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PROPOSED REDEVELOPMENT

LOT 1 IN DP818683
15 CLOSE STREET CANTERBURY

STAGE 1 PRELIMINARY CONTAMINATION ASSESSMENT & STAGE 2 DETAILED CONTAMINATION ASSESSMENT

REPORT NO 13138/1-AA 24 APRIL 2014

Lemko Place, Penrith NSW 2750 PO Box 880, Penrith NSW 2751
Telephone (02) 4722 2700 Facsimile (02) 4722 2777
e-mail: info@geotech.com.au www.geotech.com.au

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Job No: 13138/1
Our Ref: 13138/1-AA
24 April 2014

Canterbury City Council
c/- JBA Urban Planning Consultants Pty Ltd
P O Box 375
NORTH SYDNEY NSW 2059
Email: SBallango@jbaurban.com.au

Attention: Ms S Ballango

Dear Madam

re **Proposed Redevelopment**
Lot 1 in DP818683 - 15 Close Street, Canterbury
Stage1 Preliminary Contamination Assessment &
Stage 2 Detailed Contamination Assessment

Please find herewith the Stage 1 preliminary contamination assessment (PCA) and Stage 2 Detailed Contamination Assessment (DCA) report for the above site. It is understood that the site is proposed for redevelopment into commercial and residential high-rise buildings, including a multi-purpose community art cultural facility.

The objectives of the assessments were to ascertain if the site presents a risk of harm to human health and / or the environment and to determine the suitability of the site for the proposed redevelopment.

The scope of work included a desktop study of site history, geological and hydrogeological information, a site inspection, soil sampling and laboratory testing.

Reference should be made to Sections 15.0 and 16.0 of the report for the conclusion and limitations.

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

Yours faithfully
GEOTECHNIQUE PTY LTD

JOHN XU
Associate
BE, MEngSc, MIEAust

Lemko Place, Penrith NSW 2750 PO Box 880, Penrith NSW 2751
Telephone (02) 4722 2700 Facsimile (02) 4722 2777
e-mail: info@geotech.com.au www.geotech.com.au

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EXECUTIVE SUMMARY

Geotechnique Pty Ltd (Geotechnique) was commissioned by Canterbury City Council through JBA Urban Planning Consultants Pty Ltd to conduct a Stage 1 preliminary contamination assessment (PCA) and Stage 2 Detailed Contamination Assessment (DCA) for the site comprising the entirety of Lot 1 in DP818683, located at 15 Close Street, Canterbury, as shown on Figure 1, page 1 of the report.

The objectives of the assessment were to ascertain if the site presents a risk of harm to human health and / or the environment and to determine the suitability of the site for the proposed redevelopment. In order to achieve the objectives of the assessment the scope of work included a desktop study of site history, geological and hydrogeological information, a site inspection, soil sampling and laboratory testing.

The data quality objectives outlined in this report have been satisfied. The findings of this Stage 1 PCA and Stage 2 DCA are summarised as follows;

- The site is occupied by a club house, three bowling greens and a car park. The site was used for bowling activities. The site also contains fill materials.
- The site is proposed for redevelopment into commercial and residential high-rise buildings, including a multi-purpose community art cultural facility. However, details of the proposed development are unknown at this stage.
- The site is generally underlain by fill with thickness ranging from about 0.15 metre (m) to 3.3m, overlying relatively impermeable residual sandy clay.
- As presented in the summary tables and discussed in Section 14.0, most of the laboratory test results 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 sampled soil at concentrations that do not pose a risk of hazard to human health or the environment for residential with minimal soil access. Asbestos containing material was not encountered and asbestos was not detected in the soil samples analysed.

  The surface soils and the deeper soils generally do not appear to have been impacted by past activities and the presence of fill, with the exception of locations of concern BH5, BH16, BH17 and BH21, as indicated and tabulated on Drawing No 13138/1-AA2. The elevated concentrations of Zn or BaP in soil around these locations potentially pose a risk to terrestrial ecosystems if not placed beneath a building / structure / road for the proposed redevelopment.

  In addition, field work for this assessment revealed inclusion of ash material in the fill (sandy gravel) at locations BH3, BH4, BH6, BH7, BH10, BH11 and BH13 to BH15 (refer to Drawing No 13138/1-AA1).
- Due to the absence of significant chemical concentrations within the soils it is our opinion that potential off-site impacts of contaminants beneath the site on groundwater and waterbodies are low.

Based on this assessment it is considered that the site can be made suitable for the proposed redevelopment into commercial and residential high-rise buildings subject to implementation of the following recommendations, prior to site preparation and earthworks.

- Assessment of soils at and in the vicinity of the footprints of site features such as the club house, car park, etc., after complete demolition and removal. 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 were not encountered during field work for this assessment.

  Sampling and testing will be required to determine the contamination status of soils / fill at and in the vicinity of the footprints. In the event of contamination, detailed assessment, remediation and validation will be required.

- Depending on the layout and details of the proposed redevelopment, a further contamination assessment of topsoil or fill (gravelly sand or silty clay) around BH5, BH16, BH17 and BH21 (refer to Drawing No 13138/1-AA2), if not placed beneath a building / structure / road for the proposed redevelopment, should be carried out to assess the risk to terrestrial ecosystems and to determine the requirement for remediation / management.

- Inclusion of ash material in the fill (sandy gravel) was identified at BH3, BH4, BH6, BH7, BH10, BH11 and BH13 to BH15 (refer to Drawing No 13138/1-AA1). A further contamination assessment around those locations should be undertaken to determine the contamination status and to delineate the extent of the inclusion of ash material in the fill. Depending on the layout and details of the proposed redevelopment, aesthetic issues should be considered and addressed.

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

Any imported fill should be tested or appropriate validation certification provided by a qualified consultant, to ensure suitability for the proposed use. The imported fill must be free from asbestos, ash and odour, not be discoloured and acid sulphate soil. Environmentally, virgin excavated natural material (VENM) or excavated natural material (ENM) will be suitable for use as fill for the site. Salinity assessment might be required.

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" Department of Environment, Climate Change and Water (DECCW), 2009 and NSW EPA guidelines for the resource recovery exemptions under the Protection of the Environment Operations (Waste) Regulation 2005, is undertaken prior to disposal at an appropriately licensed landfill or potential re-use at other sites.

Reference should be made to Section 16.0 of the report, which set out details of the limitations of the assessments.

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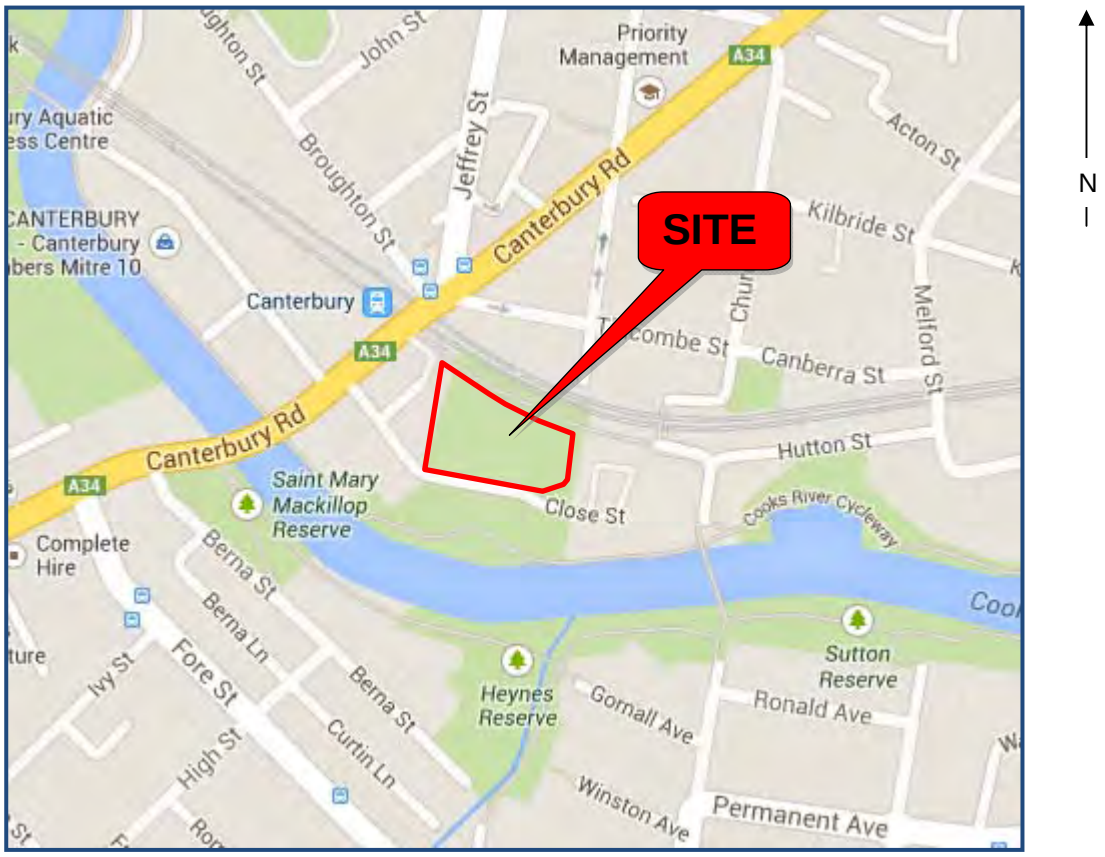
1.0 INTRODUCTION

This report presents the results of a Stage 1 preliminary contamination assessment (PCA) and Stage 2 detailed contamination assessment (DCA) for the site comprising the entirety of Lot 1 in DP818683, located at 15 Close Street, Canterbury, as indicated on Figure 1 below.

FIGURE 1



Map Data ©2014 Google

The objectives of the assessment were to ascertain if the site presents a risk of harm to human health and / or the environment and to determine the suitability of the site for the proposed redevelopment.

The format of this report closely follows that recommended in the NSW Environment Protection Authority (EPA), "Guidelines for Consultants Reporting on Contaminated Sites" - 2011.

2.0 SCOPE OF WORK

In order to achieve the objective of this assessment the following scope of work was conducted in accordance with our fee proposal Q6433R1 dated 14 January 2014.

- A desktop study of the following to assist in identification of potential contamination issues;
  - Historical aerial photographs.
  - NSW Department of Lands (DOL) records.
  - Section 149 (2& 5) Planning Certificate issued by Canterbury City Council.
  - NSW Office of Environment and Heritage (OEH) records of EPA Record of Notices for Contaminated Land.
- Review of soils and geological maps.
- Inspection by an Environmental Engineer from Geotechnique Pty Ltd (Geotechnique) to identify current site activities, site features and any visible or olfactory indicators of potential contamination.
- Soil sampling by the Environmental Engineer in accordance with a pre-determined sampling plan developed with reference to the NSW EPA *Sampling Design Guidelines* and aimed at ascertaining the presence or otherwise of soil contaminants.
- Screening the recovered fill samples for volatile organic compounds (VOC) using a calibrated Photo-Ionised Detector (PID).
- Chemical analysis by National Association of Testing Authorities (NATA) accredited testing laboratories, in accordance with chains of custody (COC) prepared by Geotechnique.
- Implementation of industry standard quality assurance (QA) and quality control (QC) measures.
- 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 AND PROPOSED DEVELOPMENT

The site is located on the northern side of Close Street, Canterbury, in the local government area of Canterbury, as indicated on Figure 1 (page 1). The site comprises the entirety of Lot 1 in DP818683.

As shown on Drawing No 13138/1-AA1 the site is an irregular shape, measuring about 140 metres (m) along the Close Street frontage, with a depth of about 105m along the western boundary and covering an area of 1.078 hectares (ha).

It is understood that the site is proposed for redevelopment into commercial and residential high-rise buildings, including a multi-purpose community art cultural facility. However, details of the proposed redevelopment are unknown at this stage.

4.0 SITE HISTORY

In order to formulate a picture of the site history and to assist in identification of any potential contamination Geotechnique obtained and / or reviewed information including historical aerial photographs, NSW DOL records, Planning Certificate issued by Council under Section 149 of the Environmental Planning and Assessment Act 1979, Council records, NSW OEH record of EPA Notices for Contaminated Land, as well as records of the POEO Public Register and WorkCover NSW information pertaining to storage of dangerous goods. The results of the information review are presented in the following sub-sections.

4.1 Aerial Photographs

Aerial photographs taken in 1951, 1961, 1970, 1978, 1986, 1994, 2005 and 2014 were examined. Copies of the aerial photographs are kept in the offices of Geotechnique and are available for examination upon request. The writer made the following observations. Due to scale some of the listed observations are best interpretations only.

All the aerial photographs indicate that a railway and Close Street border the site to the north and south respectively.

1951	The site is vacant with no specific usage noted. Disturbed areas were noted within the site. Buildings possibly associated with commercial / industrial activities are noted in the southern portion of the adjacent western and eastern properties.
1961	A building resembling the current club house is noted within the site. A car park and three areas possibly associated with bowling greens are also evident. A large building, possibly a warehouse, is evident in the northern portion of the adjoining western property. The remaining adjacent properties are relatively unchanged since 1951.
1970	The site and neighbouring properties are essentially unchanged since 1961.
1978	The site remains predominantly unchanged since 1970. The previously noted building in the southern portion of the adjacent eastern property has been demolished and removed. Large buildings possibly associated with commercial / industrial activities occupy the entire eastern property. The remaining adjacent properties are essentially unchanged.
1986 & 1994	The site and neighbouring properties are relatively unchanged since 1978.
2005	The site remains essentially unchanged since 1994. The previously noted large buildings in the adjacent eastern property have been demolished and removed. The adjoining eastern property is undergoing new residential development. The remaining adjacent properties have not changed significantly.
2014	The site appears essentially unchanged since 2005. The residential development in the adjoining eastern property has been well established. The remaining adjoining properties have not changed notably.

In summary, the aerial photographs revealed the site was vacant with no specific usage noted prior to the early 1950s and developed into commercial land possibly associated with bowling activities in the early 1960s. Disturbed areas were noted within the site in the early 1950s. It is possible that some soils were imported.

Buildings possibly associated with commercial / industrial activities were noted in the adjoining western property. The adjacent eastern property was possibly used for commercial / industrial activities until residential redevelopment in the mid 2000s.

4.2 NSW DOL Records

The list of proprietors and lessee for the site is summarised in Appendix A. NSW DOL records indicate that;

- The Council of the Municipality of Canterbury has owned the land since 1956.
- Private proprietors owned the site prior to 1956.
- The site was leased to Canterbury Bowling Club and Sydney Petanque Club Limited between 1990 and 2010. Bowling activities probably occurred within the site based on the nature of the lessee during those periods.

4.3 Section 149 (2& 5) Planning Certificate and Council Records

The Planning Certificate (No 28890) under Section 149 Environmental Planning and Assessment Act 1979 for Lot 1 in DP818683 issued by Canterbury City Council on 19 March 2014 indicated that;

- The land is zoned RE1 Public Recreation in accordance with Canterbury Local Environmental Plan 2012.
- The SEPP No. 55 - Remediation of Land applies to the land.
- Restrictions on development due to heritage are not applicable to the land.
- There is no notification that the subject property is affected by the provisions of Section 38 or 39 of the *Coastal Protection Act 1979*.
- The land is not within a mine subsidence district within the meaning of the Section 15 of the *Mine Subsidence Compensation Act, 1961*.
- The land is not affected by any road widening or road realignment under realignment under Division 2 of Part 3 of the *Roads Act 1993, or* an environmental planning instrument or any resolution of Council.
- There are no matters arising to the *Contaminated Land Management Amendment Act 1997*.
- On the 10 June 1999 Council adopted a policy on contaminated land. This policy will restrict development of land;
  a) Which is affected by contamination.
  b) Which has been used for certain purposes.
  c) In respect of which is not sufficient about contamination.

d) Which is proposed to be used for certain purposes.

e) In other circumstances contained in the policy.

Reference may be made to Appendix B for a copy of the Section 149 (2 & 5) Certificate.

A request was made to Canterbury City Council under Schedule 5 of the Government Information (Public Access) Regulation 2009 for access to any relevant information pertaining to the site under the Freedom of Information Act. The request included information pertaining to development and building applications and approvals, complaints, notices issued, council inspection records, registered activities, chemical storage and waste disposal.

The following notes were made from the information provided by Council.

- Council approval (Application Reference No 35.2963) for use of premises as a place of public entertainment, granted 15 February 1993.
- Certification of Classification for a place of public entertainment dated 15 February 1993.

4.4 NSW OEH Records

The NSW OEH maintains records of EPA notices for contaminated land under the Contaminated Land Management (CLM) Act 1997 or the Environmentally Hazardous Chemical Act 1985. The notices relate to investigation and / or remediation of site contamination.

In addition the EPA might be regulating contamination at the land through a licence or notice under the Protection of the Environment Operations Act 1997 (POEO Act). Licence conditions relate to pollution prevention, monitoring, cleaner production through recycling and re-use and implementation of best practice.

A search of the OEH records on 8 April 2014 (refer to Appendix C of this report) found no EPA Records of Notices issued for the site. It should be noted that the OEH records of EPA notices for contaminated land do not provide records of all contaminated land in NSW. At the time of searching the records 352 sites in NSW were registered in the database.

A search of the licences, applications and notices under the POEO Public Register on 8 April 2014 (refer to Appendix C of this report) found no records for the subject site.

4.5 WorkCover NSW Records

A request was made to WorkCover NSW through the Stored Chemical Information Database (SCID) to search for any information on licences to store dangerous goods, including underground tanks and/or other underground facilities at the site.

A search of SCID and the microfiche records held by WorkCover NSW did not locate any records pertaining to the site (refer to Appendix D).

5.0 SITE CONDITION AND SURROUNDING ENVIRONMENT

5.1 Site Condition

The site is owned by Canterbury City Council and currently leased to the Canterbury Bowling Club under a short-term lease arrangement.

An environmental engineer from Geotechnique made the following observations during field work on 18 March 2014.

- A club house, three bowling greens and a car park currently occupy the site.
- 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.

5.2 Surrounding Environment

At the time of inspection observations of the neighbouring properties were as follows.

To the north	A railway line
To the west	A warehouse
To the south	Close Street
To the east	Residential apartments

There were no air emissions emanating from the site and neighbouring properties.

The site layout and surrounding properties are indicated on Drawing No 13138/1-AA1.

6.0 TOPOGRAPHY, GEOLOGY& HYDROGEOLOGY

In general, ground surface slopes from north to south.

The Geological Map of Sydney (Geological Series Sheet 9130, Scale 1:100,000, 1983) published by the Department of Mineral Resources indicates the residual soils within the site to be underlain by Triassic Age Hawkesbury Sandstone, comprising medium to coarse grained quartz sandstone, very minor shale and laminite lenses and / or Quaternary Age soils consisting of silty to peaty quartz sand, silt and clay ferruginous and humic cementation in places, common shell layers.

The Soil Landscape Map of Sydney (Soil Landscape Series Sheet 9130, Scale 1:100,000, 2002) prepared by the Soil Conservation Service of NSW indicates that the site is located within the Gymea landscape area and typically comprising shallow highly impermeable residual sandy soil.

Reference should be made to Table 1 in Appendix E for descriptions of the soils encountered during sampling for this assessment. Based on information from the borehole drilling the following four types of fill were encountered at most borehole locations across the site;

- Type 1 fill, comprising gravelly sand with thickness ranging from about 0.15m to 1.0m, grey, with inclusions of clay, underlain by natural sandy clay or clayey sand at BH1,BH2, BH8, BH9 and BH17.

- Type 2 fill, comprising sandy gravel with thickness ranging from about 0.4m to 1.0m, dark grey and black with inclusions of ash material, underlain by natural sandy clay at BH3, BH4, BH6, BH7, BH10, BH11 and BH13 to BH15.
- Type 3 fill, comprising sand with thickness of about 0.6m, grey, underlain by Type 4 fill at BH21.
- Type 4 fill, comprising silty clay, with thickness of about 3.1m and 1.05m, grey, with inclusions of shale and sandstone fragments and roots, underlain by natural sandy clay at BH16 and BH21.

Topsoil (thickness ranging from about 0.1m to 0.15m) comprising silty sand, underlain by sandstone, Type 2 / Type 4 fill or natural sandy clay ,was encountered at BH5, BH10 to BH12, BH14, BH15 and BH17 to BH21. Sandstone bedrock was encountered beneath the topsoil or natural sandy clay at BH4, BH5, BH12 and BH18. The depths to sandstone bedrock vary from about 0.3m to 3.0m from existing ground level (EGL).

Bitumen with thickness of about 0.05m, underlain by Type 1 fill or roadbase, was encountered in BH1, BH2, BH8 and BH9. Roadbase underlain by Type 1 fill was encountered in BH2.

No asbestos-cement pieces were noted in the recovered soil samples.

Groundwater or perched water was not encountered during sampling to a maximum depth of about 4.0m (BH1) below EGL and during the short time the boreholes remained open.

There is no waterbody such as a river or wetland close to the site. The Cooks River is located approximately 100m to the south of the site. Based on observation and site topography surface run-off would predominantly flow to the south. Obvious local depressions that might capture or divert stormwater run-off were not observed within the site.

A site-specific groundwater assessment was not considered necessary at the time of conducting this assessment as the initial appreciation of site issues did not identify potential for groundwater contamination. However, in order to obtain some understanding of regional groundwater conditions a search was carried out through the website of the Department of Natural Resources for any registered groundwater bore data within a radius of 1 kilometre (km) of the site. The search revealed three bores within this radius. The bores were drilled between 1996 and 2003 and the final drilling depths ranged from 5.0m to 90.0m. No details were provided regarding water bearing zones, standing water level and salinity. The bores were authorised and / or intended for domestic purposes. The information obtained is summarised in the following table and included in Appendix F of this report.

Bore	Date	Authorised/ Intended Purpose	AMG coordinates	Water Bearing Zone (m)	Standing Water Level (m)	Salinity (mg/L)
GW102402	01.01.1996	Domestic / -	$_{3}26.938_{E}\&_{62}46.390_{N}$	No Details	No Details	No Details
GW105215	05.06.2003	Domestic	$_{3}25.448_{E}\&_{62}46.456_{N}$	No Details	No Details	No Details
GW305694	20.02.2003	Domestic	$_{3}26.438_{E}\&_{62}44.811_{N}$	No Details	No Details	No Details

7.0 CONCEPTUAL SITE MODEL

7.1 Potential Areas of Environmental Concern

Based on the preceding sections, Areas of Environmental Concern (AEC) and associated contaminants of potential concern have been identified and are presented in the following Table 5.1.

Table 5.1 Areas of Environmental Concern& Associated Contaminants of Potential Concern

Areas of Concern	Rationale / Detail	Potential Contaminants of Concern
Around the club house	➢ In the surface soils surrounding the club house there is potential for metals and asbestos contamination due to degradation of building materials, such as galvanised iron (GI) sheets, paint (if painted with lead based paint) and asbestos (if present) and / or possible pest control.	➢ Heavy Metals [1] ➢ Organochlorine Pesticides (OCP) ➢ Asbestos
The site	➢ The site has been used for bowling activities, which indicate potential for applied agricultural chemicals and fertilisers. The use of agricultural chemicals and fertilisers could lead to Metals, Organophosphate Pesticides (OPP) and persistent OCP contamination. The predicted persistence of OCP is less than 15 years, whilst the predicted persistence of OPP is typically less than one year.	➢ Heavy Metals [1] ➢ OCP ➢ OPP
The site	➢ Fill was encountered across the site. ➢ Fill materials could have been imported from unknown sources, therefore, there is potential for the fill materials to be contaminated.	➢ Heavy Metals [3] ➢ Total Petroleum Hydrocarbons (TPH) ➢ Benzene, Toluene, Ethyl Benzene and Xylenes (BTEX) ➢ Polycyclic Aromatic Hydrocarbons (PAH) ➢ OCP ➢ Polychlorinated Biphenyls (PCB) ➢ Cyanides ➢ Phenols ➢ Asbestos [4]
Building	➢ Due to the age of the building, features / structures, concealed pipes (water, sewer or stormwater), roofing materials, walls etc., in the building might contain asbestos. ➢ This can be ascertained by a hazardous materials survey of the building.	➢ Asbestos

[1] Metals suite includes arsenic, lead and zinc.
[2] Metals suite includes cadmium, chromium, copper, lead, mercury, nickel and zinc
[3] Metals suite includes arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc
[4] Asbestos may present in fill materials with inclusions of demolition waste and / or fibro-cement pieces.

No information in relation to product spills / losses, discharges to the land, water or air associated with chemical storage at the site has been identified as part of this assessment.

7.2 Potentially Contaminated Media

Potentially contaminated media present at the site include fill material and natural soils / sandstone bedrock.

The historical review identified that previous site activities included bowling activities which might have impacted the historical soils. In addition, the presence of the fill across the site has the potential for impacted material to have been imported to the site.

Based on the potential mobility of contaminants and associated potential leachability through the soil / fill profile, vertical migration of contaminants from the surface soils and fill material into the underlying natural soils / sandstone bedrock might have occurred. As a result, the natural soils and underlying sandstone bedrock are also considered to be potentially contaminated media.

Groundwater or perched water was not encountered during sampling to a maximum depth of about 4.0m (BH1) below the EGL. Given the relatively impermeable nature of the natural residual soil beneath the site, groundwater underlying the site is considered to have a low potential to be impacted. However if a substantial source is identified within the soil on site a groundwater assessment might be necessary.

Surface water is not identified as a potentially contaminated medium based on the absence of any permanent waterbody transecting the site and the distance to the nearest permanent waterbody (>100m to the south of the site, Section 6.0).

7.3 Potential for Migration

Contaminants generally migrate from site via a combination of windblown dust, rainwater infiltration, groundwater migration and surface water run-off. The potential for contaminants to migrate is a combination of;

- The nature of the contaminants (solid / liquid and mobility characteristics)
- The extent of the contaminants (isolated or widespread)
- The locations of the contaminants (surface soils or at depth)
- The site topography, geology, hydrology and hydrogeology

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

The potential contaminants identified as part of the site history review, site inspection and field sampling were generally in a solid form (e.g. heavy metals, PAH, OCP, asbestos, etc.).

The site is grass covered or sealed by hard stand (building and car park) across the majority of the surface. The potential for migration of contaminants via wind-blown dust is considered low as a result of the exposed soils within the site. The potential for migration of contamination via surface run-off is also expected to be minor. Some migration of contaminants via surface water might still occur in the event of heavy rain.

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

Sensitive receptors at the site under current site conditions and in the immediate vicinity are considered to include visitors who might come into contact with potentially contaminated media within the site.

8.0 DATA QUALITY OBJECTIVES

The data qualitative objectives (DQO) are qualitative and quantitative statements that specify the quality of the data required for the assessment. DQO must ensure that the data obtained is sufficient to characterise the contamination of a site and enable appropriate assessment of health and environmental risks for the current or proposed use. The DQO were developed for this assessment in accordance with the NSW Department of Environment and Conservation (DEC) (2006), Guidelines for the NSW Site Auditor Scheme (2nd edition), as well as in accordance with the Australian Standard "*Guide to the Sampling and Investigation of Potentially Contaminated Soil Part 1: Non-volatile and semi-volatile compounds*" (AS4482.1-2005) and "*Guide to the Sampling and Investigation of Potentially Contaminated Soil Part 2: Volatile substances*" (AS4482.2-1999). The DQO process adopted is outlined below.

State the Problem

The site is occupied by a club house, three bowling greens and a car park. The site was used for bowling activities. The majority of the site also contains fill materials. As a result, the potential exists for contamination to have occurred within the site in the past and presently.

It is understood that the site is proposed for redevelopment into commercial and residential high-rise buildings, including a multi-purpose community art cultural facility.

The 'problems' to be addressed are;

- What is the overall contamination status of the site and what is the extent of contamination?
- Whether the site is considered suitable for the proposed redevelopment?

The following key professional personnel were involved in the assessment:

John Xu	Associate
Lan Ye	Environmental Engineer

Identify the Decisions
The decisions to be made in completing the assessment are as follows.

- Are there any unacceptable odours emanating from the site?
- Are there any unacceptable aesthetic issues within the site?
- Are there any unacceptable risks to site occupants or the environment under the proposed redevelopment?
- Are there any background soil contaminant levels within the site that pose a risk to future site occupants or the environment under the proposed redevelopment?
- Are there any human health risks posed by potential chemical mixtures within the site?
- Is there any evidence of, or potential for, migration of contaminants from the site?
- Is the site currently suitable for the proposed end use?
- Is further investigation required to adequately address the abovementioned decisions?
- Is further investigation required to delineate the extent of contamination / locations of concern identified?
- Does the site require remediation or management to ensure suitability for the proposed end use?

Identify Inputs to the Decisions
The inputs into the decision process are as follows.

- Historical information (presented in Section 4.0).
- Site operations and observation details (presented in Section 5.0).
- Systematic soil sampling at a density required to meet the NSW EPA "*Sampling Design Guidelines*".
- Soil profile information obtained through the sampling phase.
- PID data for the recovered fill samples recorded in the field.
- Chemical test data on analysed samples.
- Develop conceptual site model (presented in Section 7.0).
- Assessment of test results against applicable soil Investigation levels and screening levels in the National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013 (Amendment NEPM 2013) and NSW Site Auditor Scheme, 2006 (Section 13.0). For asbestos assessment, the site must be free of asbestos-cement pieces and no asbestos fibre detected in the soils.

Define the Study Boundaries
The study boundary for this assessment is defined by the boundaries of the subject site as shown on Drawing No 13138/1-AA1 and summarised in Section 3.0 of this report.

The vertical boundary will be the depth within the soil profile to which contamination might have potentially migrated.

Develop a Decision Rule

The information obtained through this assessment will be used to characterise the site in terms of contamination issues and risk to human health and the environment. The decision rule in characterising the site will be as follows.

- The assessment criteria are the NSW EPA produced and / or endorsed criteria, as specified in Section 13.0 of this report. For asbestos assessment, the site must be free of asbestos-cement pieces and no asbestos fibre detected in the soils.
- The site will be deemed to potentially contain contamination "hot spots" if any of the individual concentrations exceed the assessment criteria adopted or any presence of asbestos-cement pieces / sheets and / or asbestos fibres in the samples analysed.
- Further investigation, remediation and / or management will be recommended if the site is found to be contaminated or containing contamination "hot spots".

Laboratory test results will only be accepted and considered useable for this assessment under the following conditions.

- All laboratories used are accredited by NATA for the analyses undertaken.
- All detection limits set by the laboratories fall below the assessment criteria adopted.
- Analyte concentrations in the rinsate water sample should be less than laboratory limits of reporting or should not be detected significantly.
- The recovery of spike concentrations in the trip spike sample is sufficient so as not to affect the reported concentrations of the soil samples when the same recovery is applied (BTEX only).
- The differences between the reported concentrations of analytes in the field duplicate samples and the corresponding original samples are within accepted limits (refer to Section 10.6).
- The differences between the reported concentrations of analytes in the inter-laboratory duplicate (split) samples and the corresponding original samples are within accepted limits (refer to Section 10.7).
- The QA / QC protocols and results reported by the laboratories comply with the requirements of the Amendment NEPM 2013 "*Guideline on Laboratory Analysis of Potentially Contaminated Soils*".

Specify Limits on Decision Errors

The limits on decision errors for this assessment are as follows.

- Systematic sample numbers comply with those recommended in the NSW EPA sampling design guidelines, which have risk probabilities already incorporated. Sample numbers are therefore considered adequate for site characterisation.
- Analyte selection is based on site history, site activities and the presence of the fill The possibility of any other potential contaminants that would be detected through field observation (through odours, staining, and colouring) may need to be included.
- The assessment criteria adopted from the guidelines stated in Section 13.0 have risk probabilities already incorporated.
- The acceptable limits for field and inter-laboratory duplicate (split) comparisons are outlined in Sections 10.6 and 10.7 of this report.

- The acceptance limits for laboratory QA/QC parameters are based on the laboratory reported acceptance limits and those stated in the NEPM 2013 "*Guideline on Laboratory Analysis of Potentially Contaminated Soils*".

Optimise the Design for Obtaining Data

- The procedures adopted for the location and collection of environmental samples were developed prior to implementation, in accordance with NSW EPA guidelines and current industry practice. The sampling program was designed to ensure integrity of data collection during the assessment, including decontamination techniques, sample labelling, storage and chain of custody protocols.
- The analytical program was developed in theory prior to undertaking the sampling (based on site history, site activities and the presence of the fill) and refined on the basis of field observations (both surface and sub-surface) during the sampling phase. All potential contaminants have been covered within the open area of the site.
- Only laboratories accredited by NATA for the analyses undertaken were used for this assessment. The laboratory performance is assessed through review of statistics calculated for QA samples such as blanks, spikes, duplicates and surrogates.
- The field QA / QC protocols adopted are outlined in Section 10.0 of this report. The QA / QC program incorporates preparation of traceable documentation of procedures used in the sampling and analytical program and in data validation procedures.

Data Quality Indicators

The performance of the assessment in achieving the DQO will be assessed through the application of Data Quality Indicators (DQI), defined as follows.

Precision	A quantitative measure of the variability (or reproducibility) of data;
Accuracy	A quantitative measure of the closeness of reported data to the "true" value;
Representativeness	The confidence (expressed qualitatively) that data is representative of each media present on the site;
Completeness	A measure of the amount of useable data from a data collection activity;
Comparability	The confidence (expressed qualitatively) that data can be considered equivalent for each sampling and analytical event.

An assessment of the data quality indicators is presented in Section 10.0 {**field procedures (soil sampling phase)**} and Section 11.0 {**laboratory procedures (analytical phase)}** of this report. A QA / QC data evaluation is presented in Section 12.0 of this report.

9.0 SAMPLING & ANALYSIS PLAN AND SAMPLING METHODOLOGY

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

1. Nature, location and likely distribution of soil contaminants beneath the site.

2. The risks that the contaminants (if present) pose to human health or the environment under the conditions of the proposed redevelopment.

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 13.0 of this report.

Site sampling was carried out on 18 March 2014 by an Environmental Engineer from Geotechnique who was responsible for visually assessing the site, locating the boreholes as close as possible to nominated locations, recovery of soil samples, preparation of samples for delivery to NATA accredited laboratories and logging the sub-surface profile encountered at each borehole and sample location.

Based on the "Sampling Design Guidelines for Contaminated Sites" 1995, EPA for a site area of approximately 1.0ha, twenty one (21) sampling points are required. Boreholes BH1 to BH21, as shown on Drawing No 13138/1-AA1, were drilled using a stainless steel auger mounted on an excavator, as close as possible to a square grid pattern across the site. The systematic sampling strategy was adopted to provide representative coverage of potential fill areas. A number of soil samples were recovered

Prior to drilling a services locater scanned all the borehole locations to avoid any underground services.

The sampling procedures adopted were as follows;

- The sample location was drilled to a predetermined depth and the sample was recovered from the stainless steel auger using a stainless steel trowel.
- The auger or trowel was decontaminated prior to use in order to prevent cross contamination (refer to Section 9.3 for details of the procedures for decontamination of the auger or trowel).
- Two fill samples were recovered from each sampling depth, one for laboratory analysis, the other for head space screening for the presence of VOC using a calibrated PID.

  To minimise the potential loss of organic compounds the recovered soil sample for laboratory analysis 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.

  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. All PID readings were equal to 0.0ppm.
- The recovered fill sample for asbestos analysis was transferred into a small labelled plastic bag. The small plastic bags were placed inside a large 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 jar (acid-washed and solvent-rinsed) and sealed with an airtight, Teflon screw top lid. The fully filled jar was placed in a chilled container.

A rinsate water sample was collected and placed in a bottle and vial supplied by the laboratory on completion of field work. The fully filled bottle and vial were labelled and placed in a chilled container.

On completion of field sampling the chilled container was transported to our Penrith office. All the jars, bottle and vial were then transferred to a refrigerator where the temperature was maintained below 4°C.

The primary samples with trip spike samples in chilled container together with the large plastic bag were forwarded under COC conditions to the primary testing laboratory SGS Environmental Services (SGS). Inter-laboratory duplicate (split) samples were forwarded to the secondary testing laboratory Envirolab Services Pty Ltd (Envirolab). Both SGS and Envirolab are NATA accredited.

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

In order to maximise the spatial coverage of the analysis, discrete topsoil and fill soil samples were composited in the laboratory for chemical analysis of non-volatiles. 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 (3) 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 primary laboratory, as specified in the COC prepared by Geotechnique.

Composite Sample	Type of Soil	Sub-Samples
C1	Fill	BH1 (0.05-0.2m) + BH8 (0.05-0.2m) + BH9 (0.05-0.2m)
C2	Fill / Topsoil	BH2 (0.1-0.4m) + BH4 (0-0.3m) + BH5 (0-0.15m)
C3	Fill	BH3 (0-0.3m) + BH6 (0-0.3m) + BH7 (0-0.3m)
C4	Topsoil	BH10 (0-0.15m) + BH14 (0.-0.15m) + BH15 (0-0.15m)
C5	Topsoil	BH11 (0-0.15m) + BH12 (0-0.15m) + BH13 (0-0.15m)
C6	Topsoil	BH16 (0-0.1m) + BH17 (0-0.15m) + BH18 (0-0.15m)
C7	Topsoil	BH19 (0-0.15m) + BH20 (0-0.15m) + BH21 (0-0.15m)
C8	Fill	BH10 (0.15-0.45m) + BH14 (0.2-0.5m) + BH15 (0.2-0.5m)
C9	Fill	BH11 (0.2-0.5m) + BH13 (0.3-0.6m) + BH15 (0.9-1.2m)

Composite Sample	Type of Soil	Sub-Samples
C10	Fill	BH16 (0.1-0.4m) + BH17 (0.2-0.5m) + BH21 (0.2-0.5m)
C11	Fill	BH16 (2.1-2.4m) + BH16 (3.1-3.4m) + BH21 (0.8-1.1m)

The soil profile encountered, as described in Section 6.0 of this report, did not reveal any visual (staining, dying) or olfactory indicators of potential contaminants, with the exception of ash material encountered in some of the fill layer. The PID readings on recovered fill samples were zero, suggesting that the presence of volatiles in the soil is unlikely. As a result and based on the potential for contamination identified in Section 7.0 the following laboratory analysis plan was implemented.

- All the composited soil samples and the corresponding duplicate and split samples were analysed for 8 metals including As, Cd, Cr, Cu, Pb, Hg, Ni and Zn, OCP and OPP.
- Two discrete fill samples and five discrete natural soil samples were analysed for 8 metals including As, Cd, Cr, Cu, Pb, Hg, Ni and Zn.
- For screening purposes seven composited samples and the corresponding duplicate and split samples were selected for analysis of PCB, Cyanides and Phenols.
- Ten discrete fill samples and the corresponding duplicate and split samples were analysed for TPH and BTEX.
- Twenty-four discrete fill samples and the corresponding duplicate and split samples were analysed for PAH.
- Nine discrete fill samples were analysed for asbestos for screening purposes.
- One rinsate sample R1 for metals, TPH, BTEX, PAH, OCP, OPP, PCB, Phenols and Cyanides.
- Trip spike sample TS1 for BTEX
- Twelve discrete soil samples were selected for Cation Exchange Capacity (CEC) and pH.
- Thirteen discrete soil samples were selected for Total Organic Carbon (TOC).

The laboratory testing schedule adopted is presented in Table A.

10.0 FIELD QUALITY ASSURANCE AND QUALITY CONTROL

10.1 Sampling Personnel

Geotechnique undertook all the sampling associated with this assessment. An Environmental Engineer from Geotechnique (Lan Ye) nominated sampling positions based on the project brief prepared by the Project Manager, supervised (full time) the drilling of each borehole, logged the soil profile encountered, recovered soil samples at a frequency determined by the sampling plan (project brief), carried out insitu PID screening and packaged the samples (refer to Section 9.0).

Lan Ye has a Master of Civil and Environmental degree and has been employed by Geotechnique as an Environmental Engineer since September 2011. At commencement of employment Lan Ye underwent supervised training in Geotechnique procedures for sampling and logging.

10.2 Field Instrument Calibration

As stated in Section 9.0 a calibrated PID was used in the field to screen for the presence of VOC in the recovered fill samples (head space screening). The PID was calibrated on-site on the day of field work before use. The PID calibration sheet is included in Appendix G of this report.

10.3 Decontamination Procedures

As stated in Section 9.0 of this report, soil sampling was carried out using a stainless steel auger mounted on an excavator. A stainless steel trowel was used to transfer the soil sample from the auger to the laboratory supplied glass jar. Decontamination of the auger or trowel involved the following;

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

A sample of the final rinsate water sample was recovered at completion of sampling.

10.4 Rinsate Sample

One rinsate water sample (Rinsate R1) was recovered on completion of the day of field work in order to identify possible cross contamination between the sampling locations.

The rinsate water sample was analysed for metals, TPH, BTEX, PAH, OCP, OPP, PCB, Total Phenols and Total Cyanide. The test results for the rinsate water are summarised in Table B. A copy of the laboratory analytical report is included in Appendix H.

As shown in Table B, the concentrations of analytes in the rinsate sample were in general less than laboratory limits of reporting, which indicates that adequate decontamination had been carried out in the field.

10.5 Trip Spike Sample

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

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

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

As indicated in Table C the results show a generally good recovery of the spike concentrations. Applying the losses experienced in the spike sample (worst case scenario) the actual concentrations of BTEX in each soil sample analysed might be at worst 0.14mg/kg (Benzene), 0.24mg/kg (Toluene), 0.13mg/kg (Ethyl benzene) and 0.39mg/kg (Xylenes).The concentrations in this case would still be considerably less than the relevant assessment criteria adopted (refer to Table I).

Furthermore, zero PID readings for the recovered samples were recorded in the field, BTEX results were in general less than laboratory detection limits 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 / conclusions of this report.

10.6 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 sub-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 were to be composited (with the composite sample selected for duplication) the sub-samples of that composite were duplicated and submitted blind to the laboratory. Those sub-sample duplicates were 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.

Heavy Metals:	18 samples analysed;	1 duplicate;	5.6% frequency
TPH & BTEX:	10 samples analysed;	1 duplicate;	10% frequency
PAH:	24 samples analysed;	1 duplicate;	4.2% frequency
OCP& OPP:	11 samples analysed;	1 duplicate;	9.1% frequency
PCB, Phenols & Cyanides:	7 samples analysed;	1 duplicate;	14.3% frequency

The duplicate frequency adopted complies with Schedule B3 of the National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013 (Amendment NEPM 2013), which recommends a duplicate frequency of at least 5%.

The duplicate sample test results are presented with the analytical reports in Appendix H and summarised in Tables D1 and D2.

A comparison was made of the laboratory test results for the duplicate sample with the original sample, and the Relative Percentage Differences (RPD) were computed in order 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.

The comparisons between the duplicate and corresponding original samples indicated generally acceptable RPD, with the exception of higher RPD of Pb (43%) in Table D2, mainly due to the low concentration of the analyte and non-homogeneous nature of the soil samples.

The Pb concentrations with RPD in excess of 30% in the duplicate pair were both less than the assessment criterion.

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 can be relied upon for this assessment.

10.7 Inter-laboratory Duplicate (Split) Samples

The inter-laboratory duplicate (split) sample provides a check on the analytical performance of the primary laboratory. The split sample was prepared on the basis of sample numbers recovered during field work, and the analyses undertaken by the primary laboratory.

The composite split sample was prepared in the same manner as the duplicate sample. Reference should be made to Section 10.6. 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:

Heavy Metals:	18 samples analysed;	1 split;	5.6% frequency
TPH & BTEX:	10 samples analysed;	1 split;	10% frequency
PAH:	24 samples analysed;	1 split;	4.2% frequency
OCP & OPP:	11 samples analysed;	1 split;	9.1% frequency
PCB, Phenols & Cyanides:	7 samples analysed;	1 split;	14.3% frequency

The split sample frequency adopted generally complies with Schedule B3 of the Amendment NEPM 2013, which recommends a frequency of 5%.

The laboratory certificate of analysis from Envirolab is included in Appendix H of this report. The results are summarised in Tables E1 and E2.

Based on Schedule B3 of the Amendment NEPM 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 E1 and E2 the comparisons between the splits and corresponding original samples indicated generally acceptable RPD, with the exception of higher RPD of Cr, Cu and Pb (ranging from 72% to 113%) in Table E2, which are in excess of 30%. This is considered to be due to the low concentrations of analytes detected and / or non-homogeneous nature of the soil samples.

All the concentrations of the analytes with RPD in excess of 30% in the split pair were less than the relevant assessment criteria.

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

11.0 LABORATORY QUALITY ASSESSMENT AND QUALITY CONTROL

11.1 Laboratory Accreditation

Only laboratories accredited by the NATA for chemical analyses were used for analysis of samples recovered as part of this assessment. The laboratory must 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 laboratory must 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, the two laboratories used for this assessment, are both accredited by NATA. The two laboratories also operate Quality Systems designed to comply with ISO / IEC 17025.

11.2 Sample Holding Times

The following table lists the allowable holding times of soils and water, detailed in Schedule B3 of the Amendment NEPM 2013 and in Standard Methods for the Examination of Water and Wastewater (APHA).

ANALYTE	HOLDING TIME (SOIL)	HOLDING TIME (WATER)
Metals *	6 months	6 months
Mercury (Hg)	28 days	28 days
Total Petroleum Hydrocarbons (TPH)	14 days	7 days
Benzene, Toluene, Ethyl benzene and Xylenes (BTEX)	14 days	14 days
Polycyclic Aromatic Hydrocarbons (PAH)	14 days	7 days
Organochlorine Pesticides (OCP)	14 days	7 days
Organophosphorus Pesticides (OPP)	14 days	7 days
Polychlorinated Biphenyls (PCB)	28 days	7 days

ANALYTE	HOLDING TIME (SOIL)	HOLDING TIME (WATER)
Phenols	14 days	28 days
Cyanides	14 days	14 days
pH	7 days	-
Cation Exchange Capacity (CEC)	28 days	-
Total Organic Carbon (TOC)	28 days	-

* Metals include Arsenic, Cadmium, Chromium, Copper, Lead, Nickel and Zinc

It should be noted that there is no specific holding time for asbestos analysis.

The actual holding times of the two laboratories used for this assessment are shown in the laboratory analytical reports / certificate of analyses in Appendix H of this report. All analyses were conducted within the relevant holding times.

11.3 Test Methods and Limits of Reporting / Practical Quantitation Limits

The test methods and Limits of Reporting (LOR) / Practical Quantitation Limits (PQL) adopted by SGS and Envirolab are indicated with the analytical reports / certificate of analysis in Appendix H.

The samples analysed for TPH (C6–C9) and BTEX were extracted by the purge and trap method recommended by the NSW EPA.

All reported laboratory LOR / PQL were less than the assessment criteria adopted for each analyte or analyte group.

11.4 Method Blanks

Method blank samples are designed to monitor the introduction of incidental or accidental interferences into the analysis, which might result in a false increase in analyte concentration. The blank comprises reagents specific to each individual analytical method and is analysed in the same manner as the site sample. The reagents are carried through the preparation, extraction and digestion procedures and analysed at the beginning of every sample batch analysis, or at least 1 in 20 samples.

Reagent blank samples for soil samples were analysed by the primary and secondary laboratories for Metals, TPH, BTEX, PAH, OCP, OPP, Cyanides and / or Phenols.

The reagent blank sample for rinsate water sample was analysed for Metals, TPH, BTEX, PAH, OCP, OPP, Cyanides and Phenols by the primary laboratory (SGS).

All reported blank concentrations were below the LOR or PQL, as detailed in the laboratory test results certificates from SGS and Envirolab respectively. The results complied with the acceptance criteria for each laboratory (must not be detected at the LOR / PQL).

The test results indicate that there was no interference to the analysis.

11.5 Laboratory Duplicate Samples

The laboratory prepares duplicate samples from the supplied samples (original samples) and/or laboratory spiked samples, and carries out preparation and testing in the same manner as the original sample. The duplicate sample provides an indication of laboratory precision and reproducibility.

The laboratory prepared duplicates were analysed for the same range of analytes as the samples submitted from the site.

The comparisons between the laboratory duplicates and original samples have been reported on the laboratory test results certificates as RPD.

Maximum Allowable Difference (MAD) was suggested by SGS as RPD criteria for Lab Duplicates.
Note: MAD = 100 x Statistical Detection Limit (SDL) / Mean + Limiting Repeatability (LR)

Reference may be made to SGS analytical reports in Appendix H for details of the reported duplicate sample numbers, RPD ranges, as well as acceptance criteria.

As presented in SGS analytical reports the duplicate sample numbers and reported RPD were within the acceptance criteria adopted by the laboratory.

No duplicate sample was reported for Envirolab but claims to run one sample in batches of 20 samples. The results are generally not reported with the laboratory certificates provided to clients; however, claim to be within the laboratory acceptance criteria.

Based on the above the duplicate sample numbers and reported RPD for SGS and Envirolab were within the acceptance criteria adopted by the laboratories.

11.6 Laboratory Control Samples

A laboratory control sample is a sample of material with known concentrations of various analytes, such as a standard reference material or control matrix. The control sample is analysed with the sample batch and the recorded concentrations reported as a percentage recovery of the known or expected concentration. At least one control sample is included in each run to confirm calibration validity.

The acceptance criteria for both laboratories are presented below.

SGS: 70%-130% (soil) & 80%-120% (water) for inorganics and 60%-140% for organics, as detailed in the laboratory analytical reports from SGS.

Envirolab: 60%-140% for organics and 70% to 130% for inorganics, as detailed in the laboratory certificates of analysis from Envirolab.

Reference may be made to SGS analytical reports and Envirolab certificate of analyses in Appendix H for details of the reported percentage recoveries.

The control samples data presented by the laboratories fall within the acceptance limits of the laboratories.

