DETAILED CONTAMINATION ASSESSMENT

NEIGHBOURHOOD 1A STAGE 7 & NEIGHBOURHOOD 2
GOOGONG ROAD, GOOGONG

REPORT NO 12675/4-AB **16 MAY 2017**

Job No: 12675/4
Our Ref: 12675/4-AB
16 May 2017

Googong Township Limited, as
The Trustee for Googong Township Unit Trust
c/- Peet Limited
GPO Box 1000
CIVIC SQUARE ACT 2608
Email: Adrian.Moy@peet.com.au

Attention: Mr A Moy

Dear Sir

re: **Proposed Residential/Open Space and Commercial Land Use**
Neighbourhood 1A Stage 7 & Neighbourhood 2 - Googong Road, Googong
Detailed Contamination Assessment

Further to the *Contamination Assessment* Report Ref: 12675/4-AA dated 31 May 2016 prepared by Geotechnique Pty Ltd (Geotechnique) and Interim Advice No. 1 (Ref. 16157L01_Interim Advice 1, dated 11 August 2016) prepared by Site Auditor Mr R Harwood; this report presents a detailed contamination assessment at the above site for the proposed end use, understood to be combined residential (with garden/accessible soil) / open space and commercial land use.

Reference should be made to the Executive Summary of this report.

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

Yours faithfully
GEOTECHNIQUE PTY LTD

JOHN XU
Associate
BE, MEngSc, MIEAust

EXECUTIVE SUMMARY

Geotechnique Pty Ltd (Geotechnique) was commissioned by Peet Limited to conduct a detailed contamination assessment (DCA) for the land known as Neighbourhood 1A Stage 7 & Neighbourhood 2 (the site), located at Googong Road, Googong. It is understood that the site is proposed for combined residential (with garden / accessible soil) / open space and commercial land use.

The report has been prepared to supplement the findings and to address the recommendations presented in the *Contamination Assessment* Report Ref: 12675/4-AA dated 31 May 2016 prepared by Geotechnique, as well as to meet the requirements of Site Auditor.

Soils contaminated with heavy metals were identified at a number locations in waste material zones and hematite zone (refer to Drawing No 12675/4-AA2). Elevated concentrations of the heavy metals would present or potentially present a risk of harm to human health and / or environment. Detectable concentrations of TPH F2 and F3 were noted in discrete samples collected through the central portion of the site.

The objectives of the DCA were to determine the requirements of remediation / management and to delineate the extent of soil contamination.

The findings of this assessment are summarised as follows:

- One AEC (area including hematite zone and waste material zones) and one potential AEC (central portion of the site where detectable concentrations of TPH F2 and F3 were identified previously) have been identified on the subject site based on the results of previous assessment.
- The site is proposed for combined residential (with garden / accessible soil) / open space and commercial land use.
- TPH F2 and F3 are not of concern in the soil in the central portion of the site.
- Based on the test results for this and previous assessments, soils impacted by heavy metals were identified at a number of locations in an area including hematite zone and waste material zones and hematite zone. Concentrations of the heavy metals would present or potentially present a risk of harm to human health and / or environment.

  The identified locations and the estimated extent of impacted by metals are as indicated on the Drawing Nos 12675/4-AB4A and 12675/4-AB4B. The identified contaminants with the associated concentrations are summarised in the summary tables under the conditions for residential or commercial / industrial land use.
- An area with scattered debris and asbestos (bonded ACM and FA / AF) was identified (refer to Drawing No 12675/4-AB4A for the approximate extent).
- One groundwater monitoring well was installed. The monitoring well was dry at and after the completion of borehole drilling / well installation in February 2017.
- The concentrations of Cu (Total) in the unfiltered dam water sample and Cu (Dissolved) in the filtered dam water sample were both marginally in excess of the ANZECC freshwater guidelines.
- Potential off-site impacts of contaminants on groundwater and waterbodies are considered to be low.
- Some form of remediation / management and validation of the site are required.

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

1. A human health and ecological risk assessment to determine the source of metal impacts and to determine the requirements and to devise strategies for remediation and / or management, if required.
2. Checking the groundwater level when there is a substantial rainfall to recharge the groundwater table.

   If the groundwater is available, it is recommended that the monitoring well should be developed and assessment of the groundwater be undertaken by appropriate sampling and laboratory testing of metals.
3. A remedial action plan / environmental management plan is to be developed to devise strategies for remediation / management of the metal impacted area if required based on the risk assessment.
4. Remediation / management of the area impacted by metals and / or asbestos, followed by site validation should be carried out.

   It is our opinion that remediation / management and validation of soils in the area impacted by with metals and / or asbestos could be carried out in conjunction with the assessment, remediation and validation of the Exclusive Area (30m buffer around AEC10 and AEC13), following the demolition and removal of the site features at later stage.

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

Reference should be made to Section 17.0 for details of the recommendations regarding any materials to be excavated and removed from the site, and any fill to be imported to the site. Reference should also be made to Section 18.0 for the limitations of this report.

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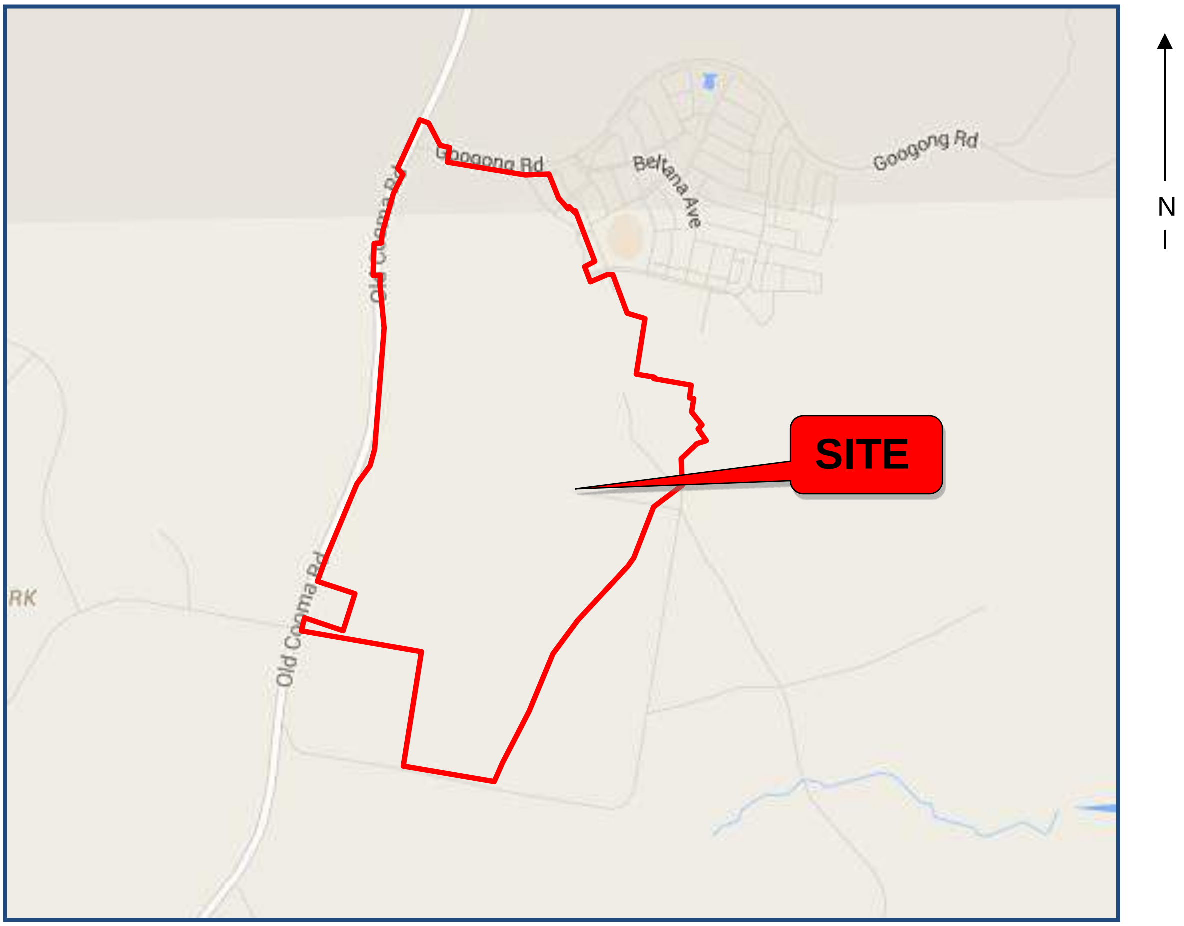
1.0 INTRODUCTION

Further to the *Contamination Assessment* Report Ref: 12675/4-AA dated 31 May 2016 prepared by Geotechnique Pty Ltd (Geotechnique) and Interim Advice No. 1 (Ref. 16157L01_Interim Advice 1, dated 11 August 2016) prepared by Site Auditor Mr R Harwood, this report presents the results of a detailed contamination assessment (DCA) for the land known as Neighbourhood 1A Stage 7 & Neighbourhood 2 (the site), located at Googong Road, Googong, as indicated on Figure 1 below:

FIGURE 1



Map Data ©2016 Google

It is understood that the site is proposed for combined residential (with garden / accessible soil) / open space and commercial land use (refer to the plan in Appendix A for details of the proposed development layout).

The report has been prepared to supplement the findings and to address the recommendations presented in the Report 12675/4-AA, as well as to meet the requirements of the Site Auditor.

Soils contaminated with heavy metals were identified at a number locations in waste material zones and hematite zone (refer to Drawing No 12675/4-AA2). Elevated concentrations of the heavy metals would present or potentially present a risk of harm to human health and / or environment.

Detectable concentrations of TPH F2 and F3 were noted in discrete samples collected through the central portion of the site.

Subsequently, DCA was carried out by Geotechnique in order to determine the requirements of remediation / management and to delineate the extent of soil contamination.

2.0 SCOPE OF WORK

In order to achieve the objectives of the DCA, the following scope of work was carried out:

- Site inspection by an Environmental Engineer and an Environmental Scientist from Geotechnique to identify any visible or olfactory indicators of potential contamination.
- Sampling by the Environmental Engineer and the Environmental Scientist, in accordance with a pre-determined sampling plan based on the sampling and testing plan (emails dated 30 September 2016, as well as 13 and 31 January 2017) prepared by Geotechnique and approved by Site Auditor.
- Drilling one bore using a drilling rig and installation of one single-level groundwater monitoring well.
- Implementation of industry standard quality assurance (QA) and quality control (QC) measures.
- Chemical analysis by laboratories accredited by the National Association of Testing Authorities (NATA), in accordance with Chains of Custody (COC) prepared by Geotechnique.
- Assessment of the laboratory analytical results.
- Assessment of field and laboratory QA and QC.
- Delineating the extents of contamination.

3.0 SITE DESCRIPTION

The site is located on the southern side of Googong Road, Googong, in the local government area of Queanbeyan and within the wider Googong Township Development.

The site comprises part of a parcel of land including; Lots 10 & 11 in DP754881, Lot 5 in DP1217396, Lot 1367 in DP1217419, Lot 21 in DP1203214 and Lot 101 in DP616217. The site, excluding a 30m buffer around areas of concern (AEC) AEC10 and AEC13, covers an area of approximately 209 hectares (ha).

4.0 SITE HISTORY & SUMMARY OF CONTAMINATION ASSESSMENT REPORT 12675/4-AA

Geotechnique conducted contamination assessment of the site in 2016 and the results were presented in the *Contamination Assessment* Report Ref: 12675/4-AA dated 31 May 2016.

The assessment was based on site historical data presented in the following reports and documents:

- *Googong Local Environment Study, Phase 1 Environmental Site Assessment* Report (Ref: C7552/1-AC dated 4 July 2004), prepared by Coffey Geosciences Pty Ltd (Coffey).
- *Sampling, Analysis and Quality Plan for the Remediation of Googong Township Residential Development* (Ref: J1526.2R-rev0 dated April 2012), prepared by C. M. Jewell & Associates Pty Ltd (CMJA).

- *Supplementary Sampling, Analysis and Quality Plan (SAQP) & Remedial Works Plan* (Ref: 12675/2-L1 dated 22 August 2014) for Neighbourhood 1B, prepared by Geotechnique and approved by Site Auditor Mr R Harwood.
- *Detailed Contamination Assessment* Report (Ref: 12675/2-AA dated 12 September 2014) for Neighbourhood 1B, prepared by Geotechnique.
- *SAQP* (Ref: 12675/4-L1 dated 19 February 2016) for Neighbourhood 1A Stage 7 & Neighbourhood 2, prepared by Geotechnique and approved by Site Auditor Mr R Harwood.
- *Sampling & Testing Program* (Ref: 12675/4-L2 dated 11 March 2016) for Neighbourhood 1A Stage 7 & Neighbourhood 2, prepared by Geotechnique and approved by Site Auditor Mr R Harwood.
- *Sampling & Testing Plan Update* for Neighbourhood 1A Stage 7 & Neighbourhood 2 in an email dated 4 April 2016, prepared by Geotechnique and approved by Site Auditor Mr R Harwood.

Coffey undertook an assessment of land including the site in 2004, and CMJA prepared an appropriate SAQP in 2012 to address the AEC within the land.

It is understood that the site was once part of a larger grazing property that has been operating since the mid to late 1800s, and has typically been used for sheep and cattle grazing.

Coffey conducted a Phase 1 Environmental Site Assessment (ESA) of the land including the site and identified AEC10 within the site as an area containing drums and car batteries within the site (Report C7552/1-AC).

CMJA was commissioned by Canberra Investment Corporation (CIC) to prepare an appropriate SAQP (Ref: J1526.2R-rev0) to address the AEC within the land. As part of these works, CMJA identified a sheep and cattle yard as an additional AEC, referred to as AEC13.

Based on Coffey Report (Ref: C7552/1-AC), CMJA SAQP (Ref: J1526.2R-rev0) and Geotechnique Revised SAQP (Ref: Q6555-L1R1), Geotechnique carried out a detailed contamination assessment (DCA) (Report Ref: 12675/2-AA) of seven AEC, including AEC10 and AEC13, identified within and in the vicinity of the land known as Neighbourhood 1B of the Googong Township Development in 2014.

AEC 10 and AEC 13 were assessed (Report 12675/2-AA) previously by Geotechnique for Neighbourhood 1B. Elevated concentrations of lead, copper and zinc were identified within AEC10, isolated to areas around the farm house.

A supplementary SAQP & Remedial Works Plan (Ref: 12675/2-L1) was prepared to outline contamination assessment of residual soil in the seven identified AECs (including AEC10 and AEC13) following demolition and removal of site features and any hard stands, and to provide details for remediation and validation of the identified contaminated areas and any additional areas identified after completion of the contamination assessment of residual soil in the footprints of former features.

It was noted that the AEC10 and AEC13 are within the north eastern portion of Neighbourhood 2, which are to be excluded from the assessment. These areas are proposed to be assessed, remediated and validated in accordance with the recommendations and methodology outlined in the *Supplementary SAQP & Remedial Works Plan* (Ref: 12675/2-L1).

To allow works to commence within the Neighbourhood 2 which contains AEC10 and AEC13, a 30 metres (m) buffer radius should be enforced around the AEC10 and AEC13 in all directions; this would allow the demolition of the site features and remediation to occur at a later stage. Reference may be made to Drawing No 12675/4-AA1 for the location of Exclusive Area (30m buffer around AEC10 and AEC13).

The objectives of contamination assessment were to provide data on the contamination status of the surface soils within the site, to determine the suitability of the site for the proposed land use, and to make recommendations with regard to any future remedial works if required.

The scope of work for the assessment included review of site historical data presented in the relevant reports and documents, site inspection, as well as soil sampling and laboratory testing.

The following three additional AECs were identified by personnel from Environmental Strategies (ES) during the site walkover in early March 2016 (refer to Drawing No 12675/4-AA1):

- A car body.
- Two rubbish pits (waste material zones).
- Hematite zone.

Based on the information provided and the site inspection, the AEC and associated Contaminants of Potential Concern (CoPC) were identified and presented in the following table:

AEC & Associated CoPC

AEC	CoPC
Surface soil within the site due to former grazing activities.	8 Heavy Metals including arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), lead (Pb), mercury (Hg), nickel (Ni) and zinc (Zn), Organochlorine Pesticides (OCP), Organophosphorus Pesticides (OPP) and Total Petroleum Hydrocarbons (TPH). For screening purposes, analysis of the other contaminants, such as BTEX (Benzene, Toluene, Ethyl Benzene and Xylenes), Polycyclic Aromatic Hydrocarbons (PAH) and Polychlorinated Biphenyls (PCB) was recommended. Asbestos might be present in the soil with inclusions of demolition waste and / or fibro-cement pieces / asbestos containing material (ACM).
Car body	8 Heavy Metals, TPH, BTEX and PAH
Two rubbish pits (waste material zones)	8 Heavy Metals, TPH, BTEX, PAH, OCP, OPP, PCB and asbestos
Hematite zone	The hematite zone is a naturally occurring, iron rich soil, which might have other naturally occurring heavy metals that could compromise the suitability of the area for future residential land use. For screening purposes, analysis of 13 heavy metals including As, beryllium (Be), boron (B), Cd, Cr, cobalt (Co), Cu, Pb, manganese (Mn), Hg, Ni, selenium (Se) and Zn was recommended.

Contamination assessment of surface soils within the site including the abovementioned three AECs was undertaken by Geotechnique based on the SAQP (Ref: 12675/4-L1), Sampling & Testing Program (Ref: 12675/4-L2), and Sampling & Testing Program Update (email dated 4 April 2016).

Based on the assessment, the majority of the laboratory test results satisfied the criteria for stating that the analytes selected were either not present (i.e. concentrations less than laboratory limits of reporting) or present in the sampled soils at concentrations that did not pose a risk of hazard to human health or the environment for the proposed land use.

However, the results of sampling and testing for the assessment identified soil contaminated with heavy metals in some soil samples.

The findings of the assessment are summarised as follows:

- Three areas of concern (car body, waste material zones and hematite zone) were identified on the subject site.
- Soil contaminated with heavy metals was identified at a number of locations in the waste material zones and hematite zone. Elevated concentrations of the heavy metals would present or potentially present a risk of harm to human health and / or environment.
- A groundwater assessment was not carried out. The potential for the abovementioned contamination to have leached to groundwater within the vicinity of the waste material zone and hematite zone should be addressed.
- No off-site migration issues were identified.
- Remediation and validation of the site are required.

Based on the assessment, it was considered that the site could be made suitable for the proposed redevelopment into residential with garden / accessible soil and open space land use subject to implementation of the following recommendations, prior to site preparation and earthworks:

1. Soil contaminated with heavy metals was identified at locations in waste material zones and hematite zone (refer to Drawing No 12675/4-AA2). Subsequently, a detailed contamination assessment (DCA) was recommended in order to delineate the extents of soil contamination.
2. Remediation of the contaminated area(s), followed by site validation should be carried out.

   It was our opinion that remediation and validation of soil contamination in waste material zones and hematite zone could be carried out in conjunction with the assessment, remediation and validation of the Exclusive Area (30m buffer around AEC10 and AEC13) following the demolition and removal of the site features at later stage.
3. The underlying groundwater would be investigated in the waste material zones and hematite zone.
4. A supplemental SAQP and remedial works plan would be prepared by Geotechnique to outline the abovementioned DCA, remediation, validation and groundwater investigation, which is to be approved by Site Auditor.

On completion of the DCA, remediation, validation and groundwater investigation, a report would be prepared by Geotechnique to determine the contamination status and recommend the suitability of the site for the proposed residential with garden / accessible soil and open space land use.

5.0 SITE CONDITION AND SURROUNDING ENVIRONMENT

At the time of the field sampling on 17 and 18 October 2016, as well as 13 to 17 February 2017, the site conditions were essentially unchanged as described in the Report Ref: 12675/4-AA, with exception that scattered debris and fibro-cement pieces were noted in an area in the vicinity of former sample location D112.

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

To the north: Googong Road, beyond which is agricultural land

To the east: Neighbourhood 1A / agricultural land

To the south: Agricultural land

To the west: Old Cooma Road, beyond which is the Fernleigh Residential Estate

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

6.0 GEOLOGY AND HYDROGEOLOGY

The Geological Map of Canberra (Geological Series Sheet 8727, Scale 1:100,000, 1992), published by the Bureau of Mineral Resources, indicates that the site is underlain by Colinton Volcanics of late Silurian age, comprising dark green dacitic ignimbrite, minor volcaniclastic sediments, tuffaceous shale, limestone and dolomitic limestone.

The Soil Landscape Map of Canberra (Soil Landscape Series Sheet 8727, Scale 1:100,000, 2000), published by the NSW Department of Land and Water Conservation, indicates that the site is located within the Burra Landscape area, which comprises undulating to rolling low hills and alluvial fans on Silurian Volcanics. Soils within this landscape are generally shallow to moderately deep. The soils have low permeability, low available water holding capacity, moderate mass movement hazard and sheet erosion risk. The soils are also commonly strongly acidic.

Reference should be made to test pit / sample logs in Appendix B for descriptions of the soils encountered during sampling for this assessment on 17 and 18 October 2016, as well as 13 to 17 February 2017. Based on information from all test pit / sample locations (refer to Drawing Nos 12675/4-AB1 and 12675/4-AB2), the sub-surface profile in the investigated area is generalised as follows:

Topsoil	Silty Clay, brown, with root fibres, some with gravel, or grey, some with root fibres, was encountered in most of the test pit locations ranging in thickness from approximately 0.2m to 0.6m.
Natural Soil	Silty Clay, brown, some with ironstone gravels, or yellow-brown Shaley Clay, yellow-brown and dark grey / grey, with shale fragments and / or ironstone gravels / fragments
Bedrock	Shale was encountered at depth ranging from about 0.4m to 2.1m below existing ground level (EGL) in a number of test pit locations.

Field observations by the Environmental Engineer and Environmental Scientist during sampling indicated, with the exception of scattered debris and fibro-cement pieces noted in an area in the vicinity of former sample location D112 (refer to Drawing No 12675/4-AB1 for the approximate extent), no detectable odour, no obvious staining / discolouration of the soil and vegetation, nor ash materials or fibro/asbestos-cement pieces on the bare surface, test pit locations or recovered soil samples that would indicate potential for contamination.

No groundwater or perched water was encountered during detailed sampling to a depth of approximately 2.5m below the EGL.

Reference should be made to the Engineering Log in Appendix C for descriptions of the soils encountered during installation of groundwater monitoring well GW1 (refer to Drawing No 12675/4-AB3) terminated at depth approximately 14.5m below the EGL on 15 February 2017 for this assessment. Topsoil comprising silty clay (thickness about 0.2m), underlain by natural silty clay, shaley clay then shale bedrock at depth approximately 2.5m below the EGL was encountered at the monitoring well location.

Field observations by an Environmental Scientist during the field work indicated that there were no detectable odour and no obvious fibro-cement pieces, ash materials, discolouration of the soils, or petroleum hydrocarbon staining noted at the well location.

The monitoring well was dry at the completion of borehole drilling / well installation.

It should be noted that the levels of groundwater / seepage might vary due to rainfall and other factors not evident during this investigation.

It is recommended that the groundwater level should be checked when there is a substantial rainfall to recharge the groundwater table.

There is no waterbody such as a creek, river or wetland close to the site. Queanbeyan River is located approximately 3 kilometres (km) to the north east, and Googong Dam is located approximately 2km to the south east of the site. An artificial drainage channel, a small surface water dam situated within the drainage channel to the southeast of the hematite zone and several farm dams that might capture or divert stormwater run-off were observed within the site.

As part of investigation for preparation of the SAQP for Neighbourhood 1A, CMJA undertook a desktop review of records held by the NSW Office of Water (NOW), covering boreholes within a 2km radius of the centre of the site and assessed the hydrogeology of the surrounding area. The search revealed many bores within this radius. Feature information was only available for three bores with recorded water bearing zones at depths ranging from 0m to 75m below the ground surface, and standing water levels between 20m and 31m.

The *May 2016 Monitoring Report* (Ref. 30011525-AQ, dated 22 June 2016) prepared by SMEC Australia Pty Ltd (SMEC) has been reviewed. The SMEC report revealed that:

- The groundwater monitoring bore network was installed between 13 August and 5 September 2013 and consists of eleven monitoring bores, comprising four shallow and seven deep.
- Groundwater flow direction in the deep aquifer appears to be to the north-east.

Groundwater flow direction in the shallow aquifer likely follows the topographic drainage lines with the direction between GGW4S and GGW7S in a northerly direction towards Beltana Pond, and the direction around GGW2 and GGW3S is likely easterly towards Googong Dam.

7.0 REVISED CONCENTUAL SITE MODEL

7.1 Revised AEC / Potential AEC

The results of the investigation during the previous contamination assessment indicated that:

- ➢ Soil contaminated with heavy metals was identified at locations in waste material zones and hematite zone (refer to Drawing No 12675/4-AA2).
- ➢ Detectable concentrations of TPH F2 and F3 were noted in discrete samples collected through the central portion of the site.

Subsequently, the AEC / potential AEC and associated CoPC have been revised and are presented in the following table:

Revised AEC / Potential AEC & Associated CoPC

AEC / Potential AEC	CoPC
Area including Hematite Zone and Waste Material Zones	➢ 9 heavy metals including As, Cd, Cr, Cu, Pb, Mn, Hg, Ni and Zn
Central Portion of the Site	➢ TPH F2 & F3

7.2 Potentially Contaminated Media

Potentially contaminated media present at the area(s) impacted by metals or with elevated concentrations of TPH includes:

- Surface soils;
- Natural soils/shale bedrock;
- Surface water; and
- Groundwater.

Soil contaminated with heavy metals was identified at a number of locations in the waste material zones and hematite zone.

The extents of soil contamination have not been defined; as such, surface soils within the vicinity contaminated locations are considered to be potentially contaminated media.

Detectable concentrations of TPH F2 and F3 were noted in discrete samples collected through the central portion of the site. The soil at and in the vicinity of those locations is also considered to be potentially contaminated media.

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

An artificial drainage channel and a small surface water dam situated within the drainage channel to the southeast of the hematite zone might capture or divert stormwater run-off. There is potential for off-site impact of the contaminants on the waterbodies due to surface water run-off from the site. As a result, surface water is also considered to be a potentially contaminated medium.

Groundwater is identified as a potentially contaminated medium due to the potential for the contamination to have leached to groundwater within the contaminated area(s).

7.3 Potential for Migration

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

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

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

The potential contaminants identified as the information obtained, site inspection and field sampling were generally in a solid form (e.g. heavy metals).

The ground surface within the site was in general grass covered. The potential for migration of contaminants via wind-blown dust is considered low as a result of the exposed soils within the site. The potential for migration of contamination via surface run-off is also expected to be minor. Some migration of contaminants via surface water might still occur in the event of heavy rain.

Migration of soil contaminants to the deeper soils or groundwater regime would generally be via leaching of contaminants from the surface soil, facilitated by infiltration of surface water. An artificial drainage channel and a small surface water dam situated within the drainage channel to the southeast of the hematite zone might act as a preferential pathway for contaminants in the area impacted to dissolve and migrate away from this area. Furthermore, the depth of contamination has not been completely delineated; therefore there is a possible risk of contaminants to migrate to deeper soils or the groundwater regime.

Sensitive receptors at the site and in the immediate vicinity, under current site conditions and based on the future land use of the site, are considered to include visitors and those living and working at the site who might come into contact with potentially contaminated media. The sensitive environmental receptors that could be adversely impacted by possible contamination are considered to be surface water bodies nearby and groundwater.

8.0 CONTAMINATION ASSESSMENT DATA QUALITY

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

State the Problem
The site was formerly used as grazing activities. Three AEC, namely, a car body, waste material zones and hematite zone, have been identified on the site.

Based on the results of detailed contamination assessment undertaken by Geotechnique as presented in Report Ref: 12675/4-AA; soil contaminated with heavy metals was identified at a number of locations in the waste material zones and hematite zone. Elevated concentrations of heavy metals would present or potentially present a risk of harm to human health and/or environment.

Detectable concentrations of TPH F2 and F3 were noted in discrete samples collected through the central portion of the site.

The 'problems' to be addressed are:

- What are the lateral and vertical extents of metal impacts;
- Whether the soil in the central portion of the site is contaminated with TPH F2 and F3; and
- Whether contamination exists within the surface water and groundwater within the vicinity of impacted area(s).

The following key professional personnel were involved in the contamination assessment:

John Xu	Associate
Lan Ye	Environmental Engineer
Saurabh Sapkota	Environmental Engineer
Justin Hofmann	Environmental Scientist

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

- Is the data sufficient to enable the preparation of a Remediation Action Plan (RAP) and/or Environmental Management Plan (EMP) should the data suggest these are required?
- Are there any off-site migration issues that need to be considered?

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

- Previous investigation data;
- Revision of conceptual site model;
- NearMap aerial photograph taken on 11 August 2016;
- Site conditions and observation details;
- Detailed soil sampling in grid pattern at various depths;
- Using a hand held XRF unit on site to obtain real time metal concentrations while sampling to assist with delineating the extent of metal impact;
- Collection of a water sample from the small surface water dam situated within the drainage channel to the southeast of the hematite zone;
- Installation of one single-level groundwater monitoring well;
- Soil profile information obtained through the sampling phase and during the installation of monitoring well;
- Laboratory test data on analysed samples;
- Assessment of test results against applicable assessment criteria; and
- Details of the proposed development.

Define the Study Boundaries
The lateral study boundaries for this assessment were defined by the investigation areas (area including Hematite Zone and Waste Zones, as well as central portion of the site) as shown on Drawing Nos 12675/4-AB1 and 12675/4-AB2.

The vertical study boundaries for this assessment were defined by the investigation depths as below:

- ➢ Ranging from approximately 0.3m to 2.5m below the EGL for soil in the area impacted by metals;
- ➢ Ranging from approximately 0.1m to 0.7m below the EGL for soil in the area with detectable concentrations of TPH F2 and F3 previously identified;
- ➢ Approximately 2.0m to 12.1m below the EGL for soil at the location of groundwater monitoring well; and
- ➢ Approximately 14.5m below the EGL for groundwater.

Develop a Decision Rule
As soil samples in the area impacted by metals were all collected between the surface and 0.1m during the previous assessment, further investigation of metal concentrations at depths >0.1m is required to delineate the vertical extent of heavy metal concentrations.

The source of the elevated metal concentrations has not been defined and it is unknown if the metal concentrations are anthropogenic in origin associated with the waste material or if these concentrations are likely to be naturally occurring and associated with the hematite zone.

The metal concentrations in the samples collected from the waste area (samples A4 to A14) and those collected from the hematite zone (A15 to A18) all show similar trends in metal concentrations. The metal concentrations at each of these locations might be related. Based on these results and a review of the NearMap aerial photograph taken on 11 August 2016, it is possible that the area impacted by elevated metal concentrations could be significantly greater than the area previously sampled.

While no concentrations of TPH F2 and F3 measured exceed the assessment criteria, it is unknown what possible causes for those results are (e.g. are they naturally occurring or are they likely to be of anthropogenic origin) and whether they could indicate a more significant area of contamination. As such, further investigation of TPH F2 and F3 in surface soil (0-0.1m) at and in the vicinity of those locations should be undertaken. Some from at least 0.5m should also be collected and analysis to assess whether they are TPH concentrations lower down in the soil profiles.

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

- The assessment criteria are the NSW EPA produced and / or endorsed criteria, as specified in Section 13.0 of this report.
- The soil will be deemed contaminated if the assessment criteria are unfulfilled or containing contamination “hot spots”. Reference should be made to NSW EPA (1995) " *Contaminated Sites: Sampling Design Guidelines*", which define what criteria determine whether an exceedance of a trigger value is a hot spots or not.
- A hand held XRF unit is to be used on site to obtain real time metal concentrations while sampling to assist with delineating the extent of heavy metal impact. Laboratory data is still required to delineate the extent of the heavy metal impacted area, but the XRF will be able to assist with determining whether enough samples have been collected for delineation purposes.

  Upon completion of delineation of the lateral and vertical extents impacted by metals, a human health and ecological risk assessment will be recommended to determine the source of contamination, as well as to determine the requirements and to devise strategies for remediation and / or management.
- Further investigation, remediation and / or management will be recommended if the soil is found to be contaminated with TPH F2 and F3.
- There will be off-site migration issues that need to be considered, if contaminants in the surface water and groundwater samples present at concentrations exceeding the assessment criteria.

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

- All laboratories used are accredited by NATA for the analyses undertaken.
- All detection limits set by the laboratories fall below the assessment criteria adopted.
- Analyte concentrations in the rinsate water sample should be less than laboratory limits of reporting (LOR) or should not be detected significantly.
- The differences between the reported concentrations of the analytes in the field duplicate and the corresponding original samples are within accepted limits (refer to Section 11.4).

- The differences between the reported concentrations of the analytes in the inter-laboratory duplicate (split) and the corresponding original samples are within accepted limits (refer to Section 11.5).
- The QA / QC protocols and results reported by the laboratories comply with the requirements of the NEPM 1999 (April 2013) "*Guideline on Laboratory Analysis of Potentially Contaminated Soils*".

Specify Limits on Decision Errors
This step is to establish the decision maker's tolerable limits on decision errors, which are used to establish performance goals for limiting uncertainty in the data. Data generated during this assessment must be appropriate to allow decisions to be made with confidence.

Decision errors for this assessment were minimised and measured by the following:

- Collection and analysis of samples, as well as installation of groundwater monitoring well were in accordance with the sampling and testing plan (emails dated 30 September 2016, as well as 13 and 31 January 2017) prepared by Geotechnique and approved by Site Auditor. Sample numbers and sampling plans are therefore considered to be adequate for site characterisation.
- The analyte selection is based on the previous site investigations and soil profiles. The possibility of any other potential contaminants that would be detected through field observation (odours, staining, colouring and inclusion of ACM and other foreign material) during sampling may need to be included. The potential for contaminants other than those analysed is considered remote.
- The assessment criteria adopted from the guidelines stated in Section 13.0 have risk probabilities already incorporated.
- The acceptable limits for field and inter-laboratory duplicate comparisons are outlined in Sections 11.4 and 11.5 of this report.
- The acceptance limits for laboratory QA / QC parameters are based on the laboratory reported acceptance limits and those stated in the NEPM1999 (April 2013) "*Guideline on Laboratory Analysis of Potentially Contaminated Soils*".

Optimise the Design for Obtaining Data
The following measures were undertaken to ensure accurate data collection:

- The procedures adopted for the location and collection of environmental samples were developed prior to implementation, in accordance with NSW EPA guidelines and current industry practice. The sampling program was designed to ensure integrity of data collection during the assessment, including decontamination techniques, sample labelling, storage and COC protocols.
- The analytical program was developed in theory prior to undertaking the sampling (based on the previous site investigations and soil profiles) and refined on the basis of field observations (both surface and sub-surface) during the sampling phase. All potential contaminants have been covered.
- A hand held XRF unit was used on site to assist with determining whether enough samples have been collected for delineation purposes.
- Only laboratories accredited by NATA for the analyses undertaken were used for this assessment. The laboratory performance is assessed through review of statistics calculated for QA samples such as blanks, spikes and duplicates.

- The field QA / QC protocols adopted are outlined in Section 11.0 of this report. The QA / QC program incorporates preparation of traceable documentation of procedures used in the sampling and analytical program and in data validation procedures.

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

Precision:	A quantitative measure of the variability (or reproducibility) of data;
Accuracy:	A quantitative measure of the closeness of reported data to the “true” value;
Representativeness:	The confidence (expressed qualitatively) that data is representative of each media present on the site;
Completeness:	A measure of the amount of useable data from a data collection activity;
Comparability:	The confidence (expressed qualitatively) that data can be considered equivalent for each sampling and analytical event.
Sensitivity:	The appropriateness of the chosen laboratory methods, including the LOR, in producing reliable data in relation to the adopted site assessment criteria.

An assessment of the DQI is presented in Sections 11.0 and 12.0 of this report for field procedures (soil sampling phase) and for laboratory procedures (analytical phase), respectively.

9.0 SITE INSPECTION, SAMPLING & ANALYSIS PLAN AND SAMPLING METHODOLOGY

On 17 and 18 October 2016, as well as 13 to 17 February 2017, our Environmental Engineer Lan Ye or Saurabh Sapkota and Environmental Scientist Justin Hofmann carried out a site inspection and sampling in the areas of concern.

Prior to carrying out field woks, the proposed sampling locations and groundwater bore location had been set up and marked with a tomato stake with flagging by surveyors from LANDdata Surveys in general according to Drawing Nos 12675/4-PS1, 12675/4-PS2, 12675/4-ABP1 and 12675/4-ABP2. A couple of the sampling points for the investigation in February 2017 were adjusted slightly so that they were not in the centre of access tracks. The proposed sample location D201 was unable to be marked due to the presence of dense bush / vegetation. The proposed D201 was relocated and recorded with a hand held GPS by our field engineer during the field works.

During the field works on 13 to 17 February 2017, a hand held XRF unit was operated by Ms A Singh or Mr M Sisic from Thermo Fisher Scientific to obtain real time metal concentrations while sampling to assist with delineating the extent of heavy metal impact. With the assistance of the XRF unit, our engineer was able to terminate the excavation test pits earlier than proposed in the southern and western portions and to further excavate additional test pits than proposed in the northern and eastern portions. Test pit locations D271 to D290 were recorded with a hand held GPS by our field engineer.

Scattered debris and fibro-cement pieces were noted in an area in the vicinity of former sample location, D112 (refer to Drawing No 12675/4-AB1 for the approximate extent recorded with a hand held GPS by our field engineer) on 17 February 2017. One fibro-cement piece FCP1 and one corresponding soil sample FCP1 (0-0.1m) were collected. The recovered fibro-cement piece and soil sample for asbestos analysis were transferred into a labelled plastic bag. The sample location was recorded with a hand held GPS by our field engineer

Reference may be made to Drawing Nos 12675/4-AB1 and 12675/4-AB2 for details of the sampling locations.

One groundwater monitoring well (GW1) was installed on 15 February 2017 to a depth of 14.5m below the EGL. Location of the well is shown on Drawing No 12675/4-AB3.

A number of natural soil samples were recovered at various depths ranging from 2.0m to 12.1m below ESL.

An unfiltered water sample was collected from a small surface water dam situated within the drainage channel to the southeast of the hematite zone. The water sample was placed in a glass bottle supplied by the laboratory. The fully filled bottle were labelled and placed in a chilled container.

The soil sampling procedures adopted for the detailed assessment were generally as follows:

- The sample locations were excavated to a predetermined depth using an excavator. The sample was then recovered from the excavator bucket using a stainless steel trowel.
- The stainless steel trowel were decontaminated prior to use, in order to prevent cross contamination (refer to Section 11.2 for details of the procedures for decontamination of the trowel).
- To minimise the potential loss of organic compounds, the recovered soil sample for laboratory analysis was immediately transferred to a labelled, laboratory supplied, 250ml glass jar and sealed with an airtight, Teflon screw top lid. The fully filled jar was then placed in a chilled container.

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

A rinsate water sample was collected daily at completion of sampling, and placed in a glass bottle supplied by the laboratory. The fully filled bottle were labelled and placed in a chilled container.

The primary samples in the chilled containers and plastic bags were forwarded under COC conditions to the primary NATA accredited laboratory, SGS Environmental Services (SGS). The split samples in the chilled container were forwarded under COC conditions to the secondary NATA accredited laboratory, Envirolab Services Pty Ltd (Envirolab).

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

The Environmental Engineer and Environmental Scientist carried out sampling in locations shown on Drawing Nos 12675/4-AB1, 12675/4-AB2 and 12675/4-AB3, based on the sampling and testing plan (emails dated 30 September 2016, as well as 13 and 31 January 2017) prepared by Geotechnique and approved by site auditor. The numbers of samples recovered and analysed including duplicate and split samples, are summarised below.

In the Area including Hematite Zone and Waste Material Zones

Sample ID	Number of Samples Recovered & Analysed	Analytes	Duplicate Sample	Split Sample
D101 to D157 (all samples at depths 0-0.1m & 0.2-0.3)	114		D2=D152 (0-0.1m) D3=D139 (0-0.1m) D4=D157 (0-0.1m) D5=D103 (0-0.1m)	S1=D125 (0-0.1m) S3=D136 (0-0.1m) S4=D146 (0-0.1m) S5=D116 (0-0.1m)
A4, A6, A8, A9, A11, A13 & A15 to A18 (all samples at depths 0.25-0.35m & 0.5-0.6m)	20		D6=A4 (0.25-0.35m) D7=A13 (0.25-0.35m)	S6=A8 (0.25-0.35m) S7=A11 (0.25-0.35m)
D101, D116, D130, D132, D139, D142, D152, D157, A8, A11 & A15 to A18 (all samples at depth 1.0-1.1m)	14			
D116 (1.4-1.5m), D139 (1.4-1.5m) & A16 (1.5-1.6m)	3			
D101, D132, D142, D152, D157, A11 & A15 to A17 (all samples at depth 1.9-2.0m)	9		D1=D132 (1.9-20m)	S2=D152 (1.9-2.0m)
D201 to D226, D229 to D238, D243 to D249, D259, D263 to D265 & D271 to D290 (all samples at depths 0-0.1m & 0.2-0.3)	134	9 metals	DS1=D204 (0-0.1m) DS2=D205 (0-0.1m) DS3=D206 (0-0.1m) DS4=D221 (0-0.1m) DS5=D224 (0-0.1m) DS6=D234 (0-0.1m) DS7=D237 (0-0.1m) DS8=D285 (0-0.1m) DS9=D287 (0-0.1m) DS10=D289 (0-0.1m) DS11=D284 (0-0.1m) DS12=D259 (0-0.1m) DS13=D271 (0-0.1m) DS14=D273 (0-0.1m) DS15=D280 (0-0.1m)	SS1=D223 (0-0.1m) SS2=D233 (0-0.1m) SS3=D236 (0-0.1m) SS4=D238 (0-0.1m) SS5=D245 (0-0.1m) SS6=D230 (0-0.1m) SS7=D226 (0-0.1m) SS8=D286 (0-0.1m) SS9=D288 (0-0.1m) SS10=D283 (0-0.1m) SS11=D290 (0-0.1m) SS12=D272 (0-0.1m) SS13=D275 (0-0.1m) SS14=D277 (0-0.1m) SS15=D279 (0-0.1m)
D201, D202, D204, D207 to D226, D229 to D238, D243 to D249, D259, D265, D271, D273 to D278, D280 to D282, D285 to D287, D289 & D290 (all samples at depth 1.0-1.1m)	57			
D203 (0.9-1.0m), D205 (0.7-0.8m), D206 (0.6-0.7m), D272 (0.7-0.8m), D288 (0.6-0.7m) & D289 (0.5-0.6m)	6			
D201, D209, D211, D213, D215, D217, D219, D221, D225, D231, D233, D235, D237, D243, D245, D247, D259, D271, D273, D275, D277, D285 & D287 (all samples at depth 1.9-2.0m)	23			
DW1 (2.0-2.1m, 3.0-3.1m, 4.0-4.1m, 5.0-5.1m, 6.0-6.1m, 7.0-7.1m, 8.0-8.1m, 9.0-9.1m, 10.0-10.1m, 11.0-11.1m & 12.0-12.1m)	11			

Notes: 9 metals including As, Cd, Cr, Cu, Pb, Mn, Hg, Ni and Zn

In the Central Portion of the Site

Sample ID	Number of Samples Recovered & Analysed	Analytes	Duplicate Sample	Split Sample
DS11, DS16, DS18, DS19, DS22, CS12-1 to CS12-3, CS14-1 to CS14-3, CS15-1 to CS15-3, CS18-1 to CS18-3 & CS22-1 to CS22-3 (all samples at depth 0-0.1m)	20	TPH F2 & F3	D8=DS11 (0-0.1m) D9=DS22 (0-0.1m) D10=CS15-2 (0-0.1m)	S8=CS15-1 (0-0.1m) S9=CS22-1 (0-0.1m) S10=DS19 (0-0.1m)
DS18, DS19, DS22, CS12-2, CS15-2 & CS18-2 (all samples at depth 0.5-0.6m)	6			

In addition, the following samples were analysed:

- 147 samples selected for analysis of Cation Exchange Capacity (CEC).
- 95 samples selected for analysis of pH.
- Surface water sample (unfiltered and filtered) for analysis of metals.
- 7 rinsate samples (R1, R2 and RS1 to RS5) for analysis of metals.
- One rinsate sample R2 for analysis of TPH (F2 & F3)
- One fibro-cement piece FCP1 and one corresponding soil sample FCP1 (0-0.1m) for asbestos analysis.

Reference may be made to Sections 11.0 and 15.0 of this report for a summary and assessment of the laboratory test results. The laboratory analytical reports and certificates of analyses are included in Appendix D.

10.0 MONITORING WELL INSTALLATION & DEVELOPMENT

One groundwater monitoring well (GW1) was installed on 15 February 2017 to a depth of 14.5m below the EGL. Location of the well is shown on Drawing No 12675/4-AB3.

Epoca Environmental Pty Ltd (Epoca) used a drilling rig equipped with push tube to penetrate through the layers of silty clay and shaley clay, then with rotary air hammer to penetrate through the layer of bedrock, remove the soil and crushed rock and install the monitoring well under the supervision of Geotechnique.

A number of natural soil samples were recovered at various depths ranging from 2.0m to 12.1m below ESL and analysed for metals.

There was no petroleum hydrocarbon staining, discolouration of the soil or odour during installation of the wells that would indicate the potential for contamination.

Each monitoring well consisted of a standpipe of 50 millimetres (mm) internal diameter, Class 18 PVC casing and a 0.45mm machine slotted screen. The bottom of the standpipe was fitted with a push-on cap. The annulus was backfilled with clean sand and after that bentonite (seal material) and concrete capping/soil cutting to prevent ingress of surface run-off. The top of the standpipe was fitted with a lockable monument. Construction details of the monitoring well are shown on the Engineering Log in Appendix C.

The monitoring well was dry at and after the completion of borehole drilling/well installation on 15 and 16 February respectively.

It should be noted that the level of groundwater might vary due to rainfall and other factors not evident during this investigation.

It is recommended that the groundwater level should be checked when there is a substantial rainfall to recharge the groundwater table.

If the groundwater is available, our field engineer will develop the monitoring well and recover groundwater samples including QA and QC samples for laboratory testing of metals.

11.0 FIELD QUALITY ASSURANCE AND QUALITY CONTROL

11.1 Sampling Personnel

Geotechnique undertook all the sampling associated with this assessment. The Environmental Engineer (Lan Ye or Saurabh Sapkota) and Environmental Scientist (Justin Hofmann) from Geotechnique located sampling positions based on the project brief prepared by the Project Manager and site conditions, logged the soil profile encountered, recovered soil samples at a frequency determined by the sampling plan (project brief), and packaged the samples (refer to Section 9.0).

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

An Environmental Scientist (Justin Hofmann) from Geotechnique supervised installation of the groundwater monitoring well.

Justin Hofmann has more than one year experience in supervising installation of groundwater monitoring well.

11.2 Decontamination Procedures

As stated in Section 9.0 of this report, the soil samples were recovered from the excavator bucket using a stainless steel trowel. Decontamination of the trowel involved the following:

- Removal of soils adhering to the trowel by scrubbing with a brush.
- Washing the trowel thoroughly in a solution of phosphate free detergent (Decon 90) using brushes and disposable towels (Bucket 1).
- Rinsing the trowel thoroughly with distilled water (Bucket 2).
- Repeating the washing / rinsing steps and rinsing with distilled water (Bucket 3).
- Drying the trowel with a clean cloth.

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

11.3 Rinsate Samples

Rinsate water samples (Rinsate R1, R2 and RS1 to RS5) were recovered at the end of field work (one each day) in order to identify possible cross contamination between the sampling locations.

The rinsate water samples were analysed for metals and / or TPH (>C10-C34). The test results for the rinsate water samples are summarised in Table A. A copy of the laboratory analytical reports is included in Appendix D.

As indicated in Table A, concentrations of analytes in the rinsate blank samples were in general less than the laboratory LOR, indicating that the cleaning and decontamination processes adopted in the field were adequate.

11.4 Duplicate Samples

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

- A larger than normal quantity of soil was recovered from the sample location selected for duplication.
- The sample was placed in a decontaminated stainless bowl and divided into two portions, using the decontaminated trowel.
- One portion of the sample was immediately transferred into 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.
- The remaining portion was stored in the same way and labelled as the original sample.

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 (6% for 9 metals and 12% for TPH) complies with Schedule B3 Guideline on Laboratory Analysis of Potentially Contaminated Soils of the NEPM 1999 (April 2013), which recommends a duplicate frequency of 5%.

The duplicate sample test results are summarised in Tables B1 to B5. A copy of the laboratory analytical reports is included in Appendix D.

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

As shown in Tables B1 to B5, the comparisons between the duplicate and corresponding original sample indicated generally acceptable RPD, with the exception of some metals (ranging from 33% to 126%), which were in excess of 30%, mainly due to the low concentrations of some analytes detected and / or the non-homogeneous nature of the soil samples.

All the concentrations with RPD in excess of 30% in the duplicate pairs were in general either both less than or both above the relevant assessment criteria, with exception of duplicate pairs D1 and D132 (1.9-2.0m), D6 and A4 (0.25-0.35m), as well as D7 and A13 (0.25-0.35m).

The duplicate pair D1 and D132 (1.9-2.0m) in Table B1 was found to have concentrations of Cd and/or Mn in the duplicate sample D1 that were higher than the corresponding original sample D132 (1.9-2.0m), and in excess of the relevant assessment criteria.

The duplicate pair D6 and A4 (0.25-0.35m) in Table B2 was found to have Pb concentration in the original sample A4 (0.25-0.35m) that was higher than the corresponding duplicate sample D6, and in excess of the relevant assessment criterion.

The duplicate pair D7 and A13 (0.25-0.35m) in Table B2 was found to have Mn concentration in the duplicate sample D7 that was higher than the corresponding original sample A13 (0.25-0.35m), and in excess of the relevant assessment criterion. The duplicate pair was also found to have Cu concentration in the original sample A13 (0.25-0.35m) that was higher than the corresponding duplicate sample D7, and in excess of the relevant assessment criterion.

As such, the higher concentrations of Cd, Cu, Pb and/or Mn were adopted for the assessment and included in Tables D3 and D3A.

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

11.5 Split Samples

Split samples provide a check on the analytical performance of the primary laboratory. The split samples were prepared based on sample numbers recovered during the field work, in the same manner as the duplicate sample. Reference should be made to Section 11.4. The split sample was forwarded to a secondary laboratory (Envirolab) for analysis.

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

The split sample frequency adopted (6% for 9 metals and 12% for TPH) complies with Schedule B3 of the NEPM 1999 (April 2013), which recommends a frequency of 5%.

The split sample test results are summarised in Tables C1 to C5. A copy of the laboratory analytical reports and certificates of analysis is included in Appendix D.

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

As shown in Tables C1 to C5 the comparisons between the splits and corresponding original samples indicated generally acceptable RPD, with the exception of RPD for some metals (ranging from 31% to 168%), which are in excess of 30%. This is considered to be due to the low concentrations of some analytes detected and / or the non-homogeneous nature of the soil samples.

All the concentrations of metals with RPD in excess of 30% in the split pairs were in general either both less than or both above the relevant assessment criteria, with exception of split pair S2 and D152 (1.9-2.0m).

The split pair S2 and D152 (1.9-2.0m) in Table C1 were found to have concentrations of Cu, Mn and/or Ni in the split sample S2 that were higher than the corresponding original sample D152 (1.9-2.0m), and in excess of the relevant assessment criteria.

As such, the higher concentrations of Cu, Mn and / or Ni were adopted for the assessment and included in Tables D4 and D4A.

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

12.0 LABORATORY QUALITY ASSESSMENT AND QUALITY CONTROL

12.1 Laboratory Accreditation

Only laboratories accredited by the NATA for chemical analyses were used for analysis of samples recovered as part of this assessment. The laboratory must also incorporate quality laboratory management systems to ensure that trained analysts using validated methods and suitably calibrated equipment produce reliable results.

In addition to the QC samples, the laboratory must also ensure that all analysts receive certification as to their competence in carrying out the analysis and participate in national and international proficiency studies. SGS and Envirolab, the laboratories used for this assessment, are accredited by NATA. SGS and Envirolab also operate Quality Systems designed to comply with ISO / IEC 17025.

12.2 Sample Holding Times

The following table lists the allowable holding times of soils and water, detailed in Schedule B3 of the NEPM 1999 (April 2013), and in Standard Methods for the Examination of Water and Wastewater (APHA).

ANALYTE	HOLDING TIME (SOIL)	HOLDING TIME (WATER)
Metals *	6 months	6 months
Mercury (Hg)	28 days	28 days
Total Petroleum Hydrocarbons (TPH)	14 days	7 days
pH	7 days	-
CEC	28 days	-

* Metals include As, Cd, Cr, Cu, Pb, Mn, Ni and Zn

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

The actual holding times of the laboratories used for this assessment are shown in the laboratory analytical reports / certificates of analyses in Appendix D of this report. All analyses were in general conducted within the relevant holding times with the exception of pH.

The extraction times for pH analysis of some soil samples by SGS (Report Nos SE158264A, SE158264B, SE158264C, SE162156A and SE162178A) were ranging from 16 to 23 days, which were technically 9 to 16 days over the 'recommended' holding time. It is our opinion that 16 to 23 days over is insignificant for pH analysis as they were kept refrigerated the whole time in the laboratory.

12.3 Test Methods and Limits of Reporting / Practical Quantitation Limits

The test methods and LOR / Practical Quantitation Limits (PQL) adopted by the laboratories are indicated with the analytical reports / certificates of analysis in Appendix D.

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

12.4 Method Blanks

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

Reagent blank samples for soil samples were analysed by the primary and secondary laboratories for Metals and/or TPH.

The reagent blank samples for water samples were analysed for metals and/or TPH by the primary laboratory (SGS).

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

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

12.5 Laboratory Duplicate Samples

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

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

SGS requires 1 duplicate analysed for every 10 samples, whilst Envirolab requires 1 duplicate analysed for every 20 samples.

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

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

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

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

Some duplicate samples comparison reported RPD by SGS exceeding the generally accepted limit for some metals (As, Cr, Cu, Pb, Mn and / or Zn), mainly due to the heterogeneity of the soil samples.

All the concentrations with RPD in excess of the accepted limit by SGS in the laboratory duplicate pairs were in general either both less than or both above the relevant assessment criteria, with exception of laboratory duplicate pairs LB112410.024 and the corresponding original sample D115 (0.2-0.3m).

The duplicate pair LB112410.024 and D115 (0.2-0.3m) in SGS Report SE158264R1 was found to have Mn concentration in the duplicate sample LB112410.024 that was higher than the corresponding original sample D115 (0.2-0.3m), and in excess of the relevant assessment criterion.

As such, the higher concentration of Mn was adopted for the assessment and included in Tables D3 and D3A.

The RPD acceptance for Envirolab is less than 50% (if concentrations are at least 5 times the PQL). Any RPD is acceptable for lower concentrations (less than 5 times the PQL).

As presented in the Envirolab certificates of analysis in Appendix D, the duplicate sample numbers and reported RPD for metals were within the acceptance criteria adopted by the laboratory.

No duplicate sample for TPH F2 and F3 was reported for Envirolab but claims to run one sample in batches of 20 samples. The results are not reported with the laboratory certificate provided to clients; however, claim to be within the laboratory acceptance criteria.

12.6 Laboratory Control Samples

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

The acceptance criteria for both laboratories are presented below:

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

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

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

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

12.7 Matrix Spike

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

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

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

Batch	Reported Failed Recovery	Acceptance Criteria	Comments
SE158264	67% for As, -56% & 391% for Pb, -280% & 1164% for Mn, 66% & 67% for Hg and 16% for Zn	70%-130%	Recovery failed acceptance criteria due to matrix interference or sample heterogeneity
SE162156	68% for Cr, 49% for Pb, -116%, 53%, 214%, 167% & 183% for Mn, 54% & 66% for Hg and -45% for Zn	70%-130%	Recovery failed acceptance criteria due to matrix interference, the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level) and / or sample heterogeneity
SE162175	-15% for Mn and 63% for Zn	70%-130%	Recovery failed acceptance criteria due to sample heterogeneity
SE162178	259% for As, 63% for Pb, 15%, -15%, -112% & 380% for Mn, and 70%, 63% & 69% for Zn	70%-130%	Recovery failed acceptance criteria due to the presence of significant concentration of analyte or sample heterogeneity

The matrix spike data for metals presented by Envirolab fall within the laboratory acceptance criteria.

However, no matrix spike for TPH F2 and F3 was reported for Envirolab, but claims to run one sample in batches of 20 samples. The results are generally not reported with the laboratory certificates provided to clients; however, claim to be within the laboratory acceptance criteria.

13.0 QA / QC DATA EVALUATION

All QA and QC details are presented in Sections 11.0 and 12.0 of this report.

The following table provides a list of the DQI for the field procedures (soil sampling phase) of the assessment, and the methods adopted to ensure that the DQI are met.

DATA QUALITY INDICATOR	ACHIEVEMENT
Precision and Accuracy	Use of trained and qualified field staff. Appropriate industry standard decontamination procedures adopted. Rinsate blank water, field duplicate, and inter-laboratory duplicate (split) samples recovered or prepared.
Representativeness	Good sampling coverage of the soils of concern. Collection and analysis of samples was in accordance with the sampling and testing plan (emails dated 30 September 2016, as well as 13 and 31 January 2017) prepared by Geotechnique and approved by Site Auditor. Representative coverage of potential contaminants, based on the previous site investigations, site observation and soil profiles.
Completeness	Grid and Judgemental soil sampling at predetermined locations, spacing and depths. All soils of concern (potential contamination) sampled. On site visual assessment of soils uncovered. Preparation of sample location plan. Records of test pit / sample logs. Field duplicate sample numbers complying with NEPM. Split sample numbers complying with NEPM. Rinsate sample recovered daily. Preparation of COC records.
Comparability	Using appropriate techniques for sample recovery. Using the same sampling and decontamination procedures for the fieldwork. Experienced sampler used. Using appropriate sample storage and transportation methods for sampling.

The following table provides a list of the DQI for the laboratory procedures (analytical phase) of the assessment and the methods adopted in ensuring that the data DQI were met.

DATA QUALITY INDICATOR	ACHIEVEMENT
Precision and Accuracy	Use of analytical laboratories experienced in the analyses undertaken, with appropriate NATA certification. NATA accreditation requires adequately trained and experienced testing staff. Rinsate blank water, field duplicate and split samples analysed. Acceptable concentrations in rinsate blank water samples. Acceptable RPD for duplicate comparison overall. Acceptable RPD for split sample comparison overall. Appropriate and validated laboratory test methods used. Adequate laboratory performance based on results of the blank, duplicate, control and matrix spike samples.

DATA QUALITY INDICATOR	ACHIEVEMENT
Representativeness	Representative coverage of potential contaminants, based on the previous site investigations. Adequate rinsate, duplicate and split sample numbers. Adequate laboratory internal QC and QA methods, complying with the NEPM.
Completeness	Analysis for all potential contaminants of concern. Laboratory sample receipt information received, confirming receipt of samples intact and appropriate COC. NATA registered laboratory analytical reports / certificates of analysis provided.
Comparability	Use of NATA registered laboratories. Test methods consistent for each sample. Test methods comparable between primary and secondary laboratory. Generally acceptable RPD between original samples and field duplicates and split samples. Some high RPD recorded mainly due to low concentrations of some analytes detected and / or the heterogeneity of the samples.
Sensitivity	Appropriate laboratory analysis methods. Appropriate laboratory LOR / PQL.

As discussed in Section 11.0, some of the duplicate/split sample comparisons reported RPD exceeding the generally accepted limits for some metals. These have been attributed to low concentrations of some analytes detected in duplicate / split and corresponding original samples, and/or the heterogeneity of the samples. The results are still considered acceptable, as virtually all remaining QA / QC sample data falls within acceptance limits.

As discussed in Section 12.0, a relatively minor amount of SGS laboratory matrix spike recoveries failed acceptance criteria due to matrix interference, sample heterogeneity and / or the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level). Some duplicate samples comparison reported RPD by SGS exceeding the generally accepted limit for some metals (As, Cr, Cu, Pb, Mn and / or Zn), mainly due to the heterogeneity of the soil samples. The results are still considered acceptable, as virtually all remaining QA / QC sample data of both laboratories fall within the acceptance criteria adopted. As such, these variations are not considered to have affected the laboratory data provided.

Based on the above, it is considered that the QC and QC DQI have been complied with, both in the field and in the laboratories. As such, it is concluded that the laboratory test data obtained as part of this assessment is reliable and useable.

14.0 ASSESSMENT CRITERIA

14.1 Soil Samples

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

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

  The site is proposed for residential / open space and commercial land use, and as such the analytical results for the assessment will be assessed against the most stringent available HIL for *residential with garden / accessible soil* (HIL A) in the area proposed for residential / open space land use and the available HIL for *commercial / industrial* (HIL D) in the area proposed for commercial land use.

- Ecological Screening Levels (ESL) for selected petroleum hydrocarbon compounds and TPH fractions 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 will be assessed against the available ESL for *urban residential and public open space* land use for fine-grained soil (clay).

- Ecological Investigation Levels (EIL), a specific type of Soil Quality Guidelines (SQG) for selected metals, Naphthalene and DDT are applicable for assessing the risk to terrestrial ecosystems. EIL listed in Table 1B(1-5) of Schedule B1 "*Guideline on Investigation Levels for Soil and Groundwater*" depend on specific soil physicochemical properties and land use scenarios and generally apply to the top 2m of soil. The EIL are calculated using 30% effect concentration (EC30) or lowest observed effect concentrations (LOEC) toxicity data.

  EIL are the sum of the added contaminant limit (ACL) and the ambient background concentration (ABC). Where required, EIL are calculated directly by using the EIL calculator developed by CSIRO for NEPC.

  For this assessment, the analytical results will be assessed against the available EIL for *urban residential and public open space* land use in the area proposed for residential / open space land use and the available EIL for *commercial / industrial* land use in the area proposed for commercial land use for aged contamination in soil.

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

The adopted assessment criteria are presented in the summarised Tables D1 to E.

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

The soil will be deemed contaminated if the assessment criteria are unfulfilled or containing contamination “hot spots” as defined by the NSW EPA "*Contaminated Sites: Sampling Design Guidelines*". Further investigation, remediation and / or management will be recommended if the soil is found to be contaminated or contain contamination “hot spots”.

14.2 Dam Water Sample

The available Trigger Values or Guideline Values presented in the Australian and New Zealand Guidelines for Fresh and Marine Water Quality, published by the Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand, 2000 (ANZECC & ARMCANZ Guidelines 2000) are considered applicable for assessment of any potential dam water impact on the aquatic ecosystem and irrigation use.

The dam water might be discharged into the local stormwater system, which may enter into regional creek / waterbody. In order to determine whether the dam water will impact on aquatic life if discharged into the local stormwater system, the dam water test results were assessed against the available Trigger Values for slightly-moderate disturbed freshwater system, at protection level of 95% of species, extracted from the abovementioned guidelines.

The dam water test results were also assessed against the available Short-term Trigger Values (STV) for irrigation water, also extracted from the abovementioned guidelines.

The "Guidelines for Managing Risks in Recreation Water" 2008, published by the Australian Government National Health and Medical Research Council (NHMRC) are is adopted for assessing water for recreational purposes.

The adopted assessment criteria are presented in Table G.

15.0 LABORATORY TEST RESULTS, ASSESSMENT & DISCUSSION

15.1 Analytical Results for Soil Samples

Reference may be made to Appendix D for the actual laboratory analytical reports from SGS. The laboratory test results for the soil samples analysed are presented in Tables D1 to F. A discussion of the test results is presented in the following sub-sections.

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

<u>Assessment Under the Conditions for Residential Land Use</u>

With the exception of highlighted concentrations of As, Cd, Cu, Pb, Mn, Ni and Zn in Tables D1, D3 to D5, D7 and D8, the remaining concentrations of metals were below the HIL A, EIL and / or PIL.

The highlighted concentrations of:

- As (ranging from 110mg/kg to 1,600mg/kg) exceeded the HIL A and EIL (both 100mg/kg);
- Cd (ranging from 3.1mg/kg to 100mg/kg) was in excess of the PIL (3mg/kg) and / or the HIL A (20mg/kg);
- Cu (ranging from 120mg/kg to 1,700mg/kg) and Ni (ranging from 6.2mg/kg to 140mg/kg) were in excess of the EIL; however, were well below the HIL A of 6,000mg/kg and 400mg/kg for Cu and Ni respectively;

- Pb (ranging from 310mg/kg to 2,300mg/kg) exceeded the HIL A (300mg/kg) and / or EIL (1,200mg/kg);
- Mn (3,900mg/kg to 47,000mg/kg) exceeded the HIL A (3,800mg/kg); and
- Zn (ranging from 160mg/kg to 10,000mg/kg) was in excess of the EIL and / or HIL A (7,400mg/kg).

Assessment Under the Conditions for Commercial Land Use

With the exception of highlighted concentrations of As, Cd, Cu, Pb, Ni and Zn in Tables D1, D3 to D5, D7 and D8, the remaining concentrations of metals were below the HIL A, EIL and / or PIL.

The highlighted concentrations of:

- As (ranging from 170mg/kg to 1,600mg/k) exceeded the EIL (160mg/kg); however, were well below the HIL D (3,000mg/kg);
- Cd (ranging from 3.1mg/kg to 100mg/kg) was in excess of the PIL (3mg/kg), but well below the HIL D (900mg/kg);
- Cu (ranging from 170g/kg to 1,700mg/kg) and Ni (ranging from 7.2mg/kg to 140mg/kg) were in excess of the EIL; however, were well below the HIL D of 6,000mg/kg and 400mg/kg for Cu and Ni respectively;
- Pb concentrations (ranging from 1,600mg/kg to 2,300mg/kg) exceeded the HIL D (1,500mg/kg) and / or EIL (1,900mg/kg); and
- Zn (ranging from 340mg/kg to 10,000mg/kg) was in excess of the EIL; however, was well below the HIL D (400,000mg/kg).

Based on this detailed assessment, Hg concentrations in all the recovered soil samples were below the HIL A, HIL D and PIL.

The previous contamination assessment (refer to Report 12675/4-AA) revealed that Hg concentration (1.1mg/kg) was reported marginally above the PIL (1mg/kg) in duplicate sample D4; however, it was noted that the corresponding original sample A3 (0-0.1m) reported low Hg concentration (0.58mg/kg).

Given the relatively consistent and low concentrations / less than LOR of Hg reported in the other recovered samples in the area impacted by metals the phytotoxic risk of Hg to plants under the conditions for the proposed development of *residential (with gardens / accessible soil) / open space* and commercial land uses is likely to be low.

Based on the above, it was our opinion that the soil with an elevated concentration of Hg in one of the numerous samples is not of concern.

15.1.2 Total Petroleum Hydrocarbons (TPH)

As presented in Table E, the concentrations of F2 (TPH>C10-C16) and F3 (TPH >C16-C34) were below the ESL adopted and less than the laboratory LOR.

Based on this assessment, it was our opinion that TPH F2 and F3 are not of concern in the soil in the central portion of the site.

15.1.3 Asbestos

As indicated in Table F, the fibro-cement piece was confirmed to contain asbestos. Asbestos (>7mm ACM and <7mm AF / FA) was found in the soil sample.

15.2 Analytical Results for Dam Water Sample

Reference may be made to Appendix D for the actual laboratory analytical report from SGS. The laboratory test results for the dam water sample analysed are presented in Table G.

As indicated in Table G, with the exception of Cu, Pb and Zn concentrations, the concentrations of the remaining metals (Total and Dissolved) in dam water sample were below the assessment criteria.

The concentrations of Cu (Total) in the unfiltered dam water sample and Cu (Dissolved) in the filtered dam water sample were both marginally in excess of the ANZECC freshwater guidelines; however, were well below the available STV for irrigation water and Health Value for assessing water for recreational purposes.

The concentrations of Pb and Zn (Total) in an unfiltered dam water sample were marginally in excess of the ANZECC freshwater guidelines; however, the concentrations of Pb and Zn (Dissolved) in a filtered dam water sample were below the ANZECC freshwater guidelines.

The concentrations of Pb and Zn (Total and dissolved) were well below the available STV for irrigation water and Health Value for assessing water for recreational purposes.

16.0 SITE CHARACTERISATION

Based on the test results for this and previous assessments, soils impacted by heavy metals were identified at a number of locations in an area including hematite zone and waste material zones and hematite zone.

The test results for this detailed assessment indicate that sufficient samples have been collected for delineation purposes.

The identified locations and the estimated extent of impacted by metals are as indicated on the Drawing Nos 12675/4-AB4A and 12675/4-AB4B. The identified contaminants with the associated concentrations are summarised in the summary tables under the conditions for residential or commercial land use as detailed below:

<u>Under the Conditions for Residential Land Use</u>

As indicated in the table on Drawing No 12675/4-AB4A:

- Concentrations of As (ranging from 110mg/kg to 1,600mg/kg) would present / potentially present a risk to human health and terrestrial ecosystems.
- Concentrations of Cd (ranging from 3.1mg/kg to 100mg/kg) might pose potential risk to the environment and have impact on plant growth and present / potentially present a risk of harm to human health.
- Concentrations of Cu (ranging from 77mg/kg to 1,700mg/kg) and Ni (ranging from 6.2mg/kg to 140mg/kg) might pose potential risk to terrestrial ecosystems, but will not present a risk of harm to human health.

- Pb concentrations (ranging from 310mg/kg to 2,300mg/kg) would present / potentially present a risk of harm to human health and/or potentially post risk to terrestrial ecosystems.
- Mn concentrations (3,900mg/kg and 47,000mg/kg) would pose / potentially pose a risk to human health.
- Zn concentrations (ranging from 160mg/kg to 10,000mg/kg) might pose / potential pose risk to terrestrial ecosystems and / or potentially present a risk of harm to human health.

Under the Conditions for Commercial/Industrial Land Use

As shown in the table on Drawing No 12675/4-AB4B:

- Concentrations of As (ranging from 170mg/kg to 1600mg/kg), Cu (ranging from 110mg/kg to 1,700mg/kg), Ni (ranging from 7.2mg/kg to 140mg/kg) and Zn (ranging from 340mg/kg to 10,000mg/kg) might pose or potentially pose risk to terrestrial ecosystems, but will not present a risk of harm to human health.
- Concentrations of Cd (ranging from 3.1mg/kg to 100mg/kg) might pose potential risk to the environment and have impact on plant growth, but will not present a risk of harm to human health.

If the soil with elevated concentrations of As, Cd, Cu, Ni and Zn remains insitu and beneath the new building / structure / road, the EIL will no longer be the appropriate threshold level. However, an appropriate management plan should be prepared.

- Pb concentrations (ranging from 1,600mg/kg to 2,300mg/kg) in samples D139 (0-0.1m), D140 (0.2-0.3m) and D151 (0-0.1m) would present / potentially present a risk of harm to human health and/or potentially post risk to terrestrial ecosystems.

An area with scattered debris and asbestos (ACM and AF / FA) was identified (refer to Drawing No 12675/4-AB4A for the approximate extent).

Bonded asbestos-cement sheets / pieces generally do not present a significant health risk unless tooled, cut, sanded, abraded or machined, which would release asbestos dust containing tiny, almost indestructible fibres that can cause damage to the lungs when breathed in.

As such, some form of remediation and/or management process is required.

Migration of soil contaminants to the groundwater regime would generally be via leaching of contaminants from the soil, facilitated by infiltration of surface water. Groundwater or seepage was not encountered during sampling to a depth of approximately 14.5m below the EGL at groundwater monitoring well GW1. As shown in Tables D9 and D9A, concentrations of metals in all the samples recovered from GW1 were below the assessment criteria adopted.

It should be noted that the level of groundwater might vary due to rainfall and other factors not evident during this investigation.

It is recommended that the groundwater level should be checked when there is a substantial rainfall to recharge the groundwater table.

If the groundwater is available, our field engineer will develop the monitoring well and recover groundwater samples including quality assurance (QA) and quality control (QC) samples for laboratory testing of metals.

An artificial drainage channel and a small surface water dam situated within the drainage channel to the southeast of the hematite zone were observed within the vicinity of the area impacted by metals that might capture or divert stormwater run-off.

The laboratory test results for the water sample collected from the small surface water dam indicated dissolved Cu concentration in excess of the ANZECC freshwater guidelines. It is our opinion that the impact on the dam water is minimal.

Based on the above, potential off-site impacts of contaminants on groundwater and waterbodies are considered to be low.

17.0 CONCLUSION AND RECOMMENDATIONS

The DQO outlined in the report have been satisfied.

The findings of this assessment are summarised as follows:

- One AEC (area including hematite zone and waste material zones) and one potential AEC (central portion of the site where detectable concentrations of TPH F2 and F3 were identified previously) have been identified on the subject site based on the results of previous assessment.
- The site is proposed for combined residential (with garden / accessible soil) / open space and commercial land use.
- TPH F2 and F3 are not of concern in the soil in the central portion of the site.
- Based on the test results for this and previous assessments, soils impacted by heavy metals were identified at a number of locations in an area including hematite zone and waste material zones and hematite zone. Concentrations of the heavy metals would present or potentially present a risk of harm to human health and / or environment.

  The identified locations and the estimated extent of impacted by metals are as indicated on the Drawing Nos 12675/4-AB4A and 12675/4-AB4B. The identified contaminants with the associated concentrations are summarised in the summary tables under the conditions for residential or commercial / industrial land use.
- An area with scattered debris and asbestos (bonded ACM and FA / AF) was identified (refer to Drawing No 12675/4-AB4A for the approximate extent).
- One groundwater monitoring well was installed. The monitoring well was dry at and after the completion of borehole drilling / well installation in February 2017.
- The concentrations of Cu (Total) in the unfiltered dam water sample and Cu (Dissolved) in the filtered dam water sample were both marginally in excess of the ANZECC freshwater guidelines.
- Potential off-site impacts of contaminants on groundwater and waterbodies are considered to be low.
- Some form of remediation / management and validation of the site are required.

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

1. A human health and ecological risk assessment to determine the source of metal impacts and to determine the requirements and to devise strategies for remediation and / or management, if required.

2. Checking the groundwater level when there is a substantial rainfall to recharge the groundwater table.

   If the groundwater is available, it is recommended that the monitoring well should be developed and assessment of the groundwater be undertaken by appropriate sampling and laboratory testing of metals.

3. A remedial action plan / environmental management plan is to be developed to devise strategies for remediation / management of the metal impacted area if required based on the risk assessment.

4. Remediation / management of the area impacted by metals and/or asbestos, followed by site validation should be carried out.

   It is our opinion that remediation / management and validation of soils in the area impacted by with metals and / or asbestos could be carried out in conjunction with the assessment, remediation and validation of the Exclusive Area (30m buffer around AEC10 and AEC13), following the demolition and removal of the site features at later stage.

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

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

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

18.0 LIMITATIONS

The services performed by Geotechnique in preparing 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 the purposes stated within. This report can also be relied upon by Queanbeyan City Council for development and building application assessment processes, and by Site Auditor Mr R Harwood for site auditing purposes. Any reliance on this report by other parties shall be at such parties' sole risk as the report might not contain sufficient information for other purposes.

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

The information in this report is considered accurate at the date of issue, in accordance with current site conditions during the recent field sampling for this assessment (13 to 17 February 2017). Any variations to the site form or use beyond these dates could nullify the conclusion stated.

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

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

LIST OF REFERENCES

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

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

Contamination Assessment Report *(Ref: 12675/4-AA dated 31 May 2016) prepared by Geotechnique Pty Ltd (Geotechnique)*

Contaminated Land Management Act 1997

Contaminated Land Management Regulation 1998

Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites – NSW Environment Protection Authority 1997 / 2011

Contaminated Sites: Guidelines for the NSW Site Auditor Scheme (2nd Edition) – Department of Environment and Conservation NSW 2006

Geology of Canberra 1:100,000 Sheet (8727) – Bureau of Mineral Resources, 1992

Detailed Contamination Assessment Report *(Ref: 12675/2-AA dated 12 September 2014) prepared by Geotechnique*

Googong Local Environment Study, Phase 1 Environmental Site Assessment Report (Ref: C7552/1-AC dated 4 July 2004) prepared by Coffey Geosciences Pty Ltd

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

May 2016 Monitoring Report (Ref. 30011525-AQ, dated 22 June 2016) prepared by SMEC Australia Pty Ltd

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

Protection of the Environment Operations Act – 1997

Protection of the Environment Operations (Waste) Regulation 2005 – General Exemption Under Part 6, Clause 51 and 51A – The Excavated Natural Material Exemption 2012

Remedial Works and Validation Plan (Ref: 12675/3-L3 dated 10 November 2015) prepared by Geotechnique

Revised Sampling, Analytical and Quality Plan (SAQP) (Ref: Q6555-L1R1 dated 11 April 2014) prepared by Geotechnique

Sampling, Analytical and Quality Plan for the Remediation of Googong Township Residential Development (Ref: J1526.2R-rev0 dated April 2012) prepared by CM Jewell & Associates Pty Ltd

Sampling, Analysis and Quality Plan (SAQP) (Ref: 12675/4-L1 dated 19 February 2016) prepared by Geotechnique

Sampling & Testing Program (Ref: 12675/4-L2 dated 11 March 2016) prepared by Geotechnique

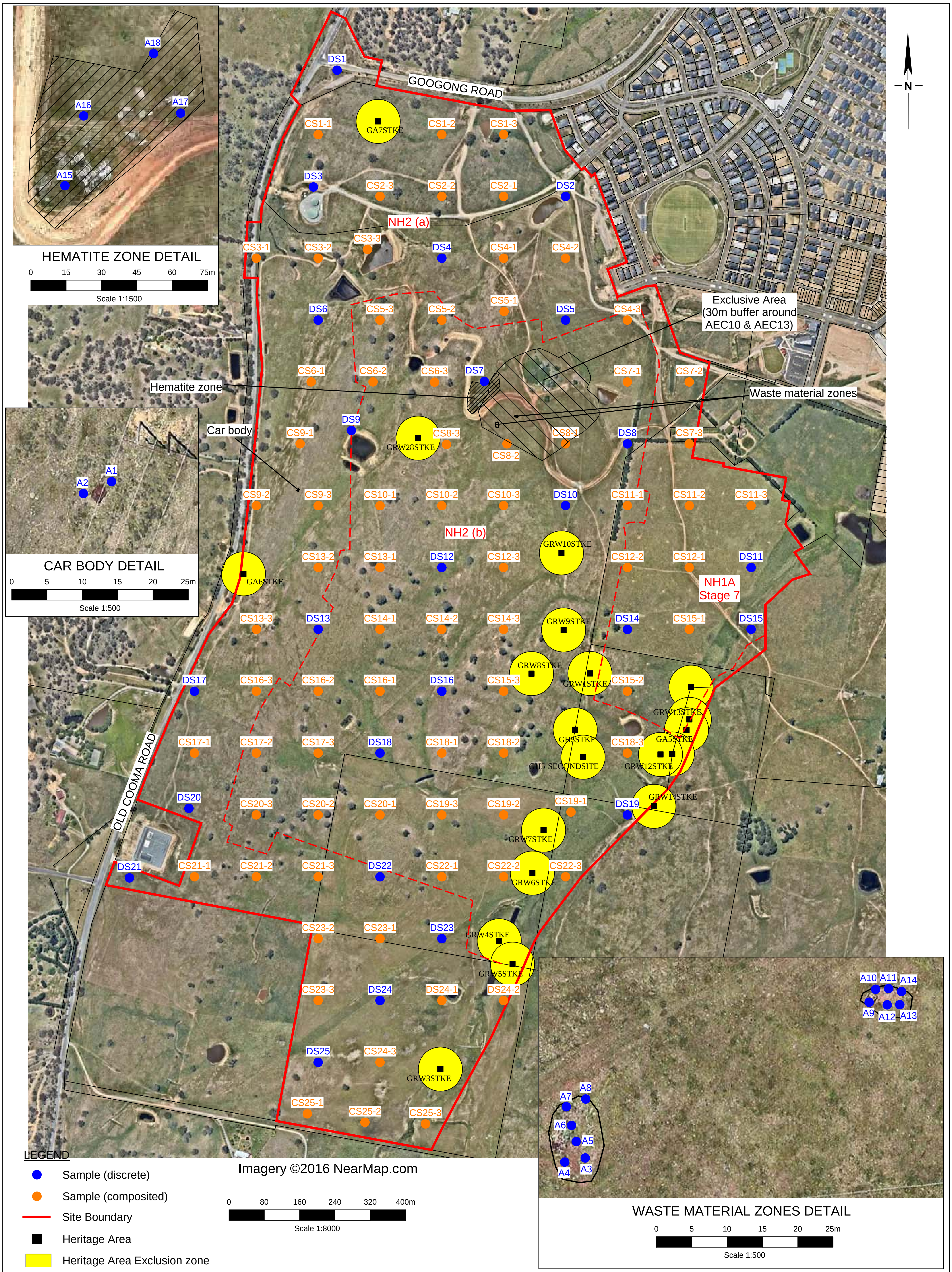
Sampling & Testing Plan Update in an email dated 4 April 2016 prepared by Geotechnique

Soil Landscape of Canberra 1:100,000Sheet (8727) – NSW Department of Land and Water Conservation, 2000

Supplementary Sampling, Analysis and Quality Plan (SAQP) & Remedial Works Plan (Ref: 12675/2-L1 dated 22 August 2014) *prepared by Geotechnique*

DRAWINGS

12675/4-AA1	*Sample Locations*
12675/4-AA2	*Locations of Contamination*
12675/4-AB1	*Detailed Sampling Locations – Area including Hematite Zone and Waste Zones*
12675/4-AB2	*Sampling Locations – Further Investigation TPH F2 and F3 (Central Portion of the Site)*
12675/4-AB3	*Groundwater Bore Locations*
12675/4-PS1	*Detailed Sampling Locations – Hematite Zone and Waste Area*
12675/4-PS2	*Sampling Locations – Further Investigation TPH F2 and F3*
12675/4-ABP1	*Proposed Sample Locations*
12675/4-ABP2	*Existing and Proposed Groundwater Bore Locations*
12675/4-AB4A	*Locations and Approximate Extent of Contamination* *Under Conditions for Residential Use* *Laboratory Summary Tables for Drawing No 12675/4-AB4A*
12675/4-AB4B	*Locations and Approximate Extent of Contamination* *Under Conditions for Commercial Use* *Laboratory Summary Tables for Drawing No 12675/4-AB4B*



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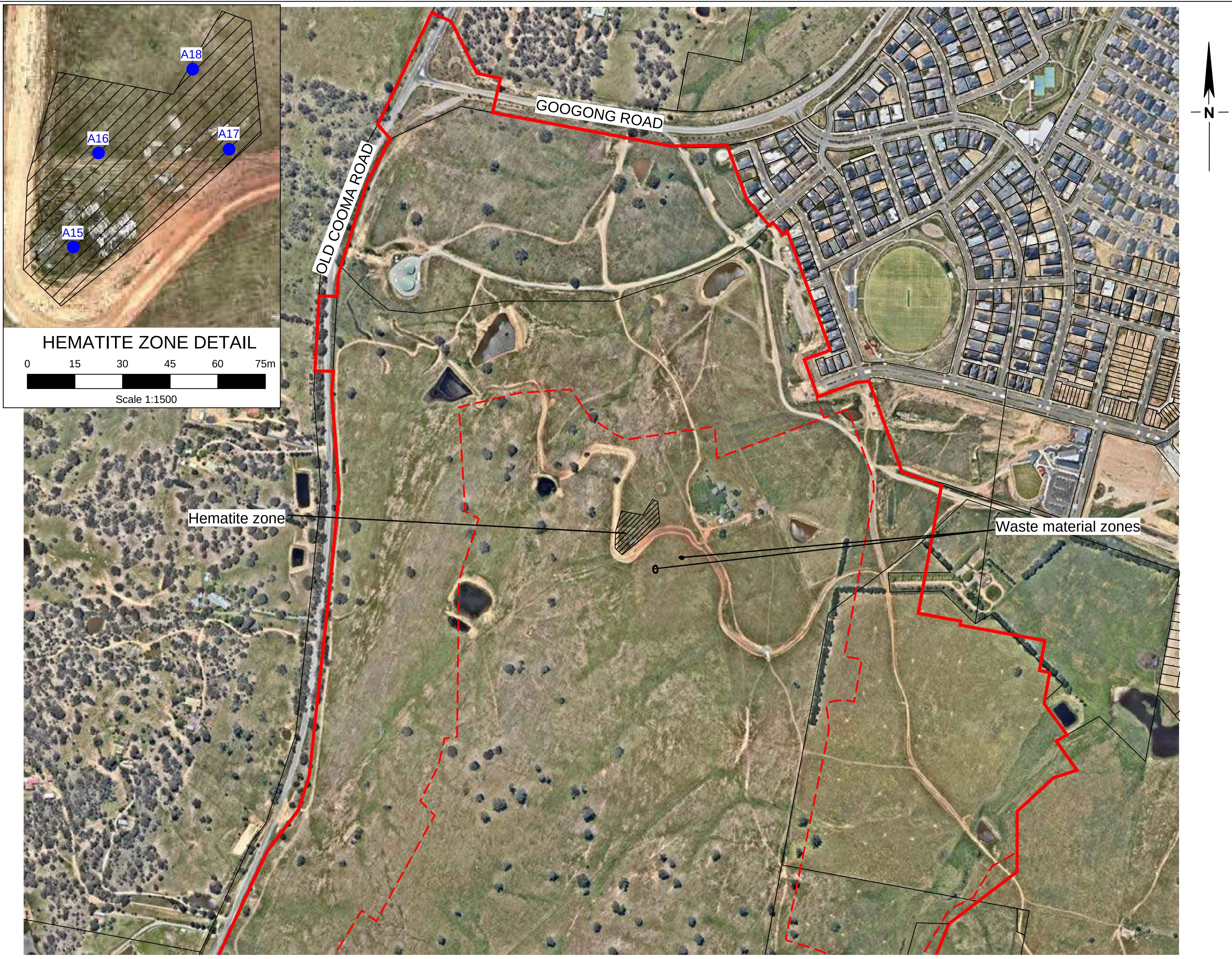
Sample Locations

Drawing No: 12675/4-AA1
Job No: 12675/4
Drawn By: MH
Date: 16 May 2016
Checked By: JH/JX

File Ref: 12675-4
Layers: 0, AA1



LEGEND

- Sample (discrete)
- Site Boundary

Imagery ©2016 NearMap.com

0 80 160 240 320 400m

Scale 1:8000

Sample Location	Depth (m)	Contaminant	Concentration (mg/kg)
A3	0-0.1	As, Cd, Cu, Pb, Ni & Zn	**140, 4.8, 77, 360, 49 & 2400**
Duplicate D4 = A3 (0-0.1m)		As, Cd, Hg, Ni & Zn	**110, 4.8, 1.1, 18 & 2100**
A4	0-0.1	As, Cd, Ni & Zn	**440, 8.0, 20 & 2700**
A5	0-0.1	As, Cd, Cu, Ni & Zn	**270, 14, 83, 22 & 4100**
A6	0-0.1	As, Cd, Ni & Zn	**350, 9.0, 20 & 3500**
A7	0-0.1	As, Cd, Pb, Ni & Zn	**350, 8.6, 330, 23 & 2500**
A8	0-0.1	As, Cd, Pb, Ni & Zn	**290, 8.5, 330, 26 & 2300**
A9	0-0.1	As, Cd, Cu, Pb & Zn	**200, 3.3, 78, 330 & 1100**
A10	0-0.1	As, Cd, Cu, Pb & Zn	**190, 3.6, 120, 330 & 1100**
A11	0-0.1	As, Cd, Cu, Pb, Ni & Zn	**200, 4.0, 1100, 360, 29 & 1400**
A12	0-0.1	As, Cd, Cu, Pb & Zn	**210, 3.2, 99, 340 & 1200**
A13	0-0.1	As, Cd, Cu, Pb & Zn	**200, 3.2, 110, 320 & 1100**
A14	0-0.1	As, Cd, Cu & Zn	**180, 3.3, 100 & 1000**
A15	0-0.1	As, Cd, Cu, Pb, Mn, Ni & Zn	**170, 4.2, 580, 330, 4200, 19 & 1000**
A16	0-0.1	As, Cd, Cu, Ni & Zn	**160, 3.3, 1100, 18 & 1000**
A17	0-0.1	As, Cd, Cu & Zn	**150, 3.7, 520 & 920**
A18	0-0.1	As, Cd, Cu, Mn, Ni & Zn	**150, 3.7, 990, 5300, 18 & 1100**
Assessment Criteria (mg/kg)	As = **100** (HIL A) & **100** (EIL)		
	Cd = **3** (PIL)		
	Cu = **75** (EIL)		
	Pb = **300** (HIL A)		
	Mn = **3800** (HIL A)		
	Hg = **1** (PIL)		
	Ni = **15** (EIL)		
	Zn = **170** (EIL)		

Notes: As, Cd, Cu, Pb, Mn, Hg, Ni, Zn : arsenic, cadmium, copper, lead, manganese, mercury, nickel, zinc

HIL A : Health-based Investigation Level for residential with garden/accessible soil

EIL : Ecological Investigation Level for urban residential land use

PIL : Provisional Phytotoxity-Based Investigation Level

WASTE MATERIAL ZONES DETAIL

0 5 10 15 20 25m

Scale 1:500

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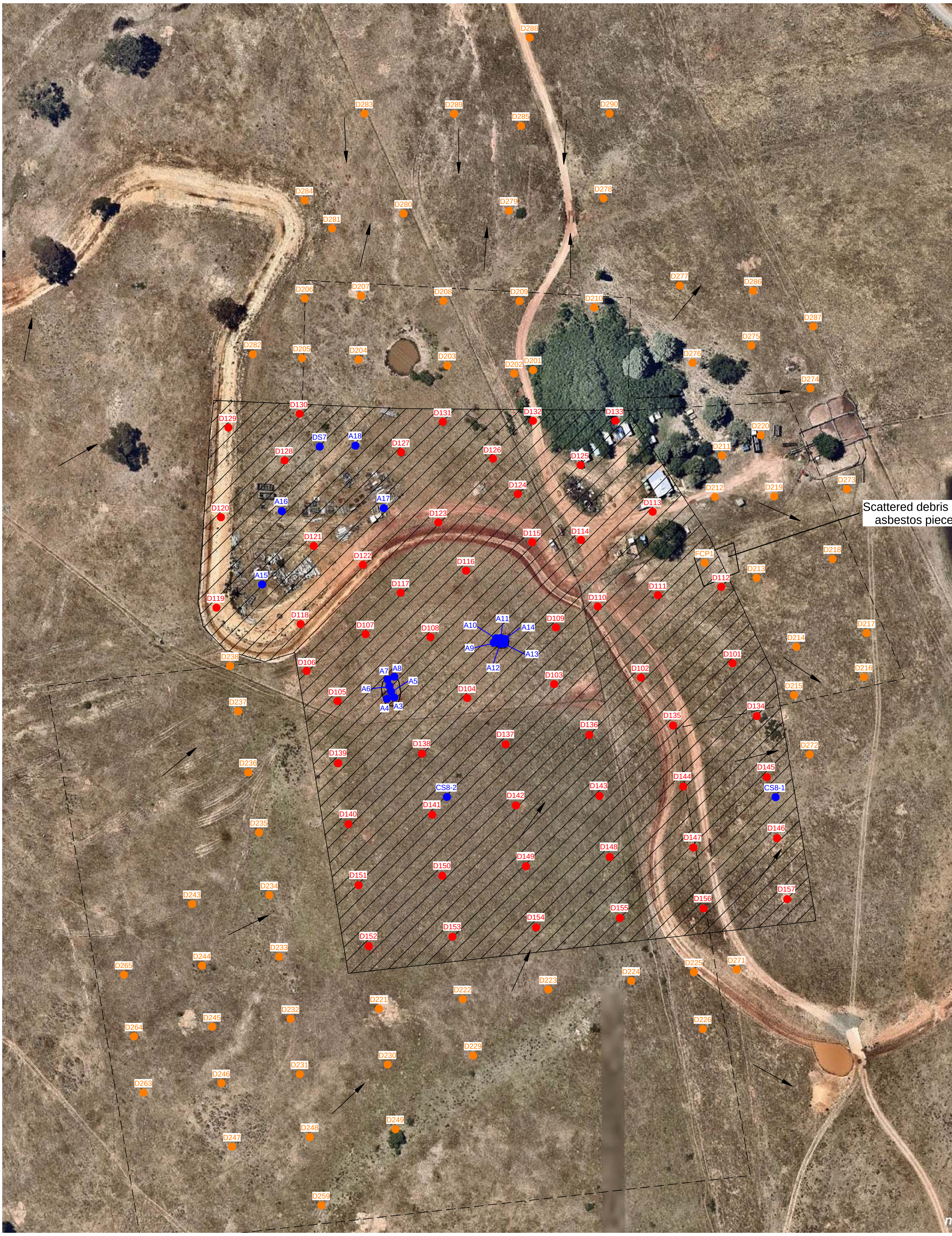
Canberra Investment Corporation
Neighbourhood 1A, Stage 7 & Neighbourhood 2
Googong Road
Googong

Locations of Contamination

Drawing No: 12675/4-AA2
Job No: 12675/4
Drawn By: MH
Date: 16 May 2016
Checked By: X

File Ref: 12675-4
Layers: 0, AA2



N

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LEGEND

- Sample (April 2016)
- Sample (October 2016)
- Sample (February 2017)
- Ground Slope
- Hematite Zone

0 15 30 45 60 75m

Scale 1:1500

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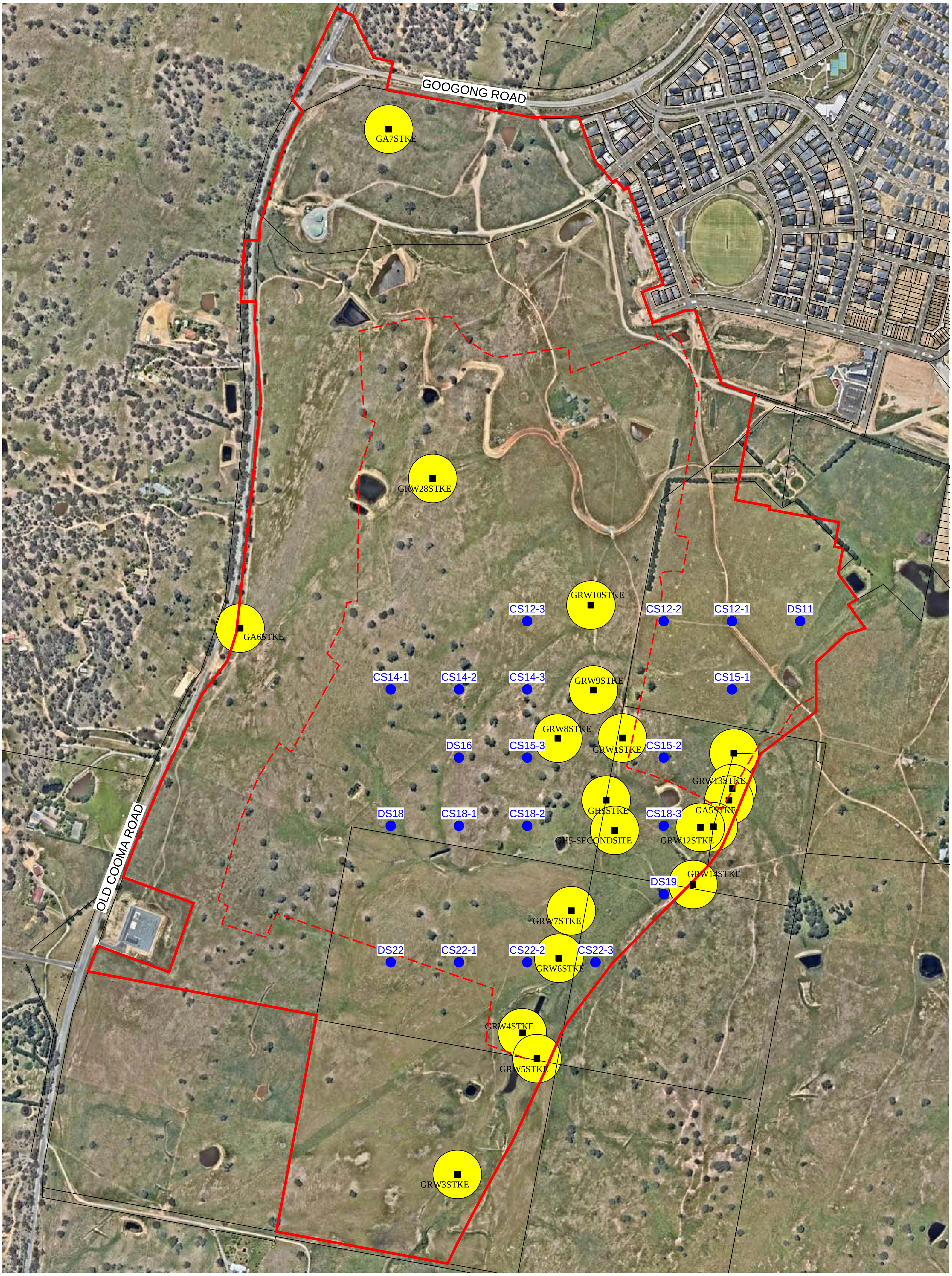
Peet Limited
Neighbourhood 1A, Stage 7 & Neighbourhood 2
Googong Road
Googong

Detailed Sampling Locations
Area Including Hematite Zone and Waste Zones

Drawing No: 12675/4-AB1
Job No: 12675/4
Drawn By: MH
Date: 9 May 2017
Checked By: JX/JH/SS

File Ref: 12675-4
Layers: 0, AB1



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LEGEND

- Sample
- Site Boundary
- Heritage Area
- Heritage Area Exclusion zone

0 80 160 240 320 400m

Scale 1:8000

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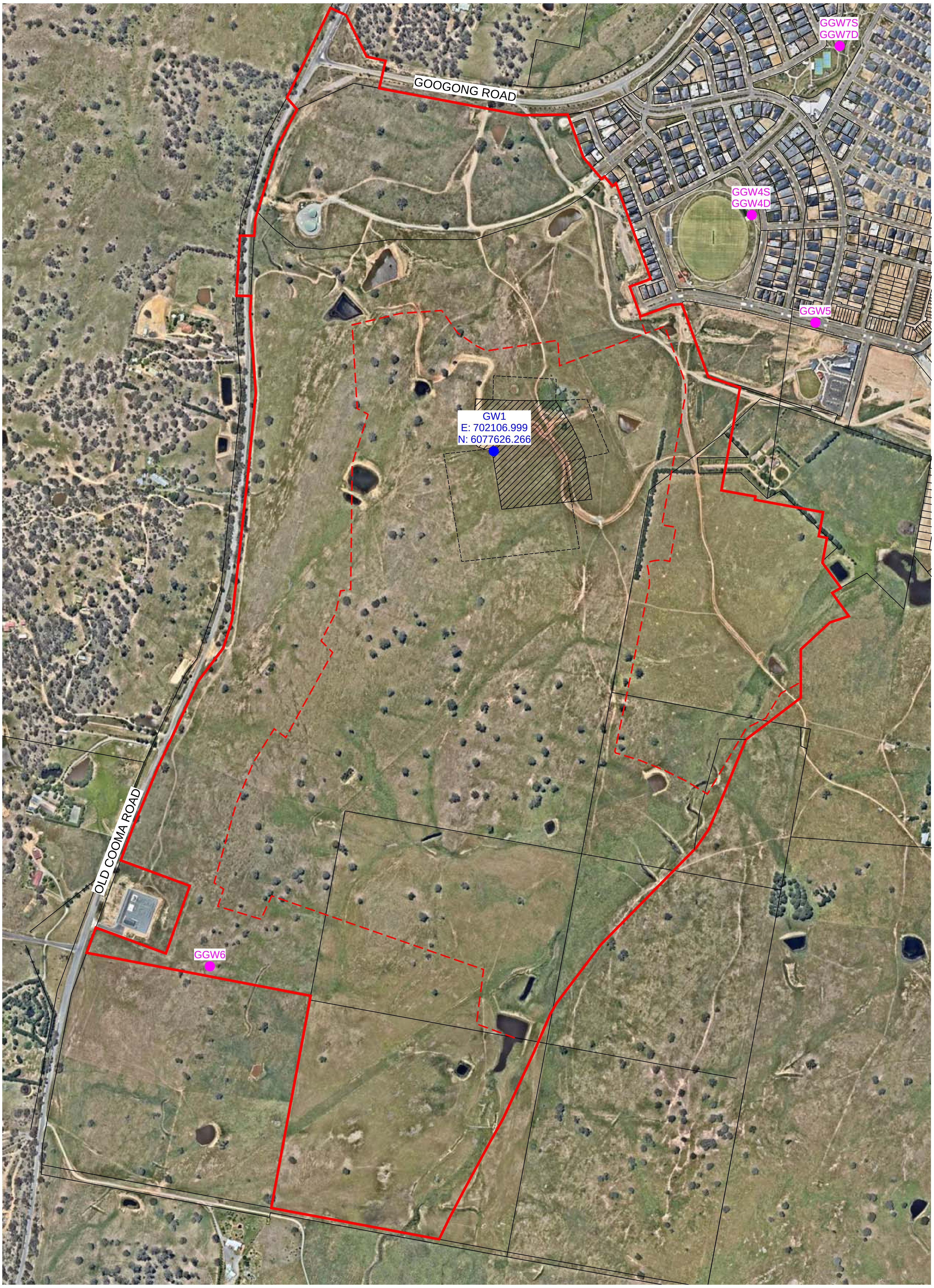
		Sampling Locations - Further Investigation of TPH F2 and F3 (Central Portion of the Site)	File Ref: 12675-4 Layers: 0, AB2



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LEGEND

- Groundwater Bore (SMEC)
- Groundwater Bore (Installed on 15 February 2017)

0 80 160 240 320 400m

Scale 1:8000

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Peet Limited
Neighbourhood 1A, Stage 7 & Neighbourhood 2
Googong Road
Googong

Groundwater Bore Locations

Drawing No: 12675/4-AB3
Job No: 12675/4
Drawn By: MH
Date: 9 May 2017
Checked By: JX

File Ref: 12675-4
Layers: 0, AB3

LEGEND

- Sample (April 2016)
- Proposed Sample
- Hematite Zone

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0 10 20 30 40 50m

Scale 1:1000

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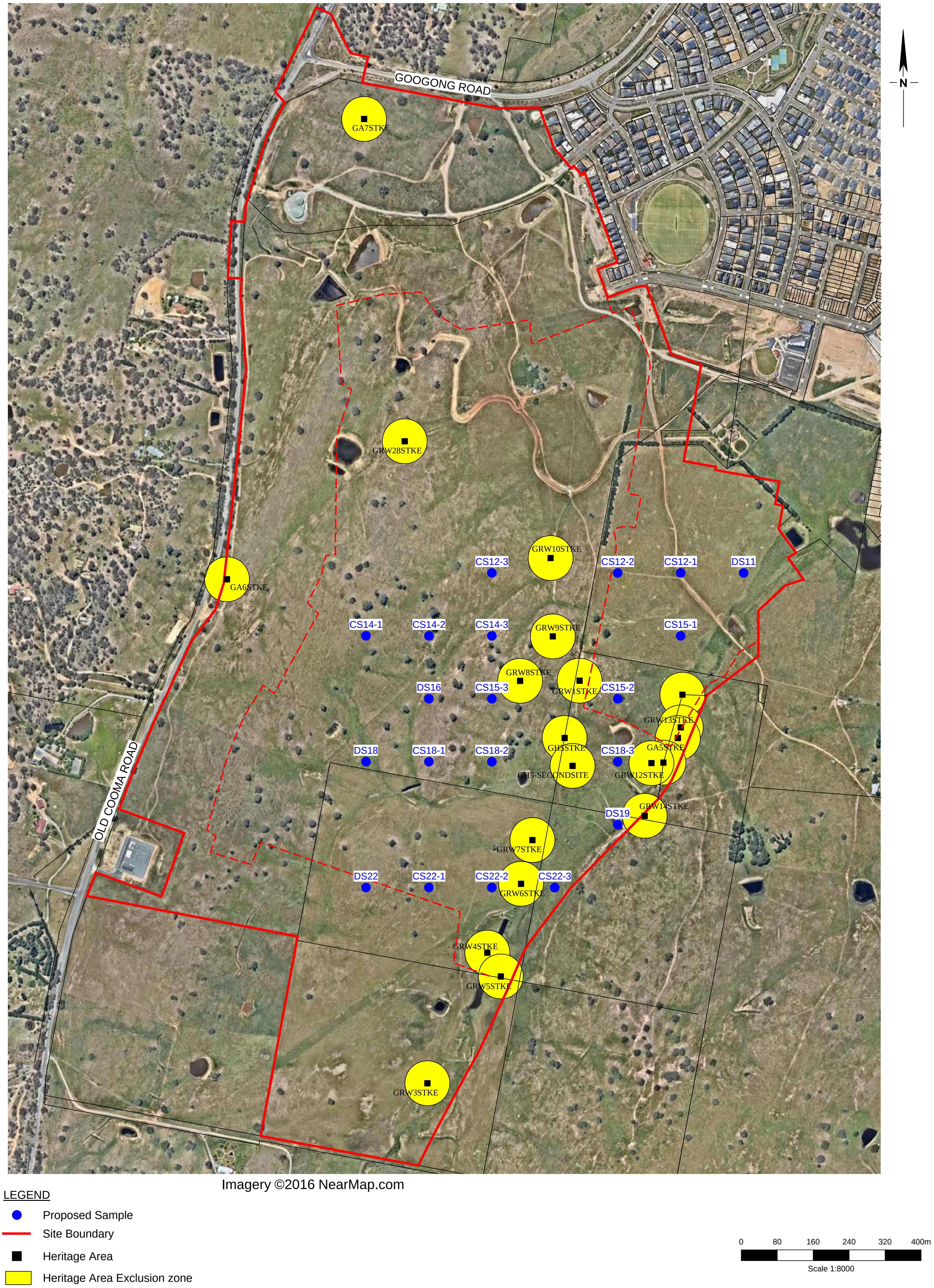
Canberra Investment Corporation
Neighbourhood 1A, Stage 7 & Neighbourhood 2
Googong Road
Googong

Proposed Detailed Sampling Locations
Hematite Zone and Waste Area

Drawing No: 12675/4-PS1
Job No: 12675/4
Drawn By: MH
Date: 30 September 2016
Checked By: JX

File Ref: 12675-4
Layers: 0, PS1



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LEGEND

- Proposed Sample
- Site Boundary
- Heritage Area
- Heritage Area Exclusion zone

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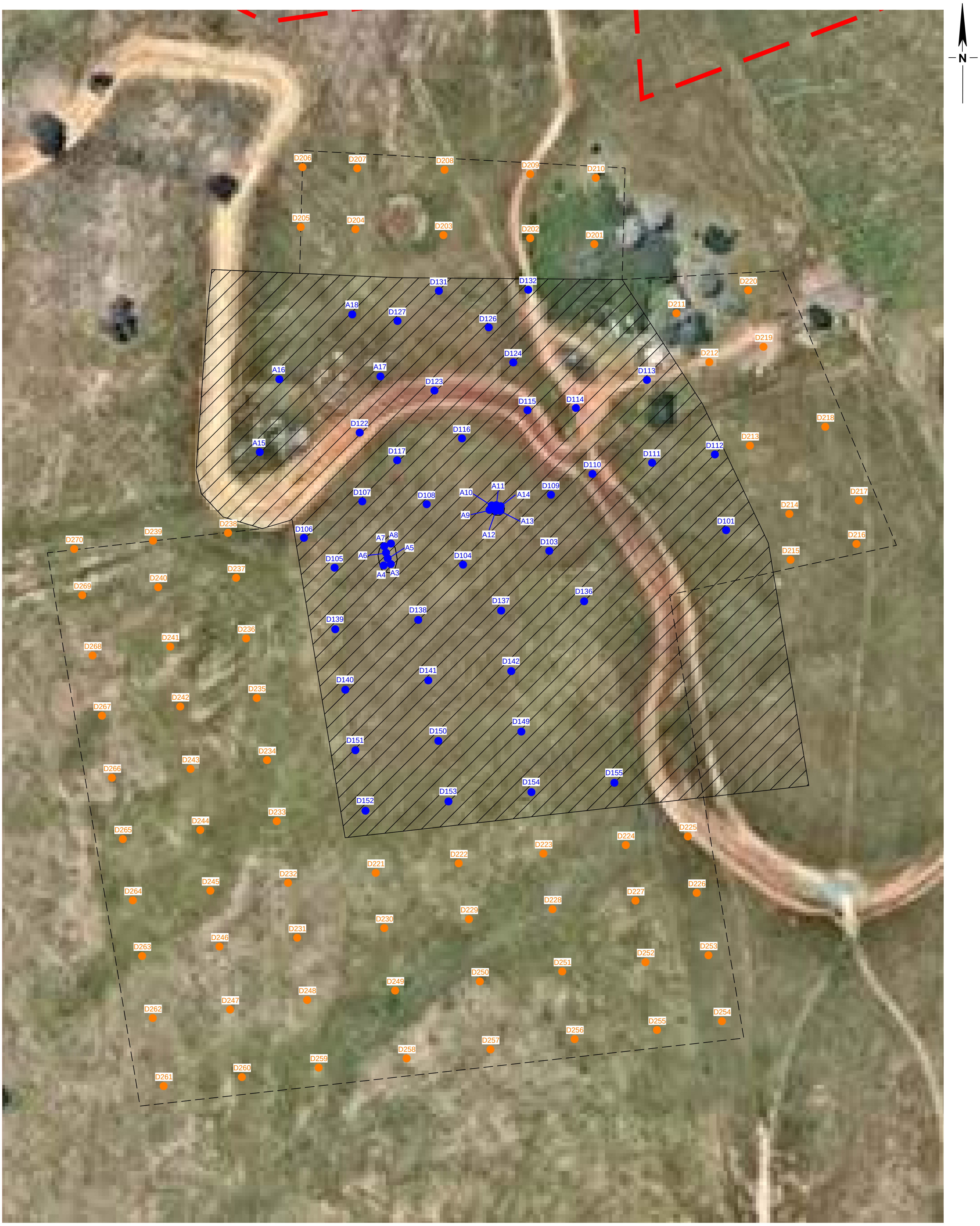
Neighbourhood 1A, Stage 7 & Neighbourhood 2
Googong Road
Googong

Proposed Sampling Locations
Further Investigation of TPH F2 and F3

Drawing No: 12675/4-PS2
Job No: 12675/4
Drawn By: MH
Date: 26 September 2016
Checked By: JX

File Ref: 12675-4
Layers: 0, PS2



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LEGEND

- Sample (Location of Contamination)
- Sample (Proposed Location for Further Investigation)
- Site Boundary

0 15 30 45 60 75m

Scale 1:1500

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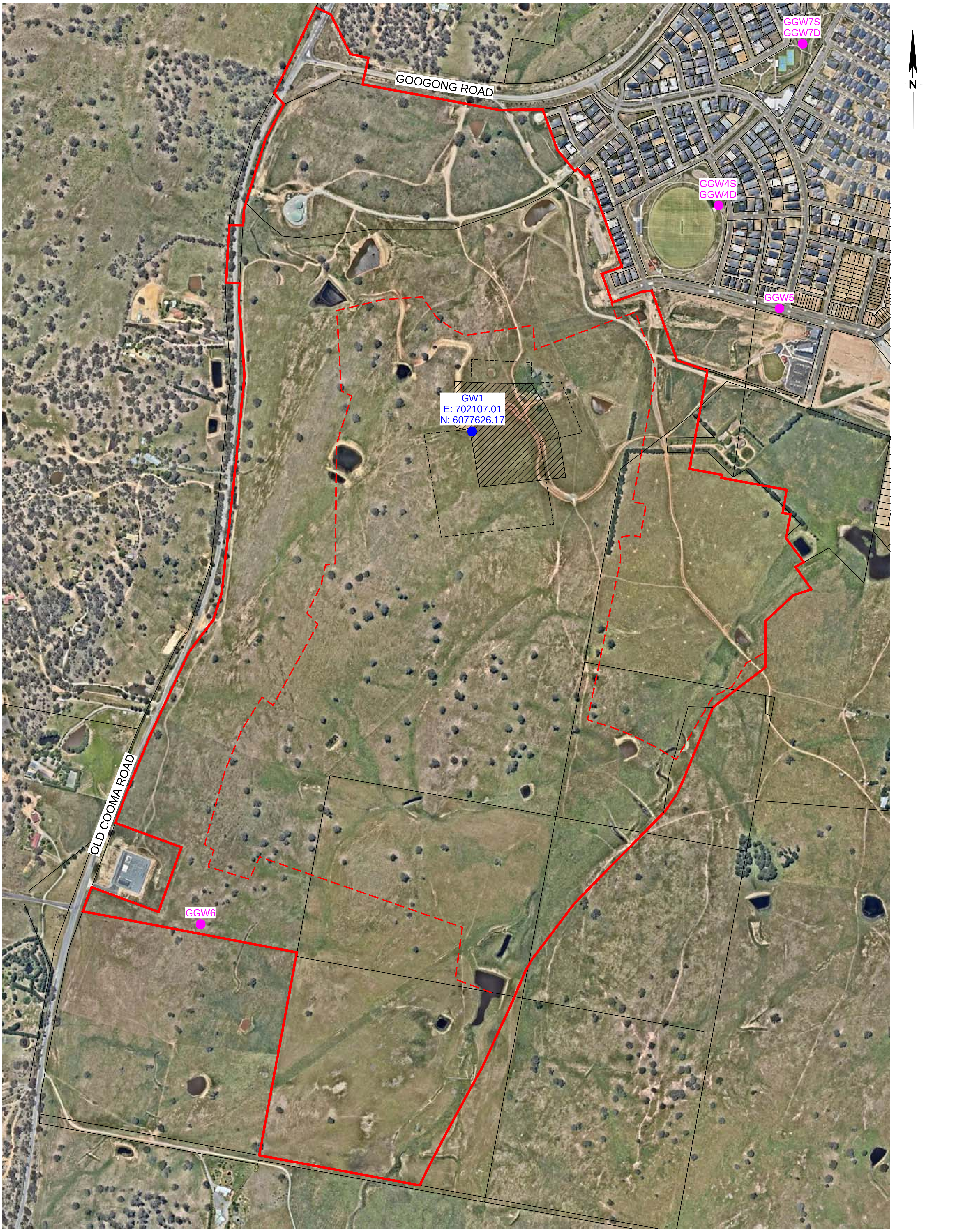
Neighbourhood 1A, Stage 7 & Neighbourhood 2
Googong Road
Googong

Proposed Sample Locations

Drawing No: 12675/4-ABP1
Job No: 12675/4
Drawn By: MH
Date: 11 January 2017
Checked By: JX

File Ref: 12675-4
Layers: 0, ABP1



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LEGEND

- Existing Groundwater Bore (SMEC)
- Proposed Groundwater Bore

0 80 160 240 320 400m

Scale 1:8000

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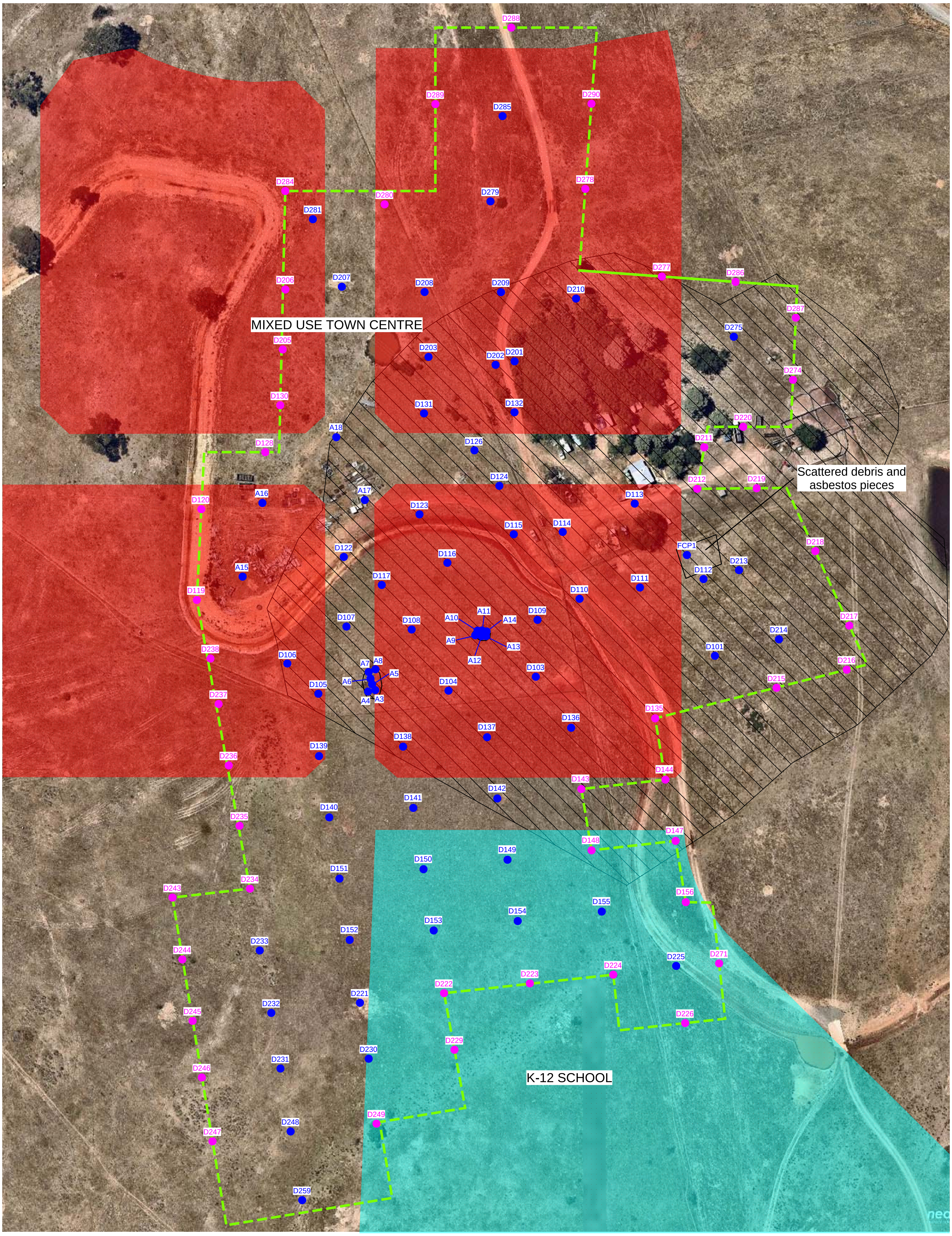
Canberra Investment Corporation
Neighbourhood 1A, Stage 7 & Neighbourhood 2
Googong Road
Googong

Existing and Proposed Groundwater Bore Locations

Drawing No: 12675/4-ABP2
Job No: 12675/4
Drawn By: MH
Date: 31 January 2017
Checked By: JX

File Ref: 12675-4
Layers: 0, ABP2



Imagery ©2017 NearMap.com

LEGEND

- Sample (Location of Contamination)
- Sample (Uncontaminated)
- Estimated Extent of Contamination
- Exclusive Area (30m Buffer Around AEC10 & AEC13)

0 15 30 45 60 75m

Scale 1:1500

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Peet Limited
Neighbourhood 1A, Stage 7 & Neighbourhood 2
Googong Road
Googong

Locations and Extent of Contamination
Under Conditions for Residential Use

Drawing No: 12675/4-AB4A
Job No: 12675/4
Drawn By: MH
Date: 9 May 2017
Checked By: JX

File Ref: 12675-4
Layers: 0, AB4A

Table for the Locations of Contamination Plan

Drawing No. 12675/4-AB4A

Sample Location	Depth (m)	Contaminant	Concentration (mg/kg)
A3	0-0.1	As, Cd, Cu, Pb, Ni & Zn	140, 4.8, 77, 360, 49 & 2400
A4	0-0.1	As, Cd, Ni & Zn	440, 8.0, 20 & 2700
	0.25-0.35	As, Cd, Pb, Mn, Ni, Zn	300, 7, 420, 7400, 44, 2700
	0.5-0.6	As, Cd, Pb, Mn, Zn	380, 7.6, 540, 6200, 3100
A5	0-0.1	As, Cd, Cu, Ni & Zn	270, 14, 83, 22 & 4100
A6	0-0.1	As, Cd, Ni & Zn	350, 9.0, 20 & 3500
	0.25-0.35	As, Cd, Mn, Ni, Zn	300, 9, 8800, 45, 3100
	0.5-0.6	As, Cd, Mn, Zn	340, 12, 7400, 4100
A7	0-0.1	As, Cd, Pb, Ni & Zn	350, 8.6, 330, 23 & 2500
A8	0-0.1	As, Cd, Pb, Ni & Zn	290, 8.5, 330, 26 & 2300
	0.25-0.35	As, Cd, Mn, Zn	310, 11, 9400, 3700
	0.5-0.6	As, Cd, Pb, Mn, Zn	270, 10, 350, 7700, 3300
	1.0-1.1	As, Cd, Mn, Zn	260, 8.2, 8000, 3000
A9	0-0.1	As, Cd, Cu, Pb & Zn	200, 3.3, 78, 330 & 1100
	0.25-0.35	As, Cd, Cu, Pb, Zn	180, 3.6, 310, 340, 1100
	0.5-0.6	As, Pb, Mn, Zn	160, 310, 4200, 870
A10	0-0.1	As, Cd, Cu, Pb & Zn	190, 3.6, 120, 330 & 1100
A11	0-0.1	As, Cd, Cu, Pb, Ni & Zn	200, 4.0, 1100, 360, 29 & 1400
	0.25-0.35	As, Cd, Mn, Zn	220, 3.9, 4600, 1400
	0.5-0.6	As, Cd, Mn, Ni, Zn	390, 17, 12000, 51, 6300
	1.0-1.1	As, Cd, Mn, Zn	300, 14, 7300, 3900
	1.9-2.0	As, Cd, Mn, Zn	540, 49, 7800, 7600
A12	0-0.1	As, Cd, Cu, Pb & Zn	210, 3.2, 99, 340 & 1200
A13	0-0.1	As, Cd, Cu, Pb & Zn	200, 3.2, 110, 320 & 1100
	0.25-0.35	As, Cd, Cu, Mn, Zn	250, 3.8, 200, 5700, 1400
	0.5-0.6	As, Cu, Zn	200, 160, 810
A14	0-0.1	As, Cd, Cu & Zn	180, 3.3, 100 & 1000
A15	0-0.1	As, Cd, Cu, Pb, Mn, Ni & Zn	170, 4.2, 580, 330, 4200, 19 & 1000
A16	0-0.1	As, Cd, Cu, Ni & Zn	160, 3.3, 1100, 18 & 1000
A17	0-0.1	As, Cd, Cu & Zn	150, 3.7, 520 & 920
	0.2-0.3	As, Cu, Zn	520, 640, 560
	0.5-0.6	As, Cd, Cu, Pb, Mn, Zn	600, 4, 870, 730, 4300, 1000
	1.0-1.1	As, Cu, Zn	420, 320, 770
	1.9-2.0	As, Cd, Cu, Pb, Mn, Ni, Zn	410, 16, 250, 570, 12000, 130, 2500
A18	0-0.1	As, Cd, Cu, Mn, Ni & Zn	150, 3.7, 990, 5300, 18 & 1100
D101	1.0-1.1	Pb, Mn	490, 4000
D103	0-0.1	As, Zn	140, 890
	0.2-0.3	As, Pb, Zn	140, 310, 800
D104	0-0.1	As, Zn	230, 830
	0.2-0.3	As, Pb, Zn	210, 310, 960
D105	0-0.1	As, Pb	150, 370
	0.2-0.3	As, Cu, Pb, Zn	240, 140, 410, 320
D106	0-0.1	Ni	20
D107	0-0.1	As, Cu, Pb, Ni, Zn	180, 150, 500, 25, 630
	0.2-0.3	As, Cu, Pb, Zn	200, 170, 430, 640
D108	0-0.1	As, Pb, Ni, Zn	110, 620, 16, 870
	0.2-0.3	As, Cd, Pb, Zn	150, 3.1, 710, 1000
D109	0-0.1	As, Pb, Ni, Zn	120, 310, 17, 650
	0.2-0.3	As, Zn	120, 630
D110	0-0.1	As, Pb, Ni, Zn	150, 330, 16, 520
	0.2-0.3	As, Zn	270, 490

Sample Location	Depth (m)	Contaminant	Concentration (mg/kg)
D111	0-0.1	Pb, Zn	310, 280
	0.2-0.3	Pb, Zn	330, 340
D112	0-0.1	Pb, Zn	560, 280
	0.2-0.3	As, Pb	110, 420
D113	0-0.1	As	110
	0.2-0.3	As, Zn	260, 300
D114	0.2-0.3	Zn	300
D115	0-0.1	Pb, Zn	320, 610
	0.2-0.3	Pb, Mn, Zn	410, 5500, 630
D116	0-0.1	As, Cd, Pb, Zn	120, 4, 620, 1200
	0.2-0.3	As, Cd, Cu, Pb, Mn, Zn	200, 6.7, 180, 760, 5200, 2900
	1.0-1.1	As, Cd, Cu, Pb, Mn, Ni, Zn	220, 7.8, 210, 790, 4800, 35, 3100
	1.4-1.5	As, Cd, Cu, Pb, Mn, Ni, Zn	530, 46, 720, 710, 18000, 36, 2000
D117	0-0.1	As, Pb, Ni, Zn	180, 960, 23, 1100
	0.2-0.3	As, Pb, Zn	170, 1000, 1100
D122	0-0.1	As, Pb, Ni, Zn	120, 430, 16, 250
	0.2-0.3	As, Cu	140, 120
D123	0-0.1	Cd, Pb, Ni, Zn	3.9, 370, 18, 1300
	0.2-0.3	Zn	1100
D124	0-0.1	Zn	380
	0.2-0.3	Pb, Zn	310, 310
D126	0.2-0.3	Zn	300
D127	0-0.1	As, Cd, Cu, Pb, Ni, Zn	250, 3.5, 310, 660, 33, 1500
	0.2-0.3	As, Cd, Cu, Pb, Zn	270, 3.3, 210, 630, 1800
D131	0-0.1	As, Pb, Zn	180, 310, 630
	0.2-0.3	As, Zn	190, 600
D132	0-0.1	As, Mn	290, 4100
	0.2-0.3	As	530
	1.0-1.1	As, Zn	940, 660
	1.9-2.0	As, Cd, Mn, Zn	540, 4.8, 6200, 1200
D136	0.2-0.3	Pb, Zn	310, 290
D137	0-0.1	As, Cd, Pb, Mn, Zn	160, 3.4, 380, 5900, 950
	0.2-0.3	As, Pb, Zn	180, 420, 770
D138	0-0.1	As, Cd, Ni, Zn	360, 3.6, 17, 1700
	0.2-0.3	As, Cd, Zn	360, 3.4, 1600
D139	0-0.1	As, Cd, Cu, Pb, Mn, Zn	850, 4.3, 680, 1700, 4000, 1100
	0.2-0.3	As, Cd, Cu, Pb, Mn, Ni, Zn	1200, 6.6, 1100, 970, 16000, 110, 1400
	1.0-1.1	As, Cd, Cu, Pb, Ni, Zn	860, 3.5, 1700, 960, 52, 630
	1.4-1.5	As, Cu, Ni, Zn	430, 560, 44, 400
D140	0-0.1	As, Cd, Pb, Mn, Ni, Zn	330, 3.7, 900, 4400, 24, 1000
	0.2-0.3	As, Cd, Cu, Pb, Mn, Ni, Zn	630, 6.1, 270, 2300, 8400, 44, 2800
D141	0.2-0.3	As, Pb, Zn	320, 570, 770
D142	0.2-0.3	As	110
D149	0-0.1	As, Pb, Mn, Ni, Zn	190, 310, 4200, 20, 520
	0.2-0.3	As, Zn	120, 290
D150	0-0.1	As, Pb, Mn, Ni, Zn	260, 380, 4500, 21, 750
	0.2-0.3	As, Pb, Mn, Zn	300, 350, 4000, 770
D151	0-0.1	As, Cu, Pb, Ni, Zn	250, 120, 1600, 23, 1100
	0.2-0.3	As, Cu, Pb, Zn	240, 120, 870, 920
D152	0-0.1	As, Pb, Zn	250, 510, 450
	0.2-0.3	As, Pb, Zn	270, 600, 540
	1.0-1.1	As, Cd, Cu, Pb, Mn, Zn	390, 5.9, 240, 360, 4700, 950
	1.9-2.0	As, Cd, Cu, Mn, Ni, Zn	680, 17, 180, 21000, 52, 1200

Sample Location	Depth (m)	Contaminant	Concentration (mg/kg)
D153	0-0.1	As, Pb, Zn	140, 460, 400
	0.2-0.3	As, Pb, Zn	170, 470, 430
D154	0.2-0.3	Pb	330
D155	0-0.1	Mn	3900
	0.2-0.3	As, Mn	120, 4400
D201	0-0.1	As	190
	0.2-0.3	As	300
	1.0-1.1	As	450
	1.9-2.0	As	530
D202	0-0.1	As, Cd, Cu, Ni, Zn	200, 4.0, 150, 21, 460
	0.2-0.3	As	500
	1.0-1.1	As, Mn, Zn	670, 13000, 1000
D203	0-0.1	As, Zn	180, 490
	0.2-0.3	As	120
D207	0.2-0.3	As	110
	1.0-1.1	As	130
D208	0-0.1	As, Cd, Ni, Zn	130, 3.4, 19, 370
	0.2-0.3	As, Cu, Zn	220, 170, 390
	1.0-1.1	As, Cd, Pb, Mn, Zn	1200, 100, 330, 34000, 9600
D209	0-0.1	As, Zn	220, 390
	0.2-0.3	As, Cd, Cu, Pb, Mn, Zn	570, 9.4, 230, 380, 5600, 1900
	1.0-1.1	As, Cd, Cu, Pb, Zn	1200, 8.6, 390, 320, 3800
	1.9-2.0	As, Cd, Cu, Zn	1200, 4.7, 250, 2500
D210	0.2-0.3	As, Mn	190, 4300
	1.0-1.1	As,Mn, Zn	590, 12000, 320
D213	1.0-1.1	As	120
D214	0-0.1	Mn	4200
D221	1.0-1.1	As, Cd, Pb, Mn, Zn	250, 3.6, 420, 4300, 860
	1.9-2.0	As, Cd, Cu, Pb, Mn, Ni, Zn	1600, 50, 460, 320, 47000, 140, 10000
D225	1.9-2.0	Cd, Mn, Zn	13, 14000, 2400
D230	0-0.1	As, Zn	110, 160
	0.2-0.3	As, Pb, Ni	110, 320, 6.2
	1.0-1.1	As, Mn	130, 4200
D231	0-0.1	Ni	7.2
	1.0-1.1	Pb	440
D232	0-0.1	Ni	11
	1.0-1.1	Pb	550
D233	0-0.1	Ni	7.0
	1.0-1.1	As, Cu	130, 220
	1.9-2.0	As, Cu	140, 170
D248	0.2-0.3	As	150
	1.0-1.1	As, Zn	290, 700
D259	1.9-2.0	Ni	36
D275	1.9-2.0	As, Mn	130, 6200
D279	0-0.1	As, Cd, Pb, Mn, Zn	280, 3.4, 310, 4300, 570
	0.2-0.3	As, Cd, Pb, Mn, Zn	300, 3.4, 330, 4400, 560
D281	0-0.1	Cu	330
	0.2-0.3	Cu	440
	1.0-1.1	Cu	500
D285	0.2-0.3	Zn	340
	1.0-1.1	As, Zn	200, 670
	1.9-2.0	As, Cd, Zn	260, 9.8, 1600
FCP1 *	0-0.1	Asbestos	0.66% w/w ACM (>7mm) & 0.36% w/w AF/FA (<7mm)

