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SIRIUS DEVELOPMENTS PTY LTD

Detailed Site Investigation

2-60 Cumberland Street, The Rocks NSW

E24614.E02_Rev2
6 July 2020

Document Control

Report Title: Detailed Site Investigation

Report No: E24614.E02_Rev2

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Revision	Details	Date	Amended By
0	Original	1 July 2020	-
1	Updates following client's review	3 July 2020	LB
2	Site details update	6 July 2020	LB

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Executive Summary

Sirius Developments Pty Ltd engaged EI Australia (EI) to conduct a Detailed Site Investigation (DSI) for 2-60 Cumberland Street, The Rocks NSW.

The main objective of this DSI was to provide characterisation of soil and groundwater conditions at the site, thereby assessing the site's suitability for on-going residential land use. A further objective was to make recommendations for the appropriate management of any contaminated soils and/or groundwater, should they be identified.

The key findings of this DSI were as follows:

- The site and surrounding area had predominantly been used for commercial and residential purposes. The site layout had remained unchanged since current building construction circa 1980.
- There was no historical evidence that heavy industrial activities took place, either on-site, or on the surrounding properties.
- There was no evidence that an underground storage tank (UST) was present on the site; however, during previous investigations, an above-ground storage tank (AST; diesel) was discovered in the basement car park and minor (oil-like) stains were observed on the sealed concrete pavement beneath it. Infiltration of petroleum hydrocarbons into the underlying soils was considered unlikely, or at most low level.
- There was no visual evidence of gross contamination across the site. No suspicious odour was detected during any of the site inspections.
- Based on the logs for eleven separate test boreholes (BH1-BH11), the subsurface consisted of sand- and gravel- dominated fill materials (0.15-0.95m thickness), overlying natural sandstone bedrock.
- Laboratory analytical results for the representative soil samples all complied with the adopted criteria applicable to residential sites (with minimal access to soils).
- The risk of site contamination by asbestos was low.
- Based on the data from the groundwater monitoring event (GME), groundwater levels at the site varied from 18.85m AHD in BH6M, to 20m AHD in BH11M. The inferred hydraulic gradient was north easterly (i.e. towards the Sydney Harbour), consistent with the local topography.
- The local groundwater was slightly acidic (pH: 6.06-6.78) and fresh (electrical conductivity: 387-1328 µS/cm). Laboratory analytical results for the representative samples all complied with the adopted groundwater criteria, except for dissolved copper, nickel and zinc, although the metal concentrations were considered representative of, or at least consistent with, background conditions for a heavily urbanised area.
- There was low likelihood of impact to groundwater originating from the site (i.e. the site soils were not considered to be the source of any groundwater contamination).

Based on the findings of this DSI, conducted in accordance with the scope agreed with the client and EI's Statement of Limitations (**Section 10**), it was concluded that the potential for site contamination was low. The site was deemed suitable for the proposed (residential) development, in accordance with *State Environmental Planning Policy 55 - Remediation of Land.*

1. Introduction

1.1 Background and Purpose

Sirius Developments Pty Ltd engaged EI Australia (EI) to conduct a Detailed Site Investigation (DSI) for 2-60 Cumberland Street, The Rocks NSW (henceforth 'the site').

The site is located 1.6 km north of the Sydney central business district (**Figure 1, Appendix A**), within the Local Government Area of City of Sydney Council. It comprises Lots 100 and 101 in DP 264104, covering a total area of 3,664.5 m^2 (**Figure 2, Appendix A**). At the time of this DSI, the site was occupied by a multi-storey, apartment building, overlying a single level basement car parking facility.

This DSI was conducted to appraise the environmental (contamination) condition of the site, thereby determining its suitability for a proposed redevelopment.

1.2 Proposed Development

Based on the supplied plans (**Appendix C**), and on consultation with the client, it was understood that the site use would remain residential. The proposed development involves architectural modifications to the existing building, with reinforcement of the structure and addition of a new basement level in the southern portion of the site. The lowest basement level was proposed to have a finished floor level (FFL) of between RL 18.0m and 18.72m. Bulk excavation levels (BELs) between RL 17.80m and RL 18.50m were assumed (including allowance for the construction of the basement slab). To achieve the BEL, excavation depths up to 6.80m below ground level (BGL) were required (although locally deeper excavations could be necessary for footings, lift overrun pits, crane pads and service trenches).

1.3 DSI Objectives

The main objective of this DSI was to provide characterisation of soil and groundwater conditions at the site, thereby assessing the site's suitability for on-going residential land use. A further objective was to make recommendations for the appropriate management of any contaminated soils and/or groundwater, should they be identified.

1.4 Scope of Works

To achieve the above objectives, the following scope of works was completed:

1.4.1 Desktop Study

- Review of relevant topographical, geological, hydrogeological and soil landscape maps for the project area;
- A search for groundwater bore records within close vicinity (<500m radius) of the site;
- A site walkover inspection, including underground services location;
- Review of a previous environmental investigation report for the site;
- Development of a conceptual site model;

1.4.2 Field Work and Laboratory Analysis

- Drilling and logging of eleven boreholes in accessible areas across the site;
- Multiple level soil sampling within fill and natural soils at each of the boreholes,

- Conversion of three boreholes to groundwater monitoring wells, constructed to standard environmental investigation protocols, to investigate potential groundwater contamination;
- Completion of one round of groundwater sampling from the constructed groundwater monitoring wells; and
- Laboratory analysis of selected soil and groundwater samples for the contaminants of potential concern (COPC), as determined from the previous site investigation and observations made during the DSI field works.

1.4.3 Data Analysis and Reporting

This report documents all desktop study findings, including preliminary and revised conceptual site models. It also provides a record of the data quality objectives, methodology, field observations, borehole and monitoring well construction logs and an interpretation of the laboratory analytical results in regards to potential risks to human health, the environment and the aesthetic uses of the land.

2. Site Description

2.1 Property Identification, Location and Physical Setting

The site identification details and associated information are presented in **Table 2-1**, while the site locality is shown in **Figure 1 (Appendix A)**.

Table 2-1 Site Identification, Location and Use

Attribute	Description
Street Address	2-60 Cumberland Street, The Rocks NSW
Location Description	Located in a mixed land use area, 1.6 north of the Sydney CBD. Bound by the join of Cumberland Street and Gloucester Walk on the northern corner, Gloucester Walk to the east, a commercial office building to the south and Cumberland Street to the west.
Site Area	3,664.5 m^2 (Ref. LTS Lockley, Job No. 50025 DT004, Revision D, 07/04/2020)
Lots and Deposit Plan (DP)	Lots 100 and 101 in DP 264104
State Survey Marks	Two Permanent Marks are situated in close proximity of the site: ▪ PM14333, located on Cumberland Street, approximately 14m south west of the site; and ▪ PM701830, located on Cumberland Street, approximately 11m north west of the site. (Source: http://maps.six.nsw.gov.au)
Local Government Authority	City of Sydney Council
Parish	Saint Philip
County	Cumberland
Current Land Uses	The site is occupied by a multi-storey apartment building, overlying a single level basement carpark. The building was previously used for residential purposes and was unoccupied at the time of this DSI.

2.2 Surrounding Land Use

The site is situated within an area of mixed, residential and commercial uses. Current uses of the surrounding land are described in **Table 2-2**.

Table 2-2 Surrounding Land Uses

Direction Relative to Site	Land Use Description
North	Cumberland Street and George Street, followed by commercial premises, such as restaurants, hotels and offices and, further, Sydney Harbour.
East	Gloucester Walk followed by residential and commercial premises, including hotel, restaurants, retail, then George Street, and, further, Sydney Harbour.
South	A multi-storey office building, followed by commercial property (restaurant, former hotel) then Argyle Street.
West	Cumberland Street followed by residential and commercial premises.

Sensitive land uses within the vicinity of the site included residential and tourist accommodation. Sensitive environmental receptors included the aquatic environment of the Sydney Harbour.

2.3 Regional Setting

Regional topography, geology, hydrogeology and soil landscape information are summarised in **Table 2-3**.

Table 2-3 Regional Setting Information

Attribute	Description
Topography	Overall down slope in a north easterly direction, with site levels varying from RL 24.5m AHD at the south-west site corner, to RL 18.5m AHD at the northern site corner.
Site Drainage	Site drainage is likely to be consistent with the general slope of the site. Stormwater is expected to drain into Sydney Harbour to the north-east, through the municipal stormwater system.
Regional Geology	Information on regional sub-surface conditions, referenced from the DMR (1985) *Sydney 1:100,000 Geological Series Sheet 9130*, indicated the site is underlain by Hawkesbury Sandstone (*Rh*). Hawkesbury Sandstone is described as medium to coarse-grained quartz sandstone, very minor shale and laminate lenses.
Soil Landscapes	The Soil Conservation Service of NSW *Soil Landscapes of the Sydney 1:100,000 Sheet* (Chapman and Murphy, 1989) indicates that the site overlies a Gymea (gy) erosional landscape, which includes undulating to rolling rises and low hills on Hawkesbury Sandstone. Soils are typically shallow to moderately deep (30-100cm) and limitations include localised steep slopes, high soil erosion hazard, rock outcrop, shallow highly permeable soil, very low soil fertility.
Acid Sulfate Soil (ASS) Risk	The *Sydney Local Environmental Plan 2012 - Acid Sulfate Soil Map* (Sheet ASS_013) does not classify the site with respect to ASS. According to the *Prospect / Parramatta River Acid Sulfate Soil Risk Map* (Murphy, 1997), the site lies within an area of *No Known Occurrence* (with respect to ASSs). In such cases, ASS are not know or expected to occur and "land management activities are not likely to be affected by ASS materials". Based on this information, an ASS investigation was not considered necessary for this DSI.
Nearest Surface Water Feature	Sydney Harbour, approximately 130m north east.
Inferred Groundwater Flow Direction	Groundwater was inferred to flow north easterly, towards the Sydney Harbour.

2.4 Groundwater Bore Records and Groundwater Use

An online search for groundwater bores registered with WaterNSW was conducted by EI on 11 June 2020 (Ref. https://realtimedata.waternsw.com.au/water.stm). The search did not identify any registered wells within a 500m radius of the site. In view that a reticulated water supply is available in the area, it is unlikely that groundwater extraction for beneficial domestic use is taking place in the locality. However, other groundwater uses, including recreational, might exist and the associated exposure risks of these users will be considered in this assessment as a prudent approach.

2.5 Site Walkover Inspection

Observations were recorded during a site inspection on 2 June 2020 and these are summarised below. Refer to photographs attached in **Appendix I.**

- The site was occupied by a multi-storey, residential building, overlying a basement car parking facility.
- The building covered most of the site footprint. Those sections without basement were constructed with suspended slabs.
- The exterior walls of the building structure appeared to be in fair condition.
- Sandstone outcrops were observed in the lower basement
- Virtually the entire surface was concrete paved, or covered by building. All concrete pavement appeared to be in good to fair condition, with only minor cracking and deformity.
- Small areas along the western and eastern site boundary had plants (including trees), none of which presented signs of distress. The lack of plant diversity precluded any further comment regarding potential phytotoxicity of site soils.
- Potential asbestos-containing materials (ACM) and lead-based paints were observed on the building.
- No visual evidence of contamination was observed on the ground surface at the time of the inspection.
- No unusual odour was detected during the site visit.
- No visual evidence of infrastructure associated with under-/above-ground storage tanks (UST / AST) was observed on the site.

3. Previous Investigation

The following previous investigation report was reviewed as part of this DSI:

- EP Risk (2017) *Preliminary Site Investigation; Sirius Building, 2-60 Cumberland Street, The Rocks NSW* (EP Risk Report EP0643.001, dated 28 September 2017).

A summary of the information documented in the above report is outlined in **Table 3-1**.

Table 3-1 Summary of Previous Investigation Works and Findings

Task	Project Findings
Objective	To review site history and provide an appraisal regarding the potential for contamination to be present.
Scope of Work	The scope of work for this PSI included: ▪ Site inspection; ▪ A review of site history, based on the following searches: ‣ Council and regulatory records; ‣ Historical land titles; ‣ Historical aerial photographs; ‣ Section 149 planning certificate; ‣ SafeWork NSW Dangerous Goods Search; and ‣ Published geological and hydrogeological information; ▪ Identification of areas and contaminants of potential concern; and ▪ Preparation of a report.
Principal Findings and Conclusions	Based on the site history review, the site and surrounding area were predominantly used for commercial and residential purposes (since the early 1900s, at least). The site remained unchanged since building construction circa 1980. There was no evidence that heavy industrial activity took place, either on-site, or in the immediate surroundings. An above-ground storage tank (AST) was found in the basement car park. Minor hydrocarbon staining was observed on the concrete hardstand immediately below this tank; however, it was considered unlikely to have infiltrated beneath the sealed concrete paved slab. EP Risk concluded that the risk of gross contamination in shallow soils and groundwater was low. The site was deemed to pose low risks to current and future users, from a contamination perspective.

4. Conceptual Site Model

In accordance with NEPC (2013) *Schedule B2 – Guideline on Site Characterisation*, EI developed a conceptual site model (CSM) that assessed plausible linkages between potential contamination sources, migration pathways and receptors. The CSM provides a framework for the review of the available data and identifies gaps in the existing site characterisation.

4.1 Predicted Subsurface Conditions

The subsurface was expected to be comprised of a shallow layer of gravel and gravelly sand fill, overlying medium to high strength sandstone bedrock. Bedrock was detected from depths of 0.26m below the paved surface.

4.2 Potential Contamination Sources

On the basis of the previous findings (described in **Section 3**), EI considered potential contamination sources to be as follows:

- Imported fill soils of unknown origin and quality (expected beneath slabs for surface levelling);
- Previous commercial activities on the property; in particular spills and leaks from the AST (understood to have contained diesel);
- Hazardous materials in surficial soils, from the weathering of exposed (former) building fabrics and uncontrolled demolition practices (including potential ACM, lead-based paints and metallic surfaces);
- Application of pesticides around building footings; and
- Migration of mobile contaminants from off-site (neighbouring) commercial properties.

4.3 Other Considerations

4.3.1 Per- and Poly- Fluoroalkyl Substances (PFAS)

EPA (2017) and NEMP (2018) require that per- and poly- fluoroalkyl substances (PFAS) are considered when assessing site contamination. EI use the following decision tree (**Table 4-1**), based on EnRisk (2016) and HEPA (2020), for determining the potential for PFAS to be present on-site and whether PFAS sampling of soil and groundwater is required.

4.3.2 Emerging Chemicals

The EPA uses Chemical Control Orders (CCOs) as a primary legislative tool under the *Environmentally Hazardous Chemicals Act 1985* to control chemicals of concern and limit their potential impact on the environment. Considerations for chemicals controlled by CCOs, and other potential emerging chemicals, are outlined in **Table 4-2**.

Table 4-1 PFAS Decision Tree

Preliminary Screening	Decision / Probability of Occurrence[1]
Is the past or present site activity listed in HEPA (2020)[2]? If so, list activity.	L
Is the past or present off-site activity up-gradient or adjacent to the site listed in the HEPA (2020)[2]? If so list activity.	L
Did fire training involving the use of suppressants occur on-site between 1970 and 2010?	L
Did fire training occur up-gradient of or adjacent to the site between 1970 and 2010?[3]	L
Have "fuel" fires ever occurred on-site? (e.g. ignition of fuel (solvent, petrol, diesel, kero) tanks)	L
Have PFAS been used in manufacturing or stored on-site?[4]	L
Could PFAS have been imported to the site in fill materials from a site with activity listed in HEPA (2020)?	L
Could PFAS-contaminated groundwater or run-off have migrated on to the site?	L
Is the site or adjacent sites listed in the NSW EPA PFAS Investigation Program? [5]	L
If the probability is medium or high in any of the rows, does the site analytical suite need to be optimised to include preliminary sampling and testing for PFAS in soil (incl. ASLP testing) and waters?	**No indication of PFAS**

Notes:
[1] Probability: L – low (all necessary documentation has been reviewed and there is no recorded instance or compelling rationale), M – medium/moderate (all necessary documentation has been reviewed and there is potential evidence of a recorded instance with compelling rationale); H – high (all necessary documentation has been reviewed and there is evidence of a recorded instance with compelling rationale); risk, N/A – not applicable (or "-")
[2] Activities listed in Appendix B of the NEMP (2020). Further information, refer to https://www.oecd.org/env/ehs/risk-management/PFC_FINAL-Web.pdf
[3] Runoff from up-gradient PFAS use may impact surface water, soil, sediment and groundwater
[4] PFAS is used wide range of industrial processes and consumer products, including in the manufacture of non-stick cookware, specialised garments and textiles, Scotchguard™ and similar products (used to protect fabric, furniture, leather and carpets from oils and stains), metal plating and in some types of fire-fighting foam (https://www.nicnas.gov.au/chemical-information/factsheets/chemical-name/perfluorinated-chemicals-pfas)
[5] https://www.epa.nsw.gov.au/your-environment/contaminated-land/pfas-investigation-program

Table 4-2 Emerging or Controlled Chemicals

Chemicals of Concern (CCO or Emerging)	Decision
Were aluminium smelter wastes used or stored on site (CCO, 1986)?	No
Do dioxin contaminated wastes (CCO,1986) have the potential to impact the site?[1]	No
Were organotin products (CCO,1989) used or stored on site ?[2]	No
Were polychlorinated biphenyls (PCBs) used or PCB wastes (CCO, 1997) stored on-site?[3]	No But possibly in imported fill
Were scheduled chemical or wastes (CCO, 2004) used or stored?[4]	Potential use of pesticides
Are other emerging chemicals suspected?[5]	No
If Yes to any questions, has site sampling suite been optimised to include specific sampling for other chemicals of concern in soil, air and water?	Yes Pesticides, PCB

Notes:
[1] From burning of certain chemicals, smelting or chemical manufacturing or fire on or near the site
[2] From anti-fouling paints used or removed at boat and ship yards and marinas
[3] From older transformer oils and electrical capacitors
[4] Mostly organochlorine pesticides and industrial by-products
[5] Other chemicals considered as emerging (e.g. 1,4 dioxane, associated with some CVOC)

4.4 Potential Contaminants

Based on the findings of the site contamination appraisal, the potential contaminants at the site were considered to be:

Soil - metals (As - arsenic, Cd – cadmium, Cr – chromium, Cu – copper, Pb – lead, Hg – mercury, Ni – nickel, Zn – zinc), total recoverable hydrocarbons (TRH), the monocyclic aromatic hydrocarbon compounds benzene, toluene, ethyl-benzene and xylenes (BTEX), polycyclic aromatic hydrocarbons (PAH), organochlorine and organophosphate pesticides (OCP/OPP) and polychlorinated biphenyls (PCB) and asbestos.

Groundwater - dissolved metals (As, Cd, Cr, Cu, Pb, Hg, Ni, Zn), volatile organic compounds (VOC; including BTEX and chlorinated volatile organic compounds (CVOC)), TRH, PAH and phenolic compounds.

4.5 Potential Receptors and Exposure Pathways

The likely human and environmental receptors of site contamination were as follows:

- Construction / demolition workers;
- Future users and maintenance / service workers of the developed site;
- Users of the adjacent land; and
- Ecological receptors in areas of exposed soil / landscaping.

The CSM, which identifies the potential exposure pathways and a qualitative assessment of the potential risks they pose, is summarised in **Table 4-3**.

Table 4-3 Preliminary Conceptual Site Model

Potential Source	Contaminants	Media	Sensitive Receptor	Transport Mechanisms	Exposure Pathways	Potential Risk
Imported fill soils from unknown origin with unknown environmental quality	Metals, TRH, BTEX, PAH, phenols, OCP, OPP, PCB asbestos	Soil Groundwater	Site workers during construction Future site residents Off-site aquatic environment	Leaching Site earthworks Environmental erosion Surface runoff Groundwater transport	Inhalation of asbestos fibres Inhalation of vapour Dermal contact Ingestion	High
Hazardous materials in site structures	Asbestos, lead	(Near) surface soils		Site earthworks Environmental erosion Surface runoff	Inhalation of asbestos fibres Dermal contact Ingestion	High
Historical application of pesticides	Metals, OCP, OPP	Soil Groundwater	Site workers during construction Future site residents Off-site aquatic environment	Direct spraying Leaching Site earthworks Environmental erosion Surface runoff	Dermal contact Ingestion	Low to Moderate
Commercial activities, involving on-site storage tanks	TRH, VOC (including BTEX), PAH	Soil Groundwater	Site workers during construction Future site residents Off-site aquatic environment	Leaching Site earthworks Environmental erosion Surface runoff Groundwater transport	Inhalation of vapour Dermal contact Ingestion	Moderate to High
Migration of contaminants from offsite (up-gradient) sources	Metals, TRHs, VOC (including BTEX and CVOC), PAH, phenols	Groundwater	Site workers during construction Future site residents Aquatic environment	Leaching Environmental erosion Surface runoff Groundwater transport Wind dispersion	Inhalation of asbestos fibres Inhalation of vapour Dermal contact Ingestion	Low to Moderate

5. Methodology

5.1 Sampling and Analysis Quality Plan (SAQP)

The CSM established that a field-based (intrusive sampling and analysis) component was required for this DSI, to complement (expand on) the previous EP Risk (2017) investigation. A SAQP was therefore necessary, prior to the inception of this component.

This SAQP outlines the sampling methodologies and the quality assurance / quality control (QA/QC) program that were adopted for the DSI. All methods and QA/QC measures were industry-endorsed, standard procedures. They were employed so that all data collected as part of the field works were accurate, precise and representative of the site conditions, thereby providing a robust basis for assessment decisions. Specifically, the SAQP encompassed:

- Description of the data quality objectives (DQO) for the project;
- Definition of the data quality indicators (DQI) for the field and laboratory QC measures;
- Investigation methodology, including the media to be sampled, details of the analytes to be monitored and a description of intended sampling points;
- Sampling procedures (including sample handling, preservation and storage);
- Field screening methods; and
- Laboratory analysis methods.

5.2 Sampling Rationale

The site is to be redeveloped for residential purposes, overlying a basement car parking facility. Most of the site is expected to be concrete paved; however soil landscaping areas beyond the basement footprint were considered to be part of the proposal, as a conservative approach. Soil and groundwater sampling works were thus planned in accordance with the following rationale:

- Due to access restrictions, boreholes were placed in targeted locations (**Figure 2**);
- Environmental sampling of fill soils occurred at depths ranging from 0.1m to 0.6m BGL and sampling of natural soils occurred at depths ranging from 0.4m to 3.48m BGL;
- A single groundwater monitoring event (GME), utilising three monitoring wells (BH6M, BH8M and BH11M), was conducted to assess local groundwater conditions; and
- Laboratory analysis of soil and groundwater samples for the identified COPC.

5.3 Data Quality Objectives (DQO)

In accordance with the NEPC (2013) *Schedule B2 Guideline on Site Characterisation*, the USEPA (2006) *Data Quality Assessment* and EPA (2017) *Guidelines for the NSW Site Auditor Scheme*, DQO were developed by the EI validation team, following the NEPM- / EPA-endorsed, seven step process (**Table 5-1**). In doing so, the appropriate levels of data quantity and quality needed for the specific requirements of the project were established.

