kg	0.5	37	35	31	5
		Lead, Pb	mg/kg	1	69	76	31	9
		Zinc, Zn	mg/kg	2	1100	910	30	15
SE191305.011	LB171090.023	Arsenic, As	mg/kg	1	5	6	47	15
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.3	2.8	4.5	44	46 ②
		Copper, Cu	mg/kg	0.5	7.8	10	36	26
		Nickel, Ni	mg/kg	0.5	<0.5	1.1	95	78
		Lead, Pb	mg/kg	1	6	12	41	67 ②
		Zinc, Zn	mg/kg	2	6.6	11	52	54 ②

Trace Metals (Dissolved) in Water by ICPMS

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE191341.001	LB171101.013	Arsenic, As	µg/L	1	6.866	6.863	30	0
		Cadmium, Cd	µg/L	0.1	0.038	0.036	200	0
		Chromium, Cr	µg/L	1	0.047	0.041	200	0
		Copper, Cu	µg/L	1	0.068	0.051	200	0
		Lead, Pb	µg/L	1	-0.014	-0.016	200	0
		Nickel, Ni	µg/L	1	9.907	9.453	25	5
		Zinc, Zn	µg/L	5	10.197	9.814	65	4

TRH (Total Recoverable Hydrocarbons) in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE191305.004	LB171088.025		TRH C10-C14	mg/kg	20	<20	0	200	0
			TRH C15-C28	mg/kg	45	<45	0	200	0
			TRH C29-C36	mg/kg	45	58	56	109	4
			TRH C37-C40	mg/kg	100	<100	0	200	0
			TRH C10-C36 Total	mg/kg	110	<110	56	200	0
			TRH C10-C40 Total (F bands)	mg/kg	210	<210	0	200	0
		TRH F Bands	TRH >C10-C16	mg/kg	25	<25	0	200	0
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	0	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	0	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	0	200	0
SE191305.011	LB171088.023		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

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.

TRH (Total Recoverable Hydrocarbons) in Soil (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE191305.011	LB171088.023	TRH F Bands	TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0

TRH (Total Recoverable Hydrocarbons) in Water

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE191292.001	LB170986.023		TRH C10-C14	µg/L	50	0	0	200	0
			TRH C15-C28	µg/L	200	0	0	200	0
			TRH C29-C36	µg/L	200	0	0	200	0
			TRH C37-C40	µg/L	200	0	0	200	0
			TRH C10-C36	µg/L	450	0	0	200	0
			TRH C10-C40	µg/L	650	0	0	200	0
		TRH F Bands	TRH >C10-C16	µg/L	60	0	0	200	0
			TRH >C16-C34 (F3)	µg/L	500	0	0	200	0
			TRH >C34-C40 (F4)	µg/L	500	0	0	200	0

VOC's in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE191305.002	LB171087.014	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	Dibromofluoromethane (Surrogate)	mg/kg	-	3.9	4.0	50	2
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.8	4.5	50	6
			d8-toluene (Surrogate)	mg/kg	-	4.0	4.1	50	2
			Bromofluorobenzene (Surrogate)	mg/kg	-	3.9	3.8	50	3
		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
SE191305.011	LB171087.026	Monocyclic	Benzene	mg/kg	0.1	<0.1	0.01	200	0
		Aromatic	Toluene	mg/kg	0.1	<0.1	0	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	0	200	0
			m/p-xylene	mg/kg	0.2	<0.2	0	200	0
			o-xylene	mg/kg	0.1	<0.1	0	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	0.01	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	3.8	3.81	50	0
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.2	4.88	50	7
			d8-toluene (Surrogate)	mg/kg	-	3.9	3.74	50	5
			Bromofluorobenzene (Surrogate)	mg/kg	-	3.7	3.77	50	2
		Totals	Total Xylenes	mg/kg	0.3	<0.3	0	200	0
			Total BTEX	mg/kg	0.6	<0.6	0.01	200	0