11.7 Matrix Spike

The purpose of matrix spikes is to monitor the performance of the analytical methods used and to determine whether matrix interferences exist. Samples are spiked with identical concentrations of the target analyte before extraction or digestion. The results are reported as percentage recoveries of the known spike concentration.

The acceptance criteria for SGS are 60% to 130% for organics and 70% to 130% for metals / inorganics.

The matrix spike data presented by SGS generally fall within the laboratory acceptance criteria, with the exception of the following failed matrix spike recoveries.

Batch	Reported Failed Recovery	Acceptance Criteria	Comments
SE126027	181% and 11% (for Pb and Zn for process batch sample)	70%-130%	Recovery failed acceptance criteria due to matrix interference

No matrix spike was reported for Envirolab, but claims to run one sample in batches of 20 samples. The results are generally not reported with the laboratory certificates provided to clients; however, claim to be within the laboratory acceptance criteria.

11.8 Surrogate Spikes

Surrogate spikes are used during analysis for organics to provide a means of checking that no gross errors have occurred at any stage of the procedure, leading to significant analyte losses. The surrogate spikes are added to each sample, blank, matrix spike, duplicate and control sample before the extraction stage. The percentage recovery of the known spike is recorded and reported on the laboratory reports / certificates.

The acceptance limits for the laboratories are as follows.

SGS: 60%-130% for soil and 40-130% for water

Envirolab: 60%-140%

Reference may be made to SGS analytical reports and Envirolab certificates of analyses in Appendix H for details of the reported recovery percentages.

As shown in laboratory reports / certificate, the surrogate spike data presented by the laboratories fall within the acceptance limits of the laboratories.

12.0 QA/QC DATA EVALUATION

All QA and QC details are presented in Sections 10.0 and 11.0 of this report.

The following table provides a list of the data quality indicators for the **soil sampling** phase of the assessment and the methods adopted in ensuring that the data quality indicators are met.

DATA QUALITY INDICATOR	ACHIEVEMENT
Data Precision and Accuracy	Use of trained and qualified field staff; Appropriately calibrated equipment used; Appropriate industry standard decontamination procedures adopted; Rinsate blank water, trip spike, field duplicate, and inter-laboratory duplicate (split) samples recovered or prepared; Refer to the Section 10.0 for all the above.
Data Representativeness	Good sampling coverage of the soils of concern; Sample numbers complies with NSW EPA sampling design guidelines; Representative coverage of potential contaminants, based on site history, site activities, the presence of the fill and soil profiles.
Documentation Completeness	Preparation of borehole and sample location plans; Records of soil profile logs / description tables; Preparation of chain of custody records.
Data Completeness	Sampling density meets the requirements of the EPA sampling design guidelines Systematic soil sampling at predetermined locations, spacings and at depths; All soils of concern (potential contamination) sampled; On site visual assessment of soils uncovered.
Data Comparability	Using appropriate techniques for sample recovery; Using the same sampling and decontamination procedures for the fieldwork; Experienced samplers used; Using appropriate sample storage and transportation methods for sampling.

The following table provides a list of the data quality indicators for the **analytical phase** of the assessment and the methods adopted in ensuring that the data quality indicators were met.

DATA QUALITY INDICATOR	ACHIEVEMENT
Data Precision and Accuracy	Use of analytical laboratories experienced in the analyses undertaken, with appropriate NATA certification; NATA accreditation requires adequately trained and experienced testing staff; Rinsate blank water, trip spikes, field duplicate, and inter-laboratory duplicate (split) samples analysed; Acceptable concentrations in rinsate blank water sample; Acceptable recoveries of spike concentrations in trip spike sample; Acceptable RPD for duplicate comparison overall; Acceptable RPD for inter-laboratory duplicate (split) sample comparison overall; Appropriate and validated laboratory test methods used; Adequate laboratory performance based on results of the blank, duplicate, control, matrix spike and surrogate samples.
Data Representativeness	Representative coverage of potential contaminants, based on site history, site activities, the presence of the fill and soil profiles; Adequate rinsate, trip spike, duplicate and split sample numbers; Adequate laboratory internal quality control and quality assurance methods, complying with the Amendment NEPM 2013.
Documentation Completeness	Preparation of chain of custody records; Laboratory sample receipt information received confirming receipt of samples intact and appropriate chain of custody; NATA registered laboratory analytical reports / certificate of analysis provided.
Data Completeness	Analysis for all potential contaminants of concern; Field duplicate sample and inter-laboratory duplicate (split) numbers complying with Amendment NEPM 2013; Rinsate sample recovered; Trip spike sample prepared and sent with sample batch.
Data Comparability	Use of NATA registered laboratories; Test methods consistent for each sample; Test methods comparable between primary and secondary laboratory; Generally acceptable Relative Percentage Differences between original samples and field duplicates and inter-laboratory duplicate (split) samples; Some high RPD recorded mainly due to low concentrations of analytes detected and / or due to heterogeneity of the fill sample.

As discussed in Section 10.0 some of the duplicate and split sample comparisons reported RPD exceeding the generally accepted limits for some metals. These have been attributed to low concentrations of analytes detected in duplicate / split and corresponding original samples and / or heterogeneity of the fill sample. The results are still considered acceptable as virtually all remaining QA / QC sample data fall within acceptance limits.

As discussed in Section 11.0, a relatively minor amount of SGS laboratory matrix spike recoveries failed acceptance criteria due to matrix interference. The results are still considered acceptable as virtually all remaining QA / QC sample data of both laboratories fall within the acceptance criteria adopted. As such, these variations are not considered to have affected the laboratory data provided.

Based on the above it is considered that the quality assurance and quality control data quality indicators have been complied with both in the field and in the laboratory. As such, it is concluded that the laboratory test data obtained as part of this assessment are reliable and useable for this assessment.

13.0 ASSESSMENT CRITERIA

Investigation levels and screening levels developed in the Amendment NEPM 2013 were used in 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.

  The site is proposed for redevelopment into commercial and residential high-rise buildings. Therefore, with regard to human health, analytical results will be assessed against risk based HIL for *residential with minimal opportunities to soil access* (HIL B).

- 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 *high density residential land use* (HSL B) for sand and clay to depth of 0m to <2m and 0m to <4m respectively.

- 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 and public open space* for coarse-grained soil (sand) and fine-grained soil (clay).

- Ecological Investigation Levels (EIL), a specific type of Soil Quality Guidelines (SQG) for selected metals 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. The EIL are calculated using 30% effect concentration (EC30) or lowest observed effect concentrations (LOEC) toxicity data. EIL are the sum of the added contaminant limit (ACL) and the ambient background concentration (ABC).

  Where required EIL are calculated directly by using EIL calculator developed by CSIRO for NEPC.

  For this assessment the analytical results were assessed against the available EIL for *urban residential* land use for aged contamination in soil for low traffic volume.

- With regard to protection of the environment and impact on plant growth the available Provisional Phytotoxicity Based Investigation Levels (PIL) published in the *Guidelines for the NSW Site Auditor Scheme* (NSW EPA / DEC, 2006) and EIL published in the NEPM 1999 for cadmium and mercury are used.

The adopted assessment criteria are presented in the summarised Tables F1 to L.

In order to detect any potential "hot spots" of contamination within an individual composite soil sample an adjusted assessment 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 adjusted assessment criteria presented in the applicable tables were calculated by dividing the assessment criteria by three (i.e. three sub-samples comprised the composite). Individual composite samples were assessed against the relevant adjusted assessment criteria.

If the concentration of an analyte for a composite soil sample is in excess of the adjusted assessment 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 concentrations of analytes were assessed against the relevant assessment criteria.

For asbestos assessment the site must be free of asbestos pieces and no asbestos fibre detected in the soils.

The site will be deemed contaminated or containing contamination “hot spots” if the above criteria are unfulfilled. Further investigation, remediation and / or management will be recommended if the area of concern is found to be contaminated or contain contamination “hot spots”.

14.0 FIELD & LABORATORY TEST RESULTS, ASSESSMENT & DISCUSSION

14.1 Field Results

Details of the sub-surface conditions encountered during field work for this assessment are presented in Table 1 in Appendix E of this report. As discussed in Section 6.0 the general soil profile comprised fill (gravelly sand, sandy gravel, sand and silty clay) overlying relatively impermeable residual sandy clay at most borehole locations across the site.

With the exception of bitumen or roadbase encountered in BH1, BH2, BH8 and BH9, as well as the inclusion of ash material noted in the fill layer in BH3, BH4, BH6, BH7, BH10, BH11 and BH13 to BH15, the remaining sample locations and recovered soil samples did not reveal any visual evidence of asbestos or other indicators of significant contamination, such as staining, odours or other foreign matter.

The PID readings on recovered fill samples were zero, suggesting that the presence of volatiles in the fill is unlikely.

14.2 Analytical Results

Reference may be made to Appendix H for the actual laboratory analytical reports from SGS. The metals, pH, CEC, TOC, TPH, BTEX, PAH, OCP, PCB, Cyanides, Phenols and OPP test results for the discrete and composited samples analysed are presented in Tables F1 to L together with the assessment criteria adopted. The asbestos test results for the discrete samples analysed are summarised in Table M.

A discussion of the test results is presented in the following sub-sections

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

Discrete Samples

As presented in Tables F1 and F2, CEC, pH values and TOC range from 1.2cmol/kg to 38cmol/kg, 4.7 to 8.4 and 0.08% to 2.8% respectively.

As indicated in Tables F1 and F2, the concentrations of metals in the samples analysed were below the relevant available HIL B and / or EIL. All concentrations of Cd and Hg were also below the relevant PIL.

Composited Samples

As indicated in Tables G1 to G5 the concentrations of metals in the composited soil samples analysed were below the relevant Adjusted HIL B, Adjusted EIL and / or Adjusted PIL, with the exception of the highlighted concentrations of Cd, Cu, Hg, Ni and Zn.

The highlighted concentrations of Cd in Table G2 and Hg in Tables G2 and G3 exceeded the relevant Adjusted PIL but were below the relevant Adjusted HIL B.

The highlighted concentrations of Cu in Tables G2 and G4, Ni in Tables G2 and G3 and Zn in Table G2 exceeded the relevant Adjusted EIL but were below the relevant Adjusted HIL B.

The sub-samples of all the failed composite samples were therefore analysed for Cd, Cu, Hg, Ni and / or Zn. The test results are summarised in Tables H1, H2A, H2B and H3 to H5.

As indicated in Tables H1 and H3, the concentrations of Cd and Hg in all the discrete soil samples analysed were below the relevant HIL B and PIL adopted.

As shown in Tables H2A, H2B and H4, the concentrations of Cu and Ni in all the discrete soil samples analysed were below the relevant HIL B and EIL adopted.

As presented in Table H5, with the exception of the highlighted Zn concentration, the Zn concentrations in the remaining soil samples analysed were below the relevant HIL B and EIL adopted.

The highlighted Zn concentration (280mg/kg) in BH5 (0-0.15m) exceeded the EIL but was below the HIL B. The Zn concentration potentially poses a risk to terrestrial ecosystems. However, if the soil with elevated concentration of Zn remains insitu / is to be relocated and beneath a building / structure / road for the proposed redevelopment, the EIL will no longer be applicable.

14.2.2 TPH & BTEX

As indicated in Table I, the concentrations of F1 (TPH C6-C10 less BTEX), F2 (TPH >C10-C16 less Naphthalene), F3 (TPH >C16-C34), F4 (TPH >C34-C40) and BTEX were below the relevant available HSL B and / or ESL adopted. Moreover, the test results were in general below the laboratory LOR.

14.2.3 Polycyclic Aromatic Hydrocarbons (PAH)

As shown in Table J, with the exception of the highlighted concentrations of Benzo(a)pyrene (BaP), the BaP concentrations in the remaining soil samples analysed were below the ESL adopted.

The highlighted concentrations of BaP (ranging from 0.9mg/kg to 2.5mg/kg) in soil samples recovered from BH16, BH17 and BH21 exceeded the ESL of 0.7mg/kg. The BaP concentrations potentially pose a risk to terrestrial ecosystems. However, if the soil with elevated concentrations of BaP remains insitu / is to be relocated and beneath a building / structure / road for the proposed redevelopment, the EIL will no longer be applicable.

As summarised in Table J the concentrations of BaP (TEQ), Naphthalene and Total PAH were well below the relevant HIL B, HSL B and / or EIL adopted.

14.2.4 Organochlorine Pesticides (OCP)

As shown in Table K, the concentrations of OCP were well below the relevant Adjusted HIL B. Concentrations of DDT were also below the Adjusted EIL. With the exception of Dieldrin concentrations, the concentrations of the remaining OCP were less than the laboratory LOR.

14.2.5 Polychlorinated Biphenyls (PCB)

As presented in Table K, the concentrations of PCB were below the laboratory LOR.

14.2.6 Cyanides

As indicated in Table K, the concentrations of Cyanides were well below the Adjusted HIL B.

14.2.7 Phenols

As presented in Table K, the concentrations of Phenols were well below the Adjusted HIL B.

14.2.8 Organophosphorus Pesticides (OPP)

As shown in Table L, the concentrations of OPP were less than the laboratory LOR. Moreover the concentrations of Chlorpyrifos were well below the Adjusted HIL B.

14.2.9 Asbestos

As indicated in Table M, no asbestos was found in all the analysed soil samples.

15.0 CONCLUSION AND RECOMMENDATIONS

The data quality objectives outlined in this report have been satisfied. The findings of this Stage 1 PCA and Stage 2 DCA are summarised as follows.

- The site is occupied by a club house, three bowling greens and a car park. The site was used for bowling activities. The site also contains fill materials.
- The site is proposed for redevelopment into commercial and residential high-rise buildings, including a multi-purpose community art cultural facility. However, details of the proposed development are unknown at this stage.
- The site is generally underlain by fill with thickness ranging from about 0.15m to 3.3m, overlying relatively impermeable residual sandy clay.
- As presented in the summary tables and discussed in Section 14.0, most of the laboratory test results 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 sampled soil at concentrations that do not pose a risk of hazard to human health or the environment for residential with minimal soil access.

Asbestos containing material was not encountered and asbestos was not detected in the soil samples analysed.

The surface soils and the deeper soils generally do not appear to have been impacted by past activities and the presence of fill, with the exception of locations of concern BH5, BH16, BH17 and BH21, as indicated and tabulated on Drawing No 13138/1-AA2. The elevated concentrations of Zn or BaP in soil around these locations potentially pose a risk to terrestrial ecosystems if not placed beneath a building / structure / road for the proposed redevelopment.

In addition, field work for this assessment revealed inclusion of ash material in the fill (sandy gravel) at locations BH3, BH4, BH6, BH7, BH10, BH11 and BH13 to BH15 (refer to Drawing No 13138/1-AA1).

- Due to the absence of significant chemical concentrations within the soils it is our opinion that potential off-site impacts of contaminants beneath the site on groundwater and waterbodies are low.

Based on this assessment it is considered that the site can be made suitable for the proposed redevelopment into commercial and residential high-rise buildings subject to implementation of the following recommendations, prior to site preparation and earthworks.

- Assessment of soils at and in the vicinity of the footprints of site features such as the club house, car park, etc., after complete demolition and removal. 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 were not encountered during field work for this assessment.

  Sampling and testing will be required to determine the contamination status of soils / fill at and in the vicinity of the footprints. In the event of contamination, detailed assessment, remediation and validation will be required.

- Depending on the layout and details of the proposed redevelopment, a further contamination assessment of topsoil or fill (gravelly sand or silty clay) around BH5, BH16, BH17 and BH21 (refer to Drawing No 13138/1-AA2), if not placed beneath a building / structure / road for the proposed redevelopment, should be carried out to assess the risk to terrestrial ecosystems and to determine the requirement for remediation / management.

- Inclusion of ash material in the fill (sandy gravel) was identified at BH3, BH4, BH6, BH7, BH10, BH11 and BH13 to BH15 (refer to Drawing No 13138/1-AA1). A further contamination assessment around those locations should be undertaken to determine the contamination status and to delineate the extent of the inclusion of ash material in the fill. Depending on the layout and details of the proposed redevelopment, aesthetic issues should be considered and addressed.

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

Any imported fill should be tested or appropriate validation certification provided by a qualified consultant, to ensure suitability for the proposed use. The imported fill must be free from asbestos, ash and odour, not be discoloured and acid sulphate soil. Environmentally, virgin excavated natural material (VENM) or excavated natural material (ENM) will be suitable for use as fill for the site. Salinity assessment might be required.

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" Department of Environment, Climate Change and Water (DECCW), 2009 and NSW EPA guidelines for the resource recovery exemptions under the Protection of the Environment Operations (Waste) Regulation 2005, is undertaken prior to disposal at an appropriately licensed landfill or potential re-use at other sites.

16.0 LIMITATIONS

The services performed by Geotechnique were conducted in a manner consistent with the level of quality and skill generally exercised by members of the profession and consulting practice.

This report has been prepared for Canterbury City Council through JBA Urban Planning Consultants Pty Ltd for the purposes stated within. 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.

This report shall only be presented in full and may not be used to support any other objective than those set out in the report, except where written approval is provided by Geotechnique.

The information in this report is considered accurate at the completion of field sampling for this assessment (18 March 2014) in accordance with current site conditions. Any variations to the site form or use beyond the sampling date could nullify the conclusions stated.

Whilst investigations conducted at the site were carried out in accordance with current NSW guidelines the potential always exists for contaminated soils to be present between sampled locations.

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

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LIST OF REFERENCES

Australian Standard "Guide to the Sampling and Investigation of Potentially Contaminated Soil Part 1: Non-volatile and semi-volatile compounds" (AS4482.1-2005)

Australian Standard "Guide to the Sampling and Investigation of Potentially Contaminated Soil Part 2: Volatile substances" (AS4482.2-1999)

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

Contaminated Land Management Act 1997

Contaminated Land Management Regulation 1998

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 Sydney 1:100,000 Sheet (9130) – Geological Survey of New South Wales, Department of Mineral Resources 1983

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

National Environmental Protection (Assessment of Site Contamination) Amendment Measures 2013 - National Environmental Protection Council

National Environment Protection (Assessment of Site Contamination) Measure – National Environmental Protection Council 1999

Soil Landscape of Sydney 1:100,000 Sheet (9130) – Department of Land & Water Conservation 2002

DRAWINGS

Drawing No 13138/1-AA1	*Borehole Locations*
Drawing No 13138/1-AA2	*Locations of Concern*

LEGEND

● Borehole

Scale 1:1000

GEOTECHNIQUE ® PTY LTD

PO Box 880
Penrith NSW 2750
Tel: 02 4722 2700
Fax: 02 4722 2777
e-mail:info@geotech.com.au
www.geotech.com.au

NOTES

1. Site features are indicative and are not to scale.
2. This drawing has been produced using a base plan provided by others to which additional information e.g test pits, borehole locations or notes have been added. Some or all of the plan may not be relevant at the time of producing this drawing

JBA Urban Development Services
Lot 1 in DP818683
15 Close Street
Canterbury

Site Features & Borehole Locations

Drawing No: 13138/1-AA1
Job No: 13138/1
Drawn By: MH
Date: 26 March 2014
Checked By: JX

File No: 13138-1
Layers: 0, AA1

Sample Location	Depth (m)	Contaminant	Concentration (mg/kg)	Assessment Criteria (mg/kg)
BH5	0-0.15	Zinc (Zn)	**320**	
BH16	2.1-2.4	Benzo(a)pyrene (BaP)	**0.8**	Zn = 280 [a]
BH16	3.1-3.4	BaP	**0.9**	BaP = 0.7 [b]
BH17	0.2-0.5	BaP	**2.4**	
BH21	1.7-1.85	BaP	**2.5**	

Notes:
EIL: Ecological Investigation Level
ESL: Ecological Screening Level
a: EIL For Zn derived from calculation spreadsheet developed by CSIRO for NEPC for old NSW suburb with low trffic volume; CEC=4.2 cmolc/kg, pH=6.7 based on test results for BH5 (0-0.15m).
b: ESL for Benzo(a)Pyrene - urban residential land use

N

LEGEND

● Borehole

0 10 20 30 40 50m

Scale 1:1000

GEOTECHNIQUE ® PTY LTD
PO Box 880
Penrith NSW 2750
Tel: 02 4722 2700
Fax: 02 4722 2777
e-mail:info@geotech.com.au
www.geotech.com.au

NOTES

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JBA Urban Development Services
Lot 1 in DP818683
15 Close Street
Canterbury

Locations of Concern

Drawing No: 13138/1-AA2
Job No: 13138/1
Drawn By: MH
Date: 17 April 2014
Checked By: JX

File No: 13138-1
Layers: 0, AA2

TABLES

TABLE A
SCHEDULE OF LABORATORY TESTING
(Ref No: 13138/1-AA)

Sample		TYPE	SAMPLING DATE	DUPLICATE	SPLIT	Heavy Metals	TPH & BTEX	PAH	OCP $ OPP	PCB	Phenols & Cyanides	BTEX	pH	CEC	TOC	ASBESTOS
Discrete Samples																
BH1	0.05-0.2	F	18/03/2014	X3			✔	✔					✔	✔	✔	✔
BH2	0.1-0.4	F	18/03/2014					✔								
BH3	0-0.3	F	18/03/2014					✔								
BH3	0.55-0.65	N	18/03/2014			✔							✔	✔	✔	
BH4	0-0.3	F	18/03/2014				✔	✔					✔	✔	✔	✔
BH6	0-0.3	F	18/03/2014					✔								
BH6	0.45-0.55	N	18/03/2014			✔							✔	✔	✔	
BH7	0-0.3	F	18/03/2014		Z2		✔	✔					✔	✔	✔	✔
BH8	0.05-0.2	F	18/03/2014					✔								
BH8	0.25-0.35	N	18/03/2014			✔							✔	✔	✔	
BH9	0.05-0.2	F	18/03/2014					✔								
BH10	0-0.15	T	18/03/2014										✔	✔	✔	
BH10	0.15-0.45	F	18/03/2014				✔	✔								✔
BH11	0.2-0.5	F	18/03/2014					✔								
BH12	0-0.15	T	18/03/2014										✔	✔	✔	
BH13	0.3-0.6	F	18/03/2014				✔	✔								✔
BH14	0.2-0.5	F	18/03/2014					✔								
BH15	0.2-0.5	F	18/03/2014					✔								
BH15	0.9-1.2	F	18/03/2014					✔								
BH15	1.25-1.35	N	18/03/2014			✔										
BH16	0.1-0.4	F	18/03/2014					✔								
BH16	1.1-1.4	F	18/03/2014					✔								
BH16	2.1-2.4	F	18/03/2014				✔	✔					✔	✔	✔	✔
BH16	3.1-3.4	F	18/03/2014					✔								
BH16	3.45-3.55	N	18/03/2014			✔										
BH17	0.2-0.5	F	18/03/2014				✔	✔					✔	✔	✔	✔
BH17	0.7-1.0	F	18/03/2014					✔								
BH21	0.2-0.5	F	18/03/2014				✔	✔					✔	✔	✔	✔
BH21	0.8-1.1	F	18/03/2014					✔								
BH21	1.3-1.6	F	18/03/2014			✔	✔	✔					✔	✔	✔	✔
BH21	1.75-1.85	F	18/03/2014			✔	✔	✔							✔	
Composite Samples																
C1		F	18/03/2014	D101		✔			✔	✔	✔					
C2		F	18/03/2014			✔			✔	✔	✔					
C3		F	18/03/2014		S101	✔			✔	✔	✔					
C4		T	18/03/2014			✔			✔							
C5		T	18/03/2014			✔			✔							
C6		T	18/03/2014			✔			✔							
C7		T	18/03/2014			✔			✔							
C8		F	18/03/2014			✔			✔							
C9		F	18/03/2014			✔			✔	✔	✔					
C10		F	18/03/2014			✔			✔	✔	✔					
C11		F	18/03/2014			✔			✔	✔	✔					
Rinsate R1			18/03/2014			✔	✔	✔	✔	✔	✔					
Trip Spike TS1												✔				

Notes
Heavy Metals: Aresenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel & Zinc
TPH: Total Petroleum Hydrcarbons
BTEX: Benzene, Toluene, Ethyl Benzene, Xylenes
PAH: Polycyclic Aromatic Hydrocarbons
OCP : Organochlorine Pesticides
PCB : Polychlorinated Biphenyls
F, T, N: Fill, Topsoil, Natural Soil
OPP: Organophosphorus Pesticides
CEC: Cation Exchange Capacity
TOC: Total Organic Carbon

TABLE B
RINSATE SAMPLE
(Ref No: 13138/1-AA)

	RINSATE R1
METALS	**(mg/L)**
Arsenic	0.02
Cadmium	<0.001
Chromium	<0.005
Copper	<0.005
Lead	<0.02
Mercury	<0.0001
Nickel	<0.005
Zinc	<0.01
TOTAL PETROLEUM HYDROCARBONS (TPH)	**(µg/L)**
F1 (C6-C10 less BTEX)	<50
F2 >C10-C16	<60
F3 (>C16-C34)	<500
F4 (>C34-C40)	<500
BTEX	**(µg/L)**
Benzene	<0.5
Toluene	<0.5
Ethyl Benzene	<0.5
Total Xylenes	<1.5
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)	**(µg/L)**
Naphthalene	<0.1
Benzo(a)Pyrene TEQ	<0.2
Benzo(a)Pyrene	<0.1
Total PAH	<1

TABLE B
RINSATE SAMPLE
(Ref No: 13138/1-AA)

	RINSATE R1
ORGANOCHLORINE PESTICIDES (OCP)	**(µg/L)**
HEXACHLOROBENZENE (HCB)	<0.1
HEPTACHLOR	<0.1
ALDRIN	<0.1
DIELDRIN	<0.1
ENDRIN	<0.1
METHOXYCHLOR	<0.1
MIREX	<0.1
ENDOSULFAN (Alpha, Beta & Sulphate)	<0.3
DDD	<0.2
DDE	<0.2
DDT	<0.2
CHLORDANE (alpha & gamma)	<0.2
Organophosphorus Pesticides (OPP)	**(µg/L)**
Azinphos-methyl (Guthion)	<0.2
Bromophos Ethyl	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	<0.2
Diazinon (Dimpylate)	<0.5
Dichlorvos	<0.5
Dimethoate	<0.5
Ethion	<0.2
Fenitrothion	<0.2
Malathion	<0.2
Methidathion	<0.5
Parathion-ethyl (Parathion)	<0.2
POLYCHLORINATED BIPHENYLS (PCB)	**(µg/L)**
Arochlor 1016	<1
Arochlor 1221	<1
Arochlor 1232	<1
Arochlor 1242	<1
Arochlor 1248	<1
Arochlor 1254	<1
Arochlor 1260	<1
Arochlor 1262	<1
Arochlor 1268	<1
PHENOLS & CYANIDES	**(mg/L)**
Total Phenols	<0.01
Total Cyanides	<0.005

TABLE C
TRIP SPIKE SAMPLE
(Ref No: 13138/1-AA)

ANALYTE	TRIP Spike TS1
BTEX	
Benzene	74%
Toluene	82%
Ethyl Benzene	77%
Total Xylenes	77%

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

TABLE D1
DUPLICATE SAMPLE
(Ref No: 13138/1-AA)

ANALYTE	BH1 0.05-0.2 m mg/kg	DUPLICATE X3 mg/kg	RELATIVE PERCENTAGE DIFFERENCE (RPD) %
TOTAL PETROLEUM HYDROCARBONS (TPH)			
F1 C6-C10	<25	<25	-
F2 (>C10-C16 less Naphthalene)	<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	-
Total Xylenes	<0.3	<0.3	-
POLYCYCLIC AROMATIC HYDROCARBONS			
Naphthalene	<0.1	<0.1	-
Benzo(a)Pyrene TEQ	<0.2	<0.2	-
Benzo(a)Pyrene	<0.1	<0.1	-
Total PAH	<0.8	<0.8	-

TABLE D2
DUPLICATE SAMPLE
(Ref No: 13138/1-AA)

ANALYTE	COMPOSITE C1 mg/kg	DUPLICATE D101 mg/kg	RELATIVE PERCENTAGE DIFFERENCE (RPD) %
METALS			
Arsenic	3	<3	-
Cadmium	0.4	0.5	22
Chromium	13	17	27
Copper	**72**	68	6
Lead	11	17	43
Mercury	<0.01	0.03	-
Nickel	75	76	1
Zinc	45	50	11
ORGANOCHLORINE PESTICIDES (OCP)			
HEXACHLOROBENZENE (HCB)	<0.1	<0.1	-
HEPTACHLOR	<0.1	<0.1	-
ALDRIN	<0.1	<0.1	-
DIELDRIN	<0.05	<0.05	-
ENDRIN	<0.2	<0.2	-
METHOXYCHLOR	<0.1	<0.1	-
MIREX	<0.1	<0.1	-
ENDOSULFAN (Alpha, Beta & Sulphate)	<0.5	<0.5	-
DDD	<0.2	<0.2	-
DDE	<0.2	<0.2	-
DDT	<0.2	<0.2	-
CHLORDANE (alpha & gamma)	<0.2	<0.2	-
Organophosphorus Pesticides (OPP)			
Azinphos-methyl (Guthion)	<0.2	<0.2	-
Bromophos Ethyl	<0.2	<0.2	-
Chlorpyrifos (Chlorpyrifos Ethyl)	<0.2	<0.2	-
Diazinon (Dimpylate)	<0.5	<0.5	-
Dichlorvos	<0.5	<0.5	-
Dimethoate	<0.5	<0.5	-
Ethion	<0.2	<0.2	-
Fenitrothion	<0.2	<0.2	-
Malathion	<0.2	<0.2	-
Methidathion	<0.5	<0.5	-
Parathion-ethyl (Parathion)	<0.2	<0.2	-
POLYCHLORINATED BIPHENYLS (PCB)			
Total PCB	<1	<1	-
PHENOLS & CYANIDES			
Total Phenols	0.2	<0.1	-
Total Cyanides	0.1	0.1	0

TABLE E1
SPLIT SAMPLE
(Ref No: 13138/1-AA)

ANALYTE	BH7 0-0.3m mg/kg (SGS)	SPLIT SAMPLE Z2 mg/kg (ENVIROLAB)	RELATIVE PERCENTAGE DIFFERENCE (RPD) %
TOTAL RECOVERABLE HYDROCARBONS (TRH)			
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	0.2	<0.5	-
Ethyl Benzene	<0.1	<1	-
Total Xylenes	<0.3	<3	-
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Naphthalene	<0.1	<0.1	-
Benzo(a)Pyrene TEQ	<0.2	2	-
Benzo(a)Pyrene	<0.1	1	-
Total PAH	<0.8	11	-

TABLE E2
SPLIT SAMPLE
(Ref No: 13138/1-AA)

ANALYTE	COMPOSITE C3 mg/kg (SGS)	SPLIT S101 mg/kg (ENVIROLAB)	RELATIVE PERCENTAGE DIFFERENCE (RPD) %
METALS			
Arsenic	<3	<3	-
Cadmium	0.4	0.5	22
Chromium	55	17	106
Copper	19	68	113
Lead	8	17	72
Mercury	0.03	0.03	0
Nickel	**56**	76	30
Zinc	**39**	50	25
ORGANOCHLORINE PESTICIDES (OCP)			
HEXACHLOROBENZENE (HCB)	<0.1	<0.1	-
HEPTACHLOR	<0.1	<0.1	-
ALDRIN	<0.1	<0.1	-
DIELDRIN	<0.05	<0.05	-
ENDRIN	<0.2	<0.2	-
METHOXYCHLOR	<0.1	<0.1	-
MIREX	<0.1	<0.1	-
ENDOSULFAN (Alpha, Beta & Sulphate)	<0.5	<0.5	-
DDD	<0.2	<0.2	-
DDE	<0.2	<0.2	-
DDT	<0.2	<0.2	-
CHLORDANE (alpha & gamma)	<0.2	<0.2	-
Organophosphorus Pesticides (OPP)			
Bromophos Ethyl	<0.2	<0.1	-
Chlorpyrifos	<0.2	<0.1	-
Diazinon	<0.5	<0.1	-
Dimethoate	<0.5	<0.1	-
Ethion	<0.2	<0.1	-
Fenitrothion	<0.2	<0.1	-
POLYCHLORINATED BIPHENYLS (PCB)			
Total PCB	<1	<1	-
PHENOLS & CYANIDES			
Total Phenols	0.7	<0.1	-
Total Cyanides	<0.1	0.1	-

TABLE F1
METALS, CATION EXCHANGE CAPACITY (CEC), pH & TOTAL ORGANIC CARBON (TOC) TEST RESULTS
DISCRETE SAMPLES
(Ref No: 13138/1-AA)

			METALS (mg/kg)										
Sample Location	Depth (m)	Soil Type	ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MERCURY	NICKEL	ZINC	CEC (cmolc/kg)	pH	TOC (%)
BH1	0.05-0.2	F	-	-	-	-	-	-	-	-	38	8.4	0.73
BH4	0-0.3	F	-	-	-	-	-	-	-	-	14	7.7	2.3
BH7	0-0.3	F	-	-	-	-	-	-	-	-	16	7.7	1.8
BH10	0-0.15	T	-	-	-	-	-	-	-	-	1.7	4.8	1.0
BH12	0-0.15	T	-	-	-	-	-	-	-	-	4.3	5.2	2.0
BH16	2.1-2.4	F	-	-	-	-	-	-	-	-	15	4.9	0.08
BH17	0.2-0.5	F	-	-	-	-	-	-	-	-	9.1	4.7	0.42
BH21	0.2-0.5	F	-	-	-	-	-	-	-	-	1.2	4.8	0.51
BH21	1.3-1.6	F	5	<0.3	6.0	30	23	<0.05	4.0	41	11	5.8	0.17
BH21	1.75-1.85	F	43	0.9	18	73	200	0.17	8.8	360	-	-	2.8
Limits of Reporting (LOR)			1	0.3	0.5	0.5	1	0.1	0.5	2	0.02	-	0.05
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)													
Health-based Investigation Levels Residential B (HIL B) [a]			500	150	500 [c]	30000	1200	30 [d]	1200	60000			
Ecological Investigation Level (EIL) [b]			100 [e]	-	190 [f]	180	1100 [g]	-	180	420			
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)													
Provisional Phytotoxity-Based Investigation Levels (PIL)				3				1					

Notes
a: Residential with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments.
b: For aged metals derived from calculation spreadsheet developed by CSIRO for NEPC for old NSW suburb with low traffic volume; CEC=11; pH=5.8 cmolc/kg; TOC=2.8 %
c: Chromium (VI)
d: Methyl Mercury
e: Generic EIL for aged arsenic - urban residential land use
f: Chromium (III), clay content was assumed =1%, a conservative assumption - urban residential land use
g: Generic EIL for Lead - urban residential land use

TABLE F2
METALS, CATION EXCHANGE CAPACITY (CEC), pH & TOTAL ORGANIC CARBON (TOC) TEST RESULTS
DISCRETE SAMPLES
(Ref No: 13138/1-AA)

			METALS (mg/kg)										
Sample Location	Depth (m)	Soil Type	ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MERCURY	NICKEL	ZINC	CEC (cmolc/kg)	pH	TOC (%)
BH3	0.55-0.65	N	4	<0.3	12	9.6	20	0.05	12	43	6.0	5.9	1.4
BH6	0.45-0.55	N	<3	<0.3	9.2	1.1	4	<0.01	4.2	4.5	5.2	6.8	0.14
BH8	0.25-0.35	N	<3	<0.3	5.4	4.8	22	0.08	3.1	17	3.6	7.0	0.43
BH15	1.25-1.35	N	<3	<0.3	6.7	2.8	9	0.03	0.9	5.3	-	-	-
BH16	3.45-3.55	N	<3	0.3	7.8	9.9	23	0.49	2.4	22	-	-	-
Limits of Reporting (LOR)			1	0.3	0.5	0.5	1	0.05	0.5	2	0.02	-	0.05
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)													
Health-based Investigation Levels Residential B (HIL B) [a]			500	150	500 [c]	30000	1200	30 [d]	1200	60000			
Ecological Investigation Level (EIL) [b]			100 [e]	-	190 [f]	40	1100 [g]	-	20	260			
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)													
Provisional Phytotoxity-Based Investigation Levels (PIL)				3				1					

Notes

a: Residential with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments.

b: For aged metals derived from calculation spreadsheet developed by CSIRO for NEPC for old NSW suburb with low traffic volume; CEC=3.6; pH=5.9 cmolc/kg; TOC=0.14 %

c: Chromium (VI)

d: Methyl Mercury

e: Generic EIL for aged arsenic - urban residential land use

f: Chromium (III), clay content was assumed =1%, a conservative assumption - urban residential land use

g: Generic EIL for Lead - urban residential land use

N: Natural Soil

TABLE G1
METALS, CATION EXCHANGE CAPACITY (CEC), pH & TOTAL ORGANIC CARBON (TOC) TEST RESULTS
COMPOSITED SAMPLE
(Ref No: 13138/1-AA)

Analytes / Composite Number	METALS (mg/kg)								CEC [k] (cmolc/kg)	pH [k]	TOC [k] (%)
	ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MERCURY	NICKEL	ZINC			
C1	3	0.4	13	72	11	<0.01	75	45	38	8.4	0.73
Limits of Reporting (LOR)	1	0.3	0.5	0.5	1	0.05	0.5	2	0.02	-	0.05
NATIONAL ENVIRONMENT PROTECTION											
AMENDMENT MEASURE (2013)											
Health-based Investigation Levels Residential B (HIL B) [a]	500	150	500 [f]	30000	1200	30 [g]	1200	60000			
Adjusted HIL [b]	167	50	167	10000	400	10	400	20000			
Ecological Investigation Level (EIL) [c]	100 [h]	-	190 [i]	240	1100 [j]	-	420	1200			
Adjusted EIL [d]	33	-	63	80	367	-	140	400			
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 minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments.

b: Adjusted HIL=HIL/3;

c: For aged metals derived from calculation spreadsheet developed by CSIRO for NEPC for old NSW suburb with low traffic volume; CEC=38; pH=8.4 cmolc/kg; TOC=0.73 %

d: Adjusted EIL=EIL/3

e: Adjusted PIL=PIL/3

f: Chromium (VI)

g: Methyl Mercury

h: Generic EIL for aged arsenic - urban residential land use

i: Chromium (III), clay content was assumed =2.5%, a conservative assumption - urban residential land use

j: Generic EIL for lead - urban residential land use

k: The test result of sub-sample BH1 (0.05-0.2m) was adopted.

TABLE G2
METALS, CATION EXCHANGE CAPACITY (CEC), pH & TOTAL ORGANIC CARBON (TOC) TEST RESULTS
COMPOSITED SAMPLES
(Ref No: 13138/1-AA)

Analytes / Composite Number	METALS (mg/kg)								CEC [k] (cmolc/kg)	pH [k]	TOC [k] (%)
	ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MERCURY	NICKEL	ZINC			
C2	<3	0.6	31	16	22	0.09	**28**	**120**	14	7.7	2.3
C4	<3	**2.2**	6.1	6.9	10	**0.45**	2.6	13	1.7	4.8	1.0
C5	5	0.8	7.5	**19**	23	0.3	2.7	21	4.3	5.2	2.0
C6	<3	**1.1**	9.8	12	21	**0.92**	**3.1**	29	-	-	-
C7	7	0.5	9.0	**30**	100	**0.43**	**3.3**	**53**	-	-	-
Limits of Reporting (LOR)	1	0.3	0.5	0.5	1	0.05	0.5	2	0.02	-	0.05
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)											
Health-based Investigation Levels Residential B (HIL B) [a]	500	150	500 [f]	30000	1200	30 [g]	1200	60000			
Adjusted HIL [b]	167	50	167	10000	400	10	400	20000			
Ecological Investigation Level (EIL) [c]	100 [h]	-	190 [i]	50	1100 [j]	-	8	130			
Adjusted EIL [d]	33	-	63	17	367	-	3	43			
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 minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments.

b: Adjusted HIL=HIL/3

c: For aged metals derived from calculation spreadsheet developed by CSIRO for NEPC for old NSW suburb with low traffic volume; CEC=1.7; pH=4.8 cmolc/kg; TOC=1 %

d: Adjusted EIL=EIL/3

e: Adjusted PIL=PIL/3

f: Chromium (VI)

g: Methyl Mercury

h: Generic EIL for aged arsenic - urban residential land use

i: Chromium (III), clay content was assumed =1%, a conservative assumption - urban residential land use

j: Generic EIL for Lead - urban residential land use

k: The lowest test result of sub-sample BH10 (0-0.15m) was adopted.

TABLE G3
METALS, CATION EXCHANGE CAPACITY (CEC), pH & TOTAL ORGANIC CARBON (TOC) TEST RESULTS
COMPOSITED SAMPLES
(Ref No: 13138/1-AA)

Analytes / Composite Number	METALS (mg/kg)										
	ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MERCURY	NICKEL	ZINC	CEC [k] (cmolc/kg)	pH [k]	TOC [k] (%)
C3	<3	0.4	55	19	8	0.03	56	39	16	7.7	1.8
Split S101 (=C3)	<3	0.5	17	68	17	0.03	76	50	-	-	-
C8	<3	0.5	5.2	8.2	8	**0.45**	9.5	10	-	-	-
C9	<3	0.6	5.8	10	13	**0.43**	9.0	15	-	-	-
Limits of Reporting (LOR)	1	0.3	0.5	0.5	1	0.05	0.5	2	0.02	-	0.05
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)											
Health-based Investigation Levels Residential B (HIL B) [a]	500	150	500 [f]	30000	1200	30 [g]	1200	60000			
Adjusted HIL [b]	167	50	167	10000	400	10	400	20000			
Ecological Investigation Level (EIL) [c]	100 [h]	-	190 [i]	220	1100 [j]	-	230	660			
Adjusted EIL [d]	33	-	63	73	367	-	77	220			
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 minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments.

b: Adjusted HIL=HIL/3

c: For aged metals derived from calculation spreadsheet developed by CSIRO for NEPC for old NSW suburb with low traffic volume; CEC=16; pH=7.7 cmolc/kg; TOC=1.8 %

d: Adjusted EIL=EIL/3

e: Adjusted PIL=PIL/3

f: Chromium (VI)

g: Methyl Mercury

h: Generic EIL for aged arsenic - urban residential land use

i: Chromium (III), clay content was assumed =1%, a conservative assumption - urban residential land use

j: Generic EIL for Lead - urban residential land use

k: The test result of sub-sample BH7 (0-0.3m) was adopted.

TABLE G4
METALS, CATION EXCHANGE CAPACITY (CEC), pH & TOTAL ORGANIC CARBON (TOC) TEST RESULTS
COMPOSITED SAMPLE
(Ref No: 13138/1-AA)

Analytes / Composite Number	METALS (mg/kg)										
	ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MERCURY	NICKEL	ZINC	CEC [k] (cmolc/kg)	pH [k]	TOC [k] (%)
C10	<3	0.4	5.7	**9.2**	21	0.13	1.5	15	1.2	4.7	0.08
Limits of Reporting (LOR)	1	0.3	0.5	0.5	1	0.05	0.5	2	0.02	-	0.05
NATIONAL ENVIRONMENT PROTECTION											
AMENDMENT MEASURE (2013)											
Health-based Investigation Levels Residential B (HIL B) [a]	500	150	500 [f]	30000	1200	30 [g]	1200	60000			
Adjusted HIL [b]	167	50	167	10000	400	10	400	20000			
Ecological Investigation Level (EIL) [c]	100 [h]	-	190 [i]	25	1100 [j]	-	6	120			
Adjusted EIL [d]	33	-	63	8.3	367	-	2	40			
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 minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments.
b: Adjusted HIL=HIL/3
c: For aged metals derived from calculation spreadsheet developed by CSIRO for NEPC for old NSW suburb with low traffic volume; CEC=1.2; pH=4.7 cmolc/kg; TOC=0.08 %
d: Adjusted EIL=EIL/3
e: Adjusted PIL=PIL/3
f: Chromium (VI)
g: Methyl Mercury
h: Generic EIL for aged arsenic - urban residential land use
i: Chromium (III), clay content was assumed =1%, a conservative assumption - urban residential land use
j: Generic EIL for Lead - urban residential land use
k: The lowest test result of sub-samples was adopted.

TABLE G5
METALS, CATION EXCHANGE CAPACITY (CEC), pH & TOTAL ORGANIC CARBON (TOC) TEST RESULTS
COMPOSITED SAMPLE
(Ref No: 13138/1-AA)

Analytes / Composite Number	METALS (mg/kg)										
	ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MERCURY	NICKEL	ZINC	CEC [k] (cmolc/kg)	pH [k]	TOC [k] (%)
C11	5	0.4	7.7	**15**	49	0.23	2.4	37	15	4.9	0.08
Limits of Reporting (LOR)	1	0.3	0.5	0.5	1	0.05	0.5	2	0.02	-	0.05
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)											
Health-based Investigation Levels Residential B (HIL B) [a]	500	150	500 [f]	30000	1200	30 [g]	1200	60000			
Adjusted HIL [b]	167	50	167	10000	400	10	400	20000			
Ecological Investigation Level (EIL) [c]	100 [h]	-	190 [i]	25	1100 [j]	-	220	250			
Adjusted EIL [d]	33	-	63	8.3	367	-	73	83			
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 minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments.
b: Adjusted HIL=HIL/3
c: For aged metals derived from calculation spreadsheet developed by CSIRO for NEPC for old NSW suburb with low traffic volume; CEC=15; pH=4.9 cmolc/kg; TOC=0.08 %
d: Adjusted EIL=EIL/3
e: Adjusted PIL=PIL/3
f: Chromium (VI)
g: Methyl Mercury
h: Generic EIL for aged arsenic - urban residential land use
i: Chromium (III), clay content was assumed =1%, a conservative assumption - urban residential land use
j: Generic EIL for Lead - urban residential land use
k: The test result of sub-sample BH16 (2.1-2.4m) was adopted.

TABLE H1
CADMIUM TEST RESULTS
SUB-SAMPLES
(Ref No: 13138/1-AA)

Analyte / Composite Number	Sub-Sample	Depth (m)	CADMIUM (mg/kg)
C4	BH10	0-0.15	0.7
	BH14	0-0.15	1.8
	BH15	0-0.15	2.2
C6	BH16	0-0.1	0.5
	BH17	0-0.15	0.4
	BH18	0-0.15	1.7
Limit of Reporting (LOR)			0.3
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)			
Health-based Investigation Levels Residential B (HIL B)		[a]	150
Ecological Investigation Level (EIL)			3

a: Residential with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments.

TABLE H2A
COPPER TEST RESULTS
SUB-SAMPLES
(Ref No: 13138/1-AA)

Analyte / Composite Number	Sub-Sample	Depth (m)	COPPER (mg/kg)
C5	BH11	0-0.15	4.0
	BH12	0-0.15	9.6
	BH13	0-0.15	11
C7	BH19	0-0.15	67
	BH20	0-0.15	17
	BH21	0-0.15	8.3
Limit of Reporting (LOR)			0.5
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)			
Health-based Investigation Levels Residential B (HIL B)		[a]	30000
Ecological Investigation Level (EIL)			50[b]
EIL			100[c]

a: Residential with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments.

b: For aged metals derived from calculation spreadsheet developed by CSIRO for NEPC for old NSW suburb with low traffic volume; CEC=1.7 cmolc/kg, pH=4.8, TOC=1.0% based on the lowest test results for BH10 (0-0.15m).

c: For aged metals derived from calculation spreadsheet developed by CSIRO for NEPC for old NSW suburb with low traffic volume; CEC=4.7 cmolc/kg, pH=5.9,TOC=1.9% based on test results for BH19 (0-0.15m).

TABLE H2B
COPPER TEST RESULTS
SUB-SAMPLES
(Ref No: 13138/1-AA)

Analyte / Composite Number	Sub-Sample	Depth (m)	COPPER (mg/kg)
C10	BH16	0.1-0.4	14
	BH17	0.2-0.5	20
	BH21	0.2-0.5	2.2
C11	BH16	2.1-2.4	13
	BH16	3.1-3.4	11
	BH21	0.8-1.1	13
Limit of Reporting (LOR)			0.5
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)			
Health-based Investigation Levels Residential B (HIL B) [a]			30000
Ecological Investigation Level (EIL)			25

a: Residential with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments.

TABLE H3
MERCURY TEST RESULTS
SUB-SAMPLES
(Ref No: 13138/1-AA)

Analyte / Composite Number	Sub-Sample	Depth (m)	MERCURY (mg/kg)
C4	BH10	0-0.15	0.63
	BH14	0-0.15	0.23
	BH15	0-0.15	0.85
C6	BH16	0-0.1	0.65
	BH17	0-0.15	0.85
	BH18	0-0.15	0.68
C7	BH19	0-0.15	0.13
	BH20	0-0.15	0.69
	BH21	0-0.15	0.29
C8	BH10	0.15-0.45	0.34
	BH14	0.2-0.5	0.23
	BH15	0.2-0.5	0.45
C9	BH11	0.2-0.5	0.47
	BH13	0.3-0.6	0.11
	BH15	0.9-1.2	0.36
Limit of Reporting (LOR)			0.05
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)			
Health-based Investigation Levels Residential B (HIL B) [a]			30
Ecological Investigation Level (EIL)			1

a: Residential with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments.