Table 5-1 Summary of Project Data Quality Objectives

DQO Steps	Details
1. State the Problem Summarise the contamination problem that will require new environmental data, and identify the resources available to resolve the problem; develop a conceptual site model	The site is to be refurbished into a residential building with additional basement carpark. Based on a review of site history and searches (**Section 3**), there was potential for soil and local groundwater contamination, which will be assessed via sampling and laboratory analysis, in order to determine the site's environmental suitability for the proposed development.
2. Identify the Goal of the Study (Identify the Decisions) Identify the decisions that need to be made on the contamination problem and the new environmental data required to make them	The decisions for this DSI concerned the following questions: ▪ Has the nature, extent and source of any soil and groundwater contamination onsite been defined? ▪ What impact do the site specific, geologic and hydrogeological conditions have on the fate and transport of any impacts that may be identified? ▪ Does the level of impact coupled with the fate and transport of identified COPCs represent an unacceptable risk to identified human and/or environmental receptors on or offsite? ▪ Does the collected data provide sufficient information to allow the selection and design of an appropriate remedial strategy, if necessary?
3. Identify Information Inputs (Identify Inputs to Decision) Identify the information needed to support any decision and specify which inputs require new environmental measurements	Inputs to the decision making process included: ▪ The proposed land use; ▪ Available site historical information; ▪ Assessment of soil and groundwater analytical results in relation to the adopted human health and ecological criteria; and ▪ Visual observation and documentation (i.e. field notes, photographs) during site works. Decision rules for soil and groundwater and criteria exceedance are outlined as follows: At the end of the assessment, a decision had to be made regarding the suitability of soil and local groundwater for the proposed residential development, or if additional investigation or remedial works were required to make the site suitable for the proposed use.
4. Define the Boundaries of the Study Specify the spatial and temporal aspects of the environmental media that the data must represent to support decision	Lateral – The investigation will be conducted within the cadastral boundaries of the site (**Figure 2**, **Appendix A**). Vertical – From existing ground surface, underlying fill and natural soil horizons, to the underlying water-bearing zone. Temporal – Results are valid on the day of data / sample collection and remain valid as long as no changes occur on site or contamination (if present) does not migrate on site or on to the site from off-site sources.
5. Develop the Analytic Approach (Develop a Decision Rule) To define the parameter of interest, specify the action level, and integrate previous DQO outputs into a single statement that describes a logical basis for choosing from alternative actions	Parameters of interest include the laboratory results of primary and quality control soil and groundwater analytical testing. The laboratory test results and laboratory performance will be considered to have met the adopted analytical and performance criteria when the following occur: ▪ All contracted laboratories are accredited by NATA for the analyses undertaken; ▪ Laboratory methods are conducted in accordance with NEPM (2013) guidelines;

DQO Steps	Details
	▪ Laboratory and field quality control sample results are within the adopted Data Quality Indicators; and ▪ Laboratory QA/QC protocols and results comply with NEPM requirements A summary of the Data Quality Indicators are summarised in **Table 5.2**.
6. Specify Performance or Acceptance Criteria (Specify Limits on Decision Errors) Specify the decision-maker's acceptable limits on decision errors, which are used to establish performance goals for limiting uncertainties in the data	Decision errors are incorrect decisions caused by using data that is not representative of site conditions due to sampling or analytical error. The two types of decision errors are: the sampling program does not detect the variability of a contaminant from point to point across the site; and errors made during sample collection, handling, preparation, analysis and data reduction. Decision errors will be minimised by the following: ▪ The field sampling design, frequency, and methodology, sample preservation techniques and laboratory analytical procedures will be conducted in accordance with accepted EPA, NEPC (2013) and NATA-accredited methodologies; and ▪ Field and laboratory primary and quality control analytical results will be compared against Data Quality Indicators for precision, accuracy, representativeness, completeness and comparability, as outlined in NEPC (2013) *Schedule B2 Site Characterisation*. Soil and groundwater concentrations for chemicals of concern that are reported to be below the adopted remediation criteria made or approved by the EPA, will be treated as acceptable and indicative of site suitability for the proposed land use.
7. Develop the Detailed Plan for Obtaining Data (Optimise the Design for Obtaining Data) Identify the most resource-effective sampling and analysis design for general data that are expected to satisfy the DQOs	To ensure resource-effective sampling, analysis and data collection that satisfied the DQOs, the following actions were taken: ▪ The SAQP provided information to guide field personnel in the required fieldwork activities; ▪ Field works and analyses were undertaken in accordance with the SAQP; ▪ Representative soil and groundwater samples were collected from the site and analysed for characterisation purposes; and ▪ Review of the results was undertaken to determine if further investigation and/or remediation was warranted.

5.4 Data Quality Indicators (DQI)

A range of QC measures were integrated into the DSI analytical program, each of which had a nominated DQI. These are outlined in **Table 5-2**. Refer also to **Appendix H** for further details.

Table 5-2 Summary of Project Data Quality Indicators

QA/QC Component	QC Measure and DQI
Precision – A quantitative measure of the variability (or reproducibility) of data	Data precision was assessed by reviewing the performance of blind field (intra-laboratory) duplicate samples, through calculation of relative percentage differences (RPDs). Data precision was deemed acceptable if RPDs were less than 30%. RPDs that exceed this range were considered acceptable where: ▪ Results were less than 10 times the limit of reporting (LOR); ▪ Results were less than 20 times the LOR and the RPD was less than 50%; or ▪ Heterogeneous materials or volatile compounds were encountered. Note that each contracted analytical laboratory conducted duplicate testing, in accordance with NATA requirements.
Accuracy – A quantitative measure of the closeness of reported data to the "true" value	Data accuracy was assessed through the analysis of: ▪ Split field (inter-laboratory) duplicate samples, with calculation of RPDs, adopting the same DQI as per blind field duplicates; and ▪ Laboratory-prepared trip spikes, which were analysed for BTEX, the DQI being 70-130% recovery. Note that each contracted analytical laboratory conducted testing of method blanks, matrix (surrogate / duplicate) spikes and control samples, in accordance with NATA requirements.
Representativeness – The confidence (expressed qualitatively) that data are representative of each medium present onsite	To ensure the data were representative of conditions encountered in the field, the following measures were employed: ▪ Equipment (rinsate) blanks were analysed for the COPC targeted in the primary samples, the DQI being non-detection (i.e. <LOR) for each analyte, to confirm there were no unacceptable instances of field artefacts; ▪ Laboratory-prepared trip blanks were analysed for BTEX, the DQI being non-detection (i.e. <LOR) for each analyte, to confirm there was no cross contamination during sample handling / transport; ▪ Laboratory blank samples were run in parallel with field samples, to confirm there were no unacceptable instances of laboratory artefacts; ▪ Review of RPD values for field and laboratory duplicates, to provide an indication that the samples are generally homogeneous, with no unacceptable instances of significant sample matrix heterogeneities; and ▪ The appropriateness of collection methodologies, handling, storage and preservation techniques were assessed to ensure/confirm there was minimal opportunity for sample interference or degradation (i.e. volatile loss during transport due to incorrect preservation / transport methods).
Completeness – A measure of the amount of useable data from a data collection activity	Analytical data sets acquired during the DSI were evaluated as complete upon confirmation that: ▪ Standard operating procedures (SOPs) for sampling were adhered to; and ▪ Copies of all COC documentation were presented, reviewed and signed. It could therefore be considered whether the proportion of "useable data" generated in the data collection activities was sufficient for the purposes of the land use assessment.
Comparability – The confidence (expressed qualitatively) that data may be considered to be equivalent for each sampling and analytical event	Given that the reported data comprised several sets of results from separate sampling episodes, issues of comparability were reduced through adherence to SOPs and regulator-endorsed or published guidelines and standards on each data gathering activity. In addition, experienced samplers conducted the field works and NATA-accredited laboratories were employed for all testing programs.

5.5 Soil Sampling

The soil sampling methodology is described in **Table 5-3**. Sampling locations are shown on **Figure 2, Appendix A**.

Table 5-3 Soil Sampling Methodology

Activity/Item	Details
Fieldwork	The borehole drilling works were conducted on 2, 3, 4 and 5 June 2020. All eleven boreholes (BH1-BH11) were completed to depths ranging from 3.69m to 8.47m BGL.
Sampling Method	Soil sampling was undertaken using diamond coring techniques. Boreholes BH1, BH2, BH3 and BH9 were drilled using the diatube (DT) method and boreholes BH4, BH5, BH6, BH7, BH8, BH10 and BH11 were drilled using a conventional diameter coring technique NMLC. BH6, BH8 and BH11 were converted to monitoring wells (BH6M, BH8M and BH11M).
Soil Logging	Examined soils were classified in the field with respect to lithological characteristics and evaluated on a qualitative basis for odour and visual signs of contamination. Soil classifications and descriptions were based on and Australian Standard (AS) 1726-2017. Borelogs are presented in **Appendix D**.
Field Observations (including visual and olfactory signs of potential contamination)	A summary of field observations is provided as follows: ▪ Visual signs of contamination were not observed during fieldworks and no obvious odours were detected; ▪ No ash or slag were noted during the intrusive investigations; and ▪ Exposed sandstone was observed in the lower basement.
Soil Sampling	Soil samples were collected by dry grab method (stainless steel trowel, with the sampler wearing unused, dedicated nitrile gloves). They were placed into laboratory-supplied, glass jars (for general analytes), or plastic, zip-lock bags (for asbestos screening). Blind and split field duplicates was separated from the primary samples and placed into glass jars.
Management of Soil Cuttings	Soil cuttings were used as backfill for completed boreholes and concrete cores placed back in place and then reinstated flush with the concrete flooring.
Decontamination Procedures	*Drilling Equipment* - The drilling rods were decontaminated between sampling locations with potable water until the augers were free of all residual materials. *Sampling Equipment* – Dedicated gloves were used for each sample; the metal trowel was decontaminated between uses using potable water, then rinsed with laboratory-supplied, purified water.
Sample Preservation and Transport	Sample containers were placed into a chilled, enclosed and secure container (insulated chest) for transport to the laboratory. Soil samples were transported to SGS Australia Pty Ltd (SGS; the primary laboratory), under strict chain-of-custody (COC) conditions. Signed COC certificates and sample receipt advice (SRA) were provided by SGS for confirmation purposes (**Appendix F**).
Laboratory Analysis and Quality Control	Soil samples were analysed by SGS for the COPC. All samples were tested within the required holding period, as documented in the corresponding laboratory reports (**Appendix G**).

5.6 Groundwater Sampling

The groundwater sampling methodology is described in **Table 5-4**. Well locations are shown on **Figure 2**, **Appendix A**.

Table 5-4 Groundwater Sampling Methodology

Activity/Item	Details
Fieldwork	Three monitoring wells (BH6M, BH8M and BH11M) were installed and developed on 2, 3, 4 and 5 June 2020. Water level gauging, well purging, field testing and groundwater sampling was conducted on 19 June 2020.
Drilling Locations	Well location was chosen to represent the inferred down-gradient location of the site.
Drilling Methodology	Drilling of the groundwater monitoring wells (BH6M, BH8M and BH11M) was advanced using a conventional diameter coring technique.
Well Construction	Well construction was in general accordance with the standards described in NUDLC (2012) and involved the following: ▪ 50 mm, Class 18 uPVC, threaded, machine-slotted screen and casing, with slotted intervals set to screen to at least 1m above the standing water level to allow sampling of phase-separated hydrocarbon product, if present; ▪ The base and top of each well were sealed with a uPVC cap; ▪ Annular, graded sand filter was applied to approximately 500mm above the top of the screen interval; ▪ Granular bentonite was applied above the annular filter to seal the screened interval; ▪ Drill cuttings were used to backfill the bore annulus to just below ground level; and ▪ Surface completion comprised 50mm uPVC casing to approximately 0.8m above ground level.
Well Development	Well development was conducted directly following installation. This involved agitation within the full length of the water column using a dedicated, high density polyethylene (HDPE), disposable bailer, followed by removal of water and accumulated sediment using a 12V HDPE submersible bore pump (Proactive Environmental, model *Super Twister*). Pumping was continued until no further reduction in suspended sediment was observed (i.e. after removal of several well volumes).
Well Survey (Elevation)	Surveyed elevations for the wells were not provided. The approximate surface levels were extrapolated from levels shown on the supplied architectural plans, in locations near the monitoring wells.
Well Gauging	The monitoring well was gauged for standing water level (SWL) prior to well purging at the commencement of the groundwater monitoring event (GME) on 19 June 2020.
Well Purging, Field Testing and Sampling	Prior to purging, groundwater was extracted from each well using a stainless steel bailer, and then transferred directly into a laboratory-supplied, PFAS sample bottle Groundwater was then purged and sampled by a low-flow / minimal draw-down sampling method using a MicroPurge kit (MP15) and a portable pump. The MicroPurge system incorporated a low density polyethylene (LDPE) pump bladder and Teflon-lined, LDPE tubbing. It employed pressurised carbon dioxide gas to regulate groundwater flow. Pump pressure and pumping cycles were adjusted accordingly to regulate extraction flow rate and avoid causing excessive drawdown of water level during the sampling process. During the purging process, water was continuously measured for field parameters (Temperature, EC, Reduction-Oxidation potential (Redox), Dissolved Oxygen (DO) and pH) using a *Hanna Multi Parameter 9829* positioned within an open flow-through cell. The readings were recorded onto field data sheets (**Appendix E**). Once water quality parameters stabilised in accordance with NEPC (2013) guidelines (i.e. within ± 10% for DO, ± 3% for EC, ± 0.2 for pH, ± 0.2° for temperature and ± 20mV for redox), groundwater sampling was undertaken. Purged water volumes removed from each well and field test results were summarised in **Section 6**.

Activity/Item	Details
	No odours were detected during the purging / sampling of the well and there were no visible signs of contamination.
Decontamination Procedure	The micro-purge pump was decontaminated in a solution of potable water and *Decon 90* and then rinsed with potable before commencement of GME. The micro-purge system employed a disposable bladder and tubing, further minimising potential (cross) contamination. All sample containers were supplied by the laboratory and only opened once, immediately prior to use. The water level was washed in a solution of potable water and Decon 90 and then rinsed with potable water before measurement of water level at wells.
Sample Containers and Preservation	The following laboratory-supplied containers were used to collect groundwater samples: ▪ One, amber glass, acid-washed and solvent-rinsed bottle; ▪ Two, 40mL amber glass vials, preserved with hydrochloric acid (1mL), Teflon-sealed; ▪ One, 250 mL HDPE bottle, preserved with nitric acid (1mL). Samples for heavy metal analysis were field-filtered using 0.45 µm pore membranes. All containers were filled to the brim with sample, then capped and stored in chests with ice-bricks, until completion of the fieldwork and during sample transit to the laboratory.
Sample Transport	Groundwater samples were transported to SGS under strict COC conditions. Signed COC certificates and SRA were provided by SGS for confirmation purposes (**Appendix F**). A split (inter-laboratory) duplicate was submitted to Envirolab under strict COC conditions. Signed COC certificates and SRA were provided by Envirolab for confirmation purposes (**Appendix F**).
Quality Control and Laboratory Analysis	Groundwater samples were analysed by SGS and Envirolab for the COPC. All samples were tested within the required holding period, as documented in the corresponding laboratory reports (**Appendix G**). In addition to the split (inter-laboratory) duplicate (analysed by Envirolab), QC testing comprised a blind (intra-laboratory) field duplicate and an equipment rinsate blank tested by SGS.

5.7 Assessment Criteria

Analytical results for site soils and groundwater were assessed against the following human health and ecological criteria, selected with due consideration of the exposure scenario and likely receptors.

Soils that displayed COPC concentrations below the assessment criteria were deemed to be suitable for the proposed residential land use. Exceedances of the acceptance criteria indicated that additional investigation, remediation and/or further risk assessment was warranted.

5.7.1 Soil Criteria

Sources of the adopted soil criteria are identified in **Table 5-5**.

Table 5-5 Adopted Investigation Levels for Soil

Description	Criteria
Entire site soils, including proposed building footprint, concrete paved and landscape areas.	Human Health (for general contaminants): ▪ HIL-B: NEPC (2013) Schedule B1, Health Investigation Levels for residential with minimal opportunities for soil access. ▪ HSL-D: NEPC (2013) Schedule B1, Health Screening Levels for multistorey buildings where non-residential use (car parking and storage/services) exist in the ground floor. Human Health (for asbestos): ▪ No visible asbestos for surface soils. ▪ HSL-B: For bonded ACM ▪ 0.001% w/w for friable asbestos in soil
Site soils within soil landscaped areas (rear setback area and western side setback area) within the upper 2 m below final site grade	Ecological investigation levels (EILs) and Ecological Screening Levels (ESLs) were adopted to assess the potential impact to proposed landscaping areas, where plants could be exposed to soils and where precipitation may result in subsurface infiltration and resulting leaching of soil impacts to groundwater. EIL/ESL: NEPC (2013) Schedule B1, Ecological Investigation Levels and Ecological Screening Levels for urban residential and public open space. CRC Care (2017) for benzo(α)pyrene.

5.7.2 Groundwater Criteria

Sources of the adopted groundwater criteria were as follows:

Aquatic Ecosystems: ANZG (2018) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, defaulting to the ANZECC and ARMCANZ (2000) *Water Quality Guidelines* where necessary. The receiving water body for local groundwater was considered to be Sydney Harbour, which is a slightly to moderately disturbed, marine system. Therefore, results were compared against criteria corresponding to 95% level of protection for marine water environments. The 99% level of protection was considered to account for the bio-accumulative nature of metals mercury and nickel in marine water ecosystems.

Human Health (Non-Use Scenario): Where groundwater was found to be contaminated with volatile contaminants, assessment for human health (non-use) was based on consideration of potential vapour intrusion impacting on indoor air quality. The NEPC (2013) groundwater health screening levels (HSL) for multistorey residential building where non-residential (car parking and storage/service) exist in the ground floor (HSL-D). Sandy soils, with a source depth of 2 m to <4m (most conservative)), were adopted.

Human Health (Recreational Use): The ANZG (2018) guidelines refer to the use of the NHMRC (2008) *Guidelines for Managing Risks in Recreational Water 2008.* The NHMRC (2008) guideline provides Australian Drinking Water Guidelines for health and aesthetic consideration. [Note: The current version of the NHMRC ADWG is Version 3.5 August 2018.] The recreational guideline values consist of the Australian Drinking Water Guidelines (ADWG) multiplied by a factor of 10. To address the aesthetic criteria, the lower of the recreational or aesthetic guideline was chosen as the acceptance criterion.

6. Results

6.1 Soil Results

6.1.1 Subsurface Conditions

Based on the logs for boreholes BH1-BH11, the general site lithology was a shallow layer of gravel and gravelly sand fill, overlying sandstone bedrock. Natural sandstone was at shallow depth across the site.

More detailed description is given in **Table 6-1**. Refer to **Appendix D** for the borehole logs.

Table 6-1 Generalised Subsurface Profile

Layer	Description	Approximate depth to top and bottom of layer (m BGL)
Concrete	Concrete slab	0-0.15
Fill	Gravelly SAND, fine to medium grained sand, grey, fine to coarse, angular to sub-angular sandstone gravels, with some sandstone cobbles. Sandy GRAVEL, fine to medium grained, grey, grey-pale brown, angular to sub-angular gravel. GRAVEL, fine to medium, angular to sub-angular blue metal gravels, with some fine to medium grained sand.	0.15-0.95 (maximum encountered at BH3).
Bedrock	SANDSTONE; slightly weathered to fresh, medium and high strength fine to medium grained sandstone.	0.27-8.47 +

Note:
+ borehole terminated at 8.47 in BH11M.

6.1.2 General Observations

Soil samples were obtained from various depths ranging between 0.1-3.5m BGL. All examined soil samples were evaluated on a qualitative basis for odour and visual signs of contamination (e.g. hydrocarbon odours, oil staining, petrochemical filming, asbestos fragments, ash, charcoal) and the following observations were noted:

- Visual or olfactory evidence of hydrocarbon impacts were not noted at any of the sampling locations, nor in any of the examined (drilled) soils; and
- Foreign material such as brick, metal and fragments were observed in fill soils at BH2, BH5, BH7 and BH8M.

6.1.3 Laboratory Analytical Results

A summary of the laboratory analytical results for the tested soil samples is presented in **Table 6-2**. More detailed tabulation, with concentrations for individual samples alongside the adopted soil criteria, is presented in **Table 1**, **Appendix B**, at the end of this report.

Table 6-2 Summary of Soil Analytical Results

Number of primary samples	Analyte	Minimum Concentration (mg/kg)	Maximum Concentration (mg/kg)	Samples Exceeding Criterion
Hydrocarbons				
13	F1	<25	<25	None
13	F2	<25	<25	None
13	F3	<90	<90	None
13	F4	<120	<120	None
13	Benzene	<0.1	<0.1	None
13	Toluene	<0.1	<0.1	None
13	Ethyl benzene	<0.1	<0.1	None
13	Total xylenes	<0.3	<0.3	None
PAHs				
13	Carcinogenic PAHs	<0.3	2.2	None
13	Total PAH	<0.8	21	None
13	Benzo(a)pyrene	<0.1	1.5	None
13	Naphthalene	<0.1	0.2	None
OCPs				
8	Total OCPs	<1	<1	None
OPPs				
8	Total OPPs	<1.7	<1.7	None
PCBs				
8	Total PCBs	<1	<1	None
Heavy Metals				
13	Arsenic	<1	3	None
13	Cadmium	<0.3	0.6	None
13	Chromium (Total)	1.4	6.1	None
13	Copper	<0.5	22	None
13	Lead	2	48	None
13	Mercury	<0.05	0.17	None
13	Nickel	<0.5	33	None
13	Zinc	<2	100	None
Asbestos				
8	Presence/absence	Not detected	Not detected	None

All sample results complied with the adopted soil assessment criteria.

6.2 Groundwater Results

6.2.1 Monitoring Well Construction Details

Well construction details are summarised in **Table 6-3**.

Table 6-3 Monitoring Well Construction Details

Well ID	Bore Depth (mBGL)	Volume Developed[1] (L)	Screen Interval (mBGL)	Lithology Screened
BH6M	6.82	Developed dry	5.02.- 2.02	Sandstone
BH8M	6.45	Developed dry	5.62- 2.62	Sandstone
BH11M	8.47	Developed dry	8.00- 6.00	Sandstone

Notes:
[1] Approximate volume of water removed during well development

6.2.2 Field Observations and Quality Parameters

One GME was conducted by EI on 19 June 2020. For each well, the standing water level (SWL) was measured prior to purging, which was recorded with well purge volumes and field-based water quality results. A summary of the recorded field data is presented in **Table 6-4** and copies of the completed field data sheets are included in **Appendix E**.

With reference to **Table 6-4**, the field data indicated that site groundwater conditions were slightly acidic (pH: 6.06 to 6.78) and fresh (EC: 387 to 1328 µS/cm). No sheen or suspicious odours were observed during groundwater sampling at each well location.

Groundwater levels varied from 18.85m AHD in BH6M to 20m AHD in BH11M. The flow direction was inferred as north easterly, towards the Sydney Harbour, as per the general slope of the site (**Section 2**, **Table 2-3**).

6.2.3 Groundwater Analytical Results

Detailed tabulation of the laboratory analytical results for the groundwater samples, with concentrations for individual samples alongside the adopted water criteria, is presented in **Table 2**, **Appendix B**, at the end of this report.

Except for dissolved copper (all samples), nickel (BH8M sample) and zinc (all samples), all sample results complied with the adopted groundwater assessment criteria. Although they exceeded the corresponding criterion, the metal concentrations were considered to be representative of (or consistent with) natural background levels for urbanised areas. Given the low metal levels in the soil samples, the site soils themselves were not considered to be the source of the exceedances in local groundwater.

Traces of the F2 TRH fraction (BH6M: 140 µg/L; BH8M: 280 µg/L), toluene (BH8M: 1 µg/L) and chloroform (BH6M: 0.6 µg/L; BH8M: 0.7 µg/L) were identified; however, the concentrations complied with the corresponding assessment level (where available) and were not considered to represent significant risks to human health or the environment.

Table 6-4 Field Water Quality Parameters

Well ID	Well Depth (m BTOC)	Top of Casing (relative to ground level; m)	Top of Casing (m AHD)	SWL (m BTOC)	SWL (m AHD)	Purged Volume (L)	Temperature (°C)	EC (µS/cm)	Redox (mV)	DO (mg/L)	pH	Comments
BH6M	5.0	-0.12	22.58	3.73	18.85	2.5	19.03	671	198.5	4.72	6.06	Yellow / grey, medium to high turbidity, no odour, no sheen.
BH8M	5.6	-0.08	23.52	4.4	19.12	2.5	19.48	1328	207.1	0.92	6.40	Grey, high turbidity, no odour, no sheen.
BH11M	8.0	-0.1	24.70	4.7	20.0	2.0	20.31	387	267.1	2.85	6.78	Yellow / grey, medium to high turbidity, no odour, no sheen.

