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Job No: 13188/2
Our Ref: 13188/2-AA
12 September 2014

Nix Anderson Pty Ltd
17 Chuter Street
McMahons Point NSW 2060

Attention: Mr R McGuinness

Dear Sir

re: **Proposed Development**
Robert Timms Factory Site (Bushell's)
160 Burwood Road, Concord
Contamination Assessment of Soil

This letter report presents the results of a contamination assessment of soils recovered from 10 geotechnical boreholes at 160 Burwood Road, Concord in the local government area of Canada Bay, hereafter referred to as the site.

It is understood that the site is proposed for an integrated Residential Community. This contamination assessment was to provide some indications on the contamination status of the sub-surface soil within the site for planning purposes.

The site is irregular in shape and covers an area of approximately 4 hectares (ha).

OBJECTIVE OF THE ASSESSMENT

The objective of the assessment was to ascertain whether the soils being assessed are likely to present a risk of harm to human health and the environment under the conditions for the proposed high density residential development.

SCOPE OF WORK

In order to achieve the objective, the following scope of work was conducted in accordance with our proposal dated 2 May 2014 (Reference Q6616);

- Recovery of soil samples from ten (10) boreholes locations in conjunction with a geotechnical investigation also undertaken by Geotechnique Pty Ltd (Geotechnique).
- 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. QA/QC samples were also prepared and forwarded to the laboratories.
- Assessment of the laboratory analytical results against current applicable guidelines.
- Assessment of field and laboratory QA and QC.
- Assessment of the contamination status of the soils.

SITE CONDITION

During fieldwork from 7th to 14th August 2014, the site operated as a coffee factory. It consisted of a number of site features including:

- A multi storey factory building
- An administration building
- A gas storage area
- A guardhouse fronting Burwood Road

Open area of the site consisted of bitumen car parks, bitumen or concrete driveways and landscaped areas.

There were no obvious ash materials, asbestos sheets / pieces, odour, discolouration of the soils or petroleum hydrocarbon staining on the bare ground surface of the site that would indicate the potential for contamination.

The site generally slopes to the east.

The adjoining properties:

To the north: Golf course, slopes similarly to the east.
To the east: Residential land, slopes away from the site.
To the south: Burwood Road, slopes similarly to the east.
To the west: Residential land, slopes gently toward the site.

REVIEW OF AVAILABLE INFORMATION AND POTENTIAL FOR CONTAMINATION

SLR Consulting Australia Pty Ltd provided relevant information regarding their environmental investigation of the site (Appendix A). From 11 areas of environmental concern (AEC1 to AEC11), there was a potential for the site to be contaminated with Hydrocarbons, metals, pesticide, asbestos and PCBs. Borehole locations were appropriately located corresponding to the suggested AECs.

From interviewing the site supervisor, Ms Kayte Nguyen, Engineering Support Officer from Fresh Food Corporation Pty Ltd, the factory produced coffee from raw coffee bean. There were two main waste products from the process; coffee grounds and caustic solution. While coffee ground removal off site by contractor, the caustic solution which was used to clean the interior of the factory's machineries was neutralised with acid on site and discharge into the sewer system. Therefore, if the neutralization was not done appropriately or if there was spillage of either the caustic waste or the acid that was used to neutralized it, soil pH within the site could be altered.

Bushell's website provides an article about Bushell's history (Appendix B). According to the article, Bushell's purchased the site in 1956. Prior to that, the site was believed to have been occupied by a timber yard. Wood preservatives such as combination of copper, chromium and arsenic could have been used and potentially contaminated the soil.

Available aerial photographs (from 1970 to 2014) indicate that the factory appears in all aerial photos.

Geotechnical borehole logs of the 10 boreholes that were drilled indicated that fill was encountered at all boreholes up to depth of 5m. The fills could possibly have been imported from unknown sources for levelling and could have been contaminated with a wide range of contaminants.

FIELD SAMPLING AND LABORATORY TESTING

Field work for the contamination assessment of soils was carried out on 7th to 14th August 2014 in conjunction with a geotechnical investigation. Reference may be made to Report 13188/1 dated 10 September 2014 for details of the geotechnical investigation results.

Environmental Scientist and Engineer from Geotechnique were responsible for sampling and logging the sub-surface profile encountered at the ten borehole locations (BH1 to BH10). The boreholes were bored using a truck mounted drilling rig to depth of about 10m. The borehole locations are shown on the attached Drawing No 13188/1-AA1.

Reference should be made to the engineering logs (Report 13188/1) for detailed descriptions of the soil profile encountered during field work. Sub-surface materials encountered in the boreholes are summarised below. In particular, asphalt or concrete underlain by road base gravel were encountered BH1, BH6, BH7, BH8 and BH10.

Topsoil	The following 6 types of fill were encountered; Type 1: Silty Sand, fine grained, grey, with root fibres, was encountered to depths of 100 millimetres (mm) to 200mm below existing ground level (EGL) at BH2, BH3 and BH4, underlain by type 1 or type 4 fill. Type 2: Silty Clay, medium plasticity, grey, inclusion of sandstone fragments, was encountered to depths of 100 mm below EGL at BH5, underlain by type 3 fill.
Fill	The following 6 types of fill were encountered; Type 1: 200mm to 800mm thick silty Sand, fine grained, brown with clay and gravel, was encountered at BH1, BH3, BH4, BH7, BH8 and BH9. Type 2: 250mm to 1500mm thick silty Clay, medium to high plasticity, grey, trace of ironstone, was encountered at BH1, BH6, BH7, BH9 and BH10. Type 3: 300mm to 2300mm thick sandy Clay, low plasticity, dark brown trace of gravel, was encountered at BH1, BH2, BH3, BH5, BH7 and BH9. Type 4: 1350mm thick silty Sand, fine grained, grey, inclusion of gravel, was encountered at BH2. Type 5: 1200mm thick silty Clay, medium plasticity, grey, inclusion of gravel, was encountered at BH2 and BH7. Type 6: 1300mm thick sand Clay, high plasticity, dark grey, was encountered at BH3. Type 7: 200mm to 300mm thick Sandstone floater, was encountered at BH3 and BH4.
Residual Soil	The following 3 types of natural soil were encountered; Type 1: Silty SAND, fine grained, dark grey was, encountered at BH, BH3, BH4 and BH8. Type 2: Sandy CLAY, medium to high plasticity, brown and grey, was encountered at BH2, BH6 and BH7. Type 3: Silty CLAY, high plasticity, grey, was encountered at BH5, BH9 and BH10.
Bedrock	SANDSTONE, fine to medium grained, grey brown, extremely weathered, low strength.

Based on the contents of the fill materials and the natural soil profiles, it appears that Types 2, 3, 6 and 7 might have originated from construction of the factory; whilst Type 1, 4 and 5 fill materials could have been imported to the site for site levelling purposes.

The recovered soil samples did not have obvious asbestos sheets / pieces, odour, staining or discolouration that would indicate the potential for contamination.

Samples were recovered from the excavated material using a stainless steel trowel, which was decontaminated prior to use to prevent cross contamination.

The sampling procedures adopted were as follows;

- Bulk soil samples from boreholes were surfaced using a truck mounted drilling rig, with auger attachment, over the depth interval nominated by the Environmental Scientist/ Engineer. A representative soil sample was recovered directly from the auger, using a decontaminated stainless steel trowel.
- To minimise the potential loss of volatiles the soil sample was immediately transferred to a labelled, laboratory supplied, 250ml glass jar and sealed with an airtight, Teflon screw top lid. The fully filled jar was then placed in a chilled container.

Distilled water used for rinsing the trowel during sampling was collected at the completion of field work and placed in a glass bottle supplied by the laboratory. The rinsate water sample was labelled and placed in the chilled container.

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

At completion of field sampling the chilled containers were transported to our Penrith office. All the jars and bottles were then transferred to a refrigerator where the temperature is maintained below 4°C.

The day after field work, the chilled containers with the trip spike sample were forwarded under COC conditions to the primary laboratory of SGS Environmental Services (SGS) and the secondary laboratory, Envirolab Services Pty Ltd (Envirolab), both NATA accredited.

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

Within the holding times detailed in Schedule B(3) of The *National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPM)* by the National Environment Protection Council (NEPC), the recovered soil samples were analysed, except for some pH analysis where holding time has been over by few days.

As mentioned, the soil profile encountered did not reveal any visual (staining, dying) or olfactory indicators of potential contaminants. Based on site observation, review of available information and the potential for contamination due to past and present site activities, the soil profile, the presence of fill, a suitable testing strategy is adopted below:

Environmental Concern	Borehole	Testing Strategy
In the vicinity of above ground tanks (ASTs), potential underground fuel tanks (USTs)	BH2, BH5, BH9 and BH10	Full range including metals, TPH, BTEX, PAH, OCP, PCB, total Phenols, total Cyanides, pH and Asbestos for top layer of fill or top soil, lower layer of fill and natural soil layer immediately below fill.
For screening in related to timber yard and possible pH issue	All boreholes	Metals, OCP, PAH and pH for all top layer top soil or fill and some lower fill layer.
Screening for imported fill	All boreholes	Full range for each fill type.

FIELD QUALITY ASSURANCE & QUALITY CONTROL (QA & QC)

The following QA / QC procedures were implemented for the sampling and analytical program.

Rinsate Sample

Five (5) rinsate water samples (R1 to R5) were recovered over the course of the field work in order to identify possible cross contamination between the sampling locations.

The rinsate water samples were analysed for Metals (arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), lead (Pb), mercury (Hg), nickel (Ni) and zinc (Zn)). The test results for the rinsate water samples are summarised in Table A. Copies of the actual laboratory test results certificates are kept in the offices of Geotechnique and will be provided upon request.

As indicated in Table A, all other concentrations in the rinsate samples were less than LOR or much lower than the assessing criteria, which indicates that adequate decontamination had been carried out in the field.

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 retained in our Penrith office at less than 4°C for a period of not more than seven days. During field work trip spike samples are kept in a chilled container with soil samples recovered from the site. The trip spike samples are then forwarded to the laboratory together with the soil samples.

The trip spike is prepared by adding a known amount of 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 as for the soil samples being analysed.

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

Two (2) trip spike samples were tested for BTEX. The test results for the trip spike sample, reported as a percentage recovery of the applied spike concentration, are shown in the attached Table B.

The results indicate that it is unlikely that BTEX, if present within the soil samples recovered from the site, volatilised significantly during field work or transportation. 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 0.121mg/kg (Benzene), 0.121mg/kg (Toluene), 0.119mg/kg (Ethyl benzene) and 0.357mg/kg (Xylenes). The concentrations in this case would still be considerably less than the relevant assessment criteria adopted (refer to Table F). Furthermore, all BTEX results were less than laboratory detection limits and there were 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.

Duplicate Sample
In order to ensure reliable analytical results from the laboratory, duplicate soil samples were prepared from original samples and submitted blind to the primary laboratory of SGS for analysis.

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 frequency adopted (5% for metals, PAH, OCP and pH, 9% for TPH, BTEX, PCB, Phenols and Cyanides) complies with the NEPM, which recommends a duplicate frequency of at least 5%.

The duplicate samples test results are presented with the attached laboratory analytical reports and summarised in the attached Table C.

A comparison was made of the laboratory test results for the duplicate samples with the original samples and the Relative Percentage Differences (RPD) were computed to assess the difference between the original and duplicate. 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.

As shown in Table C, the comparisons between the duplicate and corresponding original samples indicated generally acceptable RPD, with the exception of higher RPD of As due to inhomogeneity of the fill, Total PAH and Phenols due to low concentrations detected.

Based on the above, the variation is not considered to be critical and overall the duplicate sample comparisons indicate that the laboratory test data provided by SGS are of adequate accuracy and reliability for this assessment.

Split Sample
Split samples provide a check on the analytical performance of the primary laboratory. Split samples were submitted for analysis to the laboratory of Envirolab.

Split samples were prepared on the basis of sample numbers recovered during the field work. The split sample frequency was computed using the total number of samples analysed as part of this assessment. The split sample frequency adopted (5% for metals, PAH, OCP and pH, 9% for TPH, BTEX, PCB, Phenols and Cyanides) complies with the NEPM, which recommends a frequency of 5%.

The results are summarised in the attached Table D.

Based on Schedule B (3) of the NEPM the difference in the results between the split samples should in general be within 30% of the mean concentration determined by both laboratories, i.e., RPD should be within 30%. However, this variation can be higher for organic analysis than for inorganics and for low concentrations of analytes.

As shown in Table D the comparisons between the split and corresponding original samples indicated acceptable RPD, with the exception of higher RPD for Benzo (a) Pyrene (BaP) due to inhomogeneity of the fill, As, Hg, Zn, and Total PAH due to low concentrations detected. In particular, BaP concentration of the split sample was marginally higher than Ecological Screening Level for Urban residential.

Based on the above, it is concluded that the test results provided by the primary laboratory may be relied upon for this assessment.

LABORATORY QA & QC

Geotechnique uses only NATA accredited laboratories for chemical analyses. 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 are both accredited by NATA and operate Quality Systems designed to comply with ISO / IEC 17025.

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 limits of reporting (LOR) / practical quantitation limits (PQL) were less than the assessment criteria.

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

We have checked the QA / QC procedures and results adopted by the laboratories against the appropriate guidelines. The quality control sample numbers adopted by SGS and Envirolab are considered adequate for the analyses undertaken and generally conform to recommendations provided in the National Environment Protection Measure (NEPM) 1999 “Guideline on Laboratory Analysis of Potentially Contaminated Soils”.

Overall, the quality control elements adopted by SGS and Envirolab indicate the analytical data to fall within acceptable levels of accuracy and precision for the analysis of soils. The analytical data provided is therefore considered to be reliable and useable for this assessment.

ASSESSMENT CRITERIA

Investigation levels and screening levels developed in the 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 located within a parcel of industrial land, which will be developed into high density residential community. As such, with regard to human health, analytical results will be assessed against risk based HIL for *residential with minimal opportunities for soil access; including dwellings with fully and permanently paved yard space such as high-rise buildings and apartments* (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 result was assessed against the available HSL for *with minimal opportunities for soil access; including dwellings with fully and permanently paved yard space such as high-rise buildings and apartments* (HSL B) for clay to depth of 0m to <1m and for sand to depth of 0m to <1m.

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

  The analytical results were assessed against the available ESL for *urban residential* for coarse and fine-grained soils.

- 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. For arsenic and lead generic EIL for *urban residential* land use for aged contamination are adopted. For other metals, where available, EIL are calculated directly by using EIL calculator developed by CSIRO for NEPC.

  For this assessment the analytical results were assessed against the available SQG / EIL for *urban residential* land use for aged contamination 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.

For discrete soil samples, the individual concentrations of analytes, except Cd and Hg, were assessed against the HIL B / HSL B / ESL / EIL. The individual concentrations of Cd and Hg were assessed against the PIL and HIL B.

The soil 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".

LABORATORY TEST RESULTS, ASSESSMENT & DISCUSSION

Copies of the actual laboratory test results certificates from SGS are kept in the offices of Geotechnique and will be provided upon request. The test results are also presented in Tables E1, E2 and F to I together with the assessment criteria adopted. A discussion of the test data is presented in the following sub-sections.

Metals
The Metals test results for discrete selected soil samples are presented in Tables E1 and E2 and as shown, all concentrations of Metals were below the available relevant EIL, HIL B, except for elevated concentration of As from sample BH5 (0.1-0.4) which is marginally exceed HIL B. All Cd and Hg concentrations were also below the relevant PIL.

pH
The pH test results for discrete selected soil samples are presented in Tables E1 and E2 and as shown, soil pHs are ranging from extremely acidic (4) to strongly alkaline (9), however, majority of the pHs are within normal range of 6 to 8.

TPH and BTEX
The TPH and BTEX test results for the discrete selected soil samples are presented in Table F. As shown in Table F 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 HSL B and / or ESL adopted. Moreover, all the test results were below the LOR.

PAH
The PAH test results for the selected discrete soil samples are presented in Table G and as shown, all BaP, BaP TEQ, Naphthalene and Total PAH were below the relevant HIL B or ESL or HSL B or EIL adopted, except for elevated BaP concentrations from samples BH2 (4.5-4.8) and split sample S1 (original sample BH9 (2.0-2.3)) which are higher than ESL but much lower than HIL B.

OCP
The OCP test results for selected discrete soil samples are presented in Table H and as indicated OCP were well below the relevant HIL B and all OCP were less than the laboratory LOR. The concentrations of DDT were also below the EIL.

PCB
The PCB test results for the selected discrete soil samples are presented in Table H and as shown the PCB concentrations were below the relevant HIL B adopted and less than the laboratory LOR.

Phenols
The Phenols test results for the selected discrete soil samples are presented in Table H and as shown the Phenols concentrations were well below the relevant HIL B adopted and less than the laboratory LOR.

Cyanides
The Cyanides test results for the selected discrete soil samples are presented in Table H and as shown the Cyanides concentrations were well below the relevant HIL B adopted and some less than the laboratory LOR.

Asbestos
The asbestos results for the selected discrete soil samples are presented in Table I and as shown no asbestos was detected in any of the samples.

CONCLUSION AND RECOMMENDATIONS
Based on this assessment it is considered that soils collected geotechnical borehole within the site are generally unlikely to pose a risk of harm to human health and the environment and are environmentally suitable to retain on site for the proposed development subjected to:

- Elevated As concentration found in sample BH5 (0.1-0.4), which is marginally higher than relevant HIL B, deems the soil within the vicinity of this sample to be contaminated or containing contamination "hot spots". Further investigation, remediation and/or management are required to make the contaminated soil suitable for the proposed development.

- Elevated BaP concentrations from samples BH2 (4.5-4.8) and split sample S1 (original sample BH9 (2.0-2.3)) do not pose a risk of harm to human health and the environment due to the fact that these concentrations appear deeper than 2.0m which are unlikely to significantly upset any terrestrial ecosystem. However, if the soils were to be excavated and used as topsoil, then they may have an impact on the immediate ecosystems where they landed. A horticulturist may be consulted to determine the suitability of the soils before being use as topsoil.

- Soil pHs were detected ranging from extremely acidic (4) to strongly alkaline (9). Extremely acidic condition could have an impact on footing of future structures; therefore appropriate consideration should be taken into account during the designing process.

If suspect materials (identified by unusual staining, odour, discolouration or inclusions such as building rubble, asbestos sheets / pieces, ash material, etc) are encountered during the construction stage, we recommend that this office is contacted for assessment and necessary action.

LIMITATIONS

Within the stated scope of work the services performed by Geotechnique in preparation of this report 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 Nix Anderson Pty Ltd for the purpose stated within. 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 completion of field sampling (14 August 2014) and in accordance with current site conditions. Any variations to the site form or use beyond this date might nullify the conclusions stated.

No contamination assessment can eliminate all risk; even a rigorous professional assessment might not detect all contamination within the investigated locations.

Reference should be made to the attached "Environmental Notes" for details of the limitations of this assessment.

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

Yours faithfully
GEOTECHNIQUE PTY LTD

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AN NGUYEN
Environmental Scientist

Attached Drawing No 13188/1-AA1 Borehole Locations
Lab Summary Tables A to I
13188/1-AA Borehole Logs Nos 1 to 10
Appendix A Areas of Environmental Concern from SLR Consulting Australia Pty Ltd
Appendix B Bushell's History
Appendix C Envirolab Services Certificates of Analysis and SGS Environmental Services Analytical Report
Appendix D Environmental Notes

LEGEND

● Borehole

Imagery ©2014 NearMap.com

0 20 40 60 80 100m

Scale 1:2000

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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

Nix Management Pty Ltd
Proposed Development
Robert Timms Factory Site (Bushell's)
160 Burwood Road, Concord

Borehole Locations

Drawing No: 13188/1-AA1
Job No: 13188/1
Drawn By: MH
Date: 20 August 2014
Checked By: ER

File No: 13188-1
Layers: 0, AA1

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engineering log - borehole

Client : Nix Anderson Pty Ltd
Project : Proposed Development
Location : 160 Burwood Road, Concord

Job No. : 13188/1
Borehole No. : 1
Date : 07/08/2014
Logged/Checked by: AN/MT

drill model and mounting : Edson Truck Mounted **slope :** **deg.** **R.L. surface :** ≅5.5

hole diameter : 125 **mm** **bearing :** **deg.** **datum :** AHD

method	groundwater	env samples	PID reading (ppm)	geo samples	field test	depth or R.L. in meters	graphic log	classification symbol	MATERIAL DESCRIPTION soil type, plasticity or particle characteristic, colour, secondary and minor components.	moisture condition	consistency density index	hand penetrometer kPa	Remarks and additional observations
Auger	▼	DS			N=R 6,15,7/50 Ref	0			Asphaltic concrete	M			Well compacted
									Road base Sandy GRAVEL, fine to medium grained, grey	M			
									FILL; Sandstone Gravel, medium to coarse grained, red grey, with sand	M			
						0.5			FILL; Silty Sand, fine grained, brown, with clay and gravel				
		DS			N=8 4,4,4	1			FILL; Silty Clay, medium to high plasticity, grey, trace of ironstone	M<PL			
						1.5							
						2			FILL; Sandy Clay, low plasticity, dark brown, trace of gravel	M<PL			
		DS				2.5							
					N=R 3,25/150	3		SM	Silty SAND, fine grained, dark grey	W	MD		Bedrock
		DS											
									Commenced Coring at 3.3m				
						3.5							
						4							
						4.5							

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engineering log - borehole

Client : Nix Anderson Pty Ltd
Project : Proposed Development
Location : 160 Burwood Road, Concord

Job No. : 13188/1
Borehole No. : 2
Date : 11/08/2014
Logged/Checked by: LY/MT

drill model and mounting : Edson Truck Mounted **slope :** **deg.** **R.L. surface :** ≅5.4

hole diameter : 125 **mm** **bearing :** **deg.** **datum :** AHD

method	groundwater	env samples	PID reading (ppm)	geo samples	field test	depth or R.L. in meters	graphic log	classification symbol	MATERIAL DESCRIPTION soil type, plasticity or particle characteristic, colour, secondary and minor components.	moisture condition	consistency density index	hand penetrometer kPa	Remarks and additional observations
		DS				0			TOPSOIL; Silty Sand, fine grained, grey, with inclusion of root fibre				
									FILL; Silty Sand, fine grained, grey, with inclusion of gravel				Well compacted
		DS			N=4 4,2,2	0.5							
						1							
		DS			N=11 5,6,5	1.5			FILL: Gravelly Sandy Clay, low plasticity, brown				Well compacted
						2							
						2.5							
		DS			N=4 2,2,2	3							
						3.5							
									FILL; Silty Clay, medium plasticity, dark grey, with inclusion of timber				Well compacted
		DS			N=3 2,1,2	4							
						4.5							

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engineering log - borehole

Client : Nix Anderson Pty Ltd
Project : Proposed Development
Location : 160 Burwood Road, Concord

Job No. : 13188/1
Borehole No. : 2
Date : 11/08/2014
Logged/Checked by: LY/MT

drill model and mounting : Edson Truck Mounted **slope :** **deg.** **R.L. surface :** ≅5.4

hole diameter : 125 **mm** **bearing :** **deg.** **datum :** AHD

method	groundwater	env samples	PID reading (ppm)	geo samples	field test	depth or R.L. in meters	graphic log	classification symbol	MATERIAL DESCRIPTION soil type, plasticity or particle characteristic, colour, secondary and minor components.	moisture condition	consistency density index	hand penetrometer kPa	Remarks and additional observations
Auger		DS			N=11 4,5,6	5 5.5 6 6.5 7 7.5 8 8.5 9 9.5		CH	Sandy CLAY, high plasticity, brown and grey	M>PL	St-H		Residual
									SANDSTONE; extremely weathered, extremely low strength, brown and grey				Bedrock

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engineering log - borehole

Client : Nix Anderson Pty Ltd
Project : Proposed Development
Location : 160 Burwood Road, Concord

Job No. : 13188/1
Borehole No. : 2
Date : 11/08/2014
Logged/Checked by: LY/MT

drill model and mounting : Edson Truck Mounted **slope :** **deg.** **R.L. surface :** ≅5.4

hole diameter : 125 **mm** **bearing :** **deg.** **datum :** AHD

method	groundwater	env samples	PID reading (ppm)	geo samples	field test	depth or R.L. in meters	graphic log	classification symbol	MATERIAL DESCRIPTION soil type, plasticity or particle characteristic, colour, secondary and minor components.	moisture condition	consistency density index	hand penetrometer kPa	Remarks and additional observations
	Dry					10							
						10.5			Borehole 2 terminated at 10.5m				
						11							
						11.5							
						12							
						12.5							
						13							
						13.5							
						14							
						14.5							

GEOTECHNIQUE
PTY LTD

engineering log - borehole

Client : Nix Anderson Pty Ltd
Project : Proposed Development
Location : 160 Burwood Road, Concord

Job No. : 13188/1
Borehole No. : 3
Date : 12/08/2014
Logged/Checked by: LY/MT

drill model and mounting : Edson Truck Mounted **slope :** **deg.** **R.L. surface :** ≅5.4

hole diameter : 125 **mm** **bearing :** **deg.** **datum :** AHD

method	groundwater	env samples	PID reading (ppm)	geo samples	field test	depth or R.L. in meters	graphic log	classification symbol	MATERIAL DESCRIPTION (soil type, plasticity or particle characteristic, colour, secondary and minor components.)	moisture condition	consistency density index	hand penetrometer kPa	Remarks and additional observations
Auger	Dry					0			TOPSOIL; Silty Sand, fine grained, grey, with root fibre				
		DS							FILL; Clayey Sand, medium grained, brown, with gravel				Well compacted
					N=R 11/50 Ref	0.5			Sandstone floater				
		DS				1			FILL; Sandy Clay, medium plasticity, brown				Well compacted
		DS			N=5 2,2,3	1.5			FILL; Sandy Clay, high plasticity, dark grey				Well compacted
						2							
						2.5		SM	Silty SAND, fine to medium grained, grey	M	L-VD		Alluvial
					N=R 10,10/50	3			SANDSTONE; extremely weathered, grey				Bedrock
						3.5							
						4							
						4.5			Coring commenced at 4.1m				

GEOTECHNIQUE
PTY LTD

engineering log - borehole

Client : Nix Anderson Pty Ltd
Project : Proposed Development
Location : 160 Burwood Road, Concord

Job No. : 13188/1
Borehole No. : 4
Date : 12/08/2014
Logged/Checked by: LY/MT

drill model and mounting : Edson Truck Mounted **slope :** **deg.** **R.L. surface :** ≅5.8

hole diameter : 125 **mm** **bearing :** **deg.** **datum :** AHD

method	groundwater	env samples	PID reading (ppm)	geo samples	field test	depth or R.L. in meters	graphic log	classification symbol	MATERIAL DESCRIPTION soil type, plasticity or particle characteristic, colour, secondary and minor components.	moisture condition	consistency density index	hand penetrometer kPa	Remarks and additional observations
						0			TOPSOIL; Silty Sand, medium grained, grey, with root fibre				
		DS							FILL; Gravelly Sand, medium grained, brown				Well compacted
					N=R 15/150 Ref	0.5			SANDSTONE; floater				
								SM	Silty SAND, fine to medium grained, brown grey	M	VD		Alluvial
						1			SANDSTONE; extremely weathered. extremely low strength, brown and grey				Bedrock
	Dry					1.5							
						2							
						2.5			Commenced Coring at 2.5m				
						3							
						3.5							
						4							
						4.5							

GEOTECHNIQUE
PTY LTD

engineering log - borehole

Client : Nix Anderson Pty Ltd
Project : Proposed Development
Location : 160 Burwood Road, Concord

Job No. : 13188/1
Borehole No. : 5
Date : 13/08/2014
Logged/Checked by: LY/MT

drill model and mounting : Edson Truck Mounted **slope :** **deg.** **R.L. surface :** ≅6.7

hole diameter : 125 **mm** **bearing :** **deg.** **datum :** AHD

method	groundwater	env samples	PID reading (ppm)	geo samples	field test	depth or R.L. in meters	graphic log	classification symbol	MATERIAL DESCRIPTION soil type, plasticity or particle characteristic, colour, secondary and minor components.	moisture condition	consistency density index	hand penetrometer kPa	Remarks and additional observations
Auger	Dry	DS			N=4 4,2,2	0 0.5 1 1.5		CH	TOPSOIL; Silty Clay, medium plasticity, grey, with root fibre FILL; Sandy Gravelly Clay, medium plasticity, grey, with inclusion of sandstone fragments Silty CLAY, high plasticity, grey SANDSTONE; extremely weathered, extremely low strength, brown	M>PL	S		Well compacted Residual Bedrock
						2 2.5 3 3.5 4 4.5			Commenced Coring at 1.6m				

GEOTECHNIQUE
PTY LTD

engineering log - borehole

Client : Nix Anderson Pty Ltd
Project : Proposed Development
Location : 160 Burwood Road, Concord

Job No. : 13188/1
Borehole No. : 6
Date : 13/08/2014
Logged/Checked by: LY/MT

drill model and mounting : Edson Truck Mounted **slope :** **deg.** **R.L. surface :** ≅6.3

hole diameter : 125 **mm** **bearing :** **deg.** **datum :** AHD

method	groundwater	env samples	PID reading (ppm)	geo samples	field test	depth or R.L. in meters	graphic log	classification symbol	MATERIAL DESCRIPTION soil type, plasticity or particle characteristic, colour, secondary and minor components.	moisture condition	consistency density index	hand penetrometer kPa	Remarks and additional observations
						0			CONCRETE				
		DS							ROADBASE, gravel FILL; Gravelly Clay, medium plasticity, grey				Well compacted
		DS			N=R 7,20/100, Ref	0.5		Cl	Sandy CLAY, medium plasticity, brown, with inclusion of ironstone	M>PL	H		Residual
	Dry					1			SANDSTONE; extremely weathered, extremely low strength, brown, with some ironstone				Bedrock
									Commenced Coring at 1.2m				
						1.5							
						2							
						2.5							
						3							
						3.5							
						4							
						4.5							

