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DETAILED CONTAMINATION ASSESSMENT

RESIDENTIAL DEVELOPMENT OF STAGE 6
AIRDS BRADBURY RENEWAL PROJECT
BRIAR ROAD, AIRDS

REPORT NO 13793/5-AA 28 APRIL 2017

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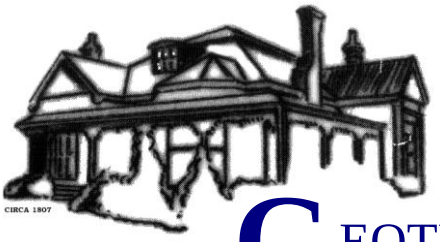

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Job No: 13793/5
Our Ref: 13793/5-AA
28 April 2017

Urban Growth NSW
P O Box 237
PARRAMATTA NSW 2124
Email: Pneville@urbangrowth.nsw.gov.au

Attention: Mr P Neville

Dear Sir

re **Residential Development of Stage 6**
Airds Bradbury Renewal Project - Briar Road, Airds
Detailed Contamination Assessment

Please find herewith our *Detailed Contamination Assessment* report for the above site.

A brief of the outcome of the assessment was summarised in the Executive Summary.

If you have any questions, please do not hesitate to contact the undersigned.

Yours faithfully
GEOTECHNIQUE PTY LTD

JOHN XU
Associate
BE, MEngSc, MIEAust

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EXECUTIVE SUMMARY

A detailed contamination assessment (DCA) was carried out for the site known as Residential Development of Stage 6, located at Briar Road, Airds, in the local government area of Campbelltown.

This assessment was based on site historical data presented in the Preliminary Site (Contamination) Investigation report prepared by JBS Environmental Pty Ltd (JBS) in March 2009.

The objectives of the assessment were to determine the contamination status of the site and to assess the suitability of the site for the proposed residential (with garden/accessible soil) land use.

In order to achieve the objectives a site reconnaissance, review of site historical, geological and information, sampling and testing were carried out.

The findings of this DCA are summarised as follows:

- The eastern portion of site was used as residential/housing commission, whilst the western portion of the site, known as Dorchester Reserve, was vacant. Some areas were long grass covered. An area with dense vegetation was noted. The site was occupied by a number of site features (refer to Drawing No 13793/5-AA1) at the time of sampling and site inspection.
- Based on the site history and site inspection, three areas of concern and associated contaminants of potential concern have been identified within the site as summarised in the table presented in Section 7.0 of this report.
- As discussed in Section 12.0, all the laboratory test results for the recovered samples satisfied the criteria for stating that the analytes selected are either not present (i.e. concentrations less than laboratory limits of reporting) or present in the samples at concentrations that do not pose a risk of harm to human health or the environment under a “residential (with garden/accessible soil)” form of development.
- Potential off-site impacts of contaminants on groundwater and waterbodies are considered to be low.

Based on this assessment, it is our opinion that the site can be made suitable for the proposed residential (with garden/accessible soil) land use subject to implementation of the following recommendations, prior to site preparation and earthworks:

- Additional 5 sampling points/locations where TP14, TP25, TP26, TP40 and TP51 were located will be required after complete demolition and removal of site features, in order to check for the presence or otherwise of fill materials and to comply with the "Sampling Design Guidelines for Contaminated Sites" 1995.
- Assessment (by sampling and testing) of soil in the footprints of site features such as the residential/housing commission’s buildings, sheds/carports, any hardstand and sections of the existing Briar Road and Waterhouse Place, etc, will be required after complete demolition and removal and/or road closure. The purpose of this is to ascertain the presence or otherwise of “suspect” materials (identified by unusual staining, odour, discolouration or inclusions such as building rubble, asbestos, ash particles, etc.) and fill, which is different to those encountered for this assessment, to address the potential contamination as listed in the table in Section 7.0 of this report, as well as to determine the contamination status of the soil.

- Due to the presence of long grass and dense vegetation in some areas as shown on Drawing No 13793/5-AA1, potentially contaminated area(s), filled area(s), building rubble, asbestos sheet(s)/piece(s), ash materials, staining, etc., could be masked by the long grass and dense vegetation. The long grass and dense vegetation must be slashed to enable detailed site inspection. Additional sampling and testing might be required.
- In the event of contamination for the abovementioned assessments, further assessment, preparation of a Remedial Action Plan (RAP) and validation (after completion of remediation) to be undertaken by a suitably qualified person (environmental consultant) will be required.

If suspect materials are encountered during any stage of future building demolition/site preparation/earthworks (identified by unusual staining, odour, discolouration or inclusions such as building rubble, asbestos sheets/pieces/pipes, ash material, etc.), we recommend that this office is contacted for assessment, and to take all necessary actions.

Reference should be made to Section 13.0 for details of the recommendations regarding any materials to be excavated and removed from the site, and any fill to be imported to the site.

Reference should be made to Section 14.0 of the report, which sets out details of the limitations of the assessment.

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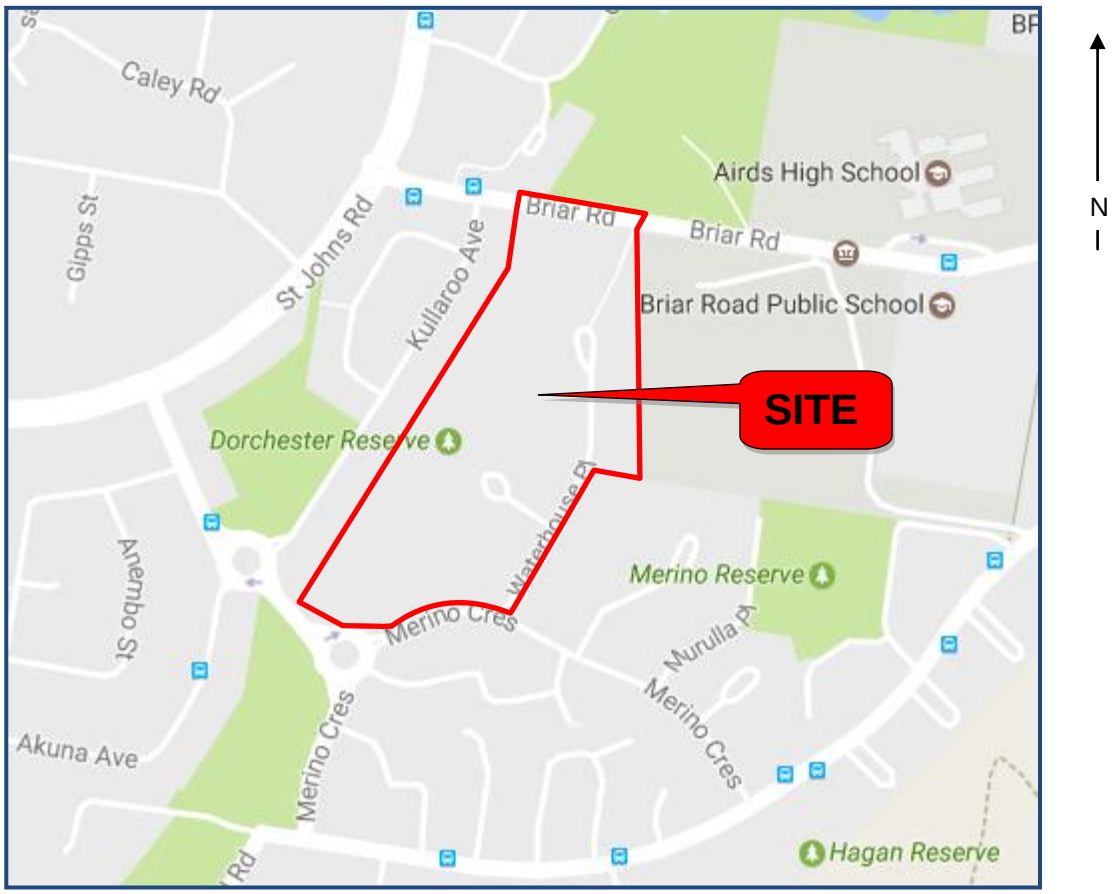
1.0 INTRODUCTION

This report presents the results of a detailed contamination assessment (DCA) for the site known as Residential Development of Stage 6, located at Briar Road, Airds, in the local government area of Campbelltown, as indicated on Figure 1 below:

FIGURE 1



Map Data ©2017 Google

The site is proposed for residential subdivision development, i.e., standard residential (with garden/accessible soil) land use. The proposed subdivision plan for the Stage 6 is included in Appendix A of this report.

This assessment was based on site historical data presented in the Preliminary Site (Contamination) Investigation report prepared by JBS Environmental Pty Ltd (JBS) in March 2009.

The objectives of the assessment were to determine the contamination status of the site and to assess the suitability of the site for the proposed land use.

This report was prepared generally in accordance with the NSW Environment Protection Authority (EPA), "Guidelines for Consultants Reporting on Contaminated Sites" - 2011 and to satisfy Managing Land Contamination: Planning Guidelines, State Environmental Planning Policy No. 55 – Remediation of Land.

2.0 SCOPE OF WORK

In order to achieve the objective of this assessment, the following scope of work was conducted:

- Updating of the following desktop study;
  - Historical Aerial Photographs
  - Department of Defence Records
  - NSW EPA Records
  - Soil and Geological Maps
  - NSW Office of Water Groundwater Bore Information
- An inspection to identify the site conditions and any areas of potential environmental concern based on visual and olfactory indicators of potential contamination.
- Recovery of samples for appropriate chemical analysis.
- A calibrated Photo-Ionisation Detector (PID) was used to screen the recovered soil samples for the presence of any volatile organic compounds (VOC).
- Preparation and analysis of standard quality assurance (QA) and quality control (QC) samples.
- Assessment of the laboratory analytical results.
- Assessment of field and laboratory QA and QC.
- Assessment of the contamination status of the site.

3.0 SITE IDENTIFICATION

The site is located on the southern side of Briar Road, Airds, in the local government area of Campbelltown and comprises part of a parcel of land, currently registered as Lot 11 in DP1176190, Lots 1 & 2 in DP1191996, Lots 37, 39 & 40 in DP261258 and Lots 381 to 383 in DP1056580.

As shown on Drawing No 13793/5-AA1, the site is irregular in shape, and based on information provided by Urban Growth NSW the site covers an area of approximately 7.11 hectares (ha).

4.0 PREVIOUS CONTAMINATION ASSESSMENT & SITE HISTORY UPDATE

JBS carried out preliminary site (contamination) investigation for the Airds Bradbury Renewal Project including the site in 2009. This section presents a summary of the scope of work involved in the investigation and the subsequent findings and recommendations.

The scope of work included a desktop study of site history, soils, geological and regional groundwater information, a site inspection, as well as limited soil sampling and laboratory testing.

A review of aerial photographs taken in 1947, 1961, 1970, 1979, 1984, 1994 and 2005 revealed that the site was part of a large parcel of a vacant undeveloped rural land with tree or grass covered and with no specific usage noted prior to 1970s. The eastern portion of the site was developed into residential (public housing) land use in late 1970s. Waterhouse Place was formed in the top eastern portion and along the eastern boundary of the site.

All the aerial photographs indicate that Briar Road borders the site to north. The adjacent south eastern property was a rural residential land and the remaining adjoining properties were part of a large parcel of a vacant undeveloped rural land with tree or grass covered and with no specific usage noted prior to the 1970s. The adjoining properties were developed into residential (public housing) and Reiby Juvenile Justice Centre in late 1970s. A dam located in the adjoining western property was evident in the 1961 and 1970 aerial photographs. The dam was backfilled in late 1970s when the public houses were built in the area. Merino Crescent was formed immediately to the south of the site.

The NSW EPA (formerly Department of Environment and Climate Change (DECC)) maintains record of notices for contaminated lands under Section 58 of the CLM Act 1997. The notices relate to investigation and/or remediation of site contamination considered to pose a significant risk of harm under the definition in the Contaminated Land Management (CLM) Act 1997.

The EPA issues environment protection licences to owners or operators of various industrial premises under the Protection of the Environment Operations (POEO) Act 1997 to control the air, noise, water and waste impacts of an activity.

A search was undertaken on 19 March 2009 through the NSW DECC's public register. The search identified that there have been no notices and records issued under the CLM Act 1997 and under the POEO Act 1997 for the site.

No heritage item was identified at the site through a search of the Australian Heritage Trust database and the NSW Heritage Inventory.

A historical title search and a Section 149 Planning Certificate review had been undertaken on selected lots at the land including the site. Targeted lots were based on the aerial photographic evidence for potential areas of contamination hotspots (rural, residential, industrial areas). There were three lots selected; however, they were not located within the site.

Based on the site history and site inspection, the following areas of environmental concern (AEC) and associated contaminants of potential concern (COPC) had been identified:

AEC	COPC
The existing residential buildings	➢ Heavy Metals ➢ Asbestos
Fill material historically used across the site	➢ Heavy Metals ➢ TPH & BTEX ➢ PAH ➢ OCP/OPP ➢ Polychlorinated Biphenyls (PCB) ➢ Asbestos

Limited soil sampling and testing was undertaken, targeting as far as practicable (within the limitations of site access constraints) identified areas of environmental concern. The laboratory test results revealed that the concentrations of metals, TPH, BTEX, PAH, OCP, OPP or PCB were below the adopted criteria indicating that these did not pose a widespread contamination issue in the part of the site which were accessible for sampling. Asbestos fibres were not reported in any soil sample selected for analysis.

However, the investigation had identified that the main contamination issue at the Airds Bradbury Renewal Project including the site was asbestos, which was present as fragments of asbestos containing material (ACM) on the ground surface and in fill materials in the other investigation areas for the Project. The extent of asbestos impact at the Project including the site would require to be assessed through a detailed site investigation process, and appropriate remediation/management plans developed to outline the steps required to make the land suitable for the proposed development.

JBS recommended that, when the Concept Plan is finalised and Stages of the Plan identified, a detailed site investigation be undertaken based on the findings of the preliminary investigation for each development stage. Where a detailed site investigation identifies contamination at levels which pose a risk under the proposed land use(s), then these are required to be addressed through the planning process in accordance with current regulatory requirements.

The following desktop study was updated through the information obtained by Geotechnique.

Aerial Photographs

Aerial photographs taken in 2009, 2010, 2013, 2015 and 2017 were examined. Copies of the aerial photographs are kept in the offices of Geotechnique and are available for examination upon request.

Review of the aerial photographs revealed that the site appears essentially unchanged since 2009.

Houses in the adjoining northern property across Briar Road were demolished in 2009 or earlier and replaced with new buildings in 2010. The adjoining properties have not changed notably since 2010.

Department of Defence Records

An enquiry was made to Land and Property Information NSW to ascertain whether any ordnance-related contamination is recorded for the site.

The Department of Defence advises that there is no record of land within this title having been used for military purposes of a nature that may have resulted in ordnance-related contamination (Appendix B of the report).

NSW EPA Record of Notices & POEO Public Register

A search of the NSW EPA records on 7 March 2017 revealed no notices issued for the site. It should be noted that the NSW EPA record for Contaminated Land does not provide a record of all contaminated lands in NSW.

A search of the POEO Public Register on 7 March 2017 found no records for the site.

Reference may be made to Appendix C for the details of the NSW EPA record of notices and the POEO Public Register.

5.0 SITE CONDITION AND SURROUNDING ENVIRONMENT

5.1 Site Condition

An Environmental Engineer and an Environmental Scientist made the following observations during site inspection for field sampling on 20 to 23 March 2017:

- The eastern portion of the site was occupied by residential/housing commissions' buildings primarily tiled roofing, brick/weatherboard walls.
- Several galvanised iron (GI)/timber sheds/carports were noted in the residential area.
- General domestic waste items including mattresses, plastic and metal were found randomly scattered throughout the site on the ground surface.
- Waterhouse Place is located along the eastern boundary and within the north eastern portion of the site.
- A gravel/bare ground path located in the central portion of the site was running from south to north.
- The western portion of the site, known as Dorchester Reserve, was vacant. Some areas were covered with long grass. An area with dense vegetation was noted.
- A potential fill area was observed in the western portion of the site.
- A local depression was observed and located in the central portion and western portion of the site respectively.
- There were no obvious features associated with any underground storage tanks (bowser, breather pipe, inlet valve and piping) or odour that would indicate the potential for contamination.
- There were no visible or olfactory indicators of potential contamination.
- There were no air emissions emanating from the site.

The site features are indicated on Drawing No 13793/5-AA1.

5.2 Surrounding Environment

At the time of field work, the neighbouring properties were as follows:

To the north	Briar Road, further north residential and vacant land
To the east	Reiby Juvenile Justice Centre and residential
To the south:	Merino Crescent, further south vacant land and residential
To the west:	Residential

There were no air emissions emanating from the neighbouring properties.

6.0 TOPOGRAPHY, GEOLOGY & HYDROGEOLOGY

In general, ground surface gradually slopes in direction as shown on Drawing No 13793/5-AA1.

The Geological Map of Wollongong - Port Hacking (Geological Series Sheet 9029-9129, Scale 1:100,000, Edition 1, 1985), published by the Department of Mineral Resources indicates the residual soils within the site to be underlain by Triassic Age Shale of the Wianamatta Group, comprising laminite and dark grey siltstone.

The Soil Landscape Map of Wollongong - Port Hacking (Soil Landscape Series Sheet 9029-9129, Scale 1:100,000, 1990) prepared by the Soil Conservation Service of NSW, indicates the site is located within the Blacktown Landscape area that typically consists of highly plastic and relatively impermeable residual soils.

Reference should be made to Table 1 in Appendix D for descriptions of the soils encountered during sampling. Materials encountered in the test pits are generally described as follows:

Fill	Silty Clay, brown or Sandy Clay with gravel, pale brown, was encountered in some test pit locations with thickness ranging from approximately 0.1 metres (m) to 1.2m.
Topsoil	Silty Clay, brown, with root fibres was encountered in some of the test pit locations ranging in thickness from approximately 0.2m to 0.4m.
Natural Soil	Silty Clay, brown, red mottled grey, red brown or yellow-brown mottled red

All the recovered fill samples were screened for the presence of any VOC using a calibrated PID. The PID readings were all zero, indicating that the presence of volatiles in the soils is unlikely.

Inclusion of glass pieces, metal pipe, plastic, glass, cloth, road base and/or plastic mesh bag in the fill was noted in some test pit locations.

There were no detectable odour and no obvious discolouration of the soil at the sampling locations.

Groundwater or seepage was not encountered during sampling to a maximum depth of about 2.5m below the existing ground level (EGL) at TP84 and during the short time the test pits remained open. It should be noted that fluctuations in the level of groundwater might occur due to variations in rainfall and/or other factors not evident during investigation.

Reference may be made to Drawing No 13793/5-AA2 for details of the above mentioned test pit locations.

There is no waterbody such as a creek, river or wetland close to the site. A small tributary to the Georges River is located approximately 700m to the east of the site. A local depression that might capture or divert stormwater run-off was observed within the central and western portions of the site.

As part of previous contamination investigation for the land including the site in 2009, JBS undertook a desktop review of records held by the NSW Department of Water and Energy (DWE), covering boreholes within a 3.5km radius of the centre of the land for the Airds Bradbury Renewal Project. The search revealed five bores within this radius. However, no water bearing zones, static water levels or groundwater characteristics were detailed in the bore information.

In order to update regional groundwater information, a search and review for any registered groundwater bore data within a 500m radius of the site was carried out for this assessment by Geotechnique, using the on-line Real-time data, which is managed and updated by the NSW Office of Water. However, information was not available (Appendix E of the report).

7.0 POTENTIAL FOR CONTAMINATION/CONCEPTUAL SITE MODEL

Based on the preceding sections, potential AEC and associated contaminants are considered to be as follows:

Potential AEC	Rational/Details	Potential Contaminants [1]
In the close vicinity of residential buildings and sheds	➢ Degradation of metal ➢ Possible pest control ➢ Any concealed pipes, floor tiles etc., might contain asbestos.	➢ Heavy Metals ➢ OCP ➢ Asbestos
Fill	➢ Fill materials could have been imported from unknown sources which might be contaminated	➢ Heavy Metals ➢ TPH & BTEX ➢ PAH ➢ OCP ➢ PCB ➢ Asbestos
Area(s) covered with long grass and dense vegetation	➢ Potential fill from unknown sources and illegal dumping of waste masked by long grass and dense vegetation	➢ Ditto

[1] The suite of potential contaminants identified will be reviewed and added to if considered appropriate.

Off-site impact of any contaminants is generally governed by the transport media available and likely receptors. The most common transport media are water and wind, whilst receptors include uncontaminated soils, groundwater, surface waterbodies, humans, flora and fauna.

Migration of any soil contaminants to the deeper soil and/or groundwater regime would generally be via leaching from the contaminated soil, facilitated by infiltration of surface water. Given that the natural soil beneath the site is relatively impermeable (refer to Section 6.0 for the regional geology information), the potential for any contaminants migrating from the contaminated soil to the groundwater table below is considered low. Furthermore, the relatively impermeable clay layer would have minimised the potential for any contaminants migrating to deeper soil. It is considered unlikely that the groundwater regime beneath the site has been impacted by contaminants in the soils. If high levels and widespread contaminants are detected through this assessment, a groundwater assessment will be recommended.

There is no waterbody such as a creek, river or wetland close to the site. A local depression that might capture or divert stormwater run-off was observed and located in the central and western portions of the site. There is potential for off-site impact of the contaminants in the waterbody due to surface water run-off from the site, if significant chemical concentrations are detected in soil samples.

8.0 SAMPLING & ANALYSIS PLAN AND SAMPLING METHODOLOGY

Sampling and analyses for the assessment were carried out to obtain a reasonable assessment of the following:

1. Nature and location of any soil contaminant(s) within the site.
2. The risk(s) that the contaminant(s) (if present) poses to human health and/or the environment under the conditions of the proposed land use.

The risk of harm to human health and the environment was determined through comparison of test results with EPA produced or endorsed criteria available at the time, as discussed in Section 11.0 of this report.

Sampling across the site was carried out on 20 to 23 March 2017 by our Environmental Engineer Saurabh Sapkota and Environmental Scientist Justin Hofmann.

Based on the "Sampling Design Guidelines for Contaminated Sites" 1995 EPA, for a site area of approximately 7.11ha, eighty six sampling points are required. Test pits TP1 to TP86 were located across the entire site. A number of test pits were located in the observed potential fill area. Five (5) test pits TP14, TP25, TP26, TP40 and TP51 could not be excavated due to access constraints. Therefore, an additional 5 sampling points will be required after demolition and removal of the site features, in order to check for the presence or otherwise of fill materials and to comply with the Guidelines.

Reference may be made to Drawing No 13793/5-AA2 for details of the above-mentioned test pit and sample locations.

Prior to sampling the test pit locations were scanned by a services locator in order to avoid any underground services.

The sampling procedures adopted were as follows:

- The majority of sample locations were excavated to a predetermined depth using an excavator. The sample was then recovered from the excavator bucket using a stainless steel trowel.
- The stainless steel trowel were decontaminated prior to use, in order to prevent cross contamination (refer to Section 9.3 for details of the procedures for decontamination of the trowel).
- The soil sample was immediately transferred to a labelled, laboratory supplied, 250ml glass jar and sealed with an airtight, Teflon screw top lid. The fully filled jar was then placed in a chilled container.
- Soil samples were also recovered for head space screening for the presence of VOC using a calibrated PID.

  A soil sample for PID screening was placed in an airtight polyethylene bag, ensuring enough air space (‘headspace’) above the sample is present to be screened in the field. The soil sample remained in the bag for approximately 15 minutes before being shaken (to thoroughly mix soil with the air in the headspace) and a PID reading recorded. The PID readings were all equal to 0.0ppm. A copy of PID calibration sheets is presented in Appendix F.
- The recovered soil sample for asbestos testing was transferred into a small plastic bag.

In order to ensure the analytical performance of the primary laboratory, duplicate and split samples were prepared for analyses. Samples were kept in a labelled laboratory supplied glass jars (acid-washed and solvent-rinsed) and sealed with an airtight screw top Teflon lids. The fully filled jars were placed in a chilled container.

A rinsate water sample was collected and placed in a glass bottle and vial supplied by the laboratory at completion of the field work (one each day). The fully filled bottle and vial were labelled and placed in a chilled container.

At completion of field sampling, the chilled container was transported to our Penrith office and the chilled container was transferred to a refrigerator where the temperature was maintained below 4°C.

The primary samples and QA/QC samples in the chilled container with trip spike samples and plastic bags were forwarded under Chain of Custody (COC) condition to the primary testing laboratory of SGS Environmental Services (SGS). Inter-laboratory duplicate (split) samples were forwarded to the secondary testing laboratory of Envirolab Services Pty Ltd (Envirolab). Both SGS and Envirolab are National Association of Testing Authorities (NATA) accredited.

On receipt of the samples and COC, the laboratories returned the Sample Receipt Advice verifying the integrity of all samples received.

Most of the discrete soil samples were composited in the laboratory for chemical analysis. Compositing of soil samples is suggested in "*Sampling Design Guidelines for Contaminated Sites"*-1995, EPA.

The methodology for compositing samples was generally adapted from "*Composite Sampling, National Environmental Health Forum Monographs, Soil Services No 3*", 1996-William H Lock, as follows:

- Three equal-mass constituent samples were included in a composite sample.
- Each constituent sample was homogenised before sub-sampling and compositing of material was undertaken.

The following table details the compositing undertaken by the laboratories, as specified in the COC prepared by Geotechnique:

Composite Sample	Sub-Samples
C601	TP1 (0-0.15m) + TP2 (0-0.15m) + TP8 (0-0.15m)
C602	TP3 (0-0.15m) + TP7 (0-0.15m) + TP10 (0-0.15m)
C603	TP4 (0-0.15m) + TP5 (0-0.15m) + TP13 (0-0.15m)
C604	TP6 (0-0.15m) + TP11(0-0.15m) + TP12 (0-0.15m)
C605	TP9 (0-0.15m) + TP19 (0-0.15m) + TP21 (0-0.15m)
C606	TP15 (0-0.15m) + TP22 (0-0.15m) + TP24 (0-0.1m)
C607	TP16 (0-0.15m) + TP18 (0-0.15m) + TP30 (0-0.15m)
C608	TP17 (0-0.15m) + TP23 (0-0.15m) + TP27 (0-0.15m)
C609	TP20 (0-0.15m) + TP31 (0-0.15m) + TP32 (0-0.15m)
C610	TP28 (0-0.15m) + TP38 (0-0.15m) + TP42 (0-0.15m)
C611	TP29 (0-0.15m) + TP36 (0-0.15m) + TP37 (0-0.15m)
C612	TP33 (0-0.15m) + TP34 (0-0.15m) + TP46 (0-0.15m)

Composite Sample	Sub-Samples
C613	TP35 (0-0.15m) + TP44 (0-0.15m) + TP49 (0-0.15m)
C614	TP39 (0-0.1m) + TP41 (0-0.15m) + TP52 (0-0.15m)
C615	TP45 (0-0.15m) + TP47 (0-0.15m) + TP48 (0-0.15m)
C616	TP23 (0.3-0.4m) + TP43 (0-0.15m) + TP52 (0.4-0.5m)
C617	TP50 (0-0.1m) + TP53 (0-0.1m) + TP54 (0-0.1m)
C618	TP55 (0-0.15m) + TP62 (0-0.1m) + TP63 (0-0.15)
C619	TP56 (0-0.15m) + TP57 (0-0.15m) + TP58 (0-0.15m)
C620	TP59 (0-0.15m) + TP60 (0-0.15m) + TP61 (0-0.15m)
C621	TP64 (0-0.15m) + TP66 (0-0.15m) + TP74 (0-0.15m)
C622	TP65 (0-0.15m) + TP76 (0-0.1m) + TP78 (0-0.1m)
C623	TP68 (0-0.15m) + TP69 (0-0.15m) + TP70 (0-0.15m)
C624	TP71 (0-0.15m) + TP79 (0-0.15m) + TP83 (0-0.15m)
C625	TP72 (0-0.15m) + TP73 (0-0.15m) + TP80 (0-0.15m)
C626	TP77 (0-0.1m) + TP84 (0-0.15m) + TP85 (0-0.15m)
C627	TP81 (0-0.15m) + TP82 (0-0.15m) + TP86 (0-0.15m)
C628	TP84 (0.5-0.8m) + TP84 (1.0-1.3m) + TP84 (1.5-1.8m)

Based on site observation, the soil profiles encountered and the potential for contamination/conceptual site model presented in Section 7.0, the following laboratory analysis plan was implemented:

- All the composited samples C601 to C628, as well as the corresponding duplicate samples CD1 to CD3 and split samples CS1 to CS3 were analysed for metals.
- A number of topsoil, fill and natural soil sub-samples were selected for analysis of Cation Exchange Capacity (CEC) and pH.
- Seventeen composited fill and/or topsoil samples, as well as the corresponding duplicate sample CD1 and split samples CS1 were selected for analysis of OCP and PCB.

  The other corresponding duplicate sample CD3 and split sample CS3 were selected for analysis of OCP.
- Five composited topsoil samples were selected for analysis of OCP for screening purposes.
- Fourteen discrete fill samples, as well as the corresponding duplicate sample X1 and split sample Z1 were selected for analysis of TPH, BTEX and PAH.
- All the fill samples were selected for analysis of asbestos for screening purposes.
- Four rinsate samples R1 to R4 for metals.
- Four trip spike samples TS1 to TS4 for BTEX.

9.0 FIELD QUALITY ASSURANCE AND QUALITY CONTROL

9.1 Sampling Personnel

Geotechnique undertook all the sampling associated with this assessment. The Environmental Engineer (Saurabh Sapkota) and Environmental Scientist (Justin Hofmann) from Geotechnique located sampling positions based on the project brief prepared by the Project Manager and site conditions, supervised the excavation of each sample location, logged the soil profile encountered, recovered soil samples at a frequency determined by the sampling plan (project brief), carried out insitu PID screening, preparation of QA/QC samples and packaged the samples (refer to Section 8.0).

Saurabh Sapkota and Justin Hofmann have undergone supervised training in Geotechnique procedures for sampling and logging.

9.2 Field Instrument Calibration

As stated in Section 8.0, a calibrated PID was used in the field to screen for the presence of volatile compounds in the recovered samples (head space screening). The PID was calibrated on-site before use (once each day). A copy of the PID calibration sheets is included in Appendix F of this report.

9.3 Decontamination Procedures

Soil sampling was in general carried out using an excavator. A stainless steel trowel was used to transfer the soil sample from the bulk bucket sample to the laboratory supplied glass jar and plastic bag. Decontamination of the trowel involved the following:

- Removal of soil adhering to the trowel by scrubbing with a brush.
- Washing the trowel thoroughly in a solution of phosphate free detergent (Decon 90) using brush.
- Rinsing the trowel thoroughly with distilled water.
- Repeating the washing/rinsing steps and rinsing with distilled water.
- Drying the trowel with clean disposable towels.

A sample of the final rinsate water sample (Bucket 3) was recovered at completion of sampling (one each day).

9.4 Rinsate Samples

Rinsate water samples (Rinsate R1 to R4) were recovered at the end of field work (one each day) in order to identify possible cross contamination between the sampling locations.

The rinsate water samples were analysed for Metals. The test results for the rinsate water samples are summarised in Table A. A copy of the laboratory analytical reports is included in Appendix G of this report.

As shown in Table A, all concentrations of analytes in the rinsate samples were in general less than laboratory limits of reporting (LOR), which indicates that adequate decontamination had been carried out in the field.

9.5 Trip Spike Samples

Trip spike sample was obtained from the laboratory on a regular basis, prior to conducting field sampling where volatile substances are suspected. The samples are held in the Penrith office of Geotechnique, at less than 4°C, for a period of not more than fourteen days. During the field work, the trip spike sample was kept in the chilled container with soil samples recovered from the site. The trip spike sample was then forwarded to the primary laboratory together with the soil samples recovered from the site.

The laboratory prepared the trip spike by adding a known amount of pure petrol standard to a clean sand sample. The sample was mixed thoroughly to ensure a relatively homogenous distribution of the spike throughout the sample. When the sample was submitted for analysis, the same procedure was adopted for testing as for the soil samples being analysed from the site.

The purpose of the trip spike is to detect any loss or potential loss of volatiles from the soil samples during field work, transportation, sample extraction or testing.

Trip spike samples (TS1 to TS4) were forwarded to the primary analytical laboratory with the samples collected from the site and tested for BTEX. The test results for the trip spike samples, reported as a percentage recovery of the applied and known spike concentrations, are shown in Table B. A copy of the laboratory analytical reports is included in Appendix G of this report.

As indicated in Table B, the results show a good recovery of the spike concentrations, ranging between 70% and 98%. Furthermore, all BTEX results were less than laboratory LOR and there was no visible or olfactory indication of hydrocarbon contamination.

Based on the above, it is considered that any loss of volatiles from the recovered samples that might have occurred would not affect the outcome/conclusion of this report.

9.6 Duplicate Samples

A field duplicate sample was prepared in the field through the following processes:

- A larger than normal quantity of soil was recovered from the sample location selected for duplication.
- The sample was placed in a decontaminated stainless bowl and divided into two portions, using the decontaminated trowel.
- One portion of the soil sample was immediately transferred, using the decontaminated trowel, into a labelled, laboratory supplied, 250ml glass jar and sealed with an airtight, Teflon screw top lid. The fully filled jar was labelled as the duplicate sample and immediately placed in a chilled container.
- The remaining portion was stored in the same way and labelled as the original sample.

Where original samples are to be composited, the sub-samples of that composite are duplicated and submitted blind to the laboratory. Those sub-sample duplicates are then composited as requested in the COC, and the results reported as a single duplicate.

Duplicate samples were prepared on the basis of sample numbers recovered during the field work. The duplicate sample frequency was computed using the total number of samples analysed as part of this assessment. The duplicate sample frequencies computed are as follows:

•	Metals:	28 samples analysed;	3 duplicates;	11% frequency
•	TPH, BTEX & PAH:	14 samples analysed;	1 duplicate;	7% frequency
•	OCP:	22 samples analysed;	2 duplicates;	9% frequency
•	PCB:	17 samples analysed;	1 duplicate;	6% frequency

The duplicate frequency adopted complies with Schedule B3 Guideline on Laboratory Analysis of Potentially Contaminated Soils of the National Environment Protection (Assessment of Site Contamination) Measure (NEPM) 1999 (April 2013), which recommends a duplicate frequency of at least 5%.

The laboratory test results are summarised in Tables C1 and C2. A copy of the laboratory analytical reports is included in Appendix G of this report.

A comparison was made of the laboratory test results for the duplicate sample with the original sample and the Relative Percentage Differences (RPD) was computed to assess the accuracy of the laboratory test procedures. RPD within 30% are generally considered acceptable. However, this variation can be higher for organic analysis than for inorganics and for low concentrations of analytes or non-homogeneous samples.

As shown in Tables C1 and C2, the comparisons between the duplicate and corresponding original sample indicated generally acceptable RPD, with the exception of As (33%), Cu (35%) and Ni (58%) in Table C2, which were in excess of 30%, mainly due to the low concentrations of As detected and/or the non-homogeneous nature of the soil samples.

All the concentrations with RPD in excess of 30% in the duplicate pairs were both less than the relevant assessment criteria.

Based on the above, the variations are not considered critical. Based on the overall duplicate sample numbers and comparisons, it is concluded that the test results provided by the primary laboratory SGS are of adequate accuracy and reliability for this assessment.

9.7 Inter-laboratory Duplicate (Split) Samples

The inter-laboratory duplicate (split) samples provide a check on the analytical performance of the primary laboratory. The split samples were prepared in the same manner as the duplicate sample. Reference should be made to Section 9.6. The split samples were forwarded to a secondary laboratory (Envirolab) for analysis.

Where original samples were to be composited (with the composite sample selected for split), the sub-samples of that composite were split and submitted blind to the laboratory. Those sub-sample splits were then composited as requested in the COC, and the results reported as a single split.

The split sample frequency was computed using the total number of samples analysed as part of this assessment. The split sample frequencies computed are as follows:

•	Metals:	28 samples analysed;	3 splits;	11% frequency
•	TPH, BTEX & PAH:	14 samples analysed;	1 split;	7% frequency
•	OCP:	22 samples analysed;	2 splits;	9% frequency
•	PCB:	17 samples analysed;	1 split;	6% frequency

The split sample frequency adopted complies with the Schedule B3 of the NEPM 1999 (April 2013), which recommends a frequency of 5%.

The results are summarised in Tables D1 and D2. A copy of the laboratory analytical reports and certificates of analysis is included in Appendix G of this report.

Based on Schedule B3 of the NEPM 1999 (April 2013) the difference in the results between the split samples should generally be within 30% of the mean concentration determined by both laboratories, i.e., RPD should be within 30%. However, higher variations can be expected for organic analyses compared to inorganic analyses and for samples with low analyte concentrations or non-homogeneous samples.

As shown in Tables D1 and D2 the comparisons between the splits and corresponding original samples indicated generally acceptable RPD, with the exception of RPD for metals (ranging from 34% to 115%), which were in excess of 30%, mainly due to the low concentrations of As detected and/or the non-homogeneous nature of the soil samples.

All the concentrations with RPD in excess of 30% in the split pairs were in general both less than the relevant assessment criteria, with exception of composite split pairs CS1 and C602, as well as CS3 and C623.

The split pair CS1 and C602 in Table D1 was found to have Ni concentration in the original composite sample C602 that was higher than the corresponding split composite sample CS1, and in excess of the relevant assessment criterion.

The split pair CS3 and C623 in Table D2 was found to have concentrations of Cu and Zn in the composite split sample CS3 that were higher than the corresponding original composite sample C623, and in excess of the relevant assessment criterion.

As such, the higher concentrations of Cu, Ni and Zn were adopted for the assessment and included in Table E.

Based on the above, the variations are not considered critical. Based on the overall split sample numbers and comparisons, it is concluded that the test results provided by the primary laboratory can be relied upon for this assessment.

10.0 LABORATORY QUALITY ASSURANCE AND QUALITY CONTROL

Geotechnique uses only laboratories accredited by the NATA for chemical analyses. The laboratories also incorporate quality laboratory management systems to ensure that trained analysts using validated methods and suitably calibrated equipment produce reliable results.

In addition to the quality control samples, the laboratories also ensure that all analysts receive certification as to their competence in carrying out the analysis and participate in national and international proficiency studies.

SGS and Envirolab are accredited by NATA and operate a Quality System designed to comply with ISO / IEC 17025.

The soil samples were in general analysed within the allowable holding times, detailed in Schedule B3 of the NEPM 1999 (April 2013). Within the allowable holding times for water detailed in Standard Methods for the Examination of Water and Wastewater (APHA) the rinsate samples were analysed.

The test methods and LOR/practical quantitation limits (PQL) adopted by the laboratories are indicated with the laboratory analytical reports/certificates of analysis. A copy of the laboratory analytical reports/certificates of analysis is included in Appendix G of this report.

As part of the analytical run for the project the laboratories included laboratory blanks, duplicate samples, laboratory control samples, matrix spikes and surrogate spikes.

The QA/QC procedures adopted by the laboratories and the results have been checked and considered to be complied with Schedule B3 of the NEPM 1999 (April 2013).

Overall, the QA/QC adopted by SGS and Envirolab indicated the analytical data to fall within acceptable levels of accuracy and precision. The analytical data provided is therefore considered to be reliable and useable for this assessment.

11.0 ASSESSMENT CRITERIA

Investigation levels and screening levels developed in the NEPM 1999 (April 2013), and the *Guidelines for the NSW Site Auditor Scheme* (NSW EPA/DEC, 2006) will be used for this assessment, as follows:

- Risk-based Health Investigation Levels (HIL) for a broad range of metals and organic substances. The HIL are applicable for assessing human health risk via all relevant pathways of exposure. The HIL as listed in Table 1A(1) of Schedule B1 "*Guideline on Investigation Levels for Soil and Groundwater*" are provided for different land uses and applicable to the top 3m of soil for residential use.

  The site is proposed for residential subdivision. Therefore, with regard to human health, analytical results were assessed against risk based HIL for *residential with garden/accessible soil* (HIL A).

- Health Screening Levels (HSL) for selected petroleum compounds, fractions and Naphthalene are applicable for assessing human health risk via inhalation and direct contact pathways. The HSL depend on specific soil physicochemical properties, land use scenarios and the characteristics of building structures. The HSL listed in Table 1A(3) of Schedule B1 "*Guideline on Investigation Levels for Soil and Groundwater*" apply to different soil types and depths below surface to >4 m.

  For this assessment the analytical results were assessed against the available HSL for *low density residential* (HSL A) for clay to depth of 0m to <2m.

- Ecological Screening Levels (ESL) for selected petroleum hydrocarbon compounds, TPH fractions and Benzo(a)Pyrene are applicable for assessing the risk to terrestrial ecosystems. ESL listed in Table 1B(6) of Schedule B1 "*Guideline on Investigation Levels for Soil and Groundwater*" broadly apply to coarse and fine-grained soils and various land uses and are generally applicable to the top 2m of soil.

  The analytical results were assessed against the available ESL for *urban residential* for fine-grained soil (clay).

- Ecological Investigation Levels (EIL), a specific type of Soil Quality Guidelines (SQG) for selected metals and DDT, are applicable for assessing the risk to terrestrial ecosystems. EIL listed in Table 1B(1-5) of Schedule B1 "*Guideline on Investigation Levels for Soil and Groundwater*" depend on specific soil physicochemical properties and land use scenarios and generally apply to the top 2m of soil.

  For this assessment, the analytical results were assessed against the available EIL for *urban residential* land use.

  For arsenic, Naphthalene and DDT, generic EIL for urban residential are adopted for aged contaminants. For other metals, EIL are the sum of the added contaminant limit (ACL) and the ambient background concentration (ABC). Where available, EIL are calculated using the EIL calculator developed by CSIRO for NEPC.

- Due to a lack of EIL for cadmium and mercury, the available Provisional Phytotoxicity Based Investigation Levels (PIL) published in the *Guidelines for the NSW Site Auditor Scheme* (NSW EPA, 2006) were used, with regard to protection of the environment and impact on plant growth.

In order to detect any potential contamination within an individual composite soil sample, an adjusted criterion is recommended for assessment of results for individual composite samples, based on Method 1, Section 6 of the EPA "*Sampling Design Guidelines*" 1995. The relevant adjusted criteria presented in the applicable tables were calculated by dividing the relevant criteria by three (i.e. three sub-samples comprised the composite). Individual composite samples will be assessed against the relevant adjusted criteria.

If the concentration of an analyte for a composite soil sample is in excess of the relevant adjusted criterion, then all sub-samples of the failed composite samples will be analysed individually. The purpose of this is to detect potentially contaminated sub-samples within the failed composite sample.

For discrete soil samples, the individual concentration of analyte will be assessed against the relevant criteria.

For asbestos, the assessed soil must not contain bonded ACM in excess of 0.01%w/w and surface soil within the site is free of visible ACM, as well as asbestos fines (AF) and fibrous asbestos (FA) in the soil is <0.001% w/w.

The soil/site will be deemed contaminated if any of the above criteria are unfulfilled. Further investigation, remediation and/or management will be recommended if the soil is found to be contaminated.

12.0 LABORATORY TEST RESULTS, ASSESSMENT & DISCUSSION

Reference may be made to Appendix G for the actual laboratory analytical reports from SGS. The laboratory test results for the soil samples analysed are presented in Tables E to J. A discussion of the test results is presented in the following sub-sections.

12.1 Metals (As, Cd, Cr, Cu, Pb, Hg, Ni & Zn), CEC& pH

The lowest test results of CEC and pH of sub-samples in Table E were adopted to calculate the relevant EIL.

As indicated in Table E, the concentrations of metals in the composited soil samples analysed were below the Adjusted HIL A, Adjusted EIL and/or Adjusted PIL, with the exception of the highlighted concentrations of Cu, Ni and Zn.

The highlighted concentrations of Cu, Ni and Zn exceeded the Adjusted EIL but were below the Adjusted HIL A.

The sub-samples of the failed composite sample were therefore analysed for Cu, Ni and/or Zn. The test results are summarised in Table F.

As indicated in Table F, all the concentrations of Cu, Ni and Zn in the analysed sub-samples were below the HIL A and EIL adopted.

12.2 Total Petroleum Hydrocarbons (TPH) and BTEX

As presented in Table G, the concentrations of F1 (TPH C6-C10 less BTEX), F2 (TPH >C10-C16 less Naphthalene and TPH>C10-C16), F4 (TPH >C34-C40) and BTEX were below the HSL A and/or ESL adopted. The test results of F1, F2 and BTEX were also less than the laboratory LOR.

There was not limiting of HSL A for clay for Ethyl Benzene.

With the exception of concentration of F3 (TPH >C16-C34) in sample TP39 (0-0.1m), the concentrations of F3 in the remaining samples analysed were below the ESL adopted.

The concentration of F3 (TPH >C16-C34) in the sample TP39 (0-0.1m) was above the ESL. In order to determine the presence or otherwise of petroleum-based hydrocarbon, the soil samples was analysed for F3 with silica gel clean-up. The result is included in Table G.

As indicated in Table G, the concentration of F3 (TPH >C16-C34) with silica gel clean-up in the sample TP39 (0-0.1m) did not exceed the ESL and was not of concern.

12.3 Polycyclic Aromatic Hydrocarbons (PAH)

As shown in Table H, all the concentrations of BaP (TEQ), Total PAH, Naphthalene and BaP were well below the HIL A, HSL, EIL and/or ESL.

Moreover, the test results of Benzo(a)pyrene (TEQ), Naphthalene and Benzo(a)pyrene were less than the laboratory LOR. The test results of Total PAH were in general less than the laboratory LOR.

12.4 Organochlorine Pesticides (OCP)

As presented in Table I, the concentrations of OCP were well below the Adjusted HIL A, and less than the laboratory LOR. The concentrations of DDT were well below the Adjusted EIL.

12.5 Polychlorinated Biphenyls (PCB)

As summarised in Table I, the concentrations of PCB were less than laboratory LOR.

12.6 Asbestos

As indicated in Table J, no >7mm ACM was found at the LOR of 0.01% w/w and no <7mm AF/FA was found at the LOR of 0.001% w/w for all the fill samples analysed.

13.0 CONCLUSION AND RECOMMENDATIONS

The findings of this DCA are summarised as follows:

- The eastern portion of site was used as residential/housing commission, whilst the western portion of the site, known as Dorchester Reserve, was vacant. Some areas were long grass covered. An area with dense vegetation was noted. The site was occupied by a number of site features (refer to Drawing No 13793/5-AA1) at the time of sampling and site inspection.
- Based on the site history and site inspection, three areas of concern and associated contaminants of potential concern have been identified within the site as summarised in the table presented in Section 7.0 of this report.
- As discussed in Section 12.0, all the laboratory test results for the recovered samples satisfied the criteria for stating that the analytes selected are either not present (i.e. concentrations less than laboratory limits of reporting) or present in the samples at concentrations that do not pose a risk of harm to human health or the environment under a “residential (with garden/accessible soil)” form of development.
- Potential off-site impacts of contaminants on groundwater and waterbodies are considered to be low.