Assessment Criteria (mg/kg)	arsenic (As) = **100** (HIL A) & **100** (EIL)
	cadmium (Cd) = **20** (HIL A) & **3** (PIL)
	copper (Cu) = **75-110** (EIL)
	lead (Pb) = **300** (HIL A) & **1200** (EIL)
	manganese (Mn) = **3800** (HIL A)
	nickel (Ni) = **6-40** (EIL)
	zinc (Zn) = **7400** (HIL A) & **150-480** (EIL)
	0.01% w/w for bonded ACM in soil
	0.001% w/w for AF & FA in soil
	No visible asbestos for surface soil

Notes:

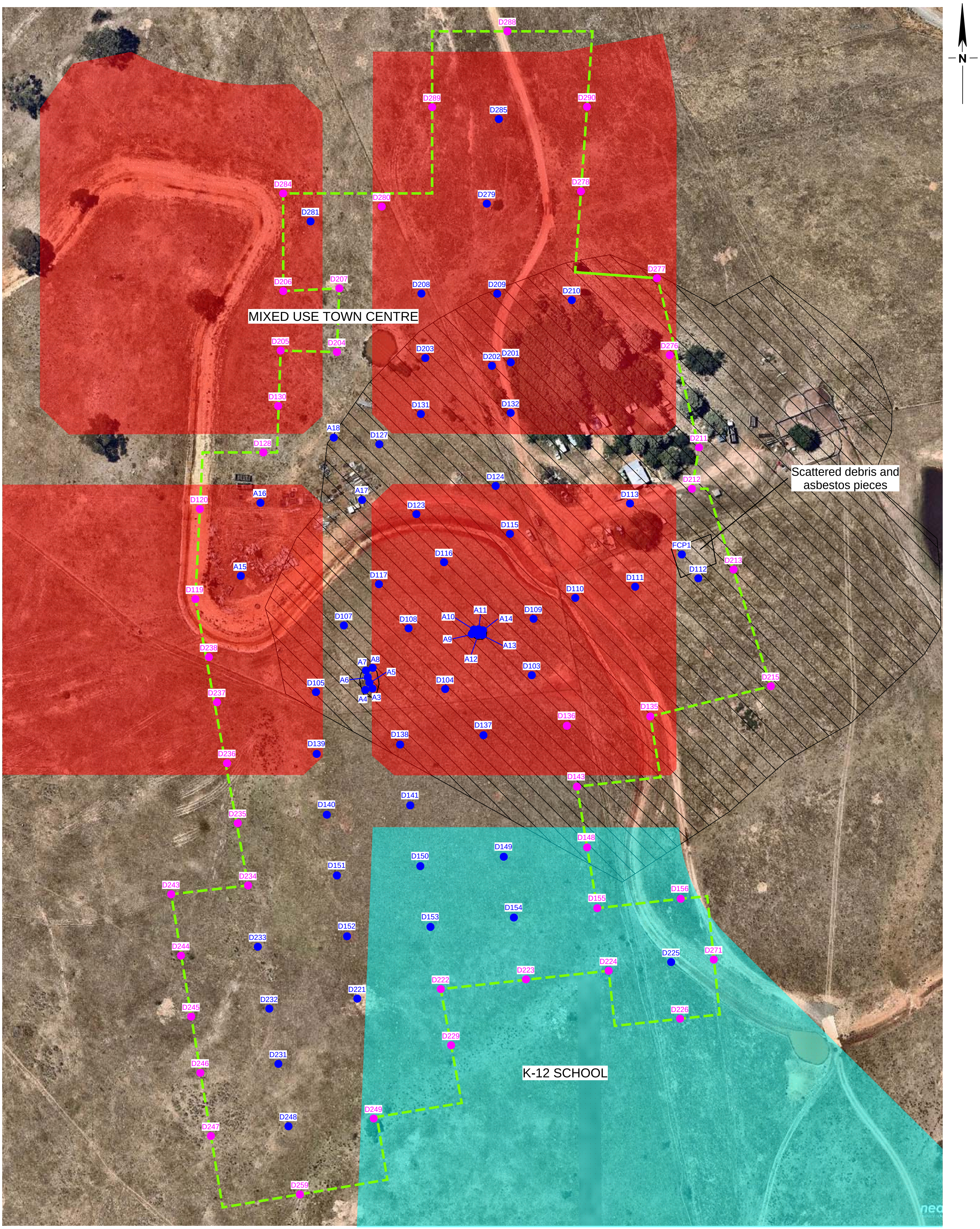
HIL A : Health-based Investigation Level for residential with garden/accessible soil

EIL : Ecological Investigation Level for urban residential land use depending on the value of Cation Exchange Capacity (CEC) and/or pH

PIL : Provisional Phytotoxity-Based Investigation Level

* : Scattered ACM pieces identified on ground surface at and in the vicinity of FCP1

ACM, AF, FA : Asbestos Containing Material, Asbestos Fine, Fibrous Asb



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LEGEND

- Sample (Location of Contamination)
- Sample (Uncontaminated)
- Estimated Extent of Contamination
- Exclusive Area (30m Buffer Around AEC10 & AEC13)

0 15 30 45 60 75m

Scale 1:1500

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Peet Limited
Neighbourhood 1A, Stage 7 & Neighbourhood 2
Googong Road
Googong

Locations and Extent of Contamination
Under Conditions for Commercial Use

Drawing No: 12675/4-AB4B
Job No: 12675/4
Drawn By: MH
Date: 9 May 2017
Checked By: JX

File Ref: 12675-4
Layers: 0, AB4B

Table for the Locations of Contamination Plan

Drawing No. 12675/4-AB4B

Sample Location	Depth (m)	Contaminant	Concentration (mg/kg)	Sample Location	Depth (m)	Contaminant	Concentration (mg/kg)	Sample Location	Depth (m)	Contaminant	Concentration (mg/kg)
A3	0-0.1	Cd, Ni, Zn	**4.8, 49, 2400**	D108	0-0.1	Zn	**870**	D151	0-0.1	As, Pb, Ni, Zn	**250, 1600, 23, 1100**
A4	0-0.1	As, Cd, Zn	**440, 8.0, 2700**		0.2-0.3	Cd, Zn	**3.1, 1000**		0.2-0.3	As, Zn	**240, 920**
	0.25-0.35	As, Cd, Zn	**300, 7, 2700**	D109	0-0.1	Zn	**650**	D152	0-0.1	As	**250**
	0.5-0.6	As, Cd, Zn	**380, 7.6, 3100**		0.2-0.3	Zn	**630**		0.2-0.3	As, Zn	**270, 540**
A5	0-0.1	As, Cd, Ni, Zn	**270, 14, 22, 4100**	D110	0-0.1	Zn	**520**		1.0-1.1	As, Cd, Cu, Zn	**390, 5.9, 240, 950**
A6	0-0.1	As, Cd, Zn	**350, 9.0, 3500**		0.2-0.3	As, Zn	**270, 490**		1.9-2.0	As, Cd, Cu, Ni, Zn	**680, 17, 180, 52, 1200**
	0.25-0.35	As, Cd, Zn	**300, 9, 3100**	D111	0-0.1	Zn	**280**	D153	0.2-0.3	As, Zn	**170, 430**
	0.5-0.6	As, Cd, Zn	**340, 12, 4100**		0.2-0.3	Zn	**340**	D201	0-0.1	As	**190**
A7	0-0.1	As, Cd, Ni, Zn	**350, 8.6, 23, 2500**	D112	0-0.1	Zn	**280**		0.2-0.3	As	**300**
A8	0-0.1	As, Cd, Ni, Zn	**290, 8.5, 26, 2300**	D113	0.2-0.3	As	**260**		1.0-1.1	As	**450**
	0.25-0.35	As, Cd, Zn	**310, 11, 3700**	D115	0-0.1	Zn	**610**		1.9-2.0	As	**530**
	0.5-0.6	As, Cd, Zn	**270, 10, 3300**		0.2-0.3	Zn	**630**	D202	0-0.1	As, Cd, Zn	**200, 4.0, 460**
	1.0-1.1	As, Cd, Zn	**260, 8.2, 3000**	D116	0-0.1	Cd, Zn	**4.0, 1200**		0.2-0.3	As	**500**
A9	0-0.1	As, Cd, Zn	**200, 3.3, 1100**		0.2-0.3	As, Cd, Cu, Zn	**200, 6.7, 180, 2900**		1.0-1.1	As, Zn	**670, 1000**
	0.25-0.35	As, Cd, Cu, Zn	**180, 3.6, 310, 1100**		1.0-1.1	As, Cd, Cu, Zn	**220, 7.8, 210, 3100**	D203	0-0.1	As, Zn	**180, 490**
	0.5-0.6	Zn	**870**		1.4-1.5	As, Cd, Cu, Ni, Zn	**530, 46, 720, 36, 2000**	D208	0-0.1	Cd, Zn	**3.4, 370**
A10	0-0.1	As, Cd, Cu, Zn	**190, 3.6, 120, 1100**	D117	0-0.1	As, Ni, Zn	**180, 23, 1100**		0.2-0.3	As, Cu, Zn	**220, 170, 390**
A11	0-0.1	As, Cd, Cu, Ni, Zn	**200, 4.0, 1100, 29, 1400**		0.2-0.3	As, Zn	**170, 1100**		1.0-1.1	As, Cd, Zn	**1200, 100, 9600**
	0.25-0.35	As, Cd, Zn	**220, 3.9, 1400**	D123	0-0.1	Cd, Zn	**3.9, 1300**	D209	0-0.1	As, Zn	**220, 390**
	0.5-0.6	As, Cd, Zn	**390, 17, 6300**		0.2-0.3	Zn	**1100**		0.2-0.3	As, Cd, Cu, Zn	**570, 9.4, 230, 1900**
	1.0-1.1	As, Cd, Zn	**300, 14, 3900**	D124	0-0.1	Zn	**380**		1.0-1.1	As, Cd, Cu, Zn	**1200, 8.6, 390, 3800**
	1.9-2.0	As, Cd, Zn	**540, 49, 7600**	D127	0-0.1	As, Cd, Cu, Ni, Zn	**250, 3.5, 310, 33, 1500**		1.9-2.0	As, Cd, Cu, Zn	**1200, 4.7, 250, 2500**
A12	0-0.1	As, Cd, Zn	**210, 3.2, 1200**		0.2-0.3	As, Cd, Zn	**270, 3.3, 1800**	D210	0.2-0.3	As	**190**
A13	0-0.1	As, Cd, Cu, Zn	**200, 3.2, 110, 1100**	D131	0-0.1	As, Zn	**180, 630**		1.0-1.1	As	**590**
	0.25-0.35	As, Cd, Cu, Zn	**250, 3.8, 200, 1400**		0.2-0.3	As, Zn	**190, 600**	D221	1.0-1.1	As, Cd, Zn	**250, 3.6,**
	0.5-0.6	As, Zn	**200, 810**	D132	0-0.1	As	**290**		1.9-2.0	As, Cd, Cu, Ni, Zn	**1600, 50, 460, 140, 10000**
A14	0-0.1	As, Cd, Zn	**180, 3.3, 1000**		0.2-0.3	As	**530**	D225	1.9-2.0	Cd, Zn	**13, 2400**
A15	0-0.1	As, Cd, Cu, Zn	**170, 4.2, 580, 1000**		1.0-1.1	As, Zn	**940, 660**	D231	0-0.1	Ni	**7.2**
A16	0-0.1	Cd, Cu, Zn	**3.3, 1100, 1000**		1.9-2.0	As, Cd, Zn	**540, 4.8, 1200**	D232	0-0.1	Ni	**11**
A17	0-0.1	Cd, Cu & Zn	**3.7, 520, 920**	D137	0-0.1	Cd, Zn	**3.4, 950**	D233	1.0-1.1	Cu	**220**
	0.2-0.3	As, Cu, Zn	**520, 640, 560**		0.2-0.3	As, Zn	**180, 770**		1.9-2.0	Cu	**170**
	0.5-0.6	As, Cd, Cu, Zn	**600, 4, 870, 1000**	D138	0-0.1	As, Cd, Zn	**360, 3.6, 1700**	D248	1.0-1.1	As, Zn	**290, 700**
	1.0-1.1	As, Cu, Zn	**420, 320, 770**		0.2-0.3	As, Cd, Zn	**360, 3.4, 1600**	D279	0-0.1	As, Cd, Zn	**280, 3.4,**
	1.9-2.0	As, Cd, Cu, Ni, Zn	**410, 16, 250, 130, 2500**	D139	0-0.1	As, Cd, Cu, Pb, Zn	**850, 4.3, 680, 1700, 1100**		0.2-0.3	As, Cd, Zn	**300, 3.4, 560**
A18	0-0.1	Cd, Cu, Zn	**3.7, 990, 1100**		0.2-0.3	As, Cd, Cu, Ni, Zn	**1200, 6.6, 1100, 110, 1400**	D281	0-0.1	Cu	**330**
D103	0-0.1	Zn	**890**		1.0-1.1	As, Cd, Cu, Ni, Zn	**860, 3.5, 1700, 52, 630**		0.2-0.3	Cu	**440**
	0.2-0.3	Zn	**800**		1.4-1.5	As, Cu, Zn	**430, 560, 400**		1.0-1.1	Cu	**500**
D104	0-0.1	As, Zn	**230, 830**	D140	0-0.1	As, Cd, Ni, Zn	**330, 3.7, 24, 1000**	D285	1.0-1.1	As, Zn	**200, 670**
	0.2-0.3	As, Zn	**210, 960**		0.2-0.3	As, Cd, Cu, Pb, Zn	**630, 6.1, 270, 2300, 2800**		1.9-2.0	As, Cd, Zn	**260, 9.8, 1600**
D105	0.2-0.3	As	**240**	D149	0-0.1	As, Zn	**190, 520**	FCP1 *	0-0.1	Asbestos	**0.66% w/w ACM (>7mm) & 0.36% w/w AF/FA (<7mm)**
D107	0-0.1	As, Ni, Zn	**180, 25, 630**	D150	0-0.1	As, Ni, Zn	**260, 21, 750**				
	0.2-0.3	As, Cu, Zn	**200, 170, 640**		0.2-0.3	As, Zn	**300, 770**				
Assessment Criteria (mg/kg)		arsenic (As) = **160** (EIL)									
		cadmium (Cd) = **3** (PIL)									
		copper (Cu) = **100-160** (EIL)									
		lead (Pb) = **1500** (HIL D) & **1900** (EIL)									
		nickel (Ni) = **7-65** (EIL)									
		zinc (Zn) = **190-550** (EIL)									
		0.01% w/w for bonded ACM in soil									
		0.001% w/w for AF & FA in soil									
		No visible asbestos for surface soil									

Notes:

HIL A : Health-based Investigation Level for commercial / industral

EIL : Ecological Investigation Level for commercial / industrial land use depending on the value of Cation Exchange Capacity (CEC) and/or pH

PIL : Provisional Phytotoxity-Based Investigation Level

* : Scattered ACM pieces identified on ground surface at and in the vicinity of FCP1

ACM, AF, FA : Asbestos Containing Material, Asbestos Fine, Fibrous Asb

TABLES

TABLE A

RINSATE SAMPLES

(Ref No: 12675/4-AB)

ANALYTES	Rinsate Sample	Rinsate Sample
	R1	R2
	17/10/2016	18/10/2016
METALS	(mg/L)	(mg/L)
Arsenic	<0.02	<0.02
Cadmium	<0.001	<0.001
Chromium	<0.005	<0.005
Copper	<0.005	<0.005
Lead	<0.02	<0.02
Manganese	<0.005	<0.005
Mercury	<0.0001	<0.0001
Nickel	<0.005	<0.005
Zinc	<0.01	<0.01
TOTAL PETROLEUM HYDROCARBONS (TPH) - Silica Clean-up	(µg/L)	(µg/L)
F2 (>C10-C16)	-	<60
F3 (>C16-C34)	-	<500
	RS1	RS2
	13/02/2017	14/02/2017
METALS	(mg/L)	(mg/L)
Arsenic	<0.02	<0.02
Cadmium	<0.001	0.001
Chromium	<0.005	<0.005
Copper	<0.005	<0.005
Lead	<0.02	<0.02
Manganese	<0.005	<0.005
Mercury	<0.0001	<0.0001
Nickel	<0.005	<0.005
Zinc	<0.01	<0.01
	RS3	RS4
	15/02/2017	16/02/2017
METALS	(mg/L)	(mg/L)
Arsenic	<0.02	<0.02
Cadmium	<0.001	<0.001
Chromium	<0.005	<0.005
Copper	<0.005	<0.005
Lead	<0.02	<0.02
Manganese	<0.005	<0.005
Mercury	<0.0001	<0.0001
Nickel	<0.005	<0.005
Zinc	<0.01	<0.01
		RS5
		17/02/2017
METALS		(mg/L)
Arsenic		<0.02
Cadmium		<0.001
Chromium		<0.005
Copper		<0.005
Lead		<0.02
Manganese		<0.005
Mercury		<0.0001
Nickel		<0.005
Zinc		<0.01

TABLE B1
DUPLICATE SAMPLES
(Ref No: 12675/4-AB)

ANALYTES	Original Sample mg/kg	Duplicate Sample mg/kg	RELATIVE PERCENTAGE DIFFERENCES (RPD) %
	D132	**Duplicate**	
METALS	**1.9-2.0 m**	**D1**	
Arsenic	540	390	32
Cadmium	1.2	4.8	120
Chromium	35	24	37
Copper	71	72	1
Lead	55	50	10
Manganese	1400	6200	126
Mercury	0.12	0.12	0
Nickel	14	31	76
Zinc	580	1200	70
	D152	**Duplicate**	
METALS	**0-0.1 m**	**D2**	
Arsenic	250	310	21
Cadmium	1.8	2.3	24
Chromium	39	58	39
Copper	92	110	18
Lead	510	630	21
Manganese	2500	2700	8
Mercury	0.05	<0.05	-
Nickel	17	18	6
Zinc	450	550	20
	D139	**Duplicate**	
METALS	**0-0.1 m**	**D3**	
Arsenic	850	840	1
Cadmium	4.3	4.8	11
Chromium	30	32	6
Copper	680	850	22
Lead	1700	1900	11
Manganese	4000	3400	16
Mercury	<0.05	<0.05	-
Nickel	36	31	15
Zinc	1100	1000	10
	D157	**Duplicate**	
METALS	**0-0.1 m**	**D4**	
Arsenic	33	30	10
Cadmium	0.4	0.4	0
Chromium	26	24	8
Copper	9.2	8.6	7
Lead	75	70	7
Manganese	1200	1500	22
Mercury	<0.05	<0.05	-
Nickel	6.8	7.3	7
Zinc	59	69	16

TABLE B2
DUPLICATE SAMPLES
(Ref No: 12675/4-AB)

ANALYTES	Original Sample mg/kg	Duplicate Sample mg/kg	RELATIVE PERCENTAGE DIFFERENCES (RPD) %
	D103	**Duplicate**	
METALS	**0-0.1 m**	**D5**	
Arsenic	140	130	7
Cadmium	2.9	3.2	10
Chromium	34	31	9
Copper	100	97	3
Lead	300	280	7
Manganese	3700	4100	10
Mercury	<0.05	<0.05	-
Nickel	19	26	31
Zinc	890	830	7
	A4	**Duplicate**	
METALS	**0.25-0.35 m**	**D6**	
Arsenic	300	260	14
Cadmium	7.0	4.8	37
Chromium	29	34	16
Copper	89	53	51
Lead	420	250	51
Manganese	7400	3900	62
Mercury	0.05	<0.05	-
Nickel	44	16	93
Zinc	2700	1600	51
	A13	**Duplicate**	
METALS	**0.25-0.35 m**	**D7**	
Arsenic	230	250	8
Cadmium	3.4	3.8	11
Chromium	41	37	10
Copper	200	62	105
Lead	300	210	35
Manganese	3500	5700	48
Mercury	<0.05	0.08	-
Nickel	17	32	61
Zinc	1000	1400	33
	DS11	**Duplicate**	
TOTAL PETROLEUM HYDROCARBONS (TPH)-Silica Gel Clean-up	**0-0.1 m**	**D8**	
F2 (>C10-C16)	<25	<25	-
F3 (>C16-C34)	<90	<90	-
	DS22	**Duplicate**	
TPH-Silica Gel Clean-up	**0-0.1 m**	**D9**	
F2 (>C10-C16)	<25	<25	-
F3 (>C16-C34)	<90	<90	-
	CS15-2	**Duplicate**	
TPH-Silica Gel Clean-up	**0-0.1 m**	**D10**	
F2 (>C10-C16)	<25	<25	-
F3 (>C16-C34)	<90	<90	-

TABLE B3
DUPLICATE SAMPLES
(Ref No: 12675/4-AB)

ANALYTES	Original Sample mg/kg	Duplicate Sample mg/kg	RELATIVE PERCENTAGE DIFFERENCES (RPD) %
	D204	**Duplicate**	
METALS	**0-0.1 m**	**DS1**	
Arsenic	14	12	15
Cadmium	<0.3	<0.3	-
Chromium	15	13	14
Copper	7.8	7	11
Lead	52	43	19
Manganese	880	730	19
Mercury	<0.05	<0.05	-
Nickel	8.3	8.2	1
Zinc	65	62	5
	D205	**Duplicate**	
METALS	**0-0.1 m**	**DS2**	
Arsenic	14	15	7
Cadmium	<0.3	<0.3	-
Chromium	17	16	6
Copper	13	8.8	39
Lead	50	61	20
Manganese	310	300	3
Mercury	<0.05	<0.05	-
Nickel	13	10	26
Zinc	78	74	5
	D206	**Duplicate**	
METALS	**0-0.1 m**	**DS3**	
Arsenic	9	11	20
Cadmium	<0.3	<0.3	-
Chromium	13	15	14
Copper	2.7	2.5	8
Lead	15	16	6
Manganese	300	190	45
Mercury	<0.05	<0.05	-
Nickel	10	11	10
Zinc	63	68	8
	D221	**Duplicate**	
METALS	**0-0.1 m**	**DS4**	
Arsenic	55	53	4
Cadmium	0.6	0.4	40
Chromium	27	30	11
Copper	24	19	23
Lead	240	190	23
Manganese	570	470	19
Mercury	<0.05	<0.05	-
Nickel	6.2	5.5	12
Zinc	110	82	29
	D224	**Duplicate**	
METALS	**0-0.1 m**	**DS5**	
Arsenic	23	27	16
Cadmium	0.4	0.4	0
Chromium	17	17	0
Copper	14	15	7
Lead	58	68	16
Manganese	1600	1800	12
Mercury	<0.05	<0.05	-
Nickel	9.4	9	4
Zinc	89	89	0

TABLE B4
DUPLICATE SAMPLES
(Ref No: 12675/4-AB)

ANALYTES	Original Sample mg/kg	Duplicate Sample mg/kg	RELATIVE PERCENTAGE DIFFERENCES (RPD) %
	D234	**Duplicate**	
METALS	**0-0.1 m**	**DS6**	
Arsenic	11	12	9
Cadmium	<0.3	<0.3	-
Chromium	21	21	0
Copper	20	19	5
Lead	20	23	14
Manganese	940	950	1
Mercury	<0.05	<0.05	-
Nickel	8.6	8.3	4
Zinc	46	43	7
	D237	**Duplicate**	
METALS	**0-0.1 m**	**DS7**	
Arsenic	10	11	10
Cadmium	<0.3	<0.3	-
Chromium	18	19	5
Copper	13	13	0
Lead	16	15	6
Manganese	810	730	10
Mercury	<0.05	<0.05	-
Nickel	6.9	6.8	1
Zinc	35	33	6
	D285	**Duplicate**	
METALS	**0-0.1 m**	**DS8**	
Arsenic	43	39	10
Cadmium	0.8	0.7	13
Chromium	27	26	4
Copper	16	16	0
Lead	82	63	26
Manganese	910	830	9
Mercury	<0.05	<0.05	-
Nickel	8.6	9.1	6
Zinc	170	160	6
	D287	**Duplicate**	
METALS	**0-0.1 m**	**DS9**	
Arsenic	29	34	16
Cadmium	0.5	0.5	0
Chromium	34	31	9
Copper	12	14	15
Lead	73	69	6
Manganese	780	710	9
Mercury	0.05	0.06	18
Nickel	3.8	4.9	25
Zinc	57	65	13
	D289	**Duplicate**	
METALS	**0-0.1 m**	**DS10**	
Arsenic	16	14	13
Cadmium	0.3	0.3	0
Chromium	23	20	14
Copper	31	20	43
Lead	17	18	6
Manganese	210	310	38
Mercury	<0.05	<0.05	-
Nickel	16	11	37
Zinc	69	50	32

TABLE B5
DUPLICATE SAMPLES
(Ref No: 12675/4-AB)

ANALYTES	Original Sample mg/kg	Duplicate Sample mg/kg	RELATIVE PERCENTAGE DIFFERENCES (RPD) %
	D284	**Duplicate**	
METALS	**0-0.1 m**	**DS11**	
Arsenic	10	12	18
Cadmium	<0.3	<0.3	-
Chromium	17	15	13
Copper	2.3	2.3	0
Lead	9	10	11
Manganese	110	110	0
Mercury	<0.05	<0.05	-
Nickel	12	11	9
Zinc	44	43	2
	D259	**Duplicate**	
METALS	**0-0.1 m**	**DS12**	
Arsenic	40	37	8
Cadmium	0.7	0.6	15
Chromium	26	29	11
Copper	14	13	7
Lead	50	60	18
Manganese	1400	1600	13
Mercury	<0.05	<0.05	-
Nickel	12	11	9
Zinc	190	110	53
	D271	**Duplicate**	
METALS	**0-0.1 m**	**DS13**	
Arsenic	30	33	10
Cadmium	0.3	0.4	29
Chromium	26	31	18
Copper	13	13	0
Lead	96	96	0
Manganese	1300	1200	8
Mercury	<0.05	<0.05	-
Nickel	6.3	6.2	2
Zinc	57	59	3
	D273	**Duplicate**	
METALS	**0-0.1 m**	**DS14**	
Arsenic	51	53	4
Cadmium	0.5	0.6	18
Chromium	49	54	10
Copper	4.6	5.9	25
Lead	100	110	10
Manganese	640	730	13
Mercury	<0.05	<0.05	-
Nickel	3	3.7	21
Zinc	56	53	6
	D280	**Duplicate**	
METALS	**0-0.1 m**	**DS15**	
Arsenic	25	24	4
Cadmium	0.4	0.3	29
Chromium	18	20	11
Copper	25	27	8
Lead	20	18	11
Manganese	320	290	10
Mercury	<0.05	<0.05	-
Nickel	15	16	6
Zinc	55	56	2

TABLE C1
SPLIT SAMPLES
(Ref No: 12675/4-AB)

ANALYTES	Original sample mg/kg (SGS)	Split Sample mg/kg (ENVIROLAB)	RELATIVE PERCENTAGE DIFFERENCES (RPD) %
	D125	**Split**	
METALS	**0-0.1 m**	**S1**	
Arsenic	46	50	8
Cadmium	0.5	0.6	18
Chromium	39	41	5
Copper	18	17	6
Lead	190	230	19
Manganese	1900	2100	10
Mercury	<0.05	<0.1	-
Nickel	7.4	8	8
Zinc	130	140	7
	D152	**Split**	
METALS	**1.9-2.0m**	**S2**	
Arsenic	390	680	54
Cadmium	4.5	17	116
Chromium	37	10	115
Copper	150	180	18
Lead	85	85	0
Manganese	1800	21000	168
Mercury	0.28	0.5	56
Nickel	19	52	93
Zinc	1100	1200	9
	D136	**Split**	
METALS	**0-0.1 m**	**S3**	
Arsenic	67	43	44
Cadmium	0.8	0.6	29
Chromium	28	35	22
Copper	32	15	72
Lead	280	260	7
Manganese	2300	2200	4
Mercury	<0.05	<0.1	-
Nickel	12	8	40
Zinc	250	140	56
	D146	**Split**	
METALS	**0-0.1 m**	**S4**	
Arsenic	31	43	32
Cadmium	0.4	0.5	22
Chromium	26	32	21
Copper	13	24	59
Lead	80	90	12
Manganese	1100	1200	9
Mercury	<0.05	<0.1	-
Nickel	8.6	10	15
Zinc	74	86	15

TABLE C2
SPLIT SAMPLES
(Ref No: 12675/4-AB)

ANALYTES	Original sample mg/kg (SGS)	Split Sample mg/kg (ENVIROLAB)	RELATIVE PERCENTAGE DIFFERENCES (RPD) %
	D116	**Split**	
METALS	**0-0.1 m**	**S5**	
Arsenic	120	150	22
Cadmium	4.0	4.4	10
Chromium	36	38	5
Copper	66	81	20
Lead	620	700	12
Manganese	3700	3900	5
Mercury	0.11	<0.1	-
Nickel	27	26	4
Zinc	1200	1200	0
	A8	**Split**	
METALS	**0.25-0.35 m**	**S6**	
Arsenic	310	310	0
Cadmium	11	13	17
Chromium	30	26	14
Copper	110	91	19
Lead	250	230	8
Manganese	9400	9000	4
Mercury	0.1	0.1	0
Nickel	24	19	23
Zinc	3700	3400	8
	A11	**Split**	
METALS	**0.25-0.35 m**	**S7**	
Arsenic	220	260	17
Cadmium	3.9	4	3
Chromium	42	44	5
Copper	64	66	3
Lead	220	210	5
Manganese	4600	3600	24
Mercury	0.11	0.1	10
Nickel	29	25	15
Zinc	1400	1800	25
	CS15-1	**Split**	
TOTAL PETROLEUM HYDROCARBONS (TPH)-Silica Gel Clean-up	**0-0.1 m**	**S8**	
F2 (>C10-C16)	<25	<50	-
F3 (>C16-C34)	<90	<100	-
	CS22-1	**Split**	
TPH-Silica Gel Clean-up	**0-0.1 m**	**S9**	
F2 (>C10-C16)	<25	<50	-
F3 (>C16-C34)	<90	<100	-
	DS19	**Split**	
TPH-Silica Gel Clean-up	**0-0.1 m**	**S10**	
F2 (>C10-C16)	<25	<50	-
F3 (>C16-C34)	<90	<100	-

TABLE C3
SPLIT SAMPLES
(Ref No: 12675/4-AB)

ANALYTES	Original sample mg/kg (SGS)	Split Sample mg/kg (ENVIROLAB)	RELATIVE PERCENTAGE DIFFERENCES (RPD) %
METALS	**D223 0-0.1 m**	**Split SS1**	
Arsenic	35	35	0
Cadmium	0.4	<0.4	-
Chromium	29	24	19
Copper	11	8	32
Lead	76	77	1
Manganese	180	240	29
Mercury	<0.05	<0.1	-
Nickel	5.3	5	6
Zinc	60	46	26
METALS	**D233 0-0.1m**	**Split SS2**	
Arsenic	54	32	51
Cadmium	0.3	<0.4	-
Chromium	23	16	36
Copper	37	17	74
Lead	75	55	31
Manganese	330	170	64
Mercury	<0.05	<0.1	-
Nickel	7.0	4	55
Zinc	36	20	57
METALS	**D236 0-0.1m**	**Split SS3**	
Arsenic	11	14	24
Cadmium	<0.3	<0.4	-
Chromium	22	28	24
Copper	24	31	25
Lead	13	16	21
Manganese	650	870	29
Mercury	<0.05	<0.1	-
Nickel	7.8	10	25
Zinc	33	35	6
METALS	**D238 0-0.1m**	**Split SS4**	
Arsenic	18	11	48
Cadmium	<0.3	<0.4	-
Chromium	29	27	7
Copper	15	16	6
Lead	28	18	43
Manganese	980	800	20
Mercury	<0.05	<0.1	-
Nickel	8.8	12	31
Zinc	49	55	12
METALS	**D245 0-0.1m**	**Split SS5**	
Arsenic	13	15	14
Cadmium	<0.3	<0.4	-
Chromium	22	28	24
Copper	22	27	20
Lead	16	18	12
Manganese	420	550	27
Mercury	<0.05	<0.1	-
Nickel	7.5	9	18
Zinc	33	35	6

TABLE C4
SPLIT SAMPLES
(Ref No: 12675/4-AB)

ANALYTES	Original sample mg/kg (SGS)	Split Sample mg/kg (ENVIROLAB)	RELATIVE PERCENTAGE DIFFERENCES (RPD) %
	D230	**Split**	
METALS	**0-0.1 m**	**SS6**	
Arsenic	110	110	0
Cadmium	0.7	0.6	15
Chromium	38	36	5
Copper	16	17	6
Lead	240	240	0
Manganese	740	800	8
Mercury	<0.05	<0.1	-
Nickel	6	6	0
Zinc	160	120	29
	D226	**Split**	
METALS	**0-0.1m**	**SS7**	
Arsenic	25	21	17
Cadmium	0.5	<0.4	-
Chromium	26	23	12
Copper	11	10	10
Lead	80	69	15
Manganese	2800	2200	24
Mercury	<0.05	<0.1	-
Nickel	11	9	20
Zinc	120	100	18
	D286	**Split**	
METALS	**0-0.1m**	**SS8**	
Arsenic	26	19	31
Cadmium	0.4	<0.4	-
Chromium	31	24	25
Copper	9.6	6	46
Lead	58	52	11
Manganese	1900	1000	62
Mercury	<0.05	<0.1	-
Nickel	5.5	4	32
Zinc	44	27	48
	D288	**Split**	
METALS	**0-0.1m**	**SS9**	
Arsenic	22	15	38
Cadmium	0.6	<0.4	-
Chromium	23	22	4
Copper	16	11	37
Lead	30	25	18
Manganese	440	470	7
Mercury	<0.05	<0.1	-
Nickel	19	17	11
Zinc	190	130	38
	D283	**Split**	
METALS	**0-0.1m**	**SS10**	
Arsenic	13	11	17
Cadmium	<0.3	<0.4	-
Chromium	14	13	7
Copper	20	16	22
Lead	19	15	24
Manganese	120	88	31
Mercury	<0.05	<0.1	-
Nickel	8.3	7	17
Zinc	50	37	30

TABLE C5
SPLIT SAMPLES
(Ref No: 12675/4-AB)

ANALYTES	Original sample mg/kg (SGS)	Split Sample mg/kg (ENVIROLAB)	RELATIVE PERCENTAGE DIFFERENCES (RPD) %
	D290	Split	
METALS	0-0.1 m	SS11	
Arsenic	22	16	32
Cadmium	1.6	1	46
Chromium	22	17	26
Copper	20	15	29
Lead	84	61	32
Manganese	2500	1500	50
Mercury	<0.05	<0.1	-
Nickel	11	8	32
Zinc	180	130	32
	D272	Split	
METALS	0-0.1m	SS12	
Arsenic	42	39	7
Cadmium	0.7	0.5	33
Chromium	34	33	3
Copper	22	19	15
Lead	110	94	16
Manganese	1700	1500	13
Mercury	<0.05	<0.1	-
Nickel	10	10	0
Zinc	110	100	10
	D275	Split	
METALS	0-0.1m	SS13	
Arsenic	25	24	4
Cadmium	<0.3	<0.4	-
Chromium	23	27	16
Copper	10	9	11
Lead	47	44	7
Manganese	860	810	6
Mercury	<0.05	<0.1	-
Nickel	4.3	4	7
Zinc	48	36	29
	D277	Split	
METALS	0-0.1m	SS14	
Arsenic	34	51	40
Cadmium	0.4	0.4	0
Chromium	30	32	6
Copper	12	12	0
Lead	66	77	15
Manganese	2900	2400	19
Mercury	<0.05	<0.1	-
Nickel	9.1	8	13
Zinc	73	69	6
	D279	Split	
METALS	0-0.1m	SS15	
Arsenic	280	240	15
Cadmium	3.4	2	52
Chromium	26	21	21
Copper	47	40	16
Lead	310	250	21
Manganese	4300	3000	36
Mercury	0.08	0.1	22
Nickel	18	15	18
Zinc	570	410	33

GEOTECHNIQUE PTY LTD

TABLE D1

METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS

DISCRETE SAMPLES - TOPSOIL (SILTY CLAY, BROWN)

(Ref No: 12675/4-AB)

		METALS (mg/kg)														
Sample Location	Depth (m)	ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MANGANESE	MERCURY	NICKEL	NICKEL	ZINC	ZINC	ZINC	ZINC	CEC (cmol/kg)	pH
Topsoil (Silty Clay, Brown)																
D101	0-0.1	52	0.7	32	22	240	3200	<0.05	11	-	-	210	-	-	4.0	5.5
D102	0-0.1	54	0.8	30	29	190	1500	<0.05	12	-	-	230	-	-	7.7	6.2
D103	0-0.1	**140**	2.9	34	100	300	3700	<0.05	-	19	**890**	-	-	-	7.6	6.1
D104	0-0.1	**230**	1.9	34	65	260	1700	<0.05	-	17	**830**	-	-	-	5.5	5.3
D105	0-0.1	**150**	0.9	28	100	**370**	1300	<0.05	13	-	-	-	270	-	6.2	6.0
D106	0-0.1	72	0.5	32	57	110	270	<0.05	**20**	-	150	-	-	-	-	-
D107	0-0.1	**180**	2.1	39	**150**	**500**	3100	<0.05	**25**	-	**630**	-	-	-	-	-
D108	0-0.1	**110**	2.3	28	67	**620**	2700	<0.05	**16**	-	**870**	-	-	-	-	-
D109	0-0.1	**120**	2.4	37	51	**310**	3000	<0.05	**17**	-	**650**	-	-	-	-	-
D110	0-0.1	**150**	1.9	35	58	**330**	3400	<0.05	**16**	-	**520**	-	-	-	-	-
D111	0-0.1	87	0.9	24	41	**310**	3100	<0.05	9.5	-	**280**	-	-	-	-	-
D112	0-0.1	97	0.8	31	35	**560**	3700	<0.05	9.5	-	**280**	-	-	-	-	-
D113	0-0.1	**110**	0.8	35	36	210	1600	<0.05	7.9	-	-	220	-	-	8.3	5.8
D114	0-0.1	60	1.1	31	27	210	2300	<0.05	14	-	-	-	-	380	8.0	6.1
D115	0-0.1	86	2.2	36	35	**320**	3100	<0.05	13	-	**610**	-	-	-	7.4	5.5
D116	0-0.1	**120**	**4.0**	36	66	**620**	3700	0.11	-	27	**1200**	-	-	-	7.1	5.9
D117	0-0.1	**180**	2.3	35	110	**960**	3100	<0.05	**23**	-	**1100**	-	-	-	-	-
D122	0-0.1	**120**	0.8	22	110	**430**	2100	<0.05	**16**	-	**250**	-	-	-	-	-
D123	0-0.1	80	**3.9**	34	73	**370**	2800	<0.05	**18**	-	**1300**	-	-	-	-	-
D124	0-0.1	59	0.8	31	30	300	2300	<0.05	8.5	-	**380**	-	-	-	3.0	5.5
D125	0-0.1	46	0.5	39	18	190	1900	<0.05	7.4	-	130	-	-	-	-	-
D126	0-0.1	71	1.1	34	30	270	2600	<0.05	9.3	-	-	-	-	360	10	6.0
D127	0-0.1	**250**	**3.5**	40	**310**	**660**	3600	<0.05	**33**	-	**1500**	-	-	-	-	-
D128	0-0.1	8	<0.3	5.5	8.7	30	680	<0.05	10	-	82	-	-	-	-	-
D131	0-0.1	**180**	2.1	39	71	**310**	2500	<0.05	14	-	**630**	-	-	-	-	-
D132	0-0.1	**290**	1.3	34	41	190	**4100**	<0.05	13	-	-	-	-	350	7.9	5.9
D133	0-0.1	35	0.5	31	12	150	1600	0.09	5.4	-	140	-	-	-	-	-
D134	0-0.1	46	0.5	40	8.7	180	1300	<0.05	5.4	-	93	-	-	-	-	-
D136	0-0.1	67	0.8	28	32	280	2300	<0.05	12	-	-	-	250	-	5.5	6.3
D137	0-0.1	**160**	**3.4**	26	76	**380**	**5900**	0.09	-	31	**950**	-	-	-	6.3	5.7
D138	0-0.1	**360**	**3.6**	32	78	230	3300	<0.05	**17**	-	**1700**	-	-	-	-	-
D139	0-0.1	**850**	**4.3**	30	**680**	**1700**	**4000**	<0.05	-	36	**1100**	-	-	-	8.2	6.7
D140	0-0.1	**330**	**3.7**	29	110	**900**	**4400**	0.07	**24**	-	**1000**	-	-	-	-	-
D141	0-0.1	48	0.4	26	11	97	760	0.05	4.1	-	200	-	-	-	-	-
D142	0-0.1	100	0.8	32	24	250	1700	<0.05	10	-	-	210	-	-	9.2	6.9
D143	0-0.1	54	0.6	31	19	220	1900	<0.05	7.5	-	140	-	-	-	-	-
D144	0-0.1	62	0.7	49	13	190	2100	<0.05	7.3	-	200	-	-	-	-	-
D145	0-0.1	47	0.8	32	48	160	1800	<0.05	15	-	140	-	-	-	-	-
D147	0-0.1	53	1.5	31	20	140	2600	<0.05	13	-	-	230	-	-	6.0	5.9
D148	0-0.1	36	0.4	28	16	72	570	<0.05	9.5	-	71	-	-	-	-	-
D149	0-0.1	**190**	1.5	28	42	**310**	**4200**	<0.05	**20**	-	**520**	-	-	-	-	-
D150	0-0.1	**260**	2.3	20	58	**380**	**4500**	<0.05	**21**	-	**750**	-	-	-	-	-
D151	0-0.1	**250**	2.7	34	**120**	**1600**	3500	<0.05	**23**	-	**1100**	-	-	-	-	-
D152	0-0.1	**250**	1.8	39	92	**510**	2500	0.05	-	17	**450**	-	-	-	8.0	6.5
D153	0-0.1	**140**	1.5	31	61	**460**	3400	<0.05	-	17	-	-	**400**	-	5.6	5.8
D154	0-0.1	64	0.6	35	20	180	1300	<0.05	6.4	-	110	-	-	-	-	-
D155	0-0.1	100	1.6	36	61	160	**3900**	0.05	-	20	-	-	270	-	7.9	6.3
Limits of Reporting (LOR)		3	0.3	0.5	0.5	1	1	0.05	0.5	0.5	0.5	0.5	0.5	0.5	0.02	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)																
Health-based Investigation Levels (HIL)[a] A - Residential A		100	20	100	6000	300	3800	10[c]	400	400	7400	7400	7400	7400		
Ecological Investigation Levels (EIL) - Urban residential		100[d]	-	400[e]	110[f]	1200[g]	-	-	15[b]	45[h]	200[b]	230[i]	330[j]	400[k]		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)																
Provisional Phytotoxicity-Based Investigation Levels (PIL)			3					1								

Notes:

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

b: EIL of aged nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=3 cmolc/kg & pH=5.5 were selected for derivation of EIL; a conservative approach.

c: Methyl Mercury

d: Generic EIL for aged arsenic

e: Chromium (III); the assumed clay content=10%, a conservative assumption.

f: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=95mg/kg, the lower ACL used based on the lowest CEC=5cmol/kg or pH=5.5.

g: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.

h: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=5.5 cmolc/kg was selected for derivation of EIL; a conservative approach.

i: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=4.0 cmolc/kg & pH=5.5 were selected for derivation of EIL; a conservative approach.

j: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=5.5 cmolc/kg & pH=5.8 were selected for derivation of EIL; a conservative approach.

k: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=5.6 cmolc/kg & pH=5.8 were selected for derivation of EIL; a conservative approach.

TABLE D2
METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS
DISCRETE SAMPLES - TOPSOIL (SILTY CLAY, GREY)
(Ref No: 12675/4-AB)

Sample Location	Depth (m)	METALS (mg/kg)											CEC (cmol/kg)	pH
		ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MANGANESE	MERCURY	NICKEL	NICKEL	ZINC	ZINC		
Topsoil (Silty Clay, Grey)														
D118	0-0.1	15	0.4	22	22	42	550	<0.05	12	-	86	-	-	-
D119	0-0.1	11	0.3	33	16	41	500	<0.05	13	-	50	-	9.2	5.3
D120	0-0.1	9	0.5	20	16	270	240	<0.05	14	-	130	-	-	-
D121	0-0.1	52	0.5	34	28	110	780	<0.05	11	-	98	-	-	-
D129	0-0.1	7	<0.3	7.6	9.6	31	150	<0.05	12	-	56	-	-	-
D130	0-0.1	8	<0.3	7.2	8.1	37	620	<0.05	9.6	-	65	-	5.9	6.0
D135	0-0.1	68	0.8	34	32	200	1200	<0.05	12	-	-	210	8.6	6.3
D146	0-0.1	31	0.4	26	13	80	1100	<0.05	8.6	-	74	-	-	-
D156	0-0.1	23	0.6	18	21	73	2200	<0.05	-	16	110	-	11	-
D157	0-0.1	33	0.4	26	9.2	75	1200	<0.05	6.8	-	59	-	2.9	5.7
Limits of Reporting (LOR)		3	0.3	0.5	0.5	1	1	0.05	0.5	0.5	0.5	0.5	0.02	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)														
Health-based Investigation Levels (HIL)[a] A - Residential A		100	20	100	6000	300	3800	10[c]	400	400	7400	7400		
Ecological Investigation Levels (EIL) - Urban residential		100[d]	-	400[e]	110[f]	1200[g]	-	-	15[b]	180[h]	190[b]	430[i]		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)														
Provisional Phytotoxity-Based Investigation Levels (PIL)			3					1						

Notes:

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

b: EIL of aged nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=2.9 cmolc/kg & pH=5.3 were selected for derivation of EIL; a conservative approach.

c: Methyl Mercury

d: Generic EIL for aged arsenic

e: Chromium (III); the assumed clay content=10%, a conservative assumption.

f: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=95mg/kg, the lower ACL used based on the lowest CEC=5cmol/kg or pH=5.5

g: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.

h: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; CEC=11 cmolc/kg.

i: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; CEC=8.6 cmolc/kg & pH=6.3.

TABLE D3
METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS
DISCRETE SAMPLES - NATURAL SOIL (SILTY CLAY)
(Ref No: 12675/4-AB)

Sample Location	Depth (m)	METALS (mg/kg)										
		ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MANGANESE	MERCURY	NICKEL	ZINC	CEC (cmol/kg)	pH
Natural Soil (Silty Clay)												
A4	0.25-0.35	**300**	**7.0**	29	89	**420**	**7400**	0.05	**44**	**2700**	-	-
A4	0.5-0.6	**380**	**7.6**	29	79	**540**	**6200**	0.07	31	**3100**	-	-
A6	0.25-0.35	**300**	**9.0**	32	100	300	**8800**	<0.05	**45**	**3100**	-	-
A6	0.5-0.6	**340**	**12**	16	49	39	**7400**	0.07	17	**4100**	-	-
A8	0.25-0.35	**310**	**11**	30	110	250	**9400**	0.1	24	**3700**	-	-
A8	0.5-0.6	**270**	**10**	35	94	**350**	**7700**	<0.05	28	**3300**	9.8	6.7
A8	1.0-1.1	**260**	**8.2**	34	94	300	**8000**	0.06	30	**3000**	-	-
A9	0.25-0.35	**180**	**3.6**	38	**310**	**340**	3200	<0.05	17	**1100**	-	-
A9	0.5-0.6	**160**	2.5	35	53	**310**	**4200**	<0.05	39	**870**	-	-
A11	0.25-0.35	**220**	**3.9**	42	64	220	**4600**	0.11	29	**1400**	-	-
A11	0.5-0.6	**390**	**17**	27	71	98	**12000**	0.48	**51**	**6300**	-	-
A11	1.0-1.1	**300**	**14**	27	49	81	**7300**	0.53	28	**3900**	11	6.7
A11	1.9-2.0	**540**	**49**	9.2	65	93	**7800**	0.46	24	**7600**	-	-
A13	0.25-0.35	**230**	**3.4**	41	**200**	300	3500	<0.05	17	**1000**	-	-
Duplicate D7 = A13 (0.25-0.35m)		**250**	**3.8**	37	62	210	**5700**	0.08	32	**1400**	-	-
A13	0.5-0.6	**200**	2.7	32	**160**	290	3200	<0.05	15	**810**	-	-
A15	0.2-0.3	11	<0.3	37	29	15	120	<0.05	17	45	-	-
A16	0.2-0.3	11	<0.3	38	26	31	93	<0.05	17	77	9.3	7.0
A17	0.2-0.3	**520**	2.2	28	**640**	190	660	0.06	17	**560**	-	-
A17	0.5-0.6	**600**	**4.0**	37	**870**	**730**	**4300**	0.12	40	**1000**	-	-
A18	0.2-0.3	87	0.5	23	110	94	480	<0.05	14	200	-	-
D101	0.2-0.3	61	0.5	35	28	280	2300	<0.05	8.6	180	-	-
D101	1.0-1.1	75	0.6	34	33	**490**	**4000**	<0.05	13	230	7.1	6.5
D102	0.2-0.3	59	0.5	37	25	270	1500	<0.05	8.8	170	-	-
D103	0.2-0.3	**140**	2.1	34	95	**310**	3500	<0.05	17	**800**	9.2	6.1
D104	0.2-0.3	**210**	2.3	32	59	**310**	3000	<0.05	19	**960**	-	-
D105	0.2-0.3	**240**	1.0	40	**140**	**410**	1000	<0.05	15	**320**	-	-
D106	0.2-0.3	74	0.7	35	67	110	290	<0.05	24	160	-	-
D107	0.2-0.3	**200**	2.2	25	**170**	**430**	3000	<0.05	19	**640**	-	-
D108	0.2-0.3	**150**	**3.1**	29	75	**710**	3000	<0.05	19	**1000**	-	-
D109	0.2-0.3	**120**	2.9	35	46	240	3000	<0.05	14	**630**	-	-
D110	0.2-0.3	**270**	1.4	38	63	300	1900	<0.05	13	**490**	-	-
D111	0.2-0.3	100	1.0	32	50	**330**	3100	<0.05	11	**340**	5.2	5.3
D112	0.2-0.3	**110**	0.6	36	40	**420**	2300	<0.05	8.3	230	-	-
D113	0.2-0.3	**260**	0.7	38	74	190	660	<0.05	12	**300**	-	-
D114	0.2-0.3	66	0.8	35	28	200	1600	<0.05	10	**300**	-	-
D115	0.2-0.3	88	1.6	38	43	**320**	2400	<0.05	12	**550**	6.7	5.9
SGS Lab Duplicate LB112410-024=D115 (0.2-0.3m)		80	1.9	-	47	**410**	**5500**	-	12	**630**	-	-
Limits of Reporting (LOR)		3	0.3	0.5	0.5	1	1	0.05	0.5	0.5	0.02	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)												
Health-based Investigation Levels (HIL)[a] A - Residential A		100	20	100	6000	300	3800	10[c]	400	7400		
Ecological Investigation Levels (EIL) - Urban residential		100[d]	-	400[e]	110[f]	1200[g]	-	-	40[b]	240[b]		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)												
Provisional Phytotoxity-Based Investigation Levels (PIL)			3					1				

Notes:

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

b: EIL of aged nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=5.2 cmolc/kg & pH=5.3 were selected for derivation of EIL; a conservative approach.

c: Methyl Mercury

d: Generic EIL for aged arsenic

e: Chromium (III); the assumed clay content=10%, a conservative assumption.

f: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=95mg/kg, the lower ACL used based on the lowest CEC=5cmol/kg or pH=5.5.

g: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.

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TABLE D3

METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS

DISCRETE SAMPLES - NATURAL SOIL (SILTY CLAY)

(Ref No: 12675/4-AB)

Sample Location	Depth (m)	METALS (mg/kg) ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MANGANESE	MERCURY	NICKEL	NICKEL	ZINC	ZINC	ZINC	CEC (cmol/kg)	pH
Natural Soil (Silty Clay)															
D116	0.2-0.3	**200**	**6.7**	34	**180**	**760**	**5200**	0.2	-	44	**2900**	-	-	8.7	6.9
D117	0.2-0.3	**170**	2.2	29	110	**1000**	3300	<0.05	25	-	**1100**	-	-	-	-
D122	0.2-0.3	**140**	0.7	40	**120**	160	77	<0.05	16	-	190	-	-	-	-
D123	0.2-0.3	94	2.9	38	89	280	2700	<0.05	27	-	**1100**	-	-	-	-
D124	0.2-0.3	66	0.7	32	33	**310**	1600	<0.05	8.2	-	**310**	-	-	-	-
D125	0.2-0.3	51	0.5	39	20	230	2100	<0.05	7.6	-	140	-	-	-	-
D126	0.2-0.3	76	0.7	41	43	230	1300	<0.05	9.1	-	**300**	-	-	-	-
D127	0.2-0.3	**270**	**3.3**	38	**210**	**630**	3700	<0.05	31	-	**1800**	-	-	-	-
D131	0.2-0.3	**190**	1.7	36	69	280	2400	<0.05	13	-	**600**	-	-	-	-
D132	0.2-0.3	**530**	1.2	42	62	120	1600	<0.05	13	-	-	490	-	12	6.5
D132	1.0-1.1	**940**	1.2	37	99	79	2300	0.08	18	-	**660**	-	-	-	-
D132	1.9-2.0	**540**	1.2	35	71	55	1400	0.12	14	-	**580**	-	-	-	-
Duplicate D1 = D132 (1.9-2.0m)		**390**	**4.8**	27	72	50	**6200**	0.15	31	-	**1200**	-	-	-	-
D133	0.2-0.3	21	<0.3	31	9.8	100	660	<0.05	4.6	-	60	-	-	-	-
D134	0.2-0.03	74	0.8	63	21	200	720	<0.05	8.3	-	110	-	-	-	-
D135	0.2-0.3	54	0.6	36	24	220	950	<0.05	7.1	-	150	-	-	-	-
D136	0.2-0.3	69	0.8	31	30	**310**	2600	<0.05	13	-	**290**	-	-	-	-
D137	0.2-0.3	**180**	2.3	32	81	**420**	3600	0.12	23	-	**770**	-	-	6.8	6.1
D138	0.2-0.3	**360**	**3.4**	26	75	260	3400	<0.05	19	-	**1600**	-	-	-	-
D139	0.2-0.3	**1200**	**6.6**	24	**1100**	**970**	**16000**	<0.05	**110**	-	**1400**	-	-	-	-
D140	0.2-0.3	**630**	**6.1**	27	**270**	**2300**	**8400**	0.16	**44**	-	**2800**	-	-	-	-
D141	0.2-0.3	**320**	2.5	28	69	**570**	3200	<0.05	20	-	**770**	-	-	7.1	6.4
D142	0.2-0.3	**110**	0.8	32	30	260	1900	<0.05	11	-	240	-	-	-	-
D143	0.2-0.3	63	0.7	40	19	220	2500	<0.05	9.3	-	160	-	-	-	-
D144	0.2-0.3	64	0.7	30	48	75	80	<0.05	15	-	200	-	-	-	-
D145	0.2-0.3	56	0.8	16	78	120	260	<0.05	22	-	170	-	-	-	-
D147	0.2-0.3	76	0.8	36	44	150	1200	<0.05	17	-	240	-	-	-	-
D148	0.2-0.3	47	0.6	31	36	69	760	<0.05	23	-	140	-	-	-	-
D149	0.2-0.3	**120**	0.8	34	37	170	1400	<0.05	11	-	**290**	-	-	-	-
D150	0.2-0.3	**300**	1.9	23	53	**350**	**4000**	<0.05	21	-	**770**	-	-	-	-
D151	0.2-0.3	**240**	1.3	27	**120**	**870**	990	0.08	18	-	**920**	-	-	-	-
D152	0.2-0.3	**270**	1.9	47	110	**600**	2700	0.06	17	-	**540**	-	-	8.0	6.6
D153	0.2-0.3	**170**	1.3	40	64	**470**	3000	<0.05	18	-	**430**	-	-	5.6	6.1
D154	0.2-0.3	80	0.8	39	33	**330**	2400	<0.05	11	-	160	-	-	-	-
D155	0.2-0.3	**120**	1.7	39	83	240	**4400**	0.05	24	-	-	-	340	8.4	6.4
Limits of Reporting (LOR)		3	0.3	0.5	0.5	1	1	0.05	0.5	0.5	0.5	0.5	0.5	0.02	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)															
Health-based Investigation Levels (HIL)[a] A - Residential A		100	20	100	6000	300	3800	10[c]	400	400	7400	7400	7400		
Ecological Investigation Levels (EIL) - Urban residential		100[d]	-	400[e]	110[f]	1200[g]	-	-	40[b]	130[h]	240[b]	540[i]	430[j]		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)															
Provisional Phytotoxity-Based Investigation Levels (PIL)			3					1							

Notes:

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

b: EIL of aged nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=5.2 cmolc/kg & pH=5.3 were selected for derivation of EIL; a conservative approach.

c: Methyl Mercury

d: Generic EIL for aged arsenic

e: Chromium (III); the assumed clay content=10%, a conservative assumption.

f: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=95mg/kg, the lower ACL used based on the lowest CEC=5cmol/kg or pH=5.5.

g: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.

h: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; CEC=8.7

i: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; CEC=12 cmolc/kg & pH=6.5.

j: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; CEC=8.4 cmolc/kg & pH=6.4.

TABLE D4
METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS
DISCRETE SAMPLES - NATURAL SOIL (SHALEY CLAY & SHALE)
(Ref No: 12675/4-AB)

Sample Location	Depth (m)	METALS (mg/kg) ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MANGANESE	MERCURY	NICKEL	NICKEL	ZINC	ZINC	CEC (cmol/kg)	pH
Natural Soil (Shaley Clay)														
A15	0.5-0.6	13	<0.3	38	34	15	86	<0.05	20	-	53	-	10	7.1
A15	1.0-1.1	19	0.3	38	33	77	180	<0.05	19	-	53	-	-	-
A15	1.9-2.0	11	<0.3	33	14	14	1000	<0.05	-	26	41	-	22	-
A16	0.5-0.6	11	0.3	2.5	19	21	58	<0.05	-	28	100	-	11	-
A16	1.0-1.1	13	0.4	28	19	23	71	<0.05	-	29	110	-	9.8	-
A16	1.5-1.6	15	<0.3	17	18	16	170	<0.05	-	30	100	-	17	-
A17	1.0-1.1	**420**	2.9	68	**320**	49	630	0.24	20	-	**770**	-	-	-
A17	1.9-2.0	**410**	**16**	18	**250**	**570**	**12000**	0.13	**130**	-	**2500**	-	3.9	6.9
A18	0.5-0.6	72	0.4	26	83	56	170	<0.05	15	-	160	-	-	-
A18	1.0-1.1	13	0.3	27	32	17	270	<0.05	-	28	180	-	10	7.5
D101	1.9-2.0	23	0.9	7.0	36	42	920	<0.05	-	51	-	430	16	7.7
D116	1.0-1.1	**220**	**7.8**	35	**210**	**790**	**4800**	0.2	**35**	-	**3100**	-	-	-
Natural Soil (Shale)														
D116	1.4-1.5	**530**	**46**	19	**720**	**710**	**18000**	0.64	**36**	-	**2000**	-	-	-
Natural Soil (Shaley Clay)														
D118	0.2-0.3	44	0.4	33	58	64	110	<0.05	25	-	130	-	-	-
D119	0.2-0.3	10	0.3	38	18	40	450	<0.05	21	-	65	-	-	-
D120	0.2-0.3	8	0.5	20	17	210	330	<0.05	15	-	130	-	-	-
D121	0.2-0.3	46	0.4	30	39	53	210	<0.05	-	29	120	-	14	-
D128	0.2-0.3	10	<0.3	11	13	20	100	<0.05	16	-	110	-	-	-
D129	0.2-0.3	13	<0.3	13	15	68	100	<0.05	12	-	74	-	-	-
D130	0.2-0.3	12	<0.3	11	15	30	130	<0.05	15	-	70	-	-	-
D130	1.0-1.1	17	0.3	12	11	15	56	<0.05	23	-	73	-	12	7.0
D139	1.0-1.1	**860**	**3.5**	44	**1700**	**960**	1600	0.11	**52**	-	**630**	-	-	-
Natural Soil (Shale)														
D139	1.4-1.5	**430**	2.6	34	**560**	170	2400	0.12	**44**	-	**400**	-	5.8	6.5
Natural Soil (Shaley Clay)														
D142	1.0-1.1	100	0.6	28	37	72	320	<0.05	11	-	250	-	-	-
D142	1.9-2.0	26	0.3	32	26	28	240	0.06	11	-	160	-	12	8.0
D146	0.2-0.3	43	0.5	35	37	49	480	<0.05	18	-	130	-	-	-
D152	1.0-1.1	**390**	**5.9**	30	**240**	**360**	**4700**	0.13	24	-	**950**	-	-	-
D152	1.9-2.0	**390**	**4.5**	37	**150**	85	1800	0.28	19	-	**1100**	-	-	-
Split S2 = D152 (1.9-2.0m)		**680**	**17**	10	**180**	85	**21000**	0.5	**52**	-	**1200**	-	-	-
D156	0.2-0.3	26	0.4	26	27	53	700	<0.05	17	-	94	-	-	-
D157	0.2-0.3	47	0.6	30	23	110	680	<0.05	21	-	73	-	-	-
D157	1.0-1.1	37	0.5	29	41	49	190	<0.05	20	-	120	-	24	8.6
D157	1.9-2.0	12	0.6	28	41	50	980	<0.05	-	59	210	-	19	-
Limits of Reporting (LOR)		3	0.3	0.5	0.5	1	1	0.05	0.5	0.5	0.5	0.5	0.02	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)														
Health-based Investigation Levels (HIL)[a] A - Residential A		100	20	100	6000	300	3800	10[c]	400	400	7400	7400		
Ecological Investigation Levels (EIL) - Urban residential		100[d]	-	400[e]	110[f]	1200[g]	-	-	25[b]	160[h]	270[b]	660[i]		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)														
Provisional Phytotoxity-Based Investigation Levels (PIL)			3					1						

Notes:
- a: Residential with garden / accessible soil (home grown produce <10% fruit and vegetable intake (no poultry)), also includes childcare centres, preschools and primary schools.
- b: EIL of aged nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=3.9 cmolc/kg & pH=6.5 were selected for derivation of EIL; a conservative approach.
- c: Methyl Mercury
- d: Generic EIL for aged arsenic
- e: Chromium (III); the assumed clay content=10%, a conservative assumption.
- f: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=95mg/kg, the lower ACL used based on the lowest CEC=5cmol/kg
- g: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.
- h: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=9.8 cmolc/kg was selected for derivation of EIL; a conservative approach.
- i: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; CEC=16 cmolc/kg & pH=7.7.

TABLE D5
METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS
DISCRETE SAMPLES - TOPSOIL (SILTY CLAY, BROWN)
(Ref No: 12675/4-AB)

Sample Location	Depth (m)	METALS (mg/kg) ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MANGANESE	MERCURY	NICKEL	NICKEL	NICKEL	ZINC	ZINC	CEC (cmol/kg)	pH
Topsoil (Silty Clay, Brown)															
D201	0-0.1	**190**	0.8	36	35	120	2600	<0.05	-	10	-	-	220	6.7	6.5
D202	0-0.1	**200**	**4.0**	31	**150**	36	1900	<0.05	-	**21**	-	**460**	-	-	-
D203	0-0.1	**180**	1.9	37	43	280	3100	<0.05	-	14	-	**490**	-	-	-
D208	0-0.1	**130**	**3.4**	28	79	34	2300	<0.05	-	**19**	-	**370**	-	-	-
D209	0-0.1	**220**	1.9	34	39	150	2900	<0.05	-	12	-	**390**	-	3.3	5.9
D210	0-0.1	100	0.6	30	28	78	3700	<0.05	-	12	-	130	130	-	-
D211	0-0.1	44	0.5	40	21	160	1100	<0.05	-	6.1	-	-	190	12	5.8
D213	0-0.1	73	0.5	31	20	270	2600	<0.05	-	7.3	-	-	160	-	-
D214	0-0.1	48	0.6	31	13	250	**4200**	<0.05	-	9.3	-	140	-	-	-
D215	0-0.1	38	0.5	31	14	180	3100	<0.05	-	9.4	-	140	-	-	-
D216	0-0.1	40	0.5	38	16	120	3100	<0.05	-	11	-	90	-	-	-
D217	0-0.1	66	0.6	45	15	190	590	<0.05	-	8.0	-	110	-	-	-
D221	0-0.1	55	0.6	27	24	240	570	<0.05	-	6.2	-	110	-	-	-
D222	0-0.1	41	0.4	31	12	140	300	<0.05	5.2	-	-	56	-	-	-
D223	0-0.1	35	0.4	29	11	76	180	<0.05	5.3	-	-	60	-	2.7	5.5
D224	0-0.1	23	0.4	17	14	58	1600	<0.05	-	9.4	-	89	-	8.8	-
D225	0-0.1	37	0.6	31	17	81	1300	<0.05	-	12	-	120	-	3.1	-
D226	0.0-0.1	25	0.5	26	11	80	2800	<0.05	-	11	-	120	-	5.1	-
D226	0.2-0.3	22	0.6	25	13	68	2700	<0.05	-	11	-	120	-	-	-
Limits of Reporting (LOR)		3	0.3	0.5	0.5	1	1	0.05	0.5	0.5	0.5	0.5	0.5	0.02	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)															
Health-based Investigation Levels (HIL)[a] A - Residential A		100	20	100	6000	300	3800	10[c]	400	400	400	7400	7400		
Ecological Investigation Levels (EIL) - Urban residential		100[d]	-	400[e]	110[f]	1200[g]	-	-	6[b]	15[h]	160[i]	150[b]	300[j]		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)															
Provisional Phytotoxity-Based Investigation Levels (PIL)			3					1							

Notes:

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

b: EIL of aged nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=1.3 cmolc/kg & pH=5.5 were selected for derivation of EIL; a conservative approach.

c: Methyl Mercury

d: Generic EIL for aged arsenic

e: Chromium (III); the assumed clay content=10%, a conservative assumption.

f: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=95mg/kg, the lower ACL used based on the lowest CEC=5cmol/kg or pH=5.5

g: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.

h: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=3.1 cmolc/kg was selected for derivation of EIL; a conservative approach.

i: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; CEC=9.6 cmolc/kg was adopted for derivation of EIL.

j: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=6.1 cmolc/kg & pH=5.6 were selected for derivation of EIL; a conservative approach.

TABLE D5
METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS
DISCRETE SAMPLES - TOPSOIL (SILTY CLAY, BROWN)
(Ref No: 12675/4-AB)

Sample Location	Depth (m)	METALS (mg/kg)												CEC (cmolc/kg)	pH
		ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MANGANESE	MERCURY	NICKEL	NICKEL	NICKEL	ZINC	ZINC		
Topsoil (Silty Clay, Brown)															
D229	0.0-0.1	41	0.4	29	7.8	76	800	<0.05	-	6.5	-	61	-	-	-
D229	0.2-0.3	54	0.5	35	8.1	100	500	<0.05	-	6.4	-	59	-	-	-
D230	0.0-0.1	**110**	0.7	38	16	240	740	<0.05	6.0	-	-	**160**	-	-	-
D230	0.2-0.3	**110**	0.7	37	15	**320**	1100	<0.05	**6.2**	-	-	140	-	-	-
D231	0.0-0.1	75	0.5	31	22	150	220	<0.05	**7.2**	-	-	79	-	-	-
D231	0.2-0.3	7	<0.3	3.9	2.5	28	30	<0.05	0.7	-	-	8.7	-	-	-
D232	0-0.1	53	0.4	26	23	93	270	<0.05	**11**		-	51	-	-	-
D233	0-0.1	54	0.3	23	37	75	330	<0.05	**7.0**		-	36	-	-	-
D234	0-0.1	11	<0.3	21	20	20	940	<0.05	-	8.6	-	46	-	-	-
D234	0.2-0.3	14	<0.3	24	23	22	1100	<0.05	-	8.5	-	39	-	-	-
D235	0-0.1	11	0.3	27	20	16	870	<0.05	-	13	-	50	-	9.5	-
D236	0-0.1	11	<0.3	22	24	13	650	<0.05	-	7.8	-	33	-	7.3	-
D237	0-0.1	10	<0.3	18	13	16	810	<0.05	-	6.9	-	35	-	-	-
D237	0.2-0.3	11	<0.3	20	14	15	550	<0.05	-	7.1	-	33	-	-	-
D238	0-0.1	18	<0.3	29	15	28	980	<0.05	-	8.8	-	49	-	-	-
D238	0.2-0.3	10	<0.3	23	14	18	700	<0.05	-	10	-	52	-	8.3	-
D243	0.0-0.1	13	<0.3	22	33	12	420	<0.05	-	7.9	-	30	-	-	-
D243	0.2-0.3	15	<0.3	26	34	11	270	<0.05	-	8.7	-	25	-	-	-
D244	0.0-0.1	9	<0.3	27	13	12	750	<0.05	-	11	-	36	-	-	-
D244	0.2-0.3	13	<0.3	38	21	12	160	<0.05	-	13	-	30	-	-	-
Limits of Reporting (LOR)		3	0.3	0.5	0.5	1	1	0.05	0.5	0.5	0.5	0.5	0.5	0.02	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)															
Health-based Investigation Levels (HIL)[a] A - Residential A		100	20	100	6000	300	3800	10[c]	400	400	400	7400	7400		
Ecological Investigation Levels (EIL) - Urban residential		100[d]	-	400[e]	110[f]	1200[g]	-	-	6[b]	15[h]	160[i]	150[b]	300[j]		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)															
Provisional Phytotoxicity-Based Investigation Levels (PIL)			3					1							

Notes:

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

b: EIL of aged nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=1.3 cmolc/kg & pH=5.5 were selected for derivation of EIL; a conservative approach.

c: Methyl Mercury

d: Generic EIL for aged arsenic

e: Chromium (III); the assumed clay content=10%, a conservative assumption.

f: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=95mg/kg, the lower ACL used based on the lowest CEC=5cmol/kg or pH=5.5

g: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.

h: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=3.1 cmolc/kg was selected for derivation of EIL; a conservative approach.

i: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; CEC=9.6 cmolc/kg was adopted for derivation of EIL.

j: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=6.1 cmolc/kg & pH=5.6 were selected for derivation of EIL; a conservative approach.

TABLE D5
METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS
DISCRETE SAMPLES - TOPSOIL (SILTY CLAY, BROWN)
(Ref No: 12675/4-AB)

Sample Location	Depth (m)	ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MANGANESE	MERCURY	NICKEL	NICKEL	NICKEL	ZINC	ZINC	CEC (cmol/kg)	pH
		METALS (mg/kg)													
Topsoil (Silty Clay, Brown)															
D245	0.0-0.1	13	<0.3	22	22	16	420	<0.05	-	7.5	-	33	-	-	-
D245	0.2-0.3	16	<0.3	27	30	18	340	<0.05	-	8.7	-	29	-	-	-
D246	0.0-0.1	16	0.4	30	7.5	19	110	<0.05	-	8.9	-	35	-	-	-
D246	0.2-0.3	20	0.3	30	16	16	55	<0.05	-	9.4	-	31	-	-	-
D247	0.0-0.1	19	0.3	42	21	18	45	<0.05	-	**17**	-	50	-		-
D248	0.0-0.1	48	0.5	25	15	56	370	<0.05	-	7.4	-	98	-	-	-
D248	0.2-0.3	**150**	0.7	35	33	220	670	0.05	-	12	-	-	260	6.1	6.4
D249	0.0-0.1	95	0.5	20	38	85	770	<0.05	-	12	-	120	-	-	-
D249	0.2-0.3	65	0.5	19	28	83	1100	<0.05	-	11	-	110	-	9.2	-
D259	0.0-0.1	40	0.7	26	14	50	1400	<0.05	-	12	-	-	190	8.1	6.2
D259	0.2-0.3	38	0.3	32	34	29	170	<0.05	-	-	19	78	-	9.6	-
D263	0.0-0.1	13	<0.3	28	22	15	710	<0.05	-	11	-	28	-	-	-
D263	0.2-0.3	11	<0.3	35	16	12	310	<0.05	-	11	-	23	-	6.7	-
D264	0.0-0.1	13	0.3	27	15	17	320	<0.05	-	11	-	42	-	4.2	-
D264	0.2-0.3	14	<0.3	28	17	18	200	<0.05	-	9.5	-	37	-	-	-
D265	0.0-0.1	9	<0.3	25	19	11	420	<0.05	-	11	-	35	-	-	-
D265	0.2-0.3	10	<0.3	28	17	9	170	<0.05	-	14	-	32	-	7.6	-
D271	0.0-0.1	30	0.3	26	13	96	1300	<0.05	-	6.3	-	57	-	-	-
D271	0.2-0.3	40	0.4	33	17	98	1100	<0.05	-	7.5	-	74	-	7.7	-
Limits of Reporting (LOR)		3	0.3	0.5	0.5	1	1	0.05	0.5	0.5	0.5	0.5	0.5	0.02	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)															
Health-based Investigation Levels (HIL)[a] A - Residential A		100	20	100	6000	300	3800	10[c]	400	400	400	7400	7400		
Ecological Investigation Levels (EIL) - Urban residential		100[d]	-	400[e]	110[f]	1200[g]	-	-	6[b]	15[h]	160[i]	150[b]	300[j]		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)															
Provisional Phytotoxity-Based Investigation Levels (PIL)			3					1							

Notes:

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

b: EIL of aged nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=1.3 cmolc/kg & pH=5.5 were selected for derivation of EIL; a conservative approach.

c: Methyl Mercury

d: Generic EIL for aged arsenic

e: Chromium (III); the assumed clay content=10%, a conservative assumption.

f: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=95mg/kg, the lower ACL used based on the lowest CEC=5cmol/kg or pH=5.5

g: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.

h: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=3.1 cmolc/kg was selected for derivation of EIL; a conservative approach.

i: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; CEC=9.6 cmolc/kg was adopted for derivation of EIL.

j: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=6.1 cmolc/kg & pH=5.6 were selected for derivation of EIL; a conservative approach.

TABLE D5

METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS

DISCRETE SAMPLES - TOPSOIL (SILTY CLAY, BROWN)

(Ref No: 12675/4-AB)

		METALS (mg/kg)													
Sample Location	Depth (m)	ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MANGANESE	MERCURY	NICKEL	NICKEL	NICKEL	ZINC	ZINC	CEC (cmol/kg)	pH
Topsoil (Silty Clay, Brown)															
D272	0.0-0.1	42	0.7	34	22	110	1700	<0.05	-	10	-	110	-	3.6	-
D272	0.2-0.3	47	0.6	40	24	130	2500	<0.05	-	9.8	-	110	-	-	-
D273	0.0-0.1	51	0.5	49	4.6	100	640	<0.05	3.0	-	-	56	-	1.3	-
D273	0.2-0.3	69	0.6	61	9.4	110	430	<0.05	4.2	-	-	50	-	-	-
D274	0.0-0.1	25	0.4	34	8.3	73	590	<0.05	3.6	-	-	54	-	-	-
D275	0.0-0.1	25	<0.3	23	10	47	860	<0.05	4.3	-	-	48	-	-	-
D276	0.0-0.1	37	0.4	26	23	66	1400	<0.05	5.8	-	-	66	-	-	-
D277	0.0-0.1	34	0.4	30	12	66	2900	<0.05	-	9.1	-	73	-	-	-
D277	0.2-0.3	33	0.4	26	14	70	3100	<0.05	-	11	-	65	-	6.2	-
D280	0.0-0.1	25	0.4	18	25	20	320	<0.05	-	15	-	55	-	6.6	-
D281	0.0-0.1	50	0.4	21	**330**	29	100	<0.05	-	14	-	57	-	4.0	-
D282	0.0-0.1	11	0.4	16	7.3	53	470	<0.05	-	12	-	82	-	6.7	-
D282	0.2-0.3	15	0.3	17	8.5	90	250	<0.05	-	12	-	87	-	-	-
D283	0.0-0.1	13	<0.3	14	20	19	120	<0.05	-	8.3	-	50	-	-	-
D283	0.2-0.3	9	<0.3	21.0	18	11	91	<0.05	-	14	-	74	-	7.5	-
D284	0.0-0.1	10	<0.3	17	2.3	9	110	<0.05	-	12	-	44	-	-	-
D284	0.2-0.3	10	<0.3	18	2.5	11	150	<0.05	-	14	-	53	-	4.0	-
D285	0.0-0.1	43	0.8	27	16	82	910	<0.05	-	8.6	-	-	170	6.5	5.6
D286	0.0-0.1	26	0.4	31	9.6	58	1900	<0.05	5.5	-	-	44	-	-	-
D287	0.0-0.1	29	0.5	34	12	73	780	0.05	3.8	-	-	57	-	-	-
D287	0.2-0.3	53	0.5	50	15	95	900	0.05	-	6.2	-	64	-	5.3	-
D288	0.0-0.1	22	0.6	23	16	30	440	<0.05	-	-	19	-	190	12	6.4
D288	0.2-0.3	16	0.4	28	16	20	190	<0.05	-	-	25	110	-	-	-
D289	0.0-0.1	16	0.3	23	31	17	210	<0.05	-	-	16	69	-	6.8	-
D289	0.2-0.3	17	<0.3	22	30	19	120	<0.05	-	-	12	51	-	-	-
D290	0.0-0.1	22	1.6	22	20	84	2500	<0.05	-	11	-	-	180	5.9	5.7
Limits of Reporting (LOR)		3	0.3	0.5	0.5	1	1	0.05	0.5	0.5	0.5	0.5	0.5	0.02	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)															
Health-based Investigation Levels (HIL)[a] A - Residential A		100	20	100	6000	300	3800	10[c]	400	400	400	7400	7400		
Ecological Investigation Levels (EIL) - Urban residential		100[d]	-	400[e]	110[f]	1200[g]	-	-	6[b]	15[h]	160[i]	150[b]	300[j]		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)															
Provisional Phytotoxicity-Based Investigation Levels (PIL)			3					1							

Notes:

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

b: EIL of aged nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=1.3 cmolc/kg & pH=5.5 were selected for derivation of EIL; a conservative approach.

c: Methyl Mercury

d: Generic EIL for aged arsenic

e: Chromium (III); the assumed clay content=10%, a conservative assumption.

f: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=95mg/kg, the lower ACL used based on the lowest CEC=5cmol/kg or pH=5.5

g: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.

h: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=3.1 cmolc/kg was selected for derivation of EIL; a conservative approach.

i: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; CEC=9.6 cmolc/kg was adopted for derivation of EIL.

j: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=6.1 cmolc/kg & pH=5.6 were selected for derivation of EIL; a conservative approach.

TABLE D6

METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS

DISCRETE SAMPLES - TOPSOIL (SILTY CLAY, GREY)

(Ref No: 12675/4-AB)

Sample Location	Depth (m)	METALS (mg/kg)											CEC (cmol/kg)	pH
		ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MANGANESE	MERCURY	NICKEL	NICKEL	ZINC	ZINC		
Topsoil (Silty Clay, Grey)														
D204	0-0.1	14	<0.3	15	7.8	52	880	<0.05	8.3	-	65	-	-	5.7
D205	0-0.1	14	<0.3	17	13	50	310	<0.05	-	13	78	-	6.7	-
D206	0-0.1	9	<0.3	13	2.7	15	300	<0.05	10	-	63	-	5.6	5.5
D207	0-0.1	27	0.4	20	21	18	350	<0.05	-	13	55	-	8.5	-
D212	0-0.1	56	0.5	41	11	210	1800	<0.05	4.7	-	100	-	-	-
D219	0-0.1	72	0.5	49	8.5	230	1700	<0.05	3.9	-	88	-	2.4	5.4
D220	0-0.1	34	0.5	37	16	120	820	0.07	4.8	-	-	240	10	6.2
Limits of Reporting (LOR)		3	0.3	0.5	0.5	1	1	0.05	0.5	0.5	0.5	0.5	0.02	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)														
Health-based Investigation Levels (HIL)[a] A - Residential A		100	20	100	6000	300	3800	10[c]	400	400	7400	7400		
Ecological Investigation Levels (EIL) - Urban residential		100[d]	-	400[e]	110[f]	1200[g]	-	-	10[b]	70[h]	180[b]	480[i]		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)														
Provisional Phytotoxity-Based Investigation Levels (PIL)			3					1						

Notes:

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

b: EIL of aged nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=2.4 cmolc/kg & pH=5.4; the assumed clay content=10 % were selected for derivation of EIL; a conservative approach

c: Methyl Mercury

d: Generic EIL for aged arsenic

e: Chromium (III); the assumed clay content=10%, a conservative assumption.

f: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=95mg/kg, the lower ACL used based on the lowest CEC=5cmol/kg or pH=5.5

g: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.

h: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=6.7 cmolc/kg was selected for derivation of EIL; a conservative approach.

i: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; CEC=10 cmolc/kg & pH=6.2 were selected for derivation of EIL.

TABLE D7
METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS
DISCRETE SAMPLES - NATURAL SOIL (SILTY CLAY)
(Ref No: 12675/4-AB)

Sample Location	Depth (m)	METALS (mg/kg)																	CEC (cmolc/kg)	pH
		ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MANGANESE	MERCURY	NICKEL	NICKEL	NICKEL	NICKEL	NICKEL	ZINC	ZINC	ZINC	ZINC	ZINC		
Natural Soil (Silty Clay, red brown)																				
D201	0.2-0.3	**300**	0.8	33	51	100	2900	<0.05	11	-	-	-	-	-	390	-	-	-	-	-
D201	1.0-1.1	**450**	1.1	34	86	64	2000	0.08	11	-	-	-	-	-	450	-	-	-	-	-
D201	1.9-2.0	**530**	1.0	38	82	59	730	<0.05	11	-	-	-	-	-	310	-	-	-	16	7.3
D202	0.2-0.3	**500**	0.9	38	52	130	1300	<0.05	13	-	-	-	-	-	270	-	-	-	-	-
D202	1.0-1.1	**670**	2.4	45	91	100	**13000**	0.15	18	-	-	-	-	**1000**	-	-	-	-	-	-
D203	0.2-0.3	**120**	0.6	42	43	110	420	<0.05	11	-	-	-	-	240	-	-	-	-	-	-
D203	0.9-1.0	82	0.5	35	60	98	170	<0.05	17	-	-	-	-	-	380	-	-	-	15	7.1
Natural Soil (Silty Clay, yellow-brown)																				
D204	0.2-0.3	37	0.4	11	35	22	280	<0.05	-	-	-	32	-	-	-	-	-	120	-	6.7
D204	1.0-1.1	24	0.3	27	27	17	90	<0.05	-	-	-	21	-	-	-	-	-	85	-	-
D205	0.2-0.3	15	0.5	24	37	43	210	<0.05	-	-	-	31	-	-	-	-	-	130	-	-
D205	0.7-0.8	13	0.3	24	16	27	160	<0.05	-	-	-	31	-	-	-	-	-	110	-	-
D206	0.2-0.3	10	0.3	20	2.7	6	130	<0.05	-	-	-	15	-	-	-	-	-	73	13	7.1
D206	0.6-0.7	32	0.4	17	6.2	15	170	<0.05	-	-	-	12	-	-	-	-	-	87	-	-
D207	0.2-0.3	**110**	0.4	32	56	13	220	<0.05	-	-	-	23	-	-	-	-	-	50	-	-
D207	1.0-1.1	**130**	0.4	28	56	14	260	<0.05	-	-	-	23	-	-	-	-	-	51	-	-
Natural Soil (Silty Clay, red brown)																				
D208	0.2-0.3	**220**	2.4	42	**170**	29	630	<0.05	26	-	-	-	-	**390**	-	-	-	-	-	-
D208	1.0-1.1	**1200**	**100**	12	100	**330**	**34000**	0.11	27	-	-	-	-	**9600**	-	-	-	-	-	-
D209	0.2-0.3	**570**	**9.4**	38	**230**	**380**	**5600**	0.06	20	-	-	-	-	**1900**	-	-	-	-	-	-
D210	0.2-0.3	**190**	0.8	32	48	69	**4300**	<0.05	17	-	-	-	-	170	-	-	-	-	-	-
D210	1.0-1.1	**590**	1.6	38	82	190	**12000**	<0.05	27	-	-	-	-	**320**	-	-	-	-	-	-
Limits of Reporting (LOR)		3	0.3	0.5	0.5	1	1	0.05	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.02	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)																				
Health-based Investigation Levels (HIL)[a] A - Residential A		100	20	100	6000	300	3800	10[c]	400	400	400	400	400	7400	7400	7400	7400	7400		
Ecological Investigation Levels (EIL) - Urban residential		100[d]	-	400[e]	110[f]	1200[g]	-	-	30[b]	9[h]	35[i]	75[j]	390[k]	260[b]	630[l]	160[m]	930[n]	380[o]		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)																				
Provisional Phytotoxity-Based Investigation Levels (PIL)			3					1												

Notes:

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

b: EIL of aged nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=4.5 cmolc/kg & pH=5.6 for red brown natural silty clay were selected for derivation of EIL; a conservative approach.

c: Methyl Mercury

d: Generic EIL for aged arsenic

e: Chromium (III); the assumed clay content=10%, a conservative assumption.

f: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=95mg/kg, the lower ACL used based on the lowest CEC=5cmol/kg or pH=5.5.

g: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.

h: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=2.0 cmolc/kg for brwon natural silty clay was selected for derivation of EIL; a conservative approach.

i: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=4.8 cmolc/kg for brwon natural silty clay was selected for derivation of EIL; a conservative approach.

j: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=7.0 cmolc/kg for yellow-brwon natural silty clay was selected for derivation of EIL; a conservative approach.

k: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; CEC=34 cmolc/kg for yellow-brwon natural silty clay was adopted for derivation of EIL.

l: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; CEC=15 cmolc/kg & pH=7.1 for red brown natural silty clay were adopted for derivation of EIL.

m: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=2.0 cmolc/kg & pH=5.2 for brown natural silty clay were selected for derivation of EIL; a conservative approach.

n: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; CEC=26 cmolc/kg & pH=7.1 for brown natural silty clay was adopted for derivation of EIL.

o: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=7.0 cmolc/kg & pH=6.2 for yellow-brown natural silty clay were selected for derivation of EIL; a conservative approach.

TABLE D7
METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS
DISCRETE SAMPLES - NATURAL SOIL (SILTY CLAY)
(Ref No: 12675/4-AB)

		METALS (mg/kg)																		
Sample Location	Depth (m)	ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MANGANESE	MERCURY	NICKEL	NICKEL	NICKEL	NICKEL	NICKEL	ZINC	ZINC	ZINC	ZINC	ZINC	CEC (cmolc/kg)	pH
Natural Soil (Silty Clay, yellow-brown)																				
D211	0.2-0.3	38	0.3	33	39	66	74	0.08	-	-	-	9.8	-	-	-	-	-	86	-	-
Natural Soil (Silty Clay, red brown)																				
D211	1.0-1.1	34	0.3	23	31	60	870	<0.05	20	-	-	-	-	84	-	-	-	-	-	-
D211	1.9-2.0	43	0.4	22	34	110	1100	<0.05	12	-	-	-	-	90	-	-	-	-	-	-
Natural Soil (Silty Clay, yellow-brown)																				
D212	0.2-0.3	86	0.5	41	40	100	150	<0.05	-	-	-	10	-	-	-	-	-	140	-	-
D212	1.0-1.1	57	0.4	39	18	110	520	<0.05	-	-	-	5.9	-	-	-	-	-	75	7.0	6.2
Natural Soil (Silty Clay, red brown)																				
D213	0.2-0.3	95	0.6	34	25	**370**	3100	<0.05	8.7	-	-	-	-	160	-	-	-	-	4.5	5.8
Natural Soil (Silty Clay, brown)																				
D213	1.0-1.1	**120**	0.6	36	70	140	61	0.11	-	-	14	-	-	-	-	-	200	-	26	7.1
Natural Soil (Silty Clay, red brown)																				
D214	0.2-0.3	49	0.5	34	19	230	3500	<0.05	8.8	-	-	-	-	130	-	-	-	-	-	-
D214	1.0-1.1	94	0.6	45	19	240	2800	<0.05	9.1	-	-	-	-	140	-	-	-	-	-	-
D215	0.2-0.3	44	0.5	31	25	140	1500	<0.05	14	-	-	-	-	160	-	-	-	-	12	6.8
Natural Soil (Silty Clay, yellow-brown)																				
D215	1.0-1.1	62	0.7	17	32	71	950	0.1	-	-	-	16	-	-	-	-	-	320	29	7.6
D215	1.9-2.0	29	2.0	11	14	37	1500	0.08	-	-	-	16	-	-	-	-	-	220	-	-
Natural Soil (Silty Clay, brown)																				
D216	0.2-0.3	47	0.5	30	43	54	230	<0.05	-	-	13	-	-	-	-	100	-	-	18	7.3
D217	0.2-0.3	75	0.6	46	25	220	500	<0.05	-	-	9.9	-	-	-	-	110	-	-	7.2	-
Natural Soil (Silty Clay, yellow-brown)																				
D217	1.0-1.1	45	0.4	29	56	56	74	<0.05	-	-	-	18	-	-	-	-	-	170	23	7.1
D217	1.9-2.0	16	0.3	16	34	17	130	<0.05	-	-	-	11	-	-	-	-	-	66	-	-
Limits of Reporting (LOR)		3	0.3	0.5	0.5	1	1	0.05	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.02	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)																				
Health-based Investigation Levels (HIL)[a] A - Residential A		100	20	100	6000	300	3800	10[c]	400	400	400	400	400	7400	7400	7400	7400	7400		
Ecological Investigation Levels (EIL) - Urban residential		100[d]	-	400[e]	110[f]	1200[g]	-	-	30[b]	9[h]	35[i]	75[j]	390[k]	260[b]	630[k]	160[l]	930[m]	380[n]		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)																				
Provisional Phytotoxity-Based Investigation Levels (PIL)			3					1												

Notes:

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

b: EIL of aged nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=4.5 cmolc/kg & pH=5.6 for red brown natural silty clay were selected for derivation of EIL; a conservative approach.

c: Methyl Mercury

d: Generic EIL for aged arsenic

e: Chromium (III); the assumed clay content=10%, a conservative assumption.

f: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=95mg/kg, the lower ACL used based on the lowest CEC=5cmol/kg or pH=5.5.

g: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.

h: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=2.0 cmolc/kg for brwon natural silty clay was selected for derivation of EIL; a conservative approach.

i: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=4.8 cmolc/kg for brwon natural silty clay was selected for derivation of EIL; a conservative approach.

j: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=7.0 cmolc/kg for yellow-brwon natural silty clay was selected for derivation of EIL; a conservative approach.

k: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; CEC=34 cmolc/kg for yellow-brwon natural silty clay was adopted for derivation of EIL.

l: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; CEC=15 cmolc/kg & pH=7.1 for red brown natural silty clay were adopted for derivation of EIL.

m: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=2.0 cmolc/kg & pH=5.2 for brown natural silty clay were selected for derivation of EIL; a conservative approach.

n: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; CEC=26 cmolc/kg & pH=7.1 for brown natural silty clay was adopted for derivation of EIL.

o: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=7.0 cmolc/kg & pH=6.2 for yellow-brown natural silty clay were selected for derivation of EIL; a conservative approach.

TABLE D7
METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS
DISCRETE SAMPLES - NATURAL SOIL (SILTY CLAY)
(Ref No: 12675/4-AB)

		METALS (mg/kg)																		
Sample Location	Depth (m)	ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MANGANESE	MERCURY	NICKEL	NICKEL	NICKEL	NICKEL	NICKEL	ZINC	ZINC	ZINC	ZINC	ZINC	CEC (cmolc/kg)	pH
Natural Soil (Silty Clay, brown)																				
D218	0.2-0.3	49	0.5	35	9.3	140	2000	<0.05	-	4.4	-	-	-	-	-	77	-	-	2.0	5.2
Natural Soil (Silty Clay, yellow-brown)																				
D218	1.0-1.1	73	0.6	30	41	76	1400	0.07	-	-	-	17	-	-	-	-	-	170	21	-
D219	0.2-0.3	90	0.6	50	25	200	1200	<0.05	-	-	-	7.8	-	-	-	-	-	100	-	-
D219	1.0-1.1	90	0.5	31	51	170	310	<0.05	-	-	-	12	-	-	-	-	-	130	-	-
Natural Soil (Silty Clay, red brown)																				
D219	1.9-2.0	72	0.4	34	34	170	450	<0.05	12	-	-	-	-	120	-	-	-	-	21	8.2
Natural Soil (Silty Clay, yellow-brown)																				
D220	0.2-0.3	36	0.4	30	35	56	100	0.06	-	-	-	10	-	-	-	-	-	69	-	-
Natural Soil (Silty Clay, red brown)																				
D220	1.0-1.1	38	0.4	28	40	56	64	<0.05	9.3	-	-	-	-	72	-	-	-	-	-	-
D221	0.2-0.3	57	0.5	32	14	190	560	<0.05	5.7	-	-	-	-	83	-	-	-	-	-	-
Natural Soil (Silty Clay, yellow-brown)																				
D221	1.0-1.1	**250**	**3.6**	28	98	**420**	**4300**	0.17	-	-	-	52	-	-	-	-	-	**860**	-	-
D221	1.9-2.0	**1600**	**50**	14	**460**	**320**	**47000**	0.4	-	-	-	**140**	-	-	-	-	-	**10000**	-	-
Natural Soil (Silty Clay, red brown)																				
D222	0.2-0.3	48	0.5	43	53	130	43	<0.05	17	-	-	-	-	140	-	-	-	-	-	-
Natural Soil (Silty Clay, yellow-brown)																				
D222	1.0-1.1	21	<0.3	20	28	80	230	<0.05	-	-	-	18	-	-	-	-	-	84	-	-
Natural Soil (Silty Clay, red brown)																				
D223	0.2-0.3	53	0.6	42	34	120	99	<0.05	15	-	-	-	-	150	-	-	-	-	8.0	5.6
D224	0.2-0.3	32	0.3	23	20	75	1200	<0.05	12	-	-	-	-	92	-	-	-	-	-	-
Natural Soil (Silty Clay, yellow-brown)																				
D224	1.0-1.1	53	0.5	41	49	71	250	<0.05	-	-	-	25	-	-	-	-	-	140	9.1	-
Natural Soil (Silty Clay, brown)																				
D225	0.2-0.3	32	0.3	26	11	54	430	<0.05	-	8.9	-	-	-	-	-	-	-	62	-	-
Limits of Reporting (LOR)		3	0.3	0.5	0.5	1	1	0.05	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.02	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)																				
Health-based Investigation Levels (HIL)[a] A - Residential A		100	20	100	6000	300	3800	10[c]	400	400	400	400	400	7400	7400	7400	7400	7400		
Ecological Investigation Levels (EIL) - Urban residential		100[d]	-	400[e]	110[f]	1200[g]	-	-	30[b]	9[h]	35[i]	75[j]	390[k]	260[b]	630[k]	160[l]	930[m]	380[n]		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)																				
Provisional Phytotoxity-Based Investigation Levels (PIL)			3					1												

Notes:

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

b: EIL of aged nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=4.5 cmolc/kg & pH=5.6 for red brown natural silty clay were selected for derivation of EIL; a conservative approach.

c: Methyl Mercury

d: Generic EIL for aged arsenic

e: Chromium (III); the assumed clay content=10%, a conservative assumption.

f: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=95mg/kg, the lower ACL used based on the lowest CEC=5cmol/kg or pH=5.5.

g: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.

h: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=2.0 cmolc/kg for brwon natural silty clay was selected for derivation of EIL; a conservative approach.

i: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=4.8 cmolc/kg for brwon natural silty clay was selected for derivation of EIL; a conservative approach.

j: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=7.0 cmolc/kg for yellow-brwon natural silty clay was selected for derivation of EIL; a conservative approach.

k: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; CEC=34 cmolc/kg for yellow-brwon natural silty clay was adopted for derivation of EIL.

l: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; CEC=15 cmolc/kg & pH=7.1 for red brown natural silty clay were adopted for derivation of EIL.

m: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=2.0 cmolc/kg & pH=5.2 for brown natural silty clay were selected for derivation of EIL; a conservative approach.

n: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; CEC=26 cmolc/kg & pH=7.1 for brown natural silty clay was adopted for derivation of EIL.

o: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=7.0 cmolc/kg & pH=6.2 for yellow-brown natural silty clay were selected for derivation of EIL; a conservative approach.

TABLE D7
METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS
DISCRETE SAMPLES - NATURAL SOIL (SILTY CLAY)
(Ref No: 12675/4-AB)

		METALS (mg/kg)																		
Sample Location	Depth (m)	ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MANGANESE	MERCURY	NICKEL	NICKEL	NICKEL	NICKEL	NICKEL	ZINC	ZINC	ZINC	ZINC	ZINC	CEC (cmol/kg)	pH
Natural Soil (Silty Clay, yellow-brown)																				
D225	1.0-1.1	60	0.6	39	27	79	1400	<0.05	-	-	-	15	-	-	-	-	-	140	-	-
D225	1.9-2.0	48	**13**	36	39	54	**14000**	0.54	-	-	-	-	77	-	-	-	-	**2400**	34	7.7
D226	1.0-1.1	40	0.4	30	15	91	1400	<0.05	-	-	-	8.8	-	-	-	-	-	87	10	-
D229	1.0-1.1	29	0.4	28	27	58	140	<0.05	-	-	-	24	-	-	-	-	-	170	11	6.7
D230	1.0-1.1	**130**	0.7	27	52	240	**4200**	<0.05	-	-	-	29	-	-	-	-	-	310	16	7.3
D231	1.0-1.1	33	0.4	17	46	**440**	1000	0.1	-	-	-	35	-	-	-	-	-	230	24	8.0
D232	0.2-0.3	44	0.3	32	60	230	220	<0.05	-	-	-	19	-	-	-	-	-	130	-	-
D232	1.0-1.1	96	0.6	30	96	**550**	930	0.06	-	-	-	23	-	-	-	-	-	330	15	8.4
D233	0.2-0.3	68	0.4	32	84	150	260	<0.05	-	-	-	10	-	-	-	-	-	49	-	-
D233	1.0-1.1	**130**	0.7	24	**220**	180	410	0.15	-	-	-	21	-	-	-	-	-	130	-	-
D233	1.9-2.0	**140**	1.1	19	**170**	150	460	0.09	-	-	-	41	-	-	-	-	-	300	-	-
D234	1.0-1.1	18	<0.3	35	35	15	120	<0.05	-	-	-	14	-	-	-	-	-	39	-	-
Natural Soil (Silty Clay, red brown)																				
D235	0.2-0.3	14	0.4	37	24	14	310	<0.05	16	-	-	-	-	51	-	-	-	-	18	-
Natural Soil (Silty Clay, yellow-brown)																				
D235	1.0-1.1	20	<0.3	20	22	6	300	<0.05	-	-	-	17	-	-	-	-	-	35	9.1	-
D236	0.2-0.3	14	<0.3	33	41	14	250	<0.05	-	-	-	10	-	-	-	-	-	29	8.2	-
D237	1.0-1.1	19	0.3	25	35	9	83	<0.05	-	-	-	19	-	-	-	-	-	56	-	-
D238	1.0-1.1	22	0.3	31	37	31	110	<0.05	-	-	-	20	-	-	-	-	-	97	17	-
D243	1.0-1.1	9	0.3	58	33	7	510	<0.05	-	-	-	27	-	-	-	-	-	50	-	-
D244	1.0-1.1	11	<0.3	38	17	10	150	<0.05	-	-	-	15	-	-	-	-	-	29	-	-
D245	1.0-1.1	23	0.3	40	40	18	190	<0.05	-	-	-	16	-	-	-	-	-	55	-	-
D245	1.9-2.0	8	0.5	38	53	9	290	<0.05	-	-	-	16	-	-	-	-	-	170	11	7.7
Limits of Reporting (LOR)		3	0.3	0.5	0.5	1	1	0.05	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.02	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)																				
Health-based Investigation Levels (HIL)[a] A - Residential A		100	20	100	6000	300	3800	10[c]	400	400	400	400	400	7400	7400	7400	7400	7400		
Ecological Investigation Levels (EIL) - Urban residential		100[d]	-	400[e]	110[f]	1200[g]	-	-	30[b]	9[h]	35[i]	75[j]	390[k]	260[b]	630[l]	160[m]	930[n]	380[o]		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)																				
Provisional Phytotoxity-Based Investigation Levels (PIL)			3					1												

Notes:

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

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c: Methyl Mercury

d: Generic EIL for aged arsenic

e: Chromium (III); the assumed clay content=10%, a conservative assumption.

f: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=95mg/kg, the lower ACL used based on the lowest CEC=5cmol/kg or pH=5.5.

g: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.

h: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=2.0 cmolc/kg for brwon natural silty clay was selected for derivation of EIL; a conservative approach.

i: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=4.8 cmolc/kg for brwon natural silty clay was selected for derivation of EIL; a conservative approach.

j: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=7.0 cmolc/kg for yellow-brwon natural silty clay was selected for derivation of EIL; a conservative approach.

k: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; CEC=34 cmolc/kg for yellow-brwon natural silty clay was adopted for derivation of EIL.

l: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; CEC=15 cmolc/kg & pH=7.1 for red brown natural silty clay were adopted for derivation of EIL.

m: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=2.0 cmolc/kg & pH=5.2 for brown natural silty clay were selected for derivation of EIL; a conservative approach.

n: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; CEC=26 cmolc/kg & pH=7.1 for brown natural silty clay was adopted for derivation of EIL.

o: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=7.0 cmolc/kg & pH=6.2 for yellow-brown natural silty clay were selected for derivation of EIL; a conservative approach.

TABLE D7
METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS
DISCRETE SAMPLES - NATURAL SOIL (SILTY CLAY)
(Ref No: 12675/4-AB)

		METALS (mg/kg)																			
Sample Location	Depth (m)	ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MANGANESE	MERCURY	NICKEL	NICKEL	NICKEL	NICKEL	NICKEL	ZINC	ZINC	ZINC	ZINC	ZINC	CEC (cmol/kg)	pH
Natural Soil (Silty Clay, yellow-brown)																				
D246	1.0-1.1	17	0.3	21	32	11	390	<0.05	-	-	-	27	-	-	-	-	-	43	19	-
D247	0.2-0.3	19	0.3	38	24	18	62	<0.05	-	-	-	21	-	-	-	-	-	55	22	-
D247	1.0-1.1	16	<0.3	29	21	15	120	<0.05	-	-	-	22	-	-	-	-	-	58	-	-
D248	1.0-1.1	**290**	1.8	37	66	140	1300	0.07	-	-	-	33	-	-	-	-	-	**700**	-	-
D249	0.0-0.1	95	0.5	20	38	85	770	<0.05	-	-	-	12	-	-	-	-	-	120	-	-
D249	1.0-1.1	45	0.4	35	42	48	380	<0.05	-	-	-	24	-	-	-	-	-	110	11	-
D259	1.0-1.1	54	0.3	33	50	35	130	<0.05	-	-	-	23	-	-	-	-	-	99	-	-
D271	1.0-1.1	96	0.7	34	54	210	690	0.05	-	-	-	19	-	-	-	-	-	240	21	6.9
D272	0.7-0.8	49	0.5	26	51	65	170	<0.05	-	-	-	14	-	-	-	-	-	110	11	-
Natural Soil (Silty Clay, red brown)																				
D273	1.0-1.1	55	0.5	41	30	75	120	<0.05	10	-	-	-	-	74	-	-	-	-	-	-
Natural Soil (Silty Clay, yellow-brown)																				
D273	1.9-2.0	42	0.4	28	34	95	42	<0.05	-	-	-	15	-	-	-	-	-	92	21	-
Natural Soil (Silty Clay, red brown)																				
D274	0.2-0.3	63	0.8	71	15	130	670	<0.05	7.6	-	-	-	-	82	-	-	-	-	-	-
D274	1.0-1.1	33	0.3	31	28	45	51	<0.05	9.6	-	-	-	-	61	-	-	-	-	23	-
D275	0.2-0.3	42	0.5	39	12	76	1200	<0.05	6.1	-	-	-	-	48	-	-	-	-	-	-
D275	1.0-1.1	42	0.4	34	28	45	140	<0.05	10	-	-	-	-	53	-	-	-	-	-	-
D275	1.9-2.0	**130**	1.0	31	64	67	**6200**	0.08	18	-	-	-	-	100	-	-	-	-	31	-
D276	0.2-0.3	76	0.6	45	45	74	800	<0.05	9.1	-	-	-	-	84	-	-	-	-	-	-
D276	1.0-1.1	85	0.7	40	80	47	510	<0.05	15	-	-	-	-	100	-	-	-	-	-	-
D277	1.0-1.1	43	0.4	31	31	42	590	<0.05	13	-	-	-	-	79	-	-	-	-	-	-
Limits of Reporting (LOR)		3	0.3	0.5	0.5	1	1	0.05	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.02	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)																				
Health-based Investigation Levels (HIL)[a] A - Residential A		100	20	100	6000	300	3800	10[c]	400	400	400	400	400	7400	7400	7400	7400	7400		
Ecological Investigation Levels (EIL) - Urban residential		100[d]	-	400[e]	110[f]	1200[g]	-	-	30[b]	9[h]	35[i]	75[j]	390[k]	260[b]	630[k]	160[l]	930[m]	380[n]		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)																				
Provisional Phytotoxicity-Based Investigation Levels (PIL)			3					1												

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

b: EIL of aged nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=4.5 cmolc/kg & pH=5.6 for red brown natural silty clay were selected for derivation of EIL; a conservative approach.

c: Methyl Mercury

d: Generic EIL for aged arsenic

e: Chromium (III); the assumed clay content=10%, a conservative assumption.

f: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=95mg/kg, the lower ACL used based on the lowest CEC=5cmol/kg or pH=5.5.

g: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.

h: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=2.0 cmolc/kg for brwon natural silty clay was selected for derivation of EIL; a conservative approach.

i: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=4.8 cmolc/kg for brwon natural silty clay was selected for derivation of EIL; a conservative approach.

j: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=7.0 cmolc/kg for yellow-brwon natural silty clay was selected for derivation of EIL; a conservative approach.

k: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; CEC=34 cmolc/kg for yellow-brwon natural silty clay was adopted for derivation of EIL.

l: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; CEC=15 cmolc/kg & pH=7.1 for red brown natural silty clay were adopted for derivation of EIL.

m: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=2.0 cmolc/kg & pH=5.2 for brown natural silty clay were selected for derivation of EIL; a conservative approach.

n: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; CEC=26 cmolc/kg & pH=7.1 for brown natural silty clay was adopted for derivation of EIL.

o: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=7.0 cmolc/kg & pH=6.2 for yellow-brown natural silty clay were selected for derivation of EIL; a conservative approach.

TABLE D7

METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS

DISCRETE SAMPLES - NATURAL SOIL (SILTY CLAY)

(Ref No: 12675/4-AB)

Sample Location	Depth (m)	ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MANGANESE	MERCURY	NICKEL	NICKEL	NICKEL	NICKEL	NICKEL	ZINC	ZINC	ZINC	ZINC	ZINC	CEC (cmol/kg)	pH
		METALS (mg/kg)																		
Natural Soil (Silty Clay, brown)																				
D278	0.0-0.1	28	1.0	22	35	52	2400	<0.05	-	-	15	-	-	-	-	160	-	-	10	-
D278	0.2-0.3	27	0.9	21	32	53	2500	<0.05	-	-	15	-	-	-	-	150	-	-	-	-
Natural Soil (Silty Clay, red brown)																				
D278	1.0-1.1	70	0.9	70	37	59	510	<0.05	17	-	-	-	-	200	-	-	-	-	11	-
D279	0.0-0.1	**280**	**3.4**	26	47	**310**	**4300**	0.08	18	-	-	-	-	**570**	-	-	-	-	-	-
D279	0.2-0.3	**300**	**3.4**	26	47	**330**	**4400**	<0.05	19	-	-	-	-	**560**	-	-	-	-	-	-
Natural Soil (Silty Clay, brown)																				
D280	0.2-0.3	32	0.4	30	37	20	130	<0.05	-	-	21	-	-	-	-	61	-	-	11	-
D281	0.2-0.3	66	0.4	20	**440**	25	66	<0.05	-	-	12	-	-	-	-	55	-	-	4.8	-
Natural Soil (Silty Clay, red brown)																				
D285	0.2-0.3	97	1.0	35	40	160	2300	<0.05	17	-	-	-	-	**340**	-	-	-	-	-	-
D285	1.0-1.1	**200**	2.0	30	64	240	3200	<0.05	21	-	-	-	-	**670**	-	-	-	-	-	-
Natural Soil (Silty Clay, yellow-brown)																				
D285	1.9-2.0	**260**	**9.8**	22	61	64	2600	0.36	-	-	-	11	-	-	-	-	-	**1600**	-	-
D286	0.2-0.3	26	0.3	29	13	58	1600	<0.05	-	-	-	6.4	-	-	-	-	-	45	-	-
D286	1.0-1.1	50	0.4	35	25	67	1000	<0.05	-	-	-	10	-	-	-	-	-	69	15	-
Natural Soil (Silty Clay, red brown)																				
D287	1.0-1.1	79	0.6	63	31	80	210	<0.05	5.4	-	-	-	-	69	-	-	-	-	-	-
Natural Soil (Silty Clay, yellow-brown)																				
D287	1.9-2.0	85	0.5	35	46	54	50	0.07	-	-	-	11	-	-	-	-	-	77	-	-
D288	0.6-0.7	15	0.3	21	14	25	240	<0.05	-	-	-	26	-	-	-	-	-	180	16	7.1
Natural Soil (Silty Clay, brown)																				
D289	0.5-0.6	22	0.3	22	31	45	190	<0.05	-	-	30	-	-	-	-	150	-	-	16	-
Natural Soil (Silty Clay, yellow-brown)																				
D289	1.0-1.1	22	0.4	19	47	21	300	<0.05	-	-	-	31	-	-	-	-	-	160	14	7.6
Natural Soil (Silty Clay, red brown)																				
D290	0.2-0.3	27	0.9	24	26	82	1400	<0.05	12	-	-	-	-	170	-	-	-	-	-	-
D290	1.0-1.1	28	1.1	27	25	84	1800	<0.05	14	-	-	-	-	180	-	-	-	-	7.7	6.4
Limits of Reporting (LOR)		3	0.3	0.5	0.5	1	1	0.05	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.02	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)																				
Health-based Investigation Levels (HIL)[a] A - Residential A		100	20	100	6000	300	3800	10[c]	400	400	400	400	400	7400	7400	7400	7400	7400		
Ecological Investigation Levels (EIL) - Urban residential		100[d]	-	400[e]	110[f]	1200[g]	-	-	30[b]	9[h]	35[i]	75[j]	390[k]	260[b]	630[k]	160[l]	930[m]	380[n]		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)																				
Provisional Phytotoxity-Based Investigation Levels (PIL)			3					1												

Notes:

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

b: EIL of aged nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=4.5 cmolc/kg & pH=5.6 for red brown natural silty clay were selected for derivation of EIL; a conservative approach.

c: Methyl Mercury

d: Generic EIL for aged arsenic

e: Chromium (III); the assumed clay content=10%, a conservative assumption.

f: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=95mg/kg, the lower ACL used based on the lowest CEC=5cmol/kg or pH=5.5.

g: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.

h: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=2.0 cmolc/kg for brwon natural silty clay was selected for derivation of EIL; a conservative approach.

i: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=4.8 cmolc/kg for brwon natural silty clay was selected for derivation of EIL; a conservative approach.

j: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=7.0 cmolc/kg for yellow-brwon natural silty clay was selected for derivation of EIL; a conservative approach.

k: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; CEC=34 cmolc/kg for yellow-brwon natural silty clay was adopted for derivation of EIL.

l: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; CEC=15 cmolc/kg & pH=7.1 for red brown natural silty clay were adopted for derivation of EIL.

l: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=2.0 cmolc/kg & pH=5.2 for brown natural silty clay were selected for derivation of EIL; a conservative approach.

m: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; CEC=26 cmolc/kg & pH=7.1 for brown natural silty clay was adopted for derivation of EIL.

n: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=7.0 cmolc/kg & pH=6.2 for yellow-brown natural silty clay were selected for derivation of EIL; a conservative approach.

TABLE D8

METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS

DISCRETE SAMPLES - NATURAL SOIL (SHALEY CLAY & SHALE)

(Ref No: 12675/4-AB)

		METALS (mg/kg)												
Sample Location	Depth (m)	ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MANGANESE	MERCURY	NICKEL	NICKEL	ZINC	ZINC	CEC (cmol/kg)	pH
Natural Soil (Shaley Clay)														
D209	1.0-1.1	**1200**	**8.6**	41	**390**	**320**	1900	0.08	20	-	**3800**	-	-	-
D209	1.9-2.0	**1200**	**4.7**	28	**250**	140	720	0.11	25	-	**2500**	-	-	-
Natural Soil (Shale)														
D213	1.9-2.0	54	0.3	19	28	84	390	<0.05	20	-	260	-	-	-
Natural Soil (Shaley Clay)														
D216	1.0-1.1	37	0.4	28	49	44	110	<0.05	18	-	120	-	27	7.9
Natural Soil (Shale)														
D223	1.0-1.1	26	1.2	38	25	63	370	<0.05	-	30	-	310	16	8.0
D231	1.9-2.0	32	2.0	49	42	240	860	0.06	-	30	-	**570**	10	7.7
D235	1.9-2.0	15	0.4	16	16	5	770	<0.05	21	-	61	-	21	-
D236	1.0-1.1	6	<0.3	39	32	10	240	<0.05	21	-	35	-	-	-
D237	1.9-2.0	16	0.3	22	25	21	220	<0.05	20	-	62	-	13	-
D243	1.9-2.0	8	<0.3	56	33	6	280	<0.05	22	-	47	-	-	-
D247	1.9-2.0	20	0.4	19	30	7	240	<0.05	-	27	66	-	11	-
D259	1.9-2.0	17	0.5	16	25	17	610	<0.05	**36**	-	97	-	4.1	8.7
D265	1.0-1.1	6	<0.3	31	14	5	140	<0.05	15	-	28	-	-	-
D271	1.9-2.0	15	0.5	18	39	19	420	0.06	20	-	220	-	7.5	8.0
D277	1.9-2.0	18	<0.3	14	24	18	540	<0.05	-	35	35	-	15	-
D280	1.0-1.1	32	0.4	24	30	16	160	<0.05	-	29	74	-	14	-
D281	1.0-1.1	69	0.4	15	**500**	32	110	<0.05	13	-	49	-	-	-
D282	1.0-1.1	8	<0.3	16	8.9	19	45	<0.05	9.1	-	79	-	-	-
Limits of Reporting (LOR)		3	0.3	0.5	0.5	1	1	0.05	0.5	0.5	0.5	0.5	0	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)														
Health-based Investigation Levels (HIL)[a] A - Residential A		100	20	100	6000	300	3800	10[c]	400	400	7400	7400		
Ecological Investigation Levels (EIL) - Urban residential		100[d]	-	400[e]	110[f]	1200[g]	-	-	25[b]	170[h]	280[b]	480[i]		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)														
Provisional Phytotoxity-Based Investigation Levels (PIL)			3					1						

Notes:

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

b: EIL of aged nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=4.1 cmolc/kg & pH=7.9 were selected for derivation of EIL; a conservative approach.

c: Methyl Mercury

d: Generic EIL for aged arsenic

e: Chromium (III); the assumed clay content=10%, a conservative assumption.

f: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=95mg/kg, the lower ACL used based on the lowest CEC=5cmol/kg or pH=7.5.

g: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.

h: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=10 cmolc/kg was selected for derivation of EIL; a conservative approach.

i: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=10 cmolc/kg & pH=7.7 were selected for derivation of EIL; a conservative approach.

TABLE D9

METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS

DISCRETE SAMPLES - NATURAL SOIL (SHALEY CLAY & SHALE/SLATE) IN GW1

(Ref No: 12675/4-AB)

		METALS (mg/kg)										
Sample Location	Depth (m)	ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MANGANESE	MERCURY	NICKEL	ZINC	CEC (cmol/kg)	pH
Natural Soil (Shaley Clay)												
DW1	2.0-2.1	8	0.5	24	28	20	300	<0.05	29	170	20	9.7
Natural Soil (Shale/Slate)												
DW1	3.0-3.1	8	0.4	22	32	25	590	<0.05	30	110	9.9	9.5
DW1	4.0-4.1	13	0.5	23	30	14	480	<0.05	34	140	-	-
DW1	5.0-5.1	12	0.4	22	32	14	630	<0.05	41	140	-	-
DW1	6.0-6.1	39	0.6	23	41	14	440	<0.05	40	63	-	-
DW1	7.0-7.1	22	0.6	23	36	8	500	<0.05	46	110	14	9.8
DW1	8.0-8.1	28	0.4	23	31	7	370	<0.05	39	140	-	-
DW1	9.0-9.1	40	0.6	20	59	27	1100	<0.05	41	67	-	-
DW1	10.0-10.1	32	0.4	27	18	14	640	<0.05	52	160	-	-
DW1	11.0-11.1	62	0.6	39	61	13	840	<0.05	74	320	22	9.5
DW1	12.0-12.1	24	0.4	25	39	9	450	<0.05	52	140	-	-
Limits of Reporting (LOR)		3	0.3	0.5	0.5	1	1	0.05	0.5	0.5	0.02	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)												
Health-based Investigation Levels (HIL)[a] A - Residential A		100	20	100	6000	300	3800	10[c]	400	7400		
Ecological Investigation Levels (EIL) - Urban residential		100[d]	-	400[e]	210[f]	1200[g]	-	-	170[b]	480[b]		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)												
Provisional Phytotoxity-Based Investigation Levels (PIL)			3					1				

Notes:

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

b: EIL of aged nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=9.9 cmolc/kg & pH=9.5 were selected for derivation of EIL; a

c: Methyl Mercury

d: Generic EIL for aged arsenic

e: Chromium (III); the assumed clay content=10%, a conservative assumption.

f: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=190mg/kg, the lower ACL used based on the lowest CEC=10cmol/kg or pH=8.0.

g: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.

TABLE D1A
METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS
DISCRETE SAMPLES - TOPSOIL (SILTY CLAY, BROWN)
(Ref No: 12675/4-AB)

		METALS (mg/kg)													
Sample Location	Depth (m)	ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MANGANESE	MERCURY	NICKEL	NICKEL	ZINC	ZINC	ZINC	CEC (cmol/kg)	pH
Topsoil (Silty Clay, Brown)															
D101	0-0.1	52	0.7	32	22	240	3200	<0.05	11	-	210	-	-	4.0	5.5
D102	0-0.1	54	0.8	30	29	190	1500	<0.05	12	-	230	-	-	7.7	6.2
D103	0-0.1	140	2.9	34	100	300	3700	<0.05	19	-	**890**	-	-	7.6	6.1
D104	0-0.1	**230**	1.9	34	65	260	1700	<0.05	17	-	**830**	-	-	5.5	5.3
D105	0-0.1	150	0.9	28	100	370	1300	<0.05	13	-	270	-	-	6.2	6.0
D106	0-0.1	72	0.5	32	57	110	270	<0.05	20	-	150	-	-	-	-
D107	0-0.1	**180**	2.1	39	150	500	3100	<0.05	**25**	-	**630**	-	-	-	-
D108	0-0.1	110	2.3	28	67	620	2700	<0.05	16	-	**870**	-	-	-	-
D109	0-0.1	120	2.4	37	51	310	3000	<0.05	17	-	**650**	-	-	-	-
D110	0-0.1	150	1.9	35	58	330	3400	<0.05	16	-	**520**	-	-	-	-
D111	0-0.1	87	0.9	24	41	310	3100	<0.05	9.5	-	**280**	-	-	-	-
D112	0-0.1	97	0.8	31	35	560	3700	<0.05	9.5	-	**280**	-	-	-	-
D113	0-0.1	110	0.8	35	36	210	1600	<0.05	7.9	-	220	-	-	8.3	5.8
D114	0-0.1	60	1.1	31	27	210	2300	<0.05	14	-	-	380	-	8.0	6.1
D115	0-0.1	86	2.2	36	35	320	3100	<0.05	13	-	**610**	-	-	7.4	5.5
D116	0-0.1	120	**4.0**	36	66	620	3700	0.11	-	27	**1200**	-	-	7.1	5.9
D117	0-0.1	**180**	2.3	35	110	960	3100	<0.05	**23**	-	**1100**	-	-	-	-
D122	0-0.1	120	0.8	22	110	430	2100	<0.05	16	-	250	-	-	-	-
D123	0-0.1	80	**3.9**	34	73	370	2800	<0.05	18	-	**1300**	-	-	-	-
D124	0-0.1	59	0.8	31	30	300	2300	<0.05	8.5	-	**380**	-	-	3.0	5.5
D125	0-0.1	46	0.5	39	18	190	1900	<0.05	7.4	-	130	-	-	-	-
D126	0-0.1	71	1.1	34	30	270	2600	<0.05	9.3	-	-	360	-	10	6.0
D127	0-0.1	**250**	**3.5**	40	**310**	660	3600	<0.05	**33**	-	**1500**	-	-	-	-
D128	0-0.1	8	<0.3	5.5	8.7	30	680	<0.05	10	-	82	-	-	-	-
D131	0-0.1	**180**	2.1	39	71	310	2500	<0.05	14	-	**630**	-	-	-	-
D132	0-0.1	**290**	1.3	34	41	190	4100	<0.05	13	-	-	350	-	7.9	5.9
D133	0-0.1	35	0.5	31	12	150	1600	0.09	5.4	-	140	-	-	-	-
D134	0-0.1	46	0.5	40	8.7	180	1300	<0.05	5.4	-	93	-	-	-	-
D136	0-0.1	67	0.8	28	32	280	2300	<0.05	12	-	250	-	-	5.5	6.3
D137	0-0.1	160	**3.4**	26	76	380	5900	0.09	-	31	**950**	-	-	6.3	5.7
D138	0-0.1	**360**	**3.6**	32	78	230	3300	<0.05	17	-	**1700**	-	-	-	-
D139	0-0.1	**850**	**4.3**	30	**680**	**1700**	4000	<0.05	-	36	**1100**	-	-	8.2	6.7
D140	0-0.1	**330**	**3.7**	29	110	900	4400	0.07	**24**	-	**1000**	-	-	-	-
D141	0-0.1	48	0.4	26	11	97	760	0.05	4.1	-	200	-	-	-	-
D142	0-0.1	100	0.8	32	24	250	1700	<0.05	10	-	210	-	-	9.2	6.9
D143	0-0.1	54	0.6	31	19	220	1900	<0.05	7.5	-	140	-	-	-	-
D144	0-0.1	62	0.7	49	13	190	2100	<0.05	7.3	-	200	-	-	-	-
D145	0-0.1	47	0.8	32	48	160	1800	<0.05	15	-	140	-	-	-	-
D147	0-0.1	53	1.5	31	20	140	2600	<0.05	13	-	230	-	-	6.0	5.9
D148	0-0.1	36	0.4	28	16	72	570	<0.05	9.5	-	71	-	-	-	-
D149	0-0.1	**190**	1.5	28	42	310	4200	<0.05	20	-	**520**	-	-	-	-
D150	0-0.1	**260**	2.3	20	58	380	4500	<0.05	**21**	-	**750**	-	-	-	-
D151	0-0.1	**250**	2.7	34	120	**1600**	3500	<0.05	**23**	-	**1100**	-	-	-	-
D152	0-0.1	**250**	1.8	39	92	510	2500	0.05	17	-	-	-	450	8.0	6.5
D153	0-0.1	140	1.5	31	61	460	3400	<0.05	17	-	-	400	-	5.6	5.8
D154	0-0.1	64	0.6	35	20	180	1300	<0.05	6.4	-	110	-	-	-	-
D155	0-0.1	100	1.6	36	61	160	3900	0.05	20	-	270	-	-	7.9	6.3
Limits of Reporting (LOR)		3	0.3	0.5	0.5	1	1	0.05	0.5	0.5	0.5	0.5	0.5	0.02	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)															
Health-based Investigation Levels (HIL)[a] D - Commercial / Industrial D		3000	900	3600	240000	1500	60000	180[c]	6000	6000	400000	400000	400000		
Ecological Investigation Levels (EIL) - Commercial and industrial		160[d]	-	660[e]	160[f]	1900[g]	-	-	20[b]	100[h]	270[b]	440[i]	600[j]		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)															
Provisional Phytotoxity-Based Investigation Levels (PIL)			3					1							

Notes:
- a: Commercial / industrial includes premises such as shops, offices, factories and industrial sites.
- b: EIL of aged nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=3 cmolc/kg & pH=5.5 were selected for derivation of EIL; a conservative approach.
- c: Methyl Mercury
- d: Generic EIL for aged arsenic
- e: Chromium (III); the assumed clay content=10%, a conservative assumption.
- f: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=140mg/kg, the lower ACL used based on the lowest CEC=5cmol/kg or pH=5.5.
- g: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.
- h: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=6.3 cmolc/kg was selected for derivation of EIL; a conservative approach.
- i: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=5.6 cmolc/kg & pH=5.8 were selected for derivation of EIL; a conservative approach.
- j: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; CEC=8.0 cmolc/kg & pH=6.5.

TABLE D2A

METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS

DISCRETE SAMPLES - TOPSOIL (SILTY CLAY, GREY)

(Ref No: 12675/4-AB)

		METALS (mg/kg)										
Sample Location	Depth (m)	ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MANGANESE	MERCURY	NICKEL	ZINC	CEC (cmol/kg)	pH
Topsoil (Silty Clay, Grey)												
D118	0-0.1	15	0.4	22	22	42	550	<0.05	12	86	-	-
D119	0-0.1	11	0.3	33	16	41	500	<0.05	13	50	9.2	5.3
D120	0-0.1	9	0.5	20	16	270	240	<0.05	14	130	-	-
D121	0-0.1	52	0.5	34	28	110	780	<0.05	11	98	-	-
D129	0-0.1	7	<0.3	7.6	9.6	31	150	<0.05	12	56	-	-
D130	0-0.1	8	<0.3	7.2	8.1	37	620	<0.05	9.6	65	5.9	6.0
D135	0-0.1	68	0.8	34	32	200	1200	<0.05	12	210	8.6	6.3
D146	0-0.1	31	0.4	26	13	80	1100	<0.05	8.6	74	-	-
D156	0-0.1	23	0.6	18	21	73	2200	<0.05	16	110	11	-
D157	0-0.1	33	0.4	26	9.2	75	1200	<0.05	6.8	59	2.9	5.7
Limits of Reporting (LOR)		3	0.3	0.5	0.5	1	1	0.05	0.5	0.5	0.02	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)												
Health-based Investigation Levels (HIL)[a] D - Commercial / Industrial D		3000	900	3600	240000	1500	60000	180[c]	6000	400000		
Ecological Investigation Levels (EIL) - Commercial and industrial		160[d]	-	660[e]	160[f]	1900[g]	-	-	20[b]	250[b]		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)												
Provisional Phytotoxity-Based Investigation Levels (PIL)			3					1				

Notes:

a: Commercial / industrial includes premises such as shops, offices, factories and industrial sites.

b: EIL of aged nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=2.9 cmolc/kg & pH=5.3 were selected for derivation of EIL; a conservative approach.

c: Methyl Mercury

d: Generic EIL for aged arsenic

e: Chromium (III); the assumed clay content=10%, a conservative assumption.

f: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=140mg/kg, the lower ACL used based on the lowest CEC=5cmol/kg or pH=5.5.

g: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.

TABLE D3A

METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS

DISCRETE SAMPLES - NATURAL SOIL (SILTY CLAY)

(Ref No: 12675/4-AB)

		METALS (mg/kg)										
Sample Location	Depth (m)	ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MANGANESE	MERCURY	NICKEL	ZINC	CEC (cmolc/kg)	pH
Natural Soil (Silty Clay)												
A4	0.25-0.35	**300**	**7.0**	29	89	420	7400	0.05	44	**2700**	-	-
A4	0.5-0.6	**380**	**7.6**	29	79	540	6200	0.07	31	**3100**	-	-
A6	0.25-0.35	**300**	**9.0**	32	100	300	8800	<0.05	45	**3100**	-	-
A6	0.5-0.6	**340**	**12**	16	49	39	7400	0.07	17	**4100**	-	-
A8	0.25-0.35	**310**	**11**	30	110	250	9400	0.1	24	**3700**	-	-
A8	0.5-0.6	**270**	**10**	35	94	350	7700	<0.05	28	**3300**	9.8	6.7
A8	1.0-1.1	**260**	**8.2**	34	94	300	8000	0.06	30	**3000**	-	-
A9	0.25-0.35	**180**	**3.6**	38	**310**	340	3200	<0.05	17	**1100**	-	-
A9	0.5-0.6	160	2.5	35	53	310	4200	<0.05	39	**870**	-	-
A11	0.25-0.35	**220**	**3.9**	42	64	220	4600	0.11	29	**1400**	-	-
A11	0.5-0.6	**390**	**17**	27	71	98	12000	0.48	51	**6300**	-	-
A11	1.0-1.1	**300**	**14**	27	49	81	7300	0.53	28	**3900**	11	6.7
A11	1.9-2.0	**540**	**49**	9.2	65	93	7800	0.46	24	**7600**	-	-
A13	0.25-0.35	**230**	**3.4**	41	**200**	300	3500	<0.05	17	**1000**	-	-
Duplicate D7 = A13 (0.25-0.35m)		**250**	**3.8**	37	62	210	5700	0.08	32	**1400**	-	-
A13	0.5-0.6	**200**	2.7	32	160	290	3200	<0.05	15	**810**	-	-
A15	0.2-0.3	11	<0.3	37	29	15	120	<0.05	17	45	-	-
A16	0.2-0.3	11	<0.3	38	26	31	93	<0.05	17	77	9.3	7.0
A17	0.2-0.3	**520**	2.2	28	**640**	190	660	0.06	17	**560**	-	-
A17	0.5-0.6	**600**	**4.0**	37	**870**	730	4300	0.12	40	**1000**	-	-
A18	0.2-0.3	87	0.5	23	110	94	480	<0.05	14	200	-	-
D101	0.2-0.3	61	0.5	35	28	280	2300	<0.05	8.6	180	-	-
D101	1.0-1.1	75	0.6	34	33	490	4000	<0.05	13	230	7.1	6.5
D102	0.2-0.3	59	0.5	37	25	270	1500	<0.05	8.8	170	-	-
D103	0.2-0.3	140	2.1	34	95	310	3500	<0.05	17	**800**	9.2	6.1
D104	0.2-0.3	**210**	2.3	32	59	310	3000	<0.05	19	**960**	-	-
D105	0.2-0.3	**240**	1.0	40	140	410	1000	<0.05	15	320	-	-
D106	0.2-0.3	74	0.7	35	67	110	290	<0.05	24	160	-	-
D107	0.2-0.3	**200**	2.2	25	**170**	430	3000	<0.05	19	**640**	-	-
D108	0.2-0.3	150	**3.1**	29	75	710	3000	<0.05	19	**1000**	-	-
D109	0.2-0.3	120	2.9	35	46	240	3000	<0.05	14	**630**	-	-
D110	0.2-0.3	**270**	1.4	38	63	300	1900	<0.05	13	**490**	-	-
D111	0.2-0.3	100	1.0	32	50	330	3100	<0.05	11	**340**	5.2	5.3
D112	0.2-0.3	110	0.6	36	40	420	2300	<0.05	8.3	230	-	-
D113	0.2-0.3	**260**	0.7	38	74	190	660	<0.05	12	300	-	-
D114	0.2-0.3	66	0.8	35	28	200	1600	<0.05	10	300	-	-
D115	0.2-0.3	88	1.6	38	43	320	2400	<0.05	12	**550**	6.7	5.9
SGS Lab Duplicate LB112410-024=D115 (0.2-0.3m)		80	1.9	-	47	410	5500	-	12	**630**	-	-
Limits of Reporting (LOR)		3	0.3	0.5	0.5	1	1	0.05	0.5	0.5	0.02	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)												
Health-based Investigation Levels (HIL)[a] D - Commercial / Industrial D		3000	900	3600	240000	1500	60000	180[c]	6000	400000		
Ecological Investigation Levels (EIL) - Commercial and industrial		160[d]	-	660[e]	160[f]	1900[g]	-	-	65[b]	330[b]		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)												
Provisional Phytotoxity-Based Investigation Levels (PIL)			3					1				

Notes:

a: Commercial / industrial includes premises such as shops, offices, factories and industrial sites.

b: EIL of aged nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=5.2 cmolc/kg & pH=5.3 were selected for derivation of EIL; a conservative approach.

c: Methyl Mercury

d: Generic EIL for aged arsenic

e: Chromium (III); the assumed clay content=10%, a conservative assumption.

f: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=140mg/kg, the lower ACL used based on the lowest CEC=5cmol/kg or pH=5.5.

g: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.