7. Site Characterisation

7.1 Soils

The field works established that the site subsurface consisted of 0.15-0.95m thickness of sand- and gravel- dominated fill materials, overlying natural sandstone bedrock. Sandstone extended to at least 8.47m BGL, as determined at the deepest borehole, BH11M.

Analytical results for all fill and natural soil samples analysed during this investigation were found to be below the adopted assessment criteria applicable to residential land use (with minimum access to soils).

7.2 Groundwater

Groundwater levels at the site varied from 18.85m AHD in BH6M to 20m AHD in BH11M. The flow direction was inferred as north easterly, towards the Sydney Harbour.

Concentrations of dissolved metals (copper, nickel and zinc) exceeding the adopted ecological criteria were identified in the groundwater samples; however, the site soils were not considered to be the source of this impact. The metal concentrations in groundwater were considered representative of, or at least consistent with, the background conditions for the heavily urbanised area and were not considered to pose an environmental concern for the site occupation.

Note that, should dewatering be required as part of the proposed basement excavations, additional groundwater assessment may be required, prior to discharge of any tail water into the local stormwater system.

7.3 Review of Conceptual Site Model

On the basis of the DSI findings, the CSM discussed in **Section 4** was considered to appropriately identify all major contamination sources, migration mechanisms and exposure pathways, as well as the potential on- and off- site receptors.

The investigation indicated that contamination at the site was limited to dissolved metals (copper, nickel and zinc) and trace organics in groundwater, which did not present significant risks to human health or the environment (i.e. it did not preclude the proposed residential use of the land).

8. Conclusions

The site located at 2-60 Cumberland Street, The Rocks NSW was the subject of a detailed investigation, conducted in order to provide characterisation of soil and groundwater conditions, thereby assessing the site's suitability for on-going residential land use.

The key findings of this DSI were as follows:

- The site and surrounding area had predominantly been used for commercial and residential purposes. The site layout had remained unchanged since current building construction circa 1980.
- There was no historical evidence that heavy industrial activities took place, either on-site, or on the surrounding properties.
- There was no evidence that a UST was present on the site; however, an AST (diesel) was discovered in the basement car park and minor (oil-like) stains were observed on the sealed concrete pavement beneath it. Infiltration of petroleum hydrocarbons into the underlying soils was considered unlikely, or at most low level.
- There was no visual evidence of gross contamination across the site. No suspicious odour was detected during any of the site inspections.
- Based on the logs for eleven separate test boreholes (BH1-BH11), the subsurface consisted of sand- and gravel- dominated fill materials (0.15-0.95m thickness), overlying natural sandstone bedrock.
- Laboratory analytical results for the representative soil samples all complied with the adopted criteria applicable to residential sites (with minimal access to soils).
- The risk of site contamination by asbestos was low.
- Based on the GME data, groundwater levels at the site varied from 18.85m AHD in BH6M, to 20m AHD in BH11M. The inferred hydraulic gradient was north easterly (i.e. towards the Sydney Harbour), consistent with the local topography.
- The local groundwater was slightly acidic (pH: 6.06-6.78) and fresh (EC: 387-1328 µS/cm). Laboratory analytical results for the representative samples all complied with the adopted groundwater criteria, except for dissolved copper, nickel and zinc, although the metal concentrations were considered representative of, or at least consistent with, background conditions for a heavily urbanised area.
- There was low likelihood of impact to groundwater originating from the site (i.e. the site soils were not considered to be the source of any groundwater contamination).

Based on the findings of this DSI, conducted in accordance with the scope agreed with the client and EI's Statement of Limitations (**Section 10**), it was concluded that the potential for site contamination was low. The site was deemed suitable for the proposed (residential) development, in accordance with *State Environmental Planning Policy 55 - Remediation of Land.*

9. Recommendations

EI makes the following recommendations in relation to the proposed development:

- All soil materials to be removed from the site, including any virgin excavated natural material (VENM), are to be classified prior to disposal, in accordance with the EPA (2014) *Waste Classification Guidelines* and the *Protection of Environmental Operations Act*.
- Once appropriately classified, all waste materials are to be transported to EPA-licensed waste facilities by licensed waste contractors.
- Any soil material to be imported to the site (i.e. for backfilling and/or landscaping purposes) must be confirmed by documentary evidence as suitable for the proposed land use. In the absence of such evidence, the material will require sampling and laboratory analysis to confirm that it is free of contamination and suitable for the intended land use, in accordance with EPA guidelines.
- A Hazardous Materials Survey was completed by EI during this DSI (Ref. E24614.E10_Rev0, 18 June 2020). At the completion of any asbestos removal works, a clearance inspection is to be undertaken prior to the commencement of any demolition works.

10. Statement of Limitations

This report has been prepared for the exclusive use of Sirius Developments Pty Ltd, whom is the only intended beneficiary of EI's work. The scope of the investigation carried out for the purpose of this report was limited to that agreed with Sirius Developments Pty Ltd.

No other party should rely on this document without the prior written consent of EI, and EI undertakes no duty, or accepts any responsibility or liability, to any third party who purports to rely upon this document without EI's approval.

The findings presented in this report are the result of discrete and specific sampling methodologies used in accordance with best industry practices and standards. Due to the site-specific nature of soil sampling from point locations, it is considered likely that all variations in subsurface conditions across a site cannot be fully defined, no matter how comprehensive the field program.

While normal assessments of data reliability have been made, EI assumes no responsibility or liability for errors in any data obtained from previous assessments conducted on site, regulatory agencies (e.g. Council, EPA), statements from sources outside of EI, or developments resulting from situations outside the scope of works of this project.

Despite all reasonable care and diligence, the ground conditions encountered and concentrations of contaminants measured may not be representative of conditions between the locations sampled and investigated. In addition, site characteristics may change at any time in response to variations in natural conditions, chemical reactions and other events (e.g. groundwater movement and or spillages of contaminating substances). These changes may occur subsequent to EI's investigation.

EI's assessment is necessarily based upon the results of the site investigation and the restricted program of surface and subsurface sampling, screening and chemical testing which was set out in the project proposal. Neither EI, nor any other reputable consultant, can provide unqualified warranties nor does EI assume any liability for site conditions not observed or accessible during the time of the investigations.

This report was prepared for Sirius Developments Pty Ltd and no responsibility is accepted for use of any part of this report in any other context or for any other purpose or by other third parties. This report does not purport to provide legal advice.

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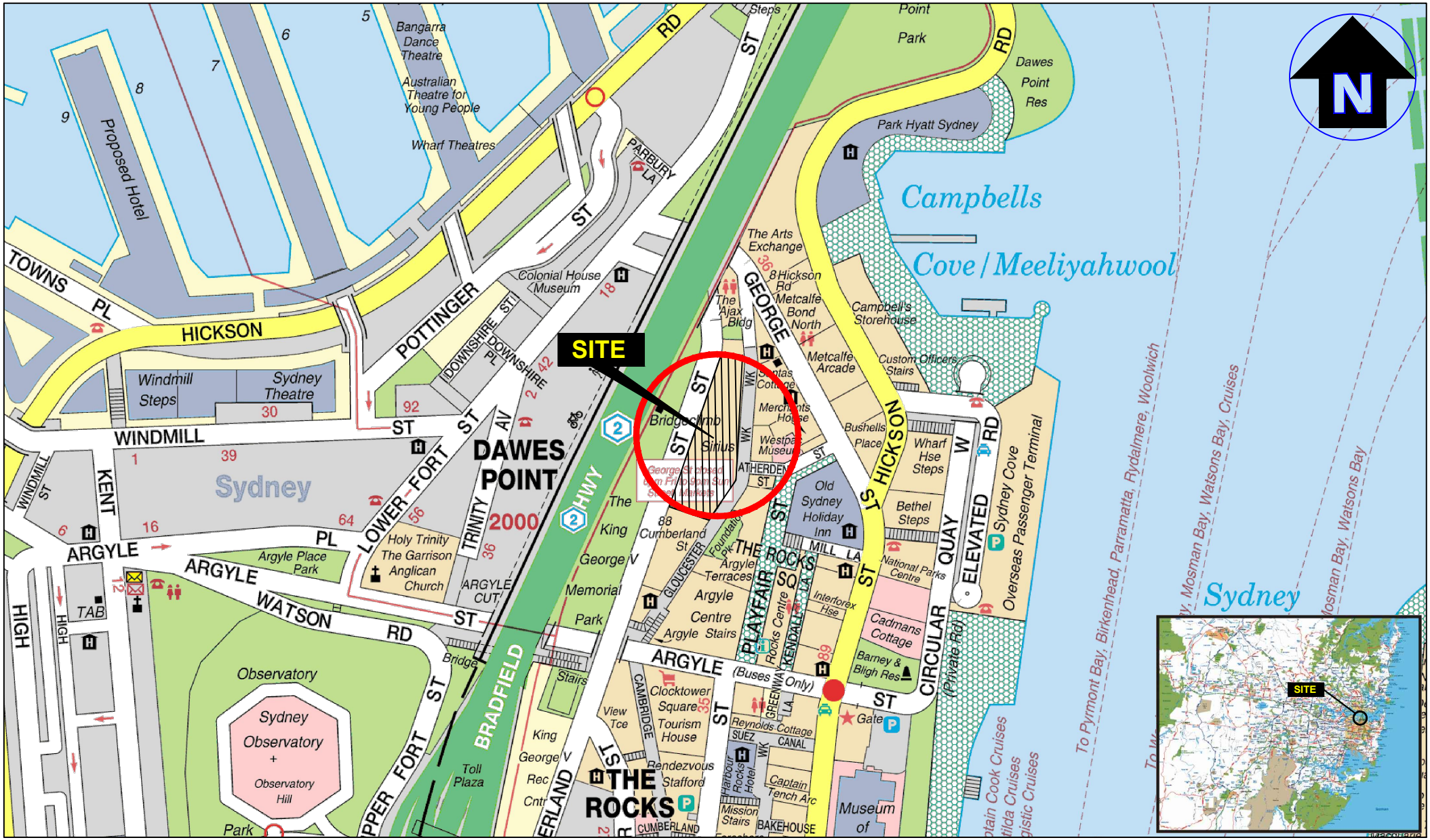
Abbreviations

ACM	Asbestos-Containing Materials
AHD	Australian Height Datum
AS	Australian Standard
ASS	Acid Sulfate Soils
AST	Above-ground Storage Tank
B(α)P	Benzo(α)Pyrene (a PAH compound)
BEL	Bulk Excavation Level
BGL	Below Ground Level
BH	Borehole
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
BTOC	Below Top of Casing
CEC	Cation Exchange Capacity
CCO	Chemical Control Order
CLM	Contaminated Land Management
COC	Chain of Custody
COPC	Contaminants of Potential Concern
CSM	Conceptual Site Model
CVOC	Chlorinated Volatile Organic Compounds (a sub-set of the VOC suite)
DO	Dissolved Oxygen
DP	Deposited Plan
DQI	Data Quality Indicators
DQO	Data Quality Objectives
DSI	Detailed Site Investigation
EC	Electrical Conductivity (measured in units of micro Siemens per centimetre, µS/cm)
EI	EI Australia
EIL	Ecological Investigation Level
EPA	Environment Protection Authority (of New South Wales)
ESL	Ecological Screening Level
F1	C_6-C_{10} TRH (less the sum of BTEX concentrations)
F2	>C_{10}-C_{16} TRH (less the concentration of naphthalene)
F3	>C_{16}-C_{34} TRH
F4	>C_{34}-C_{40} TRH
FFL	Finished Floor Level
GIL	Groundwater Investigation Level
GME	Groundwater Monitoring Event
HDPE	High Density Polyethylene
HIL	Health-based Investigation Level
HSL	Health-based Screening Level
km	Kilometres
L	Litres
LDPE	Low Density Polyethylene
LEP	Local Environmental Plan
LGA	Local Government Area
LOR	Limit of Reporting (limit of reporting for respective laboratory method)
m	Metres
µg/L	Micrograms per Litre
mg/L	Milligrams per Litre
NATA	National Association of Testing Authorities, Australia
OCP	Organochlorine Pesticides
OPP	Organophosphate Pesticides

PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
PFAS	Per- and Poly- Fluroalkyl Substances
pH	Potential Hydrogen (a measure of the acidity or basicity of an aqueous solution)
PSI	Preliminary Site Investigation
QA/QC	Quality Assurance / Quality Control
RDP	Relative Percentage Difference
Redox	Reduction Oxidation (potential measured in millivolts, mV)
RL	Relative Level
SIL	Soil Investigation Level
SOP	Standard Operating Procedure
SRA	Sample Receipt Advice (document confirming laboratory receipt of samples)
SWL	Standing Water Level
TRH	Total Recoverable Hydrocarbons (non-specific analysis of organic compounds)
UCL	Upper Confidence Limit (of the arithmetic mean)
UST	Underground Storage Tank
VENM	Virgin Excavated Natural Material
VOC	Volatile Organic Compounds (specific organic compounds which are volatile)

Appendix A - Figures



Drawn:	AM.H.	
Approved:	L.B.	
Date:	06-07-20	
Scale:	Not To Scale	

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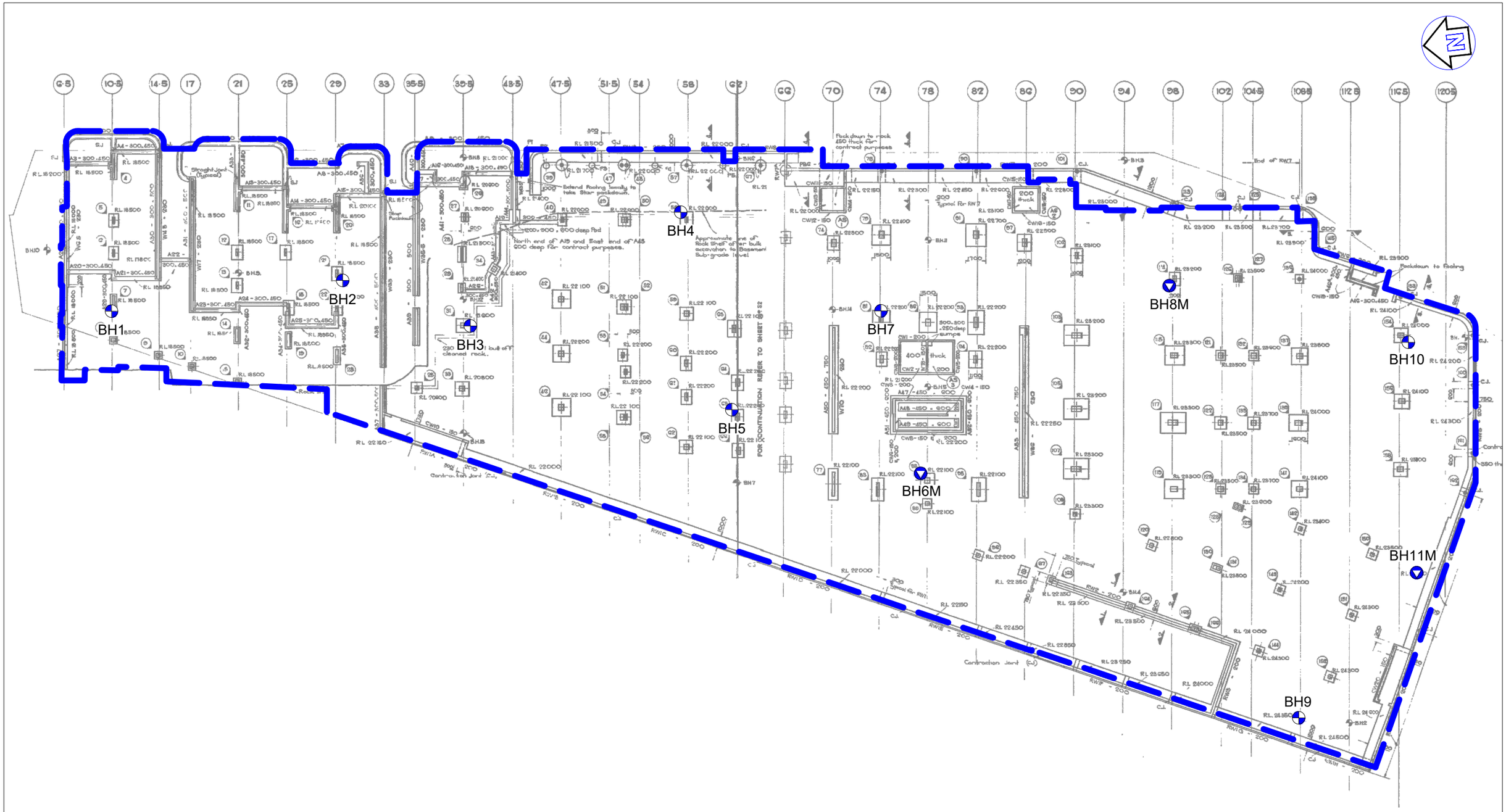
Contamination | Remediation | Geotechnical
Suite 6.01, 55 Miller Street, PYRMONT 2009
Ph (02) 9516 0722 Fax (02) 9518 5088

Sirius Developments Pty Ltd
Detailed Site Investigation
2-60 Cumberland Street, The Rocks NSW
Site Locality Plan

Figure:
1

Project: E24614.E02



Map Source: The Housing Comission, ref No: 64, Sheet No: S2 and S3

LEGEND

- Approximate basement boundary
- Approximate borehole location
- Approximate borehole/monitoring well location

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Approved:	L.B.
Date:	06-07-20

Sirius Developments Pty Ltd
Detailed Site Investigation
2-60 Cumberland Street, The Rocks NSW
Borehole Location Plan

Figure: 2

Project: E24614.E02_Rev2

Appendix B - Tables

Table 1 - Summary of Soil Analytical results

E24614.E02 - The Rocks

Sample ID	Material description	Heavy Metals								PAHs				BTEX				TRH				Pestices		PCBs	Asbestos
		As	Cd	Cr (total)	Cu	Pb	Hg	Ni	Zn	Benzo(a)pyrene	Carcinogenic PAHs as B(a)P	Total PAHs	Naphthalene	Benzene	Toluene	Ethylbenzene	Total Xylenes	F1	F2	F3	F4	OCPs	OPPs	Total	Identification
EI Australia (06/02/2020)																									
BH1_0.1-0.2	Fill	<1	<0.3	1.4	13	8	<0.05	1.6	5.7	<0.1	<0.3	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No
BH2_0.5-0.6	Fill	3	<0.3	5.3	13	48	0.17	2.5	63	1.5	2.2	21	0.2	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No
BH3_2.45-2.49	Bedrock	<1	0.6	2.2	2.4	15	<0.05	1.3	100	<0.1	<0.3	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	NA	NA	NA	NA
BH4_0.2-0.3	Fill	<1	<0.3	3.7	6.7	26	0.15	2.1	29	0.4	0.7	5	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No
BH5_0.2-0.3	Fill	<1	<0.3	3.2	11	3	<0.05	26	13	<0.1	<0.3	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No
BH6M_0.4-0.5	Fill	<1	<0.3	4.3	2.4	9	<0.05	3.2	9.5	<0.1	<0.3	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No
BH6M_1.89-1.97	Bedrock	<1	<0.3	2.7	<0.5	3	<0.05	<0.5	<2	<0.1	<0.3	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	NA	NA	NA	NA
BH7_0.35-0.45	Fill	<1	<0.3	3.2	8	6	<0.05	7.6	12	<0.1	<0.3	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No
BH8M_1.55-1.62	Bedrock	<1	<0.3	2.6	<0.5	2	<0.05	<0.5	<2	<0.1	<0.3	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	NA	NA	NA	NA
BH9_0.16-0.28	Fill	<1	<0.3	4	22	5	<0.05	33	30	<0.1	<0.3	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No
BH9_0.42-0.5	Bedrock	<1	<0.3	5.7	<0.5	7	<0.05	1.6	61	<0.1	<0.3	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	NA	NA	NA	NA
BH10_0.15-0.25	Fill	1	<0.3	6.1	10	45	0.06	9.5	61	0.8	1.2	10	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No
BH11M_0.66-0.71	Bedrock	<1	<0.3	4.2	<0.5	3	<0.05	1.2	32	<0.1	<0.3	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	NA	NA	NA	NA
Statistical Analysis																									
Maximum concentration (current investigation)		3	0.6	6.1	22	48	0.17	33	100	1.5	2.2	21	0.2	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No
95% UCL		NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
SILs																									
HIL B - Residential with minimal soil access		500	150	500 Cr(VI)	30,000	1,200	120	1,200	60,000		4	400	2200									600		1	
HSL D - Commercial / Industrial Soil texture classification – Sand [1]	Source depths 0 m to <1 m												NL	3	NL	NL	230	260	NL						
	Source depths 1 m to <2 m												NL	3	NL	NL	NL	370	NL						
	Source depths 2 m to <4 m												NL	3	NL	NL	NL	630	NL						
	Source depths 4 m +												NL	3	NL	NL	NL	NL	NL						
EIL / ESL		100		215 Cr (III)	310	1,100		35	350	33			170	50	85	70	105	180	120	300	2,800	180 DDT			
Management Limits - Residential parkland and public open space, coarse grained soil texture [1]																		700	1,000	2,500	10,000				
Asbestos contamination HSL B Bonded ACM (%w/w)																									0.04
Asbestos contamination HSL Non Bonded / Friable Asbestos (%w/w)																									0.001

Notes: All results are recorded in mg/kg (unless otherwise stated).

Highlighted values indicates concentration exceeds Human Health Based Soil Criteria (HSL / HIL).
Highlighted values indicates concentration exceeds NEPM (2013) ecological criteria (EIL / ESL).
Highlighted indicates detection of asbestos.
Highlighted values indicates criteria exceeded.
Indicates no recommended assessment criteria are currently available.

HIL B — NEPM 1999 Amendment 2013 'HIL B' Health Based Investigation Levels applicable for residential with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments.
HSL D — NEPC 1999 Amendment 2013 'HSL D' Health Based Screening Levels based on vapour intrusion values applicable for residential settings, with communal car parks or commercial properties occuping the ground floor.

NA — 'Not Analysed' i.e. the sample was not analysed.
NC — Not Calculated'
NL — 'Not Limiting' - The soil vapour limit exceeds the soil concentration at which the pore water phase cannot dissolve any more of the individual chemical.

1 — Coarse Grained soil values were applied, being the most conservative of the material types.

F1 — To obtain F1 subtract the sum of BTEX concentrations from the C6-C10 fraction.
F2 — To obtain F2 subtract Naphthalene from the >C10-C16 fraction.
F3 — (>C16-C34)
F4 — (>C34-C40)

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Table 2 - Summary of Groundwater Analytical Results

E24614.E02 - The Rocks

Sample ID	Date of sampling	Heavy Metals								PAHs			BTEX						VOCs		TRH			
		As	Cd	Cr (total)	Cu	Pb	Hg	Ni	Zn	Benzo(a)pyrene	Total PAHs	Naphthalene	Benzene	Toluene	Ethylbenzene	m/p-Xylene	o-Xylene	Total Xylenes	Chloroform (THM)	Total	F1	F2	F3	F4
EI Australia																								
GW-BH6M-1	19/06/2020	1	<0.1	<1	16	<1	<0.1	6	32	<0.1	<1	<0.1	<0.5	<0.5	<0.5	<1	<0.5	<1.5	0.6	<10	<50	140	<500	<500
GW-BH8M-1	19/06/2020	4	<0.1	<1	3	<1	<0.1	12	19	<0.1	<1	<0.1	<0.5	1.0	<0.5	<1	<0.5	<1.5	0.7	<10	<50	280	<500	<500
GW-BH11M-1	19/06/2020	<1	0.1	<1	18	<1	<0.1	6	41	<0.1	<1	<0.1	<0.5	<0.5	<0.5	<1	<0.5	<1.5	<0.5	<10	<50	<60	<500	<500
GIL																								
NEPM (2013) HSL D	**Source depths from 2m to <4m**											NL	5000	NL	NL			NL			6	NL		
ANZG (2018) [1]	**Marine Water**	24 (As III) [5] 13 (As V) [5]	0.2	27 (Cr III) 4.4 (Cr VI)	1.3	4.4	0.1 [2]	7 [2]	15			70	700	180	80	75	350 [5]		370					
NMHRC (2008) [3]	**Recreational**	100	20	500	1000 [4]	100	10	200	3000 [4]	0			10	25 [4]	3 [4]	20 [4]								

Notes: All values are in units of µg/L unless stated otherwise.