TABLE H4
NICKEL TEST RESULTS
SUB-SAMPLES
(Ref No: 13138/1-AA)

Analyte / Composite Number	Sub-Sample	Depth (m)	NICKEL (mg/kg)
C2	BH2	0.1-0.4	1.8
	BH4	0-0.3	43
	BH5	0-0.15	3.8
C6	BH16	0-0.1	4.4
	BH17	0-0.15	1.5
	BH18	0-0.15	3.5
C7	BH19	0-0.15	3.7
	BH20	0-0.15	3.8
	BH21	0-0.15	3.1
Limit of Reporting (LOR)			0.5
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)			
Health-based Investigation Levels Residential B (HIL B) [a]			1200
Ecological Investigation Level (EIL)			8 [b]
EIL			210 [c]

a: Residential with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments.

b: For aged metals derived from calculation spreadsheet developed by CSIRO for NEPC for old NSW suburb with low traffic volume; CEC=1.7 cmolc/kg based on the lowest test result for BH10 (0-0.15m).

c: For aged metals derived from calculation spreadsheet developed by CSIRO for NEPC for old NSW suburb with low traffic volume; CEC=14 cmolc/kg based on test result for BH4 (0-0.3m).

TABLE H5
ZINC TEST RESULTS
SUB-SAMPLES
(Ref No: 13138/1-AA)

Analyte / Composite Number	Sub-Sample	Depth (m)	ZINC (mg/kg)
C2	BH2	0.1-0.4	11
	BH4	0-0.3	32
	BH5	0-0.15	**320**
C7	BH19	0-0.15	60
	BH20	0-0.15	44
	BH21	0-0.15	18
Limit of Reporting (LOR)			2
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)			
Health-based Investigation Levels Residential B (HIL B)[a]			60000
Ecological Investigation Level (EIL)			130[b]
EIL			280[c]

a: Residential with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments.

b: For aged metals derived from calculation spreadsheet developed by CSIRO for NEPC for old NSW suburb with low traffic volume; CEC=1.7 cmolc/kg, pH=4.8 based on the lowest test results for BH10 (0-0.15m).

c: For aged metals derived from calculation spreadsheet developed by CSIRO for NEPC for old NSW suburb with low traffic volume; CEC=4.2 cmolc/kg, pH=6.7 based on test results for BH5 (0-0.15m).

TABLE I
TOTAL PETROLEUM HYDROCARBONS (TPH) AND BTEX TEST RESULTS
DISCRETE SAMPLES
(Ref No: 13138/1-AA)

Analyte / Sample Location	Depth (m)	Soil type	TPH (mg/kg) F1	F2*	F2**	F3	F4	BTEX (mg/kg) BENZENE	TOLUENE	ETHYLBENZENE	XYLENES
BH1	0.05-0.2	Sand	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3
BH4	0-0.3	Sand	<25	<25	<25	<90	<120	<0.1	0.2	<0.1	<0.3
BH7	0-0.3	Sand	<25	<25	<25	<90	<120	<0.1	0.2	<0.1	<0.3
BH10	0.15-0.45	Sand	<25	<25	<25	<90	<120	<0.1	0.1	<0.1	<0.3
BH13	0.3-0.6	Sand	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3
BH16	2.1-2.4	Clay	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3
BH17	0.2-0.5	Sand	<25	<25	<25	130	<120	<0.1	<0.1	<0.1	<0.3
BH21	0.2-0.5	Sand	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3
BH21	1.3-1.6	Clay	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3
BH21	1.75-1.85	Clay	<25	<25	<25	250	<120	<0.1	<0.1	<0.1	<0.3
Limits of Reporting (LOR)			25	25	25	90	120	0.1	0.1	0.1	0.3
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)											
Health Screening Level B (HSL B)											
High density residential [a]											
0 m to <1 m - Sand			45	110				0.5	160	55	40
0 m to <1 m - Clay			50	280				0.7	480	NL	110
1 m to <2 m - Clay			90	NL				1	NL	NL	310
2 m to <4 m - Clay			150	NL				2	NL	NL	NL
Ecological Screening Levels (ESLs)											
Urban residential and public open space											
Coarse-grained soil (sand)			180		120	300	2800	50	85	70	105
Fine-grained soil (clay)			180		120	1300	5600	65	105	125	45

Notes

a: Residential with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments.

F1: C6-C10 less BTEX
F2*: >C10-C16 less Naphthalene
F2**: >C10-C16
F3: >C16-C34
F4: >C34-C40
NL: Not Limiting

TABLE J

POLYCYCLIC AROMATIC HYDROCARBONS (PAH) TEST RESULTS
DISCRETE SAMPLES
(Ref No: 13138/1-AA)

Analytes			PAH(mg/kg)			
			Benzo(a)Pyrene (BaP)	BaP TEQ	NAPHTHALENE	TOTAL PAHs
Sample Location	Depth (m)	Soil Type				
BH1	0.05-0.2	Sand	<0.1	<0.2	<0.1	<0.8
BH2	0.1-0.4	Sand	<0.1	<0.2	<0.1	<0.8
BH3	0-0.3	Sand	<0.1	<0.2	<0.1	<0.8
BH4	0-0.3	Sand	<0.1	<0.2	<0.1	<0.8
BH6	0-0.3	Sand	<0.1	<0.2	<0.1	<0.8
BH7	0-0.3	Sand	<0.1	<0.2	<0.1	<0.8
BH8	0.05-0.2	Sand	<0.1	<0.2	<0.1	<0.8
BH9	0.05-0.2	Sand	<0.1	<0.2	<0.1	<0.8
BH10	0.15-0.45	Sand	<0.1	<0.2	<0.1	<0.8
BH11	0.2-0.5	Sand	<0.1	<0.2	<0.1	<0.8
BH13	0.3-0.6	Sand	<0.1	<0.2	<0.1	<0.8
BH14	0.2-0.5	Sand	<0.1	<0.2	<0.1	<0.8
BH15	0.2-0.5	Sand	<0.1	<0.2	<0.1	<0.8
BH15	0.9-1.2	Sand	<0.1	<0.2	<0.1	<0.8
BH16	0.1-0.4	Clay	0.6	0.8	<0.1	5.9
BH16	1.1-1.4	Clay	0.3	0.4	<0.1	2.4
BH16	2.1-2.4	Clay	**0.8**	1.1	<0.1	7.6
BH16	3.1-3.4	Clay	**0.9**	1.2	<0.1	10
BH17	0.2-0.5	Sand	**2.4**	3.4	<0.1	22
BH17	0.7-1.0	Sand	0.2	0.3	<0.1	2.2
BH21	0.2-0.5	Sand	<0.1	<0.2	<0.1	<0.8
BH21	0.8-1.1	Clay	0.5	0.7	<0.1	4.6
BH21	1.3-1.6	Clay	0.2	0.3	<0.1	2.2
BH21	1.75-1.85	Clay	**2.5**	3.6	0.2	29
Limits of Reporting (LOR)			0.1	0.2	0.1	0.8
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)						
Health-based Investigation Levels Residential B (HIL B) [a]				4		400
Health Screening Level B (HSL B) high density residential [a]						
0 m to <1 m - Sand					3	
1 m to <2 m - Sand					NL	
0 m to <1 m - Clay					5	
1 m to <2 m - Clay					NL	
3 m to <4 m - Clay					NL	
Ecological Investigation Level (EIL) [b]					170	
Ecological Screening Level (ESL) Coarse-grained soil (sand) & fine-grained soil (clay)			0.7 [c]			

Notes:
a: Residential with minimal opportunities for soil access;
b: Generic EIL for Naphthalene - urban residential land use
c: ESL for Benzo(a)Pyrene - urban residential land use
NL: Not Limiting

TABLE K

ORGANOCHLORINE PESTICIDES (OCP), POLYCHLORINATED BIPHENYLS (PCB), CYANIDES & PHENOLS TEST RESULTS
COMPOSITED SAMPLES
(Ref No: 13138/1-AA)

Analyte / Composite Number	OCP (mg/kg)												(mg/kg)	(mg/kg)	(mg/kg)
	HEXACHLOROBENZENE (HCB)	HEPTACHLOR	ALDRIN	DIELDRIN	ENDRIN	METHOXYCHLOR	MIREX	ENDOSULFAN [c]	DDD	DDE	DDT	CHLORDANE (alpha & gamma)	PCB	Cyanides	Phenols
C1	<0.1	<0.1	<0.1	<0.05	<0.2	<0.1	<0.1	<0.5	<0.2	<0.2	<0.2	<0.2	<1	0.1	0.2
C2	<0.1	<0.1	<0.1	<0.05	<0.2	<0.1	<0.1	<0.5	<0.2	<0.2	<0.2	<0.2	<1	0.2	1.6
C3	<0.1	<0.1	<0.1	<0.05	<0.2	<0.1	<0.1	<0.5	<0.2	<0.2	<0.2	<0.2	<1	<0.1	0.7
C4	<0.1	<0.1	<0.1	0.30	<0.2	<0.1	<0.1	<0.5	<0.2	<0.2	<0.2	<0.2	-	-	-
C5	<0.1	<0.1	<0.1	0.16	<0.2	<0.1	<0.1	<0.5	<0.2	<0.2	<0.2	<0.2	-	-	-
C6	<0.1	<0.1	<0.1	0.48	<0.2	<0.1	<0.1	<0.5	<0.2	<0.2	<0.2	<0.2	-	-	-
C7	<0.1	<0.1	<0.1	0.21	<0.2	<0.1	<0.1	<0.5	<0.2	<0.2	<0.2	<0.2	-	-	-
C8	<0.1	<0.1	<0.1	0.10	<0.2	<0.1	<0.1	<0.5	<0.2	<0.2	<0.2	<0.2	<1	<0.1	<0.1
C9	<0.1	<0.1	<0.1	0.11	<0.2	<0.1	<0.1	<0.5	<0.2	<0.2	<0.2	<0.2	<1	0.1	0.2
C10	<0.1	<0.1	<0.1	0.23	<0.2	<0.1	<0.1	<0.5	<0.2	<0.2	<0.2	<0.2	<1	<0.1	0.2
C11	<0.1	<0.1	<0.1	0.15	<0.2	<0.1	<0.1	<0.5	<0.2	<0.2	<0.2	<0.2	<1	<0.1	0.1
Limits of Reporting (LOR)	0.1	0.1	0.1	0.05	0.2	0.1	0.1	0.5	0.2	0.2	0.2	0.2	1	0.1	0.1
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)															
Health-based Investigation Levels Residential B (HIL B) [a]	15	10	10 [d]	10 [d]	20	500	20	400	600 [e]	600 [e]	600 [e]	90	1	300	45000
Adjusted HIL [b]	5	3.3	3.3	3.3	6.7	167	6.7	133	200	200	200	30	0.3	100	15000
Ecological Investigation Level (EIL)											180 [f]				
Adjusted EIL [b]											60				

Notes
a: Residential with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments.
b Adjusted HIL=HIL/3;Adjusted EIL=EIL/3
c: Alpha Endosulfan + Beta Endosulfan + Endosulfan Sulphate
d: Aldrin + Dieldrin
e: DDD + DDE + DDT
f: Generic EIL for DDT - urban residential land use

TABLE L
ORGANOPHOSPHORUS PESTICIDES (OPP) TEST RESULTS
COMPOSITED SAMPLES
(Ref No: 13138/1-AA)

Analyte / Composite Number	Organophosphorus Pesticides (mg/kg)										
	Azinphos-methyl (Guthion)	Bromophos Ethyl	Chlorpyrifos (Chlorpyrifos Ethyl)	Diazinon (Dimpylate)	Dichlorvos	Dimethoate	Ethion	Fenitrothion	Malathion	Methidathion	Parathion-ethyl (Parathion)
C1	<0.2	<0.2	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.2
C2	<0.2	<0.2	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.2
C3	<0.2	<0.2	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.2
C4	<0.2	<0.2	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.2
C5	<0.2	<0.2	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.2
C6	<0.2	<0.2	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.2
C7	<0.2	<0.2	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.2
C8	<0.2	<0.2	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.2
C9	<0.2	<0.2	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.2
C10	<0.2	<0.2	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.2
C11	<0.2	<0.2	<0.2	<0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.2
Limits of Reporting (LOR)	0.2	0.2	0.2	0.5	0.5	0.5	0.2	0.2	0.2	0.5	0.2
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)											
Health-based Investigation Levels Residential B (HIL B) [a]			340								
Adjusted HIL [b]			113								

Notes
a: Residential with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments.
b Adjusted HIL=HIL/3

TABLE M
ASBESTOS TEST RESULTS
DISCRETE SAMPLES
(Ref No: 13138/1-AA)

Analyte / Sample Location	Depth (m)	ASBESTOS
BH1	0.05-0.2	No Asbestos Found
BH4	0-0.3	No Asbestos Found
BH7	0-0.3	No Asbestos Found
BH10	0.15-0.45	No Asbestos Found
BH13	0.3-0.6	No Asbestos Found
BH16	2.1-2.4	No Asbestos Found
BH17	0.2-0.5	No Asbestos Found
BH21	0.2-0.5	No Asbestos Found
BH21	1.3-1.6	No Asbestos Found

APPENDIX A

NSW DEPARTMENT OF LANDS RECORDS

13138/1

Summary of Proprietors

Lot 1 DP818683

Year	Proprietor
1956 – to date	The Council of the Municipality of Canterbury
1956	The Cumberland County Council and The Council of the Municipality of Canterbury (?)
1908 – 1956	J.C. Hutton Proprietary Limited
1908	Edward Richard William Denham, produce merchant

Year	Leases
1990 – 2010	Canterbury Bowling and Sydney Petanque Club Limited

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 1/818683

SEARCH DATE	TIME	EDITION NO	DATE
27/3/2014	11:03 AM	3	21/8/2000

LAND

LOT 1 IN DEPOSITED PLAN 818683
AT CANTERBURY
LOCAL GOVERNMENT AREA CANTERBURY
PARISH OF PETERSHAM COUNTY OF CUMBERLAND
TITLE DIAGRAM DP818683

FIRST SCHEDULE

THE COUNCIL OF THE MUNICIPALITY OF CANTERBURY

SECOND SCHEDULE (6 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 QUALIFIED TITLE. CAUTION PURSUANT TO SECTION 28J OF THE REAL PROPERTY ACT, 1900. ENTERED 23/11/92 (BK2393 NO126)
* 3 EASEMENT FOR ELECTRICITY PURPOSES AFFECTING THE PART OF THE LAND ABOVE DESCRIBED SHOWN SO BURDENED IN THE TITLE DIAGRAM VIDE NOTIFICATION IN GOV. GAZ. DATED 23-6-67 FOLIO'S 2272 & 2273 Z944756 TRANSFER OF EASEMENT TO SYDNEY ELECTRICITY
* 4 BK 2273 NO 112 EASEMENT FOR WATER SUPPLY MAIN 7.62 WIDE AND VARIABLE WIDTH AFFECTING THE PART OF THE LAND ABOVE DESCRIBED SHOWN SO BURDENED IN THE TITLE DIAGRAM
5 DP818683 EASEMENT FOR SERVICES APPURTENANT TO THE LAND ABOVE DESCRIBED
6 7035212 LEASE TO CANTERBURY BOWLING AND SYDNEY PETANQUE CLUB LIMITED EXPIRES: 19/3/2010.

NOTATIONS

NOTE: THE CERTIFICATE OF TITLE FOR THIS FOLIO OF THE REGISTER DOES NOT INCLUDE SECURITY FEATURES INCLUDED ON COMPUTERISED CERTIFICATES OF TITLE ISSUED FROM 4TH JANUARY, 2004. IT IS RECOMMENDED THAT STRINGENT PROCESSES ARE ADOPTED IN VERIFYING THE IDENTITY OF THE PERSON(S) CLAIMING A RIGHT TO DEAL WITH THE LAND COMPRISED IN THIS FOLIO.

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

Plan Drawing only to appear in this space

*OFFICE USE ONLY

DP 818683

SIGNATURES, SEALS AND STATEMENTS of Intention to dedicate public roads or to create public reserves, drainage reserves, easements, restrictions on the use of land or positive covenants.

THE COMMON SEAL OF THE COUNCIL OF THE MUNICIPALITY OF CANTERBURY WAS HERETO AFFIXED THIS TWENTY NINTH DAY OF MAY, 1992, PURSUANT TO A RESOLUTION OF COUNCIL ON 12TH. FEBRUARY, 1991.

MAYOR — GENERAL MANAGER

Crown Lands Office Approval

PLAN APPROVED .....
Authorised Officer
Land District .....
Paper No. .....
Field Book .....pages.....

Council Clerk's Certificate

I hereby certify that —

(a) the requirements of the Local Government Act, 1919 (other then the requirements for the registration of plans), and

** (b) the requirements of Part 3 Division 2 of the † Water Board Act 1987 and Water Supply Authorities Act 1987*

have been complied with by the applicant in relation to the proposed SUBDIVISION *(Insert "new road", "subdivision" or "consolidated lot") set out herein*

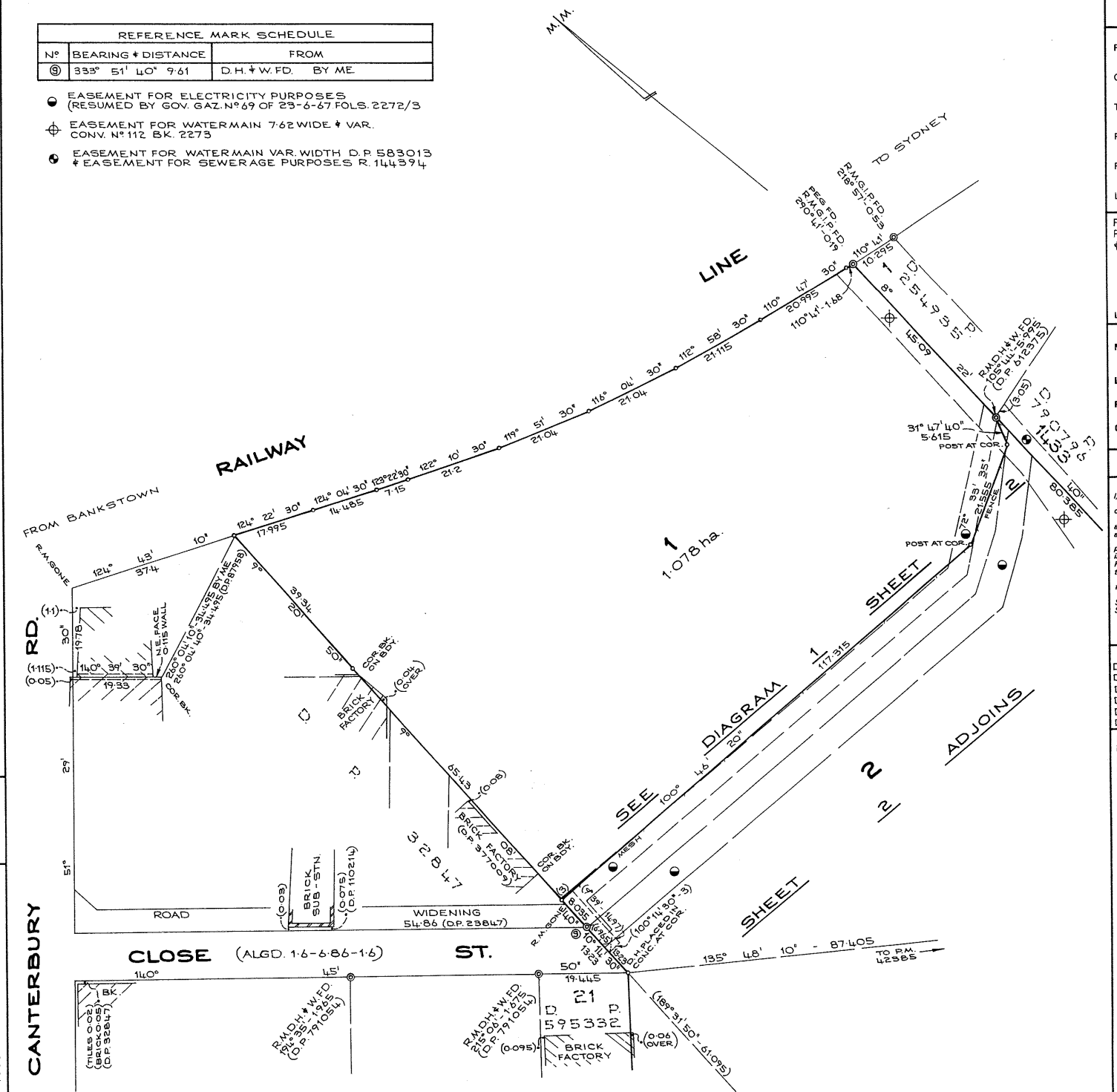
Subdivision No. 9357
Date 28 may 1992
(Signature) ..... Council Clerk
Council File No. 1931 Bowns Cres S

**This part of certificate to be deleted where the application is only for a consolidated lot or the opening of a new road or where the land to be subdivided is wholly outside the areas of operations of the Metropolitan Water, Sewerage and Drainage Board and the Hunter District Water Board.*
† Delete if inapplicable.

SURVEYOR'S REFERENCE: 45626/90

REFERENCE MARK SCHEDULE		
N°	BEARING & DISTANCE	FROM
⑨	333° 51' 40" 9·61	D.H.& W.FD. BY ME

- EASEMENT FOR ELECTRICITY PURPOSES (RESUMED BY GOV. GAZ. N°69 OF 23-6-67 FOLS. 2272/3
- EASEMENT FOR WATERMAIN 7·62 WIDE & VAR. CONV. N° 112 BK. 2273
- EASEMENT FOR WATERMAIN VAR. WIDTH D.P. 583013 & EASEMENT FOR SEWERAGE PURPOSES R. 144394



Mun./~~Shire~~ ~~City~~: CANTERBURY
Locality: CANTERBURY
Parish: PETERSHAM
County: CUMBERLAND

Registered: C&WS 23-11-1992
C.A: N° 9357 of 28-5-1992
Title System: TORRENS & OLD SYSTEM
Purpose: SUBDIVISION
Ref. Map: CANTERBURY 10#, 11#
Last Plan: D.P. 405314 (PT)

PLAN OF SUBDIVISION OF PART PORTION 143 & PART PORTION 137 & LOT B IN D.P. 405134

Lengths are in metres. Reduction Ratio 1: 600

This is sheet 1 of my plan in 2 sheets. (Delete if inapplicable)

I, DAVID JOHN PARSONS
~~of JONES & BURGESS~~
of 35 PITT ST. MORTDALE 2223
a surveyor registered under the Surveyors Act, 1929, as amended, hereby certify that the survey represented in this plan is accurate and has been made in accordance with the Survey Practice Regulations, 1933 and any special requirements of the Department of Lands, and was completed on
26·9·1990
Signature D Parsons
Surveyor registered under Surveyors Act, 1929, as amended.
Datum Line of Azimuth. "A" - "B"
#Insert date of survey.

Plans used in preparation of survey/compilation.
D.P. 378614 D.P. 405314, D.P. 109708
D.P. 790796 D.P. 254935 D.P. 791044
D.P. 791054 D.P. 87958 D.P. 32847
D.P. 595332 D.P. 586956 D.P. 594220
D.P. 499008 D.P. 499007 D.P. 583013
D.P. 728440

PANEL FOR USE ONLY for statements of intention to dedicate public roads or to create public reserves, drainage reserves, easements, restrictions on the use of land or positive covenants.

PURSUANT TO SEC. 88B. OF THE CONVEYANCING ACT 1919-1964 AS AMENDED, IT IS INTENDED TO CREATE:-

1. EASEMENT FOR SERVICES VARIABLE WIDTH
2. RESTRICTION AS TO USER

AS SET OUT IN THE ACCOMPANYING INSTRUMENT SIGNED BY THE TOWN CLERK

10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 Table of mm 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360 370 380 390

CDS. 2

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

PLAN FORM 3 — To be used in conjunction with Plan Form 2

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

*OFFICE USE ONLY

REFERENCE MARK SCHEDULE

N°	BEARING & DISTANCE		FROM
ⓐ	7° 01'	10·37	D.H. & W.FD. BY ME.
ⓑ	14° 49' 30"	0·19	" " " D.P. 791044
ⓒ	315° 19' 30"	3·27	" " " "
ⓓ	300° 15' 30"	1·86	" " " "
ⓔ	292° 28' 30"	0·765	" " " "
ⓕ	31° 35' 30"	0·175	" " " "
ⓖ	333° 51' 40"	9·61	" " " BY ME

- EASEMENT FOR ELECTRICITY PURPOSES (RESUMED BY GOV. GAZ. N°69 OF 23-6-67 FOLS. 2272/3)
- EASEMENT FOR WATER SUPPLY 0·915 WIDE - CONV. N°126 BK. 2393 (4TH. SCHEDULE)
- EASEMENT FOR WATERMAIN 7·62 WIDE & VAR. CONV. N° 112 BK. 2273
- EASEMENT FOR WATERMAIN VAR. WIDTH D.P. 583013 & EASEMENT FOR SEWERAGE PURPOSES R.144394
- PIPELINE EASEMENT 3 WIDE & VARIABLE D.P. 499008
- EASEMENT FOR ACCESS 6 WIDE D.P. 594220 CONV. N° 350 BK. 3511
- RIGHT OF CARRIAGEWAY VARIABLE WIDTH (DP791044)
- EASEMENT FOR SERVICES VARIABLE WIDTH.

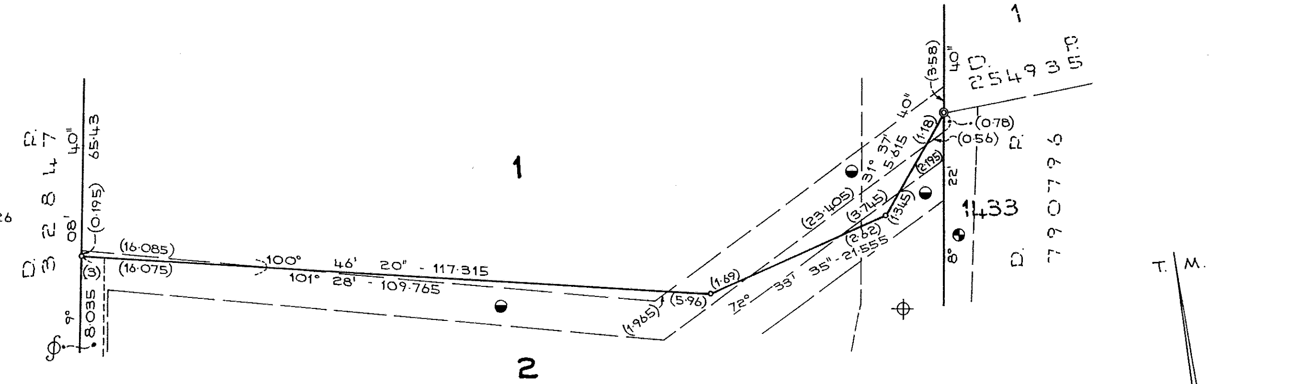
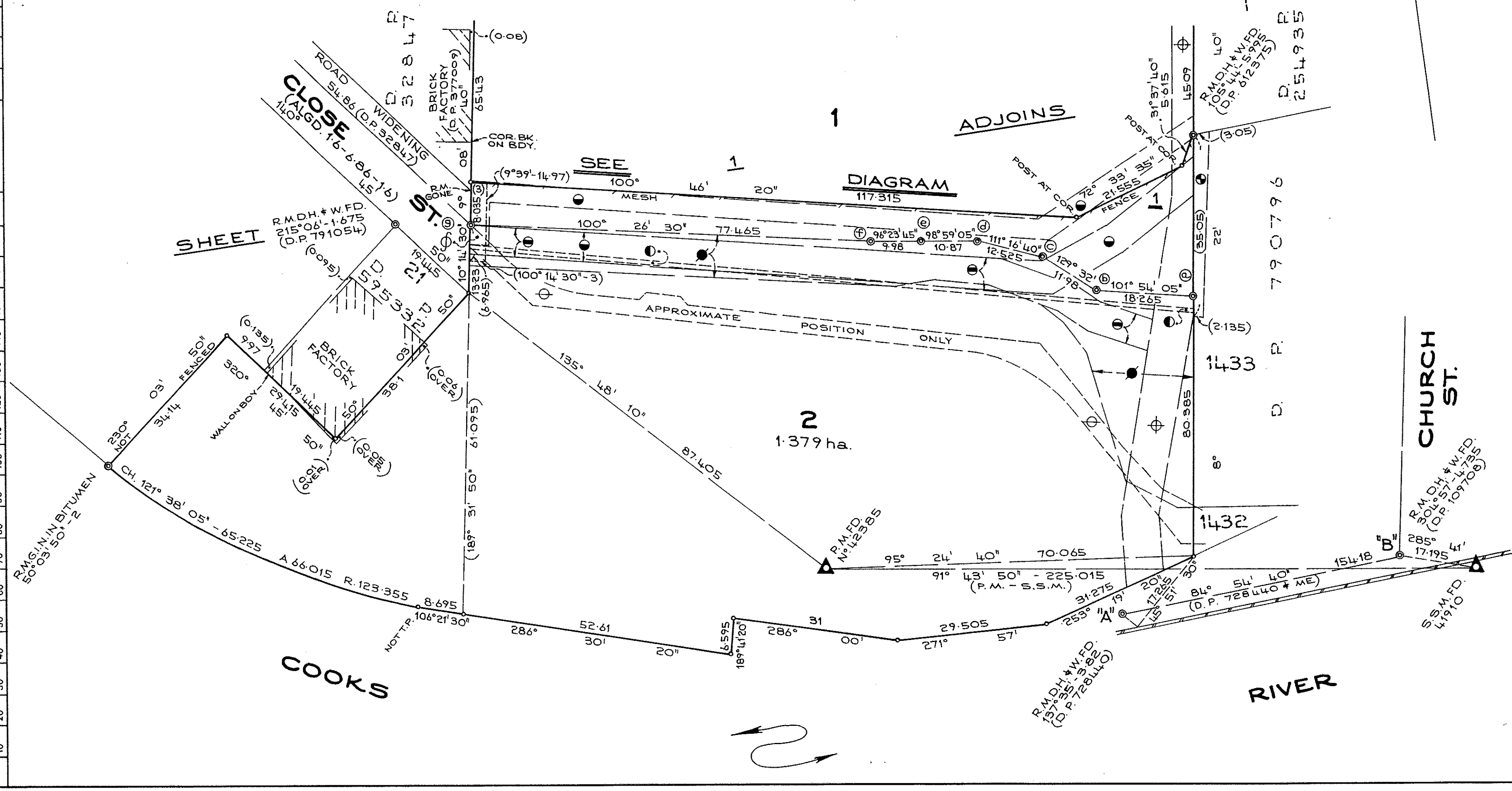


DIAGRAM 1
NOT TO SCALE



DP 818683

Registered: [seal] CBW 23-11-1992

This is sheet 2 of my plan in 2 sheets dated

D. Parsons
Surveyor registered under Surveyors Act 1929

This is sheet 2 of the plan of 2 sheets covered by my Certificate No. 9357 of 28th May, 1992

[signature]
Council Clerk

For use where space is insufficient in any panel on Plan Form 2.

Reduction Ratio 1: 600

Plan Drawing only to appear in this space

SURVEYOR'S REFERENCE: 45626/90

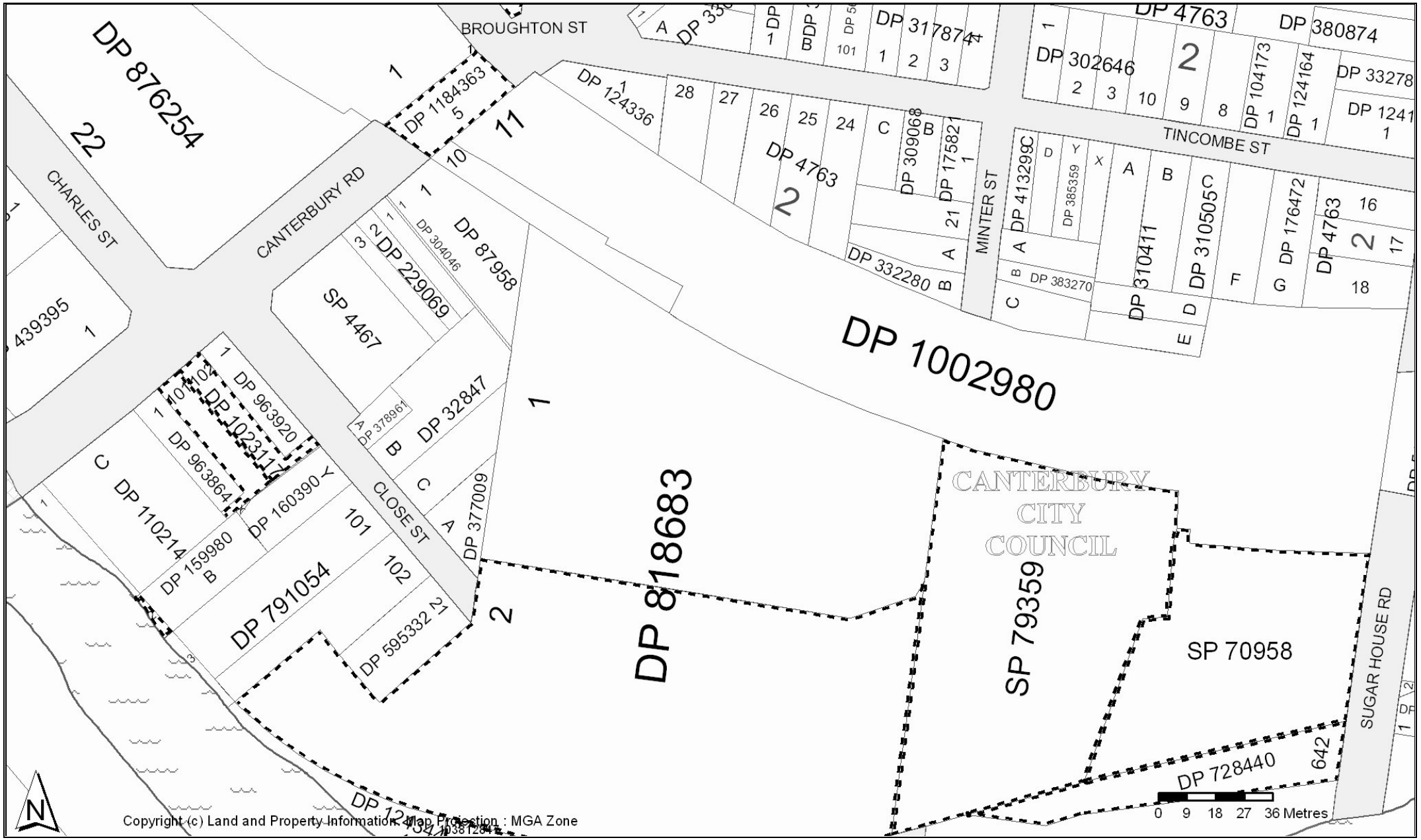
"(DP791044)" ADDED IN LPINSW TO EASEMENT VIDE 1655/2001 [seal] R 18-7-2001

Cadastral Records Enquiry Report

Ref : enviro

Requested Parcel : Lot 1 DP 818683 **Identified Parcel :** Lot 1 DP 818683

Locality : CANTERBURY **LGA :** CANTERBURY **Parish :** PETERSHAM **County :** CUMBERLAND



APPENDIX B

SECTION 149 (2& 5) PLANNING CERTIFICATE

City of Canterbury
City of Cultural Diversity

Administration Centre, 137 Beamish Street,
CAMPSIE N.S.W. 2194
DX: 3813 Campsie
Telephone: (02) 9789 9300
Fax: (02) 9789 1542

Geotechnique Pty Ltd
PO BOX 880
PENRITH NSW 2750

PLANNING CERTIFICATE

Section 149 of the Environmental Planning and Assessment Act, 1979.

Certificate No: 28890
19 March 2014

Land which Certificate is issued for:

Lot 1 DP 818683

15 Close Street, CANTERBURY NSW 2193

City of Canterbury
City of Cultural Diversity

Administration Centre, 137 Beamish Street,
CAMPSIE N.S.W. 2194
DX: 3813 Campsie
Telephone: (02) 9789 9300
Fax: (02) 9789 1542

INFORMATION PROVIDED UNDER SECTION 149 (2) OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979.

Land which Certificate is issued for:

Lot 1 DP 818683

15 Close Street, CANTERBURY NSW 2193

PART 1: ENVIRONMENTAL PLANNING INSTRUMENTS

1.1 Principal Environmental Planning Instrument

Canterbury Local Environmental Plan 2012

Date effective from

1 January 2013

Land Use Zone

ZONE RE1 PUBLIC RECREATION

1. Permitted without consent
Environmental protection works

2. Permitted with consent
Boat launching ramps; Building identification signs; Business identification signs; Car parks; Child care centres; Community facilities; Environmental facilities; Flood mitigation works; Information and education facilities; Jetties; Kiosks; Markets; Recreation areas; Recreation facilities (indoor); Recreation facilities (major); Recreation facilities (outdoor); Research stations; Respite day care centres; Restaurants or cafes; Roads; Sewerage systems; Water recreation structures; Water supply systems

3. Prohibited
Any development not specified in item 1 or 2

Administration Centre, 137 Beamish Street,
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DX: 3813 Campsie
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Fax: (02) 9789 1542

1.2 State Environmental Planning Policies

Note:

The following information indicates those State Environmental Planning Policies (SEPP) which may apply to the subject land. A summary explanation of each SEPP can be sourced from the Department of Planning (DoP) website at www.planning.nsw.gov.au . The full wording of each SEPP can also be accessed via the DoP website.

State Environmental Planning Policies:

No. 19 - Bushland in Urban Areas
No. 21 - Caravan Parks
No. 30 - Intensive Agriculture
No. 32 - Urban Consolidation (Redevelopment of Urban Land)
No. 33 - Hazardous and Offensive Development
No. 50 - Canal Estates
No. 55 - Remediation of Land
No. 64 - Advertising and Signage
No. 65 - Design Quality of Residential Flat Development
No. 71 - Coastal Protection
State Environmental Planning Policy - (Housing for Seniors or People with a Disability) 2004
State Environmental Planning Policy - Building Sustainability Index: BASIX 2004
State Environmental Planning Policy - (Repeal of Concurrence and Referral Provisions) 2004.
State Environmental Planning Policy - (Major Projects) 2005
State Environmental Planning Policy - (Mining, Petroleum Production and Extractive Industries) 2007
State Environmental Planning Policy - (Temporary Structures and Places of Public Entertainment) 2007
State Environmental Planning Policy - (Infrastructure) 2007
State Environmental Planning Policy (Repeal of Concurrence and Referral Provisions) 2008
State Environmental Planning Policy (Exempt and Complying Development Codes) 2008
State Environmental Planning Policy (Affordable Rental Housing) 2009

Proposed State Environmental Planning Policies

State Environmental Planning Policy (Competition) 2010

1.3 Proposed Environmental Planning Instruments (including any Planning Proposals) that are or have been the subject of community consultation or on public exhibition under the Act

Not applicable.

1.4 Development Control Plans.

Canterbury Development Control Plan 2012

Contains detailed design guidelines and development standards for development in Canterbury City.

1.5 Contribution Plans.

Council has in place a Development Contributions Plan prepared and adopted under the Environmental Planning and Assessment Act, 1979.

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Fax: (02) 9789 1542

PART 2:
RESTRICTIONS ON DEVELOPMENT

2.1 Heritage

Not applicable.

2.2 Coastal Protection

There is no notification that the subject property is affected by the provisions of Section 38 or 39 of the Coastal Protection Act, 1979.

2.3 Mine Subsidence

The subject land is not within a mine subsidence district within the meaning of Section 15 of the Mine Subsidence Compensation Act, 1961.

2.4 Road Widening and Road Realignment

Whether or not the land is affected by a road widening or road realignment proposal under Division 2 or Part 3 of the Roads Act 1993 or an environmental planning instrument;

The land is not affected by a road widening or road realignment proposal under Division 2 or Part 3 of the Roads Act 1993, or an environmental planning instrument.

Whether or not the land is affected by a road widening or road realignment proposal under any resolution of Council.

The land is not affected by a road widening or road realignment proposal under any resolution of Council.

2.5 Council and Other Public Authority Policies on Hazard Risk Restrictions

Whether or not the land is affected by a policy adopted by Council or adopted by any other public authority (and notified to the Council for the express purpose of its adoption by that authority being referred to) that restricts the development of the land because of the likelihood of:

- **Land Slip**
  The land is not affected by a policy restriction relating to landslip
- **Bushfire**
  The land is not bushfire prone land (as defined in the Act).
- **Tidal Inundation**
  The land is not affected by a policy restriction relating to tidal inundation
- **Subsidence**
  The land is not affected by a policy restriction relating to subsidence
- **Acid Sulfate Soils**
  The land is affected by the Acid Sulfate Soils Assessment Guidelines and Acid Sulfate Soils Planning Guidelines adopted by the Department of Planning and the Department of Environment and Conservation and notified to the Council that restricts the development of the land because of the likelihood of acid sulfate soils.
- **Unhealthy Building Land**
  The land is not affected by a policy restriction relating to Unhealthy Building Land.
- **Any Other Risk**
  Not applicable.

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CAMPSIE N.S.W. 2194
DX: 3813 Campsie
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2.6 Flooding

Development on the land, or part of the land, for the purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group homes or seniors housing) is not subject to any flood related development controls.

Development on the land, or part of the land, for any other purpose is not subject to flood related development controls.

2.7 Matters arising under the Contaminated Land Management Act, 1997.

Not applicable.

2.8 Land Reserved For Acquisition

There is no environmental planning instrument, or proposed environmental planning instrument, applying to the land that makes provision for the acquisition of the land (or any part thereof) by a public authority, as referred to in Section 27 of the Act.

2.9 Property Vegetation Plans

Not applicable

2.10 Orders under Trees (Disputes Between Neighbours) Act 2006

Not applicable

2.11 Directions under Part 3A

Not applicable

2.12 Site Compatibility Certificates and Conditions for Seniors Housing

Not applicable

2.13 Site Compatibility Certificates for Infrastructure

Not applicable

2.14 Site Compatibility Certificates and Conditions for Affordable Rental Housing

Not applicable

2.15 Certain Information Relating to Beaches and Coasts

Not applicable

2.16 Annual charges under Local Government Act 1993 for coastal protection services that relate to existing coastal protection works

Not applicable

2.17 Biodiversity Certified Land

Not applicable

2.18 Paper Subdivision Information

Not applicable

2.19 Site Verification Certificates

Not applicable

Administration Centre, 137 Beamish Street,
CAMPSIE N.S.W. 2194
DX: 3813 Campsie
Telephone: (02) 9789 9300
Fax: (02) 9789 1542

2.20 Complying Development

Whether or not the land is land on which complying development may be carried out under each of the Codes for complying development because of the provisions of clauses 1.17A (c) and (d) and 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 and, if no complying development may be carried out on that land under that Policy, the reasons why complying development may not be carried out on that land.

General Housing Code (if in a residential zone) The land is excluded for the following reason(s):	No. Land Reserved for a Public Purpose
Housing Alterations Code	Yes
General Development Code	Yes
Commercial and Industrial (New Buildings and Additions) Code) The land is excluded for the following reason(s):	No. Land Reserved for a Public Purpose
Commercial and Industrial Alterations Code	Yes
Demolition Code	Yes
Subdivision Code	Yes
Fire Safety Code	Yes

Important Disclaimer: This clause of the Certificate only contains information in respect of that required by clause 3 of Schedule 4 of the Environmental Planning and Assessment Regulation 2000, in relation to Complying Development under State Environmental Planning Policy (Exempt and Complying Development Codes) 2008. Other provisions contained in the SEPP, including but not limited to, minimum allotment size requirements, specified development standards or any other general exclusions, may preclude Complying Development under the SEPP from being able to be carried out. You will need to refer to the SEPP for complete details. It is your responsibility to ensure that you comply with all other general requirements of the SEPP. Failure to comply with these provisions may mean that any Complying Development Certificate issued under the provisions of the SEPP is invalid.

City of Canterbury
City of Cultural Diversity

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PART 3

INFORMATION PROVIDED UNDER SECTION 149 (5) OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979.

Note: *When information pursuant to Section 149(5) is requested the Council is under no obligation to furnish any of the information supplied herein pursuant to that Section. Council draws your attention to Section 149(6), which states that a Council shall not incur any liability in respect of any advice provided in good faith pursuant to sub-section (5). The absence of any reference to any matter affecting the land shall not imply that the land is not affected by any matter not referred to in this Certificate.*

3.1 Amending Local Environmental Plans

Site specific and, where relevant, general amendments to the principal planning instrument are identified below:

Not applicable

3.2 Tree Preservation Order

A tree preservation order applies to the whole of the City of Canterbury.

3.3 Council Policy on Contaminated Land

On the 10 June 1999 Council adopted a policy on contaminated land. This policy will restrict development of land:

a) which is affected by contamination;
a) which has been used for certain purposes;
b) in respect of which there is not sufficient information about contamination;
c) which is proposed to be used for certain purposes;
d) in other circumstances contained in the policy.

3.4 General Advice Regarding Use of Property

Persons considering commencing a use of or purchasing a property are advised to seek confirmation that the current, or intended, use (as the case may be) has been approved by Council, or does not require Council approval. It is pointed out that the question of "existing use rights" within the meaning of the Environmental Planning and Assessment Act, 1979, is a complex matter, and that the commencement of a use without Council approval (where required) is unlawful and may be subject to enforcement action.

3.5 Other Matters

Not applicable.

per **JIM MONTAGUE PSM**
GENERAL MANAGER

APPENDIX C

NSW ENVIRONMENT AND HERITAGE (OEH) RECORDS

NSW EPA

Healthy Environment, Healthy Community, Healthy Business

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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, 8 April 2014 there are 1128 notices in the record relating to 352 sites.

Show me the entire record or Search the record

8 April 2014

Healthy Environment, Healthy Community, Healthy Business

You are here: Home > Contaminated land > Record of notices

Search results

Your search for:LGA: Canterbury City Council

Matched 10 notices relating to 6 sites.

Search Again

Refine Search

Suburb	Address	Site Name	Notices related to this site
Campsie	403 Canterbury Road	Cheapa Petrol, Campsie	1 current
Campsie	60 Charlotte Street	Sunbeam Factory	3 former
Canterbury	13-19 Canterbury Road	Metro Petroleum Service Station	2 current
Earlwood	Lot 3 Jackson Place	Jackson Place, Earlwood	2 current
Hurlstone Park	610 - 618 New Canterbury Road	Speedway Fuels	1 current
Marrickville	Thornley Street/Wanstead Avenue	Sewer Aqueduct - Cooks River	1 former

Page 1 of 1

8 April 2014

Healthy Environment, Healthy Community, Healthy Business

Search results

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

Suburb - CANTERBURY

returned 6 results

Export to excel 1 of 1 Pages Search Again

Number	Name	Location	Type	Status	Issued date
10544	ALL CHROME SHOP PTY LTD	390 CANTERBURY ROAD, CANTERBURY, NSW 2193	POEO licence	Surrendered	23 Feb 2000
1001762	ALL CHROME SHOP PTY LTD	390 CANTERBURY ROAD, CANTERBURY, NSW 2193	s.58 Licence Variation	Issued	18 Sep 2000
1014102	ALL CHROME SHOP PTY LTD	390 CANTERBURY ROAD, CANTERBURY, NSW 2193	s.58 Licence Variation	Issued	21 Jan 2002
1035249	ALL CHROME SHOP PTY LTD	390 CANTERBURY ROAD, CANTERBURY, NSW 2193	s.58 Licence Variation	Issued	10 Mar 2004
1057322	ALL CHROME SHOP PTY LTD	390 CANTERBURY ROAD, CANTERBURY, NSW 2193	s.58 Licence Variation	Issued	15 Mar 2006
789	CANTERBURY CITY COUNCIL	PHILLIPS AVE, CANTERBURY, NSW 2193	POEO licence	Surrendered	26 Apr 2000

08 April 2014

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APPENDIX D

WORKCOVER NSW RECORDS

NSW GOVERNMENT | WorkCover

WorkCover NSW
92-100 Donnison Street, Gosford, NSW 2250
Locked Bag 2906, Lisarow, NSW 2252
T 02 4321 5000 F 02 4325 4145
WorkCover Assistance Service 13 10 50
DX 731 Sydney workcover.nsw.gov.au

Our Ref: D14/033717
Your Ref: Frances Kuipers

18 March 2014

RECEIVED
2 1 MAR 2014
BY: .....

Attention: Frances Kuipers
Geotechnique Pty Ltd
PO BOX 880
Penrith NSW 2750

Dear Ms Kuipers,

RE SITE: 15 Close St Canterbury NSW

I refer to your site search request received by WorkCover NSW on 13 March 2014 requesting information on licences to keep dangerous goods for the above site.

A search of the Stored Chemical Information Database (SCID) and the microfiche records held by WorkCover NSW has not located any records pertaining to the above mentioned premises.

If you have any further queries please contact the Dangerous Goods Licensing Team on (02) 4321 5500.