GEOTECHNIQUE
PTY LTD

engineering log - borehole

Client : Nix Anderson Pty Ltd
Project : Proposed Development
Location : 160 Burwood Road, Concord

Job No. : 13188/1
Borehole No. : 7
Date : 11/08/2014
Logged/Checked by: LY/MT

drill model and mounting : Edson Truck Mounted **slope :** **deg.** **R.L. surface :** ≅5.6

hole diameter : 125 **mm** **bearing :** **deg.** **datum :** AHD

method	groundwater	env samples	PID reading (ppm)	geo samples	field test	depth or R.L. in meters	graphic log	classification symbol	MATERIAL DESCRIPTION soil type, plasticity or particle characteristic, colour, secondary and minor components.	moisture condition	consistency density index	hand penetrometer kPa	Remarks and additional observations
Auger	Dry					0			ASPHALTIC CONCRETE				
									ROADBASE; sandy gravel, fine to medium grained, grey				Well compacted
		DS			N=14 9,10,4	0.5			FILL; Silty Sand, fine grained, brown, with inclusion of gravel				
						1			FILL; Sandy Clay, high plasticity, dark grey				Well compacted
		DS			N=5 5,3,2	1.5			FILL; Sandy Clay, medium plasticity, brown, with inclusion of gravel				Well compacted
		DS				2			FILL; Silty Clay, high plasticity, grey				Well compacted
						2.5		SM	Silty SAND, fine to medium grained, grey brown	M	D-VD		Alluvial
					N=R 2,2,10/ 100	3			SANDSTONE; fine to medium grained, grey brown				Bedrock
						3.5							
									Commenced Coring at 3.8m				
						4							
						4.5							

GEOTECHNIQUE
PTY LTD

engineering log - borehole

Client : Nix Anderson Pty Ltd
Project : Proposed Development
Location : 160 Burwood Road, Concord

Job No. : 13188/1
Borehole No. : 8
Date : 14/08/2014
Logged/Checked by: LY/MT

drill model and mounting : Edson Truck Mounted **slope :** **deg.** **R.L. surface :** ≅5.7

hole diameter : 125 **mm** **bearing :** **deg.** **datum :** AHD

method	groundwater	env samples	PID reading (ppm)	geo samples	field test	depth or R.L. in meters	graphic log	classification symbol	MATERIAL DESCRIPTION soil type, plasticity or particle characteristic, colour, secondary and minor components.	moisture condition	consistency density index	hand penetrometer kPa	Remarks and additional observations
						0			Concrete Pavement 200mm				
		DS							FILL; Silty Sand, fine to medium grained, brown, with some gravel				
					N=19 5,10,9	0.5		SM	Silty SAND, fine to medium grained, brown, with some ironstone	M	MD		
	Dry					1		SM	SANDSTONE; fine to medium grained, brown, extremely weathered				Bedrock
						1.5			Commenced Coring at 1.4m				
						2							
						2.5							
						3							
						3.5							
						4							
						4.5							

GEOTECHNIQUE PTY LTD

engineering log - borehole

Client : Nix Anderson Pty Ltd
Project : Proposed Development
Location : 160 Burwood Road, Concord

Job No. : 13188/1
Borehole No. : 9
Date : 14/08/2014
Logged/Checked by: LY/MT

drill model and mounting : Edson Truck Mounted **slope :** **deg.** **R.L. surface :** ≅7.16

hole diameter : 125 **mm** **bearing :** **deg.** **datum :** AHD

method	groundwater	env samples	PID reading (ppm)	geo samples	field test	depth or R.L. in meters	graphic log	classification symbol	MATERIAL DESCRIPTION soil type, plasticity or particle characteristic, colour, secondary and minor components.	moisture condition	consistency density index	hand penetrometer kPa	Remarks and additional observations
						0			Bitumen Pavement				
		DS							FILL; Silty Gravelly Clay, medium plasticity, grey, with some gravel	M<PL			
					N=13 5,3,10	0.5			FILL; Silty Gravelly Clay, medium to high plasticity, grey brown to dark brown, with gravel	M<PL			
		DS				1			FILL; Silty Gravelly Clay, medium to high plasticity, grey brown to dark brown with ironstone	M<PL			
					N=5 2,2,3	1.5							
		DS				2			FILL; Silty Clay, medium to high plasticity, dark brown	M<PL	F		
						2.5		CI-CH	Silty CLAY, medium to high plasticity, orange to grey, with some ironstone	M>PL	St		Residual
					N=8 2,3,5	3							
						3.5							
	Dry					4			SANDSTONE; fine to medium grained, grey red				Bedrock
						4.5			Commenced Coring at 4.5m				

GEOTECHNIQUE
PTY LTD

engineering log - borehole

Client : Nix Anderson Pty Ltd
Project : Proposed Development
Location : 160 Burwood Road, Concord

Job No. : 13188/1
Borehole No. : 10
Date : 14/08/2014
Logged/Checked by: LY/MT

drill model and mounting : Edson Truck Mounted **slope :** **deg.** **R.L. surface :** ≅5.9

hole diameter : 125 **mm** **bearing :** **deg.** **datum :** AHD

method	groundwater	env samples	PID reading (ppm)	geo samples	field test	depth or R.L. in meters	graphic log	classification symbol	MATERIAL DESCRIPTION soil type, plasticity or particle characteristic, colour, secondary and minor components.	moisture condition	consistency density index	hand penetrometer kPa	Remarks and additional observations
Auger	Dry					0			Concrete				
		DS							Road base/gravel FILL; Gravelly Clay, medium plasticity, grey with inclusion of sand				Well compacted
		DS			N=16 7,7,8	0.5		CH	Shaley CLAY, high plasticity, grey and red brown	M>PL	VSt-H		Residual
					N=R 30/150, Ref	1.5			SANDSTONE; extremely weathered, extremely low strength, brown with ironstone bands				Bedrock
						2.5			Commenced coring at 2.4m				

EXPLANATORY NOTES

Introduction
These notes have been provided to simplify the geotechnical report with regard to investigation procedures, classification methods and certain matters relating to the Discussion and Comments section. Not all notes are necessarily relevant to all reports.

Geotechnical reports are based on information gained from finite sub-surface probing, excavation, boring, sampling or other means of investigation, supplemented by experience and knowledge of local geology. For this reason they must be regarded as interpretative rather than factual documents, limited to some extent by the scope of information on which they rely.

Description and Classification Methods
The methods of description and classification of soils and rocks used in this report are based on AS1726 - 1993 "Geotechnical Site Investigations". In general, descriptions cover the following properties; strength or density, colour, structure, soil or rock type, and inclusions. Identification and classification of soil and rock involves, to a large extent, judgement within the acceptable level commonly adopted by current geotechnical practices.

Soil types are described according to the predominating particle size, qualified by the grading or other particles present (e.g. sandy clay) on the following basis:

Soil Classification	Particle Size
Clay	Less than 0.002mm
Silt	0.002 to 0.06mm
Sand	0.06 to 2.00mm
Gravel	2.00mm to 60.00mm

Cohesive soils are classified on the basis of strength, either by laboratory testing or engineering examination. The strength terms are defined as follows:

Classification	Undrained Shear Strength kPa
Very Soft	Less than 12
Soft	12 – 25
Firm	25 – 50
Stiff	50 – 100
Very Stiff	100 – 200
Hard	Greater than 200

Non-cohesive soils are classified on the basis of relative density, generally from the results of standard penetration tests (SPT) or Dutch cone penetrometer tests (CPT), as below:

Relative Density	SPT 'N' Value (blows/300mm)	CPT Cone Value (q_c-MPQ)
Very Loose	Less than 5	Less than 2
Loose	5 – 10	2 – 5
Medium Dense	10 – 30	5 – 15
Dense	30 – 50	15 – 25
Very Dense	>50	>25

Rock types are classified by their geological names, together with descriptive terms on degrees of weathering, strength, defects and other minor components. Where relevant, further information regarding rock classification is given on the following sheet.

Sampling
Sampling is carried out during drilling to allow engineering examination (and laboratory testing where required) of the soil or rock.

Disturbed samples taken during drilling provide information on plasticity, grain size, colour, type, moisture content, inclusions and depending upon the degree of disturbance, some information on strength and structure.

Undisturbed samples are taken by pushing a thin walled sample tube (normally known as U_{50}) into the soil and withdrawing a sample of the soil in a relatively undisturbed state. Such samples yield information on structure and strength and are necessary for laboratory determination of shear strength and compressibility. Undisturbed sampling is generally effective only in cohesive soils. Details of the type and method of sampling are given in the report.

Field Investigation Methods
The following is a brief summary of investigation methods currently carried out by this Company and comments on their use and application.

Hand Auger Drilling
The borehole is advanced by manually operated equipment. The diameter of the borehole ranges from 50mm to 100mm. Penetration depth of hand augered boreholes may be limited by premature refusal on a variety of materials, such as hard clay, gravels or ironstone.

Test Pits
These are excavated with a tractor-mounted backhoe or a tracked excavator, allowing close examination of the insitu soils if it is safe to descend into the pit. The depth of penetration is limited to about 3.0m for a backhoe and up to 6.0m for an excavator. A potential disadvantage is the disturbance caused by the excavation.

Care must be taken if construction is to be carried out near, or within the test pit locations, to either adequately recompact the backfill during construction, or to design the structure to accommodate the poorly compacted backfill.

Large Diameter Auger (e.g. Pengo)
The hole is advanced by a rotating plate or short spiral auger, generally 300mm or larger in diameter. The cuttings are returned to the surface at intervals (generally of not more than 0.5m) and are disturbed, but usually unchanged in moisture content. Identification of soil strata is generally much more reliable than with continuous spiral flight augers and is usually supplemented by occasional undisturbed tube sampling.

Continuous Spiral Flight Augers
The hole is advanced by using 90mm-115mm diameter continuous spiral flight augers, which are withdrawn at intervals to allow sampling or insitu testing. This is a relatively economical means of drilling in clays and in sands above the water table. Samples are returned to the surface, or may be collected after withdrawal of the auger flights, but they are very disturbed and may be highly mixed with soil of other stratum.

Information from the drilling (as distinct from specific sampling by SPT or undisturbed samples) is of relatively lower reliability due to remoulding, mixing or softening of samples by groundwater, resulting in uncertainties of the original sample depth.

The spiral augers are usually advanced by using a V-bit through the soil profile to refusal, followed by Tungsten Carbide (TC) bit, to penetrate into bedrock. The quality and continuity of the bedrock may be assessed by examination of recovered rock fragments and through observation of the drilling penetration resistance.

Non-core Rotary Drilling (Wash Boring)
The hole is advanced by a rotary bit, with water being pumped down the drill rod and returned up the annulus carrying the drill cuttings. Only major changes in stratification can be determined from the cuttings, together with some information from the feel and rate of penetration.

Rotary Mud Stabilised Drilling
This is similar to rotary drilling, but uses drilling mud as a circulating fluid, which may consist of a range of products from bentonite to polymers such as Revert or Biogel. The mud tends to mask the cuttings and reliable identification is again only possible from separate intact sampling (e.g. SPT and U_{50}) samples).

Continuous Core Drilling
A continuous core sample is obtained using a diamond tipped core barrel. Providing full core recovery is achieved (which is not always possible in very low strength rocks and granular soils), this technique provides a very reliable (but relatively expensive) method of investigation. In rocks, an NMLC triple tube core barrel, which gives a core of about 50mm diameter, is usually used with water flush.

Portable Proline Drilling
This is manually operated equipment and is only used in sites which require bedrock core sampling and there is restricted site access to truck mounted drill rigs. The boreholes are usually advanced initially using a tricone roller bit and water circulation to penetrate the upper soil profile. In some instances, a hand auger may be used to penetrate the soil profile. Subsequent drilling into bedrock involves the use of NMLC triple tube equipment, using water as a lubricant.

Standard Penetration Tests
Standard penetration tests are used mainly in non-cohesive soils, but occasionally also in cohesive soils, as a means of determining density or strength and of obtaining a relatively undisturbed sample. The test procedure is described in AS1289 6.3.1.

The test is carried out in a borehole by driving a 50mm diameter split sample tube under the impact of a 63kg hammer with a free fall of 769mm. It is normal for the tube to be driven in three successive 150mm increments and the 'N' value is taken as the number of blows for the last 300mm. In dense sands, very hard clays or weak rock, the full 450mm penetration may not be practicable and the test is discontinued.

The test results are reported in the following form:

- In a case where full penetration is obtained with successive blow counts for each 150mm of, say 4, 6 and 7 blows as;

  N = 13
  4,6,7

- In a case where the test is discontinued short of full penetration, say after 15 blows for the first 150mm and 30 blows for the next 40mm as;

  15, 30/40mm

The results of the tests can be related empirically to the engineering properties of the soil. Occasionally the test method is used to obtain samples in 50mm diameter thin walled sample tubes in clays. In these circumstances, the test results are shown on the bore logs in brackets.

Cone Penetrometer Testing and Interpretation
Cone penetrometer testing (sometimes referred to as Dutch Cone-CPT) described in this report, has been carried out using an electrical friction cone penetrometer and the test is described in AS1289 6.5.1.

In the test, a 35mm diameter rod with cone tipped end is pushed continuously into the soil, the reaction being provided by a specially designed truck or rig, which is fitted with a hydraulic ram system. Measurements are made of the end bearing resistance on the cone and the friction resistance on a separate 130mm long sleeve, immediately behind the cone. Transducers in the tip of the assembly are connected by electrical wires passing through the centre of the push rods to an amplifier and recorder unit mounted on the control truck.

As penetration occurs (at a rate of approximately 20mm per second) the information is output on continuous chart recorders. The plotted results given in this report have been traced from the original records. The information provided on the charts comprises:

- Cone resistance - the actual end bearing force divided by the cross sectional area of the cone, expressed in MPa *
- Sleeve friction - the frictional force on the sleeve divided by the surface area, expressed in kPa

The ratios of the sleeve resistance to cone resistance will vary with the type of soil encountered, with higher relative friction in clays than in sands. Friction ratios of 1% to 2% are commonly encountered in sands and very soft clays, rising to 4% to 10% in stiff clays.

In sands, the relationship between cone resistance and SPT value is commonly in the range:

$$q_c \text{ (MPa)} = (0.4 \text{ to } 0.6)\ N \text{ (blows per 300mm)}$$

In clays, the relationship between undrained shear strength and cone resistance is commonly in the range:

$$q_c=(12 \text{ to } 18)C_u$$

Interpretation of CPT values can also be made to allow estimate of modulus or compressibility values, to allow calculation of foundation settlements. Inferred stratification, as shown on the attached report, is assessed from the cone and friction traces, from experience and information from nearby boreholes etc.

This information is presented for general guidance, but must be regarded as being to some extent interpretive. The test method provides a continuous profile of engineering properties and where precise information or soil classification is required, direct drilling and sampling may be preferable.

Portable Dynamic Cone Penetrometer (DCP)
Portable Dynamic Cone Penetrometer tests are carried out by driving a rod into the ground with a falling weight hammer and measuring the blows per successive 100mm increment of penetration.

There are two similar tests, Cone Penetrometer (commonly known as Scala Penetrometer) AS1289 6.3.2 and the Perth Sand Penetrometer AS1289 6.3.3. Scala Penetrometer is commonly adopted by this company and consists of a 16mm rod with a 20mm diameter cone end, driven with a 9kg hammer, dropping 510mm (AS1289 Test P3.2).

Laboratory Testing
Laboratory testing is carried out in accordance with Australian Standard 1289 "Methods of Testing Soil for Engineering Purposes". Details of the test procedures are given on the individual report forms.

Engineering Logs
The engineering logs presented herein are an engineering and/or geological interpretation of the sub-surface conditions and their reliability will depend to some extent on frequency of sampling and the method of drilling. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, however, this is not always practicable or possible to justify economically. As it is, the boreholes represent only a small sample of the total sub-surface profile. Interpretation of the information and its application to design and construction should take into account the spacing of boreholes, frequency of sampling and the possibility of other than 'straight line' variations between the boreholes.

Groundwater
Where groundwater levels are measured in boreholes, there are several potential problems:

- in low permeability soils groundwater, although present, may enter the hole slowly or perhaps not at all during the investigation period
- a localised perched water table may lead to an erroneous indication of the true water table
- water table levels will vary from time to time due to the seasons or recent weather changes. They may not be the same at the time of construction as indicated in the report
- the use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must be washed out of the hole if water observations are to be made

More reliable measurements can be achieved by installing standpipes that are read at intervals over several days, or weeks for low permeability soils. Piezometers sealed in a particular stratum may be advisable in low permeability soils, or where there may be interference from a perched water table or surface water.

Engineering Reports
Engineering reports are prepared by qualified personnel and are based on the information obtained and on current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal, perhaps a three-storey building, the information and interpretation may not be relevant if the design proposal is changed, say to a twenty-storey building. If this occurs, the Company will be pleased to review the report and sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of sub-surface conditions, discussions of geotechnical aspects and recommendations or suggestions for design and construction. However, the Company cannot always anticipate or assume responsibility for:

- Unexpected variations in ground conditions. The potential for this will depend partly on bore spacing and sampling frequency.
- Changes in policy or interpretation of policy by statutory authorities.
- The actions of contractors responding to commercial pressures.

If these occur, the Company will be pleased to assist with investigation or advice to resolve the matter.

Site Anomalies
In the event that conditions encountered on-site during construction appear to vary from those that were expected from the information contained in the report, the Company requests immediate notification. Most problems are much more easily resolved when conditions are exposed rather than at some later stage, well after the event.

Reproduction of Information for Contractual Purposes
Attention is drawn to the document "Guidelines for the Provision of Geotechnical Information in Tender Documents", published by the Institute of Engineers Australia. Where information obtained from this Investigation is provided for tendering purposes; it is recommended that all information, including the written report and discussion, be made available.

In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. The Company would be pleased to assist in this regard and/or make additional copies of the report available for contract purposes, at a nominal charge.

Site Inspection
The Company will always be pleased to provide engineering inspection services for geotechnical aspects of work to which this report is related. This could range from a site visit to confirm that the conditions exposed are as expected, to full time engineering presence on site.

Review of Design
Where major civil or structural developments are proposed, or where only a limited investigation has been completed, or where the geotechnical conditions are complex, it is prudent to have the design reviewed by a Senior Geotechnical Engineer.

TABLE A
RINSATE SAMPLES
(Ref No: 13188/2-AA)

ANALYTES	Rinsate R1 7/08/2014	Rinsate R2 11/08/2014	Rinsate R3 12/08/2014	Rinsate R4 13/08/2014	Rinsate R5 14/08/2014
METALS	**(mg/L)**	**(mg/L)**	**(mg/L)**	**(mg/L)**	**(mg/L)**
Arsenic	<0.02	<0.02	<0.02	<0.02	<0.02
Cadmium	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium	<0.005	<0.005	<0.005	<0.005	<0.005
Copper	<0.005	<0.005	<0.005	<0.005	<0.005
Lead	<0.02	<0.02	<0.02	<0.02	<0.02
Mercury	0.0002	<0.0001	<0.0001	<0.0001	<0.0001
Nickel	<0.005	<0.005	<0.005	<0.005	<0.005
Zinc	<0.01	<0.01	<0.01	<0.01	<0.01

TABLE B
TRIP SPIKE SAMPLES
(Ref No: 13188/2-AA)

ANALYTES	Trip Spike TS1	Trip Spike TS2
BTEX		
Benzene	85%	79%
Toluene	79%	91%
Ethyl Benzene	81%	95%
Xylenes	81%	97%

Note : results are reported as percentage recovery of know n spike concentrations

TABLE C
DUPLICATE SAMPLE
(Ref No: 13188/2-AA)

ANALYTES	BH5 0.1-0.4 m mg/kg	Duplicate D2 mg/kg	RELATIVE PERCENTAGE DIFFERENCES (RPD) %
METALS			
Arsenic	520	260	67
Cadmium	0.6	0.7	15
Chromium	37	36	3
Copper	41	43	5
Lead	120	110	9
Mercury	0.06	0.08	29
Nickel	10	9.5	5
Zinc	150	150	0
TOTAL PETROLEUM HYDROCARBONS (TPH)			
F1 (C6-C10 less BTEX)	<25	<25	-
F2 (>C10-C16)	<25	<25	-
F3 (>C16-C34)	<90	<90	-
F4 (>C34-C40)	<120	<120	-
BTEX			
Benzene	<0.1	<0.1	-
Toluene	<0.1	<0.1	-
Ethyl Benzene	<0.1	<0.1	-
Xylenes	<0.3	<0.3	-
POLYCYCLIC AROMATIC HYDROCARBONS			
Benzo(a)Pyrene TEQ	0.3	<0.3	-
Total PAH	2.4	1.5	46
Naphthalene	<0.1	<0.1	
Benzo(a)Pyrene	0.2	<0.1	-
ORGANOCHLORINE PESTICIDES (OCP)			
Hexachlorobenzene (HCB)	<0.1	<0.1	-
Heptachlor	<0.1	<0.1	-
Aldrin+Dieldrin	<0.15	<0.15	-
Endrin	<0.2	<0.2	-
Methoxychlor	<0.1	<0.1	-
Mirex	<0.1	<0.1	-
Endosulfan (alpha, beta & sulphate)	<0.5	<0.5	-
DDD+DDE+DDT	<0.6	<0.6	-
Chlordane (alpha & gamma)	<0.2	<0.2	-
POLYCHLORINATED BIPHENYLS (PCB)			
Total PCB	<1	<1	-
CYANIDES & PHENOLS			
Cyanides	0.2	0.2	0
Phenols	0.3	0.1	100

TABLE D
SPLIT SAMPLE
(Ref No: 13188/2-AA)

ANALYTES	BH9 2.0-2.3 m mg/kg (SGS)	Split Sample S1 mg/kg (ENVIROLAB)	RELATIVE PERCENTAGE DIFFERENCES (RPD) %
METALS			
Arsenic	12	20	50
Cadmium	0.4	<0.4	-
Chromium	20	25	22
Copper	20	32	46
Lead	42	50	17
Mercury	0.16	0.3	61
Nickel	2.3	3	26
Zinc	67	100	40
TOTAL PETROLEUM HYDROCARBONS (TPH)			
F1 (C6-C10 less BTEX)	<25	<25	-
F2 (>C10-C16)	<25	<50	-
F3 (>C16-C34)	<90	<50	-
F4 (>C34-C40)	<120	<100	-
BTEX			
Benzene	<0.1	<0.2	-
Toluene	<0.1	<0.5	-
Ethyl Benzene	<0.1	<1	-
Xylenes	<0.3	<3	-
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Benzo(a)Pyrene TEQ	0.8	1	22
Total PAH	4.8	10.63	76
Naphthalene	<0.1	<0.1	-
Benzo(a)Pyrene	0.5	0.93	60
ORGANOCHLORINE PESTICIDES (OCP)			
Hexachlorobenzene (HCB)	<0.1	<0.1	-
Heptachlor	<0.1	<0.1	-
Aldrin+Dieldrin	<0.15	<0.2	-
Endrin	<0.2	<0.1	-
Methoxychlor	<0.1	<0.1	-
Mirex	<0.1	-	-
Endosulfan (alpha (I), beta (II) & sulphate)	<0.5	<0.3	-
DDD+DDE+DDT	<0.6	<0.3	-
Chlordane (alpha & gamma)	<0.2	<0.2	-
POLYCHLORINATED BIPHENYLS (PCB)			
Total PCB	<1	<0.7	-
CYANIDES & PHENOLS			
Cyanides	0.1	<0.5	-
Phenols	0.4	<5	-

TABLE E1
METALS, CATION EXCHANGE CAPACITY (CEC), pH & TOTAL ORGANIC CARBON (TOC) TEST RESULTS
DISCRETE SAMPLE(S)
(Ref No: 13188/2-AA)

		METALS (mg/kg)										
Sample Location	Depth (m)	ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MERCURY	NICKEL	ZINC	CEC (cmol/kg)	pH	TOC (%)
BH1	1.5-1.8	7	0.4	16	6.7	18	0.02	1.5	7.7	7	4	0
BH1	3.15-3.25	9	<0.3	14	4.1	18	0.02	3.1	11	8	6	2
BH2	0-0.15	<3	<0.3	9.1	17	28	0.02	5.3	54	10	5.3	4
BH2	0.5-0.8	4	0.3	12	15	20	0.01	4.5	38	10	6	2
BH2	4.5-4.8	30	0.8	52	**130**	120	0.4	8.3	**260**	25	8	3
BH2	5.1-5.25	10	0.3	18	8.5	22	0.02	1.9	19	13	8	0
BH3	0-0.1	<3	<0.3	8.4	8	13	0.01	5.5	26	7	6	2
BH3	1.5-1.8	7	<0.3	12	9	35	0.04	2.6	54	12	7	2
BH4	0-0.15	12	0.4	18	16	38	0.04	4.9	62	18	8	2
BH5	0.1-0.4	**520**	0.6	37	41	120	0.06	10	150	11	6	1
BH5	0.6-0.7	62	0.4	28	12	43	0.06	2.1	31	7	6	1
BH6	0.6-0.7	7	0.6	27	14	14	0.01	15	17	6	5	0
BH7	0.15-0.45	<3	<0.3	11	8.6	9	0.01	8.6	20	9	9	0
BH7	1.4-1.7	4	<0.3	11	9.3	13	0.01	5.9	17	8	6	0
BH8	0.2-0.4	4	0.5	97	15	10	0.02	50	35	-	8	-
BH9	0.2-0.5	6	0.4	23	18	23	0.02	15	43	34	8	0
BH9	2.0-2.3	12	0.4	20	20	42	0.16	2.3	67	15	7	1
BH9	2.55-2.65	5	0.3	9.3	12	24	0.05	0.7	13	6	5	0
BH10	0.23-0.5	6	0.4	16	22	15	0.01	19	16	15	7	0
BH10	0.55-0.65	4	<0.3	7.2	23	13	<0.01	19	15	6	5	0
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 (HIL)[a] B - Residential B		500	150	500[c]	30000	1200	30[d]	1200	60000			
Ecological Investigation Levels (EIL)[b] - Urban residential		100[e]	-	400[f]	55	1100[g]	-	55	160			
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: EIL of aged copper, nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=6 cmolc/kg; pH=4 and TOC=1 % were selected for derivation of EIL.
c: Chromium (VI)
d: Methyl Mercury
e: Generic EIL for aged arsenic
f: Chromium (III), clay content was assumed =10%, a conservative assun
g: Generic EIL for aged lead

TABLE E2
METALS, CATION EXCHANGE CAPACITY (CEC), pH & TOTAL ORGANIC CARBON (TOC) TEST RESULTS
DISCRETE SAMPLE
(Ref No: 13188/2-AA)

Sample Location	Depth (m)	METALS (mg/kg) ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MERCURY	NICKEL	ZINC	CEC (cmol/kg)	pH	TOC (%)
BH2	4.5-4.8	30	0.8	52	130	120	0.4	8.3	260	25	8	3
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 (HIL)[a] B - Residential B		500 [e]	150	500 [c,f]	30000	1200 [g]	30[d]	1200	60000			
Ecological Investigation Levels (EIL)[b] - Urban residential		100	-	400	240	1100	-	390	1100			
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: EIL of aged copper, nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=25 cmolc/kg; pH=8 and TOC=3 % were selected for derivation of EIL.
c: Chromium (VI)
d: Methyl Mercury
e: Generic EIL for aged arsenic
f: Chromium (III), clay content was assumed =10%, a conservative assumption
g: Generic EIL for aged lead

GEOTECHNIQUE
PTY LTD

TABLE F
TOTAL PETROLEUM HYDROCARBONS (TPH) AND BTEX TEST RESULTS
DISCRETE SAMPLE(S)
(Ref No: 13188/2-AA)

											NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)																			
			TPH (mg/kg)					BTEX (mg/kg)				Health Screening Levels (HSL) B High density residential						Ecological Screening Levels for fine-grained soil Urban residential								Ecological Screening Levels for coarse-grained soil Urban residential							
Sample Location	Depth (m)	Soil type	F1	F2*	F2**	F3	F4	BENZENE	TOLUENE	ETHYLBENZENE	XYLENES	F1	F2*	BENZENE	TOLUENE	ETHYLBENZENE	XYLENES	F1	F2**	F3	F4	BENZENE	TOLUENE	ETHYLBENZENE	XYLENES	F1	F2**	F3	F4	BENZENE	TOLUENE	ETHYLBENZENE	XYLENES
BH2	0.5-0.8	SAND	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	45	110	0.5	160	55	40	-	-	-	-	-	-	-	-	180	120	300	2800	50	85	70	105
BH2	4.5-4.8	CLAY	<25	<25	<25	160	<120	<0.1	<0.1	<0.1	<0.3	290	NL	3	NL	NL	NL	180	120	1300	5600	65	105	125	45	-	-	-	-	-	-	-	-
BH2	5.1-5.25	CLAY	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	290	NL	3	NL	NL	NL	180	120	1300	5600	65	105	125	45	-	-	-	-	-	-	-	-
BH3	1.5-1.8	CLAY	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	90	NL	1	NL	NL	310	180	120	1300	5600	65	105	125	45	-	-	-	-	-	-	-	-
BH5	0.1-0.4	CLAY	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	50	280	0.7	480	NL	110	180	120	1300	5600	65	105	125	45	-	-	-	-	-	-	-	-
BH5	0.6-0.7	CLAY	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	50	280	0.7	480	NL	110	180	120	1300	5600	65	105	125	45	-	-	-	-	-	-	-	-
BH9	0.2-0.5	SAND	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	45	110	0.5	160	55	40	-	-	-	-	-	-	-	-	180	120	300	2800	50	85	70	105
BH9	2.0-2.3	CLAY	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	150	NL	2	NL	NL	NL	180	120	1300	5600	65	105	125	45	-	-	-	-	-	-	-	-
BH9	2.55-2.65	CLAY	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	150	NL	2	NL	NL	NL	180	120	1300	5600	65	105	125	45	-	-	-	-	-	-	-	-
BH10	0.23-0.5	CLAY	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	50	280	0.7	480	NL	110	180	120	1300	5600	65	105	125	45	-	-	-	-	-	-	-	-
BH10	0.55-0.65	CLAY	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	50	280	0.7	480	NL	110	180	120	1300	5600	65	105	125	45	-	-	-	-	-	-	-	-
Limits of Reporting (LOR)			25	-	25	90	120	0.1	0.1	0.1	0.3																						