Highlighted values indicates concentration exceeds Human Health Based Soil Criteria (HSL) and NMHRC (2011).

Highlighted values indicates concentration exceeds AZNG (2018) ecological criteria.

Highlighted values indicates criteria exceeded.

Indicates no recommended assessment criteria are currently available.

HSL D = NEPC 1999 Amendment 2013 'HSL D' Health Based Screening Levels based on vapour intrusion values applicable for commercial settings, with communal car parks or commercial properties occuping the ground floor.

NR = Relevant guideline criteria are not currently available.
NA = 'Not Analysed' i.e. the sample was not analysed.
NL = Not Limited
F1 = C6-C10 minus BTEX
F2 = >C10-C16 minus naphthalene
F3 = (>C16-C34)
F4 = (>C34-C40)
1 = ANZG (2018) Australian and New Zealand Guidelines for Fresh and Marine Water Quality.
2 = The 99% trigger values have been applied for chemicals which have possible bioaccumulation and secondary poisoning effects, Ref. ANZECC & ARMCANZ (2000).
3 = NHMRC (2008) Guidelines on Managing Risks in Recreational Water. Health based Guideline value in NHMRC (2011) Australian Drinking Water Guidelines 6, Version 3.5, Updated August 2018, multiplied by a factor of 10, as recommended in NHMRC (2008).
4 = NHMRC (2011) Australian Drinking Water Guidelines 6, Version 3.5, Updated August 2018. Aesthetic value guideline.
5 = ANZG (2018) Fresh water guideline used when marine criteria is not provided.

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Table 3 - Summary of QA/QC Results for Groundwater Samples **E24614.E02 - The Rocks**

Date	Sample Identification	Description	TRH				BTEX				Heavy Metals							
			F1	F2	F3	F4	Benzene	Toluene	Ethylbenzene	Xylene (total)	Arsenic	Cadmium	Chromium (Total)	Copper	Lead	Mercury	Nickel	Zinc
Intra-laboratory Duplicate																		
19/06/2020	GW-BH8M-1	Primary Groundwater Sample	<50	280	<500	<500	<0.5	1.0	<0.5	<1.5	4	<0.1	<1	3	<1	<0.1	12	19
19/06/2020	GW-QD-1	Inter-laboratory duplicate of GW-BH8M-1	<50	690	570	<500	<0.5	1.0	<0.5	<1.5	2	0.1	<1	<1	<1	<0.1	15	43
		RPD	***0.00***	**84.54**	***17.07***	***0.00***	***0.00***	***0.00***	***0.00***	***NA***	**66.67**	***0.00***	***0.00***	**114.29**	***0.00***	***0.00***	***22.22***	**77.42**
Inter-laboratory Duplicate																		
19/06/2020	GW-BH8M-1	Primary Groundwater Sample	<50	280	<500	<500	<0.5	1.0	<0.5	<1.5	4	<0.1	<1	3	<1	<0.1	12	19
19/06/2020	GW-QT-1	Inter-laboratory duplicate of GW-BH8M-1	<10	60	<100	<100	<1	<1	<1	-	3.0	<0.1	<1	2	<1	<0.05	10	17
		RPD	***NA***	**129.41**	***NA***	***NA***	***NA***	***0.00***	***NA***	***NA***	***28.57***	***0.00***	***0.00***	***40.00***	***0.00***	***NA***	***18.18***	***11.11***
Trip Blanks																		
19/06/2020	GW-Trip Blank	Water	-	-	-	-	<0.5	<0.5	<0.5	<1.5	-	-	-	-	-	-	-	-
Trip Spikes																		
19/06/2020	GW-Trip Spike	Water	-	-	-	-	[101%]	[100%]	[100%]	-	-	-	-	-	-	-	-	-
Rinsate Blank																		
19/06/2020	GW-QR-1	Equipment rinsate water	<50	<60	<500	<500	<0.5	<0.5	<0.5	<1.5	<1	<0.1	<1	<1	<1	<0.1	<1	<5

Indicates values where a single result is found to be less than detection, with the duplicate sample found to be over the detection limit.

RPD exceeds 30-50% range referenced from AS4482.1 (2005)

Note: All water results are reported in µg/L.
NA = Not Analysed
F1 = TRH C6-C10 less the sum of BTEX
F2 = TRH >C10-C16 less naphthalene
F3 = TRH >C16-C34
F4 = TRH >C34-C40

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Appendix C – Plans of the Proposed Development

BVN

NSW ARCHITECTS REGISTRATION BOARD / NOMINATED ARCHITECTS

6501 ABBIE GALVIN
9356 NIKOTSCHKA TITCHKOSKY
7115 JULIAN ASHTON
7053 MATTHEW BLAIR
7151 PHILLIP ROSSINGTON
4937 JAMES GROSE

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NOTE

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ISSUE	DATE	FOR
1	03.04.20	FOR INFORMATION
2	08.04.20	FOR INFORMATION
3	17.04.20	FOR INFORMATION
4	20.04.20	FOR INFORMATION
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10	19.05.20	FOR INFORMATION
11	22.05.20	FOR INFORMATION
12	26.05.20	FOR INFORMATION
13	29.05.20	FOR INFORMATION
14	01.06.20	FOR INFORMATION
15	03.06.20	FOR INFORMATION
16	17.06.20	FOR INFORMATION
17	23.06.20	FOR INFORMATION

CONSULTANT

CONSULTANT

CONSULTANT

CONSULTANT

CONSULTANT

PROJECT MANAGER
DEDICO

CLIENT

JDH CAPITAL
CLIENT NUMBER

PROJECT

SIRIUS
36-50 CUMBERLAND ST, THE ROCKS
BVN PROJECT NUMBER

1712011
DRAWING KEY

TRUE NORTH

GRAPHIC SCALE
0 2000 5000
SCALE

1 : 200@A1
STATUS

FOR INFORMATION
DRAWING

BASEMENT B4-B3

AR-B-10-01

ISSUE
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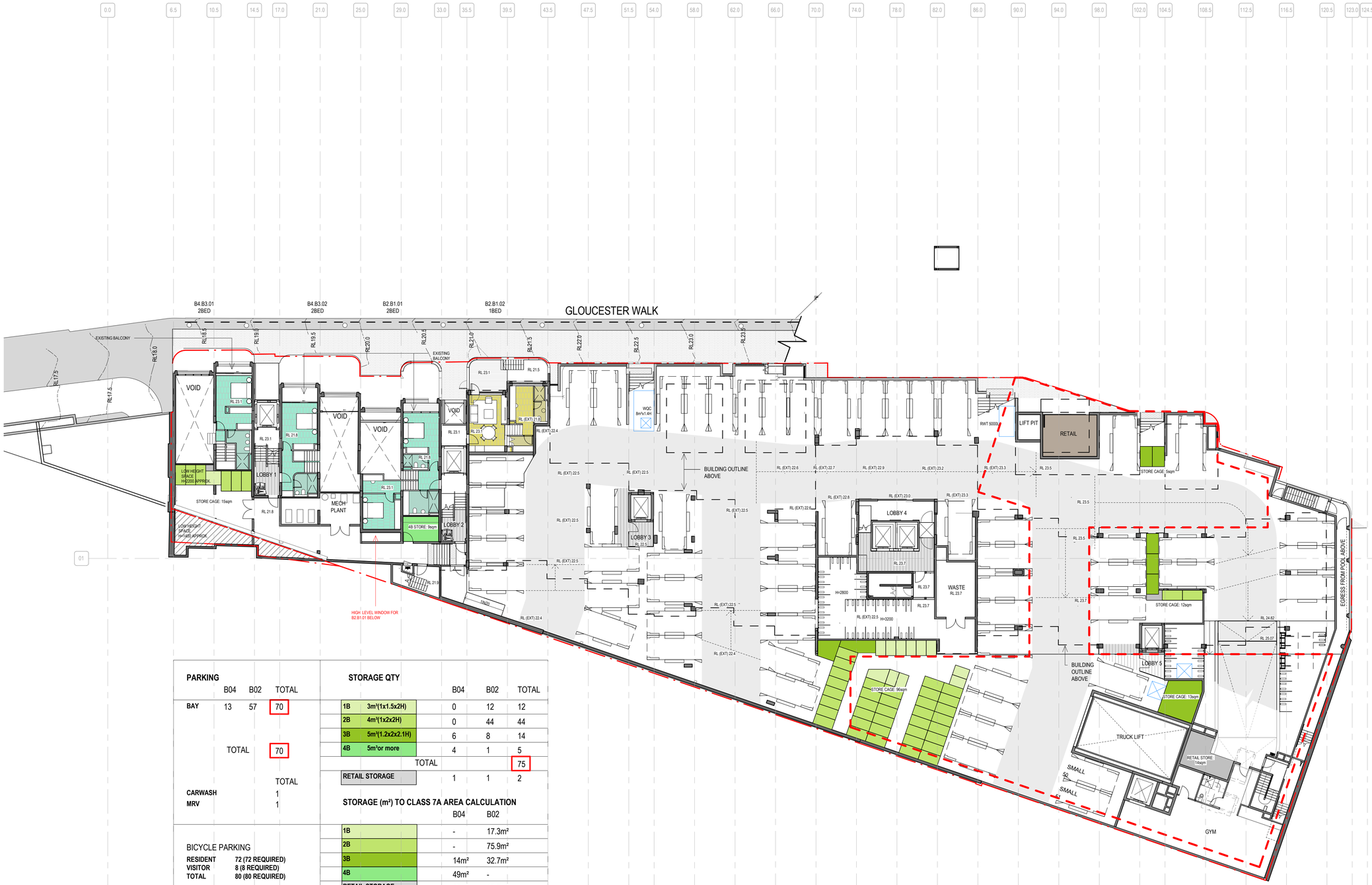

PARKING	B04	B02	TOTAL
BAY	13	57	70
TOTAL			70
			TOTAL
CARWASH			1
MRV			1

STORAGE QTY		B04	B02	TOTAL
1B	3m³(1x1.5x2H)	0	12	12
2B	4m³(1x2x2H)	0	44	44
3B	5m³(1.2x2x2.1H)	6	8	14
4B	5m³or more	4	1	5
	TOTAL			75
RETAIL STORAGE		1	1	2

STORAGE (m²) TO CLASS 7A AREA CALCULATION	B04	B02
1B	-	17.3m²
2B	-	75.9m²
3B	14m²	32.7m²
4B	49m²	-
RETAIL STORAGE	18m²	13.7m²
TOTAL	81m²	139.6m²

BICYCLE PARKING

RESIDENT	72 (72 REQUIRED)
VISITOR	8 (8 REQUIRED)
TOTAL	80 (80 REQUIRED)

EXTENT OF NEW EXCAVATION

B02 5.5% of 2545.6m² South Carpark Class 7a
B04 9.7% of 834m² South excavation level Class 7a

1 B02 1
00-00-00-00-00

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BVN

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ISSUE	DATE	FOR
1	03.04.20	FOR INFORMATION
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3	17.04.20	FOR INFORMATION
4	06.05.20	FOR INFORMATION
5	08.05.20	FOR INFORMATION
6	11.05.20	FOR INFORMATION
7	12.05.20	FOR INFORMATION
8	22.05.20	FOR INFORMATION
9	26.05.20	FOR INFORMATION
10	29.05.20	FOR INFORMATION
11	01.06.20	FOR INFORMATION
12	03.06.20	FOR INFORMATION
13	17.06.20	FOR INFORMATION
14	23.06.20	FOR INFORMATION

CONSULTANT

CONSULTANT

CONSULTANT

CONSULTANT

PROJECT MANAGER
DEDICO

CLIENT

JDH CAPITAL
CLIENT NUMBER

PROJECT

SIRIUS
36-50 CUMBERLAND ST, THE ROCKS
BVN PROJECT NUMBER

1712011
DRAWING KEY

TRUE NORTH

GRAPHIC SCALE
0 2000 5000
SCALE

1 : 200@A1
STATUS

FOR INFORMATION
DRAWING

BASEMENT B2-B1

DRAWING NUMBER	ISSUE
AR-B-10-02	14

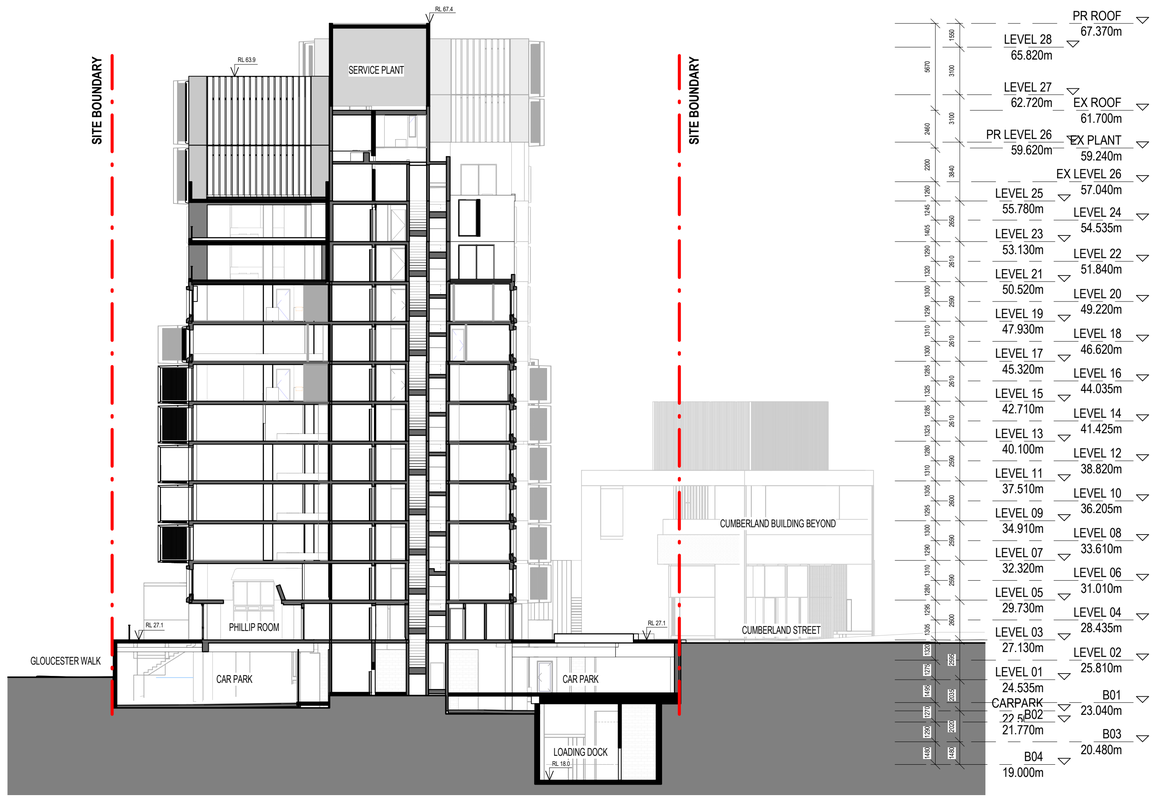
PRIVATE TERRACE

NON-TRAFFICABLE PLANTED ROOF

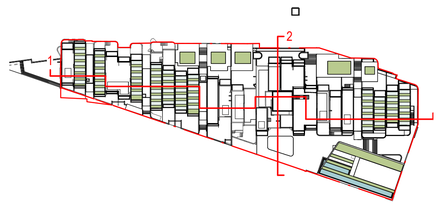
PV

RAISED SPA / POOL

1 GA_LONG SECTION
00-00-00-00-00



2 GA_CROSS SECTION
G-40-01



BVN

NSW ARCHITECTS REGISTRATION BOARD / NOMINATED ARCHITECTS
6501 ABBIE GALVIN
9356 NIKOTSCHKA TITCHKOSKY
7115 JULIAN ASHTON
7053 MATTHEW BLAIR
7151 PHILLIP ROSSINGTON
4937 JAMES GROSE

Telephone +61 2 8297 7200
Facsimile +61 2 8297 7299
www.bvn.com.au

NOTE

CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE PRIOR TO COMMENCEMENT OF WORK OR PREPARATION OF SHOP DRAWINGS. DO NOT SCALE THIS DRAWING

ISSUE	DATE	FOR
1	26.06.20	FOR INFORMATION

CONSULTANT

CONSULTANT

CONSULTANT

CONSULTANT

PROJECT MANAGER
DEDICO

CLIENT

JDH CAPITAL
CLIENT NUMBER

PROJECT

SIRIUS
36-50 CUMBERLAND ST, THE ROCKS
BVN PROJECT NUMBER

1712011
DRAWING KEY

TRUE NORTH PROJECT NORTH

GRAPHIC SCALE
0 2000 5000
SCALE

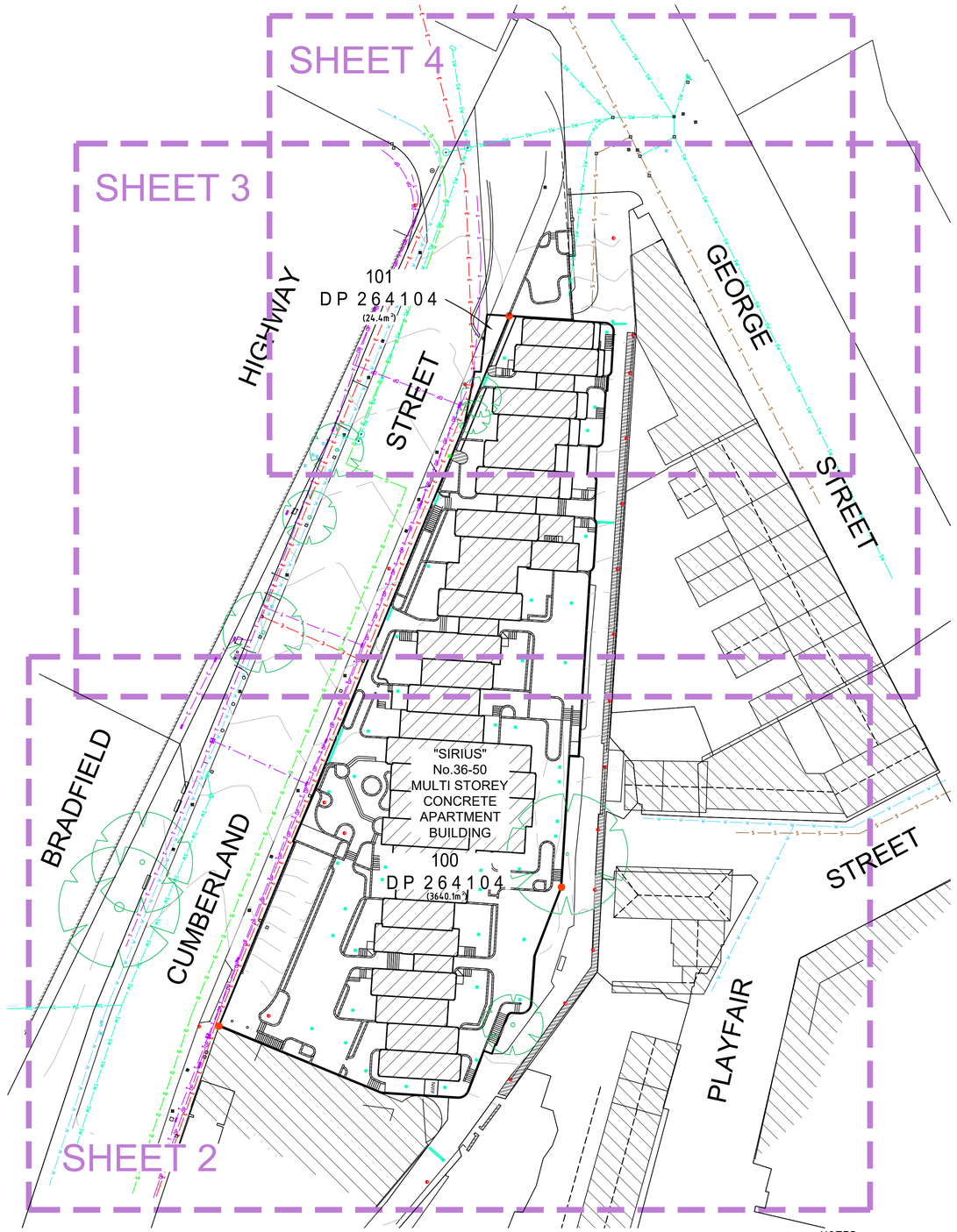
As indicated@A1
STATUS

FOR INFORMATION
DRAWING

GA SECTIONS

AR-D-10-01 | ISSUE 1

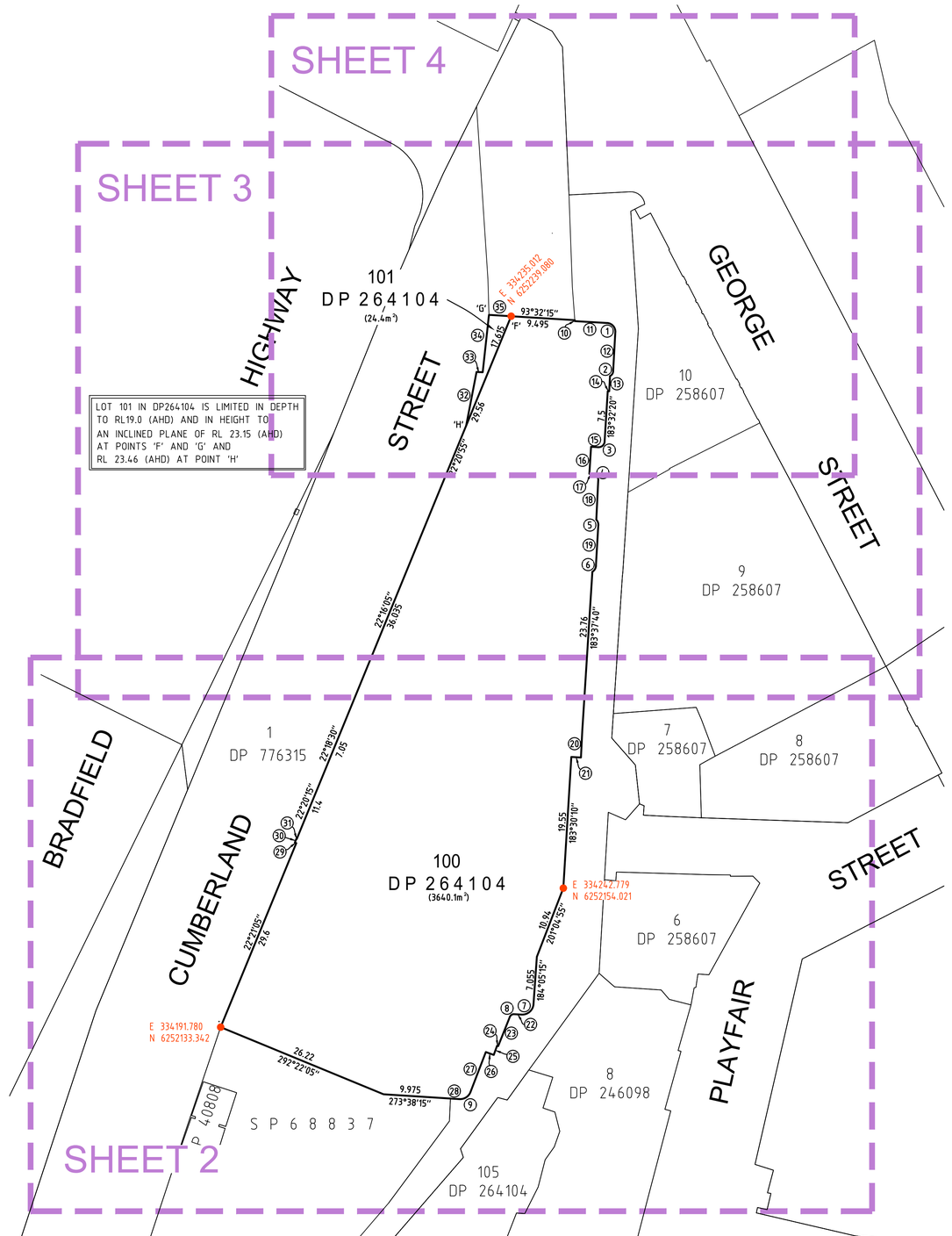
C:\REVIT_LOCAL2019\AR_1712011_SIR_SIRIUS_2019_sqiu.rvt 26/06/2020 1:32:09 PM



MGA

TN

1°00' APPROX.