VOCs in Water

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE191277.001	LB171142.022	Monocyclic	Benzene	µg/L	0.5	<0.5	<0.5	200	0
		Aromatic	Toluene	µg/L	0.5	<0.5	<0.5	200	0
			Ethylbenzene	µg/L	0.5	<0.5	<0.5	200	0
			m/p-xylene	µg/L	1	<1	<1	200	0
			o-xylene	µg/L	0.5	<0.5	<0.5	200	0
		Polycyclic	Naphthalene	µg/L	0.5	<0.5	<0.5	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	5.0	4.1	30	19
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.5	5.9	30	27
			d8-toluene (Surrogate)	µg/L	-	4.7	4.3	30	9
			Bromofluorobenzene (Surrogate)	µg/L	-	4.7	4.4	30	5
SE191305.010	LB171142.023	Monocyclic	Benzene	µg/L	0.5	<0.5	0	200	0
		Aromatic	Toluene	µg/L	0.5	<0.5	0	200	0
			Ethylbenzene	µg/L	0.5	<0.5	0	200	0
			m/p-xylene	µg/L	1	<1	0	200	0
			o-xylene	µg/L	0.5	<0.5	0	200	0
		Polycyclic	Naphthalene	µg/L	0.5	<0.5	0	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	5.6	5.95	30	7
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.9	5.53	30	12
			d8-toluene (Surrogate)	µg/L	-	5.0	4.97	30	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.

VOCs in Water (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE191305.010	LB171142.023	Surrogates	Bromofluorobenzene (Surrogate)	µg/L	-	4.8	4.73	30	1

Volatile Petroleum Hydrocarbons in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE191305.002	LB171087.014		TRH C6-C10	mg/kg	25	<25	<25	200	0
			TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	3.9	4.0	30	2
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.8	4.5	30	6
			d8-toluene (Surrogate)	mg/kg	-	4.0	4.1	30	2
			Bromofluorobenzene (Surrogate)	mg/kg	-	3.9	3.8	30	3
		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
SE191305.011	LB171087.026		TRH C6-C10	mg/kg	25	<25	0	200	0
			TRH C6-C9	mg/kg	20	<20	0	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	3.8	3.81	30	0
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.2	4.88	30	7
			d8-toluene (Surrogate)	mg/kg	-	3.9	3.74	30	5
			Bromofluorobenzene (Surrogate)	mg/kg	-	3.7	3.77	30	2
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	0.01	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	-0.01	200	0

Volatile Petroleum Hydrocarbons in Water

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE191277.001	LB171142.022		TRH C6-C10	µg/L	50	<50	<50	200	0
			TRH C6-C9	µg/L	40	<40	<40	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	5.0	4.1	30	19
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.5	5.9	30	27
			d8-toluene (Surrogate)	µg/L	-	4.7	4.3	30	9
			Bromofluorobenzene (Surrogate)	µg/L	-	4.7	4.4	30	5
		VPH F Bands	Benzene (F0)	µg/L	0.5	<0.5	<0.5	200	0
			TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	<50	200	0
SE191305.010	LB171142.023		TRH C6-C10	µg/L	50	<50	0	200	0
			TRH C6-C9	µg/L	40	<40	0	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	5.6	5.95	30	7
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.9	5.53	30	12
			d8-toluene (Surrogate)	µg/L	-	5.0	4.97	30	0
			Bromofluorobenzene (Surrogate)	µg/L	-	4.8	4.73	30	1
		VPH F Bands	Benzene (F0)	µg/L	0.5	<0.5	0	200	0
			TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	0	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 %
LB171091.002	Mercury	mg/kg	0.05	0.23	0.2	70 - 130	114

OC Pesticides in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB171088.002		Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	101
		Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	101
		Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	98
		Dieldrin	mg/kg	0.2	0.2	0.2	60 - 140	106
		Endrin	mg/kg	0.2	<0.2	0.2	60 - 140	98
		p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	87
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.15	0.15	40 - 130	102