TABLE D3A

METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS

DISCRETE SAMPLES - NATURAL SOIL (SILTY CLAY)

(Ref No: 12675/4-AB)

Sample Location	Depth (m)	METALS (mg/kg) ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MANGANESE	MERCURY	NICKEL	ZINC	ZINC	CEC (cmolc/kg)	pH
Natural Soil (Silty Clay)													
D116	0.2-0.3	**200**	**6.7**	34	**180**	760	5200	0.2	44	**2900**	-	8.7	6.9
D117	0.2-0.3	**170**	2.2	29	110	1000	3300	<0.05	25	**1100**	-	-	-
D122	0.2-0.3	140	0.7	40	120	160	77	<0.05	16	190	-	-	-
D123	0.2-0.3	94	2.9	38	89	280	2700	<0.05	27	**1100**	-	-	-
D124	0.2-0.3	66	0.7	32	33	310	1600	<0.05	8.2	310	-	-	-
D125	0.2-0.3	51	0.5	39	20	230	2100	<0.05	7.6	140	-	-	-
D126	0.2-0.3	76	0.7	41	43	230	1300	<0.05	9.1	300	-	-	-
D127	0.2-0.3	**270**	**3.3**	38	**210**	630	3700	<0.05	31	**1800**	-	-	-
D131	0.2-0.3	**190**	1.7	36	69	280	2400	<0.05	13	**600**	-	-	-
D132	0.2-0.3	**530**	1.2	42	62	120	1600	<0.05	13	-	490	12	6.5
D132	1.0-1.1	**940**	1.2	37	99	79	2300	0.08	18	**660**	-	-	-
D132	1.9-2.0	**540**	1.2	35	71	55	1400	0.12	14	**580**	-	-	-
Duplicate D1 = D132 (1.9-2.0m)		**390**	**4.8**	27	72	50	6200	0.15	31	**1200**	-	-	-
D133	0.2-0.3	21	<0.3	31	9.8	100	660	<0.05	4.6	60	-	-	-
D134	0.2-0.03	74	0.8	63	21	200	720	<0.05	8.3	110	-	-	-
D135	0.2-0.3	54	0.6	36	24	220	950	<0.05	7.1	150	-	-	-
D136	0.2-0.3	69	0.8	31	30	310	2600	<0.05	13	290	-	-	-
D137	0.2-0.3	**180**	2.3	32	81	420	3600	0.12	23	**770**	-	6.8	6.1
D138	0.2-0.3	**360**	**3.4**	26	75	260	3400	<0.05	19	**1600**	-	-	-
D139	0.2-0.3	**1200**	**6.6**	24	**1100**	970	16000	<0.05	**110**	**1400**	-	-	-
D140	0.2-0.3	**630**	**6.1**	27	**270**	**2300**	8400	0.16	44	**2800**	-	-	-
D141	0.2-0.3	**320**	2.5	28	69	570	3200	<0.05	20	**770**	-	7.1	6.4
D142	0.2-0.3	110	0.8	32	30	260	1900	<0.05	11	240	-	-	-
D143	0.2-0.3	63	0.7	40	19	220	2500	<0.05	9.3	160	-	-	-
D144	0.2-0.3	64	0.7	30	48	75	80	<0.05	15	200	-	-	-
D145	0.2-0.3	56	0.8	16	78	120	260	<0.05	22	170	-	-	-
D147	0.2-0.3	76	0.8	36	44	150	1200	<0.05	17	240	-	-	-
D148	0.2-0.3	47	0.6	31	36	69	760	<0.05	23	140	-	-	-
D149	0.2-0.3	120	0.8	34	37	170	1400	<0.05	11	290	-	-	-
D150	0.2-0.3	**300**	1.9	23	53	350	4000	<0.05	21	**770**	-	-	-
D151	0.2-0.3	**240**	1.3	27	120	870	990	0.08	18	**920**	-	-	-
D152	0.2-0.3	**270**	1.9	47	110	600	2700	0.06	17	**540**	-	8.0	6.6
D153	0.2-0.3	**170**	1.3	40	64	470	3000	<0.05	18	**430**	-	5.6	6.1
D154	0.2-0.3	80	0.8	39	33	330	2400	<0.05	11	160	-	-	-
D155	0.2-0.3	120	1.7	39	83	240	4400	0.05	24	-	340	8.4	6.4
Limits of Reporting (LOR)		3	0.3	0.5	0.5	1	1	0.05	0.5	0.5	0.5	0.02	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)													
Health-based Investigation Levels (HIL)[a] D - Commercial / Industrial D		3000	900	3600	240000	1500	60000	180[c]	6000	400000	400000		
Ecological Investigation Levels (EIL) - Commercial and industrial		160[d]	-	660[e]	160[f]	1900[g]	-	-	65[b]	330[b]	620[h]		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)													
Provisional Phytotoxity-Based Investigation Levels (PIL)			3					1					

Notes:

a: Commercial / industrial includes premises such as shops, offices, factories and industrial sites.

b: EIL of aged nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=5.2 cmolc/kg & pH=5.3 were selected for derivation of EIL; a conservative approach.

c: Methyl Mercury

d: Generic EIL for aged arsenic

e: Chromium (III); the assumed clay content=10%, a conservative assumption.

f: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=95mg/kg, the lower ACL used based on the lowest CEC=5cmol/kg or pH=5.5.

g: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.

h: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=8.4 cmolc/kg & pH=6.4 were selected for derivation of EIL; a conservative approach.

TABLE D4A
METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS
DISCRETE SAMPLES - NATURAL SOIL (SHALEY CLAY & SHALE)
(Ref No: 12675/4-AB)

Sample Location	Depth (m)	METALS (mg/kg)											CEC (cmol/kg)	pH
		ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MANGANESE	MERCURY	NICKEL	NICKEL	ZINC	ZINC		
Natural Soil (Shaley Clay)														
A15	0.5-0.6	13	<0.3	38	34	15	86	<0.05	20	-	53	-	10	7.1
A15	1.0-1.1	19	0.3	38	33	77	180	<0.05	19	-	53	-	-	-
A15	1.9-2.0	11	<0.3	33	14	14	1000	<0.05	26	-	41	-	22	-
A16	0.5-0.6	11	0.3	2.5	19	21	58	<0.05	28	-	100	-	11	-
A16	1.0-1.1	13	0.4	28	19	23	71	<0.05	29	-	110	-	9.8	-
A16	1.5-1.6	15	<0.3	17	18	16	170	<0.05	30	-	100	-	17	-
A17	1.0-1.1	**420**	2.9	68	**320**	49	630	0.24	20	-	**770**	-	-	-
A17	1.9-2.0	**410**	**16**	18	**250**	570	12000	0.13	**130**	-	**2500**	-	3.9	6.9
A18	0.5-0.6	72	0.4	26	83	56	170	<0.05	15	-	160	-	-	-
A18	1.0-1.1	13	0.3	27	32	17	270	<0.05	28	-	180	-	10	7.5
D101	1.9-2.0	23	0.9	7.0	36	42	920	<0.05	-	51	-	430	16	7.7
D116	1.0-1.1	**220**	**7.8**	35	**210**	790	4800	0.2	35	-	**3100**	-	-	-
Natural Soil (Shale)														
D116	1.4-1.5	**530**	**46**	19	**720**	710	18000	0.64	**36**	-	**2000**	-	-	-
Natural Soil (Shaley Clay)														
D118	0.2-0.3	44	0.4	33	58	64	110	<0.05	25	-	130	-	-	-
D119	0.2-0.3	10	0.3	38	18	40	450	<0.05	21	-	65	-	-	-
D120	0.2-0.3	8	0.5	20	17	210	330	<0.05	15	-	130	-	-	-
D121	0.2-0.3	46	0.4	30	39	53	210	<0.05	29	-	120	-	14	-
D128	0.2-0.3	10	<0.3	11	13	20	100	<0.05	16	-	110	-	-	-
D129	0.2-0.3	13	<0.3	13	15	68	100	<0.05	12	-	74	-	-	-
D130	0.2-0.3	12	<0.3	11	15	30	130	<0.05	15	-	70	-	-	-
D130	1.0-1.1	17	0.3	12	11	15	56	<0.05	23	-	73	-	12	7.0
D139	1.0-1.1	**860**	**3.5**	44	**1700**	960	1600	0.11	**52**	-	**630**	-	-	-
Natural Soil (Shale)														
D139	1.4-1.5	**430**	2.6	34	**560**	170	2400	0.12	-	44	**400**	-	5.8	6.5
Natural Soil (Shaley Clay)														
D142	1.0-1.1	100	0.6	28	37	72	320	<0.05	11	-	250	-	-	-
D142	1.9-2.0	26	0.3	32	26	28	240	0.06	11	-	160	-	12	8.0
D146	0.2-0.3	43	0.5	35	37	49	480	<0.05	18	-	130	-	-	-
D152	1.0-1.1	**390**	**5.9**	30	**240**	360	4700	0.13	24	-	**950**	-	-	-
D152	1.9-2.0	**390**	**4.5**	37	150	85	1800	0.28	19	-	**1100**	-	-	-
Split S2 = D152 (1.9-2.0m)		**680**	**17**	10	**180**	85	21000	0.5	**52**	-	**1200**	-	-	-
D156	0.2-0.3	26	0.4	26	27	53	700	<0.05	17	-	94	-	-	-
D157	0.2-0.3	47	0.6	30	23	110	680	<0.05	21	-	73	-	-	-
D157	1.0-1.1	37	0.5	29	41	49	190	<0.05	20	-	120	-	24	8.6
D157	1.9-2.0	12	0.6	28	41	50	980	<0.05	-	59	210	-	19	-
Limits of Reporting (LOR)		3	0.3	0.5	0.5	1	1	0.05	0.5	0.5	0.5	0.5	0.02	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)														
Health-based Investigation Levels (HIL)[a] D - Commercial / Industrial D		3000	900	3600	240000	1500	60000	180[c]	6000	6000	400000	400000		
Ecological Investigation Levels (EIL) - Commercial and industrial		160[d]	-	660[e]	160[f]	1900[g]	-	-	35[b]	85[h]	370[b]	980[i]		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)														
Provisional Phytotoxity-Based Investigation Levels (PIL)			3					1						

Notes:
a: Commercial / industrial includes premises such as shops, offices, factories and industrial sites.
b: EIL of aged nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=3.9 cmolc/kg & pH=6.5 were selected for derivation of EIL; a conservative approach.
c: Methyl Mercury
d: Generic EIL for aged arsenic
e: Chromium (III); the assumed clay content=10%, a conservative assumption.
f: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=140mg/kg, the lower ACL used based on the lowest CEC=5cmol/kg or pH=6.5.
g: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.
h: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=5.8 cmolc/kg was selected for derivation of EIL; a conservative approach.
i: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; CEC=16 cmolc/kg & pH=7.7.

TABLE D5A
METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS
DISCRETE SAMPLES - TOPSOIL (SILTY CLAY, BROWN)
(Ref No: 12675/4-AB)

		METALS (mg/kg)												
Sample Location	Depth (m)	ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MANGANESE	MERCURY	NICKEL	NICKEL	ZINC	ZINC	CEC (cmol/kg)	pH
Topsoil (Silty Clay, Brown)														
D201	0-0.1	**190**	0.8	36	35	120	2600	<0.05	-	10	-	220	6.7	6.5
D202	0-0.1	**200**	**4.0**	31	150	36	1900	<0.05	-	21	**460**	-	-	-
D203	0-0.1	**180**	1.9	37	43	280	3100	<0.05	-	14	**490**	-	-	-
D208	0-0.1	130	**3.4**	28	79	34	2300	<0.05	-	19	**370**	-	-	-
D209	0-0.1	**220**	1.9	34	39	150	2900	<0.05	-	12	**390**	-	3.3	5.9
D210	0-0.1	100	0.6	30	28	78	3700	<0.05	-	12	130	-	-	-
D211	0-0.1	44	0.5	40	21	160	1100	<0.05	-	6.1	190	-	12	5.8
D213	0-0.1	73	0.5	31	20	270	2600	<0.05	-	7.3	160	-	-	-
D214	0-0.1	48	0.6	31	13	250	4200	<0.05	-	9.3	140	-	-	-
D215	0-0.1	38	0.5	31	14	180	3100	<0.05	-	9.4	140	-	-	-
D216	0-0.1	40	0.5	38	16	120	3100	<0.05	-	11	90	-	-	-
D217	0-0.1	66	0.6	45	15	190	590	<0.05	-	8.0	110	-	-	-
D221	0-0.1	55	0.6	27	24	240	570	<0.05	-	6.2	110	-	-	-
D222	0-0.1	41	0.4	31	12	140	300	<0.05	5.2	-	56	-	-	-
D223	0-0.1	35	0.4	29	11	76	180	<0.05	5.3	-	60	-	2.7	5.5
D224	0-0.1	23	0.4	17	14	58	1600	<0.05	-	9.4	89	-	8.8	-
D225	0-0.1	37	0.6	31	17	81	1300	<0.05	-	12	120	-	3.1	-
D226	0.0-0.1	25	0.5	26	11	80	2800	<0.05	-	11	120	-	5.1	-
D226	0.2-0.3	22	0.6	25	13	68	2700	<0.05	-	11	120	-	-	-
Limits of Reporting (LOR)		3	0.3	0.5	0.5	1	1	0.05	0.5	0.5	0.5	0.5	0.02	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)														
Health-based Investigation Levels (HIL)[a] D - Commercial / Industrial D		3000	900	3600	240000	1500	60000	180[c]	6000	6000	400000	400000		
Ecological Investigation Levels (EIL) - Commercial and industrial		160[d]	-	660[e]	160[f]	1900[g]	-	-	7[b]	25[h]	190[b]	500[i]		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)														
Provisional Phytotoxity-Based Investigation Levels (PIL)			3					1						

Notes:
a: Commercial / industrial includes premises such as shops, offices, factories and industrial sites.
b: EIL of aged nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=1.3 cmolc/kg & pH=5.5 were selected for derivation of EIL; a conservative approach.
c: Methyl Mercury
d: Generic EIL for aged arsenic
e: Chromium (III); the assumed clay content=10%, a conservative assumption.
f: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=140mg/kg, the lower ACL used based on the lowest CEC=5cmol/kg or pH=5.5.
g: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.
h: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=3.1 cmolc/kg was selected for derivation of EIL; a conservative approach.
i: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=6.1 cmolc/kg & pH=5.6 were selected for derivation of EIL; a conservative approach.

TABLE D5A

METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS

DISCRETE SAMPLES - TOPSOIL (SILTY CLAY, BROWN)

(Ref No: 12675/4-AB)

		METALS (mg/kg)												
Sample Location	Depth (m)	ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MANGANESE	MERCURY	NICKEL	NICKEL	ZINC	ZINC	CEC (cmol/kg)	pH
Topsoil (Silty Clay, Brown)														
D229	0.0-0.1	41	0.4	29	7.8	76	800	<0.05	-	6.5	61	-	-	-
D229	0.2-0.3	54	0.5	35	8.1	100	500	<0.05	-	6.4	59	-	-	-
D230	0.0-0.1	110	0.7	38	16	240	740	<0.05	6.0	-	160	-	-	-
D230	0.2-0.3	110	0.7	37	15	320	1100	<0.05	6.2	-	140	-	-	-
D231	0.0-0.1	75	0.5	31	22	150	220	<0.05	**7.2**	-	79	-	-	-
D231	0.2-0.3	7	<0.3	3.9	2.5	28	30	<0.05	0.7	-	8.7	-	-	-
D232	0-0.1	53	0.4	26	23	93	270	<0.05	**11**		51	-	-	-
D233	0-0.1	54	0.3	23	37	75	330	<0.05	7.0		36	-	-	-
D234	0-0.1	11	<0.3	21	20	20	940	<0.05	-	8.6	46	-	-	-
D234	0.2-0.3	14	<0.3	24	23	22	1100	<0.05	-	8.5	39	-	-	-
D235	0-0.1	11	0.3	27	20	16	870	<0.05	-	13	50	-	9.5	-
D236	0-0.1	11	<0.3	22	24	13	650	<0.05	-	7.8	33	-	7.3	-
D237	0-0.1	10	<0.3	18	13	16	810	<0.05	-	6.9	35	-	-	-
D237	0.2-0.3	11	<0.3	20	14	15	550	<0.05	-	7.1	33	-	-	-
D238	0-0.1	18	<0.3	29	15	28	980	<0.05	-	8.8	49	-	-	-
D238	0.2-0.3	10	<0.3	23	14	18	700	<0.05	-	10	52	-	8.3	-
D243	0.0-0.1	13	<0.3	22	33	12	420	<0.05	-	7.9	30	-	-	-
D243	0.2-0.3	15	<0.3	26	34	11	270	<0.05	-	8.7	25	-	-	-
D244	0.0-0.1	9	<0.3	27	13	12	750	<0.05	-	11	36	-	-	-
D244	0.2-0.3	13	<0.3	38	21	12	160	<0.05	-	13	30	-	-	-
Limits of Reporting (LOR)		3	0.3	0.5	0.5	1	1	0.05	0.5	0.5	0.5	0.5	0.02	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)														
Health-based Investigation Levels (HIL)[a] D - Commercial / Industrial D		3000	900	3600	240000	1500	60000	180[c]	6000	6000	400000	400000		
Ecological Investigation Levels (EIL) - Commercial and industrial		160[d]	-	660[e]	160[f]	1900[g]	-	-	7[b]	25[h]	190[b]	500[i]		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)														
Provisional Phytotoxity-Based Investigation Levels (PIL)			3					1						

Notes:

a: Commercial / industrial includes premises such as shops, offices, factories and industrial sites.

b: EIL of aged nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=1.3 cmolc/kg & pH=5.5 were selected for derivation of EIL; a conservative approach.

c: Methyl Mercury

d: Generic EIL for aged arsenic

e: Chromium (III); the assumed clay content=10%, a conservative assumption.

f: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=140mg/kg, the lower ACL used based on the lowest CEC=5cmol/kg or pH=5.5.

g: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.

h: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=3.1 cmolc/kg was selected for derivation of EIL; a conservative approach.

i: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=6.1 cmolc/kg & pH=5.6 were selected for derivation of EIL; a conservative approach.

TABLE D5A

METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS

DISCRETE SAMPLES - TOPSOIL (SILTY CLAY, BROWN)

(Ref No: 12675/4-AB)

Sample Location	Depth (m)	METALS (mg/kg)											CEC (cmol/kg)	pH
		ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MANGANESE	MERCURY	NICKEL	NICKEL	ZINC	ZINC		
Topsoil (Silty Clay, Brown)														
D245	0.0-0.1	13	<0.3	22	22	16	420	<0.05	-	7.5	33	-	-	-
D245	0.2-0.3	16	<0.3	27	30	18	340	<0.05	-	8.7	29	-	-	-
D246	0.0-0.1	16	0.4	30	7.5	19	110	<0.05	-	8.9	35	-	-	-
D246	0.2-0.3	20	0.3	30	16	16	55	<0.05	-	9.4	31	-	-	-
D247	0.0-0.1	19	0.3	42	21	18	45	<0.05	-	17	50	-		-
D248	0.0-0.1	48	0.5	25	15	56	370	<0.05	-	7.4	98	-	-	-
D248	0.2-0.3	150	0.7	35	33	220	670	0.05	-	12	-	260	6.1	6.4
D249	0.0-0.1	95	0.5	20	38	85	770	<0.05	-	12	120	-	-	-
D249	0.2-0.3	65	0.5	19	28	83	1100	<0.05	-	11	110	-	9.2	-
D259	0.0-0.1	40	0.7	26	14	50	1400	<0.05	-	12	190	-	8.1	6.2
D259	0.2-0.3	38	0.3	32	34	29	170	<0.05	-	19	78	-	9.6	-
D263	0.0-0.1	13	<0.3	28	22	15	710	<0.05	-	11	28	-	-	-
D263	0.2-0.3	11	<0.3	35	16	12	310	<0.05	-	11	23	-	6.7	-
D264	0.0-0.1	13	0.3	27	15	17	320	<0.05	-	11	42	-	4.2	-
D264	0.2-0.3	14	<0.3	28	17	18	200	<0.05	-	9.5	37	-	-	-
D265	0.0-0.1	9	<0.3	25	19	11	420	<0.05	-	11	35	-	-	-
D265	0.2-0.3	10	<0.3	28	17	9	170	<0.05	-	14	32	-	7.6	-
D271	0.0-0.1	30	0.3	26	13	96	1300	<0.05	-	6.3	57	-	-	-
D271	0.2-0.3	40	0.4	33	17	98	1100	<0.05	-	7.5	74	-	7.7	-
Limits of Reporting (LOR)		3	0.3	0.5	0.5	1	1	0.05	0.5	0.5	0.5	0.5	0.02	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)														
Health-based Investigation Levels (HIL)[a] D - Commercial / Industrial D		3000	900	3600	240000	1500	60000	180[c]	6000	6000	400000	400000		
Ecological Investigation Levels (EIL) - Commercial and industrial		160[d]	-	660[e]	160[f]	1900[g]	-	-	7[b]	25[h]	190[b]	500[i]		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)														
Provisional Phytotoxity-Based Investigation Levels (PIL)			3					1						

Notes:

a: Commercial / industrial includes premises such as shops, offices, factories and industrial sites.

b: EIL of aged nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=1.3 cmolc/kg & pH=5.5 were selected for derivation of EIL; a conservative approach.

c: Methyl Mercury

d: Generic EIL for aged arsenic

e: Chromium (III); the assumed clay content=10%, a conservative assumption.

f: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=140mg/kg, the lower ACL used based on the lowest CEC=5cmol/kg or pH=5.5.

g: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.

h: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=3.1 cmolc/kg was selected for derivation of EIL; a conservative approach.

i: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=6.1 cmolc/kg & pH=6.4 were selected for derivation of EIL; a conservative approach.

TABLE D5A
METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS
DISCRETE SAMPLES - TOPSOIL (SILTY CLAY, BROWN)
(Ref No: 12675/4-AB)

Sample Location	Depth (m)	METALS (mg/kg) ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MANGANESE	MERCURY	NICKEL	NICKEL	ZINC	ZINC	CEC (cmol/kg)	pH
Topsoil (Silty Clay, Brown)														
D272	0.0-0.1	42	0.7	34	22	110	1700	<0.05	-	10	110	-	3.6	-
D272	0.2-0.3	47	0.6	40	24	130	2500	<0.05	-	9.8	110	-	-	-
D273	0.0-0.1	51	0.5	49	4.6	100	640	<0.05	3.0	-	56	-	1.3	-
D273	0.2-0.3	69	0.6	61	9.4	110	430	<0.05	4.2	-	50	-	-	-
D274	0.0-0.1	25	0.4	34	8.3	73	590	<0.05	3.6	-	54	-	-	-
D275	0.0-0.1	25	<0.3	23	10	47	860	<0.05	4.3	-	48	-	-	-
D276	0.0-0.1	37	0.4	26	23	66	1400	<0.05	5.8	-	66	-	-	-
D277	0.0-0.1	34	0.4	30	12	66	2900	<0.05	-	9.1	73	-	-	-
D277	0.2-0.3	33	0.4	26	14	70	3100	<0.05	-	11	65	-	6.2	-
D280	0.0-0.1	25	0.4	18	25	20	320	<0.05	-	15	55	-	6.6	-
D281	0.0-0.1	50	0.4	21	**330**	29	100	<0.05	-	14	57	-	4.0	-
D282	0.0-0.1	11	0.4	16	7.3	53	470	<0.05	-	12	82	-	6.7	-
D282	0.2-0.3	15	0.3	17	8.5	90	250	<0.05	-	12	87	-	-	-
D283	0.0-0.1	13	<0.3	14	20	19	120	<0.05	-	8.3	50	-	-	-
D283	0.2-0.3	9	<0.3	21.0	18	11	91	<0.05	-	14	74	-	7.5	-
D284	0.0-0.1	10	<0.3	17	2.3	9	110	<0.05	-	12	44	-	-	-
D284	0.2-0.3	10	<0.3	18	2.5	11	150	<0.05	-	14	53	-	4.0	-
D285	0.0-0.1	43	0.8	27	16	82	910	<0.05	-	8.6	170	-	6.5	5.6
D286	0.0-0.1	26	0.4	31	9.6	58	1900	<0.05	5.5	-	44	-	-	-
D287	0.0-0.1	29	0.5	34	12	73	780	0.05	3.8	-	57	-	-	-
D287	0.2-0.3	53	0.5	50	15	95	900	0.05	-	6.2	64	-	5.3	-
D288	0.0-0.1	22	0.6	23	16	30	440	<0.05	-	19	190	-	12	6.4
D288	0.2-0.3	16	0.4	28	16	20	190	<0.05	-	25	110	-	-	-
D289	0.0-0.1	16	0.3	23	31	17	210	<0.05	-	16	69	-	6.8	-
D289	0.2-0.3	17	<0.3	22	30	19	120	<0.05	-	12	51	-	-	-
D290	0.0-0.1	22	1.6	22	20	84	2500	<0.05	-	11	180	-	5.9	5.7
Limits of Reporting (LOR)		3	0.3	0.5	0.5	1	1	0.05	0.5	0.5	0.5	0.5	0.02	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)														
Health-based Investigation Levels (HIL)[a] D - Commercial / Industrial D		3000	900	3600	240000	1500	60000	180[c]	6000	6000	400000	400000		
Ecological Investigation Levels (EIL) - Commercial and industrial		160[d]	-	660[e]	160[f]	1900[g]	-	-	7[b]	25[h]	190[b]	500[i]		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)														
Provisional Phytotoxity-Based Investigation Levels (PIL)			3					1						

Notes:
- a: Commercial / industrial includes premises such as shops, offices, factories and industrial sites.
- b: EIL of aged nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=1.3 cmolc/kg & pH=5.5 were selected for derivation of EIL; a conservative approach.
- c: Methyl Mercury
- d: Generic EIL for aged arsenic
- e: Chromium (III); the assumed clay content=10%, a conservative assumption.
- f: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=140mg/kg, the lower ACL used based on the lowest CEC=5cmol/kg or pH=5.5.
- g: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.
- h: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=3.1 cmolc/kg was selected for derivation of EIL; a conservative approach.
- i: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=6.1 cmolc/kg & pH=5.6 were selected for derivation of EIL; a conservative approach.

TABLE D6A

METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS

DISCRETE SAMPLES - TOPSOIL (SILTY CLAY, GREY)

(Ref No: 12675/4-AB)

Sample Location	Depth (m)	METALS (mg/kg)										CEC (cmol/kg)	pH
		ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MANGANESE	MERCURY	NICKEL	ZINC	ZINC		
Topsoil (Silty Clay, Grey)													
D204	0-0.1	14	<0.3	15	7.8	52	880	<0.05	8.3	65	-	-	5.7
D205	0-0.1	14	<0.3	17	13	50	310	<0.05	13	78	-	6.7	-
D206	0-0.1	9	<0.3	13	2.7	15	300	<0.05	10	63	-	5.6	5.5
D207	0-0.1	27	0.4	20	21	18	350	<0.05	13	55	-	8.5	-
D212	0-0.1	56	0.5	41	11	210	1800	<0.05	4.7	100	-	-	-
D219	0-0.1	72	0.5	49	8.5	230	1700	<0.05	3.9	88	-	2.4	5.4
D220	0-0.1	34	0.5	37	16	120	820	0.07	4.8	-	240	10	6.2
Limits of Reporting (LOR)		3	0.3	0.5	0.5	1	1	0.05	0.5	0.5	0.5	0.02	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)													
Health-based Investigation Levels (HIL)[a] D - Commercial / Industrial D		3000	900	3600	240000	1500	60000	180[c]	6000	400000	400000		
Ecological Investigation Levels (EIL) - Commercial and industrial		160[d]	-	660[e]	160[f]	1900[g]	-	-	15[b]	230[b]	700[h]		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)													
Provisional Phytotoxity-Based Investigation Levels (PIL)			3					1					

Notes:

a: Commercial / industrial includes premises such as shops, offices, factories and industrial sites.

b: EIL of aged nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=2.4 cmolc/kg & pH=5.4; the assumed clay content=10 % were selected for derivation of EIL; a conservative

c: Methyl Mercury

d: Generic EIL for aged arsenic

e: Chromium (III); the assumed clay content=10%, a conservative assumption.

f: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=140mg/kg, the lower ACL used based on the lowest

g: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.

h: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; CEC=10 cmolc/kg & pH=6.2.

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TABLE D7A
METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS
DISCRETE SAMPLES - NATURAL SOIL (SILTY CLAY)
(Ref No: 12675/4-AB)

		METALS (mg/kg)																
Sample Location	Depth (m)	ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MANGANESE	MERCURY	NICKEL	NICKEL	NICKEL	NICKEL	ZINC	ZINC	ZINC	ZINC	CEC (cmol/kg)	pH
Natural Soil (Silty Clay, red brown)																		
D201	0.2-0.3	**300**	0.8	33	51	100	2900	<0.05	11	-	-	-	-	390	-	-	-	-
D201	1.0-1.1	**450**	1.1	34	86	64	2000	0.08	11	-	-	-	-	450	-	-	-	-
D201	1.9-2.0	**530**	1.0	38	82	59	730	<0.05	11	-	-	-	-	310	-	-	16	7.3
D202	0.2-0.3	**500**	0.9	38	52	130	1300	<0.05	13	-	-	-	-	270	-	-	-	-
D202	1.0-1.1	**670**	2.4	45	91	100	13000	0.15	18	-	-	-	**1000**	-	-	-	-	-
D203	0.2-0.3	120	0.6	42	43	110	420	<0.05	11	-	-	-	240	-	-	-	-	-
D203	0.9-1.0	82	0.5	35	60	98	170	<0.05	17	-	-	-	-	380	-	-	15	7.1
Natural Soil (Silty Clay, yellow-brown)																		
D204	0.2-0.3	37	0.4	11	35	22	280	<0.05	-	-	-	32	-	-	-	120	-	6.7
D204	1.0-1.1	24	0.3	27	27	17	90	<0.05	-	-	-	21	-	-	-	85	-	-
D205	0.2-0.3	15	0.5	24	37	43	210	<0.05	-	-	-	31	-	-	-	130	-	-
D205	0.7-0.8	13	0.3	24	16	27	160	<0.05	-	-	-	31	-	-	-	110	-	-
D206	0.2-0.3	10	0.3	20	2.7	6	130	<0.05	-	-	-	15	-	-	-	73	13	7.1
D206	0.6-0.7	32	0.4	17	6.2	15	170	<0.05	-	-	-	12	-	-	-	87	-	-
D207	0.2-0.3	110	0.4	32	56	13	220	<0.05	-	-	-	23	-	-	-	50	-	-
D207	1.0-1.1	130	0.4	28	56	14	260	<0.05	-	-	-	23	-	-	-	51	-	-
Natural Soil (Silty Clay, red brown)																		
D208	0.2-0.3	**220**	2.4	42	**170**	29	630	<0.05	26	-	-	-	**390**	-	-	-	-	-
D208	1.0-1.1	**1200**	**100**	12	100	330	34000	0.11	27	-	-	-	**9600**	-	-	-	-	-
D209	0.2-0.3	**570**	**9.4**	38	**230**	380	5600	0.06	20	-	-	-	**1900**	-	-	-	-	-
D210	0.2-0.3	**190**	0.8	32	48	69	4300	<0.05	17	-	-	-	170	-	-	-	-	-
D210	1.0-1.1	**590**	1.6	38	82	190	12000	<0.05	27	-	-	-	320	-	-	-	-	-
Limits of Reporting (LOR)		3	0.3	0.5	0.5	1	1	0.05	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.02	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)																		
Health-based Investigation Levels (HIL)[a] D - Commercial / Industrial D		3000	900	3600	240000	1500	60000	180[c]	6000	6000	6000	6000	400000	400000	400000	400000		
Ecological Investigation Levels (EIL) - Commercial and industrial		160[d]	-	660[e]	160[f]	1900[g]	-	-	50[b]	10[h]	55[i]	130[j]	350[b]	940[k]	200[l]	550[m]		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)																		
Provisional Phytotoxity-Based Investigation Levels (PIL)			3					1										

Notes:

a: Commercial / industrial includes premises such as shops, offices, factories and industrial sites.

b: EIL of aged nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=4.5 cmolc/kg & pH=5.6 for red brown natural silty clay were selected for derivation of EIL; a conservative approach.

c: Methyl Mercury

d: Generic EIL for aged arsenic

e: Chromium (III); the assumed clay content=10%, a conservative assumption.

f: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=140mg/kg, the lower ACL used based on the lowest CEC=5cmol/kg or pH=5.5.

g: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.

h: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=2.0 cmolc/kg for brwon natural silty clay was selected for derivation of EIL; a conservative approach.

i: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=4.8 cmolc/kg for brwon natural silty clay was selected for derivation of EIL; a conservative approach.

j: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=7.0 cmolc/kg for yellow-brwon natural silty clay was selected for derivation of EIL; a conservative approach.

k: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; CEC=15 cmolc/kg & pH=7.1 for red brown natural silty clay were adopted for derivation of EIL.

l: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=2.0 cmolc/kg & pH=5.2 for brown natural silty clay were selected for derivation of EIL; a conservative approach.

m: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=7.0 cmolc/kg & pH=6.2 for yellow-brown natural silty clay were selected for derivation of EIL; a conservative approach.

TABLE D7A

METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS

DISCRETE SAMPLES - NATURAL SOIL (SILTY CLAY)

(Ref No: 12675/4-AB)

Sample Location	Depth (m)	ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MANGANESE	MERCURY	NICKEL	NICKEL	NICKEL	NICKEL	ZINC	ZINC	ZINC	ZINC	CEC (cmol/kg)	pH
		METALS (mg/kg)																
Natural Soil (Silty Clay, yellow-brown)																		
D211	0.2-0.3	38	0.3	33	39	66	74	0.08	-	-	-	9.8	-	-	-	86	-	-
Natural Soil (Silty Clay, red brown)																		
D211	1.0-1.1	34	0.3	23	31	60	870	<0.05	20	-	-	-	84	-	-	-	-	-
D211	1.9-2.0	43	0.4	22	34	110	1100	<0.05	12	-	-	-	90	-	-	-	-	-
Natural Soil (Silty Clay, yellow-brown)																		
D212	0.2-0.3	86	0.5	41	40	100	150	<0.05	-	-	-	10	-	-	-	140	-	-
D212	1.0-1.1	57	0.4	39	18	110	520	<0.05	-	-	-	5.9	-	-	-	75	7.0	6.2
Natural Soil (Silty Clay, red brown)																		
D213	0.2-0.3	95	0.6	34	25	370	3100	<0.05	8.7	-	-	-	160	-	-	-	4.5	5.8
Natural Soil (Silty Clay, brown)																		
D213	1.0-1.1	120	0.6	36	70	140	61	0.11	-	-	14	-	-	-	200	-	26	7.1
Natural Soil (Silty Clay, red brown)																		
D214	0.2-0.3	49	0.5	34	19	230	3500	<0.05	8.8	-	-	-	130	-	-	-	-	-
D214	1.0-1.1	94	0.6	45	19	240	2800	<0.05	9.1	-	-	-	140	-	-	-	-	-
D215	0.2-0.3	44	0.5	31	25	140	1500	<0.05	14	-	-	-	160	-	-	-	12	6.8
Natural Soil (Silty Clay, yellow-brown)																		
D215	1.0-1.1	62	0.7	17	32	71	950	0.1	-	-	-	16	-	-	-	320	29	7.6
D215	1.9-2.0	29	2.0	11	14	37	1500	0.08	-	-	-	16	-	-	-	220	-	-
Natural Soil (Silty Clay, brown)																		
D216	0.2-0.3	47	0.5	30	43	54	230	<0.05	-	-	13	-	-	-	100	-	18	7.3
D217	0.2-0.3	75	0.6	46	25	220	500	<0.05	-	-	9.9	-	-	-	110	-	7.2	-
Natural Soil (Silty Clay, yellow-brown)																		
D217	1.0-1.1	45	0.4	29	56	56	74	<0.05	-	-	-	18	-	-	-	170	23	7.1
D217	1.9-2.0	16	0.3	16	34	17	130	<0.05	-	-	-	11	-	-	-	66	-	-
Limits of Reporting (LOR)		3	0.3	0.5	0.5	1	1	0.05	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.02	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)																		
Health-based Investigation Levels (HIL)[a] D - Commercial / Industrial D		3000	900	3600	240000	1500	60000	180[c]	6000	6000	6000	6000	400000	400000	400000	400000		
Ecological Investigation Levels (EIL) - Commercial and industrial		160[d]	-	660[e]	160[f]	1900[g]	-	-	50[b]	10[h]	55[i]	130[j]	350[b]	940[k]	200[l]	550[m]		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)																		
Provisional Phytotoxicity-Based Investigation Levels (PIL)			3					1										

Notes:
a: Commercial / industrial includes premises such as shops, offices, factories and industrial sites.

b: EIL of aged nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=4.5 cmolc/kg & pH=5.6 for red brown natural silty clay were selected for derivation of EIL; a conservative approach.

c: Methyl Mercury

d: Generic EIL for aged arsenic

e: Chromium (III); the assumed clay content=10%, a conservative assumption.

f: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=140mg/kg, the lower ACL used based on the lowest CEC=5cmol/kg or pH=5.5.

g: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.

h: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=2.0 cmolc/kg for brwon natural silty clay was selected for derivation of EIL; a conservative approach.

i: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=4.8 cmolc/kg for brwon natural silty clay was selected for derivation of EIL; a conservative approach.

j: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=7.0 cmolc/kg for yellow-brwon natural silty clay was selected for derivation of EIL; a conservative approach.

k: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; CEC=15 cmolc/kg & pH=7.1 for red brown natural silty clay were adopted for derivation of EIL.

l: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=2.0 cmolc/kg & pH=5.2 for brown natural silty clay were selected for derivation of EIL; a conservative approach.

m: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=7.0 cmolc/kg & pH=6.2 for yellow-brown natural silty clay were selected for derivation of EIL; a conservative approach.

TABLE D7A
METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS
DISCRETE SAMPLES - NATURAL SOIL (SILTY CLAY)
(Ref No: 12675/4-AB)

		METALS (mg/kg)																
Sample Location	Depth (m)	ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MANGANESE	MERCURY	NICKEL	NICKEL	NICKEL	NICKEL	ZINC	ZINC	ZINC	ZINC	CEC (cmol/kg)	pH
Natural Soil (Silty Clay, brown)																		
D218	0.2-0.3	49	0.5	35	9.3	140	2000	<0.05	-	4.4	-	-	-	-	77	-	2.0	5.2
Natural Soil (Silty Clay, yellow-brown)																		
D218	1.0-1.1	73	0.6	30	41	76	1400	0.07	-	-	-	17	-	-	-	170	21	-
D219	0.2-0.3	90	0.6	50	25	200	1200	<0.05	-	-	-	7.8	-	-	-	100	-	-
D219	1.0-1.1	90	0.5	31	51	170	310	<0.05	-	-	-	12	-	-	-	130	-	-
Natural Soil (Silty Clay, red brown)																		
D219	1.9-2.0	72	0.4	34	34	170	450	<0.05	12	-	-	-	120	-	-	-	21	8.2
Natural Soil (Silty Clay, yellow-brown)																		
D220	0.2-0.3	36	0.4	30	35	56	100	0.06	-	-	-	10	-	-	-	69	-	-
Natural Soil (Silty Clay, red brown)																		
D220	1.0-1.1	38	0.4	28	40	56	64	<0.05	9.3	-	-	-	72	-	-	-	-	-
D221	0.2-0.3	57	0.5	32	14	190	560	<0.05	5.7	-	-	-	83	-	-	-	-	-
Natural Soil (Silty Clay, yellow-brown)																		
D221	1.0-1.1	**250**	**3.6**	28	98	420	4300	0.17	-	-	-	52	-	-	-	**860**	-	-
D221	1.9-2.0	**1600**	**50**	14	**460**	320	47000	0.4	-	-	-	**140**	-	-	-	**10000**	-	-
Natural Soil (Silty Clay, red brown)																		
D222	0.2-0.3	48	0.5	43	53	130	43	<0.05	17	-	-	-	140	-	-	-	-	-
Natural Soil (Silty Clay, yellow-brown)																		
D222	1.0-1.1	21	<0.3	20	28	80	230	<0.05	-	-	-	18	-	-	-	84	-	-
Natural Soil (Silty Clay, red brown)																		
D223	0.2-0.3	53	0.6	42	34	120	99	<0.05	15	-	-	-	150	-	-	-	8.0	5.6
D224	0.2-0.3	32	0.3	23	20	75	1200	<0.05	12	-	-	-	92	-	-	-	-	-
Natural Soil (Silty Clay, yellow-brown)																		
D224	1.0-1.1	53	0.5	41	49	71	250	<0.05	-	-	-	25	-	-	-	140	9.1	-
Natural Soil (Silty Clay, brown)																		
D225	0.2-0.3	32	0.3	26	11	54	430	<0.05	-	8.9	-	-	-	-	-	62	-	-
Limits of Reporting (LOR)		3	0.3	0.5	0.5	1	1	0.05	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.02	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)																		
Health-based Investigation Levels (HIL)[a] D - Commercial / Industrial D		3000	900	3600	240000	1500	60000	180[c]	6000	6000	6000	6000	400000	400000	400000	400000		
Ecological Investigation Levels (EIL) - Commercial and industrial		160[d]	-	660[e]	140[f]	1900[g]	-	-	50[b]	10[h]	55[i]	130[j]	350[b]	940[k]	200[l]	550[m]		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)																		
Provisional Phytotoxity-Based Investigation Levels (PIL)			3					1										

Notes:
a: Commercial / industrial includes premises such as shops, offices, factories and industrial sites.
b: EIL of aged nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=4.5 cmolc/kg & pH=5.6 for red brown natural silty clay were selected for derivation of EIL; a conservative approach.
c: Methyl Mercury
d: Generic EIL for aged arsenic
e: Chromium (III); the assumed clay content=10%, a conservative assumption.
f: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=140mg/kg, the lower ACL used based on the lowest CEC=5cmol/kg or pH=5.5.
g: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.
h: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=2.0 cmolc/kg for brwon natural silty clay was selected for derivation of EIL; a conservative approach.
i: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=4.8 cmolc/kg for brwon natural silty clay was selected for derivation of EIL; a conservative approach.
j: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=7.0 cmolc/kg for yellow-brwon natural silty clay was selected for derivation of EIL; a conservative approach.
k: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; CEC=15 cmolc/kg & pH=7.1 for red brown natural silty clay were adopted for derivation of EIL.
l: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=2.0 cmolc/kg & pH=5.2 for brown natural silty clay were selected for derivation of EIL; a conservative approach.
m: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=7.0 cmolc/kg & pH=6.2 for yellow-brown natural silty clay were selected for derivation of EIL; a conservative approach.

TABLE D7A
METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS
DISCRETE SAMPLES - NATURAL SOIL (SILTY CLAY)
(Ref No: 12675/4-AB)

Sample Location	Depth (m)	ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MANGANESE	MERCURY	NICKEL	NICKEL	NICKEL	NICKEL	ZINC	ZINC	ZINC	ZINC	CEC (cmol/kg)	pH
		METALS (mg/kg)																
Natural Soil (Silty Clay, yellow-brown)																		
D225	1.0-1.1	60	0.6	39	27	79	1400	<0.05	-	-	-	15	-	-	-	140	-	-
D225	1.9-2.0	48	**13**	36	39	54	14000	0.54	-	-	-	77	-	-	-	**2400**	34	7.7
D226	1.0-1.1	40	0.4	30	15	91	1400	<0.05	-	-	-	8.8	-	-	-	87	10	-
D229	1.0-1.1	29	0.4	28	27	58	140	<0.05	-	-	-	24	-	-	-	170	11	6.7
D230	1.0-1.1	130	0.7	27	52	240	4200	<0.05	-	-	-	29	-	-	-	310	16	7.3
D231	1.0-1.1	33	0.4	17	46	440	1000	0.1	-	-	-	35	-	-	-	230	24	8.0
D232	0.2-0.3	44	0.3	32	60	230	220	<0.05	-	-	-	19	-	-	-	130	-	-
D232	1.0-1.1	96	0.6	30	96	550	930	0.06	-	-	-	23	-	-	-	330	15	8.4
D233	0.2-0.3	68	0.4	32	84	150	260	<0.05	-	-	-	10	-	-	-	49	-	-
D233	1.0-1.1	130	0.7	24	**220**	180	410	0.15	-	-	-	21	-	-	-	130	-	-
D233	1.9-2.0	140	1.1	19	**170**	150	460	0.09	-	-	-	41	-	-	-	300	-	-
D234	1.0-1.1	18	<0.3	35	35	15	120	<0.05	-	-	-	14	-	-	-	39	-	-
Natural Soil (Silty Clay, red brown)																		
D235	0.2-0.3	14	0.4	37	24	14	310	<0.05	16	-	-	-	51	-	-	-	18	-
Natural Soil (Silty Clay, yellow-brown)																		
D235	1.0-1.1	20	<0.3	20	22	6	300	<0.05	-	-	-	17	-	-	-	35	9.1	-
D236	0.2-0.3	14	<0.3	33	41	14	250	<0.05	-	-	-	10	-	-	-	29	8.2	-
D237	1.0-1.1	19	0.3	25	35	9	83	<0.05	-	-	-	19	-	-	-	56	-	-
D238	1.0-1.1	22	0.3	31	37	31	110	<0.05	-	-	-	20	-	-	-	97	17	-
D243	1.0-1.1	9	0.3	58	33	7	510	<0.05	-	-	-	27	-	-	-	50	-	-
D244	1.0-1.1	11	<0.3	38	17	10	150	<0.05	-	-	-	15	-	-	-	29	-	-
D245	1.0-1.1	23	0.3	40	40	18	190	<0.05	-	-	-	16	-	-	-	55	-	-
D245	1.9-2.0	8	0.5	38	53	9	290	<0.05	-	-	-	16	-	-	-	170	11	7.7
Limits of Reporting (LOR)		3	0.3	0.5	0.5	1	1	0.05	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.02	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)																		
Health-based Investigation Levels (HIL)[a] D - Commercial / Industrial D		3000	900	3600	2E+05	1500	60000	180[c]	6000	6000	6000	6000	400000	400000	400000	400000		
Ecological Investigation Levels (EIL) - Commercial and industrial		160[d]	-	660[e]	160[f]	1900[g]	-	-	50[b]	10[h]	55[i]	130[j]	350[b]	940[k]	200[l]	550[m]		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)																		
Provisional Phytotoxity-Based Investigation Levels (PIL)			3					1										

Notes:
a: Commercial / industrial includes premises such as shops, offices, factories and industrial sites.
b: EIL of aged nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=4.5 cmolc/kg & pH=5.6 for red brown natural silty clay were selected for derivation of EIL; a conservative approach.
c: Methyl Mercury
d: Generic EIL for aged arsenic
e: Chromium (III); the assumed clay content=10%, a conservative assumption.
f: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=140mg/kg, the lower ACL used based on the lowest CEC=5cmol/kg or pH=5.5.
g: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.
h: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=2.0 cmolc/kg for brwon natural silty clay was selected for derivation of EIL; a conservative approach.
i: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=4.8 cmolc/kg for brwon natural silty clay was selected for derivation of EIL; a conservative approach.
j: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=7.0 cmolc/kg for yellow-brwon natural silty clay was selected for derivation of EIL; a conservative approach.
k: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; CEC=15 cmolc/kg & pH=7.1 for red brown natural silty clay were adopted for derivation of EIL.
l: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=2.0 cmolc/kg & pH=5.2 for brown natural silty clay were selected for derivation of EIL; a conservative approach.
m: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=7.0 cmolc/kg & pH=6.2 for yellow-brown natural silty clay were selected for derivation of EIL; a conservative approach.

TABLE D7A

METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS

DISCRETE SAMPLES - NATURAL SOIL (SILTY CLAY)

(Ref No: 12675/4-AB)

Sample Location	Depth (m)	METALS (mg/kg)															CEC (cmol/kg)	pH
		ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MANGANESE	MERCURY	NICKEL	NICKEL	NICKEL	NICKEL	ZINC	ZINC	ZINC	ZINC		
Natural Soil (Silty Clay, yellow-brown)																		
D246	1.0-1.1	17	0.3	21	32	11	390	<0.05	-	-	-	27	-	-	-	43	19	-
D247	0.2-0.3	19	0.3	38	24	18	62	<0.05	-	-	-	21	-	-	-	55	22	-
D247	1.0-1.1	16	<0.3	29	21	15	120	<0.05	-	-	-	22	-	-	-	58	-	-
D248	1.0-1.1	**290**	1.8	37	66	140	1300	0.07	-	-	-	33	-	-	-	**700**	-	-
D249	0.0-0.1	95	0.5	20	38	85	770	<0.05	-	-	-	12	-	-	-	120	-	-
D249	1.0-1.1	45	0.4	35	42	48	380	<0.05	-	-	-	24	-	-	-	110	11	-
D259	1.0-1.1	54	0.3	33	50	35	130	<0.05	-	-	-	23	-	-	-	99	-	-
D271	1.0-1.1	96	0.7	34	54	210	690	0.05	-	-	-	19	-	-	-	240	21	6.9
D272	0.7-0.8	49	0.5	26	51	65	170	<0.05	-	-	-	14	-	-	-	110	11	-
Natural Soil (Silty Clay, red brown)																		
D273	1.0-1.1	55	0.5	41	30	75	120	<0.05	10	-	-	-	74	-	-	-	-	-
Natural Soil (Silty Clay, yellow-brown)																		
D273	1.9-2.0	42	0.4	28	34	95	42	<0.05	-	-	-	15	-	-	-	92	21	-
Natural Soil (Silty Clay, red brown)																		
D274	0.2-0.3	63	0.8	71	15	130	670	<0.05	7.6	-	-	-	82	-	-	-	-	-
D274	1.0-1.1	33	0.3	31	28	45	51	<0.05	9.6	-	-	-	61	-	-	-	23	-
D275	0.2-0.3	42	0.5	39	12	76	1200	<0.05	6.1	-	-	-	48	-	-	-	-	-
D275	1.0-1.1	42	0.4	34	28	45	140	<0.05	10	-	-	-	53	-	-	-	-	-
D275	1.9-2.0	130	1.0	31	64	67	6200	0.08	18	-	-	-	100	-	-	-	31	-
D276	0.2-0.3	76	0.6	45	45	74	800	<0.05	9.1	-	-	-	84	-	-	-	-	-
D276	1.0-1.1	85	0.7	40	80	47	510	<0.05	15	-	-	-	100	-	-	-	-	-
D277	1.0-1.1	43	0.4	31	31	42	590	<0.05	13	-	-	-	79	-	-	-	-	-
Limits of Reporting (LOR)		3	0.3	0.5	0.5	1	1	0.05	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.02	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)																		
Health-based Investigation Levels (HIL)[a] D - Commercial / Industrial D		3000	900	3600	240000	1500	60000	180[c]	6000	6000	6000	6000	400000	400000	400000	400000		
Ecological Investigation Levels (EIL) - Commercial and industrial		160[d]	-	660[e]	160[f]	1900[g]	-	-	50[b]	10[h]	55[i]	130[j]	350[b]	940[k]	200[l]	550[m]		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)																		
Provisional Phytotoxity-Based Investigation Levels (PIL)			3					1										

Notes:

a: Commercial / industrial includes premises such as shops, offices, factories and industrial sites.

b: EIL of aged nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=4.5 cmolc/kg & pH=5.6 for red brown natural silty clay were selected for derivation of EIL; a conservative approach.

c: Methyl Mercury

d: Generic EIL for aged arsenic

e: Chromium (III); the assumed clay content=10%, a conservative assumption.

f: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=140mg/kg, the lower ACL used based on the lowest CEC=5cmol/kg or pH=5.5.

g: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.

h: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=2.0 cmolc/kg for brwon natural silty clay was selected for derivation of EIL; a conservative approach.

i: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=4.8 cmolc/kg for brwon natural silty clay was selected for derivation of EIL; a conservative approach.

j: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=7.0 cmolc/kg for yellow-brwon natural silty clay was selected for derivation of EIL; a conservative approach.

k: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; CEC=15 cmolc/kg & pH=7.1 for red brown natural silty clay were adopted for derivation of EIL.

l: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=2.0 cmolc/kg & pH=5.2 for brown natural silty clay were selected for derivation of EIL; a conservative approach.

m: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=7.0 cmolc/kg & pH=6.2 for yellow-brown natural silty clay were selected for derivation of EIL; a conservative approach.

TABLE D7A
METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS
DISCRETE SAMPLES - NATURAL SOIL (SILTY CLAY)
(Ref No: 12675/4-AB)

Sample Location	Depth (m)	METALS (mg/kg)															CEC (cmol/kg)	pH
		ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MANGANESE	MERCURY	NICKEL	NICKEL	NICKEL	NICKEL	ZINC	ZINC	ZINC	ZINC		
Natural Soil (Silty Clay, brown)																		
D278	0.0-0.1	28	1.0	22	35	52	2400	<0.05	-	-	15	-	-	-	160	-	10	-
D278	0.2-0.3	27	0.9	21	32	53	2500	<0.05	-	-	15	-	-	-	150	-	-	-
Natural Soil (Silty Clay, red brown)																		
D278	1.0-1.1	70	0.9	70	37	59	510	<0.05	17	-	-	-	200	-	-	-	11	-
D279	0.0-0.1	**280**	**3.4**	26	47	310	4300	0.08	18	-	-	-	**570**	-	-	-	-	-
D279	0.2-0.3	**300**	**3.4**	26	47	330	4400	<0.05	19	-	-	-	**560**	-	-	-	-	-
Natural Soil (Silty Clay, brown)																		
D280	0.2-0.3	32	0.4	30	37	20	130	<0.05	-	-	21	-	-	-	61	-	11	-
D281	0.2-0.3	66	0.4	20	**440**	25	66	<0.05	-	-	12	-	-	-	55	-	4.8	-
Natural Soil (Silty Clay, red brown)																		
D285	0.2-0.3	97	1.0	35	40	160	2300	<0.05	17	-	-	-	340	-	-	-	-	-
D285	1.0-1.1	**200**	2.0	30	64	240	3200	<0.05	21	-	-	-	**670**	-	-	-	-	-
Natural Soil (Silty Clay, yellow-brown)																		
D285	1.9-2.0	**260**	**9.8**	22	61	64	2600	0.36	-	-	-	11	-	-	-	**1600**	-	-
D286	0.2-0.3	26	0.3	29	13	58	1600	<0.05	-	-	-	6.4	-	-	-	45	-	-
D286	1.0-1.1	50	0.4	35	25	67	1000	<0.05	-	-	-	10	-	-	-	69	15	-
Natural Soil (Silty Clay, red brown)																		
D287	1.0-1.1	79	0.6	63	31	80	210	<0.05	5.4	-	-	-	69	-	-	-	-	-
Natural Soil (Silty Clay, yellow-brown)																		
D287	1.9-2.0	85	0.5	35	46	54	50	0.07	-	-	-	11	-	-	-	77	-	-
D288	0.6-0.7	15	0.3	21	14	25	240	<0.05	-	-	-	26	-	-	-	180	16	7.1
Natural Soil (Silty Clay, brown)																		
D289	0.5-0.6	22	0.3	22	31	45	190	<0.05	-	-	30	-	-	-	150	-	16	-
Natural Soil (Silty Clay, yellow-brown)																		
D289	1.0-1.1	22	0.4	19	47	21	300	<0.05	-	-	-	31	-	-	-	160	14	7.6
Natural Soil (Silty Clay, red brown)																		
D290	0.2-0.3	27	0.9	24	26	82	1400	<0.05	12	-	-	-	170	-	-	-	-	-
D290	1.0-1.1	28	1.1	27	25	84	1800	<0.05	14	-	-	-	180	-	-	-	7.7	6.4
Limits of Reporting (LOR)		3	0.3	0.5	0.5	1	1	0.05	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.02	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)																		
Health-based Investigation Levels (HIL)[a] D - Commercial / Industrial D		3000	900	3600	2E+05	1500	60000	180[c]	6000	6000	6000	6000	400000	400000	400000	400000		
Ecological Investigation Levels (EIL) - Commercial and industrial		160[d]	-	660[e]	160[f]	1900[g]	-	-	50[b]	10[h]	55[i]	130[j]	350[b]	940[k]	200[l]	550[m]		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)																		
Provisional Phytotoxity-Based Investigation Levels (PIL)			3					1										

Notes:

a: Commercial / industrial includes premises such as shops, offices, factories and industrial sites.

b: EIL of aged nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=4.5 cmolc/kg & pH=5.6 for red brown natural silty clay were selected for derivation of EIL; a conservative approach.

c: Methyl Mercury

d: Generic EIL for aged arsenic

e: Chromium (III); the assumed clay content=10%, a conservative assumption.

f: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=140mg/kg, the lower ACL used based on the lowest CEC=5cmol/kg or pH=5.5.

g: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.

h: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=2.0 cmolc/kg for brwon natural silty clay was selected for derivation of EIL; a conservative approach.

i: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=4.8 cmolc/kg for brwon natural silty clay was selected for derivation of EIL; a conservative approach.

j: EIL of aged nickel was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=7.0 cmolc/kg for yellow-brwon natural silty clay was selected for derivation of EIL; a conservative approach.

k: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; CEC=15 cmolc/kg & pH=7.1 for red brown natural silty clay were adopted for derivation of EIL.

l: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=2.0 cmolc/kg & pH=5.2 for brown natural silty clay were selected for derivation of EIL; a conservative approach.

m: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=7.0 cmolc/kg & pH=6.2 for yellow-brown natural silty clay were selected for derivation of EIL; a conservative approach.

TABLE D8A
METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS
DISCRETE SAMPLES - NATURAL SOIL (SHALEY CLAY & SHALE)
(Ref No: 12675/4-AB)

Sample Location	Depth (m)	METALS (mg/kg) ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MANGANESE	MERCURY	NICKEL	ZINC	ZINC	CEC (cmol/kg)	pH
Natural Soil (Shaley Clay)													
D209	1.0-1.1	**1200**	**8.6**	41	**390**	320	1900	0.08	20	**3800**	-	-	-
D209	1.9-2.0	**1200**	**4.7**	28	**250**	140	720	0.11	25	**2500**	-	-	-
Natural Soil (Shale)													
D213	1.9-2.0	54	0.3	19	28	84	390	<0.05	20	260	-	-	-
Natural Soil (Shaley Clay)													
D216	1.0-1.1	37	0.4	28	49	44	110	<0.05	18	120	-	27	7.9
Natural Soil (Shale)													
D223	1.0-1.1	26	1.2	38	25	63	370	<0.05	30	-	310	16	8.0
D231	1.9-2.0	32	2.0	49	42	240	860	0.06	30	-	570	10	7.7
D235	1.9-2.0	15	0.4	16	16	5	770	<0.05	21	61	-	21	-
D236	1.0-1.1	6	<0.3	39	32	10	240	<0.05	21	35	-	-	-
D237	1.9-2.0	16	0.3	22	25	21	220	<0.05	20	62	-	13	-
D243	1.9-2.0	8	<0.3	56	33	6	280	<0.05	22	47	-	-	-
D247	1.9-2.0	20	0.4	19	30	7	240	<0.05	27	66	-	11	-
D259	1.9-2.0	17	0.5	16	25	17	610	<0.05	36	97	-	4.1	8.7
D265	1.0-1.1	6	<0.3	31	14	5	140	<0.05	15	28	-	-	-
D271	1.9-2.0	15	0.5	18	39	19	420	0.06	20	220	-	7.5	8.0
D277	1.9-2.0	18	<0.3	14	24	18	540	<0.05	35	35	-	15	-
D280	1.0-1.1	32	0.4	24	30	16	160	<0.05	29	74	-	14	-
D281	1.0-1.1	69	0.4	15	**500**	32	110	<0.05	13	49	-	-	-
D282	1.0-1.1	8	<0.3	16	8.9	19	45	<0.05	9.1	79	-	-	-
Limits of Reporting (LOR)		3	0.3	0.5	0.5	1	1	0.05	0.5	0.5	0.5	0	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)													
Health-based Investigation Levels (HIL)[a] D - Commercial / Industrial D		3000	900	3600	240000	1500	60000	180[c]	6000	400000	400000		
Ecological Investigation Levels (EIL) - Commercial and industrial		160[d]	-	660[e]	160[f]	1900[g]	-	-	40[b]	390[b]	700[h]		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)													
Provisional Phytotoxity-Based Investigation Levels (PIL)			3					1					

Notes:
a: Commercial / industrial includes premises such as shops, offices, factories and industrial sites.
b: EIL of aged nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=4.1 cmolc/kg & pH=7.9 were selected for derivation of EIL; a conservative approach.
c: Methyl Mercury
d: Generic EIL for aged arsenic
e: Chromium (III); the assumed clay content=10%, a conservative assumption.
f: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=140mg/kg, the lower ACL used based on the lowest
g: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.
h: EIL of aged zinc was derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=10 cmolc/kg & pH=7.7 were selected for derivation of EIL; a conservative approach.

TABLE D9A

METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS

DISCRETE SAMPLES - NATURAL SOIL (SHALEY CLAY & SHALE/SLATE) IN GW1

(Ref No: 12675/4-AB)

Sample Location	Depth (m)	METALS (mg/kg) ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MANGANESE	MERCURY	NICKEL	ZINC	CEC (cmol/kg)	pH
Natural Soil (Shaley Clay)												
DW1	2.0-2.1	8	0.5	24	28	20	300	<0.05	29	170	20	9.7
Natural Soil (Shale/Slate)												
DW1	3.0-3.1	8	0.4	22	32	25	590	<0.05	30	110	9.9	9.5
DW1	4.0-4.1	13	0.5	23	30	14	480	<0.05	34	140	-	-
DW1	5.0-5.1	12	0.4	22	32	14	630	<0.05	41	140	-	-
DW1	6.0-6.1	39	0.6	23	41	14	440	<0.05	40	63	-	-
DW1	7.0-7.1	22	0.6	23	36	8	500	<0.05	46	110	14	9.8
DW1	8.0-8.1	28	0.4	23	31	7	370	<0.05	39	140	-	-
DW1	9.0-9.1	40	0.6	20	59	27	1100	<0.05	41	67	-	-
DW1	10.0-10.1	32	0.4	27	18	14	640	<0.05	52	160	-	-
DW1	11.0-11.1	62	0.6	39	61	13	840	<0.05	74	320	22	9.5
DW1	12.0-12.1	24	0.4	25	39	9	450	<0.05	52	140	-	-
Limits of Reporting (LOR)		3	0.3	0.5	0.5	1	1	0.05	0.5	0.5	0.02	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)												
Health-based Investigation Levels (HIL)[a] D - Commercial / Industrial D		3000	900	3600	240000	1500	60000	180[c]	6000	400000		
Ecological Investigation Levels (EIL) - Commercial and industrial		160[d]	-	660[e]	300[f]	1900[g]	-	-	280[b]	700[b]		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)												
Provisional Phytotoxity-Based Investigation Levels (PIL)			3					1				

Notes:

a: Commercial / industrial includes premises such as shops, offices, factories and industrial sites.

b: EIL of aged nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=9.9 cmolc/kg & pH=9.5 were selected for derivation of EIL; a conservative approach.

c: Methyl Mercury

d: Generic EIL for aged arsenic

e: Chromium (III); the assumed clay content=10%, a conservative assumption.

f: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=280mg/kg, the lower ACL used based on the lowest CEC=10cmol/kg or pH=8.0.

g: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.

TABLE D10

METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS

DISCRETE SAMPLES (JUDGEMENTAL SAMPLING)

(Ref No: 12675/4-AB)

Sample Location	Depth (m)	METALS (mg/kg) ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MANGANESE	MERCURY	NICKEL	ZINC	CEC (cmol/kg)	pH
Rubbish Pits												
A3	0-0.1	140	**4.8**	33	77	360	-	0.58	**49**	**2400**	3.3	5.9
Duplicate D4 = A3 (0-0.1m)		110	**4.8**	32	59	210	-	**1.1**	18	**2100**	-	-
A4	0-0.1	**440**	**8.0**	29	69	220	-	0.04	20	**2700**	-	-
A5	0-0.1	**270**	**14**	25	83	250	-	0.13	**22**	**4100**	-	-
A6	0-0.1	**350**	**9.0**	32	64	290	-	0.07	20	**3500**	-	-
A7	0-0.1	**250**	**8.6**	27	60	330	-	0.03	**23**	**2500**	-	-
A8	0-0.1	**290**	**8.5**	29	64	330	-	0.02	**26**	**2300**	-	-
A9	0-0.1	**200**	**3.3**	33	78	330	-	0.03	15	**1100**	2.8	5.0
A10	0-0.1	**190**	**3.6**	34	**120**	330	-	0.04	14	**1100**	-	-
A11	0-0.1	**200**	**4.0**	34	**1100**	360	-	0.06	**29**	**1400**	-	-
A12	0-0.1	**210**	**3.2**	35	99	340	-	0.04	14	**1200**	-	-
A13	0-0.1	**200**	**3.2**	34	**110**	320	-	0.05	14	**1100**	-	-
A14	0-0.1	**180**	**3.3**	34	100	290	-	0.05	13	**1000**	-	-
Hematite Zone												
A15	0-0.1	**170**	**4.2**	34	**580**	330	4200	0.03	19	**1000**	5.0	4.9
A16	0-0.1	160	**3.3**	29	**1100**	170	3600	0.09	18	**1000**	-	-
A17	0-0.1	150	**3.7**	50	**520**	210	3100	0.08	14	**920**	4.1	5.0
A18	0-0.1	150	**3.7**	32	**990**	290	5300	0.09	18	**1100**	-	-
Limits of Reporting (LOR)		3	0.3	0.3	0.5	1	1	0.01	0.5	0.5	0.02	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)												
Health-based Investigation Levels (HIL)[a] D - Commercial / Industrial D		3000	900	3600[c]	240000	1500	60000	180[d]	6000	400000		
Ecological Investigation Levels (EIL) - Commercial and industrial		160[e]	-	660[b,f]	100[g]	1900[h]	-	-	20[b]	210[b]		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)												
Provisional Phytotoxity-Based Investigation Levels (PIL)			3					1				

Notes:

a: Commercial / industrial includes premises such as shops, offices, factories and industrial sites.

b: EIL of aged chromium(III), nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=2.8 cmolc/kg & pH=4.9; the assumed clay content=10 % were selected for derivation of EIL;

c: Chromium (VI)

d: Methyl Mercury

e: Generic EIL for aged arsenic

f: Chromium (III)

g: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=60mg/kg, the lower ACL used based on the lowest CEC=5cmol/kg or pH=5.0.

h: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.

TABLE E

TOTAL PETROLEUM HYDROCARBONS (TPH) F2 & F3 (SILICA GEL CLEAN-UP) TEST RESULTS

DISCRETE SAMPLES

(Ref No: 12675/4-AB)

			TPH-Silica Gel Clean-up (mg/kg)		NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013) Ecological Screening Levels for fine-grained soil Urban residential	
Sample Location	Depth (m)	Soil type	F2	F3	F2	F3
DS11	0-0.1	clay	<25	<90	120	1300
DS16	0-0.1	clay	<25	<90	120	1300
DS18	0-0.1	clay	<25	<90	120	1300
DS18	0.5-0.6	clay	<25	<90	120	1300
DS19	0-0.1	clay	<25	<90	120	1300
DS19	0.5-0.6	clay	<25	<90	120	1300
DS22	0-0.1	clay	<25	<90	120	1300
DS22	0.5-0.6	clay	<25	<90	120	1300
CS12-1	0-0.1	clay	<25	<90	120	1300
CS12-2	0-0.1	clay	<25	<90	120	1300
CS12-2	0.5-0.6	clay	<25	<90	120	1300
CS12-3	0-0.1	clay	<25	<90	120	1300
CS14-1	0-0.1	clay	<25	<90	120	1300
CS14-2	0-0.1	clay	<25	<90	120	1300
CS14-3	0-0.1	clay	<25	<90	120	1300
CS15-1	0-0.1	clay	<25	<90	120	1300
CS15-2	0-0.1	clay	<25	<90	120	1300
CS15-2	0.5-0.6	clay	<25	<90	120	1300
CS15-3	0-0.1	clay	<25	<90	120	1300
CS18-1	0-0.1	clay	<25	<90	120	1300
CS18-2	0-0.1	clay	<25	<90	120	1300
CS18-2	0.5-0.6	clay	<25	<90	120	1300
CS18-3	0-0.1	clay	<25	<90	120	1300
CS22-1	0-0.1	clay	<25	<90	120	1300
CS22-2	0-0.1	clay	<25	<90	120	1300
CS22-3	0-0.1	clay	<25	<90	120	1300
Limits of Reporting (LOR)			25	90		

Notes: F2: >C10-C16
F3: >C16-C34

TABLE F

ASBESTOS TEST RESULTS
DISCRETE SAMPLES
(Ref No: 12675/4-AB)

Sample Location	Depth (m)	ASBESTOS
Soil Sample		
FCP1	0-0.1	**0.66 % w/w ACM (>7mm) found; 0.36 % w/w AF/FA (<7mm) found**
Fibro-cement Piece		
FCP1		**ACM**

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

TABLE G
METALS TEST RESULTS
DAM WATER SAMPLE
(Ref No: 12675/4-AB)

Analyte / Sample Location	METALS (µg/L)								
	ARSENIC (As) - Total	CADMIUM (Cd)	CHROMIUM (Cr) - Total	COPPER (Cu)	LEAD (Pb)	MANGANESE (Mn)	MERCURY (Hg)	NICKEL (Ni)	ZINC (Zn)
DAM WATER SAMPLE (Unfiltered/Total)									
W1	3	<0.1	2	6	6	92	<0.1	3	13
DAM WATER SAMPLE (Filtered/Dissolved)									
W1	2	<0.1	2	5	2	7	<0.1	2	7
Limit of Reporting (LOR)	1	0.1	1	1	1	1	0.1	1	5
ANZ [a] Guidelines for Fresh and Marine Water Quality (2000)									
Aquatic Ecosystems- Trigger Values (TV) (95% Protection of freshwater species)	24[b] 13[c]	0.2	ID [d,] 1 [e]	1.4	3.4	1900	0.6 [f] ID [g]	11	8
Irrigation Water (Trigger Values)									
STV	2000	50	1000	5000	5000	10000	2	2000	5000
NHMRC [h] Guidelines for Managing Risks in Recreational Water (2008)									
Health Values	7	2	50 [e]	2000	10	500	1	20	
Aesthetic Values						100			3000

Notes
- a: ANZ = Australia and New Zealands
- b: as As (III)
- c: as As (V)
- d: as Cr (III)
- e: as Cr (VI)
- f: as Hg (Inorganic)
- g: as Hg (methyl)
- h: Australian Government National Health and Medical Research Council
- ID: Insufficient data to derive a reliable trigger value
- STV: Short Term Trigger Value (up to 20 years)

APPENDIX A

GENERAL AGRRANGEMENT PLAN (DRAWING NO 16-001756-D003+ DATED 23 MARCH 2017) PREPARED BY CALIBRE CONSULTING

LEGEND

- RESIDENTIAL LOTS
- OPEN SPACE (REFER LANDSCAPE DRAWINGS FOR DETAIL)
- MISCELLANEOUS USE (SALES INFORMATION AND COMMUNITY CENTRE)
- TOWN CENTRE
- SMALL LOT & MEDIUM DENSITY HOUSING
- SCHOOL/RETIREMENT LIVING
- NEIGHBOURHOOD BOUNDARY
- EXISTING TREES
- EXISTING TREES TO BE REMOVED
- MONTGOMERY CREEK
- EXISTING IRRIGATION DAM
- EXISTING DAM, EXISTING DAM TO BE REMOVED
- EXISTING BIO-RETENTION BASIN/POND
- PROPOSED BIO-RETENTION BASIN
- PROPOSED BASIN C
- SUB-STATIONS (PROPOSED LOCATION ON DESIGN WORK TO DATE)

NOTES

1. REFER TO LANDATA DRAWINGS FOR CADASTRE INFORMATION.
2. CONTOURS AT 5.0m INTERVALS.

FIRST ISSUE	DESIGN	DRAWN	CHECK	APPROVED	DATE	AMENDMENT DETAILS
	BC	VVB			23/03/2017	

WAE No.

PROJECT No.

A3 PLOT 1:10000 SCALE (METRES) 100 50 0 100 200 A1 PLOT 1:5000

CLIENT

PROJECT
GOOGONG NORTH
NEIGHBOURHOOD 2
DA SUBMISSION

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DRAWING TITLE
GENERAL ARRANGEMENT PLAN

DRAWING NUMBER
16-001756-D003+

AMEND.

APPENDIX B

TABLE1
TEST PIT/SAMPLE LOGS

GEOTECHNIQUE PTY LTD

Project	**Neighbourhood (NH) 1A Stage 7 & NH 2**	**Job No**	**12675/4**
Location	**Googong Road, Googong**	**Refer to Drawing No**	**12675/4-AB1**
		Logged & Sampled by	**LY/JH**

TABLE 1

Test Pit	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
D101	0.0-0.2	0.0-0.1	17/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-1.1	0.2-0.3 1.0-1.1			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
	1.1-2.0	1.9-2.0			(CL) Shaley CLAY, low plasticity, yellow-brown and dark grey, with shale fragments and ironstone gravel	
D102	0.0-0.2	0.0-0.1	17/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
D103	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
D104	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
D105	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
D106	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
D107	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
D108	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Fibro-cement Piece (FCP), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

GEOTECHNIQUE PTY LTD

Project	**Neighbourhood (NH) 1A Stage 7 & NH 2**	**Job No**	**12675/4**
Location	**Googong Road, Googong**	**Refer to Drawing No**	**12675/4-AB1**
		Logged & Sampled by	**LY/JH**

TABLE 1

Test Pit	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
D109	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
D110	0.0-0.2	0.0-0.1	17/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
D111	0.0-0.2	0.0-0.1	17/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
D112	0.0-0.2	0.0-0.1	17/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
D113	0.0-0.2	0.0-0.1	17/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
D114	0.0-0.2	0.0-0.1	17/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
D115	0.0-0.2	0.0-0.1	17/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
D116	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-1.0	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
	1.0-1.4	1.0-1.1			(CL) Shaley CLAY, low plasticity, yellow-brown and dark grey, with shale fragments and ironstone gravel	
	1.4-1.5	1.4-1.5			SHALE	

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Fibro-cement Piece (FCP), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

Project	**Neighbourhood (NH) 1A Stage 7 & NH 2**	**Job No**	**12675/4**
Location	**Googong Road, Googong**	**Refer to Drawing No**	**12675/4-AB1**
		Logged & Sampled by	**LY/JH**

TABLE 1

Test Pit	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
D117	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
D118	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low to medium plasticity, grey	
	0.2-0.5	0.2-0.3			(CL) Shaley CLAY, low plasticity, yellow-brown and dark grey, with shale fragments and ironstone gravel	
	0.5				Refusal on bedrock	
D119	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low to medium plasticity, grey	
	0.2-0.5	0.2-0.3			(CL) Shaley CLAY, low plasticity, yellow-brown and dark grey, with shale fragments and ironstone gravel	
	0.5				Refusal on bedrock	
D120	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low to medium plasticity, grey	
	0.2-0.5	0.2-0.3			(CL) Shaley CLAY, low plasticity, yellow-brown and dark grey, with shale fragments and ironstone gravel	
	0.5				Refusal on bedrock	
D121	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low to medium plasticity, grey	
	0.2-0.7	0.2-0.3			(CL) Shaley CLAY, low plasticity, yellow-brown and dark grey, with shale fragments and ironstone gravel	
D122	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-0.5	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
	0.5				Refusal on bedrock	
D123	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Fibro-cement Piece (FCP), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

GEOTECHNIQUE PTY LTD

Project	**Neighbourhood (NH) 1A Stage 7 & NH 2**	**Job No**	**12675/4**
Location	**Googong Road, Googong**	**Refer to Drawing No**	**12675/4-AB1**
		Logged & Sampled by	**LY/JH**

TABLE 1

Test Pit	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
D124	0.0-0.2	0.0-0.1	17/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
D125	0.0-0.2	0.0-0.1	17/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
D126	0.0-0.2	0.0-0.1	17/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
D127	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
D128	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low to medium plasticity, grey	
	0.2-0.7	0.2-0.3			(CL) Shaley CLAY, low plasticity, yellow-brown and dark grey, with shale fragments and ironstone gravel	
D129	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low to medium plasticity, grey	
	0.2-0.5	0.2-0.3			(CL) Shaley CLAY, low plasticity, yellow-brown and dark grey, with shale fragments and ironstone gravel	
	0.5				Refusal on bedrock	
D130	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low to medium plasticity, grey	
	0.2-1.1	0.2-0.3 1.0-1.1			(CL) Shaley CLAY, low plasticity, yellow-brown and dark grey, with shale fragments and ironstone gravel	
	1.1				Refusal	

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Fibro-cement Piece (FCP), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

GEOTECHNIQUE PTY LTD

Project	**Neighbourhood (NH) 1A Stage 7 & NH 2**	**Job No**	**12675/4**
Location	**Googong Road, Googong**	**Refer to Drawing No**	**12675/4-AB1**
		Logged & Sampled by	**LY/JH**

TABLE 1

Test Pit	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
D131	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
D132	0.0-0.2	0.0-0.1	17/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-2.0	0.2-0.3 1.0-1.1 1.9-2.0			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
D133	0.0-0.2	0.0-0.1	17/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
D134	0.0-0.2	0.0-0.1	17/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
D135	0.0-0.2	0.0-0.1	17/10/2016		TOPSOIL: Silty Clay, low to medium plasticity, grey	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
D136	0.0-0.2	0.0-0.1	17/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
D137	0.0-0.2	0.0-0.1	17/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
D138	0.0-0.2	0.0-0.1	17/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Fibro-cement Piece (FCP), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

GEOTECHNIQUE PTY LTD

Project	**Neighbourhood (NH) 1A Stage 7 & NH 2**	**Job No**	**12675/4**
Location	**Googong Road, Googong**	**Refer to Drawing No**	**12675/4-AB1**
		Logged & Sampled by	**LY/JH**

TABLE 1

Test Pit	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
D139	0.0-0.2	0.0-0.1	17/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-1.0	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
	1.0-1.4	1.0-1.1			(CL) Shaley CLAY, low plasticity, yellow-brown and dark grey, with shale fragments and ironstone gravel	
	1.4-1.5	1.4-1.5			SHALE	
D140	0.0-0.2	0.0-0.1	17/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
D141	0.0-0.2	0.0-0.1	17/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
D142	0.0-0.2	0.0-0.1	17/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-1.0	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
	1.0-2.0	1.0-1.1 1.9-2.0			(CL) Shaley CLAY, low plasticity, yellow-brown and dark grey, with shale fragments and ironstone gravel	
D143	0.0-0.2	0.0-0.1	17/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
D144	0.0-0.2	0.0-0.1	17/10/2016		TOPSOIL: Silty Clay, low to medium plasticity, grey	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
D145	0.0-0.2	0.0-0.1	17/10/2016		TOPSOIL: Silty Clay, low to medium plasticity, grey	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Fibro-cement Piece (FCP), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

GEOTECHNIQUE PTY LTD

Project	**Neighbourhood (NH) 1A Stage 7 & NH 2**	**Job No**	**12675/4**
Location	**Googong Road, Googong**	**Refer to Drawing No**	**12675/4-AB1**
		Logged & Sampled by	**LY/JH**

TABLE 1

Test Pit	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
D146	0.0-0.2	0.0-0.1	17/10/2016		TOPSOIL: Silty Clay, low to medium plasticity, grey	
	0.2-0.7	0.2-0.3			(CL) Shaley CLAY, low plasticity, yellow-brown and dark grey, with shale fragments and ironstone gravel	
D147	0.0-0.2	0.0-0.1	17/10/2016		TOPSOIL: Silty Clay, low to medium plasticity, grey	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
D148	0.0-0.2	0.0-0.1	17/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
D149	0.0-0.2	0.0-0.1	17/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
D150	0.0-0.2	0.0-0.1	17/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
D151	0.0-0.2	0.0-0.1	17/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
D152	0.0-0.2	0.0-0.1	17/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-1.0	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
	1.0-2.0	1.0-1.1 1.9-2.0			(CL) Shaley CLAY, low plasticity, yellow-brown and dark grey, with shale fragments and ironstone gravel	
D153	0.0-0.2	0.0-0.1	17/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Fibro-cement Piece (FCP), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

Project	Neighbourhood (NH) 1A Stage 7 & NH 2	Job No	12675/4
Location	Googong Road, Googong	Refer to Drawing No	12675/4-AB1
		Logged & Sampled by	LY/JH

TABLE 1

Test Pit	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
D154	0.0-0.2	0.0-0.1	17/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
D155	0.0-0.2	0.0-0.1	17/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
D156	0.0-0.2	0.0-0.1	17/10/2016		TOPSOIL: Silty Clay, low to medium plasticity, grey	
	0.2-0.7	0.2-0.3			(CL) Shaley CLAY, low plasticity, yellow-brown and dark grey, with shale fragments and ironstone gravel	
D157	0.0-0.2	0.0-0.1	17/10/2016		TOPSOIL: Silty Clay, low to medium plasticity, grey	
	0.2-2.0	0.2-0.3 1.0-1.1 1.9-2.0			(CL) Shaley CLAY, low plasticity, yellow-brown and dark grey, with shale fragments and ironstone gravel	
A4	0.0-0.2	NS	18/10/2016		TOPSOIL: Silty Clay, low plasticity, grey	Inclusion of scrap metal and glass
	0.2-0.7	0.25-0.35 0.5-0.6			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
A6	0.0-0.2	NS	18/10/2016		TOPSOIL: Silty Clay, low plasticity, grey	Inclusion of scrap metal and glass
	0.2-0.7	0.25-0.35 0.5-0.6			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
A8	0.0-0.2	NS	18/10/2016		TOPSOIL: Silty Clay, low plasticity, grey	Inclusion of scrap metal and glass
	0.2-1.2	0.25-0.35 0.5-0.6 1.0-1.1			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
A9	0.0-0.2	NS	18/10/2016		TOPSOIL: Silty Clay, low plasticity, grey	Inclusion of scrap metal and glass
	0.2-0.7	0.25-0.35 0.5-0.6			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Fibro-cement Piece (FCP), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

GEOTECHNIQUE PTY LTD

Project	**Neighbourhood (NH) 1A Stage 7 & NH 2**	**Job No**	**12675/4**
Location	**Googong Road, Googong**	**Refer to Drawing No**	**12675/4-AB1**
		Logged & Sampled by	**LY/JH**

TABLE 1

Test Pit	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
A11	0.0-0.2	NS	18/10/2016		TOPSOIL: Silty Clay, low plasticity, grey	Inclusion of scrap metal and glass
	0.2-2.0	0.25-0.35 0.5-0.6 1.0-1.1 1.9-2.0			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
A13	0.0-0.2	NS	18/10/2016		TOPSOIL: Silty Clay, low plasticity, grey	Inclusion of scrap metal and glass
	0.2-0.7	0.25-0.35 0.5-0.6			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
A15	0.0-0.5	0.2-0.3	18/10/2016		(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
	0.5-2.0	0.5-0.6 1.0-1.1 1.9-2.0			(CL) Shaley CLAY, low plasticity, yellow-brown and dark grey, with shale fragments and ironstone gravel	
A16	0.0-0.5	0.2-0.3	18/10/2016		(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
	0.5-1.6	0.5-0.6 1.0-1.1 1.5-1.6			(CL) Shaley CLAY, low plasticity, yellow-brown and dark grey, with shale fragments and ironstone gravel	
	1.6				Refusal on bedrock	
A17	0.0-1.0	0.2-0.3 0.5-0.6	18/10/2016		(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
	1.0-2.0	1.0-1.1 1.9-2.0			(CL) Shaley CLAY, low plasticity, yellow-brown and dark grey, with shale fragments and ironstone gravel	
A18	0.0-0.5	0.2-0.3	18/10/2016		(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
	0.5-1.1	0.5-0.6 1.0-1.1			(CL) Shaley CLAY, low plasticity, yellow-brown and dark grey, with shale fragments and ironstone gravel	
	1.1				Refusal on bedrock	

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Fibro-cement Piece (FCP), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

Project	Neighbourhood (NH) 1A Stage 7 & NH 2	Job No	12675/4
Location	Googong Dam Road, Googong	Refer to Drawing No	12675/4-AB2
		Logged & Sampled by	LY/JH

TABLE 1

Test Pit	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
DS11	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
CS12-1	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
CS12-2	0.0-0.2	0.0-0.2	18/10/2016		TOPSOIL: Silty Clay, low to medium plasticity, grey	
	0.2-0.7	0.5-0.6			(CL) Shaley CLAY, low plasticity, yellow-brown and dark grey, with shale fragments and ironstone gravel	
CS12-3	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
CS14-1	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
CS14-2	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
CS14-3	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
CS15-1	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
CS15-2	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low to medium plasticity, grey	
	0.2-0.7	0.5-0.6			(CL) Shaley CLAY, low plasticity, yellow-brown and dark grey, with shale fragments and ironstone gravel	
CS15-3	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
DS16	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
DS18	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low to medium plasticity, grey	
	0.2-0.6	0.5-0.6			(CL) Shaley CLAY, low plasticity, yellow-brown and dark grey, with shale fragments and ironstone gravel	
	0.6				Refusal on bedrock	

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Fibro-cement Piece (FCP), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

Project	Neighbourhood (NH) 1A Stage 7 & NH 2	Job No	12675/4
Location	Googong Dam Road, Googong	Refer to Drawing No	12675/4-AB2
		Logged & Sampled by	LY/JH

TABLE 1

Test Pit	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
CS18-1	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
CS18-2	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low to medium plasticity, grey	
	0.2-0.6	0.5-0.6			(CL) Shaley CLAY, low plasticity, yellow-brown and dark grey, with shale fragments and ironstone gravel	
	0.6				Refusal on bedrock	
CS18-3	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
DS19	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low to medium plasticity, grey	
	0.2-0.7	0.5-0.6			(CL) Shaley CLAY, low plasticity, yellow-brown and dark grey, with shale fragments and ironstone gravel	
DS22	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
	0.2-0.6	0.5-0.6			(CI) Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel	
CS22-1	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
CS22-2	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	
CS/22-3	0.0-0.2	0.0-0.1	18/10/2016		TOPSOIL: Silty Clay, low plasticity, brown, with gravel and root fibres	

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Fibro-cement Piece (FCP), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

Project	Neighbourhood (NH) 1A Stage 7 & NH 2	Job No	12675/4
Location	Googong Dam Road, Googong	Refer to Drawing No	12675/4-AB1
		Logged & Sampled by	SS/JH

TABLE 1

Test Pit	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
D201	0-0.2	0-0.1	13/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-2.1	0.2-0.3 1.0-1.1 1.9-2.0			(CI) Silty CLAY, medium plasticity, red-brown, with ironstone gravel	
	2.1	NS			Terminated at 2.1m due to refusal on shale	
D202	0-0.2	0-0.1	13/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-1.6	0.2-0.3 1.0-1.1			(CI) Silty CLAY, medium plasticity, red-brown, with ironstone gravel	
D203	0-0.2	0-0.1	14/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-1.0	0.2-0.3 0.9-1.0			(CI) Silty CLAY, medium plasticity, red-brown, with ironstone gravel	
	1.0	NS			Terminated at 1.0m due to refusal on shale	
D204	0-0.2	0-0.1	14/02/2017		TOPSOIL: Silty Clay, low plasticity, grey, with trace of root fibres	
	0.2-1.1	0.2-0.3 1.0-1.1			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown	
	1.1	NS			Terminated at 1.1m due to refusal on shale	
D205	0-0.2	0-0.1	14/02/2017		TOPSOIL: Silty Clay, low plasticity, grey, with trace of root fibres	
	0.2-0.8	0.2-0.3 0.7-0.8			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown	
	0.8	NS			Terminated at 0.8m due to refusal on shale	
D206	0-0.2	0-0.1	14/02/2017		TOPSOIL: Silty Clay, low plasticity, grey, with trace of root fibres	
	0.2-0.7	0.2-0.3 0.6-0.7			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown	
	0.7	NS			Terminated at 0.7m due to refusal on shale	

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Fibro-cement Piece (FCP), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

Project	Neighbourhood (NH) 1A Stage 7 & NH 2	Job No	12675/4
Location	Googong Dam Road, Googong	Refer to Drawing No	12675/4-AB1
		Logged & Sampled by	SS/JH

TABLE 1

Test Pit	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
D207	0-0.2	0-0.1	14/02/2017		TOPSOIL: Silty Clay, low plasticity, grey, with trace of root fibres	
	0.2-1.1	0.2-0.3 1.0-1.1			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown	
	1.1	NS			Terminated at 0.7m due to refusal on shale	
D208	0-0.2	0-0.1	14/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-1.6	0.2-0.3 1.0-1.1			(CI) Silty CLAY, medium plasticity, red-brown, with ironstone gravel	
D209	0-0.2	0-0.1	13/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-1.0	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with ironstone gravel	
	1.1-2.5	1.0-1.1 1.9-2.0			(CI) Shaley CLAY, medium plasticity, yellow-brown-grey, with ironstone fragments	
D210	0-0.2	0-0.1	13/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-1.0	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with ironstone gravel	
	1.0-1.6	1.0-1.1			(CI) Silty CLAY, medium plasticity, red-brown, with ironstone gravel and dark grey gravel	
D211	0-0.2	0-0.1	14/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-1.0	0.2-0.3			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown	
	1.0-2.5	1.0-1.1 1.9-2.0			(CI) Silty CLAY, medium plasticity, red-brown, with ironstone gravel	
D212	0-0.2	0-0.1	14/02/2017		TOPSOIL: Silty Clay, low plasticity, grey, with trace of root fibres	
	0.2-1.6	0.2-0.3 1.0-1.1			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown	

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Fibro-cement Piece (FCP), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

Project	Neighbourhood (NH) 1A Stage 7 & NH 2	Job No	12675/4
Location	Googong Dam Road, Googong	Refer to Drawing No	12675/4-AB1
		Logged & Sampled by	SS/JH

TABLE 1

Test Pit	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
D213	0-0.2	0-0.1	13/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-1.0	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with ironstone gravel	
	1.0-1.6	1.0-1.1			(CI) Silty CLAY, medium plasticity, brown, with siltstone gravel	
	1.6-2.0	1.9-2.0			SHALE, grey-black, very low to low strength, extremely weathered	
D214	0-0.2	0-0.1	13/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-0.8	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with ironstone gravel	
	0.8-1.2	1.0-1.1			(CI) Silty CLAY, medium plasticity, red-brown, with ironstone gravel, with black ironstone gravel	
D215	0-0.2	0-0.1	14/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-0.9	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with ironstone gravel	
	0.9-2.0	1.0-1.1 1.9-2.0			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown, with ironstone gravel	
D216	0-0.2	0-0.1	14/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-1.0	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with ironstone gravel	
	1.0-1.5	1.0-1.1			(CI) Shaley CLAY, medium plasticity, yellow-brown-grey, with ironstone fragments	
D217	0-0.2	0-0.1	14/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-0.8	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with ironstone gravel	
	0.8-1.2	1.0-1.1			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown, with ironstone gravel	
	1.2-2.2	1.9-2.0			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown, with siltstone gravel	

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Fibro-cement Piece (FCP), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

Project	Neighbourhood (NH) 1A Stage 7 & NH 2	Job No	12675/4
Location	Googong Dam Road, Googong	Refer to Drawing No	12675/4-AB1
		Logged & Sampled by	SS/JH

TABLE 1

Test Pit	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
D218	0-0.2	0-0.1			TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-0.5	0.2-0.3			(CI) Silty CLAY, medium plasticity, brown	
	0.5-0.9	NS			(CI) Silty CLAY, medium plasticity, red-brown, with ironstone gravel	
	0.9-1.2	1.0-1.1			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown, with ironstone gravel	
D219	0-0.2	0-0.1	14/02/2017		TOPSOIL: Silty Clay, low plasticity, grey, with trace of root fibres	
	0.2-1.9	0.2-0.3 1.0-1.1			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown	
	1.9-2.4	1.9-2.0			(CI) Silty CLAY, medium plasticity, red-brown, with ironstone gravel	
D220	0-0.2	0-0.1	14/02/2017		TOPSOIL: Silty Clay, low plasticity, grey, with trace of root fibres	
	0.2-1.0	0.2-0.3			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown	
	1.0-1.5	1.0-1.1			(CI) Silty CLAY, medium plasticity, red-brown, with ironstone gravel	
D221	0-0.4	0-0.1 0.2-0.3	14/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.4-0.8	NS			(CI) Silty CLAY, medium plasticity, red-brown, with ironstone gravel	
	0.8-1.5	1.0-1.1			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown, with ironstone gravel	
	1.5-2.1	1.9-2.0			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown, with coarse ironstone gravel	
D222	0-0.2	0-0.1	14/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-0.7	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with ironstone gravel	
	0.7-1.2	1.0-1.1			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown, with ironstone gravel	

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Fibro-cement Piece (FCP), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

Project	Neighbourhood (NH) 1A Stage 7 & NH 2	Job No	12675/4
Location	Googong Dam Road, Googong	Refer to Drawing No	12675/4-AB1
		Logged & Sampled by	SS/JH

TABLE 1

Test Pit	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
D223	0-0.2	0-0.1	14/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-0.6	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with ironstone gravel	
	0.6-0.8	NS			(CH) Shaley CLAY, high plasticity, red-brown	
	1.0-1.2	1.0-1.1			SHALE, grey, very low to low strength, extremely weathered, with ironstone fragments	
D224	0-0.2	0-0.1	14/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-0.6	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with ironstone gravel	
	0.6-1.2	1.0-1.1			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown	
D225	0-0.2	0-0.1	14/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-0.5	0.2-0.3			(CI) Silty CLAY, medium plasticity, brown	
	0.5-2.1	1.0-1.1 1.9-2.0			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown, with ironstone gravel	
D226	0-0.4	0-0.1 0.2-0.3	15/02/17		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.4-1.2	1.0-1.1			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown, with ironstone gravel	
D229	0-0.5	0-0.1 0.2-0.3	15/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.5-1.2	1.0-1.1			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown	
	1.2-1.5	NS			SHALE, grey, very low to low strength, extremely weathered, with ironstone fragments	

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Fibro-cement Piece (FCP), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

Project	Neighbourhood (NH) 1A Stage 7 & NH 2	Job No	12675/4
Location	Googong Dam Road, Googong	Refer to Drawing No	12675/4-AB1
		Logged & Sampled by	SS/JH

TABLE 1

Test Pit	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
D230	0-0.5	0-0.1 0.2-0.3	15/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.5-1.2	1.0-1.1			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown, with ironstone gravel	
D231	0-0.4	0-0.1 0.2-0.3	15/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.4-1.5	1.0-1.1			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown, with ironstone gravel	
	1.5-2.1	1.9-2.0			SHALE, grey, very low to low strength, extremely weathered, with ironstone fragments	
D232	0-0.2	0-0.1	14/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-0.5	0.2-0.3			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown	
	0.5-1.2	1.0-1.1			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown, with ironstone gravel	
D233	0-0.2	0-0.1	14/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-1.2	0.2-0.3 1.0-1.1			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown, with fine grained ironstone gravel	
	1.2-2.1	1.9-2.0			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown, with fine to coarse grained ironstone gravel	
D234	0-0.4	0-0.1 0.2-0.3	14/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.4-1.2	1.0-1.1			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown, with ironstone gravel	

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Fibro-cement Piece (FCP), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

Project	Neighbourhood (NH) 1A Stage 7 & NH 2	Job No	12675/4
Location	Googong Dam Road, Googong	Refer to Drawing No	12675/4-AB1
		Logged & Sampled by	SS/JH

TABLE 1

Test Pit	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
D235	0-0.2	0-0.1	14/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-0.6	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with ironstone gravel	
	0.6-1.0	NS			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown, with ironstone gravel	
	1.0-2.1	1.0-1.1 1.9-2.0			SHALE, grey, very low to low strength, extremely weathered, with ironstone fragments	
D236	0-0.2	0-0.1	14/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-0.9	0.2-0.3			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown	
	0.9-1.3	1.0-1.1			SHALE, grey, very low to low strength, extremely weathered, with ironstone fragments	
D237	0-0.5	0-0.1 0.2-0.3	14/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.5-1.2	1.0-1.1			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown, with ironstone gravel	
	1.2-2.1	1.9-2.0			SHALE, grey, very low to low strength, extremely weathered, with ironstone fragments	
D238	0-0.4	0-0.1 0.2-0.3	14/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.4-1.1	1.0-1.1			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown, with ironstone gravel	
D243	0-0.4	0-0.1 0.2-0.3	15/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.4-1.3	1.0-1.1			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown, with ironstone gravel	
	1.3-2.1	1.9-2.0			SHALE, grey, very low to low strength, extremely weathered, with ironstone fragments	

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Fibro-cement Piece (FCP), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

Project	Neighbourhood (NH) 1A Stage 7 & NH 2	Job No	12675/4
Location	Googong Dam Road, Googong	Refer to Drawing No	12675/4-AB1
		Logged & Sampled by	SS/JH

TABLE 1

Test Pit	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
D244	0-0.4	0-0.1 0.2-0.3	15/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.4-1.2	1.0-1.1			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown, with ironstone gravel	
D245	0-0.4	0-0.1 0.2-0.3	15/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.4-2.2	1.0-1.1 1.9-2.0			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown, with ironstone gravel	
D246	0-0.4	0-0.1 0.2-0.3	15/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.4-1.2	1.0-1.1			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown, with ironstone gravel	
D247	0-0.2	0-0.1	15/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-0.9	0.2-0.3			(CI) Silty CLAY, medium plasticity, red-brown, with ironstone gravel	
	0.9-1.4	1.0-1.1			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown	
	1.4-1.6	NS			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown, with ironstone gravel	
	1.6-2.2	1.9-2.0			SHALE, grey, very low to low strength, extremely weathered, with ironstone fragments	
D248	0-0.4	0-0.1 0.2-0.3	15/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.4-1.2	1.0-1.1			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown, with ironstone gravel	
D249	0-0.4	0-0.1 0.2-0.3			TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.4-1.2	1.0-1.1			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown, with ironstone gravel	
	1.2-1.4	NS			SHALE, grey, very low to low strength, extremely weathered, with ironstone fragments	

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Fibro-cement Piece (FCP), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

Project	Neighbourhood (NH) 1A Stage 7 & NH 2	Job No	12675/4
Location	Googong Dam Road, Googong	Refer to Drawing No	12675/4-AB1
		Logged & Sampled by	SS/JH

TABLE 1

Test Pit	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
D259	0-0.4	0-0.1 0.2-0.3	16/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.4-1.2	1.0-1.1			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown, with ironstone gravel	
	1.2-2.2	1.9-2.0			SHALE, grey, very low to low strength, extremely weathered, with ironstone fragments	
D263	0-0.3	0-0.1 0.2-0.3	15/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.3-0.7	NS			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown	
	0.7-0.9	NS			SHALE, grey, very low to low strength, extremely weathered, with ironstone fragments	
	0.9				Terminated at 0.9m due to refusal on shale	
D264	0-0.5	0-0.1 0.2-0.3	15/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.5-0.8	NS			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown, with ironstone gravel	
	0.8				Terminated at 0.8m due to refusal on shale	
D265	0-0.4	0-0.1 0.2-0.3	15/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.4-0.8	NS			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown, with ironstone gravel	
	0.8-1.2	1.0-1.1			SHALE, grey, very low to low strength, extremely weathered, with ironstone fragments	
	1.2				Terminated at 1.2m due to refusal on shale	

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Fibro-cement Piece (FCP), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

Project	Neighbourhood (NH) 1A Stage 7 & NH 2	Job No	12675/4
Location	Googong Dam Road, Googong	Refer to Drawing No	12675/4-AB1
		Logged & Sampled by	SS/JH

TABLE 1

Test Pit	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
D271	0-0.4	0-0.1 0.2-0.3	16/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.4-1.5	1.0-1.1			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown, with ironstone gravel	
	1.5-2.1	1.9-2.0			SHALE, grey, very low to low strength, extremely weathered, with ironstone fragments	
D272	0-0.4	0-0.1 0.2-0.3	16/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.4-0.8	0.7-0.8			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown, with ironstone gravel	
	0.8-1.0	NS			SHALE, grey, very low to low strength, extremely weathered, with ironstone fragments	
D273	0-0.4	0-0.1 0.2-0.3	16/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.4-1.5	1.0-1.1			(CI) Silty CLAY, medium plasticity, red-brown, with ironstone gravel	
	1.5-2.2	1.9-2.0			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown, with ironstone gravel	
D274	0-0.2	0-0.1	16/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-1.2	0.2-0.3 1.0-1.1			(CI) Silty CLAY, medium plasticity, red-brown, with ironstone gravel	
D275	0-0.2	0-0.1	16/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-2.1	0.2-0.3 1.0-1.1 1.9-2.0			(CI) Silty CLAY, medium plasticity, red-brown, with ironstone gravel, with ironstone gravel	
D276	0-0.2	0-0.1	16/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-1.2	0.2-0.3 1.0-1.1			(CI) Silty CLAY, medium plasticity, red-brown, with ironstone gravel	

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Fibro-cement Piece (FCP), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

Project	Neighbourhood (NH) 1A Stage 7 & NH 2	Job No	12675/4
Location	Googong Dam Road, Googong	Refer to Drawing No	12675/4-AB1
		Logged & Sampled by	SS/JH

TABLE 1

Test Pit	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
D277	0-0.4	0-0.1 0.2-0.3	16/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.4-1.2	1.0-1.1			(CI) Silty CLAY, medium plasticity, red-brown, with ironstone gravel	
	1.2-2.1	1.9-2.0			SHALE, grey, very low to low strength, extremely weathered, with ironstone fragments	
D278	0-0.4	0-0.1 0.2-0.3	16/02/2017		(CI) Silty CLAY, medium plasticity, brown, with root fibres	
	0.4-1.2	1.0-1.1			(CI) Silty CLAY, medium plasticity, red-brown, with ironstone gravel	
D279	0-0.6	0-0.1 0.2-0.3	16/02/2017		(CI) Silty CLAY, medium plasticity, red-brown, with ironstone gravel, with root fibres	
	0.6				Terminated at 0.6m due to refusal on shale	
D280	0-0.2	0-0.1	16/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-0.9	0.2-0.3			(CI) Silty CLAY, medium plasticity, brown, with shale gravel	
	0.9-1.2	1.0-1.1			SHALE, grey, very low to low strength, extremely weathered, with ironstone fragments	
D281	0-0.2	0-0.1	16/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres, with shale gravel	
	0.2-0.8	0.2-0.3			(CI) Silty CLAY, medium plasticity, brown, with shale gravel	
	0.8-1.2	1.0-1.1			SHALE, grey, very low to low strength, extremely weathered, with ironstone fragments	
	1.1				Terminated at 1.1m due to refusal on shale	

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Fibro-cement Piece (FCP), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

Project	Neighbourhood (NH) 1A Stage 7 & NH 2	Job No	12675/4
Location	Googong Dam Road, Googong	Refer to Drawing No	12675/4-AB1
		Logged & Sampled by	SS/JH

TABLE 1

Test Pit	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
D282	0-0.4	0-0.1 0.2-0.3	16/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.4-0.8	NS			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown, with shale gravel	
	0.8-1.2	1.0-1.1			SHALE, grey, very low to low strength, extremely weathered, with ironstone fragments	
D283	0-0.4	0-0.1 0.2-0.3	17/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.4-0.6	NS			SHALE, grey, very low to low strength, extremely weathered, with ironstone fragments	
D284	0-0.4	0-0.1 0.2-0.3	17/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.4				Terminated at 0.4m due to refusal on shale	
D285	0-0.2	0-0.1	17/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-1.2	0.2-0.3 1.0-1.1			(CI) Silty CLAY, medium plasticity, red-brown, with ironstone gravel	
	1.2-2.1	1.9-2.0			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown, with ironstone gravel	
D286	0-0.2	0-0.1	17/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-1.2	0.2-0.3 1.0-1.1			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown, with ironstone gravel	
D287	0-0.4	0-0.1 0.2-0.3	17/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.4-1.5	1.0-1.1			(CI) Silty CLAY, medium plasticity, red-brown, with ironstone gravel	
	1.5-2.0	1.9-2.0			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown	

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Fibro-cement Piece (FCP), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

Project	Neighbourhood (NH) 1A Stage 7 & NH 2	Job No	12675/4
Location	Googong Dam Road, Googong	Refer to Drawing No	12675/4-AB1
		Logged & Sampled by	SS/JH

TABLE 1

Test Pit	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
D288	0-0.4	0-0.1 0.2-0.3	17/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.4-0.7	0.6-0.7			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown, with ironstone gravel	
	0.7-0.9	NS			SHALE, grey, very low to low strength, extremely weathered, with ironstone fragments	
D289	0-0.4	0-0.1 0.2-0.3	17/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.4-0.6	0.5-0.6			(CI) Silty CLAY, medium plasticity, brown	
	0.6-1.6	1.0-1.1			(CI-CH) Silty CLAY, medium to high plasticity, yellow-brown, with ironstone gravel	
D290	0-0.2	0-0.1	17/02/2017		TOPSOIL: Silty Clay, low to medium plasticity, brown, with root fibres	
	0.2-1.2	0.2-0.3 1.0-1.1			(CI) Silty CLAY, medium plasticity, red-brown, with ironstone gravel	
FCP1	0-0.1	0-0.1	17/02/2017		FILL: Silty Clay, medium plasticity, brown	Inclusion of FCP; FCP sample FCP1 collected
	0.1-0.2	NS			(CI) Silty CLAY, medium plasticity, brown	

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Fibro-cement Piece (FCP), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

APPENDIX C

ENGINEERING LOG – MONITORING WELL

GEOTECHNIQUE PTY LTD

engineering log - monitoring well

Client : PEET
Project : Proposed Residential Subdivison
Location : Neighbourhood 1A, Stage 7 & Neighbourhood 2 Googong Road Googong

Job No. : 12675/4
Borehole No. : GW 1
Date : 15/02/2017
Logged/Checked by: JH

drill rig : Geoprobe 7822DT
R.L. surface : AHD

groundwater 15/02/2017 : DRY (m)

groundwater	samples	PID Reading (ppm)	depth or R.L. in meters	graphic log	classification symbol	MATERIAL DESCRIPTION soil type, plasticity or particle characteristic, colour, secondary and minor components.	MONITORING WELL Graphic Log	MONITORING WELL Description
								700mm Lockable Monument
			0			TOPSOIL: Silt Clay, low to medium plasticity, brown, trace of root fibres		Concrete capping/ soil cuttings
					CI	Silty CLAY, medium plasticity, red-brown, with inclusion of ironstone gravel		
			1					Bentonite Grout Casing
					CI	Shaley CLAY, medium plasticity, yellow- brown-grey, with shale and ironstone fragments		
	DS		2					
						SHALE, distinctly weathered		
	DS		3					
	DS		4					
	DS		5					
	DS		6					
	DS		7			SLATE, distinctly weathered		Bentonite plug/pellets
								Sand
	DS		8					
								Screening

engineering log - monitoring well

Client : PEET	**Job No. :** 12675/4
Project : Proposed Residential Subdivison	**Borehole No. :** GW 1
Location : Neighbourhood 1A, Stage 7 & Neighbourhood 2 Googong Road Googong	**Date :** 15/02/2017
	Logged/Checked by: JH
drill rig : Geoprobe 7822DT	**R.L. surface :** AHD
groundwater 15/02/2017 : DRY (m)	

groundwater	samples	PID Reading (ppm)	depth or R.L. in meters	graphic log	classification symbol	MATERIAL DESCRIPTION soil type, plasticity or particle characteristic, colour, secondary and minor components.	MONITORING WELL Graphic Log	MONITORING WELL Description
	DS		9					
	DS		10					
	DS		11					
	DS		12					
			13					
			14					Endcap
			15			Monitoring well terminated at 14.5m		
			16					
			17					
			18					

KEY TO SYMBOLS

Symbol Description

Strata symbols

Topsoil

Silty Clay medium plasticity

Shaley Clay medium plasticity

Shale

Limestone

Monitor Well Details

Locked Cap

concrete seal

bentonite slurry

bentonite pellets

silica sand, blank PVC

slotted pipe w/ sand

endcap on pipe packed in sand

Descriptions of various line types (solid, dotted, etc.)

Profile change

Symbol Description

Gradual profile change

Notes:

1. Exploratory borings were drilled between 15/02/2017 and 15/02/2017 using a 50, 100 and 125mm diameter continuous flight power auger.

2. These logs are subject to the limitations, conclusions and recommendations in this report.

3. Results of tests conducted on samples recovered are reported on the logs.

APPENDIX D

SGS ENVIRONMENTAL SERVICES ANALYTICAL REPORTS
AND
ENVIROLAB SERVICES CERTIFICATES OF ANALYSIS

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS		LABORATORY DETAILS	
Contact	John Xu	Manager	Huong Crawford
Client	Geotechnique	Laboratory	SGS Alexandria Environmental
Address	P.O. Box 880 PENRITH NSW 2751	Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	02 4722 2700	Telephone	+61 2 8594 0400
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Email	john.xu@geotech.com.au	Email	au.environmental.sydney@sgs.com
Project	**12675-4 Googong NH1A-7 and NH2**	SGS Reference	**SE158264 R1**
Order Number	(Not specified)	Date Received	19/10/2016
Samples	198	Date Reported	19/1/2017

COMMENTS

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

This report cancels and supersedes the report No.SE158264R0. dated 31/10/16 issued by SGS Environment, Health and Safety due to amended sample ID for #92.

SIGNATORIES

Bennet Lo
Senior Organic Chemist/Metals Chemist

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Ly Kim Ha
Organic Section Head

TRH Silica Gel (Total Recoverable Hydrocarbons - Silica Gel) in Soil [AN403] Tested: 21/10/2016

			DS11 0-0.1	DS16 0-0.1	DS18 0-0.1	DS18 0.5-0.6	DS19 0-0.1
			SOIL	SOIL	SOIL	SOIL	SOIL
			-	-	-	-	-
			18/10/2016	18/10/2016	18/10/2016	18/10/2016	18/10/2016
PARAMETER	UOM	LOR	SE158264.160	SE158264.161	SE158264.162	SE158264.163	SE158264.164
TRH C10-C14-Silica	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28-Silica	mg/kg	45	<45	<45	<45	<45	<45
TRH C29-C36-Silica	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40-Silica	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16-Silica (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34-Silica (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40-Silica (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36-Silica	mg/kg	110	<110	<110	<110	<110	<110

			DS19 0.5-0.6	DS22 0-0.1	DS22 0.5-0.6	CS12-1 0-0.1	CS12-2 0-0.1
			SOIL	SOIL	SOIL	SOIL	SOIL
			-	-	-	-	-
			18/10/2016	18/10/2016	18/10/2016	18/10/2016	18/10/2016
PARAMETER	UOM	LOR	SE158264.165	SE158264.166	SE158264.167	SE158264.168	SE158264.169
TRH C10-C14-Silica	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28-Silica	mg/kg	45	<45	<45	<45	<45	<45
TRH C29-C36-Silica	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40-Silica	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16-Silica (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34-Silica (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40-Silica (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36-Silica	mg/kg	110	<110	<110	<110	<110	<110

			CS12-2 0.5-0.6	CS12-3 0-0.1	CS14-1 0-0.1	CS14-2 0-0.1	CS14-3 0-0.1
			SOIL	SOIL	SOIL	SOIL	SOIL
			-	-	-	-	-
			18/10/2016	18/10/2016	18/10/2016	18/10/2016	18/10/2016
PARAMETER	UOM	LOR	SE158264.170	SE158264.171	SE158264.172	SE158264.173	SE158264.174
TRH C10-C14-Silica	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28-Silica	mg/kg	45	<45	<45	<45	<45	<45
TRH C29-C36-Silica	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40-Silica	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16-Silica (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34-Silica (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40-Silica (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36-Silica	mg/kg	110	<110	<110	<110	<110	<110

			CS15-1 0-0.1	CS15-2 0-0.1	CS15-2 0.5-0.6	CS15-3 0-0.1	CS18-1 0-0.1
			SOIL	SOIL	SOIL	SOIL	SOIL
			-	-	-	-	-
			18/10/2016	18/10/2016	18/10/2016	18/10/2016	18/10/2016
PARAMETER	UOM	LOR	SE158264.175	SE158264.176	SE158264.177	SE158264.178	SE158264.179
TRH C10-C14-Silica	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28-Silica	mg/kg	45	<45	<45	<45	<45	<45
TRH C29-C36-Silica	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40-Silica	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16-Silica (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34-Silica (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40-Silica (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36-Silica	mg/kg	110	<110	<110	<110	<110	<110

TRH Silica Gel (Total Recoverable Hydrocarbons - Silica Gel) in Soil [AN403] Tested: 21/10/2016 (continued)

PARAMETER	UOM	LOR	CS18-2 0-0.1 SOIL - 18/10/2016 SE158264.180	CS18-2 0.5-0.6 SOIL - 18/10/2016 SE158264.181	CS18-3 0-0.1 SOIL - 18/10/2016 SE158264.182	CS22-1 0-0.1 SOIL - 18/10/2016 SE158264.183	CS22-2 0-0.1 SOIL - 18/10/2016 SE158264.184
TRH C10-C14-Silica	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28-Silica	mg/kg	45	<45	<45	<45	<45	<45
TRH C29-C36-Silica	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40-Silica	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16-Silica (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34-Silica (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40-Silica (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36-Silica	mg/kg	110	<110	<110	<110	<110	<110

PARAMETER	UOM	LOR	CS22-3 0-0.1 SOIL - 18/10/2016 SE158264.185	Duplicate D8 SOIL - 18/10/2016 SE158264.193	Duplicate D9 SOIL - 18/10/2016 SE158264.194	Duplicate D10 SOIL - 18/10/2016 SE158264.195
TRH C10-C14-Silica	mg/kg	20	<20	<20	<20	<20
TRH C15-C28-Silica	mg/kg	45	<45	<45	<45	<45
TRH C29-C36-Silica	mg/kg	45	<45	<45	<45	<45
TRH C37-C40-Silica	mg/kg	100	<100	<100	<100	<100
TRH >C10-C16-Silica (F2)	mg/kg	25	<25	<25	<25	<25
TRH >C16-C34-Silica (F3)	mg/kg	90	<90	<90	<90	<90
TRH >C34-C40-Silica (F4)	mg/kg	120	<120	<120	<120	<120
TRH C10-C36-Silica	mg/kg	110	<110	<110	<110	<110

pH in soil (1:5) [AN101] Tested: 21/10/2016

PARAMETER	UOM	LOR	A8 0.5-0.6 SOIL - 18/10/2016 SE158264.006	A11 1.0-1.1 SOIL - 18/10/2016 SE158264.012	A15 0.5-0.6 SOIL - 18/10/2016 SE158264.017	A16 0.2-0.3 SOIL - 18/10/2016 SE158264.020	A17 1.9-2.0 SOIL - 18/10/2016 SE158264.027
pH	pH Units	-	6.7	6.7	7.1	7.0	6.9

PARAMETER	UOM	LOR	A18 1.0-1.1 SOIL - 18/10/2016 SE158264.030	D101 0-0.1 SOIL - 17/10/2016 SE158264.031	D101 1.0-1.1 SOIL - 17/10/2016 SE158264.033	D116 0-0.1 SOIL - 18/10/2016 SE158264.063	D116 0.2-0.3 SOIL - 18/10/2016 SE158264.064
pH	pH Units	-	7.5	5.5	6.5	5.9	6.9

PARAMETER	UOM	LOR	D119 0-0.1 SOIL - 18/10/2016 SE158264.071	D130 0-0.1 SOIL - 18/10/2016 SE158264.093	D130 1.0-1.1 SOIL - 18/10/2016 SE158264.095	D132 0-0.1 SOIL - 17/10/2016 SE158264.098	D132 0.2-0.3 SOIL - 17/10/2016 SE158264.099
pH	pH Units	-	5.3	6.0	7.0	5.9	6.5

PARAMETER	UOM	LOR	D139 0-0.1 SOIL - 17/10/2016 SE158264.114	D139 1.4-1.5 SOIL - 17/10/2016 SE158264.117	D142 0-0.1 SOIL - 17/10/2016 SE158264.122	D142 1.9-2.0 SOIL - 17/10/2016 SE158264.125	D152 0-0.1 SOIL - 17/10/2016 SE158264.144
pH	pH Units	-	6.7	6.5	6.9	8.0	6.5

PARAMETER	UOM	LOR	D152 0.2-0.3 SOIL - 17/10/2016 SE158264.145	D157 0-0.1 SOIL - 17/10/2016 SE158264.156	D157 1.0-1.1 SOIL - 17/10/2016 SE158264.158
pH	pH Units	-	6.6	5.7	8.6

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) [AN122] Tested: 25/10/2016

PARAMETER	UOM	LOR	A8 0.5-0.6 SOIL - 18/10/2016 SE158264.006	A11 1.0-1.1 SOIL - 18/10/2016 SE158264.012	A15 0.5-0.6 SOIL - 18/10/2016 SE158264.017	A16 0.2-0.3 SOIL - 18/10/2016 SE158264.020	A17 1.9-2.0 SOIL - 18/10/2016 SE158264.027
Exchangeable Sodium, Na	mg/kg	2	21	93	96	37	38
Exchangeable Sodium, Na	meq/100g	0.01	0.09	0.40	0.42	0.16	0.17
Exchangeable Sodium Percentage*	%	0.1	0.9	3.8	4.2	1.7	4.2
Exchangeable Potassium, K	mg/kg	2	69	76	66	81	30
Exchangeable Potassium, K	meq/100g	0.01	0.18	0.20	0.17	0.21	0.08
Exchangeable Potassium Percentage*	%	0.1	1.8	1.8	1.7	2.2	1.9
Exchangeable Calcium, Ca	mg/kg	2	1500	460	210	700	140
Exchangeable Calcium, Ca	meq/100g	0.01	7.4	2.3	1.1	3.5	0.68
Exchangeable Calcium Percentage*	%	0.1	75.3	21.7	10.6	37.6	17.2
Exchangeable Magnesium, Mg	mg/kg	2	260	940	1000	660	370
Exchangeable Magnesium, Mg	meq/100g	0.02	2.1	7.7	8.4	5.4	3.0
Exchangeable Magnesium Percentage*	%	0.1	22.0	72.6	83.6	58.4	76.7
Cation Exchange Capacity	meq/100g	0.02	9.8	11	10	9.3	3.9

PARAMETER	UOM	LOR	A18 1.0-1.1 SOIL - 18/10/2016 SE158264.030	D101 0-0.1 SOIL - 17/10/2016 SE158264.031	D101 1.0-1.1 SOIL - 17/10/2016 SE158264.033	D116 0-0.1 SOIL - 18/10/2016 SE158264.063	D116 0.2-0.3 SOIL - 18/10/2016 SE158264.064
Exchangeable Sodium, Na	mg/kg	2	84	16	20	23	29
Exchangeable Sodium, Na	meq/100g	0.01	0.37	0.07	0.09	0.10	0.13
Exchangeable Sodium Percentage*	%	0.1	3.5	1.7	1.2	1.4	1.5
Exchangeable Potassium, K	mg/kg	2	57	120	110	80	60
Exchangeable Potassium, K	meq/100g	0.01	0.15	0.31	0.29	0.20	0.15
Exchangeable Potassium Percentage*	%	0.1	1.4	7.8	4.1	2.9	1.8
Exchangeable Calcium, Ca	mg/kg	2	370	540	970	930	810
Exchangeable Calcium, Ca	meq/100g	0.01	1.9	2.7	4.8	4.6	4.1
Exchangeable Calcium Percentage*	%	0.1	17.8	68.2	68.2	65.9	46.6
Exchangeable Magnesium, Mg	mg/kg	2	990	110	230	260	530
Exchangeable Magnesium, Mg	meq/100g	0.02	8.1	0.89	1.9	2.1	4.4
Exchangeable Magnesium Percentage*	%	0.1	77.3	22.3	26.5	29.8	50.1
Cation Exchange Capacity	meq/100g	0.02	10	4.0	7.1	7.1	8.7

PARAMETER	UOM	LOR	D119 0-0.1 SOIL - 18/10/2016 SE158264.071	D130 0-0.1 SOIL - 18/10/2016 SE158264.093	D130 1.0-1.1 SOIL - 18/10/2016 SE158264.095	D132 0-0.1 SOIL - 17/10/2016 SE158264.098	D132 0.2-0.3 SOIL - 17/10/2016 SE158264.099
Exchangeable Sodium, Na	mg/kg	2	46	20	81	13	29
Exchangeable Sodium, Na	meq/100g	0.01	0.20	0.09	0.35	0.06	0.13
Exchangeable Sodium Percentage*	%	0.1	2.2	1.5	3.0	0.7	1.1
Exchangeable Potassium, K	mg/kg	2	58	41	100	240	140
Exchangeable Potassium, K	meq/100g	0.01	0.15	0.11	0.26	0.60	0.35
Exchangeable Potassium Percentage*	%	0.1	1.6	1.8	2.3	7.6	3.0
Exchangeable Calcium, Ca	mg/kg	2	650	640	500	1100	1400
Exchangeable Calcium, Ca	meq/100g	0.01	3.3	3.2	2.5	5.7	7.1
Exchangeable Calcium Percentage*	%	0.1	35.5	54.0	21.6	71.6	61.3
Exchangeable Magnesium, Mg	mg/kg	2	680	310	1000	190	490
Exchangeable Magnesium, Mg	meq/100g	0.02	5.6	2.5	8.4	1.6	4.0
Exchangeable Magnesium Percentage*	%	0.1	60.8	42.8	73.1	20.0	34.7
Cation Exchange Capacity	meq/100g	0.02	9.2	5.9	12	7.9	12

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) [AN122] Tested: 25/10/2016 (continued)

PARAMETER	UOM	LOR	D139 0-0.1 SOIL - 17/10/2016 SE158264.114	D139 1.4-1.5 SOIL - 17/10/2016 SE158264.117	D142 0-0.1 SOIL - 17/10/2016 SE158264.122	D142 1.9-2.0 SOIL - 17/10/2016 SE158264.125	D152 0-0.1 SOIL - 17/10/2016 SE158264.144
Exchangeable Sodium, Na	mg/kg	2	27	33	42	180	31
Exchangeable Sodium, Na	meq/100g	0.01	0.12	0.14	0.18	0.76	0.14
Exchangeable Sodium Percentage*	%	0.1	1.4	2.5	2.0	6.3	1.7
Exchangeable Potassium, K	mg/kg	2	38	24	79	97	56
Exchangeable Potassium, K	meq/100g	0.01	0.10	0.06	0.20	0.25	0.14
Exchangeable Potassium Percentage*	%	0.1	1.2	1.1	2.2	2.0	1.8
Exchangeable Calcium, Ca	mg/kg	2	1000	260	880	670	750
Exchangeable Calcium, Ca	meq/100g	0.01	5.2	1.3	4.4	3.3	3.7
Exchangeable Calcium Percentage*	%	0.1	63.6	22.0	47.9	27.3	46.7
Exchangeable Magnesium, Mg	mg/kg	2	340	530	540	960	490
Exchangeable Magnesium, Mg	meq/100g	0.02	2.8	4.3	4.4	7.9	4.0
Exchangeable Magnesium Percentage*	%	0.1	33.8	74.5	47.9	64.4	49.8
Cation Exchange Capacity	meq/100g	0.02	8.2	5.8	9.2	12	8.0

PARAMETER	UOM	LOR	D152 0.2-0.3 SOIL - 17/10/2016 SE158264.145	D157 0-0.1 SOIL - 17/10/2016 SE158264.156	D157 1.0-1.1 SOIL - 17/10/2016 SE158264.158
Exchangeable Sodium, Na	mg/kg	2	32	14	820
Exchangeable Sodium, Na	meq/100g	0.01	0.14	0.06	3.6
Exchangeable Sodium Percentage*	%	0.1	1.7	2.1	15.2
Exchangeable Potassium, K	mg/kg	2	58	28	120
Exchangeable Potassium, K	meq/100g	0.01	0.15	0.07	0.30
Exchangeable Potassium Percentage*	%	0.1	1.8	2.4	1.3
Exchangeable Calcium, Ca	mg/kg	2	740	410	580
Exchangeable Calcium, Ca	meq/100g	0.01	3.7	2.1	2.9
Exchangeable Calcium Percentage*	%	0.1	46.4	69.8	12.4
Exchangeable Magnesium, Mg	mg/kg	2	490	92	2000
Exchangeable Magnesium, Mg	meq/100g	0.02	4.0	0.75	17
Exchangeable Magnesium Percentage*	%	0.1	50.1	25.6	71.2
Cation Exchange Capacity	meq/100g	0.02	8.0	2.9	24

Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 25/10/2016

PARAMETER	UOM	LOR	A4 0.25-0.35 SOIL - 18/10/2016 SE158264.001	A4 0.5-0.6 SOIL - 18/10/2016 SE158264.002	A6 0.25-0.35 SOIL - 18/10/2016 SE158264.003	A6 0.5-0.6 SOIL - 18/10/2016 SE158264.004	A8 0.25-0.35 SOIL - 18/10/2016 SE158264.005
Arsenic, As	mg/kg	3	300	380	300	340	310
Cadmium, Cd	mg/kg	0.3	7.0	7.6	9.0	12	11
Copper, Cu	mg/kg	0.5	89	79	100	49	110
Lead, Pb	mg/kg	1	420	540	300	39	250
Manganese, Mn	mg/kg	1	7400	6200	8800	7400	9400
Nickel, Ni	mg/kg	0.5	44	31	45	17	24
Zinc, Zn	mg/kg	0.5	2700	3100	3100	4100	3700

PARAMETER	UOM	LOR	A8 0.5-0.6 SOIL - 18/10/2016 SE158264.006	A8 1.0-1.1 SOIL - 18/10/2016 SE158264.007	A9 0.25-0.35 SOIL - 18/10/2016 SE158264.008	A9 0.5-0.6 SOIL - 18/10/2016 SE158264.009	A11 0.25-0.35 SOIL - 18/10/2016 SE158264.010
Arsenic, As	mg/kg	3	270	260	180	160	220
Cadmium, Cd	mg/kg	0.3	10	8.2	3.6	2.5	3.9
Copper, Cu	mg/kg	0.5	94	94	310	53	64
Lead, Pb	mg/kg	1	350	300	340	310	220
Manganese, Mn	mg/kg	1	7700	8000	3200	4200	4600
Nickel, Ni	mg/kg	0.5	28	30	17	39	29
Zinc, Zn	mg/kg	0.5	3300	3000	1100	870	1400

PARAMETER	UOM	LOR	A11 0.5-0.6 SOIL - 18/10/2016 SE158264.011	A11 1.0-1.1 SOIL - 18/10/2016 SE158264.012	A11 1.9-2.0 SOIL - 18/10/2016 SE158264.013	A13 0.25-0.35 SOIL - 18/10/2016 SE158264.014	A13 0.5-0.6 SOIL - 18/10/2016 SE158264.015
Arsenic, As	mg/kg	3	390	300	540	230	200
Cadmium, Cd	mg/kg	0.3	17	14	49	3.4	2.7
Copper, Cu	mg/kg	0.5	71	49	65	200	160
Lead, Pb	mg/kg	1	98	81	93	300	290
Manganese, Mn	mg/kg	1	12000	7300	7800	3500	3200
Nickel, Ni	mg/kg	0.5	51	28	24	17	15
Zinc, Zn	mg/kg	0.5	6300	3900	7600	1000	810

PARAMETER	UOM	LOR	A15 0.2-0.3 SOIL - 18/10/2016 SE158264.016	A15 0.5-0.6 SOIL - 18/10/2016 SE158264.017	A15 1.0-1.1 SOIL - 18/10/2016 SE158264.018	A15 1.9-2.0 SOIL - 18/10/2016 SE158264.019	A16 0.2-0.3 SOIL - 18/10/2016 SE158264.020
Arsenic, As	mg/kg	3	11	13	19	11	11
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	0.3	<0.3	<0.3
Copper, Cu	mg/kg	0.5	29	34	33	14	26
Lead, Pb	mg/kg	1	15	15	77	14	31
Manganese, Mn	mg/kg	1	120	86	180	1000	93
Nickel, Ni	mg/kg	0.5	17	20	19	26	17
Zinc, Zn	mg/kg	0.5	45	53	53	41	77

Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 25/10/2016 (continued)

PARAMETER	UOM	LOR	A16 0.5-0.6 SOIL - 18/10/2016 SE158264.021	A16 1.0-1.1 SOIL - 18/10/2016 SE158264.022	A16 1.5-1.6 SOIL - 18/10/2016 SE158264.023	A17 0.2-0.3 SOIL - 18/10/2016 SE158264.024	A17 0.5-0.6 SOIL - 18/10/2016 SE158264.025
Arsenic, As	mg/kg	3	11	13	15	520	600
Cadmium, Cd	mg/kg	0.3	0.3	0.4	<0.3	2.2	4.0
Copper, Cu	mg/kg	0.5	19	19	18	640	870
Lead, Pb	mg/kg	1	21	23	16	190	730
Manganese, Mn	mg/kg	1	58	71	170	660	4300
Nickel, Ni	mg/kg	0.5	28	29	30	17	40
Zinc, Zn	mg/kg	0.5	100	110	100	560	1000

PARAMETER	UOM	LOR	A17 1.0-1.1 SOIL - 18/10/2016 SE158264.026	A17 1.9-2.0 SOIL - 18/10/2016 SE158264.027	A18 0.2-0.3 SOIL - 18/10/2016 SE158264.028	A18 0.5-0.6 SOIL - 18/10/2016 SE158264.029	A18 1.0-1.1 SOIL - 18/10/2016 SE158264.030
Arsenic, As	mg/kg	3	420	410	87	72	13
Cadmium, Cd	mg/kg	0.3	2.9	16	0.5	0.4	0.3
Copper, Cu	mg/kg	0.5	320	250	110	83	32
Lead, Pb	mg/kg	1	49	570	94	56	17
Manganese, Mn	mg/kg	1	630	12000	480	170	270
Nickel, Ni	mg/kg	0.5	20	130	14	15	28
Zinc, Zn	mg/kg	0.5	770	2500	200	160	180

PARAMETER	UOM	LOR	D101 0-0.1 SOIL - 17/10/2016 SE158264.031	D101 0.2-0.3 SOIL - 17/10/2016 SE158264.032	D101 1.0-1.1 SOIL - 17/10/2016 SE158264.033	D101 1.9-2.0 SOIL - 17/10/2016 SE158264.034	D102 0-0.1 SOIL - 17/10/2016 SE158264.035
Arsenic, As	mg/kg	3	52	61	75	23	54
Cadmium, Cd	mg/kg	0.3	0.7	0.5	0.6	0.9	0.8
Copper, Cu	mg/kg	0.5	22	28	33	36	29
Lead, Pb	mg/kg	1	240	280	490	42	190
Manganese, Mn	mg/kg	1	3200	2300	4000	920	1500
Nickel, Ni	mg/kg	0.5	11	8.6	13	51	12
Zinc, Zn	mg/kg	0.5	210	180	230	430	230

PARAMETER	UOM	LOR	D102 0.2-0.3 SOIL - 17/10/2016 SE158264.036	D103 0-0.1 SOIL - 18/10/2016 SE158264.037	D103 0.2-0.3 SOIL - 18/10/2016 SE158264.038	D104 0-0.1 SOIL - 18/10/2016 SE158264.039	D104 0.2-0.3 SOIL - 18/10/2016 SE158264.040
Arsenic, As	mg/kg	3	59	140	140	230	210
Cadmium, Cd	mg/kg	0.3	0.5	2.9	2.1	1.9	2.3
Copper, Cu	mg/kg	0.5	25	100	95	65	59
Lead, Pb	mg/kg	1	270	300	310	260	310
Manganese, Mn	mg/kg	1	1500	3700	3500	1700	3000
Nickel, Ni	mg/kg	0.5	8.8	19	17	17	19
Zinc, Zn	mg/kg	0.5	170	890	800	830	960

Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 25/10/2016 (continued)

PARAMETER	UOM	LOR	D105 0-0.1 SOIL - 18/10/2016 SE158264.041	D105 0.2-0.3 SOIL - 18/10/2016 SE158264.042	D106 0-0.1 SOIL - 18/10/2016 SE158264.043	D106 0.2-0.3 SOIL - 18/10/2016 SE158264.044	D107 0-0.1 SOIL - 18/10/2016 SE158264.045
Arsenic, As	mg/kg	3	150	240	72	74	180
Cadmium, Cd	mg/kg	0.3	0.9	1.0	0.5	0.7	2.1
Copper, Cu	mg/kg	0.5	100	140	57	67	150
Lead, Pb	mg/kg	1	370	410	110	110	500
Manganese, Mn	mg/kg	1	1300	1000	270	290	3100
Nickel, Ni	mg/kg	0.5	13	15	20	24	25
Zinc, Zn	mg/kg	0.5	270	320	150	160	630

PARAMETER	UOM	LOR	D107 0.2-0.3 SOIL - 18/10/2016 SE158264.046	D108 0-0.1 SOIL - 18/10/2016 SE158264.047	D108 0.2-0.3 SOIL - 18/10/2016 SE158264.048	D109 0-0.1 SOIL - 18/10/2016 SE158264.049	D109 0.2-0.3 SOIL - 18/10/2016 SE158264.050
Arsenic, As	mg/kg	3	200	110	150	120	120
Cadmium, Cd	mg/kg	0.3	2.2	2.3	3.1	2.4	2.9
Copper, Cu	mg/kg	0.5	170	67	75	51	46
Lead, Pb	mg/kg	1	430	620	710	310	240
Manganese, Mn	mg/kg	1	3000	2700	3000	3000	3000
Nickel, Ni	mg/kg	0.5	19	16	19	17	14
Zinc, Zn	mg/kg	0.5	640	870	1000	650	630

PARAMETER	UOM	LOR	D110 0-0.1 SOIL - 17/10/2016 SE158264.051	D110 0.2-0.3 SOIL - 17/10/2016 SE158264.052	D111 0-0.1 SOIL - 17/10/2016 SE158264.053	D111 0.2-0.3 SOIL - 17/10/2016 SE158264.054	D112 0-0.1 SOIL - 17/10/2016 SE158264.055
Arsenic, As	mg/kg	3	150	270	87	100	97
Cadmium, Cd	mg/kg	0.3	1.9	1.4	0.9	1.0	0.8
Copper, Cu	mg/kg	0.5	58	63	41	50	35
Lead, Pb	mg/kg	1	330	300	310	330	560
Manganese, Mn	mg/kg	1	3400	1900	3100	3100	3700
Nickel, Ni	mg/kg	0.5	16	13	9.5	11	9.5
Zinc, Zn	mg/kg	0.5	520	490	280	340	280

PARAMETER	UOM	LOR	D112 0.2-0.3 SOIL - 17/10/2016 SE158264.056	D113 0-0.1 SOIL - 17/10/2016 SE158264.057	D113 0.2-0.3 SOIL - 17/10/2016 SE158264.058	D114 0-0.1 SOIL - 17/10/2016 SE158264.059	D114 0.2-0.3 SOIL - 17/10/2016 SE158264.060
Arsenic, As	mg/kg	3	110	110	260	60	66
Cadmium, Cd	mg/kg	0.3	0.6	0.8	0.7	1.1	0.8
Copper, Cu	mg/kg	0.5	40	36	74	27	28
Lead, Pb	mg/kg	1	420	210	190	210	200
Manganese, Mn	mg/kg	1	2300	1600	660	2300	1600
Nickel, Ni	mg/kg	0.5	8.3	7.9	12	14	10
Zinc, Zn	mg/kg	0.5	230	220	300	380	300

Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 25/10/2016 (continued)

PARAMETER	UOM	LOR	D115 0-0.1 SOIL - 17/10/2016 SE158264.061	D115 0.2-0.3 SOIL - 17/10/2016 SE158264.062	D116 0-0.1 SOIL - 18/10/2016 SE158264.063	D116 0.2-0.3 SOIL - 18/10/2016 SE158264.064	D116 1.0-1.1 SOIL - 18/10/2016 SE158264.065
Arsenic, As	mg/kg	3	86	88	120	200	220
Cadmium, Cd	mg/kg	0.3	2.2	1.6	4.0	6.7	7.8
Copper, Cu	mg/kg	0.5	35	43	66	180	210
Lead, Pb	mg/kg	1	320	320	620	760	790
Manganese, Mn	mg/kg	1	3100	2400	3700	5200	4800
Nickel, Ni	mg/kg	0.5	13	12	27	44	35
Zinc, Zn	mg/kg	0.5	610	550	1200	2900	3100

PARAMETER	UOM	LOR	D116 1.4-1.5 SOIL - 18/10/2016 SE158264.066	D117 0-0.1 SOIL - 18/10/2016 SE158264.067	D117 0.2-0.3 SOIL - 18/10/2016 SE158264.068	D118 0-0.1 SOIL - 18/10/2016 SE158264.069	D118 0.2-0.3 SOIL - 18/10/2016 SE158264.070
Arsenic, As	mg/kg	3	530	180	170	15	44
Cadmium, Cd	mg/kg	0.3	46	2.3	2.2	0.4	0.4
Copper, Cu	mg/kg	0.5	720	110	110	22	58
Lead, Pb	mg/kg	1	710	960	1000	42	64
Manganese, Mn	mg/kg	1	18000	3100	3300	550	110
Nickel, Ni	mg/kg	0.5	36	23	25	12	25
Zinc, Zn	mg/kg	0.5	2000	1100	1100	86	130

PARAMETER	UOM	LOR	D119 0-0.1 SOIL - 18/10/2016 SE158264.071	D119 0.2-0.3 SOIL - 18/10/2016 SE158264.072	D120 0-0.1 SOIL - 18/10/2016 SE158264.073	D120 0.2-0.3 SOIL - 18/10/2016 SE158264.074	D121 0-0.1 SOIL - 18/10/2016 SE158264.075
Arsenic, As	mg/kg	3	11	10	9	8	52
Cadmium, Cd	mg/kg	0.3	0.3	0.3	0.5	0.5	0.5
Copper, Cu	mg/kg	0.5	16	18	16	17	28
Lead, Pb	mg/kg	1	41	40	270	210	110
Manganese, Mn	mg/kg	1	500	450	240	330	780
Nickel, Ni	mg/kg	0.5	13	21	14	15	11
Zinc, Zn	mg/kg	0.5	50	65	130	130	98

PARAMETER	UOM	LOR	D121 0.2-0.3 SOIL - 18/10/2016 SE158264.076	D122 0-0.1 SOIL - 18/10/2016 SE158264.077	D122 0.2-0.3 SOIL - 18/10/2016 SE158264.078	D123 0-0.1 SOIL - 18/10/2016 SE158264.079	D123 0.2-0.3 SOIL - 18/10/2016 SE158264.080
Arsenic, As	mg/kg	3	46	120	140	80	94
Cadmium, Cd	mg/kg	0.3	0.4	0.8	0.7	3.9	2.9
Copper, Cu	mg/kg	0.5	39	110	120	73	89
Lead, Pb	mg/kg	1	53	430	160	370	280
Manganese, Mn	mg/kg	1	210	2100	77	2800	2700
Nickel, Ni	mg/kg	0.5	29	16	16	18	27
Zinc, Zn	mg/kg	0.5	120	250	190	1300	1100

Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 25/10/2016 (continued)

PARAMETER	UOM	LOR	D124 0-0.1 SOIL - 17/10/2016 SE158264.081	D124 0.2-0.3 SOIL - 17/10/2016 SE158264.082	D125 0-0.1 SOIL - 17/10/2016 SE158264.083	D125 0.2-0.3 SOIL - 17/10/2016 SE158264.084	D126 0-0.1 SOIL - 17/10/2016 SE158264.085
Arsenic, As	mg/kg	3	59	66	46	51	71
Cadmium, Cd	mg/kg	0.3	0.8	0.7	0.5	0.5	1.1
Copper, Cu	mg/kg	0.5	30	33	18	20	30
Lead, Pb	mg/kg	1	300	310	190	230	270
Manganese, Mn	mg/kg	1	2300	1600	1900	2100	2600
Nickel, Ni	mg/kg	0.5	8.5	8.2	7.4	7.6	9.3
Zinc, Zn	mg/kg	0.5	380	310	130	140	360

PARAMETER	UOM	LOR	D126 0.2-0.3 SOIL - 17/10/2016 SE158264.086	D127 0-0.1 SOIL - 18/10/2016 SE158264.087	D127 0.2-0.3 SOIL - 18/10/2016 SE158264.088	D128 0-0.1 SOIL - 18/10/2016 SE158264.089	D128 0.2-0.3 SOIL - 18/10/2016 SE158264.090
Arsenic, As	mg/kg	3	76	250	270	8	10
Cadmium, Cd	mg/kg	0.3	0.7	3.5	3.3	<0.3	<0.3
Copper, Cu	mg/kg	0.5	43	310	210	8.7	13
Lead, Pb	mg/kg	1	230	660	630	30	20
Manganese, Mn	mg/kg	1	1300	3600	3700	680	100
Nickel, Ni	mg/kg	0.5	9.1	33	31	10	16
Zinc, Zn	mg/kg	0.5	300	1500	1800	82	110

PARAMETER	UOM	LOR	D129 0-0.1 SOIL - 18/10/2016 SE158264.091	D129 0.2-0.3 SOIL - 18/10/2016 SE158264.092	D130 0-0.1 SOIL - 18/10/2016 SE158264.093	D130 0.2-0.3 SOIL - 18/10/2016 SE158264.094	D130 1.0-1.1 SOIL - 18/10/2016 SE158264.095
Arsenic, As	mg/kg	3	7	13	8	12	17
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	0.3
Copper, Cu	mg/kg	0.5	9.6	15	8.1	15	11
Lead, Pb	mg/kg	1	31	68	37	30	15
Manganese, Mn	mg/kg	1	150	100	620	130	56
Nickel, Ni	mg/kg	0.5	12	12	9.6	15	23
Zinc, Zn	mg/kg	0.5	56	74	65	70	73

PARAMETER	UOM	LOR	D131 0-0.1 SOIL - 18/10/2016 SE158264.096	D131 0.2-0.3 SOIL - 18/10/2016 SE158264.097	D132 0-0.1 SOIL - 17/10/2016 SE158264.098	D132 0.2-0.3 SOIL - 17/10/2016 SE158264.099	D132 1.0-1.1 SOIL - 17/10/2016 SE158264.100
Arsenic, As	mg/kg	3	180	190	290	530	940
Cadmium, Cd	mg/kg	0.3	2.1	1.7	1.3	1.2	1.2
Copper, Cu	mg/kg	0.5	71	69	41	62	99
Lead, Pb	mg/kg	1	310	280	190	120	79
Manganese, Mn	mg/kg	1	2500	2400	4100	1600	2300
Nickel, Ni	mg/kg	0.5	14	13	13	13	18
Zinc, Zn	mg/kg	0.5	630	600	350	490	660

Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 25/10/2016 (continued)

PARAMETER	UOM	LOR	D132 1.9-2.0 SOIL - 17/10/2016 SE158264.101	D133 0-0.1 SOIL - 17/10/2016 SE158264.102	D133 0.2-0.3 SOIL - 17/10/2016 SE158264.103	D134 0-0.1 SOIL - 17/10/2016 SE158264.104	D134 0.2-0.03 SOIL - 17/10/2016 SE158264.105
Arsenic, As	mg/kg	3	540	35	21	46	74
Cadmium, Cd	mg/kg	0.3	1.2	0.5	<0.3	0.5	0.8
Copper, Cu	mg/kg	0.5	71	12	9.8	8.7	21
Lead, Pb	mg/kg	1	55	150	100	180	200
Manganese, Mn	mg/kg	1	1400	1600	660	1300	720
Nickel, Ni	mg/kg	0.5	14	5.4	4.6	5.4	8.3
Zinc, Zn	mg/kg	0.5	580	140	60	93	110

PARAMETER	UOM	LOR	D135 0-0.1 SOIL - 17/10/2016 SE158264.106	D135 0.2-0.3 SOIL - 17/10/2016 SE158264.107	D136 0-0.1 SOIL - 17/10/2016 SE158264.108	D136 0.2-0.3 SOIL - 17/10/2016 SE158264.109	D137 0-0.1 SOIL - 17/10/2016 SE158264.110
Arsenic, As	mg/kg	3	68	54	67	69	160
Cadmium, Cd	mg/kg	0.3	0.8	0.6	0.8	0.8	3.4
Copper, Cu	mg/kg	0.5	32	24	32	30	76
Lead, Pb	mg/kg	1	200	220	280	310	380
Manganese, Mn	mg/kg	1	1200	950	2300	2600	5900
Nickel, Ni	mg/kg	0.5	12	7.1	12	13	31
Zinc, Zn	mg/kg	0.5	210	150	250	290	950

PARAMETER	UOM	LOR	D137 0.2-0.3 SOIL - 17/10/2016 SE158264.111	D138 0-0.1 SOIL - 17/10/2016 SE158264.112	D138 0.2-0.3 SOIL - 17/10/2016 SE158264.113	D139 0-0.1 SOIL - 17/10/2016 SE158264.114	D139 0.2-0.3 SOIL - 17/10/2016 SE158264.115
Arsenic, As	mg/kg	3	180	360	360	850	1200
Cadmium, Cd	mg/kg	0.3	2.3	3.6	3.4	4.3	6.6
Copper, Cu	mg/kg	0.5	81	78	75	680	1100
Lead, Pb	mg/kg	1	420	230	260	1700	970
Manganese, Mn	mg/kg	1	3600	3300	3400	4000	16000
Nickel, Ni	mg/kg	0.5	23	17	19	36	110
Zinc, Zn	mg/kg	0.5	770	1700	1600	1100	1400

PARAMETER	UOM	LOR	D139 1.0-1.1 SOIL - 17/10/2016 SE158264.116	D139 1.4-1.5 SOIL - 17/10/2016 SE158264.117	D140 0-0.1 SOIL - 17/10/2016 SE158264.118	D140 0.2-0.3 SOIL - 17/10/2016 SE158264.119	D141 0-0.1 SOIL - 17/10/2016 SE158264.120
Arsenic, As	mg/kg	3	860	430	330	630	48
Cadmium, Cd	mg/kg	0.3	3.5	2.6	3.7	6.1	0.4
Copper, Cu	mg/kg	0.5	1700	560	110	270	11
Lead, Pb	mg/kg	1	960	170	900	2300	97
Manganese, Mn	mg/kg	1	1600	2400	4400	8400	760
Nickel, Ni	mg/kg	0.5	52	44	24	44	4.1
Zinc, Zn	mg/kg	0.5	630	400	1000	2800	200

Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 25/10/2016 (continued)

			D141 0.2-0.3	D142 0-0.1	D142 0.2-0.3	D142 1.0-1.1	D142 1.9-2.0
			SOIL	SOIL	SOIL	SOIL	SOIL
			-	-	-	-	-
			17/10/2016	17/10/2016	17/10/2016	17/10/2016	17/10/2016
PARAMETER	UOM	LOR	SE158264.121	SE158264.122	SE158264.123	SE158264.124	SE158264.125
Arsenic, As	mg/kg	3	320	100	110	100	26
Cadmium, Cd	mg/kg	0.3	2.5	0.8	0.8	0.6	0.3
Copper, Cu	mg/kg	0.5	69	24	30	37	26
Lead, Pb	mg/kg	1	570	250	260	72	28
Manganese, Mn	mg/kg	1	3200	1700	1900	320	240
Nickel, Ni	mg/kg	0.5	20	10	11	11	11
Zinc, Zn	mg/kg	0.5	770	210	240	250	160

			D143 0-0.1	D143 0.2-0.3	D144 0-0.1	D144 0.2-0.3	D145 0-0.1
			SOIL	SOIL	SOIL	SOIL	SOIL
			-	-	-	-	-
			17/10/2016	17/10/2016	17/10/2016	17/10/2016	17/10/2016
PARAMETER	UOM	LOR	SE158264.126	SE158264.127	SE158264.128	SE158264.129	SE158264.130
Arsenic, As	mg/kg	3	54	63	62	64	47
Cadmium, Cd	mg/kg	0.3	0.6	0.7	0.7	0.7	0.8
Copper, Cu	mg/kg	0.5	19	19	13	48	48
Lead, Pb	mg/kg	1	220	220	190	75	160
Manganese, Mn	mg/kg	1	1900	2500	2100	80	1800
Nickel, Ni	mg/kg	0.5	7.5	9.3	7.3	15	15
Zinc, Zn	mg/kg	0.5	140	160	200	200	140

			D145 0.2-0.3	D146 0-0.1	D146 0.2-0.3	D147 0-0.1	D147 0.2-0.3
			SOIL	SOIL	SOIL	SOIL	SOIL
			-	-	-	-	-
			17/10/2016	17/10/2016	17/10/2016	17/10/2016	17/10/2016
PARAMETER	UOM	LOR	SE158264.131	SE158264.132	SE158264.133	SE158264.134	SE158264.135
Arsenic, As	mg/kg	3	56	31	43	53	76
Cadmium, Cd	mg/kg	0.3	0.8	0.4	0.5	1.5	0.8
Copper, Cu	mg/kg	0.5	78	13	37	20	44
Lead, Pb	mg/kg	1	120	80	49	140	150
Manganese, Mn	mg/kg	1	260	1100	480	2600	1200
Nickel, Ni	mg/kg	0.5	22	8.6	18	13	17
Zinc, Zn	mg/kg	0.5	170	74	130	230	240

			D148 0-0.1	D148 0.2-0.3	D149 0-0.1	D149 0.2-0.3	D150 0-0.1
			SOIL	SOIL	SOIL	SOIL	SOIL
			-	-	-	-	-
			17/10/2016	17/10/2016	17/10/2016	17/10/2016	17/10/2016
PARAMETER	UOM	LOR	SE158264.136	SE158264.137	SE158264.138	SE158264.139	SE158264.140
Arsenic, As	mg/kg	3	36	47	190	120	260
Cadmium, Cd	mg/kg	0.3	0.4	0.6	1.5	0.8	2.3
Copper, Cu	mg/kg	0.5	16	36	42	37	58
Lead, Pb	mg/kg	1	72	69	310	170	380
Manganese, Mn	mg/kg	1	570	760	4200	1400	4500
Nickel, Ni	mg/kg	0.5	9.5	23	20	11	21
Zinc, Zn	mg/kg	0.5	71	140	520	290	750

Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 25/10/2016 (continued)

PARAMETER	UOM	LOR	D150 0.2-0.3 SOIL - 17/10/2016 SE158264.141	D151 0-0.1 SOIL - 17/10/2016 SE158264.142	D151 0.2-0.3 SOIL - 17/10/2016 SE158264.143	D152 0-0.1 SOIL - 17/10/2016 SE158264.144	D152 0.2-0.3 SOIL - 17/10/2016 SE158264.145
Arsenic, As	mg/kg	3	300	250	240	250	270
Cadmium, Cd	mg/kg	0.3	1.9	2.7	1.3	1.8	1.9
Copper, Cu	mg/kg	0.5	53	120	120	92	110
Lead, Pb	mg/kg	1	350	1600	870	510	600
Manganese, Mn	mg/kg	1	4000	3500	990	2500	2700
Nickel, Ni	mg/kg	0.5	21	23	18	17	17
Zinc, Zn	mg/kg	0.5	770	1100	920	450	540

PARAMETER	UOM	LOR	D152 1.0-1.1 SOIL - 17/10/2016 SE158264.146	D152 1.9-2.0 SOIL - 17/10/2016 SE158264.147	D153 0-0.1 SOIL - 17/10/2016 SE158264.148	D153 0.2-0.3 SOIL - 17/10/2016 SE158264.149	D154 0-0.1 SOIL - 17/10/2016 SE158264.150
Arsenic, As	mg/kg	3	390	390	140	170	64
Cadmium, Cd	mg/kg	0.3	5.9	4.5	1.5	1.3	0.6
Copper, Cu	mg/kg	0.5	240	150	61	64	20
Lead, Pb	mg/kg	1	360	85	460	470	180
Manganese, Mn	mg/kg	1	4700	1800	3400	3000	1300
Nickel, Ni	mg/kg	0.5	24	19	17	18	6.4
Zinc, Zn	mg/kg	0.5	950	1100	400	430	110

PARAMETER	UOM	LOR	D154 0.2-0.3 SOIL - 17/10/2016 SE158264.151	D155 0-0.1 SOIL - 17/10/2016 SE158264.152	D155 0.2-0.3 SOIL - 17/10/2016 SE158264.153	D156 0-0.1 SOIL - 17/10/2016 SE158264.154	D156 0.2-0.3 SOIL - 17/10/2016 SE158264.155
Arsenic, As	mg/kg	3	80	100	120	23	26
Cadmium, Cd	mg/kg	0.3	0.8	1.6	1.7	0.6	0.4
Copper, Cu	mg/kg	0.5	33	61	83	21	27
Lead, Pb	mg/kg	1	330	160	240	73	53
Manganese, Mn	mg/kg	1	2400	3900	4400	2200	700
Nickel, Ni	mg/kg	0.5	11	20	24	16	17
Zinc, Zn	mg/kg	0.5	160	270	340	110	94

PARAMETER	UOM	LOR	D157 0-0.1 SOIL - 17/10/2016 SE158264.156	D157 0.2-0.3 SOIL - 17/10/2016 SE158264.157	D157 1.0-1.1 SOIL - 17/10/2016 SE158264.158	D157 1.9-2.0 SOIL - 17/10/2016 SE158264.159	Duplicate D1 SOIL - 17/10/2016 SE158264.186
Arsenic, As	mg/kg	3	33	47	37	12	390
Cadmium, Cd	mg/kg	0.3	0.4	0.6	0.5	0.6	4.8
Copper, Cu	mg/kg	0.5	9.2	23	41	41	72
Lead, Pb	mg/kg	1	75	110	49	50	50
Manganese, Mn	mg/kg	1	1200	680	190	980	6200
Nickel, Ni	mg/kg	0.5	6.8	21	20	59	31
Zinc, Zn	mg/kg	0.5	59	73	120	210	1200

Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 25/10/2016 (continued)

			Duplicate D2	Duplicate D3	Duplicate D4	Duplicate D5	Duplicate D6
			SOIL	SOIL	SOIL	SOIL	SOIL
			-	-	-	-	-
			17/10/2016	17/10/2016	17/10/2016	18/10/2016	18/10/2016
PARAMETER	UOM	LOR	SE158264.187	SE158264.188	SE158264.189	SE158264.190	SE158264.191
Arsenic, As	mg/kg	3	310	840	30	130	260
Cadmium, Cd	mg/kg	0.3	2.3	4.8	0.4	3.2	4.8
Copper, Cu	mg/kg	0.5	110	850	8.6	97	53
Lead, Pb	mg/kg	1	630	1900	70	280	250
Manganese, Mn	mg/kg	1	2700	3400	1500	4100	3900
Nickel, Ni	mg/kg	0.5	18	31	7.3	26	16
Zinc, Zn	mg/kg	0.5	550	1000	69	830	1600

			Duplicate D7
			SOIL
			-
			18/10/2016
PARAMETER	UOM	LOR	SE158264.192
Arsenic, As	mg/kg	3	250
Cadmium, Cd	mg/kg	0.3	3.8
Copper, Cu	mg/kg	0.5	62
Lead, Pb	mg/kg	1	210
Manganese, Mn	mg/kg	1	5700
Nickel, Ni	mg/kg	0.5	32
Zinc, Zn	mg/kg	0.5	1400

Mercury in Soil [AN312] Tested: 24/10/2016

PARAMETER	UOM	LOR	A4 0.25-0.35 SOIL - 18/10/2016 SE158264.001	A4 0.5-0.6 SOIL - 18/10/2016 SE158264.002	A6 0.25-0.35 SOIL - 18/10/2016 SE158264.003	A6 0.5-0.6 SOIL - 18/10/2016 SE158264.004	A8 0.25-0.35 SOIL - 18/10/2016 SE158264.005
Mercury	mg/kg	0.05	0.05	0.07	<0.05	0.07	0.10

PARAMETER	UOM	LOR	A8 0.5-0.6 SOIL - 18/10/2016 SE158264.006	A8 1.0-1.1 SOIL - 18/10/2016 SE158264.007	A9 0.25-0.35 SOIL - 18/10/2016 SE158264.008	A9 0.5-0.6 SOIL - 18/10/2016 SE158264.009	A11 0.25-0.35 SOIL - 18/10/2016 SE158264.010
Mercury	mg/kg	0.05	<0.05	0.06	<0.05	<0.05	0.11

PARAMETER	UOM	LOR	A11 0.5-0.6 SOIL - 18/10/2016 SE158264.011	A11 1.0-1.1 SOIL - 18/10/2016 SE158264.012	A11 1.9-2.0 SOIL - 18/10/2016 SE158264.013	A13 0.25-0.35 SOIL - 18/10/2016 SE158264.014	A13 0.5-0.6 SOIL - 18/10/2016 SE158264.015
Mercury	mg/kg	0.05	0.48	0.53	0.46	<0.05	<0.05

PARAMETER	UOM	LOR	A15 0.2-0.3 SOIL - 18/10/2016 SE158264.016	A15 0.5-0.6 SOIL - 18/10/2016 SE158264.017	A15 1.0-1.1 SOIL - 18/10/2016 SE158264.018	A15 1.9-2.0 SOIL - 18/10/2016 SE158264.019	A16 0.2-0.3 SOIL - 18/10/2016 SE158264.020
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	A16 0.5-0.6 SOIL - 18/10/2016 SE158264.021	A16 1.0-1.1 SOIL - 18/10/2016 SE158264.022	A16 1.5-1.6 SOIL - 18/10/2016 SE158264.023	A17 0.2-0.3 SOIL - 18/10/2016 SE158264.024	A17 0.5-0.6 SOIL - 18/10/2016 SE158264.025
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	0.06	0.12

PARAMETER	UOM	LOR	A17 1.0-1.1 SOIL - 18/10/2016 SE158264.026	A17 1.9-2.0 SOIL - 18/10/2016 SE158264.027	A18 0.2-0.3 SOIL - 18/10/2016 SE158264.028	A18 0.5-0.6 SOIL - 18/10/2016 SE158264.029	A18 1.0-1.1 SOIL - 18/10/2016 SE158264.030
Mercury	mg/kg	0.05	0.24	0.13	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D101 0-0.1 SOIL - 17/10/2016 SE158264.031	D101 0.2-0.3 SOIL - 17/10/2016 SE158264.032	D101 1.0-1.1 SOIL - 17/10/2016 SE158264.033	D101 1.9-2.0 SOIL - 17/10/2016 SE158264.034	D102 0-0.1 SOIL - 17/10/2016 SE158264.035
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury in Soil [AN312] Tested: 24/10/2016 (continued)

PARAMETER	UOM	LOR	D102 0.2-0.3 SOIL - 17/10/2016 SE158264.036	D103 0-0.1 SOIL - 18/10/2016 SE158264.037	D103 0.2-0.3 SOIL - 18/10/2016 SE158264.038	D104 0-0.1 SOIL - 18/10/2016 SE158264.039	D104 0.2-0.3 SOIL - 18/10/2016 SE158264.040
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D105 0-0.1 SOIL - 18/10/2016 SE158264.041	D105 0.2-0.3 SOIL - 18/10/2016 SE158264.042	D106 0-0.1 SOIL - 18/10/2016 SE158264.043	D106 0.2-0.3 SOIL - 18/10/2016 SE158264.044	D107 0-0.1 SOIL - 18/10/2016 SE158264.045
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D107 0.2-0.3 SOIL - 18/10/2016 SE158264.046	D108 0-0.1 SOIL - 18/10/2016 SE158264.047	D108 0.2-0.3 SOIL - 18/10/2016 SE158264.048	D109 0-0.1 SOIL - 18/10/2016 SE158264.049	D109 0.2-0.3 SOIL - 18/10/2016 SE158264.050
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D110 0-0.1 SOIL - 17/10/2016 SE158264.051	D110 0.2-0.3 SOIL - 17/10/2016 SE158264.052	D111 0-0.1 SOIL - 17/10/2016 SE158264.053	D111 0.2-0.3 SOIL - 17/10/2016 SE158264.054	D112 0-0.1 SOIL - 17/10/2016 SE158264.055
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D112 0.2-0.3 SOIL - 17/10/2016 SE158264.056	D113 0-0.1 SOIL - 17/10/2016 SE158264.057	D113 0.2-0.3 SOIL - 17/10/2016 SE158264.058	D114 0-0.1 SOIL - 17/10/2016 SE158264.059	D114 0.2-0.3 SOIL - 17/10/2016 SE158264.060
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D115 0-0.1 SOIL - 17/10/2016 SE158264.061	D115 0.2-0.3 SOIL - 17/10/2016 SE158264.062	D116 0-0.1 SOIL - 18/10/2016 SE158264.063	D116 0.2-0.3 SOIL - 18/10/2016 SE158264.064	D116 1.0-1.1 SOIL - 18/10/2016 SE158264.065
Mercury	mg/kg	0.05	<0.05	<0.05	0.11	0.20	0.20

PARAMETER	UOM	LOR	D116 1.4-1.5 SOIL - 18/10/2016 SE158264.066	D117 0-0.1 SOIL - 18/10/2016 SE158264.067	D117 0.2-0.3 SOIL - 18/10/2016 SE158264.068	D118 0-0.1 SOIL - 18/10/2016 SE158264.069	D118 0.2-0.3 SOIL - 18/10/2016 SE158264.070
Mercury	mg/kg	0.05	0.64	<0.05	<0.05	<0.05	<0.05

Mercury in Soil [AN312] Tested: 24/10/2016 (continued)

PARAMETER	UOM	LOR	D119 0-0.1 SOIL - 18/10/2016 SE158264.071	D119 0.2-0.3 SOIL - 18/10/2016 SE158264.072	D120 0-0.1 SOIL - 18/10/2016 SE158264.073	D120 0.2-0.3 SOIL - 18/10/2016 SE158264.074	D121 0-0.1 SOIL - 18/10/2016 SE158264.075
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D121 0.2-0.3 SOIL - 18/10/2016 SE158264.076	D122 0-0.1 SOIL - 18/10/2016 SE158264.077	D122 0.2-0.3 SOIL - 18/10/2016 SE158264.078	D123 0-0.1 SOIL - 18/10/2016 SE158264.079	D123 0.2-0.3 SOIL - 18/10/2016 SE158264.080
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D124 0-0.1 SOIL - 17/10/2016 SE158264.081	D124 0.2-0.3 SOIL - 17/10/2016 SE158264.082	D125 0-0.1 SOIL - 17/10/2016 SE158264.083	D125 0.2-0.3 SOIL - 17/10/2016 SE158264.084	D126 0-0.1 SOIL - 17/10/2016 SE158264.085
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D126 0.2-0.3 SOIL - 17/10/2016 SE158264.086	D127 0-0.1 SOIL - 18/10/2016 SE158264.087	D127 0.2-0.3 SOIL - 18/10/2016 SE158264.088	D128 0-0.1 SOIL - 18/10/2016 SE158264.089	D128 0.2-0.3 SOIL - 18/10/2016 SE158264.090
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D129 0-0.1 SOIL - 18/10/2016 SE158264.091	D129 0.2-0.3 SOIL - 18/10/2016 SE158264.092	D130 0-0.1 SOIL - 18/10/2016 SE158264.093	D130 0.2-0.3 SOIL - 18/10/2016 SE158264.094	D130 1.0-1.1 SOIL - 18/10/2016 SE158264.095
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D131 0-0.1 SOIL - 18/10/2016 SE158264.096	D131 0.2-0.3 SOIL - 18/10/2016 SE158264.097	D132 0-0.1 SOIL - 17/10/2016 SE158264.098	D132 0.2-0.3 SOIL - 17/10/2016 SE158264.099	D132 1.0-1.1 SOIL - 17/10/2016 SE158264.100
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	0.08

PARAMETER	UOM	LOR	D132 1.9-2.0 SOIL - 17/10/2016 SE158264.101	D133 0-0.1 SOIL - 17/10/2016 SE158264.102	D133 0.2-0.3 SOIL - 17/10/2016 SE158264.103	D134 0-0.1 SOIL - 17/10/2016 SE158264.104	D134 0.2-0.03 SOIL - 17/10/2016 SE158264.105
Mercury	mg/kg	0.05	0.12	0.09	<0.05	<0.05	<0.05

Mercury in Soil [AN312]   Tested: 24/10/2016   (continued)

PARAMETER	UOM	LOR	D135 0-0.1 SOIL - 17/10/2016 SE158264.106	D135 0.2-0.3 SOIL - 17/10/2016 SE158264.107	D136 0-0.1 SOIL - 17/10/2016 SE158264.108	D136 0.2-0.3 SOIL - 17/10/2016 SE158264.109	D137 0-0.1 SOIL - 17/10/2016 SE158264.110
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	0.09

PARAMETER	UOM	LOR	D137 0.2-0.3 SOIL - 17/10/2016 SE158264.111	D138 0-0.1 SOIL - 17/10/2016 SE158264.112	D138 0.2-0.3 SOIL - 17/10/2016 SE158264.113	D139 0-0.1 SOIL - 17/10/2016 SE158264.114	D139 0.2-0.3 SOIL - 17/10/2016 SE158264.115
Mercury	mg/kg	0.05	0.12	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D139 1.0-1.1 SOIL - 17/10/2016 SE158264.116	D139 1.4-1.5 SOIL - 17/10/2016 SE158264.117	D140 0-0.1 SOIL - 17/10/2016 SE158264.118	D140 0.2-0.3 SOIL - 17/10/2016 SE158264.119	D141 0-0.1 SOIL - 17/10/2016 SE158264.120
Mercury	mg/kg	0.05	0.11	0.12	0.07	0.16	0.05

PARAMETER	UOM	LOR	D141 0.2-0.3 SOIL - 17/10/2016 SE158264.121	D142 0-0.1 SOIL - 17/10/2016 SE158264.122	D142 0.2-0.3 SOIL - 17/10/2016 SE158264.123	D142 1.0-1.1 SOIL - 17/10/2016 SE158264.124	D142 1.9-2.0 SOIL - 17/10/2016 SE158264.125
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	0.06

PARAMETER	UOM	LOR	D143 0-0.1 SOIL - 17/10/2016 SE158264.126	D143 0.2-0.3 SOIL - 17/10/2016 SE158264.127	D144 0-0.1 SOIL - 17/10/2016 SE158264.128	D144 0.2-0.3 SOIL - 17/10/2016 SE158264.129	D145 0-0.1 SOIL - 17/10/2016 SE158264.130
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D145 0.2-0.3 SOIL - 17/10/2016 SE158264.131	D146 0-0.1 SOIL - 17/10/2016 SE158264.132	D146 0.2-0.3 SOIL - 17/10/2016 SE158264.133	D147 0-0.1 SOIL - 17/10/2016 SE158264.134	D147 0.2-0.3 SOIL - 17/10/2016 SE158264.135
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D148 0-0.1 SOIL - 17/10/2016 SE158264.136	D148 0.2-0.3 SOIL - 17/10/2016 SE158264.137	D149 0-0.1 SOIL - 17/10/2016 SE158264.138	D149 0.2-0.3 SOIL - 17/10/2016 SE158264.139	D150 0-0.1 SOIL - 17/10/2016 SE158264.140
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury in Soil [AN312] Tested: 24/10/2016 (continued)

PARAMETER	UOM	LOR	D150 0.2-0.3 SOIL - 17/10/2016 SE158264.141	D151 0-0.1 SOIL - 17/10/2016 SE158264.142	D151 0.2-0.3 SOIL - 17/10/2016 SE158264.143	D152 0-0.1 SOIL - 17/10/2016 SE158264.144	D152 0.2-0.3 SOIL - 17/10/2016 SE158264.145
Mercury	mg/kg	0.05	<0.05	<0.05	0.08	0.05	0.06

PARAMETER	UOM	LOR	D152 1.0-1.1 SOIL - 17/10/2016 SE158264.146	D152 1.9-2.0 SOIL - 17/10/2016 SE158264.147	D153 0-0.1 SOIL - 17/10/2016 SE158264.148	D153 0.2-0.3 SOIL - 17/10/2016 SE158264.149	D154 0-0.1 SOIL - 17/10/2016 SE158264.150
Mercury	mg/kg	0.05	0.13	0.28	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D154 0.2-0.3 SOIL - 17/10/2016 SE158264.151	D155 0-0.1 SOIL - 17/10/2016 SE158264.152	D155 0.2-0.3 SOIL - 17/10/2016 SE158264.153	D156 0-0.1 SOIL - 17/10/2016 SE158264.154	D156 0.2-0.3 SOIL - 17/10/2016 SE158264.155
Mercury	mg/kg	0.05	<0.05	0.05	0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D157 0-0.1 SOIL - 17/10/2016 SE158264.156	D157 0.2-0.3 SOIL - 17/10/2016 SE158264.157	D157 1.0-1.1 SOIL - 17/10/2016 SE158264.158	D157 1.9-2.0 SOIL - 17/10/2016 SE158264.159	Duplicate D1 SOIL - 17/10/2016 SE158264.186
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	0.12

PARAMETER	UOM	LOR	Duplicate D2 SOIL - 17/10/2016 SE158264.187	Duplicate D3 SOIL - 17/10/2016 SE158264.188	Duplicate D4 SOIL - 17/10/2016 SE158264.189	Duplicate D5 SOIL - 18/10/2016 SE158264.190	Duplicate D6 SOIL - 18/10/2016 SE158264.191
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	Duplicate D7 SOIL - 18/10/2016 SE158264.192
Mercury	mg/kg	0.05	0.08

Moisture Content [AN002] Tested: 24/10/2016

PARAMETER	UOM	LOR	A4 0.25-0.35 SOIL - 18/10/2016 SE158264.001	A4 0.5-0.6 SOIL - 18/10/2016 SE158264.002	A6 0.25-0.35 SOIL - 18/10/2016 SE158264.003	A6 0.5-0.6 SOIL - 18/10/2016 SE158264.004	A8 0.25-0.35 SOIL - 18/10/2016 SE158264.005
% Moisture	%w/w	0.5	17	22	20	24	21

PARAMETER	UOM	LOR	A8 0.5-0.6 SOIL - 18/10/2016 SE158264.006	A8 1.0-1.1 SOIL - 18/10/2016 SE158264.007	A9 0.25-0.35 SOIL - 18/10/2016 SE158264.008	A9 0.5-0.6 SOIL - 18/10/2016 SE158264.009	A11 0.25-0.35 SOIL - 18/10/2016 SE158264.010
% Moisture	%w/w	0.5	17	16	17	20	22

PARAMETER	UOM	LOR	A11 0.5-0.6 SOIL - 18/10/2016 SE158264.011	A11 1.0-1.1 SOIL - 18/10/2016 SE158264.012	A11 1.9-2.0 SOIL - 18/10/2016 SE158264.013	A13 0.25-0.35 SOIL - 18/10/2016 SE158264.014	A13 0.5-0.6 SOIL - 18/10/2016 SE158264.015
% Moisture	%w/w	0.5	30	32	34	17	16

PARAMETER	UOM	LOR	A15 0.2-0.3 SOIL - 18/10/2016 SE158264.016	A15 0.5-0.6 SOIL - 18/10/2016 SE158264.017	A15 1.0-1.1 SOIL - 18/10/2016 SE158264.018	A15 1.9-2.0 SOIL - 18/10/2016 SE158264.019	A16 0.2-0.3 SOIL - 18/10/2016 SE158264.020
% Moisture	%w/w	0.5	17	19	15	18	17

PARAMETER	UOM	LOR	A16 0.5-0.6 SOIL - 18/10/2016 SE158264.021	A16 1.0-1.1 SOIL - 18/10/2016 SE158264.022	A16 1.5-1.6 SOIL - 18/10/2016 SE158264.023	A17 0.2-0.3 SOIL - 18/10/2016 SE158264.024	A17 0.5-0.6 SOIL - 18/10/2016 SE158264.025
% Moisture	%w/w	0.5	21	20	12	24	26

PARAMETER	UOM	LOR	A17 1.0-1.1 SOIL - 18/10/2016 SE158264.026	A17 1.9-2.0 SOIL - 18/10/2016 SE158264.027	A18 0.2-0.3 SOIL - 18/10/2016 SE158264.028	A18 0.5-0.6 SOIL - 18/10/2016 SE158264.029	A18 1.0-1.1 SOIL - 18/10/2016 SE158264.030
% Moisture	%w/w	0.5	29	23	16	17	16

PARAMETER	UOM	LOR	D101 0-0.1 SOIL - 17/10/2016 SE158264.031	D101 0.2-0.3 SOIL - 17/10/2016 SE158264.032	D101 1.0-1.1 SOIL - 17/10/2016 SE158264.033	D101 1.9-2.0 SOIL - 17/10/2016 SE158264.034	D102 0-0.1 SOIL - 17/10/2016 SE158264.035
% Moisture	%w/w	0.5	13	15	15	22	11

Moisture Content [AN002] Tested: 24/10/2016 (continued)

PARAMETER	UOM	LOR	D102 0.2-0.3 SOIL - 17/10/2016 SE158264.036	D103 0-0.1 SOIL - 18/10/2016 SE158264.037	D103 0.2-0.3 SOIL - 18/10/2016 SE158264.038	D104 0-0.1 SOIL - 18/10/2016 SE158264.039	D104 0.2-0.3 SOIL - 18/10/2016 SE158264.040
% Moisture	%w/w	0.5	9.8	15	17	16	17

PARAMETER	UOM	LOR	D105 0-0.1 SOIL - 18/10/2016 SE158264.041	D105 0.2-0.3 SOIL - 18/10/2016 SE158264.042	D106 0-0.1 SOIL - 18/10/2016 SE158264.043	D106 0.2-0.3 SOIL - 18/10/2016 SE158264.044	D107 0-0.1 SOIL - 18/10/2016 SE158264.045
% Moisture	%w/w	0.5	14	16	17	19	17

PARAMETER	UOM	LOR	D107 0.2-0.3 SOIL - 18/10/2016 SE158264.046	D108 0-0.1 SOIL - 18/10/2016 SE158264.047	D108 0.2-0.3 SOIL - 18/10/2016 SE158264.048	D109 0-0.1 SOIL - 18/10/2016 SE158264.049	D109 0.2-0.3 SOIL - 18/10/2016 SE158264.050
% Moisture	%w/w	0.5	17	13	18	15	14

PARAMETER	UOM	LOR	D110 0-0.1 SOIL - 17/10/2016 SE158264.051	D110 0.2-0.3 SOIL - 17/10/2016 SE158264.052	D111 0-0.1 SOIL - 17/10/2016 SE158264.053	D111 0.2-0.3 SOIL - 17/10/2016 SE158264.054	D112 0-0.1 SOIL - 17/10/2016 SE158264.055
% Moisture	%w/w	0.5	11	17	12	13	19

PARAMETER	UOM	LOR	D112 0.2-0.3 SOIL - 17/10/2016 SE158264.056	D113 0-0.1 SOIL - 17/10/2016 SE158264.057	D113 0.2-0.3 SOIL - 17/10/2016 SE158264.058	D114 0-0.1 SOIL - 17/10/2016 SE158264.059	D114 0.2-0.3 SOIL - 17/10/2016 SE158264.060
% Moisture	%w/w	0.5	15	13	23	14	13

PARAMETER	UOM	LOR	D115 0-0.1 SOIL - 17/10/2016 SE158264.061	D115 0.2-0.3 SOIL - 17/10/2016 SE158264.062	D116 0-0.1 SOIL - 18/10/2016 SE158264.063	D116 0.2-0.3 SOIL - 18/10/2016 SE158264.064	D116 1.0-1.1 SOIL - 18/10/2016 SE158264.065
% Moisture	%w/w	0.5	14	14	16	22	21

PARAMETER	UOM	LOR	D116 1.4-1.5 SOIL - 18/10/2016 SE158264.066	D117 0-0.1 SOIL - 18/10/2016 SE158264.067	D117 0.2-0.3 SOIL - 18/10/2016 SE158264.068	D118 0-0.1 SOIL - 18/10/2016 SE158264.069	D118 0.2-0.3 SOIL - 18/10/2016 SE158264.070
% Moisture	%w/w	0.5	27	16	19	17	19

Moisture Content [AN002] Tested: 24/10/2016 (continued)

PARAMETER	UOM	LOR	D119 0-0.1 SOIL - 18/10/2016 SE158264.071	D119 0.2-0.3 SOIL - 18/10/2016 SE158264.072	D120 0-0.1 SOIL - 18/10/2016 SE158264.073	D120 0.2-0.3 SOIL - 18/10/2016 SE158264.074	D121 0-0.1 SOIL - 18/10/2016 SE158264.075
% Moisture	%w/w	0.5	13	16	9.9	19	11

PARAMETER	UOM	LOR	D121 0.2-0.3 SOIL - 18/10/2016 SE158264.076	D122 0-0.1 SOIL - 18/10/2016 SE158264.077	D122 0.2-0.3 SOIL - 18/10/2016 SE158264.078	D123 0-0.1 SOIL - 18/10/2016 SE158264.079	D123 0.2-0.3 SOIL - 18/10/2016 SE158264.080
% Moisture	%w/w	0.5	20	14	20	19	24

PARAMETER	UOM	LOR	D124 0-0.1 SOIL - 17/10/2016 SE158264.081	D124 0.2-0.3 SOIL - 17/10/2016 SE158264.082	D125 0-0.1 SOIL - 17/10/2016 SE158264.083	D125 0.2-0.3 SOIL - 17/10/2016 SE158264.084	D126 0-0.1 SOIL - 17/10/2016 SE158264.085
% Moisture	%w/w	0.5	12	16	11	12	13

PARAMETER	UOM	LOR	D126 0.2-0.3 SOIL - 17/10/2016 SE158264.086	D127 0-0.1 SOIL - 18/10/2016 SE158264.087	D127 0.2-0.3 SOIL - 18/10/2016 SE158264.088	D128 0-0.1 SOIL - 18/10/2016 SE158264.089	D128 0.2-0.3 SOIL - 18/10/2016 SE158264.090
% Moisture	%w/w	0.5	14	19	23	17	17

PARAMETER	UOM	LOR	D129 0-0.1 SOIL - 18/10/2016 SE158264.091	D129 0.2-0.3 SOIL - 18/10/2016 SE158264.092	D130 0-0.1 SOIL - 18/10/2016 SE158264.093	D130 0.2-0.3 SOIL - 18/10/2016 SE158264.094	D130 1.0-1.1 SOIL - 18/10/2016 SE158264.095
% Moisture	%w/w	0.5	12	17	14	15	21

PARAMETER	UOM	LOR	D131 0-0.1 SOIL - 18/10/2016 SE158264.096	D131 0.2-0.3 SOIL - 18/10/2016 SE158264.097	D132 0-0.1 SOIL - 17/10/2016 SE158264.098	D132 0.2-0.3 SOIL - 17/10/2016 SE158264.099	D132 1.0-1.1 SOIL - 17/10/2016 SE158264.100
% Moisture	%w/w	0.5	17	21	12	20	28

PARAMETER	UOM	LOR	D132 1.9-2.0 SOIL - 17/10/2016 SE158264.101	D133 0-0.1 SOIL - 17/10/2016 SE158264.102	D133 0.2-0.3 SOIL - 17/10/2016 SE158264.103	D134 0-0.1 SOIL - 17/10/2016 SE158264.104	D134 0.2-0.03 SOIL - 17/10/2016 SE158264.105
% Moisture	%w/w	0.5	29	15	13	12	23

Moisture Content [AN002] Tested: 24/10/2016 (continued)

PARAMETER	UOM	LOR	D135 0-0.1 SOIL - 17/10/2016 SE158264.106	D135 0.2-0.3 SOIL - 17/10/2016 SE158264.107	D136 0-0.1 SOIL - 17/10/2016 SE158264.108	D136 0.2-0.3 SOIL - 17/10/2016 SE158264.109	D137 0-0.1 SOIL - 17/10/2016 SE158264.110
% Moisture	%w/w	0.5	9.5	11	14	14	17

PARAMETER	UOM	LOR	D137 0.2-0.3 SOIL - 17/10/2016 SE158264.111	D138 0-0.1 SOIL - 17/10/2016 SE158264.112	D138 0.2-0.3 SOIL - 17/10/2016 SE158264.113	D139 0-0.1 SOIL - 17/10/2016 SE158264.114	D139 0.2-0.3 SOIL - 17/10/2016 SE158264.115
% Moisture	%w/w	0.5	18	16	15	20	30

PARAMETER	UOM	LOR	D139 1.0-1.1 SOIL - 17/10/2016 SE158264.116	D139 1.4-1.5 SOIL - 17/10/2016 SE158264.117	D140 0-0.1 SOIL - 17/10/2016 SE158264.118	D140 0.2-0.3 SOIL - 17/10/2016 SE158264.119	D141 0-0.1 SOIL - 17/10/2016 SE158264.120
% Moisture	%w/w	0.5	26	27	18	21	18

PARAMETER	UOM	LOR	D141 0.2-0.3 SOIL - 17/10/2016 SE158264.121	D142 0-0.1 SOIL - 17/10/2016 SE158264.122	D142 0.2-0.3 SOIL - 17/10/2016 SE158264.123	D142 1.0-1.1 SOIL - 17/10/2016 SE158264.124	D142 1.9-2.0 SOIL - 17/10/2016 SE158264.125
% Moisture	%w/w	0.5	17	19	19	19	18

PARAMETER	UOM	LOR	D143 0-0.1 SOIL - 17/10/2016 SE158264.126	D143 0.2-0.3 SOIL - 17/10/2016 SE158264.127	D144 0-0.1 SOIL - 17/10/2016 SE158264.128	D144 0.2-0.3 SOIL - 17/10/2016 SE158264.129	D145 0-0.1 SOIL - 17/10/2016 SE158264.130
% Moisture	%w/w	0.5	14	13	12	24	16

PARAMETER	UOM	LOR	D145 0.2-0.3 SOIL - 17/10/2016 SE158264.131	D146 0-0.1 SOIL - 17/10/2016 SE158264.132	D146 0.2-0.3 SOIL - 17/10/2016 SE158264.133	D147 0-0.1 SOIL - 17/10/2016 SE158264.134	D147 0.2-0.3 SOIL - 17/10/2016 SE158264.135
% Moisture	%w/w	0.5	21	4.7	6.6	16	16

PARAMETER	UOM	LOR	D148 0-0.1 SOIL - 17/10/2016 SE158264.136	D148 0.2-0.3 SOIL - 17/10/2016 SE158264.137	D149 0-0.1 SOIL - 17/10/2016 SE158264.138	D149 0.2-0.3 SOIL - 17/10/2016 SE158264.139	D150 0-0.1 SOIL - 17/10/2016 SE158264.140
% Moisture	%w/w	0.5	11	14	17	17	12

Moisture Content [AN002] Tested: 24/10/2016 (continued)

PARAMETER	UOM	LOR	D150 0.2-0.3 SOIL - 17/10/2016 SE158264.141	D151 0-0.1 SOIL - 17/10/2016 SE158264.142	D151 0.2-0.3 SOIL - 17/10/2016 SE158264.143	D152 0-0.1 SOIL - 17/10/2016 SE158264.144	D152 0.2-0.3 SOIL - 17/10/2016 SE158264.145
% Moisture	%w/w	0.5	18	13	22	16	17

PARAMETER	UOM	LOR	D152 1.0-1.1 SOIL - 17/10/2016 SE158264.146	D152 1.9-2.0 SOIL - 17/10/2016 SE158264.147	D153 0-0.1 SOIL - 17/10/2016 SE158264.148	D153 0.2-0.3 SOIL - 17/10/2016 SE158264.149	D154 0-0.1 SOIL - 17/10/2016 SE158264.150
% Moisture	%w/w	0.5	22	24	14	15	16

PARAMETER	UOM	LOR	D154 0.2-0.3 SOIL - 17/10/2016 SE158264.151	D155 0-0.1 SOIL - 17/10/2016 SE158264.152	D155 0.2-0.3 SOIL - 17/10/2016 SE158264.153	D156 0-0.1 SOIL - 17/10/2016 SE158264.154	D156 0.2-0.3 SOIL - 17/10/2016 SE158264.155
% Moisture	%w/w	0.5	14	18	18	17	15

PARAMETER	UOM	LOR	D157 0-0.1 SOIL - 17/10/2016 SE158264.156	D157 0.2-0.3 SOIL - 17/10/2016 SE158264.157	D157 1.0-1.1 SOIL - 17/10/2016 SE158264.158	D157 1.9-2.0 SOIL - 17/10/2016 SE158264.159	DS11 0-0.1 SOIL - 18/10/2016 SE158264.160
% Moisture	%w/w	0.5	14	15	24	20	26

PARAMETER	UOM	LOR	DS16 0-0.1 SOIL - 18/10/2016 SE158264.161	DS18 0-0.1 SOIL - 18/10/2016 SE158264.162	DS18 0.5-0.6 SOIL - 18/10/2016 SE158264.163	DS19 0-0.1 SOIL - 18/10/2016 SE158264.164	DS19 0.5-0.6 SOIL - 18/10/2016 SE158264.165
% Moisture	%w/w	0.5	15	21	16	15	17

PARAMETER	UOM	LOR	DS22 0-0.1 SOIL - 18/10/2016 SE158264.166	DS22 0.5-0.6 SOIL - 18/10/2016 SE158264.167	CS12-1 0-0.1 SOIL - 18/10/2016 SE158264.168	CS12-2 0-0.1 SOIL - 18/10/2016 SE158264.169	CS12-2 0.5-0.6 SOIL - 18/10/2016 SE158264.170
% Moisture	%w/w	0.5	20	21	13	15	15

PARAMETER	UOM	LOR	CS12-3 0-0.1 SOIL - 18/10/2016 SE158264.171	CS14-1 0-0.1 SOIL - 18/10/2016 SE158264.172	CS14-2 0-0.1 SOIL - 18/10/2016 SE158264.173	CS14-3 0-0.1 SOIL - 18/10/2016 SE158264.174	CS15-1 0-0.1 SOIL - 18/10/2016 SE158264.175
% Moisture	%w/w	0.5	18	15	12	15	29

Moisture Content [AN002] Tested: 24/10/2016 (continued)

PARAMETER	UOM	LOR	CS15-2 0-0.1 SOIL - 18/10/2016 SE158264.176	CS15-2 0.5-0.6 SOIL - 18/10/2016 SE158264.177	CS15-3 0-0.1 SOIL - 18/10/2016 SE158264.178	CS18-1 0-0.1 SOIL - 18/10/2016 SE158264.179	CS18-2 0-0.1 SOIL - 18/10/2016 SE158264.180
% Moisture	%w/w	0.5	13	16	14	14	18

PARAMETER	UOM	LOR	CS18-2 0.5-0.6 SOIL - 18/10/2016 SE158264.181	CS18-3 0-0.1 SOIL - 18/10/2016 SE158264.182	CS22-1 0-0.1 SOIL - 18/10/2016 SE158264.183	CS22-2 0-0.1 SOIL - 18/10/2016 SE158264.184	CS22-3 0-0.1 SOIL - 18/10/2016 SE158264.185
% Moisture	%w/w	0.5	17	12	20	19	20

PARAMETER	UOM	LOR	Duplicate D1 SOIL - 17/10/2016 SE158264.186	Duplicate D2 SOIL - 17/10/2016 SE158264.187	Duplicate D3 SOIL - 17/10/2016 SE158264.188	Duplicate D4 SOIL - 17/10/2016 SE158264.189	Duplicate D5 SOIL - 18/10/2016 SE158264.190
% Moisture	%w/w	0.5	33	17	22	17	15

PARAMETER	UOM	LOR	Duplicate D6 SOIL - 18/10/2016 SE158264.191	Duplicate D7 SOIL - 18/10/2016 SE158264.192	Duplicate D8 SOIL - 18/10/2016 SE158264.193	Duplicate D9 SOIL - 18/10/2016 SE158264.194	Duplicate D10 SOIL - 18/10/2016 SE158264.195
% Moisture	%w/w	0.5	15	26	27	20	19

TRH Silica Gel (Total Recoverable Hydrocarbons - Silica Gel) in Water [AN403] Tested: 21/10/2016

PARAMETER	UOM	LOR	Rinsate R2 WATER - 18/10/2016 SE158264.197
TRH C10-C14-Silica	µg/L	50	<50
TRH C15-C28-Silica	µg/L	200	<200
TRH C29-C36-Silica	µg/L	200	<200
TRH C37-C40-Silica	µg/L	200	<200
TRH >C10-C16-Silica	µg/L	60	<60
TRH >C16-C34-Silica	µg/L	500	<500
TRH >C34-C40-Silica	µg/L	500	<500
TRH Sum C10-C36-Silica	µg/L	450	<450
TRH Sum C10-C40-Silica	µg/L	650	<650

Metals in Water (Dissolved) by ICPOES [AN320/AN321] Tested: 24/10/2016

PARAMETER	UOM	LOR	Rinsate R1 WATER - 17/10/2016 SE158264.196	Rinsate R2 WATER - 18/10/2016 SE158264.197
Arsenic, As	mg/L	0.02	<0.02	<0.02
Cadmium, Cd	mg/L	0.001	<0.001	<0.001
Copper, Cu	mg/L	0.005	<0.005	<0.005
Lead, Pb	mg/L	0.02	<0.02	<0.02
Manganese, Mn	mg/L	0.005	<0.005	<0.005
Nickel, Ni	mg/L	0.005	<0.005	<0.005
Zinc, Zn	mg/L	0.01	<0.01	<0.01

Trace Metals (Dissolved) in Water by ICPMS [AN318] Tested: 24/10/2016

PARAMETER	UOM	LOR	Dam Water W1 WATER - 18/10/2016 SE158264.198
Arsenic, As	μg/L	1	**2**
Cadmium, Cd	μg/L	0.1	<0.1
Copper, Cu	μg/L	1	**5**
Lead, Pb	μg/L	1	**2**
Manganese, Mn	μg/L	1	**7**
Nickel, Ni	μg/L	1	**2**
Zinc, Zn	μg/L	5	**7**

Mercury (dissolved) in Water [AN311(Perth)/AN312] Tested: 26/10/2016

PARAMETER	UOM	LOR	Rinsate R1 WATER - 17/10/2016 SE158264.196	Rinsate R2 WATER - 18/10/2016 SE158264.197	Dam Water W1 WATER - 18/10/2016 SE158264.198
Mercury	mg/L	0.0001	<0.0001	<0.0001	<0.0001

Trace Metals (Total) in Water by ICPMS [AN022/AN318] Tested: 24/10/2016

PARAMETER	UOM	LOR	Dam Water W1 WATER - 18/10/2016 SE158264.198
Total Arsenic	µg/L	1	3
Total Cadmium	µg/L	0.1	<0.1
Total Copper	µg/L	1	6
Total Lead	µg/L	1	6
Total Manganese	µg/L	1	92
Total Nickel	µg/L	1	3
Total Zinc	µg/L	5	13

Mercury (total) in Water [AN311(Perth) /AN312] Tested: 26/10/2016

PARAMETER	UOM	LOR	Dam Water W1 WATER - 18/10/2016 SE158264.198
Total Mercury	mg/L	0.0001	<0.0001

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
AN022/AN318	Following acid digestion of un filtered sample, determination of elements at trace level in waters by ICP-MS technique, in accordance with USEPA 6020A.
AN022	The water sample is digested with Nitric Acid and made up to the original volume similar to APHA3030E.
AN040/AN320	A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analysis by ASS or ICP as per USEPA Method 200.8.
AN101	pH in Soil Sludge Sediment and Water: pH is measured electrometrically using a combination electrode and is calibrated against 3 buffers purchased commercially. For soils, sediments and sludges, an extract with water (or 0.01M CaCl2) is made at a ratio of 1:5 and the pH determined and reported on the extract. Reference APHA 4500-H+.
AN122	Exchangeable Cations, CEC and ESP: Soil sample is extracted in 1M Ammonium Acetate at pH=7 (or 1M Ammonium Chloride at pH=7) with cations (Na, K, Ca & Mg) then determined by ICP OES/ICP MS and reported as Exchangeable Cations. For saline soils, these results can be corrected for water soluble cations and reported as Exchangeable cations in meq/100g or soil can be pre-treated (aqueous ethanol/aqueous glycerol) prior to extraction. Cation Exchange Capacity (CEC) is the sum of the exchangeable cations in meq/100g.
AN122	The Exchangeable Sodium Percentage (ESP) is calculated as the exchangeable sodium divided by the CEC (all in meq/100g) times 100. ESP can be used to categorise the sodicity of the soil as below: ESP < 6% non-sodic ESP 6-15% sodic ESP >15% strongly sodic Method is refernced to Rayment and Higginson, 1992, sections 15D3 and 15N1.-
AN311(Perth) /AN312	Mercury by Cold Vapour AAS in Waters: Mercury ions taken from unfiltered sample 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.
AN311(Perth)/AN312	Mercury by Cold Vapour AAS in Waters: Mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500.
AN312	Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid, mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500
AN318	Determination of elements at trace level in waters by ICP-MS technique, in accordance with USEPA 6020A.
AN320/AN321	Metals by ICP-OES: Samples are preserved with 10% nitric acid for a wide range of metals and some non-metals. This solution is measured by Inductively Coupled Plasma. Solutions are aspirated into an argon plasma at 8000-10000K and emit characteristic energy or light as a result of electron transitions through unique energy levels. The emitted light is focused onto a diffraction grating where it is separated into components.
AN320/AN321	Photomultipliers or CCDs are used to measure the light intensity at specific wavelengths. This intensity is directly proportional to concentration. Corrections are required to compensate for spectral overlap between elements. Reference APHA 3120 B.
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36.
AN403	Additionally, the volatile C6-C9 fraction may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Petroleum Hydrocarbons (TPH) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents.

AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B

FOOTNOTES

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

Samples analysed as received.
Solid samples expressed on a dry weight basis.

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

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

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

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

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

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

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

STATEMENT OF QA/QC PERFORMANCE

SE158264 R1

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
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Email	john.xu@geotech.com.au
Project	**12675-4 Googong NH1A-7 and NH2**
Order Number	(Not specified)
Samples	198

LABORATORY DETAILS

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Email	au.environmental.sydney@sgs.com
SGS Reference	**SE158264 R1**
Date Received	19 Oct 2016
Date Reported	19 Jan 2017

COMMENTS

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

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

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

Duplicate	Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES	1 item
	Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES	1 item
	Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES	1 item
	Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES	1 item
	Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES	1 item
Matrix Spike	Mercury in Soil	1 item
	Mercury in Soil	1 item
	Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES	4 items
	Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES	2 items

SAMPLE SUMMARY

Sample counts by matrix	195 Soil, 3 Water	Type of documentation received	COC
Date documentation received	20/10/16@12:22pm	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	8.3°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		

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
A8 0.5-0.6	SE158264.006	LB112360	18 Oct 2016	19 Oct 2016	15 Nov 2016	25 Oct 2016	15 Nov 2016	26 Oct 2016
A11 1.0-1.1	SE158264.012	LB112360	18 Oct 2016	19 Oct 2016	15 Nov 2016	25 Oct 2016	15 Nov 2016	26 Oct 2016
A15 0.5-0.6	SE158264.017	LB112360	18 Oct 2016	19 Oct 2016	15 Nov 2016	25 Oct 2016	15 Nov 2016	26 Oct 2016
A16 0.2-0.3	SE158264.020	LB112360	18 Oct 2016	19 Oct 2016	15 Nov 2016	25 Oct 2016	15 Nov 2016	26 Oct 2016
A17 1.9-2.0	SE158264.027	LB112360	18 Oct 2016	19 Oct 2016	15 Nov 2016	25 Oct 2016	15 Nov 2016	26 Oct 2016
A18 1.0-1.1	SE158264.030	LB112360	18 Oct 2016	19 Oct 2016	15 Nov 2016	25 Oct 2016	15 Nov 2016	26 Oct 2016
D101 0-0.1	SE158264.031	LB112360	17 Oct 2016	19 Oct 2016	14 Nov 2016	25 Oct 2016	14 Nov 2016	26 Oct 2016
D101 1.0-1.1	SE158264.033	LB112360	17 Oct 2016	19 Oct 2016	14 Nov 2016	25 Oct 2016	14 Nov 2016	26 Oct 2016
D116 0-0.1	SE158264.063	LB112360	18 Oct 2016	19 Oct 2016	15 Nov 2016	25 Oct 2016	15 Nov 2016	26 Oct 2016
D116 0.2-0.3	SE158264.064	LB112360	18 Oct 2016	19 Oct 2016	15 Nov 2016	25 Oct 2016	15 Nov 2016	26 Oct 2016
D119 0-0.1	SE158264.071	LB112360	18 Oct 2016	19 Oct 2016	15 Nov 2016	25 Oct 2016	15 Nov 2016	26 Oct 2016
D130 0-0.1	SE158264.093	LB112360	18 Oct 2016	19 Oct 2016	15 Nov 2016	25 Oct 2016	15 Nov 2016	26 Oct 2016
D130 1.0-1.1	SE158264.095	LB112360	18 Oct 2016	19 Oct 2016	15 Nov 2016	25 Oct 2016	15 Nov 2016	26 Oct 2016
D132 0-0.1	SE158264.098	LB112360	17 Oct 2016	19 Oct 2016	14 Nov 2016	25 Oct 2016	14 Nov 2016	26 Oct 2016
D132 0.2-0.3	SE158264.099	LB112360	17 Oct 2016	19 Oct 2016	14 Nov 2016	25 Oct 2016	14 Nov 2016	26 Oct 2016
D139 0-0.1	SE158264.114	LB112360	17 Oct 2016	19 Oct 2016	14 Nov 2016	25 Oct 2016	14 Nov 2016	26 Oct 2016
D139 1.4-1.5	SE158264.117	LB112360	17 Oct 2016	19 Oct 2016	14 Nov 2016	25 Oct 2016	14 Nov 2016	26 Oct 2016
D142 0-0.1	SE158264.122	LB112360	17 Oct 2016	19 Oct 2016	14 Nov 2016	25 Oct 2016	14 Nov 2016	26 Oct 2016
D142 1.9-2.0	SE158264.125	LB112360	17 Oct 2016	19 Oct 2016	14 Nov 2016	25 Oct 2016	14 Nov 2016	26 Oct 2016
D152 0-0.1	SE158264.144	LB112360	17 Oct 2016	19 Oct 2016	14 Nov 2016	25 Oct 2016	14 Nov 2016	26 Oct 2016
D152 0.2-0.3	SE158264.145	LB112360	17 Oct 2016	19 Oct 2016	14 Nov 2016	25 Oct 2016	14 Nov 2016	26 Oct 2016
D157 0-0.1	SE158264.156	LB112360	17 Oct 2016	19 Oct 2016	14 Nov 2016	25 Oct 2016	14 Nov 2016	26 Oct 2016
D157 1.0-1.1	SE158264.158	LB112360	17 Oct 2016	19 Oct 2016	14 Nov 2016	25 Oct 2016	14 Nov 2016	26 Oct 2016

Mercury (dissolved) in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Rinsate R1	SE158264.196	LB112441	17 Oct 2016	19 Oct 2016	14 Nov 2016	26 Oct 2016	14 Nov 2016	27 Oct 2016
Rinsate R2	SE158264.197	LB112441	18 Oct 2016	19 Oct 2016	15 Nov 2016	26 Oct 2016	15 Nov 2016	27 Oct 2016
Dam Water W1	SE158264.198	LB112441	18 Oct 2016	19 Oct 2016	15 Nov 2016	26 Oct 2016	15 Nov 2016	27 Oct 2016

Mercury (total) in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Dam Water W1	SE158264.198	LB112445	18 Oct 2016	19 Oct 2016	15 Nov 2016	26 Oct 2016	15 Nov 2016	26 Oct 2016

Mercury in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
A4 0.25-0.35	SE158264.001	LB112298	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
A4 0.5-0.6	SE158264.002	LB112298	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
A6 0.25-0.35	SE158264.003	LB112298	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
A6 0.5-0.6	SE158264.004	LB112298	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
A8 0.25-0.35	SE158264.005	LB112298	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
A8 0.5-0.6	SE158264.006	LB112298	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
A8 1.0-1.1	SE158264.007	LB112298	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
A9 0.25-0.35	SE158264.008	LB112298	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
A9 0.5-0.6	SE158264.009	LB112298	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
A11 0.25-0.35	SE158264.010	LB112298	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
A11 0.5-0.6	SE158264.011	LB112298	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
A11 1.0-1.1	SE158264.012	LB112298	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
A11 1.9-2.0	SE158264.013	LB112298	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
A13 0.25-0.35	SE158264.014	LB112298	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
A13 0.5-0.6	SE158264.015	LB112298	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
A15 0.2-0.3	SE158264.016	LB112298	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
A15 0.5-0.6	SE158264.017	LB112298	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
A15 1.0-1.1	SE158264.018	LB112298	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
A15 1.9-2.0	SE158264.019	LB112298	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
A16 0.2-0.3	SE158264.020	LB112299	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
A16 0.5-0.6	SE158264.021	LB112299	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
A16 1.0-1.1	SE158264.022	LB112299	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
A16 1.5-1.6	SE158264.023	LB112299	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
A17 0.2-0.3	SE158264.024	LB112299	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016

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
A17 0.5-0.6	SE158264.025	LB112299	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
A17 1.0-1.1	SE158264.026	LB112299	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
A17 1.9-2.0	SE158264.027	LB112299	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
A18 0.2-0.3	SE158264.028	LB112299	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
A18 0.5-0.6	SE158264.029	LB112299	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
A18 1.0-1.1	SE158264.030	LB112299	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D101 0-0.1	SE158264.031	LB112299	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D101 0.2-0.3	SE158264.032	LB112299	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D101 1.0-1.1	SE158264.033	LB112299	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D101 1.9-2.0	SE158264.034	LB112299	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D102 0-0.1	SE158264.035	LB112299	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D102 0.2-0.3	SE158264.036	LB112299	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D103 0-0.1	SE158264.037	LB112299	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D103 0.2-0.3	SE158264.038	LB112299	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D104 0-0.1	SE158264.039	LB112300	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D104 0.2-0.3	SE158264.040	LB112300	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D105 0-0.1	SE158264.041	LB112300	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D105 0.2-0.3	SE158264.042	LB112300	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D106 0-0.1	SE158264.043	LB112300	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D106 0.2-0.3	SE158264.044	LB112300	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D107 0-0.1	SE158264.045	LB112300	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D107 0.2-0.3	SE158264.046	LB112300	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D108 0-0.1	SE158264.047	LB112300	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D108 0.2-0.3	SE158264.048	LB112300	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D109 0-0.1	SE158264.049	LB112300	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D109 0.2-0.3	SE158264.050	LB112300	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D110 0-0.1	SE158264.051	LB112300	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D110 0.2-0.3	SE158264.052	LB112300	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D111 0-0.1	SE158264.053	LB112300	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D111 0.2-0.3	SE158264.054	LB112300	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D112 0-0.1	SE158264.055	LB112300	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D112 0.2-0.3	SE158264.056	LB112300	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D113 0-0.1	SE158264.057	LB112300	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D113 0.2-0.3	SE158264.058	LB112301	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D114 0-0.1	SE158264.059	LB112301	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D114 0.2-0.3	SE158264.060	LB112301	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D115 0-0.1	SE158264.061	LB112301	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D115 0.2-0.3	SE158264.062	LB112301	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D116 0-0.1	SE158264.063	LB112301	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D116 0.2-0.3	SE158264.064	LB112301	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D116 1.0-1.1	SE158264.065	LB112301	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D116 1.4-1.5	SE158264.066	LB112301	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D117 0-0.1	SE158264.067	LB112301	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D117 0.2-0.3	SE158264.068	LB112301	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D118 0-0.1	SE158264.069	LB112301	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D118 0.2-0.3	SE158264.070	LB112301	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D119 0-0.1	SE158264.071	LB112301	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D119 0.2-0.3	SE158264.072	LB112301	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D120 0-0.1	SE158264.073	LB112301	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D120 0.2-0.3	SE158264.074	LB112301	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D121 0-0.1	SE158264.075	LB112301	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D121 0.2-0.3	SE158264.076	LB112301	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D122 0-0.1	SE158264.077	LB112302	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D122 0.2-0.3	SE158264.078	LB112302	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D123 0-0.1	SE158264.079	LB112302	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D123 0.2-0.3	SE158264.080	LB112302	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D124 0-0.1	SE158264.081	LB112302	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D124 0.2-0.3	SE158264.082	LB112302	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D125 0-0.1	SE158264.083	LB112302	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D125 0.2-0.3	SE158264.084	LB112302	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016

SGS

HOLDING TIME SUMMARY

SE158264 R1

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
D126 0-0.1	SE158264.085	LB112302	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D126 0.2-0.3	SE158264.086	LB112302	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D127 0-0.1	SE158264.087	LB112302	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D127 0.2-0.3	SE158264.088	LB112302	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D128 0-0.1	SE158264.089	LB112302	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D128 0.2-0.3	SE158264.090	LB112302	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D129 0-0.1	SE158264.091	LB112302	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D129 0.2-0.3	SE158264.092	LB112302	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D130 0-0.1	SE158264.093	LB112302	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D130 0.2-0.3	SE158264.094	LB112302	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D130 1.0-1.1	SE158264.095	LB112302	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D131 0-0.1	SE158264.096	LB112303	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D131 0.2-0.3	SE158264.097	LB112303	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	26 Oct 2016
D132 0-0.1	SE158264.098	LB112303	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D132 0.2-0.3	SE158264.099	LB112303	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D132 1.0-1.1	SE158264.100	LB112303	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D132 1.9-2.0	SE158264.101	LB112303	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D133 0-0.1	SE158264.102	LB112303	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D133 0.2-0.3	SE158264.103	LB112303	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D134 0-0.1	SE158264.104	LB112303	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D134 0.2-0.03	SE158264.105	LB112303	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D135 0-0.1	SE158264.106	LB112303	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D135 0.2-0.3	SE158264.107	LB112303	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D136 0-0.1	SE158264.108	LB112303	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D136 0.2-0.3	SE158264.109	LB112303	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D137 0-0.1	SE158264.110	LB112303	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D137 0.2-0.3	SE158264.111	LB112303	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D138 0-0.1	SE158264.112	LB112303	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D138 0.2-0.3	SE158264.113	LB112303	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D139 0-0.1	SE158264.114	LB112303	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	26 Oct 2016
D139 0.2-0.3	SE158264.115	LB112304	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D139 1.0-1.1	SE158264.116	LB112304	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D139 1.4-1.5	SE158264.117	LB112304	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D140 0-0.1	SE158264.118	LB112304	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D140 0.2-0.3	SE158264.119	LB112304	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D141 0-0.1	SE158264.120	LB112304	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D141 0.2-0.3	SE158264.121	LB112304	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D142 0-0.1	SE158264.122	LB112304	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D142 0.2-0.3	SE158264.123	LB112304	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D142 1.0-1.1	SE158264.124	LB112304	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D142 1.9-2.0	SE158264.125	LB112304	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D143 0-0.1	SE158264.126	LB112304	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D143 0.2-0.3	SE158264.127	LB112304	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D144 0-0.1	SE158264.128	LB112304	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D144 0.2-0.3	SE158264.129	LB112304	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D145 0-0.1	SE158264.130	LB112304	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D145 0.2-0.3	SE158264.131	LB112304	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D146 0-0.1	SE158264.132	LB112304	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D146 0.2-0.3	SE158264.133	LB112304	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D147 0-0.1	SE158264.134	LB112305	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D147 0.2-0.3	SE158264.135	LB112305	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D148 0-0.1	SE158264.136	LB112305	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D148 0.2-0.3	SE158264.137	LB112305	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D149 0-0.1	SE158264.138	LB112305	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D149 0.2-0.3	SE158264.139	LB112305	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D150 0-0.1	SE158264.140	LB112305	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D150 0.2-0.3	SE158264.141	LB112305	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D151 0-0.1	SE158264.142	LB112305	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D151 0.2-0.3	SE158264.143	LB112305	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D152 0-0.1	SE158264.144	LB112305	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016

HOLDING TIME SUMMARY

SE158264 R1

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
D152 0.2-0.3	SE158264.145	LB112305	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D152 1.0-1.1	SE158264.146	LB112305	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D152 1.9-2.0	SE158264.147	LB112305	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D153 0-0.1	SE158264.148	LB112305	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D153 0.2-0.3	SE158264.149	LB112305	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D154 0-0.1	SE158264.150	LB112305	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D154 0.2-0.3	SE158264.151	LB112305	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D155 0-0.1	SE158264.152	LB112305	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D155 0.2-0.3	SE158264.153	LB112306	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D156 0-0.1	SE158264.154	LB112306	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D156 0.2-0.3	SE158264.155	LB112306	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D157 0-0.1	SE158264.156	LB112306	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D157 0.2-0.3	SE158264.157	LB112306	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D157 1.0-1.1	SE158264.158	LB112306	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
D157 1.9-2.0	SE158264.159	LB112306	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
Duplicate D1	SE158264.186	LB112306	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
Duplicate D2	SE158264.187	LB112306	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
Duplicate D3	SE158264.188	LB112306	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
Duplicate D4	SE158264.189	LB112306	17 Oct 2016	19 Oct 2016	14 Nov 2016	24 Oct 2016	14 Nov 2016	27 Oct 2016
Duplicate D5	SE158264.190	LB112306	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	27 Oct 2016
Duplicate D6	SE158264.191	LB112306	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	27 Oct 2016
Duplicate D7	SE158264.192	LB112306	18 Oct 2016	19 Oct 2016	15 Nov 2016	24 Oct 2016	15 Nov 2016	27 Oct 2016

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	SE158264.196	LB112223	17 Oct 2016	19 Oct 2016	15 Apr 2017	24 Oct 2016	15 Apr 2017	24 Oct 2016
Rinsate R2	SE158264.197	LB112223	18 Oct 2016	19 Oct 2016	16 Apr 2017	24 Oct 2016	16 Apr 2017	24 Oct 2016

Moisture Content

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
A4 0.25-0.35	SE158264.001	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
A4 0.5-0.6	SE158264.002	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
A6 0.25-0.35	SE158264.003	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
A6 0.5-0.6	SE158264.004	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
A8 0.25-0.35	SE158264.005	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
A8 0.5-0.6	SE158264.006	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
A8 1.0-1.1	SE158264.007	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
A9 0.25-0.35	SE158264.008	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
A9 0.5-0.6	SE158264.009	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
A11 0.25-0.35	SE158264.010	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
A11 0.5-0.6	SE158264.011	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
A11 1.0-1.1	SE158264.012	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
A11 1.9-2.0	SE158264.013	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
A13 0.25-0.35	SE158264.014	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
A13 0.5-0.6	SE158264.015	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
A15 0.2-0.3	SE158264.016	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
A15 0.5-0.6	SE158264.017	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
A15 1.0-1.1	SE158264.018	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
A15 1.9-2.0	SE158264.019	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
A16 0.2-0.3	SE158264.020	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
A16 0.5-0.6	SE158264.021	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
A16 1.0-1.1	SE158264.022	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
A16 1.5-1.6	SE158264.023	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
A17 0.2-0.3	SE158264.024	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
A17 0.5-0.6	SE158264.025	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
A17 1.0-1.1	SE158264.026	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
A17 1.9-2.0	SE158264.027	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
A18 0.2-0.3	SE158264.028	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
A18 0.5-0.6	SE158264.029	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
A18 1.0-1.1	SE158264.030	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D101 0-0.1	SE158264.031	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016

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

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

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

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
D101 0.2-0.3	SE158264.032	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D101 1.0-1.1	SE158264.033	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D101 1.9-2.0	SE158264.034	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D102 0-0.1	SE158264.035	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D102 0.2-0.3	SE158264.036	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D103 0-0.1	SE158264.037	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D103 0.2-0.3	SE158264.038	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D104 0-0.1	SE158264.039	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D104 0.2-0.3	SE158264.040	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D105 0-0.1	SE158264.041	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D105 0.2-0.3	SE158264.042	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D106 0-0.1	SE158264.043	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D106 0.2-0.3	SE158264.044	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D107 0-0.1	SE158264.045	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D107 0.2-0.3	SE158264.046	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D108 0-0.1	SE158264.047	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D108 0.2-0.3	SE158264.048	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D109 0-0.1	SE158264.049	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D109 0.2-0.3	SE158264.050	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D110 0-0.1	SE158264.051	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D110 0.2-0.3	SE158264.052	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D111 0-0.1	SE158264.053	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D111 0.2-0.3	SE158264.054	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D112 0-0.1	SE158264.055	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D112 0.2-0.3	SE158264.056	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D113 0-0.1	SE158264.057	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D113 0.2-0.3	SE158264.058	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D114 0-0.1	SE158264.059	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D114 0.2-0.3	SE158264.060	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D115 0-0.1	SE158264.061	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D115 0.2-0.3	SE158264.062	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D116 0-0.1	SE158264.063	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D116 0.2-0.3	SE158264.064	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D116 1.0-1.1	SE158264.065	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D116 1.4-1.5	SE158264.066	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D117 0-0.1	SE158264.067	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D117 0.2-0.3	SE158264.068	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D118 0-0.1	SE158264.069	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D118 0.2-0.3	SE158264.070	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D119 0-0.1	SE158264.071	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D119 0.2-0.3	SE158264.072	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D120 0-0.1	SE158264.073	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D120 0.2-0.3	SE158264.074	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D121 0-0.1	SE158264.075	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D121 0.2-0.3	SE158264.076	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D122 0-0.1	SE158264.077	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D122 0.2-0.3	SE158264.078	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D123 0-0.1	SE158264.079	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D123 0.2-0.3	SE158264.080	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D124 0-0.1	SE158264.081	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D124 0.2-0.3	SE158264.082	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D125 0-0.1	SE158264.083	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D125 0.2-0.3	SE158264.084	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D126 0-0.1	SE158264.085	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D126 0.2-0.3	SE158264.086	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D127 0-0.1	SE158264.087	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D127 0.2-0.3	SE158264.088	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D128 0-0.1	SE158264.089	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D128 0.2-0.3	SE158264.090	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D129 0-0.1	SE158264.091	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016

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

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

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

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
D129 0.2-0.3	SE158264.092	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D130 0-0.1	SE158264.093	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D130 0.2-0.3	SE158264.094	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D130 1.0-1.1	SE158264.095	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D131 0-0.1	SE158264.096	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D131 0.2-0.3	SE158264.097	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D132 0-0.1	SE158264.098	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D132 0.2-0.3	SE158264.099	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D132 1.0-1.1	SE158264.100	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D132 1.9-2.0	SE158264.101	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D133 0-0.1	SE158264.102	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D133 0.2-0.3	SE158264.103	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D134 0-0.1	SE158264.104	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D134 0.2-0.03	SE158264.105	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D135 0-0.1	SE158264.106	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D135 0.2-0.3	SE158264.107	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D136 0-0.1	SE158264.108	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D136 0.2-0.3	SE158264.109	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D137 0-0.1	SE158264.110	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D137 0.2-0.3	SE158264.111	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D138 0-0.1	SE158264.112	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D138 0.2-0.3	SE158264.113	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D139 0-0.1	SE158264.114	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D139 0.2-0.3	SE158264.115	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D139 1.0-1.1	SE158264.116	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D139 1.4-1.5	SE158264.117	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D140 0-0.1	SE158264.118	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D140 0.2-0.3	SE158264.119	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D141 0-0.1	SE158264.120	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D141 0.2-0.3	SE158264.121	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D142 0-0.1	SE158264.122	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D142 0.2-0.3	SE158264.123	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D142 1.0-1.1	SE158264.124	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D142 1.9-2.0	SE158264.125	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D143 0-0.1	SE158264.126	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D143 0.2-0.3	SE158264.127	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D144 0-0.1	SE158264.128	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D144 0.2-0.3	SE158264.129	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D145 0-0.1	SE158264.130	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D145 0.2-0.3	SE158264.131	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D146 0-0.1	SE158264.132	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D146 0.2-0.3	SE158264.133	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D147 0-0.1	SE158264.134	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D147 0.2-0.3	SE158264.135	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D148 0-0.1	SE158264.136	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D148 0.2-0.3	SE158264.137	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D149 0-0.1	SE158264.138	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D149 0.2-0.3	SE158264.139	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D150 0-0.1	SE158264.140	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D150 0.2-0.3	SE158264.141	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D151 0-0.1	SE158264.142	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D151 0.2-0.3	SE158264.143	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D152 0-0.1	SE158264.144	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D152 0.2-0.3	SE158264.145	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D152 1.0-1.1	SE158264.146	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D152 1.9-2.0	SE158264.147	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D153 0-0.1	SE158264.148	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D153 0.2-0.3	SE158264.149	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D154 0-0.1	SE158264.150	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D154 0.2-0.3	SE158264.151	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016

HOLDING TIME SUMMARY

SE158264 R1

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

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

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

Moisture Content (continued)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
D155 0-0.1	SE158264.152	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D155 0.2-0.3	SE158264.153	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D156 0-0.1	SE158264.154	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D156 0.2-0.3	SE158264.155	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D157 0-0.1	SE158264.156	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D157 0.2-0.3	SE158264.157	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D157 1.0-1.1	SE158264.158	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
D157 1.9-2.0	SE158264.159	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
DS11 0-0.1	SE158264.160	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
DS16 0-0.1	SE158264.161	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
DS18 0-0.1	SE158264.162	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
DS18 0.5-0.6	SE158264.163	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
DS19 0-0.1	SE158264.164	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
DS19 0.5-0.6	SE158264.165	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
DS22 0-0.1	SE158264.166	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
DS22 0.5-0.6	SE158264.167	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
CS12-1 0-0.1	SE158264.168	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
CS12-2 0-0.1	SE158264.169	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
CS12-2 0.5-0.6	SE158264.170	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	25 Oct 2016
CS12-3 0-0.1	SE158264.171	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	26 Oct 2016
CS14-1 0-0.1	SE158264.172	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	26 Oct 2016
CS14-2 0-0.1	SE158264.173	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	26 Oct 2016
CS14-3 0-0.1	SE158264.174	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	26 Oct 2016
CS15-1 0-0.1	SE158264.175	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	26 Oct 2016
CS15-2 0-0.1	SE158264.176	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	26 Oct 2016
CS15-2 0.5-0.6	SE158264.177	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	26 Oct 2016
CS15-3 0-0.1	SE158264.178	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	26 Oct 2016
CS18-1 0-0.1	SE158264.179	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	26 Oct 2016
CS18-2 0-0.1	SE158264.180	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	26 Oct 2016
CS18-2 0.5-0.6	SE158264.181	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	26 Oct 2016
CS18-3 0-0.1	SE158264.182	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	26 Oct 2016
CS22-1 0-0.1	SE158264.183	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	26 Oct 2016
CS22-2 0-0.1	SE158264.184	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	26 Oct 2016
CS22-3 0-0.1	SE158264.185	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	26 Oct 2016
Duplicate D1	SE158264.186	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	26 Oct 2016
Duplicate D2	SE158264.187	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	26 Oct 2016
Duplicate D3	SE158264.188	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	26 Oct 2016
Duplicate D4	SE158264.189	LB112237	17 Oct 2016	19 Oct 2016	31 Oct 2016	24 Oct 2016	29 Oct 2016	26 Oct 2016
Duplicate D5	SE158264.190	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	26 Oct 2016
Duplicate D6	SE158264.191	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	26 Oct 2016
Duplicate D7	SE158264.192	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	26 Oct 2016
Duplicate D8	SE158264.193	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	26 Oct 2016
Duplicate D9	SE158264.194	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	26 Oct 2016
Duplicate D10	SE158264.195	LB112237	18 Oct 2016	19 Oct 2016	01 Nov 2016	24 Oct 2016	29 Oct 2016	26 Oct 2016

pH in soil (1:5)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
A8 0.5-0.6	SE158264.006	LB112209	18 Oct 2016	19 Oct 2016	25 Oct 2016	21 Oct 2016	22 Oct 2016	21 Oct 2016
A11 1.0-1.1	SE158264.012	LB112209	18 Oct 2016	19 Oct 2016	25 Oct 2016	21 Oct 2016	22 Oct 2016	21 Oct 2016
A15 0.5-0.6	SE158264.017	LB112209	18 Oct 2016	19 Oct 2016	25 Oct 2016	21 Oct 2016	22 Oct 2016	21 Oct 2016
A16 0.2-0.3	SE158264.020	LB112209	18 Oct 2016	19 Oct 2016	25 Oct 2016	21 Oct 2016	22 Oct 2016	21 Oct 2016
A17 1.9-2.0	SE158264.027	LB112209	18 Oct 2016	19 Oct 2016	25 Oct 2016	21 Oct 2016	22 Oct 2016	21 Oct 2016
A18 1.0-1.1	SE158264.030	LB112209	18 Oct 2016	19 Oct 2016	25 Oct 2016	21 Oct 2016	22 Oct 2016	21 Oct 2016
D101 0-0.1	SE158264.031	LB112209	17 Oct 2016	19 Oct 2016	24 Oct 2016	21 Oct 2016	22 Oct 2016	21 Oct 2016
D101 1.0-1.1	SE158264.033	LB112209	17 Oct 2016	19 Oct 2016	24 Oct 2016	21 Oct 2016	22 Oct 2016	21 Oct 2016
D116 0-0.1	SE158264.063	LB112210	18 Oct 2016	19 Oct 2016	25 Oct 2016	24 Oct 2016	25 Oct 2016	24 Oct 2016
D116 0.2-0.3	SE158264.064	LB112210	18 Oct 2016	19 Oct 2016	25 Oct 2016	24 Oct 2016	25 Oct 2016	24 Oct 2016
D119 0-0.1	SE158264.071	LB112210	18 Oct 2016	19 Oct 2016	25 Oct 2016	24 Oct 2016	25 Oct 2016	24 Oct 2016
D130 0-0.1	SE158264.093	LB112210	18 Oct 2016	19 Oct 2016	25 Oct 2016	24 Oct 2016	25 Oct 2016	24 Oct 2016
D130 1.0-1.1	SE158264.095	LB112210	18 Oct 2016	19 Oct 2016	25 Oct 2016	24 Oct 2016	25 Oct 2016	24 Oct 2016

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
D132 0-0.1	SE158264.098	LB112210	17 Oct 2016	19 Oct 2016	24 Oct 2016	24 Oct 2016	25 Oct 2016	24 Oct 2016
D132 0.2-0.3	SE158264.099	LB112210	17 Oct 2016	19 Oct 2016	24 Oct 2016	24 Oct 2016	25 Oct 2016	24 Oct 2016
D139 0-0.1	SE158264.114	LB112210	17 Oct 2016	19 Oct 2016	24 Oct 2016	24 Oct 2016	25 Oct 2016	24 Oct 2016
D139 1.4-1.5	SE158264.117	LB112210	17 Oct 2016	19 Oct 2016	24 Oct 2016	24 Oct 2016	25 Oct 2016	24 Oct 2016
D142 0-0.1	SE158264.122	LB112210	17 Oct 2016	19 Oct 2016	24 Oct 2016	24 Oct 2016	25 Oct 2016	24 Oct 2016
D142 1.9-2.0	SE158264.125	LB112210	17 Oct 2016	19 Oct 2016	24 Oct 2016	24 Oct 2016	25 Oct 2016	24 Oct 2016
D152 0-0.1	SE158264.144	LB112210	17 Oct 2016	19 Oct 2016	24 Oct 2016	24 Oct 2016	25 Oct 2016	24 Oct 2016
D152 0.2-0.3	SE158264.145	LB112210	17 Oct 2016	19 Oct 2016	24 Oct 2016	24 Oct 2016	25 Oct 2016	24 Oct 2016
D157 0-0.1	SE158264.156	LB112210	17 Oct 2016	19 Oct 2016	24 Oct 2016	24 Oct 2016	25 Oct 2016	24 Oct 2016
D157 1.0-1.1	SE158264.158	LB112210	17 Oct 2016	19 Oct 2016	24 Oct 2016	24 Oct 2016	25 Oct 2016	24 Oct 2016

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
A4 0.25-0.35	SE158264.001	LB112405	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
A4 0.5-0.6	SE158264.002	LB112405	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
A6 0.25-0.35	SE158264.003	LB112405	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
A6 0.5-0.6	SE158264.004	LB112405	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
A8 0.25-0.35	SE158264.005	LB112405	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
A8 0.5-0.6	SE158264.006	LB112407	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
A8 1.0-1.1	SE158264.007	LB112407	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
A9 0.25-0.35	SE158264.008	LB112407	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
A9 0.5-0.6	SE158264.009	LB112407	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
A11 0.25-0.35	SE158264.010	LB112407	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
A11 0.5-0.6	SE158264.011	LB112407	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
A11 1.0-1.1	SE158264.012	LB112407	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
A11 1.9-2.0	SE158264.013	LB112407	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
A13 0.25-0.35	SE158264.014	LB112407	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
A13 0.5-0.6	SE158264.015	LB112407	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
A15 0.2-0.3	SE158264.016	LB112407	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	27 Oct 2016
A15 0.5-0.6	SE158264.017	LB112407	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	27 Oct 2016
A15 1.0-1.1	SE158264.018	LB112407	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	27 Oct 2016
A15 1.9-2.0	SE158264.019	LB112407	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	27 Oct 2016
A16 0.2-0.3	SE158264.020	LB112407	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	27 Oct 2016
A16 0.5-0.6	SE158264.021	LB112407	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	27 Oct 2016
A16 1.0-1.1	SE158264.022	LB112407	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	27 Oct 2016
A16 1.5-1.6	SE158264.023	LB112407	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	27 Oct 2016
A17 0.2-0.3	SE158264.024	LB112407	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	27 Oct 2016
A17 0.5-0.6	SE158264.025	LB112409	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
A17 1.0-1.1	SE158264.026	LB112409	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
A17 1.9-2.0	SE158264.027	LB112409	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
A18 0.2-0.3	SE158264.028	LB112409	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
A18 0.5-0.6	SE158264.029	LB112409	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
A18 1.0-1.1	SE158264.030	LB112409	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D101 0-0.1	SE158264.031	LB112409	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D101 0.2-0.3	SE158264.032	LB112409	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D101 1.0-1.1	SE158264.033	LB112409	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D101 1.9-2.0	SE158264.034	LB112409	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D102 0-0.1	SE158264.035	LB112409	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D102 0.2-0.3	SE158264.036	LB112409	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D103 0-0.1	SE158264.037	LB112409	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D103 0.2-0.3	SE158264.038	LB112409	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D104 0-0.1	SE158264.039	LB112409	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D104 0.2-0.3	SE158264.040	LB112409	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D105 0-0.1	SE158264.041	LB112409	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D105 0.2-0.3	SE158264.042	LB112409	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D106 0-0.1	SE158264.043	LB112409	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D106 0.2-0.3	SE158264.044	LB112410	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D107 0-0.1	SE158264.045	LB112410	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D107 0.2-0.3	SE158264.046	LB112410	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D108 0-0.1	SE158264.047	LB112410	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016

HOLDING TIME SUMMARY

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

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

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

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
D108 0.2-0.3	SE158264.048	LB112410	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D109 0-0.1	SE158264.049	LB112410	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D109 0.2-0.3	SE158264.050	LB112410	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D110 0-0.1	SE158264.051	LB112410	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D110 0.2-0.3	SE158264.052	LB112410	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D111 0-0.1	SE158264.053	LB112410	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D111 0.2-0.3	SE158264.054	LB112410	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D112 0-0.1	SE158264.055	LB112410	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D112 0.2-0.3	SE158264.056	LB112410	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D113 0-0.1	SE158264.057	LB112410	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D113 0.2-0.3	SE158264.058	LB112410	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D114 0-0.1	SE158264.059	LB112410	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D114 0.2-0.3	SE158264.060	LB112410	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D115 0-0.1	SE158264.061	LB112410	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D115 0.2-0.3	SE158264.062	LB112410	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D116 0-0.1	SE158264.063	LB112411	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D116 0.2-0.3	SE158264.064	LB112411	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D116 1.0-1.1	SE158264.065	LB112411	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D116 1.4-1.5	SE158264.066	LB112411	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D117 0-0.1	SE158264.067	LB112411	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D117 0.2-0.3	SE158264.068	LB112411	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D118 0-0.1	SE158264.069	LB112411	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D118 0.2-0.3	SE158264.070	LB112411	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D119 0-0.1	SE158264.071	LB112411	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D119 0.2-0.3	SE158264.072	LB112411	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D120 0-0.1	SE158264.073	LB112411	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D120 0.2-0.3	SE158264.074	LB112411	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D121 0-0.1	SE158264.075	LB112411	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D121 0.2-0.3	SE158264.076	LB112411	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D122 0-0.1	SE158264.077	LB112411	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D122 0.2-0.3	SE158264.078	LB112411	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D123 0-0.1	SE158264.079	LB112411	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D123 0.2-0.3	SE158264.080	LB112411	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D124 0-0.1	SE158264.081	LB112411	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D124 0.2-0.3	SE158264.082	LB112412	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D125 0-0.1	SE158264.083	LB112412	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D125 0.2-0.3	SE158264.084	LB112412	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D126 0-0.1	SE158264.085	LB112412	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D126 0.2-0.3	SE158264.086	LB112412	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D127 0-0.1	SE158264.087	LB112412	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D127 0.2-0.3	SE158264.088	LB112412	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D128 0-0.1	SE158264.089	LB112412	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D128 0.2-0.3	SE158264.090	LB112412	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D129 0-0.1	SE158264.091	LB112412	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D129 0.2-0.3	SE158264.092	LB112412	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D130 0-0.1	SE158264.093	LB112412	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D130 0.2-0.3	SE158264.094	LB112412	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D130 1.0-1.1	SE158264.095	LB112412	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D131 0-0.1	SE158264.096	LB112412	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D131 0.2-0.3	SE158264.097	LB112412	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
D132 0-0.1	SE158264.098	LB112412	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D132 0.2-0.3	SE158264.099	LB112412	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D132 1.0-1.1	SE158264.100	LB112412	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D132 1.9-2.0	SE158264.101	LB112413	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D133 0-0.1	SE158264.102	LB112413	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D133 0.2-0.3	SE158264.103	LB112413	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D134 0-0.1	SE158264.104	LB112413	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D134 0.2-0.03	SE158264.105	LB112413	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D135 0-0.1	SE158264.106	LB112413	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D135 0.2-0.3	SE158264.107	LB112413	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016

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

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

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

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

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
D136 0-0.1	SE158264.108	LB112413	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D136 0.2-0.3	SE158264.109	LB112413	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D137 0-0.1	SE158264.110	LB112413	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D137 0.2-0.3	SE158264.111	LB112413	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D138 0-0.1	SE158264.112	LB112413	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D138 0.2-0.3	SE158264.113	LB112413	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D139 0-0.1	SE158264.114	LB112413	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D139 0.2-0.3	SE158264.115	LB112413	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D139 1.0-1.1	SE158264.116	LB112413	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D139 1.4-1.5	SE158264.117	LB112413	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D140 0-0.1	SE158264.118	LB112413	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D140 0.2-0.3	SE158264.119	LB112413	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D141 0-0.1	SE158264.120	LB112414	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D141 0.2-0.3	SE158264.121	LB112414	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D142 0-0.1	SE158264.122	LB112414	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D142 0.2-0.3	SE158264.123	LB112414	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D142 1.0-1.1	SE158264.124	LB112414	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D142 1.9-2.0	SE158264.125	LB112414	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D143 0-0.1	SE158264.126	LB112414	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D143 0.2-0.3	SE158264.127	LB112414	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D144 0-0.1	SE158264.128	LB112414	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D144 0.2-0.3	SE158264.129	LB112414	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D145 0-0.1	SE158264.130	LB112414	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D145 0.2-0.3	SE158264.131	LB112414	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D146 0-0.1	SE158264.132	LB112414	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D146 0.2-0.3	SE158264.133	LB112414	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D147 0-0.1	SE158264.134	LB112414	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D147 0.2-0.3	SE158264.135	LB112414	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D148 0-0.1	SE158264.136	LB112414	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D148 0.2-0.3	SE158264.137	LB112414	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D149 0-0.1	SE158264.138	LB112414	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D149 0.2-0.3	SE158264.139	LB112415	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D150 0-0.1	SE158264.140	LB112415	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D150 0.2-0.3	SE158264.141	LB112415	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D151 0-0.1	SE158264.142	LB112415	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D151 0.2-0.3	SE158264.143	LB112415	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D152 0-0.1	SE158264.144	LB112415	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D152 0.2-0.3	SE158264.145	LB112415	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D152 1.0-1.1	SE158264.146	LB112415	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D152 1.9-2.0	SE158264.147	LB112415	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D153 0-0.1	SE158264.148	LB112415	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D153 0.2-0.3	SE158264.149	LB112415	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D154 0-0.1	SE158264.150	LB112415	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D154 0.2-0.3	SE158264.151	LB112415	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D155 0-0.1	SE158264.152	LB112415	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D155 0.2-0.3	SE158264.153	LB112415	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D156 0-0.1	SE158264.154	LB112415	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D156 0.2-0.3	SE158264.155	LB112415	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D157 0-0.1	SE158264.156	LB112415	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D157 0.2-0.3	SE158264.157	LB112415	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D157 1.0-1.1	SE158264.158	LB112416	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
D157 1.9-2.0	SE158264.159	LB112416	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
Duplicate D1	SE158264.186	LB112416	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
Duplicate D2	SE158264.187	LB112416	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
Duplicate D3	SE158264.188	LB112416	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
Duplicate D4	SE158264.189	LB112416	17 Oct 2016	19 Oct 2016	15 Apr 2017	25 Oct 2016	15 Apr 2017	28 Oct 2016
Duplicate D5	SE158264.190	LB112416	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
Duplicate D6	SE158264.191	LB112416	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016
Duplicate D7	SE158264.192	LB112416	18 Oct 2016	19 Oct 2016	16 Apr 2017	25 Oct 2016	16 Apr 2017	28 Oct 2016

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.

Trace Metals (Dissolved) in Water by ICPMS

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Dam Water W1	SE158264.198	LB112231	18 Oct 2016	19 Oct 2016	16 Apr 2017	24 Oct 2016	16 Apr 2017	24 Oct 2016

Trace Metals (Total) in Water by ICPMS

Method: ME-(AU)-[ENV]AN022/AN318

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Dam Water W1	SE158264.198	LB112227	18 Oct 2016	19 Oct 2016	16 Apr 2017	24 Oct 2016	16 Apr 2017	24 Oct 2016

TRH Silica Gel (Total Recoverable Hydrocarbons - Silica Gel) in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
DS11 0-0.1	SE158264.160	LB112192	18 Oct 2016	19 Oct 2016	01 Nov 2016	21 Oct 2016	30 Nov 2016	27 Oct 2016
DS16 0-0.1	SE158264.161	LB112192	18 Oct 2016	19 Oct 2016	01 Nov 2016	21 Oct 2016	30 Nov 2016	27 Oct 2016
DS18 0-0.1	SE158264.162	LB112192	18 Oct 2016	19 Oct 2016	01 Nov 2016	21 Oct 2016	30 Nov 2016	27 Oct 2016
DS18 0.5-0.6	SE158264.163	LB112192	18 Oct 2016	19 Oct 2016	01 Nov 2016	21 Oct 2016	30 Nov 2016	27 Oct 2016
DS19 0-0.1	SE158264.164	LB112192	18 Oct 2016	19 Oct 2016	01 Nov 2016	21 Oct 2016	30 Nov 2016	27 Oct 2016
DS19 0.5-0.6	SE158264.165	LB112192	18 Oct 2016	19 Oct 2016	01 Nov 2016	21 Oct 2016	30 Nov 2016	27 Oct 2016
DS22 0-0.1	SE158264.166	LB112192	18 Oct 2016	19 Oct 2016	01 Nov 2016	21 Oct 2016	30 Nov 2016	27 Oct 2016
DS22 0.5-0.6	SE158264.167	LB112192	18 Oct 2016	19 Oct 2016	01 Nov 2016	21 Oct 2016	30 Nov 2016	27 Oct 2016
CS12-1 0-0.1	SE158264.168	LB112192	18 Oct 2016	19 Oct 2016	01 Nov 2016	21 Oct 2016	30 Nov 2016	27 Oct 2016
CS12-2 0-0.1	SE158264.169	LB112192	18 Oct 2016	19 Oct 2016	01 Nov 2016	21 Oct 2016	30 Nov 2016	27 Oct 2016
CS12-2 0.5-0.6	SE158264.170	LB112192	18 Oct 2016	19 Oct 2016	01 Nov 2016	21 Oct 2016	30 Nov 2016	27 Oct 2016
CS12-3 0-0.1	SE158264.171	LB112192	18 Oct 2016	19 Oct 2016	01 Nov 2016	21 Oct 2016	30 Nov 2016	27 Oct 2016
CS14-1 0-0.1	SE158264.172	LB112192	18 Oct 2016	19 Oct 2016	01 Nov 2016	21 Oct 2016	30 Nov 2016	27 Oct 2016
CS14-2 0-0.1	SE158264.173	LB112192	18 Oct 2016	19 Oct 2016	01 Nov 2016	21 Oct 2016	30 Nov 2016	27 Oct 2016
CS14-3 0-0.1	SE158264.174	LB112192	18 Oct 2016	19 Oct 2016	01 Nov 2016	21 Oct 2016	30 Nov 2016	27 Oct 2016
CS15-1 0-0.1	SE158264.175	LB112192	18 Oct 2016	19 Oct 2016	01 Nov 2016	21 Oct 2016	30 Nov 2016	27 Oct 2016
CS15-2 0-0.1	SE158264.176	LB112192	18 Oct 2016	19 Oct 2016	01 Nov 2016	21 Oct 2016	30 Nov 2016	27 Oct 2016
CS15-2 0.5-0.6	SE158264.177	LB112192	18 Oct 2016	19 Oct 2016	01 Nov 2016	21 Oct 2016	30 Nov 2016	27 Oct 2016
CS15-3 0-0.1	SE158264.178	LB112192	18 Oct 2016	19 Oct 2016	01 Nov 2016	21 Oct 2016	30 Nov 2016	27 Oct 2016
CS18-1 0-0.1	SE158264.179	LB112192	18 Oct 2016	19 Oct 2016	01 Nov 2016	21 Oct 2016	30 Nov 2016	27 Oct 2016
CS18-2 0-0.1	SE158264.180	LB112193	18 Oct 2016	19 Oct 2016	01 Nov 2016	21 Oct 2016	30 Nov 2016	27 Oct 2016
CS18-2 0.5-0.6	SE158264.181	LB112193	18 Oct 2016	19 Oct 2016	01 Nov 2016	21 Oct 2016	30 Nov 2016	27 Oct 2016
CS18-3 0-0.1	SE158264.182	LB112193	18 Oct 2016	19 Oct 2016	01 Nov 2016	21 Oct 2016	30 Nov 2016	27 Oct 2016
CS22-1 0-0.1	SE158264.183	LB112193	18 Oct 2016	19 Oct 2016	01 Nov 2016	21 Oct 2016	30 Nov 2016	27 Oct 2016
CS22-2 0-0.1	SE158264.184	LB112193	18 Oct 2016	19 Oct 2016	01 Nov 2016	21 Oct 2016	30 Nov 2016	27 Oct 2016
CS22-3 0-0.1	SE158264.185	LB112193	18 Oct 2016	19 Oct 2016	01 Nov 2016	21 Oct 2016	30 Nov 2016	27 Oct 2016
Duplicate D8	SE158264.193	LB112193	18 Oct 2016	19 Oct 2016	01 Nov 2016	21 Oct 2016	30 Nov 2016	27 Oct 2016
Duplicate D9	SE158264.194	LB112193	18 Oct 2016	19 Oct 2016	01 Nov 2016	21 Oct 2016	30 Nov 2016	27 Oct 2016
Duplicate D10	SE158264.195	LB112193	18 Oct 2016	19 Oct 2016	01 Nov 2016	21 Oct 2016	30 Nov 2016	27 Oct 2016

TRH Silica Gel (Total Recoverable Hydrocarbons - Silica Gel) in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Rinsate R2	SE158264.197	LB112212	18 Oct 2016	19 Oct 2016	25 Oct 2016	21 Oct 2016	30 Nov 2016	27 Oct 2016

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

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

No surrogates were required for this job.

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

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

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

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

Sample Number	Parameter	Units	LOR

Mercury (dissolved) in Water

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

Sample Number	Parameter	Units	LOR	Result
LB112441.001	Mercury	mg/L	0.0001	<0.0001

Mercury in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB112298.001	Mercury	mg/kg	0.05	<0.05
LB112299.001	Mercury	mg/kg	0.05	<0.05
LB112300.001	Mercury	mg/kg	0.05	<0.05
LB112301.001	Mercury	mg/kg	0.05	<0.05
LB112302.001	Mercury	mg/kg	0.05	<0.05
LB112303.001	Mercury	mg/kg	0.05	<0.05
LB112304.001	Mercury	mg/kg	0.05	<0.05
LB112305.001	Mercury	mg/kg	0.05	<0.05
LB112306.001	Mercury	mg/kg	0.05	<0.05

Metals in Water (Dissolved) by ICPOES

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

Sample Number	Parameter	Units	LOR	Result
LB112223.001	Arsenic, As	mg/L	0.02	<0.02
	Cadmium, Cd	mg/L	0.001	<0.001
	Copper, Cu	mg/L	0.005	<0.005
	Lead, Pb	mg/L	0.02	<0.02
	Manganese, Mn	mg/L	0.005	<0.005
	Nickel, Ni	mg/L	0.005	<0.005
	Zinc, Zn	mg/L	0.01	<0.01

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

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

Sample Number	Parameter	Units	LOR	Result
LB112405.001	Arsenic, As	mg/kg	3	<3
	Cadmium, Cd	mg/kg	0.3	<0.3
	Copper, Cu	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Manganese, Mn	mg/kg	1	<1
	Nickel, Ni	mg/kg	0.5	<0.5
	Zinc, Zn	mg/kg	0.5	<0.5
LB112407.001	Arsenic, As	mg/kg	3	<3
	Cadmium, Cd	mg/kg	0.3	<0.3
	Copper, Cu	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Manganese, Mn	mg/kg	1	<1
	Nickel, Ni	mg/kg	0.5	<0.5
	Zinc, Zn	mg/kg	0.5	<0.5
LB112409.001	Arsenic, As	mg/kg	3	<3
	Cadmium, Cd	mg/kg	0.3	<0.3
	Copper, Cu	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Manganese, Mn	mg/kg	1	<1
	Nickel, Ni	mg/kg	0.5	<0.5
	Zinc, Zn	mg/kg	0.5	<0.5
LB112410.001	Arsenic, As	mg/kg	3	<3
	Cadmium, Cd	mg/kg	0.3	<0.3
	Copper, Cu	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Manganese, Mn	mg/kg	1	<1
	Nickel, Ni	mg/kg	0.5	<0.5
	Zinc, Zn	mg/kg	0.5	<0.5
LB112411.001	Arsenic, As	mg/kg	3	<3

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

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

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

Sample Number	Parameter	Units	LOR	Result
LB112411.001	Cadmium, Cd	mg/kg	0.3	<0.3
	Copper, Cu	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Manganese, Mn	mg/kg	1	<1
	Nickel, Ni	mg/kg	0.5	<0.5
	Zinc, Zn	mg/kg	0.5	<0.5
LB112412.001	Arsenic, As	mg/kg	3	<3
	Cadmium, Cd	mg/kg	0.3	<0.3
	Copper, Cu	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Manganese, Mn	mg/kg	1	<1
	Nickel, Ni	mg/kg	0.5	<0.5
	Zinc, Zn	mg/kg	0.5	<0.5
LB112413.001	Arsenic, As	mg/kg	3	<3
	Cadmium, Cd	mg/kg	0.3	<0.3
	Copper, Cu	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Manganese, Mn	mg/kg	1	<1
	Nickel, Ni	mg/kg	0.5	<0.5
	Zinc, Zn	mg/kg	0.5	<0.5
LB112414.001	Arsenic, As	mg/kg	3	<3
	Cadmium, Cd	mg/kg	0.3	<0.3
	Copper, Cu	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Manganese, Mn	mg/kg	1	<1
	Nickel, Ni	mg/kg	0.5	<0.5
	Zinc, Zn	mg/kg	0.5	<0.5
LB112415.001	Arsenic, As	mg/kg	3	<3
	Cadmium, Cd	mg/kg	0.3	<0.3
	Copper, Cu	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Manganese, Mn	mg/kg	1	<1
	Nickel, Ni	mg/kg	0.5	<0.5
	Zinc, Zn	mg/kg	0.5	<0.5
LB112416.001	Arsenic, As	mg/kg	3	<3
	Cadmium, Cd	mg/kg	0.3	<0.3
	Copper, Cu	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Manganese, Mn	mg/kg	1	<1
	Nickel, Ni	mg/kg	0.5	<0.5
	Zinc, Zn	mg/kg	0.5	<0.5

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

Sample Number	Parameter	Units	LOR	Result
LB112231.001	Arsenic, As	µg/L	1	<1
	Cadmium, Cd	µg/L	0.1	<0.1
	Copper, Cu	µg/L	1	<1
	Lead, Pb	µg/L	1	<1
	Manganese, Mn	µg/L	1	<1
	Nickel, Ni	µg/L	1	<1
	Zinc, Zn	µg/L	5	<5

Trace Metals (Total) in Water by ICPMS — Method: ME-(AU)-[ENV]AN022/AN318

Sample Number	Parameter	Units	LOR	Result
LB112227.001	Total Arsenic	µg/L	1	<1
	Total Cadmium	µg/L	0.1	<0.1
	Total Copper	µg/L	1	<1
	Total Lead	µg/L	1	<1
	Total Manganese	µg/L	1	<1
	Total Nickel	µg/L	1	<1
	Total Zinc	µg/L	5	<5

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

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

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

Sample Number	Parameter	Units	LOR	Result
LB112192.001	TRH C10-C14-Silica	mg/kg	20	<20
	TRH C15-C28-Silica	mg/kg	45	<45
	TRH C29-C36-Silica	mg/kg	45	<45
	TRH C37-C40-Silica	mg/kg	100	<100
	TRH >C10-C16-Silica (F2)	mg/kg	25	<25
	TRH >C16-C34-Silica (F3)	mg/kg	90	<90
	TRH >C34-C40-Silica (F4)	mg/kg	120	<120
LB112193.001	TRH C10-C14-Silica	mg/kg	20	<20
	TRH C15-C28-Silica	mg/kg	45	<45
	TRH C29-C36-Silica	mg/kg	45	<45
	TRH C37-C40-Silica	mg/kg	100	<100
	TRH >C10-C16-Silica (F2)	mg/kg	25	<25
	TRH >C16-C34-Silica (F3)	mg/kg	90	<90
	TRH >C34-C40-Silica (F4)	mg/kg	120	<120

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

Sample Number	Parameter	Units	LOR	Result
LB112212.001	TRH C10-C14-Silica	μg/L	50	<50
	TRH C15-C28-Silica	μg/L	200	<200
	TRH C29-C36-Silica	μg/L	200	<200
	TRH C37-C40-Silica	μg/L	200	<200

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

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

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

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

Mercury (dissolved) in Water

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE158259.007	LB112441.014	Mercury	μg/L	0.0001	<0.0001	<0.0001	200	0

Mercury (total) in Water

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE158264.198	LB112445.004	Total Mercury	μg/L	0.0001	<0.0001	0.0000	200	13

Mercury in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE158264.010	LB112298.014	Mercury	mg/kg	0.05	0.11	0.10	78	13
SE158264.019	LB112298.024	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE158264.029	LB112299.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE158264.038	LB112299.024	Mercury	mg/kg	0.05	<0.05	<0.05	157	0
SE158264.048	LB112300.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE158264.057	LB112300.024	Mercury	mg/kg	0.05	<0.05	<0.05	148	0
SE158264.067	LB112301.014	Mercury	mg/kg	0.05	<0.05	<0.05	183	0
SE158264.076	LB112301.024	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE158264.086	LB112302.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE158264.095	LB112302.024	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE158264.105	LB112303.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE158264.114	LB112303.024	Mercury	mg/kg	0.05	<0.05	<0.05	159	0
SE158264.124	LB112304.014	Mercury	mg/kg	0.05	<0.05	<0.05	147	0
SE158264.133	LB112304.024	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE158264.143	LB112305.014	Mercury	mg/kg	0.05	0.08	0.08	93	9
SE158264.152	LB112305.024	Mercury	mg/kg	0.05	0.05	<0.05	131	0
SE158264.188	LB112306.014	Mercury	mg/kg	0.05	<0.05	<0.05	145	0
SE158264.192	LB112306.019	Mercury	mg/kg	0.05	0.08	0.09	88	4

Moisture Content

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE158264.010	LB112237.011	% Moisture	%w/w	0.5	22	20	35	7
SE158264.020	LB112237.022	% Moisture	%w/w	0.5	17	17	36	3
SE158264.030	LB112237.033	% Moisture	%w/w	0.5	16	15	36	3
SE158264.040	LB112237.044	% Moisture	%w/w	0.5	17	15	36	12
SE158264.050	LB112237.055	% Moisture	%w/w	0.5	14	15	37	4
SE158264.060	LB112237.066	% Moisture	%w/w	0.5	13	14	37	7
SE158264.070	LB112237.077	% Moisture	%w/w	0.5	19	18	35	2
SE158264.080	LB112237.088	% Moisture	%w/w	0.5	24	25	34	5
SE158264.090	LB112237.099	% Moisture	%w/w	0.5	17	16	36	5
SE158264.100	LB112237.110	% Moisture	%w/w	0.5	28	28	34	0
SE158264.110	LB112237.121	% Moisture	%w/w	0.5	17	16	36	3
SE158264.120	LB112237.132	% Moisture	%w/w	0.5	18	18	36	0
SE158264.130	LB112237.143	% Moisture	%w/w	0.5	16	16	36	0
SE158264.140	LB112237.154	% Moisture	%w/w	0.5	12	15	38	19
SE158264.150	LB112237.165	% Moisture	%w/w	0.5	16	16	36	1
SE158264.160	LB112237.176	% Moisture	%w/w	0.5	26	27	34	4
SE158264.170	LB112237.187	% Moisture	%w/w	0.5	15	20	36	25
SE158264.180	LB112237.198	% Moisture	%w/w	0.5	18	19	35	7
SE158264.190	LB112237.209	% Moisture	%w/w	0.5	15	16	36	6
SE158264.195	LB112237.215	% Moisture	%w/w	0.5	19	18	35	4

pH in soil (1:5)

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE158264.122	LB112210.014	pH	pH Units	-	6.9	7.0	31	1
SE158273.003	LB112210.025	pH	pH Units	-	8.9	8.8	31	1
SE158285.082	LB112209.014	pH	pH Units	-	6.1	6.4	32	4
SE158285.092	LB112209.025	pH	pH Units	-	6.0	5.9	32	0

DUPLICATES

SE158264 R1

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

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

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

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

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

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE158246.011	LB112405.014	Arsenic, As	mg/kg	3	<3	<3	200	0
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Copper, Cu	mg/kg	0.5	4.9	8.2	38	49 ②
		Lead, Pb	mg/kg	1	19	25	34	26
		Nickel, Ni	mg/kg	0.5	<0.5	0.8	108	48
		Zinc, Zn	mg/kg	0.5	54	74	33	31
SE158264.015	LB112407.014	Arsenic, As	mg/kg	3	200	190	31	1
		Cadmium, Cd	mg/kg	0.3	2.7	2.6	41	2
		Copper, Cu	mg/kg	0.5	160	200	30	23
		Lead, Pb	mg/kg	1	290	280	30	3
		Manganese, Mn	mg/kg	1	3200	2800	30	11
		Nickel, Ni	mg/kg	0.5	15	15	33	1
		Zinc, Zn	mg/kg	0.5	810	830	30	3
SE158264.043	LB112409.024	Arsenic, As	mg/kg	3	72	71	31	1
		Cadmium, Cd	mg/kg	0.3	0.5	0.5	90	4
		Copper, Cu	mg/kg	0.5	57	56	31	1
		Lead, Pb	mg/kg	1	110	110	31	4
		Manganese, Mn	mg/kg	1	270	340	30	25
		Nickel, Ni	mg/kg	0.5	20	19	33	5
		Zinc, Zn	mg/kg	0.5	150	140	31	8
SE158264.053	LB112410.014	Arsenic, As	mg/kg	3	87	90	31	3
		Cadmium, Cd	mg/kg	0.3	0.9	0.9	63	2
		Copper, Cu	mg/kg	0.5	41	41	31	2
		Lead, Pb	mg/kg	1	310	330	30	5
		Manganese, Mn	mg/kg	1	3100	3100	30	3
		Nickel, Ni	mg/kg	0.5	9.5	9.4	35	1
		Zinc, Zn	mg/kg	0.5	280	300	31	7
SE158264.062	LB112410.024	Arsenic, As	mg/kg	3	88	80	31	10
		Cadmium, Cd	mg/kg	0.3	1.6	1.9	47	16
		Copper, Cu	mg/kg	0.5	43	47	31	9
		Lead, Pb	mg/kg	1	320	410	30	23
		Manganese, Mn	mg/kg	1	2400	5500	30	77 ②
		Nickel, Ni	mg/kg	0.5	12	12	34	1
		Zinc, Zn	mg/kg	0.5	550	630	30	13
SE158264.072	LB112411.014	Arsenic, As	mg/kg	3	10	11	40	8
		Cadmium, Cd	mg/kg	0.3	0.3	0.4	115	8
		Copper, Cu	mg/kg	0.5	18	20	33	10
		Lead, Pb	mg/kg	1	40	78	32	64 ②
		Manganese, Mn	mg/kg	1	450	530	30	16
		Nickel, Ni	mg/kg	0.5	21	18	33	15
		Zinc, Zn	mg/kg	0.5	65	67	33	2
SE158264.081	LB112411.024	Arsenic, As	mg/kg	3	59	62	32	6
		Cadmium, Cd	mg/kg	0.3	0.8	0.8	68	4
		Copper, Cu	mg/kg	0.5	30	32	32	8
		Lead, Pb	mg/kg	1	300	350	30	14
		Manganese, Mn	mg/kg	1	2300	2400	30	4
		Nickel, Ni	mg/kg	0.5	8.5	9.0	36	6
		Zinc, Zn	mg/kg	0.5	380	350	31	8
SE158264.091	LB112412.014	Arsenic, As	mg/kg	3	7	7	44	3
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	152	0
		Copper, Cu	mg/kg	0.5	9.6	11	35	16
		Lead, Pb	mg/kg	1	31	47	33	39 ②
		Manganese, Mn	mg/kg	1	150	170	31	10
		Nickel, Ni	mg/kg	0.5	12	13	34	11
		Zinc, Zn	mg/kg	0.5	56	66	33	17
SE158264.100	LB112412.024	Arsenic, As	mg/kg	3	940	840	30	11
		Cadmium, Cd	mg/kg	0.3	1.2	1.2	55	7
		Copper, Cu	mg/kg	0.5	99	85	31	16
		Lead, Pb	mg/kg	1	79	78	31	1
		Manganese, Mn	mg/kg	1	2300	2200	30	4
		Nickel, Ni	mg/kg	0.5	18	17	33	4

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

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

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

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

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE158264.100	LB112412.024	Zinc, Zn	mg/kg	0.5	660	580	30	14
SE158264.110	LB112413.014	Arsenic, As	mg/kg	3	160	200	31	19
		Cadmium, Cd	mg/kg	0.3	3.4	4.0	38	16
		Copper, Cu	mg/kg	0.5	76	83	31	9
		Lead, Pb	mg/kg	1	380	430	30	14
		Manganese, Mn	mg/kg	1	5900	6500	30	10
		Nickel, Ni	mg/kg	0.5	31	33	32	7
		Zinc, Zn	mg/kg	0.5	950	1100	30	12
SE158264.119	LB112413.024	Arsenic, As	mg/kg	3	630	520	30	20
		Cadmium, Cd	mg/kg	0.3	6.1	5.0	35	21
		Copper, Cu	mg/kg	0.5	270	230	30	17
		Lead, Pb	mg/kg	1	2300	1800	30	22
		Manganese, Mn	mg/kg	1	8400	6700	30	23
		Nickel, Ni	mg/kg	0.5	44	41	31	7
		Zinc, Zn	mg/kg	0.5	2800	2300	30	19
SE158264.129	LB112414.014	Arsenic, As	mg/kg	3	64	58	32	10
		Cadmium, Cd	mg/kg	0.3	0.7	0.7	73	2
		Copper, Cu	mg/kg	0.5	48	47	31	1
		Lead, Pb	mg/kg	1	75	74	31	2
		Manganese, Mn	mg/kg	1	80	76	31	5
		Nickel, Ni	mg/kg	0.5	15	15	33	2
		Zinc, Zn	mg/kg	0.5	200	200	31	1
SE158264.138	LB112414.024	Arsenic, As	mg/kg	3	190	180	31	8
		Cadmium, Cd	mg/kg	0.3	1.5	1.4	51	8
		Copper, Cu	mg/kg	0.5	42	41	31	1
		Lead, Pb	mg/kg	1	310	330	30	6
		Manganese, Mn	mg/kg	1	4200	4500	30	8
		Nickel, Ni	mg/kg	0.5	20	21	32	5
		Zinc, Zn	mg/kg	0.5	520	490	30	6
SE158264.148	LB112415.014	Arsenic, As	mg/kg	3	140	150	31	5
		Cadmium, Cd	mg/kg	0.3	1.5	1.4	51	5
		Copper, Cu	mg/kg	0.5	61	55	31	11
		Lead, Pb	mg/kg	1	460	440	30	5
		Manganese, Mn	mg/kg	1	3400	3100	30	8
		Nickel, Ni	mg/kg	0.5	17	16	33	4
		Zinc, Zn	mg/kg	0.5	400	430	30	6
SE158264.157	LB112415.024	Arsenic, As	mg/kg	3	47	48	32	3
		Cadmium, Cd	mg/kg	0.3	0.6	0.6	79	5
		Copper, Cu	mg/kg	0.5	23	21	32	11
		Lead, Pb	mg/kg	1	110	120	31	6
		Manganese, Mn	mg/kg	1	680	930	30	32 ②
		Nickel, Ni	mg/kg	0.5	21	19	32	11
		Zinc, Zn	mg/kg	0.5	73	72	33	2
SE158266.001	LB112416.014	Lead, Pb	mg/kg	1	12	12	38	0
SE158266.010	LB112416.024	Lead, Pb	mg/kg	1	160	210	31	27

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE158259.005	LB112231.014	Arsenic, As	µg/L	1	5	5	37	0
		Cadmium, Cd	µg/L	0.1	<0.1	<0.1	200	0
		Copper, Cu	µg/L	1	<1	<1	200	0
		Lead, Pb	µg/L	1	<1	<1	200	0
		Nickel, Ni	µg/L	1	86	86	16	1
		Zinc, Zn	µg/L	5	14	14	51	2
SE158325.001	LB112231.028	Arsenic, As	µg/L	1	<1	<1	149	0
		Cadmium, Cd	µg/L	0.1	<0.1	<0.1	200	0
		Copper, Cu	µg/L	1	<1	<1	160	0
		Lead, Pb	µg/L	1	<1	<1	157	0
		Nickel, Ni	µg/L	1	4	4	39	2
		Zinc, Zn	µg/L	5	17	12	49	34
SE158338.017	LB112231.029	Arsenic, As	µg/L	1	<1	<1	200	0

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

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

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

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

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

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE158338.017	LB112231.029	Cadmium, Cd	µg/L	0.1	<0.1	<0.1	200	0
		Copper, Cu	µg/L	1	<1	<1	200	0
		Lead, Pb	µg/L	1	<1	<1	200	0
		Nickel, Ni	µg/L	1	<1	<1	200	0
		Zinc, Zn	µg/L	5	<5	<5	200	0

Trace Metals (Total) in Water by ICPMS

Method: ME-(AU)-[ENV]AN022/AN318

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE158293.002	LB112227.012	Total Arsenic	µg/L	1	71	71	16	1
		Total Cadmium	µg/L	0.1	<0.1	<0.1	200	0
		Total Copper	µg/L	1	<1	<1	200	0
		Total Lead	µg/L	1	<1	<1	200	0
		Total Nickel	µg/L	1	8	7	29	9
		Total Zinc	µg/L	5	16	16	46	1

TRH Silica Gel (Total Recoverable Hydrocarbons - Silica Gel) in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE158264.169	LB112192.014	TRH C10-C14-Silica	mg/kg	20	<20	<20	200	0
		TRH C15-C28-Silica	mg/kg	45	<45	<45	200	0
		TRH C29-C36-Silica	mg/kg	45	<45	<45	200	0
		TRH C37-C40-Silica	mg/kg	100	<100	<100	200	0
		TRH >C10-C16-Silica (F2)	mg/kg	25	<25	<25	200	0
		TRH C10-C36-Silica	mg/kg	110	<110	<110	200	0
		TRH >C16-C34-Silica (F3)	mg/kg	90	<90	<90	200	0
		TRH >C34-C40-Silica (F4)	mg/kg	120	<120	<120	200	0
SE158264.179	LB112192.025	TRH C10-C14-Silica	mg/kg	20	<20	<20	200	0
		TRH C15-C28-Silica	mg/kg	45	<45	<45	200	0
		TRH C29-C36-Silica	mg/kg	45	<45	<45	200	0
		TRH C37-C40-Silica	mg/kg	100	<100	<100	200	0
		TRH >C10-C16-Silica (F2)	mg/kg	25	<25	<25	200	0
		TRH C10-C36-Silica	mg/kg	110	<110	<110	200	0
		TRH >C16-C34-Silica (F3)	mg/kg	90	<90	<90	200	0
		TRH >C34-C40-Silica (F4)	mg/kg	120	<120	<120	200	0
SE158264.182	LB112193.024	TRH C10-C14-Silica	mg/kg	20	<20	<20	200	0
		TRH C15-C28-Silica	mg/kg	45	<45	<45	200	0
		TRH C29-C36-Silica	mg/kg	45	<45	<45	200	0
		TRH C37-C40-Silica	mg/kg	100	<100	<100	200	0
		TRH >C10-C16-Silica (F2)	mg/kg	25	<25	<25	200	0
		TRH C10-C36-Silica	mg/kg	110	<110	<110	200	0
		TRH >C16-C34-Silica (F3)	mg/kg	90	<90	<90	200	0
		TRH >C34-C40-Silica (F4)	mg/kg	120	<120	<120	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 %
LB112360.002	Exchangeable Sodium, Na	mg/kg	2	NA	390	80 - 120	96
	Exchangeable Potassium, K	mg/kg	2	NA	343	80 - 120	91
	Exchangeable Calcium, Ca	mg/kg	2	NA	2570	80 - 120	90
	Exchangeable Magnesium, Mg	mg/kg	2	NA	635	80 - 120	90

Mercury in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB112298.002	Mercury	mg/kg	0.05	0.21	0.2	70 - 130	105
LB112299.002	Mercury	mg/kg	0.05	0.21	0.2	70 - 130	103
LB112300.002	Mercury	mg/kg	0.05	0.21	0.2	70 - 130	105
LB112301.002	Mercury	mg/kg	0.05	0.20	0.2	70 - 130	100
LB112302.002	Mercury	mg/kg	0.05	0.21	0.2	70 - 130	104
LB112303.002	Mercury	mg/kg	0.05	0.20	0.2	70 - 130	100
LB112304.002	Mercury	mg/kg	0.05	0.20	0.2	70 - 130	101
LB112305.002	Mercury	mg/kg	0.05	0.20	0.2	70 - 130	100
LB112306.002	Mercury	mg/kg	0.05	0.20	0.2	70 - 130	100

Metals in Water (Dissolved) by ICPOES

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB112223.002	Arsenic, As	mg/L	0.02	2.1	2	80 - 120	104
	Cadmium, Cd	mg/L	0.001	2.0	2	80 - 120	101
	Copper, Cu	mg/L	0.005	2.1	2	80 - 120	103
	Lead, Pb	mg/L	0.02	2.1	2	80 - 120	103
	Manganese, Mn	mg/L	0.005	2.0	2	80 - 120	99
	Nickel, Ni	mg/L	0.005	2.0	2	80 - 120	102
	Zinc, Zn	mg/L	0.01	2.1	2	80 - 120	104

pH in soil (1:5)

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB112209.003	pH	pH Units	-	7.4	7.415	98 - 102	100
LB112210.003	pH	pH Units	-	7.4	7.415	98 - 102	100

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

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB112405.002	Arsenic, As	mg/kg	3	48	50	80 - 120	97
	Cadmium, Cd	mg/kg	0.3	49	50	80 - 120	98
	Copper, Cu	mg/kg	0.5	48	50	80 - 120	97
	Lead, Pb	mg/kg	1	48	50	80 - 120	97
	Manganese, Mn	mg/kg	1	48	50	80 - 120	95
	Nickel, Ni	mg/kg	0.5	49	50	80 - 120	98
	Zinc, Zn	mg/kg	0.5	49	50	80 - 120	98
LB112407.002	Arsenic, As	mg/kg	3	49	50	80 - 120	99
	Cadmium, Cd	mg/kg	0.3	50	50	80 - 120	100
	Copper, Cu	mg/kg	0.5	50	50	80 - 120	100
	Lead, Pb	mg/kg	1	49	50	80 - 120	99
	Manganese, Mn	mg/kg	1	50	50	80 - 120	99
	Nickel, Ni	mg/kg	0.5	51	50	80 - 120	102
	Zinc, Zn	mg/kg	0.5	50	50	80 - 120	100
LB112409.002	Arsenic, As	mg/kg	3	50	50	80 - 120	101
	Cadmium, Cd	mg/kg	0.3	51	50	80 - 120	102
	Copper, Cu	mg/kg	0.5	51	50	80 - 120	101
	Lead, Pb	mg/kg	1	51	50	80 - 120	102
	Manganese, Mn	mg/kg	1	50	50	80 - 120	100
	Nickel, Ni	mg/kg	0.5	51	50	80 - 120	102
	Zinc, Zn	mg/kg	0.5	52	50	80 - 120	103
LB112410.002	Arsenic, As	mg/kg	3	51	50	80 - 120	102
	Cadmium, Cd	mg/kg	0.3	51	50	80 - 120	103
	Copper, Cu	mg/kg	0.5	51	50	80 - 120	102
	Lead, Pb	mg/kg	1	51	50	80 - 120	102
	Manganese, Mn	mg/kg	1	51	50	80 - 120	101
	Nickel, Ni	mg/kg	0.5	50	50	80 - 120	101
	Zinc, Zn	mg/kg	0.5	52	50	80 - 120	104

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

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

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

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB112411.002	Arsenic, As	mg/kg	3	51	50	80 - 120	102
	Cadmium, Cd	mg/kg	0.3	52	50	80 - 120	103
	Copper, Cu	mg/kg	0.5	52	50	80 - 120	104
	Lead, Pb	mg/kg	1	52	50	80 - 120	103
	Manganese, Mn	mg/kg	1	51	50	80 - 120	102
	Nickel, Ni	mg/kg	0.5	51	50	80 - 120	101
	Zinc, Zn	mg/kg	0.5	52	50	80 - 120	104
LB112412.002	Arsenic, As	mg/kg	3	49	50	80 - 120	97
	Cadmium, Cd	mg/kg	0.3	49	50	80 - 120	98
	Copper, Cu	mg/kg	0.5	49	50	80 - 120	99
	Lead, Pb	mg/kg	1	49	50	80 - 120	97
	Manganese, Mn	mg/kg	1	49	50	80 - 120	97
	Nickel, Ni	mg/kg	0.5	49	50	80 - 120	97
	Zinc, Zn	mg/kg	0.5	49	50	80 - 120	98
LB112413.002	Arsenic, As	mg/kg	3	50	50	80 - 120	100
	Cadmium, Cd	mg/kg	0.3	50	50	80 - 120	100
	Copper, Cu	mg/kg	0.5	50	50	80 - 120	100
	Lead, Pb	mg/kg	1	50	50	80 - 120	100
	Manganese, Mn	mg/kg	1	49	50	80 - 120	98
	Nickel, Ni	mg/kg	0.5	49	50	80 - 120	99
	Zinc, Zn	mg/kg	0.5	51	50	80 - 120	101
LB112414.002	Arsenic, As	mg/kg	3	51	50	80 - 120	102
	Cadmium, Cd	mg/kg	0.3	52	50	80 - 120	103
	Copper, Cu	mg/kg	0.5	51	50	80 - 120	103
	Lead, Pb	mg/kg	1	51	50	80 - 120	102
	Manganese, Mn	mg/kg	1	50	50	80 - 120	100
	Nickel, Ni	mg/kg	0.5	51	50	80 - 120	103
	Zinc, Zn	mg/kg	0.5	52	50	80 - 120	104
LB112415.002	Arsenic, As	mg/kg	3	51	50	80 - 120	101
	Cadmium, Cd	mg/kg	0.3	51	50	80 - 120	102
	Copper, Cu	mg/kg	0.5	51	50	80 - 120	103
	Lead, Pb	mg/kg	1	51	50	80 - 120	102
	Manganese, Mn	mg/kg	1	49	50	80 - 120	98
	Nickel, Ni	mg/kg	0.5	51	50	80 - 120	101
	Zinc, Zn	mg/kg	0.5	51	50	80 - 120	103
LB112416.002	Arsenic, As	mg/kg	3	51	50	80 - 120	102
	Cadmium, Cd	mg/kg	0.3	51	50	80 - 120	103
	Copper, Cu	mg/kg	0.5	52	50	80 - 120	104
	Lead, Pb	mg/kg	1	51	50	80 - 120	102
	Manganese, Mn	mg/kg	1	50	50	80 - 120	100
	Nickel, Ni	mg/kg	0.5	51	50	80 - 120	102
	Zinc, Zn	mg/kg	0.5	52	50	80 - 120	104

Trace Metals (Dissolved) in Water by ICPMS

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB112231.002	Arsenic, As	µg/L	1	20	20	80 - 120	98
	Cadmium, Cd	µg/L	0.1	20	20	80 - 120	102
	Copper, Cu	µg/L	1	21	20	80 - 120	105
	Lead, Pb	µg/L	1	21	20	80 - 120	107
	Manganese, Mn	µg/L	1	20	20	80 - 120	102
	Nickel, Ni	µg/L	1	20	20	80 - 120	102
	Zinc, Zn	µg/L	5	20	20	80 - 120	100

Trace Metals (Total) in Water by ICPMS

Method: ME-(AU)-[ENV]AN022/AN318

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB112227.002	Total Arsenic	µg/L	1	19	20	80 - 120	96
	Total Cadmium	µg/L	0.1	20	20	80 - 120	100
	Total Copper	µg/L	1	21	20	80 - 120	104
	Total Lead	µg/L	1	21	20	80 - 120	106
	Total Manganese	µg/L	1	20	20	80 - 120	100
	Total Nickel	µg/L	1	20	20	80 - 120	101
	Total Zinc	µg/L	5	19	20	80 - 120	97

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

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

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB112192.002	TRH C10-C14-Silica	mg/kg	20	37	40	70 - 130	93
	TRH C15-C28-Silica	mg/kg	45	<45	40	70 - 130	103
	TRH C29-C36-Silica	mg/kg	45	<45	40	70 - 130	108
	TRH >C10-C16-Silica (F2)	mg/kg	25	38	40	70 - 130	95
	TRH >C16-C34-Silica (F3)	mg/kg	90	<90	40	70 - 130	108
	TRH >C34-C40-Silica (F4)	mg/kg	120	<120	20	70 - 130	125
LB112193.002	TRH C10-C14-Silica	mg/kg	20	37	40	70 - 130	93
	TRH C15-C28-Silica	mg/kg	45	<45	40	70 - 130	103
	TRH C29-C36-Silica	mg/kg	45	<45	40	70 - 130	108
	TRH >C10-C16-Silica (F2)	mg/kg	25	38	40	70 - 130	95
	TRH >C16-C34-Silica (F3)	mg/kg	90	<90	40	70 - 130	108
	TRH >C34-C40-Silica (F4)	mg/kg	120	<120	20	70 - 130	125

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB112212.002	TRH C10-C14-Silica	µg/L	50	1100	1200	60 - 140	88
	TRH C15-C28-Silica	µg/L	200	1200	1200	60 - 140	103
	TRH C29-C36-Silica	µg/L	200	1400	1200	60 - 140	117
	TRH >C10-C16-Silica	µg/L	60	1100	1200	60 - 140	94
	TRH >C16-C34-Silica	µg/L	500	1300	1200	60 - 140	108
	TRH >C34-C40-Silica	µg/L	500	770	600	60 - 140	128

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

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

Mercury (dissolved) in Water

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE158239.001	LB112441.004	Mercury	mg/L	0.0001	0.0080	<0.0001	0.008	100

Mercury (total) in Water

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE158264.198	LB112445.005	Total Mercury	mg/L	0.0001	0.0084	<0.0001	-	-

Mercury in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE158264.001	LB112298.004	Mercury	mg/kg	0.05	0.19	0.05	0.2	67 ④
SE158264.020	LB112299.004	Mercury	mg/kg	0.05	0.21	<0.05	0.2	96
SE158264.039	LB112300.004	Mercury	mg/kg	0.05	0.15	<0.05	0.2	66 ④
SE158264.058	LB112301.004	Mercury	mg/kg	0.05	0.19	<0.05	0.2	75
SE158264.077	LB112302.004	Mercury	mg/kg	0.05	0.21	<0.05	0.2	88
SE158264.096	LB112303.004	Mercury	mg/kg	0.05	0.18	<0.05	0.2	77
SE158264.115	LB112304.004	Mercury	mg/kg	0.05	0.23	<0.05	0.2	90
SE158264.134	LB112305.004	Mercury	mg/kg	0.05	0.18	<0.05	0.2	79
SE158264.153	LB112306.004	Mercury	mg/kg	0.05	0.22	0.05	0.2	84

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

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE158264.063	LB112411.004	Arsenic, As	mg/kg	3	150	120	50	67 ⑨
		Cadmium, Cd	mg/kg	0.3	40	4.0	50	72
		Copper, Cu	mg/kg	0.5	120	66	50	101
		Lead, Pb	mg/kg	1	590	620	50	-56 ⑨
		Manganese, Mn	mg/kg	1	3600	3700	50	-280 ⑨
		Nickel, Ni	mg/kg	0.5	64	27	50	73
		Zinc, Zn	mg/kg	0.5	1300	1200	50	16 ⑨
SE158264.082	LB112412.004	Arsenic, As	mg/kg	3	100	66	50	72
		Cadmium, Cd	mg/kg	0.3	41	0.7	50	81
		Copper, Cu	mg/kg	0.5	77	33	50	87
		Lead, Pb	mg/kg	1	500	310	50	391 ⑨
		Manganese, Mn	mg/kg	1	2200	1600	50	1164 ⑨
		Nickel, Ni	mg/kg	0.5	50	8.2	50	83
		Zinc, Zn	mg/kg	0.5	360	310	50	103

Trace Metals (Total) in Water by ICPMS

Method: ME-(AU)-[ENV]AN022/AN318

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
BA000040.001	LB112227.004	Total Arsenic	μg/L	1	20	-0.00516513	20	102
		Total Cadmium	μg/L	0.1	21	-0.00082962	20	106
		Total Copper	μg/L	1	22	-0.01048987	20	108
		Total Lead	μg/L	1	22	0.01887509	20	111
		Total Manganese	μg/L	1	21	0.05684833	20	105
		Total Nickel	μg/L	1	21	-0.0002369	20	105
		Total Zinc	μg/L	5	20	0.37529506	20	100

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

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

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

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

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

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

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

*	NATA accreditation does not cover tthe performance of this service.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.