LEGEND

OPTUS PIT	OP	PARKING METER	PM	WINDOW	W
COMMS PIT	COM	MAIL BOX	MAIL	DOOR	D
TELSTRA PIT	TEL	GRATED DRAIN		HEAD/SILL	H/S
ELECTRIC LIGHT POLE	ELP	GRATED INLET PIT	GIP	GAS (DBYD)	G
ELECTRIC LIGHT BOLLARD	LB	KERB INLET PIT	KIP	TELSTRA (DBYD)	T
PIT WITH CONCRETE LID	CLID	STOP VALVE	SV	WATER (DBYD)	W
PIT WITH METAL LID	MLID	GAS VALVE	GAS	STORMWATER (DBYD)	SW
STREET SIGN	SS	VEHICLE CROSSING	(VC)	SEWER (DBYD)	S
BOLLARD	BOL	PRAM CROSSING	(PC)	ELECTRICITY (U'GROUND) (DBYD)	E
FLAG POLE	FP			COMMUNICATIONS (DBYD)	C

DIAL BEFORE YOU DIG www.1100.com.au

REFER TO NOTES AND LEGEND

0 8 12 16 24 32 40

SCALE 1: 400 @ A1

NOTES

1. THE BOUNDARIES HAVE NOT BEEN MARKED
2. ALL AREAS AND DIMENSIONS HAVE BEEN COMPILED FROM PLANS MADE AVAILABLE BY THE OFFICE of LAND & PROPERTY INFORMATION (NSW) AND ARE SUBJECT TO FINAL SURVEY
3. BOUNDARIES WITHIN THIS FILE HAVE BEEN ADDED FROM DCDB DATA OBTAINED FROM LPI AND ARE APPROXIMATE ONLY
4. ORIGIN OF LEVELS ON A.H.D. IS TAKEN FROM **PM 14333** R.L. **27.59** (A.H.D.) IN CUMBERLAND STREET
5. CONTOUR INTERVAL **0.5 m**
6. CONTOURS ARE INDICATIVE ONLY. ONLY SPOT LEVELS SHOULD BE USED FOR CALCULATIONS OF QUANTITIES WITH CAUTION
7. KERB LEVELS ARE TO THE TOP OF KERB UNLESS SHOWN OTHERWISE
8. FLOOR LEVELS SHOWN ARE THRESHOLD LEVELS. NO INVESTIGATION OF INTERNAL FLOOR LEVELS HAS BEEN UNDERTAKEN
9. NO INVESTIGATION OF UNDERGROUND SERVICES HAS BEEN MADE. SERVICES HAVE BEEN PLOTTED FROM RELEVANT AUTHORITIES INFORMATION AND HAVE NOT BEEN SURVEYED. ALL RELEVANT AUTHORITIES SHOULD BE NOTIFIED PRIOR TO ANY EXCAVATION ON OR NEAR THE SITE
10. 8/.477 DENOTES TREE SPREAD OF 8m, TRUNK DIAMETER OF 0.4m & APPROX HEIGHT OF 7m
11. SHOWS APPROXIMATE POSITION OF ROAD LINEMARKING AND IS INDICATIVE ONLY
12. BEARINGS SHOWN ARE MGA (MAP GRID OF AUSTRALIA) ADD APPROX. 1°00' FOR TRUE NORTH
13. PITS IN THIS AREA NOT OPENED DUE TO COVER WEIGHT AND HIGH VOLUME OF PEDESTRIAN AND VEHICLE TRAFFIC. TRAFFIC CONTROL REQUIRED TO OBTAIN INVERTS AND PIPE SIZES

SCHEDULE of CURVED BOUNDARIES

No	Bearing	Chord	Arc	Radius
1	138°36'	1.82	2.015	1.3
2	213°06'	0.845	0.885	0.85
3	228°32'	1.275	1.415	0.9
4	138°12'	1.265	1.405	0.9
5	159°49'	0.88	0.905	1.1
6	211°10'	1.025	1.065	1.1
7	228°26'	2.35	2.605	1.68
8	237°14'	0.7	0.745	0.6
9	237°20'	1.94	2.075	1.64

SCHEDULE of LINES

No	Bearing	Distance	No	Bearing	Distance
10	183°32'	0.14	23	201°43'	4.705
11	93°20'	4.84	24	290°17'	0.17
12	183°10'35"	5.825	25	200°17'	1.46
13	182°58'	2.27	26	290°02'	1.25
14	272°58'	0.225	27	201°01'35"	6.375
15	273°32'	1.065	28	273°38'	1.345
16	183°32'	4.03	29	292°21'	0.24
17	93°32'	0.475	30	22°48'	0.59
18	182°51'25"	5.86	31	112°20'	0.07
19	183°22'15"	6.05	32	10°57'25"	8.16
20	182°48'	3.92	33	93°32'15"	0.915
21	273°27'	1.435	34	6°12'35"	8.59
22	272°51'	1.17	35	93°32'15"	3.31

Revision	Date	Description	Reference
D	07/04/20	FURTHER ELEVATIONS ADDED	50025 004
C	31/03/20	BIM & LASER DETAIL ADDED	50025 004
B	18/03/20	ADDITIONAL DETAIL & LEVEL ADDED	50025 004
A	12/01/18	DETAILS FOR LOT 101 DP264104 ADDED	50025 001

THIS IS THE PLAN REFERRED TO IN MY LETTER DATED:

.....

Registered Surveyor NSW

LTS LOCKLEY
Registered Surveyors NSW
www.ltsl.com.au
Suite 1, Level 1
810 Pacific Highway
Gordon NSW 2072
Locked Bag 5
Gordon NSW 2072
P 1300 587 000
F 02 9499 7760

Client DEDICO DEVELOPMENT SERVICES

Drawing title

PLAN OF DETAIL AND LEVELS OVER LOTS 100 & 101 IN DP 264104 KNOWN AS "SIRIUS" No36-55 CUMBERLAND STREET, THE ROCKS

datum AHD

site Area 3664.5m²

LGA SYDNEY

reference number 50025 DT 004

scale 1:400 @A1

date of survey 06/07/17

SHEET 1 OF 9

Appendix D – Borehole Logs

BOREHOLE: BH1

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed site Investigation			Sheet	1 OF 1
Location	2-60 Cumberland Street, The Rocks NSW			Date Started	2/6/20
Position	Refer to Figure 2	Surface RL	19.10 m	Date Completed	3/6/20
Job No.	E24614.E02	Contractor	TJ Core Drilling	Logged	IW
Client	Sirius Developments Pty Ltd	Drill Rig	Hand Portable	Checked	
		Inclination	-90°		

Drilling					Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
DT			0	0.10				-	CONCRETE; 100 mm thick concrete slab.	-	-	
HAND DT	-			19.00	BH1_0.1-0.2 ES			-	FILL: Gravelly SAND; fine to medium grained sand, grey, fine to coarse, angular to sub-angular sandstone gravels, with some sandstone cobbles, moist, no odour.	-	-	FILL
				0.65								
				18.45				-	CONCRETE; 350 mm thick concrete footing.	-	-	
			1	1.00								
				18.10				-	SANDSTONE; high strength, fresh, pale grey, fine to medium grained, medium bedded, no odour.			BEDROCK
DT		0% RETURN			BH1_1.33-1.41 ES							
			2							-	-	
			3									
				4.00								
			4						Hole Terminated at 4.00 mBGL; Target Depth Reached.			
			5									
			6									
			7									
			8									
			9									
			10									

This borehole log should be read in conjunction with EI Australia's accompanying standard notes.

BOREHOLE: BH2

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed site Investigation			Sheet	1 OF 1
Location	2-60 Cumberland Street, The Rocks NSW			Date Started	4/6/20
Position	Refer to Figure 2	Surface RL	19.10 m	Date Completed	5/6/20
Job No.	E24614.E02	Contractor	TJ Core Drilling	Logged	IW
Client	Sirius Developments Pty Ltd	Drill Rig	Hand Portable	Checked	
		Inclination	-90°		

Drilling					Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
HAND DT			0	19.01				-	CONCRETE; 90 mm thick concrete slab.	-	-	
				0.40	BH2_0.1-0.2 ES			-	FILL: Sandy GRAVEL; fine to medium, grey-pale brown, angular to sub-angular gravels, moist, no odour.	-	-	FILL
				18.70 0.60	BH2_0.5-0.6 ES			-	FILL: Gravelly SAND; fine to coarse grained grained, grey, with some wood and metal fragments, moist, no odour.	-	-	
			1	18.50 1.10				-	CONCRETE; 500 mm thick concrete footing.	-	-	
DT	-	0% RETURN		18.00	BH2_1.49-1.57 ES			-	SANDSTONE; high strength, fresh, pale grey, medium bedded, no odour.	-	-	BEDROCK
			2									
			3									
			4	4.24					Hole Terminated at 4.24 mBGL; Target Depth Reached.			
			5									
			6									
			7									
			8									
			9									
			10									

This borehole log should be read in conjunction with EI Australia's accompanying standard notes.

BOREHOLE: BH3

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed site Investigation			Sheet	1 OF 1
Location	2-60 Cumberland Street, The Rocks NSW			Date Started	4/6/20
Position	Refer to Figure 2	Surface RL	22.60 m	Date Completed	5/6/20
Job No.	E24614.E02	Contractor	TJ Core Drilling	Logged	IW
Client	Sirius Developments Pty Ltd	Drill Rig	Hand Portable	Checked	
		Inclination	-90°		

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
DT			0	0.15				-	CONCRETE; 150 mm thick concrete slab.	-	-	
HAND				22.45				-	FILL: Gravel; fine to medium, angular to sub-angular blue metal gravels, moist, no odour.	-	-	FILL
				0.95								
			1	21.65				-	CONCRETE; 1130 mm thick concrete footing.	-	-	
			2	2.08								
DT	-	0% RETURN		20.52	BH3_2.45-2.49 ES			-	SANDSTONE; high strength, fresh, pale grey, medium bedded, no odour.	-	-	BEDROCK
			3									
			4	4.82								
			5						Hole Terminated at 4.82 mBGL; Target Depth Reached.			
			6									
			7									
			8									
			9									
			10									

This borehole log should be read in conjunction with EI Australia's accompanying standard notes.

BOREHOLE: BH4

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed site Investigation			Sheet	1 OF 1
Location	2-60 Cumberland Street, The Rocks NSW			Date Started	5/6/20
Position	Refer to Figure 2	Surface RL	22.40 m	Date Completed	5/6/20
Job No.	E24614.E02	Contractor	Geosense Drilling	Logged	IW
Client	Sirius Developments Pty Ltd	Drill Rig	Tight Access	Checked	
		Inclination	-90°		

Drilling					Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
HAND			0	0.12 22.28 0.40 22.00				-	CONCRETE; 120 mm thick concrete slab.	-	-	
					BH4_0.2-0.3 ES			-	FILL: Sandy GRAVEL; fine to medium grained, angular to sub-angular blue metal gravels, moist, with fine to medium grained sand, no odour.	-	-	FILL
								-	CONCRETE; 850 mm thick concrete footing.	-	-	
			1	1.25 21.15				-	NO CORE; 1550 mm thick, inferred to be gravelly sand fill.	-	-	
NMLC	-	0% RETURN	2									
				2.80 19.60 3.00				-	FILL: Gravelly SAND; fine to medium grained sand, with metal fragments, no odour.	-	-	FILL
			3	19.32				-	CONCRETE; 40 mm thick concrete slab.	-	-	FILL
								-	FILL: Sandy GRAVEL; fine to medium, angular to sub-angular gravels, with fine to medium grained sand, no odour.	-	-	BEDROCK
					BH4_3.4-3.48 ES				SANDSTONE; medium to high strength, fresh, fine to medium grained, pale grey, medium bedded, no odour.			
			4	4.00					Hole Terminated at 4.00 mBGL; Target Depth Reached.			
			5									
			6									
			7									
			8									
			9									
			10									

This borehole log should be read in conjunction with EI Australia's accompanying standard notes.

BOREHOLE: BH5

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed site Investigation			Sheet	1 OF 1
Location	2-60 Cumberland Street, The Rocks NSW			Date Started	4/6/20
Position	Refer to Figure 2	Surface RL	22.60 m	Date Completed	5/6/20
Job No.	E24614.E02	Contractor	Geosense Drilling	Logged	IW
Client	Sirius Developments Pty Ltd	Drill Rig	Tight Access	Checked	
		Inclination	-90°		

Drilling					Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
HAND DT			0	0.14 22.46				-	CONCRETE; 140 mm thick concrete slab.	-	-	
				0.39 22.21	BH5_0.2-0.3 ES			-	FILL: GRAVEL; fine to medium, angular to sub-angular blue metal gravels, grey, moist, no odour.	-	-	FILL
				0.84				-	CONCRETE; 450 mm thick concrete footing.	-	-	
NMLC	-	90% RETURN	1	21.76 1.35				-	SANDSTONE; medium strength, slightly weathered to fresh,fine to medium grained, pale grey-pale brown, medium bedded, no odour.			BEDROCK
				21.25	BH5_1.34-1.4 ES				From 1.35 m, grading to high strength, no odour.	-	-	
			2	2.72								
				19.88					From 2.72 to 2.92 m, dark grey, distinctly weathered, very low strength shale layer, no odour.			
			3	3.69					Hole Terminated at 3.69 mBGL; Target Depth Reached.			
			4									
			5									
			6									
			7									
			8									
			9									
			10									

This borehole log should be read in conjunction with EI Australia's accompanying standard notes.

BOREHOLE: BH6M

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed site Investigation			Sheet	1 OF 1
Location	2-60 Cumberland Street, The Rocks NSW			Date Started	4/6/20
Position	Refer to Figure 2	Surface RL	22.70 m	Date Completed	5/6/20
Job No.	E24614.E02	Contractor	Geosense Drilling	Logged	IW
Client	Sirius Developments Pty Ltd	Drill Rig	Tight Access	Checked	
		Inclination	-90°		

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS ID / Static Water Level
DT			0	0.19				-	CONCRETE; 190 mm thick concrete slab.	-	-	BH6M
HAND				0.30				-	FILL: GRAVEL; fine to medium, angular to sub-angular blue metal gravels, with some fine to medium sand, moist, no odour.	-	-	
				22.40				-		-	-	
				0.55	BH6M_0.4-0.5 ES			-	FILL: Gravelly SAND; fine to coarse grained, pale brown, moist, gravel is fine to coarse, angular to sub-angular, sandstone gravels, no odour.	-	-	
				22.15					CONCRETE; 690 mm thick concrete footing.			
			1	1.24				-	SANDSTONE; high strength, slightly weathered, fine to medium grained, pale brown, medium bedded, no odour.			
				21.46								
		90% RETURN			BH6M_1.89-1.97 ES							
			2									
			3	3.10					From 3.1 m, medium strength, thinly bedded, no odour.			
				19.60								
NMLC	-			3.70					From 3.7 m, grading to high strength, medium bedded, fresh, no odour.	-	-	
			4	19.00								
		0% RETURN	5									
			6	6.82								
			7						Hole Terminated at 6.82 mBGL; Target Depth Reached.			
			8									
			9									
			10									

Grout
Bentonite
uPVC 50 mm Casing
Sand
uPVC 50 mm Screen
Bentonite

This borehole log should be read in conjunction with EI Australia's accompanying standard notes.

BOREHOLE: BH7

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed site Investigation			Sheet	1 OF 1
Location	2-60 Cumberland Street, The Rocks NSW			Date Started	5/6/20
Position	Refer to Figure 2	Surface RL	22.80 m	Date Completed	5/6/20
Job No.	E24614.E02	Contractor	Geosense Drilling	Logged	IW
Client	Sirius Developments Pty Ltd	Drill Rig	Tight Access	Checked	
		Inclination	-90°		

Drilling					Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
DT			0	0.14				-	CONCRETE; 140 mm thick concrete slab.	-	-	
HAND				22.66	BH7_0.3-0.5 ES			-	FILL: Sandy GRAVEL; fine to medium grained, angular to sub-angular blue metal gravels, with metal fragments, moist, sand is fine to medium grained, no odour.	-	-	FILL
					BH7_0.35-0.45 ES							
				0.80								
				22.00				-	CONCRETE; 680 mm thick concrete footing.	-	-	
			1	1.48								
				21.32				-	SANDSTONE; high strength, fresh, fine to medium grained, pale grey, medium bedded,no odour.			BEDROCK
					BH7_1.8-1.87 ES							
NMLC	-	100% RETURN	2									
			3							-	-	
				3.65								
				19.15					From 3.65 m, thinly bedded, no odour.			
			4	4.05								
				18.75					From 4.05 m, medium bedded, no odour.			
				4.90								
			5						Hole Terminated at 4.90 mBGL; Target Depth Reached.			
			6									
			7									
			8									
			9									
			10									

This borehole log should be read in conjunction with EI Australia's accompanying standard notes.

BOREHOLE: BH8M

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed site Investigation			Sheet	1 OF 1
Location	2-60 Cumberland Street, The Rocks NSW			Date Started	3/6/20
Position	Refer to Figure 2	Surface RL	23.60 m	Date Completed	3/6/20
Job No.	E24614.E02	Contractor	Geosense Drilling	Logged	IW
Client	Sirius Developments Pty Ltd	Drill Rig	Tight Access	Checked	
		Inclination	-90°		

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS ID / Static Water Level
HAND DT			0	0.15 23.45				-	CONCRETE; 150 mm concrete slab.	-	-	BH8M
				0.49 23.11				-	FILL: GRAVEL; fine to medium, angular to sub-angular blue metal gravels, with some sand, brick and sandstone fragments, moist, no odour.	-	-	
			1	1.23 22.37				-	CONCRETE; 740 mm thick concrete footing.	-	-	Grout
					BH8M_1.55-1.62 ES			-	SANDSTONE; medium strength, slightly weathered, pale grey-pale brown, medium bedded, no odour.			Bentonite
			2									uPVC 50 mm Casing
			3	3.20 20.40					From 3.2 m, pale grey, fresh, no odour.			
NMLC	-	03/06/20	4							-	-	uPVC 50 mm Screen Sand
			5	5.48 18.12					From 5.48 m, thinly bedded, no odour.			
				5.85 17.75					From 5.85 m, high strength, no odour.			
			6	6.45								Cave In Cuttings
									Hole Terminated at 6.45 mBGL; Target Depth Reached.			
			7									
			8									
			9									
			10									

This borehole log should be read in conjunction with EI Australia's accompanying standard notes.

BOREHOLE: BH9

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed site Investigation			Sheet	1 OF 1
Location	2-60 Cumberland Street, The Rocks NSW			Date Started	2/6/20
Position	Refer to Figure 2	Surface RL	24.80 m	Date Completed	4/6/20
Job No.	E24614.E02	Contractor	TJ Core Drilling	Logged	IW
Client	Sirius Developments Pty Ltd	Drill Rig	Hand Portable	Checked	
		Inclination	-90°		

Drilling					Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
DT	-	0% RETURN	0	0.15				-	CONCRETE; 150 mm thick concrete slab.	-	-	
				0.27	BH9_0.16-0.28 ES			-	FILL: GRAVEL; fine to medium, angular to sub-angular blue metal gravels, with some fine to medium grained sand, moist, no odour.	-	-	FILL
				24.53	BH9_0.42-0.5 ES			-				BEDROCK
			1						SANDSTONE; medium strength, slightly weathered, fine to medium grained, pale brown, medium bedded, no odour.			
				1.95						-	-	
			2	22.85					From 1.95 m, high strength, no odour.			
				3.01				-	NO CORE; 30 mm thick.	-	-	BEDROCK
			3	21.77				-				
										-	-	
			4									
				4.40					From 4.4 m, thinly bedded, no odour.			
				4.55								
				20.25				-	From 4.45 to 4.47 m, dark grey shale band, no odour.	-	-	
				4.82					NO CORE; 270 mm thick.			
				19.98				-				BEDROCK
			5							-	-	
				5.50								
				19.16				-	From 5.5 to 5.58 m, very low strength, distinctly weathered, dark grey shale band, no odour.	-	-	BEDROCK
				19.16					NO CORE; 60 mm thick.	-	-	
			6						From 5.64 m, grading to pale grey, medium strength, fresh, no odour.			
				6.15				-	NO CORE; 50 mm thick.	-	-	BEDROCK
				18.60				-				
			7							-	-	
			8	8.20					Hole Terminated at 8.20 mBGL; Target Depth Reached.			
			9									
			10									

This borehole log should be read in conjunction with EI Australia's accompanying standard notes.

BOREHOLE: BH10

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed site Investigation			Sheet	1 OF 1
Location	2-60 Cumberland Street, The Rocks NSW			Date Started	2/6/20
Position	Refer to Figure 2	Surface RL	24.90 m	Date Completed	3/6/20
Job No.	E24614.E02	Contractor	Geosense Drilling	Logged	IW
Client	Sirius Developments Pty Ltd	Drill Rig	Tight Access	Checked	
		Inclination	-90°		

Drilling					Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
DT			0	0.15 24.75	BH10_0.15-0.25 ES			-	CONCRETE; 150 mm thick concrete slab. FILL: Sandy GRAVEL; pale brown, fine to coarse sandstone gravels, with concrete fragments and sandstone cobbles, moist, sand is fine to medium grained, no odour.	-	-	FILL
NMLC	-	90% RETURN	1	0.90 24.00	BH10_0.9-1.0 ES			-	SANDSTONE; medium strength, slightly weathered, fine to medium grained, pale brown to red-brown, medium bedded, no odour.	-	-	BEDROCK
			2	2.15 22.75					From 2.15 m, high strength, no odour.			
			3									
			4									
			5									
			6	5.70 19.20					From 5.7 m, grading to pale grey, fresh, no odour.			
			7	6.48 18.42 7.15					From 6.48 m, thinly bedded, no odour. Hole Terminated at 7.15 mBGL; Target Depth Reached.			
			8									
			9									
			10									

This borehole log should be read in conjunction with EI Australia's accompanying standard notes.

BOREHOLE: BH11M

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed site Investigation			Sheet	1 OF 1
Location	2-60 Cumberland Street, The Rocks NSW			Date Started	2/6/20
Position	Refer to Figure 2	Surface RL	24.80 m	Date Completed	3/6/20
Job No.	E24614.E02	Contractor	Geosense Drilling	Logged	IW
Client	Sirius Developments Pty Ltd	Drill Rig	Tight Access	Checked	
		Inclination	-90°		

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS ID Static Water Level BH11M
HAND DT			0	0.16 0.26 24.54				-	CONCRETE; 160 mm thick concrete slab.	-	-	
								-	FILL: GRAVEL; fine to medium, angular to sub-angular blue metal gravels, moist, no odour.	-	-	
NMLC	-		1		BH11M_0.66-0.71 ES			-	SANDSTONE; high strength, slightly weathered, fine to medium grained, pale brown to red-brown, medium bedded,no odour.			Grout
			2									
			3									
			4							-	-	Bentonite
			5	4.88 19.92					From 4.88 m, grading to pale grey, fresh, no odour.			
				5.28 19.52					From 5.28 to 5.43 m, medium strength, distinctly weathered, dark grey, shale layer, no odour.			uPVC 50 mm Casing
			6									Sand
			7									uPVC 50 mm Screen
			8	8.47								Bentonite
			9						Hole Terminated at 8.47 mBGL; Target Depth Reached.			
			10									

This borehole log should be read in conjunction with EI Australia's accompanying standard notes.