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

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TABLE G
POLYCYCLIC AROMATIC HYDROCARBONS (PAH) TEST RESULTS
DISCRETE SAMPLE(S)
(Ref No: 13188/2-AA)

							NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)				
			PAH (mg/kg)				Health-based Investigation Levels (HIL) B [a] - Residential B		Health Screening Level (HSL) B - High density residential	Generic Ecological Investigation Level (EIL) - Urban residential	Ecological Screening Level (ESL) - Urban residential
Sample Location	Depth (m)	Soil type	BaP TEQ	TOTAL PAHs	NAPHTHALENE	BENZO(a)PYRENE (BaP)	BaP TEQ	TOTAL PAHs	NAPHTHALENE	NAPHTHALENE	BENZO(a)PYRENE (BaP)
BH1	1.5-1.8	CLAY	<0.3	<0.8	<0.1	<0.1	4	400	NL	170	0.7
BH1	3.15-3.25	SAND	0.7	3.7	<0.1	0.4	4	400	NL	170	0.7
BH2	0-0.15	SAND	<0.3	<0.8	<0.1	<0.1	4	400	3	170	0.7
BH2	0.5-0.8	SAND	<0.3	<0.8	<0.1	<0.1	4	400	3	170	0.7
BH2	4.5-4.8	CLAY	2.3	16	0.3	**1.6**	4	400	NL	170	0.7
BH2	5.1-5.25	CLAY	<0.3	<0.8	<0.1	<0.1	4	400	0	170	0.7
BH3	0-0.1	SAND	<0.3	<0.8	<0.1	<0.1	4	400	3	170	0.7
BH3	1.5-1.8	CLAY	1	6.8	<0.1	0.7	4	400	NL	170	0.7
BH4	0-0.15	SAND	0.8	6.1	<0.1	0.6	4	400	3	170	0.7
BH5	0.1-0.4	CLAY	0.3	2.4	<0.1	0.2	4	400	5	170	0.7
BH5	0.6-0.7	CLAY	<0.3	<0.8	<0.1	<0.1	4	400	5	170	0.7
BH6	0.6-0.7	CLAY	<0.3	<0.8	<0.1	<0.1	4	400	5	170	0.7
BH7	0.15-0.45	SAND	<0.3	<0.8	<0.1	<0.1	4	400	3	170	0.7
BH7	1.4-1.7	CLAY	<0.3	<0.8	<0.1	<0.1	4	400	NL	170	0.7
BH8	0.2-0.4	SAND	<0.3	<0.8	<0.1	<0.1	4	400	3	170	0.7
BH9	0.2-0.5	SAND	<0.3	<0.8	<0.1	<0.1	4	400	3	170	0.7
BH9	2.0-2.3	CLAY	0.8	4.8	<0.1	0.5	4	400	NL	170	0.7
BH9	2.55-2.65	CLAY	<0.3	<0.8	<0.1	<0.1	4	400	NL	170	0.7
BH10	0.23-0.5	CLAY	<0.3	<0.8	<0.1	<0.1	4	400	5	170	0.7
BH10	0.55-0.65	CLAY	<0.3	<0.8	<0.1	<0.1	4	400	5	170	0.7
S1	2.0-2.3	CLAY	1	10.6	<0.1	**0.9**	4	400	NL	170	0.7
Limits of Reporting (LOR)			0.2	0.8	0.1	0.1					

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.
NL: Not Limimting

TABLE H
ORGANOCHLORINE PESTICIDES (OCP), POLYCHLORINATED BIPHENYLS (PCB), CYANIDES & PHENOLS TEST
DISCRETE SAMPLE(S)
(Ref No: 13188/2-AA)

Sample Location	Depth (m)	OCP (mg/kg)										PCB (mg/kg)	Cyanides (mg/kg)	Phenols (mg/kg)
		HEXACHLOROBENZENE (HCB)	HEPTACHLOR	ALDRIN+DIELDRIN	ENDRIN	METHOXYCHLOR	MIREX	ENDOSULFAN (alpha, beta & sulphate)	DDD+DDE+DDT	DDT	CHLORDANE (alpha & gamma)			
BH1	1.5-1.8	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	-	-	-
BH1	3.15-3.25	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	-	-	-
BH2	0-0.15	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	-	-	-
BH2	0.5-0.8	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1	0.2	0.6
BH2	4.5-4.8	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1	<0.1	0.4
BH2	5.1-5.25	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1	<0.1	<0.1
BH3	0-0.1	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	-	-	-
BH3	1.5-1.8	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1	0.1	0.4
BH4	0-0.15	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	-	-	-
BH5	0.1-0.4	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1	0.2	0.3
BH5	0.6-0.7	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1	0.1	0.2
BH6	0.6-0.7	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	-	-	-
BH7	0.15-0.45	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	-	-	-
BH7	1.4-1.7	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	-	-	-
BH8	0.2-0.4	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	-	-	-
BH9	0.2-0.5	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1	<0.1	0.2
BH9	2.0-2.3	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1	0.1	0.4
BH9	2.55-2.65	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1	<0.1	0.1
BH10	0.23-0.5	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1	<0.1	<0.1
BH10	0.55-0.65	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1	<0.1	<0.1
Limits of Reporting (LOR)		0.1	0.1	0.15	0.2	0.1	0.1	0.5	0.6	0.2	0.2	1	0.1	0.1
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)														
Health-based Investigation Levels (HIL) [a] B - Residential B		15	10	10	20	500	20	400	600		90	1	300	45000
Ecological Investigation Levels (EIL) - Urban residential										180 [b]				

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: Generic EIL for DDT

TABLE I

ASBESTOS TEST RESULTS

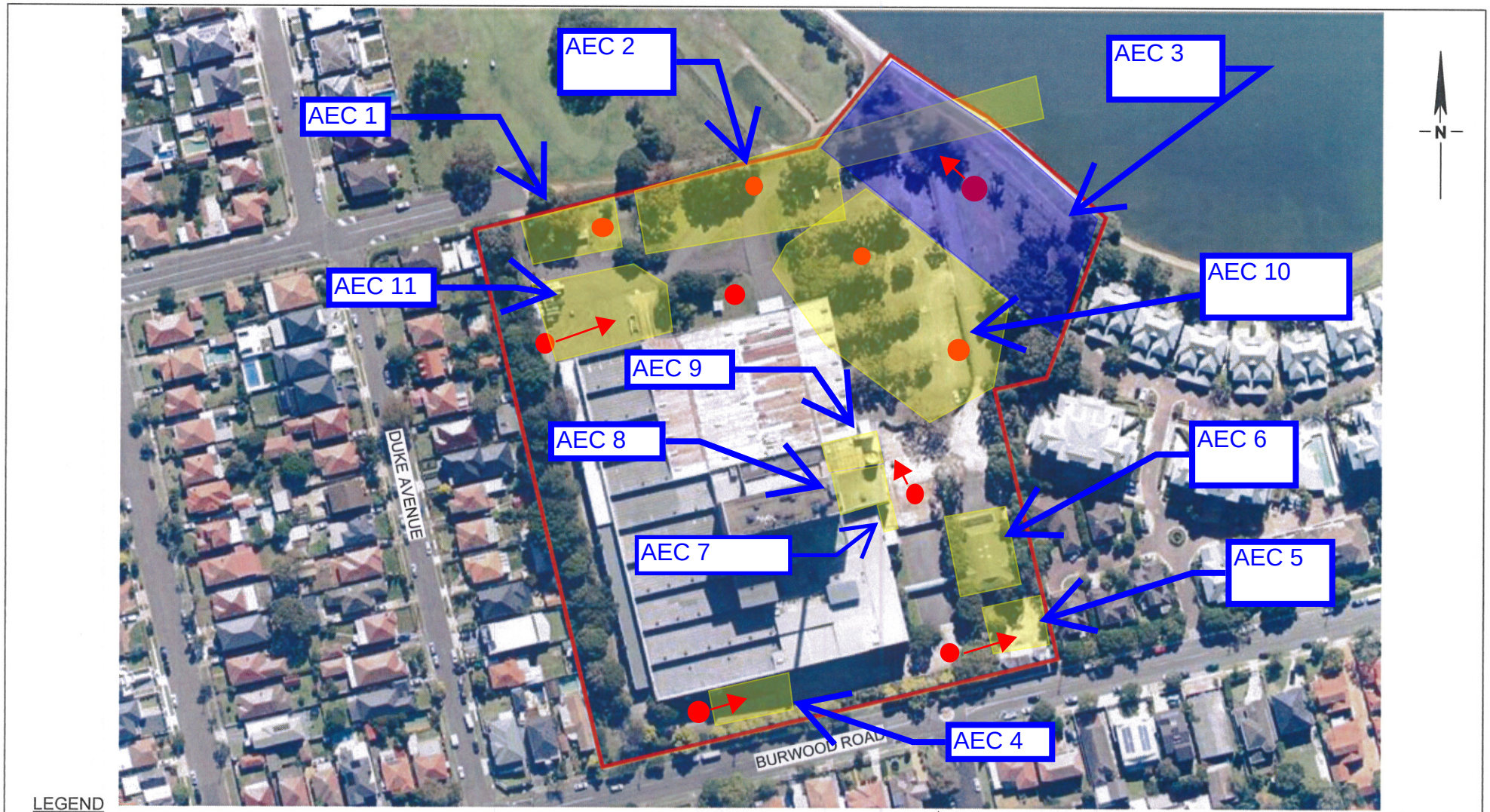
DISCRETE SAMPLE(S)

(Ref No: 13188/2-AA)

Sample Location	Depth (m)	ASBESTOS
BH1	1.5-1.8	No Asbestos Found
BH2	0-0.15	No Asbestos Found
BH2	0.5-0.8	No Asbestos Found
BH2	4.5-4.8	No Asbestos Found
BH3	0-0.1	No Asbestos Found
BH3	1.5-1.8	No Asbestos Found
BH4	0-0.15	No Asbestos Found
BH5	0.1-0.4	No Asbestos Found
BH5	0.6-0.7	No Asbestos Found
BH7	0.15-0.45	No Asbestos Found
BH7	1.4-1.7	No Asbestos Found
BH9	0.2-0.5	No Asbestos Found
BH9	2.0-2.3	No Asbestos Found
BH10	0.23-0.5	No Asbestos Found

APPENDIX A

AREAS OF ENVIRONMENTAL CONCERN FROM SLR CONSULTING AUSTRALIA PTY LTD



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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

Nix Management Pty Ltd
Proposed Development
Robert Timms Factory Site (Bushell's)
160 Burwood Road, Concord

Proposed Borehole Locations

Drawing No: Q6616-1
Job No: Q6616
Drawn By: MH
Date: 2 May 2014
Checked By: ER

File No: Q6616
Layers: 0, Lay1

→ Recommended direction for the existing boreholes to be moved

Table Areas of Environmental Concern and Contaminants of Potential Concern

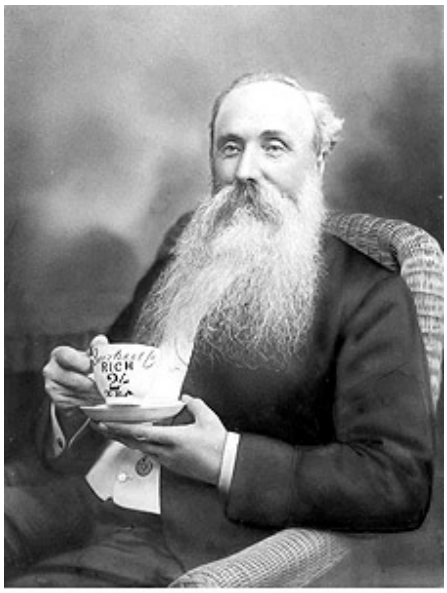
ID	AEC	Contaminants of Potential Concern
AEC 1	Former above ground tanks (ASTs)	Hydrocarbons, metals, asbestos
AEC 2	Former building at the site	Metals, asbestos, pesticides
AEC 3	Reclaimed land	Metals, hydrocarbons, pesticides, asbestos
AEC 4	Potential underground fuel tanks and the transformer area	Hydrocarbons, metals, asbestos, PCBs
AEC 5	Potential underground fuel tanks	Hydrocarbons, metals, aesthetics
AEC 6	Filled area within the vicinity of the administration building	Hydrocarbons, metals, asbestos
AEC 7	Storage of liquid nitrogen, phosphorous acid and hydrochloric acid	
AEC 8	Caustic soda room, ejector's room and separator's room	
AEC 9	Grout area and oil water separator room	Hydrocarbons, metals
AEC 10	Former stockpile area	Hydrocarbons, metals, asbestos
AEC 11	Trucks manoeuvring area	Hydrocarbons, metals, asbestos

APPENDIX B

BUSHELL'S HISTORY

BUSHELLS

Alfred Thomas Bus alia, was born 25th May 1833. The Bushells family we siness, Alfred being a Tea Dealer who employed 50 men and 45 boys, whilst his wife Agnes was the sister of the founder of Brooke Bond, the English Tea Company.



Alfred Thomas Bushell
1833 - 1910

Following the death of his wife, Agnes in the early 1880's, Alfred traveled to Brisbane and by 1883 was trading in Brisbane selling both tea and coffee from a shop. Some years later, two of Alfred's sons started selling tea in Sydney trading as Bushell and Company - the Tea Men. The Sydney business was expanded from selling tea on a roadside stall to selling tea wholesale. In 1899 the business expanded further when a branch was opened in Melbourne.

By 1902 Alfred and his sons, Walter and Phillip, were well established as tea traders, but all was not well. The sons disagreed with the way their father was running the business and on 14th July 1903 the partnership with father Alfred was dissolved. Alfred retained Queensland while Walter and Phillip took control of Sydney and Melbourne. It appears to have been an amicable parting of the ways as the brothers continued to use their father's picture on the packet to attract the more conservative customers.

In 1908, Alfred was contemplating retiring from business and was 'desirous of assigning' the Queensland business to the two sons. A memorandum of agreement stated that Alfred had the 'express desire that the surname shall continue to be identified with the business'. Following Alfred's death in 1910, Bushells Ltd was registered as public company. In 1915 an agent was appointed in Western Australia.

By 1918 Bushells Ltd had expanded into Tasmania and South Australia, but this was not without its problems. The company had over extended itself and the bank was proving difficult in assisting with the cash flow problems. It was later reported that Phillip was 'really' worried and called the staff together to explain the situation. According to an interview at the time, 'The staff kicked in the money from their own resources. The crisis was overcome with money from the employees. Most of them decided to be paid back in shares rather than cash, and many finished up very well off'.


Anthony Oxley

Land was purchased in 1920 in the area now known as 'The Rocks' in Sydney. It was here that Bushells was to build its seven-story head office and incorporate new tea blending and packing methods of both tea and coffee. This was to remain the head office and tea factory for the next 40 years.

In 1937 Bushells Ltd formed a company in New Zealand. To introduce their product to New Zealand the company sent every housewife on the electoral roll a personally addressed letter together with a card entitling her to a half pound (225g) of tea, completely free of charge. This quickly established the company and within a year it had a huge section of the tea market.

In about 1945, J.A.D. Gibson Pty Ltd, who had previously sold the tea division of their business to Robert Timms, was itself taken over by Bushells. At this time Gibsons was manufacturing coffee essence and roasting coffee in Sydney and in Newcastle.

In 1955 Bushells took over their long time rival in the New South Wales market, Inglis Ltd. The purchase of the company brought with it a significant number of brands ranging from matches (Red Head) to canned fish, sauces, wine and spirits and a flour mill in Ultimo that produced a type of porridge. There is even a record of owning a patent for a 'clothes drying apparatus'. Included in the beverage list were the teas 'Billy Tea' 'Goldena', Aromatte, 'Kofe-Kol' and 'Uncle Tom's Pure Coffee'. For a number of

years the company continued to trade in its own name, but gradually the factories and depots were amalgamated into Bushells.

In the mid 50's a decision was made to move the Bushells Head Office. Employees at the time state that the main reason for deciding to move west was the belief that the city itself was expanding that way. Several sites were examined before the current Concord site was chosen. According to records the purchase date is identified as being on Christmas Eve, 1956 and was for 85,000 pounds ($170,000).

Alfred Bushell's Family
From left: Phillip, Walter, Laura, George, Charles.

It is believed that a timber yard was operating on the site prior to the purchase, with a weatherboard building along one boundary leading onto a jetty sitting on piles. Apart from this the site was substantially clear and ready for immediate development, so indicative plans were drawn up and spray drying equipment and six instant coffee extractors were ordered from America.

The initial design of the Concord factory was to accommodate tea packing and warehousing. Indications are that some tea production commenced at the Concord site early in 1958 and that the equipment was transferred from The Rocks. The Newcastle tea plant was closed in 1963, as progressively were the other factories in Perth, Queensland and Victoria.

In 1978 the Bushells family made the decision to sell their shares and approached their cousins, Brooke, in England. The Brooke Bond company was still substantially owned by the Brooke family, but operated under the name of Brooke Bond Liebig Ltd.

At the time, newspaper reports indicated that there was some resistance to a non-Australian company purchasing the business, but the government was in the process of relaxing its policy of overseas ownership. Objections to the take over by Brooke Bond Liebig Ltd were overcome and following the sale of the shares, Bushells donated and established a public plaza. The plaza, known as 'Bushell Place', is in The Rocks area in Sydney.

Bushell & Co, Sydney
Circa 1912

Throughout the 1980's the company continued to make substantial investments in its coffee business. The instant coffee extraction plant was rebuilt in 1981, a new continuous roaster for the instant coffee was installed in 1982 and a new instant coffee agglomerator in was installed in 1985. Unilever acquired the company through their purchase of the Brooke Bond business in 1988.

In 1998, as part of an acquisition of coffee brands from Unilever, FreshFood Services Pty Ltd purchased the Bushells coffee brand. The tea brand still remains with Unilever. The coffee continues to be produced at the Concord Factory. FreshFood also purchased the New Zealand division of Bushells coffee.

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APPENDIX C

ENVIROLAB SERVICES CERTIFICATES OF ANALYSIS AND SGS ENVIRONMENTAL SERVICES ANALYTICAL REPORT

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 114771

Client:
Geotechnique Pty Ltd
PO Box 880
Penrith
NSW 2751

Attention: An Nguyen

Sample log in details:

Your Reference:	**13188/2, Concord**		
No. of samples:	1 Soil		
Date samples received / completed instructions received	18/08/14	/	18/08/14

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

Report Details:

Date results requested by: / Issue Date:	25/08/14	/	22/08/14
Date of Preliminary Report:	Not Issued		

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

Results Approved By:

Jacinta Hurst
Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil		
Our Reference:	UNITS	114771-1
Your Reference	----------	S1
Date Sampled	----------	14/08/2014
Type of sample		Soil
Date extracted	-	19/08/2014
Date analysed	-	20/08/2014
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	%	133

svTRH (C10-C40) in Soil		
Our Reference:	UNITS	114771-1
Your Reference	----------	S1
Date Sampled	----------	14/08/2014
Type of sample		Soil
Date extracted	-	19/08/2014
Date analysed	-	19/08/2014
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	%	90

PAHs in Soil		
Our Reference:	UNITS	114771-1
Your Reference	----------	S1
Date Sampled	----------	14/08/2014
Type of sample		Soil
Date extracted	-	19/08/2014
Date analysed	-	19/08/2014
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	0.8
Anthracene	mg/kg	0.2
Fluoranthene	mg/kg	1.6
Pyrene	mg/kg	1.7
Benzo(a)anthracene	mg/kg	0.7
Chrysene	mg/kg	0.7
Benzo(b,j+k)fluoranthene	mg/kg	1.4
Benzo(a)pyrene	mg/kg	0.93
Indeno(1,2,3-c,d)pyrene	mg/kg	0.6
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	0.5
Benzo(a)pyrene TEQ NEPM B1	mg/kg	1.0
Total Positive PAHs	mg/kg	9.1
Surrogate p-Terphenyl-d14	%	102

Organochlorine Pesticides in soil		
Our Reference:	UNITS	114771-1
Your Reference	----------	S1
Date Sampled	----------	14/08/2014
Type of sample		Soil
Date extracted	-	19/08/2014
Date analysed	-	19/08/2014
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	%	85

PCBs in Soil		
Our Reference:	UNITS	114771-1
Your Reference	----------	S1
Date Sampled	----------	14/08/2014
Type of sample		Soil
Date extracted	-	19/08/2014
Date analysed	-	19/08/2014
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	%	85

Total Phenolics in Soil		
Our Reference:	UNITS	114771-1
Your Reference	----------	S1
Date Sampled	----------	14/08/2014
Type of sample		Soil
Date extracted	-	19/08/2014
Date analysed	-	19/08/2014
Total Phenolics (as Phenol)	mg/kg	<5

Acid Extractable metals in soil		
Our Reference:	UNITS	114771-1
Your Reference	----------	S1
Date Sampled	----------	14/08/2014
Type of sample		Soil
Date digested	-	19/08/2014
Date analysed	-	20/08/2014
Arsenic	mg/kg	20
Cadmium	mg/kg	<0.4
Chromium	mg/kg	25
Copper	mg/kg	32
Lead	mg/kg	50
Mercury	mg/kg	0.3
Nickel	mg/kg	3
Zinc	mg/kg	100

Miscellaneous Inorg - soil		
Our Reference:	UNITS	114771-1
Your Reference	----------	S1
Date Sampled	----------	14/08/2014
Type of sample		Soil
Date prepared	-	19/08/2014
Date analysed	-	19/08/2014
pH 1:5 soil:water	pH Units	7.2
Total Cyanide	mg/kg	<0.5

Moisture		
Our Reference:	UNITS	114771-1
Your Reference	----------	S1
Date Sampled	----------	14/08/2014
Type of sample		Soil
Date prepared	-	19/08/2014
Date analysed	-	20/08/2014
Moisture	%	22

Method ID	Methodology Summary
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-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-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Inorg-031	Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish). Solids are extracted in a caustic media prior to analysis.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA 22nd ED, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-014	Cyanide - free, total, weak acid dissociable by segmented flow analyser (in line dialysis with colourimetric finish). Solids are extracted in a caustic media prior to 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	-			19/08/2014	[NT]	[NT]	LCS-1	19/08/2014
Date analysed	-			20/08/2014	[NT]	[NT]	LCS-1	20/08/2014
TRHC$_6$ - C$_9$	mg/kg	25	Org-016	<25	[NT]	[NT]	LCS-1	120%
TRHC$_6$ - C$_{10}$	mg/kg	25	Org-016	<25	[NT]	[NT]	LCS-1	120%
Benzene	mg/kg	0.2	Org-016	<0.2	[NT]	[NT]	LCS-1	115%
Toluene	mg/kg	0.5	Org-016	<0.5	[NT]	[NT]	LCS-1	121%
Ethylbenzene	mg/kg	1	Org-016	<1	[NT]	[NT]	LCS-1	120%
m+p-xylene	mg/kg	2	Org-016	<2	[NT]	[NT]	LCS-1	122%
o-Xylene	mg/kg	1	Org-016	<1	[NT]	[NT]	LCS-1	130%
naphthalene	mg/kg	1	Org-014	<1	[NT]	[NT]	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		Org-016	139	[NT]	[NT]	LCS-1	133%
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	-			19/08/2014	[NT]	[NT]	LCS-1	19/08/2014
Date analysed	-			19/08/2014	[NT]	[NT]	LCS-1	19/08/2014
TRHC$_{10}$ - C$_{14}$	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS-1	85%
TRHC$_{15}$ - C$_{28}$	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-1	100%
TRHC$_{29}$ - C$_{36}$	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-1	86%
TRH>C$_{10}$-C$_{16}$	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS-1	85%
TRH>C$_{16}$-C$_{34}$	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-1	100%
TRH>C$_{34}$-C$_{40}$	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-1	86%
Surrogate o-Terphenyl	%		Org-003	85	[NT]	[NT]	LCS-1	93%
QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			19/08/2014	[NT]	[NT]	LCS-1	19/08/2014
Date analysed	-			19/08/2014	[NT]	[NT]	LCS-1	19/08/2014
Naphthalene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-1	101%
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-1	97%
Phenanthrene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-1	97%
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-1	100%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Pyrene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-1	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-1	94%
Benzo(b,j+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-1	104%
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	99	[NT]	[NT]	LCS-1	98%
QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			19/08/2014	[NT]	[NT]	LCS-1	19/08/2014
Date analysed	-			19/08/2014	[NT]	[NT]	LCS-1	19/08/2014
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-1	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-1	86%
Heptachlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-1	86%
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-1	92%
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-1	92%
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
pp-DDE	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-1	95%
Dieldrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-1	82%
Endrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-1	94%
pp-DDD	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-1	96%
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-1	90%
Methoxychlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate TCMX	%		Org-005	85	[NT]	[NT]	LCS-1	81%

QUALITY CONTROL PCBs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			19/08/2014	[NT]	[NT]	LCS-1	19/08/2014
Date analysed	-			19/08/2014	[NT]	[NT]	LCS-1	19/08/2014
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-1	106%
Arochlor 1260	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%		Org-006	85	[NT]	[NT]	LCS-1	76%
QUALITY CONTROL Total Phenolics in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			19/08/2014	[NT]	[NT]	LCS-1	19/08/2014
Date analysed	-			19/08/2014	[NT]	[NT]	LCS-1	19/08/2014
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	<5	[NT]	[NT]	LCS-1	101%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date digested	-			19/08/2014	[NT]	[NT]	LCS-2	19/08/2014
Date analysed	-			20/08/2014	[NT]	[NT]	LCS-2	20/08/2014
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	[NT]	[NT]	LCS-2	103%
Cadmium	mg/kg	0.4	Metals-020 ICP-AES	<0.4	[NT]	[NT]	LCS-2	110%
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-2	108%
Copper	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-2	106%
Lead	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-2	104%
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	[NT]	[NT]	LCS-2	89%
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-2	107%
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-2	106%

QUALITY CONTROL Miscellaneous Inorg - soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			19/08/2014	[NT]	[NT]	LCS-1	19/08/2014
Date analysed	-			19/08/2014	[NT]	[NT]	LCS-1	19/08/2014
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	[NT]	[NT]	LCS-1	101%
Total Cyanide	mg/kg	0.5	Inorg-014	<0.5	[NT]	[NT]	LCS-1	87%

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.

ANALYTICAL REPORT

WORLD RECOGNISED ACCREDITATION

CLIENT DETAILS

Contact	An Nguyen
Client	Geotechnique
Address	P.O. Box 880 NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	anguyen@geotech.com.au
Project	**13188-2 - Concord**
Order Number	(Not specified)
Samples	28
Date Received	18/8/2014

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	**SE130614 R0**
Report Number	0000089952
Date Reported	26/8/2014
Date Started	20/8/2014

COMMENTS

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

Sample # 11:portion of the sample supplied has been sub-sampled for asbestos according to SGS In-house procedures. We therefore cannot guarantee that the sub-sample is representative of the entire sample supplied.
SGS Environmental Services recommends supplying approximately 50-100g of sample in a separate container.
No respirable fibres detected in all samples using trace analysis technique.
Asbestos analysed by Approved Identifier Yusuf Kuthpudin.