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

E-MAILED 20/10/16 @ 12.22

SGS EHS Alexandria Laboratory

SE158264 COC

Received: 19 – Oct – 2016

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
email: info@geotech.com.au

TO:	SGS ENVIRONMENTAL SERVICES UNIT 16 33 MADDOX STREET ALEXANDRIA NSW 2015
PH:	02 8594 0400
FAX:	02 8594 0499
ATTN:	MS EMILY YIN
Sampling By:	LY/JH
Job No:	12675/4
Project:	
Project Manager:	JX
Location:	Googong NH1A-7 & NH2

Results required by: Normal TAT

	Location	Depth (m)	Date	Time	Soil	Water	Heavy Metals As, Cd, Cu, Pb, Mn, Hg, Ni and Zn	TPH F2 & F3 with silica gel clean-up	pH & CEC							KEEP SAMPLE
1	A4	0.25-0.35	18/10/2016	-	SG		✓									YES
2	A4	0.5-0.6	18/10/2016	-	SG		✓									YES
3	A6	0.25-0.35	18/10/2016	-	SG		✓									YES
4	A6	0.5-0.6	18/10/2016	-	SG		✓									YES
5	A8	0.25-0.35	18/10/2016	-	SG		✓									YES
6	A8	0.5-0.6	18/10/2016	-	SG		✓		✓							YES
7	A8	1.0-1.1	18/10/2016	-	SG		✓									YES
8	A9	0.25-0.35	18/10/2016	-	SG		✓									YES
9	A9	0.5-0.6	18/10/2016	-	SG		✓									YES
10	A11	0.25-0.35	18/10/2016	-	SG		✓									YES
11	A11	0.5-0.6	18/10/2016	-	SG		✓									YES
12	A11	1.0-1.1	18/10/2016	-	SG		✓		✓							YES
13	A11	1.9-2.0	18/10/2016	-	SG		✓									YES

Relinquished by: Name	Signature	Date	Received by: Name	Signature	Date
JOHN XU	jx	20/10/2016	Oliver	[signature]	19/10/16 @ 2:05pm

Legend:

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

* Purge & Trap

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
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email: info@geotech.com.au

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

PH: 02 8594 0400 FAX: 02 8594 0499

ATTN: MS EMILY YIN

Sampling By: LY/JH
Job No: 12675/4
Project:
Project Manager: JX
Location: Googong NH1A-7 & NH2

Results required by: Normal TAT

	Location	Depth (m)	Date	Time	Soil	Water	Heavy Metals As, Cd, Cu, Pb, Mn, Hg, Ni and Zn	TPH F2 & F3 with silica gel clean-up	pH & CEC							KEEP SAMPLE
14	A13	0.25-0.35	18/10/2016	-	SG		✓									YES
15	A13	0.5-0.6	18/10/2016	-	SG		✓									YES
16	A15	0.2-0.3	18/10/2016	-	SG		✓									YES
17	A15	0.5-0.6	18/10/2016	-	SG		✓		✓							YES
18	A15	1.0-1.1	18/10/2016	-	SG		✓									YES
19	A15	1.9-2.0	18/10/2016	-	SG		✓									YES
20	A16	0.2-0.3	18/10/2016	-	SG		✓		✓							YES
21	A16	0.5-0.6	18/10/2016	-	SG		✓									YES
22	A16	1.0-1.1	18/10/2016	-	SG		✓									YES
23	A16	1.5-1.6	18/10/2016	-	SG		✓									YES
24	A17	0.2-0.3	18/10/2016	-	SG		✓									YES
25	A17	0.5-0.6	18/10/2016	-	SG		✓									YES
26	A17	1.0-1.1	18/10/2016	-	SG		✓									YES

Relinquished by: Name	Signature	Date	Received by: Name	Signature	Date
JOHN XU	jx	20/10/2016	Owen	[signature]	20/10/16 @ 2:00pm

Legend:

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

* Purge & Trap

GEOTECHNIQUE PTY LTD

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		Job No:	12675/4
		Project:	
PH:	02 8594 0400 FAX: 02 8594 0499	Project Manager:	JX
		Location:	Googong NH1A-7 & NH2
ATTN:	MS EMILY YIN		

Results required by: Normal TAT

	Sampling details				Sample type											
	Location	Depth (m)	Date	Time	Soil	Water	Heavy Metals As, Cd, Cu, Pb, Mn, Hg, Ni and Zn	TPH F2 & F3 with silica gel clean-up	pH & CEC							KEEP SAMPLE
27	A17	1.9-2.0	18/10/2016	-	SG		✓		✓							YES
28	A18	0.2-0.3	18/10/2016	-	SG		✓									YES
29	A18	0.5-0.6	18/10/2016	-	SG		✓									YES
30	A18	1.0-1.1	18/10/2016	-	SG		✓		✓							YES
31	D101	0-0.1	17/10/2016	-	SG		✓		✓							YES
32	D101	0.2-0.3	17/10/2016	-	SG		✓									YES
33	D101	1.0-1.1	17/10/2016	-	SG		✓		✓							YES
34	D101	1.9-2.0	17/10/2016	-	SG		✓									YES
35	D102	0-0.1	17/10/2016	-	SG		✓									YES
36	D102	0.2-0.3	17/10/2016	-	SG		✓									YES
37	D103	0-0.1	18/10/2016	-	SG		✓									YES
38	D103	0.2-0.3	18/10/2016	-	SG		✓									YES
39	D104	0-0.1	18/10/2016	-	SG		✓									YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	20/10/2016	[illegible]	[illegible]	[illegible] @ 2:00

Legend:

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

* Purge & Trap

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			Project:
PH:	02 8594 0400 FAX: 02 8594 0499	Project Manager: JX	Location: Googong NH1A-7 & NH2
ATTN:	MS EMILY YIN		

Results required by: Normal TAT

	Sampling details				Sample type											
	Location	Depth (m)	Date	Time	Soil	Water	Heavy Metals As, Cd, Cu, Pb, Mn, Hg, Ni and Zn	TPH F2 & F3 with silica gel clean-up	pH & CEC							KEEP SAMPLE
40	D104	0.2-0.3	18/10/2016	-	SG		✓									YES
41	D105	0-0.1	18/10/2016	-	SG		✓									YES
42	D105	0.2-0.3	18/10/2016	-	SG		✓									YES
43	D106	0-0.1	18/10/2016	-	SG		✓									YES
44	D106	0.2-0.3	18/10/2016	-	SG		✓									YES
45	D107	0-0.1	18/10/2016	-	SG		✓									YES
46	D107	0.2-0.3	18/10/2016	-	SG		✓									YES
47	D108	0-0.1	18/10/2016	-	SG		✓									YES
48	D108	0.2-0.3	18/10/2016	-	SG		✓									YES
49	D109	0-0.1	18/10/2016	-	SG		✓									YES
50	D109	0.2-0.3	18/10/2016	-	SG		✓									YES
51	D110	0-0.1	17/10/2016	-	SG		✓									YES
52	D110	0.2-0.3	17/10/2016	-	SG		✓									YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	20/10/2016			19/10/16 @ 7:00

Legend:

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

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

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PENRITH NSW 2750

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PENRITH NSW 2751

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email: info@geotech.com.au

TO:	SGS ENVIRONMENTAL SERVICES UNIT 16 33 MADDOX STREET ALEXANDRIA NSW 2015	Sampling By:	LY/JH
		Job No:	12675/4
		Project:	
PH:	02 8594 0400	FAX:	02 8594 0499
		Project Manager:	JX
		Location:	Googong NH1A-7 & NH2
ATTN:	MS EMILY YIN		

Results required by: Normal TAT

	Sampling details				Sample type												
	Location	Depth (m)	Date	Time	Soil	Water	Heavy Metals As, Cd, Cu, Pb, Mn, Hg, Ni and Zn	TPH F2 & F3 with silica gel clean-up	pH & CEC							KEEP SAMPLE
53	D111	0-0.1	17/10/2016	-	SG		✓									YES
54	D111	0.2-0.3	17/10/2016	-	SG		✓									YES
55	D112	0-0.1	17/10/2016	-	SG		✓									YES
56	D112	0.2-0.3	17/10/2016	-	SG		✓									YES
57	D113	0-0.1	17/10/2016	-	SG		✓									YES
58	D113	0.2-0.3	17/10/2016	-	SG		✓									YES
59	D114	0-0.1	17/10/2016	-	SG		✓									YES
60	D114	0.2-0.3	17/10/2016	-	SG		✓									YES
61	D115	0-0.1	17/10/2016	-	SG		✓									YES
62	D115	0.2-0.3	17/10/2016	-	SG		✓									YES
63	D116	0-0.1	18/10/2016	-	SG		✓		✓							YES
64	D116	0.2-0.3	18/10/2016	-	SG		✓		✓							YES
65	D116	1.0-1.1	18/10/2016	-	SG		✓									YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	20/10/2016	[illegible]	[illegible]	[illegible]/10/16 @ 2.00

Legend:

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

* Purge & Trap

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

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PENRITH NSW 2751

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email: info@geotech.com.au

TO:	SGS ENVIRONMENTAL SERVICES UNIT 16 33 MADDOX STREET ALEXANDRIA NSW 2015		Sampling By:	LY/JH	Job No: 12675/4
					Project:
PH:	02 8594 0400	FAX: 02 8594 0499	Project Manager:	JX	Location: Googong NH1A-7 & NH2
ATTN:	MS EMILY YIN				

Results required by: Normal TAT

	Sampling details				Sample type											
	Location	Depth (m)	Date	Time	Soil	Water	Heavy Metals As, Cd, Cu, Pb, Mn, Hg, Ni and Zn	TPH F2 & F3 with silica gel clean-up	pH & CEC							KEEP SAMPLE
66	D116	1.4-1.5	18/10/2016	-	SG		✓									YES
67	D117	0-0.1	18/10/2016	-	SG		✓									YES
68	D117	0.2-0.3	18/10/2016	-	SG		✓									YES
69	D118	0-0.1	18/10/2016	-	SG		✓									YES
70	D118	0.2-0.3	18/10/2016	-	SG		✓									YES
71	D119	0-0.1	18/10/2016	-	SG		✓		✓							YES
72	D119	0.2-0.3	18/10/2016	-	SG		✓									YES
73	D120	0-0.1	18/10/2016	-	SG		✓									YES
74	D120	0.2-0.3	18/10/2016	-	SG		✓									YES
75	D121	0-0.1	18/10/2016	-	SG		✓									YES
76	D121	0.2-0.3	18/10/2016	-	SG		✓									YES
77	D122	0-0.1	18/10/2016	-	SG		✓									YES
78	D122	0.2-0.3	18/10/2016	-	SG		✓									YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	20/10/2016	[illegible]	[illegible]	19/10/16 @ 2:00pm

Legend:

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

* Purge & Trap

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161
email: info@geotech.com.au

TO:	**SGS ENVIRONMENTAL SERVICES** **UNIT 16** **33 MADDOX STREET** **ALEXANDRIA NSW 2015**	**Sampling By:**	LY/JH
		Job No:	12675/4
		Project:	
PH:	**02 8594 0400** **FAX: 02 8594 0499**	**Project Manager:**	JX
		Location:	**Googong NH1A-7 & NH2**
ATTN:	**MS EMILY YIN**		

Results required by: Normal TAT

	Location	Depth (m)	Date	Time	Soil	Water	Heavy Metals As, Cd, Cu, Pb, Mn, Hg, Ni and Zn	TPH F2 & F3 with silica gel clean-up	pH & CEC						KEEP SAMPLE
79	D123	0-0.1	18/10/2016	-	SG		✓								YES
80	D123	0.2-0.3	18/10/2016	-	SG		✓								YES
81	D124	0-0.1	17/10/2016	-	SG		✓								YES
82	D124	0.2-0.3	17/10/2016	-	SG		✓								YES
83	D125	0-0.1	17/10/2016	-	SG		✓								YES
84	D125	0.2-0.3	17/10/2016	-	SG		✓								YES
85	D126	0-0.1	17/10/2016	-	SG		✓								YES
86	D126	0.2-0.3	17/10/2016	-	SG		✓								YES
87	D127	0-0.1	18/10/2016	-	SG		✓								YES
88	D127	0.2-0.3	18/10/2016	-	SG		✓								YES
89	D128	0-0.1	18/10/2016	-	SG		✓								YES
90	D128	0.2-0.3	18/10/2016	-	SG		✓								YES
91	D129	0-0.1	18/10/2016	-	SG		✓								YES

Relinquished by: Name	Signature	Date	Received by: Name	Signature	Date
JOHN XU	jx	20/10/2016	[illegible]	[illegible]	19/10/16 @ 3:00

Legend:

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

* Purge & Trap

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

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email: info@geotech.com.au

TO:	SGS ENVIRONMENTAL SERVICES UNIT 16 33 MADDOX STREET ALEXANDRIA NSW 2015	Sampling By:	LY/JH	Job No:	12675/4
				Project:	
PH:	02 8594 0400 FAX: 02 8594 0499	Project Manager:	JX	Location:	Googong NH1A-7 & NH2
ATTN:	MS EMILY YIN				

Results required by: Normal TAT

	Sampling details				Sample type												
	Location	Depth (m)	Date	Time	Soil	Water	Heavy Metals As, Cd, Cu, Pb, Mn, Hg, Ni and Zn	TPH F2 & F3 with silica gel clean-up	pH & CEC							KEEP SAMPLE
92	D129	0.2-0.03	18/10/2016	-	SG		✓									YES
93	D130	0-0.1	18/10/2016	-	SG		✓		✓							YES
94	D130	0.2-0.3	18/10/2016	-	SG		✓									YES
95	D130	1.0-1.1	18/10/2016	-	SG		✓		✓							YES
96	D131	0-0.1	18/10/2016	-	SG		✓									YES
97	D131	0.2-0.3	18/10/2016	-	SG		✓									YES
98	D132	0-0.1	17/10/2016	-	SG		✓		✓							YES
99	D132	0.2-0.3	17/10/2016	-	SG		✓		✓							YES
100	D132	1.0-1.1	17/10/2016	-	SG		✓									YES
101	D132	1.9-2.0	17/10/2016	-	SG		✓									YES
102	D133	0-0.1	17/10/2016	-	SG		✓									YES
103	D133	0.2-0.3	17/10/2016	-	SG		✓									YES
104	D134	0-0.1	17/10/2016	-	SG		✓									YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	20/10/2016	Owen	[illegible]	21/10/16 @ 2:00

Legend:

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

* Purge & Trap

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161
email: info@geotech.com.au

TO:	SGS ENVIRONMENTAL SERVICES UNIT 16 33 MADDOX STREET ALEXANDRIA NSW 2015	Sampling By: LY/JH	Job No: 12675/4
			Project:
PH: 02 8594 0400	FAX: 02 8594 0499	Project Manager: JX	Location: Googong NH1A-7 & NH2
ATTN:	MS EMILY YIN		

Results required by: Normal TAT

	Sampling details				Sample type												
	Location	Depth (m)	Date	Time	Soil	Water	Heavy Metals As, Cd, Cu, Pb, Mn, Hg, Ni and Zn	TPH F2 & F3 with silica gel clean-up	pH & CEC							KEEP SAMPLE
105	D134	0.2-0.03	17/10/2016	-	SG		✓									YES
106	D135	0-0.1	17/10/2016	-	SG		✓									YES
107	D135	0.2-0.3	17/10/2016	-	SG		✓									YES
108	D136	0-0.1	17/10/2016	-	SG		✓									YES
109	D136	0.2-0.3	17/10/2016	-	SG		✓									YES
110	D137	0-0.1	17/10/2016	-	SG		✓									YES
111	D137	0.2-0.3	17/10/2016	-	SG		✓									YES
112	D138	0-0.1	17/10/2016	-	SG		✓									YES
113	D138	0.2-0.3	17/10/2016	-	SG		✓									YES
114	D139	0-0.1	17/10/2016	-	SG		✓		✓							YES
115	D139	0.2-0.3	17/10/2016	-	SG		✓									YES
116	D139	1.0-1.1	17/10/2016	-	SG		✓									YES
117	D139	1.4-1.5	17/10/2016	-	SG		✓		✓							YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	20/10/2016			19/10/16 @ 2:30

Legend:

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

* Purge & Trap

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161
email: info@geotech.com.au

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

PH: 02 8594 0400 FAX: 02 8594 0499

ATTN: MS EMILY YIN

Sampling By: LY/JH
Job No: 12675/4
Project:
Project Manager: JX
Location: Googong NH1A-7 & NH2

Results required by: Normal TAT

	Location	Depth (m)	Date	Time	Soil	Water	Heavy Metals As, Cd, Cu, Pb, Mn, Hg, Ni and Zn	TPH F2 & F3 with silica gel clean-up	pH & CEC							KEEP SAMPLE
118	D140	0-0.1	17/10/2016	-	SG		✓									YES
119	D140	0.2-0.3	17/10/2016	-	SG		✓									YES
120	D141	0-0.1	17/10/2016	-	SG		✓									YES
121	D141	0.2-0.3	17/10/2016	-	SG		✓									YES
122	D142	0-0.1	17/10/2016	-	SG		✓		✓							YES
123	D142	0.2-0.3	17/10/2016	-	SG		✓									YES
124	D142	1.0-1.1	17/10/2016	-	SG		✓									YES
125	D142	1.9-2.0	17/10/2016	-	SG		✓		✓							YES
126	D143	0-0.1	17/10/2016	-	SG		✓									YES
127	D143	0.2-0.3	17/10/2016	-	SG		✓									YES
128	D144	0-0.1	17/10/2016	-	SG		✓									YES
129	D144	0.2-0.3	17/10/2016	-	SG		✓									YES
130	D145	0-0.1	17/10/2016	-	SG		✓									YES

Relinquished by: Name	Signature	Date	Received by: Name	Signature	Date
JOHN XU	jx	20/10/2016			19/10/16 @ 2:00

Legend:
WG Water sample, glass bottle
WP Water sample, plastic bottle
SG Soil sample (glass jar)
SP Soil sample (plastic bag)
✓ Test required
* Purge & Trap

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161
email: info@geotech.com.au

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

PH: 02 8594 0400   FAX: 02 8594 0499

ATTN: MS EMILY YIN

Sampling By: LY/JH   Job No: 12675/4

Project:

Project Manager: JX   Location: Googong NH1A-7 & NH2

Results required by: Normal TAT

	Location	Depth (m)	Date	Time	Soil	Water	Heavy Metals As, Cd, Cu, Pb, Mn, Hg, Ni and Zn	TPH F2 & F3 with silica gel clean-up	pH & CEC							KEEP SAMPLE
131	D145	0.2-0.3	17/10/2016	-	SG		✓									YES
132	D146	0-0.1	17/10/2016	-	SG		✓									YES
133	D146	0.2-0.3	17/10/2016	-	SG		✓									YES
134	D147	0-0.1	17/10/2016	-	SG		✓									YES
135	D147	0.2-0.3	17/10/2016	-	SG		✓									YES
136	D148	0-0.1	17/10/2016	-	SG		✓									YES
137	D148	0.2-0.3	17/10/2016	-	SG		✓									YES
138	D149	0-0.1	17/10/2016	-	SG		✓									YES
139	D149	0.2-0.3	17/10/2016	-	SG		✓									YES
140	D150	0-0.1	17/10/2016	-	SG		✓									YES
141	D150	0.2-0.3	17/10/2016	-	SG		✓									YES
142	D151	0-0.1	17/10/2016	-	SG		✓									YES
143	D151	0.2-0.3	17/10/2016	-	SG		✓									YES

Relinquished by: Name	Signature	Date	Received by: Name	Signature	Date
JOHN XU	jx	20/10/2016	[illegible]	[illegible]	17/10/16 @ 2:00

Legend:

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

GEOTECHNIQUE PTY LTD

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
email: info@geotech.com.au

TO:	**SGS ENVIRONMENTAL SERVICES** **UNIT 16** **33 MADDOX STREET** **ALEXANDRIA NSW 2015**	**Sampling By:** LY/JH	**Job No:** 12675/4
			Project:
PH:	**02 8594 0400** **FAX:** **02 8594 0499**	**Project Manager:** JX	**Location:** **Googong NH1A-7 & NH2**
ATTN:	**MS EMILY YIN**		

Results required by: Normal TAT

	Sampling details				Sample type											
	Location	Depth (m)	Date	Time	Soil	Water	Heavy Metals As, Cd, Cu, Pb, Mn, Hg, Ni and Zn	TPH F2 & F3 with silica gel clean-up	pH & CEC							KEEP SAMPLE
144	D152	0-0.1	17/10/2016	-	SG		✓		✓							YES
145	D152	0.2-0.3	17/10/2016	-	SG		✓		✓							YES
146	D152	1.0-1.1	17/10/2016	-	SG		✓									YES
147	D152	1.9-2.0	17/10/2016	-	SG		✓									YES
148	D153	0-0.1	17/10/2016	-	SG		✓									YES
149	D153	0.2-0.3	17/10/2016	-	SG		✓									YES
150	D154	0-0.1	17/10/2016	-	SG		✓									YES
151	D154	0.2-0.3	17/10/2016	-	SG		✓									YES
152	D155	0-0.1	17/10/2016	-	SG		✓									YES
153	D155	0.2-0.3	17/10/2016	-	SG		✓									YES
154	D156	0-0.1	17/10/2016	-	SG		✓									YES
155	D156	0.2-0.3	17/10/2016	-	SG		✓									YES
156	D157	0-0.1	17/10/2016	-	SG		✓		✓							YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	20/10/2016			18/10/16 2:00

Legend:

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

* Purge & Trap

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161
email: info@geotech.com.au

TO:	SGS ENVIRONMENTAL SERVICES UNIT 16 33 MADDOX STREET ALEXANDRIA NSW 2015	Sampling By: LY/JH	Job No: 12675/4
			Project:
PH: 02 8594 0400	FAX: 02 8594 0499	Project Manager: JX	Location: Googong NH1A-7 & NH2
ATTN:	MS EMILY YIN		

Results required by: Normal TAT

	Sampling details				Sample type											
	Location	Depth (m)	Date	Time	Soil	Water	Heavy Metals As, Cd, Cu, Pb, Mn, Hg, Ni and Zn	TPH F2 & F3 with silica gel clean-up	pH & CEC							KEEP SAMPLE
157	D157	0.2-0.3	17/10/2016	-	SG		✓									YES
158	D157	1.0-1.1	17/10/2016	-	SG		✓		✓							YES
159	D157	1.9-2.0	17/10/2016	-	SG		✓									YES
160	DS11	0-0.1	18/10/2016	-	SG			✓								YES
161	DS16	0-0.1	18/10/2016	-	SG			✓								YES
162	DS18	0-0.1	18/10/2016	-	SG			✓								YES
163	DS18	0.5-0.6	18/10/2016	-	SG			✓								YES
164	DS19	0-0.1	18/10/2016	-	SG			✓								YES
165	DS19	0.5-0.6	18/10/2016	-	SG			✓								YES
166	DS22	0-0.1	18/10/2016	-	SG			✓								YES
167	DS22	0.5-0.6	18/10/2016	-	SG			✓								YES
168	CS12-1	0-0.1	18/10/2016	-	SG			✓								YES
169	CS12-2	0-0.1	18/10/2016	-	SG			✓								YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	20/10/2016	[illegible]	[illegible]	19/10/16 [illegible]

Legend:

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

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161
email: info@geotech.com.au

TO:	SGS ENVIRONMENTAL SERVICES UNIT 16 33 MADDOX STREET ALEXANDRIA NSW 2015	Sampling By: LY/JH	Job No: 12675/4
			Project:
PH:	02 8594 0400 FAX: 02 8594 0499	Project Manager: JX	Location: Googong NH1A-7 & NH2
ATTN:	MS EMILY YIN		

Results required by: Normal TAT

	Location	Depth (m)	Date	Time	Soil	Water	Heavy Metals As, Cd, Cu, Pb, Mn, Hg, Ni and Zn	TPH F2 & F3 with silica gel clean-up	pH & CEC							KEEP SAMPLE
170	CS12-2	0.5-0.6	18/10/2016	-	SG			✓								YES
171	CS12-3	0-0.1	18/10/2016	-	SG			✓								YES
172	CS14-1	0-0.1	18/10/2016	-	SG			✓								YES
173	CS14-2	0-0.1	18/10/2016	-	SG			✓								YES
174	CS14-3	0-0.1	18/10/2016	-	SG			✓								YES
175	CS15-1	0-0.1	18/10/2016	-	SG			✓								YES
176	CS15-2	0-0.1	18/10/2016	-	SG			✓								YES
177	CS15-2	0.5-0.6	18/10/2016	-	SG			✓								YES
178	CS15-3	0-0.1	18/10/2016	-	SG			✓								YES
179	CS18-1	0-0.1	18/10/2016	-	SG			✓								YES
180	CS18-2	0-0.1	18/10/2016	-	SG			✓								YES
181	CS18-2	0.5-0.6	18/10/2016	-	SG			✓								YES
182	CS18-3	0-0.1	18/10/2016	-	SG			✓								YES

Relinquished by: Name	Signature	Date	Received by: Name	Signature	Date
JOHN XU	jx	20/10/2016			20/10/16 @ 2030

Legend:

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

* Purge & Trap

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
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email: info@geotech.com.au

TO:	SGS ENVIRONMENTAL SERVICES UNIT 16 33 MADDOX STREET ALEXANDRIA NSW 2015	Sampling By: LY/JH	Job No: 12675/4
			Project:
PH:	02 8594 0400 FAX: 02 8594 0499	Project Manager: JX	Location: Googong NH1A-7 & NH2
ATTN:	MS EMILY YIN		

Results required by: Normal TAT

Sampling details				Sample type											
Location	Depth (m)	Date	Time	Soil	Water	Heavy Metals As, Cd, Cu, Pb, Mn, Hg, Ni and Zn	TPH F2 & F3 with silica gel clean-up	pH & CEC							KEEP SAMPLE
183 CS22-1	0-0.1	18/10/2016	-	SG			✓								YES
184 CS22-2	0-0.1	18/10/2016	-	SG			✓								YES
185 CS22-3	0-0.1	18/10/2016	-	SG			✓								YES
186 Duplicate D1		17/10/2016	-	SG		✓									YES
187 Duplicate D2		17/10/2016	-	SG		✓									YES
188 Duplicate D3		17/10/2016	-	SG		✓									YES
189 Duplicate D4		17/10/2016	-	SG		✓									YES
190 Duplicate D5		18/10/2016	-	SG		✓									YES
191 Duplicate D6		18/10/2016	-	SG		✓									YES
192 Duplicate D7		18/10/2016	-	SG		✓									YES
193 Duplicate D8		18/10/2016	-	SG			✓								YES
194 Duplicate D9		18/10/2016	-	SG			✓								YES
195 Duplicate D10		18/10/2016	-	SG			✓								YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	20/10/2016	[illegible]	[illegible]	19/10/16 @ 2:00

Legend:

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

GEOTECHNIQUE PTY LTD

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
email: info@geotech.com.au

TO:	SGS ENVIRONMENTAL SERVICES UNIT 16 33 MADDOX STREET ALEXANDRIA NSW 2015	Sampling By: LY/JH	Job No: 12675/4
			Project:
PH: 02 8594 0400	FAX: 02 8594 0499	Project Manager: JX	Location: Googong NH1A-7 & NHQ
ATTN:	MS EMILY YIN		

Results required by: Normal TAT

Location	Depth (m)	Date	Time	Soil	Water	Heavy Metals As, Cd, Cu, Pb, Mn, Hg, Ni and Zn	TPH F2 & F3 with silica gel clean-up	Heavy Metals As, Cd, Cu, Pb, Mn, Hg, Ni and Zn (unfiltered)	Heavy Metals As, Cd, Cu, Pb, Mn, Hg, Ni and Zn (to be filtered at lab)						KEEP SAMPLE
176 Rinsate R1		17/10/2016	-		WG	✓									YES
177 Rinsate R2		18/10/2016	-		WG	✓	✓								YES
178 Dam Water W1		18/10/2016	-		WG/WP			✓	✓						YES
															YES

Relinquished by Name	Signature	Date	Received by Name	Signature	Date
JOHN XU	jx	20/10/2016	[signature]	[signature]	19/10/16 @ 2:00

Legend:

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

* Purge & Trap

SAMPLE RECEIPT ADVICE

SE158264

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**12675-4 Googong NH1A-7 and NH2**
Order Number	(Not specified)
Samples	198

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Wed 19/10/2016
Report Due	Thu 27/10/2016
SGS Reference	**SE158264**

SUBMISSION DETAILS

This is to confirm that 198 samples were received on Wednesday 19/10/2016. Results are expected to be ready by Thursday 27/10/2016. Please quote SGS reference SE158264 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Sample counts by matrix	195 Soil, 3 Water	Type of documentation received	COC
Date documentation received	20/10/16@12:22pm	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	8.3°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		

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

COMMENTS

SAMPLE RECEIPT ADVICE

SE158264

CLIENT DETAILS

Client Geotechnique

Project 12675-4 Googong NH1A-7 and NH2

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	Mercury in Soil	Moisture Content	pH in soil (1:5)	Total Recoverable Metals in Soil/Waste
001	A4 0.25-0.35	-	1	1	-	7
002	A4 0.5-0.6	-	1	1	-	7
003	A6 0.25-0.35	-	1	1	-	7
004	A6 0.5-0.6	-	1	1	-	7
005	A8 0.25-0.35	-	1	1	-	7
006	A8 0.5-0.6	13	1	1	1	7
007	A8 1.0-1.1	-	1	1	-	7
008	A9 0.25-0.35	-	1	1	-	7
009	A9 0.5-0.6	-	1	1	-	7
010	A11 0.25-0.35	-	1	1	-	7
011	A11 0.5-0.6	-	1	1	-	7
012	A11 1.0-1.1	13	1	1	1	7
013	A11 1.9-2.0	-	1	1	-	7
014	A13 0.25-0.35	-	1	1	-	7
015	A13 0.5-0.6	-	1	1	-	7
016	A15 0.2-0.3	-	1	1	-	7
017	A15 0.5-0.6	13	1	1	1	7
018	A15 1.0-1.1	-	1	1	-	7
019	A15 1.9-2.0	-	1	1	-	7
020	A16 0.2-0.3	13	1	1	1	7
021	A16 0.5-0.6	-	1	1	-	7
022	A16 1.0-1.1	-	1	1	-	7
023	A16 1.5-1.6	-	1	1	-	7
024	A17 0.2-0.3	-	1	1	-	7

CONTINUED OVERLEAF

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

SAMPLE RECEIPT ADVICE

SE158264

CLIENT DETAILS

Client: Geotechnique

Project: 12675-4 Googong NH1A-7 and NH2

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	Mercury in Soil	Moisture Content	pH in soil (1:5)	Total Recoverable Metals in Soil/Waste
025	A17 0.5-0.6	-	1	1	-	7
026	A17 1.0-1.1	-	1	1	-	7
027	A17 1.9-2.0	13	1	1	1	7
028	A18 0.2-0.3	-	1	1	-	7
029	A18 0.5-0.6	-	1	1	-	7
030	A18 1.0-1.1	13	1	1	1	7
031	D101 0-0.1	13	1	1	1	7
032	D101 0.2-0.3	-	1	1	-	7
033	D101 1.0-1.1	13	1	1	1	7
034	D101 1.9-2.0	-	1	1	-	7
035	D102 0-0.1	-	1	1	-	7
036	D102 0.2-0.3	-	1	1	-	7
037	D103 0-0.1	-	1	1	-	7
038	D103 0.2-0.3	-	1	1	-	7
039	D104 0-0.1	-	1	1	-	7
040	D104 0.2-0.3	-	1	1	-	7
041	D105 0-0.1	-	1	1	-	7
042	D105 0.2-0.3	-	1	1	-	7
043	D106 0-0.1	-	1	1	-	7
044	D106 0.2-0.3	-	1	1	-	7
045	D107 0-0.1	-	1	1	-	7
046	D107 0.2-0.3	-	1	1	-	7
047	D108 0-0.1	-	1	1	-	7
048	D108 0.2-0.3	-	1	1	-	7

CONTINUED OVERLEAF

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SAMPLE RECEIPT ADVICE

SE158264

CLIENT DETAILS

Client Geotechnique | Project 12675-4 Googong NH1A-7 and NH2

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	Mercury in Soil	Moisture Content	pH in soil (1:5)	Total Recoverable Metals in Soil/Waste
049	D109 0-0.1	-	1	1	-	7
050	D109 0.2-0.3	-	1	1	-	7
051	D110 0-0.1	-	1	1	-	7
052	D110 0.2-0.3	-	1	1	-	7
053	D111 0-0.1	-	1	1	-	7
054	D111 0.2-0.3	-	1	1	-	7
055	D112 0-0.1	-	1	1	-	7
056	D112 0.2-0.3	-	1	1	-	7
057	D113 0-0.1	-	1	1	-	7
058	D113 0.2-0.3	-	1	1	-	7
059	D114 0-0.1	-	1	1	-	7
060	D114 0.2-0.3	-	1	1	-	7
061	D115 0-0.1	-	1	1	-	7
062	D115 0.2-0.3	-	1	1	-	7
063	D116 0-0.1	13	1	1	1	7
064	D116 0.2-0.3	13	1	1	1	7
065	D116 1.0-1.1	-	1	1	-	7
066	D116 1.4-1.5	-	1	1	-	7
067	D117 0-0.1	-	1	1	-	7
068	D117 0.2-0.3	-	1	1	-	7
069	D118 0-0.1	-	1	1	-	7
070	D118 0.2-0.3	-	1	1	-	7
071	D119 0-0.1	13	1	1	1	7
072	D119 0.2-0.3	-	1	1	-	7

CONTINUED OVERLEAF

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CLIENT DETAILS

Client Geotechnique

Project 12675-4 Googong NH1A-7 and NH2

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	Mercury in Soil	Moisture Content	pH in soil (1:5)	Total Recoverable Metals in Soil/Waste
073	D120 0-0.1	-	1	1	-	7
074	D120 0.2-0.3	-	1	1	-	7
075	D121 0-0.1	-	1	1	-	7
076	D121 0.2-0.3	-	1	1	-	7
077	D122 0-0.1	-	1	1	-	7
078	D122 0.2-0.3	-	1	1	-	7
079	D123 0-0.1	-	1	1	-	7
080	D123 0.2-0.3	-	1	1	-	7
081	D124 0-0.1	-	1	1	-	7
082	D124 0.2-0.3	-	1	1	-	7
083	D125 0-0.1	-	1	1	-	7
084	D125 0.2-0.3	-	1	1	-	7
085	D126 0-0.1	-	1	1	-	7
086	D126 0.2-0.3	-	1	1	-	7
087	D127 0-0.1	-	1	1	-	7
088	D127 0.2-0.3	-	1	1	-	7
089	D128 0-0.1	-	1	1	-	7
090	D128 0.2-0.3	-	1	1	-	7
091	D129 0-0.1	-	1	1	-	7
092	D129 0.2-0.03	-	1	1	-	7
093	D130 0-0.1	13	1	1	1	7
094	D130 0.2-0.3	-	1	1	-	7
095	D130 1.0-1.1	13	1	1	1	7
096	D131 0-0.1	-	1	1	-	7

CONTINUED OVERLEAF

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SAMPLE RECEIPT ADVICE

SE158264

CLIENT DETAILS

Client Geotechnique

Project 12675-4 Googong NH1A-7 and NH2

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	Mercury in Soil	Moisture Content	pH in soil (1:5)	Total Recoverable Metals in Soil/Waste
097	D131 0.2-0.3	-	1	1	-	7
098	D132 0-0.1	13	1	1	1	7
099	D132 0.2-0.3	13	1	1	1	7
100	D132 1.0-1.1	-	1	1	-	7
101	D132 1.9-2.0	-	1	1	-	7
102	D133 0-0.1	-	1	1	-	7
103	D133 0.2-0.3	-	1	1	-	7
104	D134 0-0.1	-	1	1	-	7
105	D134 0.2-0.03	-	1	1	-	7
106	D135 0-0.1	-	1	1	-	7
107	D135 0.2-0.3	-	1	1	-	7
108	D136 0-0.1	-	1	1	-	7
109	D136 0.2-0.3	-	1	1	-	7
110	D137 0-0.1	-	1	1	-	7
111	D137 0.2-0.3	-	1	1	-	7
112	D138 0-0.1	-	1	1	-	7
113	D138 0.2-0.3	-	1	1	-	7
114	D139 0-0.1	13	1	1	1	7
115	D139 0.2-0.3	-	1	1	-	7
116	D139 1.0-1.1	-	1	1	-	7
117	D139 1.4-1.5	13	1	1	1	7
118	D140 0-0.1	-	1	1	-	7
119	D140 0.2-0.3	-	1	1	-	7
120	D141 0-0.1	-	1	1	-	7

CONTINUED OVERLEAF

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CLIENT DETAILS

Client Geotechnique

Project 12675-4 Googong NH1A-7 and NH2

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	Mercury in Soil	Moisture Content	pH in soil (1:5)	Total Recoverable Metals in Soil/Waste
121	D141 0.2-0.3	-	1	1	-	7
122	D142 0-0.1	13	1	1	1	7
123	D142 0.2-0.3	-	1	1	-	7
124	D142 1.0-1.1	-	1	1	-	7
125	D142 1.9-2.0	13	1	1	1	7
126	D143 0-0.1	-	1	1	-	7
127	D143 0.2-0.3	-	1	1	-	7
128	D144 0-0.1	-	1	1	-	7
129	D144 0.2-0.3	-	1	1	-	7
130	D145 0-0.1	-	1	1	-	7
131	D145 0.2-0.3	-	1	1	-	7
132	D146 0-0.1	-	1	1	-	7
133	D146 0.2-0.3	-	1	1	-	7
134	D147 0-0.1	-	1	1	-	7
135	D147 0.2-0.3	-	1	1	-	7
136	D148 0-0.1	-	1	1	-	7
137	D148 0.2-0.3	-	1	1	-	7
138	D149 0-0.1	-	1	1	-	7
139	D149 0.2-0.3	-	1	1	-	7
140	D150 0-0.1	-	1	1	-	7
141	D150 0.2-0.3	-	1	1	-	7
142	D151 0-0.1	-	1	1	-	7
143	D151 0.2-0.3	-	1	1	-	7
144	D152 0-0.1	13	1	1	1	7

CONTINUED OVERLEAF

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CLIENT DETAILS

Client Geotechnique

Project 12675-4 Googong NH1A-7 and NH2

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	Mercury in Soil	Moisture Content	pH in soil (1:5)	Total Recoverable Metals in Soil/Waste	TRH Silica Gel (Total Recoverable
145	D152 0.2-0.3	13	1	1	1	7	-
146	D152 1.0-1.1	-	1	1	-	7	-
147	D152 1.9-2.0	-	1	1	-	7	-
148	D153 0-0.1	-	1	1	-	7	-
149	D153 0.2-0.3	-	1	1	-	7	-
150	D154 0-0.1	-	1	1	-	7	-
151	D154 0.2-0.3	-	1	1	-	7	-
152	D155 0-0.1	-	1	1	-	7	-
153	D155 0.2-0.3	-	1	1	-	7	-
154	D156 0-0.1	-	1	1	-	7	-
155	D156 0.2-0.3	-	1	1	-	7	-
156	D157 0-0.1	13	1	1	1	7	-
157	D157 0.2-0.3	-	1	1	-	7	-
158	D157 1.0-1.1	13	1	1	1	7	-
159	D157 1.9-2.0	-	1	1	-	7	-
160	DS11 0-0.1	-	-	1	-	-	8
161	DS16 0-0.1	-	-	1	-	-	8
162	DS18 0-0.1	-	-	1	-	-	8
163	DS18 0.5-0.6	-	-	1	-	-	8
164	DS19 0-0.1	-	-	1	-	-	8
165	DS19 0.5-0.6	-	-	1	-	-	8
166	DS22 0-0.1	-	-	1	-	-	8
167	DS22 0.5-0.6	-	-	1	-	-	8
168	CS12-1 0-0.1	-	-	1	-	-	8

CONTINUED OVERLEAF

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CLIENT DETAILS

Client Geotechnique

Project 12675-4 Googong NH1A-7 and NH2

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury in Soil	Moisture Content	Total Recoverable Metals in Soil/Waste	TRH Silica Gel (Total Recoverable
169	CS12-2 0-0.1	-	1	-	8
170	CS12-2 0.5-0.6	-	1	-	8
171	CS12-3 0-0.1	-	1	-	8
172	CS14-1 0-0.1	-	1	-	8
173	CS14-2 0-0.1	-	1	-	8
174	CS14-3 0-0.1	-	1	-	8
175	CS15-1 0-0.1	-	1	-	8
176	CS15-2 0-0.1	-	1	-	8
177	CS15-2 0.5-0.6	-	1	-	8
178	CS15-3 0-0.1	-	1	-	8
179	CS18-1 0-0.1	-	1	-	8
180	CS18-2 0-0.1	-	1	-	8
181	CS18-2 0.5-0.6	-	1	-	8
182	CS18-3 0-0.1	-	1	-	8
183	CS22-1 0-0.1	-	1	-	8
184	CS22-2 0-0.1	-	1	-	8
185	CS22-3 0-0.1	-	1	-	8
186	Duplicate D1	1	1	7	-
187	Duplicate D2	1	1	7	-
188	Duplicate D3	1	1	7	-
189	Duplicate D4	1	1	7	-
190	Duplicate D5	1	1	7	-
191	Duplicate D6	1	1	7	-
192	Duplicate D7	1	1	7	-

CONTINUED OVERLEAF

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SAMPLE RECEIPT ADVICE

SE158264

CLIENT DETAILS

Client: Geotechnique

Project: 12675-4 Googong NH1A-7 and NH2

SUMMARY OF ANALYSIS

No.	Sample ID	Moisture Content	TRH Silica Gel (Total Recoverable	TRH Silica Gel (Total Recoverable
193	Duplicate D8	1	8	-
194	Duplicate D9	1	8	-
195	Duplicate D10	1	8	-
197	Rinsate R2	-	-	9

CONTINUED OVERLEAF

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SAMPLE RECEIPT ADVICE

CLIENT DETAILS

Client Geotechnique

Project 12675-4 Googong NH1A-7 and NH2

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury (dissolved) in Water	Mercury (total) in Water	Metals in Water (Dissolved) by ICPOES	Trace Metals (Dissolved) in Water by ICPMS	Trace Metals (Total) in Water by ICPMS
196	Rinsate R1	1	-	7	-	-
197	Rinsate R2	1	-	7	-	-
198	Dam Water W1	1	1	-	7	7

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ANALYTICAL REPORT

CLIENT DETAILS		LABORATORY DETAILS	
Contact	John Xu	Manager	Huong Crawford
Client	Geotechnique	Laboratory	SGS Alexandria Environmental
Address	P.O. Box 880 PENRITH NSW 2751	Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	02 4722 2700	Telephone	+61 2 8594 0400
Facsimile	02 4722 6161	Facsimile	+61 2 8594 0499
Email	john.xu@geotech.com.au	Email	au.environmental.sydney@sgs.com
Project	**12675-4 Googong NH1A-7 and NH2-Add**	SGS Reference	**SE158264A R0**
Order Number	(Not specified)	Date Received	1/11/2016
Samples	198	Date Reported	4/11/2016

COMMENTS

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

SIGNATORIES

Bennet Lo
Senior Organic Chemist/Metals Chemist

Dong Liang
Metals/Inorganics Team Leader

pH in soil (1:5) [AN101] Tested: 2/11/2016

PARAMETER	UOM	LOR	D101 1.9-2.0 SOIL - 17/10/2016 SE158264A.034	D103 0-0.1 SOIL - 18/10/2016 SE158264A.037	D104 0-0.1 SOIL - 18/10/2016 SE158264A.039	D105 0-0.1 SOIL - 18/10/2016 SE158264A.041	D114 0-0.1 SOIL - 17/10/2016 SE158264A.059
pH	pH Units	-	7.7	6.1	5.3	6.0	6.1

PARAMETER	UOM	LOR	D115 0-0.1 SOIL - 17/10/2016 SE158264A.061	D115 0.2-0.3 SOIL - 17/10/2016 SE158264A.062	D124 0-0.1 SOIL - 17/10/2016 SE158264A.081	D126 0-0.1 SOIL - 17/10/2016 SE158264A.085	D135 0-0.1 SOIL - 17/10/2016 SE158264A.106
pH	pH Units	-	5.5	5.9	5.5	6.0	6.3

PARAMETER	UOM	LOR	D136 0-0.1 SOIL - 17/10/2016 SE158264A.108	D137 0.2-0.3 SOIL - 17/10/2016 SE158264A.111	D141 0.2-0.3 SOIL - 17/10/2016 SE158264A.121	D153 0.2-0.3 SOIL - 17/10/2016 SE158264A.149	D155 0-0.1 SOIL - 17/10/2016 SE158264A.152
pH	pH Units	-	6.3	6.1	6.4	6.1	6.3

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) [AN122] Tested: 1/11/2016

PARAMETER	UOM	LOR	A15 1.9-2.0 SOIL - 18/10/2016 SE158264A.019	A16 0.5-0.6 SOIL - 18/10/2016 SE158264A.021	A16 1.0-1.1 SOIL - 18/10/2016 SE158264A.022	A16 1.5-1.6 SOIL - 18/10/2016 SE158264A.023	D101 1.9-2.0 SOIL - 17/10/2016 SE158264A.034
Exchangeable Sodium, Na	mg/kg	2	200	39	34	42	100
Exchangeable Sodium, Na	meq/100g	0.01	0.89	0.17	0.15	0.18	0.45
Exchangeable Sodium Percentage*	%	0.1	4.1	1.5	1.5	1.1	2.8
Exchangeable Potassium, K	mg/kg	2	64	100	81	70	170
Exchangeable Potassium, K	meq/100g	0.01	0.16	0.26	0.21	0.18	0.43
Exchangeable Potassium Percentage*	%	0.1	0.7	2.4	2.1	1.1	2.7
Exchangeable Calcium, Ca	mg/kg	2	68	710	520	160	1200
Exchangeable Calcium, Ca	meq/100g	0.01	0.34	3.5	2.6	0.78	6.1
Exchangeable Calcium Percentage*	%	0.1	1.5	32.3	26.9	4.7	38.1
Exchangeable Magnesium, Mg	mg/kg	2	2500	850	830	1900	1100
Exchangeable Magnesium, Mg	meq/100g	0.02	21	7.0	6.8	16	9.0
Exchangeable Magnesium Percentage*	%	0.1	93.7	63.8	69.4	93.2	56.4
Cation Exchange Capacity	meq/100g	0.02	22	11	9.8	17	16

PARAMETER	UOM	LOR	D103 0-0.1 SOIL - 18/10/2016 SE158264A.037	D104 0-0.1 SOIL - 18/10/2016 SE158264A.039	D105 0-0.1 SOIL - 18/10/2016 SE158264A.041	D114 0-0.1 SOIL - 17/10/2016 SE158264A.059	D115 0-0.1 SOIL - 17/10/2016 SE158264A.061
Exchangeable Sodium, Na	mg/kg	2	21	18	27	25	19
Exchangeable Sodium, Na	meq/100g	0.01	0.09	0.08	0.12	0.11	0.08
Exchangeable Sodium Percentage*	%	0.1	1.2	1.4	1.9	1.3	1.1
Exchangeable Potassium, K	mg/kg	2	65	66	39	220	100
Exchangeable Potassium, K	meq/100g	0.01	0.17	0.17	0.10	0.56	0.26
Exchangeable Potassium Percentage*	%	0.1	2.2	3.1	1.6	7.0	3.5
Exchangeable Calcium, Ca	mg/kg	2	1100	810	780	1000	1000
Exchangeable Calcium, Ca	meq/100g	0.01	5.3	4.1	3.9	5.0	5.1
Exchangeable Calcium Percentage*	%	0.1	70.0	73.1	63.1	62.6	68.5
Exchangeable Magnesium, Mg	mg/kg	2	250	150	250	290	240
Exchangeable Magnesium, Mg	meq/100g	0.02	2.0	1.2	2.1	2.3	2.0
Exchangeable Magnesium Percentage*	%	0.1	26.6	22.4	33.4	29.1	26.9
Cation Exchange Capacity	meq/100g	0.02	7.6	5.5	6.2	8.0	7.4

PARAMETER	UOM	LOR	D115 0.2-0.3 SOIL - 17/10/2016 SE158264A.062	D121 0.2-0.3 SOIL - 18/10/2016 SE158264A.076	D124 0-0.1 SOIL - 17/10/2016 SE158264A.081	D126 0-0.1 SOIL - 17/10/2016 SE158264A.085	D135 0-0.1 SOIL - 17/10/2016 SE158264A.106
Exchangeable Sodium, Na	mg/kg	2	17	39	10	13	27
Exchangeable Sodium, Na	meq/100g	0.01	0.08	0.17	0.05	0.05	0.12
Exchangeable Sodium Percentage*	%	0.1	1.1	1.2	1.5	0.5	1.4
Exchangeable Potassium, K	mg/kg	2	92	130	130	68	80
Exchangeable Potassium, K	meq/100g	0.01	0.24	0.32	0.33	0.17	0.20
Exchangeable Potassium Percentage*	%	0.1	3.5	2.3	11.2	1.7	2.4
Exchangeable Calcium, Ca	mg/kg	2	880	980	320	1700	860
Exchangeable Calcium, Ca	meq/100g	0.01	4.4	4.9	1.6	8.5	4.3
Exchangeable Calcium Percentage*	%	0.1	65.2	34.2	53.9	83.5	49.5
Exchangeable Magnesium, Mg	mg/kg	2	250	1100	120	180	490
Exchangeable Magnesium, Mg	meq/100g	0.02	2.0	8.9	0.98	1.5	4.0
Exchangeable Magnesium Percentage*	%	0.1	30.2	62.3	33.3	14.3	46.8
Cation Exchange Capacity	meq/100g	0.02	6.7	14	3.0	10	8.6

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) [AN122] Tested: 1/11/2016 (continued)

PARAMETER	UOM	LOR	D136 0-0.1 SOIL - 17/10/2016 SE158264A.108	D137 0.2-0.3 SOIL - 17/10/2016 SE158264A.111	D141 0.2-0.3 SOIL - 17/10/2016 SE158264A.121	D153 0.2-0.3 SOIL - 17/10/2016 SE158264A.149	D155 0-0.1 SOIL - 17/10/2016 SE158264A.152
Exchangeable Sodium, Na	mg/kg	2	19	22	27	21	19
Exchangeable Sodium, Na	meq/100g	0.01	0.08	0.10	0.12	0.09	0.08
Exchangeable Sodium Percentage*	%	0.1	1.5	1.4	1.7	1.7	1.0
Exchangeable Potassium, K	mg/kg	2	59	57	60	66	49
Exchangeable Potassium, K	meq/100g	0.01	0.15	0.15	0.15	0.17	0.13
Exchangeable Potassium Percentage*	%	0.1	2.7	2.2	2.2	3.0	1.6
Exchangeable Calcium, Ca	mg/kg	2	720	820	670	650	1000
Exchangeable Calcium, Ca	meq/100g	0.01	3.6	4.1	3.4	3.3	5.1
Exchangeable Calcium Percentage*	%	0.1	65.2	60.7	47.6	58.4	64.1
Exchangeable Magnesium, Mg	mg/kg	2	210	290	420	250	320
Exchangeable Magnesium, Mg	meq/100g	0.02	1.7	2.4	3.4	2.1	2.6
Exchangeable Magnesium Percentage*	%	0.1	30.6	35.7	48.6	37.0	33.3
Cation Exchange Capacity	meq/100g	0.02	5.5	6.8	7.1	5.6	7.9

PARAMETER	UOM	LOR	D156 0-0.1 SOIL - 17/10/2016 SE158264A.154	D157 1.9-2.0 SOIL - 17/10/2016 SE158264A.159
Exchangeable Sodium, Na	mg/kg	2	27	370
Exchangeable Sodium, Na	meq/100g	0.01	0.12	1.6
Exchangeable Sodium Percentage*	%	0.1	1.1	8.4
Exchangeable Potassium, K	mg/kg	2	42	160
Exchangeable Potassium, K	meq/100g	0.01	0.11	0.40
Exchangeable Potassium Percentage*	%	0.1	1.0	2.1
Exchangeable Calcium, Ca	mg/kg	2	1400	760
Exchangeable Calcium, Ca	meq/100g	0.01	6.9	3.8
Exchangeable Calcium Percentage*	%	0.1	62.6	19.8
Exchangeable Magnesium, Mg	mg/kg	2	470	1600
Exchangeable Magnesium, Mg	meq/100g	0.02	3.9	13
Exchangeable Magnesium Percentage*	%	0.1	35.3	69.8
Cation Exchange Capacity	meq/100g	0.02	11	19

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

FOOTNOTES

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

Samples analysed as received.
Solid samples expressed on a dry weight basis.

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

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

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

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

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

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

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

STATEMENT OF QA/QC PERFORMANCE

SE158264A R0

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**12675-4 Googong NH1A-7 and NH2-Add**
Order Number	(Not specified)
Samples	198

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	**SE158264A R0**
Date Received	01 Nov 2016
Date Reported	04 Nov 2016

COMMENTS

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

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

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

Extraction Date	pH in soil (1:5)	15 items

SAMPLE SUMMARY

Sample counts by matrix	22 Soil	Type of documentation received	COC
Date documentation received	1/11/16@4:129pm	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	8.3°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		

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
A15 1.9-2.0	SE158264A.019	LB112973	18 Oct 2016	01 Nov 2016	15 Nov 2016	01 Nov 2016	15 Nov 2016	04 Nov 2016
A16 0.5-0.6	SE158264A.021	LB112973	18 Oct 2016	01 Nov 2016	15 Nov 2016	01 Nov 2016	15 Nov 2016	04 Nov 2016
A16 1.0-1.1	SE158264A.022	LB112973	18 Oct 2016	01 Nov 2016	15 Nov 2016	01 Nov 2016	15 Nov 2016	04 Nov 2016
A16 1.5-1.6	SE158264A.023	LB112973	18 Oct 2016	01 Nov 2016	15 Nov 2016	01 Nov 2016	15 Nov 2016	04 Nov 2016
D101 1.9-2.0	SE158264A.034	LB112973	17 Oct 2016	01 Nov 2016	14 Nov 2016	01 Nov 2016	14 Nov 2016	04 Nov 2016
D103 0-0.1	SE158264A.037	LB112973	18 Oct 2016	01 Nov 2016	15 Nov 2016	01 Nov 2016	15 Nov 2016	04 Nov 2016
D104 0-0.1	SE158264A.039	LB112973	18 Oct 2016	01 Nov 2016	15 Nov 2016	01 Nov 2016	15 Nov 2016	04 Nov 2016
D105 0-0.1	SE158264A.041	LB112973	18 Oct 2016	01 Nov 2016	15 Nov 2016	01 Nov 2016	15 Nov 2016	04 Nov 2016
D114 0-0.1	SE158264A.059	LB112973	17 Oct 2016	01 Nov 2016	14 Nov 2016	01 Nov 2016	14 Nov 2016	04 Nov 2016
D115 0-0.1	SE158264A.061	LB112973	17 Oct 2016	01 Nov 2016	14 Nov 2016	01 Nov 2016	14 Nov 2016	04 Nov 2016
D115 0.2-0.3	SE158264A.062	LB112973	17 Oct 2016	01 Nov 2016	14 Nov 2016	01 Nov 2016	14 Nov 2016	04 Nov 2016
D121 0.2-0.3	SE158264A.076	LB112973	18 Oct 2016	01 Nov 2016	15 Nov 2016	01 Nov 2016	15 Nov 2016	04 Nov 2016
D124 0-0.1	SE158264A.081	LB112973	17 Oct 2016	01 Nov 2016	14 Nov 2016	01 Nov 2016	14 Nov 2016	04 Nov 2016
D126 0-0.1	SE158264A.085	LB112973	17 Oct 2016	01 Nov 2016	14 Nov 2016	01 Nov 2016	14 Nov 2016	04 Nov 2016
D135 0-0.1	SE158264A.106	LB112973	17 Oct 2016	01 Nov 2016	14 Nov 2016	01 Nov 2016	14 Nov 2016	04 Nov 2016
D136 0-0.1	SE158264A.108	LB112973	17 Oct 2016	01 Nov 2016	14 Nov 2016	01 Nov 2016	14 Nov 2016	04 Nov 2016
D137 0.2-0.3	SE158264A.111	LB112973	17 Oct 2016	01 Nov 2016	14 Nov 2016	01 Nov 2016	14 Nov 2016	04 Nov 2016
D141 0.2-0.3	SE158264A.121	LB112973	17 Oct 2016	01 Nov 2016	14 Nov 2016	01 Nov 2016	14 Nov 2016	04 Nov 2016
D153 0.2-0.3	SE158264A.149	LB112973	17 Oct 2016	01 Nov 2016	14 Nov 2016	01 Nov 2016	14 Nov 2016	04 Nov 2016
D155 0-0.1	SE158264A.152	LB112973	17 Oct 2016	01 Nov 2016	14 Nov 2016	01 Nov 2016	14 Nov 2016	04 Nov 2016
D156 0-0.1	SE158264A.154	LB112973	17 Oct 2016	01 Nov 2016	14 Nov 2016	01 Nov 2016	14 Nov 2016	04 Nov 2016
D157 1.9-2.0	SE158264A.159	LB112973	17 Oct 2016	01 Nov 2016	14 Nov 2016	01 Nov 2016	14 Nov 2016	04 Nov 2016

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
D101 1.9-2.0	SE158264A.034	LB112993	17 Oct 2016	01 Nov 2016	24 Oct 2016	02 Nov 2016†	03 Nov 2016	02 Nov 2016
D103 0-0.1	SE158264A.037	LB112993	18 Oct 2016	01 Nov 2016	25 Oct 2016	02 Nov 2016†	03 Nov 2016	02 Nov 2016
D104 0-0.1	SE158264A.039	LB112993	18 Oct 2016	01 Nov 2016	25 Oct 2016	02 Nov 2016†	03 Nov 2016	02 Nov 2016
D105 0-0.1	SE158264A.041	LB112993	18 Oct 2016	01 Nov 2016	25 Oct 2016	02 Nov 2016†	03 Nov 2016	02 Nov 2016
D114 0-0.1	SE158264A.059	LB112993	17 Oct 2016	01 Nov 2016	24 Oct 2016	02 Nov 2016†	03 Nov 2016	02 Nov 2016
D115 0-0.1	SE158264A.061	LB112993	17 Oct 2016	01 Nov 2016	24 Oct 2016	02 Nov 2016†	03 Nov 2016	02 Nov 2016
D115 0.2-0.3	SE158264A.062	LB112993	17 Oct 2016	01 Nov 2016	24 Oct 2016	02 Nov 2016†	03 Nov 2016	02 Nov 2016
D124 0-0.1	SE158264A.081	LB112993	17 Oct 2016	01 Nov 2016	24 Oct 2016	02 Nov 2016†	03 Nov 2016	02 Nov 2016
D126 0-0.1	SE158264A.085	LB112993	17 Oct 2016	01 Nov 2016	24 Oct 2016	02 Nov 2016†	03 Nov 2016	02 Nov 2016
D135 0-0.1	SE158264A.106	LB112993	17 Oct 2016	01 Nov 2016	24 Oct 2016	02 Nov 2016†	03 Nov 2016	02 Nov 2016
D136 0-0.1	SE158264A.108	LB112993	17 Oct 2016	01 Nov 2016	24 Oct 2016	02 Nov 2016†	03 Nov 2016	02 Nov 2016
D137 0.2-0.3	SE158264A.111	LB112993	17 Oct 2016	01 Nov 2016	24 Oct 2016	02 Nov 2016†	03 Nov 2016	02 Nov 2016
D141 0.2-0.3	SE158264A.121	LB112993	17 Oct 2016	01 Nov 2016	24 Oct 2016	02 Nov 2016†	03 Nov 2016	02 Nov 2016
D153 0.2-0.3	SE158264A.149	LB112993	17 Oct 2016	01 Nov 2016	24 Oct 2016	02 Nov 2016†	03 Nov 2016	02 Nov 2016
D155 0-0.1	SE158264A.152	LB112993	17 Oct 2016	01 Nov 2016	24 Oct 2016	02 Nov 2016†	03 Nov 2016	02 Nov 2016

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

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

No surrogates were required for this job.

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

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

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

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

Sample Number	Parameter	Units	LOR

DUPLICATES

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

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

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

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

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE158264A.106	LB112993.014	pH	pH Units	-	6.3	6.3	32	0
SE158687.009	LB112993.025	pH	pH Units	-	9.61	9.63	31	0

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

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

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB112973.002	Exchangeable Sodium, Na	mg/kg	2	NA	390	80 - 120	100
	Exchangeable Potassium, K	mg/kg	2	NA	343	80 - 120	99
	Exchangeable Calcium, Ca	mg/kg	2	NA	2570	80 - 120	96
	Exchangeable Magnesium, Mg	mg/kg	2	NA	635	80 - 120	96

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB112993.003	pH	pH Units	-	7.4	7.415	98 - 102	100

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

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

No matrix spikes were required for this job.

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

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

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

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

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

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

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

*	NATA accreditation does not cover tthe performance of this service.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.

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

E-MAILED
1/11/16 @ 4.12pm

SGS EHS Alexandria Laboratory

SE158264A COC
Received: 01 – Nov – 2016

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
email: info@geotech.com.au

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

PH: 02 8594 0400 FAX: 02 8594 0499

ATTN: MS EMILY YIN

Sampling By: LY/JH
Job No: 12675/4
Project:
Project Manager: JX
Location: Googong NH1A-7 & NH2

Results required by: 7/11/2016 (Normal TAT)
(SGS Ref. SE158264)

	Sampling details			Sample type											
Location	Depth (m)	Date	Time	Soil	Water	pH	CEC								KEEP SAMPLE
19 A15	1.9-2.0	18/10/2016	-	SG			✓								YES
21 A16	0.5-0.6	18/10/2016	-	SG			✓								YES
22 A16	1.0-1.1	18/10/2016	-	SG			✓								YES
23 A16	1.5-1.6	18/10/2016	-	SG			✓								YES
24 D101	1.9-2.0	17/10/2016	-	SG		✓	✓								YES
37 D103	0-0.1	18/10/2016	-	SG		✓	✓								YES
39 D104	0-0.1	18/10/2016	-	SG		✓	✓								YES
41 D105	0-0.1	18/10/2016	-	SG		✓	✓								YES
59 D114	0-0.1	17/10/2016	-	SG		✓	✓								YES
61 D115	0-0.1	17/10/2016	-	SG		✓	✓								YES
62 D115	0.2-0.3	17/10/2016	-	SG		✓	✓								YES
76 D121	0.2-0.3	18/10/2016	-	SG			✓								YES
81 D124	0-0.1	17/10/2016	-	SG		✓	✓								YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	1/11/2016	[illegible]	[illegible]	1/11/16

Legend:

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

GEOTECHNIQUE PTY LTD

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
email: info@geotech.com.au

TO:	SGS ENVIRONMENTAL SERVICES UNIT 16 33 MADDOX STREET ALEXANDRIA NSW 2015	Sampling By:	LY/JH
		Job No:	12675/4
		Project:	
PH:	02 8594 0400	FAX:	02 8594 0499
		Project Manager:	JX
		Location:	Googong NH1A-7 & NH2
ATTN:	MS EMILY YIN		

Results required by: 7/11/2016 (Normal TAT)
(SGS Ref. SE158264)

	Sampling details			Sample type											
Location	Depth (m)	Date	Time	Soil	Water	pH	CEC								KEEP SAMPLE
85 D126	0-0.1	17/10/2016	-	SG		✓	✓								YES
106 D135	0-0.1	17/10/2016	-	SG		✓	✓								YES
108 D136	0-0.1	17/10/2016	-	SG		✓	✓								YES
111 D137	0.2-0.3	17/10/2016	-	SG		✓	✓								YES
121 D141	0.2-0.3	17/10/2016	-	SG		✓	✓								YES
149 D153	0.2-0.3	17/10/2016	-	SG		✓	✓								YES
152 D155	0-0.1	17/10/2016	-	SG		✓	✓								YES
154 D156	0-0.1	17/10/2016	-	SG			✓								YES
159 D157	1.9-2.0	17/10/2016	-	SG			✓								YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	1/11/2016	Emily Yin		1/11/16

Legend:

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

* Purge & Trap

SAMPLE RECEIPT ADVICE

SE158264A

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**12675-4 Googong NH1A-7 and NH2-Add**
Order Number	(Not specified)
Samples	198

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Tue 1/11/2016
Report Due	Mon 7/11/2016
SGS Reference	**SE158264A**

SUBMISSION DETAILS

This is to confirm that 198 samples were received on Tuesday 1/11/2016. Results are expected to be ready by Monday 7/11/2016. Please quote SGS reference SE158264A when making enquiries. Refer below for details relating to sample integrity upon receipt.

Sample counts by matrix	22 Soil	Type of documentation received	COC
Date documentation received	1/11/16@4:129pm	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	8.3°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		

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

COMMENTS

SAMPLE RECEIPT ADVICE

CLIENT DETAILS

Client Geotechnique

Project 12675-4 Googong NH1A-7 and NH2-Add

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity
019	A15 1.9-2.0	13
021	A16 0.5-0.6	13
022	A16 1.0-1.1	13
023	A16 1.5-1.6	13

CONTINUED OVERLEAF

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

SAMPLE RECEIPT ADVICE

SE158264A

CLIENT DETAILS

Client Geotechnique

Project 12675-4 Googong NH1A-7 and NH2-Add

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	pH in soil (1:5)
034	D101 1.9-2.0	13	1
037	D103 0-0.1	13	1
039	D104 0-0.1	13	1
041	D105 0-0.1	13	1

CONTINUED OVERLEAF

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

SAMPLE RECEIPT ADVICE

SE158264A

CLIENT DETAILS

Client Geotechnique

Project 12675-4 Googong NH1A-7 and NH2-Add

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	pH in soil (1:5)
059	D114 0-0.1	13	1
061	D115 0-0.1	13	1
062	D115 0.2-0.3	13	1

CONTINUED OVERLEAF

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

SAMPLE RECEIPT ADVICE

SE158264A

CLIENT DETAILS

Client: Geotechnique

Project: 12675-4 Googong NH1A-7 and NH2-Add

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	pH in soil (1:5)
076	D121 0.2-0.3	13	-
081	D124 0-0.1	13	1
085	D126 0-0.1	13	1

CONTINUED OVERLEAF

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

SGS

SAMPLE RECEIPT ADVICE

CLIENT DETAILS

Client Geotechnique

Project 12675-4 Googong NH1A-7 and NH2-Add

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	pH in soil (1:5)
106	D135 0-0.1	13	1
108	D136 0-0.1	13	1
111	D137 0.2-0.3	13	1

CONTINUED OVERLEAF

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

SAMPLE RECEIPT ADVICE

SE158264A

CLIENT DETAILS

Client Geotechnique

Project 12675-4 Googong NH1A-7 and NH2-Add

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	pH in soil (1:5)
121	D141 0.2-0.3	13	1

CONTINUED OVERLEAF

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

SAMPLE RECEIPT ADVICE

SE158264A

CLIENT DETAILS

Client Geotechnique

Project 12675-4 Googong NH1A-7 and NH2-Add

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	pH in soil (1:5)
149	D153 0.2-0.3	13	1
152	D155 0-0.1	13	1
154	D156 0-0.1	13	-
159	D157 1.9-2.0	13	-

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

ANALYTICAL REPORT

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**12675-4 Googong NH1A-7 and NH2-Add**
Order Number	(Not specified)
Samples	198

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	**SE158264B R0**
Date Received	2/11/2016
Date Reported	8/11/2016

COMMENTS

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

SIGNATORIES

Bennet Lo
Senior Organic Chemist/Metals Chemist

Dong Liang
Metals/Inorganics Team Leader

pH in soil (1:5) [AN101] Tested: 4/11/2016

PARAMETER	UOM	LOR	D103 0.2-0.3 SOIL - 18/10/2016 SE158264B.038	D137 0-0.1 SOIL - 17/10/2016 SE158264B.110	D153 0-0.1 SOIL - 17/10/2016 SE158264B.148
pH	pH Units	-	6.1	5.7	5.8

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) [AN122] Tested: 3/11/2016

PARAMETER	UOM	LOR	D103 0.2-0.3 SOIL - 18/10/2016 SE158264B.038	D137 0-0.1 SOIL - 17/10/2016 SE158264B.110	D153 0-0.1 SOIL - 17/10/2016 SE158264B.148
Exchangeable Sodium, Na	mg/kg	2	19	21	18
Exchangeable Sodium, Na	meq/100g	0.01	0.08	0.09	0.08
Exchangeable Sodium Percentage*	%	0.1	0.9	1.5	1.4
Exchangeable Potassium, K	mg/kg	2	52	48	50
Exchangeable Potassium, K	meq/100g	0.01	0.13	0.12	0.13
Exchangeable Potassium Percentage*	%	0.1	1.5	1.9	2.3
Exchangeable Calcium, Ca	mg/kg	2	1300	870	720
Exchangeable Calcium, Ca	meq/100g	0.01	6.4	4.3	3.6
Exchangeable Calcium Percentage*	%	0.1	70.1	68.6	64.2
Exchangeable Magnesium, Mg	mg/kg	2	310	220	220
Exchangeable Magnesium, Mg	meq/100g	0.02	2.5	1.8	1.8
Exchangeable Magnesium Percentage*	%	0.1	27.6	28.0	32.1
Cation Exchange Capacity	meq/100g	0.02	9.2	6.3	5.6

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

FOOTNOTES

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

Samples analysed as received.
Solid samples expressed on a dry weight basis.

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

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

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

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

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

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

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

STATEMENT OF QA/QC PERFORMANCE

SE158264B R0

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**12675-4 Googong NH1A-7 and NH2-Add**
Order Number	(Not specified)
Samples	198

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	**SE158264B R0**
Date Received	02 Nov 2016
Date Reported	08 Nov 2016

COMMENTS

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

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

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

Extraction Date	pH in soil (1:5)	3 items

SAMPLE SUMMARY

Sample counts by matrix	3 Soil	Type of documentation received	COC
Date documentation received	2/11/16@1:42pm	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	8.3°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		

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
D103 0.2-0.3	SE158264B.038	LB113112	18 Oct 2016	02 Nov 2016	15 Nov 2016	03 Nov 2016	15 Nov 2016	08 Nov 2016
D137 0-0.1	SE158264B.110	LB113112	17 Oct 2016	02 Nov 2016	14 Nov 2016	03 Nov 2016	14 Nov 2016	08 Nov 2016
D153 0-0.1	SE158264B.148	LB113112	17 Oct 2016	02 Nov 2016	14 Nov 2016	03 Nov 2016	14 Nov 2016	08 Nov 2016

pH in soil (1:5)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
D103 0.2-0.3	SE158264B.038	LB113201	18 Oct 2016	02 Nov 2016	25 Oct 2016	04 Nov 2016†	05 Nov 2016	04 Nov 2016
D137 0-0.1	SE158264B.110	LB113201	17 Oct 2016	02 Nov 2016	24 Oct 2016	04 Nov 2016†	05 Nov 2016	04 Nov 2016
D153 0-0.1	SE158264B.148	LB113201	17 Oct 2016	02 Nov 2016	24 Oct 2016	04 Nov 2016†	05 Nov 2016	04 Nov 2016

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

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

No surrogates were required for this job.

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

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

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

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

Sample Number	Parameter	Units	LOR

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

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

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

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

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE158717.019	LB113201.014	pH	pH Units	-	7.901	7.868	31	0
SE158732.019	LB113201.031	pH	pH Units	-	6.2	6.2	32	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 %
LB113112.002	Exchangeable Sodium, Na	mg/kg	2	NA	390	80 - 120	98
	Exchangeable Potassium, K	mg/kg	2	NA	343	80 - 120	88
	Exchangeable Calcium, Ca	mg/kg	2	NA	2570	80 - 120	105
	Exchangeable Magnesium, Mg	mg/kg	2	NA	635	80 - 120	99

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB113201.003	pH	pH Units	-	7.4	7.415	98 - 102	100

MATRIX SPIKES

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

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

No matrix spikes were required for this job.

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

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

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

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

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

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

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

*	NATA accreditation does not cover tthe performance of this service.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.

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

E-MAILED 2/11/16 @ [illegible]

SGS EHS Alexandria Laboratory

SE158264B COC
Received: 02-Nov-2016

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
email: info@geotech.com.au

Page 1 of 1

TO:	SGS ENVIRONMENTAL SERVICES UNIT 16 33 MADDOX STREET ALEXANDRIA NSW 2015	Sampling By: LY/JH	Job No: 12675/4
			Project:
PH:	02 8594 0400 FAX: 02 8594 0499	Project Manager: JX	Location: Googong NH1A-7 & NH2
ATTN:	MS EMILY YIN		

Results required by: 8/11/2016 (Normal TAT)
(SGS Ref. SE158264)

	Location	Depth (m)	Date	Time	Soil	Water	pH	CEC							KEEP SAMPLE
38	D103	0.2-0.3	18/10/2016	-	SG		✓	✓							YES
110	D137	0-0.1	17/10/2016	-	SG		✓	✓							YES
148	D153	0-0.1	17/10/2016	-	SG		✓	✓							YES

Relinquished by: Name	Signature	Date	Received by: Name	Signature	Date
JOHN XU	jx	2/11/2016	Emily Yin	[signature]	2/11/16

Legend:

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

Form No 4.7F3-11 SGS

SAMPLE RECEIPT ADVICE

SE158264B

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**12675-4 Googong NH1A-7 and NH2-Add**
Order Number	(Not specified)
Samples	198

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Wed 2/11/2016
Report Due	Tue 8/11/2016
SGS Reference	**SE158264B**

SUBMISSION DETAILS

This is to confirm that 198 samples were received on Wednesday 2/11/2016. Results are expected to be ready by Tuesday 8/11/2016. Please quote SGS reference SE158264B when making enquiries. Refer below for details relating to sample integrity upon receipt.

Sample counts by matrix	3 Soil	Type of documentation received	COC
Date documentation received	2/11/16@1:42pm	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	8.3°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		

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

COMMENTS

SGS

SAMPLE RECEIPT ADVICE

SE158264B

CLIENT DETAILS

Client Geotechnique

Project 12675-4 Googong NH1A-7 and NH2-Add

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	pH in soil (1:5)
038	D103 0.2-0.3	13	1

CONTINUED OVERLEAF

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

SAMPLE RECEIPT ADVICE

SE158264B

CLIENT DETAILS

Client Geotechnique

Project 12675-4 Googong NH1A-7 and NH2-Add

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	pH in soil (1:5)
110	D137 0-0.1	13	1

CONTINUED OVERLEAF

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

SAMPLE RECEIPT ADVICE

SE158264B

CLIENT DETAILS

Client Geotechnique

Project 12675-4 Googong NH1A-7 and NH2-Add

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	pH in soil (1:5)
148	D153 0-0.1	13	1

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

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**12675-4 Googong NH1A-7 and NH2-Add**
Order Number	(Not specified)
Samples	198

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	**SE158264C R0**
Date Received	8/11/2016
Date Reported	10/11/2016

COMMENTS

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

SIGNATORIES

Bennet Lo
Senior Organic Chemist/Metals Chemist

Huong Crawford
Production Manager

pH in soil (1:5) [AN101] Tested: 8/11/2016

PARAMETER	UOM	LOR	D102 0-0.1 SOIL - 17/10/2016 SE158264C.035	D111 0.2-0.3 SOIL - 17/10/2016 SE158264C.054	D113 0-0.1 SOIL - 17/10/2016 SE158264C.057	D147 0-0.1 SOIL - 17/10/2016 SE158264C.134	D155 0.2-0.3 SOIL - 17/10/2016 SE158264C.153
pH	pH Units	-	6.2	5.3	5.8	5.9	6.4

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) [AN122] Tested: 8/11/2016

PARAMETER	UOM	LOR	D102 0-0.1 SOIL - 17/10/2016 SE158264C.035	D111 0.2-0.3 SOIL - 17/10/2016 SE158264C.054	D113 0-0.1 SOIL - 17/10/2016 SE158264C.057	D147 0-0.1 SOIL - 17/10/2016 SE158264C.134	D155 0.2-0.3 SOIL - 17/10/2016 SE158264C.153
Exchangeable Sodium, Na	mg/kg	2	18	20	25	20	28
Exchangeable Sodium, Na	meq/100g	0.01	0.08	0.09	0.11	0.09	0.12
Exchangeable Sodium Percentage*	%	0.1	1.0	1.7	1.3	1.4	1.5
Exchangeable Potassium, K	mg/kg	2	170	89	610	43	63
Exchangeable Potassium, K	meq/100g	0.01	0.44	0.23	1.6	0.11	0.16
Exchangeable Potassium Percentage*	%	0.1	5.7	4.4	18.9	1.8	1.9
Exchangeable Calcium, Ca	mg/kg	2	930	690	890	890	990
Exchangeable Calcium, Ca	meq/100g	0.01	4.6	3.4	4.5	4.5	5.0
Exchangeable Calcium Percentage*	%	0.1	60.1	66.8	54.1	74.4	59.2
Exchangeable Magnesium, Mg	mg/kg	2	310	170	260	160	380
Exchangeable Magnesium, Mg	meq/100g	0.02	2.6	1.4	2.1	1.3	3.1
Exchangeable Magnesium Percentage*	%	0.1	33.2	27.1	25.7	22.3	37.4
Cation Exchange Capacity	meq/100g	0.02	7.7	5.2	8.3	6.0	8.4

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

FOOTNOTES

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

Samples analysed as received.
Solid samples expressed on a dry weight basis.

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

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

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

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:
a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

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

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

STATEMENT OF QA/QC PERFORMANCE

SE158264C R0

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**12675-4 Googong NH1A-7 and NH2-Add**
Order Number	(Not specified)
Samples	198

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	**SE158264C R0**
Date Received	08 Nov 2016
Date Reported	10 Nov 2016

COMMENTS

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

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

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

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

SAMPLE SUMMARY

Sample counts by matrix	5 Soil	Type of documentation received	COC
Date documentation received	8/11/16@11:14am	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	8.3°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		

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
D102 0-0.1	SE158264C.035	LB113442	17 Oct 2016	08 Nov 2016	14 Nov 2016	08 Nov 2016	14 Nov 2016	10 Nov 2016
D111 0.2-0.3	SE158264C.054	LB113442	17 Oct 2016	08 Nov 2016	14 Nov 2016	08 Nov 2016	14 Nov 2016	10 Nov 2016
D113 0-0.1	SE158264C.057	LB113442	17 Oct 2016	08 Nov 2016	14 Nov 2016	08 Nov 2016	14 Nov 2016	10 Nov 2016
D147 0-0.1	SE158264C.134	LB113442	17 Oct 2016	08 Nov 2016	14 Nov 2016	08 Nov 2016	14 Nov 2016	10 Nov 2016
D155 0.2-0.3	SE158264C.153	LB113442	17 Oct 2016	08 Nov 2016	14 Nov 2016	08 Nov 2016	14 Nov 2016	10 Nov 2016

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
D102 0-0.1	SE158264C.035	LB113418	17 Oct 2016	08 Nov 2016	24 Oct 2016	08 Nov 2016†	09 Nov 2016	09 Nov 2016
D111 0.2-0.3	SE158264C.054	LB113418	17 Oct 2016	08 Nov 2016	24 Oct 2016	08 Nov 2016†	09 Nov 2016	09 Nov 2016
D113 0-0.1	SE158264C.057	LB113418	17 Oct 2016	08 Nov 2016	24 Oct 2016	08 Nov 2016†	09 Nov 2016	09 Nov 2016
D147 0-0.1	SE158264C.134	LB113418	17 Oct 2016	08 Nov 2016	24 Oct 2016	08 Nov 2016†	09 Nov 2016	09 Nov 2016
D155 0.2-0.3	SE158264C.153	LB113418	17 Oct 2016	08 Nov 2016	24 Oct 2016	08 Nov 2016†	09 Nov 2016	09 Nov 2016

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

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

No surrogates were required for this job.

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

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

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

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

Sample Number	Parameter	Units	LOR

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

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

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

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

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE158900.010	LB113418.025	pH	pH Units	-	7.507	8.017	31	7

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 %
LB113442.002	Exchangeable Sodium, Na	mg/kg	2	NA	390	80 - 120	99
	Exchangeable Potassium, K	mg/kg	2	NA	343	80 - 120	98
	Exchangeable Calcium, Ca	mg/kg	2	NA	2570	80 - 120	93
	Exchangeable Magnesium, Mg	mg/kg	2	NA	635	80 - 120	96

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB113418.003	pH	pH Units	-	7.4	7.415	98 - 102	100

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

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

No matrix spikes were required for this job.

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

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

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

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

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

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

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

*	NATA accreditation does not cover tthe performance of this service.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.

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

E-MAILED 8/11/16 @ 11:14 am

SGS EHS Alexandria Laboratory

SE158264C COC
Received: 08 – Nov – 2016

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
email: info@geotech.com.au

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

PH: 02 8594 0400 FAX: 02 8594 0499

ATTN: MS EMILY YIN

Sampling By: LY/JH
Job No: 12675/4
Project:
Project Manager: JX
Location: Googong NH1A-7 & NH2

Results required by: 14/11/2016 (Normal TAT)
(SGS Ref. SE158264)

Sampling details				Sample type											
Location	Depth (m)	Date	Time	Soil	Water	pH	CEC								KEEP SAMPLE
35 D102	0-0.1	17/10/2016	-	SG		✓	✓								YES
54 D111	0.2-0.3	17/10/2016	-	SG		✓	✓								YES
57 D113	0-0.1	17/10/2016	-	SG		✓	✓								YES
134 D147	0-0.1	17/10/2016	-	SG		✓	✓								YES
143 D155	0.2-0.3	17/10/2016	-	SG		✓	✓								YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	7/11/2016	[illegible]	[illegible]	8/11/16 @ 11:14am

Legend:

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

* Purge & Trap

SAMPLE RECEIPT ADVICE

SE158264C

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**12675-4 Googong NH1A-7 and NH2-Add**
Order Number	(Not specified)
Samples	198

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Tue 8/11/2016
Report Due	Mon 14/11/2016
SGS Reference	**SE158264C**

SUBMISSION DETAILS

This is to confirm that 198 samples were received on Tuesday 8/11/2016. Results are expected to be ready by Monday 14/ 11/2016. Please quote SGS reference SE158264C when making enquiries. Refer below for details relating to sample integrity upon receipt.

Sample counts by matrix	5 Soil	Type of documentation received	COC
Date documentation received	8/11/16@11:14am	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	8.3°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		

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

COMMENTS

SAMPLE RECEIPT ADVICE

SE158264C

CLIENT DETAILS

Client: Geotechnique

Project: 12675-4 Googong NH1A-7 and NH2-Add

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	pH in soil (1:5)
035	D102 0-0.1	13	1

CONTINUED OVERLEAF

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

SGS

SAMPLE RECEIPT ADVICE

SE158264C

CLIENT DETAILS

Client Geotechnique

Project 12675-4 Googong NH1A-7 and NH2-Add

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	pH in soil (1:5)
054	D111 0.2-0.3	13	1
057	D113 0-0.1	13	1

CONTINUED OVERLEAF

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

CLIENT DETAILS

Client Geotechnique

Project 12675-4 Googong NH1A-7 and NH2-Add

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	pH in soil (1:5)
134	D147 0-0.1	13	1

CONTINUED OVERLEAF

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

SAMPLE RECEIPT ADVICE

SE158264C

CLIENT DETAILS

Client Geotechnique

Project 12675-4 Googong NH1A-7 and NH2-Add

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	pH in soil (1:5)
153	D155 0.2-0.3	13	1

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

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**12675-4 Googong NH1A-7 and NH2-Add**
Order Number	(Not specified)
Samples	198

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	**SE158264D R4**
Date Received	13/12/2016
Date Reported	20/1/2017

COMMENTS

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

This report cancels and supersedes the report No.SE158264D R3. Dated 19/01/17 issued by SGS Environment, Health and Safety due to amended Cr results for samples #1-#30 and #118 following data check.

SIGNATORIES

Bennet Lo
Senior Organic Chemist/Metals Chemist

Dong Liang
Metals/Inorganics Team Leader

Huong Crawford
Production Manager

Kamrul Ahsan
Senior Chemist

Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 15/12/2016

PARAMETER	UOM	LOR	A4 0.25-0.35 SOIL - 18/10/2016 SE158264D.001	A4 0.5-0.6 SOIL - 18/10/2016 SE158264D.002	A6 0.25-0.35 SOIL - 18/10/2016 SE158264D.003	A6 0.5-0.6 SOIL - 18/10/2016 SE158264D.004	A8 0.25-0.35 SOIL - 18/10/2016 SE158264D.005
Chromium, Cr	mg/kg	0.5	29	29	32	16	30

PARAMETER	UOM	LOR	A8 0.5-0.6 SOIL - 18/10/2016 SE158264D.006	A8 1.0-1.1 SOIL - 18/10/2016 SE158264D.007	A9 0.25-0.35 SOIL - 18/10/2016 SE158264D.008	A9 0.5-0.6 SOIL - 18/10/2016 SE158264D.009	A11 0.25-0.35 SOIL - 18/10/2016 SE158264D.010
Chromium, Cr	mg/kg	0.5	35	34	38	35	42

PARAMETER	UOM	LOR	A11 0.5-0.6 SOIL - 18/10/2016 SE158264D.011	A11 1.0-1.1 SOIL - 18/10/2016 SE158264D.012	A11 1.9-2.0 SOIL - 18/10/2016 SE158264D.013	A13 0.25-0.35 SOIL - 18/10/2016 SE158264D.014	A13 0.5-0.6 SOIL - 18/10/2016 SE158264D.015
Chromium, Cr	mg/kg	0.5	27	27	9.2	41	32

PARAMETER	UOM	LOR	A15 0.2-0.3 SOIL - 18/10/2016 SE158264D.016	A15 0.5-0.6 SOIL - 18/10/2016 SE158264D.017	A15 1.0-1.1 SOIL - 18/10/2016 SE158264D.018	A15 1.9-2.0 SOIL - 18/10/2016 SE158264D.019	A16 0.2-0.3 SOIL - 18/10/2016 SE158264D.020
Chromium, Cr	mg/kg	0.5	37	38	38	33	26

PARAMETER	UOM	LOR	A16 0.5-0.6 SOIL - 18/10/2016 SE158264D.021	A16 1.0-1.1 SOIL - 18/10/2016 SE158264D.022	A16 1.5-1.6 SOIL - 18/10/2016 SE158264D.023	A17 0.2-0.3 SOIL - 18/10/2016 SE158264D.024	A17 0.5-0.6 SOIL - 18/10/2016 SE158264D.025
Chromium, Cr	mg/kg	0.5	2.5	28	17	28	37

PARAMETER	UOM	LOR	A17 1.0-1.1 SOIL - 18/10/2016 SE158264D.026	A17 1.9-2.0 SOIL - 18/10/2016 SE158264D.027	A18 0.2-0.3 SOIL - 18/10/2016 SE158264D.028	A18 0.5-0.6 SOIL - 18/10/2016 SE158264D.029	A18 1.0-1.1 SOIL - 18/10/2016 SE158264D.030
Chromium, Cr	mg/kg	0.5	68	18	23	26	27

PARAMETER	UOM	LOR	D101 0-0.1 SOIL - 17/10/2016 SE158264D.031	D101 0.2-0.3 SOIL - 17/10/2016 SE158264D.032	D101 1.0-1.1 SOIL - 17/10/2016 SE158264D.033	D101 1.9-2.0 SOIL - 17/10/2016 SE158264D.034	D102 0-0.1 SOIL - 17/10/2016 SE158264D.035
Chromium, Cr	mg/kg	0.5	32	35	34	7.0	30

Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES [AN040/AN320]   Tested: 15/12/2016   (continued)

PARAMETER	UOM	LOR	D102 0.2-0.3 SOIL - 17/10/2016 SE158264D.036	D103 0-0.1 SOIL - 18/10/2016 SE158264D.037	D103 0.2-0.3 SOIL - 18/10/2016 SE158264D.038	D104 0-0.1 SOIL - 18/10/2016 SE158264D.039	D104 0.2-0.3 SOIL - 18/10/2016 SE158264D.040
Chromium, Cr	mg/kg	0.5	37	34	34	34	32

PARAMETER	UOM	LOR	D105 0-0.1 SOIL - 18/10/2016 SE158264D.041	D105 0.2-0.3 SOIL - 18/10/2016 SE158264D.042	D106 0-0.1 SOIL - 18/10/2016 SE158264D.043	D106 0.2-0.3 SOIL - 18/10/2016 SE158264D.044	D107 0-0.1 SOIL - 18/10/2016 SE158264D.045
Chromium, Cr	mg/kg	0.5	28	40	32	35	39

PARAMETER	UOM	LOR	D107 0.2-0.3 SOIL - 18/10/2016 SE158264D.046	D108 0-0.1 SOIL - 18/10/2016 SE158264D.047	D108 0.2-0.3 SOIL - 18/10/2016 SE158264D.048	D109 0-0.1 SOIL - 18/10/2016 SE158264D.049	D109 0.2-0.3 SOIL - 18/10/2016 SE158264D.050
Chromium, Cr	mg/kg	0.5	25	28	29	37	35

PARAMETER	UOM	LOR	D110 0-0.1 SOIL - 17/10/2016 SE158264D.051	D110 0.2-0.3 SOIL - 17/10/2016 SE158264D.052	D111 0-0.1 SOIL - 17/10/2016 SE158264D.053	D111 0.2-0.3 SOIL - 17/10/2016 SE158264D.054	D112 0-0.1 SOIL - 17/10/2016 SE158264D.055
Chromium, Cr	mg/kg	0.5	35	38	24	32	31

PARAMETER	UOM	LOR	D112 0.2-0.3 SOIL - 17/10/2016 SE158264D.056	D113 0-0.1 SOIL - 17/10/2016 SE158264D.057	D113 0.2-0.3 SOIL - 17/10/2016 SE158264D.058	D114 0-0.1 SOIL - 17/10/2016 SE158264D.059	D114 0.2-0.3 SOIL - 17/10/2016 SE158264D.060
Chromium, Cr	mg/kg	0.5	36	35	38	31	35

PARAMETER	UOM	LOR	D115 0-0.1 SOIL - 17/10/2016 SE158264D.061	D115 0.2-0.3 SOIL - 17/10/2016 SE158264D.062	D116 0-0.1 SOIL - 18/10/2016 SE158264D.063	D116 0.2-0.3 SOIL - 18/10/2016 SE158264D.064	D116 1.0-1.1 SOIL - 18/10/2016 SE158264D.065
Chromium, Cr	mg/kg	0.5	36	38	36	34	35

PARAMETER	UOM	LOR	D116 1.4-1.5 SOIL - 18/10/2016 SE158264D.066	D117 0-0.1 SOIL - 18/10/2016 SE158264D.067	D117 0.2-0.3 SOIL - 18/10/2016 SE158264D.068	D118 0-0.1 SOIL - 18/10/2016 SE158264D.069	D118 0.2-0.3 SOIL - 18/10/2016 SE158264D.070
Chromium, Cr	mg/kg	0.5	19	35	29	22	33

Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 15/12/2016 (continued)

PARAMETER	UOM	LOR	D119 0-0.1 SOIL - 18/10/2016 SE158264D.071	D119 0.2-0.3 SOIL - 18/10/2016 SE158264D.072	D120 0-0.1 SOIL - 18/10/2016 SE158264D.073	D120 0.2-0.3 SOIL - 18/10/2016 SE158264D.074	D121 0-0.1 SOIL - 18/10/2016 SE158264D.075
Chromium, Cr	mg/kg	0.5	33	38	20	20	34

PARAMETER	UOM	LOR	D121 0.2-0.3 SOIL - 18/10/2016 SE158264D.076	D122 0-0.1 SOIL - 18/10/2016 SE158264D.077	D122 0.2-0.3 SOIL - 18/10/2016 SE158264D.078	D123 0-0.1 SOIL - 18/10/2016 SE158264D.079	D123 0.2-0.3 SOIL - 18/10/2016 SE158264D.080
Chromium, Cr	mg/kg	0.5	30	22	40	34	38

PARAMETER	UOM	LOR	D124 0-0.1 SOIL - 17/10/2016 SE158264D.081	D124 0.2-0.3 SOIL - 17/10/2016 SE158264D.082	D125 0-0.1 SOIL - 17/10/2016 SE158264D.083	D125 0.2-0.3 SOIL - 17/10/2016 SE158264D.084	D126 0-0.1 SOIL - 17/10/2016 SE158264D.085
Chromium, Cr	mg/kg	0.5	31	32	39	39	34

PARAMETER	UOM	LOR	D126 0.2-0.3 SOIL - 17/10/2016 SE158264D.086	D127 0-0.1 SOIL - 18/10/2016 SE158264D.087	D127 0.2-0.3 SOIL - 18/10/2016 SE158264D.088	D128 0-0.1 SOIL - 18/10/2016 SE158264D.089	D128 0.2-0.3 SOIL - 18/10/2016 SE158264D.090
Chromium, Cr	mg/kg	0.5	41	40	38	5.5	11

PARAMETER	UOM	LOR	D129 0-0.1 SOIL - 18/10/2016 SE158264D.091	D129 0.2-0.3 SOIL - 18/10/2016 SE158264D.092	D130 0-0.1 SOIL - 18/10/2016 SE158264D.093	D130 0.2-0.3 SOIL - 18/10/2016 SE158264D.094	D130 1.0-1.1 SOIL - 18/10/2016 SE158264D.095
Chromium, Cr	mg/kg	0.5	7.6	13	7.2	11	12

PARAMETER	UOM	LOR	D131 0-0.1 SOIL - 18/10/2016 SE158264D.096	D131 0.2-0.3 SOIL - 18/10/2016 SE158264D.097	D132 0-0.1 SOIL - 17/10/2016 SE158264D.098	D132 0.2-0.3 SOIL - 17/10/2016 SE158264D.099	D132 1.0-1.1 SOIL - 17/10/2016 SE158264D.100
Chromium, Cr	mg/kg	0.5	39	36	34	42	37

PARAMETER	UOM	LOR	D132 1.9-2.0 SOIL - 17/10/2016 SE158264D.101	D133 0-0.1 SOIL - 17/10/2016 SE158264D.102	D133 0.2-0.3 SOIL - 17/10/2016 SE158264D.103	D134 0-0.1 SOIL - 17/10/2016 SE158264D.104	D134 0.2-0.03 SOIL - 17/10/2016 SE158264D.105
Chromium, Cr	mg/kg	0.5	35	31	31	40	63

Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 15/12/2016 (continued)

PARAMETER	UOM	LOR	D135 0-0.1 SOIL - 17/10/2016 SE158264D.106	D135 0.2-0.3 SOIL - 17/10/2016 SE158264D.107	D136 0-0.1 SOIL - 17/10/2016 SE158264D.108	D136 0.2-0.3 SOIL - 17/10/2016 SE158264D.109	D137 0-0.1 SOIL - 17/10/2016 SE158264D.110
Chromium, Cr	mg/kg	0.5	34	36	28	31	26

PARAMETER	UOM	LOR	D137 0.2-0.3 SOIL - 17/10/2016 SE158264D.111	D138 0-0.1 SOIL - 17/10/2016 SE158264D.112	D138 0.2-0.3 SOIL - 17/10/2016 SE158264D.113	D139 0-0.1 SOIL - 17/10/2016 SE158264D.114	D139 0.2-0.3 SOIL - 17/10/2016 SE158264D.115
Chromium, Cr	mg/kg	0.5	32	32	26	30	24

PARAMETER	UOM	LOR	D139 1.0-1.1 SOIL - 17/10/2016 SE158264D.116	D139 1.4-1.5 SOIL - 17/10/2016 SE158264D.117	D140 0-0.1 SOIL - 17/10/2016 SE158264D.118	D140 0.2-0.3 SOIL - 17/10/2016 SE158264D.119	D141 0-0.1 SOIL - 17/10/2016 SE158264D.120
Chromium, Cr	mg/kg	0.5	44	34	29	27	26

PARAMETER	UOM	LOR	D141 0.2-0.3 SOIL - 17/10/2016 SE158264D.121	D142 0-0.1 SOIL - 17/10/2016 SE158264D.122	D142 0.2-0.3 SOIL - 17/10/2016 SE158264D.123	D142 1.0-1.1 SOIL - 17/10/2016 SE158264D.124	D142 1.9-2.0 SOIL - 17/10/2016 SE158264D.125
Chromium, Cr	mg/kg	0.5	28	32	32	28	32

PARAMETER	UOM	LOR	D143 0-0.1 SOIL - 17/10/2016 SE158264D.126	D143 0.2-0.3 SOIL - 17/10/2016 SE158264D.127	D144 0-0.1 SOIL - 17/10/2016 SE158264D.128	D144 0.2-0.3 SOIL - 17/10/2016 SE158264D.129	D145 0-0.1 SOIL - 17/10/2016 SE158264D.130
Chromium, Cr	mg/kg	0.5	31	40	49	30	32

PARAMETER	UOM	LOR	D145 0.2-0.3 SOIL - 17/10/2016 SE158264D.131	D146 0-0.1 SOIL - 17/10/2016 SE158264D.132	D146 0.2-0.3 SOIL - 17/10/2016 SE158264D.133	D147 0-0.1 SOIL - 17/10/2016 SE158264D.134	D147 0.2-0.3 SOIL - 17/10/2016 SE158264D.135
Chromium, Cr	mg/kg	0.5	16	26	35	31	36

PARAMETER	UOM	LOR	D148 0-0.1 SOIL - 17/10/2016 SE158264D.136	D148 0.2-0.3 SOIL - 17/10/2016 SE158264D.137	D149 0-0.1 SOIL - 17/10/2016 SE158264D.138	D149 0.2-0.3 SOIL - 17/10/2016 SE158264D.139	D150 0-0.1 SOIL - 17/10/2016 SE158264D.140
Chromium, Cr	mg/kg	0.5	28	31	28	34	20

Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 15/12/2016 (continued)

PARAMETER	UOM	LOR	D150 0.2-0.3 SOIL - 17/10/2016 SE158264D.141	D151 0-0.1 SOIL - 17/10/2016 SE158264D.142	D151 0.2-0.3 SOIL - 17/10/2016 SE158264D.143	D152 0-0.1 SOIL - 17/10/2016 SE158264D.144	D152 0.2-0.3 SOIL - 17/10/2016 SE158264D.145
Chromium, Cr	mg/kg	0.5	23	34	27	39	47

PARAMETER	UOM	LOR	D152 1.0-1.1 SOIL - 17/10/2016 SE158264D.146	D152 1.9-2.0 SOIL - 17/10/2016 SE158264D.147	D153 0-0.1 SOIL - 17/10/2016 SE158264D.148	D153 0.2-0.3 SOIL - 17/10/2016 SE158264D.149	D154 0-0.1 SOIL - 17/10/2016 SE158264D.150
Chromium, Cr	mg/kg	0.5	30	37	31	40	35

PARAMETER	UOM	LOR	D154 0.2-0.3 SOIL - 17/10/2016 SE158264D.151	D155 0-0.1 SOIL - 17/10/2016 SE158264D.152	D155 0.2-0.3 SOIL - 17/10/2016 SE158264D.153	D156 0-0.1 SOIL - 17/10/2016 SE158264D.154	D156 0.2-0.3 SOIL - 17/10/2016 SE158264D.155
Chromium, Cr	mg/kg	0.5	39	36	39	18	26

PARAMETER	UOM	LOR	D157 0-0.1 SOIL - 17/10/2016 SE158264D.156	D157 0.2-0.3 SOIL - 17/10/2016 SE158264D.157	D157 1.0-1.1 SOIL - 17/10/2016 SE158264D.158	D157 1.9-2.0 SOIL - 17/10/2016 SE158264D.159	Duplicate D1 SOIL - 17/10/2016 SE158264D.186
Chromium, Cr	mg/kg	0.5	26	30	29	28	24

PARAMETER	UOM	LOR	Duplicate D2 SOIL - 17/10/2016 SE158264D.187	Duplicate D3 SOIL - 17/10/2016 SE158264D.188	Duplicate D4 SOIL - 17/10/2016 SE158264D.189	Duplicate D5 SOIL - 18/10/2016 SE158264D.190	Duplicate D6 SOIL - 18/10/2016 SE158264D.191
Chromium, Cr	mg/kg	0.5	58	32	24	31	34

PARAMETER	UOM	LOR	Duplicate D7 SOIL - 18/10/2016 SE158264D.192
Chromium, Cr	mg/kg	0.5	37

Trace Metals (Dissolved) in Water by ICPMS [AN318] Tested: 14/12/2016

PARAMETER	UOM	LOR	Dam Water W1 WATER - 18/10/2016 SE158264D.198
Chromium, Cr	μg/L	1	2

Trace Metals (Total) in Water by ICPMS [AN022/AN318] Tested: 14/12/2016

PARAMETER	UOM	LOR	Dam Water W1 WATER - 18/10/2016 SE158264D.198
Total Chromium	µg/L	1	2

Metals in Water (Dissolved) by ICPOES [AN320/AN321] Tested: 20/12/2016

PARAMETER	UOM	LOR	Rinsate R1 WATER - 17/10/2016 SE158264D.196	Rinsate R2 WATER - 18/10/2016 SE158264D.197
Chromium, Cr	mg/L	0.005	<0.005	<0.005

METHOD	METHODOLOGY SUMMARY
AN022/AN318	Following acid digestion of un filtered sample, determination of elements at trace level in waters by ICP-MS technique, in accordance with USEPA 6020A.
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.
AN318	Determination of elements at trace level in waters by ICP-MS technique, in accordance with USEPA 6020A.
AN320/AN321	Metals by ICP-OES: Samples are preserved with 10% nitric acid for a wide range of metals and some non-metals. This solution is measured by Inductively Coupled Plasma. Solutions are aspirated into an argon plasma at 8000-10000K and emit characteristic energy or light as a result of electron transitions through unique energy levels. The emitted light is focused onto a diffraction grating where it is separated into components.
AN320/AN321	Photomultipliers or CCDs are used to measure the light intensity at specific wavelengths. This intensity is directly proportional to concentration. Corrections are required to compensate for spectral overlap between elements. Reference APHA 3120 B.

FOOTNOTES

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

Samples analysed as received.
Solid samples expressed on a dry weight basis.

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

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

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

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

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

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

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

SGS

STATEMENT OF QA/QC PERFORMANCE

SE158264D R4

CLIENT DETAILS

Contact	John Xu
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Project	**12675-4 Googong NH1A-7 and NH2-Add**
Order Number	(Not specified)
Samples	198

LABORATORY DETAILS

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SGS Reference	**SE158264D R4**
Date Received	13 Dec 2016
Date Reported	20 Jan 2017

COMMENTS

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

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

All Data Quality Objectives were met (within the SGS Alexandria Environmental laboratory).

SAMPLE SUMMARY

Sample counts by matrix	166 Soil, 3 Water	Type of documentation received	COC
Date documentation received	13/12/16@3:50pm	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	8.3°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		

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

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

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

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

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
A4 0.25-0.35	SE158264D.001	LB116113	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	16 Dec 2016
A4 0.5-0.6	SE158264D.002	LB116113	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	16 Dec 2016
A6 0.25-0.35	SE158264D.003	LB116113	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	16 Dec 2016
A6 0.5-0.6	SE158264D.004	LB116113	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	16 Dec 2016
A8 0.25-0.35	SE158264D.005	LB116113	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	16 Dec 2016
A8 0.5-0.6	SE158264D.006	LB116113	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	16 Dec 2016
A8 1.0-1.1	SE158264D.007	LB116113	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	16 Dec 2016
A9 0.25-0.35	SE158264D.008	LB116113	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	16 Dec 2016
A9 0.5-0.6	SE158264D.009	LB116113	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	16 Dec 2016
A11 0.25-0.35	SE158264D.010	LB116113	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	16 Dec 2016
A11 0.5-0.6	SE158264D.011	LB116113	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	16 Dec 2016
A11 1.0-1.1	SE158264D.012	LB116113	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	16 Dec 2016
A11 1.9-2.0	SE158264D.013	LB116113	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	16 Dec 2016
A13 0.25-0.35	SE158264D.014	LB116113	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	16 Dec 2016
A13 0.5-0.6	SE158264D.015	LB116113	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	16 Dec 2016
A15 0.2-0.3	SE158264D.016	LB116113	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	16 Dec 2016
A15 0.5-0.6	SE158264D.017	LB116113	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	16 Dec 2016
A15 1.0-1.1	SE158264D.018	LB116113	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	16 Dec 2016
A15 1.9-2.0	SE158264D.019	LB116113	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	16 Dec 2016
A16 0.2-0.3	SE158264D.020	LB116115	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	16 Dec 2016
A16 0.5-0.6	SE158264D.021	LB116115	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	16 Dec 2016
A16 1.0-1.1	SE158264D.022	LB116115	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	16 Dec 2016
A16 1.5-1.6	SE158264D.023	LB116115	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	16 Dec 2016
A17 0.2-0.3	SE158264D.024	LB116115	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	16 Dec 2016
A17 0.5-0.6	SE158264D.025	LB116115	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	16 Dec 2016
A17 1.0-1.1	SE158264D.026	LB116115	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	16 Dec 2016
A17 1.9-2.0	SE158264D.027	LB116115	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	16 Dec 2016
A18 0.2-0.3	SE158264D.028	LB116115	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	16 Dec 2016
A18 0.5-0.6	SE158264D.029	LB116115	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	16 Dec 2016
A18 1.0-1.1	SE158264D.030	LB116115	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	16 Dec 2016
D101 0-0.1	SE158264D.031	LB116115	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	16 Dec 2016
D101 0.2-0.3	SE158264D.032	LB116115	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	16 Dec 2016
D101 1.0-1.1	SE158264D.033	LB116115	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	16 Dec 2016
D101 1.9-2.0	SE158264D.034	LB116115	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	16 Dec 2016
D102 0-0.1	SE158264D.035	LB116115	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	16 Dec 2016
D102 0.2-0.3	SE158264D.036	LB116115	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	16 Dec 2016
D103 0-0.1	SE158264D.037	LB116115	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	16 Dec 2016
D103 0.2-0.3	SE158264D.038	LB116115	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	16 Dec 2016
D104 0-0.1	SE158264D.039	LB116116	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D104 0.2-0.3	SE158264D.040	LB116116	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D105 0-0.1	SE158264D.041	LB116116	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D105 0.2-0.3	SE158264D.042	LB116116	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D106 0-0.1	SE158264D.043	LB116116	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D106 0.2-0.3	SE158264D.044	LB116116	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D107 0-0.1	SE158264D.045	LB116116	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D107 0.2-0.3	SE158264D.046	LB116116	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D108 0-0.1	SE158264D.047	LB116116	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D108 0.2-0.3	SE158264D.048	LB116116	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D109 0-0.1	SE158264D.049	LB116116	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D109 0.2-0.3	SE158264D.050	LB116116	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D110 0-0.1	SE158264D.051	LB116116	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D110 0.2-0.3	SE158264D.052	LB116116	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D111 0-0.1	SE158264D.053	LB116116	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D111 0.2-0.3	SE158264D.054	LB116116	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D112 0-0.1	SE158264D.055	LB116116	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D112 0.2-0.3	SE158264D.056	LB116116	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D113 0-0.1	SE158264D.057	LB116116	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D113 0.2-0.3	SE158264D.058	LB116117	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D114 0-0.1	SE158264D.059	LB116117	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D114 0.2-0.3	SE158264D.060	LB116117	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016

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

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

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

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
D115 0-0.1	SE158264D.061	LB116117	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D115 0.2-0.3	SE158264D.062	LB116117	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D116 0-0.1	SE158264D.063	LB116117	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D116 0.2-0.3	SE158264D.064	LB116117	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D116 1.0-1.1	SE158264D.065	LB116117	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D116 1.4-1.5	SE158264D.066	LB116117	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D117 0-0.1	SE158264D.067	LB116117	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D117 0.2-0.3	SE158264D.068	LB116117	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D118 0-0.1	SE158264D.069	LB116117	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D118 0.2-0.3	SE158264D.070	LB116117	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D119 0-0.1	SE158264D.071	LB116117	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D119 0.2-0.3	SE158264D.072	LB116117	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D120 0-0.1	SE158264D.073	LB116117	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D120 0.2-0.3	SE158264D.074	LB116117	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D121 0-0.1	SE158264D.075	LB116117	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D121 0.2-0.3	SE158264D.076	LB116117	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D122 0-0.1	SE158264D.077	LB116119	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D122 0.2-0.3	SE158264D.078	LB116119	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D123 0-0.1	SE158264D.079	LB116119	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D123 0.2-0.3	SE158264D.080	LB116119	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D124 0-0.1	SE158264D.081	LB116119	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D124 0.2-0.3	SE158264D.082	LB116119	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D125 0-0.1	SE158264D.083	LB116119	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D125 0.2-0.3	SE158264D.084	LB116119	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D126 0-0.1	SE158264D.085	LB116119	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D126 0.2-0.3	SE158264D.086	LB116119	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D127 0-0.1	SE158264D.087	LB116119	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D127 0.2-0.3	SE158264D.088	LB116119	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D128 0-0.1	SE158264D.089	LB116119	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D128 0.2-0.3	SE158264D.090	LB116119	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D129 0-0.1	SE158264D.091	LB116119	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D129 0.2-0.3	SE158264D.092	LB116119	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D130 0-0.1	SE158264D.093	LB116119	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D130 0.2-0.3	SE158264D.094	LB116119	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D130 1.0-1.1	SE158264D.095	LB116119	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D131 0-0.1	SE158264D.096	LB116120	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D131 0.2-0.3	SE158264D.097	LB116120	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
D132 0-0.1	SE158264D.098	LB116120	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D132 0.2-0.3	SE158264D.099	LB116120	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D132 1.0-1.1	SE158264D.100	LB116120	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D132 1.9-2.0	SE158264D.101	LB116120	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D133 0-0.1	SE158264D.102	LB116120	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D133 0.2-0.3	SE158264D.103	LB116120	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D134 0-0.1	SE158264D.104	LB116120	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D134 0.2-0.03	SE158264D.105	LB116120	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D135 0-0.1	SE158264D.106	LB116120	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D135 0.2-0.3	SE158264D.107	LB116120	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D136 0-0.1	SE158264D.108	LB116120	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D136 0.2-0.3	SE158264D.109	LB116120	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D137 0-0.1	SE158264D.110	LB116120	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D137 0.2-0.3	SE158264D.111	LB116120	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D138 0-0.1	SE158264D.112	LB116120	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D138 0.2-0.3	SE158264D.113	LB116120	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D139 0-0.1	SE158264D.114	LB116120	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D139 0.2-0.3	SE158264D.115	LB116121	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D139 1.0-1.1	SE158264D.116	LB116121	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D139 1.4-1.5	SE158264D.117	LB116121	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D140 0-0.1	SE158264D.118	LB116121	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D140 0.2-0.3	SE158264D.119	LB116121	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D141 0-0.1	SE158264D.120	LB116121	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016

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

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

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

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
D141 0.2-0.3	SE158264D.121	LB116121	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D142 0-0.1	SE158264D.122	LB116121	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D142 0.2-0.3	SE158264D.123	LB116121	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D142 1.0-1.1	SE158264D.124	LB116121	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D142 1.9-2.0	SE158264D.125	LB116121	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D143 0-0.1	SE158264D.126	LB116121	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D143 0.2-0.3	SE158264D.127	LB116121	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D144 0-0.1	SE158264D.128	LB116121	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D144 0.2-0.3	SE158264D.129	LB116121	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D145 0-0.1	SE158264D.130	LB116121	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D145 0.2-0.3	SE158264D.131	LB116121	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D146 0-0.1	SE158264D.132	LB116121	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D146 0.2-0.3	SE158264D.133	LB116121	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D147 0-0.1	SE158264D.134	LB116122	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D147 0.2-0.3	SE158264D.135	LB116122	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D148 0-0.1	SE158264D.136	LB116122	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D148 0.2-0.3	SE158264D.137	LB116122	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D149 0-0.1	SE158264D.138	LB116122	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D149 0.2-0.3	SE158264D.139	LB116122	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D150 0-0.1	SE158264D.140	LB116122	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D150 0.2-0.3	SE158264D.141	LB116122	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D151 0-0.1	SE158264D.142	LB116122	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D151 0.2-0.3	SE158264D.143	LB116122	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D152 0-0.1	SE158264D.144	LB116122	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D152 0.2-0.3	SE158264D.145	LB116122	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D152 1.0-1.1	SE158264D.146	LB116122	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D152 1.9-2.0	SE158264D.147	LB116122	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D153 0-0.1	SE158264D.148	LB116122	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D153 0.2-0.3	SE158264D.149	LB116122	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D154 0-0.1	SE158264D.150	LB116122	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D154 0.2-0.3	SE158264D.151	LB116122	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D155 0-0.1	SE158264D.152	LB116122	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D155 0.2-0.3	SE158264D.153	LB116123	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D156 0-0.1	SE158264D.154	LB116123	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D156 0.2-0.3	SE158264D.155	LB116123	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D157 0-0.1	SE158264D.156	LB116123	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D157 0.2-0.3	SE158264D.157	LB116123	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D157 1.0-1.1	SE158264D.158	LB116123	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
D157 1.9-2.0	SE158264D.159	LB116123	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
Duplicate D1	SE158264D.186	LB116123	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
Duplicate D2	SE158264D.187	LB116123	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
Duplicate D3	SE158264D.188	LB116123	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
Duplicate D4	SE158264D.189	LB116123	17 Oct 2016	13 Dec 2016	15 Apr 2017	15 Dec 2016	15 Apr 2017	19 Dec 2016
Duplicate D5	SE158264D.190	LB116123	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
Duplicate D6	SE158264D.191	LB116123	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
Duplicate D7	SE158264D.192	LB116123	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
Duplicate D8	SE158264D.193	LB116123	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
Duplicate D9	SE158264D.194	LB116123	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016
Duplicate D10	SE158264D.195	LB116123	18 Oct 2016	13 Dec 2016	16 Apr 2017	15 Dec 2016	16 Apr 2017	19 Dec 2016

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Dam Water W1	SE158264D.198	LB115973	18 Oct 2016	13 Dec 2016	16 Apr 2017	14 Dec 2016	16 Apr 2017	14 Dec 2016

Trace Metals (Total) in Water by ICPMS — Method: ME-(AU)-[ENV]AN022/AN318

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Dam Water W1	SE158264D.198	LB115974	18 Oct 2016	13 Dec 2016	16 Apr 2017	14 Dec 2016	16 Apr 2017	14 Dec 2016

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

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

No surrogates were required for this job.

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

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

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

Sample Number	Parameter	Units	LOR	Result
LB116113.001	Chromium, Cr	mg/kg	0.5	<0.5
LB116115.001	Chromium, Cr	mg/kg	0.5	<0.5
LB116116.001	Chromium, Cr	mg/kg	0.5	<0.5
LB116117.001	Chromium, Cr	mg/kg	0.5	<0.5
LB116119.001	Chromium, Cr	mg/kg	0.5	<0.5
LB116120.001	Chromium, Cr	mg/kg	0.5	<0.5
LB116121.001	Chromium, Cr	mg/kg	0.5	<0.5
LB116122.001	Chromium, Cr	mg/kg	0.5	<0.5
LB116123.001	Chromium, Cr	mg/kg	0.5	<0.5

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

Sample Number	Parameter	Units	LOR	Result
LB115973.001	Chromium, Cr	μg/L	1	<1

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.

No duplicates were required for this job.

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

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

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

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB116113.002	Chromium, Cr	mg/kg	0.5	49	50	80 - 120	99
LB116115.002	Chromium, Cr	mg/kg	0.5	50	50	80 - 120	101
LB116116.002	Chromium, Cr	mg/kg	0.5	50	50	80 - 120	100
LB116117.002	Chromium, Cr	mg/kg	0.5	50	50	80 - 120	100
LB116119.002	Chromium, Cr	mg/kg	0.5	51	50	80 - 120	101
LB116120.002	Chromium, Cr	mg/kg	0.5	48	50	80 - 120	96
LB116121.002	Chromium, Cr	mg/kg	0.5	49	50	80 - 120	98
LB116122.002	Chromium, Cr	mg/kg	0.5	50	50	80 - 120	100
LB116123.002	Chromium, Cr	mg/kg	0.5	49	50	80 - 120	99

Trace Metals (Dissolved) in Water by ICPMS

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB115973.002	Chromium, Cr	μg/L	1	21	20	80 - 120	106

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

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

No matrix spikes were required for this job.

MATRIX SPIKE DUPLICATES

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

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

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

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

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

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

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

*	NATA accreditation does not cover tthe performance of this service.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.