Based on this assessment, it is our opinion that the site can be made suitable for the proposed residential (with garden/accessible soil) land use subject to implementation of the following recommendations, prior to site preparation and earthworks:

- Additional 5 sampling points/locations where TP14, TP25, TP26, TP40 and TP51 were located will be required after complete demolition and removal of site features, in order to check for the presence or otherwise of fill materials and to comply with the "Sampling Design Guidelines for Contaminated Sites" 1995.
- Assessment (by sampling and testing) of soil in the footprints of site features such as the residential/housing commission’s buildings, sheds/carports, any hardstand and sections of the existing Briar Road and Waterhouse Place, etc., will be required after complete demolition and removal and/or road closure. The purpose of this is to ascertain the presence or otherwise of “suspect” materials (identified by unusual staining, odour, discolouration or inclusions such as building rubble, asbestos, ash particles, etc.) and fill, which is different to those encountered for this assessment, to address the potential contamination as listed in the table in Section 7.0 of this report, as well as to determine the contamination status of the soil.
- Due to the presence of long grass and dense vegetation in some areas as shown on Drawing No 13793/5-AA1, potentially contaminated area(s), filled area(s), building rubble, asbestos sheet(s)/piece(s), ash materials, staining, etc. could be masked by the long grass and dense vegetation. The long grass and dense vegetation must be slashed to enable detailed site inspection. Additional sampling and testing might be required.
- In the event of contamination for the abovementioned assessments, further assessment, preparation of a Remedial Action Plan (RAP) and validation (after completion of remediation) to be undertaken by a suitably qualified person (environmental consultant) will be required.

If suspect materials are encountered during any stage of future building demolition/site preparation/earthworks (identified by unusual staining, odour, discolouration or inclusions such as building rubble, asbestos sheets/pieces/pipes, ash material, etc.), we recommend that this office is contacted for assessment, and to take all necessary actions.

For any materials to be excavated and removed from the site, it is recommended that waste classification of the materials, in accordance with the "Waste Classification Guidelines Part 1: Classifying Waste" NSW EPA 2014; NSW EPA resource recovery exemptions and orders under the POEO (Waste) Regulation 2014; or NSW EPA *Certification: Virgin excavated natural material* is undertaken prior to disposal at a facility that can lawfully accept the materials.

Any imported soil (fill) must be assessed by a qualified environmental consultant, prior to importation, to ensure suitability for the proposed use. In addition, the imported fill must not contain asbestos and ash, be free of unusual odour, not be discoloured and not acid sulphate soil or potential acid sulphate soil. The imported fill should either be virgin excavated natural material (VENM) or excavated natural material (ENM).

14.0 LIMITATIONS

To the best of our knowledge, all information obtained and contained in this report is true and accurate. No further investigation has been carried out to authenticate the information provided. Supporting documentation was obtained where possible, some of which is contained in this report.

This report has been prepared for Urban Growth NSW for the purpose stated within based on the agreed scope of work. Campbelltown City Council and any relevant authorities may rely on the report for development and building application assessment processes. Any reliance on this report by other parties shall be at such parties' sole risk, as the report might not contain sufficient information for other purposes.

The information in this report is considered accurate at the completion of field sampling on 20 to 23 March 2017. Any variations to the site form or use beyond that date will nullify the conclusion stated.

No contamination assessment can eliminate all risk; even a rigorous professional assessment might not detect all contamination within a site. Although the assessment conducted at the site was carried out in accordance with current NSW guidelines, the potential always exists for contaminants and contaminated soils to be present between sampled locations, in locations where possible underground services are present and in the grass/dense vegetation covered areas.

Presented in Appendix H is a document entitled "Environmental Notes", which should be read in conjunction with this report.

LIST OF REFERENCES

Composite Sampling, National Environmental Health Forum Monographs, Soil Services No 3 - William H Lock 1996

Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites – NSW Environment Protection Authority 2011

Contaminated Sites: Guidelines for the NSW Site Auditor Scheme (2nd Edition) – NSW DEC 2006

Contaminated Sites: Sampling Design Guidelines - NSW Environment Protection Authority 1995

Geology of Port Hacking - Wollongong 1:100,000 Sheet (9029-9129) – Geological Survey of New South Wales, Department of Mineral Resources 1985

Managing Land Contamination: Planning Guidelines SEPP 55 – Remediation of Land – Department of Urban Affairs and Planning / NSW Environment Protection Authority 1998

National Environment Protection (Assessment of Site Contamination) Measures, 1999 (April 2013) - National Environmental Protection Council

Protection of the Environment Operations Act 1997

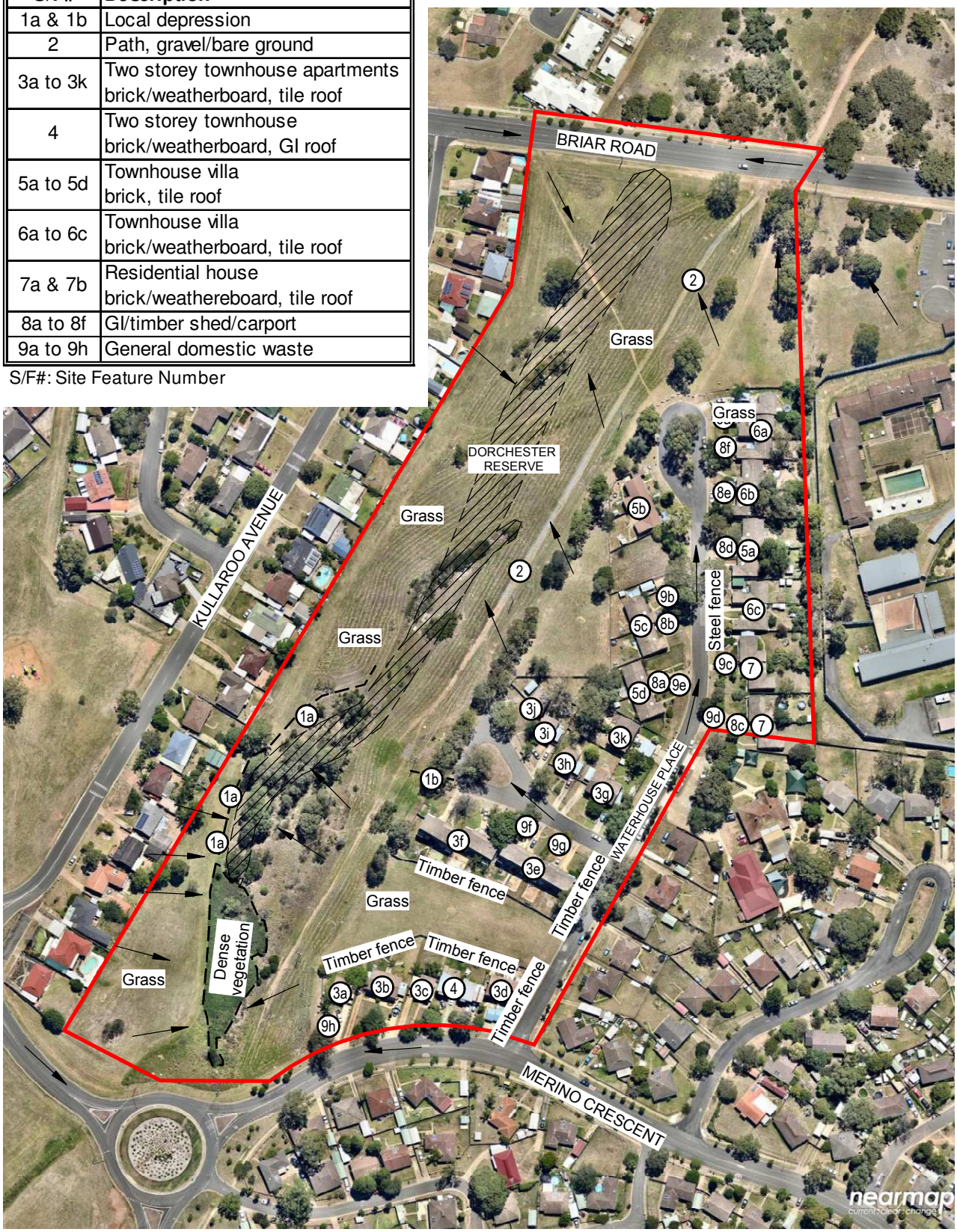
Soil Landscape of Port Hacking - Wollongong 1:100,000 Sheet (9029-9129) – Soil Conservation Service of NSW 1990

DRAWINGS

Drawing No 13793/5-AA1	*Site Features*
Drawing No 13793/5-AA2	*Test Pit Locations*

S/F#	Description
1a & 1b	Local depression
2	Path, gravel/bare ground
3a to 3k	Two storey townhouse apartments brick/weatherboard, tile roof
4	Two storey townhouse brick/weatherboard, GI roof
5a to 5d	Townhouse villa brick, tile roof
6a to 6c	Townhouse villa brick/weatherboard, tile roof
7a & 7b	Residential house brick/weathereboard, tile roof
8a to 8f	GI/timber shed/carport
9a to 9h	General domestic waste

S/F#: Site Feature Number



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LEGEND

(#) Site Feature Number

Slope

Observed Potential Fill Area

0 25 50 75 100 125m

Scale 1:2500

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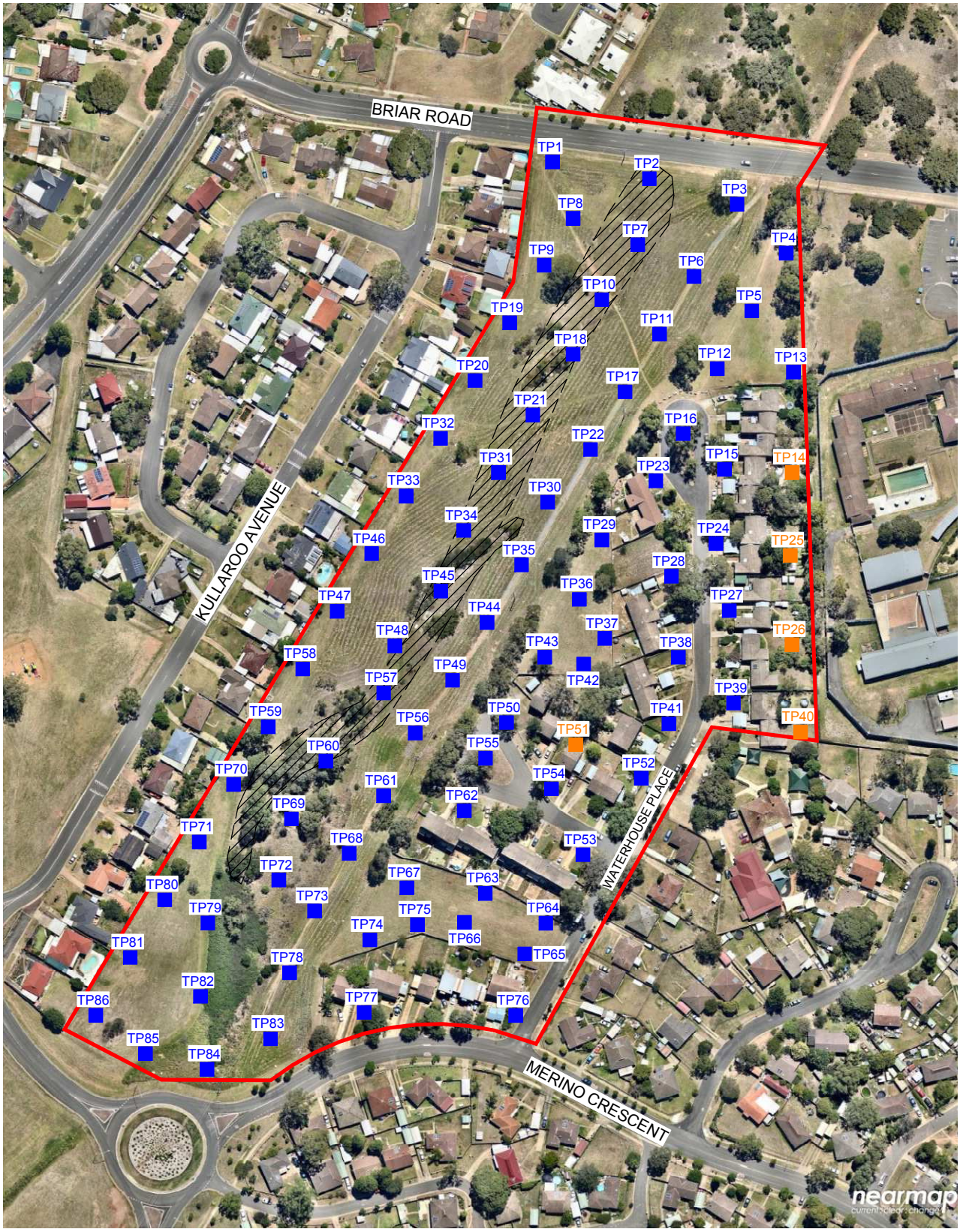
Site Features

Drawing No: 13793/5-AA1
Job No: 13793/5
Drawn By: MH/JH
Date: 28 April 2017
Checked By: JH/JX

File No: 13793-5
Layers: 0, AA1



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LEGEND

Test Pit

Test Pit (not excavated)

Observed Potential Fill Area

0 25 50 75 100 125m

Scale 1:2500

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Test Pit Locations

Drawing No: 13793/5-AA2
Job No: 13793/5
Drawn By: MH/JH
Date: 28 April 2017
Checked By: JH/JX

File No: 13793-5
Layers: 0, AA2

TABLES

TABLE A

RINSATE SAMPLES

(Ref No: 13793/5-AA)

ANALYTES	Rinsate R1 20/03/2017	Rinsate R2 21/03/2017	Rinsate R3 22/03/2017	Rinsate R4 23/03/2017
METALS	**(mg/L)**	**(mg/L)**	**(mg/L)**	**(mg/L)**
Arsenic	<0.02	<0.02	<0.02	<0.02
Cadmium	<0.001	<0.001	0.002	0.001
Chromium	<0.005	<0.005	<0.005	<0.005
Copper	<0.005	<0.005	<0.005	0.006
Lead	<0.02	<0.02	<0.02	<0.02
Mercury	<0.0001	<0.0001	<0.0001	<0.0001
Nickel	<0.005	<0.005	<0.005	<0.005
Zinc	0.02	<0.01	<0.01	0.01

TABLE B
TRIP SPIKE SAMPLES
(Ref No: 13793/5-AA)

ANALYTES	Trip Spike TS1	Trip Spike TS2	Trip Spike TS3	Trip Spike TS4
BTEX				
Benzene	87%	81%	88%	98%
Toluene	91%	84%	91%	70%
Ethyl Benzene	90%	87%	87%	93%
Xylenes	89%	87%	86%	91%

Note : results are reported as percentage recovery of known spike concentrations

TABLE C1
DUPLICATE SAMPLES
(Ref No: 13793/5-AA)

ANALYTES	TP1 0-0.15m mg/kg	Duplicate X1 mg/kg	RELATIVE PERCENTAGE DIFFERENCES (RPD) %
TOTAL PETROLEUM HYDROCARBONS (TPH)			
F1 (C6-C10 less BTEX)	<25	<25	-
F2 (>C10-C16)	<25	<25	-
F3 (>C16-C34)	<90	<90	-
F4 (>C34-C40)	<120	<120	-
BTEX			
Benzene	<0.1	<0.1	-
Toluene	<0.1	<0.1	-
Ethyl Benzene	<0.1	<0.1	-
Xylenes	<0.3	<0.3	-
POLYCYCLIC AROMATIC HYDROCARBONS			
Benzo(a)Pyrene TEQ	<0.3	<0.3	-
Total PAH	<0.8	<0.8	-
Naphthalene	<0.1	<0.1	-
Benzo(a)Pyrene	<0.1	<0.1	-

ANALYTES	C601 mg/kg	Duplicate CD1 mg/kg	RELATIVE PERCENTAGE DIFFERENCES (RPD) %
METALS			
Arsenic	6	7	15
Cadmium	0.3	0.3	0
Chromium	12	16	29
Copper	31	28	10
Lead	31	28	10
Mercury	<0.05	<0.05	-
Nickel	20	18	11
Zinc	64	68	6
ORGANOCHLORINE PESTICIDES (OCP)			
Hexachlorobenzene (HCB)	<0.1	<0.1	-
Heptachlor	<0.1	<0.1	-
Aldrin+Dieldrin	<0.15	<0.15	-
Endrin	<0.2	<0.2	-
Methoxychlor	<0.1	<0.1	-
Mirex	<0.1	<0.1	-
Endosulfan (alpha, beta & sulphate)	<0.5	<0.5	-
DDD+DDE+DDT	<0.6	<0.6	-
Chlordane (alpha & gamma)	<0.2	<0.2	-
POLYCHLORINATED BIPHENYLS (PCB)			
Total PCB	<1	<1	-

TABLE C2
DUPLICATE SAMPLES
(Ref No: 13793/5-AA)

ANALYTES	C611 mg/kg	Duplicate CD2 mg/kg	RELATIVE PERCENTAGE DIFFERENCES (RPD) %
METALS			
Arsenic	6	5	18
Cadmium	<0.3	<0.3	-
Chromium	9.6	10	4
Copper	20	14	35
Lead	22	25	13
Mercury	<0.05	<0.05	-
Nickel	18	9.9	58
Zinc	53	46	14

ANALYTES	C619 mg/kg	Duplicate CD3 mg/kg	RELATIVE PERCENTAGE DIFFERENCES (RPD) %
METALS			
Arsenic	7	5	33
Cadmium	0.3	0.3	0
Chromium	11	9.2	18
Copper	22	17	26
Lead	28	27	4
Mercury	<0.05	<0.05	-
Nickel	13	13	0
Zinc	77	69	11
ORGANOCHLORINE PESTICIDES (OCP)			
Hexachlorobenzene (HCB)	<0.1	<0.1	-
Heptachlor	<0.1	<0.1	-
Aldrin+Dieldrin	<0.15	<0.15	-
Endrin	<0.2	<0.2	-
Methoxychlor	<0.1	<0.1	-
Mirex	<0.1	<0.1	-
Endosulfan (alpha (I), beta (II) & sulphate)	<0.5	<0.5	-
DDD+DDE+DDT	<0.6	<0.6	-
Chlordane (alpha & gamma)	<0.2	<0.2	-

TABLE D1
SPLIT SAMPLES
(Ref No: 13793/5-AA)

ANALYTES	TP10 0-0.15m mg/kg (SGS)	Split Sample Z1 mg/kg (ENVIROLAB)	RELATIVE PERCENTAGE DIFFERENCES (RPD) %
TOTAL PETROLEUM HYDROCARBONS (TPH)			
F1 (C6-C10 less BTEX)	<25	<25	-
F2 (>C10-C16)	<25	<50	-
F3 (>C16-C34)	<90	<100	-
F4 (>C34-C40)	<120	<100	-
BTEX			
Benzene	<0.1	<0.2	-
Toluene	<0.1	<0.5	-
Ethyl Benzene	<0.1	<1	-
Xylenes	<0.3	<3	-
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Benzo(a)Pyrene TEQ	<0.3	<0.5	-
Total PAH	<0.8	<1.55	-
Naphthalene	<0.1	<0.1	-
Benzo(a)Pyrene	<0.1	<0.05	-

ANALYTES	C602 mg/kg (SGS)	Split Sample CS1 mg/kg (ENVIROLAB)	RELATIVE PERCENTAGE DIFFERENCES (RPD) %
METALS			
Arsenic	9	6	40
Cadmium	0.4	<0.4	-
Chromium	12	10	18
Copper	21	20	5
Lead	27	23	16
Mercury	<0.05	<0.1	-
Nickel	11	6	59
Zinc	52	48	8
ORGANOCHLORINE PESTICIDES (OCP)			
Hexachlorobenzene (HCB)	<0.1	<0.1	-
Heptachlor	<0.1	<0.1	-
Aldrin+Dieldrin	<0.15	<0.2	-
Endrin	<0.2	<0.1	-
Methoxychlor	<0.1	<0.1	-
Endosulfan (alpha (I), beta (II) & sulphate)	<0.5	<0.3	-
DDD+DDE+DDT	<0.6	<0.3	-
Chlordane (alpha & gamma)	<0.2	<0.2	-
POLYCHLORINATED BIPHENYLS (PCB)			
Total PCB	<1	<0.7	-

TABLE D2
SPLIT SAMPLES
(Ref No: 13793/5-AA)

ANALYTES	C612 mg/kg (SGS)	Split Sample CS2 mg/kg (ENVIROLAB)	RELATIVE PERCENTAGE DIFFERENCES (RPD) %
METALS			
Arsenic	6	9	40
Cadmium	0.3	<0.4	-
Chromium	9.3	18	64
Copper	26	71	93
Lead	25	32	25
Mercury	<0.05	<0.1	-
Nickel	12	17	34
Zinc	78	290	115

ANALYTES	C623 mg/kg (SGS)	Split Sample CS3 mg/kg (ENVIROLAB)	RELATIVE PERCENTAGE DIFFERENCES (RPD) %
METALS			
Arsenic	4	7	55
Cadmium	<0.3	<0.4	-
Chromium	5.7	11	63
Copper	14	21	40
Lead	27	21	25
Mercury	<0.05	<0.1	-
Nickel	4.5	8	56
Zinc	35	56	46
ORGANOCHLORINE PESTICIDES (OCP)			
Hexachlorobenzene (HCB)	<0.1	<0.1	-
Heptachlor	<0.1	<0.1	-
Aldrin+Dieldrin	<0.15	<0.2	-
Endrin	<0.2	<0.1	-
Methoxychlor	<0.1	<0.1	-
Endosulfan (alpha (I), beta (II) & sulphate)	<0.5	<0.3	-
DDD+DDE+DDT	<0.6	<0.3	-
Chlordane (alpha & gamma)	<0.2	<0.2	-

TABLE E
METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS
COMPOSITED SAMPLES
(Ref No: 13793/5-AA)

Composite Number	METALS (mg/kg)												CEC (cmol/kg) *	pH *
	ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	COPPER	LEAD	MERCURY	NICKEL	NICKEL	NICKEL	ZINC	ZINC		
C601	6	0.3	12	31	-	31	<0.05	-	-	20	64	-	22	8.2 (TP1)
C602	9	0.4	12	21	-	27	<0.05	**11**	-	-	52	-	-	-
C603	7	0.3	11	14	-	24	<0.05	-	10	-	44	-	6.0	6.0 (TP4)
C604	9	<0.3	7	22	-	18	<0.05	-	6.7	-	56	-	12	6.7 (TP6)
C605	7	0.4	11	21	-	30	<0.05	-	16	-	62	-	8.6	6.3 (TP21)
C606	7	<0.3	9.8	28	-	25	<0.05	-	9.7	-	76	-	12	6.7 (TP15)
C607	6	<0.3	10	13	-	20	<0.05	-	8.9	-	37	-	8.2	6.2 (TP18)
C608	7	0.3	9.9	17	-	36	<0.05	**12**	-	-	64	-	-	-
C609	8	0.5	14	21	-	39	<0.05	-	15	-	-	120	18	6.8 (TP20)
C610	7	<0.3	10	18	-	32	<0.05	**9.7**	-	-	49	-	-	-
C611	6	<0.3	9.6	20	-	22	<0.05	-	18	-	53	-	13	6.9 (TP29)
C612	6	0.3	9.3	26	-	25	<0.05	-	12	-	-	78	9.1	5.9 (TP33)
(Split CS2 = C612)	9	<0.4	18	-	**71**	32	<0.1	-	17	-	-	**290**	-	-
C613	7	<0.3	8.1	22	-	25	<0.05	-	14	-	-	91	10	6.4 (TP49)
C614	6	<0.3	9.5	14	-	33	<0.05	-	11	-	63	-	18	6.5 (TP39)
C615	7	0.3	12	17	-	27	<0.05	-	13	-	58	-	8.4	6.2 (TP45)
C616	4	<0.3	9.4	6.8	-	15	<0.05	4.5	-	-	24	-	6.2	8.3 (TP52)
C617	6	<0.3	9.3	20	-	36	<0.05	-	7.3	-	82	-	14	7.1 (TP50)
C618	5	<0.3	9.3	14	-	23	<0.05	**8.5**	-	-	55	-	-	-
C619	7	0.3	11	22	-	28	<0.05	-	13	-	77	-	19	6.7 (TP58)
C620	6	0.3	10	20	-	29	<0.05	-	11	-	60	-	8.9	6.0 (TP59)
C621	6	<0.3	11	**310**	-	22	<0.05	**9.6**	-	-	58	-	-	-
C622	6	0.3	9.6	22	-	26	<0.05	-	8.4	-	68	-	14	7.8 (TP76)
C623	4	<0.3	5.7	14	-	27	<0.05	-	4.5	-	35	-	7.4	5.7 (TP68)
C624	5	<0.3	8.8	14	-	25	<0.05	-	10	-	38	-	6.9	6.1 (TP71)
C625	5	0.4	8.8	16	-	23	<0.05	-	11	-	70	-	8.9	6.1 (TP80)
C626	6	<0.3	9.9	18	-	27	<0.05	-	9.9	-	51	-	12	7.3 (TP84)
C627	7	0.3	9.7	17	-	27	<0.05	**13**	-	-	42	-	3.8	5.9 (TP81)
C628	5	<0.3	9.7	18	-	18	<0.05	**8.0**	-	-	45	-	-	-
Limits of Reporting (LOR)	3	0.3	0.3	0.5	0.5	1	0.01	0.5	0.5	0.5	0.5	0.5	0.02	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)														
Health-based Investigation Levels (HIL) A - Residential A	100	20	100 [f]	6000 [f]	6000	300	10 [g]	400	400	400	7400	7400		
Adjusted HIL [b]	33	7	33	2000	2000	100	3	133	133	133	2467	2467		
Ecological Investigation Levels (EIL) - Urban residential	100 [h]	-	400 [i]	110 [j]	210 [k]	1200 [l]	-	20 [c]	55 [m]	290 [n]	250 [c]	430 [o]		
Adjusted EIL [d]	33	-	133	37	70	400	-	7	18	97	83	143		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)														
Provisional Phytotoxity-Based Investigation Levels (PIL)		3					1							
Adjusted PIL [e]		1					0.33							

Notes:
- a: Residential with garden / accessible soil (home grown produce <10% fruit and vegetable intake (no poultry)), also includes childcare centres, preschools and primary schools.
- b: Adjusted HIL=HIL/3
- c: EIL of aged chromium(III), copper, nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=3.8 cmolc/kg and pH=5.7 of the sub-sample were selected for derivation of EIL; a conservative approach.
- d: Adjusted EIL=EIL/3
- e: Adjusted PIL=PIL/3
- f: Chromium (VI)
- g: Methyl Mercury
- h: Generic EIL for aged arsenic
- i: Chromium (III); the assumed clay content=10%, a conservative assumption.
- j: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=95mg/kg, the lower ACL used based on the lowest CEC=5cmol/kg or pH=6.0.
- k: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=190mg/kg, the lower ACL used based on the CEC=10cmol/kg or pH=6.0.
- l: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.
- m: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=6.0 cmolc/kg of the sub-sample was selected for derivation of EIL; a conservative approach.
- n EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the CEC=22 cmolc/kg of the sub-sample was adopted for derivation of EIL.
- o: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=9.1 cmolc/kg and pH = 5.9 of sub-sample was adopted for derivation of EIL; a conservative approach.
- *: CEC & pH of sub-sample

TABLE F
COPPER, NICKEL & ZINC TEST RESULTS
SUB-SAMPLES
(Ref No: 13793/5-AA)

Composite Number	Sub-Sample	Depth (m)	COPPER (mg/kg)	COPPER (mg/kg)	NICKEL (mg/kg)	ZINC (mg/kg)
	TP3	0-0.15	-	-	5.3	-
	TP7	0-0.15	-	-	14	-
C602	TP10	0-0.15	-	-	6.6	-
	TP17	0-0.15	-	-	12	-
	TP23	0-0.15	-	-	8.0	-
C608	TP27	0-0.15	-	-	5.9	-
	TP28	0-0.15	-	-	8.3	-
	TP38	0-0.15	-	-	8.9	-
C610	TP42	0-0.15	-	-	12	-
	Z4 (=TP34	0-0.15)	-	21	-	68
	Z5 (=TP33	0-0.15)	-	120	-	360
Split CS2 (=C612)	Z6 (=TP46	0-0.15)	-	28	-	81
	TP55	0-0.15	-	-	8.7	-
	TP62	0-0.1	-	-	7.7	-
C618	TP63	0-0.15	-	-	6.7	-
	TP64	0-0.15	15	-	6.4	-
	TP66	0-0.15	11	-	9.8	-
C621	TP74	0-0.15	13	-	14	-
	TP81	0-0.15	-	-	8.0	-
	TP82	0-0.15	-	-	14	-
C627	TP86	0-0.15	-	-	8.0	-
	TP84	0.5-0.8	-	-	9.2	-
	TP84	1.0-1.3	-	-	12	-
C628	TP84	1.5-1.8	-	-	8.4	-
Limit of Reporting (LOR)			0.5	0.5	0.5	0.5
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)						
Health-based Investigation Levels (HIL) A [a] - Residential A			6000	6000	400	7400
Ecological Investigation Level (EIL) [b]			110	210	20	430

Notes:

a: Residential with garden / accessible soil (home grown produce <10% fruit and vegetable intake (no poultry)), also includes childcare centres,

b: refer to Table E for the EIL values adopted.

TABLE G
TOTAL PETROLEUM HYDROCARBONS (TPH) AND BTEX TEST RESULTS
DISCRETE SAMPLES
(Ref No: 13793/5-AA)

												NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)													
			TPH (mg/kg)					BTEX (mg/kg)				Health Screening Levels (HSL) A Low density residential						Ecological Screening Levels for fine-grained soil Urban residential							
Sample Location	Depth (m)	Soil type	F1	F2*	F2**	F3	F4	BENZENE	TOLUENE	ETHYLBENZENE	XYLENES	F1	F2*	BENZENE	TOLUENE	ETHYLBENZENE	XYLENES	F1	F2**	F3	F4	BENZENE	TOLUENE	ETHYLBENZENE	XYLENES
TP1	0-0.15	Clay	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	50	280	0.7	480	NL	110	180	120	1300	5600	65	105	125	45
TP6	0-0.15	Clay	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	50	280	0.7	480	NL	110	180	120	1300	5600	65	105	125	45
TP10	0-0.15	Clay	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	50	280	0.7	480	NL	110	180	120	1300	5600	65	105	125	45
TP15	0-0.1	Clay	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	50	280	0.7	480	NL	110	180	120	1300	5600	65	105	125	45
TP23	0-0.15	Clay	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	50	280	0.7	480	NL	110	180	120	1300	5600	65	105	125	45
TP33	0-0.15	Clay	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	50	280	0.7	480	NL	110	180	120	1300	5600	65	105	125	45
TP39	0-0.1	Clay	<25	<25	<25	**2000**	2900	<0.1	<0.1	<0.1	<0.3	50	280	0.7	480	NL	110	180	120	1300	5600	65	105	125	45
TP39 #	0-0.1	Clay	-	<25	<25	1300	2200	-	-	-	-	50	280	-	-	-	-	180	120	1300	5600	-	-	-	-
TP49	0-0.15	Clay	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	50	280	0.7	480	NL	110	180	120	1300	5600	65	105	125	45
TP52	0.4-0.5	Clay	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	50	280	0.7	480	NL	110	180	120	1300	5600	65	105	125	45
TP50	0-0.1	Clay	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	50	280	0.7	480	NL	110	180	120	1300	5600	65	105	125	45
TP59	0-0.15	Clay	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	50	280	0.7	480	NL	110	180	120	1300	5600	65	105	125	45
TP68	0-0.15	Clay	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	50	280	0.7	480	NL	110	180	120	1300	5600	65	105	125	45
TP76	0-0.15	Clay	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	50	280	0.7	480	NL	110	180	120	1300	5600	65	105	125	45
TP80	0-0.15	Clay	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	50	280	0.7	480	NL	110	180	120	1300	5600	65	105	125	45
Limits of Reporting (LOR)			25	25	25	90	120	0.1	0.1	0.1	0.3														

Notes:
F1: C6-C10 less BTEX
F2*: >C10-C16 less Naphthalene
F2**: >C10-C16
F3: >C16-C34
F4: >C34-C40
NL: Not Limiting
#: Test results of TPH with a silica gel clean-up

TABLE H
POLYCYCLIC AROMATIC HYDROCARBONS (PAH) TEST RESULTS
DISCRETE SAMPLES
(Ref No: 13793/5-AA)

							NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)				
			PAH (mg/kg)				Health-based Investigation Levels (HIL) A[a] Residential A		Health Screening Level (HSL) A - Low density residential	Generic Ecological Investigation Level (EIL) - Urban residential	Ecological Screening Level (ESL) - Urban residential
Sample Location	Depth (m)	Soil type	BaP TEQ	TOTAL PAHs	NAPHTHALENE	BENZO(a)PYRENE (BaP)	BaP TEQ	TOTAL PAHs	NAPHTHALENE	NAPHTHALENE	BENZO(a)PYRENE (BaP)
TP1	0-0.15	Clay	<0.3	<0.8	<0.1	<0.1	3	300	5	170	0.7
TP6	0-0.15	Clay	<0.3	<0.8	<0.1	<0.1	3	300	5	170	0.7
TP10	0-0.15	Clay	<0.3	<0.8	<0.1	<0.1	3	300	5	170	0.7
TP15	0-0.1	Clay	<0.3	<0.8	<0.1	<0.1	3	300	5	170	0.7
TP23	0-0.15	Clay	<0.3	<0.8	<0.1	<0.1	3	300	5	170	0.7
TP33	0-0.15	Clay	<0.3	<0.8	<0.1	<0.1	3	300	5	170	0.7
TP39	0-0.1	Clay	<0.3	<0.8	<0.1	<0.1	3	300	5	170	0.7
TP49	0-0.15	Clay	<0.3	<0.8	<0.1	<0.1	3	300	5	170	0.7
TP52	0.4-0.5	Clay	<0.3	<0.8	<0.1	<0.1	3	300	5	170	0.7
TP50	0-0.1	Clay	<0.3	<0.8	<0.1	<0.1	3	300	5	170	0.7
TP59	0-0.15	Clay	<0.3	<0.8	<0.1	<0.1	3	300	5	170	0.7
TP68	0-0.15	Clay	<0.3	1.7	<0.1	0.1	3	300	5	170	0.7
TP76	0-0.15	Clay	<0.3	<0.8	<0.1	<0.1	3	300	5	170	0.7
TP80	0-0.15	Clay	<0.3	<0.8	<0.1	<0.1	3	300	5	170	0.7
Limits of Reporting (LOR)			0.3	0.8	0.1	0.1					

Notes: a: Residential with garden / accessible soil (home grown produce <10% fruit and vegetable intake (no poultry)), also includes childcare centres, preschools and primary schools.
NL: Not Limimting

TABLE I

ORGANOCHLORINE PESTICIDES (OCP) & POLYCHLORINATED BIPHENYLS (PCB) TEST RESULTS
COMPOSITED SAMPLES
(Ref No: 13793/5-AA)

	OCP (mg/kg)										(mg/kg)
Composite Number	HEXACHLOROBENZENE (HCB)	HEPTACHLOR	ALDRIN+DIELDRIN	ENDRIN	METHOXYCHLOR	MIREX	ENDOSULFAN (alpha, beta & sulphate)	DDD+DDE+DDT	DDT	CHLORDANE (alpha & gamma)	PCB
C601	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1
C602	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1
C604	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1
C606	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1
C608	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1
C609	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	-
C610	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	-
C611	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	-
C612	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1
C613	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1
C614	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1
C616	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1
C617	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1
C618	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1
C619	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1
C620	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1
C621	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	-
C622	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1
C623	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1
C625	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1
C626	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1
C627	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	-
Limits of Reporting (LOR)	0.1	0.1	0.15	0.2	0.1	0.1	0.5	0.6	0.2	0.2	1
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)											
Health-based Investigation Levels (HIL) A[a] - Residential A	10	6	6	10	300	10	270	240		50	1
Adjusted HIL [b]	3	2	2	3	100	3	90	80		17	0.3
Ecological Investigation Level (EIL) - Urban residential									180[c]		
Adjusted EIL[b]									60		

Notes: a: Residential with garden / accessible soil (home grown produce <10% fruit and vegetable intake (no poultry)), also includes childcare centres, preschools and primary schools.

b: Adjusted HIL=HIL/3;Adjusted EIL=EIL/3

c: Generic EIL for DDT

TABLE J
ASBESTOS TEST RESULTS
DISCRETE SAMPLES
(Ref No: 13793/5-AA)

Sample Location	Depth (m)	ASBESTOS
Soil Samples		
TP1	0-0.15	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP2	0-0.15	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP3	0-0.15	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP3	0.5-0.65	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP6	0-0.15	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP7	0-0.15	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP8	0-0.15	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP10	0-0.15	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP10	0.5-0.65	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP11	0-0.15	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP12	0-0.15	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP12	0.5-0.65	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP15	0-0.1	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP17	0-0.15	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP22	0-0.15	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP23	0-0.15	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP23	0.3-0.4	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP24	0-0.1	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP27	0-0.1	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP33	0-0.15	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP39	0-0.1	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP44	0-0.15	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP46	0-0.15	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP49	0-0.15	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP52	0-0.15	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP52	0.4-0.5	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP50	0-0.1	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP53	0-0.1	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP54	0-0.1	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP56	0-0.15	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP57	0-0.15	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP59	0-0.15	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP60	0-0.15	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP61	0-0.15	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP62	0-0.1	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP68	0-0.15	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP69	0-0.15	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP70	0-0.15	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP72	0-0.15	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP73	0-0.15	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP76	0-0.15	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP77	0-0.1	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP78	0-0.15	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP80	0-0.15	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP80	0.5-0.7	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP84	0-0.15	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP84	0.5-0.8	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP84	1.0-1.3	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP84	1.5-1.8	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w
TP85	0-0.15	No ACM (>7mm) found at the limit of reporting 0.01% w/w; no AF/FA (<7mm) found at the limit of reporting 0.001% w/w

Notes: ACM: Asbestos Containing Material
AF: Asbestos Fine
FA: Fibrous Asbestos

APPENDIX A

PROPOSED STAGE 6 SUBDIVISION PLAN
(DRAWING NO SUB06-1 REV. D DATED 24 FEBRUARY 2017 PREPARED BY URBIS)

Lot Mix - Stage 6

Lot Type	Frontage	Depth	No. of Lots	%
	10m	26m	8	5.5%
	10m	30m	47	33%
	12.5m	26m	5	3.5%
	12.5m	30m	39	27%
	15m	26m	1	1%
	15m	30m	16	11%
	Atypical		28	19%
		Total	**144**	

STAGE 6
144 LOTS

Briar Road

Kullaroo Avenue

Merino Crescent

URBIS

Tower 2, Level 23 Darling Park
201 Sussex Street, Sydney, NSW 2000
+61 2 8233 9900
www.urbis.com.au
Urbis Pty Ltd ABN 50 105 256 228

Stage 6 Subdivision Plan

Airds Bradbury Block Typology & Feasibility Study

Airds, NSW

Scale 1:750 @ A1

0 5 10 20 30m

PROJECT No:	ND1673
DRAWING No:	SUB06-1
REV:	D
DATE:	24.02.17

APPENDIX B

DEPARTMENT OF DEFENCE RECORDS

Australian Government
Department of Defence

Where is Unexploded Ordnance (UXO)?

UXO can be found in most states within Australia. The following links will take you to an interactive map that will allow you to search the locations of known areas of concern.

SELECT STATE > FIND A MAP > SELECT PARCEL

No Results Found

No parcel found for Lot **11** DP/SP **1176190**. Only parcels within 500m of a known UXO area are available. Defence is actively engaged in identifying areas where UXO are likely to be present. Members of the public can assist in this process. If you have any information that may be of assistance please contact UXO@defence.gov.au via email.

Back

Australian Government
Department of Defence

Where is Unexploded Ordnance (UXO)?

UXO can be found in most states within Australia. The following links will take you to an interactive map that will allow you to search the locations of known areas of concern.

SELECT STATE > FIND A MAP > SELECT PARCEL

No Results Found

No parcel found for Lot **1** DP/SP **1191996**. Only parcels within 500m of a known UXO area are available. Defence is actively engaged in identifying areas where UXO are likely to be present. Members of the public can assist in this process. If you have any information that may be of assistance please contact UXO@defence.gov.au via email.

Back

Australian Government
Department of Defence

Where is Unexploded Ordnance (UXO)?

UXO can be found in most states within Australia. The following links will take you to an interactive map that will allow you to search the locations of known areas of concern.

SELECT STATE > FIND A MAP > SELECT PARCEL

No Results Found

No parcel found for Lot **2** DP/SP **1191996**. Only parcels within 500m of a known UXO area are available. Defence is actively engaged in identifying areas where UXO are likely to be present. Members of the public can assist in this process. If you have any information that may be of assistance please contact UXO@defence.gov.au via email.

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Australian Government
Department of Defence

Where is Unexploded Ordnance (UXO)?

UXO can be found in most states within Australia. The following links will take you to an interactive map that will allow you to search the locations of known areas of concern.

SELECT STATE > FIND A MAP > SELECT PARCEL

No Results Found

No parcel found for Lot **381** DP/SP **1056580**. Only parcels within 500m of a known UXO area are available. Defence is actively engaged in identifying areas where UXO are likely to be present. Members of the public can assist in this process. If you have any information that may be of assistance please contact UXO@defence.gov.au via email.

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Australian Government
Department of Defence

Where is Unexploded Ordnance (UXO)?

UXO can be found in most states within Australia. The following links will take you to an interactive map that will allow you to search the locations of known areas of concern.

SELECT STATE > FIND A MAP > SELECT PARCEL

No Results Found

No parcel found for Lot **382** DP/SP **1056580**. Only parcels within 500m of a known UXO area are available. Defence is actively engaged in identifying areas where UXO are likely to be present. Members of the public can assist in this process. If you have any information that may be of assistance please contact UXO@defence.gov.au via email.

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Australian Government
Department of Defence

Where is Unexploded Ordnance (UXO)?

UXO can be found in most states within Australia. The following links will take you to an interactive map that will allow you to search the locations of known areas of concern.

SELECT STATE > FIND A MAP > SELECT PARCEL

No Results Found

No parcel found for Lot **383** DP/SP **1056580**. Only parcels within 500m of a known UXO area are available. Defence is actively engaged in identifying areas where UXO are likely to be present. Members of the public can assist in this process. If you have any information that may be of assistance please contact UXO@defence.gov.au via email.

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Australian Government
Department of Defence

Where is Unexploded Ordnance (UXO)?

UXO can be found in most states within Australia. The following links will take you to an interactive map that will allow you to search the locations of known areas of concern.

SELECT STATE > FIND A MAP > SELECT PARCEL

No Results Found

No parcel found for Lot **37** DP/SP **261258**. Only parcels within 500m of a known UXO area are available. Defence is actively engaged in identifying areas where UXO are likely to be present. Members of the public can assist in this process. If you have any information that may be of assistance please contact UXO@defence.gov.au via email.

Back

Australian Government
Department of Defence

Where is Unexploded Ordnance (UXO)?

UXO can be found in most states within Australia. The following links will take you to an interactive map that will allow you to search the locations of known areas of concern.

SELECT STATE > FIND A MAP > SELECT PARCEL

No Results Found

No parcel found for Lot **39** DP/SP **261258**. Only parcels within 500m of a known UXO area are available. Defence is actively engaged in identifying areas where UXO are likely to be present. Members of the public can assist in this process. If you have any information that may be of assistance please contact UXO@defence.gov.au via email.

Back

Australian Government
Department of Defence

Where is Unexploded Ordnance (UXO)?

UXO can be found in most states within Australia. The following links will take you to an interactive map that will allow you to search the locations of known areas of concern.

SELECT STATE > FIND A MAP > SELECT PARCEL

No Results Found

No parcel found for Lot **40** DP/SP **261258**. Only parcels within 500m of a known UXO area are available. Defence is actively engaged in identifying areas where UXO are likely to be present. Members of the public can assist in this process. If you have any information that may be of assistance please contact UXO@defence.gov.au via email.

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APPENDIX C

NSW EPA RECORD OF NOTICES & POEO PUBLIC REGISTER

Contaminated land - record of notices

Record under section 58 of the Contaminated Land Management Act 1997

This record is maintained by OEH in accordance with Part 5 of the Contaminated Land Management Act 1997 (CLM Act).

The record **does** provide
- ✓ a record of written notices issued by OEH under the CLM Act, including preliminary investigation orders.
- ✓ the names of the sites, owners or occupiers **at the time of OEH action** in relation to the site
- ✓ copies of site audit statements (SAS) provided to OEH under section 52 of the CLM Act and relating to significantly contaminated land.

The record **does not** provide
- ✗ a record of all contaminated land in NSW. See frequently asked questions
- ✗ a list of notifications of contamination that OEH receives.
- ✗ the names of the sites, owners or occupiers if it changes **after OEH action** in relation to the site.
- ✗ some personal information.

... more about the CLM record of notices

From 1 July 2009 there were changes to the terminology of certain OEH actions under the CLM Act. See the list of these changes.

The record includes notices issued under sections 35 and 36 of the Environmentally Hazardous Chemicals Act 1985. These sections have been repealed. These notices are treated by the CLM Act as management orders.

Before using the record of notices see the Disclaimer and terms of use.

As at Tuesday, 7 March 2017 there are 1349 notices in the record relating to 349 sites.

Show me the entire record or Search the record

7 March 2017

Search results

Your search for:LGA: Campbelltown City Council

Matched 3 notices relating to 1 site.