SIGNATORIES

Andy Sutton
Senior Organic Chemist

Dong Liang
Metals/Inorganics Team Leader

Huong Crawford
Production Manager

Jaimie Cheung
Metals Chemist

Ly Kim Ha
Organic Section Head

Sheila Lepasana
Senior Technician

VOC's in Soil [AN433/AN434]

PARAMETER	UOM	LOR	BH2 0.5-0.8 SOIL - 11/8/2014 SE130614.004	BH2 4.5-4.8 SOIL - 11/8/2014 SE130614.005	BH2 5.1-5.25 SOIL - 11/8/2014 SE130614.006	BH3 1.5-1.8 SOIL - 12/8/2014 SE130614.008	BH5 0.1-0.4 SOIL - 13/8/2014 SE130614.010	BH5 0.6-0.7 SOIL - 13/8/2014 SE130614.011
Benzene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.10	<0.1	<0.1	<0.1	<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	BH9 0.2-0.5 SOIL - 14/8/2014 SE130614.016	BH9 2.0-2.3 SOIL - 14/8/2014 SE130614.017	BH9 2.55-2.65 SOIL - 14/8/2014 SE130614.018	BH10 0.23-0.5 SOIL - 12/8/2014 SE130614.019	BH10 0.55-0.65 SOIL - 12/8/2014 SE130614.020	Duplicate D2 SOIL - 13/8/2014 SE130614.021
Benzene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.10	<0.1	<0.1	<0.1	<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	Trip Spike TS1 SOIL - 12/8/2014 SE130614.022	Trip Spike TS2 SOIL - 14/8/2014 SE130614.023
Benzene	mg/kg	0.10	[85%]	[79%]
Toluene	mg/kg	0.10	[79%]	[91%]
Ethylbenzene	mg/kg	0.10	[81%]	[95%]
m/p-xylene	mg/kg	0.20	[81%]	[97%]
o-xylene	mg/kg	0.10	[86%]	[97%]
Naphthalene	mg/kg	0.10	<0.1	<0.1
Total Xylenes*	mg/kg	0.30	-	-
Total BTEX*	mg/kg	0.60	-	-

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

PARAMETER	UOM	LOR	BH2 0.5-0.8 SOIL - 11/8/2014 SE130614.004	BH2 4.5-4.8 SOIL - 11/8/2014 SE130614.005	BH2 5.1-5.25 SOIL - 11/8/2014 SE130614.006	BH3 1.5-1.8 SOIL - 12/8/2014 SE130614.008	BH5 0.1-0.4 SOIL - 13/8/2014 SE130614.010	BH5 0.6-0.7 SOIL - 13/8/2014 SE130614.011
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	BH9 0.2-0.5 SOIL - 14/8/2014 SE130614.016	BH9 2.0-2.3 SOIL - 14/8/2014 SE130614.017	BH9 2.55-2.65 SOIL - 14/8/2014 SE130614.018	BH10 0.23-0.5 SOIL - 12/8/2014 SE130614.019	BH10 0.55-0.65 SOIL - 12/8/2014 SE130614.020	Duplicate D2 SOIL - 13/8/2014 SE130614.021
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

TRH (Total Recoverable Hydrocarbons) in Soil [AN403]

PARAMETER	UOM	LOR	BH2 0.5-0.8 SOIL - 11/8/2014 SE130614.004	BH2 4.5-4.8 SOIL - 11/8/2014 SE130614.005	BH2 5.1-5.25 SOIL - 11/8/2014 SE130614.006	BH3 1.5-1.8 SOIL - 12/8/2014 SE130614.008	BH5 0.1-0.4 SOIL - 13/8/2014 SE130614.010	BH5 0.6-0.7 SOIL - 13/8/2014 SE130614.011
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45.0	<45	**100**	<45	<45	<45	<45
TRH C29-C36	mg/kg	45.0	<45	**87**	<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 >C10-C16 (F2) minus	mg/kg	25.0	<25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	**160**	<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	**190**	<110	<110	<110	<110
TRH C10-C40 Total	mg/kg	210	<210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	BH9 0.2-0.5 SOIL - 14/8/2014 SE130614.016	BH9 2.0-2.3 SOIL - 14/8/2014 SE130614.017	BH9 2.55-2.65 SOIL - 14/8/2014 SE130614.018	BH10 0.23-0.5 SOIL - 12/8/2014 SE130614.019	BH10 0.55-0.65 SOIL - 12/8/2014 SE130614.020	Duplicate D2 SOIL - 13/8/2014 SE130614.021
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45.0	**65**	<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 >C10-C16 (F2) minus	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

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420]

PARAMETER	UOM	LOR	BH1 1.5-1.8 SOIL - 7/8/2014 SE130614.001	BH1 3.15-3.25 SOIL - 7/8/2014 SE130614.002	BH2 0-0.15 SOIL - 11/8/2014 SE130614.003	BH2 0.5-0.8 SOIL - 11/8/2014 SE130614.004	BH2 4.5-4.8 SOIL - 11/8/2014 SE130614.005	BH2 5.1-5.25 SOIL - 11/8/2014 SE130614.006
Naphthalene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	0.3	<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	0.2	<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	0.8	<0.1
Anthracene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	0.2	<0.1
Fluoranthene	mg/kg	0.10	<0.1	0.5	<0.1	<0.1	2.4	<0.1
Pyrene	mg/kg	0.10	<0.1	0.5	<0.1	<0.1	3.1	<0.1
Benzo(a)anthracene	mg/kg	0.10	<0.1	0.3	<0.1	<0.1	1.1	<0.1
Chrysene	mg/kg	0.10	<0.1	0.3	<0.1	<0.1	1.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.10	<0.1	0.5	<0.1	<0.1	1.8	<0.1
Benzo(k)fluoranthene	mg/kg	0.10	<0.1	0.3	<0.1	<0.1	0.8	<0.1
Benzo(b&j&k)fluoranthene	mg/kg	0.20	<0.2	0.7	<0.2	<0.2	2.6	<0.2
Benzo(a)pyrene	mg/kg	0.10	<0.1	0.4	<0.1	<0.1	1.6	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.10	<0.1	0.4	<0.1	<0.1	1.3	<0.1
Dibenzo(a&h)anthracene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	0.2	<0.1
Benzo(ghi)perylene	mg/kg	0.10	<0.1	0.4	<0.1	<0.1	1.2	<0.1
Carcinogenic PAHs (as BaP TEQ)	TEQ (mg/kg)	0.20	<0.2	0.6	<0.2	<0.2	2.3	<0.2
Carcinogenic PAHs (as BaP TEQ)	TEQ (mg/kg)	0.30	<0.3	0.7	<0.3	<0.3	2.3	<0.3
Carcinogenic PAHs (as BaP TEQ)	TEQ (mg/kg)	0.20	<0.2	0.6	<0.2	<0.2	2.3	<0.2
Total PAH	mg/kg	0.80	<0.8	3.7	<0.8	<0.8	16	<0.8

PARAMETER	UOM	LOR	BH3 0-0.1 SOIL - 12/8/2014 SE130614.007	BH3 1.5-1.8 SOIL - 12/8/2014 SE130614.008	BH4 0-0.15 SOIL - 12/8/2014 SE130614.009	BH5 0.1-0.4 SOIL - 13/8/2014 SE130614.010	BH5 0.6-0.7 SOIL - 13/8/2014 SE130614.011	BH6 0.6-0.7 SOIL - 13/8/2014 SE130614.012
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	0.4	0.5	0.3	<0.1	<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	1.0	1.0	0.5	0.2	<0.1
Pyrene	mg/kg	0.10	<0.1	1.2	1.2	0.4	0.2	<0.1
Benzo(a)anthracene	mg/kg	0.10	<0.1	0.6	0.5	0.2	<0.1	<0.1
Chrysene	mg/kg	0.10	<0.1	0.6	0.5	0.2	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.10	<0.1	0.7	0.6	0.2	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.10	<0.1	0.3	0.3	0.1	<0.1	<0.1
Benzo(b&j&k)fluoranthene	mg/kg	0.20	<0.2	1.0	0.9	0.3	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.10	<0.1	0.7	0.6	0.2	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.10	<0.1	0.6	0.5	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	0.5	0.4	0.1	<0.1	<0.1
Carcinogenic PAHs (as BaP TEQ)	TEQ (mg/kg)	0.20	<0.2	0.9	0.7	0.2	<0.2	<0.2
Carcinogenic PAHs (as BaP TEQ)	TEQ (mg/kg)	0.30	<0.3	1.0	0.8	0.3	<0.3	<0.3
Carcinogenic PAHs (as BaP TEQ)	TEQ (mg/kg)	0.20	<0.2	1.0	0.8	0.3	<0.2	<0.2
Total PAH	mg/kg	0.80	<0.8	6.8	6.1	2.4	<0.8	<0.8

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

PARAMETER	UOM	LOR	BH7 0.15-0.45 SOIL - 11/8/2014 SE130614.013	BH7 1.4-1.7 SOIL - 11/8/2014 SE130614.014	BH8 0.2-0.4 SOIL - 14/8/2014 SE130614.015	BH9 0.2-0.5 SOIL - 14/8/2014 SE130614.016	BH9 2.0-2.3 SOIL - 14/8/2014 SE130614.017	BH9 2.55-2.65 SOIL - 14/8/2014 SE130614.018
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**	<0.1
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	**0.7**	<0.1
Pyrene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	**0.8**	<0.1
Benzo(a)anthracene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	**0.4**	<0.1
Chrysene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	**0.4**	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	**0.5**	<0.1
Benzo(k)fluoranthene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	**0.3**	<0.1
Benzo(b&j&k)fluoranthene	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	**0.8**	<0.2
Benzo(a)pyrene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	**0.5**	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	**0.4**	<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	**0.4**	<0.1
Carcinogenic PAHs (as BaP TEQ)	TEQ (mg/kg)	0.20	<0.2	<0.2	<0.2	<0.2	**0.7**	<0.2
Carcinogenic PAHs (as BaP TEQ)	TEQ (mg/kg)	0.30	<0.3	<0.3	<0.3	<0.3	**0.8**	<0.3
Carcinogenic PAHs (as BaP TEQ)	TEQ (mg/kg)	0.20	<0.2	<0.2	<0.2	<0.2	**0.7**	<0.2
Total PAH	mg/kg	0.80	<0.8	<0.8	<0.8	<0.8	**4.8**	<0.8

PARAMETER	UOM	LOR	BH10 0.23-0.5 SOIL - 12/8/2014 SE130614.019	BH10 0.55-0.65 SOIL - 12/8/2014 SE130614.020	Duplicate D2 SOIL - 13/8/2014 SE130614.021
Naphthalene	mg/kg	0.10	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.10	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.10	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.10	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.10	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.10	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.10	<0.1	<0.1	**0.2**
Anthracene	mg/kg	0.10	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.10	<0.1	<0.1	**0.3**
Pyrene	mg/kg	0.10	<0.1	<0.1	**0.3**
Benzo(a)anthracene	mg/kg	0.10	<0.1	<0.1	**0.1**
Chrysene	mg/kg	0.10	<0.1	<0.1	**0.1**
Benzo(b&j)fluoranthene	mg/kg	0.10	<0.1	<0.1	**0.1**
Benzo(k)fluoranthene	mg/kg	0.10	<0.1	<0.1	<0.1
Benzo(b&j&k)fluoranthene	mg/kg	0.20	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.10	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.10	<0.1	<0.1	<0.1
Dibenzo(a&h)anthracene	mg/kg	0.10	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.10	<0.1	<0.1	<0.1
Carcinogenic PAHs (as BaP TEQ)	TEQ (mg/kg)	0.20	<0.2	<0.2	<0.2
Carcinogenic PAHs (as BaP TEQ)	TEQ (mg/kg)	0.30	<0.3	<0.3	<0.3
Carcinogenic PAHs (as BaP TEQ)	TEQ (mg/kg)	0.20	<0.2	<0.2	<0.2
Total PAH	mg/kg	0.80	<0.8	<0.8	**1.5**

OC Pesticides in Soil [AN400/AN420]

PARAMETER	UOM	LOR	BH1 1.5-1.8 SOIL - 7/8/2014 SE130614.001	BH1 3.15-3.25 SOIL - 7/8/2014 SE130614.002	BH2 0-0.15 SOIL - 11/8/2014 SE130614.003	BH2 0.5-0.8 SOIL - 11/8/2014 SE130614.004	BH2 4.5-4.8 SOIL - 11/8/2014 SE130614.005	BH2 5.1-5.25 SOIL - 11/8/2014 SE130614.006
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	<0.05	<0.05	<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

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

PARAMETER	UOM	LOR	BH3 0-0.1 SOIL - 12/8/2014 SE130614.007	BH3 1.5-1.8 SOIL - 12/8/2014 SE130614.008	BH4 0-0.15 SOIL - 12/8/2014 SE130614.009	BH5 0.1-0.4 SOIL - 13/8/2014 SE130614.010	BH5 0.6-0.7 SOIL - 13/8/2014 SE130614.011	BH6 0.6-0.7 SOIL - 13/8/2014 SE130614.012
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	<0.05	<0.05	<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

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

PARAMETER	UOM	LOR	BH7 0.15-0.45 SOIL - 11/8/2014 SE130614.013	BH7 1.4-1.7 SOIL - 11/8/2014 SE130614.014	BH8 0.2-0.4 SOIL - 14/8/2014 SE130614.015	BH9 0.2-0.5 SOIL - 14/8/2014 SE130614.016	BH9 2.0-2.3 SOIL - 14/8/2014 SE130614.017	BH9 2.55-2.65 SOIL - 14/8/2014 SE130614.018
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	<0.05	<0.05	<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

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

PARAMETER	UOM	LOR	BH10 0.23-0.5 SOIL - 12/8/2014 SE130614.019	BH10 0.55-0.65 SOIL - 12/8/2014 SE130614.020	Duplicate D2 SOIL - 13/8/2014 SE130614.021
Hexachlorobenzene (HCB)	mg/kg	0.10	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.10	<0.1	<0.1	<0.1
Lindane	mg/kg	0.10	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.10	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.10	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.10	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.10	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.10	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.10	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.20	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.10	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.10	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.10	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.10	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.050	<0.05	<0.05	<0.05
Endrin	mg/kg	0.20	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.10	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.10	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.20	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.10	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.10	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.10	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.10	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.10	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.10	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.10	<0.1	<0.1	<0.1
Mirex	mg/kg	0.10	<0.1	<0.1	<0.1

PCBs in Soil [AN400/AN420]

PARAMETER	UOM	LOR	BH2 0.5-0.8 SOIL - 11/8/2014 SE130614.004	BH2 4.5-4.8 SOIL - 11/8/2014 SE130614.005	BH2 5.1-5.25 SOIL - 11/8/2014 SE130614.006	BH3 1.5-1.8 SOIL - 12/8/2014 SE130614.008	BH5 0.1-0.4 SOIL - 13/8/2014 SE130614.010	BH5 0.6-0.7 SOIL - 13/8/2014 SE130614.011
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	BH9 0.2-0.5 SOIL - 14/8/2014 SE130614.016	BH9 2.0-2.3 SOIL - 14/8/2014 SE130614.017	BH9 2.55-2.65 SOIL - 14/8/2014 SE130614.018	BH10 0.23-0.5 SOIL - 12/8/2014 SE130614.019	BH10 0.55-0.65 SOIL - 12/8/2014 SE130614.020	Duplicate D2 SOIL - 13/8/2014 SE130614.021
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

Total Phenolics in Soil [AN289]

PARAMETER	UOM	LOR	BH2 0.5-0.8 SOIL - 11/8/2014 SE130614.004	BH2 4.5-4.8 SOIL - 11/8/2014 SE130614.005	BH2 5.1-5.25 SOIL - 11/8/2014 SE130614.006	BH3 1.5-1.8 SOIL - 12/8/2014 SE130614.008	BH5 0.1-0.4 SOIL - 13/8/2014 SE130614.010	BH5 0.6-0.7 SOIL - 13/8/2014 SE130614.011
Total Phenols	mg/kg	0.10	0.6	0.4	<0.1	0.4	0.3	0.2

PARAMETER	UOM	LOR	BH9 0.2-0.5 SOIL - 14/8/2014 SE130614.016	BH9 2.0-2.3 SOIL - 14/8/2014 SE130614.017	BH9 2.55-2.65 SOIL - 14/8/2014 SE130614.018	BH10 0.23-0.5 SOIL - 12/8/2014 SE130614.019	BH10 0.55-0.65 SOIL - 12/8/2014 SE130614.020	Duplicate D2 SOIL - 13/8/2014 SE130614.021
Total Phenols	mg/kg	0.10	0.2	0.4	0.1	<0.1	<0.1	0.1

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

PARAMETER	UOM	LOR	BH2 0.5-0.8 SOIL - 11/8/2014 SE130614.004	BH2 4.5-4.8 SOIL - 11/8/2014 SE130614.005	BH2 5.1-5.25 SOIL - 11/8/2014 SE130614.006	BH3 1.5-1.8 SOIL - 12/8/2014 SE130614.008	BH5 0.1-0.4 SOIL - 13/8/2014 SE130614.010	BH5 0.6-0.7 SOIL - 13/8/2014 SE130614.011
Total Cyanide	mg/kg	0.10	**0.2**	<0.1	<0.1	**0.1**	**0.2**	**0.1**

PARAMETER	UOM	LOR	BH9 0.2-0.5 SOIL - 14/8/2014 SE130614.016	BH9 2.0-2.3 SOIL - 14/8/2014 SE130614.017	BH9 2.55-2.65 SOIL - 14/8/2014 SE130614.018	BH10 0.23-0.5 SOIL - 12/8/2014 SE130614.019	BH10 0.55-0.65 SOIL - 12/8/2014 SE130614.020	Duplicate D2 SOIL - 13/8/2014 SE130614.021
Total Cyanide	mg/kg	0.10	<0.1	**0.1**	<0.1	<0.1	<0.1	**0.2**

pH in soil (1:5) [AN101]

PARAMETER	UOM	LOR	BH1 1.5-1.8 SOIL - 7/8/2014 SE130614.001	BH1 3.15-3.25 SOIL - 7/8/2014 SE130614.002	BH2 0-0.15 SOIL - 11/8/2014 SE130614.003	BH2 0.5-0.8 SOIL - 11/8/2014 SE130614.004	BH2 4.5-4.8 SOIL - 11/8/2014 SE130614.005	BH2 5.1-5.25 SOIL - 11/8/2014 SE130614.006
pH	pH Units	-	4.3	5.9	5.3	5.8	8.0	7.6

PARAMETER	UOM	LOR	BH3 0-0.1 SOIL - 12/8/2014 SE130614.007	BH3 1.5-1.8 SOIL - 12/8/2014 SE130614.008	BH4 0-0.15 SOIL - 12/8/2014 SE130614.009	BH5 0.1-0.4 SOIL - 13/8/2014 SE130614.010	BH5 0.6-0.7 SOIL - 13/8/2014 SE130614.011	BH6 0.6-0.7 SOIL - 13/8/2014 SE130614.012
pH	pH Units	-	6.1	7.0	7.5	6.0	5.9	4.8

PARAMETER	UOM	LOR	BH7 0.15-0.45 SOIL - 11/8/2014 SE130614.013	BH7 1.4-1.7 SOIL - 11/8/2014 SE130614.014	BH8 0.2-0.4 SOIL - 14/8/2014 SE130614.015	BH9 0.2-0.5 SOIL - 14/8/2014 SE130614.016	BH9 2.0-2.3 SOIL - 14/8/2014 SE130614.017	BH9 2.55-2.65 SOIL - 14/8/2014 SE130614.018
pH	pH Units	-	9.1	6.2	7.8	8.4	6.5	5.2

PARAMETER	UOM	LOR	BH10 0.23-0.5 SOIL - 12/8/2014 SE130614.019	BH10 0.55-0.65 SOIL - 12/8/2014 SE130614.020	Duplicate D2 SOIL - 13/8/2014 SE130614.021
pH	pH Units	-	6.5	4.7	5.7

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

PARAMETER	UOM	LOR	BH1 1.5-1.8 SOIL - 7/8/2014 SE130614.001	BH1 3.15-3.25 SOIL - 7/8/2014 SE130614.002	BH2 0-0.15 SOIL - 11/8/2014 SE130614.003	BH2 0.5-0.8 SOIL - 11/8/2014 SE130614.004	BH2 4.5-4.8 SOIL - 11/8/2014 SE130614.005	BH2 5.1-5.25 SOIL - 11/8/2014 SE130614.006
Exchangeable Sodium, Na	mg/kg	2.0	200	110	24	36	400	700
Exchangeable Sodium, Na	meq/100g	0.010	0.89	0.49	0.10	0.16	1.7	3.1
Exchangeable Sodium Percentage*	%	0.10	13.3	6.5	1.1	1.6	6.9	22.7
Exchangeable Potassium, K	mg/kg	2.0	93	100	220	120	110	280
Exchangeable Potassium, K	meq/100g	0.010	0.24	0.26	0.56	0.30	0.29	0.70
Exchangeable Potassium	%	0.10	3.6	3.4	5.9	3.0	1.1	5.2
Exchangeable Calcium, Ca	mg/kg	2.0	570	1000	1200	1400	3800	1000
Exchangeable Calcium, Ca	meq/100g	0.010	2.8	5.2	6.2	7.1	19	5.0
Exchangeable Calcium Percentage*	%	0.10	42.7	69.6	65.1	72.4	74.2	37.3
Exchangeable Magnesium, Mg	mg/kg	2.0	330	190	320	280	550	570
Exchangeable Magnesium, Mg	meq/100g	0.020	2.7	1.5	2.7	2.3	4.5	4.7
Exchangeable Magnesium	%	0.10	40.5	20.5	27.9	23.0	17.8	34.8
Cation Exchange Capacity	meq/100g	0.020	6.7	7.5	9.5	9.8	25	13

PARAMETER	UOM	LOR	BH3 0-0.1 SOIL - 12/8/2014 SE130614.007	BH3 1.5-1.8 SOIL - 12/8/2014 SE130614.008	BH4 0-0.15 SOIL - 12/8/2014 SE130614.009	BH5 0.1-0.4 SOIL - 13/8/2014 SE130614.010	BH5 0.6-0.7 SOIL - 13/8/2014 SE130614.011	BH6 0.6-0.7 SOIL - 13/8/2014 SE130614.012
Exchangeable Sodium, Na	mg/kg	2.0	33	26	31	48	22	63
Exchangeable Sodium, Na	meq/100g	0.010	0.14	0.11	0.14	0.21	0.10	0.27
Exchangeable Sodium Percentage*	%	0.10	2.0	1.0	0.8	1.9	1.4	4.7
Exchangeable Potassium, K	mg/kg	2.0	120	74	92	130	70	45
Exchangeable Potassium, K	meq/100g	0.010	0.31	0.19	0.24	0.34	0.18	0.12
Exchangeable Potassium	%	0.10	4.2	1.6	1.3	3.2	2.6	2.0
Exchangeable Calcium, Ca	mg/kg	2.0	1100	2000	3300	1700	1200	530
Exchangeable Calcium, Ca	meq/100g	0.010	5.5	10	16	8.6	5.9	2.7
Exchangeable Calcium Percentage*	%	0.10	75.6	86.5	90.4	79.1	85.1	45.2
Exchangeable Magnesium, Mg	mg/kg	2.0	160	160	170	210	91	350
Exchangeable Magnesium, Mg	meq/100g	0.020	1.3	1.3	1.4	1.7	0.75	2.8
Exchangeable Magnesium	%	0.10	18.2	10.9	7.6	15.8	10.9	48.1
Cation Exchange Capacity	meq/100g	0.020	7.3	12	18	11	6.9	5.9

PARAMETER	UOM	LOR	BH7 0.15-0.45 SOIL - 11/8/2014 SE130614.013	BH7 1.4-1.7 SOIL - 11/8/2014 SE130614.014	BH9 0.2-0.5 SOIL - 14/8/2014 SE130614.016	BH9 2.0-2.3 SOIL - 14/8/2014 SE130614.017	BH9 2.55-2.65 SOIL - 14/8/2014 SE130614.018	BH10 0.23-0.5 SOIL - 12/8/2014 SE130614.019
Exchangeable Sodium, Na	mg/kg	2.0	170	180	300	170	180	140
Exchangeable Sodium, Na	meq/100g	0.010	0.73	0.80	1.3	0.74	0.79	0.59
Exchangeable Sodium Percentage*	%	0.10	8.3	10.2	3.8	4.9	14.2	3.9
Exchangeable Potassium, K	mg/kg	2.0	56	88	97	160	99	85
Exchangeable Potassium, K	meq/100g	0.010	0.14	0.23	0.25	0.41	0.25	0.22
Exchangeable Potassium	%	0.10	1.6	2.9	0.7	2.7	4.6	1.4
Exchangeable Calcium, Ca	mg/kg	2.0	1100	820	5600	2400	320	1700
Exchangeable Calcium, Ca	meq/100g	0.010	5.6	4.1	28	12	1.6	8.4
Exchangeable Calcium Percentage*	%	0.10	64.0	52.8	83.0	79.1	29.2	56.2
Exchangeable Magnesium, Mg	mg/kg	2.0	280	330	510	250	350	700
Exchangeable Magnesium, Mg	meq/100g	0.020	2.3	2.7	4.2	2.0	2.9	5.8
Exchangeable Magnesium	%	0.10	26.1	34.1	12.5	13.3	51.9	38.4
Cation Exchange Capacity	meq/100g	0.020	8.8	7.8	34	15	5.5	15

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

PARAMETER	UOM	LOR	BH10 0.55-0.65 SOIL - 12/8/2014 SE130614.020
Exchangeable Sodium, Na	mg/kg	2.0	**96**
Exchangeable Sodium, Na	meq/100g	0.010	**0.42**
Exchangeable Sodium Percentage*	%	0.10	**6.9**
Exchangeable Potassium, K	mg/kg	2.0	**74**
Exchangeable Potassium, K	meq/100g	0.010	**0.19**
Exchangeable Potassium	%	0.10	**3.1**
Exchangeable Calcium, Ca	mg/kg	2.0	**540**
Exchangeable Calcium, Ca	meq/100g	0.010	**2.7**
Exchangeable Calcium Percentage*	%	0.10	**44.7**
Exchangeable Magnesium, Mg	mg/kg	2.0	**340**
Exchangeable Magnesium, Mg	meq/100g	0.020	**2.7**
Exchangeable Magnesium	%	0.10	**45.3**
Cation Exchange Capacity	meq/100g	0.020	**6.1**

TOC in Soil [AN188]

PARAMETER	UOM	LOR	BH1 1.5-1.8 SOIL - 7/8/2014 SE130614.001	BH1 3.15-3.25 SOIL - 7/8/2014 SE130614.002	BH2 0-0.15 SOIL - 11/8/2014 SE130614.003	BH2 0.5-0.8 SOIL - 11/8/2014 SE130614.004	BH2 4.5-4.8 SOIL - 11/8/2014 SE130614.005	BH2 5.1-5.25 SOIL - 11/8/2014 SE130614.006
Total Organic Carbon	%w/w	0.050	0.10	1.6	4.3	1.9	3.3	0.19

PARAMETER	UOM	LOR	BH3 0-0.1 SOIL - 12/8/2014 SE130614.007	BH3 1.5-1.8 SOIL - 12/8/2014 SE130614.008	BH4 0-0.15 SOIL - 12/8/2014 SE130614.009	BH5 0.1-0.4 SOIL - 13/8/2014 SE130614.010	BH5 0.6-0.7 SOIL - 13/8/2014 SE130614.011	BH6 0.6-0.7 SOIL - 13/8/2014 SE130614.012
Total Organic Carbon	%w/w	0.050	1.6	1.5	1.5	1.2	0.62	0.14

PARAMETER	UOM	LOR	BH7 0.15-0.45 SOIL - 11/8/2014 SE130614.013	BH7 1.4-1.7 SOIL - 11/8/2014 SE130614.014	BH9 0.2-0.5 SOIL - 14/8/2014 SE130614.016	BH9 2.0-2.3 SOIL - 14/8/2014 SE130614.017	BH9 2.55-2.65 SOIL - 14/8/2014 SE130614.018	BH10 0.23-0.5 SOIL - 12/8/2014 SE130614.019
Total Organic Carbon	%w/w	0.050	0.46	0.23	0.38	1.3	0.31	0.19

PARAMETER	UOM	LOR	BH10 0.55-0.65 SOIL - 12/8/2014 SE130614.020
Total Organic Carbon	%w/w	0.050	0.16

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

PARAMETER	UOM	LOR	BH1 1.5-1.8 SOIL - 7/8/2014 SE130614.001	BH1 3.15-3.25 SOIL - 7/8/2014 SE130614.002	BH2 0-0.15 SOIL - 11/8/2014 SE130614.003	BH2 0.5-0.8 SOIL - 11/8/2014 SE130614.004	BH2 4.5-4.8 SOIL - 11/8/2014 SE130614.005	BH2 5.1-5.25 SOIL - 11/8/2014 SE130614.006
Arsenic, As	mg/kg	3.0	7	9	<3	4	30	10
Cadmium, Cd	mg/kg	0.30	0.4	<0.3	<0.3	0.3	0.8	0.3
Chromium, Cr	mg/kg	0.30	16	14	9.1	12	52	18
Copper, Cu	mg/kg	0.50	6.7	4.1	17	15	130	8.5
Lead, Pb	mg/kg	1.0	18	18	28	20	120	22
Nickel, Ni	mg/kg	0.50	1.5	3.1	5.3	4.5	8.3	1.9
Zinc, Zn	mg/kg	0.50	7.7	11	54	38	260	19

PARAMETER	UOM	LOR	BH3 0-0.1 SOIL - 12/8/2014 SE130614.007	BH3 1.5-1.8 SOIL - 12/8/2014 SE130614.008	BH4 0-0.15 SOIL - 12/8/2014 SE130614.009	BH5 0.1-0.4 SOIL - 13/8/2014 SE130614.010	BH5 0.6-0.7 SOIL - 13/8/2014 SE130614.011	BH6 0.6-0.7 SOIL - 13/8/2014 SE130614.012
Arsenic, As	mg/kg	3.0	<3	7	12	520	62	7
Cadmium, Cd	mg/kg	0.30	<0.3	<0.3	0.4	0.6	0.4	0.6
Chromium, Cr	mg/kg	0.30	8.4	12	18	37	28	27
Copper, Cu	mg/kg	0.50	8.0	9.0	16	41	12	14
Lead, Pb	mg/kg	1.0	13	35	38	120	43	14
Nickel, Ni	mg/kg	0.50	5.5	2.6	4.9	10	2.1	15
Zinc, Zn	mg/kg	0.50	26	54	62	150	31	17

PARAMETER	UOM	LOR	BH7 0.15-0.45 SOIL - 11/8/2014 SE130614.013	BH7 1.4-1.7 SOIL - 11/8/2014 SE130614.014	BH8 0.2-0.4 SOIL - 14/8/2014 SE130614.015	BH9 0.2-0.5 SOIL - 14/8/2014 SE130614.016	BH9 2.0-2.3 SOIL - 14/8/2014 SE130614.017	BH9 2.55-2.65 SOIL - 14/8/2014 SE130614.018
Arsenic, As	mg/kg	3.0	<3	4	4	6	12	5
Cadmium, Cd	mg/kg	0.30	<0.3	<0.3	0.5	0.4	0.4	0.3
Chromium, Cr	mg/kg	0.30	11	11	97	23	20	9.3
Copper, Cu	mg/kg	0.50	8.6	9.3	15	18	20	12
Lead, Pb	mg/kg	1.0	9	13	10	23	42	24
Nickel, Ni	mg/kg	0.50	8.6	5.9	50	15	2.3	0.7
Zinc, Zn	mg/kg	0.50	20	17	35	43	67	13