Yours Sincerely

Brent Jones
Senior Licensing Officer
Dangerous Goods Team

APPENDIX E

TABLE 1 – BOREHOLE AND SAMPLE LOGS

GEOTECHNIQUE PTY LTD

Project	**Proposed Redevelopment**	**Job No**	**13138/1**
Location	**15 Close Street Canterbury**	**Refer to Drawing No**	**13138/1-AA1**
		Logged & Sampled by	**LY**

TABLE 1

Borehole (BH)	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
1	0 - 0.05	No Sample (NS)	18.3.14		Bitumen	
	0.65 - 0.2	0.05 - 0.2			FILL: Gravelly Sand, medium grained, grey, with inclusions of clay	
	0.2 - 1.5	0.25 - 0.35			(Cl) Sandy CLAY, medium plasticity, dark grey	
	1.5 - 4.0	NS			(Cl) Sandy CLAY, medium plasticity, brown and grey with inclusions of ironstone gravel	
2	0 - 0.05	NS	"		Bitumen	
	0.05 - 0.1	NS			ROADBASE	
	0.1 - 0.4	0.1 - 0.4			FILL: Gravelly Sand, medium grained, grey with inclusions of clay	
	0.4 - 0.9	0.45 - 0.55			(Cl) Sandy CLAY, medium plasticity, dark grey	
3	0 - 0.5	0 - 0.3	"		FILL: Sandy Gravel, dark grey and black with inclusions of ash material	
	0.5 - 1.0	0.55 - 0.65			(Cl) Sandy CLAY, medium plasticity, dark grey	
4	0 - 0.5	0 - 0.3	"		FILL: Sandy Gravel, dark grey and black with inclusions of ash material	
	0.5 - 0.8	0.55 - 0.65			(Cl) Sandy CLAY, medium plasticity, brown and grey with inclusions of ironstone gravel	
	0.8	NS			SANDSTONE	
5	0 - 0.3	0 - 0.15	"		TOPSOIL: Silty Sand, medium grained, grey with inclusions of root fibre and clay	
	0.3	NS			SANDSTONE	
6	0 - 0.4	0 - 0.3	"		FILL: Sandy Gravel, dark grey and black with inclusions of ash material	
	0.4 - 0.7	0.45 - 0.55			(Cl) Sandy CLAY, medium plasticity, brown and grey with inclusions of ironstone gravel	
7	0 - 0.5	0 - 0.3	"		FILL: Sandy Gravel, dark grey and black, with inclusions of ash material	
	0.5 - 1.0	0.55 - 0.65			(Cl) Sandy CLAY, medium plasticity, dark grey	

*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	**Proposed Redevelopment**	**Job No**	**13138/1**
Location	**15 Close Street Canterbury**	**Refer to Drawing No**	**13138/1-AA1**
		Logged & Sampled by	**LY**

TABLE 1

Borehole (BH)	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
8	0 - 0.05	NS	18.3.14		Bitumen	
	0.05 - 0.2	0.05 - 0.2			FILL: Gravelly Sand, medium grained, grey with inclusions of clay	
	0.2 - 0.7	0.25 - 0.35			(SP) Clayey SAND, medium grained, grey	
9	0 - 0.05	NS	"		Bitumen	
	0.05 - 0.2	0.05 - 0.2			FILL: Gravelly Sand, medium grained, grey with inclusions of clay	
	0.2 - 0.7	0.25 - 0.35			(CI) Sandy CLAY, medium plasticity, dark grey	
10	0 - 0.15	0 - 0.15	"		TOPSOIL: Silty Sand, medium grained, grey with inclusions of root fibres and clay	
	0.15 - 0.65	0.15 - 0.45			FILL: Sandy Gravel, dark grey and black with inclusions of ash material	
	0.65 - 1.15	0.7 - 0.8			(CI) Sandy CLAY, medium plasticity, dark grey	
11	0 - 0.2	0 - 0.15	"		TOPSOIL: Silty Sand, medium grained, grey with inclusions of root fibres and clay	
	0.2 - 0.6	0.2 - 0.5			FILL: Sandy Gravel, dark grey and black with inclusions of ash material	
	0.6 - 1.1	0.65 - 0.75			(CI) Sandy CLAY, medium plasticity, brown and grey with inclusions of ironstone gravel	
12	0 - 0.2	0 - 0.15	"		TOPSOIL: Silty Sand, medium grained, grey with inclusions of root fibres and clay	
	0.2 - 0.5	NS			(CI) Sandy CLAY, medium plasticity, brown and grey with inclusions of ironstone gravel	
	0.5	NS			SANDSTONE	

*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	**Proposed Redevelopment**	**Job No**	**13138/1**
Location	**15 Close Street Canterbury**	**Refer to Drawing No**	**13138/1-AA1**
		Logged & Sampled by	**LY**

TABLE 1

Borehole (BH)	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
13	0 - 0.3	0 - 0.15	18.3.14		TOPSOIL: Silty Sand, medium grained, grey with inclusions of root fibres and clay	
	0.3 - 0.9	0.3 - 0.6			FILL: Sandy Gravel, dark grey and black with inclusions of ash material	
	0.9 - 1.4	0.95 - 1.15			(Cl) Sandy CLAY, medium plasticity, brown and grey with inclusions of ironstone gravel	
14	0 - 0.2	0 - 0.15	"		TOPSOIL: Silty Sand, medium grained, grey with inclusions of root fibres and clay	
	0.2 - 0.7	0.2 - 0.5			FILL: Sandy Gravel, dark grey and black, with inclusions of ash material	
	0.7 - 1.2	0.75 - 0.85			(Cl) Sandy CLAY, medium plasticity, brown and grey, with inclusions of ironstone gravel	
15	0 - 0.2	0 - 0.15	"		TOPSOIL: Silty Sand, medium grained, grey with inclusions of root fibres and clay	
	0.2 - 1.2	0.2 - 0.5			FILL: Sandy Gravel, dark grey and black with inclusion of ash material	
		0.9 - 1.2			FILL: Sandy Gravel dark grey and black with inclusions of ash material	
	1.2 - 1.7	1.25 - 1.35			(Cl) Sandy CLAY, medium plasticity, brown and grey, with inclusions of ironstone gravel	
16	0 - 0.1	0 - 0.1	"		TOPSOIL: Silty Sand, medium grained, grey with inclusions of root fibres and clay	
	0.1 - 3.4	0.1 - 0.4			FILL: Silty Clay, medium plasticity, grey with inclusions of shale and sandstone fragments and roots	
		1.1 - 1.4			FILL: Silty Clay, medium plasticity, grey with inclusions of shale and sandstone fragments and roots	
		2.1 - 2.4			FILL: Silty Clay, medium plasticity, grey with inclusions of shale and sandstone fragments and roots	
		3.1 - 3.4			FILL: Silty Clay, medium plasticity, grey with inclusions of shale and sandstone fragments and roots	
	3.4 - 3.8	3.45 - 3.55			(Cl) Sandy CLAY, medium plasticity, dark grey	

*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	**Proposed Redevelopment**	**Job No**	**13138/1**
Location	**15 Close Street Canterbury**	**Refer to Drawing No**	**13138/1-AA1**
		Logged & Sampled by	**LY**

TABLE 1

Borehole (BH)	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
17	0 - 0.2	0 - 0.15	18.3.14		TOPSOIL: Silty Sand, medium grained, grey with inclusions of root fibres and clay	
	0.2 - 1.2	0.2 - 0.5			FILL: Gravelly Sand, medium grained, grey with inclusions of clay	
		0.7 - 1.0			FILL: Gravelly Sand, medium grained, grey with inclusions of clay	
	1.2 - 1.5	1.25 - 1.35			(Cl) Sandy CLAY, medium plasticity, dark grey	
18	0 - 0.2	0 - 0.15	"		TOPSOIL: Silty Sand, medium grained, grey with inclusions of root fibres and clay	
	0.2 - 3.0	NS			(Cl) Sandy CLAY, medium plasticity, brown and grey with inclusions of ironstone gravel	
	3.0	NS			Refusal	
19	0 - 0.2	0 - 0.15	"		TOPSOIL: Silty Sand, medium grained, grey with inclusions of root fibres and clay	
	0.2 - 0.7	NS			(Cl) Sandy CLAY, medium plasticity, brown and grey, with inclusions of ironstone gravel	
20	0 - 0.2	0 - 0.15	"		TOPSOIL: Silty Sand, medium grained, grey with inclusions of root fibres and clay	
	0.2 - 0.7	NS			(SP) Clayey SAND, medium grained, grey	

*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	**Proposed Redevelopment**	**Job No**	**13138/1**
Location	**15 Close Street Canterbury**	**Refer to Drawing No**	**13138/1-AA1**
		Logged & Sampled by	**LY**

TABLE 1

Borehole (BH)	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
21	0 - 0.2	0 - 0.15	18.3.14		TOPSOIL; Silty Sand, medium grained, grey with inclusions of root fibres and clay	
	0.2 - 0.8	0.2 - 0.5			FILL: Sand, fine grained grey	
	0.8 - 1.85	0.8 - 1.1			FILL: Silty Clay, medium plasticity, grey with inclusions of shale and sandstone fragments and roots	
		1.3 - 1.6			FILL: Silty Clay, medium plasticity, grey with inclusions of shale and sandstone fragments and roots	
		1.75 - 1.85			FILL: Silty Clay, medium plasticity, grey with inclusions of shale and sandstone fragments and roots	
	1.85 - 3.8	NS			(CI) Sandy CLAY, medium plasticity, dark grey	

*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.

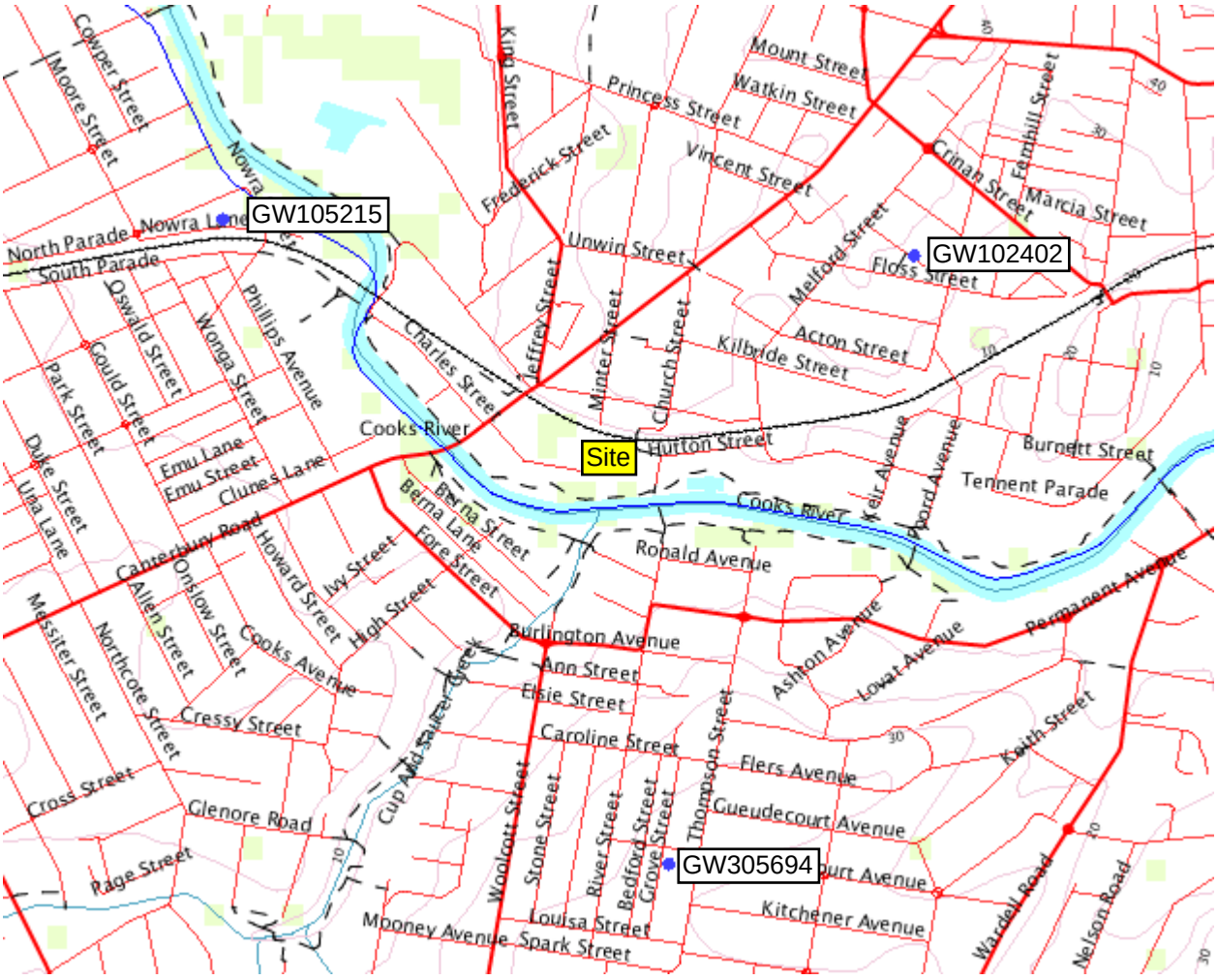
APPENDIX F

GROUNDWATER MAPS AND BORE DATA

13138/1 Groundwater Map

Map created with NSW Natural Resource Atlas - http://www.nratlas.nsw.gov.au

Tuesday, April 08, 2014



Legend

Symbol	Layer	Custodian
	Cities and large towns renderImage: Cannot build image from features	
Cowra	Populated places renderImage: Cannot build image from features	
	Towns	
	Groundwater Bores	
	Catchment Management Authority boundaries	
	Major rivers	
	Topographic base map	

Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Tuesday, April 8, 2014

Print Report

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW102402

Works Details (top)

GROUNDWATER NUMBER	GW102402
LIC-NUM	10WA108367
AUTHORISED-PURPOSES	DOMESTIC
INTENDED-PURPOSES	
WORK-TYPE	Bore
WORK-STATUS	(Unknown)
CONSTRUCTION-METHOD	
OWNER-TYPE	
COMMENCE-DATE	
COMPLETION-DATE	1996-01-01
FINAL-DEPTH (metres)	90.00
DRILLED-DEPTH (metres)	
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	SILVA
GWMA	-
GW-ZONE	-
STANDING-WATER-LEVEL	
SALINITY	
YIELD	

Site Details (top)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6246390.00
EASTING	326938.00
LATITUDE	33 54' 31"
LONGITUDE	151 7' 41"
GS-MAP	

AMG-ZONE	56
COORD-SOURCE	GIS - Geographic Information System
REMARK	

Form-A (top)

no details

Licensed (top)

COUNTY	CUMBERLAND
PARISH	PETERSHAM
PORTION-LOT-DP	26 5924

Construction (top)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE-NO	PIPE-NO	COMPONENT-CODE	COMPONENT-TYPE	DEPTH-FROM (metres)	DEPTH-TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1	1	Casing	(Unknown)	0.00	0.00	125			

Water Bearing Zones (top)

no details

Drillers Log (top)

no details

Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Tuesday, April 8, 2014

Print Report

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW105215

Works Details (top)

GROUNDWATER NUMBER	GW105215
LIC-NUM	10WA108527
AUTHORISED-PURPOSES	DOMESTIC
INTENDED-PURPOSES	DOMESTIC
WORK-TYPE	Bore
WORK-STATUS	Supply Obtained
CONSTRUCTION-METHOD	
OWNER-TYPE	Private
COMMENCE-DATE	
COMPLETION-DATE	2003-06-05
FINAL-DEPTH (metres)	15.00
DRILLED-DEPTH (metres)	
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	N/A
GWMA	-
GW-ZONE	-
STANDING-WATER-LEVEL	
SALINITY	
YIELD	

Site Details (top)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	213 - SYDNEY COAST - GEORGES RIVER
AREA-DISTRICT	
CMA-MAP	9130-3S
GRID-ZONE	56/1
SCALE	1:25,000
ELEVATION	
ELEVATION-SOURCE	(Unknown)
NORTHING	6246456.00
EASTING	325448.00
LATITUDE	33 54' 28"
LONGITUDE	151 6' 43"
GS-MAP	

AMG-ZONE	56
COORD-SOURCE	
REMARK	

Form-A (top)

COUNTY	CUMBERLAND
PARISH	ST GEORGE
PORTION-LOT-DP	LT 7 DP 12648

Licensed (top)

COUNTY	CUMBERLAND
PARISH	ST GEORGE
PORTION-LOT-DP	7 12648

Construction (top)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE-NO	PIPE-NO	COMPONENT-CODE	COMPONENT-TYPE	DEPTH-FROM (metres)	DEPTH-TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1		Hole	Hole	0.00	15.00	175			Hand Dug
1		Hole	Hole	0.00	15.00	175			Hand Drilled
1	1	Casing	Lining	0.00	0.00				

Water Bearing Zones (top)

no details

Drillers Log (top)

no details

Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Tuesday, April 8, 2014

Print Report

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW305694

Works Details (top)

GROUNDWATER NUMBER	GW305694
LIC-NUM	30BL181476
AUTHORISED-PURPOSES	DOMESTIC
INTENDED-PURPOSES	DOMESTIC
WORK-TYPE	Spear
WORK-STATUS	New Bore
CONSTRUCTION-METHOD	
OWNER-TYPE	Private
COMMENCE-DATE	
COMPLETION-DATE	2003-02-20
FINAL-DEPTH (metres)	5.00
DRILLED-DEPTH (metres)	
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	MACKNEY'S
GWMA	-
GW-ZONE	-
STANDING-WATER-LEVEL	
SALINITY	
YIELD	0.30

Site Details (top)

REGION	30 - NORTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6244811.00
EASTING	326438.00
LATITUDE	33 55' 22"
LONGITUDE	151 7' 21"
GS-MAP	

AMG-ZONE	56
COORD-SOURCE	Map Interpretation
REMARK	

Form-A (top)

COUNTY	CUMBERLAND
PARISH	ST GEORGE
PORTION-LOT-DP	3//12541

Licensed (top)

COUNTY	CUMBERLAND
PARISH	ST GEORGE
PORTION-LOT-DP	3 12541

Water Bearing Zones (top)

no details

Drillers Log (top)

no details

APPENDIX G

PID CALIBRATION SHEET

GEOTECHNIQUE
PTY LTD

PID CALIBRATION

CLIENT	JBA Urban Development Services	JOB NO	13138/1
PROJECT	Proposed Redevelopment	DATE	18/03/2014
ADDRESS	15 Close Street, Canterbury	CHECKED BY	LY
PID MODEL	**PID MODEL: PGM – 7600 MINIRAE 2000**	CALIBRATED BY	LY
SERIAL NO	**SERIAL NO: 110 – 005380**		

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

☒ **Charged***

☒ **Calibrate** **0.0ppm** **Reading:** 0 **ppm**

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

Gas Bottle Number 31 **Lot No** 934758

Signed & Approved Date: 18/03/2014

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

APPENDIX H

SGS ENVIRONMENTAL SERVICES ANALYTICAL REPORTS
AND
ENVIROLAB SERVICES CERTIFICATE OF ANALYSIS

ANALYTICAL REPORT

WORLD RECOGNISED ACCREDITATION

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	**13138-1 - Canterbury**
Order Number	(Not specified)
Samples	57
Date Received	19/3/2014

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	**SE126027 R0**
Report Number	0000078896
Date Reported	27/3/2014

COMMENTS

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

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

Asbestos analysed by Approved Identifier Yusuf Kuthpudin.

SIGNATORIES

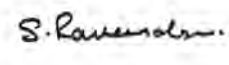
Deanne Norris
Organic Chemist

Dong Liang
Metals/Inorganics Team Leader

Huong Crawford
Production Manager

Kamrul Ahsan
Senior Chemist

Ly Kim Ha
Organic Section Head



Ravee Sivasubramaniam
Asbestos Analyst

VOC's in Soil [AN433/AN434]

PARAMETER	UOM	LOR	BH1 0.05-0.2 SOIL 18/3/2014 SE126027.001	BH4 0-0.3 SOIL 18/3/2014 SE126027.005	BH7 0-0.3 SOIL 18/3/2014 SE126027.009	BH10 0.15-0.45 SOIL 18/3/2014 SE126027.014	BH13 0.3-0.6 SOIL 18/3/2014 SE126027.019	BH16 2.1-2.4 SOIL 18/3/2014 SE126027.028
Benzene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.10	<0.1	0.2	0.2	0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Naphthalene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes*	mg/kg	0.30	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX*	mg/kg	0.60	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6

PARAMETER	UOM	LOR	BH17 0.2-0.5 SOIL 18/3/2014 SE126027.032	BH21 0.2-0.5 SOIL 18/3/2014 SE126027.036	BH21 1.3-1.6 SOIL 18/3/2014 SE126027.038	X3 SOIL 18/3/2014 SE126027.042	Tripspike TS1 SAND 18/3/2014 SE126027.044
Benzene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	[74%]
Toluene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	[82%]
Ethylbenzene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	[77%]
m/p-xylene	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	[82%]
o-xylene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	[77%]
Naphthalene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes*	mg/kg	0.30	<0.3	<0.3	<0.3	<0.3	-
Total BTEX*	mg/kg	0.60	<0.6	<0.6	<0.6	<0.6	-

Volatile Petroleum Hydrocarbons in Soil [AN433/AN434/AN410]

PARAMETER	UOM	LOR	BH1 0.05-0.2 SOIL 18/3/2014 SE126027.001	BH4 0-0.3 SOIL 18/3/2014 SE126027.005	BH7 0-0.3 SOIL 18/3/2014 SE126027.009	BH10 0.15-0.45 SOIL 18/3/2014 SE126027.014	BH13 0.3-0.6 SOIL 18/3/2014 SE126027.019	BH16 2.1-2.4 SOIL 18/3/2014 SE126027.028
Benzene (F0)	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20	<20
TRH C6-C10	mg/kg	25.0	<25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25.0	<25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	BH17 0.2-0.5 SOIL 18/3/2014 SE126027.032	BH21 0.2-0.5 SOIL 18/3/2014 SE126027.036	BH21 1.3-1.6 SOIL 18/3/2014 SE126027.038	X3 SOIL 18/3/2014 SE126027.042
Benzene (F0)	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1
TRH C6-C9	mg/kg	20	<20	<20	<20	<20
TRH C6-C10	mg/kg	25.0	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25.0	<25	<25	<25	<25

TRH (Total Recoverable Hydrocarbons) in Soil [AN403]

PARAMETER	UOM	LOR	BH1 0.05-0.2 SOIL 18/3/2014 SE126027.001	BH4 0-0.3 SOIL 18/3/2014 SE126027.005	BH7 0-0.3 SOIL 18/3/2014 SE126027.009	BH10 0.15-0.45 SOIL 18/3/2014 SE126027.014	BH13 0.3-0.6 SOIL 18/3/2014 SE126027.019	BH16 2.1-2.4 SOIL 18/3/2014 SE126027.028
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45.0	<45	<45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45.0	<45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100	<100
TRH >C10-C16 (F2)	mg/kg	25.0	<25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110	<110
TRH C10-C40 Total	mg/kg	210	<210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	BH17 0.2-0.5 SOIL 18/3/2014 SE126027.032	BH21 0.2-0.5 SOIL 18/3/2014 SE126027.036	BH21 1.3-1.6 SOIL 18/3/2014 SE126027.038	X3 SOIL 18/3/2014 SE126027.042
TRH C10-C14	mg/kg	20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45.0	**94**	<45	<45	<45
TRH C29-C36	mg/kg	45.0	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100
TRH >C10-C16 (F2)	mg/kg	25.0	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	**130**	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110
TRH C10-C40 Total	mg/kg	210	<210	<210	<210	<210

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420]

PARAMETER	UOM	LOR	BH1 0.05-0.2 SOIL 18/3/2014 SE126027.001	BH3 0-0.3 SOIL 18/3/2014 SE126027.003	BH4 0-0.3 SOIL 18/3/2014 SE126027.005	BH6 0-0.3 SOIL 18/3/2014 SE126027.007	BH7 0-0.3 SOIL 18/3/2014 SE126027.009	BH10 0.15-0.45 SOIL 18/3/2014 SE126027.014
Naphthalene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	0.1	<0.1
1-methylnaphthalene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.10	<0.1	0.2	<0.1	0.1	0.2	<0.1
Anthracene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a&h)anthracene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total PAH	mg/kg	0.80	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Carcinogenic PAHs (as BaP TEQ)	TEQ	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

PARAMETER	UOM	LOR	BH11 0.2-0.5 SOIL 18/3/2014 SE126027.016	BH13 0.3-0.6 SOIL 18/3/2014 SE126027.019	BH14 0.2-0.5 SOIL 18/3/2014 SE126027.021	BH15 0.2-0.5 SOIL 18/3/2014 SE126027.023	BH15 0.9-1.2 SOIL 18/3/2014 SE126027.024	BH16 2.1-2.4 SOIL 18/3/2014 SE126027.028
Naphthalene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	0.2	0.5
Anthracene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	0.1
Fluoranthene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	1.2
Pyrene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	1.2
Benzo(a)anthracene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	0.8
Chrysene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	0.5
Benzo(b&j)fluoranthene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	0.8
Benzo(k)fluoranthene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	0.5
Benzo(a)pyrene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	0.8
Indeno(1,2,3-cd)pyrene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	0.7
Dibenzo(a&h)anthracene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	0.4
Total PAH	mg/kg	0.80	<0.8	<0.8	<0.8	<0.8	<0.8	7.6
Carcinogenic PAHs (as BaP TEQ)	TEQ	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	1.1

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] (continued)

PARAMETER	UOM	LOR	BH17 0.2-0.5 SOIL 18/3/2014 SE126027.032	BH21 0.2-0.5 SOIL 18/3/2014 SE126027.036	BH21 1.3-1.6 SOIL 18/3/2014 SE126027.038	X3 SOIL 18/3/2014 SE126027.042
Naphthalene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.10	1.3	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.10	0.4	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.10	3.4	<0.1	0.3	<0.1
Pyrene	mg/kg	0.10	3.6	<0.1	0.3	<0.1
Benzo(a)anthracene	mg/kg	0.10	2.7	<0.1	0.2	<0.1
Chrysene	mg/kg	0.10	1.6	<0.1	0.2	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.10	2.3	<0.1	0.2	<0.1
Benzo(k)fluoranthene	mg/kg	0.10	1.1	<0.1	0.2	<0.1
Benzo(a)pyrene	mg/kg	0.10	2.4	<0.1	0.2	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.10	1.6	<0.1	0.2	<0.1
Dibenzo(a&h)anthracene	mg/kg	0.10	0.2	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.10	1.1	<0.1	0.2	<0.1
Total PAH	mg/kg	0.80	22	<0.8	2.2	<0.8
Carcinogenic PAHs (as BaP TEQ)	TEQ	0.20	3.4	<0.2	0.3	<0.2

OC Pesticides in Soil [AN400/AN420]

PARAMETER	UOM	LOR	C1 SOIL 18/3/2014 SE126027.045	C2 SOIL 18/3/2014 SE126027.046	C3 SOIL 18/3/2014 SE126027.047	C4 SOIL 18/3/2014 SE126027.048	C5 SOIL 18/3/2014 SE126027.049	C6 SOIL 18/3/2014 SE126027.050
Hexachlorobenzene (HCB)	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	**0.1**
p,p'-DDE	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	**0.1**
Dieldrin	mg/kg	0.050	<0.05	<0.05	<0.05	**0.30**	**0.16**	**0.48**
Endrin	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

OC Pesticides in Soil [AN400/AN420] (continued)

PARAMETER	UOM	LOR	C7 SOIL 18/3/2014 SE126027.051	C8 SOIL 18/3/2014 SE126027.052	C9 SOIL 18/3/2014 SE126027.053	C10 SOIL 18/3/2014 SE126027.054	C11 SOIL 18/3/2014 SE126027.055	Duplicate D101 SOIL 18/3/2014 SE126027.056
Hexachlorobenzene (HCB)	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.050	**0.21**	**0.10**	**0.11**	**0.23**	**0.15**	<0.05
Endrin	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

OP Pesticides in Soil [AN400/AN420]

PARAMETER	UOM	LOR	C1 SOIL 18/3/2014 SE126027.045	C2 SOIL 18/3/2014 SE126027.046	C3 SOIL 18/3/2014 SE126027.047	C4 SOIL 18/3/2014 SE126027.048	C5 SOIL 18/3/2014 SE126027.049	C6 SOIL 18/3/2014 SE126027.050
Dichlorvos	mg/kg	0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

PARAMETER	UOM	LOR	C7 SOIL 18/3/2014 SE126027.051	C8 SOIL 18/3/2014 SE126027.052	C9 SOIL 18/3/2014 SE126027.053	C10 SOIL 18/3/2014 SE126027.054	C11 SOIL 18/3/2014 SE126027.055	Duplicate D101 SOIL 18/3/2014 SE126027.056
Dichlorvos	mg/kg	0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

PCBs in Soil [AN400/AN420]

PARAMETER	UOM	LOR	C1 SOIL 18/3/2014 SE126027.045	C2 SOIL 18/3/2014 SE126027.046	C3 SOIL 18/3/2014 SE126027.047	C8 SOIL 18/3/2014 SE126027.052	C9 SOIL 18/3/2014 SE126027.053	C10 SOIL 18/3/2014 SE126027.054
Arochlor 1016	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1.0	<1	<1	<1	<1	<1	<1

PARAMETER	UOM	LOR	C11 SOIL 18/3/2014 SE126027.055	Duplicate D101 SOIL 18/3/2014 SE126027.056
Arochlor 1016	mg/kg	0.20	<0.2	<0.2
Arochlor 1221	mg/kg	0.20	<0.2	<0.2
Arochlor 1232	mg/kg	0.20	<0.2	<0.2
Arochlor 1242	mg/kg	0.20	<0.2	<0.2
Arochlor 1248	mg/kg	0.20	<0.2	<0.2
Arochlor 1254	mg/kg	0.20	<0.2	<0.2
Arochlor 1260	mg/kg	0.20	<0.2	<0.2
Arochlor 1262	mg/kg	0.20	<0.2	<0.2
Arochlor 1268	mg/kg	0.20	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1.0	<1	<1

Total Phenolics in Soil [AN289]

PARAMETER	UOM	LOR	C1 SOIL 18/3/2014 SE126027.045	C2 SOIL 18/3/2014 SE126027.046	C3 SOIL 18/3/2014 SE126027.047	C8 SOIL 18/3/2014 SE126027.052	C9 SOIL 18/3/2014 SE126027.053	C10 SOIL 18/3/2014 SE126027.054
Total Phenols	mg/kg	0.10	0.2	1.6	0.7	<0.1	0.2	0.2

PARAMETER	UOM	LOR	C11 SOIL 18/3/2014 SE126027.055	Duplicate D101 SOIL 18/3/2014 SE126027.056
Total Phenols	mg/kg	0.10	0.1	<0.1

Total Cyanide in soil by Discrete Analyser (Aquakem) [AN077/AN287]

PARAMETER	UOM	LOR	C1 SOIL 18/3/2014 SE126027.045	C2 SOIL 18/3/2014 SE126027.046	C3 SOIL 18/3/2014 SE126027.047	C8 SOIL 18/3/2014 SE126027.052	C9 SOIL 18/3/2014 SE126027.053	C10 SOIL 18/3/2014 SE126027.054
Total Cyanide	mg/kg	0.10	**0.1**	**0.2**	<0.1	<0.1	**0.1**	<0.1

PARAMETER	UOM	LOR	C11 SOIL 18/3/2014 SE126027.055	Duplicate D101 SOIL 18/3/2014 SE126027.056
Total Cyanide	mg/kg	0.10	<0.1	**0.1**

pH in soil (1:5) [AN101]

PARAMETER	UOM	LOR	BH1 0.05-0.2 SOIL 18/3/2014 SE126027.001	BH3 0.55-0.65 SOIL 18/3/2014 SE126027.004	BH4 0-0.3 SOIL 18/3/2014 SE126027.005	BH6 0.45-0.55 SOIL 18/3/2014 SE126027.008	BH7 0-0.3 SOIL 18/3/2014 SE126027.009	BH8 0.25-0.35 SOIL 18/3/2014 SE126027.011
pH	pH Units	-	8.4	5.9	7.7	6.8	7.7	7.0

PARAMETER	UOM	LOR	BH10 0-0.15 SOIL 18/3/2014 SE126027.013	BH12 0-0.15 SOIL 18/3/2014 SE126027.017	BH16 2.1-2.4 SOIL 18/3/2014 SE126027.028	BH17 0.2-0.5 SOIL 18/3/2014 SE126027.032	BH21 0.2-0.5 SOIL 18/3/2014 SE126027.036	BH21 1.3-1.6 SOIL 18/3/2014 SE126027.038
pH	pH Units	-	4.8	5.2	4.9	4.7	4.8	5.8

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) [AN122]

PARAMETER	UOM	LOR	BH1 0.05-0.2 SOIL 18/3/2014 SE126027.001	BH3 0.55-0.65 SOIL 18/3/2014 SE126027.004	BH4 0-0.3 SOIL 18/3/2014 SE126027.005	BH6 0.45-0.55 SOIL 18/3/2014 SE126027.008	BH7 0-0.3 SOIL 18/3/2014 SE126027.009	BH8 0.25-0.35 SOIL 18/3/2014 SE126027.011
Exchangeable Sodium, Na	mg/kg	2.0	430	130	630	150	120	37
Exchangeable Sodium, Na	meq/100g	0.010	1.9	0.55	2.7	0.66	0.52	0.16
Exchangeable Sodium Percentage*	%	0.10	4.9	9.1	19.2	12.5	3.3	4.5
Exchangeable Potassium, K	mg/kg	2.0	170	130	65	75	96	24
Exchangeable Potassium, K	meq/100g	0.010	0.42	0.32	0.16	0.19	0.25	0.06
Exchangeable Potassium	%	0.10	1.1	5.4	1.2	3.7	1.6	1.7
Exchangeable Calcium, Ca	mg/kg	2.0	5200	700	1800	710	2500	550
Exchangeable Calcium, Ca	meq/100g	0.010	26	3.5	9.1	3.6	12	2.8
Exchangeable Calcium Percentage*	%	0.10	68.3	58.4	63.5	68.0	78.5	76.5
Exchangeable Magnesium, Mg	mg/kg	2.0	1200	200	280	100	320	76
Exchangeable Magnesium, Mg	meq/100g	0.020	9.7	1.6	2.3	0.83	2.6	0.62
Exchangeable Magnesium	%	0.10	25.6	27.2	16.1	15.8	16.7	17.3
Cation Exchange Capacity	meq/100g	0.020	38	6.0	14	5.2	16	3.6

PARAMETER	UOM	LOR	BH10 0-0.15 SOIL 18/3/2014 SE126027.013	BH12 0-0.15 SOIL 18/3/2014 SE126027.017	BH16 2.1-2.4 SOIL 18/3/2014 SE126027.028	BH17 0.2-0.5 SOIL 18/3/2014 SE126027.032	BH21 0.2-0.5 SOIL 18/3/2014 SE126027.036	BH21 1.3-1.6 SOIL 18/3/2014 SE126027.038
Exchangeable Sodium, Na	mg/kg	2.0	7	15	160	27	6	84
Exchangeable Sodium, Na	meq/100g	0.010	0.03	0.06	0.71	0.12	0.03	0.37
Exchangeable Sodium Percentage*	%	0.10	1.9	1.5	4.7	1.3	2.4	3.4
Exchangeable Potassium, K	mg/kg	2.0	36	110	110	150	19	160
Exchangeable Potassium, K	meq/100g	0.010	0.09	0.29	0.27	0.39	0.05	0.40
Exchangeable Potassium	%	0.10	5.5	6.6	1.8	4.2	4.1	3.7
Exchangeable Calcium, Ca	mg/kg	2.0	270	670	2400	1400	180	1300
Exchangeable Calcium, Ca	meq/100g	0.010	1.3	3.3	12	7.1	0.91	6.7
Exchangeable Calcium Percentage*	%	0.10	79.3	77.0	81.3	77.5	77.5	62.2
Exchangeable Magnesium, Mg	mg/kg	2.0	27	79	220	190	23	400
Exchangeable Magnesium, Mg	meq/100g	0.020	0.22	0.65	1.8	1.5	0.19	3.3
Exchangeable Magnesium	%	0.10	13.3	14.9	12.2	17.0	16.0	30.6
Cation Exchange Capacity	meq/100g	0.020	1.7	4.3	15	9.1	1.2	11

TOC in Soil [AN188]

PARAMETER	UOM	LOR	BH1 0.05-0.2 SOIL 18/3/2014 SE126027.001	BH3 0.55-0.65 SOIL 18/3/2014 SE126027.004	BH4 0-0.3 SOIL 18/3/2014 SE126027.005	BH6 0.45-0.55 SOIL 18/3/2014 SE126027.008	BH7 0-0.3 SOIL 18/3/2014 SE126027.009	BH8 0.25-0.35 SOIL 18/3/2014 SE126027.011
Total Organic Carbon	%w/w	0.050	0.73	1.4	2.3	0.14	1.8	0.43

PARAMETER	UOM	LOR	BH10 0-0.15 SOIL 18/3/2014 SE126027.013	BH12 0-0.15 SOIL 18/3/2014 SE126027.017	BH16 2.1-2.4 SOIL 18/3/2014 SE126027.028	BH17 0.2-0.5 SOIL 18/3/2014 SE126027.032	BH21 0.2-0.5 SOIL 18/3/2014 SE126027.036	BH21 1.3-1.6 SOIL 18/3/2014 SE126027.038
Total Organic Carbon	%w/w	0.050	1.0	2.0	0.08	0.42	0.51	0.17

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest [AN040/AN320]

PARAMETER	UOM	LOR	BH3 0.55-0.65 SOIL 18/3/2014 SE126027.004	BH6 0.45-0.55 SOIL 18/3/2014 SE126027.008	BH8 0.25-0.35 SOIL 18/3/2014 SE126027.011	BH15 1.25-1.35 SOIL 18/3/2014 SE126027.025	BH16 3.45-3.55 SOIL 18/3/2014 SE126027.030	BH21 1.75-1.85 SOIL 18/3/2014 SE126027.039
Arsenic, As	mg/kg	3.0	4	<3	<3	<3	<3	43
Cadmium, Cd	mg/kg	0.30	<0.3	<0.3	<0.3	<0.3	0.3	0.9
Chromium, Cr	mg/kg	0.30	12	9.2	5.4	6.7	7.8	18
Copper, Cu	mg/kg	0.50	9.6	1.1	4.8	2.8	9.9	73
Lead, Pb	mg/kg	1.0	20	4	22	9	23	200
Nickel, Ni	mg/kg	0.50	12	4.2	3.1	0.9	2.4	8.8
Zinc, Zn	mg/kg	0.50	43	4.5	17	5.3	22	360

PARAMETER	UOM	LOR	C1 SOIL 18/3/2014 SE126027.045	C2 SOIL 18/3/2014 SE126027.046	C3 SOIL 18/3/2014 SE126027.047	C4 SOIL 18/3/2014 SE126027.048	C5 SOIL 18/3/2014 SE126027.049	C6 SOIL 18/3/2014 SE126027.050
Arsenic, As	mg/kg	3.0	3	<3	<3	<3	5	<3
Cadmium, Cd	mg/kg	0.30	0.4	0.6	0.4	2.2	0.8	1.1
Chromium, Cr	mg/kg	0.30	13	31	55	6.1	7.5	9.8
Copper, Cu	mg/kg	0.50	72	16	19	6.9	19	12
Lead, Pb	mg/kg	1.0	11	22	8	10	23	21
Nickel, Ni	mg/kg	0.50	75	28	56	2.6	2.7	3.1
Zinc, Zn	mg/kg	0.50	45	120	39	13	21	29

PARAMETER	UOM	LOR	C7 SOIL 18/3/2014 SE126027.051	C8 SOIL 18/3/2014 SE126027.052	C9 SOIL 18/3/2014 SE126027.053	C10 SOIL 18/3/2014 SE126027.054	C11 SOIL 18/3/2014 SE126027.055	Duplicate D101 SOIL 18/3/2014 SE126027.056
Arsenic, As	mg/kg	3.0	7	<3	<3	<3	5	<3
Cadmium, Cd	mg/kg	0.30	0.5	0.5	0.6	0.4	0.4	0.5
Chromium, Cr	mg/kg	0.30	9.0	5.2	5.8	5.7	7.7	17
Copper, Cu	mg/kg	0.50	30	8.2	10	9.2	15	68
Lead, Pb	mg/kg	1.0	100	8	13	21	49	17
Nickel, Ni	mg/kg	0.50	3.3	9.5	9.0	1.5	2.4	76
Zinc, Zn	mg/kg	0.50	53	10	15	15	37	50

Mercury in Soil [AN312]

PARAMETER	UOM	LOR	BH3 0.55-0.65 SOIL 18/3/2014 SE126027.004	BH6 0.45-0.55 SOIL 18/3/2014 SE126027.008	BH8 0.25-0.35 SOIL 18/3/2014 SE126027.011	BH15 1.25-1.35 SOIL 18/3/2014 SE126027.025	BH16 3.45-3.55 SOIL 18/3/2014 SE126027.030	BH21 1.75-1.85 SOIL 18/3/2014 SE126027.039
Mercury	mg/kg	0.010	0.05	<0.01	0.08	0.03	0.49	0.17

PARAMETER	UOM	LOR	C1 SOIL 18/3/2014 SE126027.045	C2 SOIL 18/3/2014 SE126027.046	C3 SOIL 18/3/2014 SE126027.047	C4 SOIL 18/3/2014 SE126027.048	C5 SOIL 18/3/2014 SE126027.049	C6 SOIL 18/3/2014 SE126027.050
Mercury	mg/kg	0.010	<0.01	0.09	0.03	0.45	0.30	0.92

PARAMETER	UOM	LOR	C7 SOIL 18/3/2014 SE126027.051	C8 SOIL 18/3/2014 SE126027.052	C9 SOIL 18/3/2014 SE126027.053	C10 SOIL 18/3/2014 SE126027.054	C11 SOIL 18/3/2014 SE126027.055	Duplicate D101 SOIL 18/3/2014 SE126027.056
Mercury	mg/kg	0.010	0.43	0.45	0.43	0.13	0.23	0.03

Fibre Identification in soil [AN602]

PARAMETER	UOM	LOR	BH1 0.05-0.2 SOIL 18/3/2014 SE126027.001	BH4 0-0.3 SOIL 18/3/2014 SE126027.005	BH7 0-0.3 SOIL 18/3/2014 SE126027.009	BH10 0.15-0.45 SOIL 18/3/2014 SE126027.014	BH13 0.3-0.6 SOIL 18/3/2014 SE126027.019	BH16 2.1-2.4 SOIL 18/3/2014 SE126027.028
Asbestos Detected	No unit	-	No	No	No	No	No	No
Estimated Fibres	%w/w	0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

PARAMETER	UOM	LOR	BH17 0.2-0.5 SOIL 18/3/2014 SE126027.032	BH21 0.2-0.5 SOIL 18/3/2014 SE126027.036	BH21 1.3-1.6 SOIL 18/3/2014 SE126027.038
Asbestos Detected	No unit	-	No	No	No
Estimated Fibres	%w/w	0.010	<0.01	<0.01	<0.01

Moisture Content [AN002]

PARAMETER	UOM	LOR	BH1 0.05-0.2 SOIL 18/3/2014 SE126027.001	BH2 0.1-0.4 SOIL 18/3/2014 SE126027.002	BH3 0-0.3 SOIL 18/3/2014 SE126027.003	BH3 0.55-0.65 SOIL 18/3/2014 SE126027.004	BH4 0-0.3 SOIL 18/3/2014 SE126027.005	BH5 0-0.15 SOIL 18/3/2014 SE126027.006
% Moisture	%	0.50	8.2	-	25	15	25	-

PARAMETER	UOM	LOR	BH6 0-0.3 SOIL 18/3/2014 SE126027.007	BH6 0.45-0.55 SOIL 18/3/2014 SE126027.008	BH7 0-0.3 SOIL 18/3/2014 SE126027.009	BH8 0.05-0.2 SOIL 18/3/2014 SE126027.010	BH8 0.25-0.35 SOIL 18/3/2014 SE126027.011	BH9 0.05-0.2 SOIL 18/3/2014 SE126027.012
% Moisture	%	0.50	19	11	18	-	9.9	-

PARAMETER	UOM	LOR	BH10 0-0.15 SOIL 18/3/2014 SE126027.013	BH10 0.15-0.45 SOIL 18/3/2014 SE126027.014	BH11 0-0.15 SOIL 18/3/2014 SE126027.015	BH11 0.2-0.5 SOIL 18/3/2014 SE126027.016	BH12 0-0.15 SOIL 18/3/2014 SE126027.017	BH13 0-0.15 SOIL 18/3/2014 SE126027.018
% Moisture	%	0.50	8.5	17	-	12	13	-

PARAMETER	UOM	LOR	BH13 0.3-0.6 SOIL 18/3/2014 SE126027.019	BH14 0-0.15 SOIL 18/3/2014 SE126027.020	BH14 0.2-0.5 SOIL 18/3/2014 SE126027.021	BH15 0-0.15 SOIL 18/3/2014 SE126027.022	BH15 0.2-0.5 SOIL 18/3/2014 SE126027.023	BH15 0.9-1.2 SOIL 18/3/2014 SE126027.024
% Moisture	%	0.50	10	-	18	-	15	18

PARAMETER	UOM	LOR	BH15 1.25-1.35 SOIL 18/3/2014 SE126027.025	BH16 0-0.1 SOIL 18/3/2014 SE126027.026	BH16 0.1-0.4 SOIL 18/3/2014 SE126027.027	BH16 2.1-2.4 SOIL 18/3/2014 SE126027.028	BH16 3.1-3.4 SOIL 18/3/2014 SE126027.029	BH16 3.45-3.55 SOIL 18/3/2014 SE126027.030
% Moisture	%	0.50	10	-	-	12	-	11

PARAMETER	UOM	LOR	BH17 0-0.15 SOIL 18/3/2014 SE126027.031	BH17 0.2-0.5 SOIL 18/3/2014 SE126027.032	BH18 0-0.15 SOIL 18/3/2014 SE126027.033	BH19 0-0.15 SOIL 18/3/2014 SE126027.034	BH20 0-0.15 SOIL 18/3/2014 SE126027.035	BH21 0.2-0.5 SOIL 18/3/2014 SE126027.036
% Moisture	%	0.50	-	15	-	-	-	4.5

PARAMETER	UOM	LOR	BH21 0.8-1.1 SOIL 18/3/2014 SE126027.037	BH21 1.3-1.6 SOIL 18/3/2014 SE126027.038	BH21 1.75-1.85 SOIL 18/3/2014 SE126027.039	X3 SOIL 18/3/2014 SE126027.042	C1 SOIL 18/3/2014 SE126027.045	C2 SOIL 18/3/2014 SE126027.046
% Moisture	%	0.50	-	16	19	9.2	10	17

PARAMETER	UOM	LOR	C3 SOIL 18/3/2014 SE126027.047	C4 SOIL 18/3/2014 SE126027.048	C5 SOIL 18/3/2014 SE126027.049	C6 SOIL 18/3/2014 SE126027.050	C7 SOIL 18/3/2014 SE126027.051	C8 SOIL 18/3/2014 SE126027.052
% Moisture	%	0.50	17	9.9	14	11	11	18

Moisture Content [AN002] (continued)

PARAMETER	UOM	LOR	C9 SOIL 18/3/2014 SE126027.053	C10 SOIL 18/3/2014 SE126027.054	C11 SOIL 18/3/2014 SE126027.055	Duplicate D101 SOIL 18/3/2014 SE126027.056
% Moisture	%	0.50	12	12	12	13

VOCs in Water [AN433/AN434]

PARAMETER	UOM	LOR	Rinsate R1 WATER 18/3/2014 SE126027.043
Benzene	µg/L	0.50	<0.5
Toluene	µg/L	0.50	<0.5
Ethylbenzene	µg/L	0.50	<0.5
m/p-xylene	µg/L	1.0	<1
o-xylene	µg/L	0.50	<0.5
Naphthalene	µg/L	0.50	<0.5
Total Xylenes	µg/L	1.50	<1.5
Total BTEX	µg/L	3.0	<3

Volatile Petroleum Hydrocarbons in Water [AN433/AN434/AN410]

PARAMETER	UOM	LOR	Rinsate R1 WATER 18/3/2014 SE126027.043
Benzene (F0)	µg/L	0.50	<0.5
TRH C6-C9	µg/L	40	<40
TRH C6-C10	µg/L	50	<50
TRH C6-C10 minus BTEX (F1)	µg/L	50	<50

TRH (Total Recoverable Hydrocarbons) in Water [AN403]

PARAMETER	UOM	LOR	Rinsate R1 WATER 18/3/2014 SE126027.043
TRH C10-C14	µg/L	50	<50
TRH C15-C28	µg/L	200	<200
TRH C29-C36	µg/L	200	<200
TRH C37-C40	µg/L	200	<200
TRH >C10-C16 (F2)	µg/L	60	<60
TRH >C16-C34 (F3)	µg/L	500	<500
TRH >C34-C40 (F4)	µg/L	500	<500
TRH C10-C36	µg/L	450	<450
TRH C10-C40	µg/L	650	<650

PAH (Polynuclear Aromatic Hydrocarbons) in Water [AN420]

PARAMETER	UOM	LOR	Rinsate R1 WATER 18/3/2014 SE126027.043
Naphthalene	µg/L	0.10	<0.1
2-methylnaphthalene	µg/L	0.10	<0.1
1-methylnaphthalene	µg/L	0.10	<0.1
Acenaphthylene	µg/L	0.10	<0.1
Acenaphthene	µg/L	0.10	<0.1
Fluorene	µg/L	0.10	<0.1
Phenanthrene	µg/L	0.10	<0.1
Anthracene	µg/L	0.10	<0.1
Fluoranthene	µg/L	0.10	<0.1
Pyrene	µg/L	0.10	<0.1
Benzo(a)anthracene	µg/L	0.10	<0.1
Chrysene	µg/L	0.10	<0.1
Benzo(b&j)fluoranthene	µg/L	0.10	<0.1
Benzo(k)fluoranthene	µg/L	0.10	<0.1
Benzo(a)pyrene	µg/L	0.10	<0.1
Indeno(1,2,3-cd)pyrene	µg/L	0.10	<0.1
Dibenzo(a&h)anthracene	µg/L	0.10	<0.1
Benzo(ghi)perylene	µg/L	0.10	<0.1
Total PAH (18)	µg/L	1.0	<1

OC Pesticides in Water [AN400/AN420]

PARAMETER	UOM	LOR	Rinsate R1 WATER 18/3/2014 SE126027.043
Hexachlorobenzene (HCB)	µg/L	0.10	<0.1
Alpha BHC	µg/L	0.10	<0.1
Lindane (gamma BHC)	µg/L	0.10	<0.1
Heptachlor	µg/L	0.10	<0.1
Aldrin	µg/L	0.10	<0.1
Beta BHC	µg/L	0.10	<0.1
Delta BHC	µg/L	0.10	<0.1
Heptachlor epoxide	µg/L	0.10	<0.1
o,p'-DDE	µg/L	0.10	<0.1
Alpha Endosulfan	µg/L	0.10	<0.1
Gamma Chlordane	µg/L	0.10	<0.1
Alpha Chlordane	µg/L	0.10	<0.1
trans-Nonachlor	µg/L	0.10	<0.1
p,p'-DDE	µg/L	0.10	<0.1
Dieldrin	µg/L	0.10	<0.1
Endrin	µg/L	0.10	<0.1
o,p'-DDD	µg/L	0.10	<0.1
o,p'-DDT	µg/L	0.10	<0.1
Beta Endosulfan	µg/L	0.10	<0.1
p,p'-DDD	µg/L	0.10	<0.1
p,p'-DDT	µg/L	0.10	<0.1
Endosulfan sulphate	µg/L	0.10	<0.1
Endrin aldehyde	µg/L	0.10	<0.1
Methoxychlor	µg/L	0.10	<0.1
Endrin ketone	µg/L	0.10	<0.1
Isodrin	µg/L	0.10	<0.1
Mirex	µg/L	0.10	<0.1

OP Pesticides in Water [AN400/AN420]

PARAMETER	UOM	LOR	Rinsate R1 WATER 18/3/2014 SE126027.043
Dichlorvos	µg/L	0.50	<0.5
Dimethoate	µg/L	0.50	<0.5
Diazinon (Dimpylate)	µg/L	0.50	<0.5
Fenitrothion	µg/L	0.20	<0.2
Malathion	µg/L	0.20	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	µg/L	0.20	<0.2
Parathion-ethyl (Parathion)	µg/L	0.20	<0.2
Bromophos Ethyl	µg/L	0.20	<0.2
Methidathion	µg/L	0.50	<0.5
Ethion	µg/L	0.20	<0.2
Azinphos-methyl	µg/L	0.20	<0.2

PCBs in Water [AN400/AN420]

PARAMETER	UOM	LOR	Rinsate R1 WATER 18/3/2014 SE126027.043
Arochlor 1016	µg/L	1.0	<1
Arochlor 1221	µg/L	1.0	<1
Arochlor 1232	µg/L	1.0	<1
Arochlor 1242	µg/L	1.0	<1
Arochlor 1248	µg/L	1.0	<1
Arochlor 1254	µg/L	1.0	<1
Arochlor 1260	µg/L	1.0	<1
Arochlor 1262	µg/L	1.0	<1
Arochlor 1268	µg/L	1.0	<1
Total Arochlors*	µg/L	5.0	<5

Total Phenolics in Water [AN289]

PARAMETER	UOM	LOR	Rinsate R1 WATER 18/3/2014 SE126027.043
Total Phenols	mg/L	0.010	<0.01

Total Cyanide in water by Discrete Analyser (Aquakem) [AN077/AN287]

PARAMETER	UOM	LOR	Rinsate R1 WATER 18/3/2014 SE126027.043
Total Cyanide	mg/L	0.0050	<0.005

Metals in Water (Dissolved) by ICPOES [AN320/AN321]

PARAMETER	UOM	LOR	Rinsate R1 WATER 18/3/2014 SE126027.043
Arsenic, As	mg/L	0.020	**0.02**
Cadmium, Cd	mg/L	0.0010	<0.001
Chromium, Cr	mg/L	0.0050	<0.005
Copper, Cu	mg/L	0.0050	<0.005
Lead, Pb	mg/L	0.020	<0.02
Nickel, Ni	mg/L	0.0050	<0.005
Zinc, Zn	mg/L	0.010	<0.01

Mercury (dissolved) in Water [AN311/AN312]

PARAMETER	UOM	LOR	Rinsate R1 WATER 18/3/2014 SE126027.043
Mercury	mg/L	0.00010	<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	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analsysis by ASS or ICP as per USEPA Method 200.8.
AN040/AN320	A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
AN077	Hydrogen cyanide is liberated from an acidified alkali soil extract by distillation and purging with air. The hydrogen cyanide gas is then collected by passing it through a sodium hydroxide scrubbing solution. The scrubbing solution will then be analysed for cyanide by the appropriate method.
AN083	Separatory funnels are used for aqueous samples and extracted by transferring an appropriate volume (mass) of liquid into a separatory funnel and adding 3 serial aliquots of dichloromethane. Samples receive a single extraction at pH 7 to recover base / neutral analytes and two extractions at pH < 2 to recover acidic analytes. QC samples are prepared by spiking organic free water with target analytes and extracting as per samples.
AN088	Orbital rolling for Organic pollutants are extracted from soil/sediment by transferring an appropriate mass of sample to a clear soil jar and extracting with 1:1 Dichloromethane/Acetone. Orbital Rolling method is intended for the extraction of semi-volatile organic compounds from soil/sediment samples, and is based somewhat on USEPA method 3570 (Micro Organic extraction and sample preparation). Method 3700.
AN101	pH in Soil Sludge Sediment and Water: pH is measured electrometrically using a combination electrode (glass plus reference electrode) and is calibrated against 3 buffers purchased commercially. For soils, 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 pretreated (aqueous ethanol/aqueous glycerol) prior to extraction. Cation Exchange Capacity (CEC) is the sum of the exchangeable cations in meq/100g.
AN188	The organic material in the soil sample is oxidised with chromic acid in the presence of excess sulphuric acid, without external heat being applied. The excess dichromate ion is determined by titration with standard ammonium iron (II) sulphate solution and the amount of oxidised material is calculated from the quantity of dichromate reduced. Referenced to NEPM 105 and AS1289.1.1.1.
AN287	A buffered distillate or water sample is treated with chloramine/barbituric acid reagents and the intensity of the colour developed is proportional to the cyanide concentration by Aquakem DA.
AN289	Analysis of Total Phenols in Soil Sediment and Water: Steam distillable phenols react with 4-aminoantipyrine at pH 7.9±0.1 in the presence of potassium ferricyanide to form a coloured antipyrine dye analysed by Discrete Analyser. Reference APHA 5530 B/D.
AN311/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.
AN400	OC and OP Pesticides by GC-ECD: The determination of organochlorine (OC) and organophosphorus (OP) pesticides and polychlorinated biphenyls (PCBs) in soils, sludges and groundwater. (Based on USEPA methods 3510, 3550, 8140 and 8080.)
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the Draft NEPM 2011, >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is not corrected for Naphthalene.