Search Again

Refine Search

Suburb	Address	Site Name	Notices related to this site
CAMPBELLTOWN	62 Blaxland ROAD	Chemical Storage	3 former

Page 1 of 1

7 March 2017

Search results

Your search for: **General Search** with the following criteria

Suburb - AIRDS

returned 0 result

Search Again

APPENDIX D

TABLE 1 - TEST PIT LOGS

GEOTECHNIQUE PTY LTD

Project	**Stage 6 Airds Bradbury Renewal Project**	**Job No**	**13793/5**
Location	**Briar Road, Airds**	**Refer to Drawing No**	**13793/5-AA2**
		Logged & Sampled by	**SS/JH**

TABLE 1 – Test Pit Log

Test pit	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
TP1	0-0.25	0-0.15	20/03/2017		FILL: Silty Clay, low to medium plasticity, brown, with root fibres	Glass pieces and plastics observed in fill
	0.25-0.5	0.3-0.4			(CL-CI) Silty CLAY, low to medium plasticity, brown	
	0.5-0.7	NS			(CH) Silty CLAY, high plasticity, red mottled grey	
TP2	0-0.25	0-0.15	20/03/2017		FILL: Silty Clay, low to medium plasticity, brown, with root fibres and gravel	
	0.25-0.6	0.3-0.4			(CH) Silty CLAY, high plasticity, red mottled grey	
TP3	0-0.7	0-0.15 0.5-0.65	20/03/2017		FILL: Silty Clay, low to medium plasticity, brown, with gravel	
	0.7				Test pit No 3 terminated at 0.7m due to possible services	
TP4	0-0.2	0-0.15	20/03/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-0.5	NS			(CH) Silty CLAY, high plasticity, red-brown	
TP5	0-0.35	0-0.15	20/03/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.35-0.6	NS			(CH) Silty CLAY, high plasticity, yellow-brown mottled red	
TP6	0-0.35	0-0.15	20/03/2017		FILL: Silty Clay, medium to high plasticity, brown, with gravel	Metal pipe observed in fill
	0.35-0.70	0.4-0.5			(CH) Silty CLAY, high plasticity, red-brown	
TP7	0-0.2	0-0.15	20/03/2017		FILL: Silty Clay, low to medium plasticity, brown, with root fibres and gravel	Plastic observed in fill
	0.2-0.7	0.25-0.35			(CI-CH) Silty CLAY, medium to high plasticity, brown	
	0.7-1.2				(CH) Silty CLAY, high plasticity, red mottled grey	

NS = No Sample

*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Asbestos Containing Material (ACM), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

Project	**Stage 6 Airds Bradbury Renewal Project**	**Job No**	**13793/5**
Location	**Briar Road, Airds**	**Refer to Drawing No**	**13793/5-AA2**
		Logged & Sampled by	**SS/JH**

TABLE 1 – Test Pit Log

Test pit	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
TP8	0-0.3	0-0.15	20/03/2017		FILL: Silty Clay, low to medium plasticity, brown, with root fibres and gravel	Glass observed in fill
	0.3-0.8	0.35-0.45			(CL-CI) Silty CLAY, low to medium plasticity, brown	
TP9	0-0.4	0-0.15	20/03/2017		(CL-CI) Silty CLAY, low to medium plasticity, brown, with root fibres	
TP10	0-0.9	0-0.15 0.5-0.65	20/03/2017		FILL: Silty Clay, low to medium plasticity, brown, with gravel	Glass pieces and cloth observed in fill
	0.9-1.2	0.95-1.05			(CH) Silty CLAY, high plasticity, yellow-brown mottled red	
TP11	0-0.5	0-0.15	20/03/2017		FILL: Silty Clay, medium to high plasticity, brown, with gravel	
	0.5-1.0	0.55-0.65			(CH) Silty CLAY, high plasticity, red mottled grey	
TP12	0-0.7	0-0.15 0.5-0.65	20/03/2017		FILL: Silty Clay, medium to high plasticity, brown, with sandstone gravel and plastics	
	0.7-1.0	0.75-0.85			(CH) Silty CLAY, high plasticity, red-brown	
TP13	0-0.4	0-0.15	20/03/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.4-0.7	NS			(CH) Silty CLAY, high plasticity, yellow-brown mottled red	
TP14					Not completed due to access limitation	
TP15	0-0.1	0-0.1	21/03/2017		FILL: Silty Clay, low to medium plasticity, brown, with gravel	
	0.1				Test pit No 15 terminated at 0.1m due to possible services	
TP16	0-0.2	0-0.15	21/03/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-0.5	NS			(CI-CH) Silty CLAY, medium to high plasticity, brown	
	0.5-0.6	NS			(CH) Silty CLAY, high plasticity, red-brown	

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Asbestos Containing Material (ACM), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

Project	**Stage 6 Airds Bradbury Renewal Project**	**Job No**	**13793/5**
Location	**Briar Road, Airds**	**Refer to Drawing No**	**13793/5-AA2**
		Logged & Sampled by	**SS/JH**

TABLE 1 – Test Pit Log

Test pit	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
TP17	0-0.5	0-0.15	20/03/2017		FILL: Silty Clay, medium to high plasticity, brown, with gravel and root fibres	
	0.5-0.8	0.55-0.65			(CH) Silty CLAY, high plasticity, red-brown	
TP18	0-0.2	0-0.15	20/03/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-0.5	NS			(CL-CI) Silty CLAY, low to medium plasticity, brown	
TP19	0-0.25	0-0.15	20/03/2017		(CL-CI) Silty CLAY, low to medium plasticity, brown, with root fibres	
	0.25-0.5	NS			(CH) Silty CLAY, high plasticity, red-brown	
TP20	0-0.2	0-0.15	20/03/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-0.4	NS			(CL-CI) Silty CLAY, low to medium plasticity, brown	
TP21	0-0.5	0-0.15	20/03/2017		(CH) Silty CLAY, high plasticity, red-brown	
TP22	0-0.4	0-0.15	20/03/2017		FILL: Silty Clay, low to medium plasticity, brown, with road base gravel	
	0.4-0.8	0.45-0.55			(CH) Silty CLAY, high plasticity, red-brown	
TP23	0-0.3	0-0.15	21/03/2017		FILL: Silty Clay, medium to high plasticity, brown, with gravel and root fibres	Plastic mesh bag observed in fill
	0.3-0.4	0.3-0.4			FILL: Sandy Clay, low plasticity, pale brown, with gravel and sandstone gravel	
	0.4				Test pit No 23 terminated at 0.4m due to possible services	
TP24	0-0.1	0-0.1	21/03/2017		FILL: Silty Clay, low to medium plasticity, brown, with gravel	
	0.1				Test pit No 24 terminated at 0.1m due to possible services	
TP25					Not completed due to access limitation	

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Asbestos Containing Material (ACM), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

Project	**Stage 6 Airds Bradbury Renewal Project**	**Job No**	**13793/5**
Location	**Briar Road, Airds**	**Refer to Drawing No**	**13793/5-AA2**
		Logged & Sampled by	**SS/JH**

TABLE 1 – Test Pit Log

Test pit	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
TP26					Not completed due to access limitation	
TP27	0-0.1	0-0.1	21/03/2017		FILL: Silty Clay, medium to high plasticity, brown, with gravel	
	0.1				Test pit No 27 terminated at 0.1m due to possible services	
TP28	0-0.2	0-0.15	21/03/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-0.4	NS			(CH) Silty CLAY, high plasticity, red-brown	
TP29	0-0.3	0-0.15	21/03/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.3-0.5	NS			(CH) Silty CLAY, high plasticity, red mottled grey	
TP30	0-0.3	0-0.15	20/03/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.3-0.5	NS			(CH) Silty CLAY, high plasticity, red mottled grey	
TP31	0-0.3	0-0.15	20/03/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.3-0.5	NS			(CH) Silty CLAY, high plasticity, red mottled grey	
TP32	0-0.4	0-0.15	20/03/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.4-0.5	NS			(CH) Silty CLAY, high plasticity, red mottled grey	
TP33	0-0.15	0-0.15	21/03/2017		FILL: Silty Clay, medium to high plasticity, brown, with gravel	
	0.15-0.4	0.2-0.3			(CL-CI) Silty CLAY, low to medium plasticity, brown	
	0.4-0.5	NS			(CH) Silty CLAY, high plasticity, red-brown	
TP34	0-0.3	0-0.15	21/03/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.3-0.5	NS			(CH) Silty CLAY, high plasticity, red mottled grey	

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Asbestos Containing Material (ACM), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

Project	**Stage 6 Airds Bradbury Renewal Project**	**Job No**	**13793/5**
Location	**Briar Road, Airds**	**Refer to Drawing No**	**13793/5-AA2**
		Logged & Sampled by	**SS/JH**

TABLE 1 – Test Pit Log

Test pit	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
TP35	0-0.3	0-0.15	21/03/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.3-0.5	NS			(CH) Silty CLAY, high plasticity, red mottled grey	
TP36	0-0.3	0-0.15	21/03/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.3-0.5	NS			(CH) Silty CLAY, high plasticity, red mottled grey	
TP37	0-0.25	0-0.15	21/03//2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.25-0.5	NS			(CH) Silty CLAY, high plasticity, red mottled grey	
TP38	0-0.2	0-0.15	21/03/2017		(CL-CI) Silty CLAY, low to medium plasticity, brown	
	0.2-0.4	NS			(CH) Silty CLAY, high plasticity, red-brown	
TP39	0-0.1	0-0.1	21/03/2017		FILL: Silty Clay, medium to high plasticity, brown, with gravel	
	0.1				Test pit No 39 terminated at 0.1m due to possible services	
TP40					Not completed due to access limitation	
TP41	0-0.3	0-0.15	21/03/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.3-0.5	NS			(CH) Silty CLAY, high plasticity, red-brown	
TP42	0-0.3	0-0.15	21/03/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.3-0.5	NS			(CH) Silty CLAY, high plasticity, red mottled grey	
TP43	0-0.3	0-0.15	21/03/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.3-0.5	NS			(CH) Silty CLAY, high plasticity, red mottled grey	

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Asbestos Containing Material (ACM), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

Project	**Stage 6 Airds Bradbury Renewal Project**	**Job No**	**13793/5**
Location	**Briar Road, Airds**	**Refer to Drawing No**	**13793/5-AA2**
		Logged & Sampled by	**SS/JH**

TABLE 1 – Test Pit Log

Test pit	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
TP44	0-0.2	0-0.15	21/03/2017		FILL: Silty Clay, medium to high plasticity, brown, with gravel and root fibres	
	0.2-0.4	0.25-0.35			(CL-CI) Silty CLAY, low to medium plasticity, brown	
	0.4-0.5	NS			(CH) Silty CLAY, high plasticity, red mottled grey	
TP45	0-0.25	0-0.15	21/03/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.25-0.5	NS			(CH) Silty CLAY, high plasticity, red mottled grey	
TP46	0-0.3	0-0.15	21/03/2017		FILL: Silty Clay, medium to high plasticity, brown, with gravel	
	0.3-0.5	0.25-0.35			(CL-CI) Silty CLAY, low to medium plasticity, brown	
TP47	0-0.3	0-0.15	21/03/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.3-0.5	NS			(CH) Silty CLAY, high plasticity, red-brown	
TP48	0-0.2	0-0.15	21/03/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-0.5	NS			(CH) Silty CLAY, high plasticity, red-brown	
TP49	0-0.2	0-0.15	21/03/2017		FILL: Silty Clay, medium to high plasticity, brown, with gravel	
	0.2-0.5	0.25-0.35			(CL-CI) Silty CLAY, low to medium plasticity, brown	
TP50	0-0.1	0-0.1	23/03/2017		FILL: Silty Clay, low to medium plasticity, brown, with gravel	
	0.1				Test pit No 50 terminated at 0.1m due to possible services	
TP51					Not completed due to access limitation	

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Asbestos Containing Material (ACM), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

Project	**Stage 6 Airds Bradbury Renewal Project**	**Job No**	**13793/5**
Location	**Briar Road, Airds**	**Refer to Drawing No**	**13793/5-AA2**
		Logged & Sampled by	**SS/JH**

TABLE 1 – Test Pit Log

Test pit	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
TP52	0-0.4	0-0.15	21/03/2017		FILL: Silty Clay, medium to high plasticity, brown, with gravel and root fibres	
	0.4-0.5	0.4-0.5			FILL: Sandy Clay, low plasticity, pale brown, with gravel, with sandstone gravel	
TP53	0-0.1	0-0.1	23/03/2017		FILL: Silty Clay, low to medium plasticity, brown	
	0.1				Test pit No 53 terminated at 0.1m due to potential services	
TP54	0-0.1	0-0.1	23/03/2017		FILL: Silty Clay, low to medium plasticity, brown, with sand	
	0.1				Test pit No 54 terminated at 0.1m due to potential services	
TP55	0-0.2	0-0.15	22/03/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-0.5	NS			(CH) Silty CLAY, high plasticity, red-brown	
TP56	0-0.5	0-0.15	22/03/2017		FILL: Silty Clay, medium to high plasticity, brown, with gravel	
	0.5				Test pit No 56 terminated at 0.5m due to possible services	
TP57	0-0.3	0-0.15	22/03/2017		FILL: Silty Clay, low to medium plasticity, brown	
	0.3-0.8	0.35-0.45			(CH) Silty CLAY, high plasticity, red-brown	
TP58	0-0.2	0-0.15	22/03/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-0.7	NS			(CH) Silty CLAY, high plasticity, red-brown	
TP59	0-0.5	0-0.15	23/03/2017		FILL: Silty Clay, low to medium plasticity, brown	
	0.5-1.0	0.55-0.65			(CI-CH) Silty CLAY, medium to high plasticity, brown	

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Asbestos Containing Material (ACM), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

Project	**Stage 6 Airds Bradbury Renewal Project**	**Job No**	**13793/5**
Location	**Briar Road, Airds**	**Refer to Drawing No**	**13793/5-AA2**
		Logged & Sampled by	**SS/JH**

TABLE 1 – Test Pit Log

Test pit	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
TP60	0-0.5	0-0.15	23/03/2017		FILL: Silty Clay, low to medium plasticity, brown	
	0.5-1.0	0.55-0.65			(CI-CH) Silty CLAY, medium to high plasticity, brown	
TP61	0-0.2	0-0.15	23/03/2017		FILL: Silty Clay, medium to high plasticity, brown, with gravel	
	0.2-0.5	0.25-0.35			(CI-CH) Silty CLAY, medium to high plasticity, brown	
TP62	0-0.1	0-0.1	23/03/2017		FILL: Silty Clay, medium to high plasticity, brown, with gravel	
	0.1				Test pit No 62 terminated at 0.1m due to possible services	
TP63	0-0.2	0-0.15	22/03/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-0.5	NS			(CH) Silty CLAY, high plasticity, red-brown	
TP64	0-0.2	0-0.15	22/03/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-0.5	NS			(CH) Silty CLAY, high plasticity, red-brown	
TP65	0-0.2	0-0.15	22/03/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-0.5	NS			(CH) Silty CLAY, high plasticity, red-brown	
TP66	0-0.2	0-0.15	22/03/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-0.5	NS			(CH) Silty CLAY, high plasticity, red-brown	
TP67	0-0.2	0-0.15	22/03/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-0.5	NS			(CH) Silty CLAY, high plasticity, red-brown	

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Asbestos Containing Material (ACM), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

Project	**Stage 6 Airds Bradbury Renewal Project**	**Job No**	**13793/5**
Location	**Briar Road, Airds**	**Refer to Drawing No**	**13793/5-AA2**
		Logged & Sampled by	**SS/JH**

TABLE 1 – Test Pit Log

Test pit	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
TP68	0-0.3	0-0.15	22/03/2017		FILL: Silty Clay, medium to high plasticity, brown, with gravel	
	0.3-0.8	0.35-0.45			(CH) Silty CLAY, high plasticity, red-brown	
TP69	0-0.5	0-0.15	22/03/2017		FILL: Silty Clay, medium to high plasticity, brown	
	0.5-1.0	0.55-0.65			(CH) Silty CLAY, high plasticity, red mottled grey	
TP70	0-0.4	0-0.15	22/03/2017		FILL: Silty Clay, medium to high plasticity, brown, with gravel	
	0.4-0.9	0.45-0.55			(CI-CH) Silty CLAY, medium to high plasticity, brown	
TP71	0-0.2	0-0.15	22/03/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-0.5	NS			(CH) Silty CLAY, high plasticity, red-brown	
TP72	0-0.5	0-0.15	22/03/2017		FILL: Silty Clay, medium to high plasticity, brown, with gravel	
	0.5-1.0	0.55-0.65			(CH) Silty CLAY, high plasticity, red mottled grey	
TP73	0-0.4	0-0.15	22/03/2017		FILL: Silty Clay, medium to high plasticity, brown, with gravel	
	0.4-0.9	0.45-0.55			(CI-CH) Silty CLAY, medium to high plasticity, brown	
TP74	0-0.2	0-0.15	22/03/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-0.5	NS			(CH) Silty CLAY, high plasticity, red-brown	
TP75	0-0.2	0-0.15	22/03/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-0.5	NS			(CH) Silty CLAY, high plasticity, red-brown	

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Asbestos Containing Material (ACM), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

Project	**Stage 6 Airds Bradbury Renewal Project**	**Job No**	**13793/5**
Location	**Briar Road, Airds**	**Refer to Drawing No**	**13793/5-AA2**
		Logged & Sampled by	**SS/JH**

TABLE 1 – Test Pit Log

Test pit	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
TP76	0-0.1	0-0.1	23/03/2017		FILL: Silty Clay, low to medium plasticity, brown, with sand	
	0.1				Test pit No 76 terminated at 0.1m due to potential services	
TP77	0-0.1	0-0.1	22/03/2017		FILL: Silty Clay, medium to high plasticity, brown, with gravel	
	0.1				Test pit No 77 terminated at 0.1m due to potential services	
TP78	0-0.3	0-0.15	22/03/2017		FILL: Silty Clay, low to medium plasticity, brown, with gravel	
	0.3-0.8	0.35-0.45			(CI-CH) Silty CLAY, medium to high plasticity, brown	
TP79	0-0.2	0-0.15	23/03/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-0.5	NS			(CI-CH) Silty CLAY, medium to high plasticity, brown	
TP80	0-0.7	0-0.15	23/03/2017		FILL: Silty Clay, medium to high plasticity, brown, with gravel	
		0.5-0.7				
	0.7-1.2	0.75-0.85			(CH) Silty CLAY, high plasticity, red-brown	
TP81	0-0.2	0-0.15	23/03/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-0.5	NS			(CI-CH) Silty CLAY, medium to high plasticity, brown	
TP82	0-0.2	0-0.15	23/03/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-0.5	NS			(CI-CH) Silty CLAY, medium to high plasticity, brown	
TP83	0-0.2	0-0.15	22/03/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-0.5	NS			(CI-CH) Silty CLAY, medium to high plasticity, brown	

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Asbestos Containing Material (ACM), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

GEOTECHNIQUE PTY LTD

Project	**Stage 6 Airds Bradbury Renewal Project**	**Job No**	**13793/5**
Location	**Briar Road, Airds**	**Refer to Drawing No**	**13793/5-AA2**
		Logged & Sampled by	**SS/JH**

TABLE 1 – Test Pit Log

Test pit	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
TP84	0-2.0	0-0.15 0.5-0.8 1.0-1.3 1.5-1.8	22/03/2017		FILL: Silty Clay, medium to high plasticity, brown, with gravel	
	2.0-2.5	2.05-2.15			(CH) Silty CLAY, high plasticity, red-brown	
TP85	0-0.3	0-0.15	23/03/2017		FILL: Silty Clay, medium to high plasticity, brown, with gravel	
	0.3-0.8	0.35-0.45			(CH) Silty CLAY, high plasticity, red-brown	
TP86	0-0.2	0-0.15	23/03/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-0.5	NS			(CI-CH) Silty CLAY, medium to high plasticity, brown	

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Asbestos Containing Material (ACM), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

APPENDIX E

NSW OFFICE OF WATER GROUNDWATER BORE MAP

All Groundwater

bookmark this page

All Groundwater Map

All data times are Eastern Standard Time

Map | Info

APPENDIX F

PID CALIBRATION SHEETS

GEOTECHNIQUE
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PID CALIBRATION

CLIENT Urban Growth NSW	JOB NO 13793/5
PROJECT Stage 6	DATE 20/3/17
ADDRESS Brier Rd, Airds.	CHECKED BY JH
PID MODEL **PID MODEL: PGM – 7600 MINIRAE 2000**	CALIBRATED BY JH
SERIAL NO **SERIAL NO: 110 – 005380**	

This performance of this PID has been checked and calibrated as follows:

☒ **Charged***

☒ **Calibrate** **0.0ppm** **Reading:** 0.0 **ppm**

100ppm **Isobutylene** **Reading:** 100.0 **ppm**

Gas Bottle Number 173 **Lot No** 51809

Signed & Approved _____ Date: 20/3/17

Note: * Should be between 5.V and 6.2V

GEOTECHNIQUE
PTY LTD

PID CALIBRATION

CLIENT Urban Growth NSW	JOB NO 13793/5
PROJECT Stage 6	DATE 21/3/17
ADDRESS Brier Rd. Airds.	CHECKED BY JH
PID MODEL **PID MODEL: PGM – 7600 MINIRAE 2000**	CALIBRATED BY JH
SERIAL NO **SERIAL NO: 110 – 005380**	

This performance of this PID has been checked and calibrated as follows:

☒ **Charged***

☒ **Calibrate** **0.0ppm** **Reading:** 0.0 **ppm**

100ppm **Isobutylene** **Reading:** 100.0 **ppm**

Gas Bottle Number 173 **Lot No** 51809

Signed & Approved Date: 21/3/17

Note: * Should be between 5.V and 6.2V

GEOTECHNIQUE
PTY LTD

PID CALIBRATION

CLIENT Urban Growth NSW	JOB NO 13793/5
PROJECT Stage 6	DATE 22/3/17
ADDRESS Brian Rd, Airds	CHECKED BY JH
PID MODEL **PID MODEL: PGM – 7600 MINIRAE 2000**	CALIBRATED BY JH
SERIAL NO **SERIAL NO: 110 – 005380**	

This performance of this PID has been checked and calibrated as follows:

☒ **Charged***

☒ **Calibrate** **0.0ppm** **Reading:** 0.0 **ppm**

100ppm **Isobutylene** **Reading:** 100.0 **ppm**

Gas Bottle Number 173 **Lot No** 51809

Signed & Approved Date: 22/03/17

Note: * Should be between 5.V and 6.2V

GEOTECHNIQUE
PTY LTD

PID CALIBRATION

CLIENT Urban Growth NSW	JOB NO 137935
PROJECT Stage 6	DATE 23/3/17
ADDRESS Briar Rd, Airds	CHECKED BY JH
PID MODEL **PID MODEL: PGM – 7600 MINIRAE 2000**	CALIBRATED BY JH
SERIAL NO **SERIAL NO: 110 – 005380**	

This performance of this PID has been checked and calibrated as follows:

☒ **Charged***

☒ **Calibrate** **0.0ppm** **Reading:** 0.0 **ppm**

100ppm **Isobutylene** **Reading:** 100.0 **ppm**

Gas Bottle Number 173 **Lot No** 51809

Signed & Approved _____ Date: 23/3/17

Note: * Should be between 5.V and 6.2V

APPENDIX G

LABORATORY TEST CERTIFICATES

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**13793-5 Airds**
Order Number	(Not specified)
Samples	79

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	**SE163472 R0**
Date Received	21/3/2017
Date Reported	31/3/2017

COMMENTS

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

No respirable fibres detected in all soil samples using trace analysis technique as per AS 4964-2004.

Asbestos analysed by Approved Identifiers Ravee Sivasubramaniam and Yusuf Kuthpudin .

SIGNATORIES

Bennet Lo
Senior Organic Chemist/Metals Chemist

Dong Liang
Metals/Inorganics Team Leader

Kamrul Ahsan
Senior Chemist

Ly Kim Ha
Organic Section Head

Ravee Sivasubramaniam
Hygiene Team Leader

Shane McDermott
Senior Laboratory Technician

VOC's in Soil [AN433] Tested: 27/3/2017

PARAMETER	UOM	LOR	TP1 0-0.15 SOIL - 20/3/2017 SE163472.001	TP6 0-0.15 SOIL - 20/3/2017 SE163472.007	TP10 0-0.15 SOIL - 20/3/2017 SE163472.011	TP15 0-0.1 SOIL - 20/3/2017 SE163472.017	TP23 0-0.15 SOIL - 21/3/2017 SE163472.025
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	TP33 0-0.15 SOIL - 21/3/2017 SE163472.034	TP39 0-0.1 SOIL - 21/3/2017 SE163472.040	TP49 0-0.15 SOIL - 21/3/2017 SE163472.049	TP52 0.4-0.5 SOIL - 21/3/2017 SE163472.051	X1 SOIL - 20/3/2017 SE163472.052
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	Tripspike TS1 SOIL - 20/3/2017 SE163472.059	Tripspike TS2 SOIL - 20/3/2017 SE163472.060
Benzene	mg/kg	0.1	[87%]	[81%]
Toluene	mg/kg	0.1	[91%]	[84%]
Ethylbenzene	mg/kg	0.1	[90%]	[87%]
m/p-xylene	mg/kg	0.2	[96%]	[86%]
o-xylene	mg/kg	0.1	[89%]	[87%]
Total Xylenes*	mg/kg	0.3	-	-
Total BTEX	mg/kg	0.6	-	-
Naphthalene	mg/kg	0.1	-	-

Volatile Petroleum Hydrocarbons in Soil [AN433] Tested: 27/3/2017

PARAMETER	UOM	LOR	TP1 0-0.15 SOIL - 20/3/2017 SE163472.001	TP6 0-0.15 SOIL - 20/3/2017 SE163472.007	TP10 0-0.15 SOIL - 20/3/2017 SE163472.011	TP15 0-0.1 SOIL - 20/3/2017 SE163472.017	TP23 0-0.15 SOIL - 21/3/2017 SE163472.025
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	TP33 0-0.15 SOIL - 21/3/2017 SE163472.034	TP39 0-0.1 SOIL - 21/3/2017 SE163472.040	TP49 0-0.15 SOIL - 21/3/2017 SE163472.049	TP52 0.4-0.5 SOIL - 21/3/2017 SE163472.051	X1 SOIL - 20/3/2017 SE163472.052
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

TRH (Total Recoverable Hydrocarbons) in Soil [AN403] Tested: 28/3/2017

PARAMETER	UOM	LOR	TP1 0-0.15 SOIL - 20/3/2017 SE163472.001	TP6 0-0.15 SOIL - 20/3/2017 SE163472.007	TP10 0-0.15 SOIL - 20/3/2017 SE163472.011	TP15 0-0.1 SOIL - 20/3/2017 SE163472.017	TP23 0-0.15 SOIL - 21/3/2017 SE163472.025
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16 (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 (F2) - Naphthalene	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110
TRH C10-C40 Total	mg/kg	210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	TP33 0-0.15 SOIL - 21/3/2017 SE163472.034	TP39 0-0.1 SOIL - 21/3/2017 SE163472.040	TP49 0-0.15 SOIL - 21/3/2017 SE163472.049	TP52 0.4-0.5 SOIL - 21/3/2017 SE163472.051	X1 SOIL - 20/3/2017 SE163472.052
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	**720**	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	**2700**	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	**1500**	<100	<100	<100
TRH >C10-C16 (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 (F2) - Naphthalene	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	**2000**	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	**2900**	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	**3400**	<110	<110	<110
TRH C10-C40 Total	mg/kg	210	<210	**4900**	<210	<210	<210

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 28/3/2017

PARAMETER	UOM	LOR	TP1 0-0.15 SOIL - 20/3/2017 SE163472.001	TP6 0-0.15 SOIL - 20/3/2017 SE163472.007	TP10 0-0.15 SOIL - 20/3/2017 SE163472.011	TP15 0-0.1 SOIL - 20/3/2017 SE163472.017	TP23 0-0.15 SOIL - 21/3/2017 SE163472.025
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	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

PARAMETER	UOM	LOR	TP33 0-0.15 SOIL - 21/3/2017 SE163472.034	TP39 0-0.1 SOIL - 21/3/2017 SE163472.040	TP49 0-0.15 SOIL - 21/3/2017 SE163472.049	TP52 0.4-0.5 SOIL - 21/3/2017 SE163472.051	X1 SOIL - 20/3/2017 SE163472.052
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	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: 28/3/2017

PARAMETER	UOM	LOR	C601 SOIL - 20/3/2017 SE163472.061	C602 SOIL - 20/3/2017 SE163472.062	C604 SOIL - 20/3/2017 SE163472.064	C606 SOIL - 21/3/2017 SE163472.066	C608 SOIL - 21/3/2017 SE163472.068
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

OC Pesticides in Soil [AN420] Tested: 28/3/2017 (continued)

PARAMETER	UOM	LOR	C609 SOIL - 21/3/2017 SE163472.069	C610 SOIL - 21/3/2017 SE163472.070	C611 SOIL - 21/3/2017 SE163472.071	C612 SOIL - 21/3/2017 SE163472.072	C613 SOIL - 21/3/2017 SE163472.073
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

OC Pesticides in Soil [AN420] Tested: 28/3/2017 (continued)

PARAMETER	UOM	LOR	C614 SOIL - 21/3/2017 SE163472.074	C616 SOIL - 21/3/2017 SE163472.076	Duplicate CD1 SOIL - 21/3/2017 SE163472.077
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	0.05	<0.05	<0.05	<0.05
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

PCBs in Soil [AN420] Tested: 28/3/2017

PARAMETER	UOM	LOR	C601 SOIL - 20/3/2017 SE163472.061	C602 SOIL - 20/3/2017 SE163472.062	C604 SOIL - 20/3/2017 SE163472.064	C606 SOIL - 21/3/2017 SE163472.066	C608 SOIL - 21/3/2017 SE163472.068
Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1	<1	<1

PARAMETER	UOM	LOR	C612 SOIL - 21/3/2017 SE163472.072	C613 SOIL - 21/3/2017 SE163472.073	C614 SOIL - 21/3/2017 SE163472.074	C616 SOIL - 21/3/2017 SE163472.076	Duplicate CD1 SOIL - 21/3/2017 SE163472.077
Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1	<1	<1

pH in soil (1:5) [AN101] Tested: 27/3/2017

PARAMETER	UOM	LOR	TP1 0-0.15 SOIL - 20/3/2017 SE163472.001	TP4 0-0.15 SOIL - 20/3/2017 SE163472.005	TP6 0-0.15 SOIL - 20/3/2017 SE163472.007	TP9 0-0.15 SOIL - 20/3/2017 SE163472.010	TP15 0-0.1 SOIL - 20/3/2017 SE163472.017
pH	pH Units	-	8.2	6.0	6.7	7.0	6.7

PARAMETER	UOM	LOR	TP18 0-0.15 SOIL - 20/3/2017 SE163472.020	TP19 0-0.15 SOIL - 20/3/2017 SE163472.021	TP20 0-0.15 SOIL - 20/3/2017 SE163472.022	TP21 0-0.15 SOIL - 20/3/2017 SE163472.023	TP29 0-0.15 SOIL - 21/3/2017 SE163472.030
pH	pH Units	-	6.2	6.7	6.8	6.3	6.9

PARAMETER	UOM	LOR	TP34 0-0.15 SOIL - 21/3/2017 SE163472.035	TP39 0-0.1 SOIL - 21/3/2017 SE163472.040	TP45 0-0.15 SOIL - 21/3/2017 SE163472.045	TP49 0-0.15 SOIL - 21/3/2017 SE163472.049	TP52 0.4-0.5 SOIL - 21/3/2017 SE163472.051
pH	pH Units	-	6.5	6.5	6.2	6.4	8.3

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) [AN122] Tested: 29/3/2017

PARAMETER	UOM	LOR	TP1 0-0.15 SOIL - 20/3/2017 SE163472.001	TP4 0-0.15 SOIL - 20/3/2017 SE163472.005	TP6 0-0.15 SOIL - 20/3/2017 SE163472.007	TP9 0-0.15 SOIL - 20/3/2017 SE163472.010	TP15 0-0.1 SOIL - 20/3/2017 SE163472.017
Exchangeable Sodium, Na	mg/kg	2	170	94	71	320	41
Exchangeable Sodium, Na	meq/100g	0.01	0.72	0.41	0.31	1.4	0.18
Exchangeable Sodium Percentage*	%	0.1	3.3	6.8	2.5	11.0	1.4
Exchangeable Potassium, K	mg/kg	2	240	200	390	210	200
Exchangeable Potassium, K	meq/100g	0.01	0.61	0.50	0.99	0.55	0.52
Exchangeable Potassium Percentage*	%	0.1	2.8	8.4	8.0	4.3	4.2
Exchangeable Calcium, Ca	mg/kg	2	3400	460	460	1100	1700
Exchangeable Calcium, Ca	meq/100g	0.01	17	2.3	2.3	5.3	8.6
Exchangeable Calcium Percentage*	%	0.1	76.7	38.5	18.6	41.9	68.9
Exchangeable Magnesium, Mg	mg/kg	2	460	340	1100	660	390
Exchangeable Magnesium, Mg	meq/100g	0.02	3.8	2.8	8.8	5.4	3.2
Exchangeable Magnesium Percentage*	%	0.1	17.2	46.3	70.9	42.8	25.5
Cation Exchange Capacity	meq/100g	0.02	22	6.0	12	13	12

PARAMETER	UOM	LOR	TP18 0-0.15 SOIL - 20/3/2017 SE163472.020	TP19 0-0.15 SOIL - 20/3/2017 SE163472.021	TP20 0-0.15 SOIL - 20/3/2017 SE163472.022	TP21 0-0.15 SOIL - 20/3/2017 SE163472.023	TP29 0-0.15 SOIL - 21/3/2017 SE163472.030
Exchangeable Sodium, Na	mg/kg	2	43	58	45	89	29
Exchangeable Sodium, Na	meq/100g	0.01	0.19	0.25	0.20	0.39	0.13
Exchangeable Sodium Percentage*	%	0.1	2.3	1.6	1.1	4.5	1.0
Exchangeable Potassium, K	mg/kg	2	280	260	630	140	390
Exchangeable Potassium, K	meq/100g	0.01	0.70	0.67	1.6	0.36	1.0
Exchangeable Potassium Percentage*	%	0.1	8.6	4.4	8.7	4.1	7.6
Exchangeable Calcium, Ca	mg/kg	2	770	1900	2300	610	2000
Exchangeable Calcium, Ca	meq/100g	0.01	3.8	9.4	12	3.0	10
Exchangeable Calcium Percentage*	%	0.1	46.8	61.8	63.5	35.3	75.5
Exchangeable Magnesium, Mg	mg/kg	2	420	600	600	590	260
Exchangeable Magnesium, Mg	meq/100g	0.02	3.5	4.9	4.9	4.8	2.1
Exchangeable Magnesium Percentage*	%	0.1	42.3	32.2	26.7	56.1	16.0
Cation Exchange Capacity	meq/100g	0.02	8.2	15	18	8.6	13

PARAMETER	UOM	LOR	TP34 0-0.15 SOIL - 21/3/2017 SE163472.035	TP39 0-0.1 SOIL - 21/3/2017 SE163472.040	TP45 0-0.15 SOIL - 21/3/2017 SE163472.045	TP49 0-0.15 SOIL - 21/3/2017 SE163472.049	TP52 0.4-0.5 SOIL - 21/3/2017 SE163472.051
Exchangeable Sodium, Na	mg/kg	2	56	84	35	19	22
Exchangeable Sodium, Na	meq/100g	0.01	0.24	0.37	0.15	0.08	0.09
Exchangeable Sodium Percentage*	%	0.1	2.4	2.0	1.8	0.8	1.5
Exchangeable Potassium, K	mg/kg	2	260	310	390	360	85
Exchangeable Potassium, K	meq/100g	0.01	0.65	0.79	1.0	0.91	0.22
Exchangeable Potassium Percentage*	%	0.1	6.4	4.4	11.9	8.9	3.5
Exchangeable Calcium, Ca	mg/kg	2	1000	3000	700	630	1100
Exchangeable Calcium, Ca	meq/100g	0.01	5.0	15	3.5	3.2	5.5
Exchangeable Calcium Percentage*	%	0.1	49.7	83.3	41.7	30.8	88.6
Exchangeable Magnesium, Mg	mg/kg	2	510	230	460	740	48
Exchangeable Magnesium, Mg	meq/100g	0.02	4.2	1.8	3.7	6.1	0.40
Exchangeable Magnesium Percentage*	%	0.1	41.5	10.3	44.6	59.5	6.4
Cation Exchange Capacity	meq/100g	0.02	10	18	8.4	10	6.2

Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 28/3/2017

PARAMETER	UOM	LOR	C601 SOIL - 20/3/2017 SE163472.061	C602 SOIL - 20/3/2017 SE163472.062	C603 SOIL - 20/3/2017 SE163472.063	C604 SOIL - 20/3/2017 SE163472.064	C605 SOIL - 20/3/2017 SE163472.065
Arsenic, As	mg/kg	3	6	9	7	9	7
Cadmium, Cd	mg/kg	0.3	0.3	0.4	0.3	<0.3	0.4
Chromium, Cr	mg/kg	0.3	12	12	11	7.0	11
Copper, Cu	mg/kg	0.5	31	21	14	22	21
Lead, Pb	mg/kg	1	31	27	24	18	30
Nickel, Ni	mg/kg	0.5	20	11	10	6.7	16
Zinc, Zn	mg/kg	0.5	64	52	44	56	62

PARAMETER	UOM	LOR	C606 SOIL - 21/3/2017 SE163472.066	C607 SOIL - 21/3/2017 SE163472.067	C608 SOIL - 21/3/2017 SE163472.068	C609 SOIL - 21/3/2017 SE163472.069	C610 SOIL - 21/3/2017 SE163472.070
Arsenic, As	mg/kg	3	7	6	7	8	7
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	0.3	0.5	<0.3
Chromium, Cr	mg/kg	0.3	9.8	10	9.9	14	10
Copper, Cu	mg/kg	0.5	28	13	17	21	18
Lead, Pb	mg/kg	1	25	20	36	39	32
Nickel, Ni	mg/kg	0.5	9.7	8.9	12	15	9.7
Zinc, Zn	mg/kg	0.5	76	37	64	120	49

PARAMETER	UOM	LOR	C611 SOIL - 21/3/2017 SE163472.071	C612 SOIL - 21/3/2017 SE163472.072	C613 SOIL - 21/3/2017 SE163472.073	C614 SOIL - 21/3/2017 SE163472.074	C615 SOIL - 21/3/2017 SE163472.075
Arsenic, As	mg/kg	3	6	6	7	6	7
Cadmium, Cd	mg/kg	0.3	<0.3	0.3	<0.3	<0.3	0.3
Chromium, Cr	mg/kg	0.3	9.6	9.3	8.1	9.5	12
Copper, Cu	mg/kg	0.5	20	26	22	14	17
Lead, Pb	mg/kg	1	22	25	25	33	27
Nickel, Ni	mg/kg	0.5	18	12	14	11	13
Zinc, Zn	mg/kg	0.5	53	78	91	63	58

PARAMETER	UOM	LOR	C616 SOIL - 21/3/2017 SE163472.076	Duplicate CD1 SOIL - 21/3/2017 SE163472.077	Duplicate CD2 SOIL - 21/3/2017 SE163472.078
Arsenic, As	mg/kg	3	4	7	5
Cadmium, Cd	mg/kg	0.3	<0.3	0.3	<0.3
Chromium, Cr	mg/kg	0.3	9.4	16	10
Copper, Cu	mg/kg	0.5	6.8	28	14
Lead, Pb	mg/kg	1	15	28	25
Nickel, Ni	mg/kg	0.5	4.5	18	9.9
Zinc, Zn	mg/kg	0.5	24	68	46

Mercury in Soil [AN312] Tested: 28/3/2017

PARAMETER	UOM	LOR	C601 SOIL - 20/3/2017 SE163472.061	C602 SOIL - 20/3/2017 SE163472.062	C603 SOIL - 20/3/2017 SE163472.063	C604 SOIL - 20/3/2017 SE163472.064	C605 SOIL - 20/3/2017 SE163472.065
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	C606 SOIL - 21/3/2017 SE163472.066	C607 SOIL - 21/3/2017 SE163472.067	C608 SOIL - 21/3/2017 SE163472.068	C609 SOIL - 21/3/2017 SE163472.069	C610 SOIL - 21/3/2017 SE163472.070
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	C611 SOIL - 21/3/2017 SE163472.071	C612 SOIL - 21/3/2017 SE163472.072	C613 SOIL - 21/3/2017 SE163472.073	C614 SOIL - 21/3/2017 SE163472.074	C615 SOIL - 21/3/2017 SE163472.075
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	C616 SOIL - 21/3/2017 SE163472.076	Duplicate CD1 SOIL - 21/3/2017 SE163472.077	Duplicate CD2 SOIL - 21/3/2017 SE163472.078
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05

Moisture Content [AN002] Tested: 27/3/2017

PARAMETER	UOM	LOR	TP1 0-0.15 SOIL - 20/3/2017 SE163472.001	TP4 0-0.15 SOIL - 20/3/2017 SE163472.005	TP6 0-0.15 SOIL - 20/3/2017 SE163472.007	TP9 0-0.15 SOIL - 20/3/2017 SE163472.010	TP10 0-0.15 SOIL - 20/3/2017 SE163472.011
% Moisture	%w/w	0.5	24	22	22	28	15

PARAMETER	UOM	LOR	TP15 0-0.1 SOIL - 20/3/2017 SE163472.017	TP18 0-0.15 SOIL - 20/3/2017 SE163472.020	TP19 0-0.15 SOIL - 20/3/2017 SE163472.021	TP20 0-0.15 SOIL - 20/3/2017 SE163472.022	TP21 0-0.15 SOIL - 20/3/2017 SE163472.023
% Moisture	%w/w	0.5	17	26	25	26	25

PARAMETER	UOM	LOR	TP23 0-0.15 SOIL - 21/3/2017 SE163472.025	TP29 0-0.15 SOIL - 21/3/2017 SE163472.030	TP33 0-0.15 SOIL - 21/3/2017 SE163472.034	TP34 0-0.15 SOIL - 21/3/2017 SE163472.035	TP39 0-0.1 SOIL - 21/3/2017 SE163472.040
% Moisture	%w/w	0.5	20	22	18	27	19

PARAMETER	UOM	LOR	TP45 0-0.15 SOIL - 21/3/2017 SE163472.045	TP49 0-0.15 SOIL - 21/3/2017 SE163472.049	TP52 0.4-0.5 SOIL - 21/3/2017 SE163472.051	X1 SOIL - 20/3/2017 SE163472.052	C601 SOIL - 20/3/2017 SE163472.061
% Moisture	%w/w	0.5	27	17	12	23	22

PARAMETER	UOM	LOR	C602 SOIL - 20/3/2017 SE163472.062	C603 SOIL - 20/3/2017 SE163472.063	C604 SOIL - 20/3/2017 SE163472.064	C605 SOIL - 20/3/2017 SE163472.065	C606 SOIL - 21/3/2017 SE163472.066
% Moisture	%w/w	0.5	16	23	15	26	17

PARAMETER	UOM	LOR	C607 SOIL - 21/3/2017 SE163472.067	C608 SOIL - 21/3/2017 SE163472.068	C609 SOIL - 21/3/2017 SE163472.069	C610 SOIL - 21/3/2017 SE163472.070	C611 SOIL - 21/3/2017 SE163472.071
% Moisture	%w/w	0.5	17	22	25	17	20

PARAMETER	UOM	LOR	C612 SOIL - 21/3/2017 SE163472.072	C613 SOIL - 21/3/2017 SE163472.073	C614 SOIL - 21/3/2017 SE163472.074	C615 SOIL - 21/3/2017 SE163472.075	C616 SOIL - 21/3/2017 SE163472.076
% Moisture	%w/w	0.5	23	20	18	26	15

Moisture Content [AN002] Tested: 27/3/2017 (continued)

PARAMETER	UOM	LOR	Duplicate CD1 SOIL - 21/3/2017 SE163472.077	Duplicate CD2 SOIL - 21/3/2017 SE163472.078
% Moisture	%w/w	0.5	**21**	**22**

Gravimetric Determination of Asbestos in Soil [AN605] Tested: 29/3/2017

PARAMETER	UOM	LOR	TP1 0-0.15 SOIL - 20/3/2017 SE163472.001	TP2 0-0.15 SOIL - 20/3/2017 SE163472.002	TP3 0-0.15 SOIL - 20/3/2017 SE163472.003	TP3 0.5-0.65 SOIL - 20/3/2017 SE163472.004	TP6 0-0.15 SOIL - 20/3/2017 SE163472.007
Total Sample Weight	g	1	655	740	569	711	706
ACM in >7mm Sample*	g	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
AF/FA in >2mm to <7mm Sample*	g	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
AF/FA in <2mm Sample*	g	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Asbestos in soil (>7mm ACM)*	%w/w	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Asbestos in soil (>2mm to <7mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Asbestos in soil (<2mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Asbestos in soil (<7mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Fibre Type	No unit	-	NAD,ORG	NAD,ORG	NAD	NAD	NAD

PARAMETER	UOM	LOR	TP7 0-0.15 SOIL - 20/3/2017 SE163472.008	TP8 0-0.15 SOIL - 20/3/2017 SE163472.009	TP10 0-0.15 SOIL - 20/3/2017 SE163472.011	TP10 0.5-0.65 SOIL - 20/3/2017 SE163472.012	TP11 0-0.15 SOIL - 20/3/2017 SE163472.013
Total Sample Weight	g	1	688	753	629	790	691
ACM in >7mm Sample*	g	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
AF/FA in >2mm to <7mm Sample*	g	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
AF/FA in <2mm Sample*	g	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Asbestos in soil (>7mm ACM)*	%w/w	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Asbestos in soil (>2mm to <7mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Asbestos in soil (<2mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Asbestos in soil (<7mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Fibre Type	No unit	-	NAD,ORG	NAD,ORG	NAD	NAD	NAD

PARAMETER	UOM	LOR	TP12 0-0.15 SOIL - 20/3/2017 SE163472.014	TP12 0.5-0.65 SOIL - 20/3/2017 SE163472.015	TP15 0-0.1 SOIL - 20/3/2017 SE163472.017	TP17 0-0.15 SOIL - 20/3/2017 SE163472.019	TP22 0-0.15 SOIL - 20/3/2017 SE163472.024
Total Sample Weight	g	1	714	831	802	688	550
ACM in >7mm Sample*	g	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
AF/FA in >2mm to <7mm Sample*	g	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
AF/FA in <2mm Sample*	g	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Asbestos in soil (>7mm ACM)*	%w/w	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Asbestos in soil (>2mm to <7mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Asbestos in soil (<2mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Asbestos in soil (<7mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Fibre Type	No unit	-	NAD	NAD	NAD,ORG	NAD	NAD

PARAMETER	UOM	LOR	TP23 0-0.15 SOIL - 21/3/2017 SE163472.025	TP23 0.3-0.4 SOIL - 21/3/2017 SE163472.026	TP24 0-0.1 SOIL - 21/3/2017 SE163472.027	TP27 0-0.1 SOIL - 21/3/2017 SE163472.028	TP33 0-0.15 SOIL - 21/3/2017 SE163472.034
Total Sample Weight	g	1	777	894	601	597	824
ACM in >7mm Sample*	g	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
AF/FA in >2mm to <7mm Sample*	g	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
AF/FA in <2mm Sample*	g	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Asbestos in soil (>7mm ACM)*	%w/w	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Asbestos in soil (>2mm to <7mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Asbestos in soil (<2mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Asbestos in soil (<7mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Fibre Type	No unit	-	NAD	NAD	NAD	NAD	NAD

Gravimetric Determination of Asbestos in Soil [AN605] Tested: 29/3/2017 (continued)

PARAMETER	UOM	LOR	TP39 0-0.1 SOIL - 21/3/2017 SE163472.040	TP44 0-0.15 SOIL - 21/3/2017 SE163472.044	TP46 0-0.15 SOIL - 21/3/2017 SE163472.046	TP49 0-0.15 SOIL - 21/3/2017 SE163472.049	TP52 0-0.15 SOIL - 21/3/2017 SE163472.050
Total Sample Weight	g	1	**567**	**728**	**709**	**669**	**868**
ACM in >7mm Sample*	g	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
AF/FA in >2mm to <7mm Sample*	g	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
AF/FA in <2mm Sample*	g	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Asbestos in soil (>7mm ACM)*	%w/w	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Asbestos in soil (>2mm to <7mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Asbestos in soil (<2mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Asbestos in soil (<7mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Fibre Type	No unit	-	NAD,ORG	NAD	NAD	NAD	NAD,ORG

PARAMETER	UOM	LOR	TP52 0.4-0.5 SOIL - 21/3/2017 SE163472.051
Total Sample Weight	g	1	**891**
ACM in >7mm Sample*	g	0.01	<0.01
AF/FA in >2mm to <7mm Sample*	g	0.0001	<0.0001
AF/FA in <2mm Sample*	g	0.0001	<0.0001
Asbestos in soil (>7mm ACM)*	%w/w	0.01	<0.01
Asbestos in soil (>2mm to <7mm AF/FA)*	%w/w	0.001	<0.001
Asbestos in soil (<2mm AF/FA)*	%w/w	0.001	<0.001
Asbestos in soil (<7mm AF/FA)*	%w/w	0.001	<0.001
Fibre Type	No unit	-	NAD

Metals in Water (Dissolved) by ICPOES [AN320/AN321] Tested: 30/3/2017

PARAMETER	UOM	LOR	Rinsate R1 WATER - 20/3/2017 SE163472.058	Rinsate R2 WATER - 21/3/2017 SE163472.079
Arsenic, As	mg/L	0.02	<0.02	<0.02
Cadmium, Cd	mg/L	0.001	<0.001	<0.001
Chromium, Cr	mg/L	0.005	<0.005	<0.005
Copper, Cu	mg/L	0.005	<0.005	<0.005
Lead, Pb	mg/L	0.02	<0.02	<0.02
Nickel, Ni	mg/L	0.005	<0.005	<0.005
Zinc, Zn	mg/L	0.01	**0.02**	<0.01

Mercury (dissolved) in Water [AN311(Perth)/AN312] Tested: 28/3/2017

PARAMETER	UOM	LOR	Rinsate R1 WATER - 20/3/2017 SE163472.058	Rinsate R2 WATER - 21/3/2017 SE163472.079
Mercury	mg/L	0.0001	<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.
AN101	pH in Soil Sludge Sediment and Water: pH is measured electrometrically using a combination electrode and is calibrated against 3 buffers purchased commercially. For soils, sediments and sludges, an extract with water (or 0.01M CaCl2) is made at a ratio of 1:5 and the pH determined and reported on the extract. Reference APHA 4500-H+.
AN122	Exchangeable Cations, CEC and ESP: Soil sample is extracted in 1M Ammonium Acetate at pH=7 (or 1M Ammonium Chloride at pH=7) with cations (Na, K, Ca & Mg) then determined by ICP OES/ICP MS and reported as Exchangeable Cations. For saline soils, these results can be corrected for water soluble cations and reported as Exchangeable cations in meq/100g or soil can be pre-treated (aqueous ethanol/aqueous glycerol) prior to extraction. Cation Exchange Capacity (CEC) is the sum of the exchangeable cations in meq/100g.
AN122	The Exchangeable Sodium Percentage (ESP) is calculated as the exchangeable sodium divided by the CEC (all in meq/100g) times 100. ESP can be used to categorise the sodicity of the soil as below: ESP < 6% non-sodic ESP 6-15% sodic ESP >15% strongly sodic Method is refernced to Rayment and Higginson, 1992, sections 15D3 and 15N1.-
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
AN320/AN321	Metals by ICP-OES: Samples are preserved with 10% nitric acid for a wide range of metals and some non-metals. This solution is measured by Inductively Coupled Plasma. Solutions are aspirated into an argon plasma at 8000-10000K and emit characteristic energy or light as a result of electron transitions through unique energy levels. The emitted light is focused onto a diffraction grating where it is separated into components.
AN320/AN321	Photomultipliers or CCDs are used to measure the light intensity at specific wavelengths. This intensity is directly proportional to concentration. Corrections are required to compensate for spectral overlap between elements. Reference APHA 3120 B.
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is reported directly and also corrected by subtracting Naphthalene (from VOC method AN433) where available.
AN403	Additionally, the volatile C6-C9 fraction may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Petroleum Hydrocarbons (TPH) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents.
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, 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.
AN605	This technique gravimetrically determines the mass of Asbestos Containing Material retained on a 7mm Sieve and assumes that 15% of this ACM is asbestos. This calculated asbestos weight is then calculated as a percentage of the total sample weight.
AN605	This technique also gravimetrically determines the mass of Fibrous Asbestos (FA) and Asbestos Fines (AF) Containing Material retained on and passing a 2mm sieve post 7mm sieving. Assumes that FA and AF are 100% asbestos containing. This calculated asbestos weight is then calculated as a percentage of the total sample weight. This does not include free fibres which are only observed by standard trace analysis as per AN 602.
AN605	AMO = Amosite Detected CRY = Chrysotile Detected CRO = Crocidolite Detected ORG = Organic Fibres Detected SMF = Synthetic Mineral Fibres Detected UMF = Unknown Mineral Fibres Detected NAD = No Asbestos Detected
AN605	Insofar as is technically feasible, this report is consistent with the analytical reporting recommendations in the Western Australian Department of Health Guidelines for the Assessment Remediation and Management of Asbestos - Contaminated Sites in Western Australia - May 2009.