PARAMETER	UOM	LOR	BH10 0.23-0.5 SOIL - 12/8/2014 SE130614.019	BH10 0.55-0.65 SOIL - 12/8/2014 SE130614.020	Duplicate D2 SOIL - 13/8/2014 SE130614.021
Arsenic, As	mg/kg	3.0	6	4	260
Cadmium, Cd	mg/kg	0.30	0.4	<0.3	0.7
Chromium, Cr	mg/kg	0.30	16	7.2	36
Copper, Cu	mg/kg	0.50	22	23	43
Lead, Pb	mg/kg	1.0	15	13	110
Nickel, Ni	mg/kg	0.50	19	19	9.5
Zinc, Zn	mg/kg	0.50	16	15	150

Mercury in Soil [AN312]

PARAMETER	UOM	LOR	BH1 1.5-1.8 SOIL - 7/8/2014 SE130614.001	BH1 3.15-3.25 SOIL - 7/8/2014 SE130614.002	BH2 0-0.15 SOIL - 11/8/2014 SE130614.003	BH2 0.5-0.8 SOIL - 11/8/2014 SE130614.004	BH2 4.5-4.8 SOIL - 11/8/2014 SE130614.005	BH2 5.1-5.25 SOIL - 11/8/2014 SE130614.006
Mercury	mg/kg	0.010	0.02	0.02	0.02	0.01	0.40	0.02

PARAMETER	UOM	LOR	BH3 0-0.1 SOIL - 12/8/2014 SE130614.007	BH3 1.5-1.8 SOIL - 12/8/2014 SE130614.008	BH4 0-0.15 SOIL - 12/8/2014 SE130614.009	BH5 0.1-0.4 SOIL - 13/8/2014 SE130614.010	BH5 0.6-0.7 SOIL - 13/8/2014 SE130614.011	BH6 0.6-0.7 SOIL - 13/8/2014 SE130614.012
Mercury	mg/kg	0.010	0.01	0.04	0.04	0.06	0.06	0.01

PARAMETER	UOM	LOR	BH7 0.15-0.45 SOIL - 11/8/2014 SE130614.013	BH7 1.4-1.7 SOIL - 11/8/2014 SE130614.014	BH8 0.2-0.4 SOIL - 14/8/2014 SE130614.015	BH9 0.2-0.5 SOIL - 14/8/2014 SE130614.016	BH9 2.0-2.3 SOIL - 14/8/2014 SE130614.017	BH9 2.55-2.65 SOIL - 14/8/2014 SE130614.018
Mercury	mg/kg	0.010	0.01	0.01	0.02	0.02	0.16	0.05

PARAMETER	UOM	LOR	BH10 0.23-0.5 SOIL - 12/8/2014 SE130614.019	BH10 0.55-0.65 SOIL - 12/8/2014 SE130614.020	Duplicate D2 SOIL - 13/8/2014 SE130614.021
Mercury	mg/kg	0.010	0.01	<0.01	0.08

Fibre Identification in soil [AN602]

PARAMETER	UOM	LOR	BH1 1.5-1.8 SOIL - 7/8/2014 SE130614.001	BH2 0-0.15 SOIL - 11/8/2014 SE130614.003	BH2 0.5-0.8 SOIL - 11/8/2014 SE130614.004	BH2 4.5-4.8 SOIL - 11/8/2014 SE130614.005	BH3 0-0.1 SOIL - 12/8/2014 SE130614.007	BH3 1.5-1.8 SOIL - 12/8/2014 SE130614.008
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	BH4 0-0.15 SOIL - 12/8/2014 SE130614.009	BH5 0.1-0.4 SOIL - 13/8/2014 SE130614.010	BH5 0.6-0.7 SOIL - 13/8/2014 SE130614.011	BH7 0.15-0.45 SOIL - 11/8/2014 SE130614.013	BH7 1.4-1.7 SOIL - 11/8/2014 SE130614.014	BH9 0.2-0.5 SOIL - 14/8/2014 SE130614.016
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	BH9 2.0-2.3 SOIL - 14/8/2014 SE130614.017	BH10 0.23-0.5 SOIL - 12/8/2014 SE130614.019
Asbestos Detected	No unit	-	No	No
Estimated Fibres	%w/w	0.010	<0.01	<0.01

Moisture Content [AN002]

PARAMETER	UOM	LOR	BH1 1.5-1.8 SOIL - 7/8/2014 SE130614.001	BH1 3.15-3.25 SOIL - 7/8/2014 SE130614.002	BH2 0-0.15 SOIL - 11/8/2014 SE130614.003	BH2 0.5-0.8 SOIL - 11/8/2014 SE130614.004	BH2 4.5-4.8 SOIL - 11/8/2014 SE130614.005	BH2 5.1-5.25 SOIL - 11/8/2014 SE130614.006
% Moisture	%	0.50	13	20	16	13	27	21

PARAMETER	UOM	LOR	BH3 0-0.1 SOIL - 12/8/2014 SE130614.007	BH3 1.5-1.8 SOIL - 12/8/2014 SE130614.008	BH4 0-0.15 SOIL - 12/8/2014 SE130614.009	BH5 0.1-0.4 SOIL - 13/8/2014 SE130614.010	BH5 0.6-0.7 SOIL - 13/8/2014 SE130614.011	BH6 0.6-0.7 SOIL - 13/8/2014 SE130614.012
% Moisture	%	0.50	13	17	17	23	19	10

PARAMETER	UOM	LOR	BH7 0.15-0.45 SOIL - 11/8/2014 SE130614.013	BH7 1.4-1.7 SOIL - 11/8/2014 SE130614.014	BH8 0.2-0.4 SOIL - 14/8/2014 SE130614.015	BH9 0.2-0.5 SOIL - 14/8/2014 SE130614.016	BH9 2.0-2.3 SOIL - 14/8/2014 SE130614.017	BH9 2.55-2.65 SOIL - 14/8/2014 SE130614.018
% Moisture	%	0.50	9.9	13	19	15	22	18

PARAMETER	UOM	LOR	BH10 0.23-0.5 SOIL - 12/8/2014 SE130614.019	BH10 0.55-0.65 SOIL - 12/8/2014 SE130614.020	Duplicate D2 SOIL - 13/8/2014 SE130614.021
% Moisture	%	0.50	17	16	21

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

PARAMETER	UOM	LOR	Rinsate R1 WATER - 7/8/2014 SE130614.024	Rinsate R2 WATER - 11/8/2014 SE130614.025	Rinsate R3 WATER - 12/8/2014 SE130614.026	Rinsate R4 WATER - 13/8/2014 SE130614.027	Rinsate R5 WATER - 14/8/2014 SE130614.028
Arsenic, As	mg/L	0.020	<0.02	<0.02	<0.02	<0.02	<0.02
Cadmium, Cd	mg/L	0.0010	<0.001	<0.001	<0.001	<0.001	<0.001
Chromium, Cr	mg/L	0.0050	<0.005	<0.005	<0.005	<0.005	<0.005
Copper, Cu	mg/L	0.0050	<0.005	<0.005	<0.005	<0.005	<0.005
Lead, Pb	mg/L	0.020	<0.02	<0.02	<0.02	<0.02	<0.02
Nickel, Ni	mg/L	0.0050	<0.005	<0.005	<0.005	<0.005	<0.005
Zinc, Zn	mg/L	0.010	<0.01	<0.01	<0.01	<0.01	<0.01

Mercury (dissolved) in Water [AN311/AN312]

PARAMETER	UOM	LOR	Rinsate R1 WATER - 7/8/2014 SE130614.024	Rinsate R2 WATER - 11/8/2014 SE130614.025	Rinsate R3 WATER - 12/8/2014 SE130614.026	Rinsate R4 WATER - 13/8/2014 SE130614.027	Rinsate R5 WATER - 14/8/2014 SE130614.028
Mercury	mg/L	0.00010	**0.0002**	<0.0001	<0.0001	<0.0001	<0.0001

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
AN040	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.
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 NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is reported directly and also corrected by subtracting Naphthalene (from VOC method AN433) where available.
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/~/media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf

STATEMENT OF QA/QC PERFORMANCE

SE130614 R0

CLIENT DETAILS

Contact	An Nguyen
Client	Geotechnique
Address	P.O. Box 880 NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	anguyen@geotech.com.au
Project	**13188-2 - Concord**
Order Number	(Not specified)
Samples	28

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
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SGS Reference	SE130614 R0
Report Number	0000090000
Date Reported	27 Aug 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:

Extraction Date	pH in soil (1:5)	8 items
Analysis Date	pH in soil (1:5)	21 items
Duplicate	Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest	1 item

SAMPLE SUMMARY

Sample counts by matrix	21 Soils, 5 Waters	Type of documentation received	COC
Date documentation received	18/08/2014@02:31p	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	4.5°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

SE130614 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 1.5-1.8	SE130614.001	LB062800	07 Aug 2014	18 Aug 2014	04 Sep 2014	22 Aug 2014	04 Sep 2014	25 Aug 2014
BH1 3.15-3.25	SE130614.002	LB062800	07 Aug 2014	18 Aug 2014	04 Sep 2014	22 Aug 2014	04 Sep 2014	25 Aug 2014
BH2 0-0.15	SE130614.003	LB062800	11 Aug 2014	18 Aug 2014	08 Sep 2014	22 Aug 2014	08 Sep 2014	25 Aug 2014
BH2 0.5-0.8	SE130614.004	LB062800	11 Aug 2014	18 Aug 2014	08 Sep 2014	22 Aug 2014	08 Sep 2014	25 Aug 2014
BH2 4.5-4.8	SE130614.005	LB062800	11 Aug 2014	18 Aug 2014	08 Sep 2014	22 Aug 2014	08 Sep 2014	25 Aug 2014
BH2 5.1-5.25	SE130614.006	LB062800	11 Aug 2014	18 Aug 2014	08 Sep 2014	22 Aug 2014	08 Sep 2014	25 Aug 2014
BH3 0-0.1	SE130614.007	LB062800	12 Aug 2014	18 Aug 2014	09 Sep 2014	22 Aug 2014	09 Sep 2014	25 Aug 2014
BH3 1.5-1.8	SE130614.008	LB062800	12 Aug 2014	18 Aug 2014	09 Sep 2014	22 Aug 2014	09 Sep 2014	25 Aug 2014
BH4 0-0.15	SE130614.009	LB062800	12 Aug 2014	18 Aug 2014	09 Sep 2014	22 Aug 2014	09 Sep 2014	25 Aug 2014
BH5 0.1-0.4	SE130614.010	LB062800	13 Aug 2014	18 Aug 2014	10 Sep 2014	22 Aug 2014	10 Sep 2014	25 Aug 2014
BH5 0.6-0.7	SE130614.011	LB062800	13 Aug 2014	18 Aug 2014	10 Sep 2014	22 Aug 2014	10 Sep 2014	25 Aug 2014
BH6 0.6-0.7	SE130614.012	LB062800	13 Aug 2014	18 Aug 2014	10 Sep 2014	22 Aug 2014	10 Sep 2014	25 Aug 2014
BH7 0.15-0.45	SE130614.013	LB062800	11 Aug 2014	18 Aug 2014	08 Sep 2014	22 Aug 2014	08 Sep 2014	25 Aug 2014
BH7 1.4-1.7	SE130614.014	LB062800	11 Aug 2014	18 Aug 2014	08 Sep 2014	22 Aug 2014	08 Sep 2014	25 Aug 2014
BH9 0.2-0.5	SE130614.016	LB062800	14 Aug 2014	18 Aug 2014	11 Sep 2014	22 Aug 2014	11 Sep 2014	25 Aug 2014
BH9 2.0-2.3	SE130614.017	LB062800	14 Aug 2014	18 Aug 2014	11 Sep 2014	22 Aug 2014	11 Sep 2014	25 Aug 2014
BH9 2.55-2.65	SE130614.018	LB062801	14 Aug 2014	18 Aug 2014	11 Sep 2014	22 Aug 2014	11 Sep 2014	25 Aug 2014
BH10 0.23-0.5	SE130614.019	LB062801	12 Aug 2014	18 Aug 2014	09 Sep 2014	22 Aug 2014	09 Sep 2014	25 Aug 2014
BH10 0.55-0.65	SE130614.020	LB062801	12 Aug 2014	18 Aug 2014	09 Sep 2014	22 Aug 2014	09 Sep 2014	25 Aug 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 1.5-1.8	SE130614.001	LB062740	07 Aug 2014	18 Aug 2014	07 Aug 2015	21 Aug 2014	07 Aug 2015	25 Aug 2014
BH2 0-0.15	SE130614.003	LB062740	11 Aug 2014	18 Aug 2014	11 Aug 2015	21 Aug 2014	11 Aug 2015	25 Aug 2014
BH2 0.5-0.8	SE130614.004	LB062740	11 Aug 2014	18 Aug 2014	11 Aug 2015	21 Aug 2014	11 Aug 2015	25 Aug 2014
BH2 4.5-4.8	SE130614.005	LB062740	11 Aug 2014	18 Aug 2014	11 Aug 2015	21 Aug 2014	11 Aug 2015	25 Aug 2014
BH3 0-0.1	SE130614.007	LB062740	12 Aug 2014	18 Aug 2014	12 Aug 2015	21 Aug 2014	12 Aug 2015	25 Aug 2014
BH3 1.5-1.8	SE130614.008	LB062740	12 Aug 2014	18 Aug 2014	12 Aug 2015	21 Aug 2014	12 Aug 2015	25 Aug 2014
BH4 0-0.15	SE130614.009	LB062740	12 Aug 2014	18 Aug 2014	12 Aug 2015	21 Aug 2014	12 Aug 2015	25 Aug 2014
BH5 0.1-0.4	SE130614.010	LB062740	13 Aug 2014	18 Aug 2014	13 Aug 2015	21 Aug 2014	13 Aug 2015	25 Aug 2014
BH5 0.6-0.7	SE130614.011	LB062740	13 Aug 2014	18 Aug 2014	13 Aug 2015	21 Aug 2014	13 Aug 2015	25 Aug 2014
BH7 0.15-0.45	SE130614.013	LB062740	11 Aug 2014	18 Aug 2014	11 Aug 2015	21 Aug 2014	11 Aug 2015	25 Aug 2014
BH7 1.4-1.7	SE130614.014	LB062740	11 Aug 2014	18 Aug 2014	11 Aug 2015	21 Aug 2014	11 Aug 2015	25 Aug 2014
BH9 0.2-0.5	SE130614.016	LB062740	14 Aug 2014	18 Aug 2014	14 Aug 2015	21 Aug 2014	14 Aug 2015	25 Aug 2014
BH9 2.0-2.3	SE130614.017	LB062740	14 Aug 2014	18 Aug 2014	14 Aug 2015	21 Aug 2014	14 Aug 2015	25 Aug 2014
BH10 0.23-0.5	SE130614.019	LB062740	12 Aug 2014	18 Aug 2014	12 Aug 2015	21 Aug 2014	12 Aug 2015	25 Aug 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	SE130614.024	LB062755	07 Aug 2014	18 Aug 2014	04 Sep 2014	22 Aug 2014	04 Sep 2014	22 Aug 2014
Rinsate R2	SE130614.025	LB062755	11 Aug 2014	18 Aug 2014	08 Sep 2014	22 Aug 2014	08 Sep 2014	22 Aug 2014
Rinsate R3	SE130614.026	LB062755	12 Aug 2014	18 Aug 2014	09 Sep 2014	22 Aug 2014	09 Sep 2014	22 Aug 2014
Rinsate R4	SE130614.027	LB062755	13 Aug 2014	18 Aug 2014	10 Sep 2014	22 Aug 2014	10 Sep 2014	22 Aug 2014
Rinsate R5	SE130614.028	LB062755	14 Aug 2014	18 Aug 2014	11 Sep 2014	22 Aug 2014	11 Sep 2014	22 Aug 2014

Mercury in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1 1.5-1.8	SE130614.001	LB062739	07 Aug 2014	18 Aug 2014	04 Sep 2014	21 Aug 2014	04 Sep 2014	25 Aug 2014
BH1 3.15-3.25	SE130614.002	LB062739	07 Aug 2014	18 Aug 2014	04 Sep 2014	21 Aug 2014	04 Sep 2014	25 Aug 2014
BH2 0-0.15	SE130614.003	LB062739	11 Aug 2014	18 Aug 2014	08 Sep 2014	21 Aug 2014	08 Sep 2014	25 Aug 2014
BH2 0.5-0.8	SE130614.004	LB062739	11 Aug 2014	18 Aug 2014	08 Sep 2014	21 Aug 2014	08 Sep 2014	25 Aug 2014
BH2 4.5-4.8	SE130614.005	LB062739	11 Aug 2014	18 Aug 2014	08 Sep 2014	21 Aug 2014	08 Sep 2014	25 Aug 2014
BH2 5.1-5.25	SE130614.006	LB062741	11 Aug 2014	18 Aug 2014	08 Sep 2014	21 Aug 2014	08 Sep 2014	25 Aug 2014
BH3 0-0.1	SE130614.007	LB062741	12 Aug 2014	18 Aug 2014	09 Sep 2014	21 Aug 2014	09 Sep 2014	25 Aug 2014
BH3 1.5-1.8	SE130614.008	LB062741	12 Aug 2014	18 Aug 2014	09 Sep 2014	21 Aug 2014	09 Sep 2014	25 Aug 2014
BH4 0-0.15	SE130614.009	LB062741	12 Aug 2014	18 Aug 2014	09 Sep 2014	21 Aug 2014	09 Sep 2014	25 Aug 2014
BH5 0.1-0.4	SE130614.010	LB062741	13 Aug 2014	18 Aug 2014	10 Sep 2014	21 Aug 2014	10 Sep 2014	25 Aug 2014
BH5 0.6-0.7	SE130614.011	LB062741	13 Aug 2014	18 Aug 2014	10 Sep 2014	21 Aug 2014	10 Sep 2014	25 Aug 2014
BH6 0.6-0.7	SE130614.012	LB062741	13 Aug 2014	18 Aug 2014	10 Sep 2014	21 Aug 2014	10 Sep 2014	25 Aug 2014
BH7 0.15-0.45	SE130614.013	LB062741	11 Aug 2014	18 Aug 2014	08 Sep 2014	21 Aug 2014	08 Sep 2014	25 Aug 2014
BH7 1.4-1.7	SE130614.014	LB062741	11 Aug 2014	18 Aug 2014	08 Sep 2014	21 Aug 2014	08 Sep 2014	25 Aug 2014

HOLDING TIME SUMMARY

SE130614 R0

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

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

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

Mercury in Soil (continued)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH8 0.2-0.4	SE130614.015	LB062741	14 Aug 2014	18 Aug 2014	11 Sep 2014	21 Aug 2014	11 Sep 2014	25 Aug 2014
BH9 0.2-0.5	SE130614.016	LB062741	14 Aug 2014	18 Aug 2014	11 Sep 2014	21 Aug 2014	11 Sep 2014	25 Aug 2014
BH9 2.0-2.3	SE130614.017	LB062741	14 Aug 2014	18 Aug 2014	11 Sep 2014	21 Aug 2014	11 Sep 2014	25 Aug 2014
BH9 2.55-2.65	SE130614.018	LB062741	14 Aug 2014	18 Aug 2014	11 Sep 2014	21 Aug 2014	11 Sep 2014	25 Aug 2014
BH10 0.23-0.5	SE130614.019	LB062741	12 Aug 2014	18 Aug 2014	09 Sep 2014	21 Aug 2014	09 Sep 2014	25 Aug 2014
BH10 0.55-0.65	SE130614.020	LB062741	12 Aug 2014	18 Aug 2014	09 Sep 2014	21 Aug 2014	09 Sep 2014	25 Aug 2014
Duplicate D2	SE130614.021	LB062741	13 Aug 2014	18 Aug 2014	10 Sep 2014	21 Aug 2014	10 Sep 2014	25 Aug 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	SE130614.024	LB062600	07 Aug 2014	18 Aug 2014	03 Feb 2015	20 Aug 2014	03 Feb 2015	20 Aug 2014
Rinsate R2	SE130614.025	LB062600	11 Aug 2014	18 Aug 2014	07 Feb 2015	20 Aug 2014	07 Feb 2015	20 Aug 2014
Rinsate R3	SE130614.026	LB062600	12 Aug 2014	18 Aug 2014	08 Feb 2015	20 Aug 2014	08 Feb 2015	20 Aug 2014
Rinsate R4	SE130614.027	LB062600	13 Aug 2014	18 Aug 2014	09 Feb 2015	20 Aug 2014	09 Feb 2015	20 Aug 2014
Rinsate R5	SE130614.028	LB062600	14 Aug 2014	18 Aug 2014	10 Feb 2015	20 Aug 2014	10 Feb 2015	20 Aug 2014

Moisture Content

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1 1.5-1.8	SE130614.001	LB062788	07 Aug 2014	18 Aug 2014	21 Aug 2014	21 Aug 2014	26 Aug 2014	23 Aug 2014
BH1 3.15-3.25	SE130614.002	LB062788	07 Aug 2014	18 Aug 2014	21 Aug 2014	21 Aug 2014	26 Aug 2014	23 Aug 2014
BH2 0-0.15	SE130614.003	LB062788	11 Aug 2014	18 Aug 2014	25 Aug 2014	21 Aug 2014	26 Aug 2014	23 Aug 2014
BH2 0.5-0.8	SE130614.004	LB062788	11 Aug 2014	18 Aug 2014	25 Aug 2014	21 Aug 2014	26 Aug 2014	23 Aug 2014
BH2 4.5-4.8	SE130614.005	LB062788	11 Aug 2014	18 Aug 2014	25 Aug 2014	21 Aug 2014	26 Aug 2014	23 Aug 2014
BH2 5.1-5.25	SE130614.006	LB062788	11 Aug 2014	18 Aug 2014	25 Aug 2014	21 Aug 2014	26 Aug 2014	23 Aug 2014
BH3 0-0.1	SE130614.007	LB062788	12 Aug 2014	18 Aug 2014	26 Aug 2014	21 Aug 2014	26 Aug 2014	23 Aug 2014
BH3 1.5-1.8	SE130614.008	LB062788	12 Aug 2014	18 Aug 2014	26 Aug 2014	21 Aug 2014	26 Aug 2014	23 Aug 2014
BH4 0-0.15	SE130614.009	LB062788	12 Aug 2014	18 Aug 2014	26 Aug 2014	21 Aug 2014	26 Aug 2014	23 Aug 2014
BH5 0.1-0.4	SE130614.010	LB062788	13 Aug 2014	18 Aug 2014	27 Aug 2014	21 Aug 2014	26 Aug 2014	23 Aug 2014
BH5 0.6-0.7	SE130614.011	LB062788	13 Aug 2014	18 Aug 2014	27 Aug 2014	21 Aug 2014	26 Aug 2014	23 Aug 2014
BH6 0.6-0.7	SE130614.012	LB062788	13 Aug 2014	18 Aug 2014	27 Aug 2014	21 Aug 2014	26 Aug 2014	23 Aug 2014
BH7 0.15-0.45	SE130614.013	LB062788	11 Aug 2014	18 Aug 2014	25 Aug 2014	21 Aug 2014	26 Aug 2014	23 Aug 2014
BH7 1.4-1.7	SE130614.014	LB062788	11 Aug 2014	18 Aug 2014	25 Aug 2014	21 Aug 2014	26 Aug 2014	23 Aug 2014
BH8 0.2-0.4	SE130614.015	LB062788	14 Aug 2014	18 Aug 2014	28 Aug 2014	21 Aug 2014	26 Aug 2014	23 Aug 2014
BH9 0.2-0.5	SE130614.016	LB062788	14 Aug 2014	18 Aug 2014	28 Aug 2014	21 Aug 2014	26 Aug 2014	23 Aug 2014
BH9 2.0-2.3	SE130614.017	LB062788	14 Aug 2014	18 Aug 2014	28 Aug 2014	21 Aug 2014	26 Aug 2014	23 Aug 2014
BH9 2.55-2.65	SE130614.018	LB062788	14 Aug 2014	18 Aug 2014	28 Aug 2014	21 Aug 2014	26 Aug 2014	23 Aug 2014
BH10 0.23-0.5	SE130614.019	LB062788	12 Aug 2014	18 Aug 2014	26 Aug 2014	21 Aug 2014	26 Aug 2014	23 Aug 2014
BH10 0.55-0.65	SE130614.020	LB062788	12 Aug 2014	18 Aug 2014	26 Aug 2014	21 Aug 2014	26 Aug 2014	23 Aug 2014
Duplicate D2	SE130614.021	LB062788	13 Aug 2014	18 Aug 2014	27 Aug 2014	21 Aug 2014	26 Aug 2014	23 Aug 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 1.5-1.8	SE130614.001	LB062562	07 Aug 2014	18 Aug 2014	21 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH1 3.15-3.25	SE130614.002	LB062562	07 Aug 2014	18 Aug 2014	21 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH2 0-0.15	SE130614.003	LB062562	11 Aug 2014	18 Aug 2014	25 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH2 0.5-0.8	SE130614.004	LB062562	11 Aug 2014	18 Aug 2014	25 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH2 4.5-4.8	SE130614.005	LB062562	11 Aug 2014	18 Aug 2014	25 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH2 5.1-5.25	SE130614.006	LB062562	11 Aug 2014	18 Aug 2014	25 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH3 0-0.1	SE130614.007	LB062562	12 Aug 2014	18 Aug 2014	26 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH3 1.5-1.8	SE130614.008	LB062562	12 Aug 2014	18 Aug 2014	26 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH4 0-0.15	SE130614.009	LB062562	12 Aug 2014	18 Aug 2014	26 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH5 0.1-0.4	SE130614.010	LB062562	13 Aug 2014	18 Aug 2014	27 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH5 0.6-0.7	SE130614.011	LB062562	13 Aug 2014	18 Aug 2014	27 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH6 0.6-0.7	SE130614.012	LB062562	13 Aug 2014	18 Aug 2014	27 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH7 0.15-0.45	SE130614.013	LB062562	11 Aug 2014	18 Aug 2014	25 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH7 1.4-1.7	SE130614.014	LB062562	11 Aug 2014	18 Aug 2014	25 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH8 0.2-0.4	SE130614.015	LB062562	14 Aug 2014	18 Aug 2014	28 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH9 0.2-0.5	SE130614.016	LB062562	14 Aug 2014	18 Aug 2014	28 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH9 2.0-2.3	SE130614.017	LB062563	14 Aug 2014	18 Aug 2014	28 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH9 2.55-2.65	SE130614.018	LB062563	14 Aug 2014	18 Aug 2014	28 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH10 0.23-0.5	SE130614.019	LB062563	12 Aug 2014	18 Aug 2014	26 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014