OP Pesticides in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB171088.002		Dichlorvos	mg/kg	0.5	1.6	2	60 - 140	78
		Diazinon (Dimpylate)	mg/kg	0.5	1.8	2	60 - 140	90
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	1.7	2	60 - 140	85
		Ethion	mg/kg	0.2	1.6	2	60 - 140	81
	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	92

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB171088.002		Naphthalene	mg/kg	0.1	3.9	4	60 - 140	97
		Acenaphthylene	mg/kg	0.1	3.9	4	60 - 140	98
		Acenaphthene	mg/kg	0.1	4.0	4	60 - 140	100
		Phenanthrene	mg/kg	0.1	4.8	4	60 - 140	121
		Anthracene	mg/kg	0.1	4.7	4	60 - 140	119
		Fluoranthene	mg/kg	0.1	4.5	4	60 - 140	113
		Pyrene	mg/kg	0.1	4.8	4	60 - 140	121
		Benzo(a)pyrene	mg/kg	0.1	4.2	4	60 - 140	104
	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	92

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB170986.002		Naphthalene	µg/L	0.1	29	40	60 - 140	74
		Acenaphthylene	µg/L	0.1	30	40	60 - 140	75
		Acenaphthene	µg/L	0.1	31	40	60 - 140	77
		Phenanthrene	µg/L	0.1	36	40	60 - 140	91
		Anthracene	µg/L	0.1	32	40	60 - 140	80
		Fluoranthene	µg/L	0.1	34	40	60 - 140	85
		Pyrene	µg/L	0.1	35	40	60 - 140	88
		Benzo(a)pyrene	µg/L	0.1	36	40	60 - 140	89
	Surrogates	d5-nitrobenzene (Surrogate)	µg/L	-	0.3	0.5	40 - 130	64
		2-fluorobiphenyl (Surrogate)	µg/L	-	0.3	0.5	40 - 130	66
		d14-p-terphenyl (Surrogate)	µg/L	-	0.4	0.5	40 - 130	76

PCBs in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB171088.002	Arochlor 1260	mg/kg	0.2	0.4	0.4	60 - 140	112

Total Cyanide in soil by Discrete Analyser (Aquakem)

Method: ME-(AU)-[ENV]AN077/AN287

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB171340.002	Total Cyanide	mg/kg	0.5	<0.5	0.25	70 - 130	109

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.

Total Phenolics in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB171234.002	Total Phenols	mg/kg	0.1	2.5	2.5	70 - 130	101

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 %
LB171090.002	Arsenic, As	mg/kg	1	350	336.32	79 - 120	106
	Cadmium, Cd	mg/kg	0.3	420	416.6	69 - 131	100
	Chromium, Cr	mg/kg	0.3	38	35.2	80 - 120	107
	Copper, Cu	mg/kg	0.5	330	370.46	80 - 120	90
	Nickel, Ni	mg/kg	0.5	190	210.88	79 - 120	92
	Lead, Pb	mg/kg	1	97	107.87	79 - 120	90
	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 %
LB171101.002	Arsenic, As	µg/L	1	20	20	80 - 120	102
	Cadmium, Cd	µg/L	0.1	22	20	80 - 120	108
	Chromium, Cr	µg/L	1	23	20	80 - 120	114
	Copper, Cu	µg/L	1	23	20	80 - 120	113
	Lead, Pb	µg/L	1	22	20	80 - 120	110
	Nickel, Ni	µg/L	1	21	20	80 - 120	105
	Zinc, Zn	µg/L	5	21	20	80 - 120	105

TRH (Total Recoverable Hydrocarbons) in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB171088.002		TRH C10-C14	mg/kg	20	39	40	60 - 140	98
		TRH C15-C28	mg/kg	45	<45	40	60 - 140	100
		TRH C29-C36	mg/kg	45	<45	40	60 - 140	78
	TRH F Bands	TRH >C10-C16	mg/kg	25	39	40	60 - 140	98
		TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	85
		TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	85