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.		

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

STATEMENT OF QA/QC PERFORMANCE

SE163472 R0

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
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Email	john.xu@geotech.com.au
Project	**13793-5 Airds**
Order Number	(Not specified)
Samples	79

LABORATORY DETAILS

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SGS Reference	**SE163472 R0**
Date Received	21 Mar 2017
Date Reported	31 Mar 2017

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 and was supplied by the Client.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met with the exception of the following:

Duplicate	Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES	1 item
Matrix Spike	Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES	1 item

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	58 Soil, 2 Water
Date documentation received	23/3/17@12:27pm	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	16.1°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

HOLDING TIME SUMMARY

SE163472 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.

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR)

Method: ME-(AU)-[ENV]AN122

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP1 0-0.15	SE163472.001	LB121254	20 Mar 2017	21 Mar 2017	17 Apr 2017	29 Mar 2017	17 Apr 2017	31 Mar 2017
TP4 0-0.15	SE163472.005	LB121254	20 Mar 2017	21 Mar 2017	17 Apr 2017	29 Mar 2017	17 Apr 2017	31 Mar 2017
TP6 0-0.15	SE163472.007	LB121254	20 Mar 2017	21 Mar 2017	17 Apr 2017	29 Mar 2017	17 Apr 2017	31 Mar 2017
TP9 0-0.15	SE163472.010	LB121254	20 Mar 2017	21 Mar 2017	17 Apr 2017	29 Mar 2017	17 Apr 2017	31 Mar 2017
TP15 0-0.1	SE163472.017	LB121254	20 Mar 2017	21 Mar 2017	17 Apr 2017	29 Mar 2017	17 Apr 2017	31 Mar 2017
TP18 0-0.15	SE163472.020	LB121254	20 Mar 2017	21 Mar 2017	17 Apr 2017	29 Mar 2017	17 Apr 2017	31 Mar 2017
TP19 0-0.15	SE163472.021	LB121254	20 Mar 2017	21 Mar 2017	17 Apr 2017	29 Mar 2017	17 Apr 2017	31 Mar 2017
TP20 0-0.15	SE163472.022	LB121254	20 Mar 2017	21 Mar 2017	17 Apr 2017	29 Mar 2017	17 Apr 2017	31 Mar 2017
TP21 0-0.15	SE163472.023	LB121254	20 Mar 2017	21 Mar 2017	17 Apr 2017	29 Mar 2017	17 Apr 2017	31 Mar 2017
TP29 0-0.15	SE163472.030	LB121254	21 Mar 2017	21 Mar 2017	18 Apr 2017	29 Mar 2017	18 Apr 2017	31 Mar 2017
TP34 0-0.15	SE163472.035	LB121254	21 Mar 2017	21 Mar 2017	18 Apr 2017	29 Mar 2017	18 Apr 2017	31 Mar 2017
TP39 0-0.1	SE163472.040	LB121254	21 Mar 2017	21 Mar 2017	18 Apr 2017	29 Mar 2017	18 Apr 2017	31 Mar 2017
TP45 0-0.15	SE163472.045	LB121254	21 Mar 2017	21 Mar 2017	18 Apr 2017	29 Mar 2017	18 Apr 2017	31 Mar 2017
TP49 0-0.15	SE163472.049	LB121254	21 Mar 2017	21 Mar 2017	18 Apr 2017	29 Mar 2017	18 Apr 2017	31 Mar 2017
TP52 0.4-0.5	SE163472.051	LB121254	21 Mar 2017	21 Mar 2017	18 Apr 2017	29 Mar 2017	18 Apr 2017	31 Mar 2017

Gravimetric Determination of Asbestos in Soil

Method: ME-(AU)-[ENV]AN605

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP1 0-0.15	SE163472.001	LB121298	20 Mar 2017	21 Mar 2017	16 Sep 2017	29 Mar 2017	16 Sep 2017	30 Mar 2017
TP2 0-0.15	SE163472.002	LB121298	20 Mar 2017	21 Mar 2017	16 Sep 2017	29 Mar 2017	16 Sep 2017	30 Mar 2017
TP3 0-0.15	SE163472.003	LB121298	20 Mar 2017	21 Mar 2017	16 Sep 2017	29 Mar 2017	16 Sep 2017	30 Mar 2017
TP3 0.5-0.65	SE163472.004	LB121298	20 Mar 2017	21 Mar 2017	16 Sep 2017	29 Mar 2017	16 Sep 2017	30 Mar 2017
TP6 0-0.15	SE163472.007	LB121298	20 Mar 2017	21 Mar 2017	16 Sep 2017	29 Mar 2017	16 Sep 2017	30 Mar 2017
TP7 0-0.15	SE163472.008	LB121298	20 Mar 2017	21 Mar 2017	16 Sep 2017	29 Mar 2017	16 Sep 2017	30 Mar 2017
TP8 0-0.15	SE163472.009	LB121298	20 Mar 2017	21 Mar 2017	16 Sep 2017	29 Mar 2017	16 Sep 2017	30 Mar 2017
TP10 0-0.15	SE163472.011	LB121298	20 Mar 2017	21 Mar 2017	16 Sep 2017	29 Mar 2017	16 Sep 2017	30 Mar 2017
TP10 0.5-0.65	SE163472.012	LB121298	20 Mar 2017	21 Mar 2017	16 Sep 2017	29 Mar 2017	16 Sep 2017	30 Mar 2017
TP11 0-0.15	SE163472.013	LB121298	20 Mar 2017	21 Mar 2017	16 Sep 2017	29 Mar 2017	16 Sep 2017	30 Mar 2017
TP12 0-0.15	SE163472.014	LB121298	20 Mar 2017	21 Mar 2017	16 Sep 2017	29 Mar 2017	16 Sep 2017	30 Mar 2017
TP12 0.5-0.65	SE163472.015	LB121298	20 Mar 2017	21 Mar 2017	16 Sep 2017	29 Mar 2017	16 Sep 2017	30 Mar 2017
TP15 0-0.1	SE163472.017	LB121298	20 Mar 2017	21 Mar 2017	16 Sep 2017	29 Mar 2017	16 Sep 2017	30 Mar 2017
TP17 0-0.15	SE163472.019	LB121298	20 Mar 2017	21 Mar 2017	16 Sep 2017	29 Mar 2017	16 Sep 2017	30 Mar 2017
TP22 0-0.15	SE163472.024	LB121298	20 Mar 2017	21 Mar 2017	16 Sep 2017	29 Mar 2017	16 Sep 2017	30 Mar 2017
TP23 0-0.15	SE163472.025	LB121298	21 Mar 2017	21 Mar 2017	17 Sep 2017	29 Mar 2017	17 Sep 2017	30 Mar 2017
TP23 0.3-0.4	SE163472.026	LB121298	21 Mar 2017	21 Mar 2017	17 Sep 2017	29 Mar 2017	17 Sep 2017	30 Mar 2017
TP24 0-0.1	SE163472.027	LB121298	21 Mar 2017	21 Mar 2017	17 Sep 2017	29 Mar 2017	17 Sep 2017	30 Mar 2017
TP27 0-0.1	SE163472.028	LB121298	21 Mar 2017	21 Mar 2017	17 Sep 2017	29 Mar 2017	17 Sep 2017	30 Mar 2017
TP33 0-0.15	SE163472.034	LB121298	21 Mar 2017	21 Mar 2017	17 Sep 2017	29 Mar 2017	17 Sep 2017	30 Mar 2017
TP39 0-0.1	SE163472.040	LB121298	21 Mar 2017	21 Mar 2017	17 Sep 2017	29 Mar 2017	17 Sep 2017	30 Mar 2017
TP44 0-0.15	SE163472.044	LB121298	21 Mar 2017	21 Mar 2017	17 Sep 2017	29 Mar 2017	17 Sep 2017	30 Mar 2017
TP46 0-0.15	SE163472.046	LB121298	21 Mar 2017	21 Mar 2017	17 Sep 2017	29 Mar 2017	17 Sep 2017	30 Mar 2017
TP49 0-0.15	SE163472.049	LB121298	21 Mar 2017	21 Mar 2017	17 Sep 2017	29 Mar 2017	17 Sep 2017	30 Mar 2017
TP52 0-0.15	SE163472.050	LB121298	21 Mar 2017	21 Mar 2017	17 Sep 2017	29 Mar 2017	17 Sep 2017	30 Mar 2017
TP52 0.4-0.5	SE163472.051	LB121298	21 Mar 2017	21 Mar 2017	17 Sep 2017	29 Mar 2017	17 Sep 2017	30 Mar 2017

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
Rinsate R1	SE163472.058	LB121175	20 Mar 2017	21 Mar 2017	17 Apr 2017	28 Mar 2017	17 Apr 2017	29 Mar 2017
Rinsate R2	SE163472.079	LB121175	21 Mar 2017	21 Mar 2017	18 Apr 2017	28 Mar 2017	18 Apr 2017	29 Mar 2017

Mercury in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
C601	SE163472.061	LB121208	20 Mar 2017	21 Mar 2017	17 Apr 2017	28 Mar 2017	17 Apr 2017	30 Mar 2017
C602	SE163472.062	LB121208	20 Mar 2017	21 Mar 2017	17 Apr 2017	28 Mar 2017	17 Apr 2017	30 Mar 2017
C603	SE163472.063	LB121208	20 Mar 2017	21 Mar 2017	17 Apr 2017	28 Mar 2017	17 Apr 2017	30 Mar 2017
C604	SE163472.064	LB121208	20 Mar 2017	21 Mar 2017	17 Apr 2017	28 Mar 2017	17 Apr 2017	30 Mar 2017
C605	SE163472.065	LB121208	20 Mar 2017	21 Mar 2017	17 Apr 2017	28 Mar 2017	17 Apr 2017	30 Mar 2017
C606	SE163472.066	LB121208	21 Mar 2017	21 Mar 2017	18 Apr 2017	28 Mar 2017	18 Apr 2017	30 Mar 2017
C607	SE163472.067	LB121208	21 Mar 2017	21 Mar 2017	18 Apr 2017	28 Mar 2017	18 Apr 2017	30 Mar 2017
C608	SE163472.068	LB121208	21 Mar 2017	21 Mar 2017	18 Apr 2017	28 Mar 2017	18 Apr 2017	30 Mar 2017
C609	SE163472.069	LB121208	21 Mar 2017	21 Mar 2017	18 Apr 2017	28 Mar 2017	18 Apr 2017	30 Mar 2017

HOLDING TIME SUMMARY

SE163472 R0

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

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

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

Mercury in Soil (continued)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
C610	SE163472.070	LB121208	21 Mar 2017	21 Mar 2017	18 Apr 2017	28 Mar 2017	18 Apr 2017	30 Mar 2017
C611	SE163472.071	LB121208	21 Mar 2017	21 Mar 2017	18 Apr 2017	28 Mar 2017	18 Apr 2017	30 Mar 2017
C612	SE163472.072	LB121210	21 Mar 2017	21 Mar 2017	18 Apr 2017	28 Mar 2017	18 Apr 2017	30 Mar 2017
C613	SE163472.073	LB121210	21 Mar 2017	21 Mar 2017	18 Apr 2017	28 Mar 2017	18 Apr 2017	30 Mar 2017
C614	SE163472.074	LB121210	21 Mar 2017	21 Mar 2017	18 Apr 2017	28 Mar 2017	18 Apr 2017	30 Mar 2017
C615	SE163472.075	LB121210	21 Mar 2017	21 Mar 2017	18 Apr 2017	28 Mar 2017	18 Apr 2017	30 Mar 2017
C616	SE163472.076	LB121210	21 Mar 2017	21 Mar 2017	18 Apr 2017	28 Mar 2017	18 Apr 2017	30 Mar 2017
Duplicate CD1	SE163472.077	LB121210	21 Mar 2017	21 Mar 2017	18 Apr 2017	28 Mar 2017	18 Apr 2017	30 Mar 2017
Duplicate CD2	SE163472.078	LB121210	21 Mar 2017	21 Mar 2017	18 Apr 2017	28 Mar 2017	18 Apr 2017	30 Mar 2017

Metals in Water (Dissolved) by ICPOES

Method: ME-(AU)-[ENV]AN320/AN321

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Rinsate R1	SE163472.058	LB121333	20 Mar 2017	21 Mar 2017	16 Sep 2017	30 Mar 2017	16 Sep 2017	30 Mar 2017
Rinsate R2	SE163472.079	LB121333	21 Mar 2017	21 Mar 2017	17 Sep 2017	30 Mar 2017	17 Sep 2017	30 Mar 2017

Moisture Content

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP1 0-0.15	SE163472.001	LB121121	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	01 Apr 2017	29 Mar 2017
TP2 0-0.15	SE163472.002	LB121121	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
TP3 0-0.15	SE163472.003	LB121121	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
TP4 0-0.15	SE163472.005	LB121121	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	01 Apr 2017	29 Mar 2017
TP5 0-0.15	SE163472.006	LB121121	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
TP6 0-0.15	SE163472.007	LB121121	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	01 Apr 2017	29 Mar 2017
TP7 0-0.15	SE163472.008	LB121121	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
TP8 0-0.15	SE163472.009	LB121121	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
TP9 0-0.15	SE163472.010	LB121121	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	01 Apr 2017	29 Mar 2017
TP10 0-0.15	SE163472.011	LB121121	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	01 Apr 2017	29 Mar 2017
TP11 0-0.15	SE163472.013	LB121121	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
TP12 0-0.15	SE163472.014	LB121121	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
TP13 0-0.15	SE163472.016	LB121121	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
TP15 0-0.1	SE163472.017	LB121121	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	01 Apr 2017	29 Mar 2017
TP16 0-0.15	SE163472.018	LB121121	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
TP17 0-0.15	SE163472.019	LB121121	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
TP18 0-0.15	SE163472.020	LB121121	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	01 Apr 2017	29 Mar 2017
TP19 0-0.15	SE163472.021	LB121121	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	01 Apr 2017	29 Mar 2017
TP20 0-0.15	SE163472.022	LB121121	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	01 Apr 2017	29 Mar 2017
TP21 0-0.15	SE163472.023	LB121121	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	01 Apr 2017	29 Mar 2017
TP22 0-0.15	SE163472.024	LB121121	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
TP23 0-0.15	SE163472.025	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	29 Mar 2017
TP23 0.3-0.4	SE163472.026	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
TP24 0-0.1	SE163472.027	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
TP27 0-0.1	SE163472.028	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
TP28 0-0.15	SE163472.029	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
TP29 0-0.15	SE163472.030	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	29 Mar 2017
TP30 0-0.15	SE163472.031	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
TP31 0-0.15	SE163472.032	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
TP32 0-0.15	SE163472.033	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
TP33 0-0.15	SE163472.034	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	29 Mar 2017
TP34 0-0.15	SE163472.035	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	29 Mar 2017
TP35 0-0.15	SE163472.036	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
TP36 0-0.15	SE163472.037	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
TP37 0-0.15	SE163472.038	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
TP38 0-0.15	SE163472.039	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
TP39 0-0.1	SE163472.040	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	29 Mar 2017
TP41 0-0.15	SE163472.041	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
TP42 0-0.15	SE163472.042	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
TP43 0-0.15	SE163472.043	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
TP44 0-0.15	SE163472.044	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
TP45 0-0.15	SE163472.045	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	29 Mar 2017
TP46 0-0.15	SE163472.046	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
TP47 0-0.15	SE163472.047	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017

HOLDING TIME SUMMARY

SE163472 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.

Moisture Content (continued)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP48 0-0.15	SE163472.048	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
TP49 0-0.15	SE163472.049	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	29 Mar 2017
TP52 0-0.15	SE163472.050	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
TP52 0.4-0.5	SE163472.051	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	29 Mar 2017
X1	SE163472.052	LB121121	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	01 Apr 2017	29 Mar 2017
X2	SE163472.053	LB121121	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
X3	SE163472.054	LB121121	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
X4	SE163472.055	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
X5	SE163472.056	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
X6	SE163472.057	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
C601	SE163472.061	LB121121	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
C602	SE163472.062	LB121121	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
C603	SE163472.063	LB121121	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
C604	SE163472.064	LB121121	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
C605	SE163472.065	LB121121	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
C606	SE163472.066	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
C607	SE163472.067	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
C608	SE163472.068	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
C609	SE163472.069	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
C610	SE163472.070	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
C611	SE163472.071	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
C612	SE163472.072	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
C613	SE163472.073	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
C614	SE163472.074	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
C615	SE163472.075	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
C616	SE163472.076	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
Duplicate CD1	SE163472.077	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017
Duplicate CD2	SE163472.078	LB121121	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	01 Apr 2017	30 Mar 2017

OC Pesticides in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP1 0-0.15	SE163472.001	LB121150	20 Mar 2017	21 Mar 2017	03 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
TP6 0-0.15	SE163472.007	LB121150	20 Mar 2017	21 Mar 2017	03 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
TP10 0-0.15	SE163472.011	LB121150	20 Mar 2017	21 Mar 2017	03 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
TP15 0-0.1	SE163472.017	LB121150	20 Mar 2017	21 Mar 2017	03 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
TP23 0-0.15	SE163472.025	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
TP33 0-0.15	SE163472.034	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
TP39 0-0.1	SE163472.040	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
TP49 0-0.15	SE163472.049	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
TP52 0.4-0.5	SE163472.051	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
X1	SE163472.052	LB121150	20 Mar 2017	21 Mar 2017	03 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
C601	SE163472.061	LB121150	20 Mar 2017	21 Mar 2017	03 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
C602	SE163472.062	LB121150	20 Mar 2017	21 Mar 2017	03 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
C604	SE163472.064	LB121150	20 Mar 2017	21 Mar 2017	03 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
C606	SE163472.066	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
C608	SE163472.068	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
C609	SE163472.069	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
C610	SE163472.070	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
C611	SE163472.071	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
C612	SE163472.072	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
C613	SE163472.073	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
C614	SE163472.074	LB121151	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
C616	SE163472.076	LB121151	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
Duplicate CD1	SE163472.077	LB121151	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017

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
TP1 0-0.15	SE163472.001	LB121150	20 Mar 2017	21 Mar 2017	03 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
TP6 0-0.15	SE163472.007	LB121150	20 Mar 2017	21 Mar 2017	03 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
TP10 0-0.15	SE163472.011	LB121150	20 Mar 2017	21 Mar 2017	03 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
TP15 0-0.1	SE163472.017	LB121150	20 Mar 2017	21 Mar 2017	03 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017

HOLDING TIME SUMMARY

SE163472 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.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP23 0-0.15	SE163472.025	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
TP33 0-0.15	SE163472.034	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
TP39 0-0.1	SE163472.040	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
TP49 0-0.15	SE163472.049	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
TP52 0.4-0.5	SE163472.051	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
X1	SE163472.052	LB121150	20 Mar 2017	21 Mar 2017	03 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
C601	SE163472.061	LB121150	20 Mar 2017	21 Mar 2017	03 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
C602	SE163472.062	LB121150	20 Mar 2017	21 Mar 2017	03 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
C604	SE163472.064	LB121150	20 Mar 2017	21 Mar 2017	03 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
C606	SE163472.066	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
C608	SE163472.068	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
C609	SE163472.069	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
C610	SE163472.070	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
C611	SE163472.071	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
C612	SE163472.072	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
C613	SE163472.073	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
C614	SE163472.074	LB121151	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
C616	SE163472.076	LB121151	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
Duplicate CD1	SE163472.077	LB121151	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017

PCBs in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP1 0-0.15	SE163472.001	LB121150	20 Mar 2017	21 Mar 2017	03 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
TP6 0-0.15	SE163472.007	LB121150	20 Mar 2017	21 Mar 2017	03 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
TP10 0-0.15	SE163472.011	LB121150	20 Mar 2017	21 Mar 2017	03 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
TP15 0-0.1	SE163472.017	LB121150	20 Mar 2017	21 Mar 2017	03 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
TP23 0-0.15	SE163472.025	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
TP33 0-0.15	SE163472.034	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
TP39 0-0.1	SE163472.040	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
TP49 0-0.15	SE163472.049	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
TP52 0.4-0.5	SE163472.051	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
X1	SE163472.052	LB121150	20 Mar 2017	21 Mar 2017	03 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
C601	SE163472.061	LB121150	20 Mar 2017	21 Mar 2017	03 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
C602	SE163472.062	LB121150	20 Mar 2017	21 Mar 2017	03 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
C604	SE163472.064	LB121150	20 Mar 2017	21 Mar 2017	03 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
C606	SE163472.066	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
C608	SE163472.068	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
C609	SE163472.069	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
C610	SE163472.070	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
C611	SE163472.071	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
C612	SE163472.072	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
C613	SE163472.073	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
C614	SE163472.074	LB121151	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
C616	SE163472.076	LB121151	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
Duplicate CD1	SE163472.077	LB121151	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017

pH in soil (1:5)

Method: ME-(AU)-[ENV]AN101

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP1 0-0.15	SE163472.001	LB121107	20 Mar 2017	21 Mar 2017	27 Mar 2017	27 Mar 2017	28 Mar 2017	27 Mar 2017
TP4 0-0.15	SE163472.005	LB121107	20 Mar 2017	21 Mar 2017	27 Mar 2017	27 Mar 2017	28 Mar 2017	27 Mar 2017
TP6 0-0.15	SE163472.007	LB121107	20 Mar 2017	21 Mar 2017	27 Mar 2017	27 Mar 2017	28 Mar 2017	27 Mar 2017
TP9 0-0.15	SE163472.010	LB121107	20 Mar 2017	21 Mar 2017	27 Mar 2017	27 Mar 2017	28 Mar 2017	27 Mar 2017
TP15 0-0.1	SE163472.017	LB121107	20 Mar 2017	21 Mar 2017	27 Mar 2017	27 Mar 2017	28 Mar 2017	27 Mar 2017
TP18 0-0.15	SE163472.020	LB121107	20 Mar 2017	21 Mar 2017	27 Mar 2017	27 Mar 2017	28 Mar 2017	27 Mar 2017
TP19 0-0.15	SE163472.021	LB121107	20 Mar 2017	21 Mar 2017	27 Mar 2017	27 Mar 2017	28 Mar 2017	27 Mar 2017
TP20 0-0.15	SE163472.022	LB121107	20 Mar 2017	21 Mar 2017	27 Mar 2017	27 Mar 2017	28 Mar 2017	27 Mar 2017
TP21 0-0.15	SE163472.023	LB121107	20 Mar 2017	21 Mar 2017	27 Mar 2017	27 Mar 2017	28 Mar 2017	27 Mar 2017
TP29 0-0.15	SE163472.030	LB121107	21 Mar 2017	21 Mar 2017	28 Mar 2017	27 Mar 2017	28 Mar 2017	27 Mar 2017
TP34 0-0.15	SE163472.035	LB121107	21 Mar 2017	21 Mar 2017	28 Mar 2017	27 Mar 2017	28 Mar 2017	27 Mar 2017
TP39 0-0.1	SE163472.040	LB121107	21 Mar 2017	21 Mar 2017	28 Mar 2017	27 Mar 2017	28 Mar 2017	27 Mar 2017
TP45 0-0.15	SE163472.045	LB121107	21 Mar 2017	21 Mar 2017	28 Mar 2017	27 Mar 2017	28 Mar 2017	27 Mar 2017

HOLDING TIME SUMMARY

SE163472 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.

pH in soil (1:5) (continued)

Method: ME-(AU)-[ENV]AN101

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP49 0-0.15	SE163472.049	LB121107	21 Mar 2017	21 Mar 2017	28 Mar 2017	27 Mar 2017	28 Mar 2017	27 Mar 2017
TP52 0.4-0.5	SE163472.051	LB121107	21 Mar 2017	21 Mar 2017	28 Mar 2017	27 Mar 2017	28 Mar 2017	27 Mar 2017

Total Recoverable Metals 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
C601	SE163472.061	LB121246	20 Mar 2017	21 Mar 2017	16 Sep 2017	28 Mar 2017	16 Sep 2017	31 Mar 2017
C602	SE163472.062	LB121246	20 Mar 2017	21 Mar 2017	16 Sep 2017	28 Mar 2017	16 Sep 2017	31 Mar 2017
C603	SE163472.063	LB121246	20 Mar 2017	21 Mar 2017	16 Sep 2017	28 Mar 2017	16 Sep 2017	31 Mar 2017
C604	SE163472.064	LB121246	20 Mar 2017	21 Mar 2017	16 Sep 2017	28 Mar 2017	16 Sep 2017	31 Mar 2017
C605	SE163472.065	LB121246	20 Mar 2017	21 Mar 2017	16 Sep 2017	28 Mar 2017	16 Sep 2017	31 Mar 2017
C606	SE163472.066	LB121246	21 Mar 2017	21 Mar 2017	17 Sep 2017	28 Mar 2017	17 Sep 2017	31 Mar 2017
C607	SE163472.067	LB121246	21 Mar 2017	21 Mar 2017	17 Sep 2017	28 Mar 2017	17 Sep 2017	31 Mar 2017
C608	SE163472.068	LB121246	21 Mar 2017	21 Mar 2017	17 Sep 2017	28 Mar 2017	17 Sep 2017	31 Mar 2017
C609	SE163472.069	LB121246	21 Mar 2017	21 Mar 2017	17 Sep 2017	28 Mar 2017	17 Sep 2017	31 Mar 2017
C610	SE163472.070	LB121246	21 Mar 2017	21 Mar 2017	17 Sep 2017	28 Mar 2017	17 Sep 2017	31 Mar 2017
C611	SE163472.071	LB121246	21 Mar 2017	21 Mar 2017	17 Sep 2017	28 Mar 2017	17 Sep 2017	31 Mar 2017
C612	SE163472.072	LB121246	21 Mar 2017	21 Mar 2017	17 Sep 2017	28 Mar 2017	17 Sep 2017	31 Mar 2017
C613	SE163472.073	LB121246	21 Mar 2017	21 Mar 2017	17 Sep 2017	28 Mar 2017	17 Sep 2017	31 Mar 2017
C614	SE163472.074	LB121246	21 Mar 2017	21 Mar 2017	17 Sep 2017	28 Mar 2017	17 Sep 2017	31 Mar 2017
C615	SE163472.075	LB121246	21 Mar 2017	21 Mar 2017	17 Sep 2017	28 Mar 2017	17 Sep 2017	31 Mar 2017
C616	SE163472.076	LB121247	21 Mar 2017	21 Mar 2017	17 Sep 2017	29 Mar 2017	17 Sep 2017	30 Mar 2017
Duplicate CD1	SE163472.077	LB121247	21 Mar 2017	21 Mar 2017	17 Sep 2017	29 Mar 2017	17 Sep 2017	30 Mar 2017
Duplicate CD2	SE163472.078	LB121247	21 Mar 2017	21 Mar 2017	17 Sep 2017	29 Mar 2017	17 Sep 2017	30 Mar 2017

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
TP1 0-0.15	SE163472.001	LB121150	20 Mar 2017	21 Mar 2017	03 Apr 2017	28 Mar 2017	07 May 2017	29 Mar 2017
TP6 0-0.15	SE163472.007	LB121150	20 Mar 2017	21 Mar 2017	03 Apr 2017	28 Mar 2017	07 May 2017	29 Mar 2017
TP10 0-0.15	SE163472.011	LB121150	20 Mar 2017	21 Mar 2017	03 Apr 2017	28 Mar 2017	07 May 2017	29 Mar 2017
TP15 0-0.1	SE163472.017	LB121150	20 Mar 2017	21 Mar 2017	03 Apr 2017	28 Mar 2017	07 May 2017	29 Mar 2017
TP23 0-0.15	SE163472.025	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	29 Mar 2017
TP33 0-0.15	SE163472.034	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	29 Mar 2017
TP39 0-0.1	SE163472.040	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	29 Mar 2017
TP49 0-0.15	SE163472.049	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	29 Mar 2017
TP52 0.4-0.5	SE163472.051	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	29 Mar 2017
X1	SE163472.052	LB121150	20 Mar 2017	21 Mar 2017	03 Apr 2017	28 Mar 2017	07 May 2017	29 Mar 2017
C601	SE163472.061	LB121150	20 Mar 2017	21 Mar 2017	03 Apr 2017	28 Mar 2017	07 May 2017	29 Mar 2017
C602	SE163472.062	LB121150	20 Mar 2017	21 Mar 2017	03 Apr 2017	28 Mar 2017	07 May 2017	29 Mar 2017
C604	SE163472.064	LB121150	20 Mar 2017	21 Mar 2017	03 Apr 2017	28 Mar 2017	07 May 2017	29 Mar 2017
C606	SE163472.066	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	29 Mar 2017
C608	SE163472.068	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	29 Mar 2017
C609	SE163472.069	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	29 Mar 2017
C610	SE163472.070	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	29 Mar 2017
C611	SE163472.071	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	29 Mar 2017
C612	SE163472.072	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	29 Mar 2017
C613	SE163472.073	LB121150	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	29 Mar 2017
C614	SE163472.074	LB121151	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	29 Mar 2017
C616	SE163472.076	LB121151	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	29 Mar 2017
Duplicate CD1	SE163472.077	LB121151	21 Mar 2017	21 Mar 2017	04 Apr 2017	28 Mar 2017	07 May 2017	29 Mar 2017

VOC's in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP1 0-0.15	SE163472.001	LB121106	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	06 May 2017	29 Mar 2017
TP6 0-0.15	SE163472.007	LB121106	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	06 May 2017	29 Mar 2017
TP10 0-0.15	SE163472.011	LB121106	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	06 May 2017	29 Mar 2017
TP15 0-0.1	SE163472.017	LB121106	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	06 May 2017	29 Mar 2017
TP23 0-0.15	SE163472.025	LB121106	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	06 May 2017	29 Mar 2017
TP33 0-0.15	SE163472.034	LB121106	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	06 May 2017	29 Mar 2017
TP39 0-0.1	SE163472.040	LB121106	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	06 May 2017	29 Mar 2017
TP49 0-0.15	SE163472.049	LB121106	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	06 May 2017	29 Mar 2017
TP52 0.4-0.5	SE163472.051	LB121106	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	06 May 2017	29 Mar 2017

HOLDING TIME SUMMARY

SE163472 R0

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

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

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

VOC's in Soil (continued)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
X1	SE163472.052	LB121106	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	06 May 2017	29 Mar 2017
Tripspike TS1	SE163472.059	LB121106	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	06 May 2017	29 Mar 2017
Tripspike TS2	SE163472.060	LB121106	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	06 May 2017	29 Mar 2017

Volatile Petroleum Hydrocarbons in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP1 0-0.15	SE163472.001	LB121106	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	06 May 2017	29 Mar 2017
TP6 0-0.15	SE163472.007	LB121106	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	06 May 2017	29 Mar 2017
TP10 0-0.15	SE163472.011	LB121106	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	06 May 2017	29 Mar 2017
TP15 0-0.1	SE163472.017	LB121106	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	06 May 2017	29 Mar 2017
TP23 0-0.15	SE163472.025	LB121106	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	06 May 2017	29 Mar 2017
TP33 0-0.15	SE163472.034	LB121106	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	06 May 2017	29 Mar 2017
TP39 0-0.1	SE163472.040	LB121106	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	06 May 2017	29 Mar 2017
TP49 0-0.15	SE163472.049	LB121106	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	06 May 2017	29 Mar 2017
TP52 0.4-0.5	SE163472.051	LB121106	21 Mar 2017	21 Mar 2017	04 Apr 2017	27 Mar 2017	06 May 2017	29 Mar 2017
X1	SE163472.052	LB121106	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	06 May 2017	29 Mar 2017
Tripspike TS1	SE163472.059	LB121106	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	06 May 2017	29 Mar 2017
Tripspike TS2	SE163472.060	LB121106	20 Mar 2017	21 Mar 2017	03 Apr 2017	27 Mar 2017	06 May 2017	29 Mar 2017

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)	C601	SE163472.061	%	60 - 130%	116
	C602	SE163472.062	%	60 - 130%	91
	C604	SE163472.064	%	60 - 130%	93
	C606	SE163472.066	%	60 - 130%	97
	C608	SE163472.068	%	60 - 130%	96
	C609	SE163472.069	%	60 - 130%	95
	C610	SE163472.070	%	60 - 130%	95
	C611	SE163472.071	%	60 - 130%	96
	C612	SE163472.072	%	60 - 130%	92
	C613	SE163472.073	%	60 - 130%	92
	C614	SE163472.074	%	60 - 130%	112
	C616	SE163472.076	%	60 - 130%	93
	Duplicate CD1	SE163472.077	%	60 - 130%	117

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	TP1 0-0.15	SE163472.001	%	70 - 130%	94
	TP6 0-0.15	SE163472.007	%	70 - 130%	96
	TP10 0-0.15	SE163472.011	%	70 - 130%	96
	TP15 0-0.1	SE163472.017	%	70 - 130%	94
	TP23 0-0.15	SE163472.025	%	70 - 130%	96
	TP33 0-0.15	SE163472.034	%	70 - 130%	92
	TP39 0-0.1	SE163472.040	%	70 - 130%	94
	TP49 0-0.15	SE163472.049	%	70 - 130%	92
	TP52 0.4-0.5	SE163472.051	%	70 - 130%	96
	X1	SE163472.052	%	70 - 130%	94
d14-p-terphenyl (Surrogate)	TP1 0-0.15	SE163472.001	%	70 - 130%	98
	TP6 0-0.15	SE163472.007	%	70 - 130%	96
	TP10 0-0.15	SE163472.011	%	70 - 130%	94
	TP15 0-0.1	SE163472.017	%	70 - 130%	98
	TP23 0-0.15	SE163472.025	%	70 - 130%	100
	TP33 0-0.15	SE163472.034	%	70 - 130%	94
	TP39 0-0.1	SE163472.040	%	70 - 130%	96
	TP49 0-0.15	SE163472.049	%	70 - 130%	90
	TP52 0.4-0.5	SE163472.051	%	70 - 130%	94
	X1	SE163472.052	%	70 - 130%	96
d5-nitrobenzene (Surrogate)	TP1 0-0.15	SE163472.001	%	70 - 130%	96
	TP6 0-0.15	SE163472.007	%	70 - 130%	94
	TP10 0-0.15	SE163472.011	%	70 - 130%	96
	TP15 0-0.1	SE163472.017	%	70 - 130%	94
	TP23 0-0.15	SE163472.025	%	70 - 130%	98
	TP33 0-0.15	SE163472.034	%	70 - 130%	94
	TP39 0-0.1	SE163472.040	%	70 - 130%	100
	TP49 0-0.15	SE163472.049	%	70 - 130%	98
	TP52 0.4-0.5	SE163472.051	%	70 - 130%	102
	X1	SE163472.052	%	70 - 130%	102

PCBs in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	C601	SE163472.061	%	60 - 130%	116
	C602	SE163472.062	%	60 - 130%	91
	C604	SE163472.064	%	60 - 130%	93
	C606	SE163472.066	%	60 - 130%	97
	C608	SE163472.068	%	60 - 130%	96
	C612	SE163472.072	%	60 - 130%	92
	C613	SE163472.073	%	60 - 130%	92
	C614	SE163472.074	%	60 - 130%	112
	C616	SE163472.076	%	60 - 130%	93
	Duplicate CD1	SE163472.077	%	60 - 130%	117

VOC's in Soil

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

Parameter	Sample Name	Sample Number	Units

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

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

VOC's in Soil (continued)

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	TP1 0-0.15	SE163472.001	%	60 - 130%	96
	TP6 0-0.15	SE163472.007	%	60 - 130%	94
	TP10 0-0.15	SE163472.011	%	60 - 130%	97
	TP15 0-0.1	SE163472.017	%	60 - 130%	97
	TP23 0-0.15	SE163472.025	%	60 - 130%	99
	TP33 0-0.15	SE163472.034	%	60 - 130%	95
	TP39 0-0.1	SE163472.040	%	60 - 130%	104
	TP49 0-0.15	SE163472.049	%	60 - 130%	98
	TP52 0.4-0.5	SE163472.051	%	60 - 130%	96
	X1	SE163472.052	%	60 - 130%	96
	Tripspike TS1	SE163472.059	%	60 - 130%	96
	Tripspike TS2	SE163472.060	%	60 - 130%	96
d4-1,2-dichloroethane (Surrogate)	TP1 0-0.15	SE163472.001	%	60 - 130%	83
	TP6 0-0.15	SE163472.007	%	60 - 130%	89
	TP10 0-0.15	SE163472.011	%	60 - 130%	95
	TP15 0-0.1	SE163472.017	%	60 - 130%	91
	TP23 0-0.15	SE163472.025	%	60 - 130%	90
	TP33 0-0.15	SE163472.034	%	60 - 130%	91
	TP39 0-0.1	SE163472.040	%	60 - 130%	86
	TP49 0-0.15	SE163472.049	%	60 - 130%	96
	TP52 0.4-0.5	SE163472.051	%	60 - 130%	91
	X1	SE163472.052	%	60 - 130%	89
	Tripspike TS1	SE163472.059	%	60 - 130%	100
	Tripspike TS2	SE163472.060	%	60 - 130%	99
d8-toluene (Surrogate)	TP1 0-0.15	SE163472.001	%	60 - 130%	70
	TP6 0-0.15	SE163472.007	%	60 - 130%	77
	TP10 0-0.15	SE163472.011	%	60 - 130%	83
	TP15 0-0.1	SE163472.017	%	60 - 130%	80
	TP23 0-0.15	SE163472.025	%	60 - 130%	78
	TP33 0-0.15	SE163472.034	%	60 - 130%	78
	TP39 0-0.1	SE163472.040	%	60 - 130%	73
	TP49 0-0.15	SE163472.049	%	60 - 130%	83
	TP52 0.4-0.5	SE163472.051	%	60 - 130%	76
	X1	SE163472.052	%	60 - 130%	76
	Tripspike TS1	SE163472.059	%	60 - 130%	90
	Tripspike TS2	SE163472.060	%	60 - 130%	88
Dibromofluoromethane (Surrogate)	TP1 0-0.15	SE163472.001	%	60 - 130%	90
	TP6 0-0.15	SE163472.007	%	60 - 130%	74
	TP10 0-0.15	SE163472.011	%	60 - 130%	80
	TP15 0-0.1	SE163472.017	%	60 - 130%	77
	TP23 0-0.15	SE163472.025	%	60 - 130%	76
	TP33 0-0.15	SE163472.034	%	60 - 130%	75
	TP39 0-0.1	SE163472.040	%	60 - 130%	71
	TP49 0-0.15	SE163472.049	%	60 - 130%	78
	TP52 0.4-0.5	SE163472.051	%	60 - 130%	74
	X1	SE163472.052	%	60 - 130%	73
	Tripspike TS1	SE163472.059	%	60 - 130%	83
	Tripspike TS2	SE163472.060	%	60 - 130%	81

Volatile Petroleum Hydrocarbons in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	TP1 0-0.15	SE163472.001	%	60 - 130%	96
	TP6 0-0.15	SE163472.007	%	60 - 130%	94
	TP10 0-0.15	SE163472.011	%	60 - 130%	97
	TP15 0-0.1	SE163472.017	%	60 - 130%	97
	TP23 0-0.15	SE163472.025	%	60 - 130%	99
	TP33 0-0.15	SE163472.034	%	60 - 130%	95
	TP39 0-0.1	SE163472.040	%	60 - 130%	104
	TP49 0-0.15	SE163472.049	%	60 - 130%	98
	TP52 0.4-0.5	SE163472.051	%	60 - 130%	96
	X1	SE163472.052	%	60 - 130%	96

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 %
d4-1,2-dichloroethane (Surrogate)	TP1 0-0.15	SE163472.001	%	60 - 130%	83
	TP6 0-0.15	SE163472.007	%	60 - 130%	89
	TP10 0-0.15	SE163472.011	%	60 - 130%	95
	TP15 0-0.1	SE163472.017	%	60 - 130%	91
	TP23 0-0.15	SE163472.025	%	60 - 130%	90
	TP33 0-0.15	SE163472.034	%	60 - 130%	91
	TP39 0-0.1	SE163472.040	%	60 - 130%	86
	TP49 0-0.15	SE163472.049	%	60 - 130%	96
	TP52 0.4-0.5	SE163472.051	%	60 - 130%	91
	X1	SE163472.052	%	60 - 130%	89
d8-toluene (Surrogate)	TP1 0-0.15	SE163472.001	%	60 - 130%	70
	TP6 0-0.15	SE163472.007	%	60 - 130%	77
	TP10 0-0.15	SE163472.011	%	60 - 130%	83
	TP15 0-0.1	SE163472.017	%	60 - 130%	80
	TP23 0-0.15	SE163472.025	%	60 - 130%	78
	TP33 0-0.15	SE163472.034	%	60 - 130%	78
	TP39 0-0.1	SE163472.040	%	60 - 130%	73
	TP49 0-0.15	SE163472.049	%	60 - 130%	83
	TP52 0.4-0.5	SE163472.051	%	60 - 130%	76
	X1	SE163472.052	%	60 - 130%	76
Dibromofluoromethane (Surrogate)	TP1 0-0.15	SE163472.001	%	60 - 130%	90
	TP6 0-0.15	SE163472.007	%	60 - 130%	74
	TP10 0-0.15	SE163472.011	%	60 - 130%	80
	TP15 0-0.1	SE163472.017	%	60 - 130%	77
	TP23 0-0.15	SE163472.025	%	60 - 130%	76
	TP33 0-0.15	SE163472.034	%	60 - 130%	75
	TP39 0-0.1	SE163472.040	%	60 - 130%	71
	TP49 0-0.15	SE163472.049	%	60 - 130%	78
	TP52 0.4-0.5	SE163472.051	%	60 - 130%	74
	X1	SE163472.052	%	60 - 130%	73

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.

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR)

Method: ME-(AU)-[ENV]AN122

Sample Number	Parameter	Units	LOR

Mercury (dissolved) in Water

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

Sample Number	Parameter	Units	LOR	Result
LB121175.001	Mercury	mg/L	0.0001	<0.0001

Mercury in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB121208.001	Mercury	mg/kg	0.05	<0.05
LB121210.001	Mercury	mg/kg	0.05	<0.05

Metals in Water (Dissolved) by ICPOES

Method: ME-(AU)-[ENV]AN320/AN321

Sample Number	Parameter	Units	LOR	Result
LB121333.001	Arsenic, As	mg/L	0.02	<0.02
	Cadmium, Cd	mg/L	0.001	<0.001
	Chromium, Cr	mg/L	0.005	<0.005
	Copper, Cu	mg/L	0.005	<0.005
	Lead, Pb	mg/L	0.02	<0.02
	Nickel, Ni	mg/L	0.005	<0.005
	Zinc, Zn	mg/L	0.01	<0.01

OC Pesticides in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB121150.001		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	0.05	<0.05
		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)	%	-	89
LB121151.001		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

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.