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

E-MAILED 13/12/16 @ 3.50pm

SGS EHS Alexandria Laboratory

SE158264D COC
Received: 13 – Dec – 2016

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
email: info@geotech.com.au

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

PH: 02 8594 0400 FAX: 02 8594 0499

ATTN: MS EMILY YIN

Sampling By: LY/JH
Job No: 12675/4
Project:
Project Manager: JX
Location: Googong NH1A-7 & NH2

Results required by: 19/12/2016 (Normal TAT)
(SGS Ref. SE158264)

	Location	Depth (m)	Date	Time	Soil	Water	Heavy Metal Cr									KEEP SAMPLE
1	A4	0.25-0.35	18/10/2016	-	SG		✓									YES
2	A4	0.5-0.6	18/10/2016	-	SG		✓									YES
3	A6	0.25-0.35	18/10/2016	-	SG		✓									YES
4	A6	0.5-0.6	18/10/2016	-	SG		✓									YES
5	A8	0.25-0.35	18/10/2016	-	SG		✓									YES
6	A8	0.5-0.6	18/10/2016	-	SG		✓									YES
7	A8	1.0-1.1	18/10/2016	-	SG		✓									YES
8	A9	0.25-0.35	18/10/2016	-	SG		✓									YES
9	A9	0.5-0.6	18/10/2016	-	SG		✓									YES
10	A11	0.25-0.35	18/10/2016	-	SG		✓									YES
11	A11	0.5-0.6	18/10/2016	-	SG		✓									YES
12	A11	1.0-1.1	18/10/2016	-	SG		✓									YES
13	A11	1.9-2.0	18/10/2016	-	SG		✓									YES
																YES

Relinquished by: Name	Signature	Date	Received by: Name	Signature	Date
JOHN XU	jx	13/12/2016	Emily Yin		13/12/16

Legend:

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

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

ATTN: MS EMILY YIN

Sampling By: LY/JH **Job No:** 12675/4

Project:

Project Manager: JX **Location:** Googong NH1A-7 & NH2

Results required by: 19/12/2016 (Normal TAT)
(SGS Ref. SE158264)

	Location	Depth (m)	Date	Time	Soil	Water	Heavy Metal Cr									KEEP SAMPLE
14	A13	0.25-0.35	18/10/2016	-	SG		✓									YES
15	A13	0.5-0.6	18/10/2016	-	SG		✓									YES
16	A15	0.2-0.3	18/10/2016	-	SG		✓									YES
17	A15	0.5-0.6	18/10/2016	-	SG		✓									YES
18	A15	1.0-1.1	18/10/2016	-	SG		✓									YES
19	A15	1.9-2.0	18/10/2016	-	SG		✓									YES
20	A16	0.2-0.3	18/10/2016	-	SG		✓									YES
21	A16	0.5-0.6	18/10/2016	-	SG		✓									YES
22	A16	1.0-1.1	18/10/2016	-	SG		✓									YES
23	A16	1.5-1.6	18/10/2016	-	SG		✓									YES
24	A17	0.2-0.3	18/10/2016	-	SG		✓									YES
25	A17	0.5-0.6	18/10/2016	-	SG		✓									YES
26	A17	1.0-1.1	18/10/2016	-	SG		✓									YES

Relinquished by: Name	Signature	Date	Received by: Name	Signature	Date
JOHN XU	jx	13/12/2016	Emily Yin	[signature]	13/12/16

Legend:
WG Water sample, glass bottle
WP Water sample, plastic bottle
SG Soil sample (glass jar)
SP Soil sample (plastic bag)
✓ Test required
* Purge & Trap

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		Job No:	12675/4
		Project:	
PH:	02 8594 0400 FAX: 02 8594 0499	Project Manager:	JX
		Location:	Googong NH1A-7 & NH2
ATTN:	MS EMILY YIN		

Results required by: 19/12/2016 (Normal TAT)
(SGS Ref. SE158264)

	Sampling details				Sample type											
	Location	Depth (m)	Date	Time	Soil	Water	Heavy Metal Cr									KEEP SAMPLE
27	A17	1.9-2.0	18/10/2016		SG		✓									YES
28	A18	0.2-0.3	18/10/2016	-	SG		✓									YES
29	A18	0.5-0.6	18/10/2016	-	SG		✓									YES
30	A18	1.0-1.1	18/10/2016	-	SG		✓									YES
31	D101	0-0.1	17/10/2016	-	SG		✓									YES
32	D101	0.2-0.3	17/10/2016	-	SG		✓									YES
33	D101	1.0-1.1	17/10/2016	-	SG		✓									YES
34	D101	1.9-2.0	17/10/2016	-	SG		✓									YES
35	D102	0-0.1	17/10/2016	-	SG		✓									YES
36	D102	0.2-0.3	17/10/2016	-	SG		✓									YES
37	D103	0-0.1	18/10/2016	-	SG		✓									YES
38	D103	0.2-0.3	18/10/2016	-	SG		✓									YES
39	D104	0-0.1	18/10/2016	-	SG		✓									YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	13/12/2016	Emily Yin		13/12/16

Legend:

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

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Sampling By: LY/JH
Job No: 12675/4
Project:
Project Manager: JX
Location: Googong NH1A-7 & NH2

Results required by: 19/12/2016 (Normal TAT)
(SGS Ref. SE158264)

	Sampling details				Sample type			
	Location	Depth (m)	Date	Time	Soil	Water	Heavy Metal Cr	KEEP SAMPLE
40	D104	0.2-0.3	18/10/2016		SG		✓	YES
41	D105	0-0.1	18/10/2016	-	SG		✓	YES
42	D105	0.2-0.3	18/10/2016	-	SG		✓	YES
43	D106	0-0.1	18/10/2016	-	SG		✓	YES
44	D106	0.2-0.3	18/10/2016	-	SG		✓	YES
45	D107	0-0.1	18/10/2016	-	SG		✓	YES
46	D107	0.2-0.3	18/10/2016	-	SG		✓	YES
47	D108	0-0.1	18/10/2016	-	SG		✓	YES
48	D108	0.2-0.3	18/10/2016	-	SG		✓	YES
49	D109	0-0.1	18/10/2016	-	SG		✓	YES
50	D109	0.2-0.3	18/10/2016	-	SG		✓	YES
51	D110	0-0.1	17/10/2016	-	SG		✓	YES
52	D110	0.2-0.3	17/10/2016	-	SG		✓	YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	13/12/2016	Emily Yin		13/12/16

Legend:

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

* Purge & Trap

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			Project:
PH:	02 8594 0400 FAX: 02 8594 0499	Project Manager: JX	Location: Googong NH1A-7 & NH2
ATTN:	MS EMILY YIN		

Results required by: 19/12/2016 (Normal TAT)
(SGS Ref. SE158264)

Sampling details: Location	Depth (m)	Date	Time	Sample type: Soil	Water	Heavy Metal Cr									KEEP SAMPLE
53 D111	0-0.1	17/10/2016	-	SG		✓									YES
54 D111	0.2-0.3	17/10/2016	-	SG		✓									YES
55 D112	0-0.1	17/10/2016	-	SG		✓									YES
56 D112	0.2-0.3	17/10/2016	-	SG		✓									YES
57 D113	0-0.1	17/10/2016	-	SG		✓									YES
58 D113	0.2-0.3	17/10/2016	-	SG		✓									YES
59 D114	0-0.1	17/10/2016	-	SG		✓									YES
60 D114	0.2-0.3	17/10/2016	-	SG		✓									YES
61 D115	0-0.1	17/10/2016	-	SG		✓									YES
62 D115	0.2-0.3	17/10/2016	-	SG		✓									YES
63 D116	0-0.1	18/10/2016	-	SG		✓									YES
64 D116	0.2-0.3	18/10/2016	-	SG		✓									YES
65 D116	1.0-1.1	18/10/2016	-	SG		✓									YES

Relinquished by: Name	Signature	Date	Received by: Name	Signature	Date
JOHN XU	jx	13/12/2016	[illegible]	[illegible]	13/12/16

Legend:

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

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		Job No:	12675/4
		Project:	
PH:	02 8594 0400	FAX:	02 8594 0499
		Project Manager:	JX
		Location:	Googong NH1A-7 & NH2
ATTN:	MS EMILY YIN		

Results required by: 19/12/2016 (Normal TAT)
(SGS Ref. SE158264)

	Sampling details				Sample type											
	Location	Depth (m)	Date	Time	Soil	Water	Heavy Metal Cr									KEEP SAMPLE
66	D116	1.4-1.5	18/10/2016	-	SG		✓									YES
67	D117	0-0.1	18/10/2016	-	SG		✓									YES
68	D117	0.2-0.3	18/10/2016	-	SG		✓									YES
69	D118	0-0.1	18/10/2016	-	SG		✓									YES
70	D118	0.2-0.3	18/10/2016	-	SG		✓									YES
71	D119	0-0.1	18/10/2016	-	SG		✓									YES
72	D119	0.2-0.3	18/10/2016	-	SG		✓									YES
73	D120	0-0.1	18/10/2016	-	SG		✓									YES
74	D120	0.2-0.3	18/10/2016	-	SG		✓									YES
75	D121	0-0.1	18/10/2016	-	SG		✓									YES
76	D121	0.2-0.3	18/10/2016	-	SG		✓									YES
77	D122	0-0.1	18/10/2016	-	SG		✓									YES
78	D122	0.2-0.3	18/10/2016	-	SG		✓									YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	13/12/2016	Emily Yin		13/12/16

Legend:

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

* Purge & Trap

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			Project:
PH: 02 8594 0400	FAX: 02 8594 0499	Project Manager: JX	Location: Googong NH1A-7 & NH2
ATTN: MS EMILY YIN			

Results required by: 19/12/2016 (Normal TAT)
(SGS Ref. SE158264)

Sampling details				Sample type												
Location	Depth (m)	Date	Time	Soil	Water	Heavy Metal Cr									KEEP SAMPLE
D123	0-0.1	18/10/2016		SG		✓									YES
D123	0.2-0.3	18/10/2016	-	SG		✓									YES
D124	0-0.1	17/10/2016	-	SG		✓									YES
D124	0.2-0.3	17/10/2016	-	SG		✓									YES
D125	0-0.1	17/10/2016	-	SG		✓									YES
D125	0.2-0.3	17/10/2016	-	SG		✓									YES
D126	0-0.1	17/10/2016	-	SG		✓									YES
D126	0.2-0.3	17/10/2016	-	SG		✓									YES
D127	0-0.1	18/10/2016	-	SG		✓									YES
D127	0.2-0.3	18/10/2016	-	SG		✓									YES
D128	0-0.1	18/10/2016	-	SG		✓									YES
D128	0.2-0.3	18/10/2016	-	SG		✓									YES
D129	0-0.1	18/10/2016	-	SG		✓									YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	13/12/2016			

Legend:

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

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		Job No:	12675/4
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PH:	02 8594 0400	FAX:	02 8594 0499
		Project Manager:	JX
		Location:	Googong NH1A-7 & NH2
ATTN:	MS EMILY YIN		

Results required by: 19/12/2016 (Normal TAT)
(SGS Ref. SE158264)

Sampling details				Sample type											
Location	Depth (m)	Date	Time	Soil	Water	Heavy Metal Cr									KEEP SAMPLE
~~D120~~	~~0.2-0.03~~	~~18/10/2016~~	~~-~~	~~SG~~		✓									YES
D130	0-0.1	18/10/2016	-	SG		✓									YES
D130	0.2-0.3	18/10/2016	-	SG		✓									YES
D130	1.0-1.1	18/10/2016	-	SG		✓									YES
D131	0-0.1	18/10/2016	-	SG		✓									YES
D131	0.2-0.3	18/10/2016	-	SG		✓									YES
D132	0-0.1	17/10/2016	-	SG		✓									YES
D132	0.2-0.3	17/10/2016	-	SG		✓									YES
D132	1.0-1.1	17/10/2016	-	SG		✓									YES
D132	1.9-2.0	17/10/2016	-	SG		✓									YES
D133	0-0.1	17/10/2016	-	SG		✓									YES
D133	0.2-0.3	17/10/2016	-	SG		✓									YES
D134	0-0.1	17/10/2016	-	SG		✓									YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	13/12/2016	[illegible]	[illegible]	[illegible]

Legend:

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

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Project:	
Project Manager:	JX
Location:	Googong NH1A-7 & NH2

Results required by: 19/12/2016 (Normal TAT)
(SGS Ref. SE158264)

Sampling details				Sample type											
Location	Depth (m)	Date	Time	Soil	Water	Heavy Metal Cr									KEEP SAMPLE
~~D134~~	~~0.2-0.03~~	~~17/10/2016~~	~~-~~	~~SG~~		✓									YES
D135	0-0.1	17/10/2016	-	SG		✓									YES
D135	0.2-0.3	17/10/2016	-	SG		✓									YES
D136	0-0.1	17/10/2016	-	SG		✓									YES
D136	0.2-0.3	17/10/2016	-	SG		✓									YES
D137	0-0.1	17/10/2016	-	SG		✓									YES
D137	0.2-0.3	17/10/2016	-	SG		✓									YES
D138	0-0.1	17/10/2016	-	SG		✓									YES
D138	0.2-0.3	17/10/2016	-	SG		✓									YES
D139	0-0.1	17/10/2016	-	SG		✓									YES
D139	0.2-0.3	17/10/2016	-	SG		✓									YES
D139	1.0-1.1	17/10/2016	-	SG		✓									YES
D139	1.4-1.5	17/10/2016	-	SG		✓									YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	13/12/2016	[illegible]	[signature]	13/12/16

Legend:

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

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Job No: 12675/4
Project:
Project Manager: JX
Location: Googong NH1A-7 & NH2

Results required by: 19/12/2016 (Normal TAT)
(SGS Ref. SE158264)

Location	Depth (m)	Date	Time	Soil	Water	Heavy Metal Cr									KEEP SAMPLE
D140	0-0.1	17/10/2016		SG		✓									YES
D140	0.2-0.3	17/10/2016	-	SG		✓									YES
D141	0-0.1	17/10/2016	-	SG		✓									YES
D141	0.2-0.3	17/10/2016	-	SG		✓									YES
D142	0-0.1	17/10/2016	-	SG		✓									YES
D142	0.2-0.3	17/10/2016	-	SG		✓									YES
D142	1.0-1.1	17/10/2016	-	SG		✓									YES
D142	1.9-2.0	17/10/2016	-	SG		✓									YES
D143	0-0.1	17/10/2016	-	SG		✓									YES
D143	0.2-0.3	17/10/2016	-	SG		✓									YES
D144	0-0.1	17/10/2016	-	SG		✓									YES
D144	0.2-0.3	17/10/2016	-	SG		✓									YES
D145	0-0.1	17/10/2016	-	SG		✓									YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	13/12/2016	[illegible]	[illegible]	13/12/16

Legend:
WG Water sample, glass bottle
WP Water sample, plastic bottle
SG Soil sample (glass jar)
SP Soil sample (plastic bag)
✓ Test required
* Purge & Trap

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			Project:
PH: 02 8594 0400	FAX: 02 8594 0499	Project Manager: JX	Location: Googong NH1A-7 & NH2
ATTN:	MS EMILY YIN		

Results required by: 19/12/2016 (Normal TAT)
(SGS Ref. SE158264)

Sampling details				Sample type											
Location	Depth (m)	Date	Time	Soil	Water	Heavy Metal Cr									KEEP SAMPLE
D145	0.2-0.3	17/10/2016		SG		✓									YES
D146	0-0.1	17/10/2016	-	SG		✓									YES
D146	0.2-0.3	17/10/2016	-	SG		✓									YES
D147	0-0.1	17/10/2016	-	SG		✓									YES
D147	0.2-0.3	17/10/2016	-	SG		✓									YES
D148	0-0.1	17/10/2016	-	SG		✓									YES
D148	0.2-0.3	17/10/2016	-	SG		✓									YES
D149	0-0.1	17/10/2016	-	SG		✓									YES
D149	0.2-0.3	17/10/2016	-	SG		✓									YES
D150	0-0.1	17/10/2016	-	SG		✓									YES
D150	0.2-0.3	17/10/2016	-	SG		✓									YES
D151	0-0.1	17/10/2016	-	SG		✓									YES
D151	0.2-0.3	17/10/2016	-	SG		✓									YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	13/12/2016			13/12/16

Legend:

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

* Purge & Trap

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161
email: info@geotech.com.au

TO:	SGS ENVIRONMENTAL SERVICES UNIT 16 33 MADDOX STREET ALEXANDRIA NSW 2015	Sampling By: LY/JH	Job No: 12675/4
			Project:
PH:	02 8594 0400 FAX: 02 8594 0499	Project Manager: JX	Location: Googong NH1A-7 & NH2
ATTN:	MS EMILY YIN		

Results required by: 19/12/2016 (Normal TAT)
(SGS Ref. SE158264)

Sampling details				Sample type											
Location	Depth (m)	Date	Time	Soil	Water	Heavy Metal Cr									KEEP SAMPLE
~~D152~~	~~0-0.1~~	~~17/10/2016~~	~~-~~	~~SG~~		✓									YES
D152	0.2-0.3	17/10/2016	-	SG		✓									YES
D152	1.0-1.1	17/10/2016	-	SG		✓									YES
D152	1.9-2.0	17/10/2016	-	SG		✓									YES
D153	0-0.1	17/10/2016	-	SG		✓									YES
D153	0.2-0.3	17/10/2016	-	SG		✓									YES
D154	0-0.1	17/10/2016	-	SG		✓									YES
D154	0.2-0.3	17/10/2016	-	SG		✓									YES
D155	0-0.1	17/10/2016	-	SG		✓									YES
D155	0.2-0.3	17/10/2016	-	SG		✓									YES
D156	0-0.1	17/10/2016	-	SG		✓									YES
D156	0.2-0.3	17/10/2016	-	SG		✓									YES
D157	0-0.1	17/10/2016	-	SG		✓									YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	13/12/2016	[illegible]	[illegible]	13/12/16

Legend:

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

* Purge & Trap

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161
email: info@geotech.com.au

TO:	SGS ENVIRONMENTAL SERVICES UNIT 16 33 MADDOX STREET ALEXANDRIA NSW 2015	Sampling By: LY/JH	Job No: 12675/4
			Project:
PH:	02 8594 0400 FAX: 02 8594 0499	Project Manager: JX	Location: Googong NH1A-7 & NH2
ATTN:	MS EMILY YIN		

Results required by: 19/12/2016 (Normal TAT)
(SGS Ref. SE158264)

Location	Depth (m)	Date	Time	Soil	Water	Heavy Metal Cr									KEEP SAMPLE
D157	0.2-0.3	17/10/2016		SG		✓									YES
D157	1.0-1.1	17/10/2016	-	SG		✓									YES
D157	1.9-2.0	17/10/2016	-	SG		✓									YES
DS11	0-0.1	18/10/2016	-	SG											YES
DS16	0-0.1	18/10/2016	-	SG											YES
DS18	0-0.1	18/10/2016	-	SG											YES
DS18	0.5-0.6	18/10/2016	-	SG											YES
DS19	0-0.1	18/10/2016	-	SG											YES
DS19	0.5-0.6	18/10/2016	-	SG											YES
DS22	0-0.1	18/10/2016	-	SG											YES
DS22	0.5-0.6	18/10/2016	-	SG											YES
CS12-1	0-0.1	18/10/2016	-	SG											YES
CS12-2	0-0.1	18/10/2016	-	SG											YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	13/12/2016	Emily Yin		13/12/16

Legend:

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

* Purge & Trap

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161
email: info@geotech.com.au

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

PH: 02 8594 0400 FAX: 02 8594 0499

ATTN: MS EMILY YIN

Sampling By: LY/JH
Job No: 12675/4
Project:
Project Manager: JX
Location: Googong NH1A-7 & NH2

Results required by: 19/12/2016 (Normal TAT)
(SGS Ref. SE158264)

Location	Depth (m)	Date	Time	Soil	Water	Heavy Metal Cr								KEEP SAMPLE
CS22-1	0-0.1	18/10/2016	-	SG										YES
CS22-2	0-0.1	18/10/2016	-	SG										YES
CS22-3	0-0.1	18/10/2016	-	SG										YES
186 Duplicate D1		17/10/2016	-	SG		✓								YES
7 Duplicate D2		17/10/2016	-	SG		✓								YES
8 Duplicate D3		17/10/2016	-	SG		✓								YES
9 Duplicate D4		17/10/2016	-	SG		✓								YES
190 Duplicate D5		18/10/2016	-	SG		✓								YES
1 Duplicate D6		18/10/2016	-	SG		✓								YES
2 Duplicate D7		18/10/2016	-	SG		✓								YES
3 Duplicate D8		18/10/2016	-	SG										YES
4 Duplicate D9		18/10/2016	-	SG										YES
5 Duplicate D10		18/10/2016	-	SG										YES

Relinquished by: Name	Signature	Date	Received by: Name	Signature	Date
JOHN XU	jx	13/12/2016	[illegible]	[illegible]	13/12/16

Legend:

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

* Purge & Trap

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750
P O Box 880
PENRITH NSW 2751
Tel: (02) 4722 2700
Fax: (02) 4722 6161
email: info@geotech.com.au

TO: SGS ENVIRONMENTAL SERVICES UNIT 16 33 MADDOX STREET ALEXANDRIA NSW 2015	Sampling By: LY/JH	Job No: 12673/4	
PH: 02 8594 0400 FAX: 02 8594 0499		Project:	
ATTN: MS EMILY YIN	Project Manager: JX	Location: Googong NH1A-7 & NH2	

Results required by: 19/12/2016 (Normal TAT)
(SGS Ref. SE158264)

Location	Depth (m)	Date	Time	Soil	Water	Heavy Metal Cr	Heavy Metal Cr (unfiltered)	Heavy Metal Cr (to be filtered at l)							KEEP SAMPLE
Rinsate R1		17/10/2016	-		WG	✓									
Rinsate R2		18/10/2016	-		WG	✓									YES
Dam Water W1		18/10/2016	-		WG/WP		✓	✓							YES
															YES
															YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	13/12/2016	[signature]	[signature]	13/12/16

Legend:

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

SAMPLE RECEIPT ADVICE

SE158264D

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**12675-4 Googong NH1A-7 and NH2-Add**
Order Number	(Not specified)
Samples	198

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Tue 13/12/2016
Report Due	Mon 19/12/2016
SGS Reference	**SE158264D**

SUBMISSION DETAILS

This is to confirm that 198 samples were received on Tuesday 13/12/2016. Results are expected to be ready by Monday 19/12/2016. Please quote SGS reference SE158264D when making enquiries. Refer below for details relating to sample integrity upon receipt.

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	166 Soil, 3 Water
Date documentation received	13/12/16@3:50pm	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	8.3°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

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

COMMENTS

SAMPLE RECEIPT ADVICE

CLIENT DETAILS

Client Geotechnique

Project 12675-4 Googong NH1A-7 and NH2-Add

SUMMARY OF ANALYSIS

No.	Sample ID	Total Recoverable Metals in Soil/Waste
001	A4 0.25-0.35	1
002	A4 0.5-0.6	1
003	A6 0.25-0.35	1
004	A6 0.5-0.6	1
005	A8 0.25-0.35	1
006	A8 0.5-0.6	1
007	A8 1.0-1.1	1
008	A9 0.25-0.35	1
009	A9 0.5-0.6	1
010	A11 0.25-0.35	1
011	A11 0.5-0.6	1
012	A11 1.0-1.1	1
013	A11 1.9-2.0	1
014	A13 0.25-0.35	1
015	A13 0.5-0.6	1
016	A15 0.2-0.3	1
017	A15 0.5-0.6	1
018	A15 1.0-1.1	1
019	A15 1.9-2.0	1
020	A16 0.2-0.3	1
021	A16 0.5-0.6	1
022	A16 1.0-1.1	1
023	A16 1.5-1.6	1
024	A17 0.2-0.3	1

CONTINUED OVERLEAF

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

SAMPLE RECEIPT ADVICE

SE158264D

CLIENT DETAILS

Client Geotechnique

Project 12675-4 Googong NH1A-7 and NH2-Add

SUMMARY OF ANALYSIS

No.	Sample ID	Total Recoverable Metals in Soil/Waste
025	A17 0.5-0.6	1
026	A17 1.0-1.1	1
027	A17 1.9-2.0	1
028	A18 0.2-0.3	1
029	A18 0.5-0.6	1
030	A18 1.0-1.1	1
031	D101 0-0.1	1
032	D101 0.2-0.3	1
033	D101 1.0-1.1	1
034	D101 1.9-2.0	1
035	D102 0-0.1	1
036	D102 0.2-0.3	1
037	D103 0-0.1	1
038	D103 0.2-0.3	1
039	D104 0-0.1	1
040	D104 0.2-0.3	1
041	D105 0-0.1	1
042	D105 0.2-0.3	1
043	D106 0-0.1	1
044	D106 0.2-0.3	1
045	D107 0-0.1	1
046	D107 0.2-0.3	1
047	D108 0-0.1	1
048	D108 0.2-0.3	1

CONTINUED OVERLEAF

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SAMPLE RECEIPT ADVICE

SE158264D

CLIENT DETAILS

Client Geotechnique

Project 12675-4 Googong NH1A-7 and NH2-Add

SUMMARY OF ANALYSIS

No.	Sample ID	Total Recoverable Metals in Soil/Waste
049	D109 0-0.1	1
050	D109 0.2-0.3	1
051	D110 0-0.1	1
052	D110 0.2-0.3	1
053	D111 0-0.1	1
054	D111 0.2-0.3	1
055	D112 0-0.1	1
056	D112 0.2-0.3	1
057	D113 0-0.1	1
058	D113 0.2-0.3	1
059	D114 0-0.1	1
060	D114 0.2-0.3	1
061	D115 0-0.1	1
062	D115 0.2-0.3	1
063	D116 0-0.1	1
064	D116 0.2-0.3	1
065	D116 1.0-1.1	1
066	D116 1.4-1.5	1
067	D117 0-0.1	1
068	D117 0.2-0.3	1
069	D118 0-0.1	1
070	D118 0.2-0.3	1
071	D119 0-0.1	1
072	D119 0.2-0.3	1

CONTINUED OVERLEAF

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SAMPLE RECEIPT ADVICE

CLIENT DETAILS

Client Geotechnique

Project 12675-4 Googong NH1A-7 and NH2-Add

SUMMARY OF ANALYSIS

No.	Sample ID	Total Recoverable Metals in Soil/Waste
073	D120 0-0.1	1
074	D120 0.2-0.3	1
075	D121 0-0.1	1
076	D121 0.2-0.3	1
077	D122 0-0.1	1
078	D122 0.2-0.3	1
079	D123 0-0.1	1
080	D123 0.2-0.3	1
081	D124 0-0.1	1
082	D124 0.2-0.3	1
083	D125 0-0.1	1
084	D125 0.2-0.3	1
085	D126 0-0.1	1
086	D126 0.2-0.3	1
087	D127 0-0.1	1
088	D127 0.2-0.3	1
089	D128 0-0.1	1
090	D128 0.2-0.3	1
091	D129 0-0.1	1
092	D129 0.2-0.03	1
093	D130 0-0.1	1
094	D130 0.2-0.3	1
095	D130 1.0-1.1	1
096	D131 0-0.1	1

CONTINUED OVERLEAF

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SAMPLE RECEIPT ADVICE

SE158264D

CLIENT DETAILS

Client Geotechnique

Project 12675-4 Googong NH1A-7 and NH2-Add

SUMMARY OF ANALYSIS

No.	Sample ID	Total Recoverable Metals in Soil/Waste
097	D131 0.2-0.3	1
098	D132 0-0.1	1
099	D132 0.2-0.3	1
100	D132 1.0-1.1	1
101	D132 1.9-2.0	1
102	D133 0-0.1	1
103	D133 0.2-0.3	1
104	D134 0-0.1	1
105	D134 0.2-0.03	1
106	D135 0-0.1	1
107	D135 0.2-0.3	1
108	D136 0-0.1	1
109	D136 0.2-0.3	1
110	D137 0-0.1	1
111	D137 0.2-0.3	1
112	D138 0-0.1	1
113	D138 0.2-0.3	1
114	D139 0-0.1	1
115	D139 0.2-0.3	1
116	D139 1.0-1.1	1
117	D139 1.4-1.5	1
118	D140 0-0.1	1
119	D140 0.2-0.3	1
120	D141 0-0.1	1

CONTINUED OVERLEAF

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CLIENT DETAILS

Client Geotechnique

Project 12675-4 Googong NH1A-7 and NH2-Add

SUMMARY OF ANALYSIS

No.	Sample ID	Total Recoverable Metals in Soil/Waste
121	D141 0.2-0.3	1
122	D142 0-0.1	1
123	D142 0.2-0.3	1
124	D142 1.0-1.1	1
125	D142 1.9-2.0	1
126	D143 0-0.1	1
127	D143 0.2-0.3	1
128	D144 0-0.1	1
129	D144 0.2-0.3	1
130	D145 0-0.1	1
131	D145 0.2-0.3	1
132	D146 0-0.1	1
133	D146 0.2-0.3	1
134	D147 0-0.1	1
135	D147 0.2-0.3	1
136	D148 0-0.1	1
137	D148 0.2-0.3	1
138	D149 0-0.1	1
139	D149 0.2-0.3	1
140	D150 0-0.1	1
141	D150 0.2-0.3	1
142	D151 0-0.1	1
143	D151 0.2-0.3	1
144	D152 0-0.1	1

CONTINUED OVERLEAF

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

SAMPLE RECEIPT ADVICE

CLIENT DETAILS

Client Geotechnique

Project 12675-4 Googong NH1A-7 and NH2-Add

SUMMARY OF ANALYSIS

No.	Sample ID	Total Recoverable Metals in Soil/Waste
145	D152 0.2-0.3	1
146	D152 1.0-1.1	1
147	D152 1.9-2.0	1
148	D153 0-0.1	1
149	D153 0.2-0.3	1
150	D154 0-0.1	1
151	D154 0.2-0.3	1
152	D155 0-0.1	1
153	D155 0.2-0.3	1
154	D156 0-0.1	1
155	D156 0.2-0.3	1
156	D157 0-0.1	1
157	D157 0.2-0.3	1
158	D157 1.0-1.1	1
159	D157 1.9-2.0	1

CONTINUED OVERLEAF

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

SAMPLE RECEIPT ADVICE

CLIENT DETAILS

Client Geotechnique

Project 12675-4 Googong NH1A-7 and NH2-Add

SUMMARY OF ANALYSIS

No.	Sample ID	Total Recoverable Metals in Soil/Waste
186	Duplicate D1	1
187	Duplicate D2	1
188	Duplicate D3	1
189	Duplicate D4	1
190	Duplicate D5	1
191	Duplicate D6	1
192	Duplicate D7	1

CONTINUED OVERLEAF

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Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

SGS

SAMPLE RECEIPT ADVICE

SE158264D

CLIENT DETAILS

Client Geotechnique

Project 12675-4 Googong NH1A-7 and NH2-Add

SUMMARY OF ANALYSIS

No.	Sample ID	Metals in Water (Dissolved) by ICPOES	Trace Metals (Dissolved) in Water by ICPMS	Trace Metals (Total) in Water by ICPMS
196	Rinsate R1	1	-	-
197	Rinsate R2	1	-	-
198	Dam Water W1	-	1	1

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

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**Googong NH1A-7 & NH2**
Order Number	(Not specified)
Samples	117

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	**SE162156 R0**
Date Received	20/2/2017
Date Reported	27/2/2017

COMMENTS

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

SIGNATORIES

Bennet Lo
Senior Organic Chemist/Metals Chemist

Huong Crawford
Production Manager

Kamrul Ahsan
Senior Chemist

Ly Kim Ha
Organic Section Head

Shane McDermott
Senior Laboratory Technician

ANALYTICAL RESULTS

SE162156 R0

pH in soil (1:5) [AN101] Tested: 20/2/2017

PARAMETER	UOM	LOR	D201 0-0.1 SOIL - 13/2/2017 SE162156.001	D201 1.9-2.0 SOIL - 13/2/2017 SE162156.004	D204 0-0.1 SOIL - 14/2/2017 SE162156.011	D204 0.2-0.3 SOIL - 14/2/2017 SE162156.012	D206 0-0.1 SOIL - 14/2/2017 SE162156.017
pH	pH Units	-	6.5	7.3	5.7	6.7	5.5

PARAMETER	UOM	LOR	D206 0.2-0.3 SOIL - 14/2/2017 SE162156.018	D209 0-0.1 SOIL - 13/2/2017 SE162156.026	D211 0-0.1 SOIL - 14/2/2017 SE162156.033	D212 1.0-1.1 SOIL - 14/2/2017 SE162156.039	D213 0.2-0.3 SOIL - 13/2/2017 SE162156.041
pH	pH Units	-	7.1	5.9	5.8	6.2	5.8

PARAMETER	UOM	LOR	D213 1.0-1.1 SOIL - 13/2/2017 SE162156.042	D215 0.2-0.3 SOIL - 14/2/2017 SE162156.048	D215 1.0-1.1 SOIL - 14/2/2017 SE162156.049	D216 0.2-0.3 SOIL - 14/2/2017 SE162156.052	D216 1.0-1.1 SOIL - 14/2/2017 SE162156.053
pH	pH Units	-	7.1	6.8	7.6	7.3	7.9

PARAMETER	UOM	LOR	D217 1.0-1.1 SOIL - 14/2/2017 SE162156.056	D219 1.9-2.0 SOIL - 14/2/2017 SE162156.064	D223 0-0.1 SOIL - 14/2/2017 SE162156.075	D223 0.2-0.3 SOIL - 14/2/2017 SE162156.076	D223 1.0-1.1 SOIL - 14/2/2017 SE162156.077
pH	pH Units	-	7.1	8.2	5.5	5.6	8.0

PARAMETER	UOM	LOR	D225 1.9-2.0 SOIL - 14/2/2017 SE162156.084	D232 1.0-1.1 SOIL - 14/2/2017 SE162156.087
pH	pH Units	-	7.7	8.4

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) [AN122] Tested: 21/2/2017

PARAMETER	UOM	LOR	D201 0-0.1 SOIL - 13/2/2017 SE162156.001	D201 1.9-2.0 SOIL - 13/2/2017 SE162156.004	D206 0-0.1 SOIL - 14/2/2017 SE162156.017	D206 0.2-0.3 SOIL - 14/2/2017 SE162156.018	D209 0-0.1 SOIL - 13/2/2017 SE162156.026
Exchangeable Sodium, Na	mg/kg	2	13	46	17	81	10
Exchangeable Sodium, Na	meq/100g	0.01	0.05	0.20	0.08	0.35	0.04
Exchangeable Sodium Percentage*	%	0.1	0.8	1.3	1.3	2.8	1.3
Exchangeable Potassium, K	mg/kg	2	310	140	78	50	170
Exchangeable Potassium, K	meq/100g	0.01	0.80	0.37	0.20	0.13	0.43
Exchangeable Potassium Percentage*	%	0.1	11.9	2.3	3.5	1.0	13.1
Exchangeable Calcium, Ca	mg/kg	2	880	1900	520	48	430
Exchangeable Calcium, Ca	meq/100g	0.01	4.4	9.7	2.6	0.24	2.1
Exchangeable Calcium Percentage*	%	0.1	66.0	60.4	45.9	1.9	64.3
Exchangeable Magnesium, Mg	mg/kg	2	170	700	340	1500	86
Exchangeable Magnesium, Mg	meq/100g	0.02	1.4	5.8	2.8	12	0.70
Exchangeable Magnesium Percentage*	%	0.1	21.3	36.0	49.2	94.4	21.3
Cation Exchange Capacity	meq/100g	0.02	6.7	16	5.6	13	3.3

PARAMETER	UOM	LOR	D211 0-0.1 SOIL - 14/2/2017 SE162156.033	D212 1.0-1.1 SOIL - 14/2/2017 SE162156.039	D213 0.2-0.3 SOIL - 13/2/2017 SE162156.041	D213 1.0-1.1 SOIL - 13/2/2017 SE162156.042	D215 0.2-0.3 SOIL - 14/2/2017 SE162156.048
Exchangeable Sodium, Na	mg/kg	2	75	63	15	170	98
Exchangeable Sodium, Na	meq/100g	0.01	0.33	0.27	0.06	0.73	0.42
Exchangeable Sodium Percentage*	%	0.1	2.7	3.9	1.4	2.9	3.4
Exchangeable Potassium, K	mg/kg	2	150	69	170	230	130
Exchangeable Potassium, K	meq/100g	0.01	0.38	0.18	0.44	0.58	0.33
Exchangeable Potassium Percentage*	%	0.1	3.1	2.5	10.0	2.3	2.6
Exchangeable Calcium, Ca	mg/kg	2	1700	850	610	2000	1100
Exchangeable Calcium, Ca	meq/100g	0.01	8.5	4.3	3.0	10	5.5
Exchangeable Calcium Percentage*	%	0.1	70.4	60.7	68.4	39.0	44.5
Exchangeable Magnesium, Mg	mg/kg	2	350	280	110	1700	750
Exchangeable Magnesium, Mg	meq/100g	0.02	2.9	2.3	0.90	14	6.1
Exchangeable Magnesium Percentage*	%	0.1	23.8	32.9	20.2	55.8	49.5
Cation Exchange Capacity	meq/100g	0.02	12	7.0	4.5	26	12

PARAMETER	UOM	LOR	D215 1.0-1.1 SOIL - 14/2/2017 SE162156.049	D216 0.2-0.3 SOIL - 14/2/2017 SE162156.052	D216 1.0-1.1 SOIL - 14/2/2017 SE162156.053	D217 0.2-0.3 SOIL - 14/2/2017 SE162156.055	D217 1.0-1.1 SOIL - 14/2/2017 SE162156.056
Exchangeable Sodium, Na	mg/kg	2	380	170	480	56	500
Exchangeable Sodium, Na	meq/100g	0.01	1.6	0.72	2.1	0.24	2.2
Exchangeable Sodium Percentage*	%	0.1	5.6	4.1	7.8	3.4	9.3
Exchangeable Potassium, K	mg/kg	2	160	130	160	77	140
Exchangeable Potassium, K	meq/100g	0.01	0.41	0.34	0.41	0.20	0.37
Exchangeable Potassium Percentage*	%	0.1	1.4	1.9	1.5	2.7	1.6
Exchangeable Calcium, Ca	mg/kg	2	2000	1800	1800	700	1300
Exchangeable Calcium, Ca	meq/100g	0.01	9.8	8.8	8.9	3.5	6.3
Exchangeable Calcium Percentage*	%	0.1	33.2	49.2	33.0	48.7	27.3
Exchangeable Magnesium, Mg	mg/kg	2	2100	970	1900	400	1700
Exchangeable Magnesium, Mg	meq/100g	0.02	18	8.0	16	3.3	14
Exchangeable Magnesium Percentage*	%	0.1	59.8	44.8	57.7	45.3	61.8
Cation Exchange Capacity	meq/100g	0.02	29	18	27	7.2	23

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) [AN122] Tested: 21/2/2017 (continued)

PARAMETER	UOM	LOR	D218 0-0.1 SOIL - 14/2/2017 SE162156.058	D218 0.2-0.3 SOIL - 14/2/2017 SE162156.059	D218 1.0-1.1 SOIL - 14/2/2017 SE162156.060	D219 0-0.1 SOIL - 14/2/2017 SE162156.061	D219 1.9-2.0 SOIL - 14/2/2017 SE162156.064
Exchangeable Sodium, Na	mg/kg	2	12	36	230	14	470
Exchangeable Sodium, Na	meq/100g	0.01	0.05	0.16	1.0	0.06	2.0
Exchangeable Sodium Percentage*	%	0.1	3.0	7.7	4.8	2.5	9.9
Exchangeable Potassium, K	mg/kg	2	54	61	140	230	120
Exchangeable Potassium, K	meq/100g	0.01	0.14	0.16	0.35	0.58	0.32
Exchangeable Potassium Percentage*	%	0.1	8.3	7.7	1.7	24.1	1.5
Exchangeable Calcium, Ca	mg/kg	2	200	230	1200	240	910
Exchangeable Calcium, Ca	meq/100g	0.01	0.99	1.2	6.2	1.2	4.5
Exchangeable Calcium Percentage*	%	0.1	59.3	57.5	30.3	49.9	22.1
Exchangeable Magnesium, Mg	mg/kg	2	60	67	1600	69	1700
Exchangeable Magnesium, Mg	meq/100g	0.02	0.49	0.55	13	0.56	14
Exchangeable Magnesium Percentage*	%	0.1	29.5	27.1	63.1	23.4	66.5
Cation Exchange Capacity	meq/100g	0.02	1.7	2.0	21	2.4	21

PARAMETER	UOM	LOR	D223 0-0.1 SOIL - 14/2/2017 SE162156.075	D223 0.2-0.3 SOIL - 14/2/2017 SE162156.076	D223 1.0-1.1 SOIL - 14/2/2017 SE162156.077	D224 1.0-1.1 SOIL - 14/2/2017 SE162156.080	D225 1.9-2.0 SOIL - 14/2/2017 SE162156.084
Exchangeable Sodium, Na	mg/kg	2	24	120	370	31	200
Exchangeable Sodium, Na	meq/100g	0.01	0.11	0.50	1.6	0.13	0.86
Exchangeable Sodium Percentage*	%	0.1	4.0	6.2	10.0	1.5	2.5
Exchangeable Potassium, K	mg/kg	2	33	75	82	61	150
Exchangeable Potassium, K	meq/100g	0.01	0.08	0.19	0.21	0.16	0.39
Exchangeable Potassium Percentage*	%	0.1	3.2	2.4	1.3	1.7	1.1
Exchangeable Calcium, Ca	mg/kg	2	240	270	210	410	1800
Exchangeable Calcium, Ca	meq/100g	0.01	1.2	1.3	1.1	2.0	8.8
Exchangeable Calcium Percentage*	%	0.1	45.5	16.8	6.7	22.4	25.6
Exchangeable Magnesium, Mg	mg/kg	2	150	730	1600	820	3000
Exchangeable Magnesium, Mg	meq/100g	0.02	1.3	6.0	13	6.8	24
Exchangeable Magnesium Percentage*	%	0.1	47.3	74.6	82.0	74.4	70.8
Cation Exchange Capacity	meq/100g	0.02	2.7	8.0	16	9.1	34

PARAMETER	UOM	LOR	D232 1.0-1.1 SOIL - 14/2/2017 SE162156.087	D235 0-0.1 SOIL - 14/2/2017 SE162156.095	D235 0.2-0.3 SOIL - 14/2/2017 SE162156.096	D235 1.0-1.1 SOIL - 14/2/2017 SE162156.097	D235 1.9-2.0 SOIL - 14/2/2017 SE162156.098
Exchangeable Sodium, Na	mg/kg	2	390	32	45	36	71
Exchangeable Sodium, Na	meq/100g	0.01	1.7	0.14	0.19	0.16	0.31
Exchangeable Sodium Percentage*	%	0.1	11.3	1.4	1.1	1.7	1.5
Exchangeable Potassium, K	mg/kg	2	66	49	110	76	180
Exchangeable Potassium, K	meq/100g	0.01	0.17	0.13	0.28	0.20	0.47
Exchangeable Potassium Percentage*	%	0.1	1.1	1.3	1.6	2.1	2.2
Exchangeable Calcium, Ca	mg/kg	2	15	940	790	190	170
Exchangeable Calcium, Ca	meq/100g	0.01	0.07	4.7	3.9	0.97	0.84
Exchangeable Calcium Percentage*	%	0.1	0.5	49.8	22.2	10.7	4.0
Exchangeable Magnesium, Mg	mg/kg	2	1600	550	1600	950	2400
Exchangeable Magnesium, Mg	meq/100g	0.02	13	4.5	13	7.8	20
Exchangeable Magnesium Percentage*	%	0.1	87.1	47.5	75.1	85.5	92.4
Cation Exchange Capacity	meq/100g	0.02	15	9.5	18	9.1	21

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) [AN122] Tested: 21/2/2017 (continued)

PARAMETER	UOM	LOR	D236 0-0.1 SOIL - 14/2/2017 SE162156.099	D236 0.2-0.3 SOIL - 14/2/2017 SE162156.100	D237 1.9-2.0 SOIL - 14/2/2017 SE162156.105	D238 0.2-0.3 SOIL - 14/2/2017 SE162156.107	D238 1.0-1.1 SOIL - 14/2/2017 SE162156.108
Exchangeable Sodium, Na	mg/kg	2	32	24	81	29	73
Exchangeable Sodium, Na	meq/100g	0.01	0.14	0.10	0.35	0.13	0.32
Exchangeable Sodium Percentage*	%	0.1	1.9	1.3	2.6	1.5	1.8
Exchangeable Potassium, K	mg/kg	2	61	34	69	38	100
Exchangeable Potassium, K	meq/100g	0.01	0.16	0.09	0.18	0.10	0.27
Exchangeable Potassium Percentage*	%	0.1	2.1	1.1	1.3	1.2	1.6
Exchangeable Calcium, Ca	mg/kg	2	820	390	120	900	330
Exchangeable Calcium, Ca	meq/100g	0.01	4.1	1.9	0.59	4.5	1.7
Exchangeable Calcium Percentage*	%	0.1	56.1	23.7	4.5	54.1	9.7
Exchangeable Magnesium, Mg	mg/kg	2	350	740	1500	440	1800
Exchangeable Magnesium, Mg	meq/100g	0.02	2.9	6.1	12	3.6	15
Exchangeable Magnesium Percentage*	%	0.1	39.9	73.9	91.6	43.2	86.9
Cation Exchange Capacity	meq/100g	0.02	7.3	8.2	13	8.3	17

Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 21/2/2017

PARAMETER	UOM	LOR	D201 0-0.1 SOIL - 13/2/2017 SE162156.001	D201 0.2-0.3 SOIL - 13/2/2017 SE162156.002	D201 1.0-1.1 SOIL - 13/2/2017 SE162156.003	D201 1.9-2.0 SOIL - 13/2/2017 SE162156.004	D202 0-0.1 SOIL - 13/2/2017 SE162156.005
Arsenic, As	mg/kg	3	190	300	450	530	200
Cadmium, Cd	mg/kg	0.3	0.8	0.8	1.1	1.0	4.0
Chromium, Cr	mg/kg	0.3	36	33	34	38	31
Copper, Cu	mg/kg	0.5	35	51	86	82	150
Lead, Pb	mg/kg	1	120	100	64	59	36
Manganese, Mn	mg/kg	1	2600	2900	2000	730	1900
Nickel, Ni	mg/kg	0.5	10	11	11	11	21
Zinc, Zn	mg/kg	0.5	220	390	450	310	460

PARAMETER	UOM	LOR	D202 0.2-0.3 SOIL - 13/2/2017 SE162156.006	D202 1.0-1.1 SOIL - 13/2/2017 SE162156.007	D203 0-0.1 SOIL - 14/2/2017 SE162156.008	D203 0.2-0.3 SOIL - 14/2/2017 SE162156.009	D203 0.9-1.0 SOIL - 14/2/2017 SE162156.010
Arsenic, As	mg/kg	3	500	670	180	120	82
Cadmium, Cd	mg/kg	0.3	0.9	2.4	1.9	0.6	0.5
Chromium, Cr	mg/kg	0.3	38	45	37	42	35
Copper, Cu	mg/kg	0.5	52	91	43	43	60
Lead, Pb	mg/kg	1	130	100	280	110	98
Manganese, Mn	mg/kg	1	1300	13000	3100	420	170
Nickel, Ni	mg/kg	0.5	13	18	14	11	17
Zinc, Zn	mg/kg	0.5	270	1000	490	240	380

PARAMETER	UOM	LOR	D204 0-0.1 SOIL - 14/2/2017 SE162156.011	D204 0.2-0.3 SOIL - 14/2/2017 SE162156.012	D204 1.0-1.1 SOIL - 14/2/2017 SE162156.013	D205 0-0.1 SOIL - 14/2/2017 SE162156.014	D205 0.2-0.3 SOIL - 14/2/2017 SE162156.015
Arsenic, As	mg/kg	3	14	37	24	14	15
Cadmium, Cd	mg/kg	0.3	<0.3	0.4	0.3	<0.3	0.5
Chromium, Cr	mg/kg	0.3	15	11	27	17	24
Copper, Cu	mg/kg	0.5	7.8	35	27	13	37
Lead, Pb	mg/kg	1	52	22	17	50	43
Manganese, Mn	mg/kg	1	880	280	90	310	210
Nickel, Ni	mg/kg	0.5	8.3	32	21	13	31
Zinc, Zn	mg/kg	0.5	65	120	85	78	130

PARAMETER	UOM	LOR	D205 0.7-0.8 SOIL - 14/2/2017 SE162156.016	D206 0-0.1 SOIL - 14/2/2017 SE162156.017	D206 0.2-0.3 SOIL - 14/2/2017 SE162156.018	D206 0.6-0.7 SOIL - 14/2/2017 SE162156.019	D207 0-0.1 SOIL - 14/2/2017 SE162156.020
Arsenic, As	mg/kg	3	13	9	10	32	27
Cadmium, Cd	mg/kg	0.3	0.3	<0.3	0.3	0.4	0.4
Chromium, Cr	mg/kg	0.3	24	13	20	17	20
Copper, Cu	mg/kg	0.5	16	2.7	2.7	6.2	21
Lead, Pb	mg/kg	1	27	15	6	15	18
Manganese, Mn	mg/kg	1	160	300	130	170	350
Nickel, Ni	mg/kg	0.5	31	10	15	12	13
Zinc, Zn	mg/kg	0.5	110	63	73	87	55

Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 21/2/2017 (continued)

PARAMETER	UOM	LOR	D207 0.2-0.3 SOIL - 14/2/2017 SE162156.021	D207 1.0-1.1 SOIL - 14/2/2017 SE162156.022	D208 0-0.1 SOIL - 14/2/2017 SE162156.023	D208 0.2-0.3 SOIL - 14/2/2017 SE162156.024	D208 1.0-1.1 SOIL - 14/2/2017 SE162156.025
Arsenic, As	mg/kg	3	110	130	130	220	1200
Cadmium, Cd	mg/kg	0.3	0.4	0.4	3.4	2.4	100
Chromium, Cr	mg/kg	0.3	32	28	28	42	12
Copper, Cu	mg/kg	0.5	56	56	79	170	100
Lead, Pb	mg/kg	1	13	14	34	29	330
Manganese, Mn	mg/kg	1	220	260	2300	630	34000
Nickel, Ni	mg/kg	0.5	23	23	19	26	27
Zinc, Zn	mg/kg	0.5	50	51	370	390	9600

PARAMETER	UOM	LOR	D209 0-0.1 SOIL - 13/2/2017 SE162156.026	D209 0.2-0.3 SOIL - 13/2/2017 SE162156.027	D209 1.0-1.1 SOIL - 13/2/2017 SE162156.028	D209 1.9-2.0 SOIL - 13/2/2017 SE162156.029	D210 0-0.1 SOIL - 13/2/2017 SE162156.030
Arsenic, As	mg/kg	3	220	570	1200	1200	100
Cadmium, Cd	mg/kg	0.3	1.9	9.4	8.6	4.7	0.6
Chromium, Cr	mg/kg	0.3	34	38	41	28	30
Copper, Cu	mg/kg	0.5	39	230	390	250	28
Lead, Pb	mg/kg	1	150	380	320	140	78
Manganese, Mn	mg/kg	1	2900	5600	1900	720	3700
Nickel, Ni	mg/kg	0.5	12	20	20	25	12
Zinc, Zn	mg/kg	0.5	390	1900	3800	2500	130

PARAMETER	UOM	LOR	D210 0.2-0.3 SOIL - 13/2/2017 SE162156.031	D210 1.0-1.1 SOIL - 13/2/2017 SE162156.032	D211 0-0.1 SOIL - 14/2/2017 SE162156.033	S211 0.2-0.3 SOIL - 14/2/2017 SE162156.034	D211 1.0-1.1 SOIL - 14/2/2017 SE162156.035
Arsenic, As	mg/kg	3	190	590	44	38	34
Cadmium, Cd	mg/kg	0.3	0.8	1.6	0.5	0.3	0.3
Chromium, Cr	mg/kg	0.3	32	38	40	33	23
Copper, Cu	mg/kg	0.5	48	82	21	39	31
Lead, Pb	mg/kg	1	69	190	160	66	60
Manganese, Mn	mg/kg	1	4300	12000	1100	74	870
Nickel, Ni	mg/kg	0.5	17	27	6.1	9.8	20
Zinc, Zn	mg/kg	0.5	170	320	190	86	84

PARAMETER	UOM	LOR	D211 1.9-2.0 SOIL - 14/2/2017 SE162156.036	D212 0-0.1 SOIL - 14/2/2017 SE162156.037	D212 0.2-0.3 SOIL - 14/2/2017 SE162156.038	D212 1.0-1.1 SOIL - 14/2/2017 SE162156.039	D213 0-0.1 SOIL - 13/2/2017 SE162156.040
Arsenic, As	mg/kg	3	43	56	86	57	73
Cadmium, Cd	mg/kg	0.3	0.4	0.5	0.5	0.4	0.5
Chromium, Cr	mg/kg	0.3	22	41	41	39	31
Copper, Cu	mg/kg	0.5	34	11	40	18	20
Lead, Pb	mg/kg	1	110	210	100	110	270
Manganese, Mn	mg/kg	1	1100	1800	150	520	2600
Nickel, Ni	mg/kg	0.5	12	4.7	10	5.9	7.3
Zinc, Zn	mg/kg	0.5	90	100	140	75	160

Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 21/2/2017 (continued)

PARAMETER	UOM	LOR	D213 0.2-0.3 SOIL - 13/2/2017 SE162156.041	D213 1.0-1.1 SOIL - 13/2/2017 SE162156.042	D213 1.9-2.0 SOIL - 13/2/2017 SE162156.043	D214 0-0.1 SOIL - 13/2/2017 SE162156.044	D214 0.2-0.3 SOIL - 13/2/2017 SE162156.045
Arsenic, As	mg/kg	3	95	120	54	48	49
Cadmium, Cd	mg/kg	0.3	0.6	0.6	0.3	0.6	0.5
Chromium, Cr	mg/kg	0.3	34	36	19	31	34
Copper, Cu	mg/kg	0.5	25	70	28	13	19
Lead, Pb	mg/kg	1	370	140	84	250	230
Manganese, Mn	mg/kg	1	3100	61	390	4200	3500
Nickel, Ni	mg/kg	0.5	8.7	14	20	9.3	8.8
Zinc, Zn	mg/kg	0.5	160	200	260	140	130

PARAMETER	UOM	LOR	D214 1.0-1.1 SOIL - 13/2/2017 SE162156.046	D215 0-0.1 SOIL - 14/2/2017 SE162156.047	D215 0.2-0.3 SOIL - 14/2/2017 SE162156.048	D215 1.0-1.1 SOIL - 14/2/2017 SE162156.049	D215 1.9-2.0 SOIL - 14/2/2017 SE162156.050
Arsenic, As	mg/kg	3	94	38	44	62	29
Cadmium, Cd	mg/kg	0.3	0.6	0.5	0.5	0.7	2.0
Chromium, Cr	mg/kg	0.3	45	31	31	17	11
Copper, Cu	mg/kg	0.5	19	14	25	32	14
Lead, Pb	mg/kg	1	240	180	140	71	37
Manganese, Mn	mg/kg	1	2800	3100	1500	950	1500
Nickel, Ni	mg/kg	0.5	9.1	9.4	14	16	16
Zinc, Zn	mg/kg	0.5	140	140	160	320	220

PARAMETER	UOM	LOR	D216 0-0.1 SOIL - 14/2/2017 SE162156.051	D216 0.2-0.3 SOIL - 14/2/2017 SE162156.052	D216 1.0-1.1 SOIL - 14/2/2017 SE162156.053	D217 0-0.1 SOIL - 14/2/2017 SE162156.054	D217 0.2-0.3 SOIL - 14/2/2017 SE162156.055
Arsenic, As	mg/kg	3	40	47	37	66	75
Cadmium, Cd	mg/kg	0.3	0.5	0.5	0.4	0.6	0.6
Chromium, Cr	mg/kg	0.3	38	30	28	45	46
Copper, Cu	mg/kg	0.5	16	43	49	15	25
Lead, Pb	mg/kg	1	120	54	44	190	220
Manganese, Mn	mg/kg	1	3100	230	110	590	500
Nickel, Ni	mg/kg	0.5	11	13	18	8.0	9.9
Zinc, Zn	mg/kg	0.5	90	100	120	110	110

PARAMETER	UOM	LOR	D217 1.0-1.1 SOIL - 14/2/2017 SE162156.056	D217 1.9-2.0 SOIL - 14/2/2017 SE162156.057	D218 0-0.1 SOIL - 14/2/2017 SE162156.058	D218 0.2-0.3 SOIL - 14/2/2017 SE162156.059	D218 1.0-1.1 SOIL - 14/2/2017 SE162156.060
Arsenic, As	mg/kg	3	45	16	59	49	73
Cadmium, Cd	mg/kg	0.3	0.4	0.3	0.6	0.5	0.6
Chromium, Cr	mg/kg	0.3	29	16	56	35	30
Copper, Cu	mg/kg	0.5	56	34	9.5	9.3	41
Lead, Pb	mg/kg	1	56	17	150	140	76
Manganese, Mn	mg/kg	1	74	130	1400	2000	1400
Nickel, Ni	mg/kg	0.5	18	11	5.0	4.4	17
Zinc, Zn	mg/kg	0.5	170	66	88	77	170

Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 21/2/2017 (continued)

PARAMETER	UOM	LOR	D219 0-0.1 SOIL - 14/2/2017 SE162156.061	D219 0.2-0.3 SOIL - 14/2/2017 SE162156.062	D219 1.0-1.1 SOIL - 14/2/2017 SE162156.063	D219 1.9-2.0 SOIL - 14/2/2017 SE162156.064	D220 0-0.1 SOIL - 14/2/2017 SE162156.065
Arsenic, As	mg/kg	3	72	90	90	72	34
Cadmium, Cd	mg/kg	0.3	0.5	0.6	0.5	0.4	0.5
Chromium, Cr	mg/kg	0.3	49	50	31	34	37
Copper, Cu	mg/kg	0.5	8.5	25	51	34	16
Lead, Pb	mg/kg	1	230	200	170	170	120
Manganese, Mn	mg/kg	1	1700	1200	310	450	820
Nickel, Ni	mg/kg	0.5	3.9	7.8	12	12	4.8
Zinc, Zn	mg/kg	0.5	88	100	130	120	240

PARAMETER	UOM	LOR	D220 0.2-0.3 SOIL - 14/2/2017 SE162156.066	D220 1.0-1.1 SOIL - 14/2/2017 SE162156.067	D221 0-0.1 SOIL - 14/2/2017 SE162156.068	D221 0.2-0.3 SOIL - 14/2/2017 SE162156.069	D221 1.0-1.1 SOIL - 14/2/2017 SE162156.070
Arsenic, As	mg/kg	3	36	38	55	57	250
Cadmium, Cd	mg/kg	0.3	0.4	0.4	0.6	0.5	3.6
Chromium, Cr	mg/kg	0.3	30	28	27	32	28
Copper, Cu	mg/kg	0.5	35	40	24	14	98
Lead, Pb	mg/kg	1	56	56	240	190	420
Manganese, Mn	mg/kg	1	100	64	570	560	4300
Nickel, Ni	mg/kg	0.5	10	9.3	6.2	5.7	52
Zinc, Zn	mg/kg	0.5	69	72	110	83	860

PARAMETER	UOM	LOR	D221 1.9-2.0 SOIL - 14/2/2017 SE162156.071	D222 0-0.1 SOIL - 14/2/2017 SE162156.072	D222 0.2-0.3 SOIL - 14/2/2017 SE162156.073	D222 1.0-1.1 SOIL - 14/2/2017 SE162156.074	D223 0-0.1 SOIL - 14/2/2017 SE162156.075
Arsenic, As	mg/kg	3	1600	41	48	21	35
Cadmium, Cd	mg/kg	0.3	50	0.4	0.5	<0.3	0.4
Chromium, Cr	mg/kg	0.3	14	31	43	20	29
Copper, Cu	mg/kg	0.5	460	12	53	28	11
Lead, Pb	mg/kg	1	320	140	130	80	76
Manganese, Mn	mg/kg	1	47000	300	43	230	180
Nickel, Ni	mg/kg	0.5	140	5.2	17	18	5.3
Zinc, Zn	mg/kg	0.5	10000	56	140	84	60

PARAMETER	UOM	LOR	D223 0.2-0.3 SOIL - 14/2/2017 SE162156.076	D223 1.0-1.1 SOIL - 14/2/2017 SE162156.077	D224 0-0.1 SOIL - 14/2/2017 SE162156.078	D224 0.2-0.3 SOIL - 14/2/2017 SE162156.079	D224 1.0-1.1 SOIL - 14/2/2017 SE162156.080
Arsenic, As	mg/kg	3	53	26	23	32	53
Cadmium, Cd	mg/kg	0.3	0.6	1.2	0.4	0.3	0.5
Chromium, Cr	mg/kg	0.3	42	38	17	23	41
Copper, Cu	mg/kg	0.5	34	25	14	20	49
Lead, Pb	mg/kg	1	120	63	58	75	71
Manganese, Mn	mg/kg	1	99	370	1600	1200	250
Nickel, Ni	mg/kg	0.5	15	30	9.4	12	25
Zinc, Zn	mg/kg	0.5	150	310	89	92	140

Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 21/2/2017 (continued)

PARAMETER	UOM	LOR	D225 0-0.1 SOIL - 14/2/2017 SE162156.081	D225 0.2-0.3 SOIL - 14/2/2017 SE162156.082	D225 1.0-1.1 SOIL - 14/2/2017 SE162156.083	D225 1.9-2.0 SOIL - 14/2/2017 SE162156.084	D232 0-0.1 SOIL - 14/2/2017 SE162156.085
Arsenic, As	mg/kg	3	37	32	60	48	53
Cadmium, Cd	mg/kg	0.3	0.6	0.3	0.6	13	0.4
Chromium, Cr	mg/kg	0.3	31	26	39	36	26
Copper, Cu	mg/kg	0.5	17	11	27	39	23
Lead, Pb	mg/kg	1	81	54	79	54	93
Manganese, Mn	mg/kg	1	1300	430	1400	14000	270
Nickel, Ni	mg/kg	0.5	12	8.9	15	77	11
Zinc, Zn	mg/kg	0.5	120	62	140	2400	51

PARAMETER	UOM	LOR	D232 0.2-0.3 SOIL - 14/2/2017 SE162156.086	D232 1.0-1.1 SOIL - 14/2/2017 SE162156.087	D233 0-0.1 SOIL - 14/2/2017 SE162156.088	D233 0.2-0.3 SOIL - 14/2/2017 SE162156.089	D233 1.0-1.1 SOIL - 14/2/2017 SE162156.090
Arsenic, As	mg/kg	3	44	96	54	68	130
Cadmium, Cd	mg/kg	0.3	0.3	0.6	0.3	0.4	0.7
Chromium, Cr	mg/kg	0.3	32	30	23	32	24
Copper, Cu	mg/kg	0.5	60	96	37	84	220
Lead, Pb	mg/kg	1	230	550	75	150	180
Manganese, Mn	mg/kg	1	220	930	330	260	410
Nickel, Ni	mg/kg	0.5	19	23	7.0	10	21
Zinc, Zn	mg/kg	0.5	130	330	36	49	130

PARAMETER	UOM	LOR	D233 1.9-2.0 SOIL - 14/2/2017 SE162156.091	D234 0-0.1 SOIL - 14/2/2017 SE162156.092	D234 0.2-0.3 SOIL - 14/2/2017 SE162156.093	D234 1.0-1.1 SOIL - 14/2/2017 SE162156.094	D235 0-0.1 SOIL - 14/2/2017 SE162156.095
Arsenic, As	mg/kg	3	140	11	14	18	11
Cadmium, Cd	mg/kg	0.3	1.1	<0.3	<0.3	<0.3	0.3
Chromium, Cr	mg/kg	0.3	19	21	24	35	27
Copper, Cu	mg/kg	0.5	170	20	23	35	20
Lead, Pb	mg/kg	1	150	20	22	15	16
Manganese, Mn	mg/kg	1	460	940	1100	120	870
Nickel, Ni	mg/kg	0.5	41	8.6	8.5	14	13
Zinc, Zn	mg/kg	0.5	300	46	39	39	50

PARAMETER	UOM	LOR	D235 0.2-0.3 SOIL - 14/2/2017 SE162156.096	D235 1.0-1.1 SOIL - 14/2/2017 SE162156.097	D235 1.9-2.0 SOIL - 14/2/2017 SE162156.098	D236 0-0.1 SOIL - 14/2/2017 SE162156.099	D236 0.2-0.3 SOIL - 14/2/2017 SE162156.100
Arsenic, As	mg/kg	3	14	20	15	11	14
Cadmium, Cd	mg/kg	0.3	0.4	<0.3	0.4	<0.3	<0.3
Chromium, Cr	mg/kg	0.3	37	20	16	22	33
Copper, Cu	mg/kg	0.5	24	22	16	24	41
Lead, Pb	mg/kg	1	14	6	5	13	14
Manganese, Mn	mg/kg	1	310	300	770	650	250
Nickel, Ni	mg/kg	0.5	16	17	21	7.8	10
Zinc, Zn	mg/kg	0.5	51	35	61	33	29

Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 21/2/2017 (continued)

PARAMETER	UOM	LOR	D236 1.0-1.1 SOIL - 14/2/2017 SE162156.101	D237 0-0.1 SOIL - 14/2/2017 SE162156.102	D237 0.2-0.3 SOIL - 14/2/2017 SE162156.103	D237 1.0-1.1 SOIL - 14/2/2017 SE162156.104	D237 1.9-2.0 SOIL - 14/2/2017 SE162156.105
Arsenic, As	mg/kg	3	6	10	11	19	16
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	0.3	0.3
Chromium, Cr	mg/kg	0.3	39	18	20	25	22
Copper, Cu	mg/kg	0.5	32	13	14	35	25
Lead, Pb	mg/kg	1	10	16	15	9	21
Manganese, Mn	mg/kg	1	240	810	550	83	220
Nickel, Ni	mg/kg	0.5	21	6.9	7.1	19	20
Zinc, Zn	mg/kg	0.5	35	35	33	56	62

PARAMETER	UOM	LOR	D238 0-0.1 SOIL - 14/2/2017 SE162156.106	D238 0.2-0.3 SOIL - 14/2/2017 SE162156.107	D238 1.0-1.1 SOIL - 14/2/2017 SE162156.108	Duplicate DS1 SOIL - 14/2/2017 SE162156.109	Duplicate DS2 SOIL - 14/2/2017 SE162156.110
Arsenic, As	mg/kg	3	18	10	22	12	15
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.3	29	23	31	13	16
Copper, Cu	mg/kg	0.5	15	14	37	7.0	8.8
Lead, Pb	mg/kg	1	28	18	31	43	61
Manganese, Mn	mg/kg	1	980	700	110	730	300
Nickel, Ni	mg/kg	0.5	8.8	10	20	8.2	10
Zinc, Zn	mg/kg	0.5	49	52	97	62	74

PARAMETER	UOM	LOR	Duplicate DS3 SOIL - 14/2/2017 SE162156.111	Duplicate DS4 SOIL - 14/2/2017 SE162156.112	Duplicate DS5 SOIL - 14/2/2017 SE162156.113	Duplicate DS6 SOIL - 14/2/2017 SE162156.114	Duplicate DS7 SOIL - 14/2/2017 SE162156.115
Arsenic, As	mg/kg	3	11	53	27	12	11
Cadmium, Cd	mg/kg	0.3	<0.3	0.4	0.4	<0.3	<0.3
Chromium, Cr	mg/kg	0.3	15	30	17	21	19
Copper, Cu	mg/kg	0.5	2.5	19	15	19	13
Lead, Pb	mg/kg	1	16	190	68	23	15
Manganese, Mn	mg/kg	1	190	470	1800	950	730
Nickel, Ni	mg/kg	0.5	11	5.5	9.0	8.3	6.8
Zinc, Zn	mg/kg	0.5	68	82	89	43	33

Mercury in Soil [AN312] Tested: 21/2/2017

PARAMETER	UOM	LOR	D201 0-0.1 SOIL - 13/2/2017 SE162156.001	D201 0.2-0.3 SOIL - 13/2/2017 SE162156.002	D201 1.0-1.1 SOIL - 13/2/2017 SE162156.003	D201 1.9-2.0 SOIL - 13/2/2017 SE162156.004	D202 0-0.1 SOIL - 13/2/2017 SE162156.005
Mercury	mg/kg	0.05	<0.05	<0.05	0.08	<0.05	<0.05

PARAMETER	UOM	LOR	D202 0.2-0.3 SOIL - 13/2/2017 SE162156.006	D202 1.0-1.1 SOIL - 13/2/2017 SE162156.007	D203 0-0.1 SOIL - 14/2/2017 SE162156.008	D203 0.2-0.3 SOIL - 14/2/2017 SE162156.009	D203 0.9-1.0 SOIL - 14/2/2017 SE162156.010
Mercury	mg/kg	0.05	<0.05	0.15	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D204 0-0.1 SOIL - 14/2/2017 SE162156.011	D204 0.2-0.3 SOIL - 14/2/2017 SE162156.012	D204 1.0-1.1 SOIL - 14/2/2017 SE162156.013	D205 0-0.1 SOIL - 14/2/2017 SE162156.014	D205 0.2-0.3 SOIL - 14/2/2017 SE162156.015
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D205 0.7-0.8 SOIL - 14/2/2017 SE162156.016	D206 0-0.1 SOIL - 14/2/2017 SE162156.017	D206 0.2-0.3 SOIL - 14/2/2017 SE162156.018	D206 0.6-0.7 SOIL - 14/2/2017 SE162156.019	D207 0-0.1 SOIL - 14/2/2017 SE162156.020
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D207 0.2-0.3 SOIL - 14/2/2017 SE162156.021	D207 1.0-1.1 SOIL - 14/2/2017 SE162156.022	D208 0-0.1 SOIL - 14/2/2017 SE162156.023	D208 0.2-0.3 SOIL - 14/2/2017 SE162156.024	D208 1.0-1.1 SOIL - 14/2/2017 SE162156.025
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	0.11

PARAMETER	UOM	LOR	D209 0-0.1 SOIL - 13/2/2017 SE162156.026	D209 0.2-0.3 SOIL - 13/2/2017 SE162156.027	D209 1.0-1.1 SOIL - 13/2/2017 SE162156.028	D209 1.9-2.0 SOIL - 13/2/2017 SE162156.029	D210 0-0.1 SOIL - 13/2/2017 SE162156.030
Mercury	mg/kg	0.05	<0.05	0.06	0.08	0.11	<0.05

PARAMETER	UOM	LOR	D210 0.2-0.3 SOIL - 13/2/2017 SE162156.031	D210 1.0-1.1 SOIL - 13/2/2017 SE162156.032	D211 0-0.1 SOIL - 14/2/2017 SE162156.033	S211 0.2-0.3 SOIL - 14/2/2017 SE162156.034	D211 1.0-1.1 SOIL - 14/2/2017 SE162156.035
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	0.08	<0.05

Mercury in Soil [AN312] Tested: 21/2/2017 (continued)

PARAMETER	UOM	LOR	D211 1.9-2.0 SOIL - 14/2/2017 SE162156.036	D212 0-0.1 SOIL - 14/2/2017 SE162156.037	D212 0.2-0.3 SOIL - 14/2/2017 SE162156.038	D212 1.0-1.1 SOIL - 14/2/2017 SE162156.039	D213 0-0.1 SOIL - 13/2/2017 SE162156.040
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D213 0.2-0.3 SOIL - 13/2/2017 SE162156.041	D213 1.0-1.1 SOIL - 13/2/2017 SE162156.042	D213 1.9-2.0 SOIL - 13/2/2017 SE162156.043	D214 0-0.1 SOIL - 13/2/2017 SE162156.044	D214 0.2-0.3 SOIL - 13/2/2017 SE162156.045
Mercury	mg/kg	0.05	<0.05	0.11	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D214 1.0-1.1 SOIL - 13/2/2017 SE162156.046	D215 0-0.1 SOIL - 14/2/2017 SE162156.047	D215 0.2-0.3 SOIL - 14/2/2017 SE162156.048	D215 1.0-1.1 SOIL - 14/2/2017 SE162156.049	D215 1.9-2.0 SOIL - 14/2/2017 SE162156.050
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	0.10	0.08

PARAMETER	UOM	LOR	D216 0-0.1 SOIL - 14/2/2017 SE162156.051	D216 0.2-0.3 SOIL - 14/2/2017 SE162156.052	D216 1.0-1.1 SOIL - 14/2/2017 SE162156.053	D217 0-0.1 SOIL - 14/2/2017 SE162156.054	D217 0.2-0.3 SOIL - 14/2/2017 SE162156.055
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D217 1.0-1.1 SOIL - 14/2/2017 SE162156.056	D217 1.9-2.0 SOIL - 14/2/2017 SE162156.057	D218 0-0.1 SOIL - 14/2/2017 SE162156.058	D218 0.2-0.3 SOIL - 14/2/2017 SE162156.059	D218 1.0-1.1 SOIL - 14/2/2017 SE162156.060
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	0.07

PARAMETER	UOM	LOR	D219 0-0.1 SOIL - 14/2/2017 SE162156.061	D219 0.2-0.3 SOIL - 14/2/2017 SE162156.062	D219 1.0-1.1 SOIL - 14/2/2017 SE162156.063	D219 1.9-2.0 SOIL - 14/2/2017 SE162156.064	D220 0-0.1 SOIL - 14/2/2017 SE162156.065
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	0.07

PARAMETER	UOM	LOR	D220 0.2-0.3 SOIL - 14/2/2017 SE162156.066	D220 1.0-1.1 SOIL - 14/2/2017 SE162156.067	D221 0-0.1 SOIL - 14/2/2017 SE162156.068	D221 0.2-0.3 SOIL - 14/2/2017 SE162156.069	D221 1.0-1.1 SOIL - 14/2/2017 SE162156.070
Mercury	mg/kg	0.05	0.06	<0.05	<0.05	<0.05	0.17

Mercury in Soil [AN312] Tested: 21/2/2017 (continued)

PARAMETER	UOM	LOR	D221 1.9-2.0 SOIL - 14/2/2017 SE162156.071	D222 0-0.1 SOIL - 14/2/2017 SE162156.072	D222 0.2-0.3 SOIL - 14/2/2017 SE162156.073	D222 1.0-1.1 SOIL - 14/2/2017 SE162156.074	D223 0-0.1 SOIL - 14/2/2017 SE162156.075
Mercury	mg/kg	0.05	0.40	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D223 0.2-0.3 SOIL - 14/2/2017 SE162156.076	D223 1.0-1.1 SOIL - 14/2/2017 SE162156.077	D224 0-0.1 SOIL - 14/2/2017 SE162156.078	D224 0.2-0.3 SOIL - 14/2/2017 SE162156.079	D224 1.0-1.1 SOIL - 14/2/2017 SE162156.080
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D225 0-0.1 SOIL - 14/2/2017 SE162156.081	D225 0.2-0.3 SOIL - 14/2/2017 SE162156.082	D225 1.0-1.1 SOIL - 14/2/2017 SE162156.083	D225 1.9-2.0 SOIL - 14/2/2017 SE162156.084	D232 0-0.1 SOIL - 14/2/2017 SE162156.085
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	0.54	<0.05

PARAMETER	UOM	LOR	D232 0.2-0.3 SOIL - 14/2/2017 SE162156.086	D232 1.0-1.1 SOIL - 14/2/2017 SE162156.087	D233 0-0.1 SOIL - 14/2/2017 SE162156.088	D233 0.2-0.3 SOIL - 14/2/2017 SE162156.089	D233 1.0-1.1 SOIL - 14/2/2017 SE162156.090
Mercury	mg/kg	0.05	<0.05	0.06	<0.05	<0.05	0.15

PARAMETER	UOM	LOR	D233 1.9-2.0 SOIL - 14/2/2017 SE162156.091	D234 0-0.1 SOIL - 14/2/2017 SE162156.092	D234 0.2-0.3 SOIL - 14/2/2017 SE162156.093	D234 1.0-1.1 SOIL - 14/2/2017 SE162156.094	D235 0-0.1 SOIL - 14/2/2017 SE162156.095
Mercury	mg/kg	0.05	0.09	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D235 0.2-0.3 SOIL - 14/2/2017 SE162156.096	D235 1.0-1.1 SOIL - 14/2/2017 SE162156.097	D235 1.9-2.0 SOIL - 14/2/2017 SE162156.098	D236 0-0.1 SOIL - 14/2/2017 SE162156.099	D236 0.2-0.3 SOIL - 14/2/2017 SE162156.100
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D236 1.0-1.1 SOIL - 14/2/2017 SE162156.101	D237 0-0.1 SOIL - 14/2/2017 SE162156.102	D237 0.2-0.3 SOIL - 14/2/2017 SE162156.103	D237 1.0-1.1 SOIL - 14/2/2017 SE162156.104	D237 1.9-2.0 SOIL - 14/2/2017 SE162156.105
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Mercury in Soil [AN312] Tested: 21/2/2017 (continued)

PARAMETER	UOM	LOR	D238 0-0.1 SOIL - 14/2/2017 SE162156.106	D238 0.2-0.3 SOIL - 14/2/2017 SE162156.107	D238 1.0-1.1 SOIL - 14/2/2017 SE162156.108	Duplicate DS1 SOIL - 14/2/2017 SE162156.109	Duplicate DS2 SOIL - 14/2/2017 SE162156.110
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	Duplicate DS3 SOIL - 14/2/2017 SE162156.111	Duplicate DS4 SOIL - 14/2/2017 SE162156.112	Duplicate DS5 SOIL - 14/2/2017 SE162156.113	Duplicate DS6 SOIL - 14/2/2017 SE162156.114	Duplicate DS7 SOIL - 14/2/2017 SE162156.115
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Moisture Content [AN002] Tested: 20/2/2017

PARAMETER	UOM	LOR	D201 0-0.1 SOIL - 13/2/2017 SE162156.001	D201 0.2-0.3 SOIL - 13/2/2017 SE162156.002	D201 1.0-1.1 SOIL - 13/2/2017 SE162156.003	D201 1.9-2.0 SOIL - 13/2/2017 SE162156.004	D202 0-0.1 SOIL - 13/2/2017 SE162156.005
% Moisture	%w/w	0.5	7.5	11	18	17	7.7

PARAMETER	UOM	LOR	D202 0.2-0.3 SOIL - 13/2/2017 SE162156.006	D202 1.0-1.1 SOIL - 13/2/2017 SE162156.007	D203 0-0.1 SOIL - 14/2/2017 SE162156.008	D203 0.2-0.3 SOIL - 14/2/2017 SE162156.009	D203 0.9-1.0 SOIL - 14/2/2017 SE162156.010
% Moisture	%w/w	0.5	18	24	4.4	8.2	18

PARAMETER	UOM	LOR	D204 0-0.1 SOIL - 14/2/2017 SE162156.011	D204 0.2-0.3 SOIL - 14/2/2017 SE162156.012	D204 1.0-1.1 SOIL - 14/2/2017 SE162156.013	D205 0-0.1 SOIL - 14/2/2017 SE162156.014	D205 0.2-0.3 SOIL - 14/2/2017 SE162156.015
% Moisture	%w/w	0.5	6.0	7.8	13	5.0	7.7

PARAMETER	UOM	LOR	D205 0.7-0.8 SOIL - 14/2/2017 SE162156.016	D206 0-0.1 SOIL - 14/2/2017 SE162156.017	D206 0.2-0.3 SOIL - 14/2/2017 SE162156.018	D206 0.6-0.7 SOIL - 14/2/2017 SE162156.019	D207 0-0.1 SOIL - 14/2/2017 SE162156.020
% Moisture	%w/w	0.5	10	2.4	6.3	15	7.5

PARAMETER	UOM	LOR	D207 0.2-0.3 SOIL - 14/2/2017 SE162156.021	D207 1.0-1.1 SOIL - 14/2/2017 SE162156.022	D208 0-0.1 SOIL - 14/2/2017 SE162156.023	D208 0.2-0.3 SOIL - 14/2/2017 SE162156.024	D208 1.0-1.1 SOIL - 14/2/2017 SE162156.025
% Moisture	%w/w	0.5	9.3	6.3	6.4	11	22

PARAMETER	UOM	LOR	D209 0-0.1 SOIL - 13/2/2017 SE162156.026	D209 0.2-0.3 SOIL - 13/2/2017 SE162156.027	D209 1.0-1.1 SOIL - 13/2/2017 SE162156.028	D209 1.9-2.0 SOIL - 13/2/2017 SE162156.029	D210 0-0.1 SOIL - 13/2/2017 SE162156.030
% Moisture	%w/w	0.5	3.9	8.7	19	18	7.1

PARAMETER	UOM	LOR	D210 0.2-0.3 SOIL - 13/2/2017 SE162156.031	D210 1.0-1.1 SOIL - 13/2/2017 SE162156.032	D211 0-0.1 SOIL - 14/2/2017 SE162156.033	S211 0.2-0.3 SOIL - 14/2/2017 SE162156.034	D211 1.0-1.1 SOIL - 14/2/2017 SE162156.035
% Moisture	%w/w	0.5	17	26	4.3	18	12

Moisture Content [AN002] Tested: 20/2/2017 (continued)

PARAMETER	UOM	LOR	D211 1.9-2.0 SOIL - 14/2/2017 SE162156.036	D212 0-0.1 SOIL - 14/2/2017 SE162156.037	D212 0.2-0.3 SOIL - 14/2/2017 SE162156.038	D212 1.0-1.1 SOIL - 14/2/2017 SE162156.039	D213 0-0.1 SOIL - 13/2/2017 SE162156.040
% Moisture	%w/w	0.5	13	2.1	18	6.6	6.7

PARAMETER	UOM	LOR	D213 0.2-0.3 SOIL - 13/2/2017 SE162156.041	D213 1.0-1.1 SOIL - 13/2/2017 SE162156.042	D213 1.9-2.0 SOIL - 13/2/2017 SE162156.043	D214 0-0.1 SOIL - 13/2/2017 SE162156.044	D214 0.2-0.3 SOIL - 13/2/2017 SE162156.045
% Moisture	%w/w	0.5	6.8	22	13	5.1	5.5

PARAMETER	UOM	LOR	D214 1.0-1.1 SOIL - 13/2/2017 SE162156.046	D215 0-0.1 SOIL - 14/2/2017 SE162156.047	D215 0.2-0.3 SOIL - 14/2/2017 SE162156.048	D215 1.0-1.1 SOIL - 14/2/2017 SE162156.049	D215 1.9-2.0 SOIL - 14/2/2017 SE162156.050
% Moisture	%w/w	0.5	11	5.3	11	23	19

PARAMETER	UOM	LOR	D216 0-0.1 SOIL - 14/2/2017 SE162156.051	D216 0.2-0.3 SOIL - 14/2/2017 SE162156.052	D216 1.0-1.1 SOIL - 14/2/2017 SE162156.053	D217 0-0.1 SOIL - 14/2/2017 SE162156.054	D217 0.2-0.3 SOIL - 14/2/2017 SE162156.055
% Moisture	%w/w	0.5	5.4	17	24	5.1	8.5

PARAMETER	UOM	LOR	D217 1.0-1.1 SOIL - 14/2/2017 SE162156.056	D217 1.9-2.0 SOIL - 14/2/2017 SE162156.057	D218 0-0.1 SOIL - 14/2/2017 SE162156.058	D218 0.2-0.3 SOIL - 14/2/2017 SE162156.059	D218 1.0-1.1 SOIL - 14/2/2017 SE162156.060
% Moisture	%w/w	0.5	21	23	7.3	4.3	15

PARAMETER	UOM	LOR	D219 0-0.1 SOIL - 14/2/2017 SE162156.061	D219 0.2-0.3 SOIL - 14/2/2017 SE162156.062	D219 1.0-1.1 SOIL - 14/2/2017 SE162156.063	D219 1.9-2.0 SOIL - 14/2/2017 SE162156.064	D220 0-0.1 SOIL - 14/2/2017 SE162156.065
% Moisture	%w/w	0.5	2.4	19	18	16	4.0

PARAMETER	UOM	LOR	D220 0.2-0.3 SOIL - 14/2/2017 SE162156.066	D220 1.0-1.1 SOIL - 14/2/2017 SE162156.067	D221 0-0.1 SOIL - 14/2/2017 SE162156.068	D221 0.2-0.3 SOIL - 14/2/2017 SE162156.069	D221 1.0-1.1 SOIL - 14/2/2017 SE162156.070
% Moisture	%w/w	0.5	21	21	9.0	3.2	18

Moisture Content [AN002] Tested: 20/2/2017 (continued)

PARAMETER	UOM	LOR	D221 1.9-2.0 SOIL - 14/2/2017 SE162156.071	D222 0-0.1 SOIL - 14/2/2017 SE162156.072	D222 0.2-0.3 SOIL - 14/2/2017 SE162156.073	D222 1.0-1.1 SOIL - 14/2/2017 SE162156.074	D223 0-0.1 SOIL - 14/2/2017 SE162156.075
% Moisture	%w/w	0.5	30	7.8	20	14	5.4

PARAMETER	UOM	LOR	D223 0.2-0.3 SOIL - 14/2/2017 SE162156.076	D223 1.0-1.1 SOIL - 14/2/2017 SE162156.077	D224 0-0.1 SOIL - 14/2/2017 SE162156.078	D224 0.2-0.3 SOIL - 14/2/2017 SE162156.079	D224 1.0-1.1 SOIL - 14/2/2017 SE162156.080
% Moisture	%w/w	0.5	16	14	7.4	7.8	7.7

PARAMETER	UOM	LOR	D225 0-0.1 SOIL - 14/2/2017 SE162156.081	D225 0.2-0.3 SOIL - 14/2/2017 SE162156.082	D225 1.0-1.1 SOIL - 14/2/2017 SE162156.083	D225 1.9-2.0 SOIL - 14/2/2017 SE162156.084	D232 0-0.1 SOIL - 14/2/2017 SE162156.085
% Moisture	%w/w	0.5	2.6	4.1	17	23	1.8

PARAMETER	UOM	LOR	D232 0.2-0.3 SOIL - 14/2/2017 SE162156.086	D232 1.0-1.1 SOIL - 14/2/2017 SE162156.087	D233 0-0.1 SOIL - 14/2/2017 SE162156.088	D233 0.2-0.3 SOIL - 14/2/2017 SE162156.089	D233 1.0-1.1 SOIL - 14/2/2017 SE162156.090
% Moisture	%w/w	0.5	21	16	3.8	7.5	28

PARAMETER	UOM	LOR	D233 1.9-2.0 SOIL - 14/2/2017 SE162156.091	D234 0-0.1 SOIL - 14/2/2017 SE162156.092	D234 0.2-0.3 SOIL - 14/2/2017 SE162156.093	D234 1.0-1.1 SOIL - 14/2/2017 SE162156.094	D235 0-0.1 SOIL - 14/2/2017 SE162156.095
% Moisture	%w/w	0.5	20	4.5	7.5	14	7.2

PARAMETER	UOM	LOR	D235 0.2-0.3 SOIL - 14/2/2017 SE162156.096	D235 1.0-1.1 SOIL - 14/2/2017 SE162156.097	D235 1.9-2.0 SOIL - 14/2/2017 SE162156.098	D236 0-0.1 SOIL - 14/2/2017 SE162156.099	D236 0.2-0.3 SOIL - 14/2/2017 SE162156.100
% Moisture	%w/w	0.5	15	13	19	6.0	6.7

PARAMETER	UOM	LOR	D236 1.0-1.1 SOIL - 14/2/2017 SE162156.101	D237 0-0.1 SOIL - 14/2/2017 SE162156.102	D237 0.2-0.3 SOIL - 14/2/2017 SE162156.103	D237 1.0-1.1 SOIL - 14/2/2017 SE162156.104	D237 1.9-2.0 SOIL - 14/2/2017 SE162156.105
% Moisture	%w/w	0.5	10	5.1	7.0	16	14

Moisture Content [AN002] Tested: 20/2/2017 (continued)

PARAMETER	UOM	LOR	D238 0-0.1 SOIL - 14/2/2017 SE162156.106	D238 0.2-0.3 SOIL - 14/2/2017 SE162156.107	D238 1.0-1.1 SOIL - 14/2/2017 SE162156.108	Duplicate DS1 SOIL - 14/2/2017 SE162156.109	Duplicate DS2 SOIL - 14/2/2017 SE162156.110
% Moisture	%w/w	0.5	6.8	6.1	15	5.9	4.0

PARAMETER	UOM	LOR	Duplicate DS3 SOIL - 14/2/2017 SE162156.111	Duplicate DS4 SOIL - 14/2/2017 SE162156.112	Duplicate DS5 SOIL - 14/2/2017 SE162156.113	Duplicate DS6 SOIL - 14/2/2017 SE162156.114	Duplicate DS7 SOIL - 14/2/2017 SE162156.115
% Moisture	%w/w	0.5	2.3	3.9	8.2	5.6	4.0

Metals in Water (Dissolved) by ICPOES [AN320/AN321] Tested: 24/2/2017

PARAMETER	UOM	LOR	Rinsate RS1 WATER - 14/2/2017 SE162156.116	Rinsate RS2 WATER - 14/2/2017 SE162156.117
Arsenic, As	mg/L	0.02	<0.02	<0.02
Cadmium, Cd	mg/L	0.001	<0.001	0.001
Chromium, Cr	mg/L	0.005	<0.005	<0.005
Copper, Cu	mg/L	0.005	<0.005	<0.005
Lead, Pb	mg/L	0.02	<0.02	<0.02
Manganese, Mn	mg/L	0.005	<0.005	<0.005
Nickel, Ni	mg/L	0.005	<0.005	<0.005
Zinc, Zn	mg/L	0.01	<0.01	<0.01

Mercury (dissolved) in Water [AN311(Perth)/AN312] Tested: 23/2/2017

PARAMETER	UOM	LOR	Rinsate RS1 WATER - 14/2/2017 SE162156.116	Rinsate RS2 WATER - 14/2/2017 SE162156.117
Mercury	mg/L	0.0001	<0.0001	<0.0001

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
AN040/AN320	A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analysis by ASS or ICP as per USEPA Method 200.8.
AN101	pH in Soil Sludge Sediment and Water: pH is measured electrometrically using a combination electrode and is calibrated against 3 buffers purchased commercially. For soils, sediments and sludges, an extract with water (or 0.01M CaCl2) is made at a ratio of 1:5 and the pH determined and reported on the extract. Reference APHA 4500-H+.
AN122	Exchangeable Cations, CEC and ESP: Soil sample is extracted in 1M Ammonium Acetate at pH=7 (or 1M Ammonium Chloride at pH=7) with cations (Na, K, Ca & Mg) then determined by ICP OES/ICP MS and reported as Exchangeable Cations. For saline soils, these results can be corrected for water soluble cations and reported as Exchangeable cations in meq/100g or soil can be pre-treated (aqueous ethanol/aqueous glycerol) prior to extraction. Cation Exchange Capacity (CEC) is the sum of the exchangeable cations in meq/100g.
AN122	The Exchangeable Sodium Percentage (ESP) is calculated as the exchangeable sodium divided by the CEC (all in meq/100g) times 100. ESP can be used to categorise the sodicity of the soil as below : ESP < 6% non-sodic ESP 6-15% sodic ESP >15% strongly sodic Method is refernced to Rayment and Higginson, 1992, sections 15D3 and 15N1.-
AN311(Perth)/AN312	Mercury by Cold Vapour AAS in Waters: Mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500.
AN312	Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid , mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser . Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500
AN320/AN321	Metals by ICP-OES: Samples are preserved with 10% nitric acid for a wide range of metals and some non-metals. This solution is measured by Inductively Coupled Plasma. Solutions are aspirated into an argon plasma at 8000-10000K and emit characteristic energy or light as a result of electron transitions through unique energy levels. The emitted light is focused onto a diffraction grating where it is separated into components .
AN320/AN321	Photomultipliers or CCDs are used to measure the light intensity at specific wavelengths. This intensity is directly proportional to concentration. Corrections are required to compensate for spectral overlap between elements . Reference APHA 3120 B.

FOOTNOTES

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

Samples analysed as received.
Solid samples expressed on a dry weight basis.

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

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

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

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

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

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

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

STATEMENT OF QA/QC PERFORMANCE

SE162156 R0

CLIENT DETAILS		LABORATORY DETAILS	
Contact	John Xu	Manager	Huong Crawford
Client	Geotechnique	Laboratory	SGS Alexandria Environmental
Address	P.O. Box 880 PENRITH NSW 2751	Address	Unit 16, 33 Maddox St Alexandria NSW 2015
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Email	john.xu@geotech.com.au	Email	au.environmental.sydney@sgs.com
Project	**Googong NH1A-7 & NH2**	SGS Reference	**SE162156 R0**
Order Number	(Not specified)	Date Received	20 Feb 2017
Samples	117	Date Reported	27 Feb 2017

COMMENTS

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

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

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

Duplicate	Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES	1 item
Matrix Spike	Mercury in Soil	1 item
	Mercury in Soil	1 item
	Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES	2 items
	Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES	1 item
	Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES	1 item
	Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES	1 item
	Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES	3 items

SAMPLE SUMMARY

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	115 Soil, 2 Water
Date documentation received	20/2/2017	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	17.3°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

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
D201 0-0.1	SE162156.001	LB119044	13 Feb 2017	20 Feb 2017	13 Mar 2017	21 Feb 2017	13 Mar 2017	24 Feb 2017
D201 1.9-2.0	SE162156.004	LB119044	13 Feb 2017	20 Feb 2017	13 Mar 2017	21 Feb 2017	13 Mar 2017	24 Feb 2017
D206 0-0.1	SE162156.017	LB119044	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	24 Feb 2017
D206 0.2-0.3	SE162156.018	LB119044	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	24 Feb 2017
D209 0-0.1	SE162156.026	LB119044	13 Feb 2017	20 Feb 2017	13 Mar 2017	21 Feb 2017	13 Mar 2017	24 Feb 2017
D211 0-0.1	SE162156.033	LB119044	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	24 Feb 2017
D212 1.0-1.1	SE162156.039	LB119044	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	24 Feb 2017
D213 0.2-0.3	SE162156.041	LB119044	13 Feb 2017	20 Feb 2017	13 Mar 2017	21 Feb 2017	13 Mar 2017	24 Feb 2017
D213 1.0-1.1	SE162156.042	LB119044	13 Feb 2017	20 Feb 2017	13 Mar 2017	21 Feb 2017	13 Mar 2017	24 Feb 2017
D215 0.2-0.3	SE162156.048	LB119044	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	24 Feb 2017
D215 1.0-1.1	SE162156.049	LB119044	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	24 Feb 2017
D216 0.2-0.3	SE162156.052	LB119044	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	24 Feb 2017
D216 1.0-1.1	SE162156.053	LB119044	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	24 Feb 2017
D217 0.2-0.3	SE162156.055	LB119044	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	24 Feb 2017
D217 1.0-1.1	SE162156.056	LB119044	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	24 Feb 2017
D218 0-0.1	SE162156.058	LB119044	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	24 Feb 2017
D218 0.2-0.3	SE162156.059	LB119044	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	24 Feb 2017
D218 1.0-1.1	SE162156.060	LB119044	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	24 Feb 2017
D219 0-0.1	SE162156.061	LB119044	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	24 Feb 2017
D219 1.9-2.0	SE162156.064	LB119135	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
D223 0-0.1	SE162156.075	LB119135	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
D223 0.2-0.3	SE162156.076	LB119135	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
D223 1.0-1.1	SE162156.077	LB119135	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
D224 1.0-1.1	SE162156.080	LB119135	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
D225 1.9-2.0	SE162156.084	LB119135	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
D232 1.0-1.1	SE162156.087	LB119135	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
D235 0-0.1	SE162156.095	LB119135	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
D235 0.2-0.3	SE162156.096	LB119135	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
D235 1.0-1.1	SE162156.097	LB119135	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
D235 1.9-2.0	SE162156.098	LB119135	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
D236 0-0.1	SE162156.099	LB119135	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
D236 0.2-0.3	SE162156.100	LB119135	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
D237 1.9-2.0	SE162156.105	LB119135	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
D238 0.2-0.3	SE162156.107	LB119135	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
D238 1.0-1.1	SE162156.108	LB119135	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017

Mercury (dissolved) in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Rinsate RS1	SE162156.116	LB119219	14 Feb 2017	20 Feb 2017	14 Mar 2017	23 Feb 2017	14 Mar 2017	23 Feb 2017
Rinsate RS2	SE162156.117	LB119219	14 Feb 2017	20 Feb 2017	14 Mar 2017	23 Feb 2017	14 Mar 2017	23 Feb 2017

Mercury in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
D201 0-0.1	SE162156.001	LB119123	13 Feb 2017	20 Feb 2017	13 Mar 2017	21 Feb 2017	13 Mar 2017	23 Feb 2017
D201 0.2-0.3	SE162156.002	LB119123	13 Feb 2017	20 Feb 2017	13 Mar 2017	21 Feb 2017	13 Mar 2017	23 Feb 2017
D201 1.0-1.1	SE162156.003	LB119123	13 Feb 2017	20 Feb 2017	13 Mar 2017	21 Feb 2017	13 Mar 2017	23 Feb 2017
D201 1.9-2.0	SE162156.004	LB119123	13 Feb 2017	20 Feb 2017	13 Mar 2017	21 Feb 2017	13 Mar 2017	23 Feb 2017
D202 0-0.1	SE162156.005	LB119123	13 Feb 2017	20 Feb 2017	13 Mar 2017	21 Feb 2017	13 Mar 2017	23 Feb 2017
D202 0.2-0.3	SE162156.006	LB119123	13 Feb 2017	20 Feb 2017	13 Mar 2017	21 Feb 2017	13 Mar 2017	23 Feb 2017
D202 1.0-1.1	SE162156.007	LB119123	13 Feb 2017	20 Feb 2017	13 Mar 2017	21 Feb 2017	13 Mar 2017	23 Feb 2017
D203 0-0.1	SE162156.008	LB119123	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D203 0.2-0.3	SE162156.009	LB119123	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D203 0.9-1.0	SE162156.010	LB119124	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D204 0-0.1	SE162156.011	LB119124	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D204 0.2-0.3	SE162156.012	LB119124	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D204 1.0-1.1	SE162156.013	LB119124	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D205 0-0.1	SE162156.014	LB119124	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D205 0.2-0.3	SE162156.015	LB119124	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D205 0.7-0.8	SE162156.016	LB119124	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D206 0-0.1	SE162156.017	LB119124	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D206 0.2-0.3	SE162156.018	LB119124	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017

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
D206 0.6-0.7	SE162156.019	LB119124	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D207 0-0.1	SE162156.020	LB119124	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D207 0.2-0.3	SE162156.021	LB119124	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D207 1.0-1.1	SE162156.022	LB119124	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D208 0-0.1	SE162156.023	LB119124	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D208 0.2-0.3	SE162156.024	LB119124	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D208 1.0-1.1	SE162156.025	LB119124	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D209 0-0.1	SE162156.026	LB119124	13 Feb 2017	20 Feb 2017	13 Mar 2017	21 Feb 2017	13 Mar 2017	23 Feb 2017
D209 0.2-0.3	SE162156.027	LB119124	13 Feb 2017	20 Feb 2017	13 Mar 2017	21 Feb 2017	13 Mar 2017	23 Feb 2017
D209 1.0-1.1	SE162156.028	LB119124	13 Feb 2017	20 Feb 2017	13 Mar 2017	21 Feb 2017	13 Mar 2017	23 Feb 2017
D209 1.9-2.0	SE162156.029	LB119125	13 Feb 2017	20 Feb 2017	13 Mar 2017	21 Feb 2017	13 Mar 2017	23 Feb 2017
D210 0-0.1	SE162156.030	LB119125	13 Feb 2017	20 Feb 2017	13 Mar 2017	21 Feb 2017	13 Mar 2017	23 Feb 2017
D210 0.2-0.3	SE162156.031	LB119125	13 Feb 2017	20 Feb 2017	13 Mar 2017	21 Feb 2017	13 Mar 2017	23 Feb 2017
D210 1.0-1.1	SE162156.032	LB119125	13 Feb 2017	20 Feb 2017	13 Mar 2017	21 Feb 2017	13 Mar 2017	23 Feb 2017
D211 0-0.1	SE162156.033	LB119125	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
S211 0.2-0.3	SE162156.034	LB119125	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D211 1.0-1.1	SE162156.035	LB119125	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D211 1.9-2.0	SE162156.036	LB119125	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D212 0-0.1	SE162156.037	LB119125	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D212 0.2-0.3	SE162156.038	LB119125	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D212 1.0-1.1	SE162156.039	LB119125	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D213 0-0.1	SE162156.040	LB119125	13 Feb 2017	20 Feb 2017	13 Mar 2017	21 Feb 2017	13 Mar 2017	23 Feb 2017
D213 0.2-0.3	SE162156.041	LB119125	13 Feb 2017	20 Feb 2017	13 Mar 2017	21 Feb 2017	13 Mar 2017	23 Feb 2017
D213 1.0-1.1	SE162156.042	LB119125	13 Feb 2017	20 Feb 2017	13 Mar 2017	21 Feb 2017	13 Mar 2017	23 Feb 2017
D213 1.9-2.0	SE162156.043	LB119125	13 Feb 2017	20 Feb 2017	13 Mar 2017	21 Feb 2017	13 Mar 2017	23 Feb 2017
D214 0-0.1	SE162156.044	LB119125	13 Feb 2017	20 Feb 2017	13 Mar 2017	21 Feb 2017	13 Mar 2017	23 Feb 2017
D214 0.2-0.3	SE162156.045	LB119125	13 Feb 2017	20 Feb 2017	13 Mar 2017	21 Feb 2017	13 Mar 2017	23 Feb 2017
D214 1.0-1.1	SE162156.046	LB119125	13 Feb 2017	20 Feb 2017	13 Mar 2017	21 Feb 2017	13 Mar 2017	23 Feb 2017
D215 0-0.1	SE162156.047	LB119125	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D215 0.2-0.3	SE162156.048	LB119126	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D215 1.0-1.1	SE162156.049	LB119126	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D215 1.9-2.0	SE162156.050	LB119126	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D216 0-0.1	SE162156.051	LB119126	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D216 0.2-0.3	SE162156.052	LB119126	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D216 1.0-1.1	SE162156.053	LB119126	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D217 0-0.1	SE162156.054	LB119126	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D217 0.2-0.3	SE162156.055	LB119126	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D217 1.0-1.1	SE162156.056	LB119126	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D217 1.9-2.0	SE162156.057	LB119126	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D218 0-0.1	SE162156.058	LB119126	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D218 0.2-0.3	SE162156.059	LB119126	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D218 1.0-1.1	SE162156.060	LB119126	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D219 0-0.1	SE162156.061	LB119126	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D219 0.2-0.3	SE162156.062	LB119126	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D219 1.0-1.1	SE162156.063	LB119126	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D219 1.9-2.0	SE162156.064	LB119126	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D220 0-0.1	SE162156.065	LB119126	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D220 0.2-0.3	SE162156.066	LB119126	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D220 1.0-1.1	SE162156.067	LB119127	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D221 0-0.1	SE162156.068	LB119127	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D221 0.2-0.3	SE162156.069	LB119127	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D221 1.0-1.1	SE162156.070	LB119127	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D221 1.9-2.0	SE162156.071	LB119127	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D222 0-0.1	SE162156.072	LB119127	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D222 0.2-0.3	SE162156.073	LB119127	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D222 1.0-1.1	SE162156.074	LB119127	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D223 0-0.1	SE162156.075	LB119127	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D223 0.2-0.3	SE162156.076	LB119127	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D223 1.0-1.1	SE162156.077	LB119127	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D224 0-0.1	SE162156.078	LB119127	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017

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
D224 0.2-0.3	SE162156.079	LB119127	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D224 1.0-1.1	SE162156.080	LB119127	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D225 0-0.1	SE162156.081	LB119127	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D225 0.2-0.3	SE162156.082	LB119127	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D225 1.0-1.1	SE162156.083	LB119127	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D225 1.9-2.0	SE162156.084	LB119127	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D232 0-0.1	SE162156.085	LB119127	14 Feb 2017	20 Feb 2017	14 Mar 2017	21 Feb 2017	14 Mar 2017	23 Feb 2017
D232 0.2-0.3	SE162156.086	LB119166	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
D232 1.0-1.1	SE162156.087	LB119166	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
D233 0-0.1	SE162156.088	LB119166	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
D233 0.2-0.3	SE162156.089	LB119166	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
D233 1.0-1.1	SE162156.090	LB119166	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
D233 1.9-2.0	SE162156.091	LB119166	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
D234 0-0.1	SE162156.092	LB119166	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
D234 0.2-0.3	SE162156.093	LB119166	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
D234 1.0-1.1	SE162156.094	LB119166	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
D235 0-0.1	SE162156.095	LB119166	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
D235 0.2-0.3	SE162156.096	LB119166	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
D235 1.0-1.1	SE162156.097	LB119166	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
D235 1.9-2.0	SE162156.098	LB119166	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
D236 0-0.1	SE162156.099	LB119166	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
D236 0.2-0.3	SE162156.100	LB119166	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
D236 1.0-1.1	SE162156.101	LB119166	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
D237 0-0.1	SE162156.102	LB119166	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
D237 0.2-0.3	SE162156.103	LB119166	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
D237 1.0-1.1	SE162156.104	LB119166	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
D237 1.9-2.0	SE162156.105	LB119167	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
D238 0-0.1	SE162156.106	LB119167	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
D238 0.2-0.3	SE162156.107	LB119167	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
D238 1.0-1.1	SE162156.108	LB119167	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
Duplicate DS1	SE162156.109	LB119167	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
Duplicate DS2	SE162156.110	LB119167	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
Duplicate DS3	SE162156.111	LB119167	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
Duplicate DS4	SE162156.112	LB119167	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
Duplicate DS5	SE162156.113	LB119167	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
Duplicate DS6	SE162156.114	LB119167	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017
Duplicate DS7	SE162156.115	LB119167	14 Feb 2017	20 Feb 2017	14 Mar 2017	22 Feb 2017	14 Mar 2017	24 Feb 2017

Metals in Water (Dissolved) by ICPOES

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Rinsate RS1	SE162156.116	LB119273	14 Feb 2017	20 Feb 2017	13 Aug 2017	24 Feb 2017	13 Aug 2017	24 Feb 2017
Rinsate RS2	SE162156.117	LB119273	14 Feb 2017	20 Feb 2017	13 Aug 2017	24 Feb 2017	13 Aug 2017	24 Feb 2017

Moisture Content

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
D201 0-0.1	SE162156.001	LB119000	13 Feb 2017	20 Feb 2017	27 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D201 0.2-0.3	SE162156.002	LB119000	13 Feb 2017	20 Feb 2017	27 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D201 1.0-1.1	SE162156.003	LB119000	13 Feb 2017	20 Feb 2017	27 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D201 1.9-2.0	SE162156.004	LB119000	13 Feb 2017	20 Feb 2017	27 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D202 0-0.1	SE162156.005	LB119000	13 Feb 2017	20 Feb 2017	27 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D202 0.2-0.3	SE162156.006	LB119000	13 Feb 2017	20 Feb 2017	27 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D202 1.0-1.1	SE162156.007	LB119000	13 Feb 2017	20 Feb 2017	27 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D203 0-0.1	SE162156.008	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D203 0.2-0.3	SE162156.009	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D203 0.9-1.0	SE162156.010	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D204 0-0.1	SE162156.011	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D204 0.2-0.3	SE162156.012	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D204 1.0-1.1	SE162156.013	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D205 0-0.1	SE162156.014	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D205 0.2-0.3	SE162156.015	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D205 0.7-0.8	SE162156.016	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017

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

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

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

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
D206 0-0.1	SE162156.017	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D206 0.2-0.3	SE162156.018	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D206 0.6-0.7	SE162156.019	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D207 0-0.1	SE162156.020	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D207 0.2-0.3	SE162156.021	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D207 1.0-1.1	SE162156.022	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D208 0-0.1	SE162156.023	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D208 0.2-0.3	SE162156.024	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D208 1.0-1.1	SE162156.025	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D209 0-0.1	SE162156.026	LB119000	13 Feb 2017	20 Feb 2017	27 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D209 0.2-0.3	SE162156.027	LB119000	13 Feb 2017	20 Feb 2017	27 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D209 1.0-1.1	SE162156.028	LB119000	13 Feb 2017	20 Feb 2017	27 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D209 1.9-2.0	SE162156.029	LB119000	13 Feb 2017	20 Feb 2017	27 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D210 0-0.1	SE162156.030	LB119000	13 Feb 2017	20 Feb 2017	27 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D210 0.2-0.3	SE162156.031	LB119000	13 Feb 2017	20 Feb 2017	27 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D210 1.0-1.1	SE162156.032	LB119000	13 Feb 2017	20 Feb 2017	27 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D211 0-0.1	SE162156.033	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
S211 0.2-0.3	SE162156.034	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D211 1.0-1.1	SE162156.035	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D211 1.9-2.0	SE162156.036	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D212 0-0.1	SE162156.037	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D212 0.2-0.3	SE162156.038	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D212 1.0-1.1	SE162156.039	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D213 0-0.1	SE162156.040	LB119000	13 Feb 2017	20 Feb 2017	27 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D213 0.2-0.3	SE162156.041	LB119000	13 Feb 2017	20 Feb 2017	27 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D213 1.0-1.1	SE162156.042	LB119000	13 Feb 2017	20 Feb 2017	27 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D213 1.9-2.0	SE162156.043	LB119000	13 Feb 2017	20 Feb 2017	27 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D214 0-0.1	SE162156.044	LB119000	13 Feb 2017	20 Feb 2017	27 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D214 0.2-0.3	SE162156.045	LB119000	13 Feb 2017	20 Feb 2017	27 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D214 1.0-1.1	SE162156.046	LB119000	13 Feb 2017	20 Feb 2017	27 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D215 0-0.1	SE162156.047	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D215 0.2-0.3	SE162156.048	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D215 1.0-1.1	SE162156.049	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D215 1.9-2.0	SE162156.050	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D216 0-0.1	SE162156.051	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D216 0.2-0.3	SE162156.052	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D216 1.0-1.1	SE162156.053	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D217 0-0.1	SE162156.054	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D217 0.2-0.3	SE162156.055	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D217 1.0-1.1	SE162156.056	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D217 1.9-2.0	SE162156.057	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D218 0-0.1	SE162156.058	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D218 0.2-0.3	SE162156.059	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D218 1.0-1.1	SE162156.060	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D219 0-0.1	SE162156.061	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	21 Feb 2017
D219 0.2-0.3	SE162156.062	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D219 1.0-1.1	SE162156.063	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D219 1.9-2.0	SE162156.064	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D220 0-0.1	SE162156.065	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D220 0.2-0.3	SE162156.066	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D220 1.0-1.1	SE162156.067	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D221 0-0.1	SE162156.068	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D221 0.2-0.3	SE162156.069	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D221 1.0-1.1	SE162156.070	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D221 1.9-2.0	SE162156.071	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D222 0-0.1	SE162156.072	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D222 0.2-0.3	SE162156.073	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D222 1.0-1.1	SE162156.074	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D223 0-0.1	SE162156.075	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D223 0.2-0.3	SE162156.076	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017

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

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

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

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
D223 1.0-1.1	SE162156.077	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D224 0-0.1	SE162156.078	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D224 0.2-0.3	SE162156.079	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D224 1.0-1.1	SE162156.080	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D225 0-0.1	SE162156.081	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D225 0.2-0.3	SE162156.082	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D225 1.0-1.1	SE162156.083	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D225 1.9-2.0	SE162156.084	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D232 0-0.1	SE162156.085	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D232 0.2-0.3	SE162156.086	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D232 1.0-1.1	SE162156.087	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D233 0-0.1	SE162156.088	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D233 0.2-0.3	SE162156.089	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D233 1.0-1.1	SE162156.090	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D233 1.9-2.0	SE162156.091	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D234 0-0.1	SE162156.092	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D234 0.2-0.3	SE162156.093	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D234 1.0-1.1	SE162156.094	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D235 0-0.1	SE162156.095	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D235 0.2-0.3	SE162156.096	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D235 1.0-1.1	SE162156.097	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D235 1.9-2.0	SE162156.098	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D236 0-0.1	SE162156.099	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D236 0.2-0.3	SE162156.100	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D236 1.0-1.1	SE162156.101	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D237 0-0.1	SE162156.102	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D237 0.2-0.3	SE162156.103	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D237 1.0-1.1	SE162156.104	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D237 1.9-2.0	SE162156.105	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D238 0-0.1	SE162156.106	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D238 0.2-0.3	SE162156.107	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
D238 1.0-1.1	SE162156.108	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
Duplicate DS1	SE162156.109	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
Duplicate DS2	SE162156.110	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
Duplicate DS3	SE162156.111	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
Duplicate DS4	SE162156.112	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
Duplicate DS5	SE162156.113	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
Duplicate DS6	SE162156.114	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017
Duplicate DS7	SE162156.115	LB119000	14 Feb 2017	20 Feb 2017	28 Feb 2017	20 Feb 2017	25 Feb 2017	22 Feb 2017

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
D201 0-0.1	SE162156.001	LB119004	13 Feb 2017	20 Feb 2017	20 Feb 2017	20 Feb 2017	21 Feb 2017	21 Feb 2017
D201 1.9-2.0	SE162156.004	LB119004	13 Feb 2017	20 Feb 2017	20 Feb 2017	20 Feb 2017	21 Feb 2017	21 Feb 2017
D204 0-0.1	SE162156.011	LB119004	14 Feb 2017	20 Feb 2017	21 Feb 2017	20 Feb 2017	21 Feb 2017	21 Feb 2017
D204 0.2-0.3	SE162156.012	LB119004	14 Feb 2017	20 Feb 2017	21 Feb 2017	20 Feb 2017	21 Feb 2017	21 Feb 2017
D206 0-0.1	SE162156.017	LB119004	14 Feb 2017	20 Feb 2017	21 Feb 2017	20 Feb 2017	21 Feb 2017	21 Feb 2017
D206 0.2-0.3	SE162156.018	LB119004	14 Feb 2017	20 Feb 2017	21 Feb 2017	20 Feb 2017	21 Feb 2017	21 Feb 2017
D209 0-0.1	SE162156.026	LB119004	13 Feb 2017	20 Feb 2017	20 Feb 2017	20 Feb 2017	21 Feb 2017	21 Feb 2017
D211 0-0.1	SE162156.033	LB119004	14 Feb 2017	20 Feb 2017	21 Feb 2017	20 Feb 2017	21 Feb 2017	21 Feb 2017
D212 1.0-1.1	SE162156.039	LB119004	14 Feb 2017	20 Feb 2017	21 Feb 2017	20 Feb 2017	21 Feb 2017	21 Feb 2017
D213 0.2-0.3	SE162156.041	LB119004	13 Feb 2017	20 Feb 2017	20 Feb 2017	20 Feb 2017	21 Feb 2017	21 Feb 2017
D213 1.0-1.1	SE162156.042	LB119004	13 Feb 2017	20 Feb 2017	20 Feb 2017	20 Feb 2017	21 Feb 2017	21 Feb 2017
D215 0.2-0.3	SE162156.048	LB119004	14 Feb 2017	20 Feb 2017	21 Feb 2017	20 Feb 2017	21 Feb 2017	21 Feb 2017
D215 1.0-1.1	SE162156.049	LB119004	14 Feb 2017	20 Feb 2017	21 Feb 2017	20 Feb 2017	21 Feb 2017	21 Feb 2017
D216 0.2-0.3	SE162156.052	LB119004	14 Feb 2017	20 Feb 2017	21 Feb 2017	20 Feb 2017	21 Feb 2017	21 Feb 2017
D216 1.0-1.1	SE162156.053	LB119004	14 Feb 2017	20 Feb 2017	21 Feb 2017	20 Feb 2017	21 Feb 2017	21 Feb 2017
D217 1.0-1.1	SE162156.056	LB119004	14 Feb 2017	20 Feb 2017	21 Feb 2017	20 Feb 2017	21 Feb 2017	21 Feb 2017
D219 1.9-2.0	SE162156.064	LB119004	14 Feb 2017	20 Feb 2017	21 Feb 2017	20 Feb 2017	21 Feb 2017	21 Feb 2017
D223 0-0.1	SE162156.075	LB119004	14 Feb 2017	20 Feb 2017	21 Feb 2017	20 Feb 2017	21 Feb 2017	21 Feb 2017

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
D223 0.2-0.3	SE162156.076	LB119004	14 Feb 2017	20 Feb 2017	21 Feb 2017	20 Feb 2017	21 Feb 2017	21 Feb 2017
D223 1.0-1.1	SE162156.077	LB119004	14 Feb 2017	20 Feb 2017	21 Feb 2017	20 Feb 2017	21 Feb 2017	21 Feb 2017
D225 1.9-2.0	SE162156.084	LB119004	14 Feb 2017	20 Feb 2017	21 Feb 2017	20 Feb 2017	21 Feb 2017	21 Feb 2017
D232 1.0-1.1	SE162156.087	LB119004	14 Feb 2017	20 Feb 2017	21 Feb 2017	20 Feb 2017	21 Feb 2017	21 Feb 2017

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
D201 0-0.1	SE162156.001	LB119094	13 Feb 2017	20 Feb 2017	12 Aug 2017	21 Feb 2017	12 Aug 2017	24 Feb 2017
D201 0.2-0.3	SE162156.002	LB119094	13 Feb 2017	20 Feb 2017	12 Aug 2017	21 Feb 2017	12 Aug 2017	24 Feb 2017
D201 1.0-1.1	SE162156.003	LB119094	13 Feb 2017	20 Feb 2017	12 Aug 2017	21 Feb 2017	12 Aug 2017	24 Feb 2017
D201 1.9-2.0	SE162156.004	LB119094	13 Feb 2017	20 Feb 2017	12 Aug 2017	21 Feb 2017	12 Aug 2017	24 Feb 2017
D202 0-0.1	SE162156.005	LB119094	13 Feb 2017	20 Feb 2017	12 Aug 2017	21 Feb 2017	12 Aug 2017	24 Feb 2017
D202 0.2-0.3	SE162156.006	LB119094	13 Feb 2017	20 Feb 2017	12 Aug 2017	21 Feb 2017	12 Aug 2017	24 Feb 2017
D202 1.0-1.1	SE162156.007	LB119094	13 Feb 2017	20 Feb 2017	12 Aug 2017	21 Feb 2017	12 Aug 2017	24 Feb 2017
D203 0-0.1	SE162156.008	LB119094	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D203 0.2-0.3	SE162156.009	LB119094	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D203 0.9-1.0	SE162156.010	LB119094	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D204 0-0.1	SE162156.011	LB119094	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D204 0.2-0.3	SE162156.012	LB119094	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D204 1.0-1.1	SE162156.013	LB119094	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D205 0-0.1	SE162156.014	LB119094	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D205 0.2-0.3	SE162156.015	LB119094	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D205 0.7-0.8	SE162156.016	LB119094	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D206 0-0.1	SE162156.017	LB119094	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D206 0.2-0.3	SE162156.018	LB119094	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D206 0.6-0.7	SE162156.019	LB119094	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D207 0-0.1	SE162156.020	LB119095	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D207 0.2-0.3	SE162156.021	LB119095	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D207 1.0-1.1	SE162156.022	LB119095	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D208 0-0.1	SE162156.023	LB119095	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D208 0.2-0.3	SE162156.024	LB119095	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D208 1.0-1.1	SE162156.025	LB119095	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D209 0-0.1	SE162156.026	LB119095	13 Feb 2017	20 Feb 2017	12 Aug 2017	21 Feb 2017	12 Aug 2017	24 Feb 2017
D209 0.2-0.3	SE162156.027	LB119095	13 Feb 2017	20 Feb 2017	12 Aug 2017	21 Feb 2017	12 Aug 2017	24 Feb 2017
D209 1.0-1.1	SE162156.028	LB119095	13 Feb 2017	20 Feb 2017	12 Aug 2017	21 Feb 2017	12 Aug 2017	24 Feb 2017
D209 1.9-2.0	SE162156.029	LB119095	13 Feb 2017	20 Feb 2017	12 Aug 2017	21 Feb 2017	12 Aug 2017	24 Feb 2017
D210 0-0.1	SE162156.030	LB119095	13 Feb 2017	20 Feb 2017	12 Aug 2017	21 Feb 2017	12 Aug 2017	24 Feb 2017
D210 0.2-0.3	SE162156.031	LB119095	13 Feb 2017	20 Feb 2017	12 Aug 2017	21 Feb 2017	12 Aug 2017	24 Feb 2017
D210 1.0-1.1	SE162156.032	LB119095	13 Feb 2017	20 Feb 2017	12 Aug 2017	21 Feb 2017	12 Aug 2017	24 Feb 2017
D211 0-0.1	SE162156.033	LB119095	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
S211 0.2-0.3	SE162156.034	LB119095	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D211 1.0-1.1	SE162156.035	LB119095	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D211 1.9-2.0	SE162156.036	LB119095	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D212 0-0.1	SE162156.037	LB119095	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D212 0.2-0.3	SE162156.038	LB119095	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D212 1.0-1.1	SE162156.039	LB119096	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D213 0-0.1	SE162156.040	LB119096	13 Feb 2017	20 Feb 2017	12 Aug 2017	21 Feb 2017	12 Aug 2017	24 Feb 2017
D213 0.2-0.3	SE162156.041	LB119096	13 Feb 2017	20 Feb 2017	12 Aug 2017	21 Feb 2017	12 Aug 2017	24 Feb 2017
D213 1.0-1.1	SE162156.042	LB119096	13 Feb 2017	20 Feb 2017	12 Aug 2017	21 Feb 2017	12 Aug 2017	24 Feb 2017
D213 1.9-2.0	SE162156.043	LB119096	13 Feb 2017	20 Feb 2017	12 Aug 2017	21 Feb 2017	12 Aug 2017	24 Feb 2017
D214 0-0.1	SE162156.044	LB119096	13 Feb 2017	20 Feb 2017	12 Aug 2017	21 Feb 2017	12 Aug 2017	24 Feb 2017
D214 0.2-0.3	SE162156.045	LB119096	13 Feb 2017	20 Feb 2017	12 Aug 2017	21 Feb 2017	12 Aug 2017	24 Feb 2017
D214 1.0-1.1	SE162156.046	LB119096	13 Feb 2017	20 Feb 2017	12 Aug 2017	21 Feb 2017	12 Aug 2017	24 Feb 2017
D215 0-0.1	SE162156.047	LB119096	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D215 0.2-0.3	SE162156.048	LB119096	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D215 1.0-1.1	SE162156.049	LB119096	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D215 1.9-2.0	SE162156.050	LB119096	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D216 0-0.1	SE162156.051	LB119096	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D216 0.2-0.3	SE162156.052	LB119096	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D216 1.0-1.1	SE162156.053	LB119096	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017

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

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

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

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

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
D217 0-0.1	SE162156.054	LB119096	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D217 0.2-0.3	SE162156.055	LB119096	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D217 1.0-1.1	SE162156.056	LB119096	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D217 1.9-2.0	SE162156.057	LB119096	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D218 0-0.1	SE162156.058	LB119097	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D218 0.2-0.3	SE162156.059	LB119097	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D218 1.0-1.1	SE162156.060	LB119097	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D219 0-0.1	SE162156.061	LB119097	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D219 0.2-0.3	SE162156.062	LB119097	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D219 1.0-1.1	SE162156.063	LB119097	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D219 1.9-2.0	SE162156.064	LB119097	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D220 0-0.1	SE162156.065	LB119097	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D220 0.2-0.3	SE162156.066	LB119097	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D220 1.0-1.1	SE162156.067	LB119097	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D221 0-0.1	SE162156.068	LB119097	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D221 0.2-0.3	SE162156.069	LB119097	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D221 1.0-1.1	SE162156.070	LB119097	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D221 1.9-2.0	SE162156.071	LB119097	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D222 0-0.1	SE162156.072	LB119097	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D222 0.2-0.3	SE162156.073	LB119097	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D222 1.0-1.1	SE162156.074	LB119097	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D223 0-0.1	SE162156.075	LB119097	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D223 0.2-0.3	SE162156.076	LB119097	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D223 1.0-1.1	SE162156.077	LB119099	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D224 0-0.1	SE162156.078	LB119099	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D224 0.2-0.3	SE162156.079	LB119099	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D224 1.0-1.1	SE162156.080	LB119099	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D225 0-0.1	SE162156.081	LB119099	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D225 0.2-0.3	SE162156.082	LB119099	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D225 1.0-1.1	SE162156.083	LB119099	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D225 1.9-2.0	SE162156.084	LB119099	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D232 0-0.1	SE162156.085	LB119099	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D232 0.2-0.3	SE162156.086	LB119099	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D232 1.0-1.1	SE162156.087	LB119099	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D233 0-0.1	SE162156.088	LB119099	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D233 0.2-0.3	SE162156.089	LB119099	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D233 1.0-1.1	SE162156.090	LB119099	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D233 1.9-2.0	SE162156.091	LB119099	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D234 0-0.1	SE162156.092	LB119099	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D234 0.2-0.3	SE162156.093	LB119099	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D234 1.0-1.1	SE162156.094	LB119099	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D235 0-0.1	SE162156.095	LB119099	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D235 0.2-0.3	SE162156.096	LB119100	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D235 1.0-1.1	SE162156.097	LB119100	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D235 1.9-2.0	SE162156.098	LB119100	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D236 0-0.1	SE162156.099	LB119100	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D236 0.2-0.3	SE162156.100	LB119100	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D236 1.0-1.1	SE162156.101	LB119100	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D237 0-0.1	SE162156.102	LB119100	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D237 0.2-0.3	SE162156.103	LB119100	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D237 1.0-1.1	SE162156.104	LB119100	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D237 1.9-2.0	SE162156.105	LB119100	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D238 0-0.1	SE162156.106	LB119100	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D238 0.2-0.3	SE162156.107	LB119100	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
D238 1.0-1.1	SE162156.108	LB119100	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
Duplicate DS1	SE162156.109	LB119100	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
Duplicate DS2	SE162156.110	LB119100	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
Duplicate DS3	SE162156.111	LB119100	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
Duplicate DS4	SE162156.112	LB119100	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
Duplicate DS5	SE162156.113	LB119100	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017

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

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

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

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Duplicate DS6	SE162156.114	LB119100	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017
Duplicate DS7	SE162156.115	LB119100	14 Feb 2017	20 Feb 2017	13 Aug 2017	21 Feb 2017	13 Aug 2017	24 Feb 2017

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

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

No surrogates were required for this job.

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

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

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

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

Sample Number	Parameter	Units	LOR

Mercury (dissolved) in Water

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

Sample Number	Parameter	Units	LOR	Result
LB119219.001	Mercury	mg/L	0.0001	<0.0001

Mercury in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB119123.001	Mercury	mg/kg	0.05	<0.05
LB119124.001	Mercury	mg/kg	0.05	<0.05
LB119125.001	Mercury	mg/kg	0.05	<0.05
LB119126.001	Mercury	mg/kg	0.05	<0.05
LB119127.001	Mercury	mg/kg	0.05	<0.05
LB119166.001	Mercury	mg/kg	0.05	<0.05
LB119167.001	Mercury	mg/kg	0.05	<0.05

Metals in Water (Dissolved) by ICPOES

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

Sample Number	Parameter	Units	LOR	Result
LB119273.001	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
	Manganese, Mn	mg/L	0.005	<0.005
	Nickel, Ni	mg/L	0.005	<0.005
	Zinc, Zn	mg/L	0.01	<0.01

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

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

Sample Number	Parameter	Units	LOR	Result
LB119094.001	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
	Manganese, Mn	mg/kg	1	<1
	Nickel, Ni	mg/kg	0.5	<0.5
	Zinc, Zn	mg/kg	0.5	<0.5
LB119095.001	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
	Manganese, Mn	mg/kg	1	<1
	Nickel, Ni	mg/kg	0.5	<0.5
	Zinc, Zn	mg/kg	0.5	<0.5
LB119096.001	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
	Manganese, Mn	mg/kg	1	<1
	Nickel, Ni	mg/kg	0.5	<0.5
	Zinc, Zn	mg/kg	0.5	<0.5
LB119097.001	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
	Manganese, Mn	mg/kg	1	<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.