TRH (Total Recoverable Hydrocarbons) in Water

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB170986.002		TRH C10-C14	µg/L	50	1100	1200	60 - 140	92
		TRH C15-C28	µg/L	200	1400	1200	60 - 140	113
		TRH C29-C36	µg/L	200	1400	1200	60 - 140	119
	TRH F Bands	TRH >C10-C16	µg/L	60	1200	1200	60 - 140	100
		TRH >C16-C34 (F3)	µg/L	500	1400	1200	60 - 140	121
		TRH >C34-C40 (F4)	µg/L	500	730	600	60 - 140	121

VOC's in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB171087.002	Monocyclic	Benzene	mg/kg	0.1	1.8	2.9	60 - 140	62
	Aromatic	Toluene	mg/kg	0.1	2.1	2.9	60 - 140	74
		Ethylbenzene	mg/kg	0.1	1.9	2.9	60 - 140	67
		m/p-xylene	mg/kg	0.2	4.3	5.8	60 - 140	74
		o-xylene	mg/kg	0.1	2.1	2.9	60 - 140	72
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.1	5	60 - 140	81
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.4	5	60 - 140	88
		d8-toluene (Surrogate)	mg/kg	-	4.2	5	60 - 140	84
		Bromofluorobenzene (Surrogate)	mg/kg	-	4.1	5	60 - 140	82

VOCs in Water

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB171142.002	Monocyclic	Benzene	µg/L	0.5	51	45.45	60 - 140	113
	Aromatic	Toluene	µg/L	0.5	51	45.45	60 - 140	113
		Ethylbenzene	µg/L	0.5	51	45.45	60 - 140	113
		m/p-xylene	µg/L	1	100	90.9	60 - 140	113
		o-xylene	µg/L	0.5	51	45.45	60 - 140	113
	Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.8	5	60 - 140	95
		d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.9	5	60 - 140	97
		d8-toluene (Surrogate)	µg/L	-	5.0	5	60 - 140	100

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.

VOCs in Water (continued)

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB171142.002	Surrogates	Bromofluorobenzene (Surrogate)	µg/L	-	5.1	5	60 - 140	102

Volatile Petroleum Hydrocarbons in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB171087.002		TRH C6-C10	mg/kg	25	<25	24.65	60 - 140	81
		TRH C6-C9	mg/kg	20	<20	23.2	60 - 140	81
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.1	5	60 - 140	81
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.4	5	60 - 140	88
		d8-toluene (Surrogate)	mg/kg	-	4.2	5	60 - 140	84
		Bromofluorobenzene (Surrogate)	mg/kg	-	4.1	5	60 - 140	82
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	7.25	60 - 140	92

Volatile Petroleum Hydrocarbons in Water

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB171142.002		TRH C6-C10	µg/L	50	1000	946.63	60 - 140	106
		TRH C6-C9	µg/L	40	820	818.71	60 - 140	100
	Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.8	5	60 - 140	95
		d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.9	5	60 - 140	97
		d8-toluene (Surrogate)	µg/L	-	5.0	5	60 - 140	100
		Bromofluorobenzene (Surrogate)	µg/L	-	5.1	5	60 - 140	102
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	700	639.67	60 - 140	109

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

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

Mercury in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE191303.001	LB171091.004	Mercury	mg/kg	0.05	0.28	0.02017326631	0.2	130