OC Pesticides in Soil (continued)

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

Sample Number		Parameter	Units	LOR	Result
LB121151.001		p,p'-DDE	mg/kg	0.1	<0.1
		Dieldrin	mg/kg	0.05	<0.05
		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)	%	-	93

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB121150.001		Naphthalene	mg/kg	0.1	<0.1
		2-methylnaphthalene	mg/kg	0.1	<0.1
		1-methylnaphthalene	mg/kg	0.1	<0.1
		Acenaphthylene	mg/kg	0.1	<0.1
		Acenaphthene	mg/kg	0.1	<0.1
		Fluorene	mg/kg	0.1	<0.1
		Phenanthrene	mg/kg	0.1	<0.1
		Anthracene	mg/kg	0.1	<0.1
		Fluoranthene	mg/kg	0.1	<0.1
		Pyrene	mg/kg	0.1	<0.1
		Benzo(a)anthracene	mg/kg	0.1	<0.1
		Chrysene	mg/kg	0.1	<0.1
		Benzo(a)pyrene	mg/kg	0.1	<0.1
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1
		Dibenzo(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)	%	-	94
		2-fluorobiphenyl (Surrogate)	%	-	92
		d14-p-terphenyl (Surrogate)	%	-	94

PCBs in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB121150.001		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)	%	-	89
LB121151.001		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)	%	-	93

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 Metals in Soil/Waste Solids/Materials by ICPOES

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

Sample Number	Parameter	Units	LOR	Result
LB121246.001	Arsenic, As	mg/kg	3	<3
	Cadmium, Cd	mg/kg	0.3	<0.3
	Chromium, Cr	mg/kg	0.3	<0.3
	Copper, Cu	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Nickel, Ni	mg/kg	0.5	<0.5
	Zinc, Zn	mg/kg	0.5	<0.5
LB121247.001	Arsenic, As	mg/kg	3	<3
	Cadmium, Cd	mg/kg	0.3	<0.3
	Chromium, Cr	mg/kg	0.3	<0.3
	Copper, Cu	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Nickel, Ni	mg/kg	0.5	<0.5
	Zinc, Zn	mg/kg	0.5	<0.5

TRH (Total Recoverable Hydrocarbons) in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB121150.001	TRH C10-C14	mg/kg	20	<20
	TRH C15-C28	mg/kg	45	<45
	TRH C29-C36	mg/kg	45	<45
	TRH C37-C40	mg/kg	100	<100
	TRH C10-C36 Total	mg/kg	110	<110

VOC's in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB121106.001	Monocyclic Aromatic	Benzene	mg/kg	0.1	<0.1
	Hydrocarbons	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)	%	-	94
		d4-1,2-dichloroethane (Surrogate)	%	-	104
		d8-toluene (Surrogate)	%	-	93
		Bromofluorobenzene (Surrogate)	%	-	98
	Totals	Total BTEX	mg/kg	0.6	<0.6

Volatile Petroleum Hydrocarbons in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB121106.001		TRH C6-C9	mg/kg	20	<20
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	94
		d4-1,2-dichloroethane (Surrogate)	%	-	104
		d8-toluene (Surrogate)	%	-	93

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

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

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

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

Mercury in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE163472.062	LB121208.014	Mercury	mg/kg	0.05	<0.05	<0.05	179	0
SE163472.071	LB121208.024	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE163482.003	LB121210.014	Mercury	mg/kg	0.05	<0.05	<0.05	193	0
SE163512.004	LB121210.024	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 %
SE163472.011	LB121121.011	% Moisture	%w/w	0.5	15	16	37	10
SE163472.023	LB121121.022	% Moisture	%w/w	0.5	25	25	34	0
SE163472.066	LB121121.066	% Moisture	%w/w	0.5	17	17	36	3
SE163472.076	LB121121.077	% Moisture	%w/w	0.5	15	14	37	5
SE163472.078	LB121121.080	% Moisture	%w/w	0.5	22	20	35	7

OC Pesticides in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE163472.066	LB121150.028		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	0.05	<0.05	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
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.15	0.148	30	1
SE163472.074	LB121151.025		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	0.05	<0.05	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

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

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

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

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

OC Pesticides in Soil (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE163472.074	LB121151.025		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
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.17	0.171	30	2

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE163472.052	LB121150.014		Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthylene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluorene	mg/kg	0.1	<0.1	<0.1	200	0
			Phenanthrene	mg/kg	0.1	<0.1	<0.1	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	TEQ (mg/kg)	0.2	<0.2	<0.2	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	134	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (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	-	0.5	0.5	30	4
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	4
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	6

PCBs in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE163472.066	LB121150.026		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
			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	0.148	30	1
SE163472.074	LB121151.025		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
			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	0.171	30	2

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.

pH in soil (1:5)

Method: ME-(AU)-[ENV]AN101

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE163472.005	LB121107.014	pH	pH Units	-	6.0	5.9	32	1
SE163472.051	LB121107.032	pH	pH Units	-	8.3	8.5	31	2

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

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE163457.005	LB121247.014	Arsenic, As	mg/kg	3	<3	<3	78	26
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.3	27	27	32	0
		Copper, Cu	mg/kg	0.5	23	12	33	61 ②
		Lead, Pb	mg/kg	1	9	9	41	8
		Nickel, Ni	mg/kg	0.5	4.6	4.2	41	8
		Zinc, Zn	mg/kg	0.5	16	13	44	18
SE163457.010	LB121247.020	Arsenic, As	mg/kg	3	7	7	44	10
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	154	0
		Chromium, Cr	mg/kg	0.3	19	18	33	7
		Copper, Cu	mg/kg	0.5	25	24	32	4
		Lead, Pb	mg/kg	1	110	100	31	8
		Nickel, Ni	mg/kg	0.5	8.5	9.6	36	12
		Zinc, Zn	mg/kg	0.5	80	79	33	1
SE163472.066	LB121246.014	Arsenic, As	mg/kg	3	7	7	44	5
		Cadmium, Cd	mg/kg	0.3	<0.3	0.3	129	10
		Chromium, Cr	mg/kg	0.3	9.8	11	35	9
		Copper, Cu	mg/kg	0.5	28	28	32	2
		Lead, Pb	mg/kg	1	25	26	34	5
		Nickel, Ni	mg/kg	0.5	9.7	10	35	6
		Zinc, Zn	mg/kg	0.5	76	77	33	2
SE163472.075	LB121246.024	Arsenic, As	mg/kg	3	7	6	45	23
		Cadmium, Cd	mg/kg	0.3	0.3	0.3	128	2
		Chromium, Cr	mg/kg	0.3	12	12	34	4
		Copper, Cu	mg/kg	0.5	17	17	33	2
		Lead, Pb	mg/kg	1	27	29	34	7
		Nickel, Ni	mg/kg	0.5	13	13	34	2
		Zinc, Zn	mg/kg	0.5	58	56	34	4

TRH (Total Recoverable Hydrocarbons) in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE163472.052	LB121150.014		TRH C10-C14	mg/kg	20	<20	<20	200	0
			TRH C15-C28	mg/kg	45	<45	<45	200	0
			TRH C29-C36	mg/kg	45	<45	<45	200	0
			TRH C37-C40	mg/kg	100	<100	<100	200	0
			TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
			TRH C10-C40 Total	mg/kg	210	<210	<210	200	0
		TRH F Bands	TRH >C10-C16 (F2)	mg/kg	25	<25	<25	200	0
			TRH >C10-C16 (F2) - Naphthalene	mg/kg	25	<25	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0

VOC's in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE163472.052	LB121106.014	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	-	3.7	4.1	50	11
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.4	4.2	50	6
			d8-toluene (Surrogate)	mg/kg	-	3.8	3.5	50	7
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.8	4.9	50	2
		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

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.

VOC's in Soil (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE163482.006	LB121106.023	Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
		Aromatic	Toluene	mg/kg	0.1	<0.1	<0.1	173	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	-	5.7	5.1	50	10
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.3	4.4	50	3
			d8-toluene (Surrogate)	mg/kg	-	3.5	3.6	50	3
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.7	4.7	50	0
		Totals	Total Xylenes*	mg/kg	0.3	<0.3	<0.3	200	0
			Total BTEX	mg/kg	0.6	<0.6	<0.6	200	0

Volatile Petroleum Hydrocarbons in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE163472.052	LB121106.014		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	-	3.7	4.1	30	11
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.4	4.2	30	6
			d8-toluene (Surrogate)	mg/kg	-	3.8	3.5	30	7
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.8	4.9	30	2
		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
SE163482.006	LB121106.023		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	-	5.7	5.1	30	10
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.3	4.4	30	3
			d8-toluene (Surrogate)	mg/kg	-	3.5	3.6	30	3
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.7	4.7	30	0
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0

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

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

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR)

Method: ME-(AU)-[ENV]AN122

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB121254.002	Exchangeable Sodium, Na	mg/kg	2	NA	390	80 - 120	91
	Exchangeable Potassium, K	mg/kg	2	NA	343	80 - 120	88
	Exchangeable Calcium, Ca	mg/kg	2	NA	2570	80 - 120	93
	Exchangeable Magnesium, Mg	mg/kg	2	NA	635	80 - 120	91

Mercury in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB121208.002	Mercury	mg/kg	0.05	0.19	0.2	70 - 130	96
LB121210.002	Mercury	mg/kg	0.05	0.19	0.2	70 - 130	96

Metals in Water (Dissolved) by ICPOES

Method: ME-(AU)-[ENV]AN320/AN321

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB121333.002	Arsenic, As	mg/L	0.02	1.9	2	80 - 120	97
	Cadmium, Cd	mg/L	0.001	2.0	2	80 - 120	100
	Chromium, Cr	mg/L	0.005	2.0	2	80 - 120	101
	Copper, Cu	mg/L	0.005	2.0	2	80 - 120	100
	Lead, Pb	mg/L	0.02	2.0	2	80 - 120	100
	Nickel, Ni	mg/L	0.005	2.0	2	80 - 120	101
	Zinc, Zn	mg/L	0.01	2.0	2	80 - 120	98

OC Pesticides in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB121150.002		Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	109
		Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	102
		Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	104
		Dieldrin	mg/kg	0.05	0.19	0.2	60 - 140	96
		Endrin	mg/kg	0.2	<0.2	0.2	60 - 140	82
		p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	121
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.13	0.15	40 - 130	88
LB121151.002		Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	111
		Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	112
		Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	116
		Dieldrin	mg/kg	0.05	0.21	0.2	60 - 140	103
		Endrin	mg/kg	0.2	0.2	0.2	60 - 140	112
		p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	117
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.14	0.15	40 - 130	90

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB121150.002		Naphthalene	mg/kg	0.1	4.4	4	60 - 140	111
		Acenaphthylene	mg/kg	0.1	4.4	4	60 - 140	110
		Acenaphthene	mg/kg	0.1	4.5	4	60 - 140	112
		Phenanthrene	mg/kg	0.1	4.4	4	60 - 140	109
		Anthracene	mg/kg	0.1	4.5	4	60 - 140	112
		Fluoranthene	mg/kg	0.1	4.4	4	60 - 140	111
		Pyrene	mg/kg	0.1	4.3	4	60 - 140	108
		Benzo(a)pyrene	mg/kg	0.1	4.6	4	60 - 140	114
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	98
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	96
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	96

PCBs in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB121150.002	Arochlor 1260	mg/kg	0.2	0.4	0.4	60 - 140	111
LB121151.002	Arochlor 1260	mg/kg	0.2	0.4	0.4	60 - 140	99

pH in soil (1:5)

Method: ME-(AU)-[ENV]AN101

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB121107.003	pH	pH Units	-	7.4	7.415	98 - 102	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.

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

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB121246.002		Arsenic, As	mg/kg	3	59	50	80 - 120	118
		Cadmium, Cd	mg/kg	0.3	55	50	80 - 120	110
		Chromium, Cr	mg/kg	0.3	47	50	80 - 120	94
		Copper, Cu	mg/kg	0.5	53	50	80 - 120	107
		Lead, Pb	mg/kg	1	56	50	80 - 120	111
		Nickel, Ni	mg/kg	0.5	51	50	80 - 120	102
		Zinc, Zn	mg/kg	0.5	55	50	80 - 120	109
LB121247.002		Arsenic, As	mg/kg	3	51	50	80 - 120	102
		Cadmium, Cd	mg/kg	0.3	51	50	80 - 120	102
		Chromium, Cr	mg/kg	0.3	51	50	80 - 120	101
		Copper, Cu	mg/kg	0.5	50	50	80 - 120	100
		Lead, Pb	mg/kg	1	51	50	80 - 120	102
		Nickel, Ni	mg/kg	0.5	51	50	80 - 120	102
		Zinc, Zn	mg/kg	0.5	51	50	80 - 120	103

TRH (Total Recoverable Hydrocarbons) in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB121150.002		TRH C10-C14	mg/kg	20	44	40	60 - 140	110
		TRH C15-C28	mg/kg	45	<45	40	60 - 140	108
		TRH C29-C36	mg/kg	45	<45	40	60 - 140	88
	TRH F Bands	TRH >C10-C16 (F2)	mg/kg	25	44	40	60 - 140	110
		TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	100
		TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	85

VOC's in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB121106.002	Monocyclic	Benzene	mg/kg	0.1	1.8	2.9	60 - 140	63
	Aromatic	Toluene	mg/kg	0.1	2.1	2.9	60 - 140	73
		Ethylbenzene	mg/kg	0.1	2.3	2.9	60 - 140	80
		m/p-xylene	mg/kg	0.2	4.8	5.8	60 - 140	83
		o-xylene	mg/kg	0.1	2.4	2.9	60 - 140	82
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.1	5	60 - 140	83
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.6	5	60 - 140	91
		d8-toluene (Surrogate)	mg/kg	-	4.2	5	60 - 140	84
		Bromofluorobenzene (Surrogate)	mg/kg	-	4.8	5	60 - 140	95

Volatile Petroleum Hydrocarbons in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB121106.002		TRH C6-C10	mg/kg	25	<25	24.65	60 - 140	86
		TRH C6-C9	mg/kg	20	<20	23.2	60 - 140	77
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.1	5	60 - 140	83
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.6	5	60 - 140	91
		d8-toluene (Surrogate)	mg/kg	-	4.2	5	60 - 140	84
		Bromofluorobenzene (Surrogate)	mg/kg	-	4.8	5	60 - 140	95
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	7.25	60 - 140	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.

Mercury (dissolved) in Water

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE163341.019	LB121175.004	Mercury	mg/L	0.0001	0.0070	<0.0001	0.008	89

Mercury in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE163472.072	LB121210.004	Mercury	mg/kg	0.05	0.19	<0.05	0.2	78

OC Pesticides in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Original	Spike	Recovery%
SE163472.069	LB121150.027		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	0.2	124
			Aldrin	mg/kg	0.1	<0.1	0.2	119
			Beta BHC	mg/kg	0.1	<0.1	-	-
			Delta BHC	mg/kg	0.1	<0.1	0.2	123
			Heptachlor epoxide	mg/kg	0.1	<0.1	-	-
			o,p'-DDE	mg/kg	0.1	<0.1	-	-
			Alpha Endosulfan	mg/kg	0.2	<0.2	-	-
			Gamma Chlordane	mg/kg	0.1	<0.1	-	-
			Alpha Chlordane	mg/kg	0.1	<0.1	-	-
			trans-Nonachlor	mg/kg	0.1	<0.1	-	-
			p,p'-DDE	mg/kg	0.1	<0.1	-	-
			Dieldrin	mg/kg	0.05	<0.05	0.2	111
			Endrin	mg/kg	0.2	<0.2	0.2	109
			o,p'-DDD	mg/kg	0.1	<0.1	-	-
			o,p'-DDT	mg/kg	0.1	<0.1	-	-
			Beta Endosulfan	mg/kg	0.2	<0.2	-	-
			p,p'-DDD	mg/kg	0.1	<0.1	-	-
			p,p'-DDT	mg/kg	0.1	<0.1	0.2	125
			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)	mg/kg	-	0.14	-	101

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Original	Spike	Recovery%
SE163472.017	LB121150.026	Naphthalene	mg/kg	0.1	<0.1	4	107
		2-methylnaphthalene	mg/kg	0.1	<0.1	-	-
		1-methylnaphthalene	mg/kg	0.1	<0.1	-	-
		Acenaphthylene	mg/kg	0.1	<0.1	4	105
		Acenaphthene	mg/kg	0.1	<0.1	4	105
		Fluorene	mg/kg	0.1	<0.1	-	-
		Phenanthrene	mg/kg	0.1	<0.1	4	105
		Anthracene	mg/kg	0.1	<0.1	4	107
		Fluoranthene	mg/kg	0.1	<0.1	4	108
		Pyrene	mg/kg	0.1	<0.1	4	120
		Benzo(a)anthracene	mg/kg	0.1	<0.1	-	-
		Chrysene	mg/kg	0.1	<0.1	-	-
		Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	-	-
		Benzo(k)fluoranthene	mg/kg	0.1	<0.1	-	-
		Benzo(a)pyrene	mg/kg	0.1	<0.1	4	105
		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	-	-
		Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ	0.2	<0.2	-	-

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

QC Sample	Sample Number		Parameter	Units	LOR	Original	Spike	Recovery%
SE163472.017	LB121150.026		Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	-	-
			Total PAH (18)	mg/kg	0.8	<0.8	-	-
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	-	94
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	-	92
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	-	94

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

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE163472.076	LB121247.004	Arsenic, As	mg/kg	3	45	4	50	81
		Cadmium, Cd	mg/kg	0.3	42	<0.3	50	84
		Chromium, Cr	mg/kg	0.3	51	9.4	50	83
		Copper, Cu	mg/kg	0.5	50	6.8	50	86
		Lead, Pb	mg/kg	1	54	15	50	77
		Nickel, Ni	mg/kg	0.5	49	4.5	50	90
		Zinc, Zn	mg/kg	0.5	69	24	50	90
SE163512.050	LB121246.004	Arsenic, As	mg/kg	3	61	10	50	100
		Cadmium, Cd	mg/kg	0.3	49	0.8	50	96
		Chromium, Cr	mg/kg	0.3	69	25	50	87
		Copper, Cu	mg/kg	0.5	110	58	50	107
		Lead, Pb	mg/kg	1	90	35	50	109
		Nickel, Ni	mg/kg	0.5	60	15	50	92
		Zinc, Zn	mg/kg	0.5	460	370	50	180 ⑨

TRH (Total Recoverable Hydrocarbons) in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Original	Spike	Recovery%
SE163472.017	LB121150.026		TRH C10-C14	mg/kg	20	<20	40	90
			TRH C15-C28	mg/kg	45	<45	40	88
			TRH C29-C36	mg/kg	45	<45	40	93
			TRH C37-C40	mg/kg	100	<100	-	-
			TRH C10-C36 Total	mg/kg	110	<110	-	-
			TRH C10-C40 Total	mg/kg	210	<210	-	-
		TRH F Bands	TRH >C10-C16 (F2)	mg/kg	25	<25	40	93
			TRH >C10-C16 (F2) - Naphthalene	mg/kg	25	<25	-	-
			TRH >C16-C34 (F3)	mg/kg	90	<90	40	95
			TRH >C34-C40 (F4)	mg/kg	120	<120	-	-

VOC's in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE163472.001	LB121106.004	Monocyclic	Benzene	mg/kg	0.1	2.2	<0.1	2.9	76
		Aromatic	Toluene	mg/kg	0.1	1.9	<0.1	2.9	62
			Ethylbenzene	mg/kg	0.1	2.1	<0.1	2.9	70
			m/p-xylene	mg/kg	0.2	4.2	<0.2	5.8	72
			o-xylene	mg/kg	0.1	2.2	<0.1	2.9	73
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	3.5	4.5	-	70
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.1	4.2	-	82
			d8-toluene (Surrogate)	mg/kg	-	3.6	3.5	-	72
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.7	4.8	-	94
		Totals	Total Xylenes*	mg/kg	0.3	6.4	<0.3	-	-
			Total BTEX	mg/kg	0.6	13	<0.6	-	-

Volatile Petroleum Hydrocarbons in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE163472.001	LB121106.004		TRH C6-C10	mg/kg	25	<25	<25	24.65	82
			TRH C6-C9	mg/kg	20	<20	<20	23.2	73
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	3.5	4.5	-	70
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.1	4.2	-	82
			d8-toluene (Surrogate)	mg/kg	-	3.6	3.5	-	72
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.7	4.8	-	94
		VPH F	Benzene (F0)	mg/kg	0.1	2.2	<0.1	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	7.25	109

MATRIX SPIKE DUPLICATES

SE163472 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: http://www.sgs.com.au/~/media/Local/Australia/Documents/Technical Documents/MP-AU-ENV-QU-022 QA QC Plan.pdf

*	NATA accreditation does not cover tthe performance of this service.
-	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 EHS Alexandria Laboratory

SE163472 COC

Received: 21–Mar–2017

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161

TO:	SGS ENVIRONMENTAL SERVICES UNIT 16 33 MADDOX STREET ALEXANDRIA NSW 2015	Sampling By: SS	Job No: 13793/5
			Project:
PH:	02 8594 0400 FAX: 02 8594 0499	Project Manager: JX	Location: Airds
ATTN:	MS EMILY YIN		

Results required by: Standard Turnaround Time

	Location	Depth (m)	Date	Time	Sampling details: Soil	Sample type: Material	Metals As, Cd, Cr, Cu, Pb, Hg, Ni and Zn	TPH* & BTEX	PAH	OCP	PCB	pH, CEC	ASBESTOS 0.001% w/w	BTEX		KEEP SAMPLE
*																
1	TP1	0-0.15	20/03/2017	-	SG/SP			✓	✓			✓	✓			YES
	TP1	0.3-0.4	20/03/2017	-	SG											YES
2	TP2	0-0.15	20/03/2017	-	SG/SP								✓			YES
	TP2	0.3-0.4	20/03/2017	-	SG											YES
3	TP3	0-0.15	20/03/2017	-	SG/SP								✓			YES
4	TP3	0.5-0.65	20/03/2017	-	SG/SP								✓			YES
5	TP4	0-0.15	20/03/2017	-	SG							✓				YES
6	TP5	0-0.15	20/03/2017	-	SG											YES
7 *	TP6	0-0.15	20/03/2017	-	SG/SP			✓	✓			✓	✓			YES
	TP6	0.4-0.5	20/03/2017	-	SG											YES
8	TP7	0-0.15	20/03/2017	-	SG/SP								✓			YES
	TP7	0.25-0.35	20/03/2017	-	SG											YES
9	TP8	0-0.15	20/03/2017	-	SG/SP								✓			YES
	TP8	0.35-0.45	20/03/2017	-	SG											YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	JX	23/03/2017	SM-SGS		21/3/17

Legend:

WG	Water sample, glass bottle	SG	Soil sample (glass jar)	SP	Soil sample (plastic bag)
WP	Water sample, plastic bottle	FCP	Fibro Cement Piece (plastic bag)	✓	Test required

* Purge & Trap

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

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PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161

TO: SGS ENVIRONMENTAL SERVICES
UNIT 16
33 MADDOX STREET
ALEXANDRIA NSW 2015

PH: 02 8594 0400 FAX: 02 8594 0499

ATTN: MS EMILY YIN

Sampling By: SS
Job No: 13793/5
Project:
Project Manager: JX
Location: Airds

Results required by: Standard Turnaround Time

	Location	Depth (m)	Date	Time	Sample type: Soil	Sample type: Material	Metals As, Cd, Cr, Cu, Pb, Hg, Ni and Zn	TPH* & BTEX	PAH	OCP	PCB	pH, CEC	ASBESTOS 0.001% w/w	BTEX		KEEP SAMPLE
10	TP9	0-0.15	20/03/2017	-	SG							✓				YES
11	TP10	0-0.15	20/03/2017	-	SG/SP			✓	✓				✓			YES
12	TP10	0.5-0.65	20/03/2017	-	SG/SP								✓			YES
	TP10	0.95-1.05	20/03/2017	-	SG											YES
13	TP11	0-0.15	20/03/2017	-	SG/SP								✓			YES
	TP11	0.5-0.65	20/03/2017	-	SG											YES
14	TP12	0-0.15	20/03/2017	-	SG/SP								✓			YES
15	TP12	0.5-0.65	20/03/2017	-	SG/SP								✓			YES
	TP12	0.75-0.85	20/03/2017	-	SG											YES
16	TP13	0-0.15	20/03/2017	-	SG											YES
17	TP15	0-0.1	20/03/2017	-	SG/SP			✓	✓			✓	✓			YES
18	TP16	0-0.15	20/03/2017	-	SG											YES
19	TP17	0-0.15	20/03/2017	-	SG/SP								✓			YES
	TP17	0.55-0.65	20/03/2017	-	SG											YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	JX	23/03/2017	AO		21/3/17 @ 2pm

Legend:

WG	Water sample, glass bottle	SG	Soil sample (glass jar)	SP	Soil sample (plastic bag)	* Purge & Trap
WP	Water sample, plastic bottle	FCP	Fibro Cement Piece (plastic bag)	✓	Test required	

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161

TO: SGS ENVIRONMENTAL SERVICES
UNIT 16
33 MADDOX STREET
ALEXANDRIA NSW 2015

PH: 02 8594 0400 **FAX:** 02 8594 0499

ATTN: MS EMILY YIN

Sampling By: SS **Job No:** 13793/5

Project:

Project Manager: JX **Location:** Airds

Results required by: Standard Turnaround Time

	Location	Depth (m)	Date	Time	Soil	Material	Metals As, Cd, Cr, Cu, Pb, Hg, Ni and Zn	TPH* & BTEX	PAH	OCP	PCB	pH, CEC	ASBESTOS 0.001% w/w	BTEX		KEEP SAMPLE
					Sampling details											
					Sample type											
20	TP18	0-0.15	20/03/2017	-	SG							✓				YES
21	TP19	0-0.15	20/03/2017	-	SG							✓				YES
	TP19	0.3-0.4	20/03/2017	-	SG											YES
22	TP20	0-0.15	20/03/2017	-	SG							✓				YES
23	TP21	0-0.15	20/03/2017	-	SG							✓				YES
24	TP22	0-0.15	20/03/2017	-	SG/SP								✓			YES
	TP22	0.45-0.55	20/03/2017	-	SG											YES
25	TP23	0-0.15	21/03/2017	-	SG/SP			✓	✓				✓			YES
26	TP23	0.3-0.4	21/03/2017	-	SG/SP								✓			YES
27	TP24	0-0.1	21/03/2017	-	SG/SP								✓			YES
28	TP27	0-0.1	21/03/2017	-	SG/SP								✓			YES
29	TP28	0-0.15	21/03/2017	-	SG											YES
30	TP29	0-0.15	21/03/2017	-	SG							✓				YES
31	TP30	0-0.15	21/03/2017	-	SG											YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	JX	23/03/2017	EA	[signature]	21/3/17 2pm

Legend:

WG	Water sample, glass bottle	SG	Soil sample (glass jar)	SP	Soil sample (plastic bag)	* Purge & Trap
WP	Water sample, plastic bottle	FCP	Fibro Cement Piece (plastic bag)	✓	Test required	

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161

TO: SGS ENVIRONMENTAL SERVICES
UNIT 16
33 MADDOX STREET
ALEXANDRIA NSW 2015

PH: 02 8594 0400 FAX: 02 8594 0499

ATTN: MS EMILY YIN

Sampling By: SS Job No: 13793/5

Project:

Project Manager: JX Location: Airds

Results required by: Standard Turnaround Time

	Location	Depth (m)	Date	Time	Sample type: Soil	Sample type: Material	Metals As, Cd, Cr, Cu, Pb, Hg, Ni and Zn	TPH* & BTEX	PAH	OCP	PCB	pH, CEC	ASBESTOS 0.001% w/w	BTEX		KEEP SAMPLE
32	TP31	0-0.15	21/03/2017	-	SG											YES
33	TP32	0-0.15	21/03/2017	-	SG											YES
34	TP33	0-0.15	21/03/2017	-	SG/SP			✓	✓				✓			YES
	TP33	0.2-0.3	21/03/2017	-	SG											YES
35	TP34	0-0.15	21/03/2017	-	SG							✓				YES
36	TP35	0-0.15	21/03/2017	-	SG											YES
37	TP36	0-0.15	21/03/2017	-	SG											YES
38	TP37	0-0.15	21/03/2017	-	SG											YES
39	TP38	0-0.15	21/03/2017	-	SG											YES
40	TP39	0-0.1	21/03/2017	-	SG/SP			✓	✓			✓	✓			YES
41	TP41	0-0.15	21/03/2017	-	SG											YES
42	TP42	0-0.15	21/03/2017	-	SG											YES
43	TP43	0-0.15	21/03/2017	-	SG											YES
44	TP44	0-0.15	21/03/2017	-	SG/SP								✓			YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	JX	23/03/2017	AO		21/3/17 2pm

Legend:

WG	Water sample, glass bottle	SG	Soil sample (glass jar)	SP	Soil sample (plastic bag)
WP	Water sample, plastic bottle	FCP	Fibro Cement Piece (plastic bag)	✓	Test required

* Purge & Trap

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161

TO: SGS ENVIRONMENTAL SERVICES
UNIT 16
33 MADDOX STREET
ALEXANDRIA NSW 2015

PH: 02 8594 0400 FAX: 02 8594 0499

ATTN: MS EMILY YIN

Sampling By: SS Job No: 13793/5

Project:

Project Manager: JX Location: Airds

Results required by: Standard Turnaround Time

Sampling details				Sample type											
	Location	Depth (m)	Date	Time	Soil	Material	Metals As, Cd, Cr, Cu, Pb, Hg, Ni and Zn	TPH* & BTEX	PAH	OCP	PCB	pH, CEC	ASBESTOS 0.001% w/w	BTEX		KEEP SAMPLE
	TP44	0.25-0.35	21/03/2017	-	SG											YES
45	TP45	0-0.15	21/03/2017	-	SG							✓				YES
46	TP46	0-0.15	21/03/2017	-	SG/SP								✓			YES
	TP46	0.25-0.35	21/03/2017	-	SG											YES
47	TP47	0-0.15	21/03/2017	-	SG											YES
48	TP48	0-0.15	21/03/2017	-	SG											YES
49	TP49	0-0.15	21/03/2017	-	SG/SP			✓	✓			✓	✓			YES
	TP49	0.25-0.35	21/03/2017	-	SG											YES
50	TP52	0-0.15	21/03/2017	-	SG/SP								✓			YES
51	TP52	0.4-0.5	21/03/2017	-	SG/SP			✓	✓			✓	✓			YES
52	X1		20/03/2017	-	SG			✓	✓							YES
53	X2		20/03/2017	-	SG											YES
54	X3		20/03/2017	-	SG											YES
55	X4		21/03/2017	-	SG											YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	JX	23/03/2017	AO		24/3/17 @2pm

Legend:

WG	Water sample, glass bottle	SG	Soil sample (glass jar)	SP	Soil sample (plastic bag)
WP	Water sample, plastic bottle	FCP	Fibro Cement Piece (plastic bag)	✓	Test required

* Purge & Trap

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161

TO: SGS ENVIRONMENTAL SERVICES
UNIT 16
33 MADDOX STREET
ALEXANDRIA NSW 2015

PH: 02 8594 0400 **FAX:** 02 8594 0499

ATTN: MS EMILY YIN

Sampling By: SS **Job No:** 13793/5

Project:

Project Manager: JX **Location:** Airds

Results required by: Standard Turnaround Time

Sampling details				Sample type										
Location	Depth (m)	Date	Time	Soil	Material	Metals As, Cd, Cr, Cu, Pb, Hg, Ni and Zn	TPH* & BTEX	PAH	OCP	PCB	pH, CEC	ASBESTOS 0.001% w/w	BTEX		KEEP SAMPLE
56 X5		21/03/2017	-	SG											YES
57 X6		21/03/2017	-	SG											YES
58 Rinsate R1		20/03/2017	-		WG/Vial	✓									YES
~~59~~ Rinsate R2	79	21/03/2017	-		WG/Vial	✓									YES
59 ~~60~~ Tripspike TS1													✓		YES
60 ~~61~~ Tripspike TS2													✓		YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	JX	23/03/2017	AO		21/3/17 2pm

Legend:

WG	Water sample, glass bottle	SG	Soil sample (glass jar)	SP	Soil sample (plastic bag)
WP	Water sample, plastic bottle	FCP	Fibro Cement Piece (plastic bag)	✓	Test required

* Purge & Trap

GEOTECHNIQUE PTY LTD

SGS ENVIRONMENTAL SERVICES

Sampling Date: 20 & 21/3/2017 Job No: 13793/5
Sampled by: SS
Project Manager: JX Location: Airds
Results Required by: Standard Turnaround Time

Composite Sample	Sub-Samples	Analyte		
		Metals	OCP	PCB
C601	TP1 (0-0.15m) + TP2 (0-0.15m) + TP8 (0-0.15m)	✔	✔	✔
C602	TP3 (0-0.15m) + TP7 (0-0.15m) + TP10 (0-0.15m)	✔	✔	✔
C603	TP4 (0-0.15m) + TP5 (0-0.15m) + TP13 (0-0.15m)	✔	-	-
C604	TP6 (0-0.15m) + TP11(0-0.15m) + TP12 (0-0.15m)	✔	✔	✔
C605	TP9 (0-0.15m) + TP19 (0-0.15m) + TP21 (0-0.15m)	✔	-	-
C606	TP15 (0-0.15m) + TP22 (0-0.15m) + TP24 (0-0.1m)	✔	✔	✔
C607	TP16 (0-0.15m) + TP18 (0-0.15m) + TP30 (0-0.15m)	✔	-	-
C608	TP17 (0-0.15m) + TP23 (0-0.15m) + TP27 (0-0.15m)	✔	✔	✔
C609	TP20 (0-0.15m) + TP31 (0-0.15m) + TP32 (0-0.15m)	✔	✔	-
C610	TP28 (0-0.15m) + TP38 (0-0.15m) + TP42 (0-0.15m)	✔	✔	-
C611	TP29 (0-0.15m) + TP36 (0-0.15m) + TP37 (0-0.15m)	✔	✔	-
C612	TP33 (0-0.15m) + TP34 (0-0.15m) + TP46 (0-0.15m)	✔	✔	✔
C613	TP35 (0-0.15m) + TP44 (0-0.15m) + TP49 (0-0.15m)	✔	✔	✔
C614	TP39 (0-0.1m) + TP41 (0-0.15m) + TP52 (0-0.15m)	✔	✔	✔
C615	TP45 (0-0.15m) + TP47 (0-0.15m) + TP48 (0-0.15m)	✔	-	-
C616	TP23 (0.3-0.4m) + TP43 (0-0.15m) + TP52 (0.4-0.5m)	✔	✔	✔
Duplicate CD1	X1 + X2 + X3	✔	✔	✔
Duplicate CD2	X4 + X5 + X6	✔	-	-

✔ Test required

Metals include arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), lead (Pb), mercury (Hg), nickel (Ni) and zinc (Zn)
OCP = Organochlorine Pesticides
PCB: Polychlorinated Biphenyls

JX
23/3/2017
(JOHN XU)
Geotechnique Pty Ltd

SAMPLE RECEIPT ADVICE

SE163472

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**13793-5 Airds**
Order Number	(Not specified)
Samples	79

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	Tue 21/3/2017
Report Due	Thu 30/3/2017
SGS Reference	**SE163472**

SUBMISSION DETAILS

This is to confirm that 79 samples were received on Tuesday 21/3/2017. Results are expected to be ready by Thursday 30/3/2017. Please quote SGS reference SE163472 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	58 Soil, 2 Water
Date documentation received	23/3/17@12:27pm	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	16.1°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

SE163472

CLIENT DETAILS

Client Geotechnique

Project 13793-5 Airds

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	PAH (Polynuclear Aromatic Hydrocarbons) in Soil	pH in soil (1:5)	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
001	TP1 0-0.15	13	26	1	10	12	8
005	TP4 0-0.15	13	-	1	-	-	-
007	TP6 0-0.15	13	26	1	10	12	8
010	TP9 0-0.15	13	-	1	-	-	-
011	TP10 0-0.15	-	26	-	10	12	8
017	TP15 0-0.1	13	26	1	10	12	8
020	TP18 0-0.15	13	-	1	-	-	-
021	TP19 0-0.15	13	-	1	-	-	-
022	TP20 0-0.15	13	-	1	-	-	-
023	TP21 0-0.15	13	-	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

SE163472

CLIENT DETAILS

Client Geotechnique

Project 13793-5 Airds

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	PAH (Polynuclear Aromatic Hydrocarbons) in Soil	pH in soil (1:5)	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
025	TP23 0-0.15	-	26	-	10	12	8
030	TP29 0-0.15	13	-	1	-	-	-
034	TP33 0-0.15	-	26	-	10	12	8
035	TP34 0-0.15	13	-	1	-	-	-
040	TP39 0-0.1	13	26	1	10	12	8
045	TP45 0-0.15	13	-	1	-	-	-

CONTINUED OVERLEAF

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SAMPLE RECEIPT ADVICE

SE163472

CLIENT DETAILS

Client Geotechnique

Project 13793-5 Airds

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	OC Pesticides in Soil	PAH (Polynuclear Aromatic Hydrocarbons) in Soil	PCBs in Soil	pH in soil (1:5)	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
049	TP49 0-0.15	13	-	26	-	1	10	12	8
051	TP52 0.4-0.5	13	-	26	-	1	10	12	8
052	X1	-	-	26	-	-	10	12	8
059	Tripspike TS1	-	-	-	-	-	-	12	-
060	Tripspike TS2	-	-	-	-	-	-	12	-
061	C601	-	28	-	11	-	-	-	-
062	C602	-	28	-	11	-	-	-	-
064	C604	-	28	-	11	-	-	-	-
066	C606	-	28	-	11	-	-	-	-
068	C608	-	28	-	11	-	-	-	-
069	C609	-	28	-	-	-	-	-	-
070	C610	-	28	-	-	-	-	-	-
071	C611	-	28	-	-	-	-	-	-
072	C612	-	28	-	11	-	-	-	-

CONTINUED OVERLEAF

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SAMPLE RECEIPT ADVICE

SE163472

CLIENT DETAILS

Client Geotechnique

Project 13793-5 Airds

SUMMARY OF ANALYSIS

No.	Sample ID	OC Pesticides in Soil	PCBs in Soil
073	C613	28	11
074	C614	28	11
076	C616	28	11
077	Duplicate CD1	28	11

CONTINUED OVERLEAF

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
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SAMPLE RECEIPT ADVICE

SE163472

CLIENT DETAILS

Client Geotechnique

Project 13793-5 Airds

SUMMARY OF ANALYSIS

No.	Sample ID	Gravimetric Determination of Asbestos in Soil	Moisture Content
001	TP1 0-0.15	9	1
002	TP2 0-0.15	9	-
003	TP3 0-0.15	9	-
004	TP3 0.5-0.65	9	-
005	TP4 0-0.15	-	1
007	TP6 0-0.15	9	1
008	TP7 0-0.15	9	-
009	TP8 0-0.15	9	-
010	TP9 0-0.15	-	1
011	TP10 0-0.15	9	1
012	TP10 0.5-0.65	9	-
013	TP11 0-0.15	9	-
014	TP12 0-0.15	9	-
015	TP12 0.5-0.65	9	-
017	TP15 0-0.1	9	1
019	TP17 0-0.15	9	-
020	TP18 0-0.15	-	1
021	TP19 0-0.15	-	1
022	TP20 0-0.15	-	1
023	TP21 0-0.15	-	1
024	TP22 0-0.15	9	-

CONTINUED OVERLEAF

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
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SAMPLE RECEIPT ADVICE

SE163472

CLIENT DETAILS

Client Geotechnique

Project 13793-5 Airds

SUMMARY OF ANALYSIS

No.	Sample ID	Gravimetric Determination of Asbestos in Soil	Moisture Content
025	TP23 0-0.15	9	1
026	TP23 0.3-0.4	9	-
027	TP24 0-0.1	9	-
028	TP27 0-0.1	9	-
030	TP29 0-0.15	-	1
034	TP33 0-0.15	9	1
035	TP34 0-0.15	-	1
040	TP39 0-0.1	9	1
044	TP44 0-0.15	9	-
045	TP45 0-0.15	-	1
046	TP46 0-0.15	9	-

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

SE163472

CLIENT DETAILS

Client Geotechnique

Project 13793-5 Airds

SUMMARY OF ANALYSIS

No.	Sample ID	Gravimetric Determination of Asbestos in Soil	Mercury (dissolved) in Water	Mercury in Soil	Metals in Water (Dissolved) by ICPOES	Moisture Content	Total Recoverable Metals in Soil/Waste
049	TP49 0-0.15	9	-	-	-	1	-
050	TP52 0-0.15	9	-	-	-	-	-
051	TP52 0.4-0.5	9	-	-	-	1	-
052	X1	-	-	-	-	1	-
058	Rinsate R1	-	1	-	7	-	-
061	C601	-	-	1	-	1	7
062	C602	-	-	1	-	1	7
063	C603	-	-	1	-	1	7
064	C604	-	-	1	-	1	7
065	C605	-	-	1	-	1	7
066	C606	-	-	1	-	1	7
067	C607	-	-	1	-	1	7
068	C608	-	-	1	-	1	7
069	C609	-	-	1	-	1	7
070	C610	-	-	1	-	1	7
071	C611	-	-	1	-	1	7
072	C612	-	-	1	-	1	7

CONTINUED OVERLEAF

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
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Testing as per this table shall commence immediately unless the client intervenes with a correction .

SAMPLE RECEIPT ADVICE

SE163472

CLIENT DETAILS

Client Geotechnique

Project 13793-5 Airds

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury (dissolved) in Water	Mercury in Soil	Metals in Water (Dissolved) by ICPOES	Moisture Content	Total Recoverable Metals in Soil/Waste
073	C613	-	1	-	1	7
074	C614	-	1	-	1	7
075	C615	-	1	-	1	7
076	C616	-	1	-	1	7
077	Duplicate CD1	-	1	-	1	7
078	Duplicate CD2	-	1	-	1	7
079	Rinsate R2	1	-	7	-	-

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
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Testing as per this table shall commence immediately unless the client intervenes with a correction .

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**13793-5 Airds Additional**
Order Number	(Not specified)
Samples	79

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	**SE163472A R0**
Date Received	4/4/2017
Date Reported	10/4/2017

COMMENTS

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

SIGNATORIES

Bennet Lo
Senior Organic Chemist/Metals Chemist

Ly Kim Ha
Organic Section Head

Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 7/4/2017

PARAMETER	UOM	LOR	TP3 0-0.15 SOIL - 20/3/2017 SE163472A.003	TP7 0-0.15 SOIL - 20/3/2017 SE163472A.008	TP10 0-0.15 SOIL - 20/3/2017 SE163472A.011	TP17 0-0.15 SOIL - 20/3/2017 SE163472A.019	TP23 0-0.15 SOIL - 21/3/2017 SE163472A.025
Nickel, Ni	mg/kg	0.5	5.3	14	6.6	12	8.0

PARAMETER	UOM	LOR	TP27 0-0.1 SOIL - 21/3/2017 SE163472A.028	TP28 0-0.15 SOIL - 21/3/2017 SE163472A.029	TP38 0-0.15 SOIL - 21/3/2017 SE163472A.039	TP42 0-0.15 SOIL - 21/3/2017 SE163472A.042
Nickel, Ni	mg/kg	0.5	5.9	8.3	8.9	12

Moisture Content [AN002] Tested: 5/4/2017

PARAMETER	UOM	LOR	TP3 0-0.15 SOIL - 20/3/2017 SE163472A.003	TP7 0-0.15 SOIL - 20/3/2017 SE163472A.008	TP17 0-0.15 SOIL - 20/3/2017 SE163472A.019	TP27 0-0.1 SOIL - 21/3/2017 SE163472A.028	TP28 0-0.15 SOIL - 21/3/2017 SE163472A.029
% Moisture	%w/w	0.5	15	21	21	18	19

PARAMETER	UOM	LOR	TP38 0-0.15 SOIL - 21/3/2017 SE163472A.039	TP42 0-0.15 SOIL - 21/3/2017 SE163472A.042
% Moisture	%w/w	0.5	14	20

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN040/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.

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.		

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

STATEMENT OF QA/QC PERFORMANCE

SE163472A R0

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
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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	**SE163472A R0**
Date Received	04 Apr 2017
Date Reported	10 Apr 2017

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 and was supplied by the Client.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met with the exception of the following:

Extraction Date	Moisture Content	7 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	9 Soil
Date documentation received	4/4/17@3:49pm	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	16.1°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

HOLDING TIME SUMMARY

SE163472A 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.

Moisture Content

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP3 0-0.15	SE163472A.003	LB121939	20 Mar 2017	04 Apr 2017	03 Apr 2017	05 Apr 2017†	10 Apr 2017	10 Apr 2017
TP7 0-0.15	SE163472A.008	LB121939	20 Mar 2017	04 Apr 2017	03 Apr 2017	05 Apr 2017†	10 Apr 2017	10 Apr 2017
TP17 0-0.15	SE163472A.019	LB121939	20 Mar 2017	04 Apr 2017	03 Apr 2017	05 Apr 2017†	10 Apr 2017	10 Apr 2017
TP27 0-0.1	SE163472A.028	LB121939	21 Mar 2017	04 Apr 2017	04 Apr 2017	05 Apr 2017†	10 Apr 2017	10 Apr 2017
TP28 0-0.15	SE163472A.029	LB121939	21 Mar 2017	04 Apr 2017	04 Apr 2017	05 Apr 2017†	10 Apr 2017	10 Apr 2017
TP38 0-0.15	SE163472A.039	LB121939	21 Mar 2017	04 Apr 2017	04 Apr 2017	05 Apr 2017†	10 Apr 2017	10 Apr 2017
TP42 0-0.15	SE163472A.042	LB121939	21 Mar 2017	04 Apr 2017	04 Apr 2017	05 Apr 2017†	10 Apr 2017	10 Apr 2017

Total Recoverable Metals 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
TP3 0-0.15	SE163472A.003	LB121950	20 Mar 2017	04 Apr 2017	16 Sep 2017	07 Apr 2017	16 Sep 2017	10 Apr 2017
TP7 0-0.15	SE163472A.008	LB121950	20 Mar 2017	04 Apr 2017	16 Sep 2017	07 Apr 2017	16 Sep 2017	10 Apr 2017
TP10 0-0.15	SE163472A.011	LB121950	20 Mar 2017	04 Apr 2017	16 Sep 2017	07 Apr 2017	16 Sep 2017	10 Apr 2017
TP17 0-0.15	SE163472A.019	LB121950	20 Mar 2017	04 Apr 2017	16 Sep 2017	07 Apr 2017	16 Sep 2017	10 Apr 2017
TP23 0-0.15	SE163472A.025	LB121950	21 Mar 2017	04 Apr 2017	17 Sep 2017	07 Apr 2017	17 Sep 2017	10 Apr 2017
TP27 0-0.1	SE163472A.028	LB121950	21 Mar 2017	04 Apr 2017	17 Sep 2017	07 Apr 2017	17 Sep 2017	10 Apr 2017
TP28 0-0.15	SE163472A.029	LB121950	21 Mar 2017	04 Apr 2017	17 Sep 2017	07 Apr 2017	17 Sep 2017	10 Apr 2017
TP38 0-0.15	SE163472A.039	LB121950	21 Mar 2017	04 Apr 2017	17 Sep 2017	07 Apr 2017	17 Sep 2017	10 Apr 2017
TP42 0-0.15	SE163472A.042	LB121950	21 Mar 2017	04 Apr 2017	17 Sep 2017	07 Apr 2017	17 Sep 2017	10 Apr 2017

SURROGATES

SE163472A R0

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.