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).
AN433/AN434	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.
AN433/AN434/AN410	VOCs and C6-C9/C6-C10 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.
AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.

FOOTNOTES

*	Analysis not covered by the scope of accreditation.	-	Not analysed.	UOM	Unit of Measure.
**	Indicative data, theoretical holding time exceeded.	NVL	Not validated.	LOR	Limit of Reporting.
^	Performed by outside laboratory.	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.

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

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: http://www.sgs.com.au.pv.sgsv3/~/media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf

STATEMENT OF QA/QC PERFORMANCE

SE126027 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	**13138-1 - Canterbury**
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	SE126027 R0
Report Number	0000078931
Date Reported	28 Mar 2014

COMMENTS

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

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

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

Matrix Spike	Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest	2 items

SAMPLE SUMMARY

Sample counts by matrix	43 Soils, 1 Water	Type of documentation received	COC
Date documentation received	21/3/14@9:58/15:37	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	3.9°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		

HOLDING TIME SUMMARY

SE126027 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
BH1 0.05-0.2	SE126027.001	LB054734	18 Mar 2014	19 Mar 2014	15 Apr 2014	24 Mar 2014	15 Apr 2014	26 Mar 2014
BH3 0.55-0.65	SE126027.004	LB054734	18 Mar 2014	19 Mar 2014	15 Apr 2014	24 Mar 2014	15 Apr 2014	26 Mar 2014
BH4 0-0.3	SE126027.005	LB054734	18 Mar 2014	19 Mar 2014	15 Apr 2014	24 Mar 2014	15 Apr 2014	26 Mar 2014
BH6 0.45-0.55	SE126027.008	LB054734	18 Mar 2014	19 Mar 2014	15 Apr 2014	24 Mar 2014	15 Apr 2014	26 Mar 2014
BH7 0-0.3	SE126027.009	LB054734	18 Mar 2014	19 Mar 2014	15 Apr 2014	24 Mar 2014	15 Apr 2014	26 Mar 2014
BH8 0.25-0.35	SE126027.011	LB054734	18 Mar 2014	19 Mar 2014	15 Apr 2014	24 Mar 2014	15 Apr 2014	26 Mar 2014
BH10 0-0.15	SE126027.013	LB054734	18 Mar 2014	19 Mar 2014	15 Apr 2014	24 Mar 2014	15 Apr 2014	26 Mar 2014
BH12 0-0.15	SE126027.017	LB054734	18 Mar 2014	19 Mar 2014	15 Apr 2014	24 Mar 2014	15 Apr 2014	26 Mar 2014
BH16 2.1-2.4	SE126027.028	LB054734	18 Mar 2014	19 Mar 2014	15 Apr 2014	24 Mar 2014	15 Apr 2014	26 Mar 2014
BH17 0.2-0.5	SE126027.032	LB054734	18 Mar 2014	19 Mar 2014	15 Apr 2014	24 Mar 2014	15 Apr 2014	26 Mar 2014
BH21 0.2-0.5	SE126027.036	LB054734	18 Mar 2014	19 Mar 2014	15 Apr 2014	24 Mar 2014	15 Apr 2014	26 Mar 2014
BH21 1.3-1.6	SE126027.038	LB054734	18 Mar 2014	19 Mar 2014	15 Apr 2014	24 Mar 2014	15 Apr 2014	26 Mar 2014

Fibre Identification in soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1 0.05-0.2	SE126027.001	LB054859	18 Mar 2014	19 Mar 2014	18 Mar 2015	26 Mar 2014	18 Mar 2015	27 Mar 2014
BH4 0-0.3	SE126027.005	LB054859	18 Mar 2014	19 Mar 2014	18 Mar 2015	26 Mar 2014	18 Mar 2015	27 Mar 2014
BH7 0-0.3	SE126027.009	LB054859	18 Mar 2014	19 Mar 2014	18 Mar 2015	26 Mar 2014	18 Mar 2015	27 Mar 2014
BH10 0.15-0.45	SE126027.014	LB054859	18 Mar 2014	19 Mar 2014	18 Mar 2015	26 Mar 2014	18 Mar 2015	27 Mar 2014
BH13 0.3-0.6	SE126027.019	LB054859	18 Mar 2014	19 Mar 2014	18 Mar 2015	26 Mar 2014	18 Mar 2015	27 Mar 2014
BH16 2.1-2.4	SE126027.028	LB054859	18 Mar 2014	19 Mar 2014	18 Mar 2015	26 Mar 2014	18 Mar 2015	27 Mar 2014
BH17 0.2-0.5	SE126027.032	LB054859	18 Mar 2014	19 Mar 2014	18 Mar 2015	26 Mar 2014	18 Mar 2015	27 Mar 2014
BH21 0.2-0.5	SE126027.036	LB054859	18 Mar 2014	19 Mar 2014	18 Mar 2015	26 Mar 2014	18 Mar 2015	27 Mar 2014
BH21 1.3-1.6	SE126027.038	LB054859	18 Mar 2014	19 Mar 2014	18 Mar 2015	26 Mar 2014	18 Mar 2015	27 Mar 2014

Mercury (dissolved) in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Rinsate R1	SE126027.043	LB054782	18 Mar 2014	19 Mar 2014	15 Apr 2014	25 Mar 2014	15 Apr 2014	27 Mar 2014

Mercury in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH3 0.55-0.65	SE126027.004	LB054815	18 Mar 2014	19 Mar 2014	15 Apr 2014	26 Mar 2014	15 Apr 2014	27 Mar 2014
BH6 0.45-0.55	SE126027.008	LB054815	18 Mar 2014	19 Mar 2014	15 Apr 2014	26 Mar 2014	15 Apr 2014	27 Mar 2014
BH8 0.25-0.35	SE126027.011	LB054815	18 Mar 2014	19 Mar 2014	15 Apr 2014	26 Mar 2014	15 Apr 2014	27 Mar 2014
BH15 1.25-1.35	SE126027.025	LB054815	18 Mar 2014	19 Mar 2014	15 Apr 2014	26 Mar 2014	15 Apr 2014	27 Mar 2014
BH16 3.45-3.55	SE126027.030	LB054815	18 Mar 2014	19 Mar 2014	15 Apr 2014	26 Mar 2014	15 Apr 2014	27 Mar 2014
BH21 1.75-1.85	SE126027.039	LB054815	18 Mar 2014	19 Mar 2014	15 Apr 2014	26 Mar 2014	15 Apr 2014	27 Mar 2014
C1	SE126027.045	LB054816	18 Mar 2014	19 Mar 2014	15 Apr 2014	26 Mar 2014	15 Apr 2014	27 Mar 2014
C2	SE126027.046	LB054816	18 Mar 2014	19 Mar 2014	15 Apr 2014	26 Mar 2014	15 Apr 2014	27 Mar 2014
C3	SE126027.047	LB054816	18 Mar 2014	19 Mar 2014	15 Apr 2014	26 Mar 2014	15 Apr 2014	27 Mar 2014
C4	SE126027.048	LB054816	18 Mar 2014	19 Mar 2014	15 Apr 2014	26 Mar 2014	15 Apr 2014	27 Mar 2014
C5	SE126027.049	LB054816	18 Mar 2014	19 Mar 2014	15 Apr 2014	26 Mar 2014	15 Apr 2014	27 Mar 2014
C6	SE126027.050	LB054816	18 Mar 2014	19 Mar 2014	15 Apr 2014	26 Mar 2014	15 Apr 2014	27 Mar 2014
C7	SE126027.051	LB054816	18 Mar 2014	19 Mar 2014	15 Apr 2014	26 Mar 2014	15 Apr 2014	27 Mar 2014
C8	SE126027.052	LB054816	18 Mar 2014	19 Mar 2014	15 Apr 2014	26 Mar 2014	15 Apr 2014	27 Mar 2014
C9	SE126027.053	LB054816	18 Mar 2014	19 Mar 2014	15 Apr 2014	26 Mar 2014	15 Apr 2014	27 Mar 2014
C10	SE126027.054	LB054816	18 Mar 2014	19 Mar 2014	15 Apr 2014	26 Mar 2014	15 Apr 2014	27 Mar 2014
C11	SE126027.055	LB054816	18 Mar 2014	19 Mar 2014	15 Apr 2014	26 Mar 2014	15 Apr 2014	27 Mar 2014
Duplicate D101	SE126027.056	LB054816	18 Mar 2014	19 Mar 2014	15 Apr 2014	26 Mar 2014	15 Apr 2014	27 Mar 2014

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	SE126027.043	LB054781	18 Mar 2014	19 Mar 2014	14 Sep 2014	25 Mar 2014	14 Sep 2014	26 Mar 2014

Moisture Content

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1 0.05-0.2	SE126027.001	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	26 Mar 2014
BH2 0.1-0.4	SE126027.002	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	27 Mar 2014
BH3 0-0.3	SE126027.003	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	26 Mar 2014
BH3 0.55-0.65	SE126027.004	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	26 Mar 2014

HOLDING TIME SUMMARY

SE126027 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
BH4 0-0.3	SE126027.005	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	26 Mar 2014
BH5 0-0.15	SE126027.006	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	27 Mar 2014
BH6 0-0.3	SE126027.007	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	26 Mar 2014
BH6 0.45-0.55	SE126027.008	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	26 Mar 2014
BH7 0-0.3	SE126027.009	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	26 Mar 2014
BH8 0.05-0.2	SE126027.010	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	27 Mar 2014
BH8 0.25-0.35	SE126027.011	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	26 Mar 2014
BH9 0.05-0.2	SE126027.012	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	27 Mar 2014
BH10 0-0.15	SE126027.013	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	26 Mar 2014
BH10 0.15-0.45	SE126027.014	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	26 Mar 2014
BH11 0-0.15	SE126027.015	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	27 Mar 2014
BH11 0.2-0.5	SE126027.016	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	26 Mar 2014
BH12 0-0.15	SE126027.017	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	26 Mar 2014
BH13 0-0.15	SE126027.018	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	27 Mar 2014
BH13 0.3-0.6	SE126027.019	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	26 Mar 2014
BH14 0-0.15	SE126027.020	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	27 Mar 2014
BH14 0.2-0.5	SE126027.021	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	26 Mar 2014
BH15 0-0.15	SE126027.022	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	27 Mar 2014
BH15 0.2-0.5	SE126027.023	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	26 Mar 2014
BH15 0.9-1.2	SE126027.024	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	26 Mar 2014
BH15 1.25-1.35	SE126027.025	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	26 Mar 2014
BH16 0-0.1	SE126027.026	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	27 Mar 2014
BH16 0.1-0.4	SE126027.027	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	27 Mar 2014
BH16 2.1-2.4	SE126027.028	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	26 Mar 2014
BH16 3.1-3.4	SE126027.029	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	27 Mar 2014
BH16 3.45-3.55	SE126027.030	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	26 Mar 2014
BH17 0-0.15	SE126027.031	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	27 Mar 2014
BH17 0.2-0.5	SE126027.032	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	26 Mar 2014
BH18 0-0.15	SE126027.033	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	27 Mar 2014
BH19 0-0.15	SE126027.034	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	27 Mar 2014
BH20 0-0.15	SE126027.035	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	27 Mar 2014
BH21 0.2-0.5	SE126027.036	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	26 Mar 2014
BH21 0.8-1.1	SE126027.037	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	27 Mar 2014
BH21 1.3-1.6	SE126027.038	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	26 Mar 2014
BH21 1.75-1.85	SE126027.039	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	26 Mar 2014
X1	SE126027.040	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	27 Mar 2014
X2	SE126027.041	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	27 Mar 2014
X3	SE126027.042	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	26 Mar 2014
C1	SE126027.045	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	26 Mar 2014
C2	SE126027.046	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	26 Mar 2014
C3	SE126027.047	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	26 Mar 2014
C4	SE126027.048	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	26 Mar 2014
C5	SE126027.049	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	26 Mar 2014
C6	SE126027.050	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	26 Mar 2014
C7	SE126027.051	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	26 Mar 2014
C8	SE126027.052	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	26 Mar 2014
C9	SE126027.053	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	26 Mar 2014
C10	SE126027.054	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	26 Mar 2014
C11	SE126027.055	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	26 Mar 2014
Duplicate D101	SE126027.056	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	26 Mar 2014
BH21 0-0.15	SE126027.057	LB054759	18 Mar 2014	19 Mar 2014	01 Apr 2014	25 Mar 2014	30 Mar 2014	27 Mar 2014

OC Pesticides in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1 0.05-0.2	SE126027.001	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH3 0-0.3	SE126027.003	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH4 0-0.3	SE126027.005	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH6 0-0.3	SE126027.007	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH7 0-0.3	SE126027.009	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH10 0.15-0.45	SE126027.014	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014

HOLDING TIME SUMMARY

SE126027 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]AN400/AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH11 0.2-0.5	SE126027.016	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH13 0.3-0.6	SE126027.019	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH14 0.2-0.5	SE126027.021	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH15 0.2-0.5	SE126027.023	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH15 0.9-1.2	SE126027.024	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH16 2.1-2.4	SE126027.028	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH17 0.2-0.5	SE126027.032	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH21 0.2-0.5	SE126027.036	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH21 1.3-1.6	SE126027.038	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
X3	SE126027.042	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C1	SE126027.045	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C2	SE126027.046	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C3	SE126027.047	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C4	SE126027.048	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C5	SE126027.049	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C6	SE126027.050	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C7	SE126027.051	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C8	SE126027.052	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C9	SE126027.053	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C10	SE126027.054	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C11	SE126027.055	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
Duplicate D101	SE126027.056	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014

OC Pesticides in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Rinsate R1	SE126027.043	LB054771	18 Mar 2014	19 Mar 2014	25 Mar 2014	25 Mar 2014	04 May 2014	27 Mar 2014

OP Pesticides in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1 0.05-0.2	SE126027.001	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH3 0-0.3	SE126027.003	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH4 0-0.3	SE126027.005	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH6 0-0.3	SE126027.007	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH7 0-0.3	SE126027.009	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH10 0.15-0.45	SE126027.014	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH11 0.2-0.5	SE126027.016	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH13 0.3-0.6	SE126027.019	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH14 0.2-0.5	SE126027.021	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH15 0.2-0.5	SE126027.023	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH15 0.9-1.2	SE126027.024	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH16 2.1-2.4	SE126027.028	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH17 0.2-0.5	SE126027.032	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH21 0.2-0.5	SE126027.036	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH21 1.3-1.6	SE126027.038	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
X3	SE126027.042	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C1	SE126027.045	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C2	SE126027.046	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C3	SE126027.047	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C4	SE126027.048	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C5	SE126027.049	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C6	SE126027.050	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C7	SE126027.051	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C8	SE126027.052	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C9	SE126027.053	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C10	SE126027.054	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C11	SE126027.055	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
Duplicate D101	SE126027.056	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014

OP Pesticides in Water

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

Sample Name	Sample No.	QC Ref

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

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

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

OP Pesticides in Water (continued)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Rinsate R1	SE126027.043	LB054771	18 Mar 2014	19 Mar 2014	25 Mar 2014	25 Mar 2014	04 May 2014	27 Mar 2014

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1 0.05-0.2	SE126027.001	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH3 0-0.3	SE126027.003	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH4 0-0.3	SE126027.005	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH6 0-0.3	SE126027.007	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH7 0-0.3	SE126027.009	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH10 0.15-0.45	SE126027.014	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH11 0.2-0.5	SE126027.016	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH13 0.3-0.6	SE126027.019	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH14 0.2-0.5	SE126027.021	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH15 0.2-0.5	SE126027.023	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH15 0.9-1.2	SE126027.024	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH16 2.1-2.4	SE126027.028	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH17 0.2-0.5	SE126027.032	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH21 0.2-0.5	SE126027.036	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH21 1.3-1.6	SE126027.038	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
X3	SE126027.042	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C1	SE126027.045	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C2	SE126027.046	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C3	SE126027.047	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C4	SE126027.048	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C5	SE126027.049	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C6	SE126027.050	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C7	SE126027.051	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C8	SE126027.052	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C9	SE126027.053	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C10	SE126027.054	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C11	SE126027.055	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
Duplicate D101	SE126027.056	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Rinsate R1	SE126027.043	LB054771	18 Mar 2014	19 Mar 2014	25 Mar 2014	25 Mar 2014	04 May 2014	27 Mar 2014

PCBs in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1 0.05-0.2	SE126027.001	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH3 0-0.3	SE126027.003	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH4 0-0.3	SE126027.005	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH6 0-0.3	SE126027.007	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH7 0-0.3	SE126027.009	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH10 0.15-0.45	SE126027.014	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH11 0.2-0.5	SE126027.016	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH13 0.3-0.6	SE126027.019	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH14 0.2-0.5	SE126027.021	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH15 0.2-0.5	SE126027.023	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH15 0.9-1.2	SE126027.024	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH16 2.1-2.4	SE126027.028	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH17 0.2-0.5	SE126027.032	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH21 0.2-0.5	SE126027.036	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH21 1.3-1.6	SE126027.038	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
X3	SE126027.042	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C1	SE126027.045	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C2	SE126027.046	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C3	SE126027.047	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C4	SE126027.048	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014

HOLDING TIME SUMMARY

SE126027 R0

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

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

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

PCBs in Soil (continued)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
C5	SE126027.049	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C6	SE126027.050	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C7	SE126027.051	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C8	SE126027.052	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C9	SE126027.053	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C10	SE126027.054	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C11	SE126027.055	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
Duplicate D101	SE126027.056	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014

PCBs in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Rinsate R1	SE126027.043	LB054771	18 Mar 2014	19 Mar 2014	25 Mar 2014	25 Mar 2014	04 May 2014	27 Mar 2014

pH in soil (1:5)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1 0.05-0.2	SE126027.001	LB054755	18 Mar 2014	19 Mar 2014	25 Mar 2014	25 Mar 2014	26 Mar 2014	25 Mar 2014
BH3 0.55-0.65	SE126027.004	LB054755	18 Mar 2014	19 Mar 2014	25 Mar 2014	25 Mar 2014	26 Mar 2014	25 Mar 2014
BH4 0-0.3	SE126027.005	LB054755	18 Mar 2014	19 Mar 2014	25 Mar 2014	25 Mar 2014	26 Mar 2014	25 Mar 2014
BH6 0.45-0.55	SE126027.008	LB054755	18 Mar 2014	19 Mar 2014	25 Mar 2014	25 Mar 2014	26 Mar 2014	25 Mar 2014
BH7 0-0.3	SE126027.009	LB054755	18 Mar 2014	19 Mar 2014	25 Mar 2014	25 Mar 2014	26 Mar 2014	25 Mar 2014
BH8 0.25-0.35	SE126027.011	LB054755	18 Mar 2014	19 Mar 2014	25 Mar 2014	25 Mar 2014	26 Mar 2014	25 Mar 2014
BH10 0-0.15	SE126027.013	LB054755	18 Mar 2014	19 Mar 2014	25 Mar 2014	25 Mar 2014	26 Mar 2014	25 Mar 2014
BH12 0-0.15	SE126027.017	LB054755	18 Mar 2014	19 Mar 2014	25 Mar 2014	25 Mar 2014	26 Mar 2014	25 Mar 2014
BH16 2.1-2.4	SE126027.028	LB054755	18 Mar 2014	19 Mar 2014	25 Mar 2014	25 Mar 2014	26 Mar 2014	25 Mar 2014
BH17 0.2-0.5	SE126027.032	LB054755	18 Mar 2014	19 Mar 2014	25 Mar 2014	25 Mar 2014	26 Mar 2014	25 Mar 2014
BH21 0.2-0.5	SE126027.036	LB054755	18 Mar 2014	19 Mar 2014	25 Mar 2014	25 Mar 2014	26 Mar 2014	25 Mar 2014
BH21 1.3-1.6	SE126027.038	LB054755	18 Mar 2014	19 Mar 2014	25 Mar 2014	25 Mar 2014	26 Mar 2014	25 Mar 2014

TOC in Soil

Method: ME-(AU)-[ENV]AN188

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1 0.05-0.2	SE126027.001	LB054803	18 Mar 2014	19 Mar 2014	25 Mar 2014	25 Mar 2014	25 Mar 2014	25 Mar 2014
BH3 0.55-0.65	SE126027.004	LB054803	18 Mar 2014	19 Mar 2014	25 Mar 2014	25 Mar 2014	25 Mar 2014	25 Mar 2014
BH4 0-0.3	SE126027.005	LB054803	18 Mar 2014	19 Mar 2014	25 Mar 2014	25 Mar 2014	25 Mar 2014	25 Mar 2014
BH6 0.45-0.55	SE126027.008	LB054803	18 Mar 2014	19 Mar 2014	25 Mar 2014	25 Mar 2014	25 Mar 2014	25 Mar 2014
BH7 0-0.3	SE126027.009	LB054803	18 Mar 2014	19 Mar 2014	25 Mar 2014	25 Mar 2014	25 Mar 2014	25 Mar 2014
BH8 0.25-0.35	SE126027.011	LB054803	18 Mar 2014	19 Mar 2014	25 Mar 2014	25 Mar 2014	25 Mar 2014	25 Mar 2014
BH10 0-0.15	SE126027.013	LB054803	18 Mar 2014	19 Mar 2014	25 Mar 2014	25 Mar 2014	25 Mar 2014	25 Mar 2014
BH12 0-0.15	SE126027.017	LB054803	18 Mar 2014	19 Mar 2014	25 Mar 2014	25 Mar 2014	25 Mar 2014	25 Mar 2014
BH16 2.1-2.4	SE126027.028	LB054803	18 Mar 2014	19 Mar 2014	25 Mar 2014	25 Mar 2014	25 Mar 2014	25 Mar 2014
BH17 0.2-0.5	SE126027.032	LB054803	18 Mar 2014	19 Mar 2014	25 Mar 2014	25 Mar 2014	25 Mar 2014	25 Mar 2014
BH21 0.2-0.5	SE126027.036	LB054803	18 Mar 2014	19 Mar 2014	25 Mar 2014	25 Mar 2014	25 Mar 2014	25 Mar 2014
BH21 1.3-1.6	SE126027.038	LB054803	18 Mar 2014	19 Mar 2014	25 Mar 2014	25 Mar 2014	25 Mar 2014	25 Mar 2014

Total Cyanide in soil by Discrete Analyser (Aquakem)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
C1	SE126027.045	LB054825	18 Mar 2014	19 Mar 2014	01 Apr 2014	26 Mar 2014	01 Apr 2014	27 Mar 2014
C2	SE126027.046	LB054825	18 Mar 2014	19 Mar 2014	01 Apr 2014	26 Mar 2014	01 Apr 2014	27 Mar 2014
C3	SE126027.047	LB054825	18 Mar 2014	19 Mar 2014	01 Apr 2014	26 Mar 2014	01 Apr 2014	27 Mar 2014
C8	SE126027.052	LB054825	18 Mar 2014	19 Mar 2014	01 Apr 2014	26 Mar 2014	01 Apr 2014	27 Mar 2014
C9	SE126027.053	LB054825	18 Mar 2014	19 Mar 2014	01 Apr 2014	26 Mar 2014	01 Apr 2014	27 Mar 2014
C10	SE126027.054	LB054825	18 Mar 2014	19 Mar 2014	01 Apr 2014	26 Mar 2014	01 Apr 2014	27 Mar 2014
C11	SE126027.055	LB054825	18 Mar 2014	19 Mar 2014	01 Apr 2014	26 Mar 2014	01 Apr 2014	27 Mar 2014
Duplicate D101	SE126027.056	LB054825	18 Mar 2014	19 Mar 2014	01 Apr 2014	26 Mar 2014	01 Apr 2014	27 Mar 2014

Total Cyanide in water by Discrete Analyser (Aquakem)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Rinsate R1	SE126027.043	LB054820	18 Mar 2014	19 Mar 2014	01 Apr 2014	26 Mar 2014	01 Apr 2014	26 Mar 2014

Total Phenolics in Soil

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

Sample Name	Sample No.	QC Ref

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 Phenolics in Soil (continued)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
C1	SE126027.045	LB054826	18 Mar 2014	19 Mar 2014	01 Apr 2014	26 Mar 2014	01 Apr 2014	27 Mar 2014
C2	SE126027.046	LB054826	18 Mar 2014	19 Mar 2014	01 Apr 2014	26 Mar 2014	01 Apr 2014	27 Mar 2014
C3	SE126027.047	LB054826	18 Mar 2014	19 Mar 2014	01 Apr 2014	26 Mar 2014	01 Apr 2014	27 Mar 2014
C8	SE126027.052	LB054826	18 Mar 2014	19 Mar 2014	01 Apr 2014	26 Mar 2014	01 Apr 2014	27 Mar 2014
C9	SE126027.053	LB054826	18 Mar 2014	19 Mar 2014	01 Apr 2014	26 Mar 2014	01 Apr 2014	27 Mar 2014
C10	SE126027.054	LB054826	18 Mar 2014	19 Mar 2014	01 Apr 2014	26 Mar 2014	01 Apr 2014	27 Mar 2014
C11	SE126027.055	LB054826	18 Mar 2014	19 Mar 2014	01 Apr 2014	26 Mar 2014	01 Apr 2014	27 Mar 2014
Duplicate D101	SE126027.056	LB054826	18 Mar 2014	19 Mar 2014	01 Apr 2014	26 Mar 2014	01 Apr 2014	27 Mar 2014

Total Phenolics in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Rinsate R1	SE126027.043	LB054764	18 Mar 2014	19 Mar 2014	15 Apr 2014	25 Mar 2014	15 Apr 2014	25 Mar 2014

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH3 0.55-0.65	SE126027.004	LB054811	18 Mar 2014	19 Mar 2014	14 Sep 2014	26 Mar 2014	14 Sep 2014	26 Mar 2014
BH6 0.45-0.55	SE126027.008	LB054811	18 Mar 2014	19 Mar 2014	14 Sep 2014	26 Mar 2014	14 Sep 2014	26 Mar 2014
BH8 0.25-0.35	SE126027.011	LB054811	18 Mar 2014	19 Mar 2014	14 Sep 2014	26 Mar 2014	14 Sep 2014	26 Mar 2014
BH15 1.25-1.35	SE126027.025	LB054811	18 Mar 2014	19 Mar 2014	14 Sep 2014	26 Mar 2014	14 Sep 2014	26 Mar 2014
BH16 3.45-3.55	SE126027.030	LB054811	18 Mar 2014	19 Mar 2014	14 Sep 2014	26 Mar 2014	14 Sep 2014	26 Mar 2014
BH21 1.75-1.85	SE126027.039	LB054811	18 Mar 2014	19 Mar 2014	14 Sep 2014	26 Mar 2014	14 Sep 2014	26 Mar 2014
C1	SE126027.045	LB054812	18 Mar 2014	19 Mar 2014	14 Sep 2014	26 Mar 2014	14 Sep 2014	27 Mar 2014
C2	SE126027.046	LB054812	18 Mar 2014	19 Mar 2014	14 Sep 2014	26 Mar 2014	14 Sep 2014	27 Mar 2014
C3	SE126027.047	LB054812	18 Mar 2014	19 Mar 2014	14 Sep 2014	26 Mar 2014	14 Sep 2014	27 Mar 2014
C4	SE126027.048	LB054812	18 Mar 2014	19 Mar 2014	14 Sep 2014	26 Mar 2014	14 Sep 2014	27 Mar 2014
C5	SE126027.049	LB054812	18 Mar 2014	19 Mar 2014	14 Sep 2014	26 Mar 2014	14 Sep 2014	27 Mar 2014
C6	SE126027.050	LB054812	18 Mar 2014	19 Mar 2014	14 Sep 2014	26 Mar 2014	14 Sep 2014	27 Mar 2014
C7	SE126027.051	LB054812	18 Mar 2014	19 Mar 2014	14 Sep 2014	26 Mar 2014	14 Sep 2014	27 Mar 2014
C8	SE126027.052	LB054812	18 Mar 2014	19 Mar 2014	14 Sep 2014	26 Mar 2014	14 Sep 2014	27 Mar 2014
C9	SE126027.053	LB054812	18 Mar 2014	19 Mar 2014	14 Sep 2014	26 Mar 2014	14 Sep 2014	27 Mar 2014
C10	SE126027.054	LB054812	18 Mar 2014	19 Mar 2014	14 Sep 2014	26 Mar 2014	14 Sep 2014	27 Mar 2014
C11	SE126027.055	LB054812	18 Mar 2014	19 Mar 2014	14 Sep 2014	26 Mar 2014	14 Sep 2014	27 Mar 2014
Duplicate D101	SE126027.056	LB054812	18 Mar 2014	19 Mar 2014	14 Sep 2014	26 Mar 2014	14 Sep 2014	27 Mar 2014

TRH (Total Recoverable Hydrocarbons) in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1 0.05-0.2	SE126027.001	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH3 0-0.3	SE126027.003	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH4 0-0.3	SE126027.005	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH6 0-0.3	SE126027.007	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH7 0-0.3	SE126027.009	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH10 0.15-0.45	SE126027.014	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH11 0.2-0.5	SE126027.016	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH13 0.3-0.6	SE126027.019	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH14 0.2-0.5	SE126027.021	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH15 0.2-0.5	SE126027.023	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH15 0.9-1.2	SE126027.024	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH16 2.1-2.4	SE126027.028	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH17 0.2-0.5	SE126027.032	LB054726	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH21 0.2-0.5	SE126027.036	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH21 1.3-1.6	SE126027.038	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
X3	SE126027.042	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C1	SE126027.045	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C2	SE126027.046	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C3	SE126027.047	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C4	SE126027.048	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C5	SE126027.049	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C6	SE126027.050	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C7	SE126027.051	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C8	SE126027.052	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014

HOLDING TIME SUMMARY

SE126027 R0

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

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

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

TRH (Total Recoverable Hydrocarbons) in Soil (continued)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
C9	SE126027.053	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C10	SE126027.054	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
C11	SE126027.055	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
Duplicate D101	SE126027.056	LB054727	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014

TRH (Total Recoverable Hydrocarbons) in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Rinsate R1	SE126027.043	LB054771	18 Mar 2014	19 Mar 2014	25 Mar 2014	25 Mar 2014	04 May 2014	27 Mar 2014

VOC's in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1 0.05-0.2	SE126027.001	LB054731	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH4 0-0.3	SE126027.005	LB054731	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH7 0-0.3	SE126027.009	LB054731	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH10 0.15-0.45	SE126027.014	LB054731	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH13 0.3-0.6	SE126027.019	LB054731	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH16 2.1-2.4	SE126027.028	LB054731	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH17 0.2-0.5	SE126027.032	LB054731	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH21 0.2-0.5	SE126027.036	LB054731	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH21 1.3-1.6	SE126027.038	LB054731	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
X3	SE126027.042	LB054731	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
Tripspike TS1	SE126027.044	LB054731	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014

VOCs in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Rinsate R1	SE126027.043	LB054778	18 Mar 2014	19 Mar 2014	25 Mar 2014	25 Mar 2014	04 May 2014	27 Mar 2014

Volatile Petroleum Hydrocarbons in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1 0.05-0.2	SE126027.001	LB054731	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH4 0-0.3	SE126027.005	LB054731	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH7 0-0.3	SE126027.009	LB054731	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH10 0.15-0.45	SE126027.014	LB054731	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH13 0.3-0.6	SE126027.019	LB054731	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH16 2.1-2.4	SE126027.028	LB054731	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH17 0.2-0.5	SE126027.032	LB054731	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH21 0.2-0.5	SE126027.036	LB054731	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
BH21 1.3-1.6	SE126027.038	LB054731	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
X3	SE126027.042	LB054731	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014
Tripspike TS1	SE126027.044	LB054731	18 Mar 2014	19 Mar 2014	01 Apr 2014	24 Mar 2014	03 May 2014	27 Mar 2014

Volatile Petroleum Hydrocarbons in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Rinsate R1	SE126027.043	LB054778	18 Mar 2014	19 Mar 2014	25 Mar 2014	25 Mar 2014	04 May 2014	27 Mar 2014

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

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

OC Pesticides in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	C1	SE126027.045	%	60 - 130%	113
	C2	SE126027.046	%	60 - 130%	109
	C3	SE126027.047	%	60 - 130%	113
	C4	SE126027.048	%	60 - 130%	111
	C5	SE126027.049	%	60 - 130%	111
	C6	SE126027.050	%	60 - 130%	110
	C7	SE126027.051	%	60 - 130%	112
	C8	SE126027.052	%	60 - 130%	110
	C9	SE126027.053	%	60 - 130%	107
	C10	SE126027.054	%	60 - 130%	116
	C11	SE126027.055	%	60 - 130%	117
	Duplicate D101	SE126027.056	%	60 - 130%	116

OC Pesticides in Water

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	Rinsate R1	SE126027.043	%	40 - 130%	73

OP Pesticides in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	C1	SE126027.045	%	60 - 130%	98
	C2	SE126027.046	%	60 - 130%	86
	C3	SE126027.047	%	60 - 130%	92
	C4	SE126027.048	%	60 - 130%	90
	C5	SE126027.049	%	60 - 130%	88
	C6	SE126027.050	%	60 - 130%	90
	C7	SE126027.051	%	60 - 130%	88
	C8	SE126027.052	%	60 - 130%	86
	C9	SE126027.053	%	60 - 130%	90
	C10	SE126027.054	%	60 - 130%	86
	C11	SE126027.055	%	60 - 130%	88
	Duplicate D101	SE126027.056	%	60 - 130%	92
d14-p-terphenyl (Surrogate)	C1	SE126027.045	%	60 - 130%	118
	C2	SE126027.046	%	60 - 130%	100
	C3	SE126027.047	%	60 - 130%	98
	C4	SE126027.048	%	60 - 130%	102
	C5	SE126027.049	%	60 - 130%	96
	C6	SE126027.050	%	60 - 130%	104
	C7	SE126027.051	%	60 - 130%	108
	C8	SE126027.052	%	60 - 130%	70
	C9	SE126027.053	%	60 - 130%	84
	C10	SE126027.054	%	60 - 130%	98
	C11	SE126027.055	%	60 - 130%	104
	Duplicate D101	SE126027.056	%	60 - 130%	106

OP Pesticides in Water

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	Rinsate R1	SE126027.043	%	40 - 130%	70
d14-p-terphenyl (Surrogate)	Rinsate R1	SE126027.043	%	40 - 130%	100

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH1 0.05-0.2	SE126027.001	%	60 - 130%	84
	BH3 0-0.3	SE126027.003	%	60 - 130%	78
	BH4 0-0.3	SE126027.005	%	60 - 130%	80
	BH6 0-0.3	SE126027.007	%	60 - 130%	80
	BH7 0-0.3	SE126027.009	%	60 - 130%	78
	BH10 0.15-0.45	SE126027.014	%	60 - 130%	80
	BH11 0.2-0.5	SE126027.016	%	60 - 130%	80
	BH13 0.3-0.6	SE126027.019	%	60 - 130%	82
	BH14 0.2-0.5	SE126027.021	%	60 - 130%	78
	BH15 0.2-0.5	SE126027.023	%	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.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH15 0.9-1.2	SE126027.024	%	60 - 130%	80
	BH16 2.1-2.4	SE126027.028	%	60 - 130%	84
	BH17 0.2-0.5	SE126027.032	%	60 - 130%	86
	BH21 0.2-0.5	SE126027.036	%	60 - 130%	82
	BH21 1.3-1.6	SE126027.038	%	60 - 130%	86
	X3	SE126027.042	%	60 - 130%	82
d14-p-terphenyl (Surrogate)	BH1 0.05-0.2	SE126027.001	%	60 - 130%	94
	BH3 0-0.3	SE126027.003	%	60 - 130%	86
	BH4 0-0.3	SE126027.005	%	60 - 130%	88
	BH6 0-0.3	SE126027.007	%	60 - 130%	88
	BH7 0-0.3	SE126027.009	%	60 - 130%	92
	BH10 0.15-0.45	SE126027.014	%	60 - 130%	74
	BH11 0.2-0.5	SE126027.016	%	60 - 130%	82
	BH13 0.3-0.6	SE126027.019	%	60 - 130%	94
	BH14 0.2-0.5	SE126027.021	%	60 - 130%	78
	BH15 0.2-0.5	SE126027.023	%	60 - 130%	74
	BH15 0.9-1.2	SE126027.024	%	60 - 130%	80
	BH16 2.1-2.4	SE126027.028	%	60 - 130%	98
	BH17 0.2-0.5	SE126027.032	%	60 - 130%	98
	BH21 0.2-0.5	SE126027.036	%	60 - 130%	86
	BH21 1.3-1.6	SE126027.038	%	60 - 130%	98
	X3	SE126027.042	%	60 - 130%	96
d5-nitrobenzene (Surrogate)	BH1 0.05-0.2	SE126027.001	%	60 - 130%	86
	BH3 0-0.3	SE126027.003	%	60 - 130%	78
	BH4 0-0.3	SE126027.005	%	60 - 130%	80
	BH6 0-0.3	SE126027.007	%	60 - 130%	82
	BH7 0-0.3	SE126027.009	%	60 - 130%	80
	BH10 0.15-0.45	SE126027.014	%	60 - 130%	76
	BH11 0.2-0.5	SE126027.016	%	60 - 130%	78
	BH13 0.3-0.6	SE126027.019	%	60 - 130%	84
	BH14 0.2-0.5	SE126027.021	%	60 - 130%	74
	BH15 0.2-0.5	SE126027.023	%	60 - 130%	74
	BH15 0.9-1.2	SE126027.024	%	60 - 130%	78
	BH16 2.1-2.4	SE126027.028	%	60 - 130%	82
	BH17 0.2-0.5	SE126027.032	%	60 - 130%	84
	BH21 0.2-0.5	SE126027.036	%	60 - 130%	82
	BH21 1.3-1.6	SE126027.038	%	60 - 130%	84
	X3	SE126027.042	%	60 - 130%	84

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	Rinsate R1	SE126027.043	%	40 - 130%	70
d14-p-terphenyl (Surrogate)	Rinsate R1	SE126027.043	%	40 - 130%	100
d5-nitrobenzene (Surrogate)	Rinsate R1	SE126027.043	%	40 - 130%	70

PCBs in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	C1	SE126027.045	%	60 - 130%	113
	C2	SE126027.046	%	60 - 130%	109
	C3	SE126027.047	%	60 - 130%	113
	C8	SE126027.052	%	60 - 130%	110
	C9	SE126027.053	%	60 - 130%	107
	C10	SE126027.054	%	60 - 130%	116
	C11	SE126027.055	%	60 - 130%	117
	Duplicate D101	SE126027.056	%	60 - 130%	116

PCBs in Water

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (Surrogate)	Rinsate R1	SE126027.043	%	40 - 130%	73

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

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH1 0.05-0.2	SE126027.001	%	60 - 130%	92
	BH4 0-0.3	SE126027.005	%	60 - 130%	78
	BH7 0-0.3	SE126027.009	%	60 - 130%	81
	BH10 0.15-0.45	SE126027.014	%	60 - 130%	71
	BH13 0.3-0.6	SE126027.019	%	60 - 130%	81
	BH16 2.1-2.4	SE126027.028	%	60 - 130%	96
	BH17 0.2-0.5	SE126027.032	%	60 - 130%	93
	BH21 0.2-0.5	SE126027.036	%	60 - 130%	94
	BH21 1.3-1.6	SE126027.038	%	60 - 130%	80
	X3	SE126027.042	%	60 - 130%	85
	Tripspike TS1	SE126027.044	%	60 - 130%	116
d4-1,2-dichloroethane (Surrogate)	BH1 0.05-0.2	SE126027.001	%	60 - 130%	85
	BH4 0-0.3	SE126027.005	%	60 - 130%	80
	BH7 0-0.3	SE126027.009	%	60 - 130%	87
	BH10 0.15-0.45	SE126027.014	%	60 - 130%	81
	BH13 0.3-0.6	SE126027.019	%	60 - 130%	81
	BH16 2.1-2.4	SE126027.028	%	60 - 130%	80
	BH17 0.2-0.5	SE126027.032	%	60 - 130%	94
	BH21 0.2-0.5	SE126027.036	%	60 - 130%	83
	BH21 1.3-1.6	SE126027.038	%	60 - 130%	108
	X3	SE126027.042	%	60 - 130%	82
	Tripspike TS1	SE126027.044	%	60 - 130%	93
d8-toluene (Surrogate)	BH1 0.05-0.2	SE126027.001	%	60 - 130%	113
	BH4 0-0.3	SE126027.005	%	60 - 130%	99
	BH7 0-0.3	SE126027.009	%	60 - 130%	118
	BH10 0.15-0.45	SE126027.014	%	60 - 130%	99
	BH13 0.3-0.6	SE126027.019	%	60 - 130%	96
	BH16 2.1-2.4	SE126027.028	%	60 - 130%	102
	BH17 0.2-0.5	SE126027.032	%	60 - 130%	87
	BH21 0.2-0.5	SE126027.036	%	60 - 130%	108
	BH21 1.3-1.6	SE126027.038	%	60 - 130%	87
	X3	SE126027.042	%	60 - 130%	97
	Tripspike TS1	SE126027.044	%	60 - 130%	116
Dibromofluoromethane (Surrogate)	BH1 0.05-0.2	SE126027.001	%	60 - 130%	100
	BH4 0-0.3	SE126027.005	%	60 - 130%	97
	BH7 0-0.3	SE126027.009	%	60 - 130%	80
	BH10 0.15-0.45	SE126027.014	%	60 - 130%	104
	BH13 0.3-0.6	SE126027.019	%	60 - 130%	97
	BH16 2.1-2.4	SE126027.028	%	60 - 130%	110
	BH17 0.2-0.5	SE126027.032	%	60 - 130%	93
	BH21 0.2-0.5	SE126027.036	%	60 - 130%	96
	BH21 1.3-1.6	SE126027.038	%	60 - 130%	107
	X3	SE126027.042	%	60 - 130%	101
	Tripspike TS1	SE126027.044	%	60 - 130%	98

VOCs in Water

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	Rinsate R1	SE126027.043	%	40 - 130%	85
d4-1,2-dichloroethane (Surrogate)	Rinsate R1	SE126027.043	%	40 - 130%	93
d8-toluene (Surrogate)	Rinsate R1	SE126027.043	%	40 - 130%	84
Dibromofluoromethane (Surrogate)	Rinsate R1	SE126027.043	%	40 - 130%	90

Volatile Petroleum Hydrocarbons in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH1 0.05-0.2	SE126027.001	%	60 - 130%	92
	BH4 0-0.3	SE126027.005	%	60 - 130%	78
	BH7 0-0.3	SE126027.009	%	60 - 130%	81
	BH10 0.15-0.45	SE126027.014	%	60 - 130%	71
	BH13 0.3-0.6	SE126027.019	%	60 - 130%	81
	BH16 2.1-2.4	SE126027.028	%	60 - 130%	96
	BH17 0.2-0.5	SE126027.032	%	60 - 130%	93
	BH21 0.2-0.5	SE126027.036	%	60 - 130%	94