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Original	Spike	Recovery%
SE191303.001	LB171088.024		Naphthalene	mg/kg	0.1	0	4	97
			2-methylnaphthalene	mg/kg	0.1	0	-	-
			1-methylnaphthalene	mg/kg	0.1	0	-	-
			Acenaphthylene	mg/kg	0.1	0	4	98
			Acenaphthene	mg/kg	0.1	0	4	100
			Fluorene	mg/kg	0.1	0	-	-
			Phenanthrene	mg/kg	0.1	0.03	4	101
			Anthracene	mg/kg	0.1	0.03	4	98
			Fluoranthene	mg/kg	0.1	0.01	4	93
			Pyrene	mg/kg	0.1	0.01	4	102
			Benzo(a)anthracene	mg/kg	0.1	0.02	-	-
			Chrysene	mg/kg	0.1	0.02	-	-
			Benzo(b&j)fluoranthene	mg/kg	0.1	0.01	-	-
			Benzo(k)fluoranthene	mg/kg	0.1	0.01	-	-
			Benzo(a)pyrene	mg/kg	0.1	0.01	4	106
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	0.01	-	-
			Dibenzo(ah)anthracene	mg/kg	0.1	0	-	-
			Benzo(ghi)perylene	mg/kg	0.1	0.01	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	0	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	0.242	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	0.121	-	-
			Total PAH (18)	mg/kg	0.8	0	-	-
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.41	-	82
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	-	86
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.44	-	82

Total Cyanide in soil by Discrete Analyser (Aquakem)

Method: ME-(AU)-[ENV]AN077/AN287

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE191305.001	LB171340.005	Total Cyanide	mg/kg	0.5	<0.5	<0.5	0.25	110

Total Phenolics in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE191305.009	LB171234.007	Total Phenols	mg/kg	0.1	2.7	0.6	2.5	83

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

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE191303.001	LB171090.004	Arsenic, As	mg/kg	1	40	2.03714534131	50	76
		Cadmium, Cd	mg/kg	0.3	37	0.01303078043	50	73
		Chromium, Cr	mg/kg	0.3	39	2.91889481741	50	73
		Copper, Cu	mg/kg	0.5	40	3.77023913915	50	73
		Nickel, Ni	mg/kg	0.5	37	0.58204152609	50	72
		Lead, Pb	mg/kg	1	46	11.2281891413E	50	70 ④
		Zinc, Zn	mg/kg	2	53	18.2474362023C	50	69 ④

Trace Metals (Dissolved) in Water by ICPMS

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE191216.007	LB171101.004	Arsenic, As	µg/L	1	20	-0.013	20	102
		Cadmium, Cd	µg/L	0.1	22	0.002	20	110
		Chromium, Cr	µg/L	1	23	-0.009	20	117
		Copper, Cu	µg/L	1	24	0.075	20	118
		Lead, Pb	µg/L	1	22	0.014	20	111
		Nickel, Ni	µg/L	1	22	0.005	20	108

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.

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

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE191216.007	LB171101.004	Zinc, Zn	µg/L	5	24	0.657	20	114

TRH (Total Recoverable Hydrocarbons) in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Original	Spike	Recovery%
SE191303.001	LB171088.024		TRH C10-C14	mg/kg	20	0	40	80
			TRH C15-C28	mg/kg	45	0	40	85
			TRH C29-C36	mg/kg	45	0	40	80
			TRH C37-C40	mg/kg	100	0	-	-
			TRH C10-C36 Total	mg/kg	110	0	-	-
			TRH C10-C40 Total (F bands)	mg/kg	210	0	-	-
		TRH F Bands	TRH >C10-C16	mg/kg	25	0	40	83
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	0	-	-
			TRH >C16-C34 (F3)	mg/kg	90	0	40	85
			TRH >C34-C40 (F4)	mg/kg	120	0	-	-

VOC's in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE191303.001	LB171087.004	Monocyclic	Benzene	mg/kg	0.1	1.9	0.01	2.9	66
		Aromatic	Toluene	mg/kg	0.1	1.8	0	2.9	62
			Ethylbenzene	mg/kg	0.1	1.8	0	2.9	61
			m/p-xylene	mg/kg	0.2	3.9	0	5.8	66
			o-xylene	mg/kg	0.1	1.8	0	2.9	63
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	0.01	-	-
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	3.9	3.79	-	78
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.1	4.22	-	102
			d8-toluene (Surrogate)	mg/kg	-	4.4	3.78	-	88
			Bromofluorobenzene (Surrogate)	mg/kg	-	3.7	3.85	-	74
		Totals	Total Xylenes	mg/kg	0.3	5.7	0	-	-
			Total BTEX	mg/kg	0.6	11	0.01	-	-