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

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

Sample Number	Parameter	Units	LOR	Result
LB119097.001	Nickel, Ni	mg/kg	0.5	<0.5
	Zinc, Zn	mg/kg	0.5	<0.5
LB119099.001	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
	Manganese, Mn	mg/kg	1	<1
	Nickel, Ni	mg/kg	0.5	<0.5
	Zinc, Zn	mg/kg	0.5	<0.5
LB119100.001	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
	Manganese, Mn	mg/kg	1	<1
	Nickel, Ni	mg/kg	0.5	<0.5
	Zinc, Zn	mg/kg	0.5	<0.5

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

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

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

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

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE162275.019	LB119219.010	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 %
SE162154.010	LB119123.014	Mercury	mg/kg	0.05	0.26	0.27	49	3
SE162156.009	LB119123.024	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE162156.019	LB119124.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE162156.028	LB119124.024	Mercury	mg/kg	0.05	0.08	0.09	91	11
SE162156.038	LB119125.014	Mercury	mg/kg	0.05	<0.05	0.05	132	3
SE162156.047	LB119125.024	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE162156.057	LB119126.014	Mercury	mg/kg	0.05	<0.05	<0.05	147	0
SE162156.066	LB119126.024	Mercury	mg/kg	0.05	0.06	0.06	114	13
SE162156.076	LB119127.014	Mercury	mg/kg	0.05	<0.05	<0.05	162	0
SE162156.085	LB119127.024	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE162156.095	LB119166.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE162156.104	LB119166.024	Mercury	mg/kg	0.05	<0.05	<0.05	193	0
SE162156.114	LB119167.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE162175.008	LB119167.024	Mercury	mg/kg	0.05	<0.05	<0.05	200	0

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE162156.010	LB119000.011	% Moisture	%w/w	0.5	18	16	36	12
SE162156.020	LB119000.022	% Moisture	%w/w	0.5	7.5	7.4	43	2
SE162156.030	LB119000.033	% Moisture	%w/w	0.5	7.1	7.2	44	0
SE162156.040	LB119000.044	% Moisture	%w/w	0.5	6.7	6.3	45	5
SE162156.050	LB119000.055	% Moisture	%w/w	0.5	19	15	36	23
SE162156.060	LB119000.066	% Moisture	%w/w	0.5	15	21	35	31
SE162156.070	LB119000.077	% Moisture	%w/w	0.5	18	19	35	5
SE162156.080	LB119000.088	% Moisture	%w/w	0.5	7.7	8.9	42	14
SE162156.090	LB119000.099	% Moisture	%w/w	0.5	28	23	34	19
SE162156.100	LB119000.110	% Moisture	%w/w	0.5	6.7	6.8	45	2
SE162156.110	LB119000.121	% Moisture	%w/w	0.5	4.0	4.2	54	4
SE162156.115	LB119000.127	% Moisture	%w/w	0.5	4.0	4.4	54	10

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE162156.041	LB119004.014	pH	pH Units	-	5.8	5.6	32	2
SE162156.077	LB119004.025	pH	pH Units	-	8.0	8.3	31	2

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE162156.010	LB119094.014	Arsenic, As	mg/kg	3	82	86	31	6
		Cadmium, Cd	mg/kg	0.3	0.5	0.5	86	1
		Chromium, Cr	mg/kg	0.3	35	36	31	3
		Copper, Cu	mg/kg	0.5	60	66	31	11
		Lead, Pb	mg/kg	1	98	100	31	3
		Manganese, Mn	mg/kg	1	170	170	31	4
		Nickel, Ni	mg/kg	0.5	17	17	33	0
		Zinc, Zn	mg/kg	0.5	380	360	31	4
SE162156.019	LB119094.024	Arsenic, As	mg/kg	3	32	31	33	2
		Cadmium, Cd	mg/kg	0.3	0.4	0.4	100	2
		Chromium, Cr	mg/kg	0.3	17	19	33	7
		Copper, Cu	mg/kg	0.5	6.2	7.3	37	17
		Lead, Pb	mg/kg	1	15	13	37	15
		Manganese, Mn	mg/kg	1	170	140	31	22
		Nickel, Ni	mg/kg	0.5	12	12	34	1
		Zinc, Zn	mg/kg	0.5	87	94	32	8
SE162156.029	LB119095.014	Arsenic, As	mg/kg	3	1200	1100	30	4
		Cadmium, Cd	mg/kg	0.3	4.7	3.8	37	22

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

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

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

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

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

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE162156.029	LB119095.014	Chromium, Cr	mg/kg	0.3	28	31	32	9
		Copper, Cu	mg/kg	0.5	250	230	30	10
		Lead, Pb	mg/kg	1	140	140	31	4
		Manganese, Mn	mg/kg	1	720	680	30	6
		Nickel, Ni	mg/kg	0.5	25	22	32	11
		Zinc, Zn	mg/kg	0.5	2500	2300	30	8
SE162156.038	LB119095.024	Arsenic, As	mg/kg	3	86	91	31	5
		Cadmium, Cd	mg/kg	0.3	0.5	0.5	88	0
		Chromium, Cr	mg/kg	0.3	41	42	31	3
		Copper, Cu	mg/kg	0.5	40	42	31	4
		Lead, Pb	mg/kg	1	100	100	31	3
		Manganese, Mn	mg/kg	1	150	130	31	18
		Nickel, Ni	mg/kg	0.5	10	9.9	35	1
		Zinc, Zn	mg/kg	0.5	140	140	31	5
SE162156.048	LB119096.014	Arsenic, As	mg/kg	3	44	47	32	7
		Cadmium, Cd	mg/kg	0.3	0.5	0.5	93	4
		Chromium, Cr	mg/kg	0.3	31	34	32	11
		Copper, Cu	mg/kg	0.5	25	25	32	1
		Lead, Pb	mg/kg	1	140	120	31	12
		Manganese, Mn	mg/kg	1	1500	1300	30	12
		Nickel, Ni	mg/kg	0.5	14	14	34	1
		Zinc, Zn	mg/kg	0.5	160	170	31	3
SE162156.057	LB119096.024	Arsenic, As	mg/kg	3	16	15	36	7
		Cadmium, Cd	mg/kg	0.3	0.3	<0.3	127	7
		Chromium, Cr	mg/kg	0.3	16	15	33	7
		Copper, Cu	mg/kg	0.5	34	33	32	4
		Lead, Pb	mg/kg	1	17	17	36	3
		Manganese, Mn	mg/kg	1	130	140	31	9
		Nickel, Ni	mg/kg	0.5	11	11	35	4
		Zinc, Zn	mg/kg	0.5	66	64	33	2
SE162156.067	LB119097.014	Arsenic, As	mg/kg	3	38	40	33	5
		Cadmium, Cd	mg/kg	0.3	0.4	0.4	113	7
		Chromium, Cr	mg/kg	0.3	28	30	32	6
		Copper, Cu	mg/kg	0.5	40	40	31	1
		Lead, Pb	mg/kg	1	56	62	32	11
		Manganese, Mn	mg/kg	1	64	68	32	6
		Nickel, Ni	mg/kg	0.5	9.3	9.5	35	2
		Zinc, Zn	mg/kg	0.5	72	74	33	2
SE162156.076	LB119097.024	Arsenic, As	mg/kg	3	53	57	32	8
		Cadmium, Cd	mg/kg	0.3	0.6	0.7	73	14
		Chromium, Cr	mg/kg	0.3	42	49	31	16
		Copper, Cu	mg/kg	0.5	34	34	31	2
		Lead, Pb	mg/kg	1	120	120	31	0
		Manganese, Mn	mg/kg	1	99	120	31	22
		Nickel, Ni	mg/kg	0.5	15	16	33	3
		Zinc, Zn	mg/kg	0.5	150	160	31	8
SE162156.086	LB119099.014	Arsenic, As	mg/kg	3	44	53	32	20
		Cadmium, Cd	mg/kg	0.3	0.3	0.4	115	7
		Chromium, Cr	mg/kg	0.3	32	32	32	1
		Copper, Cu	mg/kg	0.5	60	83	31	31 ②
		Lead, Pb	mg/kg	1	230	240	30	1
		Manganese, Mn	mg/kg	1	220	220	30	2
		Nickel, Ni	mg/kg	0.5	19	20	33	7
		Zinc, Zn	mg/kg	0.5	130	140	32	5
SE162156.095	LB119099.024	Arsenic, As	mg/kg	3	11	10	40	14
		Cadmium, Cd	mg/kg	0.3	0.3	<0.3	128	4
		Chromium, Cr	mg/kg	0.3	27	27	32	2
		Copper, Cu	mg/kg	0.5	20	18	33	11
		Lead, Pb	mg/kg	1	16	16	36	1
		Manganese, Mn	mg/kg	1	870	900	30	4
		Nickel, Ni	mg/kg	0.5	13	12	34	5

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

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

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

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

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE162156.095	LB119099.024	Zinc, Zn	mg/kg	0.5	50	48	34	4
SE162156.105	LB119100.014	Arsenic, As	mg/kg	3	16	14	37	8
		Cadmium, Cd	mg/kg	0.3	0.3	0.3	127	4
		Chromium, Cr	mg/kg	0.3	22	21	32	5
		Copper, Cu	mg/kg	0.5	25	23	32	9
		Lead, Pb	mg/kg	1	21	20	35	5
		Manganese, Mn	mg/kg	1	220	260	30	14
		Nickel, Ni	mg/kg	0.5	20	19	33	4
		Zinc, Zn	mg/kg	0.5	62	62	33	1
SE162156.114	LB119100.024	Arsenic, As	mg/kg	3	12	12	38	2
		Cadmium, Cd	mg/kg	0.3	<0.3	0.3	135	1
		Chromium, Cr	mg/kg	0.3	21	22	32	7
		Copper, Cu	mg/kg	0.5	19	20	33	5
		Lead, Pb	mg/kg	1	23	22	34	5
		Manganese, Mn	mg/kg	1	950	1200	30	21
		Nickel, Ni	mg/kg	0.5	8.3	8.9	36	7
		Zinc, Zn	mg/kg	0.5	43	45	35	5

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

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

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

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB119044.002	Exchangeable Sodium, Na	mg/kg	2	NA	390	80 - 120	96
	Exchangeable Potassium, K	mg/kg	2	NA	343	80 - 120	93
	Exchangeable Calcium, Ca	mg/kg	2	NA	2570	80 - 120	93
	Exchangeable Magnesium, Mg	mg/kg	2	NA	635	80 - 120	92
LB119135.002	Exchangeable Sodium, Na	mg/kg	2	NA	390	80 - 120	93
	Exchangeable Potassium, K	mg/kg	2	NA	343	80 - 120	90
	Exchangeable Calcium, Ca	mg/kg	2	NA	2570	80 - 120	93
	Exchangeable Magnesium, Mg	mg/kg	2	NA	635	80 - 120	91

Mercury in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB119123.002	Mercury	mg/kg	0.05	0.19	0.2	70 - 130	95
LB119124.002	Mercury	mg/kg	0.05	0.19	0.2	70 - 130	93
LB119125.002	Mercury	mg/kg	0.05	0.17	0.2	70 - 130	87
LB119126.002	Mercury	mg/kg	0.05	0.18	0.2	70 - 130	90
LB119127.002	Mercury	mg/kg	0.05	0.20	0.2	70 - 130	102
LB119166.002	Mercury	mg/kg	0.05	0.18	0.2	70 - 130	91
LB119167.002	Mercury	mg/kg	0.05	0.20	0.2	70 - 130	101

Metals in Water (Dissolved) by ICPOES

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB119273.002	Arsenic, As	mg/L	0.02	2.0	2	80 - 120	99
	Cadmium, Cd	mg/L	0.001	2.0	2	80 - 120	100
	Chromium, Cr	mg/L	0.005	2.0	2	80 - 120	101
	Copper, Cu	mg/L	0.005	2.0	2	80 - 120	100
	Lead, Pb	mg/L	0.02	2.0	2	80 - 120	101
	Manganese, Mn	mg/L	0.005	2.0	2	80 - 120	100
	Nickel, Ni	mg/L	0.005	2.0	2	80 - 120	101
	Zinc, Zn	mg/L	0.01	2.0	2	80 - 120	100

pH in soil (1:5)

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB119004.003	pH	pH Units	-	7.4	7.415	98 - 102	100

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

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB119094.002	Arsenic, As	mg/kg	3	52	50	80 - 120	104
	Cadmium, Cd	mg/kg	0.3	54	50	80 - 120	107
	Chromium, Cr	mg/kg	0.3	51	50	80 - 120	103
	Copper, Cu	mg/kg	0.5	51	50	80 - 120	103
	Lead, Pb	mg/kg	1	53	50	80 - 120	105
	Manganese, Mn	mg/kg	1	51	50	80 - 120	103
	Nickel, Ni	mg/kg	0.5	53	50	80 - 120	106
	Zinc, Zn	mg/kg	0.5	52	50	80 - 120	104
LB119095.002	Arsenic, As	mg/kg	3	53	50	80 - 120	105
	Cadmium, Cd	mg/kg	0.3	53	50	80 - 120	106
	Chromium, Cr	mg/kg	0.3	52	50	80 - 120	103
	Copper, Cu	mg/kg	0.5	51	50	80 - 120	102
	Lead, Pb	mg/kg	1	53	50	80 - 120	106
	Manganese, Mn	mg/kg	1	52	50	80 - 120	104
	Nickel, Ni	mg/kg	0.5	54	50	80 - 120	107
	Zinc, Zn	mg/kg	0.5	52	50	80 - 120	104
LB119096.002	Arsenic, As	mg/kg	3	53	50	80 - 120	106
	Cadmium, Cd	mg/kg	0.3	54	50	80 - 120	108
	Chromium, Cr	mg/kg	0.3	52	50	80 - 120	103
	Copper, Cu	mg/kg	0.5	52	50	80 - 120	104
	Lead, Pb	mg/kg	1	53	50	80 - 120	105
	Manganese, Mn	mg/kg	1	52	50	80 - 120	104
	Nickel, Ni	mg/kg	0.5	54	50	80 - 120	107
	Zinc, Zn	mg/kg	0.5	53	50	80 - 120	105
LB119097.002	Arsenic, As	mg/kg	3	51	50	80 - 120	102

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

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

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB119097.002	Cadmium, Cd	mg/kg	0.3	50	50	80 - 120	100
	Chromium, Cr	mg/kg	0.3	52	50	80 - 120	104
	Copper, Cu	mg/kg	0.5	52	50	80 - 120	105
	Lead, Pb	mg/kg	1	51	50	80 - 120	101
	Manganese, Mn	mg/kg	1	52	50	80 - 120	104
	Nickel, Ni	mg/kg	0.5	52	50	80 - 120	105
	Zinc, Zn	mg/kg	0.5	53	50	80 - 120	106
LB119099.002	Arsenic, As	mg/kg	3	45	50	80 - 120	91
	Cadmium, Cd	mg/kg	0.3	45	50	80 - 120	90
	Chromium, Cr	mg/kg	0.3	45	50	80 - 120	89
	Copper, Cu	mg/kg	0.5	44	50	80 - 120	88
	Lead, Pb	mg/kg	1	45	50	80 - 120	90
	Manganese, Mn	mg/kg	1	46	50	80 - 120	91
	Nickel, Ni	mg/kg	0.5	45	50	80 - 120	89
	Zinc, Zn	mg/kg	0.5	45	50	80 - 120	90
LB119100.002	Arsenic, As	mg/kg	3	52	50	80 - 120	104
	Cadmium, Cd	mg/kg	0.3	52	50	80 - 120	104
	Chromium, Cr	mg/kg	0.3	52	50	80 - 120	104
	Copper, Cu	mg/kg	0.5	51	50	80 - 120	103
	Lead, Pb	mg/kg	1	52	50	80 - 120	104
	Manganese, Mn	mg/kg	1	52	50	80 - 120	105
	Nickel, Ni	mg/kg	0.5	52	50	80 - 120	104
	Zinc, Zn	mg/kg	0.5	53	50	80 - 120	105

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

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

Mercury (dissolved) in Water

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE162156.116	LB119219.004	Mercury	mg/L	0.0001	0.0082	<0.0001	0.008	103

Mercury in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE162154.001	LB119123.004	Mercury	mg/kg	0.05	0.43	0.27	0.2	80
SE162156.010	LB119124.004	Mercury	mg/kg	0.05	0.16	<0.05	0.2	73
SE162156.029	LB119125.004	Mercury	mg/kg	0.05	0.27	0.11	0.2	82
SE162156.048	LB119126.004	Mercury	mg/kg	0.05	0.20	<0.05	0.2	86
SE162156.067	LB119127.004	Mercury	mg/kg	0.05	0.16	<0.05	0.2	54 ④
SE162156.086	LB119166.004	Mercury	mg/kg	0.05	0.18	<0.05	0.2	66 ④
SE162156.105	LB119167.004	Mercury	mg/kg	0.05	0.20	<0.05	0.2	93

Metals in Water (Dissolved) by ICPOES

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE162156.116	LB119273.004	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	101
		Lead, Pb	mg/L	0.02	2.0	<0.02	2	102
		Manganese, Mn	mg/L	0.005	2.0	<0.005	2	100
		Nickel, Ni	mg/L	0.005	2.0	<0.005	2	101
		Zinc, Zn	mg/L	0.01	2.0	<0.01	2	100
SE162321.014	LB119273.030	Arsenic, As	mg/L	0.02	2.1	<0.02	2	104
		Cadmium, Cd	mg/L	0.001	2.1	<0.001	2	104
		Chromium, Cr	mg/L	0.005	2.1	<0.005	2	104
		Copper, Cu	mg/L	0.005	2.1	<0.005	2	105
		Lead, Pb	mg/L	0.02	2.1	<0.02	2	106
		Nickel, Ni	mg/L	0.005	2.1	<0.005	2	105
		Zinc, Zn	mg/L	0.01	2.1	<0.01	2	105

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

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE162156.001	LB119094.004	Arsenic, As	mg/kg	3	240	190	50	90
		Cadmium, Cd	mg/kg	0.3	43	0.8	50	85
		Chromium, Cr	mg/kg	0.3	75	36	50	79
		Copper, Cu	mg/kg	0.5	79	35	50	89
		Lead, Pb	mg/kg	1	150	120	50	49 ⑨
		Manganese, Mn	mg/kg	1	2600	2600	50	-116 ⑤
		Nickel, Ni	mg/kg	0.5	54	10	50	86
		Zinc, Zn	mg/kg	0.5	260	220	50	79
SE162156.020	LB119095.004	Arsenic, As	mg/kg	3	66	27	50	77
		Cadmium, Cd	mg/kg	0.3	41	0.4	50	81
		Chromium, Cr	mg/kg	0.3	59	20	50	77
		Copper, Cu	mg/kg	0.5	68	21	50	95
		Lead, Pb	mg/kg	1	58	18	50	78
		Manganese, Mn	mg/kg	1	380	350	50	53 ⑨
		Nickel, Ni	mg/kg	0.5	53	13	50	80
		Zinc, Zn	mg/kg	0.5	97	55	50	84
SE162156.039	LB119096.004	Arsenic, As	mg/kg	3	100	57	50	89
		Cadmium, Cd	mg/kg	0.3	45	0.4	50	90
		Chromium, Cr	mg/kg	0.3	82	39	50	85
		Copper, Cu	mg/kg	0.5	64	18	50	92
		Lead, Pb	mg/kg	1	150	110	50	90
		Manganese, Mn	mg/kg	1	620	520	50	214 ⑤
		Nickel, Ni	mg/kg	0.5	51	5.9	50	90
		Zinc, Zn	mg/kg	0.5	140	75	50	121
SE162156.058	LB119097.004	Arsenic, As	mg/kg	3	110	59	50	104
		Cadmium, Cd	mg/kg	0.3	45	0.6	50	88
		Chromium, Cr	mg/kg	0.3	97	56	50	82
		Copper, Cu	mg/kg	0.5	60	9.5	50	101

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

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

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE162156.058	LB119097.004	Lead, Pb	mg/kg	1	200	150	50	106
		Manganese, Mn	mg/kg	1	1500	1400	50	167 ⑤
		Nickel, Ni	mg/kg	0.5	52	5.0	50	93
		Zinc, Zn	mg/kg	0.5	130	88	50	82
SE162156.077	LB119099.004	Arsenic, As	mg/kg	3	65	26	50	78
		Cadmium, Cd	mg/kg	0.3	39	1.2	50	75
		Chromium, Cr	mg/kg	0.3	72	38	50	68 ⑨
		Copper, Cu	mg/kg	0.5	65	25	50	81
		Lead, Pb	mg/kg	1	110	63	50	91
		Manganese, Mn	mg/kg	1	460	370	50	183 ⑤
		Nickel, Ni	mg/kg	0.5	67	30	50	73
		Zinc, Zn	mg/kg	0.5	290	310	50	-45 ⑤

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

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

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

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

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

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

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

*	NATA accreditation does not cover tthe performance of this service.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.

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

E-MAILED 20/2/17 @ 4.26 am

SGS EHS Alexandria Laboratory

SE162156 COC

Received: 20 – Feb – 2017

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161
email: info@geotech.com.au

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

PH: 02 8594 0400 FAX: 02 8594 0499

ATTN: MS EMILY YIN

Sampling By: SS/JH
Job No: 12675/4
Project:
Project Manager: JX
Location: Googong NH1A-7 & NH2

Results required by: Normal TAT

	Location	Depth (m)	Date	Time	Soil	Water	Heavy Metals As, Cd, Cr, Cu, Pb, Mn, Hg, Ni and Zn	pH	CEC							KEEP SAMPLE
1	D201	0-0.1	13/02/2017	-	SG		✓	✓	✓							YES
2	D201	0.2-0.3	13/02/2017	-	SG		✓									YES
3	D201	1.0-1.1	13/02/2017	-	SG		✓									YES
4	D201	1.9-2.0	13/02/2017	-	SG		✓	✓	✓							YES
5	D202	0-0.1	13/02/2017	-	SG		✓									YES
6	D202	0.2-0.3	13/02/2017	-	SG		✓									YES
7	D202	1.0-1.1	13/02/2017	-	SG		✓									YES
8	D203	0-0.1	14/02/2017	-	SG		✓									YES
9	D203	0.2-0.3	14/02/2017	-	SG		✓									YES
10	D203	0.9-1.0	14/02/2017	-	SG		✓									YES
11	D204	0-0.1	14/02/2017	-	SG		✓	✓								YES
12	D204	0.2-0.3	14/02/2017	-	SG		✓	✓								YES
13	D204	1.0-1.1	14/02/2017	-	SG		✓									YES

Relinquished by: Name	Signature	Date	Received by: Name	Signature	Date
JOHN XU	jx	20/02/2017	Suba	B. Baby	20/2/17 @ 11:30

Legend:

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

* Purge & Trap

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161
email: info@geotech.com.au

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

PH: 02 8594 0400 FAX: 02 8594 0499

ATTN: MS EMILY YIN

Sampling By: SS/JH
Job No: 12675/4
Project:
Project Manager: JX
Location: Googong NH1A-7 & NH2

Results required by: Normal TAT

	Location	Depth (m)	Date	Time	Soil	Water	Heavy Metals As, Cd, Cr, Cu, Pb, Mn, Hg, Ni and Zn	pH	CEC							KEEP SAMPLE
14	D205	0-0.1	14/02/2017	-	SG		✓									YES
15	D205	0.2-0.3	14/02/2017	-	SG		✓									YES
16	D205	0.7-0.8	14/02/2017	-	SG		✓									YES
17	D206	0-0.1	14/02/2017	-	SG		✓	✓	✓							YES
18	D206	0.2-0.3	14/02/2017	-	SG		✓	✓	✓							YES
19	D206	0.6-0.7	14/02/2017	-	SG		✓									YES
20	D207	0-0.1	14/02/2017	-	SG		✓									YES
21	D207	0.2-0.3	14/02/2017	-	SG		✓									YES
22	D207	1.0-1.1	14/02/2017	-	SG		✓									YES
23	D208	0-0.1	14/02/2017	-	SG		✓									YES
24	D208	0.2-0.3	14/02/2017	-	SG		✓									YES
25	D208	1.0-1.1	14/02/2017	-	SG		✓									YES

Relinquished by: Name	Signature	Date	Received by: Name	Signature	Date
JOHN XU	jx	20/02/2017 17/02/2017	Suba	[signature]	20/02/17 @ 11:30

Legend:
WG Water sample, glass bottle
WP Water sample, plastic bottle
SG Soil sample (glass jar)
SP Soil sample (plastic bag)
✓ Test required
* Purge & Trap

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750
P O Box 880
PENRITH NSW 2751
Tel: (02) 4722 2700
Fax: (02) 4722 6161
email: info@geotech.com.au

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

PH: 02 8594 0400 FAX: 02 8594 0499

ATTN: MS EMILY YIN

Sampling By: SS/JH
Job No: 12675/4
Project:
Project Manager: JX
Location: Googong NH1A-7 & NH2

Results required by: Normal TAT

	Location	Depth (m)	Date	Time	Soil	Water	Heavy Metals As, Cd, Cr, Cu, Pb, Mn, Hg, Ni and Zn	pH	CEC							KEEP SAMPLE
26	D209	0-0.1	13/02/2017	-	SG		✓	✓	✓							YES
27	D209	0.2-0.3	13/02/2017	-	SG		✓									YES
28	D209	1.0-1.1	13/02/2017	-	SG		✓									YES
29	D209	1.9-2.0	13/02/2017	-	SG		✓									YES
30	D210	0-0.1	13/02/2017	-	SG		✓									YES
31	D210	0.2-0.3	13/02/2017	-	SG		✓									YES
32	D210	1.0-1.1	13/02/2017	-	SG		✓									YES
33	D211	0-0.1	14/02/2017	-	SG		✓	✓	✓							YES
34	D211	0.2-0.3	14/02/2017	-	SG		✓									YES
35	D211	1.0-1.1	14/02/2017	-	SG		✓									YES
36	D211	1.9-2.0	14/02/2017	-	SG		✓									YES
37	D212	0-0.1	14/02/2017	-	SG		✓									YES
38	D212	0.2-0.3	14/02/2017	-	SG		✓									YES
39	D212	1.0-1.1	14/02/2017	-	SG		✓	✓	✓							YES

Relinquished by: Name	Signature	Date	Received by: Name	Signature	Date
JOHN XU	jx	20/02/2017	Suba	[signature]	20/2/17 @ 11:30

Legend:
WG Water sample, glass bottle
WP Water sample, plastic bottle
SG Soil sample (glass jar)
SP Soil sample (plastic bag)
✓ Test required
* Purge & Trap

Form No 4.7F3-11 SGS

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
email: info@geotech.com.au

TO:	SGS ENVIRONMENTAL SERVICES UNIT 16 33 MADDOX STREET ALEXANDRIA NSW 2015	Sampling By:	SS/JH
		Job No:	12675/4
		Project:	
PH:	02 8594 0400	FAX:	02 8594 0499
		Project Manager:	JX
		Location:	Googong NH1A-7 & NH2
ATTN:	MS EMILY YIN		

Results required by: Normal TAT

	Sampling details: Location	Depth (m)	Date	Time	Sample type: Soil	Water	Heavy Metals As, Cd, Cr, Cu, Pb, Mn, Hg, Ni and Zn	pH	CEC							KEEP SAMPLE
40	D213	0-0.1	13/02/2017	-	SG		✓									YES
41	D213	0.2-0.3	13/02/2017	-	SG		✓	✓	✓							YES
42	D213	1.0-1.1	13/02/2017	-	SG		✓	✓	✓							YES
43	D213	1.9-2.0	13/02/2017	-	SG		✓									YES
44	D214	0-0.1	13/02/2017	-	SG		✓									YES
45	D214	0.2-0.3	13/02/2017	-	SG		✓									YES
46	D214	1.0-1.1	13/02/2017	-	SG		✓									YES
47	D215	0-0.1	14/02/2017	-	SG		✓									YES
48	D215	0.2-0.3	14/02/2017	-	SG		✓	✓	✓							YES
49	D215	1.0-1.1	14/02/2017	-	SG		✓	✓	✓							YES
50	D215	1.9-2.0	14/02/2017	-	SG		✓									YES
51	D216	0-0.1	14/02/2017	-	SG		✓									YES
52	D216	0.2-0.3	14/02/2017	-	SG		✓	✓	✓							YES
53	D216	1.0-1.1	14/02/2017	-	SG		✓	✓	✓							YES

Relinquished by: Name	Signature	Date	Received by: Name	Signature	Date
JOHN XU	jx	20/02/2017	Suba	[signature]	20/2/17 @ 11:30

Legend:

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

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		Job No:	12675/4
		Project:	
PH:	02 8594 0400	FAX:	02 8594 0499
		Project Manager:	JX
		Location:	Googong NH1A-7 & NH2
ATTN:	MS EMILY YIN		

Results required by: Normal TAT

Location	Depth (m)	Date	Time	Soil	Water	Heavy Metals As, Cd, Cr, Cu, Pb, Mn, Hg, Ni and Zn	pH	CEC							KEEP SAMPLE
54 D217	0-0.1	14/02/2017	-	SG		✓									YES
55 D217	0.2-0.3	14/02/2017	-	SG		✓		✓							YES
56 D217	1.0-1.1	14/02/2017	-	SG		✓	✓	✓							YES
57 D217	1.9-2.0	14/02/2017	-	SG		✓									YES
58 D218	0-0.1	14/02/2017	-	SG		✓		✓							YES
59 D218	0.2-0.3	14/02/2017	-	SG		✓		✓							YES
60 D218	1.0-1.1	14/02/2017	-	SG		✓		✓							YES
61 D219	0-0.1	14/02/2017	-	SG		✓		✓							YES
62 D219	0.2-0.3	14/02/2017	-	SG		✓									YES
63 D219	1.0-1.1	14/02/2017	-	SG		✓									YES
64 D219	1.9-2.0	14/02/2017	-	SG		✓	✓	✓							YES
65 D220	0-0.1	14/02/2017	-	SG		✓									YES
66 D220	0.2-0.3	14/02/2017	-	SG		✓									YES
67 D220	1.0-1.1	14/02/2017	-	SG		✓									YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	20/02/2017	Suba	[signature]	20/2/17 @ 11:30

Legend:

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

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				Project:	
PH:	02 8594 0400 FAX: 02 8594 0499	Project Manager:	JX	Location:	Googong NH1A-7 & NH2
ATTN:	MS EMILY YIN				

Results required by: Normal TAT

Sampling details: Location	Depth (m)	Date	Time	Sample type: Soil	Water	Heavy Metals As, Cd, Cr, Cu, Pb, Mn, Hg, Ni and Zn	pH	CEC							KEEP SAMPLE
68 D221	0-0.1	14/02/2017	-	SG		✓									YES
69 D221	0.2-0.3	14/02/2017	-	SG		✓									YES
70 D221	1.0-1.1	14/02/2017	-	SG		✓									YES
71 D221	1.9-2.0	14/02/2017	-	SG		✓									YES
72 D222	0-0.1	14/02/2017	-	SG		✓									YES
73 D222	0.2-0.3	14/02/2017	-	SG		✓									YES
74 D222	1.0-1.1	14/02/2017	-	SG		✓									YES
75 D223	0-0.1	14/02/2017	-	SG		✓	✓	✓							YES
76 D223	0.2-0.3	14/02/2017	-	SG		✓	✓	✓							YES
77 D223	1.0-1.1	14/02/2017	-	SG		✓	✓	✓							YES
78 D224	0-0.1	14/02/2017	-	SG		✓									YES
79 D224	0.2-0.3	14/02/2017	-	SG		✓									YES
80 D224	1.0-1.1	14/02/2017	-	SG		✓		✓							YES

Relinquished by: Name	Signature	Date	Received by: Name	Signature	Date
JOHN XU	jx	20/02/2017	Suba	[illegible]	20/2/17 @ 11:30

Legend:

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

* Purge & Trap

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TO:	SGS ENVIRONMENTAL SERVICES UNIT 16 33 MADDOX STREET ALEXANDRIA NSW 2015	Sampling By: SS/JH	Job No: 12675/4
			Project:
PH: 02 8594 0400	FAX: 02 8594 0499	Project Manager: JX	Location: Googong NH1A-7 & NH2
ATTN:	MS EMILY YIN		

Results required by: Normal TAT

Sampling details				Sample type												
Location	Depth (m)	Date	Time	Soil	Water	Heavy Metals As, Cd, Cr, Cu, Pb, Mn, Hg, Ni and Zn	pH	CEC							KEEP SAMPLE
81 D225	0-0.1	14/02/2017	-	SG		✓									YES
82 D225	0.2-0.3	14/02/2017	-	SG		✓									YES
83 D225	1.0-1.1	14/02/2017	-	SG		✓									YES
84 D225	1.9-2.0	14/02/2017	-	SG		✓	✓	✓							YES
85 D232	0-0.1	14/02/2017	-	SG		✓									YES
86 D232	0.2-0.3	14/02/2017	-	SG		✓									YES
87 D232	1.0-1.1	14/02/2017	-	SG		✓	✓	✓							YES
88 D233	0-0.1	14/02/2017	-	SG		✓									YES
89 D233	0.2-0.3	14/02/2017	-	SG		✓									YES
90 D233	1.0-1.1	14/02/2017	-	SG		✓									YES
91 D233	1.9-2.0	14/02/2017	-	SG		✓									YES
92 D234	0-0.1	14/02/2017	-	SG		✓									YES
93 D234	0.2-0.3	14/02/2017	-	SG		✓									YES
94 D234	1.0-1.1	14/02/2017	-	SG		✓									YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	20/02/2017	Suba	Subay	20/2/17 @ 11:30

Legend:

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

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TO:	SGS ENVIRONMENTAL SERVICES UNIT 16 33 MADDOX STREET ALEXANDRIA NSW 2015	Sampling By:	SS/JH
		Job No:	12675/4
		Project:	
PH:	02 8594 0400	FAX:	02 8594 0499
Project Manager:	JX	Location:	Googong NH1A-7 & NH2
ATTN:	MS EMILY YIN		

Results required by: Normal TAT

Sampling details				Sample type											
Location	Depth (m)	Date	Time	Soil	Water	Heavy Metals As, Cd, Cr, Cu, Pb, Mn, Hg, Ni and Zn	pH	CEC							KEEP SAMPLE
95 D235	0-0.1	14/02/2017	-	SG		✓									YES
96 D235	0.2-0.3	14/02/2017	-	SG		✓		✓							YES
97 D235	1.0-1.1	14/02/2017	-	SG		✓		✓							YES
98 D235	1.9-2.0	14/02/2017	-	SG		✓		✓							YES
99 D236	0-0.1	14/02/2017	-	SG		✓		✓							YES
100 D236	0.2-0.3	14/02/2017	-	SG		✓		✓							YES
101 D236	1.0-1.1	14/02/2017	-	SG		✓									YES
102 D237	0-0.1	14/02/2017	-	SG		✓									YES
103 D237	0.2-0.3	14/02/2017	-	SG		✓									YES
104 D237	1.0-1.1	14/02/2017	-	SG		✓									YES
105 D237	1.9-2.0	14/02/2017	-	SG		✓		✓							YES
106 D238	0-0.1	14/02/2017	-	SG		✓									YES
107 D238	0.2-0.3	14/02/2017	-	SG		✓		✓							YES
108 D238	1.0-1.1	14/02/2017	-	SG		✓		✓							YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	20/02/2017	Suba	P. Dube	20/2/17 @ 11:30

Legend:

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

* Purge & Trap

Form No 4.7F3-11 SGS

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Fax: (02) 4722 6161
email: info@geotech.com.au

TO: SGS ENVIRONMENTAL SERVICES UNIT 16 33 MADDOX STREET ALEXANDRIA NSW 2015	Sampling By: SS/JH Job No: 12675/4 Project:
PH: 02 8594 0400 FAX: 02 8594 0499	Project Manager: JX Location: Googong NH1A-7 & NH2
ATTN: MS EMILY YIN	

Results required by: Normal TAT

Sampling details				Sample type										
Location	Depth (m)	Date	Time	Soil	Water	Heavy Metals As, Cd, Cr, Cu, Pb, Mn, Hg, Ni and Zn	pH	CEC						KEEP SAMPLE
109 Duplicate DS1		14/02/2017	-	SG		✓								YES
110 Duplicate DS2		14/02/2017	-	SG		✓								YES
111 Duplicate DS3		14/02/2017	-	SG		✓								YES
112 Duplicate DS4		14/02/2017	-	SG		✓								YES
113 Duplicate DS5		14/02/2017	-	SG		✓								YES
114 Duplicate DS6		14/02/2017	-	SG		✓								YES
115 Duplicate DS7		14/02/2017	-	SG		✓								YES
116 Rinsate RS1		13/02/2017	-		WG	✓								YES
117 Rinsate RS2		14/02/2017	-		WG	✓								YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	20/02/2017	Suba	Suba	20/2/17 @ 11:30

Legend:

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

SAMPLE RECEIPT ADVICE

SE162156

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**Googong NH1A-7 & NH2**
Order Number	(Not specified)
Samples	117

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 20/2/2017
Report Due	Mon 27/2/2017
SGS Reference	**SE162156**

SUBMISSION DETAILS

This is to confirm that 117 samples were received on Monday 20/2/2017. Results are expected to be ready by Monday 27/2/2017. Please quote SGS reference SE162156 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	115 Soil, 2 Water
Date documentation received	20/2/2017	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	17.3°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

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

COMMENTS

SAMPLE RECEIPT ADVICE

SE162156

CLIENT DETAILS

Client Geotechnique

Project Googong NH1A-7 & NH2

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	Mercury in Soil	Moisture Content	pH in soil (1:5)	Total Recoverable Metals in Soil/Waste
001	D201 0-0.1	13	1	1	1	8
002	D201 0.2-0.3	-	1	1	-	8
003	D201 1.0-1.1	-	1	1	-	8
004	D201 1.9-2.0	13	1	1	1	8
005	D202 0-0.1	-	1	1	-	8
006	D202 0.2-0.3	-	1	1	-	8
007	D202 1.0-1.1	-	1	1	-	8
008	D203 0-0.1	-	1	1	-	8
009	D203 0.2-0.3	-	1	1	-	8
010	D203 0.9-1.0	-	1	1	-	8
011	D204 0-0.1	-	1	1	1	8
012	D204 0.2-0.3	-	1	1	1	8
013	D204 1.0-1.1	-	1	1	-	8
014	D205 0-0.1	-	1	1	-	8
015	D205 0.2-0.3	-	1	1	-	8
016	D205 0.7-0.8	-	1	1	-	8
017	D206 0-0.1	13	1	1	1	8
018	D206 0.2-0.3	13	1	1	1	8
019	D206 0.6-0.7	-	1	1	-	8
020	D207 0-0.1	-	1	1	-	8
021	D207 0.2-0.3	-	1	1	-	8
022	D207 1.0-1.1	-	1	1	-	8
023	D208 0-0.1	-	1	1	-	8
024	D208 0.2-0.3	-	1	1	-	8

CONTINUED OVERLEAF

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

SAMPLE RECEIPT ADVICE

SE162156

CLIENT DETAILS

Client Geotechnique

Project Googong NH1A-7 & NH2

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	Mercury in Soil	Moisture Content	pH in soil (1:5)	Total Recoverable Metals in Soil/Waste
025	D208 1.0-1.1	-	1	1	-	8
026	D209 0-0.1	13	1	1	1	8
027	D209 0.2-0.3	-	1	1	-	8
028	D209 1.0-1.1	-	1	1	-	8
029	D209 1.9-2.0	-	1	1	-	8
030	D210 0-0.1	-	1	1	-	8
031	D210 0.2-0.3	-	1	1	-	8
032	D210 1.0-1.1	-	1	1	-	8
033	D211 0-0.1	13	1	1	1	8
034	S211 0.2-0.3	-	1	1	-	8
035	D211 1.0-1.1	-	1	1	-	8
036	D211 1.9-2.0	-	1	1	-	8
037	D212 0-0.1	-	1	1	-	8
038	D212 0.2-0.3	-	1	1	-	8
039	D212 1.0-1.1	13	1	1	1	8
040	D213 0-0.1	-	1	1	-	8
041	D213 0.2-0.3	13	1	1	1	8
042	D213 1.0-1.1	13	1	1	1	8
043	D213 1.9-2.0	-	1	1	-	8
044	D214 0-0.1	-	1	1	-	8
045	D214 0.2-0.3	-	1	1	-	8
046	D214 1.0-1.1	-	1	1	-	8
047	D215 0-0.1	-	1	1	-	8
048	D215 0.2-0.3	13	1	1	1	8

CONTINUED OVERLEAF

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SAMPLE RECEIPT ADVICE

SE162156

CLIENT DETAILS

Client Geotechnique

Project Googong NH1A-7 & NH2

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	Mercury in Soil	Moisture Content	pH in soil (1:5)	Total Recoverable Metals in Soil/Waste
049	D215 1.0-1.1	13	1	1	1	8
050	D215 1.9-2.0	-	1	1	-	8
051	D216 0-0.1	-	1	1	-	8
052	D216 0.2-0.3	13	1	1	1	8
053	D216 1.0-1.1	13	1	1	1	8
054	D217 0-0.1	-	1	1	-	8
055	D217 0.2-0.3	13	1	1	-	8
056	D217 1.0-1.1	13	1	1	1	8
057	D217 1.9-2.0	-	1	1	-	8
058	D218 0-0.1	13	1	1	-	8
059	D218 0.2-0.3	13	1	1	-	8
060	D218 1.0-1.1	13	1	1	-	8
061	D219 0-0.1	13	1	1	-	8
062	D219 0.2-0.3	-	1	1	-	8
063	D219 1.0-1.1	-	1	1	-	8
064	D219 1.9-2.0	13	1	1	1	8
065	D220 0-0.1	-	1	1	-	8
066	D220 0.2-0.3	-	1	1	-	8
067	D220 1.0-1.1	-	1	1	-	8
068	D221 0-0.1	-	1	1	-	8
069	D221 0.2-0.3	-	1	1	-	8
070	D221 1.0-1.1	-	1	1	-	8
071	D221 1.9-2.0	-	1	1	-	8
072	D222 0-0.1	-	1	1	-	8

CONTINUED OVERLEAF

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SAMPLE RECEIPT ADVICE

SE162156

CLIENT DETAILS

Client Geotechnique

Project Googong NH1A-7 & NH2

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	Mercury in Soil	Moisture Content	pH in soil (1:5)	Total Recoverable Metals in Soil/Waste
073	D222 0.2-0.3	-	1	1	-	8
074	D222 1.0-1.1	-	1	1	-	8
075	D223 0-0.1	13	1	1	1	8
076	D223 0.2-0.3	13	1	1	1	8
077	D223 1.0-1.1	13	1	1	1	8
078	D224 0-0.1	-	1	1	-	8
079	D224 0.2-0.3	-	1	1	-	8
080	D224 1.0-1.1	13	1	1	-	8
081	D225 0-0.1	-	1	1	-	8
082	D225 0.2-0.3	-	1	1	-	8
083	D225 1.0-1.1	-	1	1	-	8
084	D225 1.9-2.0	13	1	1	1	8
085	D232 0-0.1	-	1	1	-	8
086	D232 0.2-0.3	-	1	1	-	8
087	D232 1.0-1.1	13	1	1	1	8
088	D233 0-0.1	-	1	1	-	8
089	D233 0.2-0.3	-	1	1	-	8
090	D233 1.0-1.1	-	1	1	-	8
091	D233 1.9-2.0	-	1	1	-	8
092	D234 0-0.1	-	1	1	-	8
093	D234 0.2-0.3	-	1	1	-	8
094	D234 1.0-1.1	-	1	1	-	8
095	D235 0-0.1	13	1	1	-	8
096	D235 0.2-0.3	13	1	1	-	8

CONTINUED OVERLEAF

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SAMPLE RECEIPT ADVICE

CLIENT DETAILS

Client Geotechnique

Project Googong NH1A-7 & NH2

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	Mercury (dissolved) in Water	Mercury in Soil	Metals in Water (Dissolved) by ICPOES	Moisture Content	Total Recoverable Metals in Soil/Waste
097	D235 1.0-1.1	13	-	1	-	1	8
098	D235 1.9-2.0	13	-	1	-	1	8
099	D236 0-0.1	13	-	1	-	1	8
100	D236 0.2-0.3	13	-	1	-	1	8
101	D236 1.0-1.1	-	-	1	-	1	8
102	D237 0-0.1	-	-	1	-	1	8
103	D237 0.2-0.3	-	-	1	-	1	8
104	D237 1.0-1.1	-	-	1	-	1	8
105	D237 1.9-2.0	13	-	1	-	1	8
106	D238 0-0.1	-	-	1	-	1	8
107	D238 0.2-0.3	13	-	1	-	1	8
108	D238 1.0-1.1	13	-	1	-	1	8
109	Duplicate DS1	-	-	1	-	1	8
110	Duplicate DS2	-	-	1	-	1	8
111	Duplicate DS3	-	-	1	-	1	8
112	Duplicate DS4	-	-	1	-	1	8
113	Duplicate DS5	-	-	1	-	1	8
114	Duplicate DS6	-	-	1	-	1	8
115	Duplicate DS7	-	-	1	-	1	8
116	Rinsate RS1	-	1	-	8	-	-
117	Rinsate RS2	-	1	-	8	-	-

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

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS		LABORATORY DETAILS	
Contact	John Xu	Manager	Huong Crawford
Client	Geotechnique	Laboratory	SGS Alexandria Environmental
Address	P.O. Box 880 PENRITH NSW 2751	Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	02 4722 2700	Telephone	+61 2 8594 0400
Facsimile	02 4722 6161	Facsimile	+61 2 8594 0499
Email	john.xu@geotech.com.au	Email	au.environmental.sydney@sgs.com
Project	**Googong NH1A-7 & NH2 - Additional**	SGS Reference	**SE162156A R0**
Order Number	(Not specified)	Date Received	7/3/2017
Samples	117	Date Reported	13/3/2017

COMMENTS

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

SIGNATORIES

Bennet Lo
Senior Organic Chemist/Metals Chemist

Shane McDermott
Senior Laboratory Technician

pH in soil (1:5) [AN101] Tested: 9/3/2017

PARAMETER	UOM	LOR	D203 0.9-1.0 SOIL - 14/2/2017 SE162156A.010	D218 0.2-0.3 SOIL - 14/2/2017 SE162156A.059	D219 0-0.1 SOIL - 14/2/2017 SE162156A.061	D220 0-0.1 SOIL - 14/2/2017 SE162156A.065
pH	pH Units	-	7.1	5.2	5.4	6.2

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) [AN122] Tested: 9/3/2017

PARAMETER	UOM	LOR	D203 0.9-1.0 SOIL - 14/2/2017 SE162156A.010	D205 0-0.1 SOIL - 14/2/2017 SE162156A.014	D207 0-0.1 SOIL - 14/2/2017 SE162156A.020	D220 0-0.1 SOIL - 14/2/2017 SE162156A.065	D224 0-0.1 SOIL - 14/2/2017 SE162156A.078
Exchangeable Sodium, Na	mg/kg	2	53	18	21	30	26
Exchangeable Sodium, Na	meq/100g	0.01	0.23	0.08	0.09	0.13	0.11
Exchangeable Sodium Percentage*	%	0.1	1.5	1.1	1.1	1.3	1.3
Exchangeable Potassium, K	mg/kg	2	130	45	62	110	51
Exchangeable Potassium, K	meq/100g	0.01	0.33	0.12	0.16	0.28	0.13
Exchangeable Potassium Percentage*	%	0.1	2.2	1.7	1.9	2.6	1.5
Exchangeable Calcium, Ca	mg/kg	2	1000	370	630	1700	1100
Exchangeable Calcium, Ca	meq/100g	0.01	5.0	1.8	3.1	8.3	5.4
Exchangeable Calcium Percentage*	%	0.1	32.7	27.6	37.1	79.5	61.8
Exchangeable Magnesium, Mg	mg/kg	2	1200	570	620	210	380
Exchangeable Magnesium, Mg	meq/100g	0.02	9.8	4.7	5.1	1.7	3.1
Exchangeable Magnesium Percentage*	%	0.1	63.6	69.5	60.0	16.6	35.4
Cation Exchange Capacity	meq/100g	0.02	15	6.7	8.5	10	8.8

PARAMETER	UOM	LOR	D225 0-0.1 SOIL - 14/2/2017 SE162156A.081
Exchangeable Sodium, Na	mg/kg	2	16
Exchangeable Sodium, Na	meq/100g	0.01	0.07
Exchangeable Sodium Percentage*	%	0.1	2.3
Exchangeable Potassium, K	mg/kg	2	51
Exchangeable Potassium, K	meq/100g	0.01	0.13
Exchangeable Potassium Percentage*	%	0.1	4.3
Exchangeable Calcium, Ca	mg/kg	2	400
Exchangeable Calcium, Ca	meq/100g	0.01	2.0
Exchangeable Calcium Percentage*	%	0.1	65.9
Exchangeable Magnesium, Mg	mg/kg	2	100
Exchangeable Magnesium, Mg	meq/100g	0.02	0.84
Exchangeable Magnesium Percentage*	%	0.1	27.6
Cation Exchange Capacity	meq/100g	0.02	3.1

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

FOOTNOTES

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

Samples analysed as received.
Solid samples expressed on a dry weight basis.

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

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

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

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

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

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

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

SGS

STATEMENT OF QA/QC PERFORMANCE

SE162156A R0

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**Googong NH1A-7 & NH2 - Additional**
Order Number	(Not specified)
Samples	117

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	**SE162156A R0**
Date Received	07 Mar 2017
Date Reported	13 Mar 2017

COMMENTS

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

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

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

Extraction Date	pH in soil (1:5)	4 items

SAMPLE SUMMARY

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	8 Soils
Date documentation received	7/3/17@1.30pm	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	17.3°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

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
D203 0.9-1.0	SE162156A.010	LB120105	14 Feb 2017	07 Mar 2017	14 Mar 2017	09 Mar 2017	14 Mar 2017	13 Mar 2017
D205 0-0.1	SE162156A.014	LB120105	14 Feb 2017	07 Mar 2017	14 Mar 2017	09 Mar 2017	14 Mar 2017	13 Mar 2017
D207 0-0.1	SE162156A.020	LB120105	14 Feb 2017	07 Mar 2017	14 Mar 2017	09 Mar 2017	14 Mar 2017	13 Mar 2017
D220 0-0.1	SE162156A.065	LB120105	14 Feb 2017	07 Mar 2017	14 Mar 2017	09 Mar 2017	14 Mar 2017	13 Mar 2017
D224 0-0.1	SE162156A.078	LB120105	14 Feb 2017	07 Mar 2017	14 Mar 2017	09 Mar 2017	14 Mar 2017	13 Mar 2017
D225 0-0.1	SE162156A.081	LB120105	14 Feb 2017	07 Mar 2017	14 Mar 2017	09 Mar 2017	14 Mar 2017	13 Mar 2017

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
D203 0.9-1.0	SE162156A.010	LB120061	14 Feb 2017	07 Mar 2017	21 Feb 2017	09 Mar 2017†	10 Mar 2017	09 Mar 2017
D218 0.2-0.3	SE162156A.059	LB120061	14 Feb 2017	07 Mar 2017	21 Feb 2017	09 Mar 2017†	10 Mar 2017	09 Mar 2017
D219 0-0.1	SE162156A.061	LB120061	14 Feb 2017	07 Mar 2017	21 Feb 2017	09 Mar 2017†	10 Mar 2017	09 Mar 2017
D220 0-0.1	SE162156A.065	LB120061	14 Feb 2017	07 Mar 2017	21 Feb 2017	09 Mar 2017†	10 Mar 2017	09 Mar 2017

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

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

No surrogates were required for this job.

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

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

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

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

Sample Number	Parameter	Units	LOR

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

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

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

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

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE162729.001	LB120061.014	pH	pH Units	-	5.7	5.7	32	0
SE162762.007	LB120061.025	pH	pH Units	-	5.7	5.7	32	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 %
LB120105.002	Exchangeable Sodium, Na	mg/kg	2	NA	390	80 - 120	92
	Exchangeable Potassium, K	mg/kg	2	NA	343	80 - 120	90
	Exchangeable Calcium, Ca	mg/kg	2	NA	2570	80 - 120	91
	Exchangeable Magnesium, Mg	mg/kg	2	NA	635	80 - 120	89

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB120061.003	pH	pH Units	-	7.4	7.415	98 - 102	100

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

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

No matrix spikes were required for this job.

MATRIX SPIKE DUPLICATES

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

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

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

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

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

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

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

*	NATA accreditation does not cover tthe performance of this service.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.

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

E-MAILED 7/3/17 @ 1:30pm

SGS EHS Alexandria Laboratory

SE162156A COC

Received: 07 – Mar – 2017

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161
email: info@geotech.com.au

TO:	SGS ENVIRONMENTAL SERVICES UNIT 16 33 MADDOX STREET ALEXANDRIA NSW 2015
PH:	02 8594 0400
FAX:	02 8594 0499
ATTN:	MS EMILY YIN
Sampling By:	SS/JH
Job No:	12675/4
Project:	
Project Manager:	JX
Location:	Googong NH1A-7 & NH2

Results required by: Monday 13/03/2017 (Normal TAT)
SGS Ref. SE162156

Location	Depth (m)	Date	Time	Soil	Water	pH	CEC	KEEP SAMPLE
10 D203	0.9-1.0	14/02/2017	-	SG		✓	✓	YES
16 D205	0-0.1	14/02/2017	-	SG			✓	YES
20 D207	0-0.1	14/02/2017	-	SG			✓	YES
59 D218	0.2-0.3	14/02/2017	-	SG		✓		YES
61 D219	0-0.1	14/02/2017	-	SG		✓		YES
65 D220	0-0.1	14/02/2017	-	SG		✓	✓	YES
78 D224	0-0.1	14/02/2017	-	SG			✓	YES
81 D225	0-0.1	14/02/2017	-	SG			✓	YES

	Name	Signature	Date
Relinquished by	JOHN XU	jx	7/03/2017
Received by	Eric Adams	E. A	7/3/17 1:30pm

Legend:

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

SAMPLE RECEIPT ADVICE

SE162156A

CLIENT DETAILS		LABORATORY DETAILS	
Contact	John Xu	Manager	Huong Crawford
Client	Geotechnique	Laboratory	SGS Alexandria Environmental
Address	P.O. Box 880 PENRITH NSW 2751	Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	02 4722 2700	Telephone	+61 2 8594 0400
Facsimile	02 4722 6161	Facsimile	+61 2 8594 0499
Email	john.xu@geotech.com.au	Email	au.environmental.sydney@sgs.com
Project	**Googong NH1A-7 & NH2 - Additional**	Samples Received	Tue 7/3/2017
Order Number	(Not specified)	Report Due	Mon 13/3/2017
Samples	117	SGS Reference	**SE162156A**

SUBMISSION DETAILS

This is to confirm that 117 samples were received on Tuesday 7/3/2017. Results are expected to be ready by Monday 13/3/2017. Please quote SGS reference SE162156A when making enquiries. Refer below for details relating to sample integrity upon receipt.

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	8 Soils
Date documentation received	7/3/17@1.30pm	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	17.3°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

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

COMMENTS

SGS

SAMPLE RECEIPT ADVICE

SE162156A

CLIENT DETAILS

Client Geotechnique

Project Googong NH1A-7 & NH2 - Additional

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	pH in soil (1:5)
010	D203 0.9-1.0	13	1
014	D205 0-0.1	13	-
020	D207 0-0.1	13	-

CONTINUED OVERLEAF

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

SAMPLE RECEIPT ADVICE

CLIENT DETAILS

Client Geotechnique

Project Googong NH1A-7 & NH2 - Additional

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	pH in soil (1:5)
059	D218 0.2-0.3	-	1
061	D219 0-0.1	-	1
065	D220 0-0.1	13	1

CONTINUED OVERLEAF

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

SAMPLE RECEIPT ADVICE

SE162156A

CLIENT DETAILS

Client Geotechnique

Project Googong NH1A-7 & NH2 - Additional

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity
078	D224 0-0.1	13
081	D225 0-0.1	13

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

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS		LABORATORY DETAILS	
Contact	John Xu	Manager	Huong Crawford
Client	Geotechnique	Laboratory	SGS Alexandria Environmental
Address	P.O. Box 880 PENRITH NSW 2751	Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	02 4722 2700	Telephone	+61 2 8594 0400
Facsimile	02 4722 6161	Facsimile	+61 2 8594 0499
Email	john.xu@geotech.com.au	Email	au.environmental.sydney@sgs.com
Project	**12675-4 Googong NH1A-7 &NH2**	SGS Reference	**SE162175 R0**
Order Number	(Not specified)	Date Received	20/2/2017
Samples	11	Date Reported	27/2/2017

COMMENTS

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

SIGNATORIES

Bennet Lo
Senior Organic Chemist/Metals Chemist

Huong Crawford
Production Manager

Kamrul Ahsan
Senior Chemist

Ly Kim Ha
Organic Section Head

pH in soil (1:5) [AN101] Tested: 21/2/2017

PARAMETER	UOM	LOR	DW1 2.0-2.1 SOIL - 15/2/2017 SE162175.001	DW1 3.0-3.1 SOIL - 15/2/2017 SE162175.002	DW1 7.0-7.1 SOIL - 15/2/2017 SE162175.006	DW1 11.0-11.1 SOIL - 15/2/2017 SE162175.010
pH	pH Units	-	9.7	9.5	9.8	9.5

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) [AN122] Tested: 22/2/2017

PARAMETER	UOM	LOR	DW1 2.0-2.1 SOIL - 15/2/2017 SE162175.001	DW1 3.0-3.1 SOIL - 15/2/2017 SE162175.002	DW1 7.0-7.1 SOIL - 15/2/2017 SE162175.006	DW1 11.0-11.1 SOIL - 15/2/2017 SE162175.010
Exchangeable Sodium, Na	mg/kg	2	370	370	340	410
Exchangeable Sodium, Na	meq/100g	0.01	1.6	1.6	1.5	1.8
Exchangeable Sodium Percentage*	%	0.1	8.1	16.3	10.5	8.1
Exchangeable Potassium, K	mg/kg	2	62	69	62	93
Exchangeable Potassium, K	meq/100g	0.01	0.16	0.18	0.16	0.24
Exchangeable Potassium Percentage*	%	0.1	0.8	1.8	1.1	1.1
Exchangeable Calcium, Ca	mg/kg	2	960	130	600	76
Exchangeable Calcium, Ca	meq/100g	0.01	4.8	0.65	3.0	0.38
Exchangeable Calcium Percentage*	%	0.1	24.1	6.6	21.4	1.7
Exchangeable Magnesium, Mg	mg/kg	2	1600	910	1100	2400
Exchangeable Magnesium, Mg	meq/100g	0.02	13	7.4	9.4	20
Exchangeable Magnesium Percentage*	%	0.1	67.0	75.3	67.0	89.1
Cation Exchange Capacity	meq/100g	0.02	20	9.9	14	22

Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 21/2/2017

PARAMETER	UOM	LOR	DW1 2.0-2.1 SOIL - 15/2/2017 SE162175.001	DW1 3.0-3.1 SOIL - 15/2/2017 SE162175.002	DW1 4.0-4.1 SOIL - 15/2/2017 SE162175.003	DW1 5.0-5.1 SOIL - 15/2/2017 SE162175.004	DW1 6.0-6.1 SOIL - 15/2/2017 SE162175.005
Arsenic, As	mg/kg	3	8	8	13	12	39
Cadmium, Cd	mg/kg	0.3	0.5	0.4	0.5	0.4	0.6
Chromium, Cr	mg/kg	0.3	24	22	23	22	23
Copper, Cu	mg/kg	0.5	28	32	30	32	41
Lead, Pb	mg/kg	1	20	25	14	14	14
Manganese, Mn	mg/kg	1	300	590	480	630	440
Nickel, Ni	mg/kg	0.5	29	30	34	41	40
Zinc, Zn	mg/kg	0.5	170	110	140	140	63

PARAMETER	UOM	LOR	DW1 7.0-7.1 SOIL - 15/2/2017 SE162175.006	DW1 8.0-8.1 SOIL - 15/2/2017 SE162175.007	DW1 9.0-9.1 SOIL - 15/2/2017 SE162175.008	DW1 10.0-10.1 SOIL - 15/2/2017 SE162175.009	DW1 11.0-11.1 SOIL - 15/2/2017 SE162175.010
Arsenic, As	mg/kg	3	22	28	40	32	62
Cadmium, Cd	mg/kg	0.3	0.6	0.4	0.6	0.4	0.6
Chromium, Cr	mg/kg	0.3	23	23	20	27	39
Copper, Cu	mg/kg	0.5	36	31	59	18	61
Lead, Pb	mg/kg	1	8	7	27	14	13
Manganese, Mn	mg/kg	1	500	370	1100	640	840
Nickel, Ni	mg/kg	0.5	46	39	41	52	74
Zinc, Zn	mg/kg	0.5	110	140	67	160	320

PARAMETER	UOM	LOR	DW1 12.0-12.1 SOIL - 15/2/2017 SE162175.011
Arsenic, As	mg/kg	3	24
Cadmium, Cd	mg/kg	0.3	0.4
Chromium, Cr	mg/kg	0.3	25
Copper, Cu	mg/kg	0.5	39
Lead, Pb	mg/kg	1	9
Manganese, Mn	mg/kg	1	450
Nickel, Ni	mg/kg	0.5	52
Zinc, Zn	mg/kg	0.5	140

Mercury in Soil [AN312] Tested: 22/2/2017

PARAMETER	UOM	LOR	DW1 2.0-2.1 SOIL - 15/2/2017 SE162175.001	DW1 3.0-3.1 SOIL - 15/2/2017 SE162175.002	DW1 4.0-4.1 SOIL - 15/2/2017 SE162175.003	DW1 5.0-5.1 SOIL - 15/2/2017 SE162175.004	DW1 6.0-6.1 SOIL - 15/2/2017 SE162175.005
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	DW1 7.0-7.1 SOIL - 15/2/2017 SE162175.006	DW1 8.0-8.1 SOIL - 15/2/2017 SE162175.007	DW1 9.0-9.1 SOIL - 15/2/2017 SE162175.008	DW1 10.0-10.1 SOIL - 15/2/2017 SE162175.009	DW1 11.0-11.1 SOIL - 15/2/2017 SE162175.010
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	DW1 12.0-12.1 SOIL - 15/2/2017 SE162175.011
Mercury	mg/kg	0.05	<0.05

Moisture Content [AN002] Tested: 21/2/2017

PARAMETER	UOM	LOR	DW1 2.0-2.1 SOIL - 15/2/2017 SE162175.001	DW1 3.0-3.1 SOIL - 15/2/2017 SE162175.002	DW1 4.0-4.1 SOIL - 15/2/2017 SE162175.003	DW1 5.0-5.1 SOIL - 15/2/2017 SE162175.004	DW1 6.0-6.1 SOIL - 15/2/2017 SE162175.005
% Moisture	%w/w	0.5	8.6	8.2	7.4	7.3	10

PARAMETER	UOM	LOR	DW1 7.0-7.1 SOIL - 15/2/2017 SE162175.006	DW1 8.0-8.1 SOIL - 15/2/2017 SE162175.007	DW1 9.0-9.1 SOIL - 15/2/2017 SE162175.008	DW1 10.0-10.1 SOIL - 15/2/2017 SE162175.009	DW1 11.0-11.1 SOIL - 15/2/2017 SE162175.010
% Moisture	%w/w	0.5	8.8	9.8	11	9.9	9.2

PARAMETER	UOM	LOR	DW1 12.0-12.1 SOIL - 15/2/2017 SE162175.011
% Moisture	%w/w	0.5	7.7

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN040/AN320	A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analysis by ASS or ICP as per USEPA Method 200.8.
AN101	pH in Soil Sludge Sediment and Water: pH is measured electrometrically using a combination electrode and is calibrated against 3 buffers purchased commercially. For soils, sediments and sludges, an extract with water (or 0.01M CaCl2) is made at a ratio of 1:5 and the pH determined and reported on the extract. Reference APHA 4500-H+.
AN122	Exchangeable Cations, CEC and ESP: Soil sample is extracted in 1M Ammonium Acetate at pH=7 (or 1M Ammonium Chloride at pH=7) with cations (Na, K, Ca & Mg) then determined by ICP OES/ICP MS and reported as Exchangeable Cations. For saline soils, these results can be corrected for water soluble cations and reported as Exchangeable cations in meq/100g or soil can be pre-treated (aqueous ethanol/aqueous glycerol) prior to extraction. Cation Exchange Capacity (CEC) is the sum of the exchangeable cations in meq/100g.
AN122	The Exchangeable Sodium Percentage (ESP) is calculated as the exchangeable sodium divided by the CEC (all in meq/100g) times 100. ESP can be used to categorise the sodicity of the soil as below : ESP < 6% non-sodic ESP 6-15% sodic ESP >15% strongly sodic Method is refernced to Rayment and Higginson, 1992, sections 15D3 and 15N1.-
AN312	Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid , mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser . Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500

FOOTNOTES

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

Samples analysed as received.
Solid samples expressed on a dry weight basis.

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

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

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

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

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

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

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

STATEMENT OF QA/QC PERFORMANCE

SE162175 R0

CLIENT DETAILS		LABORATORY DETAILS	
Contact	John Xu	Manager	Huong Crawford
Client	Geotechnique	Laboratory	SGS Alexandria Environmental
Address	P.O. Box 880 PENRITH NSW 2751	Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	02 4722 2700	Telephone	+61 2 8594 0400
Facsimile	02 4722 6161	Facsimile	+61 2 8594 0499
Email	john.xu@geotech.com.au	Email	au.environmental.sydney@sgs.com
Project	**12675-4 Googong NH1A-7 &NH2**	SGS Reference	**SE162175 R0**
Order Number	(Not specified)	Date Received	20 Feb 2017
Samples	11	Date Reported	27 Feb 2017

COMMENTS

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

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

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

Matrix Spike	Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES	2 items

SAMPLE SUMMARY

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	11 Soil
Date documentation received	20/2/2017	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	17.3°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

HOLDING TIME SUMMARY

SE162175 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
DW1 2.0-2.1	SE162175.001	LB119135	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
DW1 3.0-3.1	SE162175.002	LB119135	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
DW1 7.0-7.1	SE162175.006	LB119135	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
DW1 11.0-11.1	SE162175.010	LB119135	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017

Mercury in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
DW1 2.0-2.1	SE162175.001	LB119167	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
DW1 3.0-3.1	SE162175.002	LB119167	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
DW1 4.0-4.1	SE162175.003	LB119167	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
DW1 5.0-5.1	SE162175.004	LB119167	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
DW1 6.0-6.1	SE162175.005	LB119167	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
DW1 7.0-7.1	SE162175.006	LB119167	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
DW1 8.0-8.1	SE162175.007	LB119167	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
DW1 9.0-9.1	SE162175.008	LB119167	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
DW1 10.0-10.1	SE162175.009	LB119168	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
DW1 11.0-11.1	SE162175.010	LB119168	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
DW1 12.0-12.1	SE162175.011	LB119168	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017

Moisture Content

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
DW1 2.0-2.1	SE162175.001	LB119035	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
DW1 3.0-3.1	SE162175.002	LB119035	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
DW1 4.0-4.1	SE162175.003	LB119035	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
DW1 5.0-5.1	SE162175.004	LB119035	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
DW1 6.0-6.1	SE162175.005	LB119035	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
DW1 7.0-7.1	SE162175.006	LB119035	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
DW1 8.0-8.1	SE162175.007	LB119035	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
DW1 9.0-9.1	SE162175.008	LB119035	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
DW1 10.0-10.1	SE162175.009	LB119035	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
DW1 11.0-11.1	SE162175.010	LB119035	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
DW1 12.0-12.1	SE162175.011	LB119035	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017

pH in soil (1:5)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
DW1 2.0-2.1	SE162175.001	LB119063	15 Feb 2017	20 Feb 2017	22 Feb 2017	21 Feb 2017	22 Feb 2017	22 Feb 2017
DW1 3.0-3.1	SE162175.002	LB119063	15 Feb 2017	20 Feb 2017	22 Feb 2017	21 Feb 2017	22 Feb 2017	22 Feb 2017
DW1 7.0-7.1	SE162175.006	LB119063	15 Feb 2017	20 Feb 2017	22 Feb 2017	21 Feb 2017	22 Feb 2017	22 Feb 2017
DW1 11.0-11.1	SE162175.010	LB119063	15 Feb 2017	20 Feb 2017	22 Feb 2017	21 Feb 2017	22 Feb 2017	22 Feb 2017

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

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
DW1 2.0-2.1	SE162175.001	LB119114	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	27 Feb 2017
DW1 3.0-3.1	SE162175.002	LB119114	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	27 Feb 2017
DW1 4.0-4.1	SE162175.003	LB119114	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	27 Feb 2017
DW1 5.0-5.1	SE162175.004	LB119114	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	27 Feb 2017
DW1 6.0-6.1	SE162175.005	LB119114	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	27 Feb 2017
DW1 7.0-7.1	SE162175.006	LB119114	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	27 Feb 2017
DW1 8.0-8.1	SE162175.007	LB119114	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	27 Feb 2017
DW1 9.0-9.1	SE162175.008	LB119114	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	27 Feb 2017
DW1 10.0-10.1	SE162175.009	LB119114	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	27 Feb 2017
DW1 11.0-11.1	SE162175.010	LB119114	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	27 Feb 2017
DW1 12.0-12.1	SE162175.011	LB119114	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	27 Feb 2017

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

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

No surrogates were required for this job.

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

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

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

Sample Number	Parameter	Units	LOR

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

Sample Number	Parameter	Units	LOR	Result
LB119167.001	Mercury	mg/kg	0.05	<0.05
LB119168.001	Mercury	mg/kg	0.05	<0.05

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

Sample Number	Parameter	Units	LOR	Result
LB119114.001	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
	Manganese, Mn	mg/kg	1	<1
	Nickel, Ni	mg/kg	0.5	<0.5
	Zinc, Zn	mg/kg	0.5	<0.5

DUPLICATES

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

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

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

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

Mercury in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE162156.114	LB119167.014	Mercury	mg/kg	0.05	0.0253380798	0.0253099577	200	0
SE162175.008	LB119167.024	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE162178.007	LB119168.014	Mercury	mg/kg	0.05	0.0148247225	0.0122994044	200	0
SE162178.016	LB119168.024	Mercury	mg/kg	0.05	0.0096979418	0.0101489659	200	0

Moisture Content

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE162175.006	LB119035.011	% Moisture	%w/w	0.5	8.8	8.9	41	1
SE162176.003	LB119035.020	% Moisture	%w/w	0.5	5.1	4.1	52	21

pH in soil (1:5)

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE162178.013	LB119063.014	pH	pH Units	-	7.723	7.646	31	1
SE162178.112	LB119063.022	pH	pH Units	-	6.358	6.381	32	0

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

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE162175.010	LB119114.014	Arsenic, As	mg/kg	3	62	61	32	2
		Cadmium, Cd	mg/kg	0.3	0.6	0.6	77	0
		Chromium, Cr	mg/kg	0.3	39	39	31	0
		Copper, Cu	mg/kg	0.5	61	61	31	1
		Lead, Pb	mg/kg	1	13	13	38	4
		Manganese, Mn	mg/kg	1	840	910	30	8
		Nickel, Ni	mg/kg	0.5	74	77	31	5
		Zinc, Zn	mg/kg	0.5	320	320	31	1
SE162178.120	LB119114.022	Arsenic, As	mg/kg	3	23.997389637	24.082599909	34	0
		Cadmium, Cd	mg/kg	0.3	0.3277630187	0.3231908513	122	1
		Chromium, Cr	mg/kg	0.3	20.304556568	19.192590497	33	6
		Copper, Cu	mg/kg	0.5	26.659397303	25.594906886	32	4
		Lead, Pb	mg/kg	1	17.968239492	18.442129361	35	3
		Manganese, Mn	mg/kg	1	86.288990219	84.494472954	30	1
		Nickel, Ni	mg/kg	0.5	15.565354877	15.159222018	33	3
		Zinc, Zn	mg/kg	0.5	55.523295003	53.974187227	34	3

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 %
LB119135.002	Exchangeable Sodium, Na	mg/kg	2	NA	390	80 - 120	93
	Exchangeable Potassium, K	mg/kg	2	NA	343	80 - 120	90
	Exchangeable Calcium, Ca	mg/kg	2	NA	2570	80 - 120	93
	Exchangeable Magnesium, Mg	mg/kg	2	NA	635	80 - 120	91

Mercury in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB119167.002	Mercury	mg/kg	0.05	0.20	0.2	70 - 130	101
LB119168.002	Mercury	mg/kg	0.05	0.20	0.2	70 - 130	100

pH in soil (1:5)

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB119063.003	pH	pH Units	-	7.5	7.415	98 - 102	101

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

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB119114.002	Arsenic, As	mg/kg	3	50	50	80 - 120	99
	Cadmium, Cd	mg/kg	0.3	50	50	80 - 120	100
	Chromium, Cr	mg/kg	0.3	50	50	80 - 120	101
	Copper, Cu	mg/kg	0.5	49	50	80 - 120	99
	Lead, Pb	mg/kg	1	50	50	80 - 120	101
	Manganese, Mn	mg/kg	1	50	50	80 - 120	101
	Nickel, Ni	mg/kg	0.5	51	50	80 - 120	102
	Zinc, Zn	mg/kg	0.5	50	50	80 - 120	100

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

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

Mercury in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE162156.105	LB119167.004	Mercury	mg/kg	0.05	0.20	0.01821271260	0.2	93
SE162175.009	LB119168.004	Mercury	mg/kg	0.05	0.18	<0.05	0.2	90

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

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE162175.001	LB119114.004	Arsenic, As	mg/kg	3	48	8	50	81
		Cadmium, Cd	mg/kg	0.3	41	0.5	50	81
		Chromium, Cr	mg/kg	0.3	65	24	50	81
		Copper, Cu	mg/kg	0.5	71	28	50	86
		Lead, Pb	mg/kg	1	57	20	50	75
		Manganese, Mn	mg/kg	1	290	300	50	-15 ⑨
		Nickel, Ni	mg/kg	0.5	67	29	50	77
		Zinc, Zn	mg/kg	0.5	200	170	50	63 ⑨

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

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

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

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

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

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

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

*	NATA accreditation does not cover tthe performance of this service.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.

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

E-MAILED 20/2/17 @ 1:13

SGS EHS Alexandria Laboratory

SE162175 COC
Received: 20-Feb-2017

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161
email: info@geotech.com.au

Page 1 of 1

TO:	SGS ENVIRONMENTAL SERVICES UNIT 16 33 MADDOX STREET ALEXANDRIA NSW 2015	Sampling By: SS/JH	Job No: 12875/4 COC 3
PH:	02 8594 0400 FAX: 02 8594 0499	Project Manager: JX	Project: Location: Googong NH1A-7 & NH2
ATTN:	MS EMILY YIN		

Results required by: Normal TAT

	Location	Depth (m)	Date	Time	Soil	Water	Heavy Metals As, Cd, Cr, Cu, Pb, Mn, Hg, Ni and Zn	pH	CEC							KEEP SAMPLE
1	DW1	2.0-2.1	15/02/2017	-	SG		✓	✓	✓							YES
2	DW1	3.0-3.1	15/02/2017	-	SG		✓	✓	✓							YES
3	DW1	4.0-4.1	15/02/2017	-	SG		✓									YES
4	DW1	5.0-5.1	15/02/2017	-	SG		✓									YES
5	DW1	6.0-6.1	15/02/2017	-	SG		✓									YES
6	DW1	7.0-7.1	15/02/2017	-	SG		✓	✓	✓							YES
7	DW1	8.0-8.1	15/02/2017	-	SG		✓									YES
8	DW1	9.0-9.1	15/02/2017	-	SG		✓									YES
9	DW1	10.0-10.1	15/02/2017	-	SG		✓									YES
10	DW1	11.0-11.1	15/02/2017	-	SG		✓	✓	✓							YES
11	DW1	12.0-12.1	15/02/2017	-	SG		✓									YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	20/02/2017	Suba	[signature]	20/02/17 @ 12:15

Legend:

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

SAMPLE RECEIPT ADVICE

SE162175

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**12675-4 Googong NH1A-7 &NH2**
Order Number	(Not specified)
Samples	11

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 20/2/2017
Report Due	Mon 27/2/2017
SGS Reference	**SE162175**

SUBMISSION DETAILS

This is to confirm that 11 samples were received on Monday 20/2/2017. Results are expected to be ready by Monday 27/2/2017. Please quote SGS reference SE162175 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	11 Soil
Date documentation received	20/2/2017	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	17.3°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

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

COMMENTS

SAMPLE RECEIPT ADVICE

SE162175

CLIENT DETAILS

Client Geotechnique

Project 12675-4 Googong NH1A-7 &NH2

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	Mercury in Soil	Moisture Content	pH in soil (1:5)	Total Recoverable Metals in Soil/Waste
001	DW1 2.0-2.1	13	1	1	1	8
002	DW1 3.0-3.1	13	1	1	1	8
003	DW1 4.0-4.1	-	1	1	-	8
004	DW1 5.0-5.1	-	1	1	-	8
005	DW1 6.0-6.1	-	1	1	-	8
006	DW1 7.0-7.1	13	1	1	1	8
007	DW1 8.0-8.1	-	1	1	-	8
008	DW1 9.0-9.1	-	1	1	-	8
009	DW1 10.0-10.1	-	1	1	-	8
010	DW1 11.0-11.1	13	1	1	1	8
011	DW1 12.0-12.1	-	1	1	-	8

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

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**12675-4 Goongong NH1A-7 & NH2**
Order Number	(Not specified)
Samples	123

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	**SE162178 R1**
Date Received	20/2/2017
Date Reported	18/5/2017

COMMENTS

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

This report cancels and supersedes the report No. SE162178 R0. dated 27.02.17 issued by SGS Environment, Health and Safety due to correction of sample ID's on samples .113 to .119..

SIGNATORIES

Bennet Lo
Senior Organic Chemist/Metals Chemist

Huong Crawford
Production Manager

Kamrul Ahsan
Senior Chemist

Ly Kim Ha
Organic Section Head

pH in soil (1:5) [AN101] Tested: 21/2/2017

PARAMETER	UOM	LOR	D229 1.0-1.1 SOIL - 15/2/2017 SE162178.006	D230 1.0-1.1 SOIL - 15/2/2017 SE162178.009	D231 1.0-1.1 SOIL - 15/2/2017 SE162178.012	D231 1.9-2.0 SOIL - 15/2/2017 SE162178.013	D245 1.9-2.0 SOIL - 15/2/2017 SE162178.024
pH	pH Units	-	6.7	7.3	8.0	7.7	7.7

PARAMETER	UOM	LOR	D248 0.2-0.3 SOIL - 15/2/2017 SE162178.033	D271 1.0-1.1 SOIL - 16/2/2017 SE162178.051	D271 1.9-2.0 SOIL - 16/2/2017 SE162178.052	D288 0.6-0.7 SOIL - 17/2/2017 SE162178.105	D289 1.0-1.1 SOIL - 17/2/2017 SE162178.109
pH	pH Units	-	6.4	6.9	8.0	7.1	7.6

PARAMETER	UOM	LOR	D290 1.0-1.1 SOIL - 17/2/2017 SE162178.112
pH	pH Units	-	6.4

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) [AN122] Tested: 22/2/2017

PARAMETER	UOM	LOR	D226 0.0-0.1 SOIL - 15/2/2017 SE162178.001	D226 1.0-1.1 SOIL - 15/2/2017 SE162178.003	D229 1.0-1.1 SOIL - 15/2/2017 SE162178.006	D230 1.0-1.1 SOIL - 15/2/2017 SE162178.009	D231 1.0-1.1 SOIL - 15/2/2017 SE162178.012
Exchangeable Sodium, Na	mg/kg	2	18	60	230	150	200
Exchangeable Sodium, Na	meq/100g	0.01	0.08	0.26	1.0	0.65	0.85
Exchangeable Sodium Percentage*	%	0.1	1.5	2.6	9.2	4.1	3.5
Exchangeable Potassium, K	mg/kg	2	36	71	70	96	170
Exchangeable Potassium, K	meq/100g	0.01	0.09	0.18	0.18	0.25	0.45
Exchangeable Potassium Percentage*	%	0.1	1.8	1.8	1.6	1.6	1.8
Exchangeable Calcium, Ca	mg/kg	2	750	830	44	220	46
Exchangeable Calcium, Ca	meq/100g	0.01	3.7	4.1	0.22	1.1	0.23
Exchangeable Calcium Percentage*	%	0.1	73.1	40.7	2.0	6.9	0.9
Exchangeable Magnesium, Mg	mg/kg	2	150	680	1200	1700	2800
Exchangeable Magnesium, Mg	meq/100g	0.02	1.2	5.6	9.5	14	23
Exchangeable Magnesium Percentage*	%	0.1	23.6	55.0	87.2	87.5	93.8
Cation Exchange Capacity	meq/100g	0.02	5.1	10	11	16	24

PARAMETER	UOM	LOR	D231 1.9-2.0 SOIL - 15/2/2017 SE162178.013	D245 1.9-2.0 SOIL - 15/2/2017 SE162178.024	D246 1.0-1.1 SOIL - 15/2/2017 SE162178.027	D247 0.2-0.3 SOIL - 15/2/2017 SE162178.029	D247 1.9-2.0 SOIL - 15/2/2017 SE162178.031
Exchangeable Sodium, Na	mg/kg	2	120	100	540	370	190
Exchangeable Sodium, Na	meq/100g	0.01	0.51	0.45	2.4	1.6	0.83
Exchangeable Sodium Percentage*	%	0.1	4.9	3.9	12.7	7.2	7.8
Exchangeable Potassium, K	mg/kg	2	43	32	130	130	75
Exchangeable Potassium, K	meq/100g	0.01	0.11	0.08	0.34	0.33	0.19
Exchangeable Potassium Percentage*	%	0.1	1.1	0.7	1.8	1.5	1.8
Exchangeable Calcium, Ca	mg/kg	2	98	9	23	100	13
Exchangeable Calcium, Ca	meq/100g	0.01	0.49	0.04	0.11	0.52	0.07
Exchangeable Calcium Percentage*	%	0.1	4.7	0.4	0.6	2.3	0.6
Exchangeable Magnesium, Mg	mg/kg	2	1100	1300	1900	2400	1200
Exchangeable Magnesium, Mg	meq/100g	0.02	9.3	11	16	20	9.6
Exchangeable Magnesium Percentage*	%	0.1	89.3	95.0	84.8	88.9	89.8
Cation Exchange Capacity	meq/100g	0.02	10	11	19	22	11

PARAMETER	UOM	LOR	D248 0.2-0.3 SOIL - 15/2/2017 SE162178.033	D249 0.2-0.3 SOIL - 15/2/2017 SE162178.036	D249 1.0-1.1 SOIL - 15/2/2017 SE162178.037	D259 0.2-0.3 SOIL - 16/2/2017 SE162178.039	D259 1.9-2.0 SOIL - 16/2/2017 SE162178.041
Exchangeable Sodium, Na	mg/kg	2	51	32	64	210	120
Exchangeable Sodium, Na	meq/100g	0.01	0.22	0.14	0.28	0.90	0.52
Exchangeable Sodium Percentage*	%	0.1	3.6	1.5	2.6	9.3	12.6
Exchangeable Potassium, K	mg/kg	2	36	43	61	44	21
Exchangeable Potassium, K	meq/100g	0.01	0.09	0.11	0.16	0.11	0.05
Exchangeable Potassium Percentage*	%	0.1	1.5	1.2	1.4	1.2	1.3
Exchangeable Calcium, Ca	mg/kg	2	97	920	440	350	100
Exchangeable Calcium, Ca	meq/100g	0.01	0.48	4.6	2.2	1.8	0.51
Exchangeable Calcium Percentage*	%	0.1	7.9	49.8	20.4	18.2	12.4
Exchangeable Magnesium, Mg	mg/kg	2	650	530	1000	840	370
Exchangeable Magnesium, Mg	meq/100g	0.02	5.3	4.4	8.2	6.9	3.0
Exchangeable Magnesium Percentage*	%	0.1	87.0	47.5	75.6	71.3	73.6
Cation Exchange Capacity	meq/100g	0.02	6.1	9.2	11	9.6	4.1

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) [AN122] Tested: 22/2/2017 (continued)

PARAMETER	UOM	LOR	D263 0.2-0.3 SOIL - 15/2/2017 SE162178.043	D264 0.0-0.1 SOIL - 15/2/2017 SE162178.044	D265 0.2-0.3 SOIL - 15/2/2017 SE162178.047	D271 1.0-1.1 SOIL - 16/2/2017 SE162178.051	D271 1.9-2.0 SOIL - 16/2/2017 SE162178.052
Exchangeable Sodium, Na	mg/kg	2	36	18	34	180	120
Exchangeable Sodium, Na	meq/100g	0.01	0.16	0.08	0.15	0.76	0.51
Exchangeable Sodium Percentage*	%	0.1	2.3	1.8	1.9	3.7	6.9
Exchangeable Potassium, K	mg/kg	2	28	32	21	140	48
Exchangeable Potassium, K	meq/100g	0.01	0.07	0.08	0.05	0.37	0.12
Exchangeable Potassium Percentage*	%	0.1	1.1	1.9	0.7	1.8	1.7
Exchangeable Calcium, Ca	mg/kg	2	160	400	170	1300	300
Exchangeable Calcium, Ca	meq/100g	0.01	0.81	2.0	0.85	6.6	1.5
Exchangeable Calcium Percentage*	%	0.1	12.0	48.4	11.2	32.1	19.9
Exchangeable Magnesium, Mg	mg/kg	2	690	240	790	1600	650
Exchangeable Magnesium, Mg	meq/100g	0.02	5.7	2.0	6.5	13	5.3
Exchangeable Magnesium Percentage*	%	0.1	84.6	47.8	86.1	62.4	71.5
Cation Exchange Capacity	meq/100g	0.02	6.7	4.2	7.6	21	7.5

PARAMETER	UOM	LOR	D272 0.0-0.1 SOIL - 16/2/2017 SE162178.053	D272 0.7-0.8 SOIL - 16/2/2017 SE162178.055	D273 0.0-0.1 SOIL - 16/2/2017 SE162178.056	D273 1.9-2.0 SOIL - 16/2/2017 SE162178.059	D274 1.0-1.1 SOIL - 16/2/2017 SE162178.062
Exchangeable Sodium, Na	mg/kg	2	25	63	12	310	210
Exchangeable Sodium, Na	meq/100g	0.01	0.11	0.27	0.05	1.4	0.91
Exchangeable Sodium Percentage*	%	0.1	3.1	2.5	4.1	6.5	3.9
Exchangeable Potassium, K	mg/kg	2	64	78	60	120	170
Exchangeable Potassium, K	meq/100g	0.01	0.16	0.20	0.15	0.32	0.44
Exchangeable Potassium Percentage*	%	0.1	4.6	1.9	12.4	1.5	1.9
Exchangeable Calcium, Ca	mg/kg	2	450	960	140	710	1600
Exchangeable Calcium, Ca	meq/100g	0.01	2.3	4.8	0.72	3.5	7.8
Exchangeable Calcium Percentage*	%	0.1	63.3	44.5	57.7	17.0	33.7
Exchangeable Magnesium, Mg	mg/kg	2	130	670	40	1900	1700
Exchangeable Magnesium, Mg	meq/100g	0.02	1.0	5.5	0.32	16	14
Exchangeable Magnesium Percentage*	%	0.1	29.0	51.1	25.9	74.9	60.5
Cation Exchange Capacity	meq/100g	0.02	3.6	11	1.3	21	23

PARAMETER	UOM	LOR	D275 1.9-2.0 SOIL - 16/2/2017 SE162178.066	D277 0.2-0.3 SOIL - 16/2/2017 SE162178.071	D277 1.9-2.0 SOIL - 16/2/2017 SE162178.073	D278 1.0-1.1 SOIL - 16/2/2017 SE162178.076	D283 0.2-0.3 SOIL - 17/2/2017 SE162178.089
Exchangeable Sodium, Na	mg/kg	2	300	15	40	21	50
Exchangeable Sodium, Na	meq/100g	0.01	1.3	0.06	0.18	0.09	0.22
Exchangeable Sodium Percentage*	%	0.1	4.3	1.0	1.2	0.8	2.9
Exchangeable Potassium, K	mg/kg	2	220	170	84	100	26
Exchangeable Potassium, K	meq/100g	0.01	0.58	0.43	0.21	0.26	0.07
Exchangeable Potassium Percentage*	%	0.1	1.9	7.0	1.4	2.4	0.9
Exchangeable Calcium, Ca	mg/kg	2	1900	880	1300	1500	110
Exchangeable Calcium, Ca	meq/100g	0.01	9.4	4.4	6.5	7.7	0.55
Exchangeable Calcium Percentage*	%	0.1	30.5	71.2	43.2	69.6	7.2
Exchangeable Magnesium, Mg	mg/kg	2	2400	160	1000	370	820
Exchangeable Magnesium, Mg	meq/100g	0.02	19	1.3	8.2	3.0	6.7
Exchangeable Magnesium Percentage*	%	0.1	63.4	20.7	54.2	27.2	89.0
Cation Exchange Capacity	meq/100g	0.02	31	6.2	15	11	7.5

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) [AN122] Tested: 22/2/2017 (continued)

PARAMETER	UOM	LOR	D286 1.0-1.1 SOIL - 17/2/2017 SE162178.098	D288 0.6-0.7 SOIL - 17/2/2017 SE162178.105	D289 1.0-1.1 SOIL - 17/2/2017 SE162178.109	D290 1.0-1.1 SOIL - 17/2/2017 SE162178.112
Exchangeable Sodium, Na	mg/kg	2	53	44	69	18
Exchangeable Sodium, Na	meq/100g	0.01	0.23	0.19	0.30	0.08
Exchangeable Sodium Percentage*	%	0.1	1.6	1.2	2.2	1.0
Exchangeable Potassium, K	mg/kg	2	140	100	53	150
Exchangeable Potassium, K	meq/100g	0.01	0.35	0.26	0.14	0.39
Exchangeable Potassium Percentage*	%	0.1	2.4	1.6	1.0	5.0
Exchangeable Calcium, Ca	mg/kg	2	1500	840	150	1000
Exchangeable Calcium, Ca	meq/100g	0.01	7.7	4.2	0.73	5.1
Exchangeable Calcium Percentage*	%	0.1	52.2	26.1	5.3	66.7
Exchangeable Magnesium, Mg	mg/kg	2	790	1400	1500	260
Exchangeable Magnesium, Mg	meq/100g	0.02	6.5	11	13	2.1
Exchangeable Magnesium Percentage*	%	0.1	43.8	71.1	91.5	27.3
Cation Exchange Capacity	meq/100g	0.02	15	16	14	7.7

Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 21/2/2017

PARAMETER	UOM	LOR	D226 0.0-0.1 SOIL - 15/2/2017 SE162178.001	D226 0.2-0.3 SOIL - 15/2/2017 SE162178.002	D226 1.0-1.1 SOIL - 15/2/2017 SE162178.003	D229 0.0-0.1 SOIL - 15/2/2017 SE162178.004	D229 0.2-0.3 SOIL - 15/2/2017 SE162178.005
Arsenic, As	mg/kg	3	25	22	40	41	54
Cadmium, Cd	mg/kg	0.3	0.5	0.6	0.4	0.4	0.5
Chromium, Cr	mg/kg	0.3	26	25	30	29	35
Copper, Cu	mg/kg	0.5	11	13	15	7.8	8.1
Lead, Pb	mg/kg	1	80	68	91	76	100
Nickel, Ni	mg/kg	0.5	11	11	8.8	6.5	6.4
Zinc, Zn	mg/kg	0.5	120	120	87	61	59
Manganese, Mn	mg/kg	1	2800	2700	1400	800	500

PARAMETER	UOM	LOR	D229 1.0-1.1 SOIL - 15/2/2017 SE162178.006	D230 0.0-0.1 SOIL - 15/2/2017 SE162178.007	D230 0.2-0.3 SOIL - 15/2/2017 SE162178.008	D230 1.0-1.1 SOIL - 15/2/2017 SE162178.009	D231 0.0-0.1 SOIL - 15/2/2017 SE162178.010
Arsenic, As	mg/kg	3	29	110	110	130	75
Cadmium, Cd	mg/kg	0.3	0.4	0.7	0.7	0.7	0.5
Chromium, Cr	mg/kg	0.3	28	38	37	27	31
Copper, Cu	mg/kg	0.5	27	16	15	52	22
Lead, Pb	mg/kg	1	58	240	320	240	150
Nickel, Ni	mg/kg	0.5	24	6.0	6.2	29	7.2
Zinc, Zn	mg/kg	0.5	170	160	140	310	79
Manganese, Mn	mg/kg	1	140	740	1100	4200	220

PARAMETER	UOM	LOR	D231 0.2-0.3 SOIL - 15/2/2017 SE162178.011	D231 1.0-1.1 SOIL - 15/2/2017 SE162178.012	D231 1.9-2.0 SOIL - 15/2/2017 SE162178.013	D243 0.0-0.1 SOIL - 15/2/2017 SE162178.014	D243 0.2-0.3 SOIL - 15/2/2017 SE162178.015
Arsenic, As	mg/kg	3	7	33	32	13	15
Cadmium, Cd	mg/kg	0.3	<0.3	0.4	2.0	<0.3	<0.3
Chromium, Cr	mg/kg	0.3	3.9	17	49	22	26
Copper, Cu	mg/kg	0.5	2.5	46	42	33	34
Lead, Pb	mg/kg	1	28	440	240	12	11
Nickel, Ni	mg/kg	0.5	0.7	35	30	7.9	8.7
Zinc, Zn	mg/kg	0.5	8.7	230	570	30	25
Manganese, Mn	mg/kg	1	30	1000	860	420	270

PARAMETER	UOM	LOR	D243 1.0-1.1 SOIL - 15/2/2017 SE162178.016	D243 1.9-2.0 SOIL - 15/2/2017 SE162178.017	D244 0.0-0.1 SOIL - 15/2/2017 SE162178.018	D244 0.2-0.3 SOIL - 15/2/2017 SE162178.019	D244 1.0-1.1 SOIL - 15/2/2017 SE162178.020
Arsenic, As	mg/kg	3	9	8	9	13	11
Cadmium, Cd	mg/kg	0.3	0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.3	58	56	27	38	38
Copper, Cu	mg/kg	0.5	33	33	13	21	17
Lead, Pb	mg/kg	1	7	6	12	12	10
Nickel, Ni	mg/kg	0.5	27	22	11	13	15
Zinc, Zn	mg/kg	0.5	50	47	36	30	29
Manganese, Mn	mg/kg	1	510	280	750	160	150

Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 21/2/2017 (continued)

PARAMETER	UOM	LOR	D245 0.0-0.1 SOIL - 15/2/2017 SE162178.021	D245 0.2-0.3 SOIL - 15/2/2017 SE162178.022	D245 1.0-1.1 SOIL - 15/2/2017 SE162178.023	D245 1.9-2.0 SOIL - 15/2/2017 SE162178.024	D246 0.0-0.1 SOIL - 15/2/2017 SE162178.025
Arsenic, As	mg/kg	3	13	16	23	8	16
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	0.3	0.5	0.4
Chromium, Cr	mg/kg	0.3	22	27	40	38	30
Copper, Cu	mg/kg	0.5	22	30	40	53	7.5
Lead, Pb	mg/kg	1	16	18	18	9	19
Nickel, Ni	mg/kg	0.5	7.5	8.7	16	16	8.9
Zinc, Zn	mg/kg	0.5	33	29	55	170	35
Manganese, Mn	mg/kg	1	420	340	190	290	110

PARAMETER	UOM	LOR	D246 0.2-0.3 SOIL - 15/2/2017 SE162178.026	D246 1.0-1.1 SOIL - 15/2/2017 SE162178.027	D247 0.0-0.1 SOIL - 15/2/2017 SE162178.028	D247 0.2-0.3 SOIL - 15/2/2017 SE162178.029	D247 1.0-1.1 SOIL - 15/2/2017 SE162178.030
Arsenic, As	mg/kg	3	20	17	19	19	16
Cadmium, Cd	mg/kg	0.3	0.3	0.3	0.3	0.3	<0.3
Chromium, Cr	mg/kg	0.3	30	21	42	38	29
Copper, Cu	mg/kg	0.5	16	32	21	24	21
Lead, Pb	mg/kg	1	16	11	18	18	15
Nickel, Ni	mg/kg	0.5	9.4	27	17	21	22
Zinc, Zn	mg/kg	0.5	31	43	50	55	58
Manganese, Mn	mg/kg	1	55	390	45	62	120

PARAMETER	UOM	LOR	D247 1.9-2.0 SOIL - 15/2/2017 SE162178.031	D248 0.0-0.1 SOIL - 15/2/2017 SE162178.032	D248 0.2-0.3 SOIL - 15/2/2017 SE162178.033	D248 1.0-1.1 SOIL - 15/2/2017 SE162178.034	D249 0.0-0.1 SOIL - 15/2/2017 SE162178.035
Arsenic, As	mg/kg	3	20	48	150	290	95
Cadmium, Cd	mg/kg	0.3	0.4	0.5	0.7	1.8	0.5
Chromium, Cr	mg/kg	0.3	19	25	35	37	20
Copper, Cu	mg/kg	0.5	30	15	33	66	38
Lead, Pb	mg/kg	1	7	56	220	140	85
Nickel, Ni	mg/kg	0.5	27	7.4	12	33	12
Zinc, Zn	mg/kg	0.5	66	98	260	700	120
Manganese, Mn	mg/kg	1	240	370	670	1300	770

PARAMETER	UOM	LOR	D249 0.2-0.3 SOIL - 15/2/2017 SE162178.036	D249 1.0-1.1 SOIL - 15/2/2017 SE162178.037	D259 0.0-0.1 SOIL - 16/2/2017 SE162178.038	D259 0.2-0.3 SOIL - 16/2/2017 SE162178.039	D259 1.0-1.1 SOIL - 16/2/2017 SE162178.040
Arsenic, As	mg/kg	3	65	45	40	38	54
Cadmium, Cd	mg/kg	0.3	0.5	0.4	0.7	0.3	0.3
Chromium, Cr	mg/kg	0.3	19	35	26	32	33
Copper, Cu	mg/kg	0.5	28	42	14	34	50
Lead, Pb	mg/kg	1	83	48	50	29	35
Nickel, Ni	mg/kg	0.5	11	24	12	19	23
Zinc, Zn	mg/kg	0.5	110	110	190	78	99
Manganese, Mn	mg/kg	1	1100	380	1400	170	130

Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 21/2/2017 (continued)

PARAMETER	UOM	LOR	D259 1.9-2.0 SOIL - 16/2/2017 SE162178.041	D263 0.0-0.1 SOIL - 15/2/2017 SE162178.042	D263 0.2-0.3 SOIL - 15/2/2017 SE162178.043	D264 0.0-0.1 SOIL - 15/2/2017 SE162178.044	D264 0.2-0.3 SOIL - 15/2/2017 SE162178.045
Arsenic, As	mg/kg	3	17	13	11	13	14
Cadmium, Cd	mg/kg	0.3	0.5	<0.3	<0.3	0.3	<0.3
Chromium, Cr	mg/kg	0.3	16	28	35	27	28
Copper, Cu	mg/kg	0.5	25	22	16	15	17
Lead, Pb	mg/kg	1	17	15	12	17	18
Nickel, Ni	mg/kg	0.5	36	11	11	11	9.5
Zinc, Zn	mg/kg	0.5	97	28	23	42	37
Manganese, Mn	mg/kg	1	610	710	310	320	200

PARAMETER	UOM	LOR	D265 0.0-0.1 SOIL - 15/2/2017 SE162178.046	D265 0.2-0.3 SOIL - 15/2/2017 SE162178.047	D265 1.0-1.1 SOIL - 15/2/2017 SE162178.048	D271 0.0-0.1 SOIL - 16/2/2017 SE162178.049	D271 0.2-0.3 SOIL - 16/2/2017 SE162178.050
Arsenic, As	mg/kg	3	9	10	6	30	40
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	0.3	0.4
Chromium, Cr	mg/kg	0.3	25	28	31	26	33
Copper, Cu	mg/kg	0.5	19	17	14	13	17
Lead, Pb	mg/kg	1	11	9	5	96	98
Nickel, Ni	mg/kg	0.5	11	14	15	6.3	7.5
Zinc, Zn	mg/kg	0.5	35	32	28	57	74
Manganese, Mn	mg/kg	1	420	170	140	1300	1100

PARAMETER	UOM	LOR	D271 1.0-1.1 SOIL - 16/2/2017 SE162178.051	D271 1.9-2.0 SOIL - 16/2/2017 SE162178.052	D272 0.0-0.1 SOIL - 16/2/2017 SE162178.053	D272 0.2-0.3 SOIL - 16/2/2017 SE162178.054	D272 0.7-0.8 SOIL - 16/2/2017 SE162178.055
Arsenic, As	mg/kg	3	96	15	42	47	49
Cadmium, Cd	mg/kg	0.3	0.7	0.5	0.7	0.6	0.5
Chromium, Cr	mg/kg	0.3	34	18	34	40	26
Copper, Cu	mg/kg	0.5	54	39	22	24	51
Lead, Pb	mg/kg	1	210	19	110	130	65
Nickel, Ni	mg/kg	0.5	19	20	10	9.8	14
Zinc, Zn	mg/kg	0.5	240	220	110	110	110
Manganese, Mn	mg/kg	1	690	420	1700	2500	170

PARAMETER	UOM	LOR	D273 0.0-0.1 SOIL - 16/2/2017 SE162178.056	D273 0.2-0.3 SOIL - 16/2/2017 SE162178.057	D273 1.0-1.1 SOIL - 16/2/2017 SE162178.058	D273 1.9-2.0 SOIL - 16/2/2017 SE162178.059	D274 0.0-0.1 SOIL - 16/2/2017 SE162178.060
Arsenic, As	mg/kg	3	51	69	55	42	25
Cadmium, Cd	mg/kg	0.3	0.5	0.6	0.5	0.4	0.4
Chromium, Cr	mg/kg	0.3	49	61	41	28	34
Copper, Cu	mg/kg	0.5	4.6	9.4	30	34	8.3
Lead, Pb	mg/kg	1	100	110	75	95	73
Nickel, Ni	mg/kg	0.5	3.0	4.2	10	15	3.6
Zinc, Zn	mg/kg	0.5	56	50	74	92	54
Manganese, Mn	mg/kg	1	640	430	120	42	590

Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 21/2/2017 (continued)

PARAMETER	UOM	LOR	D274 0.2-0.3 SOIL - 16/2/2017 SE162178.061	D274 1.0-1.1 SOIL - 16/2/2017 SE162178.062	D275 0.0-0.1 SOIL - 16/2/2017 SE162178.063	D275 0.2-0.3 SOIL - 16/2/2017 SE162178.064	D275 1.0-1.1 SOIL - 16/2/2017 SE162178.065
Arsenic, As	mg/kg	3	63	33	25	42	42
Cadmium, Cd	mg/kg	0.3	0.8	0.3	<0.3	0.5	0.4
Chromium, Cr	mg/kg	0.3	71	31	23	39	34
Copper, Cu	mg/kg	0.5	15	28	10	12	28
Lead, Pb	mg/kg	1	130	45	47	76	45
Nickel, Ni	mg/kg	0.5	7.6	9.6	4.3	6.1	10
Zinc, Zn	mg/kg	0.5	82	61	48	48	53
Manganese, Mn	mg/kg	1	670	51	860	1200	140

PARAMETER	UOM	LOR	D275 1.9-2.0 SOIL - 16/2/2017 SE162178.066	D276 0.0-0.1 SOIL - 16/2/2017 SE162178.067	D276 0.2-0.3 SOIL - 16/2/2017 SE162178.068	D276 1.0-1.1 SOIL - 16/2/2017 SE162178.069	D277 0.0-0.1 SOIL - 16/2/2017 SE162178.070
Arsenic, As	mg/kg	3	130	37	76	85	34
Cadmium, Cd	mg/kg	0.3	1.0	0.4	0.6	0.7	0.4
Chromium, Cr	mg/kg	0.3	31	26	45	40	30
Copper, Cu	mg/kg	0.5	64	23	45	80	12
Lead, Pb	mg/kg	1	67	66	74	47	66
Nickel, Ni	mg/kg	0.5	18	5.8	9.1	15	9.1
Zinc, Zn	mg/kg	0.5	100	66	84	100	73
Manganese, Mn	mg/kg	1	6200	1400	800	510	2900

PARAMETER	UOM	LOR	D277 0.2-0.3 SOIL - 16/2/2017 SE162178.071	D277 1.0-1.1 SOIL - 16/2/2017 SE162178.072	D277 1.9-2.0 SOIL - 16/2/2017 SE162178.073	D278 0.0-0.1 SOIL - 16/2/2017 SE162178.074	D278 0.2-0.3 SOIL - 16/2/2017 SE162178.075
Arsenic, As	mg/kg	3	33	43	18	28	27
Cadmium, Cd	mg/kg	0.3	0.4	0.4	<0.3	1.0	0.9
Chromium, Cr	mg/kg	0.3	26	31	14	22	21
Copper, Cu	mg/kg	0.5	14	31	24	35	32
Lead, Pb	mg/kg	1	70	42	18	52	53
Nickel, Ni	mg/kg	0.5	11	13	35	15	15
Zinc, Zn	mg/kg	0.5	65	79	35	160	150
Manganese, Mn	mg/kg	1	3100	590	540	2400	2500

PARAMETER	UOM	LOR	D278 1.0-1.1 SOIL - 16/2/2017 SE162178.076	D279 0.0-0.1 SOIL - 16/2/2017 SE162178.077	D279 0.2-0.3 SOIL - 16/2/2017 SE162178.078	D280 0.0-0.1 SOIL - 16/2/2017 SE162178.079	D280 0.2-0.3 SOIL - 16/2/2017 SE162178.080
Arsenic, As	mg/kg	3	70	280	300	25	32
Cadmium, Cd	mg/kg	0.3	0.9	3.4	3.4	0.4	0.4
Chromium, Cr	mg/kg	0.3	70	26	26	18	30
Copper, Cu	mg/kg	0.5	37	47	47	25	37
Lead, Pb	mg/kg	1	59	310	330	20	20
Nickel, Ni	mg/kg	0.5	17	18	19	15	21
Zinc, Zn	mg/kg	0.5	200	570	560	55	61
Manganese, Mn	mg/kg	1	510	4300	4400	320	130

Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 21/2/2017 (continued)

PARAMETER	UOM	LOR	D280 1.0-1.1 SOIL - 16/2/2017 SE162178.081	D281 0.0-0.1 SOIL - 16/2/2017 SE162178.082	D281 0.2-0.3 SOIL - 16/2/2017 SE162178.083	D281 1.0-1.1 SOIL - 16/2/2017 SE162178.084	D282 0.0-0.1 SOIL - 16/2/2017 SE162178.085
Arsenic, As	mg/kg	3	32	50	66	69	11
Cadmium, Cd	mg/kg	0.3	0.4	0.4	0.4	0.4	0.4
Chromium, Cr	mg/kg	0.3	24	21	20	15	16
Copper, Cu	mg/kg	0.5	30	330	440	500	7.3
Lead, Pb	mg/kg	1	16	29	25	32	53
Nickel, Ni	mg/kg	0.5	29	14	12	13	12
Zinc, Zn	mg/kg	0.5	74	57	55	49	82
Manganese, Mn	mg/kg	1	160	100	66	110	470

PARAMETER	UOM	LOR	D282 0.2-0.3 SOIL - 16/2/2017 SE162178.086	D282 1.0-1.1 SOIL - 16/2/2017 SE162178.087	D283 0.0-0.1 SOIL - 17/2/2017 SE162178.088	D283 0.2-0.3 SOIL - 17/2/2017 SE162178.089	D284 0.0-0.1 SOIL - 17/2/2017 SE162178.090
Arsenic, As	mg/kg	3	15	8	13	9	10
Cadmium, Cd	mg/kg	0.3	0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.3	17	16	14	21	17
Copper, Cu	mg/kg	0.5	8.5	8.9	20	18	2.3
Lead, Pb	mg/kg	1	90	19	19	11	9
Nickel, Ni	mg/kg	0.5	12	9.1	8.3	14	12
Zinc, Zn	mg/kg	0.5	87	79	50	74	44
Manganese, Mn	mg/kg	1	250	45	120	91	110

PARAMETER	UOM	LOR	D284 0.2-0.3 SOIL - 17/2/2017 SE162178.091	D285 0.0-0.1 SOIL - 17/2/2017 SE162178.092	D285 0.2-0.3 SOIL - 17/2/2017 SE162178.093	D285 1.0-1.1 SOIL - 17/2/2017 SE162178.094	D285 1.9-2.0 SOIL - 17/2/2017 SE162178.095
Arsenic, As	mg/kg	3	10	43	97	200	260
Cadmium, Cd	mg/kg	0.3	<0.3	0.8	1.0	2.0	9.8
Chromium, Cr	mg/kg	0.3	18	27	35	30	22
Copper, Cu	mg/kg	0.5	2.5	16	40	64	61
Lead, Pb	mg/kg	1	11	82	160	240	64
Nickel, Ni	mg/kg	0.5	14	8.6	17	21	11
Zinc, Zn	mg/kg	0.5	53	170	340	670	1600
Manganese, Mn	mg/kg	1	150	910	2300	3200	2600

PARAMETER	UOM	LOR	D286 0.0-0.1 SOIL - 17/2/2017 SE162178.096	D286 0.2-0.3 SOIL - 17/2/2017 SE162178.097	D286 1.0-1.1 SOIL - 17/2/2017 SE162178.098	D287 0.0-0.1 SOIL - 17/2/2017 SE162178.099	D287 0.2-0.3 SOIL - 17/2/2017 SE162178.100
Arsenic, As	mg/kg	3	26	26	50	29	53
Cadmium, Cd	mg/kg	0.3	0.4	0.3	0.4	0.5	0.5
Chromium, Cr	mg/kg	0.3	31	29	35	34	50
Copper, Cu	mg/kg	0.5	9.6	13	25	12	15
Lead, Pb	mg/kg	1	58	58	67	73	95
Nickel, Ni	mg/kg	0.5	5.5	6.4	10	3.8	6.2
Zinc, Zn	mg/kg	0.5	44	45	69	57	64
Manganese, Mn	mg/kg	1	1900	1600	1000	780	900

Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 21/2/2017 (continued)

PARAMETER	UOM	LOR	D287 1.0-1.1 SOIL - 17/2/2017 SE162178.101	D287 1.9-2.0 SOIL - 17/2/2017 SE162178.102	D288 0.0-0.1 SOIL - 17/2/2017 SE162178.103	D288 0.2-0.3 SOIL - 17/2/2017 SE162178.104	D288 0.6-0.7 SOIL - 17/2/2017 SE162178.105
Arsenic, As	mg/kg	3	79	85	22	16	15
Cadmium, Cd	mg/kg	0.3	0.6	0.5	0.6	0.4	0.3
Chromium, Cr	mg/kg	0.3	63	35	23	28	21
Copper, Cu	mg/kg	0.5	31	46	16	16	14
Lead, Pb	mg/kg	1	80	54	30	20	25
Nickel, Ni	mg/kg	0.5	5.4	11	19	25	26
Zinc, Zn	mg/kg	0.5	69	77	190	110	180
Manganese, Mn	mg/kg	1	210	50	440	190	240

PARAMETER	UOM	LOR	D289 0.0-0.1 SOIL - 17/2/2017 SE162178.106	D289 0.2-0.3 SOIL - 17/2/2017 SE162178.107	D289 0.5-0.6 SOIL - 17/2/2017 SE162178.108	D289 1.0-1.1 SOIL - 17/2/2017 SE162178.109	D290 0.0-0.1 SOIL - 17/2/2017 SE162178.110
Arsenic, As	mg/kg	3	16	17	22	22	22
Cadmium, Cd	mg/kg	0.3	0.3	<0.3	0.3	0.4	1.6
Chromium, Cr	mg/kg	0.3	23	22	22	19	22
Copper, Cu	mg/kg	0.5	31	30	31	47	20
Lead, Pb	mg/kg	1	17	19	45	21	84
Nickel, Ni	mg/kg	0.5	16	12	30	31	11
Zinc, Zn	mg/kg	0.5	69	51	150	160	180
Manganese, Mn	mg/kg	1	210	120	190	300	2500

PARAMETER	UOM	LOR	D290 0.2-0.3 SOIL - 17/2/2017 SE162178.111	D290 1.0-1.1 SOIL - 17/2/2017 SE162178.112	Duplicate DS8 SOIL - 17/2/2017 SE162178.113	Duplicate DS9 SOIL - 17/2/2017 SE162178.114	Duplicate DS10 SOIL - 17/2/2017 SE162178.115
Arsenic, As	mg/kg	3	27	28	39	34	14
Cadmium, Cd	mg/kg	0.3	0.9	1.1	0.7	0.5	0.3
Chromium, Cr	mg/kg	0.3	24	27	26	31	20
Copper, Cu	mg/kg	0.5	26	25	16	14	20
Lead, Pb	mg/kg	1	82	84	63	69	18
Nickel, Ni	mg/kg	0.5	12	14	9.1	4.9	11
Zinc, Zn	mg/kg	0.5	170	180	160	65	50
Manganese, Mn	mg/kg	1	1400	1800	830	710	310

PARAMETER	UOM	LOR	Duplicate DS11 SOIL - 17/2/2017 SE162178.116	Duplicate DS12 SOIL - 16/2/2017 SE162178.117	Duplicate DS13 SOIL - 16/2/2017 SE162178.118	Duplicate DS14 SOIL - 16/2/2017 SE162178.119	Duplicate DS15 SOIL - 16/2/2017 SE162178.120
Arsenic, As	mg/kg	3	12	37	33	53	24
Cadmium, Cd	mg/kg	0.3	<0.3	0.6	0.4	0.6	0.3
Chromium, Cr	mg/kg	0.3	15	29	31	54	20
Copper, Cu	mg/kg	0.5	2.3	13	13	5.9	27
Lead, Pb	mg/kg	1	10	60	96	110	18
Nickel, Ni	mg/kg	0.5	11	11	6.2	3.7	16
Zinc, Zn	mg/kg	0.5	43	110	59	53	56
Manganese, Mn	mg/kg	1	110	1600	1200	730	290

Mercury in Soil [AN312] Tested: 22/2/2017

PARAMETER	UOM	LOR	D226 0.0-0.1 SOIL - 15/2/2017 SE162178.001	D226 0.2-0.3 SOIL - 15/2/2017 SE162178.002	D226 1.0-1.1 SOIL - 15/2/2017 SE162178.003	D229 0.0-0.1 SOIL - 15/2/2017 SE162178.004	D229 0.2-0.3 SOIL - 15/2/2017 SE162178.005
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D229 1.0-1.1 SOIL - 15/2/2017 SE162178.006	D230 0.0-0.1 SOIL - 15/2/2017 SE162178.007	D230 0.2-0.3 SOIL - 15/2/2017 SE162178.008	D230 1.0-1.1 SOIL - 15/2/2017 SE162178.009	D231 0.0-0.1 SOIL - 15/2/2017 SE162178.010
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D231 0.2-0.3 SOIL - 15/2/2017 SE162178.011	D231 1.0-1.1 SOIL - 15/2/2017 SE162178.012	D231 1.9-2.0 SOIL - 15/2/2017 SE162178.013	D243 0.0-0.1 SOIL - 15/2/2017 SE162178.014	D243 0.2-0.3 SOIL - 15/2/2017 SE162178.015
Mercury	mg/kg	0.05	<0.05	0.10	0.06	<0.05	<0.05

PARAMETER	UOM	LOR	D243 1.0-1.1 SOIL - 15/2/2017 SE162178.016	D243 1.9-2.0 SOIL - 15/2/2017 SE162178.017	D244 0.0-0.1 SOIL - 15/2/2017 SE162178.018	D244 0.2-0.3 SOIL - 15/2/2017 SE162178.019	D244 1.0-1.1 SOIL - 15/2/2017 SE162178.020
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D245 0.0-0.1 SOIL - 15/2/2017 SE162178.021	D245 0.2-0.3 SOIL - 15/2/2017 SE162178.022	D245 1.0-1.1 SOIL - 15/2/2017 SE162178.023	D245 1.9-2.0 SOIL - 15/2/2017 SE162178.024	D246 0.0-0.1 SOIL - 15/2/2017 SE162178.025
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D246 0.2-0.3 SOIL - 15/2/2017 SE162178.026	D246 1.0-1.1 SOIL - 15/2/2017 SE162178.027	D247 0.0-0.1 SOIL - 15/2/2017 SE162178.028	D247 0.2-0.3 SOIL - 15/2/2017 SE162178.029	D247 1.0-1.1 SOIL - 15/2/2017 SE162178.030
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D247 1.9-2.0 SOIL - 15/2/2017 SE162178.031	D248 0.0-0.1 SOIL - 15/2/2017 SE162178.032	D248 0.2-0.3 SOIL - 15/2/2017 SE162178.033	D248 1.0-1.1 SOIL - 15/2/2017 SE162178.034	D249 0.0-0.1 SOIL - 15/2/2017 SE162178.035
Mercury	mg/kg	0.05	<0.05	<0.05	0.05	0.07	<0.05

Mercury in Soil [AN312] Tested: 22/2/2017 (continued)

PARAMETER	UOM	LOR	D249 0.2-0.3 SOIL - 15/2/2017 SE162178.036	D249 1.0-1.1 SOIL - 15/2/2017 SE162178.037	D259 0.0-0.1 SOIL - 16/2/2017 SE162178.038	D259 0.2-0.3 SOIL - 16/2/2017 SE162178.039	D259 1.0-1.1 SOIL - 16/2/2017 SE162178.040
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D259 1.9-2.0 SOIL - 16/2/2017 SE162178.041	D263 0.0-0.1 SOIL - 15/2/2017 SE162178.042	D263 0.2-0.3 SOIL - 15/2/2017 SE162178.043	D264 0.0-0.1 SOIL - 15/2/2017 SE162178.044	D264 0.2-0.3 SOIL - 15/2/2017 SE162178.045
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D265 0.0-0.1 SOIL - 15/2/2017 SE162178.046	D265 0.2-0.3 SOIL - 15/2/2017 SE162178.047	D265 1.0-1.1 SOIL - 15/2/2017 SE162178.048	D271 0.0-0.1 SOIL - 16/2/2017 SE162178.049	D271 0.2-0.3 SOIL - 16/2/2017 SE162178.050
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D271 1.0-1.1 SOIL - 16/2/2017 SE162178.051	D271 1.9-2.0 SOIL - 16/2/2017 SE162178.052	D272 0.0-0.1 SOIL - 16/2/2017 SE162178.053	D272 0.2-0.3 SOIL - 16/2/2017 SE162178.054	D272 0.7-0.8 SOIL - 16/2/2017 SE162178.055
Mercury	mg/kg	0.05	0.05	0.06	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D273 0.0-0.1 SOIL - 16/2/2017 SE162178.056	D273 0.2-0.3 SOIL - 16/2/2017 SE162178.057	D273 1.0-1.1 SOIL - 16/2/2017 SE162178.058	D273 1.9-2.0 SOIL - 16/2/2017 SE162178.059	D274 0.0-0.1 SOIL - 16/2/2017 SE162178.060
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D274 0.2-0.3 SOIL - 16/2/2017 SE162178.061	D274 1.0-1.1 SOIL - 16/2/2017 SE162178.062	D275 0.0-0.1 SOIL - 16/2/2017 SE162178.063	D275 0.2-0.3 SOIL - 16/2/2017 SE162178.064	D275 1.0-1.1 SOIL - 16/2/2017 SE162178.065
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D275 1.9-2.0 SOIL - 16/2/2017 SE162178.066	D276 0.0-0.1 SOIL - 16/2/2017 SE162178.067	D276 0.2-0.3 SOIL - 16/2/2017 SE162178.068	D276 1.0-1.1 SOIL - 16/2/2017 SE162178.069	D277 0.0-0.1 SOIL - 16/2/2017 SE162178.070
Mercury	mg/kg	0.05	0.08	<0.05	<0.05	<0.05	<0.05

Mercury in Soil [AN312] Tested: 22/2/2017 (continued)

PARAMETER	UOM	LOR	D277 0.2-0.3 SOIL - 16/2/2017 SE162178.071	D277 1.0-1.1 SOIL - 16/2/2017 SE162178.072	D277 1.9-2.0 SOIL - 16/2/2017 SE162178.073	D278 0.0-0.1 SOIL - 16/2/2017 SE162178.074	D278 0.2-0.3 SOIL - 16/2/2017 SE162178.075
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D278 1.0-1.1 SOIL - 16/2/2017 SE162178.076	D279 0.0-0.1 SOIL - 16/2/2017 SE162178.077	D279 0.2-0.3 SOIL - 16/2/2017 SE162178.078	D280 0.0-0.1 SOIL - 16/2/2017 SE162178.079	D280 0.2-0.3 SOIL - 16/2/2017 SE162178.080
Mercury	mg/kg	0.05	<0.05	0.08	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D280 1.0-1.1 SOIL - 16/2/2017 SE162178.081	D281 0.0-0.1 SOIL - 16/2/2017 SE162178.082	D281 0.2-0.3 SOIL - 16/2/2017 SE162178.083	D281 1.0-1.1 SOIL - 16/2/2017 SE162178.084	D282 0.0-0.1 SOIL - 16/2/2017 SE162178.085
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D282 0.2-0.3 SOIL - 16/2/2017 SE162178.086	D282 1.0-1.1 SOIL - 16/2/2017 SE162178.087	D283 0.0-0.1 SOIL - 17/2/2017 SE162178.088	D283 0.2-0.3 SOIL - 17/2/2017 SE162178.089	D284 0.0-0.1 SOIL - 17/2/2017 SE162178.090
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D284 0.2-0.3 SOIL - 17/2/2017 SE162178.091	D285 0.0-0.1 SOIL - 17/2/2017 SE162178.092	D285 0.2-0.3 SOIL - 17/2/2017 SE162178.093	D285 1.0-1.1 SOIL - 17/2/2017 SE162178.094	D285 1.9-2.0 SOIL - 17/2/2017 SE162178.095
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	0.36

PARAMETER	UOM	LOR	D286 0.0-0.1 SOIL - 17/2/2017 SE162178.096	D286 0.2-0.3 SOIL - 17/2/2017 SE162178.097	D286 1.0-1.1 SOIL - 17/2/2017 SE162178.098	D287 0.0-0.1 SOIL - 17/2/2017 SE162178.099	D287 0.2-0.3 SOIL - 17/2/2017 SE162178.100
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	0.05	0.05

PARAMETER	UOM	LOR	D287 1.0-1.1 SOIL - 17/2/2017 SE162178.101	D287 1.9-2.0 SOIL - 17/2/2017 SE162178.102	D288 0.0-0.1 SOIL - 17/2/2017 SE162178.103	D288 0.2-0.3 SOIL - 17/2/2017 SE162178.104	D288 0.6-0.7 SOIL - 17/2/2017 SE162178.105
Mercury	mg/kg	0.05	<0.05	0.07	<0.05	<0.05	<0.05

Mercury in Soil [AN312] Tested: 22/2/2017 (continued)

PARAMETER	UOM	LOR	D289 0.0-0.1 SOIL - 17/2/2017 SE162178.106	D289 0.2-0.3 SOIL - 17/2/2017 SE162178.107	D289 0.5-0.6 SOIL - 17/2/2017 SE162178.108	D289 1.0-1.1 SOIL - 17/2/2017 SE162178.109	D290 0.0-0.1 SOIL - 17/2/2017 SE162178.110
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	D290 0.2-0.3 SOIL - 17/2/2017 SE162178.111	D290 1.0-1.1 SOIL - 17/2/2017 SE162178.112	Duplicate DS8 SOIL - 17/2/2017 SE162178.113	Duplicate DS9 SOIL - 17/2/2017 SE162178.114	Duplicate DS10 SOIL - 17/2/2017 SE162178.115
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	0.06	<0.05

PARAMETER	UOM	LOR	Duplicate DS11 SOIL - 17/2/2017 SE162178.116	Duplicate DS12 SOIL - 16/2/2017 SE162178.117	Duplicate DS13 SOIL - 16/2/2017 SE162178.118	Duplicate DS14 SOIL - 16/2/2017 SE162178.119	Duplicate DS15 SOIL - 16/2/2017 SE162178.120
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Moisture Content [AN002] Tested: 21/2/2017

PARAMETER	UOM	LOR	D226 0.0-0.1 SOIL - 15/2/2017 SE162178.001	D226 0.2-0.3 SOIL - 15/2/2017 SE162178.002	D226 1.0-1.1 SOIL - 15/2/2017 SE162178.003	D229 0.0-0.1 SOIL - 15/2/2017 SE162178.004	D229 0.2-0.3 SOIL - 15/2/2017 SE162178.005
% Moisture	%w/w	0.5	5.9	4.4	8.9	2.7	5.5

PARAMETER	UOM	LOR	D229 1.0-1.1 SOIL - 15/2/2017 SE162178.006	D230 0.0-0.1 SOIL - 15/2/2017 SE162178.007	D230 0.2-0.3 SOIL - 15/2/2017 SE162178.008	D230 1.0-1.1 SOIL - 15/2/2017 SE162178.009	D231 0.0-0.1 SOIL - 15/2/2017 SE162178.010
% Moisture	%w/w	0.5	13	3.6	2.6	16	2.3

PARAMETER	UOM	LOR	D231 0.2-0.3 SOIL - 15/2/2017 SE162178.011	D231 1.0-1.1 SOIL - 15/2/2017 SE162178.012	D231 1.9-2.0 SOIL - 15/2/2017 SE162178.013	D243 0.0-0.1 SOIL - 15/2/2017 SE162178.014	D243 0.2-0.3 SOIL - 15/2/2017 SE162178.015
% Moisture	%w/w	0.5	3.4	21	16	4.6	3.6

PARAMETER	UOM	LOR	D243 1.0-1.1 SOIL - 15/2/2017 SE162178.016	D243 1.9-2.0 SOIL - 15/2/2017 SE162178.017	D244 0.0-0.1 SOIL - 15/2/2017 SE162178.018	D244 0.2-0.3 SOIL - 15/2/2017 SE162178.019	D244 1.0-1.1 SOIL - 15/2/2017 SE162178.020
% Moisture	%w/w	0.5	20	15	6.7	3.4	4.1

PARAMETER	UOM	LOR	D245 0.0-0.1 SOIL - 15/2/2017 SE162178.021	D245 0.2-0.3 SOIL - 15/2/2017 SE162178.022	D245 1.0-1.1 SOIL - 15/2/2017 SE162178.023	D245 1.9-2.0 SOIL - 15/2/2017 SE162178.024	D246 0.0-0.1 SOIL - 15/2/2017 SE162178.025
% Moisture	%w/w	0.5	4.3	4.9	15	18	1.7

PARAMETER	UOM	LOR	D246 0.2-0.3 SOIL - 15/2/2017 SE162178.026	D246 1.0-1.1 SOIL - 15/2/2017 SE162178.027	D247 0.0-0.1 SOIL - 15/2/2017 SE162178.028	D247 0.2-0.3 SOIL - 15/2/2017 SE162178.029	D247 1.0-1.1 SOIL - 15/2/2017 SE162178.030
% Moisture	%w/w	0.5	4.7	13	14	18	18

PARAMETER	UOM	LOR	D247 1.9-2.0 SOIL - 15/2/2017 SE162178.031	D248 0.0-0.1 SOIL - 15/2/2017 SE162178.032	D248 0.2-0.3 SOIL - 15/2/2017 SE162178.033	D248 1.0-1.1 SOIL - 15/2/2017 SE162178.034	D249 0.0-0.1 SOIL - 15/2/2017 SE162178.035
% Moisture	%w/w	0.5	12	2.2	10	24	7.1

Moisture Content [AN002] Tested: 21/2/2017 (continued)

PARAMETER	UOM	LOR	D249 0.2-0.3 SOIL - 15/2/2017 SE162178.036	D249 1.0-1.1 SOIL - 15/2/2017 SE162178.037	D259 0.0-0.1 SOIL - 16/2/2017 SE162178.038	D259 0.2-0.3 SOIL - 16/2/2017 SE162178.039	D259 1.0-1.1 SOIL - 16/2/2017 SE162178.040
% Moisture	%w/w	0.5	8.2	9.9	4.1	7.5	14

PARAMETER	UOM	LOR	D259 1.9-2.0 SOIL - 16/2/2017 SE162178.041	D263 0.0-0.1 SOIL - 15/2/2017 SE162178.042	D263 0.2-0.3 SOIL - 15/2/2017 SE162178.043	D264 0.0-0.1 SOIL - 15/2/2017 SE162178.044	D264 0.2-0.3 SOIL - 15/2/2017 SE162178.045
% Moisture	%w/w	0.5	14	5.0	3.9	2.6	3.0

PARAMETER	UOM	LOR	D265 0.0-0.1 SOIL - 15/2/2017 SE162178.046	D265 0.2-0.3 SOIL - 15/2/2017 SE162178.047	D265 1.0-1.1 SOIL - 15/2/2017 SE162178.048	D271 0.0-0.1 SOIL - 16/2/2017 SE162178.049	D271 0.2-0.3 SOIL - 16/2/2017 SE162178.050
% Moisture	%w/w	0.5	4.0	3.5	11	4.3	7.2

PARAMETER	UOM	LOR	D271 1.0-1.1 SOIL - 16/2/2017 SE162178.051	D271 1.9-2.0 SOIL - 16/2/2017 SE162178.052	D272 0.0-0.1 SOIL - 16/2/2017 SE162178.053	D272 0.2-0.3 SOIL - 16/2/2017 SE162178.054	D272 0.7-0.8 SOIL - 16/2/2017 SE162178.055
% Moisture	%w/w	0.5	18	11	3.5	4.7	11

PARAMETER	UOM	LOR	D273 0.0-0.1 SOIL - 16/2/2017 SE162178.056	D273 0.2-0.3 SOIL - 16/2/2017 SE162178.057	D273 1.0-1.1 SOIL - 16/2/2017 SE162178.058	D273 1.9-2.0 SOIL - 16/2/2017 SE162178.059	D274 0.0-0.1 SOIL - 16/2/2017 SE162178.060
% Moisture	%w/w	0.5	2.6	3.9	18	18	2.5

PARAMETER	UOM	LOR	D274 0.2-0.3 SOIL - 16/2/2017 SE162178.061	D274 1.0-1.1 SOIL - 16/2/2017 SE162178.062	D275 0.0-0.1 SOIL - 16/2/2017 SE162178.063	D275 0.2-0.3 SOIL - 16/2/2017 SE162178.064	D275 1.0-1.1 SOIL - 16/2/2017 SE162178.065
% Moisture	%w/w	0.5	7.5	19	1.7	4.2	16

PARAMETER	UOM	LOR	D275 1.9-2.0 SOIL - 16/2/2017 SE162178.066	D276 0.0-0.1 SOIL - 16/2/2017 SE162178.067	D276 0.2-0.3 SOIL - 16/2/2017 SE162178.068	D276 1.0-1.1 SOIL - 16/2/2017 SE162178.069	D277 0.0-0.1 SOIL - 16/2/2017 SE162178.070
% Moisture	%w/w	0.5	24	5.0	10	22	4.9

Moisture Content [AN002] Tested: 21/2/2017 (continued)

PARAMETER	UOM	LOR	D277 0.2-0.3 SOIL - 16/2/2017 SE162178.071	D277 1.0-1.1 SOIL - 16/2/2017 SE162178.072	D277 1.9-2.0 SOIL - 16/2/2017 SE162178.073	D278 0.0-0.1 SOIL - 16/2/2017 SE162178.074	D278 0.2-0.3 SOIL - 16/2/2017 SE162178.075
% Moisture	%w/w	0.5	6.4	12	6.8	8.2	6.7

PARAMETER	UOM	LOR	D278 1.0-1.1 SOIL - 16/2/2017 SE162178.076	D279 0.0-0.1 SOIL - 16/2/2017 SE162178.077	D279 0.2-0.3 SOIL - 16/2/2017 SE162178.078	D280 0.0-0.1 SOIL - 16/2/2017 SE162178.079	D280 0.2-0.3 SOIL - 16/2/2017 SE162178.080
% Moisture	%w/w	0.5	7.2	8.4	8.5	2.4	5.5

PARAMETER	UOM	LOR	D280 1.0-1.1 SOIL - 16/2/2017 SE162178.081	D281 0.0-0.1 SOIL - 16/2/2017 SE162178.082	D281 0.2-0.3 SOIL - 16/2/2017 SE162178.083	D281 1.0-1.1 SOIL - 16/2/2017 SE162178.084	D282 0.0-0.1 SOIL - 16/2/2017 SE162178.085
% Moisture	%w/w	0.5	6.1	3.0	6.3	8.3	5.8

PARAMETER	UOM	LOR	D282 0.2-0.3 SOIL - 16/2/2017 SE162178.086	D282 1.0-1.1 SOIL - 16/2/2017 SE162178.087	D283 0.0-0.1 SOIL - 17/2/2017 SE162178.088	D283 0.2-0.3 SOIL - 17/2/2017 SE162178.089	D284 0.0-0.1 SOIL - 17/2/2017 SE162178.090
% Moisture	%w/w	0.5	5.4	16	2.4	4.2	2.2

PARAMETER	UOM	LOR	D284 0.2-0.3 SOIL - 17/2/2017 SE162178.091	D285 0.0-0.1 SOIL - 17/2/2017 SE162178.092	D285 0.2-0.3 SOIL - 17/2/2017 SE162178.093	D285 1.0-1.1 SOIL - 17/2/2017 SE162178.094	D285 1.9-2.0 SOIL - 17/2/2017 SE162178.095
% Moisture	%w/w	0.5	2.6	2.5	11	13	27

PARAMETER	UOM	LOR	D286 0.0-0.1 SOIL - 17/2/2017 SE162178.096	D286 0.2-0.3 SOIL - 17/2/2017 SE162178.097	D286 1.0-1.1 SOIL - 17/2/2017 SE162178.098	D287 0.0-0.1 SOIL - 17/2/2017 SE162178.099	D287 0.2-0.3 SOIL - 17/2/2017 SE162178.100
% Moisture	%w/w	0.5	1.8	5.8	15	4.7	5.3

PARAMETER	UOM	LOR	D287 1.0-1.1 SOIL - 17/2/2017 SE162178.101	D287 1.9-2.0 SOIL - 17/2/2017 SE162178.102	D288 0.0-0.1 SOIL - 17/2/2017 SE162178.103	D288 0.2-0.3 SOIL - 17/2/2017 SE162178.104	D288 0.6-0.7 SOIL - 17/2/2017 SE162178.105
% Moisture	%w/w	0.5	7.3	21	5.2	9.1	10

Moisture Content [AN002] Tested: 21/2/2017 (continued)

PARAMETER	UOM	LOR	D289 0.0-0.1 SOIL - 17/2/2017 SE162178.106	D289 0.2-0.3 SOIL - 17/2/2017 SE162178.107	D289 0.5-0.6 SOIL - 17/2/2017 SE162178.108	D289 1.0-1.1 SOIL - 17/2/2017 SE162178.109	D290 0.0-0.1 SOIL - 17/2/2017 SE162178.110
% Moisture	%w/w	0.5	2.5	4.9	11	6.4	5.5

PARAMETER	UOM	LOR	D290 0.2-0.3 SOIL - 17/2/2017 SE162178.111	D290 1.0-1.1 SOIL - 17/2/2017 SE162178.112	Duplicate DS8 SOIL - 17/2/2017 SE162178.113	Duplicate DS9 SOIL - 17/2/2017 SE162178.114	Duplicate DS10 SOIL - 17/2/2017 SE162178.115
% Moisture	%w/w	0.5	7.7	8.4	3.6	5.4	3.0

PARAMETER	UOM	LOR	Duplicate DS11 SOIL - 17/2/2017 SE162178.116	Duplicate DS12 SOIL - 16/2/2017 SE162178.117	Duplicate DS13 SOIL - 16/2/2017 SE162178.118	Duplicate DS14 SOIL - 16/2/2017 SE162178.119	Duplicate DS15 SOIL - 16/2/2017 SE162178.120
% Moisture	%w/w	0.5	2.0	4.5	4.4	2.1	2.2

Metals in Water (Dissolved) by ICPOES [AN320/AN321] Tested: 24/2/2017

PARAMETER	UOM	LOR	Rinsate RS3 WATER - 15/2/2017 SE162178.121	Rinsate RS4 WATER - 16/2/2017 SE162178.122	Rinsate RS5 WATER - 17/2/2017 SE162178.123
Arsenic, As	mg/L	0.02	<0.02	<0.02	<0.02
Cadmium, Cd	mg/L	0.001	<0.001	<0.001	<0.001
Chromium, Cr	mg/L	0.005	<0.005	<0.005	<0.005
Copper, Cu	mg/L	0.005	<0.005	<0.005	<0.005
Lead, Pb	mg/L	0.02	<0.02	<0.02	<0.02
Manganese, Mn	mg/L	0.005	<0.005	<0.005	<0.005
Nickel, Ni	mg/L	0.005	<0.005	<0.005	<0.005
Zinc, Zn	mg/L	0.01	<0.01	<0.01	<0.01

Mercury (dissolved) in Water [AN311(Perth)/AN312] Tested: 23/2/2017

PARAMETER	UOM	LOR	Rinsate RS3 WATER - 15/2/2017 SE162178.121	Rinsate RS4 WATER - 16/2/2017 SE162178.122	Rinsate RS5 WATER - 17/2/2017 SE162178.123
Mercury	mg/L	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/AN320	A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analysis by ASS or ICP as per USEPA Method 200.8.
AN101	pH in Soil Sludge Sediment and Water: pH is measured electrometrically using a combination electrode and is calibrated against 3 buffers purchased commercially. For soils, sediments and sludges, an extract with water (or 0.01M $CaCl_2$) is made at a ratio of 1:5 and the pH determined and reported on the extract. Reference APHA 4500-H+.
AN122	Exchangeable Cations, CEC and ESP: Soil sample is extracted in 1M Ammonium Acetate at pH=7 (or 1M Ammonium Chloride at pH=7) with cations (Na, K, Ca & Mg) then determined by ICP OES/ICP MS and reported as Exchangeable Cations. For saline soils, these results can be corrected for water soluble cations and reported as Exchangeable cations in meq/100g or soil can be pre-treated (aqueous ethanol/aqueous glycerol) prior to extraction. Cation Exchange Capacity (CEC) is the sum of the exchangeable cations in meq/100g.
AN122	The Exchangeable Sodium Percentage (ESP) is calculated as the exchangeable sodium divided by the CEC (all in meq/100g) times 100. ESP can be used to categorise the sodicity of the soil as below : ESP < 6% non-sodic ESP 6-15% sodic ESP >15% strongly sodic Method is refernced to Rayment and Higginson, 1992, sections 15D3 and 15N1.-
AN311(Perth)/AN312	Mercury by Cold Vapour AAS in Waters: Mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500.
AN312	Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid , mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser . Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500
AN320/AN321	Metals by ICP-OES: Samples are preserved with 10% nitric acid for a wide range of metals and some non-metals. This solution is measured by Inductively Coupled Plasma. Solutions are aspirated into an argon plasma at 8000-10000K and emit characteristic energy or light as a result of electron transitions through unique energy levels. The emitted light is focused onto a diffraction grating where it is separated into components .
AN320/AN321	Photomultipliers or CCDs are used to measure the light intensity at specific wavelengths. This intensity is directly proportional to concentration. Corrections are required to compensate for spectral overlap between elements . Reference APHA 3120 B.

FOOTNOTES

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

Samples analysed as received.
Solid samples expressed on a dry weight basis.