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/AN434/AN410

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH21 1.3-1.6	SE126027.038	%	60 - 130%	80
	X3	SE126027.042	%	60 - 130%	85
d4-1,2-dichloroethane (Surrogate)	BH1 0.05-0.2	SE126027.001	%	60 - 130%	85
	BH4 0-0.3	SE126027.005	%	60 - 130%	80
	BH7 0-0.3	SE126027.009	%	60 - 130%	87
	BH10 0.15-0.45	SE126027.014	%	60 - 130%	81
	BH13 0.3-0.6	SE126027.019	%	60 - 130%	81
	BH16 2.1-2.4	SE126027.028	%	60 - 130%	80
	BH17 0.2-0.5	SE126027.032	%	60 - 130%	94
	BH21 0.2-0.5	SE126027.036	%	60 - 130%	83
	BH21 1.3-1.6	SE126027.038	%	60 - 130%	108
	X3	SE126027.042	%	60 - 130%	82
d8-toluene (Surrogate)	BH1 0.05-0.2	SE126027.001	%	60 - 130%	113
	BH4 0-0.3	SE126027.005	%	60 - 130%	99
	BH7 0-0.3	SE126027.009	%	60 - 130%	118
	BH10 0.15-0.45	SE126027.014	%	60 - 130%	99
	BH13 0.3-0.6	SE126027.019	%	60 - 130%	96
	BH16 2.1-2.4	SE126027.028	%	60 - 130%	102
	BH17 0.2-0.5	SE126027.032	%	60 - 130%	87
	BH21 0.2-0.5	SE126027.036	%	60 - 130%	108
	BH21 1.3-1.6	SE126027.038	%	60 - 130%	87
	X3	SE126027.042	%	60 - 130%	97
Dibromofluoromethane (Surrogate)	BH1 0.05-0.2	SE126027.001	%	60 - 130%	100
	BH4 0-0.3	SE126027.005	%	60 - 130%	97
	BH7 0-0.3	SE126027.009	%	60 - 130%	80
	BH10 0.15-0.45	SE126027.014	%	60 - 130%	104
	BH13 0.3-0.6	SE126027.019	%	60 - 130%	97
	BH16 2.1-2.4	SE126027.028	%	60 - 130%	110
	BH17 0.2-0.5	SE126027.032	%	60 - 130%	93
	BH21 0.2-0.5	SE126027.036	%	60 - 130%	96
	BH21 1.3-1.6	SE126027.038	%	60 - 130%	107
	X3	SE126027.042	%	60 - 130%	101

Volatile Petroleum Hydrocarbons in Water

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	Rinsate R1	SE126027.043	%	60 - 130%	85
d4-1,2-dichloroethane (Surrogate)	Rinsate R1	SE126027.043	%	60 - 130%	93
d8-toluene (Surrogate)	Rinsate R1	SE126027.043	%	60 - 130%	84
Dibromofluoromethane (Surrogate)	Rinsate R1	SE126027.043	%	60 - 130%	90

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	Result
LB054734.001	Exchangeable Sodium, Na	mg/kg	2	<-0.583
	Exchangeable Potassium, K	mg/kg	2	<-0.238
	Exchangeable Calcium, Ca	mg/kg	2	<-0.142
	Exchangeable Magnesium, Mg	mg/kg	2	<-0.015

Mercury (dissolved) in Water

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

Sample Number	Parameter	Units	LOR	Result
LB054782.001	Mercury	mg/L	0.0001	<0.0001

Mercury in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB054815.001	Mercury	mg/kg	0.01	<0.01
LB054816.001	Mercury	mg/kg	0.01	<0.01

Metals in Water (Dissolved) by ICPOES

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

Sample Number	Parameter	Units	LOR	Result
LB054781.001	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]AN400/AN420

Sample Number		Parameter	Units	LOR	Result
LB054727.001		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)	%	-	116

OC Pesticides in Water

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

Sample Number	Parameter	Units	LOR	Result
LB054771.001	Hexachlorobenzene (HCB)	µg/L	0.1	<0.1
	Alpha BHC	µg/L	0.1	<0.1
	Lindane (gamma BHC)	µg/L	0.1	<0.1
	Heptachlor	µg/L	0.1	<0.1
	Aldrin	µg/L	0.1	<0.1
	Beta BHC	µg/L	0.1	<0.1
	Delta BHC	µg/L	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 Water (continued)

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

Sample Number		Parameter	Units	LOR	Result
LB054771.001		Heptachlor epoxide	µg/L	0.1	<0.1
		Alpha Endosulfan	µg/L	0.1	<0.1
		Gamma Chlordane	µg/L	0.1	<0.1
		Alpha Chlordane	µg/L	0.1	<0.1
		p,p'-DDE	µg/L	0.1	<0.1
		Dieldrin	µg/L	0.1	<0.1
		Endrin	µg/L	0.1	<0.1
		Beta Endosulfan	µg/L	0.1	<0.1
		p,p'-DDD	µg/L	0.1	<0.1
		p,p'-DDT	µg/L	0.1	<0.1
		Endosulfan sulphate	µg/L	0.1	<0.1
		Endrin aldehyde	µg/L	0.1	<0.1
		Methoxychlor	µg/L	0.1	<0.1
		Endrin ketone	µg/L	0.1	<0.1
		Isodrin	µg/L	0.1	<0.1
		Mirex	µg/L	0.1	<0.1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	114

OP Pesticides in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB054727.001		Dichlorvos	mg/kg	0.5	<0.5
		Dimethoate	mg/kg	0.5	<0.5
		Diazinon (Dimpylate)	mg/kg	0.5	<0.5
		Fenitrothion	mg/kg	0.2	<0.2
		Malathion	mg/kg	0.2	<0.2
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2
		Bromophos Ethyl	mg/kg	0.2	<0.2
		Methidathion	mg/kg	0.5	<0.5
		Ethion	mg/kg	0.2	<0.2
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2
	Surrogates	2-fluorobiphenyl (Surrogate)	%	-	88
		d14-p-terphenyl (Surrogate)	%	-	78

OP Pesticides in Water

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

Sample Number		Parameter	Units	LOR	Result
LB054771.001		Dichlorvos	µg/L	0.5	<0.5
		Dimethoate	µg/L	0.5	<0.5
		Diazinon (Dimpylate)	µg/L	0.5	<0.5
		Fenitrothion	µg/L	0.2	<0.2
		Malathion	µg/L	0.2	<0.2
		Chlorpyrifos (Chlorpyrifos Ethyl)	µg/L	0.2	<0.2
		Parathion-ethyl (Parathion)	µg/L	0.2	<0.2
		Bromophos Ethyl	µg/L	0.2	<0.2
		Methidathion	µg/L	0.5	<0.5
		Ethion	µg/L	0.2	<0.2
		Azinphos-methyl	µg/L	0.2	<0.2
	Surrogates	2-fluorobiphenyl (Surrogate)	%	-	74
		d14-p-terphenyl (Surrogate)	%	-	94

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB054726.001	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

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
LB054726.001		Benzo(a)anthracene	mg/kg	0.1	<0.1
		Chrysene	mg/kg	0.1	<0.1
		Benzo(a)pyrene	mg/kg	0.1	<0.1
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1
		Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1
		Benzo(ghi)perylene	mg/kg	0.1	<0.1
		Total PAH	mg/kg	0.8	<0.8
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	88
		2-fluorobiphenyl (Surrogate)	%	-	80
		d14-p-terphenyl (Surrogate)	%	-	92
LB054727.001		Naphthalene	mg/kg	0.1	<0.1
		2-methylnaphthalene	mg/kg	0.1	<0.1
		1-methylnaphthalene	mg/kg	0.1	<0.1
		Acenaphthylene	mg/kg	0.1	<0.1
		Acenaphthene	mg/kg	0.1	<0.1
		Fluorene	mg/kg	0.1	<0.1
		Phenanthrene	mg/kg	0.1	<0.1
		Anthracene	mg/kg	0.1	<0.1
		Fluoranthene	mg/kg	0.1	<0.1
		Pyrene	mg/kg	0.1	<0.1
		Benzo(a)anthracene	mg/kg	0.1	<0.1
		Chrysene	mg/kg	0.1	<0.1
		Benzo(a)pyrene	mg/kg	0.1	<0.1
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1
		Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1
		Benzo(ghi)perylene	mg/kg	0.1	<0.1
		Total PAH	mg/kg	0.8	<0.8
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	90
		2-fluorobiphenyl (Surrogate)	%	-	88
		d14-p-terphenyl (Surrogate)	%	-	78

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Sample Number		Parameter	Units	LOR	Result
LB054771.001		Naphthalene	µg/L	0.1	<0.1
		2-methylnaphthalene	µg/L	0.1	<0.1
		1-methylnaphthalene	µg/L	0.1	<0.1
		Acenaphthylene	µg/L	0.1	<0.1
		Acenaphthene	µg/L	0.1	<0.1
		Fluorene	µg/L	0.1	<0.1
		Phenanthrene	µg/L	0.1	<0.1
		Anthracene	µg/L	0.1	<0.1
		Fluoranthene	µg/L	0.1	<0.1
		Pyrene	µg/L	0.1	<0.1
		Benzo(a)anthracene	µg/L	0.1	<0.1
		Chrysene	µg/L	0.1	<0.1
		Benzo(a)pyrene	µg/L	0.1	<0.1
		Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1
		Dibenzo(a&h)anthracene	µg/L	0.1	<0.1
		Benzo(ghi)perylene	µg/L	0.1	<0.1
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	76
		2-fluorobiphenyl (Surrogate)	%	-	74
		d14-p-terphenyl (Surrogate)	%	-	94

PCBs in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB054727.001	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

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

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

PCBs in Soil (continued)

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

Sample Number		Parameter	Units	LOR	Result
LB054727.001		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)	%	-	116

PCBs in Water

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

Sample Number	Parameter	Units	LOR	Result
LB054771.001	Arochlor 1016	µg/L	1	<1
	Arochlor 1221	µg/L	1	<1
	Arochlor 1232	µg/L	1	<1
	Arochlor 1242	µg/L	1	<1
	Arochlor 1248	µg/L	1	<1
	Arochlor 1254	µg/L	1	<1
	Arochlor 1260	µg/L	1	<1
	Arochlor 1262	µg/L	1	<1
	Arochlor 1268	µg/L	1	<1

TOC in Soil

Method: ME-(AU)-[ENV]AN188

Sample Number	Parameter	Units	LOR	Result
LB054803.004	Total Organic Carbon	%w/w	0.05	<0.05

Total Cyanide in soil by Discrete Analyser (Aquakem)

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

Sample Number	Parameter	Units	LOR	Result
LB054825.001	Total Cyanide	mg/kg	0.1	<0.1

Total Cyanide in water by Discrete Analyser (Aquakem)

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

Sample Number	Parameter	Units	LOR	Result
LB054820.001	Total Cyanide	mg/L	0.005	<0.005

Total Phenolics in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB054826.001	Total Phenols	mg/kg	0.1	<0.1

Total Phenolics in Water

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

Sample Number	Parameter	Units	LOR	Result
LB054764.001	Total Phenols	mg/L	0.01	<0.01

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

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

Sample Number	Parameter	Units	LOR	Result
LB054811.001	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
LB054812.001	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

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 (Total Recoverable Hydrocarbons) in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB054726.001	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
LB054727.001	TRH C10-C14	mg/kg	20	<20
	TRH C15-C28	mg/kg	45	<45
	TRH C29-C36	mg/kg	45	<45
	TRH C37-C40	mg/kg	100	<100
	TRH C10-C36 Total	mg/kg	110	<110

TRH (Total Recoverable Hydrocarbons) in Water

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

Sample Number	Parameter	Units	LOR	Result
LB054771.001	TRH C10-C14	µg/L	50	<50
	TRH C15-C28	µg/L	200	<200
	TRH C29-C36	µg/L	200	<200
	TRH C37-C40	µg/L	200	<200

VOC's in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB054731.001	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)	%	-	86
		d4-1,2-dichloroethane (Surrogate)	%	-	96
		d8-toluene (Surrogate)	%	-	119
		Bromofluorobenzene (Surrogate)	%	-	117
	Totals	Total BTEX*	mg/kg	0.6	<0.6
LB054731.028	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)	%	-	104
		d4-1,2-dichloroethane (Surrogate)	%	-	79
		d8-toluene (Surrogate)	%	-	93
		Bromofluorobenzene (Surrogate)	%	-	94
	Totals	Total BTEX*	mg/kg	0.6	<0.6

VOCs in Water

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

Sample Number		Parameter	Units	LOR	Result
LB054778.001	Monocyclic Aromatic	Benzene	µg/L	0.5	<0.5
	Hydrocarbons	Toluene	µg/L	0.5	<0.5
		Ethylbenzene	µg/L	0.5	<0.5
		m/p-xylene	µg/L	1	<1
		o-xylene	µg/L	0.5	<0.5
	Polycyclic VOCs	Naphthalene	µg/L	0.5	<0.5
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	113
		d4-1,2-dichloroethane (Surrogate)	%	-	109
		d8-toluene (Surrogate)	%	-	95
		Bromofluorobenzene (Surrogate)	%	-	86

Volatile Petroleum Hydrocarbons in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB054731.001		TRH C6-C9	mg/kg	20	<20
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	86
		d4-1,2-dichloroethane (Surrogate)	%	-	96
		d8-toluene (Surrogate)	%	-	119
LB054731.028		TRH C6-C9	mg/kg	20	<20

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/AN434/AN410

Sample Number		Parameter	Units	LOR	Result
LB054731.028	Surrogates	Dibromofluoromethane (Surrogate)	%	-	104
		d4-1,2-dichloroethane (Surrogate)	%	-	79
		d8-toluene (Surrogate)	%	-	93

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

Sample Number		Parameter	Units	LOR	Result
LB054778.001		TRH C6-C9	µg/L	40	<40
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	113
		d4-1,2-dichloroethane (Surrogate)	%	-	109
		d8-toluene (Surrogate)	%	-	95
		Bromofluorobenzene (Surrogate)	%	-	86

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/AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE126027.043	LB054782.014	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 %
SE125990.010	LB054815.014	Mercury	mg/kg	0.01	0.02	0.0220189945	75	0
SE126027.039	LB054815.023	Mercury	mg/kg	0.01	0.17	0.22	35	24
SE126027.054	LB054816.014	Mercury	mg/kg	0.01	0.13	0.13	38	0
SE126027.056	LB054816.017	Mercury	mg/kg	0.01	0.03	0.03	68	0

OC Pesticides in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE126027.050	LB054727.014		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	110	8
			p,p'-DDE	mg/kg	0.1	0.1	0.1	125	10
			Dieldrin	mg/kg	0.05	0.48	0.48	51	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	-	0.17	0.17	30	3

OP Pesticides in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE126027.050	LB054727.014		Dichlorvos	mg/kg	0.5	<0.5	<0.5	200	0
			Dimethoate	mg/kg	0.5	<0.5	<0.5	200	0
			Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	200	0
			Fenitrothion	mg/kg	0.2	<0.2	<0.2	200	0
			Malathion	mg/kg	0.2	<0.2	<0.2	200	0
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	200	0
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	200	0
			Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	200	0
			Methidathion	mg/kg	0.5	<0.5	<0.5	200	0
			Ethion	mg/kg	0.2	<0.2	<0.2	200	0
			Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	200	0
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	0
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	2

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Original	Duplicate	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.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE126027.014	LB054726.018		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(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	200	0
			Total PAH	mg/kg	0.8	<0.8	<0.8	200	0
			Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.2	<0.2	<0.2	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.4	30	8
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	0
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	15
SE126027.036	LB054727.006		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(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	200	0
			Total PAH	mg/kg	0.8	<0.8	<0.8	200	0
			Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.2	<0.2	<0.2	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.4	30	2
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	2
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	2

pH in soil (1:5)

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE126027.032	LB054755.012	pH	pH Units	-	4.7	4.7	32	0
SE126027.038	LB054755.015	pH	pH Units	-	5.8	5.9	32	1

TOC in Soil

Method: ME-(AU)-[ENV]AN188

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE126027.001	LB054803.007	Total Organic Carbon	%w/w	0.05	0.73	0.71	22	2

Total Cyanide in water by Discrete Analyser (Aquakem)

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

Original	Duplicate	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.

Total Cyanide in water by Discrete Analyser (Aquakem) (continued)

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE126093A.001	LB054820.006	Total Cyanide	mg/L	0.005	<0.004	<0.004	200	0

Total Phenolics in Water

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE125973.001	LB054764.004	Total Phenols	mg/L	0.01	0.31	0.30	18	2

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE125990.010	LB054811.014	Arsenic, As	mg/kg	3	7	6.3891981609	76	4
		Cadmium, Cd	mg/kg	0.3	0.5	0.4140742068	98	11
		Chromium, Cr	mg/kg	0.3	19	17.057374712	33	13
		Copper, Cu	mg/kg	0.5	25	24.7173108045	32	1
		Lead, Pb	mg/kg	1	52	38.7278114942	32	27
		Nickel, Ni	mg/kg	0.5	25	22.629795862(	32	8
		Zinc, Zn	mg/kg	0.5	94	00.093839080	32	6
SE126027.039	LB054811.024	Arsenic, As	mg/kg	3	43	46	37	7
		Cadmium, Cd	mg/kg	0.3	0.9	0.9	64	4
		Chromium, Cr	mg/kg	0.3	18	19	33	4
		Copper, Cu	mg/kg	0.5	73	80	31	10
		Lead, Pb	mg/kg	1	200	210	30	5
		Nickel, Ni	mg/kg	0.5	8.8	9.1	36	3
		Zinc, Zn	mg/kg	0.5	360	370	31	1
SE126027.054	LB054812.014	Arsenic, As	mg/kg	3	<3	<3	138	13
		Cadmium, Cd	mg/kg	0.3	0.4	0.5	95	23
		Chromium, Cr	mg/kg	0.3	5.7	5.8	39	1
		Copper, Cu	mg/kg	0.5	9.2	10	35	10
		Lead, Pb	mg/kg	1	21	28	34	27
		Nickel, Ni	mg/kg	0.5	1.5	1.7	62	13
		Zinc, Zn	mg/kg	0.5	15	18	42	21
SE126077.003	LB054812.020	Arsenic, As	mg/kg	3	2	2	164	9
		Cadmium, Cd	mg/kg	0.3	0.3	0.4	116	8
		Chromium, Cr	mg/kg	0.3	5.8	6.1	38	4
		Copper, Cu	mg/kg	0.5	17	17	33	2
		Lead, Pb	mg/kg	1	18	17	36	6
		Nickel, Ni	mg/kg	0.5	18	19	33	3
		Zinc, Zn	mg/kg	0.5	93	96	32	3

TRH (Total Recoverable Hydrocarbons) in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE126027.014	LB054726.019		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 >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0
SE126027.036	LB054727.006		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 >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/AN434

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE125990.010	LB054731.015	Monocyclic	Benzene	mg/kg	0.1	<0.1	0	200	0
		Aromatic	Toluene	mg/kg	0.1	0.1	0.11	121	0
			Ethylbenzene	mg/kg	0.1	<0.1	0	200	0
			m/p-xylene	mg/kg	0.2	<0.2	0	200	0
			o-xylene	mg/kg	0.1	<0.1	0	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	0	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	5.1	5.15	50	2
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.3	4.61	50	8
			d8-toluene (Surrogate)	mg/kg	-	5.0	5.39	50	7
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.7	4.76	50	2
		Totals	Total Xylenes*	mg/kg	0.3	<0.3	0	200	0
			Total BTEX*	mg/kg	0.6	<0.6	0.11	200	0
SE126027.038	LB054731.026	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	-	5.4	5.3	50	1
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.4	5.8	50	7
			d8-toluene (Surrogate)	mg/kg	-	4.3	5.1	50	17
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.0	4.6	50	14
		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/AN434/AN410

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE125990.010	LB054731.015		TRH C6-C10	mg/kg	25	<25	0	200	0
			TRH C6-C9	mg/kg	20	<20	0	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	5.1	5.15	30	2
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.3	4.61	30	8
			d8-toluene (Surrogate)	mg/kg	-	5.0	5.39	30	7
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.7	4.76	30	2
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	0	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	-0.11	200	0
SE126027.038	LB054731.026		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	-	5.4	5.3	30	1
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.4	5.8	30	7
			d8-toluene (Surrogate)	mg/kg	-	4.3	5.1	30	17
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.0	4.6	30	14
		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 %
LB054734.002	Exchangeable Sodium, Na	mg/kg	2	160	160	80 - 120	98
	Exchangeable Potassium, K	mg/kg	2	280	330	80 - 120	85
	Exchangeable Calcium, Ca	mg/kg	2	4400	4347	80 - 120	101
	Exchangeable Magnesium, Mg	mg/kg	2	1400	1578	80 - 120	91

Mercury in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB054815.002	Mercury	mg/kg	0.01	0.21	0.2	70 - 130	104
LB054816.002	Mercury	mg/kg	0.01	0.21	0.2	70 - 130	104

Metals in Water (Dissolved) by ICPOES

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB054781.002	Arsenic, As	mg/L	0.02	1.8	2	80 - 120	92
	Cadmium, Cd	mg/L	0.001	1.9	2	80 - 120	97
	Chromium, Cr	mg/L	0.005	1.9	2	80 - 120	95
	Copper, Cu	mg/L	0.005	1.9	2	80 - 120	95
	Lead, Pb	mg/L	0.02	1.8	2	80 - 120	92
	Nickel, Ni	mg/L	0.005	1.9	2	80 - 120	94
	Zinc, Zn	mg/L	0.01	1.9	2	80 - 120	96

OC Pesticides in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB054727.002		Heptachlor	mg/kg	0.1	0.3	0.2	60 - 140	140
		Aldrin	mg/kg	0.1	0.3	0.2	60 - 140	140
		Delta BHC	mg/kg	0.1	0.3	0.2	60 - 140	135
		Dieldrin	mg/kg	0.05	0.28	0.2	60 - 140	140
		Endrin	mg/kg	0.2	0.3	0.2	60 - 140	140
		p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	120
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.17	0.15	40 - 130	110

OC Pesticides in Water

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB054771.002		Heptachlor	µg/L	0.1	0.2	0.2	60 - 140	115
		Aldrin	µg/L	0.1	0.2	0.2	60 - 140	115
		Delta BHC	µg/L	0.1	0.2	0.2	60 - 140	105
		Dieldrin	µg/L	0.1	0.2	0.2	60 - 140	110
		Endrin	µg/L	0.1	0.2	0.2	60 - 140	115
		p,p'-DDT	µg/L	0.1	0.2	0.2	60 - 140	100
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	µg/L	-	0.15	0.15	40 - 130	97

OP Pesticides in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB054727.002		Dichlorvos	mg/kg	0.5	1.6	2	60 - 140	82
		Diazinon (Dimpylate)	mg/kg	0.5	1.6	2	60 - 140	79
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	1.6	2	60 - 140	79
		Ethion	mg/kg	0.2	1.5	2	60 - 140	77
	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	82
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	78

OP Pesticides in Water

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB054771.002		Dichlorvos	µg/L	0.5	6.3	8	60 - 140	79
		Diazinon (Dimpylate)	µg/L	0.5	6.0	8	60 - 140	75
		Chlorpyrifos (Chlorpyrifos Ethyl)	µg/L	0.2	6.3	8	60 - 140	78
		Ethion	µg/L	0.2	6.5	8	60 - 140	81
	Surrogates	2-fluorobiphenyl (Surrogate)	µg/L	-	0.4	0.5	40 - 130	82
		d14-p-terphenyl (Surrogate)	µg/L	-	0.4	0.5	40 - 130	80

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB054726.002	Naphthalene	mg/kg	0.1	3.7	4	60 - 140	92
	Acenaphthylene	mg/kg	0.1	3.8	4	60 - 140	96
	Acenaphthene	mg/kg	0.1	3.9	4	60 - 140	98

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.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB054726.002		Phenanthrene	mg/kg	0.1	3.8	4	60 - 140	96
		Anthracene	mg/kg	0.1	3.5	4	60 - 140	88
		Fluoranthene	mg/kg	0.1	3.5	4	60 - 140	88
		Pyrene	mg/kg	0.1	3.7	4	60 - 140	92
		Benzo(a)pyrene	mg/kg	0.1	4.2	4	60 - 140	106
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	86
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	78
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	82
LB054727.002		Naphthalene	mg/kg	0.1	3.6	4	60 - 140	89
		Acenaphthylene	mg/kg	0.1	3.7	4	60 - 140	92
		Acenaphthene	mg/kg	0.1	3.7	4	60 - 140	92
		Phenanthrene	mg/kg	0.1	3.6	4	60 - 140	90
		Anthracene	mg/kg	0.1	3.7	4	60 - 140	92
		Fluoranthene	mg/kg	0.1	3.6	4	60 - 140	90
		Pyrene	mg/kg	0.1	3.5	4	60 - 140	88
		Benzo(a)pyrene	mg/kg	0.1	3.9	4	60 - 140	98
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	80
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	82
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	82

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB054771.002		Naphthalene	µg/L	0.1	35	40	60 - 140	87
		Acenaphthylene	µg/L	0.1	38	40	60 - 140	94
		Acenaphthene	µg/L	0.1	36	40	60 - 140	90
		Phenanthrene	µg/L	0.1	33	40	60 - 140	84
		Anthracene	µg/L	0.1	33	40	60 - 140	81
		Fluoranthene	µg/L	0.1	33	40	60 - 140	83
		Pyrene	µg/L	0.1	32	40	60 - 140	81
		Benzo(a)pyrene	µg/L	0.1	35	40	60 - 140	87
	Surrogates	d5-nitrobenzene (Surrogate)	µg/L	-	0.4	0.5	40 - 130	80
		2-fluorobiphenyl (Surrogate)	µg/L	-	0.4	0.5	40 - 130	82
		d14-p-terphenyl (Surrogate)	µg/L	-	0.4	0.5	40 - 130	80

PCBs in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB054727.002	Arochlor 1260	mg/kg	0.2	0.5	0.4	60 - 140	130

PCBs in Water

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB054771.002	Arochlor 1260	µg/L	1	<1	0.4	60 - 140	105

pH in soil (1:5)

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB054755.001	pH	pH Units	-	7.5	7.415	98 - 102	100

TOC in Soil

Method: ME-(AU)-[ENV]AN188

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB054803.002	Total Organic Carbon	%w/w	0.05	0.32	0.325	80 - 120	98
LB054803.005	Total Organic Carbon	%w/w	0.05	0.32	0.325	80 - 120	97

Total Cyanide in soil by Discrete Analyser (Aquakem)

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB054825.002	Total Cyanide	mg/kg	0.1	0.3	0.25	70 - 130	105

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 Cyanide in water by Discrete Analyser (Aquakem)

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB054820.002	Total Cyanide	mg/L	0.005	0.027	0.025	80 - 120	109

Total Phenolics in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB054826.002	Total Phenols	mg/kg	0.1	2.5	2.5	70 - 130	100

Total Phenolics in Water

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB054764.002	Total Phenols	mg/L	0.01	0.25	0.25	80 - 120	101

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB054811.002	Arsenic, As	mg/kg	3	48	50	80 - 120	96
	Cadmium, Cd	mg/kg	0.3	49	50	80 - 120	97
	Chromium, Cr	mg/kg	0.3	49	50	80 - 120	99
	Copper, Cu	mg/kg	0.5	48	50	80 - 120	96
	Lead, Pb	mg/kg	1	49	50	80 - 120	98
	Nickel, Ni	mg/kg	0.5	49	50	80 - 120	98
	Zinc, Zn	mg/kg	0.5	49	50	80 - 120	98
LB054812.002	Arsenic, As	mg/kg	3	49	50	80 - 120	97
	Cadmium, Cd	mg/kg	0.3	50	50	80 - 120	100
	Chromium, Cr	mg/kg	0.3	48	50	80 - 120	97
	Copper, Cu	mg/kg	0.5	50	50	80 - 120	101
	Lead, Pb	mg/kg	1	50	50	80 - 120	99
	Nickel, Ni	mg/kg	0.5	49	50	80 - 120	98
	Zinc, Zn	mg/kg	0.5	49	50	80 - 120	99

TRH (Total Recoverable Hydrocarbons) in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB054726.002		TRH C10-C14	mg/kg	20	36	40	60 - 140	90
		TRH C15-C28	mg/kg	45	<45	40	60 - 140	90
		TRH C29-C36	mg/kg	45	<45	40	60 - 140	80
	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	85
		TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	85
LB054727.002		TRH C10-C14	mg/kg	20	40	40	60 - 140	100
		TRH C15-C28	mg/kg	45	<45	40	60 - 140	100
		TRH C29-C36	mg/kg	45	<45	40	60 - 140	85
	TRH F Bands	TRH >C10-C16 (F2)	mg/kg	25	40	40	60 - 140	100
		TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	98
		TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	80

TRH (Total Recoverable Hydrocarbons) in Water

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB054771.002		TRH C10-C14	µg/L	50	1100	1200	60 - 140	94
		TRH C15-C28	µg/L	200	1200	1200	60 - 140	96
		TRH C29-C36	µg/L	200	1100	1200	60 - 140	95
	TRH F Bands	TRH >C10-C16 (F2)	µg/L	60	1100	1200	60 - 140	95
		TRH >C16-C34 (F3)	µg/L	500	1100	1200	60 - 140	95
		TRH >C34-C40 (F4)	µg/L	500	590	600	60 - 140	98

VOC's in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB054731.002	Monocyclic	Benzene	mg/kg	0.1	2.2	2.9	60 - 140	76
	Aromatic	Toluene	mg/kg	0.1	2.5	2.9	60 - 140	85
		Ethylbenzene	mg/kg	0.1	2.7	2.9	60 - 140	92
		m/p-xylene	mg/kg	0.2	5.3	5.8	60 - 140	91
		o-xylene	mg/kg	0.1	2.7	2.9	60 - 140	92

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

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

VOC's in Soil (continued)

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB054731.002	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.3	5	60 - 140	86
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.7	5	60 - 140	94
		d8-toluene (Surrogate)	mg/kg	-	5.8	5	60 - 140	117
		Bromofluorobenzene (Surrogate)	mg/kg	-	5.3	5	60 - 140	105
LB054731.029	Monocyclic	Benzene	mg/kg	0.1	2.3	2.9	60 - 140	78
	Aromatic	Toluene	mg/kg	0.1	2.6	2.9	60 - 140	91
		Ethylbenzene	mg/kg	0.1	3.0	2.9	60 - 140	102
		m/p-xylene	mg/kg	0.2	5.9	5.8	60 - 140	102
		o-xylene	mg/kg	0.1	2.9	2.9	60 - 140	101
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	5.5	5	60 - 140	110
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.7	5	60 - 140	93
		d8-toluene (Surrogate)	mg/kg	-	5.6	5	60 - 140	112
		Bromofluorobenzene (Surrogate)	mg/kg	-	5.5	5	60 - 140	110

VOCs in Water

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB054778.002	Monocyclic	Benzene	µg/L	0.5	51	45.45	60 - 140	113
	Aromatic	Toluene	µg/L	0.5	51	45.45	60 - 140	113
		Ethylbenzene	µg/L	0.5	51	45.45	60 - 140	113
		m/p-xylene	µg/L	1	100	90.9	60 - 140	113
		o-xylene	µg/L	0.5	51	45.45	60 - 140	113

Volatile Petroleum Hydrocarbons in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB054731.002		TRH C6-C10	mg/kg	25	<25	24.65	60 - 140	91
		TRH C6-C9	mg/kg	20	22	23.2	60 - 140	93
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.3	5	60 - 140	86
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.7	5	60 - 140	94
		d8-toluene (Surrogate)	mg/kg	-	5.8	5	60 - 140	117
		Bromofluorobenzene (Surrogate)	mg/kg	-	5.3	5	60 - 140	105
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	7.25	60 - 140	99
LB054731.029		TRH C6-C10	mg/kg	25	<25	24.65	60 - 140	91
		TRH C6-C9	mg/kg	20	22	23.2	60 - 140	94
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	5.5	5	60 - 140	110
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.7	5	60 - 140	93
		d8-toluene (Surrogate)	mg/kg	-	5.6	5	60 - 140	112
		Bromofluorobenzene (Surrogate)	mg/kg	-	5.5	5	60 - 140	110
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	7.25	60 - 140	77

Volatile Petroleum Hydrocarbons in Water

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB054778.002		TRH C6-C10	µg/L	50	1000	946.63	60 - 140	108
		TRH C6-C9	µg/L	40	840	818.71	60 - 140	102
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	720	639.67	60 - 140	112

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/AN312

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE125983.001	LB054782.004	Mercury	mg/L	0.0001	0.0083	-0.001	0.008	103

Mercury in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE125990.001	LB054815.004	Mercury	mg/kg	0.01	0.36	0.20	0.2	79
SE126027.045	LB054816.004	Mercury	mg/kg	0.01	0.18	<0.01	0.2	85

Metals in Water (Dissolved) by ICPOES

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE126027.043	LB054781.004	Arsenic, As	mg/L	0.02	2.0	0.02	2	98
		Cadmium, Cd	mg/L	0.001	2.1	<0.001	2	104
		Chromium, Cr	mg/L	0.005	2.1	<0.005	2	103
		Copper, Cu	mg/L	0.005	2.0	<0.005	2	102
		Lead, Pb	mg/L	0.02	1.9	<0.02	2	96
		Nickel, Ni	mg/L	0.005	2.1	<0.005	2	103
		Zinc, Zn	mg/L	0.01	2.1	<0.01	2	104

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE126027.021	LB054726.022	Naphthalene	mg/kg	0.1	3.3	<0.1	4	81
		2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		Acenaphthylene	mg/kg	0.1	3.3	<0.1	4	83
		Acenaphthene	mg/kg	0.1	3.6	<0.1	4	89
		Fluorene	mg/kg	0.1	<0.1	<0.1	-	-
		Phenanthrene	mg/kg	0.1	4.1	<0.1	4	99
		Anthracene	mg/kg	0.1	3.8	<0.1	4	94
		Fluoranthene	mg/kg	0.1	3.2	<0.1	4	81
		Pyrene	mg/kg	0.1	3.2	<0.1	4	81
		Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	-	-
		Chrysene	mg/kg	0.1	<0.1	<0.1	-	-
		Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	-	-
		Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	-	-
		Benzo(a)pyrene	mg/kg	0.1	4.0	<0.1	4	101
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	-	-
		Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	-	-
		Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	-	-
		Total PAH	mg/kg	0.8	28	<0.8	-	-
		Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ	0.2	4.0	<0.2	-	-
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.4	-	72
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	-	76
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.4	-	108

Total Cyanide in soil by Discrete Analyser (Aquakem)

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE126027.045	LB054825.004	Total Cyanide	mg/kg	0.1	0.4	0.1	0.25	95

Total Phenolics in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE126027.056	LB054826.013	Total Phenols	mg/kg	0.1	2.5	<0.1	2.5	96

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

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

QC Sample	Sample Number	Parameter	Units	LOR

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 by ICPOES from EPA 200.8 Digest (continued)

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE125990.001	LB054811.004	Arsenic, As	mg/kg	3	50	6	50	87
		Cadmium, Cd	mg/kg	0.3	45	0.5	50	89
		Chromium, Cr	mg/kg	0.3	57	10	50	94
		Copper, Cu	mg/kg	0.5	76	36	50	79
		Lead, Pb	mg/kg	1	220	130	50	181 ④
		Nickel, Ni	mg/kg	0.5	54	5.8	50	96
		Zinc, Zn	mg/kg	0.5	260	250	50	11 ④
SE126027.045	LB054812.004	Arsenic, As	mg/kg	3	44	3	50	82
		Cadmium, Cd	mg/kg	0.3	43	0.4	50	85
		Chromium, Cr	mg/kg	0.3	55	13	50	84
		Copper, Cu	mg/kg	0.5	110	72	50	76
		Lead, Pb	mg/kg	1	62	11	50	101
		Nickel, Ni	mg/kg	0.5	110	75	50	73
		Zinc, Zn	mg/kg	0.5	97	45	50	103

VOC's in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE125990.001	LB054731.004	Monocyclic	Benzene	mg/kg	0.1	2.6	<0.1	2.9	88
		Aromatic	Toluene	mg/kg	0.1	3.1	0.3	2.9	98
			Ethylbenzene	mg/kg	0.1	2.6	<0.1	2.9	89
			m/p-xylene	mg/kg	0.2	5.1	<0.2	5.8	88
			o-xylene	mg/kg	0.1	2.7	<0.1	2.9	91
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	5.0	5.5	5	100
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.5	4.7	5	110
			d8-toluene (Surrogate)	mg/kg	-	3.5	5.8	5	70
			Bromofluorobenzene (Surrogate)	mg/kg	-	5.3	5.7	5	106
		Totals	Total Xylenes*	mg/kg	0.3	7.8	<0.3	-	-
			Total BTEX*	mg/kg	0.6	16	<0.6	-	-

Volatile Petroleum Hydrocarbons in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE125990.001	LB054731.004		TRH C6-C10	mg/kg	25	<25	<25	24.65	92
			TRH C6-C9	mg/kg	20	21	<20	23.2	91
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	5.0	5.5	5	100
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.5	4.7	5	110
			d8-toluene (Surrogate)	mg/kg	-	3.5	5.8	5	70
			Bromofluorobenzene (Surrogate)	mg/kg	-	5.3	5.7	5	106
		VPH F	Benzene (F0)	mg/kg	0.1	2.6	<0.1	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	7.25	97

MATRIX SPIKE DUPLICATES

SE126027 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.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE126027.021	LB054726.023		Naphthalene	mg/kg	0.1	3.3	3.3	33	1
			2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	-
			1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	-
			Acenaphthylene	mg/kg	0.1	3.3	3.5	33	6
			Acenaphthene	mg/kg	0.1	3.6	3.8	33	5
			Fluorene	mg/kg	0.1	<0.1	<0.1	200	-
			Phenanthrene	mg/kg	0.1	4.1	4.3	32	5
			Anthracene	mg/kg	0.1	3.8	3.9	33	2
			Fluoranthene	mg/kg	0.1	3.2	3.4	33	4
			Pyrene	mg/kg	0.1	3.2	3.3	33	0
			Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	200	-
			Chrysene	mg/kg	0.1	<0.1	<0.1	200	-
			Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	-
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	-
			Benzo(a)pyrene	mg/kg	0.1	4.0	3.6	33	12
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	200	-
			Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	200	-
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	200	-
			Total PAH	mg/kg	0.8	28	29	33	-
			Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ	0.2	4.0	3.6	15	-
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.4	30	0
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	3
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	4

TRH (Total Recoverable Hydrocarbons) in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Duplicate
SE126022.001	LB054726.005		TRH C10-C14	mg/kg	20	34
			TRH C15-C28	mg/kg	45	<45
			TRH C29-C36	mg/kg	45	<45
			TRH C37-C40	mg/kg	100	<100
			TRH C10-C36 Total	mg/kg	110	<110
			TRH C10-C40 Total	mg/kg	210	<210
		TRH F Bands	TRH >C10-C16 (F2)	mg/kg	25	33
			TRH >C16-C34 (F3)	mg/kg	90	<90
			TRH >C34-C40 (F4)	mg/kg	120	<120

VOC's in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE125990.001	LB054731.005	Monocyclic Aromatic	Benzene	mg/kg	0.1	2.6	2.6	34	2
			Toluene	mg/kg	0.1	3.1	3.3	33	6
			Ethylbenzene	mg/kg	0.1	2.6	2.7	34	5
			m/p-xylene	mg/kg	0.2	5.1	5.1	34	0
			o-xylene	mg/kg	0.1	2.7	2.6	34	2
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	-
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	5.0	4.2	50	18
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.5	5.7	50	4
			d8-toluene (Surrogate)	mg/kg	-	3.5	4.0	50	12
			Bromofluorobenzene (Surrogate)	mg/kg	-	5.3	5.3	50	1
		Totals	Total Xylenes*	mg/kg	0.3	7.8	7.7	34	-
			Total BTEX*	mg/kg	0.6	16	16	34	-

Volatile Petroleum Hydrocarbons in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR

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.

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

QC Sample	Sample Number		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE125990.001	LB054731.005		TRH C6-C10	mg/kg	25	<25	<25	141	2
			TRH C6-C9	mg/kg	20	21	21	124	1
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	5.0	4.2	30	18
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.5	5.7	30	4
			d8-toluene (Surrogate)	mg/kg	-	3.5	4.0	30	12
			Bromofluorobenzene (Surrogate)	mg/kg	-	5.3	5.3	30	1
		VPH F Bands	Benzene (F0)	mg/kg	0.1	2.6	2.6	34	-
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	9

Samples analysed as received.

Solid samples expressed on a dry weight basis.

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

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

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

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

ANALYTICAL REPORT

WORLD RECOGNISED ACCREDITATION

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	**13138-1 - Canterbury**
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	SE126027 R0
Report Number	0000078898
Date Reported	27 Mar 2014
Date Received	19 Mar 2014

COMMENTS

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

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

Asbestos analysed by Approved Identifier Yusuf Kuthpudin.

SIGNATORIES

Deanne Norris
Organic Chemist

Dong Liang
Metals/Inorganics Team Leader

Huong Crawford
Production Manager

Kamrul Ahsan
Senior Chemist

Ly Kim Ha
Organic Section Head

Ravee Sivasubramaniam
Asbestos Analyst

ANALYTICAL REPORT

SE126027 R0

RESULTS

Fibre Identification in soil — Method AN602

Laboratory Reference	Client Reference	Matrix	Sample Description	Date Sampled	Fibre Identification	Est.%w/w
SE126027.001	BH1 0.05-0.2	Soil	33g Soil,clay,rocks	18 Mar 2014	No Asbestos Found	<0.01
SE126027.005	BH4 0-0.3	Soil	135g Sand,soil,rocks	18 Mar 2014	No Asbestos Found	<0.01
SE126027.009	BH7 0-0.3	Soil	144g Sand,soil,rocks	18 Mar 2014	No Asbestos Found	<0.01
SE126027.014	BH10 0.15-0.45	Soil	135g Sand,soil,rocks	18 Mar 2014	No Asbestos Found Organic Fibres Detected	<0.01
SE126027.019	BH13 0.3-0.6	Soil	106g Sand,soil,rocks	18 Mar 2014	No Asbestos Found Organic Fibres Detected	<0.01
SE126027.028	BH16 2.1-2.4	Soil	169g Clay,soil,rocks	18 Mar 2014	No Asbestos Found	<0.01
SE126027.032	BH17 0.2-0.5	Soil	201g Clay,sand,soil,rocks	18 Mar 2014	No Asbestos Found	<0.01
SE126027.036	BH21 0.2-0.5	Soil	230g Sand,soil,rocks	18 Mar 2014	No Asbestos Found	<0.01
SE126027.038	BH21 1.3-1.6	Soil	264g Clay,soil,rocks	18 Mar 2014	No Asbestos Found	<0.01

METHOD SUMMARY

SE126027 R0

METHOD	METHODOLOGY SUMMARY
AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602	Fibres/material that cannot be unequivocably identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf).
AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples, Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection limit of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."

FOOTNOTES

Amosite	-	Brown Asbestos	NA	-	Not Analysed
Chrysotile	-	White Asbestos	LNR	-	Listed, Not Required
Crocidolite	-	Blue Asbestos	*	-	Not Accredited
Amphiboles	-	Amosite and/or Crocidolite	**	-	Indicative data, theoretical holding time exceeded.

This report does not comply with the analytical reporting recommendations in the Western Australian Department of Health Guidelines for the Assessment and Remediation and Management of Asbestos Contaminated sites in Western Australia - May 2009.

Sampled by the client.

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

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

The QC 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.pv.sgsv3/~/media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf

COC received 21/03/2014 @ 9:58AM.

RECEIVED
19 MAR 2014
SE126027

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: LY
Job No: 13138/1
Project:
Project Manager: JX
Location: Canterbury

Results required by: 27th March 2014 - Standard Turnaround Time

	Location	Depth (m)	Date	Time	Soil	Water	Metals As, Cd, Cr, Cu, Pb, Hg, Ni and Zn	TPH* & BTEX	PAH	pH	CEC, TOC (%)	ASBESTOS				KEEP SAMPLE
1	BH1	0.05-0.2	18/03/2014	-	SG/SP			✓	✓	✓	✓	✓				YES
	BH1	0.25-0.35	18/03/2014	-	SG											YES
2	BH2	0.1-0.4	18/03/2014	-	SG/SP											YES
	BH2	0.45-0.55	18/03/2014	-	SG											YES
3	BH3	0-0.3	18/03/2014	-	SG/SP				✓							YES
4	BH3	0.55-0.65	18/03/2014	-	SG		✓			✓	✓					YES
5	BH4	0-0.3	18/03/2014	-	SG/SP			✓	✓	✓	✓	✓				YES
	BH4	0.55-0.65	18/03/2014	-	SG											YES
6	BH5	0-0.15	18/03/2014	-	SG/SP											YES
7	BH6	0-0.3	18/03/2014	-	SG/SP				✓							YES
8	BH6	0.45-0.55	18/03/2014	-	SG		✓			✓	✓					YES
9	BH7	0-0.3	18/03/2014	-	SG/SP			✓	✓	✓	✓	✓				YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	21/03/2014	Suba		19/03/14 1:50

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

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:**	LY
PH:	**02 8594 0400** **FAX:** **02 8594 0499**	**Project Manager:**	JX
ATTN:	**MS EMILY YIN**		

Job No: 13138/1
Project:
Location: Canterbury

Results required by: 27th March 2014 - Standard Turnaround Time

	Location	Depth (m)	Date	Time	Sample type: Soil	Sample type: Water	Metals As, Cd, Cr, Cu, Pb, Hg, Ni and Zn	TPH* & BTEX	PAH	pH	CEC, TOC (%)	ASBESTOS				KEEP SAMPLE
	BH7	0.55-0.65	18/03/2014	-	SG											YES
10	BH8	0.05-0.2	18/03/2014	-	SG/SP											YES
11	BH8	0.25-0.35	18/03/2014	-	SG		✓			✓	✓					YES
12	BH9	0.05-0.2	18/03/2014	-	SG/SP											YES
	BH9	0.25-0.35	18/03/2014	-	SG											YES
13	BH10	0-0.15	18/03/2014	-	SG/SP					✓	✓					YES
14	BH10	0.15-0.45	18/03/2014	-	SG/SP			✓	✓			✓				YES
	BH10	0.7-0.8	18/03/2014	-	SG											YES
15	BH11	0-0.15	18/03/2014	-	SG/SP											YES
16	BH11	0.2-0.5	18/03/2014	-	SG/SP				✓							YES
	BH11	0.65-0.75	18/03/2014	-	SG											YES
17	BH12	0-0.15	18/03/2014	-	SG/SP					✓	✓					YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	21/03/2014	SUSY		19/03/14 @ 1:50

Legend:

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

* Purge & Trap

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

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ALEXANDRIA NSW 2015

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ATTN: MS EMILY YIN

Sampling By: LY

Job No: 13138/1

Project:

Project Manager: JX

Location: Canterbury

Results required by: 27th March 2014 - Standard Turnaround Time

	Location	Depth (m)	Date	Time	Soil	Water	Metals As, Cd, Cr, Cu, Pb, Hg, Ni and Zn	TPH* & BTEX	PAH	pH	CEC, TOC (%)	ASBESTOS				KEEP SAMPLE
		Sampling details			Sample type											
18	BH13	0-0.15	18/03/2014	-	SG/SP											YES
19	BH13	0.3-0.6	18/03/2014	-	SG/SP			✓	✓			✓				YES
	BH13	0.95-1.05	18/03/2014	-	SG											YES
20	BH14	0-0.15	18/03/2014	-	SG/SP											YES
21	BH14	0.2-0.5	18/03/2014	-	SG/SP				✓							YES
	BH14	0.75-0.85	18/03/2014	-	SG											YES
22	BH15	0-0.15	18/03/2014	-	SG/SP											YES
23	BH15	0.2-0.5	18/03/2014	-	SG/SP				✓							YES
24	BH15	0.9-1.2	18/03/2014	-	SG/SP				✓							YES
25	BH15	1.25-1.35	18/03/2014	-	SG		✓									YES
26	BH16	0-0.1	18/03/2014	-	SG/SP											YES
27	BH16	0.1-0.4	18/03/2014	-	SG/SP											YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	21/03/2014	Susa		19/03/14

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

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

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PENRITH NSW 2750

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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: LY

Job No: 13138/1

Project:

Project Manager: JX

Location: Canterbury

Results required by: 27th March 2014 - Standard Turnaround Time

	Location	Depth (m)	Date	Time	Sample type: Soil	Sample type: Water	Metals As, Cd, Cr, Cu, Pb, Hg, Ni and Zn	TPH* & BTEX	PAH	pH	CEC, TOC (%)	ASBESTOS				KEEP SAMPLE
	BH16	1.1-1.4	18/03/2014	-	SG/SP											YES
28	BH16	2.1-2.4	18/03/2014	-	SG/SP			✓	✓	✓	✓	✓				YES
29	BH16	3.1-3.4	18/03/2014	-	SG/SP											YES
30	BH16	3.45-3.55	18/03/2014	-	SG		✓									YES
31	BH17	0-0.15	18/03/2014	-	SG/SP											YES
32	BH17	0.2-0.5	18/03/2014	-	SG/SP											YES
	BH17	0.7-1.0	18/03/2014	-	SG/SP			✓	✓	✓	✓	✓				YES
	BH17	1.25-1.35	18/03/2014	-	SG											YES
33	BH18	0-0.15	18/03/2014	-	SG/SP											YES
34	BH19	0-0.15	18/03/2014	-	SG/SP											YES
35	BH20	0-0.15	18/03/2014	-	SG/SP											YES
37	BH21	0-0.15	18/03/2014	-	SG/SP											YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	21/03/2014	SUSO		19/03/14

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

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: LY **Job No:** 13138/1

Project:

Project Manager: JX **Location:** Canterbury

Results required by: 27th March 2014 - Standard Turnaround Time

	Location	Depth (m)	Date	Time	Soil	Water	Metals As, Cd, Cr, Cu, Pb, Hg, Ni and Zn	TPH* & BTEX	PAH	pH	CEC, TOC (%)	ASBESTOS	BTEX	OCP, OPP & PCB	TOTAL PHENOLS & CYANIDE	KEEP SAMPLE
36	BH21	0.2-0.5	18/03/2014	-	SG/SP			✓	✓	✓	✓	✓				YES
37	BH21	0.8-1.1	18/03/2014	-	SG/SP											YES
38	BH21	1.3-1.6	18/03/2014	-	SG/SP			✓	✓	✓	✓	✓				YES
39	BH21	1.75-1.85	18/03/2014	-	SG		✓									YES
40	X1	-	18/03/2014	-	SG											YES
41	X2	-	18/03/2014	-	SG											YES
42	X3	-	18/03/2014	-	SG			✓	✓							YES
	X4	-	18/03/2014	-	SG											YES
	X5	-	18/03/2014	-	SG											YES
	X6	-	18/03/2014	-	SG											YES
	Duplicate D1	-	18/03/2014	-	SG											YES
43	Rinsate R1	-	18/03/2014	-		WG/Vial	✓	✓	✓					✓	✓	YES
44	Tripspike TS1		18/03/2014	-									✓			YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	21/03/2014	Susa		19/03/14

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	

Amended Sheet sent on 21/03/2014@3:37PM.