VOCs in Water

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE191279.006	LB171142.024	Monocyclic	Benzene	µg/L	0.5	50	0.02	45.45	109
		Aromatic	Toluene	µg/L	0.5	53	0.02	45.45	116
			Ethylbenzene	µg/L	0.5	55	0.01	45.45	120
			m/p-xylene	µg/L	1	110	0.02	90.9	125
			o-xylene	µg/L	0.5	55	0.01	45.45	122
		Polycyclic	Naphthalene	µg/L	0.5	<0.5	0.02	-	-
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	5.3	5.05	-	105
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.9	4.63	-	97
			d8-toluene (Surrogate)	µg/L	-	4.9	4.85	-	98
			Bromofluorobenzene (Surrogate)	µg/L	-	5.2	4.75	-	103

Volatile Petroleum Hydrocarbons in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE191303.001	LB171087.004		TRH C6-C10	mg/kg	25	<25	0	24.65	77
			TRH C6-C9	mg/kg	20	<20	0	23.2	77
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	3.9	3.79	-	78
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.1	4.22	-	102
			d8-toluene (Surrogate)	mg/kg	-	4.4	3.78	-	88
			Bromofluorobenzene (Surrogate)	mg/kg	-	3.7	3.85	-	74
		VPH F	Benzene (F0)	mg/kg	0.1	1.9	0.01	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	-0.01	7.25	91

Volatile Petroleum Hydrocarbons in Water

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE191279.006	LB171142.025		TRH C6-C10	µg/L	50	1100	0	946.63	112
			TRH C6-C9	µg/L	40	880	0	818.71	107
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	5.3	5.05	-	105
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.9	4.63	-	97
			d8-toluene (Surrogate)	µg/L	-	4.9	4.85	-	98
			Bromofluorobenzene (Surrogate)	µg/L	-	5.2	4.75	-	103
		VPH F	Benzene (F0)	µg/L	0.5	50	0.02	-	-

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.

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE191279.006	LB171142.025	VPH F	TRH C6-C10 minus BTEX (F1)	µg/L	50	730	-0.08	639.67	115

MATRIX SPIKE DUPLICATES

SE191305 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.

SGS

CHAIN OF CUSTODY & ANALYSIS REQUEST

Page ____ of ____

SGS Environmental Services
Unit 16, 33 Maddox Street
Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email: au.samplereceipt.sydney@sgs.com

Company Name:	Australian Geotechnical	Project Name/No:	AG-369
Address:	2 Shirley Street, Rose Hill, NSW	Purchase Order No:	AG-369_1 quote MMG3TN
		Results Required By:	**Standard TAT**
		Telephone:	
Contact Name:	Nathan Smith	Facsimile:	
		Email Results:	info@austgeo.com.au

Client Sample ID	Date Sampled	Lab Sample ID	WATER	SOIL	PRESERVATIVE	NO OF CONTAINERS	CL10	SV9	Asbestos ID	Phenols	CEC and pHcacl2	BTEX		Cyanide
E1	4-04-19	1		x		2	X	x	X	x				x
E2	4-04-19	2		X		2	X		X					
E3	4-04-19	3		X		2	X		x					
E4	4-04-19	4		X		2	X	x	x					
E5	4-04-19	5		x		1	X			x				
E6	4-04-19	6		x		2	x		x					
E7	4-04-19	7		X		2	x		X					
E8	4-04-19	9		x		1	x							
E9	4-04-19	9		x		2	x	x	X	x				

SGS EHS Alexandria Laboratory
SE191305 COC
Received: 05 – Apr – 2019

Relinquished By: NS	Date/Time: 05-04-19	Received By: Ness.	Date/Time 5/4/19 2:15
Relinquished By:	Date/Time:	Received By:	Date/Time
Samples Intact: Yes/ No	Temperature: Ambient / Chilled	Sample Cooler Sealed: Yes/ No	Laboratory Quotation No:
	Comments:		