Appendix E – Field Data Sheets

WATER SAMPLING FIELD SHEET

eiaustralia

Site Address:	2-60 Cumberland St, The Rocks	Job Number:	E24614.E02
Client:	Sirius Developments Pty Ltd	Date:	19-Jun-20
Field Staff:	Emily	Sampling Location ID	BH6M
Well Location:	BH6M	Round No:	1
MEDIUM	☒Groundwater ☐Surface Water	☐Stormwater	☐Other:
SAMPLING POINT INFO			
Well Installation Date:	04/06/20	Stick up / down (m):	- 0.12 (+ above ground - below ground)
Initial Well Depth (mBTOC):	4.9	Screen Interval (mBTOC):	1.9 - 4.9
Previous Sampling Date:	X	Previous SWL (mBTOC):	X
PID READINGS			
PID Headspace (ppm):	X	PID Background (ppm):	X
PID Breathing Space (ppm):	X		
PRE PURGE			
Total Well Depth (mBTOC):	5.0	Well Head Condition:	good.
SWL (mBTOC):	3.73	Water Column (m):	1.27
PHASE SEPARATED HYDROCARBONS (PSH)			
Depth to PSH (mBTOC):	X	PSH Visually Confirmed (Bailer):	X
PSH Thickness (mm):	X		
PURGE AND SAMPLE			
Sampling Method	☒Bladder ☐Peristaltic ☐Submersible	☐Other:	
Depth of Pump Inlet (mBTOC):	4.4	Fill Timer:	20
Pump Pressure Regulator (psi):	20	Discharge Timer:	10
Weather Conditions:	Sunny	Cycle:	CPM2
Pump on time:	11:45	Pump off time:	12:05
WATER QUALITY PARAMETERS			
Probe Make and Model:		Bump Test Date and Time:	

Time	Volume (L)	SWL (mbtoc)	Temp (°C)	EC (µS/cm)	Redox (mV)	DO (mg/L)	pH (units)	Comments (colour, turbidity, odour, sheen etc.)
11:50	0.5	3.7	18.98	708	81.1	4.18	6.49	- yellow/grey
11:53	1.0	3.7	18.97	698	19.5	0.86	5.89	- hh to h turbidity
11:55	1.5	3.7	18.94	1056	-3.5	4.61	5.97	- no odour
11:58	2.0	3.7	19.00	647	-7.2	4.86	6.14	- no sheen.
12:01	2.5	3.7	19.03	671	-6.5	4.72	6.06	
Stabilisation range: 3 consecutive readings			±0.2°C	±3%	±20mV	±10%	±0.2	

OTHER COMMENTS/OBSERVATIONS:

SIGNATURE:

WATER SAMPLING FIELD SHEET

eiaustralia

Site Address:	2-60 Cumberland St, The Rocks	Job Number:	E24614.E02
Client:	Sirius Developments Pty Ltd	Date:	19-Jun-20
Field Staff:	Emily	Sampling Location ID	BH8M
Well Location:	BH8M	Round No:	1
MEDIUM	☒Groundwater ☐Surface Water	☐Stormwater	☐Other:
SAMPLING POINT INFO			
Well Installation Date:	03/06/20	Stick up / (down) (m):	-0.08 (+ above ground - below ground)
Initial Well Depth (mBTOC):	5.54	Screen Interval (mBTOC):	2.54 to 5.54
Previous Sampling Date:	X	Previous SWL (mBTOC):	X
PID READINGS			
PID Headspace (ppm):	X	PID Background (ppm):	X
PID Breathing Space (ppm):	X		
PRE PURGE			
Total Well Depth (mBTOC):	5.6	Well Head Condition:	good.
SWL (mBTOC):	4.4	Water Column (m):	1.2
PHASE SEPARATED HYDROCARBONS (PSH)			
Depth to PSH (mBTOC):	X	PSH Visually Confirmed (Bailer):	X
PSH Thickness (mm):	X		
PURGE AND SAMPLE			
Sampling Method	☒Bladder ☐Peristaltic ☐Submersible	☐Other:	
Depth of Pump Inlet (mBTOC):	5.0	Fill Timer:	20
Pump Pressure Regulator (psi):	20	Discharge Timer:	10
Weather Conditions:	sunny + cold	Cycle:	CPM2
Pump on time:	9:45	Pump off time:	10:40
WATER QUALITY PARAMETERS			
Probe Make and Model:		Bump Test Date and Time:	

Time	Volume (L)	SWL (mbtoc)	Temp (°C)	EC (µS/cm)	Redox (mV)	DO (mg/L)	pH (units)	Comments (colour, turbidity, odour, sheen etc.)
9:50	0.5	4.4	19.54	1912	131.1	4.23	6.39	- grey
9:53	1.0	4.4	19.52	1530	33.3	1.38	6.43	- high turbidity
9:56	1.5	4.4	19.53	1464	7.8	1.11	6.35	- no odour
9:59	2.0	4.4	19.52	1471	16.9	1.08	6.37	- no sheen
10:03	2.5	4.4	19.48	1328	-2.1	0.92	6.40	
Stabilisation range: 3 consecutive readings			±0.2°C	±3%	±20mV	±10%	±0.2	

OTHER COMMENTS/OBSERVATIONS: QA/QC collected from this well

SIGNATURE:

WATER SAMPLING FIELD SHEET

eiaustralia

Site Address:	2-60 Cumberland St, The Rocks	Job Number:	E24614.E02
Client:	Sirius Developments Pty Ltd	Date:	19-Jun-20
Field Staff:	Emily	Sampling Location ID	BH11M
Well Location:	BH11M	Round No:	1
MEDIUM	☒Groundwater ☐Surface Water	☐Stormwater	☐Other:
SAMPLING POINT INFO			
Well Installation Date:	02/06/20	Stick up / (down) (m):	-0.10 (+ above ground - below ground)
Initial Well Depth (mBTOC):	7.9	Screen Interval (mBTOC):	5.9 - 7.9
Previous Sampling Date:	X	Previous SWL (mBTOC):	X
PID READINGS			
PID Headspace (ppm):	X	PID Background (ppm):	X
PID Breathing Space (ppm):	X		
PRE PURGE			
Total Well Depth (mBTOC):	8.0	Well Head Condition:	good.
SWL (mBTOC):	4.7	Water Column (m):	3.3
PHASE SEPARATED HYDROCARBONS (PSH)			
Depth to PSH (mBTOC):	X	PSH Visually Confirmed (Bailer):	X
PSH Thickness (mm):	X		
PURGE AND SAMPLE			
Sampling Method	☒Bladder ☐Peristaltic ☐Submersible	☐Other:	
Depth of Pump Inlet (mBTOC):	6.35	Fill Timer:	20
Pump Pressure Regulator (psi):	20	Discharge Timer:	10
Weather Conditions:	Sunny	Cycle:	cpm2
Pump on time:	10:55	Pump off time:	11:36
WATER QUALITY PARAMETERS			
Probe Make and Model:		Bump Test Date and Time:	

Time	Volume (L)	SWL (mbtoc)	Temp (°C)	EC (µS/cm)	Redox (mV)	DO (mg/L)	pH (units)	Comments (colour, turbidity, odour, sheen etc.)
11:00	0.5	4.7	20.22	410	47.8	3.27	7.02	- yellow/grey
11:03	1.0	4.7	20.41	381	67.4	2.72	6.77	- m to h turbidity
11:06	1.5	4.7	20.38	396	58.4	2.96	6.98	- no odour
11:09	2.0	4.7	20.31	387	62.1	2.85	6.78	- no sheen.
Stabilisation range: 3 consecutive readings			±0.2°C	±3%	±20mV	±10%	±0.2	

OTHER COMMENTS/OBSERVATIONS:

SIGNATURE:

Appendix F – Chain of Custody and Sample Receipt Forms

Sheet 1 of 2

Site: 2-60 Cumberland St The Rocks

Project No: E24614.E02

Laboratory: SGS Australia
Unit 16, 33 Maddox Street,
ALEXANDRIA NSW 2015
P: 02 8594 0400 F: 02 8594 0499

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	Sample Matrix: WATER	SOIL	OTHERS (i.e. Fibro, Paint, etc.)	Analysis: HM[A] /TRH/BTEX/PAHs OCP/OP/PCB/Asbestos	HM[A] /TRH/BTEX/PAHs	HM[A] /TRH/BTEX	BTEX	VOCs	Asbestos	Asbestos Quantification	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	Dewatering Suite	sPOCAS	PFAS	HOLD			TCLP HM[B] / PAH
BH1_0.1-0.2	1	J, ZLB	2/6/20			X		X															
BH1_1.33-1.41			2/6/20																X	No bag			
BH2_0.1-0.2			4/6/20																X				
BH2_0.5-0.6	2		↓					X															
BH2_1.49-1.57			↓																X	No bag			
BH3_2.45-2.49	3		4/6/20						X														
BH4_0.2-0.3	4		5/6/20					X															
BH4_3.4-3.48			5/6/20																X	No bag			
BH5_0.2-0.3	5		4/6/20					X															
BH5_1.34-1.40			↓																X	No bag			
BH6M_0.4-0.5	6		4/6/20					X															
BH6M_1.89-1.97	7		↓			↓			X														

Comments

HM[A]
Arsenic
Cadmium
Chromium
Copper
Lead
Mercury
Nickel
Zinc

HM[B]
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

Dewatering Suite
pH & EC
TDS / Turbidity NTU
Hardness
Total Cyanide
Metals (Al, As, Cd, Cr, Cu, Pb, Hg, Ni, Zn)
TRH (F1, F2, F3, F4)
BTEX
PAH
Total Phenol

LABORATORY TURNAROUND
- [x] Standard
- [ ] 24 Hours
- [ ] 48 Hours
- [ ] 72 Hours
- [ ] Other_____

Container Type:
J= solvent washed, acid rinsed,Teflon sealed, glass jar
S= solvent washed, acid rinsed glass bottle
P= natural HDPE plastic bottle
VC= glass vial, Teflon Septum
ZLB = Zip-Lock Bag

Investigator: I attest that these samples were collected in accordance with standard EI field sampling procedures.

Report with EI Waste Classification Table ☐

Sampler's Name (EI): IW	Received by (SGS):
Print: Kate Warton	Print: Suba
Signature:	Signature:
Date: 9/6/2020	Date: 09/06/20 @ 2:20

IMPORTANT:
Please e-mail laboratory results to: lab@eiaustralia.com.au

Sampler's Comments:
SGS EHS Sydney COC
SE207287

eiaustralia
Contamination | Remediation | Geotechnical
Suite 6.01, 55 Miller Street,
PYRMONT NSW 2009
Ph: 9516 0722
lab@eiaustralia.com.au

Sheet 2 of 2

Site: 2-60 Cumberland St The Rocks

Project No: E24614. E02

Laboratory: SGS Australia
Unit 16, 33 Maddox Street,
ALEXANDRIA NSW 2015
P: 02 8594 0400 F: 02 8594 0499

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	Sample Matrix: WATER	SOIL	OTHERS (i.e. Fibro, Paint, etc.)	Analysis: HM [A] /TRH/BTEX/PAHs OCP/OP/PCB/Asbestos	HM [A] /TRH/BTEX/PAHs	HM [A] /TRH/BTEX	BTEX	VOCs	Asbestos	Asbestos Quantification	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	Dewatering Suite	sPOCAS	PFAS	HOLD			TCLP HM [B] / PAH
BH7_0.35-0.45	8	J, ZLB	5/6/20			X		X															
BH7_0.3-0.5																			X	no bag			
BH5M_1.55-1.62	9	2	3/6/20						X										X	no bag			
BH9_0.16-0.25	10		2/6/20					X															
BH9_0.42-0.5	11								X														
BH10_0.15-0.25	12							X															
BH10_0.4-1.0																			X	No bag			
BH11M_0.66-0.71	13								X														
BH7_1.8-1.87			5/6/20			X													X	no bag			

Comments

HM [A]
Arsenic
Cadmium
Chromium
Copper
Lead
Mercury
Nickel
Zinc

HM [B]
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

Dewatering Suite
pH & EC
TDS / Turbidity NTU
Hardness
Total Cyanide
Metals (Al, As, Cd, Cr, Cu, Pb, Hg, Ni, Zn)
TRH (F1, F2, F3, F4)
BTEX
PAH
Total Phenol

LABORATORY TURNAROUND

- [X] Standard
- [ ] 24 Hours
- [ ] 48 Hours
- [ ] 72 Hours
- [ ] Other_____

Container Type:
J= solvent washed, acid rinsed,Teflon sealed, glass jar
S= solvent washed, acid rinsed glass bottle
P= natural HDPE plastic bottle
VC= glass vial, Teflon Septum
ZLB = Zip-Lock Bag

Investigator: I attest that these samples were collected in accordance with standard EI field sampling procedures.

Report with EI Waste Classification Table ☐

Sampler's Name (EI): IW	Received by (SGS):
Print: Kate Warren	Print: Suba
Signature:	Signature:
Date: 9/6/2020	Date: 09/06/20 @ 2:20

Sampler's Comments:

IMPORTANT:
Please e-mail laboratory results to: lab@eiaustralia.com.au

eiaustralia
Contamination | Remediation | Geotechnical
Suite 6.01, 55 Miller Street,
PYRMONT NSW 2009
Ph: 9516 0722
lab@eiaustralia.com.au

SAMPLE RECEIPT ADVICE

SE207287

CLIENT DETAILS

Contact	Kate Warton
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	Kate.Warton@eiaustralia.com.au
Project	**E24614.E02 2-60 Cumberland St, The Rocks**
Order Number	**E24614.E02**
Samples	13

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Tue 9/6/2020
Report Due	Tue 16/6/2020
SGS Reference	**SE207287**

SUBMISSION DETAILS

This is to confirm that 13 samples were received on Tuesday 9/6/2020. Results are expected to be ready by COB Tuesday 16/6/2020. Please quote SGS reference SE207287 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	13 Soil
Date documentation received	9/6/2020	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	7.5°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

7 soil samples have been placed on hold as no tests have been assigned for them by the client. These samples will not be processed.
BH7_0.3-0.5 sample not received.
3 Extra samples: BH6M_0.2-0.3, Trip Spike, Trip Blank received.

SAMPLE RECEIPT ADVICE

SE207287

CLIENT DETAILS

Client EI AUSTRALIA

Project E24614.E02 2-60 Cumberland St, The Rocks

SUMMARY OF ANALYSIS

No.	Sample ID	OC Pesticides in Soil	OP Pesticides in Soil	PAH (Polynuclear Aromatic Hydrocarbons) in Soil	PCBs in Soil	Total Recoverable Elements in Soil/Waste	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
001	BH1_0.1-0.2	29	14	26	11	7	10	11	7
002	BH2_0.5-0.6	29	14	26	11	7	10	11	7
003	BH3_2.45-2.49	-	-	26	-	7	10	11	7
004	BH4_0.2-0.3	29	14	26	11	7	10	11	7
005	BH5_0.2-0.3	29	14	26	11	7	10	11	7
006	BH6M_0.4-0.5	29	14	26	11	7	10	11	7
007	BH6M_1.89-1.97	-	-	26	-	7	10	11	7
008	BH7_0.35-0.45	29	14	26	11	7	10	11	7
009	BH8M_1.55-1.62	-	-	26	-	7	10	11	7
010	BH9_0.16-0.28	29	14	26	11	7	10	11	7
011	BH9_0.42-0.5	-	-	26	-	7	10	11	7
012	BH10_0.15-0.25	29	14	26	11	7	10	11	7
013	BH11M_0.66-0.71	-	-	26	-	7	10	11	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

SE207287

CLIENT DETAILS

Client EI AUSTRALIA

Project E24614.E02 2-60 Cumberland St, The Rocks

SUMMARY OF ANALYSIS

No.	Sample ID	Fibre Identification in soil	Mercury in Soil	Moisture Content
001	BH1_0.1-0.2	2	1	1
002	BH2_0.5-0.6	2	1	1
003	BH3_2.45-2.49	-	1	1
004	BH4_0.2-0.3	2	1	1
005	BH5_0.2-0.3	2	1	1
006	BH6M_0.4-0.5	2	1	1
007	BH6M_1.89-1.97	-	1	1
008	BH7_0.35-0.45	2	1	1
009	BH8M_1.55-1.62	-	1	1
010	BH9_0.16-0.28	2	1	1
011	BH9_0.42-0.5	-	1	1
012	BH10_0.15-0.25	2	1	1
013	BH11M_0.66-0.71	-	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 .

Sheet 1 of 1

Site:	Project No:
48 Cumberland Street, The Rocks	E24614

Laboratory: SGS Australia
Unit 16, 33 Maddox Street,
ALEXANDRIA NSW 2015
P: 02 8594 0400 F: 02 8594 0499

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	Sample Matrix: WATER	SOIL	OTHER	Analysis: HM[A] /TRH/BTEX/PAHs OCP/OP/PCB/Asbestos	HM[A] /TRH/BTEX/PAHs	HM[A] /TRH/BTEX	BTEX	VOCs	Asbestos	Asbestos Quantification	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	Dewatering Suite	sPOCAS	PFAS	Sulphates	Chlorides		TCLP HM A / PAH
BH7_0.35-0.45	8	ZLB	5/06/2020			X										X				X	X		
BH3_2.45-2.49	3	RC	4/06/2020			X										X				X	X		

Comments

HM[A]
Arsenic
Cadmium
Chromium
Copper
Lead
Mercury
Nickel

HM[A]
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

Dewatering Suite
pH & EC
TDS / TDU
Hardness
Total Cyanide
Metals (Al, As, Cd, Cr, Cu, Pb, Hg, Ni, Zn)
TRH (F1, F2, F3, F4)
BTEX
PAH
Total Phenol

SGS EHS Alexandria Laboratory

SE207287A COC
Received: 10 – Jun – 2020

LABORATORY TURNAROUND

- [X] Standard
- [ ] 24 Hours
- [ ] 48 Hours
- [ ] 72 Hours
- [ ] Other____

Container Type:
J = solvent washed, acid rinsed, Tefton sealed glass jar
S = solvent washed, acid rinsed glass bottle
P = natural HDPE plastic bottle
VC = glass vial, Tefton Septum
ZLB = Zip-Lock Bag

Investigator: I attest that these samples were collected in accordance with standard EI field sampling procedures.

Sampler's Name (EI):	Received by (SGS):
Print: Ian Watts	Print: Alex. S
Signature:	Signature:
Date: 9/06/2020	Date: 10/06 14:00

IMPORTANT:
Please e-mail laboratory results to: lab@eiaustralia.com.au

Report with EI Waste Classification Table ☐

Sampler's Comments:
Please test PH/EC in 1:5 (soil:water)

eiaustralia
Contamination | Remediation | Geotechnical
Suite 6.01, 55 Miller Street,
PYRMONT NSW 2009
Ph: 9516 0722
lab@eiaustralia.com.au

SAMPLE RECEIPT ADVICE

SE207287A

CLIENT DETAILS

Contact	Ian Watts
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	ian.watts@eiaustralia.com.au
Project	**E24614 48 Cumberland StreetThe Rocks**
Order Number	**E24614**
Samples	13

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Wed 10/6/2020
Report Due	Wed 17/6/2020
SGS Reference	**SE207287A**

SUBMISSION DETAILS

This is to confirm that 13 samples were received on Wednesday 10/6/2020. Results are expected to be ready by COB Wednesday 17/6/2020. Please quote SGS reference SE207287A 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	2 Soil
Date documentation received	10/6/2020	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	7.5°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

SE207287A

CLIENT DETAILS

Client EI AUSTRALIA

Project E24614 48 Cumberland StreetThe Rocks

SUMMARY OF ANALYSIS

No.	Sample ID	Conductivity and TDS by Calculation - Soil	pH in soil (1:5)	Soluble Anions (1:5) in Soil by Ion Chromatography
003	BH3_2.45-2.49	1	1	2
008	BH7_0.35-0.45	1	1	2

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

Sheet 1 of 1

Site: 2-60 Cumberland St, The Rocks

Project No: E24614

Laboratory: SGS Australia
Unit 16, 33 Maddox Street,
ALEXANDRIA NSW 2015
P: 02 8594 0400 F: 02 8594 0499

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	Sample Matrix: WATER	SOIL	OTHERS (i.e. Fibro, Paint, etc.)	Analysis: HM[A] /TRH/BTEX/PAHs OCP/OP/PCB/Asbestos	HM[A] /TRH/BTEX/PAHs	HM[A] /TRH/BTEX	BTEX	VOCs (Total phenols*)	Asbestos	Asbestos Quantification	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	Dewatering Suite	sPOCAS	PFAS	HOLD			TCLP HM[B] / PAH
GW_BH6M-1	1	S,P, 2x VC	19/06/20	AM	X				X			X											
GW_BH8M-1	2	↓	↓	↓	↓				↓			↓											
GW_BH11M-1	3	↓	↓	↓	↓				↓			↓											
GW_QD-1	4	↓	↓	↓	↓					X													
GW_QR-1	5	↓	↓	↓	↓					X													
GW_QRB-1		↓	↓	↓	↓														X				
GW_TripBlank	6	VC	lab prepared	↓	↓						X												
GW_TripSpike	7	↓	↓	↓	↓						X												

SGS EHS Sydney COC
SE207730

Comments

HM[A]
Arsenic
Cadmium
Chromium
Copper
Lead
Mercury
Nickel
Zinc

HM[B]
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

Dewatering Suite
pH & EC
TDS / Turbidity NTU
Hardness
Total Cyanide
Metals (Al, As, Cd, Cr, Cu, Pb, Hg, Ni, Zn)
TRH (F1, F2, F3, F4)
BTEX
PAH
Total Phenol

LABORATORY TURNAROUND

- [x] Standard
- [ ] 24 Hours
- [ ] 48 Hours
- [ ] 72 Hours
- [ ] Other ____

Container Type:
J= solvent washed, acid rinsed, Teflon sealed, glass jar
S= solvent washed, acid rinsed glass bottle
P= natural HDPE plastic bottle
VC= glass vial, Teflon Septum
ZLB = Zip-Lock Bag

Investigator: I attest that these samples were collected in accordance with standard EI field sampling procedures.

Report with EI Waste Classification Table ☐

Sampler's Name (EI):	Received by (SGS):
Print: Emily Scanlon	Print:
Signature:	Signature:
Date: 19/6/20	Date: 19/6 15:15

Sampler's Comments:

Please cc:
Luiza Barbosa

* include chlorinated hydrocarbons pls

eiaustralia
Contamination | Remediation | Geotechnical

Suite 6.01, 55 Miller Street,
PYRMONT NSW 2009
Ph: 9516 0722
lab@eiaustralia.com.au

COC March 2018 FORM v.4 - SGS

IMPORTANT:
Please e-mail laboratory results to: lab@eiaustralia.com.au

SAMPLE RECEIPT ADVICE

SE207730

CLIENT DETAILS

Contact	Emily Scanlon
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 9516 0722
Facsimile	(Not specified)
Email	emily.scanlon@eiaustralia.com.au
Project	**E24614 2-60 Cumberland St, The Rocks**
Order Number	**E24614**
Samples	7

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Fri 19/6/2020
Report Due	Fri 26/6/2020
SGS Reference	**SE207730**

SUBMISSION DETAILS

This is to confirm that 7 samples were received on Friday 19/6/2020. Results are expected to be ready by COB Friday 26/6/2020. Please quote SGS reference SE207730 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	7 Water
Date documentation received	19/6/2020	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	12°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

1 water sample has been placed on hold as no tests have been assigned for it. This sample will not be processed.
GW-QT1-1 additional sample.