SGS ENVIRONMENTAL SERVICES

Sampling Date: 18/3/2014 Job No: 13138/1
Sampled by: LY
Project Manager: JX Location: Canterbury

Results Required by: 27th March 2014 – Standard TAT

	Composite Sample	Sub-Samples	Analyte					
			Heavy Metals*	OCP	OPP	PCB	Total Phenols	Total Cyanides
45	C1	BH1 (0.05-0.2m) + BH8 (0.05-0.2m) + BH9 (0.05-0.2m)	✔	✔	✔	✔	✔	✔
46	C2	BH2 (0.1-0.4m) + BH4 (0-0.3m) + BH5 (0-0.15m)	✔	✔	✔	✔	✔	✔
47	C3	BH3 (0-0.3m) + BH6 (0-0.3m) + BH7 (0.05-0.2m)	✔	✔	✔	✔	✔	✔
48	C4	BH10 (0-0.15m) + BH14 (0.-0.15m) + BH15 (0-0.15m)	✔	✔	✔	-	-	-
49	C5	BH11 (0-0.15m) + BH12 (0-0.15m) + BH13 (0-0.15m)	✔	✔	✔	-	-	-
50	C6	BH16 (0-0.1m) + BH17 (0-0.15m) + BH18 (0-0.15m)	✔	✔	✔	-	-	-
51	C7	BH19 (0-0.15m) + BH20 (0-0.15m) + BH21 (0-015m)	✔	✔	✔	-	-	-
52	C8	BH10 (0.15-0.45m) + BH14 (0.2-0.5m) + BH15 (0.2-0.5m)	✔	✔	✔	✔	✔	✔
53	C9	BH11 (0.2-0.5m) + BH13 (0.3-0.6m) + BH15 (0.9-1.2m)	✔	✔	✔	✔	✔	✔
54	C10	BH16 (0.1-0.4m) + BH17 (0.2-0.5m) + BH21 (0.2-0.5m)	✔	✔	✔	✔	✔	✔
55	C11	BH16 (2.1-2.4m) + BH16 (3.1-3.4m) + BH21 (0.8-1.1m)	✔	✔	✔	✔	✔	✔
56	Duplicate D101	X1 + X2 + X3	✔	✔	✔	✔	✔	✔

*: Heavy Metals include As, Cd, Cr, Cu, Pb, Hg, Ni and Zn
✔: Test required
OCP: Organochlorine Pesticides
OPP: Organophosphorus Pesticides
PCB: Polychlorinated Biphenyls

GEOTECHNIQUE PTY LTD
(JOHN XU)
21/3/2014

SAMPLE RECEIPT ADVICE

SE126027

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	**13138-1 - Canterbury**
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 19/3/2014
Report Due	Thu 27/3/2014
SGS Reference	**SE126027**

SUBMISSION DETAILS

This is to confirm that 57 samples were received on Wednesday 19/3/2014. Results are expected to be ready by Thursday 27/3/2014. Please quote SGS reference SE126027 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Sample counts by matrix	43 Soils, 1 Water	Type of documentation received	COC
Date documentation received	21/3/14@9:58/15:37	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	3.9°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		

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

COMMENTS

Instructions received at SGS on 21/03/2014@09:58am and 03:37pm.
16 soil and 1 water samples, which were not marked for analyses on the COC, have been placed on hold. These samples will not be processed.

SAMPLE RECEIPT ADVICE

SE126027

CLIENT DETAILS

Client Geotechnique

Project 13138-1 - Canterbury

SUMMARY OF ANALYSIS

No.	Sample ID	PAH (Polynuclear Aromatic Hydrocarbons) in	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
001	BH1 0.05-0.2	23	9	12	8
003	BH3 0-0.3	23	-	-	-
005	BH4 0-0.3	23	9	12	8
007	BH6 0-0.3	23	-	-	-
009	BH7 0-0.3	23	9	12	8
014	BH10 0.15-0.45	23	9	12	8
016	BH11 0.2-0.5	23	-	-	-
019	BH13 0.3-0.6	23	9	12	8
021	BH14 0.2-0.5	23	-	-	-
023	BH15 0.2-0.5	23	-	-	-
024	BH15 0.9-1.2	23	-	-	-

CONTINUED OVERLEAF

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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

SE126027

CLIENT DETAILS

Client Geotechnique

Project 13138-1 - Canterbury

SUMMARY OF ANALYSIS

No.	Sample ID	OC Pesticides in Soil	OP Pesticides in Soil	PAH (Polynuclear Aromatic Hydrocarbons) in	PCBs in Soil	Total Phenolics in Soil	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
028	BH16 2.1-2.4	-	-	23	-	-	9	12	8
032	BH17 0.2-0.5	-	-	23	-	-	9	12	8
036	BH21 0.2-0.5	-	-	23	-	-	9	12	8
038	BH21 1.3-1.6	-	-	23	-	-	9	12	8
042	X3	-	-	23	-	-	9	12	8
044	Tripspike TS1	-	-	-	-	-	-	12	-
045	C1	28	13	-	11	1	-	-	-
046	C2	28	13	-	11	1	-	-	-
047	C3	28	13	-	11	1	-	-	-
048	C4	28	13	-	-	-	-	-	-

CONTINUED OVERLEAF

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SAMPLE RECEIPT ADVICE

SE126027

CLIENT DETAILS

Client Geotechnique

Project 13138-1 - Canterbury

SUMMARY OF ANALYSIS

No.	Sample ID	OC Pesticides in Soil	OP Pesticides in Soil	PCBs in Soil	Total Phenolics in Soil
049	C5	28	13	-	-
050	C6	28	13	-	-
051	C7	28	13	-	-
052	C8	28	13	11	1
053	C9	28	13	11	1
054	C10	28	13	11	1
055	C11	28	13	11	1
056	Duplicate D101	28	13	11	1

CONTINUED OVERLEAF

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SAMPLE RECEIPT ADVICE

SE126027

CLIENT DETAILS

Client Geotechnique

Project 13138-1 - Canterbury

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	Fibre Identification in soil	Mercury in Soil	Moisture Content	pH in soil (1:5)	TOC in Soil	Total Recoverable Metals in Soil by ICPOES from
001	BH1 0.05-0.2	13	2	-	1	1	1	-
003	BH3 0-0.3	-	-	-	1	-	-	-
004	BH3 0.55-0.65	13	-	1	1	1	1	7
005	BH4 0-0.3	13	2	-	1	1	1	-
007	BH6 0-0.3	-	-	-	1	-	-	-
008	BH6 0.45-0.55	13	-	1	1	1	1	7
009	BH7 0-0.3	13	2	-	1	1	1	-
011	BH8 0.25-0.35	13	-	1	1	1	1	7
013	BH10 0-0.15	13	-	-	1	1	1	-
014	BH10 0.15-0.45	-	2	-	1	-	-	-
016	BH11 0.2-0.5	-	-	-	1	-	-	-
017	BH12 0-0.15	13	-	-	1	1	1	-
019	BH13 0.3-0.6	-	2	-	1	-	-	-
021	BH14 0.2-0.5	-	-	-	1	-	-	-
023	BH15 0.2-0.5	-	-	-	1	-	-	-
024	BH15 0.9-1.2	-	-	-	1	-	-	-

CONTINUED OVERLEAF

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SAMPLE RECEIPT ADVICE

SE126027

CLIENT DETAILS

Client Geotechnique

Project 13138-1 - Canterbury

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	Fibre Identification in soil	Mercury in Soil	Moisture Content	pH in soil (1:5)	TOC in Soil	Total Cyanide in soil by Discrete Analyser	Total Recoverable Metals in Soil by ICPOES from
025	BH15 1.25-1.35	-	-	1	1	-	-	-	7
028	BH16 2.1-2.4	13	2	-	1	1	1	-	-
030	BH16 3.45-3.55	-	-	1	1	-	-	-	7
032	BH17 0.2-0.5	13	2	-	1	1	1	-	-
036	BH21 0.2-0.5	13	2	-	1	1	1	-	-
038	BH21 1.3-1.6	13	2	-	1	1	1	-	-
039	BH21 1.75-1.85	-	-	1	1	-	-	-	7
042	X3	-	-	-	1	-	-	-	-
045	C1	-	-	1	1	-	-	1	7
046	C2	-	-	1	1	-	-	1	7
047	C3	-	-	1	1	-	-	1	7
048	C4	-	-	1	1	-	-	-	7

CONTINUED OVERLEAF

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SAMPLE RECEIPT ADVICE

SE126027

CLIENT DETAILS

Client Geotechnique

Project 13138-1 - Canterbury

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury in Soil	Moisture Content	Total Cyanide in soil by Discrete Analyser	Total Recoverable Metals in Soil by ICPOES from
049	C5	1	1	-	7
050	C6	1	1	-	7
051	C7	1	1	-	7
052	C8	1	1	1	7
053	C9	1	1	1	7
054	C10	1	1	1	7
055	C11	1	1	1	7
056	Duplicate D101	1	1	1	7

CONTINUED OVERLEAF

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SAMPLE RECEIPT ADVICE

SE126027

CLIENT DETAILS

Client Geotechnique

Project 13138-1 - Canterbury

SUMMARY OF ANALYSIS

No.	Sample ID	OC Pesticides in Water	OP Pesticides in Water	PAH (Polynuclear Aromatic Hydrocarbons) in	PCBs in Water	Total Phenolics in Water	TRH (Total Recoverable Hydrocarbons) in Water	VOCs in Water	Volatile Petroleum Hydrocarbons in Water
043	Rinsate R1	28	13	22	11	1	9	12	8

CONTINUED OVERLEAF

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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

SE126027

CLIENT DETAILS

Client Geotechnique

Project 13138-1 - Canterbury

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury (dissolved) in Water	Metals in Water (Dissolved) by ICPOES	Total Cyanide in water by Discrete Analyser
043	Rinsate R1	1	7	1

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The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details.
Testing as per this table shall commence immediately unless the client intervenes with a correction.

ANALYTICAL REPORT

WORLD RECOGNISED ACCREDITATION

CLIENT DETAILS

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	**13138-1- Canterbury- Additional Analyses**
Order Number	(Not specified)
Samples	57
Date Received	19/3/2014

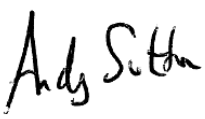
LABORATORY DETAILS

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	**SE126027A R0**
Report Number	0000079493
Date Reported	4/4/2014

COMMENTS

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

SIGNATORIES



Andy Sutton
Senior Organic Chemist

Dong Liang
Metals/Inorganics Team Leader

Kamrul Ahsan
Senior Chemist

Ly Kim Ha
Organic Section Head

VOC's in Soil [AN433/AN434]

PARAMETER	UOM	LOR	BH21 1.75-1.85 SOIL 18/3/2014 SE126027A.039
Benzene	mg/kg	0.10	<0.1
Toluene	mg/kg	0.10	<0.1
Ethylbenzene	mg/kg	0.10	<0.1
m/p-xylene	mg/kg	0.20	<0.2
o-xylene	mg/kg	0.10	<0.1
Total Xylenes*	mg/kg	0.30	<0.3
Total BTEX*	mg/kg	0.60	<0.6
Naphthalene	mg/kg	0.10	<0.1

Volatile Petroleum Hydrocarbons in Soil [AN433/AN434/AN410]

PARAMETER	UOM	LOR	BH21 1.75-1.85 SOIL 18/3/2014 SE126027A.039
TRH C6-C9	mg/kg	20	<20
Benzene (F0)	mg/kg	0.10	<0.1
TRH C6-C10	mg/kg	25.0	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25.0	<25

TRH (Total Recoverable Hydrocarbons) in Soil [AN403]

PARAMETER	UOM	LOR	BH21 1.75-1.85 SOIL 18/3/2014 SE126027A.039
TRH C10-C14	mg/kg	20	<20
TRH C15-C28	mg/kg	45.0	**140**
TRH C29-C36	mg/kg	45.0	**170**
TRH C37-C40	mg/kg	100	<100
TRH >C10-C16 (F2)	mg/kg	25.0	<25
TRH >C16-C34 (F3)	mg/kg	90	**250**
TRH >C34-C40 (F4)	mg/kg	120	<120
TRH C10-C36 Total	mg/kg	110	**300**
TRH C10-C40 Total	mg/kg	210	**300**

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420]

PARAMETER	UOM	LOR	BH21 1.75-1.85 SOIL 18/3/2014 SE126027A.039
Naphthalene	mg/kg	0.10	**0.2**
2-methylnaphthalene	mg/kg	0.10	<0.1
1-methylnaphthalene	mg/kg	0.10	<0.1
Acenaphthylene	mg/kg	0.10	**0.4**
Acenaphthene	mg/kg	0.10	**0.1**
Fluorene	mg/kg	0.10	**0.3**
Phenanthrene	mg/kg	0.10	**2.8**
Anthracene	mg/kg	0.10	**0.6**
Fluoranthene	mg/kg	0.10	**4.8**
Pyrene	mg/kg	0.10	**4.4**
Benzo(a)anthracene	mg/kg	0.10	**3.1**
Chrysene	mg/kg	0.10	**1.9**
Benzo(b&j)fluoranthene	mg/kg	0.10	**3.0**
Benzo(k)fluoranthene	mg/kg	0.10	**1.2**
Benzo(a)pyrene	mg/kg	0.10	**2.5**
Indeno(1,2,3-cd)pyrene	mg/kg	0.10	**2.2**
Dibenzo(a&h)anthracene	mg/kg	0.10	**0.2**
Benzo(ghi)perylene	mg/kg	0.10	**1.5**
Total PAH	mg/kg	0.80	**29**
Carcinogenic PAHs (as BaP TEQ)	TEQ	0.20	**3.6**

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest [AN040/AN320]

PARAMETER	UOM	LOR	BH2 0.1-0.4 SOIL 18/3/2014 SE126027A.002	BH4 0-0.3 SOIL 18/3/2014 SE126027A.005	BH5 0-0.15 SOIL 18/3/2014 SE126027A.006	BH10 0-0.15 SOIL 18/3/2014 SE126027A.013	BH11 0-0.15 SOIL 18/3/2014 SE126027A.015	BH12 0-0.15 SOIL 18/3/2014 SE126027A.017
Arsenic, As	mg/kg	1.0	-	-	-	-	-	-
Cadmium, Cd	mg/kg	0.30	-	-	-	0.7	-	-
Chromium, Cr	mg/kg	0.50	-	-	-	-	-	-
Copper, Cu	mg/kg	0.50	-	-	-	-	4.0	9.6
Lead, Pb	mg/kg	1.0	-	-	-	-	-	-
Nickel, Ni	mg/kg	0.50	1.8	43	3.8	-	-	-
Zinc, Zn	mg/kg	2.0	11	32	320	-	-	-

PARAMETER	UOM	LOR	BH13 0-0.15 SOIL 18/3/2014 SE126027A.018	BH14 0-0.15 SOIL 18/3/2014 SE126027A.020	BH15 0-0.15 SOIL 18/3/2014 SE126027A.022	BH16 0-0.1 SOIL 18/3/2014 SE126027A.026	BH16 0.1-0.4 SOIL 18/3/2014 SE126027A.027	BH17 0-0.15 SOIL 18/3/2014 SE126027A.031
Arsenic, As	mg/kg	1.0	-	-	-	-	-	-
Cadmium, Cd	mg/kg	0.30	-	1.8	2.2	0.5	-	0.4
Chromium, Cr	mg/kg	0.50	-	-	-	-	-	-
Copper, Cu	mg/kg	0.50	11	-	-	-	14	-
Lead, Pb	mg/kg	1.0	-	-	-	-	-	-
Nickel, Ni	mg/kg	0.50	-	-	-	4.4	-	1.5
Zinc, Zn	mg/kg	2.0	-	-	-	-	-	-

PARAMETER	UOM	LOR	BH17 0.2-0.5 SOIL 18/3/2014 SE126027A.032	BH18 0-0.15 SOIL 18/3/2014 SE126027A.033	BH19 0-0.15 SOIL 18/3/2014 SE126027A.034	BH20 0-0.15 SOIL 18/3/2014 SE126027A.035	BH21 0.2-0.5 SOIL 18/3/2014 SE126027A.036	BH21 1.3-1.6 SOIL 18/3/2014 SE126027A.038
Arsenic, As	mg/kg	1.0	-	-	-	-	-	5
Cadmium, Cd	mg/kg	0.30	-	1.7	-	-	-	<0.3
Chromium, Cr	mg/kg	0.50	-	-	-	-	-	6.0
Copper, Cu	mg/kg	0.50	20	-	67	17	2.2	30
Lead, Pb	mg/kg	1.0	-	-	-	-	-	23
Nickel, Ni	mg/kg	0.50	-	3.5	3.7	3.8	-	4.0
Zinc, Zn	mg/kg	2.0	-	-	60	44	-	41

PARAMETER	UOM	LOR	BH21 0-0.15 SOIL 18/3/2014 SE126027A.057
Arsenic, As	mg/kg	1.0	-
Cadmium, Cd	mg/kg	0.30	-
Chromium, Cr	mg/kg	0.50	-
Copper, Cu	mg/kg	0.50	8.3
Lead, Pb	mg/kg	1.0	-
Nickel, Ni	mg/kg	0.50	3.1
Zinc, Zn	mg/kg	2.0	18

Mercury in Soil [AN312]

PARAMETER	UOM	LOR	BH10 0-0.15 SOIL 18/3/2014 SE126027A.013	BH10 0.15-0.45 SOIL 18/3/2014 SE126027A.014	BH11 0.2-0.5 SOIL 18/3/2014 SE126027A.016	BH13 0.3-0.6 SOIL 18/3/2014 SE126027A.019	BH14 0-0.15 SOIL 18/3/2014 SE126027A.020	BH14 0.2-0.5 SOIL 18/3/2014 SE126027A.021
Mercury	mg/kg	0.050	0.63	0.34	0.47	0.11	0.23	0.23

PARAMETER	UOM	LOR	BH15 0-0.15 SOIL 18/3/2014 SE126027A.022	BH15 0.2-0.5 SOIL 18/3/2014 SE126027A.023	BH15 0.9-1.2 SOIL 18/3/2014 SE126027A.024	BH16 0-0.1 SOIL 18/3/2014 SE126027A.026	BH17 0-0.15 SOIL 18/3/2014 SE126027A.031	BH18 0-0.15 SOIL 18/3/2014 SE126027A.033
Mercury	mg/kg	0.050	0.65	0.45	0.36	0.65	0.85	0.68

PARAMETER	UOM	LOR	BH19 0-0.15 SOIL 18/3/2014 SE126027A.034	BH20 0-0.15 SOIL 18/3/2014 SE126027A.035	BH21 1.3-1.6 SOIL 18/3/2014 SE126027A.038	BH21 0-0.15 SOIL 18/3/2014 SE126027A.057
Mercury	mg/kg	0.050	0.13	0.69	<0.05	0.29

Moisture Content [AN002]

PARAMETER	UOM	LOR	BH2 0.1-0.4 SOIL 18/3/2014 SE126027A.002	BH5 0-0.15 SOIL 18/3/2014 SE126027A.006	BH11 0-0.15 SOIL 18/3/2014 SE126027A.015	BH13 0-0.15 SOIL 18/3/2014 SE126027A.018	BH14 0-0.15 SOIL 18/3/2014 SE126027A.020	BH15 0-0.15 SOIL 18/3/2014 SE126027A.022
% Moisture	%	0.50	20.0	14.8	9.2	11.7	9.4	10.3

PARAMETER	UOM	LOR	BH16 0-0.1 SOIL 18/3/2014 SE126027A.026	BH16 0.1-0.4 SOIL 18/3/2014 SE126027A.027	BH17 0-0.15 SOIL 18/3/2014 SE126027A.031	BH18 0-0.15 SOIL 18/3/2014 SE126027A.033	BH19 0-0.15 SOIL 18/3/2014 SE126027A.034	BH20 0-0.15 SOIL 18/3/2014 SE126027A.035
% Moisture	%	0.50	10.9	21.9	7.2	10.7	11.7	10.5

PARAMETER	UOM	LOR	BH21 0-0.15 SOIL 18/3/2014 SE126027A.057
% Moisture	%	0.50	5.9

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analsysis by ASS or ICP as per USEPA Method 200.8.
AN040/AN320	A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
AN088	Orbital rolling for Organic pollutants are extracted from soil/sediment by transferring an appropriate mass of sample to a clear soil jar and extracting with 1:1 Dichloromethane/Acetone. Orbital Rolling method is intended for the extraction of semi-volatile organic compounds from soil/sediment samples, and is based somewhat on USEPA method 3570 (Micro Organic extraction and sample preparation). Method 3700.
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
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 Draft NEPM 2011, >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is not corrected for Naphthalene.
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).
AN433/AN434	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.
AN433/AN434/AN410	VOCs and C6-C9/C6-C10 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.

FOOTNOTES

*	Analysis not covered by the scope of accreditation.	-	Not analysed.	UOM	Unit of Measure.
**	Indicative data, theoretical holding time exceeded.	NVL	Not validated.	LOR	Limit of Reporting.
^	Performed by outside laboratory.	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.

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

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: http://www.sgs.com.au.pv.sgsv3/~/media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf

STATEMENT OF QA/QC PERFORMANCE

SE126027A 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	**13138-1- Canterbury- Additional Analyses**
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	SE126027A R0
Report Number	0000079530
Date Reported	04 Apr 2014

COMMENTS

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

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

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

SAMPLE SUMMARY

Sample counts by matrix	26 Soils	Type of documentation received	COC
Date documentation received	28/03/2014@05:26p	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	3.9°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		

HOLDING TIME SUMMARY

SE126027A 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

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH10 0-0.15	SE126027A.013	LB055094	18 Mar 2014	19 Mar 2014	15 Apr 2014	01 Apr 2014	15 Apr 2014	01 Apr 2014
BH10 0.15-0.45	SE126027A.014	LB055094	18 Mar 2014	19 Mar 2014	15 Apr 2014	01 Apr 2014	15 Apr 2014	01 Apr 2014
BH11 0.2-0.5	SE126027A.016	LB055094	18 Mar 2014	19 Mar 2014	15 Apr 2014	01 Apr 2014	15 Apr 2014	01 Apr 2014
BH13 0.3-0.6	SE126027A.019	LB055094	18 Mar 2014	19 Mar 2014	15 Apr 2014	01 Apr 2014	15 Apr 2014	01 Apr 2014
BH14 0-0.15	SE126027A.020	LB055094	18 Mar 2014	19 Mar 2014	15 Apr 2014	01 Apr 2014	15 Apr 2014	01 Apr 2014
BH14 0.2-0.5	SE126027A.021	LB055094	18 Mar 2014	19 Mar 2014	15 Apr 2014	01 Apr 2014	15 Apr 2014	01 Apr 2014
BH15 0-0.15	SE126027A.022	LB055094	18 Mar 2014	19 Mar 2014	15 Apr 2014	01 Apr 2014	15 Apr 2014	01 Apr 2014
BH15 0.2-0.5	SE126027A.023	LB055094	18 Mar 2014	19 Mar 2014	15 Apr 2014	01 Apr 2014	15 Apr 2014	01 Apr 2014
BH15 0.9-1.2	SE126027A.024	LB055094	18 Mar 2014	19 Mar 2014	15 Apr 2014	01 Apr 2014	15 Apr 2014	01 Apr 2014
BH16 0-0.1	SE126027A.026	LB055094	18 Mar 2014	19 Mar 2014	15 Apr 2014	01 Apr 2014	15 Apr 2014	01 Apr 2014
BH17 0-0.15	SE126027A.031	LB055094	18 Mar 2014	19 Mar 2014	15 Apr 2014	01 Apr 2014	15 Apr 2014	01 Apr 2014
BH18 0-0.15	SE126027A.033	LB055094	18 Mar 2014	19 Mar 2014	15 Apr 2014	01 Apr 2014	15 Apr 2014	01 Apr 2014
BH19 0-0.15	SE126027A.034	LB055094	18 Mar 2014	19 Mar 2014	15 Apr 2014	01 Apr 2014	15 Apr 2014	01 Apr 2014
BH20 0-0.15	SE126027A.035	LB055094	18 Mar 2014	19 Mar 2014	15 Apr 2014	01 Apr 2014	15 Apr 2014	01 Apr 2014
BH21 1.3-1.6	SE126027A.038	LB055094	18 Mar 2014	19 Mar 2014	15 Apr 2014	01 Apr 2014	15 Apr 2014	01 Apr 2014
BH21 0-0.15	SE126027A.057	LB055094	18 Mar 2014	19 Mar 2014	15 Apr 2014	01 Apr 2014	15 Apr 2014	01 Apr 2014

Moisture Content

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH2 0.1-0.4	SE126027A.002	LB055060	18 Mar 2014	19 Mar 2014	01 Apr 2014	31 Mar 2014	05 Apr 2014	31 Mar 2014
BH5 0-0.15	SE126027A.006	LB055060	18 Mar 2014	19 Mar 2014	01 Apr 2014	31 Mar 2014	05 Apr 2014	31 Mar 2014
BH11 0-0.15	SE126027A.015	LB055060	18 Mar 2014	19 Mar 2014	01 Apr 2014	31 Mar 2014	05 Apr 2014	31 Mar 2014
BH13 0-0.15	SE126027A.018	LB055060	18 Mar 2014	19 Mar 2014	01 Apr 2014	31 Mar 2014	05 Apr 2014	31 Mar 2014
BH14 0-0.15	SE126027A.020	LB055060	18 Mar 2014	19 Mar 2014	01 Apr 2014	31 Mar 2014	05 Apr 2014	31 Mar 2014
BH15 0-0.15	SE126027A.022	LB055060	18 Mar 2014	19 Mar 2014	01 Apr 2014	31 Mar 2014	05 Apr 2014	31 Mar 2014
BH16 0-0.1	SE126027A.026	LB055060	18 Mar 2014	19 Mar 2014	01 Apr 2014	31 Mar 2014	05 Apr 2014	31 Mar 2014
BH16 0.1-0.4	SE126027A.027	LB055060	18 Mar 2014	19 Mar 2014	01 Apr 2014	31 Mar 2014	05 Apr 2014	31 Mar 2014
BH17 0-0.15	SE126027A.031	LB055060	18 Mar 2014	19 Mar 2014	01 Apr 2014	31 Mar 2014	05 Apr 2014	31 Mar 2014
BH18 0-0.15	SE126027A.033	LB055060	18 Mar 2014	19 Mar 2014	01 Apr 2014	31 Mar 2014	05 Apr 2014	31 Mar 2014
BH19 0-0.15	SE126027A.034	LB055060	18 Mar 2014	19 Mar 2014	01 Apr 2014	31 Mar 2014	05 Apr 2014	31 Mar 2014
BH20 0-0.15	SE126027A.035	LB055060	18 Mar 2014	19 Mar 2014	01 Apr 2014	31 Mar 2014	05 Apr 2014	31 Mar 2014
BH21 0-0.15	SE126027A.057	LB055060	18 Mar 2014	19 Mar 2014	01 Apr 2014	31 Mar 2014	05 Apr 2014	31 Mar 2014

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH21 1.75-1.85	SE126027A.039	LB055057	18 Mar 2014	19 Mar 2014	01 Apr 2014	31 Mar 2014	10 May 2014	02 Apr 2014

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH2 0.1-0.4	SE126027A.002	LB055089	18 Mar 2014	19 Mar 2014	14 Sep 2014	01 Apr 2014	14 Sep 2014	02 Apr 2014
BH4 0-0.3	SE126027A.005	LB055089	18 Mar 2014	19 Mar 2014	14 Sep 2014	01 Apr 2014	14 Sep 2014	02 Apr 2014
BH5 0-0.15	SE126027A.006	LB055089	18 Mar 2014	19 Mar 2014	14 Sep 2014	01 Apr 2014	14 Sep 2014	02 Apr 2014
BH10 0-0.15	SE126027A.013	LB055089	18 Mar 2014	19 Mar 2014	14 Sep 2014	01 Apr 2014	14 Sep 2014	02 Apr 2014
BH11 0-0.15	SE126027A.015	LB055089	18 Mar 2014	19 Mar 2014	14 Sep 2014	01 Apr 2014	14 Sep 2014	02 Apr 2014
BH12 0-0.15	SE126027A.017	LB055089	18 Mar 2014	19 Mar 2014	14 Sep 2014	01 Apr 2014	14 Sep 2014	02 Apr 2014
BH13 0-0.15	SE126027A.018	LB055089	18 Mar 2014	19 Mar 2014	14 Sep 2014	01 Apr 2014	14 Sep 2014	02 Apr 2014
BH14 0-0.15	SE126027A.020	LB055089	18 Mar 2014	19 Mar 2014	14 Sep 2014	01 Apr 2014	14 Sep 2014	02 Apr 2014
BH15 0-0.15	SE126027A.022	LB055089	18 Mar 2014	19 Mar 2014	14 Sep 2014	01 Apr 2014	14 Sep 2014	02 Apr 2014
BH16 0-0.1	SE126027A.026	LB055089	18 Mar 2014	19 Mar 2014	14 Sep 2014	01 Apr 2014	14 Sep 2014	02 Apr 2014
BH16 0.1-0.4	SE126027A.027	LB055089	18 Mar 2014	19 Mar 2014	14 Sep 2014	01 Apr 2014	14 Sep 2014	02 Apr 2014
BH17 0-0.15	SE126027A.031	LB055089	18 Mar 2014	19 Mar 2014	14 Sep 2014	01 Apr 2014	14 Sep 2014	02 Apr 2014
BH17 0.2-0.5	SE126027A.032	LB055089	18 Mar 2014	19 Mar 2014	14 Sep 2014	01 Apr 2014	14 Sep 2014	02 Apr 2014
BH18 0-0.15	SE126027A.033	LB055089	18 Mar 2014	19 Mar 2014	14 Sep 2014	01 Apr 2014	14 Sep 2014	02 Apr 2014
BH19 0-0.15	SE126027A.034	LB055089	18 Mar 2014	19 Mar 2014	14 Sep 2014	01 Apr 2014	14 Sep 2014	02 Apr 2014
BH20 0-0.15	SE126027A.035	LB055089	18 Mar 2014	19 Mar 2014	14 Sep 2014	01 Apr 2014	14 Sep 2014	02 Apr 2014
BH21 0.2-0.5	SE126027A.036	LB055089	18 Mar 2014	19 Mar 2014	14 Sep 2014	01 Apr 2014	14 Sep 2014	02 Apr 2014
BH21 1.3-1.6	SE126027A.038	LB055089	18 Mar 2014	19 Mar 2014	14 Sep 2014	01 Apr 2014	14 Sep 2014	02 Apr 2014
BH21 0-0.15	SE126027A.057	LB055089	18 Mar 2014	19 Mar 2014	14 Sep 2014	01 Apr 2014	14 Sep 2014	02 Apr 2014

TRH (Total Recoverable Hydrocarbons) in Soil

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

Sample Name	Sample No.	QC Ref

HOLDING TIME SUMMARY

SE126027A R0

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

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

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

TRH (Total Recoverable Hydrocarbons) in Soil (continued)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH21 1.75-1.85	SE126027A.039	LB055057	18 Mar 2014	19 Mar 2014	01 Apr 2014	31 Mar 2014	10 May 2014	03 Apr 2014

VOC's in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH21 1.75-1.85	SE126027A.039	LB055062	18 Mar 2014	19 Mar 2014	01 Apr 2014	31 Mar 2014	10 May 2014	03 Apr 2014

Volatile Petroleum Hydrocarbons in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH21 1.75-1.85	SE126027A.039	LB055062	18 Mar 2014	19 Mar 2014	01 Apr 2014	31 Mar 2014	10 May 2014	03 Apr 2014

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

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

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH21 1.75-1.85	SE126027A.039	%	60 - 130%	102
d14-p-terphenyl (Surrogate)	BH21 1.75-1.85	SE126027A.039	%	60 - 130%	116
d5-nitrobenzene (Surrogate)	BH21 1.75-1.85	SE126027A.039	%	60 - 130%	110

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH21 1.75-1.85	SE126027A.039	%	60 - 130%	92
d4-1,2-dichloroethane (Surrogate)	BH21 1.75-1.85	SE126027A.039	%	60 - 130%	102
d8-toluene (Surrogate)	BH21 1.75-1.85	SE126027A.039	%	60 - 130%	88
Dibromofluoromethane (Surrogate)	BH21 1.75-1.85	SE126027A.039	%	60 - 130%	86

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH21 1.75-1.85	SE126027A.039	%	60 - 130%	92
d4-1,2-dichloroethane (Surrogate)	BH21 1.75-1.85	SE126027A.039	%	60 - 130%	102
d8-toluene (Surrogate)	BH21 1.75-1.85	SE126027A.039	%	60 - 130%	88
Dibromofluoromethane (Surrogate)	BH21 1.75-1.85	SE126027A.039	%	60 - 130%	86

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

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

Mercury in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB055094.001	Mercury	mg/kg	0.05	<0.05

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB055057.001		Naphthalene	mg/kg	0.1	<0.1
		2-methylnaphthalene	mg/kg	0.1	<0.1
		1-methylnaphthalene	mg/kg	0.1	<0.1
		Acenaphthylene	mg/kg	0.1	<0.1
		Acenaphthene	mg/kg	0.1	<0.1
		Fluorene	mg/kg	0.1	<0.1
		Phenanthrene	mg/kg	0.1	<0.1
		Anthracene	mg/kg	0.1	<0.1
		Fluoranthene	mg/kg	0.1	<0.1
		Pyrene	mg/kg	0.1	<0.1
		Benzo(a)anthracene	mg/kg	0.1	<0.1
		Chrysene	mg/kg	0.1	<0.1
		Benzo(a)pyrene	mg/kg	0.1	<0.1
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1
		Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1
		Benzo(ghi)perylene	mg/kg	0.1	<0.1
		Total PAH	mg/kg	0.8	<0.8
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	114
		2-fluorobiphenyl (Surrogate)	%	-	104
		d14-p-terphenyl (Surrogate)	%	-	112

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

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

Sample Number	Parameter	Units	LOR	Result
LB055089.001	Arsenic, As	mg/kg	1	<1
	Cadmium, Cd	mg/kg	0.3	<0.3
	Chromium, Cr	mg/kg	0.5	<0.5
	Copper, Cu	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Nickel, Ni	mg/kg	0.5	<0.5
	Zinc, Zn	mg/kg	2	<2

TRH (Total Recoverable Hydrocarbons) in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB055057.001	TRH C10-C14	mg/kg	20	<20
	TRH C15-C28	mg/kg	45	<45
	TRH C29-C36	mg/kg	45	<45
	TRH C37-C40	mg/kg	100	<100
	TRH C10-C36 Total	mg/kg	110	<110

VOC's in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB055062.001	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)	%	-	95
		d4-1,2-dichloroethane (Surrogate)	%	-	112
		d8-toluene (Surrogate)	%	-	111
		Bromofluorobenzene (Surrogate)	%	-	108
	Totals	Total BTEX*	mg/kg	0.6	<0.6

Volatile Petroleum Hydrocarbons in Soil

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

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/AN434/AN410

Sample Number		Parameter	Units	LOR	Result
LB055062.001		TRH C6-C9	mg/kg	20	<20
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	95
		d4-1,2-dichloroethane (Surrogate)	%	-	112
		d8-toluene (Surrogate)	%	-	111

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 %
SE126027A.026	LB055094.014	Mercury	mg/kg	0.05	0.65	0.66	32	2
SE126027A.057	LB055094.021	Mercury	mg/kg	0.05	0.29	0.30	33	2

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE126260.001	LB055057.014		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(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	200	0
			Total PAH	mg/kg	0.8	<0.8	<0.8	200	0
			Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.2	<0.2	<0.2	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.6	0.54	30	14
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.6	0.54	30	9
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.41	30	14

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE126027A.026	LB055089.014	Cadmium, Cd	mg/kg	0.3	0.5	0.5	94	3
		Nickel, Ni	mg/kg	0.5	4.4	4.4	41	2
SE126027A.057	LB055089.024	Copper, Cu	mg/kg	0.5	8.3	6.5	37	24
		Nickel, Ni	mg/kg	0.5	3.1	2.3	48	27
		Zinc, Zn	mg/kg	2	18	14	43	21

TRH (Total Recoverable Hydrocarbons) in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE126260.001	LB055057.015		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 >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/AN434

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE126027A.039	LB055062.004	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	-	4.3	5.1	50	17
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.1	5.7	50	12
			d8-toluene (Surrogate)	mg/kg	-	4.4	5.0	50	13
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.6	5.0	50	8

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/AN434

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE126027A.039	LB055062.004	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/AN434/AN410

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE126027A.039	LB055062.004		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	-	4.3	5.1	30	17
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.1	5.7	30	12
			d8-toluene (Surrogate)	mg/kg	-	4.4	5.0	30	13
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.6	5.0	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.

Mercury in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB055094.002	Mercury	mg/kg	0.05	0.21	0.2	70 - 130	106

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB055057.002		Naphthalene	mg/kg	0.1	4.0	4	60 - 140	99
		Acenaphthylene	mg/kg	0.1	4.0	4	60 - 140	99
		Acenaphthene	mg/kg	0.1	4.1	4	60 - 140	102
		Phenanthrene	mg/kg	0.1	3.9	4	60 - 140	98
		Anthracene	mg/kg	0.1	3.9	4	60 - 140	98
		Fluoranthene	mg/kg	0.1	3.9	4	60 - 140	99
		Pyrene	mg/kg	0.1	3.7	4	60 - 140	92
		Benzo(a)pyrene	mg/kg	0.1	4.3	4	60 - 140	108
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.6	0.5	40 - 130	114
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	100
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.6	0.5	40 - 130	114

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB055089.002	Arsenic, As	mg/kg	1	51	50	80 - 120	103
	Cadmium, Cd	mg/kg	0.3	51	50	80 - 120	102
	Chromium, Cr	mg/kg	0.5	51	50	80 - 120	103
	Copper, Cu	mg/kg	0.5	51	50	80 - 120	103
	Lead, Pb	mg/kg	1	51	50	80 - 120	103
	Nickel, Ni	mg/kg	0.5	51	50	80 - 120	103
	Zinc, Zn	mg/kg	2	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 %
LB055057.002		TRH C10-C14	mg/kg	20	40	40	60 - 140	100
		TRH C15-C28	mg/kg	45	<45	40	60 - 140	98
		TRH C29-C36	mg/kg	45	<45	40	60 - 140	83
	TRH F Bands	TRH >C10-C16 (F2)	mg/kg	25	40	40	60 - 140	100
		TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	98
		TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	75

VOC's in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB055062.002	Monocyclic	Benzene	mg/kg	0.1	2.4	2.9	60 - 140	81
	Aromatic	Toluene	mg/kg	0.1	2.6	2.9	60 - 140	90
		Ethylbenzene	mg/kg	0.1	2.6	2.9	60 - 140	89
		m/p-xylene	mg/kg	0.2	5.1	5.8	60 - 140	88
		o-xylene	mg/kg	0.1	2.5	2.9	60 - 140	88
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	5.1	5	60 - 140	102
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.7	5	60 - 140	113
		d8-toluene (Surrogate)	mg/kg	-	5.5	5	60 - 140	111
		Bromofluorobenzene (Surrogate)	mg/kg	-	6.0	5	60 - 140	119

Volatile Petroleum Hydrocarbons in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB055062.002		TRH C6-C10	mg/kg	25	<25	24.65	60 - 140	99
		TRH C6-C9	mg/kg	20	22	23.2	60 - 140	93
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	5.1	5	60 - 140	102
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.7	5	60 - 140	113
		d8-toluene (Surrogate)	mg/kg	-	5.5	5	60 - 140	111
		Bromofluorobenzene (Surrogate)	mg/kg	-	6.0	5	60 - 140	119
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	7.25	60 - 140	128

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

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

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE126027A.01	LB055094.004	Mercury	mg/kg	0.05	0.81	0.63	0.2	91

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE126027A.00	LB055089.004	Nickel, Ni	mg/kg	0.5	51	1.8	50	98
2		Zinc, Zn	mg/kg	2	59	11	50	96

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%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf

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

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

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

28/03/2014 @ 5:26PM

SGS Ref: SE126027A

Due Date: 04/04/2014

TAT: Standard

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: LY

Job No: 13138/1

Project:

Project Manager: JX

Location: Canterbury

Results required by: 4th April 2014 - Standard Turnaround Time (SGS Ref. SE126027)

	Location	Depth (m)	Date	Time	Sample type: Soil	Sample type: Water	Metals As, Cd, Cr, Cu, Pb, Hg, Ni and Zn	Cd	Cu	Hg	Ni	Zn	TPH* & BTEX	PAH		KEEP SAMPLE
	BH1	0.05-0.2	18/03/2014	-	SG/SP											YES
	BH1	0.25-0.35	18/03/2014	-	SG											YES
2	BH2	0.1-0.4	18/03/2014	-	SG/SP						✓	✓				YES
	BH2	0.45-0.55	18/03/2014	-	SG											YES
	BH3	0-0.3	18/03/2014	-	SG/SP											YES
	BH3	0.55-0.65	18/03/2014	-	SG											YES
5	BH4	0-0.3	18/03/2014	-	SG/SP						✓	✓				YES
	BH4	0.55-0.65	18/03/2014	-	SG											YES
6	BH5	0-0.15	18/03/2014	-	SG/SP						✓	✓				YES
	BH6	0-0.3	18/03/2014	-	SG/SP											YES
	BH6	0.45-0.55	18/03/2014	-	SG											YES
	BH7	0-0.3	18/03/2014	-	SG/SP											YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	28/03/2014	KARLA	Karla	28/03/2014 @ 5:26PM

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

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: LY
Job No: 13138/1
Project:
Project Manager: JX
Location: Canterbury

Results required by: 4th April 2014 - Standard Turnaround Time (SGS Ref. SE126027)

	Location	Depth (m)	Date	Time	Sample type: Soil	Sample type: Water	Metals As, Cd, Cr, Cu, Pb, Hg, Ni and Zn	Cd	Cu	Hg	Ni	Zn	TPH* & BTEX	PAH		KEEP SAMPLE
	BH7	0.55-0.65	18/03/2014	-	SG											YES
	BH8	0.05-0.2	18/03/2014	-	SG/SP											YES
	BH8	0.25-0.35	18/03/2014	-	SG											YES
	BH9	0.05-0.2	18/03/2014	-	SG/SP											YES
	BH9	0.25-0.35	18/03/2014	-	SG											YES
13	BH10	0-0.15	18/03/2014	-	SG/SP			✓		✓						YES
14	BH10	0.15-0.45	18/03/2014	-	SG/SP					✓						YES
	BH10	0.7-0.8	18/03/2014	-	SG											YES
15	BH11	0-0.15	18/03/2014	-	SG/SP				✓							YES
16	BH11	0.2-0.5	18/03/2014	-	SG/SP					✓						YES
	BH11	0.65-0.75	18/03/2014	-	SG											YES
17	BH12	0-0.15	18/03/2014	-	SG/SP				✓							YES

Relinquished by

Name	Signature	Date
JOHN XU	jx	28/03/2014

Received by

Name	Signature	Date
KARLA	karla	28/3/2014 @ 5:26 p.m.

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

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: LY
Job No: 13138/1
Project:
Project Manager: JX
Location: Canterbury

Results required by: 4th April 2014 - Standard Turnaround Time (SGS Ref. SE126027)

	Location	Depth (m)	Date	Time	Sample type: Soil	Sample type: Water	Metals As, Cd, Cr, Cu, Pb, Hg, Ni and Zn	Cd	Cu	Hg	Ni	Zn	TPH* & BTEX	PAH		KEEP SAMPLE
18	BH13	0-0.15	18/03/2014	-	SG/SP				✓							YES
19	BH13	0.3-0.6	18/03/2014	-	SG/SP					✓						YES
	BH13	0.95-1.05	18/03/2014	-	SG											YES
20	BH14	0-0.15	18/03/2014	-	SG/SP			✓		✓						YES
21	BH14	0.2-0.5	18/03/2014	-	SG/SP					✓						YES
	BH14	0.75-0.85	18/03/2014	-	SG											YES
22	BH15	0-0.15	18/03/2014	-	SG/SP			✓		✓						YES
23	BH15	0.2-0.5	18/03/2014	-	SG/SP					✓						YES
24	BH15	0.9-1.2	18/03/2014	-	SG/SP					✓						YES
	BH15	1.25-1.35	18/03/2014	-	SG											YES
26	BH16	0-0.1	18/03/2014	-	SG/SP			✓		✓	✓					YES
27	BH16	0.1-0.4	18/03/2014	-	SG/SP				✓							YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	28/03/2014	KARLA		28/03/2014 @ 5:26PM

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

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: LY **Job No:** 13138/1

Project:

Project Manager: JX **Location:** Canterbury

Results required by: 4th April 2014 - Standard Turnaround Time (SGS Ref. SE126027)

	Location	Depth (m)	Date	Time	Soil	Water	Metals As, Cd, Cr, Cu, Pb, Hg, Ni and Zn	Cd	Cu	Hg	Ni	Zn	TPH* & BTEX	PAH		KEEP SAMPLE
	BH16	1.1-1.4	18/03/2014	-	SG/SP											YES
	BH16	2.1-2.4	18/03/2014	-	SG/SP											YES
	BH16	3.1-3.4	18/03/2014	-	SG/SP											YES
	BH16	3.45-3.55	18/03/2014	-	SG											YES
31	BH17	0-0.15	18/03/2014	-	SG/SP			✓		✓	✓					YES
32	BH17	0.2-0.5	18/03/2014	-	SG/SP				✓							YES
	BH17	0.7-1.0	18/03/2014	-	SG/SP											YES
	BH17	1.25-1.35	18/03/2014	-	SG											YES
33	BH18	0-0.15	18/03/2014	-	SG/SP			✓		✓	✓					YES
34	BH19	0-0.15	18/03/2014	-	SG/SP				✓	✓	✓	✓				YES
35	BH20	0-0.15	18/03/2014	-	SG/SP				✓	✓	✓	✓				YES
57	BH21	0-0.15	18/03/2014	-	SG/SP				✓	✓	✓	✓				YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	28/03/2014	KARLA	Karla	28/03/2014 @ 5:26/h

Legend:

WG	Water sample, glass bottle	SG	Soil sample (glass jar)	SP	Soil sample (plastic bag)
WP	Water sample, plastic bottle			✓	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: LY **Job No:** 13138/1

Project:

Project Manager: JX **Location:** Canterbury

Results required by: 4th April 2014 - Standard Turnaround Time (SGS Ref. SE126027)

	Location	Depth (m)	Date	Time	Soil	Water	Metals As, Cd, Cr, Cu, Pb, Hg, Ni and Zn	Cd	Cu	Hg	Ni	Zn	TPH* & BTEX	PAH		KEEP SAMPLE
36	BH21	0.2-0.5	18/03/2014	-	SG/SP				✓							YES
	BH21	0.8-1.1	18/03/2014	-	SG/SP											YES
38	BH21	1.3-1.6	18/03/2014	-	SG/SP		✓									YES
39	BH21	1.75-1.85	18/03/2014	-	SG								✓	✓		YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	28/03/2014	[illegible]	[illegible]	28/03/2014 @ 5:26 PM.

Legend:

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

* Purge & Trap

SAMPLE RECEIPT ADVICE

SE126027A

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	**13138-1- Canterbury- Additional Analyses**
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 19/3/2014
Report Due	Fri 4/4/2014
SGS Reference	**SE126027A**

SUBMISSION DETAILS

This is to confirm that 57 samples were received on Wednesday 19/3/2014. Results are expected to be ready by Friday 4/4/2014. Please quote SGS reference SE126027A when making enquiries. Refer below for details relating to sample integrity upon receipt.

Sample counts by matrix	26 Soils	Type of documentation received	COC
Date documentation received	28/03/2014@05:26pm	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	3.9°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		

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

COMMENTS

Instructions received at SGS on 28/03/2014@05:26pm. Samples were not registered until the next working day.