SGS

CHAIN OF CUSTODY & ANALYSIS REQUEST

Page ____ of ____

SGS Environmental Services
Unit 16, 33 Maddox Street
Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email: au.samplereceipt.sydney@sgs.com

Company Name:	Australian Geotechnical	Project Name/No:	AG-369
Address:	2 Shirley Street, Rose Hill, NSW	Purchase Order No:	AG-369_1 quote MMG3TN
		Results Required By:	**Standard TAT**
		Telephone:	
Contact Name:	Nathan Smith	Facsimile:	
		Email Results:	info@austgeo.com.au

Client Sample ID	Date Sampled	Lab Sample ID	WATER	SOIL	PRESERVATIVE	NO OF CONTAINERS	CL10	SV9	Asbestos ID	Phenols	CEC and pHcacl2	BTEX		Cyanide								
Rin-1	4-4-19	10	x			4	x															
Split	4-4-19	11		X		1	x															
Trip Spike/Blank	4-4-19	12		X		1						x										

Relinquished By:NS	Date/Time:05-04-19	Received By: Ness	Date/Time 5/4/19 2:15
Relinquished By:	Date/Time:	Received By:	Date/Time
Samples Intact: Yes/ No	Temperature: Ambient / Chilled	Sample Cooler Sealed: Yes/ No	Laboratory Quotation No:
	Comments:		

SAMPLE RECEIPT ADVICE

SE191305

CLIENT DETAILS

Contact	Nathan Smith
Client	AUSTRALIAN GEOTECHNICAL PTY LTD
Address	2 SHIRLEY STREET ROSEHILL NSW 2144
Telephone	(Not specified)
Facsimile	(Not specified)
Email	nathan@austgeo.com.au
Project	**AG-369**
Order Number	**AG-369_1**
Samples	13

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Fri 5/4/2019
Report Due	Fri 12/4/2019
SGS Reference	**SE191305**

SUBMISSION DETAILS

This is to confirm that 13 samples were received on Friday 5/4/2019. Results are expected to be ready by COB Friday 12/4/2019. Please quote SGS reference SE191305 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	12 Soil, 1 Water
Date documentation received	5/4/2019	Type of documentation received	COC
Number of eskies/boxes received		Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	13.8°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

SE191305

CLIENT DETAILS

Client AUSTRALIAN GEOTECHNICAL PTY LTD

Project AG-369

SUMMARY OF ANALYSIS

No.	Sample ID	OC Pesticides in Soil	OP Pesticides in Soil	PAH (Polynuclear Aromatic Hydrocarbons) in Soil	PCBs in Soil	Total Phenolics in Soil	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
001	E1	29	14	26	11	1	10	12	8
002	E2	-	-	26	-	-	10	12	8
003	E3	-	-	26	-	-	10	12	8
004	E4	29	14	26	11	-	10	12	8
005	E5	-	-	26	-	1	10	12	8
006	E6	-	-	26	-	-	10	12	8
007	E7	-	-	26	-	-	10	12	8
008	E8	-	-	26	-	-	10	12	8
009	E9	29	14	26	11	1	10	12	8
011	Split	-	-	26	-	-	10	12	8
012	Trip Spike	-	-	-	-	-	-	12	-
013	Trip Blank	-	-	-	-	-	-	12	8

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

SE191305

CLIENT DETAILS

Client AUSTRALIAN GEOTECHNICAL PTY LTD

Project AG-369

SUMMARY OF ANALYSIS

No.	Sample ID	Fibre Identification in soil	Mercury in Soil	Moisture Content	Total Cyanide in soil by Discrete Analyser	Total Recoverable Elements in Soil/Waste
001	E1	2	1	1	1	7
002	E2	2	1	1	-	7
003	E3	2	1	1	-	7
004	E4	2	1	1	-	7
005	E5	-	1	1	-	7
006	E6	2	1	1	-	7
007	E7	2	1	1	-	7
008	E8	-	1	1	-	7
009	E9	2	1	1	-	7
011	Split	-	1	1	-	7
013	Trip Blank	-	-	1	-	-