SAMPLE RECEIPT ADVICE

SE207730

CLIENT DETAILS

Client EI AUSTRALIA

Project E24614 2-60 Cumberland St, The Rocks

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury (dissolved) in Water	PAH (Polynuclear Aromatic Hydrocarbons) in Water	Total Phenolics in Water	Trace Metals (Dissolved) in Water by ICPMS	TRH (Total Recoverable Hydrocarbons) in Water	VOCs in Water	Volatile Petroleum Hydrocarbons in Water
001	GW_BH6m-1	1	22	1	7	9	78	7
002	GW_BH8M-1	1	22	1	7	9	78	7
003	GW_BH11M-1	1	22	1	7	9	78	7
004	GW_QD-1	1	-	-	7	9	11	7
005	GW_QR-1	1	-	-	7	9	11	7
006	GW_Trip Blank	-	-	-	-	-	11	-
007	GW_Trip Spike	-	-	-	-	-	11	-

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 .

Sheet 1 of 1

Site: 2-60 Cumberland St. The Rocks

Project No: E24614

Laboratory: **Envirolab Services**
12 Ashley Street,
CHATSWOOD NSW 2067
P: 02 9910 6200

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	Sample Matrix: WATER	SOIL	OTHERS (i.e. Fibro, Paint, etc.)	HM [A] /TRH/BTEX/PAHs OCP/OP/PCB/Asbestos	HM [A] /TRH/BTEX/PAHs	HM [A] /TRH/BTEX	BTEX	VOCs	Asbestos	Asbestos Quantification	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	Dewatering Suite	sPOCAS	PFAS			TCLP HM [B] / PAH
GW-QT-1	(1)	S,P, 2x VC	19/6/20	AM	X					X												

ENVIROLAB

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 245272
Date Received: 19.6.20
Time Received: 1646
Received by: KG
Temp: Cool/Ambient 9.1c
Cooling: Ice/Icepack
Security: Intact/Broken/None

Comments

HM [A]
Arsenic
Cadmium
Chromium
Copper
Lead
Mercury
Nickel
Zinc

HM [B]
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

Dewatering Suite
pH & EC
TDS / Turbidity NTU
Hardness
Total Cyanide
Metals (Al, As, Cd, Cr, Cu, Pb, Hg, Ni, Zn)
TRH (F1, F2, F3, F4)
BTEX
PAH
Total Phenol

LABORATORY TURNAROUND

- [X] Standard
- [ ] 24 Hours
- [ ] 48 Hours
- [ ] 72 Hours
- [ ] Other_____

Container Type:
J= solvent washed, acid rinsed,Teflon sealed, glass jar
S= solvent washed, acid rinsed glass bottle
P= natural HDPE plastic bottle
VC= glass vial, Teflon Septum
ZLB = Zip-Lock Bag

Investigator: I attest that these samples were collected in accordance with standard EI field sampling procedures.

Report with EI Waste Classification Table ☐

Sampler's Name (EI):	Received by (Envirolab)
Print: Emily Scanlon	Print: K-Gore
Signature:	Signature:
Date: 19/6/20	Date: 19.06.2020

Sampler's Comments:

Please cc:
Luiza Barbosa

IMPORTANT:
Please e-mail laboratory results to: lab@eiaustralia.com.au

eiaustralia
Contamination | Remediation | Geotechnical

Suite 6.01, 55 Miller Street,
PYRMONT NSW 2009
Ph: 9516 0722
lab@eiaustralia.com.au

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details

Client	EI Australia
Attention	Luiza Barbosa, Emily Scanlon

Sample Login Details

Your reference	E24614, The Rocks
Envirolab Reference	245272
Date Sample Received	19/06/2020
Date Instructions Received	19/06/2020
Date Results Expected to be Reported	26/06/2020

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	1 Water
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	9.1
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Nil

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@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the 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
customerservice@envirolab.com.au
www.envirolab.com.au

Sample ID	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	HM in water - dissolved
GW-QT1	✓	✓	✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

Appendix G – Laboratory Analytical Reports

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Kate Warton
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	Kate.Warton@eiaustralia.com.au
Project	**E24614.E02 2-60 Cumberland St, The Rocks**
Order Number	**E24614.E02**
Samples	13

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE207287 R0**
Date Received	9/6/2020
Date Reported	16/6/2020

COMMENTS

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

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

Asbestos analysed by Approved Identifier Yusuf Kuthpudin.

SIGNATORIES

Dong LIANG
Metals/Inorganics Team Leader

Kamrul AHSAN
Senior Chemist

Ly Kim HA
Organic Section Head

Ravee SIVASUBRAMANIAM
Hygiene Team Leader

VOC's in Soil [AN433] Tested: 11/6/2020

PARAMETER	UOM	LOR	BH1_0.1-0.2 SOIL - 2/6/2020 SE207287.001	BH2_0.5-0.6 SOIL - 4/6/2020 SE207287.002	BH3_2.45-2.49 SOIL - 4/6/2020 SE207287.003	BH4_0.2-0.3 SOIL - 5/6/2020 SE207287.004	BH5_0.2-0.3 SOIL - 4/6/2020 SE207287.005
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

PARAMETER	UOM	LOR	BH6M_0.4-0.5 SOIL - 4/6/2020 SE207287.006	BH6M_1.89-1.97 SOIL - 4/6/2020 SE207287.007	BH7_0.35-0.45 SOIL - 5/6/2020 SE207287.008	BH8M_1.55-1.62 SOIL - 3/6/2020 SE207287.009	BH9_0.16-0.28 SOIL - 2/6/2020 SE207287.010
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

PARAMETER	UOM	LOR	BH9_0.42-0.5 SOIL - 2/6/2020 SE207287.011	BH10_0.15-0.25 SOIL - 2/6/2020 SE207287.012	BH11M_0.66-0.71 SOIL - 2/6/2020 SE207287.013
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1

Volatile Petroleum Hydrocarbons in Soil [AN433] Tested: 11/6/2020

PARAMETER	UOM	LOR	BH1_0.1-0.2 SOIL - 2/6/2020 SE207287.001	BH2_0.5-0.6 SOIL - 4/6/2020 SE207287.002	BH3_2.45-2.49 SOIL - 4/6/2020 SE207287.003	BH4_0.2-0.3 SOIL - 5/6/2020 SE207287.004	BH5_0.2-0.3 SOIL - 4/6/2020 SE207287.005
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	BH6M_0.4-0.5 SOIL - 4/6/2020 SE207287.006	BH6M_1.89-1.97 SOIL - 4/6/2020 SE207287.007	BH7_0.35-0.45 SOIL - 5/6/2020 SE207287.008	BH8M_1.55-1.62 SOIL - 3/6/2020 SE207287.009	BH9_0.16-0.28 SOIL - 2/6/2020 SE207287.010
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	BH9_0.42-0.5 SOIL - 2/6/2020 SE207287.011	BH10_0.15-0.25 SOIL - 2/6/2020 SE207287.012	BH11M_0.66-0.71 SOIL - 2/6/2020 SE207287.013
TRH C6-C9	mg/kg	20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25

TRH (Total Recoverable Hydrocarbons) in Soil [AN403] Tested: 11/6/2020

PARAMETER	UOM	LOR	BH1_0.1-0.2 SOIL - 2/6/2020 SE207287.001	BH2_0.5-0.6 SOIL - 4/6/2020 SE207287.002	BH3_2.45-2.49 SOIL - 4/6/2020 SE207287.003	BH4_0.2-0.3 SOIL - 5/6/2020 SE207287.004	BH5_0.2-0.3 SOIL - 4/6/2020 SE207287.005
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	59	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110
TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	BH6M_0.4-0.5 SOIL - 4/6/2020 SE207287.006	BH6M_1.89-1.97 SOIL - 4/6/2020 SE207287.007	BH7_0.35-0.45 SOIL - 5/6/2020 SE207287.008	BH8M_1.55-1.62 SOIL - 3/6/2020 SE207287.009	BH9_0.16-0.28 SOIL - 2/6/2020 SE207287.010
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110
TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	BH9_0.42-0.5 SOIL - 2/6/2020 SE207287.011	BH10_0.15-0.25 SOIL - 2/6/2020 SE207287.012	BH11M_0.66-0.71 SOIL - 2/6/2020 SE207287.013
TRH C10-C14	mg/kg	20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110
TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 11/6/2020

PARAMETER	UOM	LOR	BH1_0.1-0.2 SOIL - 2/6/2020 SE207287.001	BH2_0.5-0.6 SOIL - 4/6/2020 SE207287.002	BH3_2.45-2.49 SOIL - 4/6/2020 SE207287.003	BH4_0.2-0.3 SOIL - 5/6/2020 SE207287.004	BH5_0.2-0.3 SOIL - 4/6/2020 SE207287.005
Naphthalene	mg/kg	0.1	<0.1	0.2	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	0.4	<0.1	0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	0.2	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	2.1	<0.1	0.3	<0.1
Anthracene	mg/kg	0.1	<0.1	0.9	<0.1	0.2	<0.1
Fluoranthene	mg/kg	0.1	<0.1	3.9	<0.1	0.9	<0.1
Pyrene	mg/kg	0.1	<0.1	4.0	<0.1	1.0	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	1.9	<0.1	0.4	<0.1
Chrysene	mg/kg	0.1	<0.1	1.5	<0.1	0.4	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	1.6	<0.1	0.5	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	1.1	<0.1	0.2	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	1.5	<0.1	0.4	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	0.9	<0.1	0.3	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	0.9	<0.1	0.3	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	2.2	<0.2	0.6	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	2.2	<0.3	0.7	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	2.2	<0.2	0.6	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	21	<0.8	5.0	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	21	<0.8	5.0	<0.8

PARAMETER	UOM	LOR	BH6M_0.4-0.5 SOIL - 4/6/2020 SE207287.006	BH6M_1.89-1.97 SOIL - 4/6/2020 SE207287.007	BH7_0.35-0.45 SOIL - 5/6/2020 SE207287.008	BH8M_1.55-1.62 SOIL - 3/6/2020 SE207287.009	BH9_0.16-0.28 SOIL - 2/6/2020 SE207287.010
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	0.2	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 11/6/2020 (continued)

PARAMETER	UOM	LOR	BH9_0.42-0.5 SOIL - 2/6/2020 SE207287.011	BH10_0.15-0.25 SOIL - 2/6/2020 SE207287.012	BH11M_0.66-0.71 SOIL - 2/6/2020 SE207287.013
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	**0.1**	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	**0.5**	<0.1
Anthracene	mg/kg	0.1	<0.1	**0.3**	<0.1
Fluoranthene	mg/kg	0.1	<0.1	**2.0**	<0.1
Pyrene	mg/kg	0.1	<0.1	**2.1**	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	**0.9**	<0.1
Chrysene	mg/kg	0.1	<0.1	**0.8**	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	**1.0**	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	**0.5**	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	**0.8**	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	**0.6**	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	**0.7**	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	**1.1**	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	**1.2**	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	**1.2**	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	**10**	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	**10**	<0.8

OC Pesticides in Soil [AN420] Tested: 11/6/2020

PARAMETER	UOM	LOR	BH1_0.1-0.2 SOIL - 2/6/2020 SE207287.001	BH2_0.5-0.6 SOIL - 4/6/2020 SE207287.002	BH3_2.45-2.49 SOIL - 4/6/2020 SE207287.003	BH4_0.2-0.3 SOIL - 5/6/2020 SE207287.004	BH5_0.2-0.3 SOIL - 4/6/2020 SE207287.005
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	-	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	-	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	-	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	-	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	-	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	-	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	-	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	-	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	-	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	-	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	-	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	-	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	-	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	-	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	-	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	-	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	-	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	-	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	-	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	-	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	-	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	-	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	-	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	<1	-	<1	<1

OC Pesticides in Soil [AN420] Tested: 11/6/2020 (continued)

PARAMETER	UOM	LOR	BH6M_0.4-0.5 SOIL - 4/6/2020 SE207287.006	BH6M_1.89-1.97 SOIL - 4/6/2020 SE207287.007	BH7_0.35-0.45 SOIL - 5/6/2020 SE207287.008	BH8M_1.55-1.62 SOIL - 3/6/2020 SE207287.009	BH9_0.16-0.28 SOIL - 2/6/2020 SE207287.010
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	-	<0.1	-	<0.1
Alpha BHC	mg/kg	0.1	<0.1	-	<0.1	-	<0.1
Lindane	mg/kg	0.1	<0.1	-	<0.1	-	<0.1
Heptachlor	mg/kg	0.1	<0.1	-	<0.1	-	<0.1
Aldrin	mg/kg	0.1	<0.1	-	<0.1	-	<0.1
Beta BHC	mg/kg	0.1	<0.1	-	<0.1	-	<0.1
Delta BHC	mg/kg	0.1	<0.1	-	<0.1	-	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	-	<0.1	-	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	-	<0.1	-	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	-	<0.2	-	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	-	<0.1	-	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	-	<0.1	-	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	-	<0.1	-	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	-	<0.1	-	<0.1
Dieldrin	mg/kg	0.2	<0.2	-	<0.2	-	<0.2
Endrin	mg/kg	0.2	<0.2	-	<0.2	-	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	-	<0.1	-	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	-	<0.1	-	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	-	<0.2	-	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	-	<0.1	-	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	-	<0.1	-	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	-	<0.1	-	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	-	<0.1	-	<0.1
Methoxychlor	mg/kg	0.1	<0.1	-	<0.1	-	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	-	<0.1	-	<0.1
Isodrin	mg/kg	0.1	<0.1	-	<0.1	-	<0.1
Mirex	mg/kg	0.1	<0.1	-	<0.1	-	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	-	<1	-	<1

OC Pesticides in Soil [AN420] Tested: 11/6/2020 (continued)

PARAMETER	UOM	LOR	BH9_0.42-0.5 SOIL - 2/6/2020 SE207287.011	BH10_0.15-0.25 SOIL - 2/6/2020 SE207287.012	BH11M_0.66-0.71 SOIL - 2/6/2020 SE207287.013
Hexachlorobenzene (HCB)	mg/kg	0.1	-	<0.1	-
Alpha BHC	mg/kg	0.1	-	<0.1	-
Lindane	mg/kg	0.1	-	<0.1	-
Heptachlor	mg/kg	0.1	-	<0.1	-
Aldrin	mg/kg	0.1	-	<0.1	-
Beta BHC	mg/kg	0.1	-	<0.1	-
Delta BHC	mg/kg	0.1	-	<0.1	-
Heptachlor epoxide	mg/kg	0.1	-	<0.1	-
o,p'-DDE	mg/kg	0.1	-	<0.1	-
Alpha Endosulfan	mg/kg	0.2	-	<0.2	-
Gamma Chlordane	mg/kg	0.1	-	<0.1	-
Alpha Chlordane	mg/kg	0.1	-	<0.1	-
trans-Nonachlor	mg/kg	0.1	-	<0.1	-
p,p'-DDE	mg/kg	0.1	-	<0.1	-
Dieldrin	mg/kg	0.2	-	<0.2	-
Endrin	mg/kg	0.2	-	<0.2	-
o,p'-DDD	mg/kg	0.1	-	<0.1	-
o,p'-DDT	mg/kg	0.1	-	<0.1	-
Beta Endosulfan	mg/kg	0.2	-	<0.2	-
p,p'-DDD	mg/kg	0.1	-	<0.1	-
p,p'-DDT	mg/kg	0.1	-	<0.1	-
Endosulfan sulphate	mg/kg	0.1	-	<0.1	-
Endrin Aldehyde	mg/kg	0.1	-	<0.1	-
Methoxychlor	mg/kg	0.1	-	<0.1	-
Endrin Ketone	mg/kg	0.1	-	<0.1	-
Isodrin	mg/kg	0.1	-	<0.1	-
Mirex	mg/kg	0.1	-	<0.1	-
Total CLP OC Pesticides	mg/kg	1	-	<1	-

OP Pesticides in Soil [AN420] Tested: 11/6/2020

PARAMETER	UOM	LOR	BH1_0.1-0.2 SOIL - 2/6/2020 SE207287.001	BH2_0.5-0.6 SOIL - 4/6/2020 SE207287.002	BH4_0.2-0.3 SOIL - 5/6/2020 SE207287.004	BH5_0.2-0.3 SOIL - 4/6/2020 SE207287.005	BH6M_0.4-0.5 SOIL - 4/6/2020 SE207287.006
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	<1.7	<1.7	<1.7

PARAMETER	UOM	LOR	BH7_0.35-0.45 SOIL - 5/6/2020 SE207287.008	BH9_0.16-0.28 SOIL - 2/6/2020 SE207287.010	BH10_0.15-0.25 SOIL - 2/6/2020 SE207287.012
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	<1.7

PCBs in Soil [AN420] Tested: 11/6/2020

PARAMETER	UOM	LOR	BH1_0.1-0.2 SOIL - 2/6/2020 SE207287.001	BH2_0.5-0.6 SOIL - 4/6/2020 SE207287.002	BH3_2.45-2.49 SOIL - 4/6/2020 SE207287.003	BH4_0.2-0.3 SOIL - 5/6/2020 SE207287.004	BH5_0.2-0.3 SOIL - 4/6/2020 SE207287.005
Arochlor 1016	mg/kg	0.2	<0.2	<0.2	-	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	-	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	-	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	-	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	-	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	-	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	-	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	-	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	-	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1	-	<1	<1

PARAMETER	UOM	LOR	BH6M_0.4-0.5 SOIL - 4/6/2020 SE207287.006	BH6M_1.89-1.97 SOIL - 4/6/2020 SE207287.007	BH7_0.35-0.45 SOIL - 5/6/2020 SE207287.008	BH8M_1.55-1.62 SOIL - 3/6/2020 SE207287.009	BH9_0.16-0.28 SOIL - 2/6/2020 SE207287.010
Arochlor 1016	mg/kg	0.2	<0.2	-	<0.2	-	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	-	<0.2	-	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	-	<0.2	-	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	-	<0.2	-	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	-	<0.2	-	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	-	<0.2	-	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	-	<0.2	-	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	-	<0.2	-	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	-	<0.2	-	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	-	<1	-	<1

PARAMETER	UOM	LOR	BH9_0.42-0.5 SOIL - 2/6/2020 SE207287.011	BH10_0.15-0.25 SOIL - 2/6/2020 SE207287.012	BH11M_0.66-0.71 SOIL - 2/6/2020 SE207287.013
Arochlor 1016	mg/kg	0.2	-	<0.2	-
Arochlor 1221	mg/kg	0.2	-	<0.2	-
Arochlor 1232	mg/kg	0.2	-	<0.2	-
Arochlor 1242	mg/kg	0.2	-	<0.2	-
Arochlor 1248	mg/kg	0.2	-	<0.2	-
Arochlor 1254	mg/kg	0.2	-	<0.2	-
Arochlor 1260	mg/kg	0.2	-	<0.2	-
Arochlor 1262	mg/kg	0.2	-	<0.2	-
Arochlor 1268	mg/kg	0.2	-	<0.2	-
Total PCBs (Arochlors)	mg/kg	1	-	<1	-

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 10/6/2020

PARAMETER	UOM	LOR	BH1_0.1-0.2 SOIL - 2/6/2020 SE207287.001	BH2_0.5-0.6 SOIL - 4/6/2020 SE207287.002	BH3_2.45-2.49 SOIL - 4/6/2020 SE207287.003	BH4_0.2-0.3 SOIL - 5/6/2020 SE207287.004	BH5_0.2-0.3 SOIL - 4/6/2020 SE207287.005
Arsenic, As	mg/kg	1	<1	3	<1	<1	<1
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	0.6	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	1.4	5.3	2.2	3.7	3.2
Copper, Cu	mg/kg	0.5	13	13	2.4	6.7	11
Lead, Pb	mg/kg	1	8	48	15	26	3
Nickel, Ni	mg/kg	0.5	1.6	2.5	1.3	2.1	26
Zinc, Zn	mg/kg	2	5.7	63	100	29	13

PARAMETER	UOM	LOR	BH6M_0.4-0.5 SOIL - 4/6/2020 SE207287.006	BH6M_1.89-1.97 SOIL - 4/6/2020 SE207287.007	BH7_0.35-0.45 SOIL - 5/6/2020 SE207287.008	BH8M_1.55-1.62 SOIL - 3/6/2020 SE207287.009	BH9_0.16-0.28 SOIL - 2/6/2020 SE207287.010
Arsenic, As	mg/kg	1	<1	<1	<1	<1	<1
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	4.3	2.7	3.2	2.6	4.0
Copper, Cu	mg/kg	0.5	2.4	<0.5	8.0	<0.5	22
Lead, Pb	mg/kg	1	9	3	6	2	5
Nickel, Ni	mg/kg	0.5	3.2	<0.5	7.6	<0.5	33
Zinc, Zn	mg/kg	2	9.5	<2.0	12	<2.0	30

PARAMETER	UOM	LOR	BH9_0.42-0.5 SOIL - 2/6/2020 SE207287.011	BH10_0.15-0.25 SOIL - 2/6/2020 SE207287.012	BH11M_0.66-0.71 SOIL - 2/6/2020 SE207287.013
Arsenic, As	mg/kg	1	<1	1	<1
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	5.7	6.1	4.2
Copper, Cu	mg/kg	0.5	<0.5	10	<0.5
Lead, Pb	mg/kg	1	7	45	3
Nickel, Ni	mg/kg	0.5	1.6	9.5	1.2
Zinc, Zn	mg/kg	2	61	61	32

Mercury in Soil [AN312] Tested: 10/6/2020

PARAMETER	UOM	LOR	BH1_0.1-0.2 SOIL - 2/6/2020 SE207287.001	BH2_0.5-0.6 SOIL - 4/6/2020 SE207287.002	BH3_2.45-2.49 SOIL - 4/6/2020 SE207287.003	BH4_0.2-0.3 SOIL - 5/6/2020 SE207287.004	BH5_0.2-0.3 SOIL - 4/6/2020 SE207287.005
Mercury	mg/kg	0.05	<0.05	**0.17**	<0.05	**0.15**	<0.05

PARAMETER	UOM	LOR	BH6M_0.4-0.5 SOIL - 4/6/2020 SE207287.006	BH6M_1.89-1.97 SOIL - 4/6/2020 SE207287.007	BH7_0.35-0.45 SOIL - 5/6/2020 SE207287.008	BH8M_1.55-1.62 SOIL - 3/6/2020 SE207287.009	BH9_0.16-0.28 SOIL - 2/6/2020 SE207287.010
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	BH9_0.42-0.5 SOIL - 2/6/2020 SE207287.011	BH10_0.15-0.25 SOIL - 2/6/2020 SE207287.012	BH11M_0.66-0.71 SOIL - 2/6/2020 SE207287.013
Mercury	mg/kg	0.05	<0.05	**0.06**	<0.05

Moisture Content [AN002] Tested: 11/6/2020

PARAMETER	UOM	LOR	BH1_0.1-0.2 SOIL - 2/6/2020 SE207287.001	BH2_0.5-0.6 SOIL - 4/6/2020 SE207287.002	BH3_2.45-2.49 SOIL - 4/6/2020 SE207287.003	BH4_0.2-0.3 SOIL - 5/6/2020 SE207287.004	BH5_0.2-0.3 SOIL - 4/6/2020 SE207287.005
% Moisture	%w/w	1	3.3	17.5	5.2	9.6	8.4

PARAMETER	UOM	LOR	BH6M_0.4-0.5 SOIL - 4/6/2020 SE207287.006	BH6M_1.89-1.97 SOIL - 4/6/2020 SE207287.007	BH7_0.35-0.45 SOIL - 5/6/2020 SE207287.008	BH8M_1.55-1.62 SOIL - 3/6/2020 SE207287.009	BH9_0.16-0.28 SOIL - 2/6/2020 SE207287.010
% Moisture	%w/w	1	8.5	5.6	6.2	6.3	8.1

PARAMETER	UOM	LOR	BH9_0.42-0.5 SOIL - 2/6/2020 SE207287.011	BH10_0.15-0.25 SOIL - 2/6/2020 SE207287.012	BH11M_0.66-0.71 SOIL - 2/6/2020 SE207287.013
% Moisture	%w/w	1	6.4	10.6	5.0

Fibre Identification in soil [AN602] Tested: 15/6/2020

PARAMETER	UOM	LOR	BH1_0.1-0.2 SOIL - 2/6/2020 SE207287.001	BH2_0.5-0.6 SOIL - 4/6/2020 SE207287.002	BH4_0.2-0.3 SOIL - 5/6/2020 SE207287.004	BH5_0.2-0.3 SOIL - 4/6/2020 SE207287.005	BH6M_0.4-0.5 SOIL - 4/6/2020 SE207287.006
Asbestos Detected	No unit	-	No	No	No	No	No
Estimated Fibres*	%w/w	0.01	<0.01	<0.01	<0.01	<0.01	<0.01

PARAMETER	UOM	LOR	BH7_0.35-0.45 SOIL - 5/6/2020 SE207287.008	BH9_0.16-0.28 SOIL - 2/6/2020 SE207287.010	BH10_0.15-0.25 SOIL - 2/6/2020 SE207287.012
Asbestos Detected	No unit	-	No	No	No
Estimated Fibres*	%w/w	0.01	<0.01	<0.01	<0.01

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.
AN312	Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid , mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser . Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is reported directly and also corrected by subtracting Naphthalene (from VOC method AN433) where available.
AN403	Additionally, the volatile C6-C9 fraction may be determined by a purge and trap technique and GC /MS because of the potential for volatiles loss. Total Recoverable Hydrocarbons - Silica (TRH-Si) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents .
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup /fractionation techniques. Reference USEPA 3510B, 8015B.
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN420	SVOC Compounds: Semi-Volatile Organic Compounds (SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols in soils, sediments and waters are determined by GCMS /ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN433	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.
AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602	Fibres/material that cannot be unequivocably identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf) The fibres detected may or may not be asbestos fibres.
AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples, Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection limit of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."
AN602	The sample can be reported “no asbestos found at the reporting limit of 0.1 g/kg” (<0.01%w/w) where AN602 section 4.5 of this method has been followed, and if- (a) no trace asbestos fibres have been detected (i.e. no ‘respirable ’ fibres): (b) the estimated weight of non-respirable asbestos fibre bundles and/or the estimated weight of asbestos in asbestos-containing materials are found to be less than 0.1g/kg: and (c) these non-respirable asbestos fibre bundles and/or the asbestos containing materials are only visible under stereo-microscope viewing conditions.