SAMPLE RECEIPT ADVICE

SE126027A

CLIENT DETAILS

Client Geotechnique

Project 13138-1- Canterbury- Additional Analyses

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury in Soil	Total Recoverable Metals in Soil by ICPOES from
002	BH2 0.1-0.4	-	2
005	BH4 0-0.3	-	2
006	BH5 0-0.15	-	2
013	BH10 0-0.15	1	1
014	BH10 0.15-0.45	1	-
015	BH11 0-0.15	-	1
016	BH11 0.2-0.5	1	-
017	BH12 0-0.15	-	1
018	BH13 0-0.15	-	1
019	BH13 0.3-0.6	1	-
020	BH14 0-0.15	1	1
021	BH14 0.2-0.5	1	-
022	BH15 0-0.15	1	1
023	BH15 0.2-0.5	1	-
024	BH15 0.9-1.2	1	-

CONTINUED OVERLEAF

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

SAMPLE RECEIPT ADVICE

SE126027A

CLIENT DETAILS

Client Geotechnique

Project 13138-1- Canterbury- Additional Analyses

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury in Soil	PAH (Polynuclear Aromatic Hydrocarbons) in	Total Recoverable Metals in Soil by ICPOES from	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
026	BH16 0-0.1	1	-	2	-	-	-
027	BH16 0.1-0.4	-	-	1	-	-	-
031	BH17 0-0.15	1	-	2	-	-	-
032	BH17 0.2-0.5	-	-	1	-	-	-
033	BH18 0-0.15	1	-	2	-	-	-
034	BH19 0-0.15	1	-	3	-	-	-
035	BH20 0-0.15	1	-	3	-	-	-
036	BH21 0.2-0.5	-	-	1	-	-	-
038	BH21 1.3-1.6	1	-	7	-	-	-
039	BH21 1.75-1.85	-	23	-	9	12	8

CONTINUED OVERLEAF

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

SAMPLE RECEIPT ADVICE

SE126027A

CLIENT DETAILS

Client Geotechnique

Project 13138-1- Canterbury- Additional Analyses

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury in Soil	Total Recoverable Metals in Soil by ICPOES from
057	BH21 0-0.15	1	3

CONTINUED OVERLEAF

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

SAMPLE RECEIPT ADVICE

SE126027A

CLIENT DETAILS

Client Geotechnique

Project 13138-1- Canterbury- Additional Analyses

SUMMARY OF ANALYSIS

No.	Sample ID	Moisture Content
002	BH2 0.1-0.4	1
006	BH5 0-0.15	1
015	BH11 0-0.15	1
018	BH13 0-0.15	1
020	BH14 0-0.15	1
022	BH15 0-0.15	1

CONTINUED OVERLEAF

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

SAMPLE RECEIPT ADVICE

SE126027A

CLIENT DETAILS

Client Geotechnique

Project 13138-1- Canterbury- Additional Analyses

SUMMARY OF ANALYSIS

No.	Sample ID	Moisture Content
026	BH16 0-0.1	1
027	BH16 0.1-0.4	1
031	BH17 0-0.15	1
033	BH18 0-0.15	1
034	BH19 0-0.15	1
035	BH20 0-0.15	1

CONTINUED OVERLEAF

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

SAMPLE RECEIPT ADVICE

SE126027A

CLIENT DETAILS

Client Geotechnique

Project 13138-1- Canterbury- Additional Analyses

SUMMARY OF ANALYSIS

No.	Sample ID	Moisture Content
057	BH21 0-0.15	1

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

ANALYTICAL REPORT

WORLD RECOGNISED ACCREDITATION

CLIENT DETAILS

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	**13138-1- Canterbury- Additional Analyses**
Order Number	(Not specified)
Samples	59
Date Received	19/3/2014

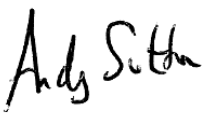
LABORATORY DETAILS

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	**SE126027B R0**
Report Number	0000079593
Date Reported	7/4/2014

COMMENTS

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

SIGNATORIES



Andy Sutton
Senior Organic Chemist

Dong Liang
Metals/Inorganics Team Leader

Huong Crawford
Production Manager

Kamrul Ahsan
Senior Chemist

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420]

PARAMETER	UOM	LOR	BH2 0.1-0.4 SOIL 18/3/2014 SE126027B.002	BH8 0.05-0.2 SOIL 18/3/2014 SE126027B.010	BH9 0.05-0.2 SOIL 18/3/2014 SE126027B.012	BH16 0.1-0.4 SOIL 18/3/2014 SE126027B.027	BH16 3.1-3.4 SOIL 18/3/2014 SE126027B.029	BH21 0.8-1.1 SOIL 18/3/2014 SE126027B.037
Naphthalene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	0.1	<0.1
Fluorene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.10	<0.1	<0.1	<0.1	0.3	1.0	0.3
Anthracene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	0.3	<0.1
Fluoranthene	mg/kg	0.10	<0.1	<0.1	0.2	0.8	1.6	0.6
Pyrene	mg/kg	0.10	<0.1	<0.1	0.1	0.7	1.5	0.5
Benzo(a)anthracene	mg/kg	0.10	<0.1	<0.1	<0.1	0.5	0.8	0.4
Chrysene	mg/kg	0.10	<0.1	<0.1	<0.1	0.3	0.5	0.3
Benzo(b&j)fluoranthene	mg/kg	0.10	<0.1	<0.1	<0.1	0.6	1.0	0.5
Benzo(k)fluoranthene	mg/kg	0.10	<0.1	<0.1	<0.1	0.3	0.5	0.3
Benzo(a)pyrene	mg/kg	0.10	<0.1	<0.1	<0.1	0.6	0.9	0.5
Indeno(1,2,3-cd)pyrene	mg/kg	0.10	<0.1	<0.1	0.1	1.0	1.4	0.8
Dibenzo(a&h)anthracene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.10	<0.1	<0.1	0.1	0.7	1.0	0.6
Total PAH	mg/kg	0.80	<0.8	<0.8	<0.8	5.9	10	4.6
Carcinogenic PAHs (as BaP TEQ)	TEQ	0.20	<0.2	<0.2	<0.2	0.8	1.2	0.7

PARAMETER	UOM	LOR	BH16 1.1-1.4 SOIL 18/3/2014 SE126027B.058	BH17 0.7-1.0 SOIL 18/3/2014 SE126027B.059
Naphthalene	mg/kg	0.10	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.10	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.10	<0.1	<0.1
Acenaphthylene	mg/kg	0.10	<0.1	<0.1
Acenaphthene	mg/kg	0.10	<0.1	<0.1
Fluorene	mg/kg	0.10	<0.1	<0.1
Phenanthrene	mg/kg	0.10	0.1	0.1
Anthracene	mg/kg	0.10	<0.1	<0.1
Fluoranthene	mg/kg	0.10	0.3	0.3
Pyrene	mg/kg	0.10	0.2	0.2
Benzo(a)anthracene	mg/kg	0.10	0.2	0.2
Chrysene	mg/kg	0.10	0.2	0.2
Benzo(b&j)fluoranthene	mg/kg	0.10	0.3	0.3
Benzo(k)fluoranthene	mg/kg	0.10	0.1	0.1
Benzo(a)pyrene	mg/kg	0.10	0.3	0.2
Indeno(1,2,3-cd)pyrene	mg/kg	0.10	0.4	0.3
Dibenzo(a&h)anthracene	mg/kg	0.10	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.10	0.3	0.2
Total PAH	mg/kg	0.80	2.4	2.2
Carcinogenic PAHs (as BaP TEQ)	TEQ	0.20	0.4	0.3

Moisture Content [AN002]

PARAMETER	UOM	LOR	BH8 0.05-0.2 SOIL 18/3/2014 SE126027B.010	BH9 0.05-0.2 SOIL 18/3/2014 SE126027B.012	BH16 3.1-3.4 SOIL 18/3/2014 SE126027B.029	BH21 0.8-1.1 SOIL 18/3/2014 SE126027B.037	BH16 1.1-1.4 SOIL 18/3/2014 SE126027B.058	BH17 0.7-1.0 SOIL 18/3/2014 SE126027B.059
% Moisture	%	0.50	8.2	22	16	9.2	9.5	16

TCLP (Toxicity Characteristic Leaching Procedure) for Organics/SVOC [AN006]

PARAMETER	UOM	LOR	BH17 0.2-0.5 SOIL 18/3/2014 SE126027B.032
pH 1:20	pH Units	-	**4.2**
pH 1:20 plus HCL	pH Units	-	-
Extraction Solution Used	No unit	-	**1**
Mass of Sample Used*	g	-	**25**
Volume of ExtractionSolution Used*	mL	-	**500**
pH TCLP after 18 hours	pH Units	-	**4.9**

PAH (Polynuclear Aromatic Hydrocarbons) in TCLP Extract [AN420]

PARAMETER	UOM	LOR	BH17 0.2-0.5 SOIL 18/3/2014 SE126027B.032
Benzo(a)pyrene	µg/L	0.10	<0.1

TCLP (Toxicity Characteristic Leaching Procedure) for Metals [AN006]

PARAMETER	UOM	LOR	BH21 1.75-1.85 SOIL 18/3/2014 SE126027B.039
pH 1:20	pH Units	-	**6.6**
pH 1:20 plus HCL	pH Units	-	**1.7**
Extraction Solution Used	No unit	-	**1**
Mass of Sample Used*	g	-	**13**
Volume of ExtractionSolution Used*	mL	-	**250**
pH TCLP after 18 hours	pH Units	-	**5.0**

Metals in Soil (TCLP) by ICPOES [AN320/AN321]

PARAMETER	UOM	LOR	BH21 1.75-1.85 SOIL 18/3/2014 SE126027B.039
Lead, Pb	mg/L	0.020	**0.12**

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.
AN006	Contaminants of interest in a waste material are leached out of the waste with a selected leaching solution under controlled conditions. The ratio of sample to extraction fluid is 100g to 2L (1 to 20 by mass). The concentration of each contaminant of interest is determined in the leachate by appropriate methods after separation from the sample by filtering. Base on USEPA 1311.
AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
AN083	Separatory funnels are used for aqueous samples and extracted by transferring an appropriate volume (mass) of liquid into a separatory funnel and adding 3 serial aliquots of dichloromethane. Samples receive a single extraction at pH 7 to recover base / neutral analytes and two extractions at pH < 2 to recover acidic analytes. QC samples are prepared by spiking organic free water with target analytes and extracting as per samples.
AN088	Orbital rolling for Organic pollutants are extracted from soil/sediment by transferring an appropriate mass of sample to a clear soil jar and extracting with 1:1 Dichloromethane/Acetone. Orbital Rolling method is intended for the extraction of semi-volatile organic compounds from soil/sediment samples, and is based somewhat on USEPA method 3570 (Micro Organic extraction and sample preparation). Method 3700.
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.
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).

FOOTNOTES

*	Analysis not covered by the scope of accreditation.	-	Not analysed.	UOM	Unit of Measure.
**	Indicative data, theoretical holding time exceeded.	NVL	Not validated.	LOR	Limit of Reporting.
^	Performed by outside laboratory.	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.

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

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here:
http://www.sgs.com.au.pv.sgsv3/~/media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf

STATEMENT OF QA/QC PERFORMANCE

SE126027B 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	**13138-1- Canterbury- Additional Analyses**
Order Number	(Not specified)
Samples	59

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	SE126027B R0
Report Number	0000079640
Date Reported	07 Apr 2014

COMMENTS

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

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

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

SAMPLE SUMMARY

Sample counts by matrix	10 Soils	Type of documentation received	COC
Date documentation received	31/03/2014@05:00p	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	3.9°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		

HOLDING TIME SUMMARY

SE126027B 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.

Metals in Soil (TCLP) by ICPOES

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH21 1.75-1.85	SE126027B.039	LB055367	18 Mar 2014	19 Mar 2014	14 Sep 2014	04 Apr 2014	01 Oct 2014	04 Apr 2014

Moisture Content

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH8 0.05-0.2	SE126027B.010	LB055176	18 Mar 2014	19 Mar 2014	01 Apr 2014	01 Apr 2014	06 Apr 2014	03 Apr 2014
BH9 0.05-0.2	SE126027B.012	LB055176	18 Mar 2014	19 Mar 2014	01 Apr 2014	01 Apr 2014	06 Apr 2014	03 Apr 2014
BH16 3.1-3.4	SE126027B.029	LB055176	18 Mar 2014	19 Mar 2014	01 Apr 2014	01 Apr 2014	06 Apr 2014	03 Apr 2014
BH21 0.8-1.1	SE126027B.037	LB055176	18 Mar 2014	19 Mar 2014	01 Apr 2014	01 Apr 2014	06 Apr 2014	03 Apr 2014
BH16 1.1-1.4	SE126027B.058	LB055176	18 Mar 2014	19 Mar 2014	01 Apr 2014	01 Apr 2014	06 Apr 2014	03 Apr 2014
BH17 0.7-1.0	SE126027B.059	LB055176	18 Mar 2014	19 Mar 2014	01 Apr 2014	01 Apr 2014	06 Apr 2014	03 Apr 2014

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH2 0.1-0.4	SE126027B.002	LB055190	18 Mar 2014	19 Mar 2014	01 Apr 2014	01 Apr 2014	11 May 2014	07 Apr 2014
BH8 0.05-0.2	SE126027B.010	LB055190	18 Mar 2014	19 Mar 2014	01 Apr 2014	01 Apr 2014	11 May 2014	07 Apr 2014
BH9 0.05-0.2	SE126027B.012	LB055190	18 Mar 2014	19 Mar 2014	01 Apr 2014	01 Apr 2014	11 May 2014	07 Apr 2014
BH16 0.1-0.4	SE126027B.027	LB055190	18 Mar 2014	19 Mar 2014	01 Apr 2014	01 Apr 2014	11 May 2014	07 Apr 2014
BH16 3.1-3.4	SE126027B.029	LB055190	18 Mar 2014	19 Mar 2014	01 Apr 2014	01 Apr 2014	11 May 2014	07 Apr 2014
BH21 0.8-1.1	SE126027B.037	LB055190	18 Mar 2014	19 Mar 2014	01 Apr 2014	01 Apr 2014	11 May 2014	07 Apr 2014
BH16 1.1-1.4	SE126027B.058	LB055190	18 Mar 2014	19 Mar 2014	01 Apr 2014	01 Apr 2014	11 May 2014	07 Apr 2014
BH17 0.7-1.0	SE126027B.059	LB055190	18 Mar 2014	19 Mar 2014	01 Apr 2014	01 Apr 2014	11 May 2014	07 Apr 2014

PAH (Polynuclear Aromatic Hydrocarbons) in TCLP Extract

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH17 0.2-0.5	SE126027B.032	LB055187	18 Mar 2014	19 Mar 2014	01 Apr 2014	01 Apr 2014	11 May 2014	07 Apr 2014

TCLP (Toxicity Characteristic Leaching Procedure) for Metals

Method: ME-(AU)-[ENV]AN006

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH21 1.75-1.85	SE126027B.039	LB055230	18 Mar 2014	19 Mar 2014	14 Sep 2014	02 Apr 2014	14 Sep 2014	04 Apr 2014

TCLP (Toxicity Characteristic Leaching Procedure) for Organics/SVOC

Method: ME-(AU)-[ENV]AN006

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH17 0.2-0.5	SE126027B.032	LB055229	18 Mar 2014	19 Mar 2014	01 Apr 2014	01 Apr 2014	15 Apr 2014	04 Apr 2014

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

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

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH2 0.1-0.4	SE126027B.002	%	60 - 130%	88
	BH8 0.05-0.2	SE126027B.010	%	60 - 130%	92
	BH9 0.05-0.2	SE126027B.012	%	60 - 130%	90
	BH16 0.1-0.4	SE126027B.027	%	60 - 130%	90
	BH16 3.1-3.4	SE126027B.029	%	60 - 130%	92
	BH21 0.8-1.1	SE126027B.037	%	60 - 130%	88
	BH16 1.1-1.4	SE126027B.058	%	60 - 130%	86
	BH17 0.7-1.0	SE126027B.059	%	60 - 130%	90
d14-p-terphenyl (Surrogate)	BH2 0.1-0.4	SE126027B.002	%	60 - 130%	104
	BH8 0.05-0.2	SE126027B.010	%	60 - 130%	108
	BH9 0.05-0.2	SE126027B.012	%	60 - 130%	90
	BH16 0.1-0.4	SE126027B.027	%	60 - 130%	98
	BH16 3.1-3.4	SE126027B.029	%	60 - 130%	98
	BH21 0.8-1.1	SE126027B.037	%	60 - 130%	96
	BH16 1.1-1.4	SE126027B.058	%	60 - 130%	108
	BH17 0.7-1.0	SE126027B.059	%	60 - 130%	98
d5-nitrobenzene (Surrogate)	BH2 0.1-0.4	SE126027B.002	%	60 - 130%	90
	BH8 0.05-0.2	SE126027B.010	%	60 - 130%	94
	BH9 0.05-0.2	SE126027B.012	%	60 - 130%	92
	BH16 0.1-0.4	SE126027B.027	%	60 - 130%	88
	BH16 3.1-3.4	SE126027B.029	%	60 - 130%	98
	BH21 0.8-1.1	SE126027B.037	%	60 - 130%	98
	BH16 1.1-1.4	SE126027B.058	%	60 - 130%	92
	BH17 0.7-1.0	SE126027B.059	%	60 - 130%	92

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH17 0.2-0.5	SE126027B.032	%	40 - 130%	92
d14-p-terphenyl (Surrogate)	BH17 0.2-0.5	SE126027B.032	%	40 - 130%	102
d5-nitrobenzene (Surrogate)	BH17 0.2-0.5	SE126027B.032	%	40 - 130%	98

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.

Metals in Soil (TCLP) by ICPOES

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

Sample Number	Parameter	Units	LOR	Result
LB055367.001	Lead, Pb	mg/L	0.02	<0.02

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB055190.001		Naphthalene	mg/kg	0.1	<0.1
		2-methylnaphthalene	mg/kg	0.1	<0.1
		1-methylnaphthalene	mg/kg	0.1	<0.1
		Acenaphthylene	mg/kg	0.1	<0.1
		Acenaphthene	mg/kg	0.1	<0.1
		Fluorene	mg/kg	0.1	<0.1
		Phenanthrene	mg/kg	0.1	<0.1
		Anthracene	mg/kg	0.1	<0.1
		Fluoranthene	mg/kg	0.1	<0.1
		Pyrene	mg/kg	0.1	<0.1
		Benzo(a)anthracene	mg/kg	0.1	<0.1
		Chrysene	mg/kg	0.1	<0.1
		Benzo(a)pyrene	mg/kg	0.1	<0.1
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1
		Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1
		Benzo(ghi)perylene	mg/kg	0.1	<0.1
		Total PAH	mg/kg	0.8	<0.8
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	102
		2-fluorobiphenyl (Surrogate)	%	-	106
		d14-p-terphenyl (Surrogate)	%	-	112

PAH (Polynuclear Aromatic Hydrocarbons) in TCLP Extract

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

Sample Number		Parameter	Units	LOR	Result
LB055187.001		Benzo(a)pyrene	µg/L	0.1	<0.1
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	114
		2-fluorobiphenyl (Surrogate)	%	-	112
		d14-p-terphenyl (Surrogate)	%	-	118

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 — **Method: ME-(AU)-[ENV]AN420**

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE126313.001	LB055190.018		Naphthalene	mg/kg	0.1	0	0	200	0
			2-methylnaphthalene	mg/kg	0.1	0	0	200	0
			1-methylnaphthalene	mg/kg	0.1	0	0	200	0
			Acenaphthylene	mg/kg	0.1	0	0	200	0
			Acenaphthene	mg/kg	0.1	0	0	200	0
			Fluorene	mg/kg	0.1	0	0	200	0
			Phenanthrene	mg/kg	0.1	0	0	200	0
			Anthracene	mg/kg	0.1	0	0	200	0
			Fluoranthene	mg/kg	0.1	0	0	200	0
			Pyrene	mg/kg	0.1	0	0	200	0
			Benzo(a)anthracene	mg/kg	0.1	0	0	200	0
			Chrysene	mg/kg	0.1	0	0	200	0
			Benzo(b&j)fluoranthene	mg/kg	0.1	0	0	200	0
			Benzo(k)fluoranthene	mg/kg	0.1	0	0	200	0
			Benzo(a)pyrene	mg/kg	0.1	0	0	200	0
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	0.12	0.12	113	0
			Dibenzo(a&h)anthracene	mg/kg	0.1	0	0	200	0
			Benzo(ghi)perylene	mg/kg	0.1	0.13	0.13	107	0
			Total PAH	mg/kg	0.8	0.25	0.25	200	0
			Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.2	0.0133	0.0133	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.46	0.5	30	8
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.46	0.46	30	0
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.54	0.57	30	5

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.

Metals in Soil (TCLP) by ICPOES

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB055367.002	Lead, Pb	mg/L	0.02	2.0	2	80 - 120	99

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB055190.002		Naphthalene	mg/kg	0.1	3.8	4	60 - 140	95
		Acenaphthylene	mg/kg	0.1	3.8	4	60 - 140	95
		Acenaphthene	mg/kg	0.1	3.9	4	60 - 140	97
		Phenanthrene	mg/kg	0.1	3.8	4	60 - 140	95
		Anthracene	mg/kg	0.1	3.4	4	60 - 140	84
		Fluoranthene	mg/kg	0.1	4.1	4	60 - 140	102
		Pyrene	mg/kg	0.1	3.9	4	60 - 140	97
		Benzo(a)pyrene	mg/kg	0.1	4.5	4	60 - 140	112
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	90
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	94
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	98

PAH (Polynuclear Aromatic Hydrocarbons) in TCLP Extract

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB055187.002		Benzo(a)pyrene	µg/L	0.1	47	40	60 - 140	118
	Surrogates	d5-nitrobenzene (Surrogate)	µg/L	-	0.5	0.5	40 - 130	94
		2-fluorobiphenyl (Surrogate)	µg/L	-	0.5	0.5	40 - 130	94
		d14-p-terphenyl (Surrogate)	µg/L	-	0.5	0.5	40 - 130	94

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

SE126027B 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%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf

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

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

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

COC received 31/03/2014 @ 5PM.

SGS Ref: SE126027B

Due Date: 07/04/2014

TAT, Standard.

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: LY **Job No:** 13138/1

Project:

Project Manager: JX **Location:** Canterbury

Results required by: 7th April 2014 - Standard Turnaround Time (SGS Ref. SE126027)

Sampling details				Sample type											
	Location	Depth (m)	Date	Time	Soil	Water	PAH	TCLP for benzo(a)pyrene	TCLP for Pb						KEEP SAMPLE
2	BH2	0.1-0.4	18/03/2014	-	SG		✓								YES
10	BH8	0.05-0.2	18/03/2014	-	SG		✓								YES
12	BH9	0.05-0.2	18/03/2014	-	SG		✓								YES
27	BH16	0.1-0.4	18/03/2014	-	SG		✓								YES
58	BH16	1.1-1.4	18/03/2014	-	SG		✓								YES
29	BH16	3.1-3.4	18/03/2014	-	SG		✓								YES
32	BH17	0.2-0.5	18/03/2014	-	SG			✓							YES
59	BH17	0.7-1.0	18/03/2014	-	SG		✓								YES
37	BH21	0.8-1.1	18/03/2014	-	SG		✓								YES
39	BH21	1.75-1.85	18/03/2014	-	SG				✓						YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	31/03/2014	KARLA	Karla	31/03/2014 @ 5PM

Legend:

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

* Purge & Trap

SAMPLE RECEIPT ADVICE

SE126027B

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	**13138-1- Canterbury- Additional Analyses**
Order Number	(Not specified)
Samples	59

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 19/3/2014
Report Due	Mon 7/4/2014
SGS Reference	**SE126027B**

SUBMISSION DETAILS

This is to confirm that 59 samples were received on Wednesday 19/3/2014. Results are expected to be ready by Monday 7/4/2014. Please quote SGS reference SE126027B when making enquiries. Refer below for details relating to sample integrity upon receipt.

Sample counts by matrix	10 Soils	Type of documentation received	COC
Date documentation received	31/03/2014@05:00pm	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	3.9°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		

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

COMMENTS

Instructions received at SGS on 31/03/2014@05:00pm. Samples were not registered until the next working day.

SAMPLE RECEIPT ADVICE

SE126027B

CLIENT DETAILS

Client Geotechnique

Project 13138-1- Canterbury- Additional Analyses

SUMMARY OF ANALYSIS

No.	Sample ID	Moisture Content	PAH (Polynuclear Aromatic Hydrocarbons) in
002	BH2 0.1-0.4	-	23
010	BH8 0.05-0.2	1	23
012	BH9 0.05-0.2	1	23

CONTINUED OVERLEAF

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

SAMPLE RECEIPT ADVICE

SE126027B

CLIENT DETAILS

Client Geotechnique

Project 13138-1- Canterbury- Additional Analyses

SUMMARY OF ANALYSIS

No.	Sample ID	Metals in Soil (TCLP) by ICPOES	Moisture Content	PAH (Polynuclear Aromatic Hydrocarbons) in	PAH (Polynuclear Aromatic Hydrocarbons) in	TCLP (Toxicity Characteristic Leaching	TCLP (Toxicity Characteristic Leaching
027	BH16 0.1-0.4	-	-	23	-	-	-
029	BH16 3.1-3.4	-	1	23	-	-	-
032	BH17 0.2-0.5	-	-	-	4	-	6
037	BH21 0.8-1.1	-	1	23	-	-	-
039	BH21 1.75-1.85	1	-	-	-	6	-

CONTINUED OVERLEAF

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

SAMPLE RECEIPT ADVICE

SE126027B

CLIENT DETAILS

Client Geotechnique

Project 13138-1- Canterbury- Additional Analyses

SUMMARY OF ANALYSIS

No.	Sample ID	Moisture Content	PAH (Polynuclear Aromatic Hydrocarbons) in
058	BH16 1.1-1.4	1	23
059	BH17 0.7-1.0	1	23

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

ANALYTICAL REPORT

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	**13138-1- Canterbury- Additional Analyses**
Order Number	(Not specified)
Samples	59
Date Received	19/3/2014

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	**SE126027C R0**
Report Number	0000079657
Date Reported	7/4/2014

COMMENTS

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

SIGNATORIES

Dong Liang
Metals/Inorganics Team Leader

TOC in Soil [AN188]

PARAMETER	UOM	LOR	BH21 1.75-1.85 SOIL 18/3/2014 SE126027C.039
Total Organic Carbon	%w/w	0.050	**2.8**

METHOD	METHODOLOGY SUMMARY
AN188	The organic material in the soil sample is oxidised with chromic acid in the presence of excess sulphuric acid, without external heat being applied. The excess dichromate ion is determined by titration with standard ammonium iron (II) sulphate solution and the amount of oxidised material is calculated from the quantity of dichromate reduced. Referenced to NEPM 105 and AS1289.1.1.1.

FOOTNOTES

*	Analysis not covered by the scope of accreditation.	-	Not analysed.	UOM	Unit of Measure.
**	Indicative data, theoretical holding time exceeded.	NVL	Not validated.	LOR	Limit of Reporting.
^	Performed by outside laboratory.	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.

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

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here:
http://www.sgs.com.au.pv.sgsv3/~/media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf

STATEMENT OF QA/QC PERFORMANCE

SE126027C 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	**13138-1- Canterbury- Additional Analyses**
Order Number	(Not specified)
Samples	59

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	SE126027C R0
Report Number	0000079658
Date Reported	07 Apr 2014

COMMENTS

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

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

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

SAMPLE SUMMARY

Sample counts by matrix	1 Soil	Type of documentation received	COC
Date documentation received	01/04/2014@09:25a	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	3.9°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		

HOLDING TIME SUMMARY

SE126027C 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.

TOC in Soil — **Method: ME-(AU)-[ENV]AN188**

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH21 1.75-1.85	SE126027C.039	LB055268	18 Mar 2014	19 Mar 2014	15 Apr 2014	03 Apr 2014	15 Apr 2014	07 Apr 2014

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

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

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.

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.

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.

TOC in Soil — **Method: ME-(AU)-[ENV]AN188**

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB055268.002	Total Organic Carbon	%w/w	0.05	NA	0.325	80 - 120	93

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.

QC Sample	Sample Number	Parameter	Units	LOR

MATRIX SPIKE DUPLICATES

SE126027C 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%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf

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

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

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

SGS Ref: SE126027C

Due Date: 07/04/2014

TAT: Standard

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: LY **Job No:** 13138/1

Project:

Project Manager: JX **Location:** Canterbury

Results required by: 7th April 2014 - Standard Turnaround Time (SGS Ref. SE126027)

	Sampling details				Sample type										
	Location	Depth (m)	Date	Time	Soil	Water	TOC (%)								KEEP SAMPLE
39	BH21	1.75-1.85	18/03/2014	-	SG		✓								YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	1/04/2014	KARA	Kara	7/04/2014 @ 9:25AM.

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	

SAMPLE RECEIPT ADVICE

SE126027C

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	**13138-1- Canterbury- Additional Analyses**
Order Number	(Not specified)
Samples	59

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 19/3/2014
Report Due	Mon 7/4/2014
SGS Reference	**SE126027C**

SUBMISSION DETAILS

This is to confirm that 59 samples were received on Wednesday 19/3/2014. Results are expected to be ready by Monday 7/4/2014. Please quote SGS reference SE126027C when making enquiries. Refer below for details relating to sample integrity upon receipt.

Sample counts by matrix	1 Soil	Type of documentation received	COC
Date documentation received	01/04/2014@09:25am	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	3.9°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		

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

COMMENTS

Instructions received at SGS on 01/04/2014@09:25am.

SAMPLE RECEIPT ADVICE

SE126027C

CLIENT DETAILS

Client Geotechnique

Project 13138-1- Canterbury- Additional Analyses

SUMMARY OF ANALYSIS

No.	Sample ID	TOC in Soil
039	BH21 1.75-1.85	1

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

ANALYTICAL REPORT

WORLD RECOGNISED ACCREDITATION

CLIENT DETAILS

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	**13138-1 - Canterbury - Add**
Order Number	(Not specified)
Samples	57
Date Received	7/4/2014

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	**SE126027D R0**
Report Number	0000080081
Date Reported	11/4/2014

COMMENTS

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

SIGNATORIES

Andy Sutton
Senior Organic Chemist

Kamrul Ahsan
Senior Chemist

Sheila Lepasana
Senior Technician

Snezana Kostoska
2IC Inorganics Chemist

pH in soil (1:5) [AN101]

PARAMETER	UOM	LOR	BH5 0-0.15 SOIL 18/3/2014 SE126027D.006	BH19 0-0.15 SOIL 18/3/2014 SE126027D.034
pH	pH Units	-	**6.7**	**5.9**

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) [AN122]

PARAMETER	UOM	LOR	BH5 0-0.15 SOIL 18/3/2014 SE126027D.006	BH19 0-0.15 SOIL 18/3/2014 SE126027D.034
Exchangeable Sodium, Na	mg/kg	2.0	36	20
Exchangeable Sodium, Na	meq/100g	0.010	0.16	0.09
Exchangeable Sodium Percentage*	%	0.10	3.7	1.8
Exchangeable Potassium, K	mg/kg	2.0	35	61
Exchangeable Potassium, K	meq/100g	0.010	0.09	0.16
Exchangeable Potassium	%	0.10	2.1	3.3
Exchangeable Calcium, Ca	mg/kg	2.0	640	720
Exchangeable Calcium, Ca	meq/100g	0.010	3.2	3.6
Exchangeable Calcium Percentage*	%	0.10	76.2	75.5
Exchangeable Magnesium, Mg	mg/kg	2.0	93	110
Exchangeable Magnesium, Mg	meq/100g	0.020	0.76	0.92
Exchangeable Magnesium	%	0.10	17.9	19.4
Cation Exchange Capacity	meq/100g	0.020	4.2	4.7

TOC in Soil [AN188]

PARAMETER	UOM	LOR	BH19 0-0.15 SOIL 18/3/2014 SE126027D.034
Total Organic Carbon	%w/w	0.050	**1.6**

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest [AN040/AN320]

PARAMETER	UOM	LOR	BH16 2.1-2.4 SOIL 18/3/2014 SE126027D.028	BH16 3.1-3.4 SOIL 18/3/2014 SE126027D.029	BH21 0.8-1.1 SOIL 18/3/2014 SE126027D.037
Copper, Cu	mg/kg	0.50	13	11	13

Moisture Content [AN002]

PARAMETER	UOM	LOR	BH5 0-0.15 SOIL 18/3/2014 SE126027D.006	BH16 2.1-2.4 SOIL 18/3/2014 SE126027D.028	BH16 3.1-3.4 SOIL 18/3/2014 SE126027D.029	BH19 0-0.15 SOIL 18/3/2014 SE126027D.034	BH21 0.8-1.1 SOIL 18/3/2014 SE126027D.037
% Moisture	%	0.50	15	13	17	10	10

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analsysis by ASS or ICP as per USEPA Method 200.8.
AN040/AN320	A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
AN101	pH in Soil Sludge Sediment and Water: pH is measured electrometrically using a combination electrode (glass plus reference electrode) and is calibrated against 3 buffers purchased commercially. For soils, 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 pretreated (aqueous ethanol/aqueous glycerol) prior to extraction. Cation Exchange Capacity (CEC) is the sum of the exchangeable cations in meq/100g.
AN188	The organic material in the soil sample is oxidised with chromic acid in the presence of excess sulphuric acid, without external heat being applied. The excess dichromate ion is determined by titration with standard ammonium iron (II) sulphate solution and the amount of oxidised material is calculated from the quantity of dichromate reduced. Referenced to NEPM 105 and AS1289.1.1.1.

FOOTNOTES

*	Analysis not covered by the scope of accreditation.	-	Not analysed.	UOM	Unit of Measure.
**	Indicative data, theoretical holding time exceeded.	NVL	Not validated.	LOR	Limit of Reporting.
^	Performed by outside laboratory.	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.

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

The QC criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here:
http://www.sgs.com.au.pv.sgsv3/~/media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf

COC received 7/4/14 @ 10:57 am

SGS Ref: SE126027D
Date due: 11/4/14
TAT: STANDARD

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: LY **Job No:** 13138/1

Project:

Project Manager: JX **Location:** Canterbury

Results required by: 11th April 2014 - Standard Turnaround Time (SGS Ref. SE126027)

	Sampling details			Sample type										
	Location	Depth (m)	Date	Time	Soil	Water	Cu	CEC	pH	TOC (%)					KEEP SAMPLE
6	BH5	0-0.15	18/03/2014	-	SG			✓	✓						YES
28	BH16	2.1-2.4	18/03/2014	-	SG		✓								YES
29	BH16	3.1-3.4	18/03/2014	-	SG		✓								YES
34	BH19	0-0.15	18/03/2014	-	SG			✓	✓	✓					YES
37	BH21	0.8-1.1	18/03/2014	-	SG		✓								YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	7/04/2014	Emily Yin	✓	7/4/14 10.57 am

Legend:

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

* Purge & Trap

SAMPLE RECEIPT ADVICE

SE126027D

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	**13138-1 - Canterbury - Add**
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	Mon 7/4/2014
Report Due	Fri 11/4/2014
SGS Reference	**SE126027D**

SUBMISSION DETAILS

This is to confirm that 57 samples were received on Monday 7/4/2014. Results are expected to be ready by Friday 11/4/2014. Please quote SGS reference SE126027D when making enquiries. Refer below for details relating to sample integrity upon receipt.

Sample counts by matrix	5 Soils	Type of documentation received	COC
Date documentation received	7/4/14@10:57am	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	3.9°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		

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

COMMENTS

SAMPLE RECEIPT ADVICE

SE126027D

CLIENT DETAILS

Client Geotechnique

Project 13138-1 - Canterbury - Add

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	Moisture Content	pH in soil (1:5)
006	BH5 0-0.15	13	1	1

CONTINUED OVERLEAF

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

SAMPLE RECEIPT ADVICE

SE126027D

CLIENT DETAILS

Client Geotechnique

Project 13138-1 - Canterbury - Add

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	Moisture Content	pH in soil (1:5)	TOC in Soil	Total Recoverable Metals in Soil by ICPOES from
028	BH16 2.1-2.4	-	1	-	-	1
029	BH16 3.1-3.4	-	1	-	-	1
034	BH19 0-0.15	13	1	1	1	-
037	BH21 0.8-1.1	-	1	-	-	1

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

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

CERTIFICATE OF ANALYSIS 106889

Client:
Geotechnique Pty Ltd
PO Box 880
Penrith
NSW 2751

Attention: John Xu

Sample log in details:

Your Reference:	**13138/1, Canterbury**
No. of samples:	7 Soils
Date samples received / completed instructions received	19/03/2014 / 21/3/2014

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:	28/03/14 / 27/03/14
Date of Preliminary Report:	n

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

Results Approved By:

Jacinta Hurst
Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil		
Our Reference:	UNITS	106889-2
Your Reference	----------	Z2
Composite Reference	----------	
Date Sampled		18/03/2014
Type of sample		Soil
Date extracted	-	24/03/2014
Date analysed	-	26/03/2014
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
naphthalene	mg/kg	<1
Surrogate aaa-Trifluorotoluene	%	99

svTRH (C10-C40) in Soil		
Our Reference:	UNITS	106889-2
Your Reference	----------	Z2
Composite Reference	----------	
Date Sampled		18/03/2014
Type of sample		Soil
Date extracted	-	24/03/2014
Date analysed	-	25/03/2014
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
Surrogate o-Terphenyl	%	93

PAHs in Soil		
Our Reference:	UNITS	106889-2
Your Reference	----------	Z2
Composite Reference	----------	
Date Sampled		18/03/2014
Type of sample		Soil
Date extracted	-	24/03/2014
Date analysed	-	26/03/2014
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	0.6
Anthracene	mg/kg	0.2
Fluoranthene	mg/kg	1.8
Pyrene	mg/kg	1.8
Benzo(a)anthracene	mg/kg	0.9
Chrysene	mg/kg	1.0
Benzo(b+k)fluoranthene	mg/kg	1.9
Benzo(a)pyrene	mg/kg	1.0
Indeno(1,2,3-c,d)pyrene	mg/kg	0.7
Dibenzo(a,h)anthracene	mg/kg	0.1
Benzo(g,h,i)perylene	mg/kg	0.7
Benzo(a)pyrene TEQ NEPM B1	mg/kg	2.0
Total +ve PAH's	mg/kg	11
Surrogate p-Terphenyl-d14	%	96

Organochlorine Pesticides in soil		
Our Reference:	UNITS	106889-8
Your Reference	----------	S101
Composite Reference	----------	1+2+3
Date Sampled		18/03/2014
Type of sample		Soil
Date extracted	-	24/03/2014
Date analysed	-	25/03/2014
HCB	mg/kg	<0.1
alpha-BHC	mg/kg	<0.1
gamma-BHC	mg/kg	<0.1
beta-BHC	mg/kg	<0.1
Heptachlor	mg/kg	<0.1
delta-BHC	mg/kg	<0.1
Aldrin	mg/kg	<0.1
Heptachlor Epoxide	mg/kg	<0.1
gamma-Chlordane	mg/kg	<0.1
alpha-chlordane	mg/kg	<0.1
Endosulfan I	mg/kg	<0.1
pp-DDE	mg/kg	<0.1
Dieldrin	mg/kg	<0.1
Endrin	mg/kg	<0.1
pp-DDD	mg/kg	<0.1
Endosulfan II	mg/kg	<0.1
pp-DDT	mg/kg	<0.1
Endrin Aldehyde	mg/kg	<0.1
Endosulfan Sulphate	mg/kg	<0.1
Methoxychlor	mg/kg	<0.1
Surrogate TCMX	%	97

Organophosphorus Pesticides		
Our Reference:	UNITS	106889-8
Your Reference	----------	S101
Composite Reference	----------	1+2+3
Date Sampled		18/03/2014
Type of sample		Soil
Date extracted	-	24/03/2014
Date analysed	-	25/03/2014
Diazinon	mg/kg	<0.1
Dimethoate	mg/kg	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1
Ronnel	mg/kg	<0.1
Chlorpyriphos	mg/kg	<0.1
Fenitrothion	mg/kg	<0.1
Bromophos-ethyl	mg/kg	<0.1
Ethion	mg/kg	<0.1
Surrogate TCMX	%	97

PCBs in Soil		
Our Reference:	UNITS	106889-8
Your Reference	----------	S101
Composite Reference	----------	1+2+3
Date Sampled		18/03/2014
Type of sample		Soil
Date extracted	-	24/03/2014
Date analysed	-	25/03/2014
Arochlor 1016	mg/kg	<0.1
Arochlor 1221	mg/kg	<0.1
Arochlor 1232	mg/kg	<0.1
Arochlor 1242	mg/kg	<0.1
Arochlor 1248	mg/kg	<0.1
Arochlor 1254	mg/kg	<0.1
Arochlor 1260	mg/kg	<0.1
Surrogate TCLMX	%	97

Total Phenolics in Soil		
Our Reference:	UNITS	106889-8
Your Reference	----------	S101
Composite Reference	----------	1+2+3
Date Sampled		18/03/2014
Type of sample		Soil
Date extracted	-	25/03/2014
Date analysed	-	25/03/2014
Total Phenolics (as Phenol)	mg/kg	<5

Acid Extractable metals in soil		
Our Reference:	UNITS	106889-8
Your Reference	----------	S101
Composite Reference	----------	1+2+3
Date Sampled		18/03/2014
Type of sample		Soil
Date digested	-	24/03/2014
Date analysed	-	24/03/2014
Arsenic	mg/kg	<4
Cadmium	mg/kg	<0.4
Chromium	mg/kg	32
Copper	mg/kg	15
Lead	mg/kg	13
Mercury	mg/kg	<0.1
Nickel	mg/kg	31
Zinc	mg/kg	53

Miscellaneous Inorg - soil		
Our Reference:	UNITS	106889-8
Your Reference	----------	S101
Composite Reference	----------	1+2+3
Date Sampled		18/03/2014
Type of sample		Soil
Date prepared	-	25/03/2014
Date analysed	-	25/03/2014
Total Cyanide	mg/kg	<0.5

Moisture			
Our Reference:	UNITS	106889-2	106889-8
Your Reference	----------	Z2	S101
Composite Reference	----------		1+2+3
Date Sampled		18/03/2014	18/03/2014
Type of sample		Soil	Soil
Date prepared	-	24/03/2014	24/03/2014
Date analysed	-	25/03/2014	25/03/2014
Moisture	%	17	18

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-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-012 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-008	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Inorg-030	Total Phenolics - determined colorimetrically following distillation, based upon APHA 22nd ED 5530 D.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Inorg-013	Cyanide - total determined colourimetrically after distillation, based on APHA 22nd ED, 4500-CN_C,E. Free cyanide determined colourimetrically after filtration and confirmed by diffusion. Solids are extracted in a caustic media prior to distillation and analysis.
Inorg-008	Moisture content determined by heating at 105+/-5 deg C for a minimum of 12 hours.

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			24/03/2014	[NT]	[NT]	LCS-8	24/03/2014
Date analysed	-			26/03/2014	[NT]	[NT]	LCS-8	26/03/2014
TRHC$_6$ - C$_9$	mg/kg	25	Org-016	<25	[NT]	[NT]	LCS-8	137%
TRHC$_6$ - C$_{10}$	mg/kg	25	Org-016	<25	[NT]	[NT]	LCS-8	137%
Benzene	mg/kg	0.2	Org-016	<0.2	[NT]	[NT]	LCS-8	140%
Toluene	mg/kg	0.5	Org-016	<0.5	[NT]	[NT]	LCS-8	136%
Ethylbenzene	mg/kg	1	Org-016	<1	[NT]	[NT]	LCS-8	137%
m+p-xylene	mg/kg	2	Org-016	<2	[NT]	[NT]	LCS-8	136%
o-Xylene	mg/kg	1	Org-016	<1	[NT]	[NT]	LCS-8	137%
naphthalene	mg/kg	1	Org-014	<1	[NT]	[NT]	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		Org-016	98	[NT]	[NT]	LCS-8	124%
QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			24/03/2014	[NT]	[NT]	LCS-8	24/03/2014
Date analysed	-			25/03/2014	[NT]	[NT]	LCS-8	25/03/2014
TRHC$_{10}$ - C$_{14}$	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS-8	107%
TRHC$_{15}$ - C$_{28}$	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-8	111%
TRHC$_{29}$ - C$_{36}$	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-8	129%
TRH>C$_{10}$-C$_{16}$	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS-8	107%
TRH>C$_{16}$-C$_{34}$	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-8	111%
TRH>C$_{34}$-C$_{40}$	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-8	129%
Surrogate o-Terphenyl	%		Org-003	93	[NT]	[NT]	LCS-8	83%
QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			24/03/2014	[NT]	[NT]	LCS-3	24/03/2014
Date analysed	-			26/03/2014	[NT]	[NT]	LCS-3	26/03/2014
Naphthalene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-3	97%
Acenaphthylene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-3	102%
Phenanthrene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-3	100%
Anthracene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-3	95%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Pyrene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-3	100%
Benzo(a)anthracene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-3	95%
Benzo(b+k)fluoranthene	mg/kg	0.2	Org-012 subset	<0.2	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	Org-012 subset	<0.05	[NT]	[NT]	LCS-3	105%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012 subset	90	[NT]	[NT]	LCS-3	94%
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	-			24/03/2014	[NT]	[NT]	LCS-8	24/03/2014
Date analysed	-			25/03/2014	[NT]	[NT]	LCS-8	25/03/2014
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-8	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-8	68%
Heptachlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-8	94%
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-8	98%
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-8	120%
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-8	95%
Dieldrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-8	91%
Endrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-8	97%
pp-DDD	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-8	105%
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-8	92%
Methoxychlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate TCMX	%		Org-005	95	[NT]	[NT]	LCS-8	95%

QUALITY CONTROL Organophosphorus Pesticides	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			24/03/2014	[NT]	[NT]	LCS-8	24/03/2014
Date analysed	-			25/03/2014	[NT]	[NT]	LCS-8	25/03/2014
Diazinon	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NR]	[NR]
Dimethoate	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NR]	[NR]
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NR]	[NR]
Ronnel	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NR]	[NR]
Chlorpyriphos	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	LCS-8	101%
Fenitrothion	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	LCS-8	80%
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NR]	[NR]
Ethion	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	LCS-8	71%
Surrogate TCMX	%		Org-008	95	[NT]	[NT]	LCS-8	95%
QUALITY CONTROL PCBs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			24/03/2014	[NT]	[NT]	LCS-8	24/03/2014
Date analysed	-			25/03/2014	[NT]	[NT]	LCS-8	25/03/2014
Arochlor 1016	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1221	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1232	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1242	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1248	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1254	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	LCS-8	96%
Arochlor 1260	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%		Org-006	95	[NT]	[NT]	LCS-8	91%
QUALITY CONTROL Total Phenolics in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			25/03/2014	[NT]	[NT]	LCS-1	25/03/2014
Date analysed	-			25/03/2014	[NT]	[NT]	LCS-1	25/03/2014
Total Phenolics (as Phenol)	mg/kg	5	Inorg-030	<5	[NT]	[NT]	LCS-1	87%
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 digested	-			24/03/2014	[NT]	[NT]	LCS-5	24/03/2014
Date analysed	-			24/03/2014	[NT]	[NT]	LCS-5	24/03/2014
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	[NT]	[NT]	LCS-5	104%
Cadmium	mg/kg	0.4	Metals-020 ICP-AES	<0.4	[NT]	[NT]	LCS-5	110%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-5	108%
Copper	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-5	108%
Lead	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-5	105%
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	[NT]	[NT]	LCS-5	94%
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-5	108%
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-5	109%

QUALITY CONTROL Miscellaneous Inorg - soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			25/03/2014	[NT]	[NT]	LCS-1	25/03/2014
Date analysed	-			25/03/2014	[NT]	[NT]	LCS-1	25/03/2014
Total Cyanide	mg/kg	0.5	Inorg-013	<0.5	[NT]	[NT]	LCS-1	89%

QUALITY CONTROL Moisture	UNITS	PQL	METHOD	Blank
Date prepared	-			[NT]
Date analysed	-			[NT]
Moisture	%	0.1	Inorg-008	[NT]

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
NA: 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 and 10-140% for SVOC and speciated phenols is acceptable.

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

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

COC 21/3 10am.

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: LY
Job No: 13138/1
Project:
Project Manager: JX
Location: Canterbury

Results required by: 27th March - Standard Turnaround Time

	Sampling details			Sample type											
	Location	Depth (m)	Date	Time	Soil	Water	Metals As, Cd, Cr, Cu, Pb, Hg, Ni and Zn	TPH* & BTEX	PAH						KEEP SAMPLE
1	Z1	-	18/03/2014	-	SG										YES
2	Z2	-	18/03/2014	-	SG			✓	✓						YES
3	Z3	-	18/03/2014	-	SG										YES
4	Z4	-	18/03/2014	-	SG										YES
5	Z5	-	18/03/2014	-	SG										YES
6	Z6	-	18/03/2014	-	SG										YES
7	S1	-	18/03/2014	-	SG										YES

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200
106889
19/3/14
16:30
Ambient
Icepack
Broken/None

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	21/03/2014	Tania		21/3/14

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

ENVIROLAB SERVICES PTY LTD

Sampling Date: 18/3/2014
Sampled by: LY
Project Manager: JX

Job No: 13138/1
Location: Canterbury

Results Required by: 27th March 2014 - Standard TAT

Composite Sample	Sub-Samples	Analyte					
		Heavy Metals*	OCP	OPP	PCB	Total Phenols	Total Cyanides
8 S101	Z1 + Z2 + Z3	✔	✔	✔	✔	✔	✔

*: Heavy Metals include As, Cd, Cr, Cu, Pb, Hg, Ni and Zn
✔: Test required
OCP: Organochlorine Pesticides
OPP: Organophosphorus Pesticides
PCB: Polychlorinated Biphenyls

GEOTECHNIQUE PTY LTD
(JOHN XU)
21/3/2014

106889

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:

Geotechnique Pty Ltd
PO Box 880
Penrith NSW 2751

ph: 02 4722 2700
Fax: 02 4722 6161

Attention: John Xu

Sample log in details:

Your reference:	**13138/1, Canterbury**
Envirolab Reference:	**106889**
Date received:	19/03/2014
Date results expected to be reported:	**28/03/14**

Samples received in appropriate condition for analysis:	YES
No. of samples provided	7 Soils
Turnaround time requested:	Standard
Temperature on receipt (°C)	10.1
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.

Contact details:

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

APPENDIX I

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.