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

SE191305

CLIENT DETAILS

Client AUSTRALIAN GEOTECHNICAL PTY LTD Project AG-369

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury (dissolved) in Water	PAH (Polynuclear Aromatic Hydrocarbons) in Water	Trace Metals (Dissolved) in Water by ICPMS	TRH (Total Recoverable Hydrocarbons) in Water	VOCs in Water	Volatile Petroleum Hydrocarbons in Water
010	Rin -1	1	22	7	10	12	8

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 .

APPENDIX C

SUPPORTING INFORMATION

Image 1: Eastern View of Site

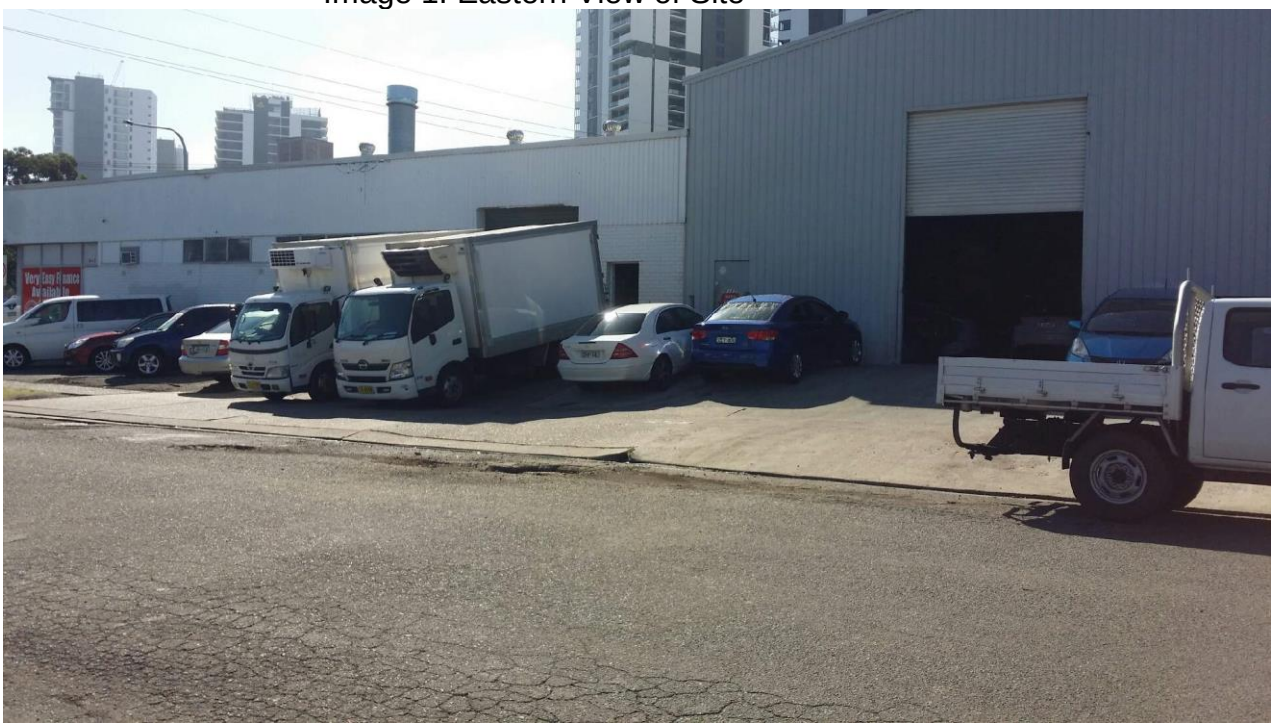

Image 2: Site View looking south-east

Image 3: Natural Soil Profile

Image 4: Concrete Coring Borehole Numbered 1