No surrogates were required for this job.

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

Sample Number	Parameter	Units	LOR	Result
LB121950.001	Nickel, Ni	mg/kg	0.5	<0.5

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.

Moisture Content

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE163472A.008	LB121939.022	% Moisture	%w/w	0.5	21	19	35	12
SE163788.001	LB121939.044	% Moisture	%w/w	0.5	21.380846325	21.5462610899	35	1
SE163841.002	LB121939.011	% Moisture	%w/w	0.5	28.748451053	28.0856423173	34	2
SE163914.002	LB121939.033	% Moisture	%w/w	0.5	15.621301775	17.0310701956	36	9

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

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE163472A.042	LB121950.014	Nickel, Ni	mg/kg	0.5	12	11	34	8
SE163914.009	LB121950.024	Nickel, Ni	mg/kg	0.5	8.202692860	10.2473762920	35	22

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB121950.002	Nickel, Ni	mg/kg	0.5	48	50	80 - 120	96

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.

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE163904.001	LB121950.004	Nickel, Ni	mg/kg	0.5	49	4.89859375	50	87

MATRIX SPIKE DUPLICATES

SE163472A 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: http://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.
-	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.

E-MAILED
4/4/17 @ 3.45pm

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161

TO:	**SGS ENVIRONMENTAL SERVICES** **UNIT 16** **33 MADDOX STREET** **ALEXANDRIA NSW 2015**	**Sampling By:** SS	**Job No:** 13793/5
			Project:
PH:	**02 8594 0400** **FAX:** **02 8594 0499**	**Project Manager:** JX	**Location: Airds**
ATTN:	**MS EMILY YIN**		

Results required by: Monday 10/04/2017 (Standard Turnaround Time)
SGS Ref. SE163472

Sampling details				Sample type											
	Location	Depth (m)	Date	Time	Soil	Material	Ni								KEEP SAMPLE
3	TP3	0-0.15	20/03/2017	-	SG		✓								YES
8	TP7	0-0.15	20/03/2017	-	SG		✓								YES
11	TP10	0-0.15	20/03/2017	-	SG		✓								YES
19	TP17	0-0.15	20/03/2017	-	SG		✓								YES
25	TP23	0-0.15	21/03/2017	-	SG		✓								YES
28	TP27	0-0.15	21/03/2017	-	SG		✓								YES
29	TP28	0-0.15	21/03/2017	-	SG		✓								YES
39	TP38	0-0.15	21/03/2017	-	SG		✓								YES
42	TP42	0-0.15	21/03/2017	-	SG		✓								YES

SGS EHS Alexandria Laboratory
SE163472A COC
Received: 04 – Apr – 2017

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	JX	4/04/2017	A. Ochsner		

Legend:

WG	Water sample, glass bottle	SG	Soil sample (glass jar)	SP	Soil sample (plastic bag)	* Purge & Trap
WP	Water sample, plastic bottle	FCP	Fibro Cement Piece (plastic bag)	✓	Test required	

SAMPLE RECEIPT ADVICE

SE163472A

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**13793-5 Airds Additional**
Order Number	(Not specified)
Samples	79

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	Tue 4/4/2017
Report Due	Mon 10/4/2017
SGS Reference	**SE163472A**

SUBMISSION DETAILS

This is to confirm that 79 samples were received on Tuesday 4/4/2017. Results are expected to be ready by Monday 10/4/2017. Please quote SGS reference SE163472A 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	9 Soil
Date documentation received	4/4/17@3:49pm	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	16.1°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

SE163472A

CLIENT DETAILS

Client Geotechnique

Project 13793-5 Airds Additional

SUMMARY OF ANALYSIS

No.	Sample ID	Moisture Content	Total Recoverable Metals in Soil/Waste
003	TP3 0-0.15	1	1
008	TP7 0-0.15	1	1
011	TP10 0-0.15	-	1
019	TP17 0-0.15	1	1

CONTINUED OVERLEAF

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
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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

SE163472A

CLIENT DETAILS

Client Geotechnique

Project 13793-5 Airds Additional

SUMMARY OF ANALYSIS

No.	Sample ID	Moisture Content	Total Recoverable Metals in Soil/Waste
025	TP23 0-0.15	-	1
028	TP27 0-0.15	1	1
029	TP28 0-0.15	1	1
039	TP38 0-0.15	1	1
042	TP42 0-0.15	1	1

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 .
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ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
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Project	**13793-5 Airds Additional**
Order Number	(Not specified)
Samples	79

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	**SE163472B R0**
Date Received	6/4/2017
Date Reported	11/4/2017

COMMENTS

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

SIGNATORIES

Ly Kim Ha
Organic Section Head

TRH Silica Gel (Total Recoverable Hydrocarbons - Silica Gel) in Soil [AN403] Tested: 10/4/2017

PARAMETER	UOM	LOR	TP39 0-0.1 SOIL - 21/3/2017 SE163472B.040
TRH C10-C14-Silica	mg/kg	20	<20
TRH C15-C28-Silica	mg/kg	45	**350**
TRH C29-C36-Silica	mg/kg	45	**2200**
TRH C37-C40-Silica	mg/kg	100	**1000**
TRH >C10-C16-Silica (F2)	mg/kg	25	<25
TRH >C16-C34-Silica (F3)	mg/kg	90	**1300**
TRH >C34-C40-Silica (F4)	mg/kg	120	**2200**
TRH C10-C36-Silica	mg/kg	110	**2500**

METHOD	METHODOLOGY SUMMARY
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.
AN403	Additionally, the volatile C6-C9 fraction may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Petroleum Hydrocarbons (TPH) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents .
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B

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.		

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

STATEMENT OF QA/QC PERFORMANCE

SE163472B R0

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**13793-5 Airds Additional**
Order Number	(Not specified)
Samples	79

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	**SE163472B R0**
Date Received	06 Apr 2017
Date Reported	11 Apr 2017

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 and was supplied by the Client.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met with the exception of the following:

Extraction Date	TRH Silica Gel (Total Recoverable Hydrocarbons - Silica Gel) in Soil	1 item

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	1 Soil
Date documentation received	6/4/17@2:11pm	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	16.1°C	Sufficient sample for analysis	Yes
Turnaround time requested	Three Days		

HOLDING TIME SUMMARY

SE163472B 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 Silica Gel (Total Recoverable Hydrocarbons - Silica Gel) in Soil — Method: ME-(AU)-[ENV]AN403

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP39 0-0.1	SE163472B.040	LB121973	21 Mar 2017	06 Apr 2017	04 Apr 2017	10 Apr 2017†	20 May 2017	11 Apr 2017

SURROGATES

SE163472B R0

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.

No surrogates were required for this job.

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.

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

Sample Number	Parameter	Units	LOR	Result
LB121973.001	TRH C10-C14-Silica	mg/kg	20	<20
	TRH C15-C28-Silica	mg/kg	45	<45
	TRH C29-C36-Silica	mg/kg	45	<45
	TRH C37-C40-Silica	mg/kg	100	<100
	TRH >C10-C16-Silica (F2)	mg/kg	25	<25
	TRH >C16-C34-Silica (F3)	mg/kg	90	<90
	TRH >C34-C40-Silica (F4)	mg/kg	120	<120

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.

Original	Duplicate	Parameter	Units	LOR

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

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

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB121973.002	TRH C10-C14-Silica	mg/kg	20	40	40	70 - 130	100
	TRH C15-C28-Silica	mg/kg	45	<45	40	70 - 130	100
	TRH C29-C36-Silica	mg/kg	45	<45	40	70 - 130	78
	TRH >C10-C16-Silica (F2)	mg/kg	25	41	40	70 - 130	103
	TRH >C16-C34-Silica (F3)	mg/kg	90	<90	40	70 - 130	90
	TRH >C34-C40-Silica (F4)	mg/kg	120	<120	20	70 - 130	75

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.

No matrix spikes were required for this job.

MATRIX SPIKE DUPLICATES

SE163472B 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: http://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.
-	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.

E-MAILED
6/4/17 @ 2:51 pm

SGS EHS Alexandria Laboratory

SE163472B COC
Received: 06 – Apr – 2017

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161

TO:	**SGS ENVIRONMENTAL SERVICES** **UNIT 16** **33 MADDOX STREET** **ALEXANDRIA NSW 2015**	**Sampling By:** SS	**Job No:** 13793/5
			Project:
PH:	**02 8594 0400** **FAX:** **02 8594 0499**	**Project Manager:** JX	**Location:** **Airds**
ATTN:	**MS EMILY YIN**		

Results required by: Tuesday 11/04/2017 (3 day Turnaround Time)
SGS Ref. SE163472

Sampling details				Sample type										
Location	Depth (m)	Date	Time	Soil	Material	TPH F2 & F3 with silica gel clean-up								KEEP SAMPLE
10 TP39	0-0.1	21/03/2017	-	SG		✓								YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	JX	6/04/2017	A Odisho		

Legend:

WG	Water sample, glass bottle	SG	Soil sample (glass jar)	SP	Soil sample (plastic bag)	* Purge & Trap
WP	Water sample, plastic bottle	FCP	Fibro Cement Piece (plastic bag)	✓	Test required	

SAMPLE RECEIPT ADVICE

SE163472B

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**13793-5 Airds Additional**
Order Number	(Not specified)
Samples	79

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Thu 6/4/2017
Report Due	Tue 11/4/2017
SGS Reference	**SE163472B**

SUBMISSION DETAILS

This is to confirm that 79 samples were received on Thursday 6/4/2017. Results are expected to be ready by Tuesday 11/4/2017. Please quote SGS reference SE163472B 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	1 Soil
Date documentation received	6/4/17@2:11pm	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	16.1°C	Sufficient sample for analysis	Yes
Turnaround time requested	Three Days		

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

SE163472B

CLIENT DETAILS

Client Geotechnique

Project 13793-5 Airds Additional

SUMMARY OF ANALYSIS

No.	Sample ID	TRH Silica Gel (Total Recoverable
040	TP39 0-0.1	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 .

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**13793-5 Airds Additional**
Order Number	(Not specified)
Samples	79

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	**SE163472C R0**
Date Received	10/4/2017
Date Reported	12/4/2017

COMMENTS

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

SIGNATORIES

Bennet Lo
Senior Organic Chemist/Metals Chemist

Dong Liang
Metals/Inorganics Team Leader

pH in soil (1:5) [AN101] Tested: 11/4/2017

PARAMETER	UOM	LOR	TP33 0-0.15 SOIL - 21/3/2017 SE163472C.034
pH	pH Units	-	**5.9**

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) [AN122] Tested: 12/4/2017

PARAMETER	UOM	LOR	TP33 0-0.15 SOIL - 21/3/2017 SE163472C.034
Exchangeable Sodium, Na	mg/kg	2	**34**
Exchangeable Sodium, Na	meq/100g	0.01	**0.15**
Exchangeable Sodium Percentage*	%	0.1	**1.6**
Exchangeable Potassium, K	mg/kg	2	**270**
Exchangeable Potassium, K	meq/100g	0.01	**0.69**
Exchangeable Potassium Percentage*	%	0.1	**7.6**
Exchangeable Calcium, Ca	mg/kg	2	**720**
Exchangeable Calcium, Ca	meq/100g	0.01	**3.6**
Exchangeable Calcium Percentage*	%	0.1	**39.5**
Exchangeable Magnesium, Mg	mg/kg	2	**570**
Exchangeable Magnesium, Mg	meq/100g	0.02	**4.7**
Exchangeable Magnesium Percentage*	%	0.1	**51.2**
Cation Exchange Capacity	meq/100g	0.02	**9.1**

METHOD	METHODOLOGY SUMMARY
AN101	pH in Soil Sludge Sediment and Water: pH is measured electrometrically using a combination electrode and is calibrated against 3 buffers purchased commercially. For soils, sediments and sludges, an extract with water (or 0.01M CaCl2) is made at a ratio of 1:5 and the pH determined and reported on the extract. Reference APHA 4500-H+.
AN122	Exchangeable Cations, CEC and ESP: Soil sample is extracted in 1M Ammonium Acetate at pH=7 (or 1M Ammonium Chloride at pH=7) with cations (Na, K, Ca & Mg) then determined by ICP OES/ICP MS and reported as Exchangeable Cations. For saline soils, these results can be corrected for water soluble cations and reported as Exchangeable cations in meq/100g or soil can be pre-treated (aqueous ethanol/aqueous glycerol) prior to extraction. Cation Exchange Capacity (CEC) is the sum of the exchangeable cations in meq/100g.
AN122	The Exchangeable Sodium Percentage (ESP) is calculated as the exchangeable sodium divided by the CEC (all in meq/100g) times 100. ESP can be used to categorise the sodicity of the soil as below: ESP < 6% non-sodic ESP 6-15% sodic ESP >15% strongly sodic Method is refernced to Rayment and Higginson, 1992, sections 15D3 and 15N1.-

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.		

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

STATEMENT OF QA/QC PERFORMANCE

SE163472C R0

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**13793-5 Airds Additional**
Order Number	(Not specified)
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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	**SE163472C R0**
Date Received	10 Apr 2017
Date Reported	12 Apr 2017

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 and was supplied by the Client.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met with the exception of the following:

Extraction Date	pH in soil (1:5)	1 item

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	1 Soil
Date documentation received	10/4/17@4:37pm	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	16.1°C	Sufficient sample for analysis	Yes
Turnaround time requested	Next Day		

HOLDING TIME SUMMARY

SE163472C 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.

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR)

Method: ME-(AU)-[ENV]AN122

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP33 0-0.15	SE163472C.034	LB122187	21 Mar 2017	10 Apr 2017	18 Apr 2017	12 Apr 2017	18 Apr 2017	12 Apr 2017

pH in soil (1:5)

Method: ME-(AU)-[ENV]AN101

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP33 0-0.15	SE163472C.034	LB122143	21 Mar 2017	10 Apr 2017	28 Mar 2017	11 Apr 2017†	12 Apr 2017	12 Apr 2017

SURROGATES

SE163472C R0

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.

No surrogates were required for this job.

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.

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

Sample Number	Parameter	Units	LOR

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.

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE163975.004	LB122143.014	pH	pH Units	-	4.743	4.781	32	1
SE164078.010	LB122143.025	pH	pH Units	-	9.025	9.019	31	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.

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB122187.002	Exchangeable Sodium, Na	mg/kg	2	NA	390	80 - 120	88
	Exchangeable Potassium, K	mg/kg	2	NA	343	80 - 120	86
	Exchangeable Calcium, Ca	mg/kg	2	NA	2570	80 - 120	88
	Exchangeable Magnesium, Mg	mg/kg	2	NA	635	80 - 120	88

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB122143.003	pH	pH Units	-	7.4	7.415	98 - 102	100

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.

No matrix spikes were required for this job.

MATRIX SPIKE DUPLICATES

SE163472C 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: http://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.
-	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.

E-MAILED
10/4/17 @ 4:57 pm

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161

TO:	**SGS ENVIRONMENTAL SERVICES** **UNIT 16** **33 MADDOX STREET** **ALEXANDRIA NSW 2015**	**Sampling By:** SS	**Job No:** 13793/5
			Project:
PH:	**02 8594 0400** **FAX:** **02 8594 0499**	**Project Manager:** JX	**Location:** **Airds**
ATTN:	**MS EMILY YIN**		

Results required by: Wednesday 12/04/2017 (2 day Turnaround Time)
SGS Ref. SE163472

Sampling details				Sample type										
Location	Depth (m)	Date	Time	Soil	Material	pH & CEC								KEEP SAMPLE
34 TP33	0-0.15	21/03/2017	-	SG		✓								YES

SGS EHS Alexandria Laboratory
SE163472C COC
Received: 10 – Apr – 2017

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	JX	10/04/2017	A. Ochuo		10/4/17

Legend:

WG	Water sample, glass bottle	SG	Soil sample (glass jar)	SP	Soil sample (plastic bag)	* Purge & Trap
WP	Water sample, plastic bottle	FCP	Fibro Cement Piece (plastic bag)	✓	Test required	

SAMPLE RECEIPT ADVICE

SE163472C

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**13793-5 Airds Additional**
Order Number	(Not specified)
Samples	79

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	Mon 10/4/2017
Report Due	Wed 12/4/2017
SGS Reference	**SE163472C**

SUBMISSION DETAILS

This is to confirm that 79 samples were received on Monday 10/4/2017. Results are expected to be ready by Wednesday 12/4/2017. Please quote SGS reference SE163472C 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	1 Soil
Date documentation received	10/4/17@4:37pm	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	16.1°C	Sufficient sample for analysis	Yes
Turnaround time requested	Next Day		

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

SE163472C

CLIENT DETAILS

Client Geotechnique

Project 13793-5 Airds Additional

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	pH in soil (1:5)
034	TP33 0-0.15	13	1

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

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**13793-5 Airds**
Order Number	(Not specified)
Samples	57

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	**SE163541 R0**
Date Received	23/3/2017
Date Reported	4/4/2017

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 as per AS 4964-2004.

Asbestos analysed by Approved Identifiers Yusuf Kuthpudin and Ravee Sivasubramaniam .

SIGNATORIES

Bennet Lo
Senior Organic Chemist/Metals 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: 28/3/2017

PARAMETER	UOM	LOR	TP50 0-0.1 SOIL - 23/3/2017 SE163541.001	TP59 0-0.15 SOIL - 23/3/2017 SE163541.008	TP68 0-0.15 SOIL - 22/3/2017 SE163541.016	TP76 0-0.15 SOIL - 23/3/2017 SE163541.023	TP80 0-0.15 SOIL - 23/3/2017 SE163541.027
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	Tripspike TS3 SOIL - 22/3/2017 SE163541.043	Tripspike TS4 SOIL - 22/3/2017 SE163541.044
Benzene	mg/kg	0.1	[88%]	[98%]
Toluene	mg/kg	0.1	[91%]	[70%]
Ethylbenzene	mg/kg	0.1	[87%]	[93%]
m/p-xylene	mg/kg	0.2	[87%]	[95%]
o-xylene	mg/kg	0.1	[86%]	[91%]
Total Xylenes*	mg/kg	0.3	-	-
Total BTEX	mg/kg	0.6	-	-
Naphthalene	mg/kg	0.1	-	-

Volatile Petroleum Hydrocarbons in Soil [AN433] Tested: 28/3/2017

PARAMETER	UOM	LOR	TP50 0-0.1 SOIL - 23/3/2017 SE163541.001	TP59 0-0.15 SOIL - 23/3/2017 SE163541.008	TP68 0-0.15 SOIL - 22/3/2017 SE163541.016	TP76 0-0.15 SOIL - 23/3/2017 SE163541.023	TP80 0-0.15 SOIL - 23/3/2017 SE163541.027
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

TRH (Total Recoverable Hydrocarbons) in Soil [AN403] Tested: 28/3/2017

PARAMETER	UOM	LOR	TP50 0-0.1 SOIL - 23/3/2017 SE163541.001	TP59 0-0.15 SOIL - 23/3/2017 SE163541.008	TP68 0-0.15 SOIL - 22/3/2017 SE163541.016	TP76 0-0.15 SOIL - 23/3/2017 SE163541.023	TP80 0-0.15 SOIL - 23/3/2017 SE163541.027
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	**50**	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	**57**	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16 (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 (F2) - Naphthalene	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110
TRH C10-C40 Total	mg/kg	210	<210	<210	<210	<210	<210

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 28/3/2017

PARAMETER	UOM	LOR	TP50 0-0.1 SOIL - 23/3/2017 SE163541.001	TP59 0-0.15 SOIL - 23/3/2017 SE163541.008	TP68 0-0.15 SOIL - 22/3/2017 SE163541.016	TP76 0-0.15 SOIL - 23/3/2017 SE163541.023	TP80 0-0.15 SOIL - 23/3/2017 SE163541.027
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	**0.2**	<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	**0.5**	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	**0.4**	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	**0.2**	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	**0.2**	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	**0.2**	<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	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	**1.7**	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	**1.7**	<0.8	<0.8

OC Pesticides in Soil [AN420] Tested: 28/3/2017

PARAMETER	UOM	LOR	C617 SOIL - 23/3/2017 SE163541.045	C618 SOIL - 22/3/2017 SE163541.046	C619 SOIL - 22/3/2017 SE163541.047	C620 SOIL - 23/3/2017 SE163541.048	C621 SOIL - 22/3/2017 SE163541.049
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

OC Pesticides in Soil [AN420] Tested: 28/3/2017 (continued)

PARAMETER	UOM	LOR	C622 SOIL - 22/3/2017 SE163541.050	C623 SOIL - 22/3/2017 SE163541.051	C625 SOIL - 22/3/2017 SE163541.053	C626 SOIL - 22/3/2017 SE163541.054	C627 SOIL - 22/3/2017 SE163541.055
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

OC Pesticides in Soil [AN420] Tested: 28/3/2017 (continued)

PARAMETER	UOM	LOR	Duplicate CD3 SOIL - 22/3/2017 SE163541.057
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1
Lindane	mg/kg	0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1
Aldrin	mg/kg	0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1
Dieldrin	mg/kg	0.05	<0.05
Endrin	mg/kg	0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1
Isodrin	mg/kg	0.1	<0.1
Mirex	mg/kg	0.1	<0.1

PCBs in Soil [AN420] Tested: 28/3/2017

PARAMETER	UOM	LOR	C617 SOIL - 23/3/2017 SE163541.045	C618 SOIL - 22/3/2017 SE163541.046	C619 SOIL - 22/3/2017 SE163541.047	C620 SOIL - 23/3/2017 SE163541.048	C622 SOIL - 22/3/2017 SE163541.050
Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1	<1	<1

PARAMETER	UOM	LOR	C623 SOIL - 22/3/2017 SE163541.051	C625 SOIL - 22/3/2017 SE163541.053	C626 SOIL - 22/3/2017 SE163541.054
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

pH in soil (1:5) [AN101] Tested: 30/3/2017

PARAMETER	UOM	LOR	TP50 0-0.1 SOIL - 23/3/2017 SE163541.001	TP58 0-0.15 SOIL - 22/3/2017 SE163541.007	TP59 0-0.15 SOIL - 23/3/2017 SE163541.008	TP68 0-0.15 SOIL - 22/3/2017 SE163541.016	TP71 0-0.15 SOIL - 23/3/2017 SE163541.019
pH	pH Units	-	7.1	6.7	6.0	5.7	6.1

PARAMETER	UOM	LOR	TP76 0-0.15 SOIL - 23/3/2017 SE163541.023	TP80 0-0.15 SOIL - 23/3/2017 SE163541.027	TP81 0-0.15 SOIL - 23/3/2017 SE163541.029	TP84 0-0.15 SOIL - 22/3/2017 SE163541.032
pH	pH Units	-	7.8	6.1	5.9	7.3

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) [AN122] Tested: 30/3/2017

PARAMETER	UOM	LOR	TP50 0-0.1 SOIL - 23/3/2017 SE163541.001	TP58 0-0.15 SOIL - 22/3/2017 SE163541.007	TP59 0-0.15 SOIL - 23/3/2017 SE163541.008	TP68 0-0.15 SOIL - 22/3/2017 SE163541.016	TP71 0-0.15 SOIL - 23/3/2017 SE163541.019
Exchangeable Sodium, Na	mg/kg	2	25	65	130	32	78
Exchangeable Sodium, Na	meq/100g	0.01	0.11	0.28	0.56	0.14	0.34
Exchangeable Sodium Percentage*	%	0.1	0.8	1.5	6.3	1.9	4.9
Exchangeable Potassium, K	mg/kg	2	130	530	180	290	160
Exchangeable Potassium, K	meq/100g	0.01	0.33	1.4	0.46	0.73	0.40
Exchangeable Potassium Percentage*	%	0.1	2.4	7.2	5.2	9.9	5.9
Exchangeable Calcium, Ca	mg/kg	2	2400	2200	620	450	680
Exchangeable Calcium, Ca	meq/100g	0.01	12	11	3.1	2.2	3.4
Exchangeable Calcium Percentage*	%	0.1	85.6	59.0	34.7	30.2	49.6
Exchangeable Magnesium, Mg	mg/kg	2	190	750	590	520	330
Exchangeable Magnesium, Mg	meq/100g	0.02	1.6	6.1	4.8	4.3	2.7
Exchangeable Magnesium Percentage*	%	0.1	11.3	32.3	53.8	58.0	39.6
Cation Exchange Capacity	meq/100g	0.02	14	19	8.9	7.4	6.9

PARAMETER	UOM	LOR	TP76 0-0.15 SOIL - 23/3/2017 SE163541.023	TP80 0-0.15 SOIL - 23/3/2017 SE163541.027	TP81 0-0.15 SOIL - 23/3/2017 SE163541.029	TP84 0-0.15 SOIL - 22/3/2017 SE163541.032
Exchangeable Sodium, Na	mg/kg	2	15	68	68	36
Exchangeable Sodium, Na	meq/100g	0.01	0.06	0.30	0.30	0.16
Exchangeable Sodium Percentage*	%	0.1	0.5	3.3	7.8	1.3
Exchangeable Potassium, K	mg/kg	2	180	120	190	690
Exchangeable Potassium, K	meq/100g	0.01	0.47	0.30	0.48	1.8
Exchangeable Potassium Percentage*	%	0.1	3.3	3.4	12.5	14.8
Exchangeable Calcium, Ca	mg/kg	2	2500	950	280	1300
Exchangeable Calcium, Ca	meq/100g	0.01	13	4.8	1.4	6.4
Exchangeable Calcium Percentage*	%	0.1	89.0	53.6	36.5	53.3
Exchangeable Magnesium, Mg	mg/kg	2	120	430	200	450
Exchangeable Magnesium, Mg	meq/100g	0.02	1.0	3.5	1.6	3.7
Exchangeable Magnesium Percentage*	%	0.1	7.2	39.6	43.2	30.5
Cation Exchange Capacity	meq/100g	0.02	14	8.9	3.8	12

Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 30/3/2017

PARAMETER	UOM	LOR	C617 SOIL - 23/3/2017 SE163541.045	C618 SOIL - 22/3/2017 SE163541.046	C619 SOIL - 22/3/2017 SE163541.047	C620 SOIL - 23/3/2017 SE163541.048	C621 SOIL - 22/3/2017 SE163541.049
Arsenic, As	mg/kg	3	6	5	7	6	6
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	0.3	0.3	<0.3
Chromium, Cr	mg/kg	0.3	9.3	9.3	11	10	11
Copper, Cu	mg/kg	0.5	20	14	22	20	310
Lead, Pb	mg/kg	1	36	23	28	29	22
Nickel, Ni	mg/kg	0.5	7.3	8.5	13	11	9.6
Zinc, Zn	mg/kg	0.5	82	55	77	60	58

PARAMETER	UOM	LOR	C622 SOIL - 22/3/2017 SE163541.050	C623 SOIL - 22/3/2017 SE163541.051	C624 SOIL - 22/3/2017 SE163541.052	C625 SOIL - 22/3/2017 SE163541.053	C626 SOIL - 22/3/2017 SE163541.054
Arsenic, As	mg/kg	3	6	4	5	5	6
Cadmium, Cd	mg/kg	0.3	0.3	<0.3	<0.3	0.4	<0.3
Chromium, Cr	mg/kg	0.3	9.6	5.7	8.8	8.8	9.9
Copper, Cu	mg/kg	0.5	22	14	14	16	18
Lead, Pb	mg/kg	1	26	27	25	23	27
Nickel, Ni	mg/kg	0.5	8.4	4.5	10	11	9.9
Zinc, Zn	mg/kg	0.5	68	35	38	70	51

PARAMETER	UOM	LOR	C627 SOIL - 22/3/2017 SE163541.055	C628 SOIL - 22/3/2017 SE163541.056	Duplicate CD3 SOIL - 22/3/2017 SE163541.057
Arsenic, As	mg/kg	3	7	5	5
Cadmium, Cd	mg/kg	0.3	0.3	<0.3	0.3
Chromium, Cr	mg/kg	0.3	9.7	9.7	9.2
Copper, Cu	mg/kg	0.5	17	18	17
Lead, Pb	mg/kg	1	27	18	27
Nickel, Ni	mg/kg	0.5	13	8.0	13
Zinc, Zn	mg/kg	0.5	42	45	69

Mercury in Soil [AN312] Tested: 29/3/2017

PARAMETER	UOM	LOR	C617 SOIL - 23/3/2017 SE163541.045	C618 SOIL - 22/3/2017 SE163541.046	C619 SOIL - 22/3/2017 SE163541.047	C620 SOIL - 23/3/2017 SE163541.048	C621 SOIL - 22/3/2017 SE163541.049
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	C622 SOIL - 22/3/2017 SE163541.050	C623 SOIL - 22/3/2017 SE163541.051	C624 SOIL - 22/3/2017 SE163541.052	C625 SOIL - 22/3/2017 SE163541.053	C626 SOIL - 22/3/2017 SE163541.054
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	C627 SOIL - 22/3/2017 SE163541.055	C628 SOIL - 22/3/2017 SE163541.056	Duplicate CD3 SOIL - 22/3/2017 SE163541.057
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05

Moisture Content [AN002] Tested: 28/3/2017

PARAMETER	UOM	LOR	TP50 0-0.1 SOIL - 23/3/2017 SE163541.001	TP58 0-0.15 SOIL - 22/3/2017 SE163541.007	TP59 0-0.15 SOIL - 23/3/2017 SE163541.008	TP68 0-0.15 SOIL - 22/3/2017 SE163541.016	TP71 0-0.15 SOIL - 23/3/2017 SE163541.019
% Moisture	%w/w	0.5	21	26	22	19	28

PARAMETER	UOM	LOR	TP76 0-0.15 SOIL - 23/3/2017 SE163541.023	TP80 0-0.15 SOIL - 23/3/2017 SE163541.027	TP81 0-0.15 SOIL - 23/3/2017 SE163541.029	TP84 0-0.15 SOIL - 22/3/2017 SE163541.032	C617 SOIL - 23/3/2017 SE163541.045
% Moisture	%w/w	0.5	22	23	23	19	26

PARAMETER	UOM	LOR	C618 SOIL - 22/3/2017 SE163541.046	C619 SOIL - 22/3/2017 SE163541.047	C620 SOIL - 23/3/2017 SE163541.048	C621 SOIL - 22/3/2017 SE163541.049	C622 SOIL - 22/3/2017 SE163541.050
% Moisture	%w/w	0.5	19	24	23	23	22

PARAMETER	UOM	LOR	C623 SOIL - 22/3/2017 SE163541.051	C624 SOIL - 22/3/2017 SE163541.052	C625 SOIL - 22/3/2017 SE163541.053	C626 SOIL - 22/3/2017 SE163541.054	C627 SOIL - 22/3/2017 SE163541.055
% Moisture	%w/w	0.5	20	23	24	18	25

PARAMETER	UOM	LOR	C628 SOIL - 22/3/2017 SE163541.056	Duplicate CD3 SOIL - 22/3/2017 SE163541.057
% Moisture	%w/w	0.5	17	24

Gravimetric Determination of Asbestos in Soil [AN605] Tested: 30/3/2017

PARAMETER	UOM	LOR	TP50 0-0.1 SOIL - 23/3/2017 SE163541.001	TP53 0-0.1 SOIL - 23/3/2017 SE163541.002	TP54 0-0.1 SOIL - 23/3/2017 SE163541.003	TP56 0-0.15 SOIL - 22/3/2017 SE163541.005	TP57 0-0.15 SOIL - 22/3/2017 SE163541.006
Total Sample Weight	g	1	**490**	**870**	**749**	**935**	**558**
ACM in >7mm Sample*	g	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
AF/FA in >2mm to <7mm Sample*	g	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
AF/FA in <2mm Sample*	g	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Asbestos in soil (>7mm ACM)*	%w/w	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Asbestos in soil (>2mm to <7mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Asbestos in soil (<2mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Asbestos in soil (<7mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Fibre Type	No unit	-	NAD,ORG	NAD,ORG	NAD	NAD,ORG	NAD

PARAMETER	UOM	LOR	TP59 0-0.15 SOIL - 23/3/2017 SE163541.008	TP60 0-0.15 SOIL - 23/3/2017 SE163541.009	TP61 0-0.15 SOIL - 23/3/2017 SE163541.010	TP62 0-0.1 SOIL - 23/3/2017 SE163541.011	TP68 0-0.15 SOIL - 22/3/2017 SE163541.016
Total Sample Weight	g	1	**687**	**484**	**564**	**676**	**880**
ACM in >7mm Sample*	g	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
AF/FA in >2mm to <7mm Sample*	g	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
AF/FA in <2mm Sample*	g	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Asbestos in soil (>7mm ACM)*	%w/w	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Asbestos in soil (>2mm to <7mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Asbestos in soil (<2mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Asbestos in soil (<7mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Fibre Type	No unit	-	NAD	NAD	NAD	NAD	NAD

PARAMETER	UOM	LOR	TP69 0-0.15 SOIL - 22/3/2017 SE163541.017	TP70 0-0.15 SOIL - 22/3/2017 SE163541.018	TP72 0-0.15 SOIL - 22/3/2017 SE163541.020	TP73 0-0.15 SOIL - 22/3/2017 SE163541.021	TP76 0-0.15 SOIL - 23/3/2017 SE163541.023
Total Sample Weight	g	1	**963**	**1120**	**728**	**717**	**735**
ACM in >7mm Sample*	g	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
AF/FA in >2mm to <7mm Sample*	g	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
AF/FA in <2mm Sample*	g	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Asbestos in soil (>7mm ACM)*	%w/w	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Asbestos in soil (>2mm to <7mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Asbestos in soil (<2mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Asbestos in soil (<7mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Fibre Type	No unit	-	NAD	NAD	NAD	NAD	NAD,ORG

PARAMETER	UOM	LOR	TP77 0-0.1 SOIL - 22/3/2017 SE163541.024	TP78 0-0.15 SOIL - 23/3/2017 SE163541.025	TP80 0-0.15 SOIL - 23/3/2017 SE163541.027	TP80 0.5-0.7 SOIL - 23/3/2017 SE163541.028	TP84 0-0.15 SOIL - 22/3/2017 SE163541.032
Total Sample Weight	g	1	**648**	**632**	**747**	**565**	**723**
ACM in >7mm Sample*	g	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
AF/FA in >2mm to <7mm Sample*	g	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
AF/FA in <2mm Sample*	g	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Asbestos in soil (>7mm ACM)*	%w/w	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Asbestos in soil (>2mm to <7mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Asbestos in soil (<2mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Asbestos in soil (<7mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Fibre Type	No unit	-	NAD,ORG	NAD	NAD,ORG	NAD	NAD

Gravimetric Determination of Asbestos in Soil [AN605] Tested: 30/3/2017 (continued)

PARAMETER	UOM	LOR	TP84 0.5-0.8 SOIL - 22/3/2017 SE163541.033	TP84 1.0-1.3 SOIL - 22/3/2017 SE163541.034	TP84 1.5-1.8 SOIL - 22/3/2017 SE163541.035	TP85 0-0.15 SOIL - 23/3/2017 SE163541.036
Total Sample Weight	g	1	**845**	**510**	**565**	**749**
ACM in >7mm Sample*	g	0.01	<0.01	<0.01	<0.01	<0.01
AF/FA in >2mm to <7mm Sample*	g	0.0001	<0.0001	<0.0001	<0.0001	<0.0001
AF/FA in <2mm Sample*	g	0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Asbestos in soil (>7mm ACM)*	%w/w	0.01	<0.01	<0.01	<0.01	<0.01
Asbestos in soil (>2mm to <7mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001
Asbestos in soil (<2mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001
Asbestos in soil (<7mm AF/FA)*	%w/w	0.001	<0.001	<0.001	<0.001	<0.001
Fibre Type	No unit	-	NAD	NAD	NAD	NAD

Metals in Water (Dissolved) by ICPOES [AN320/AN321] Tested: 31/3/2017

PARAMETER	UOM	LOR	Rinsate R3 WATER - 22/3/2017 SE163541.041	Rinsate R4 WATER - 23/3/2017 SE163541.042
Arsenic, As	mg/L	0.02	<0.02	<0.02
Cadmium, Cd	mg/L	0.001	**0.002**	**0.001**
Chromium, Cr	mg/L	0.005	<0.005	<0.005
Copper, Cu	mg/L	0.005	<0.005	**0.006**
Lead, Pb	mg/L	0.02	<0.02	<0.02
Nickel, Ni	mg/L	0.005	<0.005	<0.005
Zinc, Zn	mg/L	0.01	<0.01	**0.01**

Mercury (dissolved) in Water [AN311(Perth)/AN312] Tested: 30/3/2017

PARAMETER	UOM	LOR	Rinsate R3 WATER - 22/3/2017 SE163541.041	Rinsate R4 WATER - 23/3/2017 SE163541.042
Mercury	mg/L	0.0001	<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.
AN101	pH in Soil Sludge Sediment and Water: pH is measured electrometrically using a combination electrode and is calibrated against 3 buffers purchased commercially. For soils, sediments and sludges, an extract with water (or 0.01M CaCl2) is made at a ratio of 1:5 and the pH determined and reported on the extract. Reference APHA 4500-H+.
AN122	Exchangeable Cations, CEC and ESP: Soil sample is extracted in 1M Ammonium Acetate at pH=7 (or 1M Ammonium Chloride at pH=7) with cations (Na, K, Ca & Mg) then determined by ICP OES/ICP MS and reported as Exchangeable Cations. For saline soils, these results can be corrected for water soluble cations and reported as Exchangeable cations in meq/100g or soil can be pre-treated (aqueous ethanol/aqueous glycerol) prior to extraction. Cation Exchange Capacity (CEC) is the sum of the exchangeable cations in meq/100g.
AN122	The Exchangeable Sodium Percentage (ESP) is calculated as the exchangeable sodium divided by the CEC (all in meq/100g) times 100. ESP can be used to categorise the sodicity of the soil as below: ESP < 6% non-sodic ESP 6-15% sodic ESP >15% strongly sodic Method is refernced to Rayment and Higginson, 1992, sections 15D3 and 15N1.-
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
AN320/AN321	Metals by ICP-OES: Samples are preserved with 10% nitric acid for a wide range of metals and some non-metals. This solution is measured by Inductively Coupled Plasma. Solutions are aspirated into an argon plasma at 8000-10000K and emit characteristic energy or light as a result of electron transitions through unique energy levels. The emitted light is focused onto a diffraction grating where it is separated into components.
AN320/AN321	Photomultipliers or CCDs are used to measure the light intensity at specific wavelengths. This intensity is directly proportional to concentration. Corrections are required to compensate for spectral overlap between elements. Reference APHA 3120 B.
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is reported directly and also corrected by subtracting Naphthalene (from VOC method AN433) where available.
AN403	Additionally, the volatile C6-C9 fraction may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Petroleum Hydrocarbons (TPH) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents.
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, 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.
AN605	This technique gravimetrically determines the mass of Asbestos Containing Material retained on a 7mm Sieve and assumes that 15% of this ACM is asbestos. This calculated asbestos weight is then calculated as a percentage of the total sample weight.
AN605	This technique also gravimetrically determines the mass of Fibrous Asbestos (FA) and Asbestos Fines (AF) Containing Material retained on and passing a 2mm sieve post 7mm sieving. Assumes that FA and AF are 100% asbestos containing. This calculated asbestos weight is then calculated as a percentage of the total sample weight. This does not include free fibres which are only observed by standard trace analysis as per AN 602.
AN605	AMO = Amosite Detected CRY = Chrysotile Detected CRO = Crocidolite Detected ORG = Organic Fibres Detected SMF = Synthetic Mineral Fibres Detected UMF = Unknown Mineral Fibres Detected NAD = No Asbestos Detected
AN605	Insofar as is technically feasible, this report is consistent with the analytical reporting recommendations in the Western Australian Department of Health Guidelines for the Assessment Remediation and Management of Asbestos - Contaminated Sites in Western Australia - May 2009.

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.		

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

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STATEMENT OF QA/QC PERFORMANCE

SE163541 R0

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
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Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**13793-5 Airds**
Order Number	(Not specified)
Samples	57

LABORATORY DETAILS

Manager	Huong Crawford
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Email	au.environmental.sydney@sgs.com
SGS Reference	**SE163541 R0**
Date Received	23 Mar 2017
Date Reported	04 Apr 2017

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 and was supplied by the Client.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met with the exception of the following:

Matrix Spike	Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES	1 item

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	42 Soil, 2 Water
Date documentation received	24/3/17@3:08pm	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	11.3°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

HOLDING TIME SUMMARY

SE163541 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.

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR)

Method: ME-(AU)-[ENV]AN122

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP50 0-0.1	SE163541.001	LB121344	23 Mar 2017	23 Mar 2017	20 Apr 2017	30 Mar 2017	20 Apr 2017	31 Mar 2017
TP58 0-0.15	SE163541.007	LB121344	22 Mar 2017	23 Mar 2017	19 Apr 2017	30 Mar 2017	19 Apr 2017	31 Mar 2017
TP59 0-0.15	SE163541.008	LB121344	23 Mar 2017	23 Mar 2017	20 Apr 2017	30 Mar 2017	20 Apr 2017	31 Mar 2017
TP68 0-0.15	SE163541.016	LB121344	22 Mar 2017	23 Mar 2017	19 Apr 2017	30 Mar 2017	19 Apr 2017	31 Mar 2017
TP71 0-0.15	SE163541.019	LB121344	23 Mar 2017	23 Mar 2017	20 Apr 2017	30 Mar 2017	20 Apr 2017	31 Mar 2017
TP76 0-0.15	SE163541.023	LB121344	23 Mar 2017	23 Mar 2017	20 Apr 2017	30 Mar 2017	20 Apr 2017	31 Mar 2017
TP80 0-0.15	SE163541.027	LB121344	23 Mar 2017	23 Mar 2017	20 Apr 2017	30 Mar 2017	20 Apr 2017	31 Mar 2017
TP81 0-0.15	SE163541.029	LB121344	23 Mar 2017	23 Mar 2017	20 Apr 2017	30 Mar 2017	20 Apr 2017	31 Mar 2017
TP84 0-0.15	SE163541.032	LB121344	22 Mar 2017	23 Mar 2017	19 Apr 2017	30 Mar 2017	19 Apr 2017	31 Mar 2017

Gravimetric Determination of Asbestos in Soil

Method: ME-(AU)-[ENV]AN605

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP50 0-0.1	SE163541.001	LB121400	23 Mar 2017	23 Mar 2017	19 Sep 2017	30 Mar 2017	19 Sep 2017	03 Apr 2017
TP53 0-0.1	SE163541.002	LB121400	23 Mar 2017	23 Mar 2017	19 Sep 2017	30 Mar 2017	19 Sep 2017	03 Apr 2017
TP54 0-0.1	SE163541.003	LB121400	23 Mar 2017	23 Mar 2017	19 Sep 2017	30 Mar 2017	19 Sep 2017	03 Apr 2017
TP56 0-0.15	SE163541.005	LB121400	22 Mar 2017	23 Mar 2017	18 Sep 2017	30 Mar 2017	18 Sep 2017	03 Apr 2017
TP57 0-0.15	SE163541.006	LB121400	22 Mar 2017	23 Mar 2017	18 Sep 2017	30 Mar 2017	18 Sep 2017	03 Apr 2017
TP59 0-0.15	SE163541.008	LB121400	23 Mar 2017	23 Mar 2017	19 Sep 2017	30 Mar 2017	19 Sep 2017	03 Apr 2017
TP60 0-0.15	SE163541.009	LB121400	23 Mar 2017	23 Mar 2017	19 Sep 2017	30 Mar 2017	19 Sep 2017	03 Apr 2017
TP61 0-0.15	SE163541.010	LB121400	23 Mar 2017	23 Mar 2017	19 Sep 2017	30 Mar 2017	19 Sep 2017	03 Apr 2017
TP62 0-0.1	SE163541.011	LB121400	23 Mar 2017	23 Mar 2017	19 Sep 2017	30 Mar 2017	19 Sep 2017	03 Apr 2017
TP68 0-0.15	SE163541.016	LB121400	22 Mar 2017	23 Mar 2017	18 Sep 2017	30 Mar 2017	18 Sep 2017	03 Apr 2017
TP69 0-0.15	SE163541.017	LB121400	22 Mar 2017	23 Mar 2017	18 Sep 2017	30 Mar 2017	18 Sep 2017	03 Apr 2017
TP70 0-0.15	SE163541.018	LB121400	22 Mar 2017	23 Mar 2017	18 Sep 2017	30 Mar 2017	18 Sep 2017	03 Apr 2017
TP72 0-0.15	SE163541.020	LB121400	22 Mar 2017	23 Mar 2017	18 Sep 2017	30 Mar 2017	18 Sep 2017	03 Apr 2017
TP73 0-0.15	SE163541.021	LB121400	22 Mar 2017	23 Mar 2017	18 Sep 2017	30 Mar 2017	18 Sep 2017	03 Apr 2017
TP76 0-0.15	SE163541.023	LB121400	23 Mar 2017	23 Mar 2017	19 Sep 2017	30 Mar 2017	19 Sep 2017	04 Apr 2017
TP77 0-0.1	SE163541.024	LB121400	22 Mar 2017	23 Mar 2017	18 Sep 2017	30 Mar 2017	18 Sep 2017	04 Apr 2017
TP78 0-0.15	SE163541.025	LB121400	23 Mar 2017	23 Mar 2017	19 Sep 2017	30 Mar 2017	19 Sep 2017	04 Apr 2017
TP80 0-0.15	SE163541.027	LB121400	23 Mar 2017	23 Mar 2017	19 Sep 2017	30 Mar 2017	19 Sep 2017	04 Apr 2017
TP80 0.5-0.7	SE163541.028	LB121400	23 Mar 2017	23 Mar 2017	19 Sep 2017	30 Mar 2017	19 Sep 2017	04 Apr 2017
TP84 0-0.15	SE163541.032	LB121400	22 Mar 2017	23 Mar 2017	18 Sep 2017	30 Mar 2017	18 Sep 2017	04 Apr 2017
TP84 0.5-0.8	SE163541.033	LB121400	22 Mar 2017	23 Mar 2017	18 Sep 2017	30 Mar 2017	18 Sep 2017	04 Apr 2017
TP84 1.0-1.3	SE163541.034	LB121400	22 Mar 2017	23 Mar 2017	18 Sep 2017	30 Mar 2017	18 Sep 2017	04 Apr 2017
TP84 1.5-1.8	SE163541.035	LB121400	22 Mar 2017	23 Mar 2017	18 Sep 2017	30 Mar 2017	18 Sep 2017	04 Apr 2017
TP85 0-0.15	SE163541.036	LB121400	23 Mar 2017	23 Mar 2017	19 Sep 2017	30 Mar 2017	19 Sep 2017	04 Apr 2017

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
Rinsate R3	SE163541.041	LB121371	22 Mar 2017	23 Mar 2017	19 Apr 2017	30 Mar 2017	19 Apr 2017	30 Mar 2017
Rinsate R4	SE163541.042	LB121371	23 Mar 2017	23 Mar 2017	20 Apr 2017	30 Mar 2017	20 Apr 2017	30 Mar 2017

Mercury in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
C617	SE163541.045	LB121325	23 Mar 2017	23 Mar 2017	20 Apr 2017	29 Mar 2017	20 Apr 2017	31 Mar 2017
C618	SE163541.046	LB121325	22 Mar 2017	23 Mar 2017	19 Apr 2017	29 Mar 2017	19 Apr 2017	31 Mar 2017
C619	SE163541.047	LB121325	22 Mar 2017	23 Mar 2017	19 Apr 2017	29 Mar 2017	19 Apr 2017	31 Mar 2017
C620	SE163541.048	LB121325	23 Mar 2017	23 Mar 2017	20 Apr 2017	29 Mar 2017	20 Apr 2017	31 Mar 2017
C621	SE163541.049	LB121325	22 Mar 2017	23 Mar 2017	19 Apr 2017	29 Mar 2017	19 Apr 2017	31 Mar 2017
C622	SE163541.050	LB121325	22 Mar 2017	23 Mar 2017	19 Apr 2017	29 Mar 2017	19 Apr 2017	31 Mar 2017
C623	SE163541.051	LB121325	22 Mar 2017	23 Mar 2017	19 Apr 2017	29 Mar 2017	19 Apr 2017	31 Mar 2017
C624	SE163541.052	LB121325	22 Mar 2017	23 Mar 2017	19 Apr 2017	29 Mar 2017	19 Apr 2017	31 Mar 2017
C625	SE163541.053	LB121325	22 Mar 2017	23 Mar 2017	19 Apr 2017	29 Mar 2017	19 Apr 2017	31 Mar 2017
C626	SE163541.054	LB121325	22 Mar 2017	23 Mar 2017	19 Apr 2017	29 Mar 2017	19 Apr 2017	31 Mar 2017
C627	SE163541.055	LB121325	22 Mar 2017	23 Mar 2017	19 Apr 2017	29 Mar 2017	19 Apr 2017	31 Mar 2017
C628	SE163541.056	LB121325	22 Mar 2017	23 Mar 2017	19 Apr 2017	29 Mar 2017	19 Apr 2017	31 Mar 2017
Duplicate CD3	SE163541.057	LB121325	22 Mar 2017	23 Mar 2017	19 Apr 2017	29 Mar 2017	19 Apr 2017	31 Mar 2017

Metals in Water (Dissolved) by ICPOES

Method: ME-(AU)-[ENV]AN320/AN321

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Rinsate R3	SE163541.041	LB121421	22 Mar 2017	23 Mar 2017	18 Sep 2017	31 Mar 2017	18 Sep 2017	31 Mar 2017
Rinsate R4	SE163541.042	LB121421	23 Mar 2017	23 Mar 2017	19 Sep 2017	31 Mar 2017	19 Sep 2017	31 Mar 2017

HOLDING TIME SUMMARY

SE163541 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.