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

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

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

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:
a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

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

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

STATEMENT OF QA/QC PERFORMANCE

SE162178 R1

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**12675-4 Goongong NH1A-7 & NH2**
Order Number	(Not specified)
Samples	123

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
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Telephone	+61 2 8594 0400
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Email	au.environmental.sydney@sgs.com
SGS Reference	**SE162178 R1**
Date Received	20 Feb 2017
Date Reported	18 May 2017

COMMENTS

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

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

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

Duplicate	Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES	4 items
	Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES	4 items
	Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES	3 items
	Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES	1 item
Matrix Spike	Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES	1 item
	Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES	3 items
	Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES	1 item
	Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES	2 items
	Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES	1 item
	Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES	2 items

SAMPLE SUMMARY

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	120 Soil, 3 Water
Date documentation received	20/2/2017	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	17.0°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

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
D226 0.0-0.1	SE162178.001	LB119136	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	27 Feb 2017
D226 1.0-1.1	SE162178.003	LB119136	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	27 Feb 2017
D229 1.0-1.1	SE162178.006	LB119136	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	27 Feb 2017
D230 1.0-1.1	SE162178.009	LB119136	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	27 Feb 2017
D231 1.0-1.1	SE162178.012	LB119136	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	27 Feb 2017
D231 1.9-2.0	SE162178.013	LB119136	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	27 Feb 2017
D245 1.9-2.0	SE162178.024	LB119136	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	27 Feb 2017
D246 1.0-1.1	SE162178.027	LB119136	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	27 Feb 2017
D247 0.2-0.3	SE162178.029	LB119136	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	27 Feb 2017
D247 1.9-2.0	SE162178.031	LB119136	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	27 Feb 2017
D248 0.2-0.3	SE162178.033	LB119136	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	27 Feb 2017
D249 0.2-0.3	SE162178.036	LB119136	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	27 Feb 2017
D249 1.0-1.1	SE162178.037	LB119136	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	27 Feb 2017
D259 0.2-0.3	SE162178.039	LB119136	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	27 Feb 2017
D259 1.9-2.0	SE162178.041	LB119136	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	27 Feb 2017
D263 0.2-0.3	SE162178.043	LB119136	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	27 Feb 2017
D264 0.0-0.1	SE162178.044	LB119136	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	27 Feb 2017
D265 0.2-0.3	SE162178.047	LB119138	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	27 Feb 2017
D271 1.0-1.1	SE162178.051	LB119138	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	27 Feb 2017
D271 1.9-2.0	SE162178.052	LB119138	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	27 Feb 2017
D272 0.0-0.1	SE162178.053	LB119138	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	27 Feb 2017
D272 0.7-0.8	SE162178.055	LB119138	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	27 Feb 2017
D273 0.0-0.1	SE162178.056	LB119138	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	27 Feb 2017
D273 1.9-2.0	SE162178.059	LB119138	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	27 Feb 2017
D274 1.0-1.1	SE162178.062	LB119138	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	27 Feb 2017
D275 1.9-2.0	SE162178.066	LB119138	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	27 Feb 2017
D277 0.2-0.3	SE162178.071	LB119138	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	27 Feb 2017
D277 1.9-2.0	SE162178.073	LB119138	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	27 Feb 2017
D278 1.0-1.1	SE162178.076	LB119138	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	27 Feb 2017
D283 0.2-0.3	SE162178.089	LB119138	17 Feb 2017	20 Feb 2017	17 Mar 2017	22 Feb 2017	17 Mar 2017	27 Feb 2017
D286 1.0-1.1	SE162178.098	LB119138	17 Feb 2017	20 Feb 2017	17 Mar 2017	22 Feb 2017	17 Mar 2017	27 Feb 2017
D288 0.6-0.7	SE162178.105	LB119138	17 Feb 2017	20 Feb 2017	17 Mar 2017	22 Feb 2017	17 Mar 2017	27 Feb 2017
D289 1.0-1.1	SE162178.109	LB119138	17 Feb 2017	20 Feb 2017	17 Mar 2017	22 Feb 2017	17 Mar 2017	27 Feb 2017
D290 1.0-1.1	SE162178.112	LB119138	17 Feb 2017	20 Feb 2017	17 Mar 2017	22 Feb 2017	17 Mar 2017	27 Feb 2017

Mercury (dissolved) in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Rinsate RS3	SE162178.121	LB119219	15 Feb 2017	20 Feb 2017	15 Mar 2017	23 Feb 2017	15 Mar 2017	23 Feb 2017
Rinsate RS4	SE162178.122	LB119219	16 Feb 2017	20 Feb 2017	16 Mar 2017	23 Feb 2017	16 Mar 2017	23 Feb 2017
Rinsate RS5	SE162178.123	LB119219	17 Feb 2017	20 Feb 2017	17 Mar 2017	23 Feb 2017	17 Mar 2017	23 Feb 2017

Mercury in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
D226 0.0-0.1	SE162178.001	LB119168	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D226 0.2-0.3	SE162178.002	LB119168	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D226 1.0-1.1	SE162178.003	LB119168	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D229 0.0-0.1	SE162178.004	LB119168	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D229 0.2-0.3	SE162178.005	LB119168	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D229 1.0-1.1	SE162178.006	LB119168	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D230 0.0-0.1	SE162178.007	LB119168	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D230 0.2-0.3	SE162178.008	LB119168	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D230 1.0-1.1	SE162178.009	LB119168	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D231 0.0-0.1	SE162178.010	LB119168	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D231 0.2-0.3	SE162178.011	LB119168	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D231 1.0-1.1	SE162178.012	LB119168	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D231 1.9-2.0	SE162178.013	LB119168	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D243 0.0-0.1	SE162178.014	LB119168	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D243 0.2-0.3	SE162178.015	LB119168	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D243 1.0-1.1	SE162178.016	LB119168	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D243 1.9-2.0	SE162178.017	LB119169	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D244 0.0-0.1	SE162178.018	LB119169	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017

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
D244 0.2-0.3	SE162178.019	LB119169	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D244 1.0-1.1	SE162178.020	LB119169	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D245 0.0-0.1	SE162178.021	LB119169	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D245 0.2-0.3	SE162178.022	LB119169	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D245 1.0-1.1	SE162178.023	LB119169	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D245 1.9-2.0	SE162178.024	LB119169	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D246 0.0-0.1	SE162178.025	LB119169	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D246 0.2-0.3	SE162178.026	LB119169	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D246 1.0-1.1	SE162178.027	LB119169	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D247 0.0-0.1	SE162178.028	LB119169	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D247 0.2-0.3	SE162178.029	LB119169	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D247 1.0-1.1	SE162178.030	LB119169	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D247 1.9-2.0	SE162178.031	LB119169	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D248 0.0-0.1	SE162178.032	LB119169	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D248 0.2-0.3	SE162178.033	LB119169	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D248 1.0-1.1	SE162178.034	LB119169	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D249 0.0-0.1	SE162178.035	LB119169	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D249 0.2-0.3	SE162178.036	LB119170	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D249 1.0-1.1	SE162178.037	LB119170	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D259 0.0-0.1	SE162178.038	LB119170	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D259 0.2-0.3	SE162178.039	LB119170	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D259 1.0-1.1	SE162178.040	LB119170	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D259 1.9-2.0	SE162178.041	LB119170	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D263 0.0-0.1	SE162178.042	LB119170	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D263 0.2-0.3	SE162178.043	LB119170	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D264 0.0-0.1	SE162178.044	LB119170	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D264 0.2-0.3	SE162178.045	LB119170	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D265 0.0-0.1	SE162178.046	LB119170	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D265 0.2-0.3	SE162178.047	LB119170	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D265 1.0-1.1	SE162178.048	LB119170	15 Feb 2017	20 Feb 2017	15 Mar 2017	22 Feb 2017	15 Mar 2017	24 Feb 2017
D271 0.0-0.1	SE162178.049	LB119170	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D271 0.2-0.3	SE162178.050	LB119170	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D271 1.0-1.1	SE162178.051	LB119170	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D271 1.9-2.0	SE162178.052	LB119170	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D272 0.0-0.1	SE162178.053	LB119170	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D272 0.2-0.3	SE162178.054	LB119170	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D272 0.7-0.8	SE162178.055	LB119171	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D273 0.0-0.1	SE162178.056	LB119171	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D273 0.2-0.3	SE162178.057	LB119171	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D273 1.0-1.1	SE162178.058	LB119171	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D273 1.9-2.0	SE162178.059	LB119171	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D274 0.0-0.1	SE162178.060	LB119171	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D274 0.2-0.3	SE162178.061	LB119171	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D274 1.0-1.1	SE162178.062	LB119171	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D275 0.0-0.1	SE162178.063	LB119171	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D275 0.2-0.3	SE162178.064	LB119171	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D275 1.0-1.1	SE162178.065	LB119171	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D275 1.9-2.0	SE162178.066	LB119171	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D276 0.0-0.1	SE162178.067	LB119171	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D276 0.2-0.3	SE162178.068	LB119171	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D276 1.0-1.1	SE162178.069	LB119171	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D277 0.0-0.1	SE162178.070	LB119171	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D277 0.2-0.3	SE162178.071	LB119171	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D277 1.0-1.1	SE162178.072	LB119171	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D277 1.9-2.0	SE162178.073	LB119171	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D278 0.0-0.1	SE162178.074	LB119172	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D278 0.2-0.3	SE162178.075	LB119172	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D278 1.0-1.1	SE162178.076	LB119172	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D279 0.0-0.1	SE162178.077	LB119172	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D279 0.2-0.3	SE162178.078	LB119172	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017

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
D280 0.0-0.1	SE162178.079	LB119172	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D280 0.2-0.3	SE162178.080	LB119172	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D280 1.0-1.1	SE162178.081	LB119172	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D281 0.0-0.1	SE162178.082	LB119172	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D281 0.2-0.3	SE162178.083	LB119172	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D281 1.0-1.1	SE162178.084	LB119172	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D282 0.0-0.1	SE162178.085	LB119172	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D282 0.2-0.3	SE162178.086	LB119172	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D282 1.0-1.1	SE162178.087	LB119172	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	24 Feb 2017
D283 0.0-0.1	SE162178.088	LB119172	17 Feb 2017	20 Feb 2017	17 Mar 2017	22 Feb 2017	17 Mar 2017	24 Feb 2017
D283 0.2-0.3	SE162178.089	LB119172	17 Feb 2017	20 Feb 2017	17 Mar 2017	22 Feb 2017	17 Mar 2017	24 Feb 2017
D284 0.0-0.1	SE162178.090	LB119172	17 Feb 2017	20 Feb 2017	17 Mar 2017	22 Feb 2017	17 Mar 2017	24 Feb 2017
D284 0.2-0.3	SE162178.091	LB119172	17 Feb 2017	20 Feb 2017	17 Mar 2017	22 Feb 2017	17 Mar 2017	24 Feb 2017
D285 0.0-0.1	SE162178.092	LB119172	17 Feb 2017	20 Feb 2017	17 Mar 2017	22 Feb 2017	17 Mar 2017	24 Feb 2017
D285 0.2-0.3	SE162178.093	LB119173	17 Feb 2017	20 Feb 2017	17 Mar 2017	22 Feb 2017	17 Mar 2017	27 Feb 2017
D285 1.0-1.1	SE162178.094	LB119173	17 Feb 2017	20 Feb 2017	17 Mar 2017	22 Feb 2017	17 Mar 2017	27 Feb 2017
D285 1.9-2.0	SE162178.095	LB119173	17 Feb 2017	20 Feb 2017	17 Mar 2017	22 Feb 2017	17 Mar 2017	27 Feb 2017
D286 0.0-0.1	SE162178.096	LB119173	17 Feb 2017	20 Feb 2017	17 Mar 2017	22 Feb 2017	17 Mar 2017	27 Feb 2017
D286 0.2-0.3	SE162178.097	LB119173	17 Feb 2017	20 Feb 2017	17 Mar 2017	22 Feb 2017	17 Mar 2017	27 Feb 2017
D286 1.0-1.1	SE162178.098	LB119173	17 Feb 2017	20 Feb 2017	17 Mar 2017	22 Feb 2017	17 Mar 2017	27 Feb 2017
D287 0.0-0.1	SE162178.099	LB119173	17 Feb 2017	20 Feb 2017	17 Mar 2017	22 Feb 2017	17 Mar 2017	27 Feb 2017
D287 0.2-0.3	SE162178.100	LB119173	17 Feb 2017	20 Feb 2017	17 Mar 2017	22 Feb 2017	17 Mar 2017	27 Feb 2017
D287 1.0-1.1	SE162178.101	LB119173	17 Feb 2017	20 Feb 2017	17 Mar 2017	22 Feb 2017	17 Mar 2017	27 Feb 2017
D287 1.9-2.0	SE162178.102	LB119173	17 Feb 2017	20 Feb 2017	17 Mar 2017	22 Feb 2017	17 Mar 2017	27 Feb 2017
D288 0.0-0.1	SE162178.103	LB119173	17 Feb 2017	20 Feb 2017	17 Mar 2017	22 Feb 2017	17 Mar 2017	27 Feb 2017
D288 0.2-0.3	SE162178.104	LB119173	17 Feb 2017	20 Feb 2017	17 Mar 2017	22 Feb 2017	17 Mar 2017	27 Feb 2017
D288 0.6-0.7	SE162178.105	LB119173	17 Feb 2017	20 Feb 2017	17 Mar 2017	22 Feb 2017	17 Mar 2017	27 Feb 2017
D289 0.0-0.1	SE162178.106	LB119173	17 Feb 2017	20 Feb 2017	17 Mar 2017	22 Feb 2017	17 Mar 2017	27 Feb 2017
D289 0.2-0.3	SE162178.107	LB119173	17 Feb 2017	20 Feb 2017	17 Mar 2017	22 Feb 2017	17 Mar 2017	27 Feb 2017
D289 0.5-0.6	SE162178.108	LB119173	17 Feb 2017	20 Feb 2017	17 Mar 2017	22 Feb 2017	17 Mar 2017	27 Feb 2017
D289 1.0-1.1	SE162178.109	LB119173	17 Feb 2017	20 Feb 2017	17 Mar 2017	22 Feb 2017	17 Mar 2017	27 Feb 2017
D290 0.0-0.1	SE162178.110	LB119173	17 Feb 2017	20 Feb 2017	17 Mar 2017	22 Feb 2017	17 Mar 2017	27 Feb 2017
D290 0.2-0.3	SE162178.111	LB119173	17 Feb 2017	20 Feb 2017	17 Mar 2017	22 Feb 2017	17 Mar 2017	27 Feb 2017
D290 1.0-1.1	SE162178.112	LB119174	17 Feb 2017	20 Feb 2017	17 Mar 2017	22 Feb 2017	17 Mar 2017	23 Feb 2017
Duplicate DS8	SE162178.113	LB119174	17 Feb 2017	20 Feb 2017	17 Mar 2017	22 Feb 2017	17 Mar 2017	23 Feb 2017
Duplicate DS9	SE162178.114	LB119174	17 Feb 2017	20 Feb 2017	17 Mar 2017	22 Feb 2017	17 Mar 2017	23 Feb 2017
Duplicate DS10	SE162178.115	LB119174	17 Feb 2017	20 Feb 2017	17 Mar 2017	22 Feb 2017	17 Mar 2017	23 Feb 2017
Duplicate DS11	SE162178.116	LB119174	17 Feb 2017	20 Feb 2017	17 Mar 2017	22 Feb 2017	17 Mar 2017	23 Feb 2017
Duplicate DS12	SE162178.117	LB119174	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	23 Feb 2017
Duplicate DS13	SE162178.118	LB119174	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	23 Feb 2017
Duplicate DS14	SE162178.119	LB119174	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	23 Feb 2017
Duplicate DS15	SE162178.120	LB119174	16 Feb 2017	20 Feb 2017	16 Mar 2017	22 Feb 2017	16 Mar 2017	23 Feb 2017

Metals in Water (Dissolved) by ICPOES — Method: ME-(AU)-[ENV]AN320/AN321

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Rinsate RS3	SE162178.121	LB119273	15 Feb 2017	20 Feb 2017	14 Aug 2017	24 Feb 2017	14 Aug 2017	24 Feb 2017
Rinsate RS4	SE162178.122	LB119273	16 Feb 2017	20 Feb 2017	15 Aug 2017	24 Feb 2017	15 Aug 2017	24 Feb 2017
Rinsate RS5	SE162178.123	LB119273	17 Feb 2017	20 Feb 2017	16 Aug 2017	24 Feb 2017	16 Aug 2017	24 Feb 2017

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
D226 0.0-0.1	SE162178.001	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D226 0.2-0.3	SE162178.002	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D226 1.0-1.1	SE162178.003	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D229 0.0-0.1	SE162178.004	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D229 0.2-0.3	SE162178.005	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D229 1.0-1.1	SE162178.006	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D230 0.0-0.1	SE162178.007	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D230 0.2-0.3	SE162178.008	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D230 1.0-1.1	SE162178.009	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D231 0.0-0.1	SE162178.010	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017

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

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

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

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
D231 0.2-0.3	SE162178.011	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D231 1.0-1.1	SE162178.012	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D231 1.9-2.0	SE162178.013	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D243 0.0-0.1	SE162178.014	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D243 0.2-0.3	SE162178.015	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D243 1.0-1.1	SE162178.016	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D243 1.9-2.0	SE162178.017	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D244 0.0-0.1	SE162178.018	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D244 0.2-0.3	SE162178.019	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D244 1.0-1.1	SE162178.020	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D245 0.0-0.1	SE162178.021	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D245 0.2-0.3	SE162178.022	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D245 1.0-1.1	SE162178.023	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D245 1.9-2.0	SE162178.024	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D246 0.0-0.1	SE162178.025	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D246 0.2-0.3	SE162178.026	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D246 1.0-1.1	SE162178.027	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D247 0.0-0.1	SE162178.028	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D247 0.2-0.3	SE162178.029	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D247 1.0-1.1	SE162178.030	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D247 1.9-2.0	SE162178.031	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D248 0.0-0.1	SE162178.032	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D248 0.2-0.3	SE162178.033	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D248 1.0-1.1	SE162178.034	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D249 0.0-0.1	SE162178.035	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D249 0.2-0.3	SE162178.036	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D249 1.0-1.1	SE162178.037	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D259 0.0-0.1	SE162178.038	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D259 0.2-0.3	SE162178.039	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D259 1.0-1.1	SE162178.040	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D259 1.9-2.0	SE162178.041	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D263 0.0-0.1	SE162178.042	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D263 0.2-0.3	SE162178.043	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D264 0.0-0.1	SE162178.044	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D264 0.2-0.3	SE162178.045	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D265 0.0-0.1	SE162178.046	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D265 0.2-0.3	SE162178.047	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D265 1.0-1.1	SE162178.048	LB119034	15 Feb 2017	20 Feb 2017	01 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D271 0.0-0.1	SE162178.049	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D271 0.2-0.3	SE162178.050	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D271 1.0-1.1	SE162178.051	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D271 1.9-2.0	SE162178.052	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D272 0.0-0.1	SE162178.053	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D272 0.2-0.3	SE162178.054	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D272 0.7-0.8	SE162178.055	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D273 0.0-0.1	SE162178.056	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D273 0.2-0.3	SE162178.057	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D273 1.0-1.1	SE162178.058	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D273 1.9-2.0	SE162178.059	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D274 0.0-0.1	SE162178.060	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D274 0.2-0.3	SE162178.061	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D274 1.0-1.1	SE162178.062	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D275 0.0-0.1	SE162178.063	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D275 0.2-0.3	SE162178.064	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D275 1.0-1.1	SE162178.065	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D275 1.9-2.0	SE162178.066	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D276 0.0-0.1	SE162178.067	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D276 0.2-0.3	SE162178.068	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D276 1.0-1.1	SE162178.069	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D277 0.0-0.1	SE162178.070	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017

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

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

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

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
D277 0.2-0.3	SE162178.071	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D277 1.0-1.1	SE162178.072	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D277 1.9-2.0	SE162178.073	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D278 0.0-0.1	SE162178.074	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D278 0.2-0.3	SE162178.075	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D278 1.0-1.1	SE162178.076	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D279 0.0-0.1	SE162178.077	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D279 0.2-0.3	SE162178.078	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D280 0.0-0.1	SE162178.079	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D280 0.2-0.3	SE162178.080	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D280 1.0-1.1	SE162178.081	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D281 0.0-0.1	SE162178.082	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D281 0.2-0.3	SE162178.083	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D281 1.0-1.1	SE162178.084	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D282 0.0-0.1	SE162178.085	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D282 0.2-0.3	SE162178.086	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D282 1.0-1.1	SE162178.087	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D283 0.0-0.1	SE162178.088	LB119034	17 Feb 2017	20 Feb 2017	03 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D283 0.2-0.3	SE162178.089	LB119034	17 Feb 2017	20 Feb 2017	03 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D284 0.0-0.1	SE162178.090	LB119034	17 Feb 2017	20 Feb 2017	03 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D284 0.2-0.3	SE162178.091	LB119034	17 Feb 2017	20 Feb 2017	03 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D285 0.0-0.1	SE162178.092	LB119034	17 Feb 2017	20 Feb 2017	03 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D285 0.2-0.3	SE162178.093	LB119034	17 Feb 2017	20 Feb 2017	03 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D285 1.0-1.1	SE162178.094	LB119034	17 Feb 2017	20 Feb 2017	03 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D285 1.9-2.0	SE162178.095	LB119034	17 Feb 2017	20 Feb 2017	03 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D286 0.0-0.1	SE162178.096	LB119034	17 Feb 2017	20 Feb 2017	03 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D286 0.2-0.3	SE162178.097	LB119034	17 Feb 2017	20 Feb 2017	03 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D286 1.0-1.1	SE162178.098	LB119034	17 Feb 2017	20 Feb 2017	03 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D287 0.0-0.1	SE162178.099	LB119034	17 Feb 2017	20 Feb 2017	03 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D287 0.2-0.3	SE162178.100	LB119034	17 Feb 2017	20 Feb 2017	03 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D287 1.0-1.1	SE162178.101	LB119034	17 Feb 2017	20 Feb 2017	03 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D287 1.9-2.0	SE162178.102	LB119034	17 Feb 2017	20 Feb 2017	03 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D288 0.0-0.1	SE162178.103	LB119034	17 Feb 2017	20 Feb 2017	03 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D288 0.2-0.3	SE162178.104	LB119034	17 Feb 2017	20 Feb 2017	03 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D288 0.6-0.7	SE162178.105	LB119034	17 Feb 2017	20 Feb 2017	03 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D289 0.0-0.1	SE162178.106	LB119034	17 Feb 2017	20 Feb 2017	03 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D289 0.2-0.3	SE162178.107	LB119034	17 Feb 2017	20 Feb 2017	03 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D289 0.5-0.6	SE162178.108	LB119034	17 Feb 2017	20 Feb 2017	03 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D289 1.0-1.1	SE162178.109	LB119034	17 Feb 2017	20 Feb 2017	03 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D290 0.0-0.1	SE162178.110	LB119034	17 Feb 2017	20 Feb 2017	03 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D290 0.2-0.3	SE162178.111	LB119034	17 Feb 2017	20 Feb 2017	03 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
D290 1.0-1.1	SE162178.112	LB119034	17 Feb 2017	20 Feb 2017	03 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
Duplicate DS8	SE162178.113	LB119034	17 Feb 2017	20 Feb 2017	03 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
Duplicate DS9	SE162178.114	LB119034	17 Feb 2017	20 Feb 2017	03 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
Duplicate DS10	SE162178.115	LB119034	17 Feb 2017	20 Feb 2017	03 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
Duplicate DS11	SE162178.116	LB119034	17 Feb 2017	20 Feb 2017	03 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
Duplicate DS12	SE162178.117	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
Duplicate DS13	SE162178.118	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
Duplicate DS14	SE162178.119	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017
Duplicate DS15	SE162178.120	LB119034	16 Feb 2017	20 Feb 2017	02 Mar 2017	21 Feb 2017	26 Feb 2017	22 Feb 2017

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
D229 1.0-1.1	SE162178.006	LB119063	15 Feb 2017	20 Feb 2017	22 Feb 2017	21 Feb 2017	22 Feb 2017	22 Feb 2017
D230 1.0-1.1	SE162178.009	LB119063	15 Feb 2017	20 Feb 2017	22 Feb 2017	21 Feb 2017	22 Feb 2017	22 Feb 2017
D231 1.0-1.1	SE162178.012	LB119063	15 Feb 2017	20 Feb 2017	22 Feb 2017	21 Feb 2017	22 Feb 2017	22 Feb 2017
D231 1.9-2.0	SE162178.013	LB119063	15 Feb 2017	20 Feb 2017	22 Feb 2017	21 Feb 2017	22 Feb 2017	22 Feb 2017
D245 1.9-2.0	SE162178.024	LB119063	15 Feb 2017	20 Feb 2017	22 Feb 2017	21 Feb 2017	22 Feb 2017	22 Feb 2017
D248 0.2-0.3	SE162178.033	LB119063	15 Feb 2017	20 Feb 2017	22 Feb 2017	21 Feb 2017	22 Feb 2017	22 Feb 2017
D271 1.0-1.1	SE162178.051	LB119063	16 Feb 2017	20 Feb 2017	23 Feb 2017	21 Feb 2017	22 Feb 2017	22 Feb 2017

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
D271 1.9-2.0	SE162178.052	LB119063	16 Feb 2017	20 Feb 2017	23 Feb 2017	21 Feb 2017	22 Feb 2017	22 Feb 2017
D288 0.6-0.7	SE162178.105	LB119063	17 Feb 2017	20 Feb 2017	24 Feb 2017	21 Feb 2017	22 Feb 2017	22 Feb 2017
D289 1.0-1.1	SE162178.109	LB119063	17 Feb 2017	20 Feb 2017	24 Feb 2017	21 Feb 2017	22 Feb 2017	22 Feb 2017
D290 1.0-1.1	SE162178.112	LB119063	17 Feb 2017	20 Feb 2017	24 Feb 2017	21 Feb 2017	22 Feb 2017	22 Feb 2017

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
D226 0.0-0.1	SE162178.001	LB119108	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D226 0.2-0.3	SE162178.002	LB119108	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D226 1.0-1.1	SE162178.003	LB119108	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D229 0.0-0.1	SE162178.004	LB119108	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D229 0.2-0.3	SE162178.005	LB119108	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D229 1.0-1.1	SE162178.006	LB119108	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D230 0.0-0.1	SE162178.007	LB119108	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D230 0.2-0.3	SE162178.008	LB119108	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D230 1.0-1.1	SE162178.009	LB119108	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D231 0.0-0.1	SE162178.010	LB119108	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D231 0.2-0.3	SE162178.011	LB119108	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D231 1.0-1.1	SE162178.012	LB119108	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D231 1.9-2.0	SE162178.013	LB119108	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D243 0.0-0.1	SE162178.014	LB119108	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D243 0.2-0.3	SE162178.015	LB119108	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D243 1.0-1.1	SE162178.016	LB119108	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D243 1.9-2.0	SE162178.017	LB119108	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D244 0.0-0.1	SE162178.018	LB119108	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D244 0.2-0.3	SE162178.019	LB119108	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D244 1.0-1.1	SE162178.020	LB119109	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D245 0.0-0.1	SE162178.021	LB119109	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D245 0.2-0.3	SE162178.022	LB119109	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D245 1.0-1.1	SE162178.023	LB119109	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D245 1.9-2.0	SE162178.024	LB119109	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D246 0.0-0.1	SE162178.025	LB119109	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D246 0.2-0.3	SE162178.026	LB119109	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D246 1.0-1.1	SE162178.027	LB119109	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D247 0.0-0.1	SE162178.028	LB119109	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D247 0.2-0.3	SE162178.029	LB119109	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D247 1.0-1.1	SE162178.030	LB119109	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D247 1.9-2.0	SE162178.031	LB119109	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D248 0.0-0.1	SE162178.032	LB119109	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D248 0.2-0.3	SE162178.033	LB119109	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D248 1.0-1.1	SE162178.034	LB119109	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D249 0.0-0.1	SE162178.035	LB119109	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D249 0.2-0.3	SE162178.036	LB119109	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D249 1.0-1.1	SE162178.037	LB119109	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D259 0.0-0.1	SE162178.038	LB119109	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D259 0.2-0.3	SE162178.039	LB119110	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D259 1.0-1.1	SE162178.040	LB119110	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D259 1.9-2.0	SE162178.041	LB119110	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D263 0.0-0.1	SE162178.042	LB119110	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D263 0.2-0.3	SE162178.043	LB119110	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D264 0.0-0.1	SE162178.044	LB119110	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D264 0.2-0.3	SE162178.045	LB119110	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D265 0.0-0.1	SE162178.046	LB119110	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D265 0.2-0.3	SE162178.047	LB119110	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D265 1.0-1.1	SE162178.048	LB119110	15 Feb 2017	20 Feb 2017	14 Aug 2017	21 Feb 2017	14 Aug 2017	24 Feb 2017
D271 0.0-0.1	SE162178.049	LB119110	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D271 0.2-0.3	SE162178.050	LB119110	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D271 1.0-1.1	SE162178.051	LB119110	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D271 1.9-2.0	SE162178.052	LB119110	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D272 0.0-0.1	SE162178.053	LB119110	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017

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

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

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

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
D272 0.2-0.3	SE162178.054	LB119110	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D272 0.7-0.8	SE162178.055	LB119110	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D273 0.0-0.1	SE162178.056	LB119110	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D273 0.2-0.3	SE162178.057	LB119110	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D273 1.0-1.1	SE162178.058	LB119111	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D273 1.9-2.0	SE162178.059	LB119111	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D274 0.0-0.1	SE162178.060	LB119111	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D274 0.2-0.3	SE162178.061	LB119111	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D274 1.0-1.1	SE162178.062	LB119111	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D275 0.0-0.1	SE162178.063	LB119111	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D275 0.2-0.3	SE162178.064	LB119111	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D275 1.0-1.1	SE162178.065	LB119111	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D275 1.9-2.0	SE162178.066	LB119111	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D276 0.0-0.1	SE162178.067	LB119111	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D276 0.2-0.3	SE162178.068	LB119111	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D276 1.0-1.1	SE162178.069	LB119111	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D277 0.0-0.1	SE162178.070	LB119111	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D277 0.2-0.3	SE162178.071	LB119111	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D277 1.0-1.1	SE162178.072	LB119111	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D277 1.9-2.0	SE162178.073	LB119111	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D278 0.0-0.1	SE162178.074	LB119111	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D278 0.2-0.3	SE162178.075	LB119111	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D278 1.0-1.1	SE162178.076	LB119111	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D279 0.0-0.1	SE162178.077	LB119112	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D279 0.2-0.3	SE162178.078	LB119112	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D280 0.0-0.1	SE162178.079	LB119112	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D280 0.2-0.3	SE162178.080	LB119112	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D280 1.0-1.1	SE162178.081	LB119112	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D281 0.0-0.1	SE162178.082	LB119112	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D281 0.2-0.3	SE162178.083	LB119112	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D281 1.0-1.1	SE162178.084	LB119112	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D282 0.0-0.1	SE162178.085	LB119112	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D282 0.2-0.3	SE162178.086	LB119112	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D282 1.0-1.1	SE162178.087	LB119112	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	24 Feb 2017
D283 0.0-0.1	SE162178.088	LB119112	17 Feb 2017	20 Feb 2017	16 Aug 2017	21 Feb 2017	16 Aug 2017	24 Feb 2017
D283 0.2-0.3	SE162178.089	LB119112	17 Feb 2017	20 Feb 2017	16 Aug 2017	21 Feb 2017	16 Aug 2017	24 Feb 2017
D284 0.0-0.1	SE162178.090	LB119112	17 Feb 2017	20 Feb 2017	16 Aug 2017	21 Feb 2017	16 Aug 2017	24 Feb 2017
D284 0.2-0.3	SE162178.091	LB119112	17 Feb 2017	20 Feb 2017	16 Aug 2017	21 Feb 2017	16 Aug 2017	24 Feb 2017
D285 0.0-0.1	SE162178.092	LB119112	17 Feb 2017	20 Feb 2017	16 Aug 2017	21 Feb 2017	16 Aug 2017	24 Feb 2017
D285 0.2-0.3	SE162178.093	LB119112	17 Feb 2017	20 Feb 2017	16 Aug 2017	21 Feb 2017	16 Aug 2017	24 Feb 2017
D285 1.0-1.1	SE162178.094	LB119112	17 Feb 2017	20 Feb 2017	16 Aug 2017	21 Feb 2017	16 Aug 2017	24 Feb 2017
D285 1.9-2.0	SE162178.095	LB119112	17 Feb 2017	20 Feb 2017	16 Aug 2017	21 Feb 2017	16 Aug 2017	24 Feb 2017
D286 0.0-0.1	SE162178.096	LB119113	17 Feb 2017	20 Feb 2017	16 Aug 2017	21 Feb 2017	16 Aug 2017	27 Feb 2017
D286 0.2-0.3	SE162178.097	LB119113	17 Feb 2017	20 Feb 2017	16 Aug 2017	21 Feb 2017	16 Aug 2017	27 Feb 2017
D286 1.0-1.1	SE162178.098	LB119113	17 Feb 2017	20 Feb 2017	16 Aug 2017	21 Feb 2017	16 Aug 2017	27 Feb 2017
D287 0.0-0.1	SE162178.099	LB119113	17 Feb 2017	20 Feb 2017	16 Aug 2017	21 Feb 2017	16 Aug 2017	27 Feb 2017
D287 0.2-0.3	SE162178.100	LB119113	17 Feb 2017	20 Feb 2017	16 Aug 2017	21 Feb 2017	16 Aug 2017	27 Feb 2017
D287 1.0-1.1	SE162178.101	LB119113	17 Feb 2017	20 Feb 2017	16 Aug 2017	21 Feb 2017	16 Aug 2017	27 Feb 2017
D287 1.9-2.0	SE162178.102	LB119113	17 Feb 2017	20 Feb 2017	16 Aug 2017	21 Feb 2017	16 Aug 2017	27 Feb 2017
D288 0.0-0.1	SE162178.103	LB119113	17 Feb 2017	20 Feb 2017	16 Aug 2017	21 Feb 2017	16 Aug 2017	27 Feb 2017
D288 0.2-0.3	SE162178.104	LB119113	17 Feb 2017	20 Feb 2017	16 Aug 2017	21 Feb 2017	16 Aug 2017	27 Feb 2017
D288 0.6-0.7	SE162178.105	LB119113	17 Feb 2017	20 Feb 2017	16 Aug 2017	21 Feb 2017	16 Aug 2017	27 Feb 2017
D289 0.0-0.1	SE162178.106	LB119113	17 Feb 2017	20 Feb 2017	16 Aug 2017	21 Feb 2017	16 Aug 2017	27 Feb 2017
D289 0.2-0.3	SE162178.107	LB119113	17 Feb 2017	20 Feb 2017	16 Aug 2017	21 Feb 2017	16 Aug 2017	27 Feb 2017
D289 0.5-0.6	SE162178.108	LB119113	17 Feb 2017	20 Feb 2017	16 Aug 2017	21 Feb 2017	16 Aug 2017	27 Feb 2017
D289 1.0-1.1	SE162178.109	LB119113	17 Feb 2017	20 Feb 2017	16 Aug 2017	21 Feb 2017	16 Aug 2017	27 Feb 2017
D290 0.0-0.1	SE162178.110	LB119113	17 Feb 2017	20 Feb 2017	16 Aug 2017	21 Feb 2017	16 Aug 2017	27 Feb 2017
D290 0.2-0.3	SE162178.111	LB119113	17 Feb 2017	20 Feb 2017	16 Aug 2017	21 Feb 2017	16 Aug 2017	27 Feb 2017
D290 1.0-1.1	SE162178.112	LB119113	17 Feb 2017	20 Feb 2017	16 Aug 2017	21 Feb 2017	16 Aug 2017	27 Feb 2017
Duplicate DS8	SE162178.113	LB119113	17 Feb 2017	20 Feb 2017	16 Aug 2017	21 Feb 2017	16 Aug 2017	27 Feb 2017

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

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

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

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

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
Duplicate DS9	SE162178.114	LB119113	17 Feb 2017	20 Feb 2017	16 Aug 2017	21 Feb 2017	16 Aug 2017	27 Feb 2017
Duplicate DS10	SE162178.115	LB119114	17 Feb 2017	20 Feb 2017	16 Aug 2017	21 Feb 2017	16 Aug 2017	27 Feb 2017
Duplicate DS11	SE162178.116	LB119114	17 Feb 2017	20 Feb 2017	16 Aug 2017	21 Feb 2017	16 Aug 2017	27 Feb 2017
Duplicate DS12	SE162178.117	LB119114	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	27 Feb 2017
Duplicate DS13	SE162178.118	LB119114	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	27 Feb 2017
Duplicate DS14	SE162178.119	LB119114	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	27 Feb 2017
Duplicate DS15	SE162178.120	LB119114	16 Feb 2017	20 Feb 2017	15 Aug 2017	21 Feb 2017	15 Aug 2017	27 Feb 2017

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

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

No surrogates were required for this job.

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

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

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

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

Sample Number	Parameter	Units	LOR

Mercury (dissolved) in Water

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

Sample Number	Parameter	Units	LOR	Result
LB119219.001	Mercury	mg/L	0.0001	<0.0001

Mercury in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB119168.001	Mercury	mg/kg	0.05	<0.05
LB119169.001	Mercury	mg/kg	0.05	<0.05
LB119170.001	Mercury	mg/kg	0.05	<0.05
LB119171.001	Mercury	mg/kg	0.05	<0.05
LB119172.001	Mercury	mg/kg	0.05	<0.05
LB119173.001	Mercury	mg/kg	0.05	<0.05
LB119174.001	Mercury	mg/kg	0.05	<0.05

Metals in Water (Dissolved) by ICPOES

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

Sample Number	Parameter	Units	LOR	Result
LB119273.001	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
	Manganese, Mn	mg/L	0.005	<0.005
	Nickel, Ni	mg/L	0.005	<0.005
	Zinc, Zn	mg/L	0.01	<0.01

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

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

Sample Number	Parameter	Units	LOR	Result
LB119108.001	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
	Manganese, Mn	mg/kg	1	<1
LB119109.001	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
	Manganese, Mn	mg/kg	1	<1
LB119110.001	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
	Manganese, Mn	mg/kg	1	<1
LB119111.001	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

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

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

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

Sample Number	Parameter	Units	LOR	Result
LB119111.001	Zinc, Zn	mg/kg	0.5	<0.5
	Manganese, Mn	mg/kg	1	<1
LB119112.001	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
	Manganese, Mn	mg/kg	1	<1
LB119113.001	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
	Manganese, Mn	mg/kg	1	<1
LB119114.001	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
	Manganese, Mn	mg/kg	1	<1

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

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

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

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

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE162275.019	LB119219.010	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 %
SE162178.007	LB119168.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE162178.016	LB119168.024	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE162178.026	LB119169.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE162178.035	LB119169.024	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE162178.045	LB119170.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE162178.054	LB119170.024	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE162178.064	LB119171.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE162178.073	LB119171.024	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE162178.083	LB119172.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE162178.092	LB119172.024	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE162178.102	LB119173.014	Mercury	mg/kg	0.05	0.07	0.05	114	31
SE162178.111	LB119173.024	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE162178.118	LB119174.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE162188.001	LB119174.023	Mercury	mg/kg	0.05	0.09	0.10	84	5

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE162178.010	LB119034.011	% Moisture	%w/w	0.5	2.3	2.2	75	5
SE162178.020	LB119034.022	% Moisture	%w/w	0.5	4.1	4.0	55	2
SE162178.030	LB119034.033	% Moisture	%w/w	0.5	18	17	36	5
SE162178.040	LB119034.044	% Moisture	%w/w	0.5	14	12	38	21
SE162178.050	LB119034.055	% Moisture	%w/w	0.5	7.2	5.8	45	22
SE162178.060	LB119034.066	% Moisture	%w/w	0.5	2.5	2.5	70	2
SE162178.070	LB119034.077	% Moisture	%w/w	0.5	4.9	5.0	50	2
SE162178.080	LB119034.088	% Moisture	%w/w	0.5	5.5	7.8	45	34
SE162178.090	LB119034.099	% Moisture	%w/w	0.5	2.2	1.9	78	12
SE162178.100	LB119034.110	% Moisture	%w/w	0.5	5.3	5.2	49	2
SE162178.110	LB119034.121	% Moisture	%w/w	0.5	5.5	5.0	49	11
SE162178.120	LB119034.132	% Moisture	%w/w	0.5	2.2	2.3	75	5

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE162178.013	LB119063.014	pH	pH Units	-	7.7	7.6	31	1
SE162178.112	LB119063.022	pH	pH Units	-	6.4	6.4	32	0

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE162175.010	LB119114.014	Arsenic, As	mg/kg	3	62	61	32	2
		Cadmium, Cd	mg/kg	0.3	0.6	0.6	77	0
		Chromium, Cr	mg/kg	0.3	39	39	31	0
		Copper, Cu	mg/kg	0.5	61	61	31	1
		Lead, Pb	mg/kg	1	13	13	38	4
		Nickel, Ni	mg/kg	0.5	74	77	31	5
		Zinc, Zn	mg/kg	0.5	320	320	31	1
		Manganese, Mn	mg/kg	1	840	910	30	8
SE162178.010	LB119108.014	Arsenic, As	mg/kg	3	75	47	32	45 ②
		Cadmium, Cd	mg/kg	0.3	0.5	0.4	100	26
		Chromium, Cr	mg/kg	0.3	31	27	32	14
		Copper, Cu	mg/kg	0.5	22	13	33	51 ②
		Lead, Pb	mg/kg	1	150	98	31	39 ②
		Nickel, Ni	mg/kg	0.5	7.2	5.7	38	23
		Zinc, Zn	mg/kg	0.5	79	59	33	29
		Manganese, Mn	mg/kg	1	220	130	31	48 ②
SE162178.019	LB119108.024	Arsenic, As	mg/kg	3	13	10	39	34
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	157	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.

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

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE162178.019	LB119108.024	Chromium, Cr	mg/kg	0.3	38	34	31	12
		Copper, Cu	mg/kg	0.5	21	18	33	15
		Lead, Pb	mg/kg	1	12	9	40	25
		Nickel, Ni	mg/kg	0.5	13	13	34	4
		Zinc, Zn	mg/kg	0.5	30	28	37	8
		Manganese, Mn	mg/kg	1	160	140	31	15
SE162178.029	LB119109.014	Arsenic, As	mg/kg	3	19	17	36	8
		Cadmium, Cd	mg/kg	0.3	0.3	0.3	124	2
		Chromium, Cr	mg/kg	0.3	38	37	31	5
		Copper, Cu	mg/kg	0.5	24	23	32	7
		Lead, Pb	mg/kg	1	18	17	36	6
		Nickel, Ni	mg/kg	0.5	21	20	32	4
		Zinc, Zn	mg/kg	0.5	55	52	34	4
		Manganese, Mn	mg/kg	1	62	65	32	6
SE162178.038	LB119109.024	Arsenic, As	mg/kg	3	40	38	33	4
		Cadmium, Cd	mg/kg	0.3	0.7	0.8	70	7
		Chromium, Cr	mg/kg	0.3	26	25	32	5
		Copper, Cu	mg/kg	0.5	14	14	34	4
		Lead, Pb	mg/kg	1	50	49	32	3
		Nickel, Ni	mg/kg	0.5	12	13	34	12
		Zinc, Zn	mg/kg	0.5	190	180	31	4
		Manganese, Mn	mg/kg	1	1400	1500	30	10
SE162178.048	LB119110.014	Arsenic, As	mg/kg	3	6	7	46	14
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	169	0
		Chromium, Cr	mg/kg	0.3	31	32	32	2
		Copper, Cu	mg/kg	0.5	14	14	34	3
		Lead, Pb	mg/kg	1	5	6	47	16
		Nickel, Ni	mg/kg	0.5	15	15	33	2
		Zinc, Zn	mg/kg	0.5	28	27	37	2
		Manganese, Mn	mg/kg	1	140	180	31	26
SE162178.057	LB119110.024	Arsenic, As	mg/kg	3	69	78	31	12
		Cadmium, Cd	mg/kg	0.3	0.6	0.8	73	29
		Chromium, Cr	mg/kg	0.3	61	74	31	20
		Copper, Cu	mg/kg	0.5	9.4	7.1	36	28
		Lead, Pb	mg/kg	1	110	150	31	27
		Nickel, Ni	mg/kg	0.5	4.2	4.6	41	9
		Zinc, Zn	mg/kg	0.5	50	66	33	28
		Manganese, Mn	mg/kg	1	430	550	30	24
SE162178.067	LB119111.014	Arsenic, As	mg/kg	3	37	44	32	18
		Cadmium, Cd	mg/kg	0.3	0.4	0.5	101	18
		Chromium, Cr	mg/kg	0.3	26	40	32	43 ②
		Copper, Cu	mg/kg	0.5	23	23	32	0
		Lead, Pb	mg/kg	1	66	110	31	48 ②
		Nickel, Ni	mg/kg	0.5	5.8	6.5	38	11
		Zinc, Zn	mg/kg	0.5	66	71	33	7
		Manganese, Mn	mg/kg	1	1400	750	30	58 ②
SE162178.076	LB119111.024	Arsenic, As	mg/kg	3	70	59	32	18
		Cadmium, Cd	mg/kg	0.3	0.9	0.8	66	13
		Chromium, Cr	mg/kg	0.3	70	39	31	56 ②
		Copper, Cu	mg/kg	0.5	37	37	31	1
		Lead, Pb	mg/kg	1	59	70	32	16
		Nickel, Ni	mg/kg	0.5	17	19	33	11
		Zinc, Zn	mg/kg	0.5	200	170	31	17
		Manganese, Mn	mg/kg	1	510	640	30	22
SE162178.086	LB119112.014	Arsenic, As	mg/kg	3	15	16	37	3
		Cadmium, Cd	mg/kg	0.3	0.3	<0.3	130	4
		Chromium, Cr	mg/kg	0.3	17	18	33	3
		Copper, Cu	mg/kg	0.5	8.5	8.7	36	2
		Lead, Pb	mg/kg	1	90	78	31	15
		Nickel, Ni	mg/kg	0.5	12	12	34	0
		Zinc, Zn	mg/kg	0.5	87	87	32	1

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

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

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

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

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

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE162178.086	LB119112.014	Manganese, Mn	mg/kg	1	250	190	30	30 †
SE162178.095	LB119112.024	Arsenic, As	mg/kg	3	260	220	30	18
		Cadmium, Cd	mg/kg	0.3	9.8	9.9	33	1
		Chromium, Cr	mg/kg	0.3	22	19	32	16
		Copper, Cu	mg/kg	0.5	61	58	31	4
		Lead, Pb	mg/kg	1	64	100	31	48 ②
		Nickel, Ni	mg/kg	0.5	11	11	35	2
		Zinc, Zn	mg/kg	0.5	1600	1300	30	16
		Manganese, Mn	mg/kg	1	2600	3600	30	34 ②
SE162178.105	LB119113.014	Arsenic, As	mg/kg	3	15	15	37	1
		Cadmium, Cd	mg/kg	0.3	0.3	<0.3	125	10
		Chromium, Cr	mg/kg	0.3	21	22	32	1
		Copper, Cu	mg/kg	0.5	14	16	33	11
		Lead, Pb	mg/kg	1	25	26	34	5
		Nickel, Ni	mg/kg	0.5	26	24	32	9
		Zinc, Zn	mg/kg	0.5	180	170	31	7
		Manganese, Mn	mg/kg	1	240	160	31	38 ②
SE162178.114	LB119113.024	Arsenic, As	mg/kg	3	34	37	33	9
		Cadmium, Cd	mg/kg	0.3	0.5	0.5	89	4
		Chromium, Cr	mg/kg	0.3	31	32	32	5
		Copper, Cu	mg/kg	0.5	14	16	33	13
		Lead, Pb	mg/kg	1	69	76	31	11
		Nickel, Ni	mg/kg	0.5	4.9	4.7	40	3
		Zinc, Zn	mg/kg	0.5	65	69	33	6
		Manganese, Mn	mg/kg	1	710	830	30	15
SE162178.120	LB119114.022	Arsenic, As	mg/kg	3	24	24	34	0
		Cadmium, Cd	mg/kg	0.3	0.3	0.3	122	1
		Chromium, Cr	mg/kg	0.3	20	19	33	6
		Copper, Cu	mg/kg	0.5	27	26	32	4
		Lead, Pb	mg/kg	1	18	18	35	3
		Nickel, Ni	mg/kg	0.5	16	15	33	3
		Zinc, Zn	mg/kg	0.5	56	54	34	3
		Manganese, Mn	mg/kg	1	290	280	30	1

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 %
LB119136.002	Exchangeable Sodium, Na	mg/kg	2	NA	390	80 - 120	92
	Exchangeable Potassium, K	mg/kg	2	NA	343	80 - 120	89
	Exchangeable Calcium, Ca	mg/kg	2	NA	2570	80 - 120	88
	Exchangeable Magnesium, Mg	mg/kg	2	NA	635	80 - 120	97
LB119138.002	Exchangeable Sodium, Na	mg/kg	2	NA	390	80 - 120	90
	Exchangeable Potassium, K	mg/kg	2	NA	343	80 - 120	88
	Exchangeable Calcium, Ca	mg/kg	2	NA	2570	80 - 120	87
	Exchangeable Magnesium, Mg	mg/kg	2	NA	635	80 - 120	96

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB119168.002	Mercury	mg/kg	0.05	0.20	0.2	70 - 130	100
LB119169.002	Mercury	mg/kg	0.05	0.19	0.2	70 - 130	96
LB119170.002	Mercury	mg/kg	0.05	0.20	0.2	70 - 130	102
LB119171.002	Mercury	mg/kg	0.05	0.21	0.2	70 - 130	104
LB119172.002	Mercury	mg/kg	0.05	0.21	0.2	70 - 130	106
LB119173.002	Mercury	mg/kg	0.05	0.20	0.2	70 - 130	102
LB119174.002	Mercury	mg/kg	0.05	0.21	0.2	70 - 130	105

Metals in Water (Dissolved) by ICPOES — Method: ME-(AU)-[ENV]AN320/AN321

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB119273.002	Arsenic, As	mg/L	0.02	2.0	2	80 - 120	99
	Cadmium, Cd	mg/L	0.001	2.0	2	80 - 120	100
	Chromium, Cr	mg/L	0.005	2.0	2	80 - 120	101
	Copper, Cu	mg/L	0.005	2.0	2	80 - 120	100
	Lead, Pb	mg/L	0.02	2.0	2	80 - 120	101
	Manganese, Mn	mg/L	0.005	2.0	2	80 - 120	100
	Nickel, Ni	mg/L	0.005	2.0	2	80 - 120	101
	Zinc, Zn	mg/L	0.01	2.0	2	80 - 120	100

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB119063.003	pH	pH Units	-	7.5	7.415	98 - 102	101

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB119108.002	Arsenic, As	mg/kg	3	51	50	80 - 120	101
	Cadmium, Cd	mg/kg	0.3	49	50	80 - 120	97
	Chromium, Cr	mg/kg	0.3	50	50	80 - 120	101
	Copper, Cu	mg/kg	0.5	51	50	80 - 120	103
	Lead, Pb	mg/kg	1	49	50	80 - 120	98
	Nickel, Ni	mg/kg	0.5	52	50	80 - 120	103
	Zinc, Zn	mg/kg	0.5	51	50	80 - 120	102
	Manganese, Mn	mg/kg	1	51	50	80 - 120	101
LB119109.002	Arsenic, As	mg/kg	3	51	50	80 - 120	103
	Cadmium, Cd	mg/kg	0.3	49	50	80 - 120	98
	Chromium, Cr	mg/kg	0.3	51	50	80 - 120	102
	Copper, Cu	mg/kg	0.5	51	50	80 - 120	102
	Lead, Pb	mg/kg	1	50	50	80 - 120	100
	Nickel, Ni	mg/kg	0.5	52	50	80 - 120	104
	Zinc, Zn	mg/kg	0.5	53	50	80 - 120	106
	Manganese, Mn	mg/kg	1	52	50	80 - 120	104
LB119110.002	Arsenic, As	mg/kg	3	52	50	80 - 120	104
	Cadmium, Cd	mg/kg	0.3	51	50	80 - 120	103
	Chromium, Cr	mg/kg	0.3	52	50	80 - 120	104
	Copper, Cu	mg/kg	0.5	51	50	80 - 120	102
	Lead, Pb	mg/kg	1	52	50	80 - 120	104
	Nickel, Ni	mg/kg	0.5	51	50	80 - 120	103
	Zinc, Zn	mg/kg	0.5	52	50	80 - 120	103
	Manganese, Mn	mg/kg	1	52	50	80 - 120	104
LB119111.002	Arsenic, As	mg/kg	3	49	50	80 - 120	99

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

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

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

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB119111.002	Cadmium, Cd	mg/kg	0.3	49	50	80 - 120	98
	Chromium, Cr	mg/kg	0.3	50	50	80 - 120	99
	Copper, Cu	mg/kg	0.5	49	50	80 - 120	97
	Lead, Pb	mg/kg	1	49	50	80 - 120	99
	Nickel, Ni	mg/kg	0.5	49	50	80 - 120	98
	Zinc, Zn	mg/kg	0.5	49	50	80 - 120	99
	Manganese, Mn	mg/kg	1	49	50	80 - 120	99
LB119112.002	Arsenic, As	mg/kg	3	49	50	80 - 120	99
	Cadmium, Cd	mg/kg	0.3	50	50	80 - 120	101
	Chromium, Cr	mg/kg	0.3	51	50	80 - 120	101
	Copper, Cu	mg/kg	0.5	51	50	80 - 120	101
	Lead, Pb	mg/kg	1	51	50	80 - 120	102
	Nickel, Ni	mg/kg	0.5	51	50	80 - 120	101
	Zinc, Zn	mg/kg	0.5	51	50	80 - 120	102
	Manganese, Mn	mg/kg	1	51	50	80 - 120	101
LB119113.002	Arsenic, As	mg/kg	3	52	50	80 - 120	103
	Cadmium, Cd	mg/kg	0.3	52	50	80 - 120	103
	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	105
	Nickel, Ni	mg/kg	0.5	53	50	80 - 120	107
	Zinc, Zn	mg/kg	0.5	52	50	80 - 120	103
	Manganese, Mn	mg/kg	1	53	50	80 - 120	105
LB119114.002	Arsenic, As	mg/kg	3	50	50	80 - 120	99
	Cadmium, Cd	mg/kg	0.3	50	50	80 - 120	100
	Chromium, Cr	mg/kg	0.3	50	50	80 - 120	101
	Copper, Cu	mg/kg	0.5	49	50	80 - 120	99
	Lead, Pb	mg/kg	1	50	50	80 - 120	101
	Nickel, Ni	mg/kg	0.5	51	50	80 - 120	102
	Zinc, Zn	mg/kg	0.5	50	50	80 - 120	100
	Manganese, Mn	mg/kg	1	50	50	80 - 120	101

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

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

Mercury (dissolved) in Water

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE162156.116	LB119219.004	Mercury	mg/L	0.0001	0.0082	<0.0001	0.008	103

Mercury in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE162175.009	LB119168.004	Mercury	mg/kg	0.05	0.18	<0.05	0.2	90
SE162178.017	LB119169.004	Mercury	mg/kg	0.05	0.19	<0.05	0.2	91
SE162178.036	LB119170.004	Mercury	mg/kg	0.05	0.19	<0.05	0.2	83
SE162178.055	LB119171.004	Mercury	mg/kg	0.05	0.18	<0.05	0.2	78
SE162178.074	LB119172.004	Mercury	mg/kg	0.05	0.23	<0.05	0.2	103
SE162178.093	LB119173.004	Mercury	mg/kg	0.05	0.20	<0.05	0.2	89
SE162263.001	LB119174.004	Mercury	mg/kg	0.05	0.17	0.02	0.2	77

Metals in Water (Dissolved) by ICPOES

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE162156.116	LB119273.004	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	101
		Lead, Pb	mg/L	0.02	2.0	<0.02	2	102
		Manganese, Mn	mg/L	0.005	2.0	<0.005	2	100
		Nickel, Ni	mg/L	0.005	2.0	<0.005	2	101
		Zinc, Zn	mg/L	0.01	2.0	<0.01	2	100
SE162321.014	LB119273.030	Arsenic, As	mg/L	0.02	2.1	<0.02	2	104
		Cadmium, Cd	mg/L	0.001	2.1	<0.001	2	104
		Chromium, Cr	mg/L	0.005	2.1	<0.005	2	104
		Copper, Cu	mg/L	0.005	2.1	<0.005	2	105
		Lead, Pb	mg/L	0.02	2.1	<0.02	2	106
		Nickel, Ni	mg/L	0.005	2.1	<0.005	2	105
		Zinc, Zn	mg/L	0.01	2.1	<0.01	2	105

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

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE162175.001	LB119114.004	Arsenic, As	mg/kg	3	48	8	50	81
		Cadmium, Cd	mg/kg	0.3	41	0.5	50	81
		Chromium, Cr	mg/kg	0.3	65	24	50	81
		Copper, Cu	mg/kg	0.5	71	28	50	86
		Lead, Pb	mg/kg	1	57	20	50	75
		Nickel, Ni	mg/kg	0.5	67	29	50	77
		Zinc, Zn	mg/kg	0.5	200	170	50	63 ⑨
		Manganese, Mn	mg/kg	1	290	300	50	-15 ⑨
SE162178.020	LB119109.004	Arsenic, As	mg/kg	3	50	11	50	77
		Cadmium, Cd	mg/kg	0.3	35	<0.3	50	70
		Chromium, Cr	mg/kg	0.3	76	38	50	75
		Copper, Cu	mg/kg	0.5	60	17	50	85
		Lead, Pb	mg/kg	1	44	10	50	67 ⑨
		Nickel, Ni	mg/kg	0.5	52	15	50	75
		Zinc, Zn	mg/kg	0.5	71	29	50	84
		Manganese, Mn	mg/kg	1	190	150	50	77
SE162178.039	LB119110.004	Arsenic, As	mg/kg	3	170	38	50	256 ⑨
		Cadmium, Cd	mg/kg	0.3	40	0.3	50	79
		Chromium, Cr	mg/kg	0.3	71	32	50	79
		Copper, Cu	mg/kg	0.5	92	34	50	116
		Lead, Pb	mg/kg	1	93	29	50	128
		Nickel, Ni	mg/kg	0.5	56	19	50	73
		Zinc, Zn	mg/kg	0.5	110	78	50	70 ⑨
		Manganese, Mn	mg/kg	1	180	170	50	15 ⑨
SE162178.058	LB119111.004	Arsenic, As	mg/kg	3	99	55	50	87
		Cadmium, Cd	mg/kg	0.3	43	0.5	50	85
		Chromium, Cr	mg/kg	0.3	80	41	50	77
		Copper, Cu	mg/kg	0.5	76	30	50	91

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

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

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

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE162178.058	LB119111.004	Lead, Pb	mg/kg	1	110	75	50	63 ⑨
		Nickel, Ni	mg/kg	0.5	52	10	50	82
		Zinc, Zn	mg/kg	0.5	140	74	50	124
		Manganese, Mn	mg/kg	1	160	120	50	77
SE162178.077	LB119112.004	Arsenic, As	mg/kg	3	330	280	50	92
		Cadmium, Cd	mg/kg	0.3	41	3.4	50	75
		Chromium, Cr	mg/kg	0.3	65	26	50	78
		Copper, Cu	mg/kg	0.5	90	47	50	86
		Lead, Pb	mg/kg	1	370	310	50	115
		Nickel, Ni	mg/kg	0.5	55	18	50	75
		Zinc, Zn	mg/kg	0.5	600	570	50	69 ⑤
		Manganese, Mn	mg/kg	1	4500	4300	50	380 ⑤
SE162178.096	LB119113.004	Arsenic, As	mg/kg	3	71	26	50	91
		Cadmium, Cd	mg/kg	0.3	47	0.4	50	93
		Chromium, Cr	mg/kg	0.3	77	31	50	91
		Copper, Cu	mg/kg	0.5	60	9.6	50	100
		Lead, Pb	mg/kg	1	100	58	50	86
		Nickel, Ni	mg/kg	0.5	53	5.5	50	96
		Zinc, Zn	mg/kg	0.5	95	44	50	102
		Manganese, Mn	mg/kg	1	1800	1900	50	-112 ⑤

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

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

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

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

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

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

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

*	NATA accreditation does not cover the performance of this service.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.

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

E-MAILED 20/2/17 @ 1:13

SGS EHS Alexandria Laboratory

SE162178 COC
Received: 20 – Feb – 2017

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161
email: info@geotech.com.au

TO:	SGS ENVIRONMENTAL SERVICES UNIT 16 33 MADDOX STREET ALEXANDRIA NSW 2015	Sampling By:	SS/JH
		Job No:	12675/4
		Project:	
PH:	02 8594 0400	FAX:	02 8594 0499
		Project Manager:	JX
ATTN:	MS EMILY YIN	Location:	Googong NH1A-7 & NH2

Results required by: Normal TAT

	Sampling details				Sample type											
	Location	Depth (m)	Date	Time	Soil	Water	Heavy Metals As, Cd, Cr, Cu, Pb, Mn, Hg, Ni and Zn	pH	CEC							KEEP SAMPLE
1	D228	0-0.1	15/02/2017	-	SG		✓		✓							YES
2	D228	0.2-0.3	15/02/2017	-	SG		✓									YES
3	D228	1.0-1.1	15/02/2017	-	SG		✓		✓							YES
4	D229	0-0.1	15/02/2017	-	SG		✓									YES
5	D229	0.2-0.3	15/02/2017	-	SG		✓									YES
6	D229	1.0-1.1	15/02/2017	-	SG		✓	✓	✓							YES
7	D230	0-0.1	15/02/2017	-	SG		✓									YES
8	D230	0.2-0.3	15/02/2017	-	SG		✓									YES
9	D230	1.0-1.1	15/02/2017	-	SG		✓	✓	✓							YES
10	D231	0-0.1	15/02/2017	-	SG		✓									YES
11	D231	0.2-0.3	15/02/2017	-	SG		✓									YES
12	D231	1.0-1.1	15/02/2017	-	SG		✓	✓	✓							YES
13	D231	1.9-2.0	15/02/2017	-	SG		✓	✓	✓							YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	20/02/2017	[signature]	[signature]	20/2/17 @12:15

Legend:

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

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TO:	SGS ENVIRONMENTAL SERVICES UNIT 16 33 MADDOX STREET ALEXANDRIA NSW 2015	Sampling By: SS/JH	Job No: 12675/4
			Project:
PH:	02 8594 0400 FAX: 02 8594 0499	Project Manager: JX	Location: Googong NH1A-7 & NH2
ATTN:	MS EMILY YIN		

Results required by: Normal TAT

	Sampling details				Sample type											
	Location	Depth (m)	Date	Time	Soil	Water	Heavy Metals As, Cd, Cr, Cu, Pb, Mn, Hg, Ni and Zn	pH	CEC							KEEP SAMPLE
14	D243	0-0.1	15/02/2017	-	SG		✓									YES
15	D243	0.2-0.3	15/02/2017	-	SG		✓									YES
16	D243	1.0-1.1	15/02/2017	-	SG		✓									YES
17	D243	1.9-2.0	15/02/2017	-	SG		✓									YES
18	D244	0-0.1	15/02/2017	-	SG		✓									YES
19	D244	0.2-0.3	15/02/2017	-	SG		✓									YES
20	D244	1.0-1.1	15/02/2017	-	SG		✓									YES
21	D245	0-0.1	15/02/2017	-	SG		✓									YES
22	D245	0.2-0.3	15/02/2017	-	SG		✓									YES
23	D245	1.0-1.1	15/02/2017	-	SG		✓									YES
24	D245	1.9-2.0	15/02/2017	-	SG		✓	✓	✓							YES
25	D246	0-0.1	15/02/2017	-	SG		✓									YES
26	D246	0.2-0.3	15/02/2017	-	SG		✓									YES
27	D246	1.0-1.1	15/02/2017	-	SG		✓		✓							YES
																YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	20/02/2017	Oliver	Oliver	20/2/17 @ 12:15

Legend:

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

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		Job No:	12675/4
		Project:	
PH:	02 8594 0400	FAX:	02 8594 0499
		Project Manager:	JX
		Location:	Googong NH1A-7 & NH2
ATTN:	MS EMILY YIN		

Results required by: Normal TAT

	Sampling details				Sample type											
	Location	Depth (m)	Date	Time	Soil	Water	Heavy Metals As, Cd, Cr, Cu, Pb, Mn, Hg, Ni and Zn	pH	CEC							KEEP SAMPLE
28	D247	0-0.1	15/02/2017	-	SG		✓									YES
29	D247	0.2-0.3	15/02/2017	-	SG		✓		✓							YES
30	D247	1.0-1.1	15/02/2017	-	SG		✓									YES
31	D247	1.9-2.0	15/02/2017	-	SG		✓		✓							YES
32	D248	0-0.1	15/02/2017	-	SG		✓									YES
33	D248	0.2-0.3	15/02/2017	-	SG		✓	✓	✓							YES
34	D248	1.0-1.1	15/02/2017	-	SG		✓									YES
35	D249	0-0.1	15/02/2017	-	SG		✓									YES
36	D249	0.2-0.3	15/02/2017	-	SG		✓		✓							YES
37	D249	1.0-1.1	15/02/2017	-	SG		✓		✓							YES
38	D259	0-0.1	16/02/2017	-	SG		✓									YES
39	D259	0.2-0.3	16/02/2017	-	SG		✓		✓							YES
40	D259	1.0-1.1	16/02/2017	-	SG		✓									YES
41	D259	1.9-2.0	16/02/2017	-	SG		✓		✓							YES
																YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	20/02/2017	Owen	[signature]	20/2/17 @ 12:35

Legend:

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

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

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		Job No:	12675/4
		Project:	
PH:	02 8594 0400 FAX: 02 8594 0499	Project Manager:	JX
		Location:	Googong NH1A-7 & NH2
ATTN:	MS EMILY YIN		

Results required by: Normal TAT

Location	Depth (m)	Date	Time	Soil	Water	Heavy Metals As, Cd, Cr, Cu, Pb, Mn, Hg, Ni and Zn	pH	CEC							KEEP SAMPLE
42 D263	0-0.1	15/02/2017	-	SG		✓									YES
43 D263	0.2-0.3	15/02/2017	-	SG		✓		✓							YES
44 D264	0-0.1	15/02/2017	-	SG		✓		✓							YES
45 D264	0.2-0.3	15/02/2017	-	SG		✓									YES
46 D265	0-0.1	15/02/2017	-	SG		✓									YES
47 D265	0.2-0.3	15/02/2017	-	SG		✓		✓							YES
48 D265	1.0-1.1	15/02/2017	-	SG		✓									YES
49 D271	0-0.1	16/02/2017	-	SG		✓									YES
50 D271	0.2-0.3	16/02/2017	-	SG		✓									YES
51 D271	1.0-1.1	16/02/2017	-	SG		✓	✓	✓							YES
52 D271	1.9-2.0	16/02/2017	-	SG		✓	✓	✓							YES
53 D272	0-0.1	16/02/2017	-	SG		✓		✓							YES
54 D272	0.2-0.3	16/02/2017	-	SG		✓									YES
55 D272	0.7-0.8	16/02/2017	-	SG		✓		✓							YES

Relinquished by: Name	Signature	Date	Received by: Name	Signature	Date
JOHN XU	jx	20/02/2017	Quan	Quan	24/2/17 @ 12:15

Legend:

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

GEOTECHNIQUE PTY LTD

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
email: info@geotech.com.au

TO:	SGS ENVIRONMENTAL SERVICES UNIT 16 33 MADDOX STREET ALEXANDRIA NSW 2015	Sampling By:	SS/JH
		Job No:	12675/4
		Project:	
PH:	02 8594 0400	FAX:	02 8594 0499
		Project Manager:	JX
		Location:	Googong NH1A-7 & NH2
ATTN:	MS EMILY YIN		

Results required by: Normal TAT

	Sampling details				Sample type												
	Location	Depth (m)	Date	Time	Soil	Water	Heavy Metals As, Cd, Cr, Cu, Pb, Mn, Hg, Ni and Zn	pH	CEC							KEEP SAMPLE
56	D273	0-0.1	16/02/2017	-	SG		✓		✓							YES
57	D273	0.2-0.3	16/02/2017	-	SG		✓									YES
58	D273	1.0-1.1	16/02/2017	-	SG		✓									YES
59	D273	1.9-2.0	16/02/2017	-	SG		✓		✓							YES
60	D274	0-0.1	16/02/2017	-	SG		✓									YES
61	D274	0.2-0.3	16/02/2017	-	SG		✓									YES
62	D274	1.0-1.1	16/02/2017	-	SG		✓		✓							YES
63	D275	0-0.1	16/02/2017	-	SG		✓									YES
64	D275	0.2-0.3	16/02/2017	-	SG		✓									YES
65	D275	1.0-1.1	16/02/2017	-	SG		✓									YES
66	D275	1.9-2.0	16/02/2017	-	SG		✓		✓							YES
67	D276	0-0.1	16/02/2017	-	SG		✓									YES
68	D276	0.2-0.3	16/02/2017	-	SG		✓									YES
69	D276	1.0-1.1	16/02/2017	-	SG		✓									YES
																YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	JX	20/02/2017	Owen	Owen	20/2/17 @ 12:15

Legend:

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

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		Job No:	12675/4
		Project:	
PH:	02 8594 0400	FAX:	02 8594 0499
		Project Manager:	JX
		Location:	Googong NH1A-7 & NH2
ATTN:	MS EMILY YIN		

Results required by: Normal TAT

	Sampling details				Sample type												
	Location	Depth (m)	Date	Time	Soil	Water	Heavy Metals As, Cd, Cr, Cu, Pb, Mn, Hg, Ni and Zn	pH	CEC							KEEP SAMPLE
70	D277	0-0.1	16/02/2017	-	SG		✓									YES
71	D277	0.2-0.3	16/02/2017	-	SG		✓		✓							YES
72	D277	1.0-1.1	16/02/2017	-	SG		✓									YES
73	D277	1.9-2.0	16/02/2017	-	SG		✓		✓							YES
74	D278	0-0.1	16/02/2017	-	SG		✓									YES
75	D278	0.2-0.3	16/02/2017	-	SG		✓									YES
76	D278	1.0-1.1	16/02/2017	-	SG		✓		✓							YES
77	D279	0-0.1	16/02/2017	-	SG		✓									YES
78	D279	0.2-0.3	16/02/2017	-	SG		✓									YES
79	D280	0-0.1	16/02/2017	-	SG		✓									YES
80	D280	0.2-0.3	16/02/2017	-	SG		✓									YES
81	D280	1.0-1.1	16/02/2017	-	SG		✓									YES
82	D281	0-0.1	16/02/2017	-	SG		✓									YES
83	D281	0.2-0.3	16/02/2017	-	SG		✓									YES
84	D281	1.0-1.1	16/02/2017	-	SG		✓									YES
																YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	20/02/2017	Awen	Awen	20/2/17 @ 12:15

Legend:

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

* Purge & Trap

GEOTECHNIQUE PTY LTD

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TO:	SGS ENVIRONMENTAL SERVICES UNIT 16 33 MADDOX STREET ALEXANDRIA NSW 2015	Sampling By:	SS/JH
		Job No:	12675/4
		Project:	
PH:	02 8594 0400	FAX:	02 8594 0499
		Project Manager:	JX
		Location:	Googong NH1A-7 & NH2
ATTN:	MS EMILY YIN		

Results required by: Normal TAT

	Sampling details: Location	Depth (m)	Date	Time	Sample type: Soil	Water	Heavy Metals As, Cd, Cr, Cu, Pb, Mn, Hg, Ni and Zn	pH	CEC							KEEP SAMPLE
85	D282	0-0.1	16/02/2017	-	SG		✓									YES
86	D282	0.2-0.3	16/02/2017	-	SG		✓									YES
87	D282	1.0-1.1	16/02/2017	-	SG		✓									YES
88	D283	0-0.1	17/02/2017	-	SG		✓									YES
89	D283	0.2-0.3	17/02/2017	-	SG		✓		✓							YES
90	D284	0-0.1	17/02/2017	-	SG		✓									YES
91	D284	0.2-0.3	17/02/2017	-	SG		✓									YES
92	D285	0-0.1	17/02/2017	-	SG		✓									YES
93	D285	0.2-0.3	17/02/2017	-	SG		✓									YES
94	D285	1.0-1.1	17/02/2017	-	SG		✓									YES
95	D285	1.9-2.0	17/02/2017	-	SG		✓									YES
96	D286	0-0.1	17/02/2017	-	SG		✓									YES
97	D286	0.2-0.3	17/02/2017	-	SG		✓									YES
98	D286	1.0-1.1	17/02/2017	-	SG		✓		✓							YES
																YES

Relinquished by: Name	Signature	Date	Received by: Name	Signature	Date
JOHN XU	jx	20/02/2017	[signature]	[signature]	20/2/17 @ 12:15

Legend:

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

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

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email: info@geotech.com.au

TO:	SGS ENVIRONMENTAL SERVICES UNIT 16 33 MADDOX STREET ALEXANDRIA NSW 2015	Sampling By:	SS/JH
		Job No:	12875/4
		Project:	
PH:	02 8594 0400	FAX:	02 8594 0499
		Project Manager:	JX
		Location:	Googong NH1A-7 & NH2
ATTN:	MS EMILY YIN		

Results required by: Normal TAT

	Sampling details: Location	Depth (m)	Date	Time	Sample type: Soil	Water	Heavy Metals As, Cd, Cr, Cu, Pb, Mn, Hg, Ni and Zn	pH	CEC							KEEP SAMPLE
99	D287	0-0.1	17/02/2017	-	SG		✓									YES
100	D287	0.2-0.3	17/02/2017	-	SG		✓									YES
101	D287	1.0-1.1	17/02/2017	-	SG		✓									YES
102	D287	1.9-2.0	17/02/2017	-	SG		✓									YES
103	D288	0-0.1	17/02/2017	-	SG		✓									YES
104	D288	0.2-0.3	17/02/2017	-	SG		✓									YES
105	D288	0.6-0.7	17/02/2017	-	SG		✓	✓	✓							YES
106	D289	0-0.1	17/02/2017	-	SG		✓									YES
107	D289	0.2-0.3	17/02/2017	-	SG		✓									YES
108	D289	0.5-0.6	17/02/2017	-	SG		✓									YES
109	D289	1.0-1.1	17/02/2017	-	SG		✓	✓	✓							YES
110	D290	0-0.1	17/02/2017	-	SG		✓									YES
111	D290	0.2-0.3	17/02/2017	-	SG		✓									YES
112	D290	1.0-1.1	17/02/2017	-	SG		✓	✓	✓							YES

Relinquished by: Name	Signature	Date	Received by: Name	Signature	Date
JOHN XU	jx	20/02/2017	Aien	[signature]	20/2/17 @ 12:15

Legend:

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

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161
email: info@geotech.com.au

TO: SGS ENVIRONMENTAL SERVICES UNIT 16 33 MADDOX STREET ALEXANDRIA NSW 2015		Sampling By: SS/JH	Job No: 12675/4 COC 2
			Project:
PH: 02 8594 0400	FAX: 02 8594 0499	Project Manager: JX	Location: Googong NH1A-7 & NH2
ATTN: MS EMILY YIN			

Results required by: Normal TAT

Location	Depth (m)	Date	Time	Soil	Water	Heavy Metals As, Cd, Cr, Cu, Pb, Mn, Hg, Ni and Zn	pH	CEC						KEEP SAMPLE
113 Duplicate DS8		17/02/2017	-	SG		✓								YES
114 Duplicate DS9		17/02/2017	-	SG		✓								YES
115 Duplicate DS10		17/02/2017	-	SG		✓								YES
116 Duplicate DS11		17/02/2017	-	SG		✓								YES
117 Duplicate DS12		16/02/2017	-	SG		✓								YES
118 Duplicate DS13		16/02/2017	-	SG		✓								YES
119 Duplicate DS14		16/02/2017	-	SG		✓								YES
120 Duplicate DS15		16/02/2017	-	SG		✓								YES
121 Rinsate RS3		15/02/2017	-	SG		✓								YES
122 Rinsate RS4		16/02/2017	-	SG		✓								YES
123 Rinsate RS5		17/02/2017	-	SG		✓								YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	20/02/2017			20/2/17 @ 12:15

Legend:

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

SAMPLE RECEIPT ADVICE

SE162178

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**12675-4 Goongong NH1A-7 & NH2**
Order Number	(Not specified)
Samples	123

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 20/2/2017
Report Due	Mon 27/2/2017
SGS Reference	**SE162178**

SUBMISSION DETAILS

This is to confirm that 123 samples were received on Monday 20/2/2017. Results are expected to be ready by Monday 27/2/2017. Please quote SGS reference SE162178 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	120 Soil, 3 Water
Date documentation received	20/2/2017	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	17.0°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

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

COMMENTS

SAMPLE RECEIPT ADVICE

SE162178

CLIENT DETAILS

Client: Geotechnique

Project: 12675-4 Goongong NH1A-7 & NH2

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	Mercury in Soil	Moisture Content	pH in soil (1:5)	Total Recoverable Metals in Soil/Waste
001	D226 0.0-0.1	13	1	1	-	8
002	D226 0.2-0.3	-	1	1	-	8
003	D226 1.0-1.1	13	1	1	-	8
004	D229 0.0-0.1	-	1	1	-	8
005	D229 0.2-0.3	-	1	1	-	8
006	D229 1.0-1.1	13	1	1	1	8
007	D230 0.0-0.1	-	1	1	-	8
008	D230 0.2-0.3	-	1	1	-	8
009	D230 1.0-1.1	13	1	1	1	8
010	D231 0.0-0.1	-	1	1	-	8
011	D231 0.2-0.3	-	1	1	-	8
012	D231 1.0-1.1	13	1	1	1	8
013	D231 1.9-2.0	13	1	1	1	8
014	D243 0.0-0.1	-	1	1	-	8
015	D243 0.2-0.3	-	1	1	-	8
016	D243 1.0-1.1	-	1	1	-	8
017	D243 1.9-2.0	-	1	1	-	8
018	D244 0.0-0.1	-	1	1	-	8
019	D244 0.2-0.3	-	1	1	-	8
020	D244 1.0-1.1	-	1	1	-	8
021	D245 0.0-0.1	-	1	1	-	8
022	D245 0.2-0.3	-	1	1	-	8
023	D245 1.0-1.1	-	1	1	-	8
024	D245 1.9-2.0	13	1	1	1	8

CONTINUED OVERLEAF

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

SAMPLE RECEIPT ADVICE

CLIENT DETAILS

Client Geotechnique

Project 12675-4 Goongong NH1A-7 & NH2

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	Mercury in Soil	Moisture Content	pH in soil (1:5)	Total Recoverable Metals in Soil/Waste
025	D246 0.0-0.1	-	1	1	-	8
026	D246 0.2-0.3	-	1	1	-	8
027	D246 1.0-1.1	13	1	1	-	8
028	D247 0.0-0.1	-	1	1	-	8
029	D247 0.2-0.3	13	1	1	-	8
030	D247 1.0-1.1	-	1	1	-	8
031	D247 1.9-2.0	13	1	1	-	8
032	D248 0.0-0.1	-	1	1	-	8
033	D248 0.2-0.3	13	1	1	1	8
034	D248 1.0-1.1	-	1	1	-	8
035	D249 0.0-0.1	-	1	1	-	8
036	D249 0.2-0.3	13	1	1	-	8
037	D249 1.0-1.1	13	1	1	-	8
038	D259 0.0-0.1	-	1	1	-	8
039	D259 0.2-0.3	13	1	1	-	8
040	D259 1.0-1.1	-	1	1	-	8
041	D259 1.9-2.0	13	1	1	-	8
042	D263 0.0-0.1	-	1	1	-	8
043	D263 0.2-0.3	13	1	1	-	8
044	D264 0.0-0.1	13	1	1	-	8
045	D264 0.2-0.3	-	1	1	-	8
046	D265 0.0-0.1	-	1	1	-	8
047	D265 0.2-0.3	13	1	1	-	8
048	D265 1.0-1.1	-	1	1	-	8

CONTINUED OVERLEAF

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SAMPLE RECEIPT ADVICE

SE162178

CLIENT DETAILS

Client Geotechnique

Project 12675-4 Goongong NH1A-7 & NH2

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	Mercury in Soil	Moisture Content	pH in soil (1:5)	Total Recoverable Metals in Soil/Waste
049	D271 0.0-0.1	-	1	1	-	8
050	D271 0.2-0.3	-	1	1	-	8
051	D271 1.0-1.1	13	1	1	1	8
052	D271 1.9-2.0	13	1	1	1	8
053	D272 0.0-0.1	13	1	1	-	8
054	D272 0.2-0.3	-	1	1	-	8
055	D272 0.7-0.8	13	1	1	-	8
056	D273 0.0-0.1	13	1	1	-	8
057	D273 0.2-0.3	-	1	1	-	8
058	D273 1.0-1.1	-	1	1	-	8
059	D273 1.9-2.0	13	1	1	-	8
060	D274 0.0-0.1	-	1	1	-	8
061	D274 0.2-0.3	-	1	1	-	8
062	D274 1.0-1.1	13	1	1	-	8
063	D275 0.0-0.1	-	1	1	-	8
064	D275 0.2-0.3	-	1	1	-	8
065	D275 1.0-1.1	-	1	1	-	8
066	D275 1.9-2.0	13	1	1	-	8
067	D276 0.0-0.1	-	1	1	-	8
068	D276 0.2-0.3	-	1	1	-	8
069	D276 1.0-1.1	-	1	1	-	8
070	D277 0.0-0.1	-	1	1	-	8
071	D277 0.2-0.3	13	1	1	-	8
072	D277 1.0-1.1	-	1	1	-	8

CONTINUED OVERLEAF

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SAMPLE RECEIPT ADVICE

SE162178

CLIENT DETAILS

Client Geotechnique

Project 12675-4 Goongong NH1A-7 & NH2

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	Mercury in Soil	Moisture Content	Total Recoverable Metals in Soil/Waste
073	D277 1.9-2.0	13	1	1	8
074	D278 0.0-0.1	-	1	1	8
075	D278 0.2-0.3	-	1	1	8
076	D278 1.0-1.1	13	1	1	8
077	D279 0.0-0.1	-	1	1	8
078	D279 0.2-0.3	-	1	1	8
079	D280 0.0-0.1	-	1	1	8
080	D280 0.2-0.3	-	1	1	8
081	D280 1.0-1.1	-	1	1	8
082	D281 0.0-0.1	-	1	1	8
083	D281 0.2-0.3	-	1	1	8
084	D281 1.0-1.1	-	1	1	8
085	D282 0.0-0.1	-	1	1	8
086	D282 0.2-0.3	-	1	1	8
087	D282 1.0-1.1	-	1	1	8
088	D283 0.0-0.1	-	1	1	8
089	D283 0.2-0.3	13	1	1	8
090	D284 0.0-0.1	-	1	1	8
091	D284 0.2-0.3	-	1	1	8
092	D285 0.0-0.1	-	1	1	8
093	D285 0.2-0.3	-	1	1	8
094	D285 1.0-1.1	-	1	1	8
095	D285 1.9-2.0	-	1	1	8
096	D286 0.0-0.1	-	1	1	8

CONTINUED OVERLEAF

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SAMPLE RECEIPT ADVICE

SE162178

CLIENT DETAILS

Client Geotechnique

Project 12675-4 Goongong NH1A-7 & NH2

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	Mercury in Soil	Moisture Content	pH in soil (1:5)	Total Recoverable Metals in Soil/Waste
097	D286 0.2-0.3	-	1	1	-	8
098	D286 1.0-1.1	13	1	1	-	8
099	D287 0.0-0.1	-	1	1	-	8
100	D287 0.2-0.3	-	1	1	-	8
101	D287 1.0-1.1	-	1	1	-	8
102	D287 1.9-2.0	-	1	1	-	8
103	D288 0.0-0.1	-	1	1	-	8
104	D288 0.2-0.3	-	1	1	-	8
105	D288 0.6-0.7	13	1	1	1	8
106	D289 0.0-0.1	-	1	1	-	8
107	D289 0.2-0.3	-	1	1	-	8
108	D289 0.5-0.6	-	1	1	-	8
109	D289 1.0-1.1	13	1	1	1	8
110	D290 0.0-0.1	-	1	1	-	8
111	D290 0.2-0.3	-	1	1	-	8
112	D290 1.0-1.1	13	1	1	1	8
113	Duplicate DS8	-	1	1	-	8
114	Duplicate DS9	-	1	1	-	8
115	Duplicate DS10	-	1	1	-	8
116	Duplicate DS11	-	1	1	-	8
117	Duplicate DS12	-	1	1	-	8
118	Duplicate DS13	-	1	1	-	8
119	Duplicate DS14	-	1	1	-	8
120	Duplicate DS15	-	1	1	-	8

CONTINUED OVERLEAF

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

SAMPLE RECEIPT ADVICE

SE162178

CLIENT DETAILS

Client Geotechnique

Project 12675-4 Goongong NH1A-7 & NH2

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury (dissolved) in Water	Metals in Water (Dissolved) by ICPOES
121	Rinsate RS3	1	8
122	Rinsate RS4	1	8
123	Rinsate RS5	1	8

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

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**12675-4 Goongong NH1A-7 & NH2**
Order Number	(Not specified)
Samples	123

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	**SE162178A R0**
Date Received	7/3/2017
Date Reported	13/3/2017

COMMENTS

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

SIGNATORIES

Bennet Lo
Senior Organic Chemist/Metals Chemist

Shane McDermott
Senior Laboratory Technician

ANALYTICAL RESULTS

SE162178A R0

pH in soil (1:5) [AN101] Tested: 9/3/2017

PARAMETER	UOM	LOR	D259 0.0-0.1 SOIL - 16/2/2017 SE162178A.038	D259 1.9-2.0 SOIL - 16/2/2017 SE162178A.041	D285 0.0-0.1 SOIL - 17/2/2017 SE162178A.092	D288 0.0-0.1 SOIL - 17/2/2017 SE162178A.103	D290 0.0-0.1 SOIL - 17/2/2017 SE162178A.110
pH	pH Units	-	6.2	8.7	5.6	6.4	5.7

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) [AN122] Tested: 9/3/2017

PARAMETER	UOM	LOR	D259 0.0-0.1 SOIL - 16/2/2017 SE162178A.038	D271 0.2-0.3 SOIL - 16/2/2017 SE162178A.050	D278 0.0-0.1 SOIL - 16/2/2017 SE162178A.074	D280 0.0-0.1 SOIL - 16/2/2017 SE162178A.079	D280 0.2-0.3 SOIL - 16/2/2017 SE162178A.080
Exchangeable Sodium, Na	mg/kg	2	76	36	21	15	25
Exchangeable Sodium, Na	meq/100g	0.01	0.33	0.15	0.09	0.06	0.11
Exchangeable Sodium Percentage*	%	0.1	4.0	2.0	0.9	1.0	1.0
Exchangeable Potassium, K	mg/kg	2	61	49	180	120	110
Exchangeable Potassium, K	meq/100g	0.01	0.16	0.13	0.47	0.30	0.29
Exchangeable Potassium Percentage*	%	0.1	1.9	1.6	4.4	4.6	2.7
Exchangeable Calcium, Ca	mg/kg	2	760	950	1500	890	810
Exchangeable Calcium, Ca	meq/100g	0.01	3.8	4.7	7.5	4.4	4.0
Exchangeable Calcium Percentage*	%	0.1	46.9	61.4	71.7	66.6	37.3
Exchangeable Magnesium, Mg	mg/kg	2	470	330	290	230	780
Exchangeable Magnesium, Mg	meq/100g	0.02	3.8	2.7	2.4	1.8	6.4
Exchangeable Magnesium Percentage*	%	0.1	47.1	35.0	22.9	27.8	59.1
Cation Exchange Capacity	meq/100g	0.02	8.1	7.7	10	6.6	11

PARAMETER	UOM	LOR	D280 1.0-1.1 SOIL - 16/2/2017 SE162178A.081	D281 0.0-0.1 SOIL - 16/2/2017 SE162178A.082	D281 0.2-0.3 SOIL - 16/2/2017 SE162178A.083	D282 0.0-0.1 SOIL - 16/2/2017 SE162178A.085	D284 0.2-0.3 SOIL - 17/2/2017 SE162178A.091
Exchangeable Sodium, Na	mg/kg	2	33	17	24	23	21
Exchangeable Sodium, Na	meq/100g	0.01	0.14	0.07	0.10	0.10	0.09
Exchangeable Sodium Percentage*	%	0.1	1.0	1.8	2.1	1.5	2.4
Exchangeable Potassium, K	mg/kg	2	130	76	37	63	32
Exchangeable Potassium, K	meq/100g	0.01	0.33	0.19	0.10	0.16	0.08
Exchangeable Potassium Percentage*	%	0.1	2.4	4.8	2.0	2.4	2.1
Exchangeable Calcium, Ca	mg/kg	2	740	350	160	780	230
Exchangeable Calcium, Ca	meq/100g	0.01	3.7	1.7	0.81	3.9	1.1
Exchangeable Calcium Percentage*	%	0.1	26.6	43.0	16.9	57.8	28.9
Exchangeable Magnesium, Mg	mg/kg	2	1200	250	460	320	320
Exchangeable Magnesium, Mg	meq/100g	0.02	9.8	2.0	3.8	2.6	2.6
Exchangeable Magnesium Percentage*	%	0.1	70.0	50.3	79.0	38.3	66.6
Cation Exchange Capacity	meq/100g	0.02	14	4.0	4.8	6.7	4.0

PARAMETER	UOM	LOR	D285 0.0-0.1 SOIL - 17/2/2017 SE162178A.092	D287 0.2-0.3 SOIL - 17/2/2017 SE162178A.100	D288 0.0-0.1 SOIL - 17/2/2017 SE162178A.103	D289 0.0-0.1 SOIL - 17/2/2017 SE162178A.106	D289 0.5-0.6 SOIL - 17/2/2017 SE162178A.108
Exchangeable Sodium, Na	mg/kg	2	11	15	24	18	54
Exchangeable Sodium, Na	meq/100g	0.01	0.05	0.06	0.10	0.08	0.23
Exchangeable Sodium Percentage*	%	0.1	0.8	1.2	0.9	1.2	1.5
Exchangeable Potassium, K	mg/kg	2	190	74	65	110	81
Exchangeable Potassium, K	meq/100g	0.01	0.48	0.19	0.17	0.29	0.21
Exchangeable Potassium Percentage*	%	0.1	7.3	3.6	1.4	4.3	1.3
Exchangeable Calcium, Ca	mg/kg	2	860	660	1200	690	250
Exchangeable Calcium, Ca	meq/100g	0.01	4.3	3.3	6.0	3.4	1.2
Exchangeable Calcium Percentage*	%	0.1	65.9	62.3	51.9	50.9	8.0
Exchangeable Magnesium, Mg	mg/kg	2	210	210	650	360	1700
Exchangeable Magnesium, Mg	meq/100g	0.02	1.7	1.7	5.3	3.0	14
Exchangeable Magnesium Percentage*	%	0.1	26.0	32.9	45.8	43.7	89.2
Cation Exchange Capacity	meq/100g	0.02	6.5	5.3	12	6.8	16

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) [AN122] Tested: 9/3/2017 (continued)

PARAMETER	UOM	LOR	D290 0.0-0.1 SOIL - 17/2/2017 SE162178A.110
Exchangeable Sodium, Na	mg/kg	2	12
Exchangeable Sodium, Na	meq/100g	0.01	0.05
Exchangeable Sodium Percentage*	%	0.1	0.9
Exchangeable Potassium, K	mg/kg	2	190
Exchangeable Potassium, K	meq/100g	0.01	0.48
Exchangeable Potassium Percentage*	%	0.1	8.2
Exchangeable Calcium, Ca	mg/kg	2	870
Exchangeable Calcium, Ca	meq/100g	0.01	4.4
Exchangeable Calcium Percentage*	%	0.1	74.3
Exchangeable Magnesium, Mg	mg/kg	2	120
Exchangeable Magnesium, Mg	meq/100g	0.02	0.97
Exchangeable Magnesium Percentage*	%	0.1	16.5
Cation Exchange Capacity	meq/100g	0.02	5.9

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

FOOTNOTES

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

Samples analysed as received.
Solid samples expressed on a dry weight basis.

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

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

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

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:
a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

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

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

STATEMENT OF QA/QC PERFORMANCE

SE162178A R0

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
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Email	john.xu@geotech.com.au
Project	**12675-4 Goongong NH1A-7 & NH2**
Order Number	(Not specified)
Samples	123

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
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Email	au.environmental.sydney@sgs.com
SGS Reference	**SE162178A R0**
Date Received	07 Mar 2017
Date Reported	13 Mar 2017

COMMENTS

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

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

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

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

SAMPLE SUMMARY

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	17 Soils
Date documentation received	7/3/17@1.30pm	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	17.0°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

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
D259 0.0-0.1	SE162178A.038	LB120105	16 Feb 2017	07 Mar 2017	16 Mar 2017	09 Mar 2017	16 Mar 2017	13 Mar 2017
D271 0.2-0.3	SE162178A.050	LB120105	16 Feb 2017	07 Mar 2017	16 Mar 2017	09 Mar 2017	16 Mar 2017	13 Mar 2017
D278 0.0-0.1	SE162178A.074	LB120105	16 Feb 2017	07 Mar 2017	16 Mar 2017	09 Mar 2017	16 Mar 2017	13 Mar 2017
D280 0.0-0.1	SE162178A.079	LB120105	16 Feb 2017	07 Mar 2017	16 Mar 2017	09 Mar 2017	16 Mar 2017	13 Mar 2017
D280 0.2-0.3	SE162178A.080	LB120105	16 Feb 2017	07 Mar 2017	16 Mar 2017	09 Mar 2017	16 Mar 2017	13 Mar 2017
D280 1.0-1.1	SE162178A.081	LB120105	16 Feb 2017	07 Mar 2017	16 Mar 2017	09 Mar 2017	16 Mar 2017	13 Mar 2017
D281 0.0-0.1	SE162178A.082	LB120105	16 Feb 2017	07 Mar 2017	16 Mar 2017	09 Mar 2017	16 Mar 2017	13 Mar 2017
D281 0.2-0.3	SE162178A.083	LB120105	16 Feb 2017	07 Mar 2017	16 Mar 2017	09 Mar 2017	16 Mar 2017	13 Mar 2017
D282 0.0-0.1	SE162178A.085	LB120105	16 Feb 2017	07 Mar 2017	16 Mar 2017	09 Mar 2017	16 Mar 2017	13 Mar 2017
D284 0.2-0.3	SE162178A.091	LB120105	17 Feb 2017	07 Mar 2017	17 Mar 2017	09 Mar 2017	17 Mar 2017	13 Mar 2017
D285 0.0-0.1	SE162178A.092	LB120105	17 Feb 2017	07 Mar 2017	17 Mar 2017	09 Mar 2017	17 Mar 2017	13 Mar 2017
D287 0.2-0.3	SE162178A.100	LB120105	17 Feb 2017	07 Mar 2017	17 Mar 2017	09 Mar 2017	17 Mar 2017	13 Mar 2017
D288 0.0-0.1	SE162178A.103	LB120105	17 Feb 2017	07 Mar 2017	17 Mar 2017	09 Mar 2017	17 Mar 2017	13 Mar 2017
D289 0.0-0.1	SE162178A.106	LB120105	17 Feb 2017	07 Mar 2017	17 Mar 2017	09 Mar 2017	17 Mar 2017	13 Mar 2017
D289 0.5-0.6	SE162178A.108	LB120105	17 Feb 2017	07 Mar 2017	17 Mar 2017	09 Mar 2017	17 Mar 2017	13 Mar 2017
D290 0.0-0.1	SE162178A.110	LB120105	17 Feb 2017	07 Mar 2017	17 Mar 2017	09 Mar 2017	17 Mar 2017	13 Mar 2017

pH in soil (1:5)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
D259 0.0-0.1	SE162178A.038	LB120061	16 Feb 2017	07 Mar 2017	23 Feb 2017	09 Mar 2017†	10 Mar 2017	09 Mar 2017
D259 1.9-2.0	SE162178A.041	LB120061	16 Feb 2017	07 Mar 2017	23 Feb 2017	09 Mar 2017†	10 Mar 2017	09 Mar 2017
D285 0.0-0.1	SE162178A.092	LB120061	17 Feb 2017	07 Mar 2017	24 Feb 2017	09 Mar 2017†	10 Mar 2017	09 Mar 2017
D288 0.0-0.1	SE162178A.103	LB120061	17 Feb 2017	07 Mar 2017	24 Feb 2017	09 Mar 2017†	10 Mar 2017	09 Mar 2017
D290 0.0-0.1	SE162178A.110	LB120061	17 Feb 2017	07 Mar 2017	24 Feb 2017	09 Mar 2017†	10 Mar 2017	09 Mar 2017

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

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

No surrogates were required for this job.

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

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

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

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

Sample Number	Parameter	Units	LOR

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

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

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

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

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE162729.001	LB120061.014	pH	pH Units	-	5.7	5.7	32	0
SE162762.007	LB120061.025	pH	pH Units	-	5.7	5.7	32	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 %
LB120105.002	Exchangeable Sodium, Na	mg/kg	2	NA	390	80 - 120	92
	Exchangeable Potassium, K	mg/kg	2	NA	343	80 - 120	90
	Exchangeable Calcium, Ca	mg/kg	2	NA	2570	80 - 120	91
	Exchangeable Magnesium, Mg	mg/kg	2	NA	635	80 - 120	89

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB120061.003	pH	pH Units	-	7.4	7.415	98 - 102	100

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

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

No matrix spikes were required for this job.

MATRIX SPIKE DUPLICATES

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

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

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

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

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

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

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

*	NATA accreditation does not cover tthe performance of this service .
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.

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

E-MAILED 7/3/17 @ 1:30pm

SGS EHS Alexandria Laboratory

SE162178A COC

Received: 07 – Mar – 2017

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161
email: info@geotech.com.au

TO:	SGS ENVIRONMENTAL SERVICES UNIT 16 33 MADDOX STREET ALEXANDRIA NSW 2015	Sampling By: SS/JH	Job No: 12675/4
			Project:
PH: 02 8594 0400	FAX: 02 8594 0499	Project Manager: JX	Location: Googong NH1A-7 & NH2
ATTN:	MS EMILY YIN		

Results required by: Monday 13/03/2017 (Normal TAT)
SGS Ref. SE162178

Location	Depth (m)	Date	Time	Soil	Water	pH	CEC								KEEP SAMPLE
38 D259	0-0.1	16/02/2017	-	SG		✓	✓								YES
41 D259	1.9-2.0	16/02/2017	-	SG		✓									YES
50 D271	0.2-0.3	16/02/2017	-	SG			✓								YES
54 D278	0-0.1	16/02/2017	-	SG			✓								YES
79 D280	0-0.1	16/02/2017	-	SG			✓								YES
80 D280	0.2-0.3	16/02/2017	-	SG			✓								YES
81 D280	1.0-1.1	16/02/2017	-	SG			✓								YES
82 D281	0-0.1	16/02/2017	-	SG			✓								YES
83 D281	0.2-0.3	16/02/2017	-	SG			✓								YES
85 D282	0-0.1	16/02/2017	-	SG			✓								YES
91 D284	0.2-0.3	17/02/2017	-	SG			✓								YES
92 D285	0-0.1	17/02/2017	-	SG		✓	✓								YES
100 D287	0.2-0.3	17/02/2017	-	SG			✓								YES

Relinquished by: Name	Signature	Date	Received by: Name	Signature	Date
JOHN XU	jx	7/03/2017	Erin Adams	E. A.	7/3/17 1:30

Legend:

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

GEOTECHNIQUE PTY LTD

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
email: info@geotech.com.au

TO:	SGS ENVIRONMENTAL SERVICES UNIT 16 33 MADDOX STREET ALEXANDRIA NSW 2015	Sampling By: SS/JH	Job No: 12675/4
			Project:
PH:	02 8594 0400 FAX: 02 8594 0499	Project Manager: JX	Location: Googong NH1A-7 & NH2
ATTN:	MS EMILY YIN		

Results required by: Monday 13/03/2017 (Normal TAT)
SGS Ref. SE162178

	Sampling details				Sample type											
	Location	Depth (m)	Date	Time	Soil	Water	pH	CEC								KEEP SAMPLE
103	D288	0-0.1	17/02/2017	-	SG		✓	✓								YES
106	D289	0-0.1	17/02/2017	-	SG			✓								YES
105	D289	0.5-0.6	17/02/2017	-	SG			✓								YES
110	D290	0-0.1	17/02/2017	-	SG		✓	✓								YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	7/03/2017	Erin Adams	[illegible]	7/3/17 1:30

Legend:

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

SAMPLE RECEIPT ADVICE

SE162178A

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**12675-4 Goongong NH1A-7 & NH2**
Order Number	(Not specified)
Samples	123

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Tue 7/3/2017
Report Due	Mon 13/3/2017
SGS Reference	**SE162178A**

SUBMISSION DETAILS

This is to confirm that 123 samples were received on Tuesday 7/3/2017. Results are expected to be ready by Monday 13/3/2017. Please quote SGS reference SE162178A when making enquiries. Refer below for details relating to sample integrity upon receipt.

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	17 Soils
Date documentation received	7/3/17@1.30pm	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	17.0°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

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

COMMENTS

SGS

SAMPLE RECEIPT ADVICE

CLIENT DETAILS

Client Geotechnique

Project 12675-4 Goongong NH1A-7 & NH2

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	pH in soil (1:5)
038	D259 0.0-0.1	13	1
041	D259 1.9-2.0	-	1

CONTINUED OVERLEAF

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

CLIENT DETAILS

Client Geotechnique

Project 12675-4 Goongong NH1A-7 & NH2

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity
050	D271 0.2-0.3	13

CONTINUED OVERLEAF

CLIENT DETAILS

Client Geotechnique

Project 12675-4 Goongong NH1A-7 & NH2

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	pH in soil (1:5)
074	D278 0.0-0.1	13	-
079	D280 0.0-0.1	13	-
080	D280 0.2-0.3	13	-
081	D280 1.0-1.1	13	-
082	D281 0.0-0.1	13	-
083	D281 0.2-0.3	13	-
085	D282 0.0-0.1	13	-
091	D284 0.2-0.3	13	-
092	D285 0.0-0.1	13	1

CONTINUED OVERLEAF

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

SAMPLE RECEIPT ADVICE

SE162178A

CLIENT DETAILS

Client Geotechnique

Project 12675-4 Goongong NH1A-7 & NH2

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	pH in soil (1:5)
100	D287 0.2-0.3	13	-
103	D288 0.0-0.1	13	1
106	D289 0.0-0.1	13	-
108	D289 0.5-0.6	13	-
110	D290 0.0-0.1	13	1

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

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS		LABORATORY DETAILS	
Contact	John Xu	Manager	Huong Crawford
Client	Geotechnique	Laboratory	SGS Alexandria Environmental
Address	P.O. Box 880 PENRITH NSW 2751	Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	02 4722 2700	Telephone	+61 2 8594 0400
Facsimile	02 4722 6161	Facsimile	+61 2 8594 0499
Email	john.xu@geotech.com.au	Email	au.environmental.sydney@sgs.com
Project	**Googong NH1A-7 & NH2**	SGS Reference	**SE162177 R0**
Order Number	(Not specified)	Date Received	20/2/2017
Samples	2	Date Reported	24/2/2017

COMMENTS

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

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

Sample #1: Asbestos found in 50x30x4mm cement sheet fragments in >7mm fraction, and cement sheet fragments in >2 to <7 mm fraction

Asbestos analysed by Approved Identifiers Ravee Sivasubramaniam and Yusuf Kuthpudin .

SIGNATORIES

Ravee Sivasubramaniam
Hygiene Team Leader

Gravimetric Determination of Asbestos in Soil [AN605] Tested: 23/2/2017

PARAMETER	UOM	LOR	FCP1 0-0.1 SOIL - 17/2/2017 SE162177.001
Total Sample Weight	g	1	336
ACM in >7mm Sample*	g	0.01	14.9
AF/FA in >2mm to <7mm Sample*	g	0.0001	1.22
AF/FA in <2mm Sample*	g	0.0001	<0.0001
Asbestos in soil (>7mm ACM)*	%w/w	0.01	0.66
Asbestos in soil (>2mm to <7mm AF/FA)*	%w/w	0.001	0.36
Asbestos in soil (<2mm AF/FA)*	%w/w	0.001	<0.001
Asbestos in soil (<7mm AF/FA)*	%w/w	0.001	0.36
Fibre Type	No unit	-	CRY,ORG

Fibre ID in bulk materials [AN602] Tested: 24/2/2017

PARAMETER	UOM	LOR	FCP1 MATERIAL - 17/2/2017 SE162177.002
Asbestos Detected	No unit	-	Yes

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).
AN605	This technique gravimetrically determines the mass of Asbestos Containing Material retained on a 7mm Sieve and assumes that 15% of this ACM is asbestos. This calculated asbestos weight is then calculated as a percentage of the total sample weight.
AN605	This technique also gravimetrically determines the mass of Fibrous Asbestos (FA) and Asbestos Fines (AF) Containing Material retained on and passing a 2mm sieve post 7mm sieving. Assumes that FA and AF are 100% asbestos containing. This calculated asbestos weight is then calculated as a percentage of the total sample weight. This does not include free fibres which are only observed by standard trace analysis as per AN 602.
AN605	AMO = Amosite Detected CRY = Chrysotile Detected CRO = Crocidolite Detected ORG = Organic Fibres Detected SMF = Synthetic Mineral Fibres Detected UMF = Unknown Mineral Fibres Detected NAD = No Asbestos Detected
AN605	Insofar as is technically feasible, this report is consistent with the analytical reporting recommendations in the Western Australian Department of Health Guidelines for the Assessment Remediation and Management of Asbestos - Contaminated Sites in Western Australia - May 2009.

FOOTNOTES

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

Samples analysed as received.
Solid samples expressed on a dry weight basis.

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

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

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

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

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

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

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

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS		LABORATORY DETAILS	
Contact	John Xu	Manager	Huong Crawford
Client	Geotechnique	Laboratory	SGS Alexandria Environmental
Address	P.O. Box 880 PENRITH NSW 2751	Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	02 4722 2700	Telephone	+61 2 8594 0400
Facsimile	02 4722 6161	Facsimile	+61 2 8594 0499
Email	john.xu@geotech.com.au	Email	au.environmental.sydney@sgs.com
Project	**Googong NH1A-7 & NH2**	SGS Reference	**SE162177 R0**
Order Number	(Not specified)	Date Received	20 Feb 2017
Samples	1	Date Reported	24 Feb 2017

COMMENTS

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

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

Sample #1: Asbestos found in 50x30x4mm cement sheet fragments in >7mm fraction, and cement sheet fragments in >2 to <7 mm fraction

Asbestos analysed by Approved Identifiers Ravee Sivasubramaniam and Yusuf Kuthpudin .

SIGNATORIES

S. Raveendran.

Ravee Sivasubramaniam
Hygiene Team Leader

ANALYTICAL REPORT

RESULTS

Fibre ID in bulk materials   Method AN602

Laboratory Reference	Client Reference	Matrix	Sample Description	Date Sampled	Fibre Identification
SE162177.002	FCP1	Other	45x40x5mm cement sheet fragment	17 Feb 2017	Chrysotile Asbestos Detected

METHOD SUMMARY

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).

FOOTNOTES

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

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

Sampled by the client.

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

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

The QC 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

E-MAILED
20/2/17 @ 1:13

SGS EHS Alexandria Laboratory

SE162177 COC
Received: 20 – Feb – 2017

GEOTECHNIQUE PTY LTD

Laboratory Test Request / Chain of Custody Record

Lemko Place
PENRITH NSW 2750

P O Box 880
PENRITH NSW 2751

Tel: (02) 4722 2700
Fax: (02) 4722 6161
email: info@geotech.com.au

TO:	SGS ENVIRONMENTAL SERVICES UNIT 16 33 MADDOX STREET ALEXANDRIA NSW 2015			Sampling By:	SS/JH	Job No:	12675/4 COC 4
						Project:	
PH:	02 8594 0400	FAX:	02 8594 0499	Project Manager:	JX	Location:	Googong NH1A-7 & NH2
ATTN:	MS EMILY YIN						

Results required by: Normal TAT

Sampling details				Sample type											
Location	Depth (m)	Date	Time	Soil	Material	ASBESTOS 0.001% w/w	ASBESTOS								KEEP SAMPLE
FCP1	0-0.1	17/02/2017	-	SP		✓									YES
FCP1	-	17/02/2017	-		FCP		✓								YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	20/02/2017	Suba	[signature]	20/02/17 @ 12:15

Legend:

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

SAMPLE RECEIPT ADVICE

SE162177

CLIENT DETAILS

Contact	John Xu
Client	Geotechnique
Address	P.O. Box 880 PENRITH NSW 2751
Telephone	02 4722 2700
Facsimile	02 4722 6161
Email	john.xu@geotech.com.au
Project	**Googong NH1A-7 & NH2**
Order Number	(Not specified)
Samples	2

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 20/2/2017
Report Due	Mon 27/2/2017
SGS Reference	**SE162177**

SUBMISSION DETAILS

This is to confirm that 2 samples were received on Monday 20/2/2017. Results are expected to be ready by Monday 27/2/2017. Please quote SGS reference SE162177 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	Client	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	1 Soil, 1 Material
Date documentation received	20/2/2017	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	17.3°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

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

COMMENTS

SAMPLE RECEIPT ADVICE

SE162177

CLIENT DETAILS

Client Geotechnique

Project Googong NH1A-7 & NH2

SUMMARY OF ANALYSIS

No.	Sample ID	Fibre ID in bulk materials	Gravimetric Determination of Asbestos in Soil
001	FCP1 0-0.1	-	9
002	FCP1	1	-

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

12 Ashley Street, Chatswood, NSW 2067
tel: +61 2 9910 6200

email: sydney@envirolab.com.au
envirolab.com.au

Envirolab Services Pty Ltd - Sydney | ABN 37 112 535 645

CERTIFICATE OF ANALYSIS **155675**

Client:
Geotechnique Pty Ltd
PO Box 880
Penrith
NSW 2751

Attention: John Xu

Sample log in details:

Your Reference:	**12675/4, Googong NH1A-7 & NH2**	
No. of samples:	10 soils	
Date samples received / completed instructions received	19/10/16	/ 20/10/16

This report replaces R00 due to the addition of manganese results.

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:	27/10/16	/ 26/10/16
Date of Preliminary Report:	Not Issued	

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

Results Approved By:

David Springer
General Manager

ACCREDITED FOR TECHNICAL COMPETENCE

Acid Extractable metals in soil						
Our Reference:	UNITS	155675-1	155675-2	155675-3	155675-4	155675-5
Your Reference	-------------	S1	S2	S3	S4	S5
Date Sampled	------------	17/10/2016	17/10/2016	17/10/2016	17/10/2016	18/10/2016
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	21/10/2016	21/10/2016	21/10/2016	21/10/2016	21/10/2016
Date analysed	-	21/10/2016	21/10/2016	21/10/2016	21/10/2016	21/10/2016
Arsenic	mg/kg	50	680	43	43	150
Cadmium	mg/kg	0.6	17	0.6	0.5	4.4
Chromium	mg/kg	41	10	35	32	38
Copper	mg/kg	17	180	15	24	81
Lead	mg/kg	230	85	260	90	700
Mercury	mg/kg	<0.1	0.5	<0.1	<0.1	<0.1
Nickel	mg/kg	8	52	8	10	26
Zinc	mg/kg	140	1,200	140	86	1,200
Manganese	mg/kg	2,100	21,000	2,200	1,200	3,900

Acid Extractable metals in soil			
Our Reference:	UNITS	155675-6	155675-7
Your Reference	-------------	S6	S7
Date Sampled	------------	18/10/2016	18/10/2016
Type of sample		soil	soil
Date prepared	-	21/10/2016	21/10/2016
Date analysed	-	21/10/2016	21/10/2016
Arsenic	mg/kg	310	260
Cadmium	mg/kg	13	4
Chromium	mg/kg	26	44
Copper	mg/kg	91	66
Lead	mg/kg	230	210
Mercury	mg/kg	0.1	0.1
Nickel	mg/kg	19	25
Zinc	mg/kg	3,400	1,800
Manganese	mg/kg	9,000	3,600

Moisture Our Reference: Your Reference Date Sampled Type of sample	UNITS ------------- ------------	155675-1 S1 17/10/2016 soil	155675-2 S2 17/10/2016 soil	155675-3 S3 17/10/2016 soil	155675-4 S4 17/10/2016 soil	155675-5 S5 18/10/2016 soil
Date prepared	-	21/10/2016	21/10/2016	21/10/2016	21/10/2016	21/10/2016
Date analysed	-	24/10/2016	24/10/2016	24/10/2016	24/10/2016	24/10/2016
Moisture	%	12	35	7.6	13	16

Moisture Our Reference: Your Reference Date Sampled Type of sample	UNITS ------------- ------------	155675-6 S6 18/10/2016 soil	155675-7 S7 18/10/2016 soil	155675-8 S8 18/10/2016 soil	155675-9 S9 18/10/2016 soil	155675-10 S10 18/10/2016 soil
Date prepared	-	21/10/2016	21/10/2016	21/10/2016	21/10/2016	21/10/2016
Date analysed	-	24/10/2016	24/10/2016	24/10/2016	24/10/2016	24/10/2016
Moisture	%	18	17	23	20	13

svTRH (C10-C40) in Soil				
Our Reference:	UNITS	155675-8	155675-9	155675-10
Your Reference	-------------	S8	S9	S10
Date Sampled	------------	18/10/2016	18/10/2016	18/10/2016
Type of sample		soil	soil	soil
Date extracted	-	21/10/2016	21/10/2016	21/10/2016
Date analysed	-	22/10/2016	22/10/2016	22/10/2016
TRHC $_{10}$ - C $_{14}$	mg/kg	<50	<50	<50
TRHC $_{15}$ - C $_{28}$	mg/kg	<100	<100	<100
TRHC $_{29}$ - C $_{36}$	mg/kg	<100	<100	<100
TRH>C $_{10}$-C $_{16}$	mg/kg	<50	<50	<50
TRH>C $_{16}$-C $_{34}$	mg/kg	<100	<100	<100
TRH>C $_{34}$-C $_{40}$	mg/kg	<100	<100	<100
Surrogate o-Terphenyl	%	75	74	77

Method ID	Methodology Summary
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Inorg-008	Moisture content determined by heating at 105+/-5 deg C for a minimum of 12 hours.
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.

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			21/10/2016	155675-7	21/10/2016 || 21/10/2016	LCS-2	21/10/2016
Date analysed	-			21/10/2016	155675-7	21/10/2016 || 21/10/2016	LCS-2	21/10/2016
Arsenic	mg/kg	4	Metals-020	<4	155675-7	260 || 250 || RPD: 4	LCS-2	119%
Cadmium	mg/kg	0.4	Metals-020	<0.4	155675-7	4 || 4 || RPD: 0	LCS-2	112%
Chromium	mg/kg	1	Metals-020	<1	155675-7	44 || 43 || RPD: 2	LCS-2	116%
Copper	mg/kg	1	Metals-020	<1	155675-7	66 || 61 || RPD: 8	LCS-2	111%
Lead	mg/kg	1	Metals-020	<1	155675-7	210 || 220 || RPD: 5	LCS-2	110%
Mercury	mg/kg	0.1	Metals-021	<0.1	155675-7	0.1 || 0.1 || RPD: 0	LCS-2	99%
Nickel	mg/kg	1	Metals-020	<1	155675-7	25 || 21 || RPD: 17	LCS-2	107%
Zinc	mg/kg	1	Metals-020	<1	155675-7	1800 || 1200 || RPD: 40	LCS-2	114%
Manganese	mg/kg	1	Metals-020	<1	155675-7	3600 || 3500 || RPD: 3	LCS-2	106%

QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			21/10/2016	[NT]	[NT]	LCS-2	21/10/2016
Date analysed	-			22/10/2016	[NT]	[NT]	LCS-2	22/10/2016
TRHC$_{10}$ - C$_{14}$	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS-2	124%
TRHC$_{15}$ - C$_{28}$	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-2	110%
TRHC$_{29}$ - C$_{36}$	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-2	96%
TRH>C$_{10}$-C$_{16}$	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS-2	124%
TRH>C$_{16}$-C$_{34}$	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-2	110%
TRH>C$_{34}$-C$_{40}$	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-2	96%
Surrogate o-Terphenyl	%		Org-003	80	[NT]	[NT]	LCS-2	89%

Report Comments:

Asbestos ID was analysed by Approved Identifier:	Not applicable for this job
Asbestos ID was authorised by Approved Signatory:	Not applicable for this job

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NR: Test not required	RPD: Relative Percent Difference	NA: Test not required
<: Less than	>: Greater than	LCS: Laboratory Control Sample

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.

Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.

Matrix Spike : A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

LCS (Laboratory Control Sample) : This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

ENVIROLAB

Job No. 155675

Date Received 19-10-16
Time Received 15:00
Received by: LN
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

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
email: info@geotech.com.au

TO: ENVIROLAB SERVICES PTY LD
12 ASHLEY STREET
CHATSWOOD NSW 2067

PH: 02 9910 6200 **FAX:** 02 9910 6201

ATTN: MS AILEEN HIE

Sampling By: LY/JH
Job No: 12675/4
Project:
Project Manager: JX
Location: Googong NH1A-7 & NH2

Results required by: Normal TAT

	Sampling details				Sample type											
	Location	Depth (m)	Date	Time	Soil	Water	Heavy Metals As, Cd, Cu, Pb, Mn, Hg, Ni and Zn	TPH F2 & F3 with silica gel clean-up								KEEP SAMPLE
1	S1		17/10/2016	-	SG		✓									YES
2	S2		17/10/2016	-	SG		✓									YES
3	S3		17/10/2016	-	SG		✓									YES
4	S4		17/10/2016	-	SG		✓									YES
5	S5		18/10/2016	-	SG		✓									YES
6	S6		18/10/2016	-	SG		✓									YES
7	S7		18/10/2016	-	SG		✓									YES
8	S8		18/10/2016	-	SG			✓								YES
9	S9		18/10/2016	-	SG			✓								YES
10	S10		18/10/2016	-	SG			✓								YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	20/10/2016			

Legend:
WG Water sample, glass bottle
WP Water sample, plastic bottle
SG Soil sample (glass jar)
SP Soil sample (plastic bag)
✓ Test required
* Purge & Trap

ENVIROLAB SERVICES

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

SAMPLE RECEIPT ADVICE

Client Details	
Client	Geotechnique Pty Ltd
Attention	John Xu

Sample Login Details	
Your Reference	12675/4, Googong NH1A-7 & NH2
Envirolab Reference	**155675**
Date Sample Received	19/10/2016
Date Instructions Received	20/10/2016
Date Results Expected to be Reported	**27/10/2016**

Sample Condition	
Samples received in appropriate condition for analysis	YES
No. of Samples Provided	10 soils
Turnaround Time Requested	Standard
Temperature on receipt (°C)	10.0
Cooling Method	Ice
Sampling Date Provided	YES

Comments
Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	Phone: 02 9910 6200
Fax: 02 9910 6201	Fax: 02 9910 6201
Email: ahie@envirolabservices.com.au	Email: jhurst@envirolabservices.com.au

Sample and Testing Details on following page

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

Sample Id	*sTPH in Soil (C10-C40)-Silica*	*Acid Extractable metals in soil*
S1		✓
S2		✓
S3		✓
S4		✓
S5		✓
S6		✓
S7		✓
S8	✓	
S9	✓	
S10	✓	

12 Ashley Street, Chatswood, NSW 2067
tel: +61 2 9910 6200
email: sydney@envirolab.com.au
envirolab.com.au
Envirolab Services Pty Ltd - Sydney | ABN 37 112 535 645

CERTIFICATE OF ANALYSIS 162188

Client:
Geotechnique Pty Ltd
PO Box 880
Penrith
NSW 2751

Attention: John Xu

Sample log in details:

Your Reference:	**12675/4, Googong NH1A-7 & NH2**
No. of samples:	15 Soils
Date samples received / completed instructions received	20/02/17 / 20/02/17

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

Report Details:

Date results requested by: / Issue Date:	27/02/17 / 23/02/17
Date of Preliminary Report:	Not Issued

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

Results Approved By:

David Springer
General Manager

NATA ACCREDITED FOR TECHNICAL COMPETENCE

Acid Extractable metals in soil						
Our Reference:	UNITS	162188-1	162188-2	162188-3	162188-4	162188-5
Your Reference	-------------	SS1	SS2	SS3	SS4	SS5
Date Sampled	------------	14/02/2017	14/02/2017	14/02/2017	14/02/2017	15/02/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	21/02/2017	21/02/2017	21/02/2017	21/02/2017	21/02/2017
Date analysed	-	21/02/2017	21/02/2017	21/02/2017	21/02/2017	21/02/2017
Arsenic	mg/kg	35	32	14	11	15
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	24	16	28	27	28
Copper	mg/kg	8	17	31	16	27
Lead	mg/kg	77	55	16	18	18
Manganese	mg/kg	240	170	870	800	550
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	5	4	10	12	9
Zinc	mg/kg	46	20	35	55	35

Acid Extractable metals in soil						
Our Reference:	UNITS	162188-6	162188-7	162188-8	162188-9	162188-10
Your Reference	-------------	SS6	SS7	SS8	SS9	SS10
Date Sampled	------------	15/02/2017	15/02/2017	17/02/2017	17/02/2017	17/02/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	21/02/2017	21/02/2017	21/02/2017	21/02/2017	21/02/2017
Date analysed	-	21/02/2017	21/02/2017	21/02/2017	21/02/2017	21/02/2017
Arsenic	mg/kg	110	21	19	15	11
Cadmium	mg/kg	0.6	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	36	23	24	22	13
Copper	mg/kg	17	10	6	11	16
Lead	mg/kg	240	69	52	25	15
Manganese	mg/kg	800	2,200	1,000	470	88
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	6	9	4	17	7
Zinc	mg/kg	120	100	27	130	37

Acid Extractable metals in soil						
Our Reference:	UNITS	162188-11	162188-12	162188-13	162188-14	162188-15
Your Reference	-------------	SS11	SS12	SS13	SS14	SS15
Date Sampled	------------	17/02/2017	16/02/2017	16/02/2017	16/02/2017	16/02/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	21/02/2017	21/02/2017	21/02/2017	21/02/2017	21/02/2017
Date analysed	-	21/02/2017	21/02/2017	21/02/2017	21/02/2017	21/02/2017
Arsenic	mg/kg	16	39	24	51	240
Cadmium	mg/kg	1	0.5	<0.4	0.4	2
Chromium	mg/kg	17	33	27	32	21
Copper	mg/kg	15	19	9	12	40
Lead	mg/kg	61	94	44	77	250
Manganese	mg/kg	1,500	1,500	810	2,400	3,000
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1
Nickel	mg/kg	8	10	4	8	15
Zinc	mg/kg	130	100	36	69	410

Acid Extractable metals in soil		
Our Reference:	UNITS	162188-16
Your Reference	-------------	SS1 - [TRIPLICATE]
Date Sampled	------------	14/02/2017
Type of sample		Soil
Date prepared	-	21/02/2017
Date analysed	-	21/02/2017
Arsenic	mg/kg	30
Cadmium	mg/kg	<0.4
Chromium	mg/kg	22
Copper	mg/kg	6
Lead	mg/kg	68
Manganese	mg/kg	240
Mercury	mg/kg	<0.1
Nickel	mg/kg	4
Zinc	mg/kg	40

Moisture Our Reference: Your Reference Date Sampled Type of sample	UNITS ------------- - ------------	162188-1 SS1 14/02/2017 Soil	162188-2 SS2 14/02/2017 Soil	162188-3 SS3 14/02/2017 Soil	162188-4 SS4 14/02/2017 Soil	162188-5 SS5 15/02/2017 Soil
Date prepared	-	21/02/2017	21/02/2017	21/02/2017	21/02/2017	21/02/2017
Date analysed	-	22/02/2017	22/02/2017	22/02/2017	22/02/2017	22/02/2017
Moisture	%	1.7	3.4	2.1	5.6	2.1

Moisture Our Reference: Your Reference Date Sampled Type of sample	UNITS ------------- - ------------	162188-6 SS6 15/02/2017 Soil	162188-7 SS7 15/02/2017 Soil	162188-8 SS8 17/02/2017 Soil	162188-9 SS9 17/02/2017 Soil	162188-10 SS10 17/02/2017 Soil
Date prepared	-	21/02/2017	21/02/2017	21/02/2017	21/02/2017	21/02/2017
Date analysed	-	22/02/2017	22/02/2017	22/02/2017	22/02/2017	22/02/2017
Moisture	%	3.0	4.4	2.1	4.6	2.5

Moisture Our Reference: Your Reference Date Sampled Type of sample	UNITS ------------- - ------------	162188-11 SS11 17/02/2017 Soil	162188-12 SS12 16/02/2017 Soil	162188-13 SS13 16/02/2017 Soil	162188-14 SS14 16/02/2017 Soil	162188-15 SS15 16/02/2017 Soil
Date prepared	-	21/02/2017	21/02/2017	21/02/2017	21/02/2017	21/02/2017
Date analysed	-	22/02/2017	22/02/2017	22/02/2017	22/02/2017	22/02/2017
Moisture	%	4.7	3.8	1.7	5.0	7.3

Method ID	Methodology Summary
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			21/02/2017	162188-1	21/02/2017 || 21/02/2017	LCS-4	21/02/2017
Date analysed	-			21/02/2017	162188-1	21/02/2017 || 21/02/2017	LCS-4	21/02/2017
Arsenic	mg/kg	4	Metals-020	<4	162188-1	35 || 39 || RPD: 11	LCS-4	107%
Cadmium	mg/kg	0.4	Metals-020	<0.4	162188-1	<0.4 || <0.4	LCS-4	100%
Chromium	mg/kg	1	Metals-020	<1	162188-1	24 || 32 || RPD: 29	LCS-4	104%
Copper	mg/kg	1	Metals-020	<1	162188-1	8 || 18 || RPD: 77	LCS-4	103%
Lead	mg/kg	1	Metals-020	<1	162188-1	77 || 83 || RPD: 8	LCS-4	97%
Manganese	mg/kg	1	Metals-020	<1	162188-1	240 || 270 || RPD: 12	LCS-4	123%
Mercury	mg/kg	0.1	Metals-021	<0.1	162188-1	<0.1 || <0.1	LCS-4	91%
Nickel	mg/kg	1	Metals-020	<1	162188-1	5 || 9 || RPD: 57	LCS-4	95%
Zinc	mg/kg	1	Metals-020	<1	162188-1	46 || 81 || RPD: 55	LCS-4	97%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	162188-11	21/02/2017 || 21/02/2017	162188-2	21/02/2017
Date analysed	-	162188-11	21/02/2017 || 21/02/2017	162188-2	21/02/2017
Arsenic	mg/kg	162188-11	16 || 21 || RPD: 27	162188-2	107%
Cadmium	mg/kg	162188-11	1 || 1 || RPD: 0	162188-2	75%
Chromium	mg/kg	162188-11	17 || 21 || RPD: 21	162188-2	91%
Copper	mg/kg	162188-11	15 || 17 || RPD: 12	162188-2	98%
Lead	mg/kg	162188-11	61 || 68 || RPD: 11	162188-2	129%
Manganese	mg/kg	162188-11	1500 || 1700 || RPD: 12	162188-2	#
Mercury	mg/kg	162188-11	<0.1 || <0.1	162188-2	84%
Nickel	mg/kg	162188-11	8 || 9 || RPD: 12	162188-2	77%
Zinc	mg/kg	162188-11	130 || 170 || RPD: 27	162188-2	86%

Report Comments:

Acid Extractable Metals in Soil: The laboratory RPD acceptance criteria has been exceeded for 162188-1 for Cu, Ni, Zn. Therefore a triplicate result has been issued as laboratory sample number 162188-16.

Acid Extractable Metals in Soil:
Percent recovery is not possible to report due to the high concentration of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.

Asbestos ID was analysed by Approved Identifier:	Not applicable for this job
Asbestos ID was authorised by Approved Signatory:	Not applicable for this job

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NR: Test not required	RPD: Relative Percent Difference	NA: Test not required
<: Less than	>: Greater than	LCS: Laboratory Control Sample

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.

Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.

Matrix Spike : A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

LCS (Laboratory Control Sample) : This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 162188

Date Received: 20.7.17
Time Received: 16.45
Received by: JE
Temp: Cool/Ambient 18.5°C
Cooling: Ice/Icepack
Security: Intact/Broken/None

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
email: info@geotech.com.au

TO: ENVIROLAB SERVICES PTY LD
12 ASHLEY STREET
CHATSWOOD NSW 2067

PH: 02 9910 6200 FAX: 02 9910 6201

ATTN: MS AILEEN HIE

Sampling By: SS/JH
Job No: 12675/4
Project:
Project Manager: JX
Location: Googong NH1A-7 & NH2

Results required by: Normal TAT

	Location	Depth (m)	Date	Time	Soil	Water	Heavy Metals As, Cd, Cr, Cu, Pb, Mn, Hg, Ni and Zn								KEEP SAMPLE
1	SS1		14/02/2017	-	SG		✓								YES
2	SS2		14/02/2017	-	SG		✓								YES
3	SS3		14/02/2017	-	SG		✓								YES
4	SS4		14/02/2017	-	SG		✓								YES
5	SS5		15/02/2017	-	SG		✓								YES
6	SS6		15/02/2017	-	SG		✓								YES
7	SS7		15/02/2017	-	SG		✓								YES
8	SS8		17/02/2017	-	SG		✓								YES
9	SS9		17/02/2017	-	SG		✓								YES
10	SS10		17/02/2017	-	SG		✓								YES
11	SS11		17/02/2017	-	SG		✓								YES
12	SS12		16/02/2017	-	SG		✓								YES

Relinquished by: Name	Signature	Date	Received by: Name	Signature	Date
JOHN XU	jx	20/02/2017	Jack Eastlen	[signature]	20.2.17

Legend:
WG Water sample, glass bottle
WP Water sample, plastic bottle
SG Soil sample (glass jar)
SP Soil sample (plastic bag)
✓ Test required
* Purge & Trap

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
email: info@geotech.com.au

TO: ENVIROLAB SERVICES PTY LD 12 ASHLEY STREET CHATSWOOD NSW 2067		Sampling By: SS/JH	Job No: 12675/4 Project:
PH: 02 9910 6200	FAX: 02 9910 6201	Project Manager: JX	Location: Googong NH1A-7 & NH2
ATTN: MS AILEEN HIE			

Sampling details				Sample type		Results required by: Normal TAT								
Location	Depth (m)	Date	Time	Soil	Water									
162188						Heavy Metals As, Cd, Cr, Cu, Pb, Mn, Hg, Ni and Zn								KEEP SAMPLE
13 SS13		16/02/2017	-	SG		✓								YES
14 SS14		16/02/2017	-	SG		✓								YES
15 SS15		16/02/2017	-	SG		✓								YES

Relinquished by			Received by		
Name	Signature	Date	Name	Signature	Date
JOHN XU	jx	20/02/2017	Jack Emblen	[signature]	20.2.17

Legend:

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

* Purge & Trap

ENVIROLAB SERVICES

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

SAMPLE RECEIPT ADVICE

Client Details	
Client	Geotechnique Pty Ltd
Attention	John Xu

Sample Login Details	
Your Reference	12675/4, Googong NH1A-7 & NH2
Envirolab Reference	**162188**
Date Sample Received	20/02/2017
Date Instructions Received	20/02/2017
Date Results Expected to be Reported	**27/02/2017**

Sample Condition	
Samples received in appropriate condition for analysis	YES
No. of Samples Provided	15 Soils
Turnaround Time Requested	Standard
Temperature on receipt (°C)	18.5
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments
Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	Phone: 02 9910 6200
Fax: 02 9910 6201	Fax: 02 9910 6201
Email: ahie@envirolabservices.com.au	Email: jhurst@envirolabservices.com.au

Sample and Testing Details on following page

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

Sample Id	***Acid Extractable metals in soil***
SS1	✓
SS2	✓
SS3	✓
SS4	✓
SS5	✓
SS6	✓
SS7	✓
SS8	✓
SS9	✓
SS10	✓
SS11	✓
SS12	✓
SS13	✓
SS14	✓
SS15	✓

*The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.***

APPENDIX E

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.