HOLDING TIME SUMMARY

SE130614 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
BH10 0.55-0.65	SE130614.020	LB062563	12 Aug 2014	18 Aug 2014	26 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
Duplicate D2	SE130614.021	LB062563	13 Aug 2014	18 Aug 2014	27 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 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 1.5-1.8	SE130614.001	LB062562	07 Aug 2014	18 Aug 2014	21 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH1 3.15-3.25	SE130614.002	LB062562	07 Aug 2014	18 Aug 2014	21 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH2 0-0.15	SE130614.003	LB062562	11 Aug 2014	18 Aug 2014	25 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH2 0.5-0.8	SE130614.004	LB062562	11 Aug 2014	18 Aug 2014	25 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH2 4.5-4.8	SE130614.005	LB062562	11 Aug 2014	18 Aug 2014	25 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH2 5.1-5.25	SE130614.006	LB062562	11 Aug 2014	18 Aug 2014	25 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH3 0-0.1	SE130614.007	LB062562	12 Aug 2014	18 Aug 2014	26 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH3 1.5-1.8	SE130614.008	LB062562	12 Aug 2014	18 Aug 2014	26 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH4 0-0.15	SE130614.009	LB062562	12 Aug 2014	18 Aug 2014	26 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH5 0.1-0.4	SE130614.010	LB062562	13 Aug 2014	18 Aug 2014	27 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH5 0.6-0.7	SE130614.011	LB062562	13 Aug 2014	18 Aug 2014	27 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH6 0.6-0.7	SE130614.012	LB062562	13 Aug 2014	18 Aug 2014	27 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH7 0.15-0.45	SE130614.013	LB062562	11 Aug 2014	18 Aug 2014	25 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH7 1.4-1.7	SE130614.014	LB062562	11 Aug 2014	18 Aug 2014	25 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH8 0.2-0.4	SE130614.015	LB062562	14 Aug 2014	18 Aug 2014	28 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH9 0.2-0.5	SE130614.016	LB062562	14 Aug 2014	18 Aug 2014	28 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH9 2.0-2.3	SE130614.017	LB062563	14 Aug 2014	18 Aug 2014	28 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH9 2.55-2.65	SE130614.018	LB062563	14 Aug 2014	18 Aug 2014	28 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH10 0.23-0.5	SE130614.019	LB062563	12 Aug 2014	18 Aug 2014	26 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH10 0.55-0.65	SE130614.020	LB062563	12 Aug 2014	18 Aug 2014	26 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
Duplicate D2	SE130614.021	LB062563	13 Aug 2014	18 Aug 2014	27 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 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 1.5-1.8	SE130614.001	LB062562	07 Aug 2014	18 Aug 2014	21 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH1 3.15-3.25	SE130614.002	LB062562	07 Aug 2014	18 Aug 2014	21 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH2 0-0.15	SE130614.003	LB062562	11 Aug 2014	18 Aug 2014	25 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH2 0.5-0.8	SE130614.004	LB062562	11 Aug 2014	18 Aug 2014	25 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH2 4.5-4.8	SE130614.005	LB062562	11 Aug 2014	18 Aug 2014	25 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH2 5.1-5.25	SE130614.006	LB062562	11 Aug 2014	18 Aug 2014	25 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH3 0-0.1	SE130614.007	LB062562	12 Aug 2014	18 Aug 2014	26 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH3 1.5-1.8	SE130614.008	LB062562	12 Aug 2014	18 Aug 2014	26 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH4 0-0.15	SE130614.009	LB062562	12 Aug 2014	18 Aug 2014	26 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH5 0.1-0.4	SE130614.010	LB062562	13 Aug 2014	18 Aug 2014	27 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH5 0.6-0.7	SE130614.011	LB062562	13 Aug 2014	18 Aug 2014	27 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH6 0.6-0.7	SE130614.012	LB062562	13 Aug 2014	18 Aug 2014	27 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH7 0.15-0.45	SE130614.013	LB062562	11 Aug 2014	18 Aug 2014	25 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH7 1.4-1.7	SE130614.014	LB062562	11 Aug 2014	18 Aug 2014	25 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH8 0.2-0.4	SE130614.015	LB062562	14 Aug 2014	18 Aug 2014	28 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH9 0.2-0.5	SE130614.016	LB062562	14 Aug 2014	18 Aug 2014	28 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH9 2.0-2.3	SE130614.017	LB062563	14 Aug 2014	18 Aug 2014	28 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH9 2.55-2.65	SE130614.018	LB062563	14 Aug 2014	18 Aug 2014	28 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH10 0.23-0.5	SE130614.019	LB062563	12 Aug 2014	18 Aug 2014	26 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH10 0.55-0.65	SE130614.020	LB062563	12 Aug 2014	18 Aug 2014	26 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
Duplicate D2	SE130614.021	LB062563	13 Aug 2014	18 Aug 2014	27 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 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 1.5-1.8	SE130614.001	LB062682	07 Aug 2014	18 Aug 2014	14 Aug 2014	19 Aug 2014†	20 Aug 2014	22 Aug 2014†
BH1 3.15-3.25	SE130614.002	LB062682	07 Aug 2014	18 Aug 2014	14 Aug 2014	19 Aug 2014†	20 Aug 2014	22 Aug 2014†
BH2 0-0.15	SE130614.003	LB062682	11 Aug 2014	18 Aug 2014	18 Aug 2014	19 Aug 2014†	20 Aug 2014	22 Aug 2014†
BH2 0.5-0.8	SE130614.004	LB062682	11 Aug 2014	18 Aug 2014	18 Aug 2014	19 Aug 2014†	20 Aug 2014	22 Aug 2014†
BH2 4.5-4.8	SE130614.005	LB062682	11 Aug 2014	18 Aug 2014	18 Aug 2014	19 Aug 2014†	20 Aug 2014	22 Aug 2014†
BH2 5.1-5.25	SE130614.006	LB062682	11 Aug 2014	18 Aug 2014	18 Aug 2014	19 Aug 2014†	20 Aug 2014	22 Aug 2014†
BH3 0-0.1	SE130614.007	LB062682	12 Aug 2014	18 Aug 2014	19 Aug 2014	19 Aug 2014	20 Aug 2014	22 Aug 2014†
BH3 1.5-1.8	SE130614.008	LB062682	12 Aug 2014	18 Aug 2014	19 Aug 2014	19 Aug 2014	20 Aug 2014	22 Aug 2014†

HOLDING TIME SUMMARY

SE130614 R0

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

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

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

pH in soil (1:5) (continued)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH4 0-0.15	SE130614.009	LB062682	12 Aug 2014	18 Aug 2014	19 Aug 2014	19 Aug 2014	20 Aug 2014	22 Aug 2014†
BH5 0.1-0.4	SE130614.010	LB062682	13 Aug 2014	18 Aug 2014	20 Aug 2014	19 Aug 2014	20 Aug 2014	22 Aug 2014†
BH5 0.6-0.7	SE130614.011	LB062682	13 Aug 2014	18 Aug 2014	20 Aug 2014	19 Aug 2014	20 Aug 2014	22 Aug 2014†
BH6 0.6-0.7	SE130614.012	LB062682	13 Aug 2014	18 Aug 2014	20 Aug 2014	19 Aug 2014	20 Aug 2014	22 Aug 2014†
BH7 0.15-0.45	SE130614.013	LB062682	11 Aug 2014	18 Aug 2014	18 Aug 2014	19 Aug 2014†	20 Aug 2014	22 Aug 2014†
BH7 1.4-1.7	SE130614.014	LB062682	11 Aug 2014	18 Aug 2014	18 Aug 2014	19 Aug 2014†	20 Aug 2014	22 Aug 2014†
BH8 0.2-0.4	SE130614.015	LB062682	14 Aug 2014	18 Aug 2014	21 Aug 2014	19 Aug 2014	20 Aug 2014	22 Aug 2014†
BH9 0.2-0.5	SE130614.016	LB062682	14 Aug 2014	18 Aug 2014	21 Aug 2014	19 Aug 2014	20 Aug 2014	22 Aug 2014†
BH9 2.0-2.3	SE130614.017	LB062682	14 Aug 2014	18 Aug 2014	21 Aug 2014	19 Aug 2014	20 Aug 2014	22 Aug 2014†
BH9 2.55-2.65	SE130614.018	LB062682	14 Aug 2014	18 Aug 2014	21 Aug 2014	19 Aug 2014	20 Aug 2014	22 Aug 2014†
BH10 0.23-0.5	SE130614.019	LB062682	12 Aug 2014	18 Aug 2014	19 Aug 2014	19 Aug 2014	20 Aug 2014	22 Aug 2014†
BH10 0.55-0.65	SE130614.020	LB062682	12 Aug 2014	18 Aug 2014	19 Aug 2014	19 Aug 2014	20 Aug 2014	22 Aug 2014†
Duplicate D2	SE130614.021	LB062682	13 Aug 2014	18 Aug 2014	20 Aug 2014	19 Aug 2014	20 Aug 2014	22 Aug 2014†

TOC in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1 1.5-1.8	SE130614.001	LB062858	07 Aug 2014	18 Aug 2014	04 Sep 2014	25 Aug 2014	04 Sep 2014	25 Aug 2014
BH1 3.15-3.25	SE130614.002	LB062858	07 Aug 2014	18 Aug 2014	04 Sep 2014	25 Aug 2014	04 Sep 2014	25 Aug 2014
BH2 0-0.15	SE130614.003	LB062858	11 Aug 2014	18 Aug 2014	08 Sep 2014	25 Aug 2014	08 Sep 2014	25 Aug 2014
BH2 0.5-0.8	SE130614.004	LB062858	11 Aug 2014	18 Aug 2014	08 Sep 2014	25 Aug 2014	08 Sep 2014	25 Aug 2014
BH2 4.5-4.8	SE130614.005	LB062858	11 Aug 2014	18 Aug 2014	08 Sep 2014	25 Aug 2014	08 Sep 2014	25 Aug 2014
BH2 5.1-5.25	SE130614.006	LB062858	11 Aug 2014	18 Aug 2014	08 Sep 2014	25 Aug 2014	08 Sep 2014	25 Aug 2014
BH3 0-0.1	SE130614.007	LB062858	12 Aug 2014	18 Aug 2014	09 Sep 2014	25 Aug 2014	09 Sep 2014	25 Aug 2014
BH3 1.5-1.8	SE130614.008	LB062858	12 Aug 2014	18 Aug 2014	09 Sep 2014	25 Aug 2014	09 Sep 2014	25 Aug 2014
BH4 0-0.15	SE130614.009	LB062858	12 Aug 2014	18 Aug 2014	09 Sep 2014	25 Aug 2014	09 Sep 2014	25 Aug 2014
BH5 0.1-0.4	SE130614.010	LB062858	13 Aug 2014	18 Aug 2014	10 Sep 2014	25 Aug 2014	10 Sep 2014	25 Aug 2014
BH5 0.6-0.7	SE130614.011	LB062858	13 Aug 2014	18 Aug 2014	10 Sep 2014	25 Aug 2014	10 Sep 2014	25 Aug 2014
BH6 0.6-0.7	SE130614.012	LB062858	13 Aug 2014	18 Aug 2014	10 Sep 2014	25 Aug 2014	10 Sep 2014	25 Aug 2014
BH7 0.15-0.45	SE130614.013	LB062858	11 Aug 2014	18 Aug 2014	08 Sep 2014	25 Aug 2014	08 Sep 2014	25 Aug 2014
BH7 1.4-1.7	SE130614.014	LB062858	11 Aug 2014	18 Aug 2014	08 Sep 2014	25 Aug 2014	08 Sep 2014	25 Aug 2014
BH9 0.2-0.5	SE130614.016	LB062858	14 Aug 2014	18 Aug 2014	11 Sep 2014	25 Aug 2014	11 Sep 2014	25 Aug 2014
BH9 2.0-2.3	SE130614.017	LB062858	14 Aug 2014	18 Aug 2014	11 Sep 2014	25 Aug 2014	11 Sep 2014	25 Aug 2014
BH9 2.55-2.65	SE130614.018	LB062858	14 Aug 2014	18 Aug 2014	11 Sep 2014	25 Aug 2014	11 Sep 2014	25 Aug 2014
BH10 0.23-0.5	SE130614.019	LB062858	12 Aug 2014	18 Aug 2014	09 Sep 2014	25 Aug 2014	09 Sep 2014	25 Aug 2014
BH10 0.55-0.65	SE130614.020	LB062858	12 Aug 2014	18 Aug 2014	09 Sep 2014	25 Aug 2014	09 Sep 2014	25 Aug 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
BH2 0.5-0.8	SE130614.004	LB062764	11 Aug 2014	18 Aug 2014	25 Aug 2014	22 Aug 2014	25 Aug 2014	25 Aug 2014
BH2 4.5-4.8	SE130614.005	LB062764	11 Aug 2014	18 Aug 2014	25 Aug 2014	22 Aug 2014	25 Aug 2014	25 Aug 2014
BH2 5.1-5.25	SE130614.006	LB062764	11 Aug 2014	18 Aug 2014	25 Aug 2014	22 Aug 2014	25 Aug 2014	25 Aug 2014
BH3 1.5-1.8	SE130614.008	LB062764	12 Aug 2014	18 Aug 2014	26 Aug 2014	22 Aug 2014	26 Aug 2014	25 Aug 2014
BH5 0.1-0.4	SE130614.010	LB062764	13 Aug 2014	18 Aug 2014	27 Aug 2014	22 Aug 2014	27 Aug 2014	25 Aug 2014
BH5 0.6-0.7	SE130614.011	LB062764	13 Aug 2014	18 Aug 2014	27 Aug 2014	22 Aug 2014	27 Aug 2014	25 Aug 2014
BH9 0.2-0.5	SE130614.016	LB062764	14 Aug 2014	18 Aug 2014	28 Aug 2014	22 Aug 2014	28 Aug 2014	25 Aug 2014
BH9 2.0-2.3	SE130614.017	LB062764	14 Aug 2014	18 Aug 2014	28 Aug 2014	22 Aug 2014	28 Aug 2014	25 Aug 2014
BH9 2.55-2.65	SE130614.018	LB062764	14 Aug 2014	18 Aug 2014	28 Aug 2014	22 Aug 2014	28 Aug 2014	25 Aug 2014
BH10 0.23-0.5	SE130614.019	LB062764	12 Aug 2014	18 Aug 2014	26 Aug 2014	22 Aug 2014	26 Aug 2014	25 Aug 2014
BH10 0.55-0.65	SE130614.020	LB062764	12 Aug 2014	18 Aug 2014	26 Aug 2014	22 Aug 2014	26 Aug 2014	25 Aug 2014
Duplicate D2	SE130614.021	LB062764	13 Aug 2014	18 Aug 2014	27 Aug 2014	22 Aug 2014	27 Aug 2014	25 Aug 2014

Total Phenolics in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH2 0.5-0.8	SE130614.004	LB062763	11 Aug 2014	18 Aug 2014	25 Aug 2014	22 Aug 2014	25 Aug 2014	22 Aug 2014
BH2 4.5-4.8	SE130614.005	LB062763	11 Aug 2014	18 Aug 2014	25 Aug 2014	22 Aug 2014	25 Aug 2014	22 Aug 2014
BH2 5.1-5.25	SE130614.006	LB062763	11 Aug 2014	18 Aug 2014	25 Aug 2014	22 Aug 2014	25 Aug 2014	22 Aug 2014
BH3 1.5-1.8	SE130614.008	LB062763	12 Aug 2014	18 Aug 2014	26 Aug 2014	22 Aug 2014	26 Aug 2014	22 Aug 2014
BH5 0.1-0.4	SE130614.010	LB062763	13 Aug 2014	18 Aug 2014	27 Aug 2014	22 Aug 2014	27 Aug 2014	22 Aug 2014
BH5 0.6-0.7	SE130614.011	LB062763	13 Aug 2014	18 Aug 2014	27 Aug 2014	22 Aug 2014	27 Aug 2014	22 Aug 2014
BH9 0.2-0.5	SE130614.016	LB062763	14 Aug 2014	18 Aug 2014	28 Aug 2014	22 Aug 2014	28 Aug 2014	22 Aug 2014
BH9 2.0-2.3	SE130614.017	LB062763	14 Aug 2014	18 Aug 2014	28 Aug 2014	22 Aug 2014	28 Aug 2014	22 Aug 2014

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
BH9 2.55-2.65	SE130614.018	LB062763	14 Aug 2014	18 Aug 2014	28 Aug 2014	22 Aug 2014	28 Aug 2014	22 Aug 2014
BH10 0.23-0.5	SE130614.019	LB062763	12 Aug 2014	18 Aug 2014	26 Aug 2014	22 Aug 2014	26 Aug 2014	22 Aug 2014
BH10 0.55-0.65	SE130614.020	LB062835	12 Aug 2014	18 Aug 2014	26 Aug 2014	23 Aug 2014	26 Aug 2014	26 Aug 2014
Duplicate D2	SE130614.021	LB062835	13 Aug 2014	18 Aug 2014	27 Aug 2014	23 Aug 2014	27 Aug 2014	23 Aug 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
BH1 1.5-1.8	SE130614.001	LB062732	07 Aug 2014	18 Aug 2014	03 Feb 2015	21 Aug 2014	03 Feb 2015	25 Aug 2014
BH1 3.15-3.25	SE130614.002	LB062732	07 Aug 2014	18 Aug 2014	03 Feb 2015	21 Aug 2014	03 Feb 2015	25 Aug 2014
BH2 0-0.15	SE130614.003	LB062732	11 Aug 2014	18 Aug 2014	07 Feb 2015	21 Aug 2014	07 Feb 2015	25 Aug 2014
BH2 0.5-0.8	SE130614.004	LB062732	11 Aug 2014	18 Aug 2014	07 Feb 2015	21 Aug 2014	07 Feb 2015	25 Aug 2014
BH2 4.5-4.8	SE130614.005	LB062732	11 Aug 2014	18 Aug 2014	07 Feb 2015	21 Aug 2014	07 Feb 2015	25 Aug 2014
BH2 5.1-5.25	SE130614.006	LB062733	11 Aug 2014	18 Aug 2014	07 Feb 2015	21 Aug 2014	07 Feb 2015	25 Aug 2014
BH3 0-0.1	SE130614.007	LB062733	12 Aug 2014	18 Aug 2014	08 Feb 2015	21 Aug 2014	08 Feb 2015	25 Aug 2014
BH3 1.5-1.8	SE130614.008	LB062733	12 Aug 2014	18 Aug 2014	08 Feb 2015	21 Aug 2014	08 Feb 2015	25 Aug 2014
BH4 0-0.15	SE130614.009	LB062733	12 Aug 2014	18 Aug 2014	08 Feb 2015	21 Aug 2014	08 Feb 2015	25 Aug 2014
BH5 0.1-0.4	SE130614.010	LB062733	13 Aug 2014	18 Aug 2014	09 Feb 2015	21 Aug 2014	09 Feb 2015	25 Aug 2014
BH5 0.6-0.7	SE130614.011	LB062733	13 Aug 2014	18 Aug 2014	09 Feb 2015	21 Aug 2014	09 Feb 2015	25 Aug 2014
BH6 0.6-0.7	SE130614.012	LB062733	13 Aug 2014	18 Aug 2014	09 Feb 2015	21 Aug 2014	09 Feb 2015	25 Aug 2014
BH7 0.15-0.45	SE130614.013	LB062733	11 Aug 2014	18 Aug 2014	07 Feb 2015	21 Aug 2014	07 Feb 2015	25 Aug 2014
BH7 1.4-1.7	SE130614.014	LB062733	11 Aug 2014	18 Aug 2014	07 Feb 2015	21 Aug 2014	07 Feb 2015	25 Aug 2014
BH8 0.2-0.4	SE130614.015	LB062733	14 Aug 2014	18 Aug 2014	10 Feb 2015	21 Aug 2014	10 Feb 2015	25 Aug 2014
BH9 0.2-0.5	SE130614.016	LB062733	14 Aug 2014	18 Aug 2014	10 Feb 2015	21 Aug 2014	10 Feb 2015	25 Aug 2014
BH9 2.0-2.3	SE130614.017	LB062733	14 Aug 2014	18 Aug 2014	10 Feb 2015	21 Aug 2014	10 Feb 2015	25 Aug 2014
BH9 2.55-2.65	SE130614.018	LB062733	14 Aug 2014	18 Aug 2014	10 Feb 2015	21 Aug 2014	10 Feb 2015	25 Aug 2014
BH10 0.23-0.5	SE130614.019	LB062733	12 Aug 2014	18 Aug 2014	08 Feb 2015	21 Aug 2014	08 Feb 2015	25 Aug 2014
BH10 0.55-0.65	SE130614.020	LB062733	12 Aug 2014	18 Aug 2014	08 Feb 2015	21 Aug 2014	08 Feb 2015	25 Aug 2014
Duplicate D2	SE130614.021	LB062733	13 Aug 2014	18 Aug 2014	09 Feb 2015	21 Aug 2014	09 Feb 2015	25 Aug 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 1.5-1.8	SE130614.001	LB062562	07 Aug 2014	18 Aug 2014	21 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH1 3.15-3.25	SE130614.002	LB062562	07 Aug 2014	18 Aug 2014	21 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH2 0-0.15	SE130614.003	LB062562	11 Aug 2014	18 Aug 2014	25 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH2 0.5-0.8	SE130614.004	LB062562	11 Aug 2014	18 Aug 2014	25 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH2 4.5-4.8	SE130614.005	LB062562	11 Aug 2014	18 Aug 2014	25 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH2 5.1-5.25	SE130614.006	LB062562	11 Aug 2014	18 Aug 2014	25 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH3 0-0.1	SE130614.007	LB062562	12 Aug 2014	18 Aug 2014	26 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH3 1.5-1.8	SE130614.008	LB062562	12 Aug 2014	18 Aug 2014	26 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH4 0-0.15	SE130614.009	LB062562	12 Aug 2014	18 Aug 2014	26 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH5 0.1-0.4	SE130614.010	LB062562	13 Aug 2014	18 Aug 2014	27 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH5 0.6-0.7	SE130614.011	LB062562	13 Aug 2014	18 Aug 2014	27 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH6 0.6-0.7	SE130614.012	LB062562	13 Aug 2014	18 Aug 2014	27 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH7 0.15-0.45	SE130614.013	LB062562	11 Aug 2014	18 Aug 2014	25 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH7 1.4-1.7	SE130614.014	LB062562	11 Aug 2014	18 Aug 2014	25 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH8 0.2-0.4	SE130614.015	LB062562	14 Aug 2014	18 Aug 2014	28 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH9 0.2-0.5	SE130614.016	LB062562	14 Aug 2014	18 Aug 2014	28 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH9 2.0-2.3	SE130614.017	LB062563	14 Aug 2014	18 Aug 2014	28 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH9 2.55-2.65	SE130614.018	LB062563	14 Aug 2014	18 Aug 2014	28 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH10 0.23-0.5	SE130614.019	LB062563	12 Aug 2014	18 Aug 2014	26 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
BH10 0.55-0.65	SE130614.020	LB062563	12 Aug 2014	18 Aug 2014	26 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
Duplicate D2	SE130614.021	LB062563	13 Aug 2014	18 Aug 2014	27 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 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
BH2 0.5-0.8	SE130614.004	LB062558	11 Aug 2014	18 Aug 2014	25 Aug 2014	19 Aug 2014	28 Sep 2014	22 Aug 2014
BH2 4.5-4.8	SE130614.005	LB062558	11 Aug 2014	18 Aug 2014	25 Aug 2014	19 Aug 2014	28 Sep 2014	22 Aug 2014
BH2 5.1-5.25	SE130614.006	LB062558	11 Aug 2014	18 Aug 2014	25 Aug 2014	19 Aug 2014	28 Sep 2014	22 Aug 2014
BH3 1.5-1.8	SE130614.008	LB062558	12 Aug 2014	18 Aug 2014	26 Aug 2014	19 Aug 2014	28 Sep 2014	22 Aug 2014
BH5 0.1-0.4	SE130614.010	LB062558	13 Aug 2014	18 Aug 2014	27 Aug 2014	19 Aug 2014	28 Sep 2014	22 Aug 2014
BH5 0.6-0.7	SE130614.011	LB062558	13 Aug 2014	18 Aug 2014	27 Aug 2014	19 Aug 2014	28 Sep 2014	22 Aug 2014

HOLDING TIME SUMMARY

SE130614 R0

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

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

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

VOC's in Soil (continued)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH9 0.2-0.5	SE130614.016	LB062558	14 Aug 2014	18 Aug 2014	28 Aug 2014	19 Aug 2014	28 Sep 2014	22 Aug 2014
BH9 2.0-2.3	SE130614.017	LB062558	14 Aug 2014	18 Aug 2014	28 Aug 2014	19 Aug 2014	28 Sep 2014	22 Aug 2014
BH9 2.55-2.65	SE130614.018	LB062558	14 Aug 2014	18 Aug 2014	28 Aug 2014	19 Aug 2014	28 Sep 2014	22 Aug 2014
BH10 0.23-0.5	SE130614.019	LB062558	12 Aug 2014	18 Aug 2014	26 Aug 2014	19 Aug 2014	28 Sep 2014	22 Aug 2014
BH10 0.55-0.65	SE130614.020	LB062558	12 Aug 2014	18 Aug 2014	26 Aug 2014	19 Aug 2014	28 Sep 2014	22 Aug 2014
Duplicate D2	SE130614.021	LB062558	13 Aug 2014	18 Aug 2014	27 Aug 2014	19 Aug 2014	28 Sep 2014	22 Aug 2014
Trip Spike TS1	SE130614.022	LB062558	12 Aug 2014	18 Aug 2014	26 Aug 2014	19 Aug 2014	28 Sep 2014	22 Aug 2014
Trip Spike TS2	SE130614.023	LB062558	14 Aug 2014	18 Aug 2014	28 Aug 2014	19 Aug 2014	28 Sep 2014	22 Aug 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
BH2 0.5-0.8	SE130614.004	LB062558	11 Aug 2014	18 Aug 2014	25 Aug 2014	19 Aug 2014	28 Sep 2014	22 Aug 2014
BH2 4.5-4.8	SE130614.005	LB062558	11 Aug 2014	18 Aug 2014	25 Aug 2014	19 Aug 2014	28 Sep 2014	22 Aug 2014
BH2 5.1-5.25	SE130614.006	LB062558	11 Aug 2014	18 Aug 2014	25 Aug 2014	19 Aug 2014	28 Sep 2014	22 Aug 2014
BH3 1.5-1.8	SE130614.008	LB062558	12 Aug 2014	18 Aug 2014	26 Aug 2014	19 Aug 2014	28 Sep 2014	22 Aug 2014
BH5 0.1-0.4	SE130614.010	LB062558	13 Aug 2014	18 Aug 2014	27 Aug 2014	19 Aug 2014	28 Sep 2014	22 Aug 2014
BH5 0.6-0.7	SE130614.011	LB062558	13 Aug 2014	18 Aug 2014	27 Aug 2014	19 Aug 2014	28 Sep 2014	22 Aug 2014
BH9 0.2-0.5	SE130614.016	LB062558	14 Aug 2014	18 Aug 2014	28 Aug 2014	19 Aug 2014	28 Sep 2014	22 Aug 2014
BH9 2.0-2.3	SE130614.017	LB062558	14 Aug 2014	18 Aug 2014	28 Aug 2014	19 Aug 2014	28 Sep 2014	22 Aug 2014
BH9 2.55-2.65	SE130614.018	LB062558	14 Aug 2014	18 Aug 2014	28 Aug 2014	19 Aug 2014	28 Sep 2014	22 Aug 2014
BH10 0.23-0.5	SE130614.019	LB062558	12 Aug 2014	18 Aug 2014	26 Aug 2014	19 Aug 2014	28 Sep 2014	22 Aug 2014
BH10 0.55-0.65	SE130614.020	LB062558	12 Aug 2014	18 Aug 2014	26 Aug 2014	19 Aug 2014	28 Sep 2014	22 Aug 2014
Duplicate D2	SE130614.021	LB062558	13 Aug 2014	18 Aug 2014	27 Aug 2014	19 Aug 2014	28 Sep 2014	22 Aug 2014
Trip Spike TS1	SE130614.022	LB062558	12 Aug 2014	18 Aug 2014	26 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 2014
Trip Spike TS2	SE130614.023	LB062558	14 Aug 2014	18 Aug 2014	28 Aug 2014	19 Aug 2014	28 Sep 2014	25 Aug 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)	BH1 1.5-1.8	SE130614.001	%	60 - 130%	107
	BH1 3.15-3.25	SE130614.002	%	60 - 130%	106
	BH2 0-0.15	SE130614.003	%	60 - 130%	105
	BH2 0.5-0.8	SE130614.004	%	60 - 130%	109
	BH2 4.5-4.8	SE130614.005	%	60 - 130%	111
	BH2 5.1-5.25	SE130614.006	%	60 - 130%	111
	BH3 0-0.1	SE130614.007	%	60 - 130%	105
	BH3 1.5-1.8	SE130614.008	%	60 - 130%	107
	BH4 0-0.15	SE130614.009	%	60 - 130%	109
	BH5 0.1-0.4	SE130614.010	%	60 - 130%	111
	BH5 0.6-0.7	SE130614.011	%	60 - 130%	107
	BH6 0.6-0.7	SE130614.012	%	60 - 130%	105
	BH7 0.15-0.45	SE130614.013	%	60 - 130%	105
	BH7 1.4-1.7	SE130614.014	%	60 - 130%	107
	BH8 0.2-0.4	SE130614.015	%	60 - 130%	109
	BH9 0.2-0.5	SE130614.016	%	60 - 130%	109
	BH9 2.0-2.3	SE130614.017	%	60 - 130%	111
	BH9 2.55-2.65	SE130614.018	%	60 - 130%	110
	BH10 0.23-0.5	SE130614.019	%	60 - 130%	107
	BH10 0.55-0.65	SE130614.020	%	60 - 130%	103
	Duplicate D2	SE130614.021	%	60 - 130%	99

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH1 1.5-1.8	SE130614.001	%	60 - 130%	84
	BH1 3.15-3.25	SE130614.002	%	60 - 130%	84
	BH2 0-0.15	SE130614.003	%	60 - 130%	90
	BH2 0.5-0.8	SE130614.004	%	60 - 130%	88
	BH2 4.5-4.8	SE130614.005	%	60 - 130%	88
	BH2 5.1-5.25	SE130614.006	%	60 - 130%	86
	BH3 0-0.1	SE130614.007	%	60 - 130%	88
	BH3 1.5-1.8	SE130614.008	%	60 - 130%	84
	BH4 0-0.15	SE130614.009	%	60 - 130%	88
	BH5 0.1-0.4	SE130614.010	%	60 - 130%	86
	BH5 0.6-0.7	SE130614.011	%	60 - 130%	80
	BH6 0.6-0.7	SE130614.012	%	60 - 130%	84
	BH7 0.15-0.45	SE130614.013	%	60 - 130%	86
	BH7 1.4-1.7	SE130614.014	%	60 - 130%	82
	BH8 0.2-0.4	SE130614.015	%	60 - 130%	84
	BH9 0.2-0.5	SE130614.016	%	60 - 130%	86
	BH9 2.0-2.3	SE130614.017	%	60 - 130%	88
	BH9 2.55-2.65	SE130614.018	%	60 - 130%	86
	BH10 0.23-0.5	SE130614.019	%	60 - 130%	82
	BH10 0.55-0.65	SE130614.020	%	60 - 130%	80
	Duplicate D2	SE130614.021	%	60 - 130%	86
d14-p-terphenyl (Surrogate)	BH1 1.5-1.8	SE130614.001	%	60 - 130%	94
	BH1 3.15-3.25	SE130614.002	%	60 - 130%	94
	BH2 0-0.15	SE130614.003	%	60 - 130%	100
	BH2 0.5-0.8	SE130614.004	%	60 - 130%	96
	BH2 4.5-4.8	SE130614.005	%	60 - 130%	94
	BH2 5.1-5.25	SE130614.006	%	60 - 130%	98
	BH3 0-0.1	SE130614.007	%	60 - 130%	98
	BH3 1.5-1.8	SE130614.008	%	60 - 130%	94
	BH4 0-0.15	SE130614.009	%	60 - 130%	96
	BH5 0.1-0.4	SE130614.010	%	60 - 130%	96
	BH5 0.6-0.7	SE130614.011	%	60 - 130%	90
	BH6 0.6-0.7	SE130614.012	%	60 - 130%	96
	BH7 0.15-0.45	SE130614.013	%	60 - 130%	98
	BH7 1.4-1.7	SE130614.014	%	60 - 130%	92
	BH8 0.2-0.4	SE130614.015	%	60 - 130%	92
	BH9 0.2-0.5	SE130614.016	%	60 - 130%	100