Moisture Content

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP50 0-0.1	SE163541.001	LB121237	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	02 Apr 2017	30 Mar 2017
TP53 0-0.1	SE163541.002	LB121237	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
TP54 0-0.1	SE163541.003	LB121237	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
TP55 0-0.15	SE163541.004	LB121237	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
TP56 0-0.15	SE163541.005	LB121237	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
TP57 0-0.15	SE163541.006	LB121237	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
TP58 0-0.15	SE163541.007	LB121237	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	02 Apr 2017	30 Mar 2017
TP59 0-0.15	SE163541.008	LB121237	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	02 Apr 2017	30 Mar 2017
TP60 0-0.15	SE163541.009	LB121237	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
TP61 0-0.15	SE163541.010	LB121237	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
TP62 0-0.1	SE163541.011	LB121237	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
TP63 0-0.15	SE163541.012	LB121237	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
TP64 0-0.15	SE163541.013	LB121237	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
TP65 0-0.15	SE163541.014	LB121237	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
TP66 0-0.15	SE163541.015	LB121237	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
TP68 0-0.15	SE163541.016	LB121237	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	02 Apr 2017	30 Mar 2017
TP69 0-0.15	SE163541.017	LB121237	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
TP70 0-0.15	SE163541.018	LB121237	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
TP71 0-0.15	SE163541.019	LB121237	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	02 Apr 2017	30 Mar 2017
TP72 0-0.15	SE163541.020	LB121237	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
TP73 0-0.15	SE163541.021	LB121237	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
TP74 0-0.15	SE163541.022	LB121237	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
TP76 0-0.15	SE163541.023	LB121237	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	02 Apr 2017	30 Mar 2017
TP77 0-0.1	SE163541.024	LB121237	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
TP78 0-0.15	SE163541.025	LB121237	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
TP79 0-0.15	SE163541.026	LB121237	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
TP80 0-0.15	SE163541.027	LB121237	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	02 Apr 2017	30 Mar 2017
TP81 0-0.15	SE163541.029	LB121237	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	02 Apr 2017	30 Mar 2017
TP82 0-0.15	SE163541.030	LB121237	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
TP83 0-0.15	SE163541.031	LB121237	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
TP84 0-0.15	SE163541.032	LB121237	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	02 Apr 2017	30 Mar 2017
TP84 0.5-0.8	SE163541.033	LB121237	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
TP84 1.0-1.3	SE163541.034	LB121237	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
TP84 1.5-1.8	SE163541.035	LB121237	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
TP85 0-0.15	SE163541.036	LB121237	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
TP86 0-0.15	SE163541.037	LB121237	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
X7	SE163541.038	LB121237	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
X8	SE163541.039	LB121237	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
X9	SE163541.040	LB121237	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
C617	SE163541.045	LB121237	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
C618	SE163541.046	LB121237	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
C619	SE163541.047	LB121237	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
C620	SE163541.048	LB121237	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
C621	SE163541.049	LB121237	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
C622	SE163541.050	LB121237	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
C623	SE163541.051	LB121237	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
C624	SE163541.052	LB121237	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
C625	SE163541.053	LB121237	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
C626	SE163541.054	LB121237	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
C627	SE163541.055	LB121237	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
C628	SE163541.056	LB121237	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017
Duplicate CD3	SE163541.057	LB121237	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	02 Apr 2017	31 Mar 2017

OC Pesticides in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP50 0-0.1	SE163541.001	LB121200	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
TP59 0-0.15	SE163541.008	LB121200	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
TP68 0-0.15	SE163541.016	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
TP76 0-0.15	SE163541.023	LB121200	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
TP80 0-0.15	SE163541.027	LB121200	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017

HOLDING TIME SUMMARY

SE163541 R0

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

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

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

OC Pesticides in Soil (continued)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
C617	SE163541.045	LB121200	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C618	SE163541.046	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C619	SE163541.047	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C620	SE163541.048	LB121200	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C621	SE163541.049	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C622	SE163541.050	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C623	SE163541.051	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C625	SE163541.053	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C626	SE163541.054	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C627	SE163541.055	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
Duplicate CD3	SE163541.057	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017

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
TP50 0-0.1	SE163541.001	LB121200	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
TP59 0-0.15	SE163541.008	LB121200	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
TP68 0-0.15	SE163541.016	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
TP76 0-0.15	SE163541.023	LB121200	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
TP80 0-0.15	SE163541.027	LB121200	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C617	SE163541.045	LB121200	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C618	SE163541.046	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C619	SE163541.047	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C620	SE163541.048	LB121200	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C621	SE163541.049	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C622	SE163541.050	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C623	SE163541.051	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C625	SE163541.053	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C626	SE163541.054	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C627	SE163541.055	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
Duplicate CD3	SE163541.057	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017

PCBs in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP50 0-0.1	SE163541.001	LB121200	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
TP59 0-0.15	SE163541.008	LB121200	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
TP68 0-0.15	SE163541.016	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
TP76 0-0.15	SE163541.023	LB121200	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
TP80 0-0.15	SE163541.027	LB121200	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C617	SE163541.045	LB121200	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C618	SE163541.046	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C619	SE163541.047	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C620	SE163541.048	LB121200	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C621	SE163541.049	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C622	SE163541.050	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C623	SE163541.051	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C625	SE163541.053	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C626	SE163541.054	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C627	SE163541.055	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
Duplicate CD3	SE163541.057	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017

pH in soil (1:5)

Method: ME-(AU)-[ENV]AN101

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP50 0-0.1	SE163541.001	LB121381	23 Mar 2017	23 Mar 2017	30 Mar 2017	29 Mar 2017	30 Mar 2017	30 Mar 2017
TP58 0-0.15	SE163541.007	LB121381	22 Mar 2017	23 Mar 2017	29 Mar 2017	29 Mar 2017	30 Mar 2017	30 Mar 2017
TP59 0-0.15	SE163541.008	LB121381	23 Mar 2017	23 Mar 2017	30 Mar 2017	29 Mar 2017	30 Mar 2017	30 Mar 2017
TP68 0-0.15	SE163541.016	LB121381	22 Mar 2017	23 Mar 2017	29 Mar 2017	29 Mar 2017	30 Mar 2017	30 Mar 2017
TP71 0-0.15	SE163541.019	LB121381	23 Mar 2017	23 Mar 2017	30 Mar 2017	29 Mar 2017	30 Mar 2017	30 Mar 2017
TP76 0-0.15	SE163541.023	LB121381	23 Mar 2017	23 Mar 2017	30 Mar 2017	29 Mar 2017	30 Mar 2017	30 Mar 2017
TP80 0-0.15	SE163541.027	LB121381	23 Mar 2017	23 Mar 2017	30 Mar 2017	29 Mar 2017	30 Mar 2017	30 Mar 2017
TP81 0-0.15	SE163541.029	LB121381	23 Mar 2017	23 Mar 2017	30 Mar 2017	29 Mar 2017	30 Mar 2017	30 Mar 2017
TP84 0-0.15	SE163541.032	LB121381	22 Mar 2017	23 Mar 2017	29 Mar 2017	29 Mar 2017	30 Mar 2017	30 Mar 2017

HOLDING TIME SUMMARY

SE163541 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.

Total Recoverable Metals 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
C617	SE163541.045	LB121348	23 Mar 2017	23 Mar 2017	19 Sep 2017	30 Mar 2017	19 Sep 2017	31 Mar 2017
C618	SE163541.046	LB121348	22 Mar 2017	23 Mar 2017	18 Sep 2017	30 Mar 2017	18 Sep 2017	31 Mar 2017
C619	SE163541.047	LB121348	22 Mar 2017	23 Mar 2017	18 Sep 2017	30 Mar 2017	18 Sep 2017	31 Mar 2017
C620	SE163541.048	LB121348	23 Mar 2017	23 Mar 2017	19 Sep 2017	30 Mar 2017	19 Sep 2017	31 Mar 2017
C621	SE163541.049	LB121348	22 Mar 2017	23 Mar 2017	18 Sep 2017	30 Mar 2017	18 Sep 2017	31 Mar 2017
C622	SE163541.050	LB121348	22 Mar 2017	23 Mar 2017	18 Sep 2017	30 Mar 2017	18 Sep 2017	31 Mar 2017
C623	SE163541.051	LB121348	22 Mar 2017	23 Mar 2017	18 Sep 2017	30 Mar 2017	18 Sep 2017	31 Mar 2017
C624	SE163541.052	LB121348	22 Mar 2017	23 Mar 2017	18 Sep 2017	30 Mar 2017	18 Sep 2017	31 Mar 2017
C625	SE163541.053	LB121348	22 Mar 2017	23 Mar 2017	18 Sep 2017	30 Mar 2017	18 Sep 2017	31 Mar 2017
C626	SE163541.054	LB121348	22 Mar 2017	23 Mar 2017	18 Sep 2017	30 Mar 2017	18 Sep 2017	31 Mar 2017
C627	SE163541.055	LB121348	22 Mar 2017	23 Mar 2017	18 Sep 2017	30 Mar 2017	18 Sep 2017	31 Mar 2017
C628	SE163541.056	LB121348	22 Mar 2017	23 Mar 2017	18 Sep 2017	30 Mar 2017	18 Sep 2017	31 Mar 2017
Duplicate CD3	SE163541.057	LB121348	22 Mar 2017	23 Mar 2017	18 Sep 2017	30 Mar 2017	18 Sep 2017	31 Mar 2017

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
TP50 0-0.1	SE163541.001	LB121200	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
TP59 0-0.15	SE163541.008	LB121200	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
TP68 0-0.15	SE163541.016	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
TP76 0-0.15	SE163541.023	LB121200	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
TP80 0-0.15	SE163541.027	LB121200	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C617	SE163541.045	LB121200	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C618	SE163541.046	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C619	SE163541.047	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C620	SE163541.048	LB121200	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C621	SE163541.049	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C622	SE163541.050	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C623	SE163541.051	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C625	SE163541.053	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C626	SE163541.054	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
C627	SE163541.055	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017
Duplicate CD3	SE163541.057	LB121200	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	31 Mar 2017

VOC's in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP50 0-0.1	SE163541.001	LB121220	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
TP59 0-0.15	SE163541.008	LB121220	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
TP68 0-0.15	SE163541.016	LB121220	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
TP76 0-0.15	SE163541.023	LB121220	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
TP80 0-0.15	SE163541.027	LB121220	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
Tripspike TS3	SE163541.043	LB121220	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
Tripspike TS4	SE163541.044	LB121220	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017

Volatile Petroleum Hydrocarbons in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP50 0-0.1	SE163541.001	LB121220	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
TP59 0-0.15	SE163541.008	LB121220	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
TP68 0-0.15	SE163541.016	LB121220	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
TP76 0-0.15	SE163541.023	LB121220	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
TP80 0-0.15	SE163541.027	LB121220	23 Mar 2017	23 Mar 2017	06 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
Tripspike TS3	SE163541.043	LB121220	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017
Tripspike TS4	SE163541.044	LB121220	22 Mar 2017	23 Mar 2017	05 Apr 2017	28 Mar 2017	07 May 2017	30 Mar 2017

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)	C617	SE163541.045	%	60 - 130%	109
	C618	SE163541.046	%	60 - 130%	115
	C619	SE163541.047	%	60 - 130%	119
	C620	SE163541.048	%	60 - 130%	117
	C621	SE163541.049	%	60 - 130%	124
	C622	SE163541.050	%	60 - 130%	110
	C623	SE163541.051	%	60 - 130%	111
	C625	SE163541.053	%	60 - 130%	109
	C626	SE163541.054	%	60 - 130%	111
	C627	SE163541.055	%	60 - 130%	113
	Duplicate CD3	SE163541.057	%	60 - 130%	107

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	TP50 0-0.1	SE163541.001	%	70 - 130%	102
	TP59 0-0.15	SE163541.008	%	70 - 130%	98
	TP68 0-0.15	SE163541.016	%	70 - 130%	88
	TP76 0-0.15	SE163541.023	%	70 - 130%	92
	TP80 0-0.15	SE163541.027	%	70 - 130%	92
d14-p-terphenyl (Surrogate)	TP50 0-0.1	SE163541.001	%	70 - 130%	110
	TP59 0-0.15	SE163541.008	%	70 - 130%	92
	TP68 0-0.15	SE163541.016	%	70 - 130%	90
	TP76 0-0.15	SE163541.023	%	70 - 130%	108
	TP80 0-0.15	SE163541.027	%	70 - 130%	94
d5-nitrobenzene (Surrogate)	TP50 0-0.1	SE163541.001	%	70 - 130%	106
	TP59 0-0.15	SE163541.008	%	70 - 130%	104
	TP68 0-0.15	SE163541.016	%	70 - 130%	96
	TP76 0-0.15	SE163541.023	%	70 - 130%	94
	TP80 0-0.15	SE163541.027	%	70 - 130%	98

PCBs in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	C617	SE163541.045	%	60 - 130%	109
	C618	SE163541.046	%	60 - 130%	115
	C619	SE163541.047	%	60 - 130%	119
	C620	SE163541.048	%	60 - 130%	117
	C622	SE163541.050	%	60 - 130%	110
	C623	SE163541.051	%	60 - 130%	111
	C625	SE163541.053	%	60 - 130%	109
	C626	SE163541.054	%	60 - 130%	111

VOC's in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	TP50 0-0.1	SE163541.001	%	60 - 130%	80
	TP59 0-0.15	SE163541.008	%	60 - 130%	73
	TP68 0-0.15	SE163541.016	%	60 - 130%	73
	TP76 0-0.15	SE163541.023	%	60 - 130%	74
	TP80 0-0.15	SE163541.027	%	60 - 130%	81
	Tripspike TS3	SE163541.043	%	60 - 130%	82
	Tripspike TS4	SE163541.044	%	60 - 130%	77
d4-1,2-dichloroethane (Surrogate)	TP50 0-0.1	SE163541.001	%	60 - 130%	91
	TP59 0-0.15	SE163541.008	%	60 - 130%	89
	TP68 0-0.15	SE163541.016	%	60 - 130%	92
	TP76 0-0.15	SE163541.023	%	60 - 130%	90
	TP80 0-0.15	SE163541.027	%	60 - 130%	85
	Tripspike TS3	SE163541.043	%	60 - 130%	98
	Tripspike TS4	SE163541.044	%	60 - 130%	93
d8-toluene (Surrogate)	TP50 0-0.1	SE163541.001	%	60 - 130%	70
	TP59 0-0.15	SE163541.008	%	60 - 130%	74
	TP68 0-0.15	SE163541.016	%	60 - 130%	77
	TP76 0-0.15	SE163541.023	%	60 - 130%	71
	TP80 0-0.15	SE163541.027	%	60 - 130%	74

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

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

VOC's in Soil (continued)

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d8-toluene (Surrogate)	Tripspike TS3	SE163541.043	%	60 - 130%	80
	Tripspike TS4	SE163541.044	%	60 - 130%	79
Dibromofluoromethane (Surrogate)	TP50 0-0.1	SE163541.001	%	60 - 130%	86
	TP59 0-0.15	SE163541.008	%	60 - 130%	90
	TP68 0-0.15	SE163541.016	%	60 - 130%	95
	TP76 0-0.15	SE163541.023	%	60 - 130%	89
	TP80 0-0.15	SE163541.027	%	60 - 130%	81
	Tripspike TS3	SE163541.043	%	60 - 130%	75
	Tripspike TS4	SE163541.044	%	60 - 130%	95

Volatile Petroleum Hydrocarbons in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	TP50 0-0.1	SE163541.001	%	60 - 130%	80
	TP59 0-0.15	SE163541.008	%	60 - 130%	73
	TP68 0-0.15	SE163541.016	%	60 - 130%	73
	TP76 0-0.15	SE163541.023	%	60 - 130%	74
	TP80 0-0.15	SE163541.027	%	60 - 130%	81
d4-1,2-dichloroethane (Surrogate)	TP50 0-0.1	SE163541.001	%	60 - 130%	91
	TP59 0-0.15	SE163541.008	%	60 - 130%	89
	TP68 0-0.15	SE163541.016	%	60 - 130%	92
	TP76 0-0.15	SE163541.023	%	60 - 130%	90
	TP80 0-0.15	SE163541.027	%	60 - 130%	85
d8-toluene (Surrogate)	TP50 0-0.1	SE163541.001	%	60 - 130%	70
	TP59 0-0.15	SE163541.008	%	60 - 130%	74
	TP68 0-0.15	SE163541.016	%	60 - 130%	77
	TP76 0-0.15	SE163541.023	%	60 - 130%	71
	TP80 0-0.15	SE163541.027	%	60 - 130%	74
Dibromofluoromethane (Surrogate)	TP50 0-0.1	SE163541.001	%	60 - 130%	86
	TP59 0-0.15	SE163541.008	%	60 - 130%	90
	TP68 0-0.15	SE163541.016	%	60 - 130%	95
	TP76 0-0.15	SE163541.023	%	60 - 130%	89
	TP80 0-0.15	SE163541.027	%	60 - 130%	81

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.

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR)

Method: ME-(AU)-[ENV]AN122

Sample Number	Parameter	Units	LOR

Mercury (dissolved) in Water

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

Sample Number	Parameter	Units	LOR	Result
LB121371.001	Mercury	mg/L	0.0001	<0.0001

Mercury in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB121325.001	Mercury	mg/kg	0.05	<0.05

Metals in Water (Dissolved) by ICPOES

Method: ME-(AU)-[ENV]AN320/AN321

Sample Number	Parameter	Units	LOR	Result
LB121421.001	Arsenic, As	mg/L	0.02	<0.02
	Cadmium, Cd	mg/L	0.001	<0.001
	Chromium, Cr	mg/L	0.005	<0.005
	Copper, Cu	mg/L	0.005	<0.005
	Lead, Pb	mg/L	0.02	<0.02
	Nickel, Ni	mg/L	0.005	<0.005
	Zinc, Zn	mg/L	0.01	<0.01

OC Pesticides in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB121200.001		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	0.05	<0.05
		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)	%	-	111

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB121200.001	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
LB121200.001		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)	%	-	106
		2-fluorobiphenyl (Surrogate)	%	-	100
		d14-p-terphenyl (Surrogate)	%	-	90

PCBs in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB121200.001		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)	%	-	111

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

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

Sample Number	Parameter	Units	LOR	Result
LB121348.001	Arsenic, As	mg/kg	3	<3
	Cadmium, Cd	mg/kg	0.3	<0.3
	Chromium, Cr	mg/kg	0.3	<0.3
	Copper, Cu	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Nickel, Ni	mg/kg	0.5	<0.5
	Zinc, Zn	mg/kg	0.5	<0.5

TRH (Total Recoverable Hydrocarbons) in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB121200.001	TRH C10-C14	mg/kg	20	<20
	TRH C15-C28	mg/kg	45	<45
	TRH C29-C36	mg/kg	45	<45
	TRH C37-C40	mg/kg	100	<100
	TRH C10-C36 Total	mg/kg	110	<110

VOC's in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB121220.001	Monocyclic Aromatic	Benzene	mg/kg	0.1	<0.1
	Hydrocarbons	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)	%	-	78
		d4-1,2-dichloroethane (Surrogate)	%	-	80
		d8-toluene (Surrogate)	%	-	80
		Bromofluorobenzene (Surrogate)	%	-	82
	Totals	Total BTEX	mg/kg	0.6	<0.6

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
LB121220.001		TRH C6-C9	mg/kg	20	<20
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	78
		d4-1,2-dichloroethane (Surrogate)	%	-	71
		d8-toluene (Surrogate)	%	-	71

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 %
SE163541.041	LB121371.015	Mercury	µg/L	0.0001	<0.0001	<0.0001	200	0

Mercury in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE163541.053	LB121325.014	Mercury	mg/kg	0.05	<0.05	<0.05	193	0
SE163542.015	LB121325.024	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 %
SE163541.045	LB121237.044	% Moisture	%w/w	0.5	26	25	34	3
SE163541.055	LB121237.055	% Moisture	%w/w	0.5	25	25	34	2
SE163541.057	LB121237.058	% Moisture	%w/w	0.5	24	24	34	2

OC Pesticides in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE163541.053	LB121200.025		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Lindane	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor	mg/kg	0.1	<0.1	<0.1	200	0
			Aldrin	mg/kg	0.1	<0.1	<0.1	200	0
			Beta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Delta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Dieldrin	mg/kg	0.05	<0.05	<0.05	200	0
			Endrin	mg/kg	0.2	<0.2	<0.2	200	0
			o,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	200	0
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Ketone	mg/kg	0.1	<0.1	<0.1	200	0
			Isodrin	mg/kg	0.1	<0.1	<0.1	200	0
			Mirex	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.16	0.16	30	0

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE163541.023	LB121200.022	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

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

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

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE163541.023	LB121200.022		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	TEQ (mg/kg)	0.2	<0.2	<0.2	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	134	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (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	-	0.5	0.5	30	8
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	8
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	8

PCBs in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE163541.053	LB121200.023		Arochlor 1016	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1221	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1232	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1242	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1248	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1254	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1260	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1262	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1268	mg/kg	0.2	<0.2	<0.2	200	0
			Total PCBs (Arochlors)	mg/kg	1	<1	<1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	30	0

pH in soil (1:5)

Method: ME-(AU)-[ENV]AN101

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE163628.001	LB121381.014	pH	pH Units	-	6.4	6.4	32	0
SE163641.051	LB121381.028	pH	pH Units	-	5.4	5.2	32	5

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

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE163541.048	LB121348.014	Arsenic, As	mg/kg	3	6	6	46	9
		Cadmium, Cd	mg/kg	0.3	0.3	<0.3	134	1
		Chromium, Cr	mg/kg	0.3	10	9.6	35	8
		Copper, Cu	mg/kg	0.5	20	19	33	4
		Lead, Pb	mg/kg	1	29	32	33	9
		Nickel, Ni	mg/kg	0.5	11	10	35	11
		Zinc, Zn	mg/kg	0.5	60	55	33	8
SE163541.057	LB121348.024	Arsenic, As	mg/kg	3	5	6	48	4
		Cadmium, Cd	mg/kg	0.3	0.3	<0.3	130	2
		Chromium, Cr	mg/kg	0.3	9.2	9.0	35	3
		Copper, Cu	mg/kg	0.5	17	17	33	3
		Lead, Pb	mg/kg	1	27	26	34	3
		Nickel, Ni	mg/kg	0.5	13	13	34	3
		Zinc, Zn	mg/kg	0.5	69	67	33	3

TRH (Total Recoverable Hydrocarbons) in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE163541.023	LB121200.022		TRH C10-C14	mg/kg	20	<20	<20	200	0
			TRH C15-C28	mg/kg	45	<45	<45	200	0
			TRH C29-C36	mg/kg	45	<45	<45	200	0
			TRH C37-C40	mg/kg	100	<100	<100	200	0
			TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
			TRH C10-C40 Total	mg/kg	210	<210	<210	200	0
		TRH F Bands	TRH >C10-C16 (F2)	mg/kg	25	<25	<25	200	0
			TRH >C10-C16 (F2) - Naphthalene	mg/kg	25	<25	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0

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.

VOC's in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE163541.023	LB121220.014	Monocyclic Aromatic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
			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	-	4.5	4.6	50	4
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.5	4.2	50	7
			d8-toluene (Surrogate)	mg/kg	-	3.6	3.7	50	4
			Bromofluorobenzene (Surrogate)	mg/kg	-	3.7	4.0	50	9
		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
SE163582.001	LB121220.024	Monocyclic Aromatic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
			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	-	4.0	3.8	50	5
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.3	4.0	50	8
			d8-toluene (Surrogate)	mg/kg	-	3.6	4.2	50	14
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.1	4.5	50	8
		Totals	Total Xylenes*	mg/kg	0.3	<0.3	<0.3	200	0
			Total BTEX	mg/kg	0.6	<0.6	<0.6	200	0

Volatile Petroleum Hydrocarbons in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE163541.023	LB121220.014		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	-	4.5	4.6	30	4
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.5	4.2	30	7
			d8-toluene (Surrogate)	mg/kg	-	3.6	3.7	30	4
			Bromofluorobenzene (Surrogate)	mg/kg	-	3.7	4.0	30	9
		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
SE163582.001	LB121220.024		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	-	4.0	3.8	30	5
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.3	4.0	30	8
			d8-toluene (Surrogate)	mg/kg	-	3.6	4.2	30	14
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.1	4.5	30	8
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0

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

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

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR)

Method: ME-(AU)-[ENV]AN122

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB121344.002	Exchangeable Sodium, Na	mg/kg	2	NA	390	80 - 120	88
	Exchangeable Potassium, K	mg/kg	2	NA	343	80 - 120	84
	Exchangeable Calcium, Ca	mg/kg	2	NA	2570	80 - 120	91
	Exchangeable Magnesium, Mg	mg/kg	2	NA	635	80 - 120	91

Mercury in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB121325.002	Mercury	mg/kg	0.05	0.19	0.2	70 - 130	97

Metals in Water (Dissolved) by ICPOES

Method: ME-(AU)-[ENV]AN320/AN321

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB121421.002	Arsenic, As	mg/L	0.02	2.0	2	80 - 120	98
	Cadmium, Cd	mg/L	0.001	2.0	2	80 - 120	100
	Chromium, Cr	mg/L	0.005	2.0	2	80 - 120	100
	Copper, Cu	mg/L	0.005	2.0	2	80 - 120	99
	Lead, Pb	mg/L	0.02	2.0	2	80 - 120	101
	Nickel, Ni	mg/L	0.005	2.0	2	80 - 120	99
	Zinc, Zn	mg/L	0.01	2.0	2	80 - 120	100

OC Pesticides in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB121200.003		Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	116
		Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	121
		Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	121
		Dieldrin	mg/kg	0.05	0.25	0.2	60 - 140	125
		Endrin	mg/kg	0.2	0.2	0.2	60 - 140	125
		p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	121
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.16	0.15	40 - 130	107

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB121200.002		Naphthalene	mg/kg	0.1	4.3	4	60 - 140	108
		Acenaphthylene	mg/kg	0.1	3.5	4	60 - 140	89
		Acenaphthene	mg/kg	0.1	4.3	4	60 - 140	108
		Phenanthrene	mg/kg	0.1	4.0	4	60 - 140	100
		Anthracene	mg/kg	0.1	4.1	4	60 - 140	103
		Fluoranthene	mg/kg	0.1	4.2	4	60 - 140	105
		Pyrene	mg/kg	0.1	4.4	4	60 - 140	110
		Benzo(a)pyrene	mg/kg	0.1	4.6	4	60 - 140	115
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	96
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	90
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	102

PCBs in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB121200.002	Arochlor 1260	mg/kg	0.2	0.5	0.4	60 - 140	124

pH in soil (1:5)

Method: ME-(AU)-[ENV]AN101

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB121381.003	pH	pH Units	-	7.4	7.415	98 - 102	100

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

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB121348.002	Arsenic, As	mg/kg	3	59	50	80 - 120	118
	Cadmium, Cd	mg/kg	0.3	56	50	80 - 120	111
	Chromium, Cr	mg/kg	0.3	49	50	80 - 120	97
	Copper, Cu	mg/kg	0.5	54	50	80 - 120	109
	Lead, Pb	mg/kg	1	57	50	80 - 120	114

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

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB121348.002		Nickel, Ni	mg/kg	0.5	52	50	80 - 120	104
		Zinc, Zn	mg/kg	0.5	56	50	80 - 120	111

TRH (Total Recoverable Hydrocarbons) in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB121200.002		TRH C10-C14	mg/kg	20	35	40	60 - 140	88
		TRH C15-C28	mg/kg	45	<45	40	60 - 140	103
		TRH C29-C36	mg/kg	45	<45	40	60 - 140	85
	TRH F Bands	TRH >C10-C16 (F2)	mg/kg	25	36	40	60 - 140	90
		TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	90
		TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	85

VOC's in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB121220.002	Monocyclic	Benzene	mg/kg	0.1	2.2	2.9	60 - 140	75
	Aromatic	Toluene	mg/kg	0.1	2.6	2.9	60 - 140	88
		Ethylbenzene	mg/kg	0.1	2.6	2.9	60 - 140	90
		m/p-xylene	mg/kg	0.2	5.3	5.8	60 - 140	92
		o-xylene	mg/kg	0.1	2.7	2.9	60 - 140	92
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	3.8	5	60 - 140	77
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.9	5	60 - 140	99
		d8-toluene (Surrogate)	mg/kg	-	4.3	5	60 - 140	85
		Bromofluorobenzene (Surrogate)	mg/kg	-	4.3	5	60 - 140	85

Volatile Petroleum Hydrocarbons in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB121220.002		TRH C6-C10	mg/kg	25	<25	24.65	60 - 140	98
		TRH C6-C9	mg/kg	20	20	23.2	60 - 140	87
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.1	5	60 - 140	82
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.1	5	60 - 140	82
		d8-toluene (Surrogate)	mg/kg	-	4.2	5	60 - 140	83
		Bromofluorobenzene (Surrogate)	mg/kg	-	4.9	5	60 - 140	97
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	7.25	60 - 140	121

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

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

Mercury (dissolved) in Water

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE163501.001	LB121371.006	Mercury	mg/L	0.0001	0.0080	<0.0001	0.008	99

Mercury in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE163524.023	LB121325.004	Mercury	mg/kg	0.05	0.18	<0.05	0.2	88

OC Pesticides in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE163541.045	LB121200.024		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha BHC	mg/kg	0.1	<0.1	<0.1	-	-
			Lindane	mg/kg	0.1	<0.1	<0.1	-	-
			Heptachlor	mg/kg	0.1	0.2	<0.1	0.2	121
			Aldrin	mg/kg	0.1	0.2	<0.1	0.2	125
			Beta BHC	mg/kg	0.1	<0.1	<0.1	-	-
			Delta BHC	mg/kg	0.1	0.2	<0.1	0.2	125
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	-	-
			o,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	-	-
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
			Dieldrin	mg/kg	0.05	0.25	<0.05	0.2	125
			Endrin	mg/kg	0.2	0.2	<0.2	0.2	123
			o,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
			o,p'-DDT	mg/kg	0.1	<0.1	<0.1	-	-
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
			p,p'-DDT	mg/kg	0.1	0.2	<0.1	0.2	124
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	-	-
			Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	-	-
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	-	-
			Endrin Ketone	mg/kg	0.1	<0.1	<0.1	-	-
			Isodrin	mg/kg	0.1	<0.1	<0.1	-	-
			Mirex	mg/kg	0.1	<0.1	<0.1	-	-
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.16	0.16	-	104

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

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE163637.007	LB121348.004	Arsenic, As	mg/kg	3	45	7	50	77
		Cadmium, Cd	mg/kg	0.3	37	<0.3	50	74
		Chromium, Cr	mg/kg	0.3	41	8.4	50	65 ⑨
		Copper, Cu	mg/kg	0.5	61	25	50	72
		Lead, Pb	mg/kg	1	50	13	50	74
		Nickel, Ni	mg/kg	0.5	48	12	50	72
		Zinc, Zn	mg/kg	0.5	110	73	50	80

VOC's in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE163523.001	LB121220.004	Monocyclic Aromatic	Benzene	mg/kg	0.1	2.2	<0.1	2.9	77
			Toluene	mg/kg	0.1	1.8	<0.1	2.9	60
			Ethylbenzene	mg/kg	0.1	2.2	<0.1	2.9	76
			m/p-xylene	mg/kg	0.2	4.9	<0.2	5.8	84
			o-xylene	mg/kg	0.1	2.5	<0.1	2.9	86
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	3.5	4.5	-	71
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.8	4.6	-	97
			d8-toluene (Surrogate)	mg/kg	-	3.7	3.9	-	73

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

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

VOC's in Soil (continued)

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE163523.001	LB121220.004	Surrogates	Bromofluorobenzene (Surrogate)	mg/kg	-	4.7	3.5	-	94
		Totals	Total Xylenes*	mg/kg	0.3	7.4	<0.3	-	-
			Total BTEX	mg/kg	0.6	14	<0.6	-	-
SE163549.001	LB121220.025	Monocyclic	Benzene	mg/kg	0.1	2.5	<0.1	2.9	87
		Aromatic	Toluene	mg/kg	0.1	2.3	<0.1	2.9	79
			Ethylbenzene	mg/kg	0.1	2.2	<0.1	2.9	77
			m/p-xylene	mg/kg	0.2	4.5	<0.2	5.8	76
			o-xylene	mg/kg	0.1	2.5	<0.1	2.9	84
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	3.7	4.2	-	74
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	3.5	4.2	-	71
			d8-toluene (Surrogate)	mg/kg	-	3.9	3.9	-	78
			Bromofluorobenzene (Surrogate)	mg/kg	-	3.5	4.2	-	71
		Totals	Total Xylenes*	mg/kg	0.3	7.0	<0.3	-	-
			Total BTEX	mg/kg	0.6	14	<0.6	-	-

Volatile Petroleum Hydrocarbons in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE163523.001	LB121220.004		TRH C6-C10	mg/kg	25	<25	<25	24.65	89
			TRH C6-C9	mg/kg	20	<20	<20	23.2	86
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	3.5	4.5	-	71
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.8	4.6	-	97
			d8-toluene (Surrogate)	mg/kg	-	3.7	3.9	-	73
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.7	3.5	-	94
		VPH F	Benzene (F0)	mg/kg	0.1	2.2	<0.1	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	7.25	117

MATRIX SPIKE DUPLICATES

SE163541 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: http://www.sgs.com.au/~/media/Local/Australia/Documents/Technical Documents/MP-AU-ENV-QU-022 QA QC Plan.pdf

*	NATA accreditation does not cover tthe performance of this service.
-	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 EHS Alexandria Laboratory

SE163541 COC

Received: 23 – Mar – 2017

E-MAILED
24/3/17 3.08pm

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161

TO: SGS ENVIRONMENTAL SERVICES
UNIT 16
33 MADDOX STREET
ALEXANDRIA NSW 2015

PH: 02 8594 0400 **FAX:** 02 8594 0499

ATTN: MS EMILY YIN

Sampling By: JH **Job No:** 13793/5

Project:

Project Manager: JX **Location:** Airds

Results required by: Standard Turnaround Time

	Sampling details				Sample type											
	Location	Depth (m)	Date	Time	Soil	Material	Metals As, Cd, Cr, Cu, Pb, Hg, Ni and Zn	TPH* & BTEX	PAH	OCP	PCB	pH, CEC	ASBESTOS 0.001% w/w	BTEX		KEEP SAMPLE
1	TP50	0-0.1	23/03/2017	-	SG/SP			✓	✓			✓	✓			YES
2	TP53	0-0.1	23/03/2017	-	SG/SP								✓			YES
3	TP54	0-0.1	23/03/2017	-	SG/SP								✓			YES
4	TP55	0-0.15	22/03/2017	-	SG/SP											YES
5	TP56	0-0.15	22/03/2017	-	SG/SP								✓			YES
6	TP57	0-0.15	22/03/2017	-	SG/SP								✓			YES
	TP57	0.35-0.45	22/03/2017	-	SG											YES
7	TP58	0-0.15	22/03/2017	-	SG							✓				YES
8	TP59	0-0.15	23/03/2017	-	SG/SP			✓	✓			✓	✓			YES
	TP59	0.55-0.65	23/03/2017	-	SG											YES
9	TP60	0-0.15	23/03/2017	-	SG/SP								✓			YES
	TP60	0.55-0.65	23/03/2017	-	SG											YES
10	TP61	0-0.15	23/03/2017	-	SG/SP								✓			YES
	TP61	0.25-0.35	23/03/2017	-	SG											YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	JX	24/03/2017			23/3/17 1:40

Legend:

WG	Water sample, glass bottle	SG	Soil sample (glass jar)	SP	Soil sample (plastic bag)
WP	Water sample, plastic bottle	FCP	Fibro Cement Piece (plastic bag)	✓	Test required

* Purge & Trap

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PENRITH NSW 2751

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ALEXANDRIA NSW 2015

PH: 02 8594 0400 **FAX:** 02 8594 0499

ATTN: MS EMILY YIN

Sampling By: JH **Job No:** 13793/5

Project:

Project Manager: JX **Location:** Airds

Results required by: Standard Turnaround Time

Sampling details				Sample type											
	Location	Depth (m)	Date	Time	Soil	Material	Metals As, Cd, Cr, Cu, Pb, Hg, Ni and Zn	TPH* & BTEX	PAH	OCP	PCB	pH, CEC	ASBESTOS 0.001% w/w	BTEX		KEEP SAMPLE
11	TP62	0-0.1	23/03/2017	-	SG/SP								✓			YES
12	TP63	0-0.15	22/03/2017	-	SG/SP											YES
13	TP64	0-0.15	22/03/2017	-	SG/SP											YES
14	TP65	0-0.15	22/03/2017	-	SG/SP											YES
15	TP66	0-0.15	22/03/2017	-	SG/SP											YES
	TP67	0-0.15	22/03/2017	-	SG/SP											YES
16	TP68	0-0.15	22/03/2017	-	SG/SP			✓	✓			✓	✓			YES
	TP68	0.35-0.45	22/03/2017	-	SG											YES
17	TP69	0-0.15	22/03/2017	-	SG/SP								✓			YES
	TP69	0.55-0.65	22/03/2017	-	SG											YES
18	TP70	0-0.15	22/03/2017	-	SG/SP								✓			YES
	TP70	0.45-0.55	22/03/2017	-	SG											YES
19	TP71	0-0.15	23/03/2017	-	SG							✓				YES
25	TP72	0-0.15	22/03/2017	-	SG/SP								✓			YES
	TP72	0.55-0.65	22/03/2017	-	SG											YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	JX	24/03/2017			

Legend:

WG	Water sample, glass bottle	SG	Soil sample (glass jar)	SP	Soil sample (plastic bag)
WP	Water sample, plastic bottle	FCP	Fibro Cement Piece (plastic bag)	✓	Test required

* Purge & Trap

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TO: SGS ENVIRONMENTAL SERVICES
UNIT 16
33 MADDOX STREET
ALEXANDRIA NSW 2015

PH: 02 8594 0400 **FAX:** 02 8594 0499

ATTN: MS EMILY YIN

Sampling By: JH **Job No:** 13793/5

Project:

Project Manager: JX **Location:** Airds

Results required by: Standard Turnaround Time

Sampling details				Sample type											
	Location	Depth (m)	Date	Time	Soil	Material	Metals As, Cd, Cr, Cu, Pb, Hg, Ni and Zn	TPH* & BTEX	PAH	OCP	PCB	pH, CEC	ASBESTOS 0.001% w/w	BTEX		KEEP SAMPLE
21	TP73	0-0.15	22/03/2017	-	SG/SP								✓			YES
	TP73	0.45-0.55	22/03/2017	-	SG											YES
22	TP74	0-0.15	22/03/2017	-	SG/SP											YES
	TP75	0-0.15	22/03/2017	-	SG/SP											YES
23	TP76	0-0.1	23/03/2017	-	SG/SP			✓	✓			✓	✓			YES
24	TP77	0-0.1	22/03/2017	-	SG/SP								✓			YES
25	TP78	0-0.15	23/03/2017	-	SG/SP								ü			YES
	TP78	0.35-0.45	23/03/2017	-	SG											YES
26	TP79	0-0.15	23/03/2017	-	SG/SP											YES
27	TP80	0-0.15	23/03/2017	-	SG/SP			✓	✓			✓	✓			YES
28	TP80	0.5-0.7	23/03/2017	-	SG/SP								✓			YES
	TP80	0.75-0.85	23/03/2017	-	SG											YES
29	TP81	0-0.15	23/03/2017	-	SG							✓				YES
30	TP82	0-0.15	23/03/2017	-	SG											YES
31	TP83	0-0.15	22/03/2017	-	SG											YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	JX	24/03/2017			

Legend:

WG	Water sample, glass bottle	SG	Soil sample (glass jar)	SP	Soil sample (plastic bag)
WP	Water sample, plastic bottle	FCP	Fibro Cement Piece (plastic bag)	✓	Test required

* Purge & Trap

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161

TO: SGS ENVIRONMENTAL SERVICES
UNIT 16
33 MADDOX STREET
ALEXANDRIA NSW 2015

PH: 02 8594 0400 **FAX:** 02 8594 0499

ATTN: MS EMILY YIN

Sampling By: JH **Job No:** 13793/5

Project:

Project Manager: JX **Location:** Airds

Results required by: Standard Turnaround Time

Sampling details				Sample type											
	Location	Depth (m)	Date	Time	Soil	Material	Metals As, Cd, Cr, Cu, Pb, Hg, Ni and Zn	TPH* & BTEX	PAH	OCP	PCB	pH, CEC	ASBESTOS 0.001% w/w	BTEX		KEEP SAMPLE
32	TP84	0-0.15	22/03/2017	-	SG/SP							✓	✓			YES
33	TP84	0.5-0.8	22/03/2017	-	SG/SP								✓			YES
34	TP84	1.0-1.3	22/03/2017	-	SG/SP								✓			YES
35	TP84	1.5-1.8	22/03/2017	-	SG/SP								✓			YES
	TP84	2.05-2.15	22/03/2017	-	SG											YES
36	TP85	0-0.15	23/03/2017	-	SG/SP								✓			YES
	TP85	0.35-0.45	23/03/2017	-	SG											YES
37	TP86	0-0.15	23/03/2017	-	SG											YES
38	X7		22/03/2017	-	SG											YES
39	X8		22/03/2017	-	SG											YES
40	X9		22/03/2017	-	SG											YES
41	Rinsate R3		22/03/2017			WG/Vial	✓									YES
42	Rinsate R4		23/03/2017			WG/Vial	✓									YES
43	Tripspike TS3													✓		YES
44	Tripspike TS4													✓		YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	JX	24/03/2017			

Legend:

WG	Water sample, glass bottle	SG	Soil sample (glass jar)	SP	Soil sample (plastic bag)
WP	Water sample, plastic bottle	FCP	Fibro Cement Piece (plastic bag)	✓	Test required

* Purge & Trap

GEOTECHNIQUE PTY LTD

SGS ENVIRONMENTAL SERVICES

Sampling Date: 22 & 23/3/2017 Job No: 13793/5
Sampled by: JH
Project Manager: JX Location: Airds
Results Required by: Standard Turnaround Time

Composite Sample		Sub-Samples	Analyte		
			Metals	OCP	PCB
S5	C617	TP50 (0-0.1m) + TP53 (0-0.1m) + TP54 (0-0.1m)	✔	✔	✔
S6	C618	TP55 (0-0.15m) + TP62 (0-0.1m) + TP63 (0-0.15)	✔	✔	✔
S7	C619	TP56 (0-0.15m) + TP57 (0-0.15m) + TP58 (0-0.15m)	✔	✔	✔
S8	C620	TP59 (0-0.15m) + TP60 (0-0.15m) + TP61 (0-0.15m)	✔	✔	✔
S9	C621	TP64 (0-0.15m) + TP66 (0-0.15m) + TP74 (0-0.15m)	✔	✔	-
S0	C622	TP65 (0-0.15m) + TP76 (0-0.1m) + TP78 (0-0.1m)	✔	✔	✔
S1	C623	TP68 (0-0.15m) + TP69 (0-0.15m) + TP70 (0-0.15m)	✔	✔	✔
S2	C624	TP71 (0-0.15m) + TP79 (0-0.15m) + TP83 (0-0.15m)	✔	-	-
S3	C625	TP72 (0-0.15m) + TP73 (0-0.15m) + TP80 (0-0.15m)	✔	✔	✔
S4	C626	TP77 (0-0.1m) + TP84 (0-0.15m) + TP85 (0-0.15m)	✔	✔	✔
S5	C627	TP81 (0-0.15m) + TP82 (0-0.15m) + TP86 (0-0.15m)	✔	✔	-
S6	C628	TP84 (0.5-0.8m) + TP84 (1.0-1.3m) + TP84 (1.5-1.8m)	✔	-	-
S7	Duplicate CD3	X7 + X8 + X9	✔	✔	-

✔ Test required

Metals include arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), lead (Pb), mercury (Hg), nickel (Ni) and zinc (Zn)
OCP = Organochlorine Pesticides
PCB: Polychlorinated Biphenyls

JX
24/3/2017
(JOHN XU)
Geotechnique Pty Ltd

SAMPLE RECEIPT ADVICE

SE163541

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**13793-5 Airds**
Order Number	(Not specified)
Samples	57

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Thu 23/3/2017
Report Due	Fri 31/3/2017
SGS Reference	**SE163541**

SUBMISSION DETAILS

This is to confirm that 57 samples were received on Thursday 23/3/2017. Results are expected to be ready by Friday 31/3/2017. Please quote SGS reference SE163541 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	42 Soil, 2 Water
Date documentation received	24/3/17@3:08pm	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	11.3°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

15 soil samples have been placed on hold.