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d14-p-terphenyl (Surrogate)	BH9 2.0-2.3	SE130614.017	%	60 - 130%	98
	BH9 2.55-2.65	SE130614.018	%	60 - 130%	98
	BH10 0.23-0.5	SE130614.019	%	60 - 130%	96
	BH10 0.55-0.65	SE130614.020	%	60 - 130%	96
	Duplicate D2	SE130614.021	%	60 - 130%	94
d5-nitrobenzene (Surrogate)	BH1 1.5-1.8	SE130614.001	%	60 - 130%	86
	BH1 3.15-3.25	SE130614.002	%	60 - 130%	86
	BH2 0-0.15	SE130614.003	%	60 - 130%	92
	BH2 0.5-0.8	SE130614.004	%	60 - 130%	90
	BH2 4.5-4.8	SE130614.005	%	60 - 130%	90
	BH2 5.1-5.25	SE130614.006	%	60 - 130%	92
	BH3 0-0.1	SE130614.007	%	60 - 130%	92
	BH3 1.5-1.8	SE130614.008	%	60 - 130%	86
	BH4 0-0.15	SE130614.009	%	60 - 130%	88
	BH5 0.1-0.4	SE130614.010	%	60 - 130%	92
	BH5 0.6-0.7	SE130614.011	%	60 - 130%	86
	BH6 0.6-0.7	SE130614.012	%	60 - 130%	86
	BH7 0.15-0.45	SE130614.013	%	60 - 130%	86
	BH7 1.4-1.7	SE130614.014	%	60 - 130%	86
	BH8 0.2-0.4	SE130614.015	%	60 - 130%	86
	BH9 0.2-0.5	SE130614.016	%	60 - 130%	88
	BH9 2.0-2.3	SE130614.017	%	60 - 130%	90
	BH9 2.55-2.65	SE130614.018	%	60 - 130%	90
	BH10 0.23-0.5	SE130614.019	%	60 - 130%	88
	BH10 0.55-0.65	SE130614.020	%	60 - 130%	84
	Duplicate D2	SE130614.021	%	60 - 130%	88

PCBs in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH2 0.5-0.8	SE130614.004	%	60 - 130%	109
	BH2 4.5-4.8	SE130614.005	%	60 - 130%	111
	BH2 5.1-5.25	SE130614.006	%	60 - 130%	111
	BH3 1.5-1.8	SE130614.008	%	60 - 130%	107
	BH5 0.1-0.4	SE130614.010	%	60 - 130%	111
	BH5 0.6-0.7	SE130614.011	%	60 - 130%	107
	BH9 0.2-0.5	SE130614.016	%	60 - 130%	109
	BH9 2.0-2.3	SE130614.017	%	60 - 130%	111
	BH9 2.55-2.65	SE130614.018	%	60 - 130%	110
	BH10 0.23-0.5	SE130614.019	%	60 - 130%	107
	BH10 0.55-0.65	SE130614.020	%	60 - 130%	103
	Duplicate D2	SE130614.021	%	60 - 130%	99

VOC's in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH2 0.5-0.8	SE130614.004	%	60 - 130%	108
	BH2 4.5-4.8	SE130614.005	%	60 - 130%	122
	BH2 5.1-5.25	SE130614.006	%	60 - 130%	104
	BH3 1.5-1.8	SE130614.008	%	60 - 130%	114
	BH5 0.1-0.4	SE130614.010	%	60 - 130%	114
	BH5 0.6-0.7	SE130614.011	%	60 - 130%	114
	BH9 0.2-0.5	SE130614.016	%	60 - 130%	119
	BH9 2.0-2.3	SE130614.017	%	60 - 130%	100
	BH9 2.55-2.65	SE130614.018	%	60 - 130%	90
	BH10 0.23-0.5	SE130614.019	%	60 - 130%	116
	BH10 0.55-0.65	SE130614.020	%	60 - 130%	116
	Duplicate D2	SE130614.021	%	60 - 130%	118
	Trip Spike TS1	SE130614.022	%	60 - 130%	116
	Trip Spike TS2	SE130614.023	%	60 - 130%	110
d4-1,2-dichloroethane (Surrogate)	BH2 0.5-0.8	SE130614.004	%	60 - 130%	79
	BH2 4.5-4.8	SE130614.005	%	60 - 130%	93
	BH2 5.1-5.25	SE130614.006	%	60 - 130%	96
	BH3 1.5-1.8	SE130614.008	%	60 - 130%	114

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

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

VOC's in Soil (continued)

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d4-1,2-dichloroethane (Surrogate)	BH5 0.1-0.4	SE130614.010	%	60 - 130%	114
	BH5 0.6-0.7	SE130614.011	%	60 - 130%	114
	BH9 0.2-0.5	SE130614.016	%	60 - 130%	119
	BH9 2.0-2.3	SE130614.017	%	60 - 130%	97
	BH9 2.55-2.65	SE130614.018	%	60 - 130%	104
	BH10 0.23-0.5	SE130614.019	%	60 - 130%	107
	BH10 0.55-0.65	SE130614.020	%	60 - 130%	115
	Duplicate D2	SE130614.021	%	60 - 130%	108
	Trip Spike TS1	SE130614.022	%	60 - 130%	117
	Trip Spike TS2	SE130614.023	%	60 - 130%	106
d8-toluene (Surrogate)	BH2 0.5-0.8	SE130614.004	%	60 - 130%	110
	BH2 4.5-4.8	SE130614.005	%	60 - 130%	117
	BH2 5.1-5.25	SE130614.006	%	60 - 130%	99
	BH3 1.5-1.8	SE130614.008	%	60 - 130%	115
	BH5 0.1-0.4	SE130614.010	%	60 - 130%	116
	BH5 0.6-0.7	SE130614.011	%	60 - 130%	119
	BH9 0.2-0.5	SE130614.016	%	60 - 130%	119
	BH9 2.0-2.3	SE130614.017	%	60 - 130%	96
	BH9 2.55-2.65	SE130614.018	%	60 - 130%	90
	BH10 0.23-0.5	SE130614.019	%	60 - 130%	111
	BH10 0.55-0.65	SE130614.020	%	60 - 130%	118
	Duplicate D2	SE130614.021	%	60 - 130%	105
	Trip Spike TS1	SE130614.022	%	60 - 130%	123
	Trip Spike TS2	SE130614.023	%	60 - 130%	100
Dibromofluoromethane (Surrogate)	BH2 0.5-0.8	SE130614.004	%	60 - 130%	89
	BH2 4.5-4.8	SE130614.005	%	60 - 130%	101
	BH2 5.1-5.25	SE130614.006	%	60 - 130%	107
	BH3 1.5-1.8	SE130614.008	%	60 - 130%	124
	BH5 0.1-0.4	SE130614.010	%	60 - 130%	122
	BH5 0.6-0.7	SE130614.011	%	60 - 130%	120
	BH9 0.2-0.5	SE130614.016	%	60 - 130%	127
	BH9 2.0-2.3	SE130614.017	%	60 - 130%	104
	BH9 2.55-2.65	SE130614.018	%	60 - 130%	108
	BH10 0.23-0.5	SE130614.019	%	60 - 130%	113
	BH10 0.55-0.65	SE130614.020	%	60 - 130%	114
	Duplicate D2	SE130614.021	%	60 - 130%	115
	Trip Spike TS1	SE130614.022	%	60 - 130%	122
	Trip Spike TS2	SE130614.023	%	60 - 130%	110

Volatile Petroleum Hydrocarbons in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH2 0.5-0.8	SE130614.004	%	60 - 130%	108
	BH2 4.5-4.8	SE130614.005	%	60 - 130%	122
	BH2 5.1-5.25	SE130614.006	%	60 - 130%	104
	BH3 1.5-1.8	SE130614.008	%	60 - 130%	114
	BH5 0.1-0.4	SE130614.010	%	60 - 130%	114
	BH5 0.6-0.7	SE130614.011	%	60 - 130%	114
	BH9 0.2-0.5	SE130614.016	%	60 - 130%	119
	BH9 2.0-2.3	SE130614.017	%	60 - 130%	100
	BH9 2.55-2.65	SE130614.018	%	60 - 130%	90
	BH10 0.23-0.5	SE130614.019	%	60 - 130%	116
	BH10 0.55-0.65	SE130614.020	%	60 - 130%	116
	Duplicate D2	SE130614.021	%	60 - 130%	118
d4-1,2-dichloroethane (Surrogate)	BH2 0.5-0.8	SE130614.004	%	60 - 130%	79
	BH2 4.5-4.8	SE130614.005	%	60 - 130%	93
	BH2 5.1-5.25	SE130614.006	%	60 - 130%	96
	BH3 1.5-1.8	SE130614.008	%	60 - 130%	114
	BH5 0.1-0.4	SE130614.010	%	60 - 130%	114
	BH5 0.6-0.7	SE130614.011	%	60 - 130%	114
	BH9 0.2-0.5	SE130614.016	%	60 - 130%	119
	BH9 2.0-2.3	SE130614.017	%	60 - 130%	97

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 %
d4-1,2-dichloroethane (Surrogate)	BH9 2.55-2.65	SE130614.018	%	60 - 130%	104
	BH10 0.23-0.5	SE130614.019	%	60 - 130%	107
	BH10 0.55-0.65	SE130614.020	%	60 - 130%	115
	Duplicate D2	SE130614.021	%	60 - 130%	108
d8-toluene (Surrogate)	BH2 0.5-0.8	SE130614.004	%	60 - 130%	110
	BH2 4.5-4.8	SE130614.005	%	60 - 130%	117
	BH2 5.1-5.25	SE130614.006	%	60 - 130%	99
	BH3 1.5-1.8	SE130614.008	%	60 - 130%	115
	BH5 0.1-0.4	SE130614.010	%	60 - 130%	116
	BH5 0.6-0.7	SE130614.011	%	60 - 130%	119
	BH9 0.2-0.5	SE130614.016	%	60 - 130%	119
	BH9 2.0-2.3	SE130614.017	%	60 - 130%	96
	BH9 2.55-2.65	SE130614.018	%	60 - 130%	90
	BH10 0.23-0.5	SE130614.019	%	60 - 130%	111
	BH10 0.55-0.65	SE130614.020	%	60 - 130%	118
	Duplicate D2	SE130614.021	%	60 - 130%	105
Dibromofluoromethane (Surrogate)	BH2 0.5-0.8	SE130614.004	%	60 - 130%	89
	BH2 4.5-4.8	SE130614.005	%	60 - 130%	101
	BH2 5.1-5.25	SE130614.006	%	60 - 130%	107
	BH3 1.5-1.8	SE130614.008	%	60 - 130%	124
	BH5 0.1-0.4	SE130614.010	%	60 - 130%	122
	BH5 0.6-0.7	SE130614.011	%	60 - 130%	120
	BH9 0.2-0.5	SE130614.016	%	60 - 130%	127
	BH9 2.0-2.3	SE130614.017	%	60 - 130%	104
	BH9 2.55-2.65	SE130614.018	%	60 - 130%	108
	BH10 0.23-0.5	SE130614.019	%	60 - 130%	113
	BH10 0.55-0.65	SE130614.020	%	60 - 130%	114
	Duplicate D2	SE130614.021	%	60 - 130%	115

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

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

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

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

Sample Number	Parameter	Units	LOR

Mercury (dissolved) in Water

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

Sample Number	Parameter	Units	LOR	Result
LB062755.001	Mercury	mg/L	0.0001	<0.0001

Mercury in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB062739.001	Mercury	mg/kg	0.01	<0.01
LB062741.001	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
LB062600.001	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
LB062562.001		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)	%	-	101
LB062563.001		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1
		Alpha BHC	mg/kg	0.1	<0.1
		Lindane	mg/kg	0.1	<0.1
		Heptachlor	mg/kg	0.1	<0.1
		Aldrin	mg/kg	0.1	<0.1
		Beta BHC	mg/kg	0.1	<0.1
		Delta BHC	mg/kg	0.1	<0.1
		Heptachlor epoxide	mg/kg	0.1	<0.1
		Alpha Endosulfan	mg/kg	0.2	<0.2
		Gamma Chlordane	mg/kg	0.1	<0.1
		Alpha Chlordane	mg/kg	0.1	<0.1

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

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

OC Pesticides in Soil (continued)

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

Sample Number		Parameter	Units	LOR	Result
LB062563.001		p,p'-DDE	mg/kg	0.1	<0.1
		Dieldrin	mg/kg	0.05	<0.05
		Endrin	mg/kg	0.2	<0.2
		Beta Endosulfan	mg/kg	0.2	<0.2
		p,p'-DDD	mg/kg	0.1	<0.1
		p,p'-DDT	mg/kg	0.1	<0.1
		Endosulfan sulphate	mg/kg	0.1	<0.1
		Endrin Aldehyde	mg/kg	0.1	<0.1
		Methoxychlor	mg/kg	0.1	<0.1
		Endrin Ketone	mg/kg	0.1	<0.1
		Isodrin	mg/kg	0.1	<0.1
		Mirex	mg/kg	0.1	<0.1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	103

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB062562.001		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(b&j&k)fluoranthene	mg/kg	0.2	<0.2
		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)	%	-	96
		d14-p-terphenyl (Surrogate)	%	-	102
LB062563.001		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(b&j&k)fluoranthene	mg/kg	0.2	<0.2
		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)	%	-	86
		2-fluorobiphenyl (Surrogate)	%	-	80
		d14-p-terphenyl (Surrogate)	%	-	90

PCBs in Soil

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

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.

PCBs in Soil (continued)

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

Sample Number		Parameter	Units	LOR	Result
LB062562.001		Arochlor 1016	mg/kg	0.2	<0.2
		Arochlor 1221	mg/kg	0.2	<0.2
		Arochlor 1232	mg/kg	0.2	<0.2
		Arochlor 1242	mg/kg	0.2	<0.2
		Arochlor 1248	mg/kg	0.2	<0.2
		Arochlor 1254	mg/kg	0.2	<0.2
		Arochlor 1260	mg/kg	0.2	<0.2
		Arochlor 1262	mg/kg	0.2	<0.2
		Arochlor 1268	mg/kg	0.2	<0.2
		Total PCBs (Arochlors)	mg/kg	1	<1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	101
LB062563.001		Arochlor 1016	mg/kg	0.2	<0.2
		Arochlor 1221	mg/kg	0.2	<0.2
		Arochlor 1232	mg/kg	0.2	<0.2
		Arochlor 1242	mg/kg	0.2	<0.2
		Arochlor 1248	mg/kg	0.2	<0.2
		Arochlor 1254	mg/kg	0.2	<0.2
		Arochlor 1260	mg/kg	0.2	<0.2
		Arochlor 1262	mg/kg	0.2	<0.2
		Arochlor 1268	mg/kg	0.2	<0.2
		Total PCBs (Arochlors)	mg/kg	1	<1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	103

Total Cyanide in soil by Discrete Analyser (Aquakem)

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

Sample Number	Parameter	Units	LOR	Result
LB062764.001	Total Cyanide	mg/kg	0.1	<0.1

Total Phenolics in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB062763.001	Total Phenols	mg/kg	0.1	<0.1
LB062835.001	Total Phenols	mg/kg	0.1	<0.1

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

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

Sample Number	Parameter	Units	LOR	Result
LB062732.001	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
LB062733.001	Arsenic, As	mg/kg	3	<3
	Cadmium, Cd	mg/kg	0.3	<0.3
	Chromium, Cr	mg/kg	0.3	<0.3
	Copper, Cu	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Nickel, Ni	mg/kg	0.5	<0.5
	Zinc, Zn	mg/kg	0.5	<0.5

TRH (Total Recoverable Hydrocarbons) in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB062562.001	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
LB062563.001	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

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 (continued)

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

Sample Number		Parameter	Units	LOR	Result
LB062563.001		TRH C10-C36 Total	mg/kg	110	<110

VOC's in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB062558.001	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)	%	-	96
		d4-1,2-dichloroethane (Surrogate)	%	-	92
		d8-toluene (Surrogate)	%	-	107
		Bromofluorobenzene (Surrogate)	%	-	96
	Totals	Total BTEX*	mg/kg	0.6	<0.3

Volatile Petroleum Hydrocarbons in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB062558.001		TRH C6-C9	mg/kg	20	<20
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	96
		d4-1,2-dichloroethane (Surrogate)	%	-	92
		d8-toluene (Surrogate)	%	-	107

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 %
SE130689.001	LB062755.014	Mercury	µg/L	0.0001	<0.00005	0.00000	200	6
SE130742.002	LB062755.019	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 %
SE130591.008	LB062739.014	Mercury	mg/kg	0.01	<0.01	<0.01	200	0
SE130614.005	LB062739.024	Mercury	mg/kg	0.01	0.40	0.46	42	14
SE130614.015	LB062741.014	Mercury	mg/kg	0.01	0.02	0.02	200	0
SE130617.003	LB062741.024	Mercury	mg/kg	0.01	0.02	0.02	200	0

Moisture Content

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE130614.010	LB062788.011	% Moisture	%w/w	0.5	23	23	34	1
SE130614.020	LB062788.022	% Moisture	%	0.5	16	17	36	8
SE130614.021	LB062788.024	% Moisture	%	0.5	21	21	35	1

OC Pesticides in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE130614.011	LB062562.020		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Lindane	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor	mg/kg	0.1	<0.1	<0.1	200	0
			Aldrin	mg/kg	0.1	<0.1	<0.1	200	0
			Beta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Delta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Dieldrin	mg/kg	0.05	<0.05	<0.05	200	0
			Endrin	mg/kg	0.2	<0.2	<0.2	200	0
			o,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	200	0
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Ketone	mg/kg	0.1	<0.1	<0.1	200	0
			Isodrin	mg/kg	0.1	<0.1	<0.1	200	0
			Mirex	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.16	0.16	30	1
SE130614.020	LB062563.008		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Lindane	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor	mg/kg	0.1	<0.1	<0.1	200	0
			Aldrin	mg/kg	0.1	<0.1	<0.1	200	0
			Beta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Delta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0

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

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

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

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

OC Pesticides in Soil (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE130614.020	LB062563.008		Dieldrin	mg/kg	0.05	<0.05	<0.05	200	0
			Endrin	mg/kg	0.2	<0.2	<0.2	200	0
			o,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	200	0
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Ketone	mg/kg	0.1	<0.1	<0.1	200	0
			Isodrin	mg/kg	0.1	<0.1	<0.1	200	0
			Mirex	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.16	0.16	30	1

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE130602.001	LB062562.004		Naphthalene	mg/kg	0.1	<0.1	<0.1	148	0
			2-methylnaphthalene	mg/kg	0.1	0.7	0.5	46	33
			1-methylnaphthalene	mg/kg	0.1	0.9	0.6	43	37
			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(b&j&k)fluoranthene	mg/kg	0.2	<0.2	<0.2	200	0
			Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	200	0
			Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.2	<0.2	<0.2	200	0
			Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.3	<0.3	<0.3	134	0
			Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.2	<0.2	<0.2	175	0
			Total PAH	mg/kg	0.8	1.8	1.2	83	38
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.50	0.53	30	6
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.45	0.49	30	9
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.46	0.50	30	8
SE130614.011	LB062562.023		Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthylene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluorene	mg/kg	0.1	<0.1	<0.1	200	0
			Phenanthrene	mg/kg	0.1	<0.1	<0.1	197	0
			Anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluoranthene	mg/kg	0.1	0.2	0.1	101	29
			Pyrene	mg/kg	0.1	0.2	0.1	110	40
			Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	184	0
			Chrysene	mg/kg	0.1	<0.1	<0.1	184	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(b&j&k)fluoranthene	mg/kg	0.2	<0.2	<0.2	200	0
			Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	197	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

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 %
SE130614.011	LB062562.023		Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	200	0
			Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.2	<0.2	<0.2	200	0
			Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.3	<0.3	<0.3	134	0
			Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.2	<0.2	<0.2	175	0
			Total PAH	mg/kg	0.8	<0.8	<0.8	155	0
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.43	0.43	30	0
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.40	0.41	30	2
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.45	0.47	30	4
SE130614.020	LB062563.008		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(b&j&k)fluoranthene	mg/kg	0.2	<0.2	<0.2	200	0
			Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	200	0
			Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.2	<0.2	<0.2	200	0
			Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.3	<0.3	<0.3	134	0
			Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.2	<0.2	<0.2	175	0
			Total PAH	mg/kg	0.8	<0.8	<0.8	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.42	0.42	30	0
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.40	0.40	30	0
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.48	0.48	30	0

PCBs in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE130614.011	LB062562.020		Arochlor 1016	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1221	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1232	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1242	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1248	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1254	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1260	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1262	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1268	mg/kg	0.2	<0.2	<0.2	200	0
			Total PCBs (Arochlors)	mg/kg	1	<1	<1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	30	1
SE130614.020	LB062563.008		Arochlor 1016	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1221	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1232	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1242	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1248	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1254	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1260	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1262	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1268	mg/kg	0.2	<0.2	<0.2	200	0
			Total PCBs (Arochlors)	mg/kg	1	<1	<1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	30	1

pH in soil (1:5)

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

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.

pH in soil (1:5) (continued)

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE130614.011	LB062682.014	pH	pH Units	-	5.9	5.9	32	1
SE130614.020	LB062682.024	pH	pH Units	-	4.7	4.5	32	3

TOC in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE130614.011	LB062858.015	Total Organic Carbon	%w/w	0.05	0.62	0.59	23	4
SE130614.020	LB062858.024	Total Organic Carbon	%w/w	0.05	0.16	0.16	46	3

Total Cyanide in soil by Discrete Analyser (Aquakem)

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE130614.004	LB062764.004	Total Cyanide	mg/kg	0.1	0.2	0.2	200	0

Total Phenolics in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE130614.004	LB062763.004	Total Phenols	mg/kg	0.1	0.6	0.7	30	13
SE130614.020	LB062835.004	Total Phenols	mg/kg	0.1	<0.1	0.2	94	56
SE130633.001	LB062763.015	Total Phenols	mg/kg	0.1	1.8	1.9	21	6

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 %
SE130591.008	LB062732.014	Arsenic, As	mg/kg	3	<3	<3	200	0
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.3	2.8	2.7	48	2
		Copper, Cu	mg/kg	0.5	<0.5	<0.5	200	0
		Lead, Pb	mg/kg	1	<1	<1	200	0
		Nickel, Ni	mg/kg	0.5	1.3	1.3	69	1
		Zinc, Zn	mg/kg	0.5	0.9	0.5	200	0
SE130614.005	LB062732.024	Arsenic, As	mg/kg	3	30	29	33	1
		Cadmium, Cd	mg/kg	0.3	0.8	0.7	70	4
		Chromium, Cr	mg/kg	0.3	52	50	31	4
		Copper, Cu	mg/kg	0.5	130	130	30	1
		Lead, Pb	mg/kg	1	120	110	31	5
		Nickel, Ni	mg/kg	0.5	8.3	7.7	36	7
		Zinc, Zn	mg/kg	0.5	260	240	31	7
SE130614.015	LB062733.014	Arsenic, As	mg/kg	3	4	5	51	13
		Cadmium, Cd	mg/kg	0.3	0.5	0.5	95	4
		Chromium, Cr	mg/kg	0.3	97	57	31	52 ②
		Copper, Cu	mg/kg	0.5	15	14	33	9
		Lead, Pb	mg/kg	1	10	9	41	2
		Nickel, Ni	mg/kg	0.5	50	42	31	17
		Zinc, Zn	mg/kg	0.5	35	32	36	8
SE130617.003	LB062733.024	Arsenic, As	mg/kg	3	<3	<3	200	0
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.3	3.6	3.5	44	5
		Copper, Cu	mg/kg	0.5	2.9	2.8	48	5
		Lead, Pb	mg/kg	1	15	19	36	24
		Nickel, Ni	mg/kg	0.5	2.6	2.5	49	4
		Zinc, Zn	mg/kg	0.5	12	15	45	18

TRH (Total Recoverable Hydrocarbons) in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE130602.001	LB062562.004		TRH C10-C14	mg/kg	20	140	120	45	14
			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	140	120	114	14
			TRH C10-C40 Total	mg/kg	210	<210	<210	190	0
		TRH F Bands	TRH >C10-C16 (F2)	mg/kg	25	150	130	48	15

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

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

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

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

TRH (Total Recoverable Hydrocarbons) in Soil (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE130602.001	LB062562.004	TRH F Bands	TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0
SE130614.011	LB062562.021		TRH C10-C14	mg/kg	20	<20	<20	200	0
			TRH C15-C28	mg/kg	45	<45	<45	200	0
			TRH C29-C36	mg/kg	45	<45	<45	200	0
			TRH C37-C40	mg/kg	100	<100	<100	200	0
			TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
			TRH C10-C40 Total	mg/kg	210	<210	<210	200	0
		TRH F Bands	TRH >C10-C16 (F2)	mg/kg	25	<25	<25	200	0
			TRH >C10-C16 (F2) minus Naphthalene	mg/kg	25	<25	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0
SE130614.020	LB062563.008		TRH C10-C14	mg/kg	20	<20	<20	200	0
			TRH C15-C28	mg/kg	45	<45	<45	200	0
			TRH C29-C36	mg/kg	45	<45	<45	200	0
			TRH C37-C40	mg/kg	100	<100	<100	200	0
			TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
			TRH C10-C40 Total	mg/kg	210	<210	<210	200	0
		TRH F Bands	TRH >C10-C16 (F2)	mg/kg	25	<25	<25	200	0
			TRH >C10-C16 (F2) minus Naphthalene	mg/kg	25	<25	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0

VOC's in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE130614.011	LB062558.015	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	-	6.0	5.6	50	7
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.7	5.2	50	10
			d8-toluene (Surrogate)	mg/kg	-	5.9	5.4	50	9
			Bromofluorobenzene (Surrogate)	mg/kg	-	5.7	5.8	50	3
		Totals	Total Xylenes*	mg/kg	0.3	<0.3	<0.3	200	0
			Total BTEX*	mg/kg	0.6	<0.6	<0.3	200	0
SE130614.021	LB062558.022	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	-	5.8	5.6	50	2
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.4	5.3	50	2
			d8-toluene (Surrogate)	mg/kg	-	5.2	5.2	50	1
			Bromofluorobenzene (Surrogate)	mg/kg	-	5.9	5.4	50	9
		Totals	Total Xylenes*	mg/kg	0.3	<0.3	<0.3	200	0
			Total BTEX*	mg/kg	0.6	<0.6	<0.6	200	0

Volatile Petroleum Hydrocarbons in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE130614.011	LB062558.015		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	-	6.0	5.6	30	7
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.7	5.2	30	10
			d8-toluene (Surrogate)	mg/kg	-	5.9	5.4	30	9
			Bromofluorobenzene (Surrogate)	mg/kg	-	5.7	5.8	30	3
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0
SE130614.021	LB062558.022		TRH C6-C10	mg/kg	25	<25	<25	200	0
			TRH C6-C9	mg/kg	20	<20	<20	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.

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE130614.021	LB062558.022	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	5.8	5.6	30	2
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.4	5.3	30	2
			d8-toluene (Surrogate)	mg/kg	-	5.2	5.2	30	1
			Bromofluorobenzene (Surrogate)	mg/kg	-	5.9	5.4	30	9
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0

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 %
LB062800.002	Exchangeable Sodium, Na	mg/kg	2	NA	160	80 - 120	119
	Exchangeable Potassium, K	mg/kg	2	NA	330	80 - 120	101
	Exchangeable Calcium, Ca	mg/kg	2	NA	4347	80 - 120	99
	Exchangeable Magnesium, Mg	mg/kg	2	NA	1578	80 - 120	97
LB062801.002	Exchangeable Sodium, Na	mg/kg	2	NA	160	80 - 120	118
	Exchangeable Potassium, K	mg/kg	2	NA	330	80 - 120	102
	Exchangeable Calcium, Ca	mg/kg	2	NA	4347	80 - 120	97
	Exchangeable Magnesium, Mg	mg/kg	2	NA	1578	80 - 120	96

Mercury in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB062739.002	Mercury	mg/kg	0.01	0.20	0.2	70 - 130	101
LB062741.002	Mercury	mg/kg	0.01	0.22	0.2	70 - 130	109

Metals in Water (Dissolved) by ICPOES

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB062600.002	Arsenic, As	mg/L	0.02	1.9	2	80 - 120	97
	Cadmium, Cd	mg/L	0.001	2.0	2	80 - 120	98
	Chromium, Cr	mg/L	0.005	2.0	2	80 - 120	98
	Copper, Cu	mg/L	0.005	2.0	2	80 - 120	98
	Lead, Pb	mg/L	0.02	2.0	2	80 - 120	98
	Nickel, Ni	mg/L	0.005	2.0	2	80 - 120	98
	Zinc, Zn	mg/L	0.01	2.0	2	80 - 120	99

OC Pesticides in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB062562.002		Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	117
		Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	122
		Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	112
		Dieldrin	mg/kg	0.05	0.23	0.2	60 - 140	115
		Endrin	mg/kg	0.2	0.2	0.2	60 - 140	121
		p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	100
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.16	0.15	40 - 130	104
LB062563.002		Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	118
		Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	120
		Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	112
		Dieldrin	mg/kg	0.05	0.23	0.2	60 - 140	116
		Endrin	mg/kg	0.2	0.2	0.2	60 - 140	121
		p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	100
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.15	0.15	40 - 130	99

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB062562.002		Naphthalene	mg/kg	0.1	3.7	4	60 - 140	93
		Acenaphthylene	mg/kg	0.1	3.8	4	60 - 140	95
		Acenaphthene	mg/kg	0.1	4.0	4	60 - 140	99
		Phenanthrene	mg/kg	0.1	3.5	4	60 - 140	87
		Anthracene	mg/kg	0.1	3.3	4	60 - 140	84
		Fluoranthene	mg/kg	0.1	3.6	4	60 - 140	90
		Pyrene	mg/kg	0.1	3.6	4	60 - 140	89
		Benzo(a)pyrene	mg/kg	0.1	4.0	4	60 - 140	99
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.47	0.5	40 - 130	94
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.46	0.5	40 - 130	92
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.43	0.5	40 - 130	86
LB062563.002		Naphthalene	mg/kg	0.1	3.6	4	60 - 140	90
		Acenaphthylene	mg/kg	0.1	3.6	4	60 - 140	89
		Acenaphthene	mg/kg	0.1	3.7	4	60 - 140	93
		Phenanthrene	mg/kg	0.1	3.7	4	60 - 140	93
		Anthracene	mg/kg	0.1	3.5	4	60 - 140	87
		Fluoranthene	mg/kg	0.1	4.0	4	60 - 140	100
		Pyrene	mg/kg	0.1	3.8	4	60 - 140	94
		Benzo(a)pyrene	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 %
LB062563.002	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.44	0.5	40 - 130	88
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.43	0.5	40 - 130	86
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.44	0.5	40 - 130	88

PCBs in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB062562.002	Arochlor 1260	mg/kg	0.2	0.5	0.4	60 - 140	119
LB062563.002	Arochlor 1260	mg/kg	0.2	0.5	0.4	60 - 140	125

pH in soil (1:5)

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB062682.001	pH	pH Units	-	7.4	7.415	98 - 102	100
LB062682.025	pH	pH Units	-	7.4	7.415	98 - 102	100

TOC in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB062858.002	Total Organic Carbon	%w/w	0.05	0.31	0.325	80 - 120	96

Total Cyanide in soil by Discrete Analyser (Aquakem)

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB062764.002	Total Cyanide	mg/kg	0.1	0.3	0.25	70 - 130	104

Total Phenolics in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB062763.002	Total Phenols	mg/kg	0.1	2.2	2.5	70 - 130	88
LB062835.002	Total Phenols	mg/kg	0.1	2.2	2.5	70 - 130	90

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 %
LB062732.002	Arsenic, As	mg/kg	3	53	50	80 - 120	105
	Cadmium, Cd	mg/kg	0.3	53	50	80 - 120	105
	Chromium, Cr	mg/kg	0.3	53	50	80 - 120	105
	Copper, Cu	mg/kg	0.5	52	50	80 - 120	103
	Lead, Pb	mg/kg	1	53	50	80 - 120	106
	Nickel, Ni	mg/kg	0.5	53	50	80 - 120	106
	Zinc, Zn	mg/kg	0.5	53	50	80 - 120	107
LB062733.002	Arsenic, As	mg/kg	3	52	50	80 - 120	103
	Cadmium, Cd	mg/kg	0.3	53	50	80 - 120	105
	Chromium, Cr	mg/kg	0.3	52	50	80 - 120	104
	Copper, Cu	mg/kg	0.5	52	50	80 - 120	103
	Lead, Pb	mg/kg	1	53	50	80 - 120	105
	Nickel, Ni	mg/kg	0.5	53	50	80 - 120	105
	Zinc, Zn	mg/kg	0.5	53	50	80 - 120	106

TRH (Total Recoverable Hydrocarbons) in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB062562.002		TRH C10-C14	mg/kg	20	37	40	60 - 140	93
		TRH C15-C28	mg/kg	45	<45	40	60 - 140	90
		TRH C29-C36	mg/kg	45	<45	40	60 - 140	85
	TRH F Bands	TRH >C10-C16 (F2)	mg/kg	25	37	40	60 - 140	93
		TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	90
		TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	95
LB062563.002		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	78
	TRH F Bands	TRH >C10-C16 (F2)	mg/kg	25	39	40	60 - 140	98
		TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	93

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

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

TRH (Total Recoverable Hydrocarbons) in Soil (continued)

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB062563.002	TRH F Bands	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 %
LB062558.002	Monocyclic	Benzene	mg/kg	0.1	2.1	2.9	60 - 140	73
	Aromatic	Toluene	mg/kg	0.1	2.6	2.9	60 - 140	89
		Ethylbenzene	mg/kg	0.1	2.4	2.9	60 - 140	83
		m/p-xylene	mg/kg	0.2	4.6	5.8	60 - 140	80
		o-xylene	mg/kg	0.1	2.4	2.9	60 - 140	82
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.5	5	60 - 140	90
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.5	5	60 - 140	89
		d8-toluene (Surrogate)	mg/kg	-	5.2	5	60 - 140	104
		Bromofluorobenzene (Surrogate)	mg/kg	-	5.1	5	60 - 140	102

Volatile Petroleum Hydrocarbons in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB062558.002		TRH C6-C10	mg/kg	25	<25	24.65	60 - 140	92
		TRH C6-C9	mg/kg	20	20	23.2	60 - 140	87
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.5	5	60 - 140	90
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.5	5	60 - 140	89
		d8-toluene (Surrogate)	mg/kg	-	5.2	5	60 - 140	104
		Bromofluorobenzene (Surrogate)	mg/kg	-	5.1	5	60 - 140	102
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	7.25	60 - 140	119

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%
SE130614.024	LB062755.004	Mercury	mg/L	0.0001	0.0076	0.0002	0.008	93

Mercury in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE130590.012	LB062739.004	Mercury	mg/kg	0.01	0.19	<0.01	0.2	92
SE130614.006	LB062741.004	Mercury	mg/kg	0.01	0.21	0.02	0.2	94

Metals in Water (Dissolved) by ICPOES

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE130614.024	LB062600.004	Arsenic, As	mg/L	0.02	2.0	<0.02	2	100
		Cadmium, Cd	mg/L	0.001	2.0	<0.001	2	100
		Chromium, Cr	mg/L	0.005	2.0	<0.005	2	100
		Copper, Cu	mg/L	0.005	2.0	<0.005	2	100
		Lead, Pb	mg/L	0.02	2.0	<0.02	2	101
		Nickel, Ni	mg/L	0.005	2.0	<0.005	2	101
		Zinc, Zn	mg/L	0.01	2.0	<0.01	2	102

OC Pesticides in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE130614.012	LB062562.022	Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	-	-
		Alpha BHC	mg/kg	0.1	<0.1	<0.1	-	-
		Lindane	mg/kg	0.1	<0.1	<0.1	-	-
		Heptachlor	mg/kg	0.1	0.3	<0.1	0.2	126
		Aldrin	mg/kg	0.1	0.3	<0.1	0.2	128
		Beta BHC	mg/kg	0.1	<0.1	<0.1	-	-
		Delta BHC	mg/kg	0.1	0.2	<0.1	0.2	119
		Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	-	-
		o,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
		Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
		Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
		Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
		trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	-	-
		p,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
		Dieldrin	mg/kg	0.05	0.24	<0.05	0.2	122
		Endrin	mg/kg	0.2	0.3	<0.2	0.2	127
		o,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
		o,p'-DDT	mg/kg	0.1	<0.1	<0.1	-	-
		Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
		p,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
		p,p'-DDT	mg/kg	0.1	0.2	<0.1	0.2	109
		Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	-	-
		Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	-	-
		Methoxychlor	mg/kg	0.1	<0.1	<0.1	-	-
		Endrin Ketone	mg/kg	0.1	<0.1	<0.1	-	-
		Isodrin	mg/kg	0.1	<0.1	<0.1	-	-
		Mirex	mg/kg	0.1	<0.1	<0.1	-	-
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.16	0.16	-	106

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE130614.001	LB062562.010	Naphthalene	mg/kg	0.1	3.6	<0.1	4	90
		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	3.4	<0.1	4	86
		Acenaphthene	mg/kg	0.1	3.7	<0.1	4	93
		Fluorene	mg/kg	0.1	<0.1	<0.1	-	-
		Phenanthrene	mg/kg	0.1	3.6	<0.1	4	91
		Anthracene	mg/kg	0.1	3.5	<0.1	4	86
		Fluoranthene	mg/kg	0.1	4.4	<0.1	4	111

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE130614.001	LB062562.010		Pyrene	mg/kg	0.1	3.7	<0.1	4	92
			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(b&j&k)fluoranthene	mg/kg	0.2	<0.2	<0.2	-	-
			Benzo(a)pyrene	mg/kg	0.1	3.7	<0.1	4	93
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	-	-
			Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	-	-
			Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.2	3.7	<0.2	-	-
			Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.3	3.9	<0.3	-	-
			Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.2	3.8	<0.2	-	-
			Total PAH	mg/kg	0.8	30	<0.8	-	-
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.43	0.43	-	86
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.42	0.42	-	84
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.45	0.47	-	90

TOC in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE130614.001	LB062858.004	Total Organic Carbon	%w/w	0.05	0.42	0.10	-	-

Total Phenolics in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE130617.008	LB062835.014	Total Phenols	mg/kg	0.1	2.3	<0.1	2.5	92

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%
SE130590.012	LB062732.004	Arsenic, As	mg/kg	3	47	<3	50	88
		Cadmium, Cd	mg/kg	0.3	46	<0.3	50	92
		Chromium, Cr	mg/kg	0.3	58	12	50	92
		Copper, Cu	mg/kg	0.5	47	<0.5	50	94
		Lead, Pb	mg/kg	1	63	17	50	91
		Nickel, Ni	mg/kg	0.5	47	0.8	50	93
		Zinc, Zn	mg/kg	0.5	49	1.5	50	94
SE130614.006	LB062733.004	Arsenic, As	mg/kg	3	52	10	50	85
		Cadmium, Cd	mg/kg	0.3	44	0.3	50	88
		Chromium, Cr	mg/kg	0.3	60	18	50	85
		Copper, Cu	mg/kg	0.5	53	8.5	50	88
		Lead, Pb	mg/kg	1	61	22	50	78
		Nickel, Ni	mg/kg	0.5	46	1.9	50	89
		Zinc, Zn	mg/kg	0.5	60	19	50	83

VOC's in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE130602.004	LB062558.009	Monocyclic	Benzene	mg/kg	0.1	2.1	<0.1	2.9	73
		Aromatic	Toluene	mg/kg	0.1	2.5	<0.1	2.9	87
			Ethylbenzene	mg/kg	0.1	2.2	<0.1	2.9	75
			m/p-xylene	mg/kg	0.2	4.1	<0.2	5.8	71
			o-xylene	mg/kg	0.1	2.2	<0.1	2.9	74
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<1.0	-	-
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.7	4.1	5	95
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.7	3.9	5	93
			d8-toluene (Surrogate)	mg/kg	-	5.2	4.8	5	104
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.6	5.2	5	92
		Totals	Total Xylenes*	mg/kg	0.3	6.3	<0.3	-	-
			Total BTEX*	mg/kg	0.6	13	<0.3	-	-

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

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

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE130614.004	LB062558.009		TRH C6-C10	mg/kg	25	<25	<25	24.65	86
			TRH C6-C9	mg/kg	20	<20	<20	23.2	81
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.7	4.5	5	95
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.7	4.0	5	93
			d8-toluene (Surrogate)	mg/kg	-	5.2	5.5	5	104
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.6	5.4	5	92
		VPH F	Benzene (F0)	mg/kg	0.1	2.1	<0.1	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	7.25	112

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

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

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

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

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

OC Pesticides in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE130614.012	LB062562.023		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	-
			Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	-
			Lindane	mg/kg	0.1	<0.1	<0.1	200	-
			Heptachlor	mg/kg	0.1	0.3	0.3	69	1
			Aldrin	mg/kg	0.1	0.3	0.3	69	2
			Beta BHC	mg/kg	0.1	<0.1	<0.1	200	-
			Delta BHC	mg/kg	0.1	0.2	0.2	72	3
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	-
			o,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	-
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	200	-
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	-
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	-
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	-
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	-
			Dieldrin	mg/kg	0.05	0.24	0.25	71	1
			Endrin	mg/kg	0.2	0.3	0.3	69	2
			o,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	-
			o,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	-
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	-
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	-
			p,p'-DDT	mg/kg	0.1	0.2	0.2	76	0
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	-
			Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	200	-
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	-
			Endrin Ketone	mg/kg	0.1	<0.1	<0.1	200	-
			Isodrin	mg/kg	0.1	<0.1	<0.1	200	-
			Mirex	mg/kg	0.1	<0.1	<0.1	200	-
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.16	0.16	30	1

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE130614.001	LB062562.011		Naphthalene	mg/kg	0.1	3.6	3.7	33	2
			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	3.4	3.7	33	7
			Acenaphthene	mg/kg	0.1	3.7	3.8	33	2
			Fluorene	mg/kg	0.1	<0.1	<0.1	200	-
			Phenanthrene	mg/kg	0.1	3.6	3.7	33	2
			Anthracene	mg/kg	0.1	3.5	3.5	33	2
			Fluoranthene	mg/kg	0.1	4.4	4.3	32	2
			Pyrene	mg/kg	0.1	3.7	3.8	33	5
			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(b&j&k)fluoranthene	mg/kg	0.2	<0.2	<0.2	200	-
			Benzo(a)pyrene	mg/kg	0.1	3.7	3.8	33	3
			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	-
			Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.2	3.7	3.8	15	-
			Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.3	3.9	4.0	18	-
			Carcinogenic PAHs (as BaP TEQ)-assume results	TEQ (mg/kg)	0.2	3.8	3.9	15	-
			Total PAH	mg/kg	0.8	30	30	33	-
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.43	0.44	30	2
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.42	0.43	30	2
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.45	0.46	30	2

Samples analysed as received.

Solid samples expressed on a dry weight basis.

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

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

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

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

ANALYTICAL REPORT

WORLD RECOGNISED ACCREDITATION

CLIENT DETAILS

Contact	An Nguyen
Client	Geotechnique
Address	P.O. Box 880 NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	anguyen@geotech.com.au
Project	**13188-2 - Concord**
Order Number	(Not specified)
Samples	28

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	SE130614 R0
Report Number	0000089956
Date Reported	26 Aug 2014
Date Received	18 Aug 2014

COMMENTS

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

Sample # 11:portion of the sample supplied has been sub-sampled for asbestos according to SGS In-house procedures. We therefore cannot guarantee that the sub-sample is representative of the entire sample supplied.
SGS Environmental Services recommends supplying approximately 50-100g of sample in a separate container.
No respirable fibres detected in all samples using trace analysis technique.
Asbestos analysed by Approved Identifier Yusuf Kuthpudin.

SIGNATORIES

Andy Sutton
Senior Organic Chemist

Dong Liang
Metals/Inorganics Team Leader

Huong Crawford
Production Manager

Jaimie Cheung
Metals Chemist

Ly Kim Ha
Organic Section Head

Sheila Lepasana
Senior Technician

ANALYTICAL REPORT

RESULTS

Fibre Identification in soil — Method AN602

Laboratory Reference	Client Reference	Matrix	Sample Description	Date Sampled	Fibre Identification	Est.%w/w
SE130614.001	BH1 1.5-1.8	Soil	56 g Clay	07 Aug 2014	No Asbestos Found	<0.01
SE130614.003	BH2 0-0.15	Soil	80 g Clay,sand,soil,rocks	11 Aug 2014	No Asbestos Found Organic Fibres Detected	<0.01
SE130614.004	BH2 0.5-0.8	Soil	182 g Clay,sand,soil,rocks	11 Aug 2014	No Asbestos Found	<0.01
SE130614.005	BH2 4.5-4.8	Soil	180 g Clay,sand,soil,rocks	11 Aug 2014	No Asbestos Found Organic Fibres Detected	<0.01
SE130614.007	BH3 0-0.1	Soil	81 g Sand,soil,rocks	12 Aug 2014	No Asbestos Found Organic Fibres Detected	<0.01
SE130614.008	BH3 1.5-1.8	Soil	142 g Clay,sand,soil	12 Aug 2014	No Asbestos Found Organic Fibres Detected	<0.01
SE130614.009	BH4 0-0.15	Soil	102 g Clay,sand,soil,rocks	12 Aug 2014	No Asbestos Found Organic Fibres Detected	<0.01
SE130614.010	BH5 0.1-0.4	Soil	145 g Clay,soil,rocks	13 Aug 2014	No Asbestos Found Organic Fibres Detected	<0.01
SE130614.011	BH5 0.6-0.7	Soil	104 g Clay,sand,soil	13 Aug 2014	No Asbestos Found	<0.01
SE130614.013	BH7 0.15-0.45	Soil	120 g Sand,soil,rocks	11 Aug 2014	No Asbestos Found	<0.01
SE130614.014	BH7 1.4-1.7	Soil	125 g Clay,sand,rocks	11 Aug 2014	No Asbestos Found	<0.01
SE130614.016	BH9 0.2-0.5	Soil	148 g Clay,soil,rocks	14 Aug 2014	No Asbestos Found	<0.01
SE130614.017	BH9 2.0-2.3	Soil	132 g Clay,soil,rocks	14 Aug 2014	No Asbestos Found	<0.01
SE130614.019	BH10 0.23-0.5	Soil	88 g Clay,soil	12 Aug 2014	No Asbestos Found	<0.01

METHOD SUMMARY

SE130614 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/~/media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf

Co c received 18/8/14 @ 2:31pm

RECEIVED
18 AUG 2014

SE130614.

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:	AN
PH:	02 8594 0400 FAX: 02 8594 0499	Project Manager:	AN
ATTN:	MS EMILY YIN	Job No:	13188/2
		Project:	
		Location:	Concord

Results required by: Standard Turnaround Time

	Location	Depth (m)	Date	Time	Sample type: Soil	Sample type: Material	Metals As, Cd, Cr, Cu, Pb, Hg, Ni and Zn	TPH* & BTEX	PAH	OCP	PCB	TOTAL PHENOLS	TOTAL CYANIDE	pH	CEC, TOC (%)	ASBESTOS	KEEP SAMPLE
	BH1	0.3-0.6	07/08/2014	-	SG/SP												YES
1	BH1	1.5-1.8	07/08/2014	-	SG/SP		✓		✓	✓				✓	✓	✓	YES
	BH1	2.5-2.8	07/08/2014	-	SG/SP												YES
2	BH1	3.15-3.25	07/08/2014	-	SG		✓		✓	✓				✓	✓		YES
3	BH2	0-0.15	11/08/2014	-	SG/SP		✓		✓	✓				✓	✓	✓	YES
4	BH2	0.5-0.8	11/08/2014	-	SG/SP		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	YES
	BH2	1.5-1.8	11/08/2014	-	SG/SP												YES
	BH2	3.0-3.3	11/08/2014	-	SG/SP												YES
5	BH2	4.5-4.8	11/08/2014	-	SG/SP		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	YES
6	BH2	5.1-5.25	11/08/2014	-	SG		✓	✓	✓	✓	✓	✓	✓	✓	✓		YES
7	BH3	0-0.1	12/08/2014	-	SG/SP		✓		✓	✓				✓	✓	✓	YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
AN NGUYEN	AN	18/8/2014	KALLA		18/08/2014.

Legend:

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

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

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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	Sampling By:	AN
		Job No:	13188/2
		Project:	
PH:	02 8594 0400 FAX: 02 8594 0499	Project Manager:	AN
		Location:	Concord
ATTN:	MS EMILY YIN		

Results required by: Standard Turnaround Time

	Location	Depth (m)	Date	Time	Sampling details: Soil	Sample type: Material	Metals As, Cd, Cr, Cu, Pb, Hg, Ni and Zn	TPH* & BTEX	PAH	OCP	PCB	TOTAL PHENOLS	TOTAL CYANIDE	pH	CEC, TOC (%)	ASBESTOS	KEEP SAMPLE
	BH3	0.1-0.4	12/08/2014	-	SG/SP												YES
	BH3	0.8-1.1	12/08/2014	-	SG/SP												YES
8	BH3	1.5-1.8	12/08/2014	-	SG/SP		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	YES
9	BH4	0-0.15	12/08/2014	-	SG/SP		✓		✓	✓				✓	✓	✓	YES
	BH4	0.2-0.5	12/08/2014	-	SG												YES
10	BH5	0.1-0.4	13/08/2014	-	SG/SP		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	YES
11	BH5	0.6-0.7	13/08/2014	-	SG		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	YES
	BH6	0.25-0.5	13/08/2014	-	SG/SP												YES
12	BH6	0.6-0.7	13/08/2014	-	SG		✓		✓	✓				✓	✓		YES
13	BH7	0.15-0.45	11/08/2014	-	SG/SP		✓		✓	✓				✓	✓	✓	YES
	BH7	0.9-1.2	11/08/2014	-	SG/SP												YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
AN NGUYEN	AN	18/8/2014	KANJA	Kanja	18/08/2014

Legend:

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

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

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

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

PH: 02 8594 0400 FAX: 02 8594 0499

ATTN: MS EMILY YIN

Sampling By: AN
Job No: 13188/2
Project:
Project Manager: AN
Location: Concord

Results required by: Standard Turnaround Time

	Sampling details				Sample type												
	Location	Depth (m)	Date	Time	Soil	Material	Metals As, Cd, Cr, Cu, Pb, Hg, Ni and Zn	TPH* & BTEX	PAH	OCP	PCB	TOTAL PHENOLS	TOTAL CYANIDE	pH	CEC, TOC (%)	ASBESTOS	KEEP SAMPLE
14	BH7	1.4-1.7	11/08/2014	-	SG/SP		✓		✓	✓				✓	✓	✓	YES
	BH7	2.2-2.5	11/08/2014	-	SG/SP												YES
15	BH8	0.2-0.4	14/08/2014	-	SG/SP		✓		✓	✓				✓			YES
16	BH9	0.2-0.5	14/08/2014	-	SG/SP		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	YES
	BH9	1.0-1.2	14/08/2014	-	SG/SP												YES
17	BH9	2.0-2.3	14/08/2014	-	SG/SP		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	YES
18	BH9	2.55-2.65	14/08/2014	-	SG		✓	✓	✓	✓	✓	✓	✓	✓	✓		YES
19	BH10	0.23-0.5	12/08/2014	-	SG/SP		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	YES
20	BH10	0.55-0.65	12/08/2014	-	SG		✓	✓	✓	✓	✓	✓	✓	✓	✓		YES
	Duplicate D1	-	07/08/2014	-	SG												YES
21	Duplicate D2	-	13/08/2014	-	SG		✓	✓	✓	✓	✓	✓	✓	✓			YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
AN NGUYEN	AN	18/8/2014	KARLA	[signature]	18/8/2014.

Legend:

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

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

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

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

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

ATTN: MS EMILY YIN

Sampling By: AN **Job No:** 13188/2

Project:

Project Manager: AN **Location:** Concord

Results required by: Standard Turnaround Time

Sampling details				Sample type										
Location	Depth (m)	Date	Time	Soil	Water	Metals As, Cd, Cr, Cu, Pb, Hg, Ni and Zn	BTEX							KEEP SAMPLE
22 Trip spike TS1	-	12/08/2014	-	SG			✓							YES
23 Trip spike TS2	-	14/08/2014	-	SG			✓							YES
24 Rinsate R1	-	07/08/2014	-		WG	✓								YES
25 Rinsate R2	-	11/08/2014	-		WG	✓								YES
26 Rinsate R3	-	12/08/2014	-		WG	✓								YES
27 Rinsate R4	-	13/08/2014	-		WG	✓								YES
28 Rinsate R5	-	14/08/2014	-		WG	✓								YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
AN NGUYEN	AN	18/8/2014	KANJA	Kanja	18/08/2014.

Legend:

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

* Purge & Trap

SAMPLE RECEIPT ADVICE

SE130614

CLIENT DETAILS

Contact	An Nguyen
Client	Geotechnique
Address	P.O. Box 880 NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	anguyen@geotech.com.au
Project	**13188-2 - Concord**
Order Number	(Not specified)
Samples	28

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 18/8/2014
Report Due	Mon 25/8/2014
SGS Reference	**SE130614**

SUBMISSION DETAILS

This is to confirm that 28 samples were received on Monday 18/8/2014. Results are expected to be ready by Monday 25/8/2014. Please quote SGS reference SE130614 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Sample counts by matrix	21 Soils, 5 Waters	Type of documentation received	COC
Date documentation received	18/08/2014@02:31pm	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	4.5°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

A separate homogenised portion (~100g) was not supplied for Asbestos analysis on sample "BH5 0.6-0.7". SGS will proceed by sub-sampling a portion from the glass jar supplied, on the provision that a comment will be reflected on the final report regarding this sub-sampling.
12 soil samples, which were not marked for analyses on the COC, have been placed on hold. These samples will not be processed.

SAMPLE RECEIPT ADVICE

SE130614

CLIENT DETAILS

Client Geotechnique

Project 13188-2 - Concord

SUMMARY OF ANALYSIS

No.	Sample ID	OC Pesticides in Soil	PAH (Polynuclear Aromatic Hydrocarbons) in	PCBs in Soil	Total Cyanide in soil by Discrete Analyser	Total Phenolics in Soil	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
001	BH1 1.5-1.8	28	26	-	-	-	-	-	-
002	BH1 3.15-3.25	28	26	-	-	-	-	-	-
003	BH2 0-0.15	28	26	-	-	-	-	-	-
004	BH2 0.5-0.8	28	26	11	1	1	10	12	8
005	BH2 4.5-4.8	28	26	11	1	1	10	12	8
006	BH2 5.1-5.25	28	26	11	1	1	10	12	8
007	BH3 0-0.1	28	26	-	-	-	-	-	-
008	BH3 1.5-1.8	28	26	11	1	1	10	12	8
009	BH4 0-0.15	28	26	-	-	-	-	-	-
010	BH5 0.1-0.4	28	26	11	1	1	10	12	8
011	BH5 0.6-0.7	28	26	11	1	1	10	12	8
012	BH6 0.6-0.7	28	26	-	-	-	-	-	-
013	BH7 0.15-0.45	28	26	-	-	-	-	-	-
014	BH7 1.4-1.7	28	26	-	-	-	-	-	-
015	BH8 0.2-0.4	28	26	-	-	-	-	-	-
016	BH9 0.2-0.5	28	26	11	1	1	10	12	8
017	BH9 2.0-2.3	28	26	11	1	1	10	12	8
018	BH9 2.55-2.65	28	26	11	1	1	10	12	8
019	BH10 0.23-0.5	28	26	11	1	1	10	12	8
020	BH10 0.55-0.65	28	26	11	1	1	10	12	8
021	Duplicate D2	28	26	11	1	1	10	12	8
022	Trip Spike TS1	-	-	-	-	-	-	12	-
023	Trip Spike TS2	-	-	-	-	-	-	12	-

CONTINUED OVERLEAF

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SAMPLE RECEIPT ADVICE

SE130614

CLIENT DETAILS

Client Geotechnique

Project 13188-2 - Concord

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	Fibre Identification in soil	Mercury in Soil	Metals in Water (Dissolved) by ICPOES	Moisture Content	pH in soil (1:5)	TOC in Soil	Total Recoverable Metals in Soil by ICPOES from
001	BH1 1.5-1.8	13	2	1	-	1	1	1	7
002	BH1 3.15-3.25	13	-	1	-	1	1	1	7
003	BH2 0-0.15	13	2	1	-	1	1	1	7
004	BH2 0.5-0.8	13	2	1	-	1	1	1	7
005	BH2 4.5-4.8	13	2	1	-	1	1	1	7
006	BH2 5.1-5.25	13	-	1	-	1	1	1	7
007	BH3 0-0.1	13	2	1	-	1	1	1	7
008	BH3 1.5-1.8	13	2	1	-	1	1	1	7
009	BH4 0-0.15	13	2	1	-	1	1	1	7
010	BH5 0.1-0.4	13	2	1	-	1	1	1	7
011	BH5 0.6-0.7	13	2	1	-	1	1	1	7
012	BH6 0.6-0.7	13	-	1	-	1	1	1	7
013	BH7 0.15-0.45	13	2	1	-	1	1	1	7
014	BH7 1.4-1.7	13	2	1	-	1	1	1	7
015	BH8 0.2-0.4	-	-	1	-	1	1	-	7
016	BH9 0.2-0.5	13	2	1	-	1	1	1	7
017	BH9 2.0-2.3	13	2	1	-	1	1	1	7
018	BH9 2.55-2.65	13	-	1	-	1	1	1	7
019	BH10 0.23-0.5	13	2	1	-	1	1	1	7
020	BH10 0.55-0.65	13	-	1	-	1	1	1	7
021	Duplicate D2	-	-	1	-	1	1	-	7
024	Rinsate R1	-	-	-	7	-	-	-	-

CONTINUED OVERLEAF

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CLIENT DETAILS

Client Geotechnique

Project 13188-2 - Concord

SUMMARY OF ANALYSIS

No.	Sample ID	Metals in Water (Dissolved) by ICPOES
025	Rinsate R2	7
026	Rinsate R3	7
027	Rinsate R4	7
028	Rinsate R5	7

CONTINUED OVERLEAF

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SAMPLE RECEIPT ADVICE

SE130614

CLIENT DETAILS

Client Geotechnique

Project 13188-2 - Concord

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury (dissolved) in Water
024	Rinsate R1	1

CONTINUED OVERLEAF

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SE130614

CLIENT DETAILS

Client Geotechnique

Project 13188-2 - Concord

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury (dissolved) in Water
025	Rinsate R2	1
026	Rinsate R3	1
027	Rinsate R4	1
028	Rinsate R5	1

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

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.