SAMPLE RECEIPT ADVICE

SE163541

CLIENT DETAILS

Client Geotechnique

Project 13793-5 Airds

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	PAH (Polynuclear Aromatic Hydrocarbons) in Soil	pH in soil (1:5)	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
001	TP50 0-0.1	13	26	1	10	12	8
007	TP58 0-0.15	13	-	1	-	-	-
008	TP59 0-0.15	13	26	1	10	12	8
016	TP68 0-0.15	13	26	1	10	12	8
019	TP71 0-0.15	13	-	1	-	-	-
023	TP76 0-0.15	13	26	1	10	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

SE163541

CLIENT DETAILS

Client Geotechnique

Project 13793-5 Airds

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	OC Pesticides in Soil	PAH (Polynuclear Aromatic Hydrocarbons) in Soil	PCBs in Soil	pH in soil (1:5)	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
027	TP80 0-0.15	13	-	26	-	1	10	12	8
029	TP81 0-0.15	13	-	-	-	1	-	-	-
032	TP84 0-0.15	13	-	-	-	1	-	-	-
043	Tripspike TS3	-	-	-	-	-	-	12	-
044	Tripspike TS4	-	-	-	-	-	-	12	-
045	C617	-	28	-	11	-	-	-	-
046	C618	-	28	-	11	-	-	-	-
047	C619	-	28	-	11	-	-	-	-
048	C620	-	28	-	11	-	-	-	-

CONTINUED OVERLEAF

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SAMPLE RECEIPT ADVICE

SE163541

CLIENT DETAILS

Client Geotechnique

Project 13793-5 Airds

SUMMARY OF ANALYSIS

No.	Sample ID	OC Pesticides in Soil	PCBs in Soil
049	C621	28	-
050	C622	28	11
051	C623	28	11
053	C625	28	11
054	C626	28	11
055	C627	28	-
057	Duplicate CD3	28	-

CONTINUED OVERLEAF

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Testing as per this table shall commence immediately unless the client intervenes with a correction .

SAMPLE RECEIPT ADVICE

SE163541

CLIENT DETAILS

Client Geotechnique

Project 13793-5 Airds

SUMMARY OF ANALYSIS

No.	Sample ID	Gravimetric Determination of Asbestos in Soil	Moisture Content
001	TP50 0-0.1	9	1
002	TP53 0-0.1	9	-
003	TP54 0-0.1	9	-
005	TP56 0-0.15	9	-
006	TP57 0-0.15	9	-
007	TP58 0-0.15	-	1
008	TP59 0-0.15	9	1
009	TP60 0-0.15	9	-
010	TP61 0-0.15	9	-
011	TP62 0-0.1	9	-
016	TP68 0-0.15	9	1
017	TP69 0-0.15	9	-
018	TP70 0-0.15	9	-
019	TP71 0-0.15	-	1
020	TP72 0-0.15	9	-
021	TP73 0-0.15	9	-
023	TP76 0-0.15	9	1
024	TP77 0-0.1	9	-

CONTINUED OVERLEAF

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
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Testing as per this table shall commence immediately unless the client intervenes with a correction .

SAMPLE RECEIPT ADVICE

SE163541

CLIENT DETAILS

Client Geotechnique

Project 13793-5 Airds

SUMMARY OF ANALYSIS

No.	Sample ID	Gravimetric Determination of Asbestos in Soil	Mercury (dissolved) in Water	Mercury in Soil	Metals in Water (Dissolved) by ICPOES	Moisture Content	Total Recoverable Metals in Soil/Waste
025	TP78 0-0.15	9	-	-	-	-	-
027	TP80 0-0.15	9	-	-	-	1	-
028	TP80 0.5-0.7	9	-	-	-	-	-
029	TP81 0-0.15	-	-	-	-	1	-
032	TP84 0-0.15	9	-	-	-	1	-
033	TP84 0.5-0.8	9	-	-	-	-	-
034	TP84 1.0-1.3	9	-	-	-	-	-
035	TP84 1.5-1.8	9	-	-	-	-	-
036	TP85 0-0.15	9	-	-	-	-	-
041	Rinsate R3	-	1	-	7	-	-
042	Rinsate R4	-	1	-	7	-	-
045	C617	-	-	1	-	1	7
046	C618	-	-	1	-	1	7
047	C619	-	-	1	-	1	7
048	C620	-	-	1	-	1	7

CONTINUED OVERLEAF

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

SAMPLE RECEIPT ADVICE

SE163541

CLIENT DETAILS

Client Geotechnique

Project 13793-5 Airds

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury in Soil	Moisture Content	Total Recoverable Metals in Soil/Waste
049	C621	1	1	7
050	C622	1	1	7
051	C623	1	1	7
052	C624	1	1	7
053	C625	1	1	7
054	C626	1	1	7
055	C627	1	1	7
056	C628	1	1	7
057	Duplicate CD3	1	1	7

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

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**13793-5 Airds Additional**
Order Number	(Not specified)
Samples	57

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	**SE163541A R0**
Date Received	5/4/2017
Date Reported	10/4/2017

COMMENTS

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

SIGNATORIES

Bennet Lo
Senior Organic Chemist/Metals Chemist

Ly Kim Ha
Organic Section Head

Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 10/4/2017

PARAMETER	UOM	LOR	TP55 0-0.15 SOIL - 22/3/2017 SE163541A.004	TP62 0-0.1 SOIL - 23/3/2017 SE163541A.011	TP63 0-0.15 SOIL - 22/3/2017 SE163541A.012	TP64 0-0.15 SOIL - 22/3/2017 SE163541A.013	TP66 0-0.15 SOIL - 22/3/2017 SE163541A.015
Copper, Cu	mg/kg	0.5	-	-	-	**15**	**11**
Nickel, Ni	mg/kg	0.5	**8.7**	**7.7**	**6.7**	**6.4**	**9.8**

PARAMETER	UOM	LOR	TP74 0-0.15 SOIL - 22/3/2017 SE163541A.022
Copper, Cu	mg/kg	0.5	**13**
Nickel, Ni	mg/kg	0.5	**14**

Moisture Content [AN002] Tested: 7/4/2017

PARAMETER	UOM	LOR	TP55 0-0.15 SOIL - 22/3/2017 SE163541A.004	TP62 0-0.1 SOIL - 23/3/2017 SE163541A.011	TP63 0-0.15 SOIL - 22/3/2017 SE163541A.012	TP64 0-0.15 SOIL - 22/3/2017 SE163541A.013	TP66 0-0.15 SOIL - 22/3/2017 SE163541A.015
% Moisture	%w/w	0.5	15	17	24	21	23

PARAMETER	UOM	LOR	TP74 0-0.15 SOIL - 22/3/2017 SE163541A.022
% Moisture	%w/w	0.5	25

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN040/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.

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.		

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

STATEMENT OF QA/QC PERFORMANCE

SE163541A R0

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**13793-5 Airds Additional**
Order Number	(Not specified)
Samples	57

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	**SE163541A R0**
Date Received	05 Apr 2017
Date Reported	10 Apr 2017

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 and was supplied by the Client.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met with the exception of the following:

Extraction Date	Moisture Content	6 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	6 Soil
Date documentation received	5/4/17@9:47am	Type of documentation received	Email
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	11.3°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

HOLDING TIME SUMMARY

SE163541A 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.

Moisture Content

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP55 0-0.15	SE163541A.004	LB121957	22 Mar 2017	05 Apr 2017	05 Apr 2017	07 Apr 2017†	12 Apr 2017	10 Apr 2017
TP62 0-0.1	SE163541A.011	LB121957	23 Mar 2017	05 Apr 2017	06 Apr 2017	07 Apr 2017†	12 Apr 2017	10 Apr 2017
TP63 0-0.15	SE163541A.012	LB121957	22 Mar 2017	05 Apr 2017	05 Apr 2017	07 Apr 2017†	12 Apr 2017	10 Apr 2017
TP64 0-0.15	SE163541A.013	LB121957	22 Mar 2017	05 Apr 2017	05 Apr 2017	07 Apr 2017†	12 Apr 2017	10 Apr 2017
TP66 0-0.15	SE163541A.015	LB121957	22 Mar 2017	05 Apr 2017	05 Apr 2017	07 Apr 2017†	12 Apr 2017	10 Apr 2017
TP74 0-0.15	SE163541A.022	LB121957	22 Mar 2017	05 Apr 2017	05 Apr 2017	07 Apr 2017†	12 Apr 2017	10 Apr 2017

Total Recoverable Metals 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
TP55 0-0.15	SE163541A.004	LB121985	22 Mar 2017	05 Apr 2017	18 Sep 2017	10 Apr 2017	18 Sep 2017	10 Apr 2017
TP62 0-0.1	SE163541A.011	LB121985	23 Mar 2017	05 Apr 2017	19 Sep 2017	10 Apr 2017	19 Sep 2017	10 Apr 2017
TP63 0-0.15	SE163541A.012	LB121985	22 Mar 2017	05 Apr 2017	18 Sep 2017	10 Apr 2017	18 Sep 2017	10 Apr 2017
TP64 0-0.15	SE163541A.013	LB121985	22 Mar 2017	05 Apr 2017	18 Sep 2017	10 Apr 2017	18 Sep 2017	10 Apr 2017
TP66 0-0.15	SE163541A.015	LB121985	22 Mar 2017	05 Apr 2017	18 Sep 2017	10 Apr 2017	18 Sep 2017	10 Apr 2017
TP74 0-0.15	SE163541A.022	LB121985	22 Mar 2017	05 Apr 2017	18 Sep 2017	10 Apr 2017	18 Sep 2017	10 Apr 2017

SURROGATES

SE163541A R0

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.

No surrogates were required for this job.

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

Sample Number	Parameter	Units	LOR	Result
LB121985.001	Copper, Cu	mg/kg	0.5	<0.5
	Nickel, Ni	mg/kg	0.5	<0.5

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.

Moisture Content

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE163829.004	LB121957.011	% Moisture	%w/w	0.5	6.91823899376	.6371681415	45	4
SE163902.002	LB121957.022	% Moisture	%w/w	0.5	15.2631578947	4.8394241417	37	3
SE163902.006	LB121957.027	% Moisture	%w/w	0.5	11.2432432432	1.9153674832	39	6

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

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE163541A.004	LB121985.014	Nickel, Ni	mg/kg	0.5	8.7	8.8	36	1
SE163541A.022	LB121985.020	Copper, Cu	mg/kg	0.5	13	11	34	12
		Nickel, Ni	mg/kg	0.5	14	12	34	15

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB121985.002	Copper, Cu	mg/kg	0.5	48	50	80 - 120	95
	Nickel, Ni	mg/kg	0.5	49	50	80 - 120	97

MATRIX SPIKES

SE163541A R0

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.

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE164016.001	LB121985.004	Copper, Cu	mg/kg	0.5	55	8.34669394960	50	93
		Nickel, Ni	mg/kg	0.5	50	5.31920237522	50	89

MATRIX SPIKE DUPLICATES

SE163541A 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: http://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.
-	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.

E-MAILED
5/4/17 @ 9:47am

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161

TO: SGS ENVIRONMENTAL SERVICES
UNIT 16
33 MADDOX STREET
ALEXANDRIA NSW 2015

PH: 02 8594 0400 **FAX:** 02 8594 0499

ATTN: MS EMILY YIN

Sampling By: JH **Job No:** 13793/5

Project:

Project Manager: JX **Location:** Airds

Results required by: Tuesday 11/04/2017 (Standard Turnaround Time)
SGS Ref. SE163541

	Location	Depth (m)	Date	Time	Soil	Material	Cu,	Ni								KEEP SAMPLE
4	TP55	0-0.15	23/03/2017	-	SG			✓								YES
11	TP62	0-0.1	23/03/2017	-	SG			✓								YES
12	TP63	0-0.15	22/03/2017	-	SG			✓								YES
13	TP64	0-0.15	22/03/2017	-	SG		✓	✓								YES
15	TP66	0-0.15	22/03/2017	-	SG		✓	✓								YES
22	TP74	0-0.15	22/03/2017	-	SG		✓	✓								YES

SGS EHS Alexandria Laboratory

SE163541A COC
Received: 05 – Apr – 2017

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	JX	5/04/2017	A. Odisho		

Legend:

WG	Water sample, glass bottle	SG	Soil sample (glass jar)	SP	Soil sample (plastic bag)
WP	Water sample, plastic bottle	FCP	Fibro Cement Piece (plastic bag)	✓	Test required

* Purge & Trap

SAMPLE RECEIPT ADVICE

SE163541A

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**13793-5 Airds Additional**
Order Number	(Not specified)
Samples	57

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	Wed 5/4/2017
Report Due	Tue 11/4/2017
SGS Reference	**SE163541A**

SUBMISSION DETAILS

This is to confirm that 57 samples were received on Wednesday 5/4/2017. Results are expected to be ready by Tuesday 11/4/2017. Please quote SGS reference SE163541A 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	6 Soil
Date documentation received	5/4/17@9:47am	Type of documentation received	Email
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	11.3°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

SE163541A

CLIENT DETAILS

Client Geotechnique

Project 13793-5 Airds Additional

SUMMARY OF ANALYSIS

No.	Sample ID	Moisture Content	Total Recoverable Metals in Soil/Waste
004	TP55 0-0.15	1	1
011	TP62 0-0.1	1	1
012	TP63 0-0.15	1	1
013	TP64 0-0.15	1	2
015	TP66 0-0.15	1	2
022	TP74 0-0.15	1	2

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

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**13793-5 Airds - Additional**
Order Number	(Not specified)
Samples	57

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	**SE163541B R0**
Date Received	13/4/2017
Date Reported	19/4/2017

COMMENTS

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

SIGNATORIES

Kamrul Ahsan
Senior Chemist

Ly Kim Ha
Organic Section Head

Shane McDermott
Senior Laboratory Technician

Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 18/4/2017

PARAMETER	UOM	LOR	TP81 0-0.15 SOIL - 23/3/2017 SE163541B.029	TP82 0-0.15 SOIL - 23/3/2017 SE163541B.030	TP84 0.5-0.8 SOIL - 22/3/2017 SE163541B.033	TP84 1.0-1.3 SOIL - 22/3/2017 SE163541B.034	TP84 1.5-1.8 SOIL - 22/3/2017 SE163541B.035
Nickel, Ni	mg/kg	0.5	8.0	14	9.2	12	8.4

PARAMETER	UOM	LOR	TP86 0-0.15 SOIL - 23/3/2017 SE163541B.037
Nickel, Ni	mg/kg	0.5	8.0

Moisture Content [AN002] Tested: 13/4/2017

PARAMETER	UOM	LOR	TP82 0-0.15 SOIL - 23/3/2017 SE163541B.030	TP84 0.5-0.8 SOIL - 22/3/2017 SE163541B.033	TP84 1.0-1.3 SOIL - 22/3/2017 SE163541B.034	TP84 1.5-1.8 SOIL - 22/3/2017 SE163541B.035	TP86 0-0.15 SOIL - 23/3/2017 SE163541B.037
% Moisture	%w/w	1	**26.0**	**23.7**	**18.7**	**17.6**	**27.7**

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN040/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.

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.		

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

STATEMENT OF QA/QC PERFORMANCE

SE163541B R0

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**13793-5 Airds - Additional**
Order Number	(Not specified)
Samples	57

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	**SE163541B R0**
Date Received	13 Apr 2017
Date Reported	19 Apr 2017

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 and was supplied by the Client.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met with the exception of the following:

Extraction Date	Moisture Content	5 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	6 Soil
Date documentation received	13/4/17@11:53	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	11.3°C	Sufficient sample for analysis	Yes
Turnaround time requested	Two Days		

HOLDING TIME SUMMARY

SE163541B 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.

Moisture Content

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TP82 0-0.15	SE163541B.030	LB122381	23 Mar 2017	13 Apr 2017	06 Apr 2017	13 Apr 2017†	18 Apr 2017	18 Apr 2017
TP84 0.5-0.8	SE163541B.033	LB122381	22 Mar 2017	13 Apr 2017	05 Apr 2017	13 Apr 2017†	18 Apr 2017	18 Apr 2017
TP84 1.0-1.3	SE163541B.034	LB122381	22 Mar 2017	13 Apr 2017	05 Apr 2017	13 Apr 2017†	18 Apr 2017	18 Apr 2017
TP84 1.5-1.8	SE163541B.035	LB122381	22 Mar 2017	13 Apr 2017	05 Apr 2017	13 Apr 2017†	18 Apr 2017	18 Apr 2017
TP86 0-0.15	SE163541B.037	LB122381	23 Mar 2017	13 Apr 2017	06 Apr 2017	13 Apr 2017†	18 Apr 2017	18 Apr 2017

Total Recoverable Metals 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
TP81 0-0.15	SE163541B.029	LB122426	23 Mar 2017	13 Apr 2017	19 Sep 2017	18 Apr 2017	19 Sep 2017	19 Apr 2017
TP82 0-0.15	SE163541B.030	LB122426	23 Mar 2017	13 Apr 2017	19 Sep 2017	18 Apr 2017	19 Sep 2017	19 Apr 2017
TP84 0.5-0.8	SE163541B.033	LB122426	22 Mar 2017	13 Apr 2017	18 Sep 2017	18 Apr 2017	18 Sep 2017	19 Apr 2017
TP84 1.0-1.3	SE163541B.034	LB122426	22 Mar 2017	13 Apr 2017	18 Sep 2017	18 Apr 2017	18 Sep 2017	19 Apr 2017
TP84 1.5-1.8	SE163541B.035	LB122426	22 Mar 2017	13 Apr 2017	18 Sep 2017	18 Apr 2017	18 Sep 2017	19 Apr 2017
TP86 0-0.15	SE163541B.037	LB122426	23 Mar 2017	13 Apr 2017	19 Sep 2017	18 Apr 2017	19 Sep 2017	19 Apr 2017

SURROGATES

SE163541B R0

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.

No surrogates were required for this job.

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

Sample Number	Parameter	Units	LOR	Result
LB122426.001	Nickel, Ni	mg/kg	0.5	<0.5

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.

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE164047.008	LB122381.033	% Moisture	%w/w	1	29.469790382	32.720588235	33	10
SE164065.006	LB122381.044	% Moisture	%w/w	1	12.182741116	78.415841584	40	37
SE164065.016	LB122381.055	% Moisture	%w/w	1	21.115973741	22.577696526	35	7
SE164065.026	LB122381.066	% Moisture	%w/w	1	31.228070175	42.745591939	33	5
SE164119.002	LB122381.072	% Moisture	%w/w	1	17.748091603	09.085714285	35	7
SE164161.008	LB122381.022	% Moisture	%w/w	1	6.3636363636	6.3291139240	46	1
SE164220.005	LB122381.011	% Moisture	%w/w	1	18.649517684	86.881720430	36	10

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE163541B.035	LB122426.014	Nickel, Ni	mg/kg	0.5	8.4	8.2	36	2
SE164162.008	LB122426.024	Nickel, Ni	mg/kg	0.5	12.921291981	14.219707140	34	10

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB122426.002	Nickel, Ni	mg/kg	0.5	43	50	80 - 120	87

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.

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE164148.001	LB122426.004	Nickel, Ni	mg/kg	0.5	48	0.41630879773	50	95

MATRIX SPIKE DUPLICATES

SE163541B 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: http://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.
-	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.

E-MAILED
13/4/17 @ 1.43pm

SGS EHS Alexandria Laboratory

SE163541B COC
Received: 13 – Apr – 2017

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161

TO:	**SGS ENVIRONMENTAL SERVICES UNIT 16 33 MADDOX STREET ALEXANDRIA NSW 2015**	**Sampling By:** JH	**Job No:** 13793/5
			Project:
PH:	**02 8594 0400** **FAX:** **02 8594 0499**	**Project Manager:** JX	**Location:** **Airds**
ATTN:	**MS EMILY YIN**		

Results required by: 19/04/2017 (2 day TAT)
SGS Ref. SE163541

	Sampling details				Sample type										
	Location	Depth (m)	Date	Time	Soil	Material	Ni								KEEP SAMPLE
29	TP81	0-0.15	23/03/2017	-	SG		✓								YES
30	TP82	0-0.15	23/03/2017	-	SG		✓								YES
33	TP84	0.5-0.8	22/03/2017	-	SG		✓								YES
34	TP84	1.0-1.3	22/03/2017	-	SG		✓								YES
35	TP84	1.5-1.8	22/03/2017	-	SG		✓								YES
37	TP86	0-0.15	23/03/2017	-	SG		✓								YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	JX	13/04/2017			

Legend:

WG	Water sample, glass bottle	SG	Soil sample (glass jar)	SP	Soil sample (plastic bag)
WP	Water sample, plastic bottle	FCP	Fibro Cement Piece (plastic bag)	✓	Test required

* Purge & Trap

SAMPLE RECEIPT ADVICE

SE163541B

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**13793-5 Airds - Additional**
Order Number	(Not specified)
Samples	57

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Thu 13/4/2017
Report Due	Wed 19/4/2017
SGS Reference	**SE163541B**

SUBMISSION DETAILS

This is to confirm that 57 samples were received on Thursday 13/4/2017. Results are expected to be ready by Wednesday 19/4/2017. Please quote SGS reference SE163541B 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	6 Soil
Date documentation received	13/4/17@11:53	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	11.3°C	Sufficient sample for analysis	Yes
Turnaround time requested	Two Days		

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

SE163541B

CLIENT DETAILS

Client Geotechnique

Project 13793-5 Airds - Additional

SUMMARY OF ANALYSIS

No.	Sample ID	Moisture Content	Total Recoverable Metals in Soil/Waste
029	TP81 0-0.15	-	1
030	TP82 0-0.15	1	1
033	TP84 0.5-0.8	1	1
034	TP84 1.0-1.3	1	1
035	TP84 1.5-1.8	1	1
037	TP86 0-0.15	1	1

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 .

12 Ashley Street, Chatswood, NSW 2067
tel: +61 2 9910 6200

email: sydney@envirolab.com.au
envirolab.com.au

Envirolab Services Pty Ltd - Sydney | ABN 37 112 535 645

CERTIFICATE OF ANALYSIS 164078

Client:
Geotechnique Pty Ltd
PO Box 880
Penrith
NSW 2751

Attention: John Xu

Sample log in details:

Your Reference:	**13793/5 , Airds**
No. of samples:	9 Soils, 3 Composites
Date samples received / completed instructions received	22/03/17 / 24/03/17

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

Report Details:

Date results requested by: / Issue Date:	31/03/17 / 30/03/17
Date of Preliminary Report:	Not Issued

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Accredited for compliance with ISO/IEC 17025 - Testing **Tests not covered by NATA are denoted with *.**

Results Approved By:

David Springer
General Manager

vTRH(C6-C10)/BTEXN in Soil		
Our Reference:	UNITS	164078-1
Your Reference	---------- -	Z1
Composite Reference	----------	-
Date Sampled		20/03/2017
Type of sample		Soil
Date extracted	-	27/03/2017
Date analysed	-	28/03/2017
TRHC$_6$ - C$_9$	mg/kg	<25
TRHC$_6$ - C$_{10}$	mg/kg	<25
vTPHC$_6$ - C$_{10}$ less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
Total +ve Xylenes	mg/kg	<1
naphthalene	mg/kg	<1
Surrogate aaa-Trifluorotoluene	%	88

svTRH (C10-C40) in Soil		
Our Reference:	UNITS	164078-1
Your Reference	---------- -	Z1
Composite Reference	----------	-
Date Sampled		20/03/2017
Type of sample		Soil
Date extracted	-	27/03/2017
Date analysed	-	28/03/2017
$TRHC_{10}$ - C_{14}	mg/kg	<50
$TRHC_{15}$ - C_{28}	mg/kg	<100
$TRHC_{29}$ - C_{36}	mg/kg	<100
$TRH>C_{10}$-C_{16}	mg/kg	<50
$TRH>C_{10}$ - C_{16} less Naphthalene (F2)	mg/kg	<50
$TRH>C_{16}$-C_{34}	mg/kg	<100
$TRH>C_{34}$-C_{40}	mg/kg	<100
Total +ve TRH (>C10-C40)	mg/kg	<50
Surrogate o-Terphenyl	%	98

PAHs in Soil		
Our Reference:	UNITS	164078-1
Your Reference	----------	Z1
	-	
Composite Reference	----------	-
Date Sampled		20/03/2017
Type of sample		Soil
Date extracted	-	27/03/2017
Date analysed	-	28/03/2017
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	<0.1
Pyrene	mg/kg	<0.1
Benzo(a)anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2
Benzo(a)pyrene	mg/kg	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5
Total +ve PAH's	mg/kg	<0.05
Surrogate p-Terphenyl-d14	%	121

Organochlorine Pesticides in soil			
Our Reference:	UNITS	164078-10	164078-12
Your Reference	----------	Split CS1	Split CS3
	-		
Composite Reference	----------	1+2+3	7+8+9
Date Sampled		20/03/2017	22/03/2017
Type of sample		Soil	Soil
Date extracted	-	27/03/2017	27/03/2017
Date analysed	-	27/03/2017	27/03/2017
HCB	mg/kg	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1
Surrogate TCMX	%	96	97

PCBs in Soil		
Our Reference:	UNITS	164078-10
Your Reference	---------- -	Split CS1
Composite Reference	----------	1+2+3
Date Sampled		20/03/2017
Type of sample		Soil
Date extracted	-	27/03/2017
Date analysed	-	27/03/2017
Aroclor 1016	mg/kg	<0.1
Aroclor 1221	mg/kg	<0.1
Aroclor 1232	mg/kg	<0.1
Aroclor 1242	mg/kg	<0.1
Aroclor 1248	mg/kg	<0.1
Aroclor 1254	mg/kg	<0.1
Aroclor 1260	mg/kg	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1
Surrogate TCLMX	%	96

Acid Extractable metals in soil				
Our Reference:	UNITS	164078-10	164078-11	164078-12
Your Reference	---------- -	Split CS1	Split CS2	Split CS3
Composite Reference	----------	1+2+3	4+5+6	7+8+9
Date Sampled		20/03/2017	21/03/2017	22/03/2017
Type of sample		Soil	Soil	Soil
Date prepared	-	27/03/2017	27/03/2017	27/03/2017
Date analysed	-	27/03/2017	27/03/2017	27/03/2017
Arsenic	mg/kg	6	9	7
Cadmium	mg/kg	<0.4	<0.4	<0.4
Chromium	mg/kg	10	18	11
Copper	mg/kg	20	71	21
Lead	mg/kg	23	32	21
Mercury	mg/kg	<0.1	<0.1	<0.1
Nickel	mg/kg	6	17	8
Zinc	mg/kg	48	290	56

Moisture Our Reference: Your Reference	UNITS ----------	164078-1 Z1	164078-10 Split CS1	164078-11 Split CS2	164078-12 Split CS3
Composite Reference	- ----------	- -	1+2+3	4+5+6	7+8+9
Date Sampled Type of sample		20/03/2017 Soil	20/03/2017 Soil	21/03/2017 Soil	22/03/2017 Soil
Date prepared	-	27/03/2017	27/03/2017	27/03/2017	27/03/2017
Date analysed	-	28/03/2017	28/03/2017	28/03/2017	28/03/2017
Moisture	%	17	13	25	22

Method ID	Methodology Summary
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'TEQ PQL' values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'TEQ zero' values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'TEQ half PQL' values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			27/03/2017	[NT]	[NT]	LCS-1	27/03/2017
Date analysed	-			28/03/2017	[NT]	[NT]	LCS-1	28/03/2017
$TRHC_6$ - C_9	mg/kg	25	Org-016	<25	[NT]	[NT]	LCS-1	94%
$TRHC_6$ - C_{10}	mg/kg	25	Org-016	<25	[NT]	[NT]	LCS-1	94%
Benzene	mg/kg	0.2	Org-016	<0.2	[NT]	[NT]	LCS-1	93%
Toluene	mg/kg	0.5	Org-016	<0.5	[NT]	[NT]	LCS-1	97%
Ethylbenzene	mg/kg	1	Org-016	<1	[NT]	[NT]	LCS-1	94%
m+p-xylene	mg/kg	2	Org-016	<2	[NT]	[NT]	LCS-1	94%
o-Xylene	mg/kg	1	Org-016	<1	[NT]	[NT]	LCS-1	95%
naphthalene	mg/kg	1	Org-014	<1	[NT]	[NT]	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		Org-016	76	[NT]	[NT]	LCS-1	86%
QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			27/03/2017	[NT]	[NT]	LCS-1	27/03/2017
Date analysed	-			27/03/2017	[NT]	[NT]	LCS-1	27/03/2017
$TRHC_{10}$ - C_{14}	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS-1	101%
$TRHC_{15}$ - C_{28}	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-1	102%
$TRHC_{29}$ - C_{36}	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-1	103%
$TRH>C_{10}$-C_{16}	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS-1	101%
$TRH>C_{16}$-C_{34}	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-1	102%
$TRH>C_{34}$-C_{40}	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-1	103%
Surrogate o-Terphenyl	%		Org-003	102	[NT]	[NT]	LCS-1	98%
QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			27/03/2017	[NT]	[NT]	LCS-4	27/03/2017
Date analysed	-			28/03/2017	[NT]	[NT]	LCS-4	28/03/2017
Naphthalene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	LCS-4	122%
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	LCS-4	120%
Phenanthrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	LCS-4	124%
Anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	LCS-4	128%
Pyrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	LCS-4	126%
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	LCS-4	119%
Benzo(b,j+k) fluoranthene	mg/kg	0.2	Org-012	<0.2	[NT]	[NT]	[NR]	[NR]

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	[NT]	[NT]	LCS-4	121%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012	92	[NT]	[NT]	LCS-4	87%
QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			27/03/2017	[NT]	[NT]	LCS-3	27/03/2017
Date analysed	-			27/03/2017	[NT]	[NT]	LCS-3	27/03/2017
HCB	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-3	89%
gamma-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
beta-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-3	93%
Heptachlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-3	95%
delta-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Aldrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-3	92%
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-3	92%
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
pp-DDE	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-3	93%
Dieldrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-3	105%
Endrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-3	90%
pp-DDD	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-3	83%
Endosulfan II	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
pp-DDT	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-3	77%
Methoxychlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate TCMX	%		Org-005	100	[NT]	[NT]	LCS-3	92%

QUALITY CONTROL PCBs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			27/03/2017	[NT]	[NT]	LCS-3	27/03/2017
Date analysed	-			27/03/2017	[NT]	[NT]	LCS-3	27/03/2017
Aroclor 1016	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Aroclor 1221	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Aroclor 1232	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Aroclor 1242	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Aroclor 1248	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Aroclor 1254	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	LCS-3	103%
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%		Org-006	100	[NT]	[NT]	LCS-3	99%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			27/03/2017	[NT]	[NT]	LCS-1	27/03/2017
Date analysed	-			27/03/2017	[NT]	[NT]	LCS-1	27/03/2017
Arsenic	mg/kg	4	Metals-020	<4	[NT]	[NT]	LCS-1	117%
Cadmium	mg/kg	0.4	Metals-020	<0.4	[NT]	[NT]	LCS-1	110%
Chromium	mg/kg	1	Metals-020	<1	[NT]	[NT]	LCS-1	111%
Copper	mg/kg	1	Metals-020	<1	[NT]	[NT]	LCS-1	111%
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	LCS-1	100%
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	LCS-1	101%
Nickel	mg/kg	1	Metals-020	<1	[NT]	[NT]	LCS-1	103%
Zinc	mg/kg	1	Metals-020	<1	[NT]	[NT]	LCS-1	106%

Report Comments:

Asbestos ID was analysed by Approved Identifier:	Not applicable for this job
Asbestos ID was authorised by Approved Signatory:	Not applicable for this job

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NR: Test not required	RPD: Relative Percent Difference	NA: Test not required
<: Less than	>: Greater than	LCS: Laboratory Control Sample

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.

Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.

Matrix Spike : A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

LCS (Laboratory Control Sample) : This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria

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

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

COC 24/3

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161

TO: ENVIROLAB SERVICES PTY LD
12 ASHLEY STREET
CHATSWOOD NSW 2067

PH: 02 9910 6200 FAX: 02 9910 6201

ATTN: MS AILEEN HIE

Sampling By: SS/JH Job No: 13793/5

Project:

Project Manager: JX Location: Airds

Results required by: Standard Turnaround Time

Sampling details				Sample type										
Location	Depth (m)	Date	Time	Soil / Material	Water	Metals As, Cd, Cr, Cu, Pb, Hg, Ni and Zn	TPH* & BTEX	PAH	OCP	PCB				KEEP SAMPLE
1 Z1		20/03/2017	-	SG			✓	✓						YES
2 Z2		20/03/2017	-	SG										YES
3 Z3		20/03/2017	-	SG										YES
4 Z4		21/03/2017	-	SG										YES
5 Z5		21/03/2017	-	SG										YES
6 Z6		21/03/2017	-	SG										YES
7 Z7		22/03/2017	-	SG										YES
8 Z8		22/03/2017	-	SG										YES
9 Z9		22/03/2017	-	SG										YES

ENVIROLAB GROUP

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

Job No: 164078

Date Received: Sample: 22/03. 17:40.

Time Received: COC: 24/03 12:20

Received by: AZ.

Temp: Cool/Ambient

Cooling: Ice/Icepack

Security: Intact/Broken/None

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	JX	24/03/2017	Andy Zhang	AZ	~~24/03~~ Sample: 22/03. 17:40. COC: 24/03 12:20

Legend:

WG	Water sample, glass bottle	SG	Soil sample (glass jar)	SP	Soil sample (plastic bag)	* Purge & Trap
WP	Water sample, plastic bottle			✓	Test required	

GEOTECHNIQUE
PTY LTD

ENVIROLAB SERVICES PTY LTD

Sampling Date: 20, 21 & 22/3/2017 Job No: 13793/5
Sampled by: SS/JH
Project Manager: JX Location: Airds
Results Required by: Standard Turnaround Time

	Composite Sample	Sub-Samples	Analyte		
			Metals	OCP	PCB
10	Split CS1	Z1 + Z2 + Z3	✔	✔	✔
11	Split CS2	Z4 + Z5 + Z6	✔	-	-
12	Split CS3	Z7 + Z8 + Z9	✔	✔	-

✔ Test required

Metals include arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), lead (Pb), mercury (Hg), nickel (Ni) and zinc (Zn)
OCP = Organochlorine Pesticides
PCB: Polychlorinated Biphenyls

JX
24/3/2017
(JOHN XU)
Geotechnique Pty Ltd

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

SAMPLE RECEIPT ADVICE

Client Details	
Client	Geotechnique Pty Ltd
Attention	John Xu

Sample Login Details	
Your Reference	13793/5 , Airds
Envirolab Reference	**164078**
Date Sample Received	22/03/2017
Date Instructions Received	24/03/2017
Date Results Expected to be Reported	**31/03/2017**

Sample Condition	
Samples received in appropriate condition for analysis	YES
No. of Samples Provided	9 Soils, 3 Composites
Turnaround Time Requested	Standard
Temperature on receipt (°C)	12.9
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments
Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	Phone: 02 9910 6200
Fax: 02 9910 6201	Fax: 02 9910 6201
Email: ahie@envirolabservices.com.au	Email: jhurst@envirolabservices.com.au

Sample and Testing Details on following page

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

Sample Id	*vTRH(C6-C10)/BTEXN in Soil*	*svTRH (C10-C40) in Soil*	*PAHs in Soil*	*Organochlorine Pesticides in soil*	*PCBs in Soil*	*Acid Extractable metals in soil*	*On Hold*
Z1	✓	✓	✓				
Z2							✓
Z3							✓
Z4							✓
Z5							✓
Z6							✓
Z7							✓
Z8							✓
Z9							✓
Split CS1				✓	✓	✓	
Split CS2						✓	
Split CS3				✓		✓	

The '✓' indicates the testing you have requested. ***THIS IS NOT A REPORT OF THE RESULTS****.*

12 Ashley Street, Chatswood, NSW 2067
tel: +61 2 9910 6200

email: sydney@envirolab.com.au
envirolab.com.au

Envirolab Services Pty Ltd - Sydney | ABN 37 112 535 645

CERTIFICATE OF ANALYSIS 164078-A

Client:
Geotechnique Pty Ltd
PO Box 880
Penrith
NSW 2751

Attention: John Xu

Sample log in details:

Your Reference:	**13793/5 , Airds**
No. of samples:	Addtional Testing on 3 Soils
Date samples received / completed instructions received	22/03/17 / 04/04/17

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

Report Details:

Date results requested by: / Issue Date:	10/04/17 / 7/04/17
Date of Preliminary Report:	Not Issued

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

Results Approved By:

David Springer
General Manager

Acid Extractable metals in soil				
Our Reference:	UNITS	164078-A-4	164078-A-5	164078-A-6
Your Reference	----------	Z4	Z5	Z6
	-			
Date Sampled	----------	21/03/2017	21/03/2017	21/03/2017
Type of sample		Soil	Soil	Soil
Date prepared	-	05/04/2017	05/04/2017	05/04/2017
Date analysed	-	06/04/2017	06/04/2017	06/04/2017
Copper	mg/kg	21	120	28
Zinc	mg/kg	68	360	81

Moisture Our Reference: Your Reference	UNITS ----------	164078-A-4 Z4	164078-A-5 Z5	164078-A-6 Z6
Date Sampled	- ----------	21/03/2017	21/03/2017	21/03/2017
Type of sample		Soil	Soil	Soil
Date prepared	-	05/04/2017	05/04/2017	05/04/2017
Date analysed	-	06/04/2017	06/04/2017	06/04/2017
Moisture	%	26	23	22

Method ID	Methodology Summary
Metals-020	Determination of various metals by ICP-AES.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			05/04/2017	[NT]	[NT]	LCS-5	05/04/2017
Date analysed	-			06/04/2017	[NT]	[NT]	LCS-5	06/04/2017
Copper	mg/kg	1	Metals-020	<1	[NT]	[NT]	LCS-5	114%
Zinc	mg/kg	1	Metals-020	<1	[NT]	[NT]	LCS-5	106%

Report Comments:

Asbestos ID was analysed by Approved Identifier:	Not applicable for this job
Asbestos ID was authorised by Approved Signatory:	Not applicable for this job

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NR: Test not required	RPD: Relative Percent Difference	NA: Test not required
<: Less than	>: Greater than	LCS: Laboratory Control Sample

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.

Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.

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

Measurement Uncertainty estimates are available for most tests upon request.

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161

TO: ENVIROLAB SERVICES PTY LD
12 ASHLEY STREET
CHATSWOOD NSW 2067

PH: 02 9910 6200 **FAX:** 02 9910 6201

ATTN: MS AILEEN HIE

Sampling By: SS/JH **Job No:** 13793/5

Project:

Project Manager: JX **Location:** Airds

Results required by: Monday 10/04/2017 (Standard Turnaround Time)
Envirolab Ref. 164078 - A

Sampling details				Sample type										
Location	Depth (m)	Date	Time	Soil / Material	Water	Cu & Zn								KEEP SAMPLE
4 - Z4		21/03/2017	-	SG		✓								YES
5 - Z5		21/03/2017	-	SG		✓								YES
6 - Z6		21/03/2017	-	SG		✓								YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	JX	4/04/2017	JYH		4/4/17

Legend:
WG Water sample, glass bottle
WP Water sample, plastic bottle
SG Soil sample (glass jar)
SP Soil sample (plastic bag)
✓ Test required
* Purge & Trap

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SAMPLE RECEIPT ADVICE

Client Details	
Client	Geotechnique Pty Ltd
Attention	John Xu

Sample Login Details	
Your Reference	13793/5 , Airds
Envirolab Reference	**164078-A**
Date Sample Received	22/03/2017
Date Instructions Received	04/04/2017
Date Results Expected to be Reported	**10/04/2017**

Sample Condition	
Samples received in appropriate condition for analysis	YES
No. of Samples Provided	Addtional Testing on 3 Soils
Turnaround Time Requested	Standard
Temperature on receipt (°C)	12.9
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments
Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	Phone: 02 9910 6200
Fax: 02 9910 6201	Fax: 02 9910 6201
Email: ahie@envirolabservices.com.au	Email: jhurst@envirolabservices.com.au

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www.envirolabservices.com.au

Sample Id	*Acid Extractable metals in soil*	*On Hold*
Z1		✓
Z2		✓
Z3		✓
Z4	✓	
Z5	✓	
Z6	✓	
Z7		✓
Z8		✓
Z9		✓
Split CS1		✓
Split CS2		✓
Split CS3		✓

The '✓' indicates the testing you have requested. ***THIS IS NOT A REPORT OF THE RESULTS****.*

APPENDIX H

ENVIRONMENTAL NOTES

IMPORTANT INFORMATION REGARDING YOUR ENVIRONMENTAL SITE ASSESSMENT

These notes have been prepared by Geotechnique Pty Ltd, using guidelines prepared by the ASFE (Associated Soil and Foundation Engineers). The notes are offered to assist in the interpretation of your environmental site assessment report.

REASONS FOR AN ENVIRONMENTAL ASSESSMENT

Environmental site assessments are typically, though not exclusively, performed in the following circumstances:

- As a pre-acquisition assessment on behalf of a purchaser or a vendor, when a property is to be sold
- As a pre-development assessment, when a property or area of land is to be redeveloped, or the land use has changed, e.g. from a factory to a residential subdivision
- As a pre-development assessment of greenfield sites, to establish baseline conditions and assess environmental, geological and hydrological constraints to the development of e.g. a landfill
- As an audit of the environmental effects of previous and present site usage

Each circumstance requires a specific approach to assessment of soil and groundwater contamination. In all cases the objective is to identify and if possible quantify the risks that unrecognised contamination poses to the ongoing proposed activity. Such risks may be financial (clean-up costs or limitations in site use) and physical (health risks to site users or the public).

ENVIRONMENTAL SITE ASSESSMENT LIMITATIONS

Although information provided by an environmental site assessment can reduce exposure to the risk of the presence of contamination, no environmental site assessment can eliminate the risk. Even a rigorous professional assessment might not detect all contamination within a site. Contaminants could be present in areas that were not surveyed or sampled, or migrate to areas that did not show signs of contamination when sampled. Contaminant analysis cannot possibly cover every type of contaminant that may occur; only the most likely contaminants are screened.

AN ENVIRONMENTAL SITE ASSESSMENT REPORT IS BASED ON A UNIQUE SET OF PROJECT SPECIFIC FACTORS

In the following events and in order to avoid cost problems, you should ask your consultant to assess any changes in the conclusion and recommendations made in the assessment:

- When the nature of the proposed development is changed e.g. if a residential development is proposed, rather than a commercial development
- When the size or configuration of the proposed development is altered e.g. if a basement is added
- When the location or orientation of the proposed structure is modified
- When there is a change of land ownership, or
- For application to an adjacent site

ENVIRONMENTAL SITE ASSESSMENT FINDINGS ARE PROFESSIONAL ESTIMATES

Site assessment identifies actual sub-surface conditions only at those points where samples are taken, when they are taken. Data obtained from the sampling and subsequent laboratory analyses are interpreted by geologists, engineers or scientists and opinions are drawn about the overall sub-surface conditions, the nature and extent of contamination, the likely impact on any proposed development and appropriate remediation measures. Actual conditions may differ from those inferred, because no professional, no matter how qualified and no sub-surface exploration program, no matter how comprehensive, can reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than an assessment indicates. Actual conditions in areas not sampled may differ from predictions. Nothing can be done to prevent the unanticipated, however, steps can be taken to help minimise the impact. For this reason site owners should retain the services of their consultants throughout the development stages of the project in order to identify variances, conduct additional tests that may be necessary and to recommend solutions to problems encountered on site.

Soil and groundwater contamination is a field in which legislation and interpretation of legislation by government departments is changing rapidly. Whilst every attempt is made by Geotechnique Pty Ltd to be familiar with current policy, our interpretation of the investigation findings should not be taken to be that of the relevant authority. When approval from a statutory authority is required for a project, approval should be directly sought.

STABILITY OF SUB-SURFACE CONDITIONS

Sub-surface conditions can change by natural processes and site activities. As an environmental site assessment is based on conditions existing at the time of the investigation, project decisions should not be based on environmental site assessment data that may have been affected by time. The consultant should be requested to advise if additional tests are required.

ENVIRONMENTAL SITE ASSESSMENTS ARE PERFORMED FOR SPECIFIC PURPOSES AND CLIENTS

Environmental site assessments are prepared in response to a specific scope of work required to meet the specific needs of specific individuals e.g. an assessment prepared for a consulting civil engineer may not be adequate to a construction contractor or another consulting civil engineer.

An assessment should not be used by other persons for any purpose or by the client for a different purpose. No individual, other than the client, should apply an assessment, even for its intended purpose, without first conferring with the consultant. No person should apply an assessment for any purpose other than that originally contemplated, without first conferring with the consultant.

MISINTERPRETATION OF ENVIRONMENTAL SITE ASSESSMENTS

Costly problems can occur when design professionals develop plans based on misinterpretation of an environmental site assessment. In order to minimise problems, the environmental consultant should be retained to work with appropriate design professionals, to explain relevant findings and to review the adequacy of plans and specifications relative to contamination issues.

LOGS SHOULD NOT BE SEPARATED FROM THE REPORT

Borehole and test pit logs are prepared by environmental scientists, engineers or geologists, based upon interpretation of field conditions and laboratory evaluation of field samples. Logs are normally provided in our reports and these would not be redrawn for inclusion in site remediation or other design drawings, as subtle but significant drafting errors or omissions may occur in the transfer process. Photographic reproduction can eliminate this problem, however, contractors can still misinterpret the logs during bid preparation if separated from the text of the assessment. Should this occur, delays and disputes, or unanticipated costs may result.

To reduce the likelihood of borehole and test pit log misinterpretation, the complete assessment should be available to persons or organisations involved in the project, such as contractors, for their use. Denial of such access and disclaiming responsibility for the accuracy of sub-surface information does not insulate an owner from the attendant liability. It is critical that the site owner provides all available site information to persons and organisations, such as contractors.

READ RESPONSIBILITY CLAUSES CLOSELY

An environmental site assessment is based extensively on judgement and opinion; therefore, it is necessarily less exact than other disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. In order to aid in prevention of this problem, model clauses have been developed for use in written transmittals. These are definitive clauses, designed to indicate consultant responsibility. Their use helps all parties involved recognise individual responsibilities and formulate appropriate action. Some of these definitive clauses are likely to appear in the environmental site assessment and you are encouraged to read them closely. Your consultant will be happy to give full and frank answers to any questions you may have.