FOOTNOTES

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

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the " Total" LOR will be the sum of those two LORs.

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

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:

a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au/en-gb/environment-health-and-safety.

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Kate Warton
Client	EI AUSTRALIA
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Telephone	61 2 95160722
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Email	Kate.Warton@eiaustralia.com.au
Project	**E24614.E02 2-60 Cumberland St, The Rocks**
Order Number	**E24614.E02**
Samples	8

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	**SE207287 R0**
Date Received	09 Jun 2020
Date Reported	16 Jun 2020

COMMENTS

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

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

Asbestos analysed by Approved Identifier Yusuf Kuthpudin.

SIGNATORIES

Kamrul AHSAN
Senior Chemist

Ly Kim HA
Organic Section Head

Ravee SIVASUBRAMANIAM
Hygiene Team Leader

RESULTS

Fibre Identification in soil — Method AN602

Laboratory Reference	Client Reference	Matrix	Sample Description	Date Sampled	Fibre Identification	Est.%w/w*
SE207287.001	BH1_0.1-0.2	Soil	369g Sand,Soil,Rocks	02 Jun 2020	No Asbestos Found	<0.01
SE207287.002	BH2_0.5-0.6	Soil	218g Sand,Soil,Rocks ,Plant Matter	04 Jun 2020	No Asbestos Found Organic Fibres Detected	<0.01
SE207287.004	BH4_0.2-0.3	Soil	155g Sand,Soil,Rocks	05 Jun 2020	No Asbestos Found	<0.01
SE207287.005	BH5_0.2-0.3	Soil	322g Sand,Soil,Rocks	04 Jun 2020	No Asbestos Found	<0.01
SE207287.006	BH6M_0.4-0.5	Soil	307g Sand,Rocks	04 Jun 2020	No Asbestos Found	<0.01
SE207287.008	BH7_0.35-0.45	Soil	132g Sand,Rocks	05 Jun 2020	No Asbestos Found	<0.01
SE207287.010	BH9_0.16-0.28	Soil	245g Sand,Rocks	02 Jun 2020	No Asbestos Found	<0.01
SE207287.012	BH10_0.15-0.25	Soil	225g Sand,Soil,Rocks	02 Jun 2020	No Asbestos Found	<0.01

METHOD SUMMARY

SE207287 R0

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

FOOTNOTES

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

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

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

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

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

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au/en-gb/environment-health-and-safety .

STATEMENT OF QA/QC PERFORMANCE

SE207287 R0

CLIENT DETAILS

Contact	Kate Warton
Client	EI AUSTRALIA
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Facsimile	(Not specified)
Email	Kate.Warton@eiaustralia.com.au
Project	**E24614.E02 2-60 Cumberland St, The Rocks**
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Samples	13

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
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Email	au.environmental.sydney@sgs.com
SGS Reference	**SE207287 R0**
Date Received	09 Jun 2020
Date Reported	16 Jun 2020

COMMENTS

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

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

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

Duplicate	Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES	1 item

SAMPLE SUMMARY

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	13 Soil
Date documentation received	9/6/2020	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	7.5°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

HOLDING TIME SUMMARY

SE207287 R0

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

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

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

Fibre Identification in soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.1-0.2	SE207287.001	LB201898	02 Jun 2020	09 Jun 2020	02 Jun 2021	15 Jun 2020	02 Jun 2021	16 Jun 2020
BH2_0.5-0.6	SE207287.002	LB201898	04 Jun 2020	09 Jun 2020	04 Jun 2021	15 Jun 2020	04 Jun 2021	16 Jun 2020
BH4_0.2-0.3	SE207287.004	LB201898	05 Jun 2020	09 Jun 2020	05 Jun 2021	15 Jun 2020	05 Jun 2021	16 Jun 2020
BH5_0.2-0.3	SE207287.005	LB201898	04 Jun 2020	09 Jun 2020	04 Jun 2021	15 Jun 2020	04 Jun 2021	16 Jun 2020
BH6M_0.4-0.5	SE207287.006	LB201898	04 Jun 2020	09 Jun 2020	04 Jun 2021	15 Jun 2020	04 Jun 2021	16 Jun 2020
BH7_0.35-0.45	SE207287.008	LB201898	05 Jun 2020	09 Jun 2020	05 Jun 2021	15 Jun 2020	05 Jun 2021	16 Jun 2020
BH9_0.16-0.28	SE207287.010	LB201898	02 Jun 2020	09 Jun 2020	02 Jun 2021	15 Jun 2020	02 Jun 2021	16 Jun 2020
BH10_0.15-0.25	SE207287.012	LB201898	02 Jun 2020	09 Jun 2020	02 Jun 2021	15 Jun 2020	02 Jun 2021	16 Jun 2020

Mercury in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.1-0.2	SE207287.001	LB201657	02 Jun 2020	09 Jun 2020	30 Jun 2020	10 Jun 2020	30 Jun 2020	15 Jun 2020
BH2_0.5-0.6	SE207287.002	LB201657	04 Jun 2020	09 Jun 2020	02 Jul 2020	10 Jun 2020	02 Jul 2020	15 Jun 2020
BH3_2.45-2.49	SE207287.003	LB201657	04 Jun 2020	09 Jun 2020	02 Jul 2020	10 Jun 2020	02 Jul 2020	15 Jun 2020
BH4_0.2-0.3	SE207287.004	LB201657	05 Jun 2020	09 Jun 2020	03 Jul 2020	10 Jun 2020	03 Jul 2020	15 Jun 2020
BH5_0.2-0.3	SE207287.005	LB201657	04 Jun 2020	09 Jun 2020	02 Jul 2020	10 Jun 2020	02 Jul 2020	15 Jun 2020
BH6M_0.4-0.5	SE207287.006	LB201657	04 Jun 2020	09 Jun 2020	02 Jul 2020	10 Jun 2020	02 Jul 2020	15 Jun 2020
BH6M_1.89-1.97	SE207287.007	LB201657	04 Jun 2020	09 Jun 2020	02 Jul 2020	10 Jun 2020	02 Jul 2020	15 Jun 2020
BH7_0.35-0.45	SE207287.008	LB201657	05 Jun 2020	09 Jun 2020	03 Jul 2020	10 Jun 2020	03 Jul 2020	15 Jun 2020
BH8M_1.55-1.62	SE207287.009	LB201657	03 Jun 2020	09 Jun 2020	01 Jul 2020	10 Jun 2020	01 Jul 2020	15 Jun 2020
BH9_0.16-0.28	SE207287.010	LB201657	02 Jun 2020	09 Jun 2020	30 Jun 2020	10 Jun 2020	30 Jun 2020	15 Jun 2020
BH9_0.42-0.5	SE207287.011	LB201657	02 Jun 2020	09 Jun 2020	30 Jun 2020	10 Jun 2020	30 Jun 2020	15 Jun 2020
BH10_0.15-0.25	SE207287.012	LB201657	02 Jun 2020	09 Jun 2020	30 Jun 2020	10 Jun 2020	30 Jun 2020	15 Jun 2020
BH11M_0.66-0.71	SE207287.013	LB201657	02 Jun 2020	09 Jun 2020	30 Jun 2020	10 Jun 2020	30 Jun 2020	15 Jun 2020

Moisture Content

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.1-0.2	SE207287.001	LB201723	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	16 Jun 2020	15 Jun 2020
BH2_0.5-0.6	SE207287.002	LB201723	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	16 Jun 2020	15 Jun 2020
BH3_2.45-2.49	SE207287.003	LB201723	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	16 Jun 2020	15 Jun 2020
BH4_0.2-0.3	SE207287.004	LB201723	05 Jun 2020	09 Jun 2020	19 Jun 2020	11 Jun 2020	16 Jun 2020	15 Jun 2020
BH5_0.2-0.3	SE207287.005	LB201723	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	16 Jun 2020	15 Jun 2020
BH6M_0.4-0.5	SE207287.006	LB201723	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	16 Jun 2020	15 Jun 2020
BH6M_1.89-1.97	SE207287.007	LB201723	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	16 Jun 2020	15 Jun 2020
BH7_0.35-0.45	SE207287.008	LB201723	05 Jun 2020	09 Jun 2020	19 Jun 2020	11 Jun 2020	16 Jun 2020	15 Jun 2020
BH8M_1.55-1.62	SE207287.009	LB201723	03 Jun 2020	09 Jun 2020	17 Jun 2020	11 Jun 2020	16 Jun 2020	15 Jun 2020
BH9_0.16-0.28	SE207287.010	LB201723	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	16 Jun 2020	15 Jun 2020
BH9_0.42-0.5	SE207287.011	LB201723	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	16 Jun 2020	15 Jun 2020
BH10_0.15-0.25	SE207287.012	LB201723	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	16 Jun 2020	15 Jun 2020
BH11M_0.66-0.71	SE207287.013	LB201723	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	16 Jun 2020	15 Jun 2020

OC Pesticides in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.1-0.2	SE207287.001	LB201720	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH2_0.5-0.6	SE207287.002	LB201720	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH3_2.45-2.49	SE207287.003	LB201720	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH4_0.2-0.3	SE207287.004	LB201720	05 Jun 2020	09 Jun 2020	19 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH5_0.2-0.3	SE207287.005	LB201720	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH6M_0.4-0.5	SE207287.006	LB201720	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH6M_1.89-1.97	SE207287.007	LB201720	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH7_0.35-0.45	SE207287.008	LB201720	05 Jun 2020	09 Jun 2020	19 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH8M_1.55-1.62	SE207287.009	LB201720	03 Jun 2020	09 Jun 2020	17 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH9_0.16-0.28	SE207287.010	LB201720	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH9_0.42-0.5	SE207287.011	LB201720	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH10_0.15-0.25	SE207287.012	LB201720	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH11M_0.66-0.71	SE207287.013	LB201720	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020

OP Pesticides in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.1-0.2	SE207287.001	LB201720	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH2_0.5-0.6	SE207287.002	LB201720	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH3_2.45-2.49	SE207287.003	LB201720	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020

HOLDING TIME SUMMARY

SE207287 R0

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

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

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

OP Pesticides in Soil (continued)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH4_0.2-0.3	SE207287.004	LB201720	05 Jun 2020	09 Jun 2020	19 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH5_0.2-0.3	SE207287.005	LB201720	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH6M_0.4-0.5	SE207287.006	LB201720	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH6M_1.89-1.97	SE207287.007	LB201720	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH7_0.35-0.45	SE207287.008	LB201720	05 Jun 2020	09 Jun 2020	19 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH8M_1.55-1.62	SE207287.009	LB201720	03 Jun 2020	09 Jun 2020	17 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH9_0.16-0.28	SE207287.010	LB201720	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH9_0.42-0.5	SE207287.011	LB201720	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH10_0.15-0.25	SE207287.012	LB201720	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH11M_0.66-0.71	SE207287.013	LB201720	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.1-0.2	SE207287.001	LB201720	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH2_0.5-0.6	SE207287.002	LB201720	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH3_2.45-2.49	SE207287.003	LB201720	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH4_0.2-0.3	SE207287.004	LB201720	05 Jun 2020	09 Jun 2020	19 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH5_0.2-0.3	SE207287.005	LB201720	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH6M_0.4-0.5	SE207287.006	LB201720	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH6M_1.89-1.97	SE207287.007	LB201720	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH7_0.35-0.45	SE207287.008	LB201720	05 Jun 2020	09 Jun 2020	19 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH8M_1.55-1.62	SE207287.009	LB201720	03 Jun 2020	09 Jun 2020	17 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH9_0.16-0.28	SE207287.010	LB201720	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH9_0.42-0.5	SE207287.011	LB201720	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH10_0.15-0.25	SE207287.012	LB201720	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH11M_0.66-0.71	SE207287.013	LB201720	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020

PCBs in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.1-0.2	SE207287.001	LB201720	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH2_0.5-0.6	SE207287.002	LB201720	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH3_2.45-2.49	SE207287.003	LB201720	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH4_0.2-0.3	SE207287.004	LB201720	05 Jun 2020	09 Jun 2020	19 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH5_0.2-0.3	SE207287.005	LB201720	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH6M_0.4-0.5	SE207287.006	LB201720	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH6M_1.89-1.97	SE207287.007	LB201720	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH7_0.35-0.45	SE207287.008	LB201720	05 Jun 2020	09 Jun 2020	19 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH8M_1.55-1.62	SE207287.009	LB201720	03 Jun 2020	09 Jun 2020	17 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH9_0.16-0.28	SE207287.010	LB201720	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH9_0.42-0.5	SE207287.011	LB201720	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH10_0.15-0.25	SE207287.012	LB201720	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH11M_0.66-0.71	SE207287.013	LB201720	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020

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

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.1-0.2	SE207287.001	LB201654	02 Jun 2020	09 Jun 2020	29 Nov 2020	10 Jun 2020	29 Nov 2020	15 Jun 2020
BH2_0.5-0.6	SE207287.002	LB201654	04 Jun 2020	09 Jun 2020	01 Dec 2020	10 Jun 2020	01 Dec 2020	15 Jun 2020
BH3_2.45-2.49	SE207287.003	LB201654	04 Jun 2020	09 Jun 2020	01 Dec 2020	10 Jun 2020	01 Dec 2020	15 Jun 2020
BH4_0.2-0.3	SE207287.004	LB201654	05 Jun 2020	09 Jun 2020	02 Dec 2020	10 Jun 2020	02 Dec 2020	15 Jun 2020
BH5_0.2-0.3	SE207287.005	LB201654	04 Jun 2020	09 Jun 2020	01 Dec 2020	10 Jun 2020	01 Dec 2020	15 Jun 2020
BH6M_0.4-0.5	SE207287.006	LB201654	04 Jun 2020	09 Jun 2020	01 Dec 2020	10 Jun 2020	01 Dec 2020	15 Jun 2020
BH6M_1.89-1.97	SE207287.007	LB201654	04 Jun 2020	09 Jun 2020	01 Dec 2020	10 Jun 2020	01 Dec 2020	15 Jun 2020
BH7_0.35-0.45	SE207287.008	LB201654	05 Jun 2020	09 Jun 2020	02 Dec 2020	10 Jun 2020	02 Dec 2020	15 Jun 2020
BH8M_1.55-1.62	SE207287.009	LB201654	03 Jun 2020	09 Jun 2020	30 Nov 2020	10 Jun 2020	30 Nov 2020	15 Jun 2020
BH9_0.16-0.28	SE207287.010	LB201654	02 Jun 2020	09 Jun 2020	29 Nov 2020	10 Jun 2020	29 Nov 2020	15 Jun 2020
BH9_0.42-0.5	SE207287.011	LB201654	02 Jun 2020	09 Jun 2020	29 Nov 2020	10 Jun 2020	29 Nov 2020	15 Jun 2020
BH10_0.15-0.25	SE207287.012	LB201654	02 Jun 2020	09 Jun 2020	29 Nov 2020	10 Jun 2020	29 Nov 2020	15 Jun 2020
BH11M_0.66-0.71	SE207287.013	LB201654	02 Jun 2020	09 Jun 2020	29 Nov 2020	10 Jun 2020	29 Nov 2020	15 Jun 2020

TRH (Total Recoverable Hydrocarbons) in Soil

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

Sample Name	Sample No.	QC Ref

HOLDING TIME SUMMARY

SE207287 R0

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

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

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

TRH (Total Recoverable Hydrocarbons) in Soil (continued)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.1-0.2	SE207287.001	LB201720	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH2_0.5-0.6	SE207287.002	LB201720	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH3_2.45-2.49	SE207287.003	LB201720	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH4_0.2-0.3	SE207287.004	LB201720	05 Jun 2020	09 Jun 2020	19 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH5_0.2-0.3	SE207287.005	LB201720	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH6M_0.4-0.5	SE207287.006	LB201720	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH6M_1.89-1.97	SE207287.007	LB201720	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH7_0.35-0.45	SE207287.008	LB201720	05 Jun 2020	09 Jun 2020	19 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH8M_1.55-1.62	SE207287.009	LB201720	03 Jun 2020	09 Jun 2020	17 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH9_0.16-0.28	SE207287.010	LB201720	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH9_0.42-0.5	SE207287.011	LB201720	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH10_0.15-0.25	SE207287.012	LB201720	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020
BH11M_0.66-0.71	SE207287.013	LB201720	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	21 Jul 2020	16 Jun 2020

VOC's in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.1-0.2	SE207287.001	LB201716	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH2_0.5-0.6	SE207287.002	LB201716	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH3_2.45-2.49	SE207287.003	LB201716	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH4_0.2-0.3	SE207287.004	LB201716	05 Jun 2020	09 Jun 2020	19 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH5_0.2-0.3	SE207287.005	LB201716	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH6M_0.4-0.5	SE207287.006	LB201716	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH6M_1.89-1.97	SE207287.007	LB201716	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH7_0.35-0.45	SE207287.008	LB201716	05 Jun 2020	09 Jun 2020	19 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH8M_1.55-1.62	SE207287.009	LB201716	03 Jun 2020	09 Jun 2020	17 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH9_0.16-0.28	SE207287.010	LB201716	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH9_0.42-0.5	SE207287.011	LB201716	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH10_0.15-0.25	SE207287.012	LB201716	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH11M_0.66-0.71	SE207287.013	LB201716	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020

Volatile Petroleum Hydrocarbons in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.1-0.2	SE207287.001	LB201716	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH2_0.5-0.6	SE207287.002	LB201716	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH3_2.45-2.49	SE207287.003	LB201716	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH4_0.2-0.3	SE207287.004	LB201716	05 Jun 2020	09 Jun 2020	19 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH5_0.2-0.3	SE207287.005	LB201716	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH6M_0.4-0.5	SE207287.006	LB201716	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH6M_1.89-1.97	SE207287.007	LB201716	04 Jun 2020	09 Jun 2020	18 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH7_0.35-0.45	SE207287.008	LB201716	05 Jun 2020	09 Jun 2020	19 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH8M_1.55-1.62	SE207287.009	LB201716	03 Jun 2020	09 Jun 2020	17 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH9_0.16-0.28	SE207287.010	LB201716	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH9_0.42-0.5	SE207287.011	LB201716	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH10_0.15-0.25	SE207287.012	LB201716	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020
BH11M_0.66-0.71	SE207287.013	LB201716	02 Jun 2020	09 Jun 2020	16 Jun 2020	11 Jun 2020	21 Jul 2020	15 Jun 2020

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

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

OC Pesticides in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH1_0.1-0.2	SE207287.001	%	60 - 130%	109
	BH2_0.5-0.6	SE207287.002	%	60 - 130%	123
	BH4_0.2-0.3	SE207287.004	%	60 - 130%	109
	BH5_0.2-0.3	SE207287.005	%	60 - 130%	99
	BH6M_0.4-0.5	SE207287.006	%	60 - 130%	121
	BH7_0.35-0.45	SE207287.008	%	60 - 130%	109
	BH9_0.16-0.28	SE207287.010	%	60 - 130%	121
	BH10_0.15-0.25	SE207287.012	%	60 - 130%	120

OP Pesticides in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH1_0.1-0.2	SE207287.001	%	60 - 130%	73
	BH2_0.5-0.6	SE207287.002	%	60 - 130%	77
	BH4_0.2-0.3	SE207287.004	%	60 - 130%	76
	BH5_0.2-0.3	SE207287.005	%	60 - 130%	78
	BH6M_0.4-0.5	SE207287.006	%	60 - 130%	76
	BH7_0.35-0.45	SE207287.008	%	60 - 130%	76
	BH9_0.16-0.28	SE207287.010	%	60 - 130%	73
	BH10_0.15-0.25	SE207287.012	%	60 - 130%	75
d14-p-terphenyl (Surrogate)	BH1_0.1-0.2	SE207287.001	%	60 - 130%	105
	BH2_0.5-0.6	SE207287.002	%	60 - 130%	95
	BH4_0.2-0.3	SE207287.004	%	60 - 130%	89
	BH5_0.2-0.3	SE207287.005	%	60 - 130%	97
	BH6M_0.4-0.5	SE207287.006	%	60 - 130%	125
	BH7_0.35-0.45	SE207287.008	%	60 - 130%	92
	BH9_0.16-0.28	SE207287.010	%	60 - 130%	129
	BH10_0.15-0.25	SE207287.012	%	60 - 130%	99

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH1_0.1-0.2	SE207287.001	%	70 - 130%	73
	BH2_0.5-0.6	SE207287.002	%	70 - 130%	77
	BH3_2.45-2.49	SE207287.003	%	70 - 130%	80
	BH4_0.2-0.3	SE207287.004	%	70 - 130%	76
	BH5_0.2-0.3	SE207287.005	%	70 - 130%	78
	BH6M_0.4-0.5	SE207287.006	%	70 - 130%	76
	BH6M_1.89-1.97	SE207287.007	%	70 - 130%	75
	BH7_0.35-0.45	SE207287.008	%	70 - 130%	76
	BH8M_1.55-1.62	SE207287.009	%	70 - 130%	76
	BH9_0.16-0.28	SE207287.010	%	70 - 130%	73
	BH9_0.42-0.5	SE207287.011	%	70 - 130%	77
	BH10_0.15-0.25	SE207287.012	%	70 - 130%	75
	BH11M_0.66-0.71	SE207287.013	%	70 - 130%	81
d14-p-terphenyl (Surrogate)	BH1_0.1-0.2	SE207287.001	%	70 - 130%	105
	BH2_0.5-0.6	SE207287.002	%	70 - 130%	95
	BH3_2.45-2.49	SE207287.003	%	70 - 130%	90
	BH4_0.2-0.3	SE207287.004	%	70 - 130%	89
	BH5_0.2-0.3	SE207287.005	%	70 - 130%	97
	BH6M_0.4-0.5	SE207287.006	%	70 - 130%	125
	BH6M_1.89-1.97	SE207287.007	%	70 - 130%	114
	BH7_0.35-0.45	SE207287.008	%	70 - 130%	92
	BH8M_1.55-1.62	SE207287.009	%	70 - 130%	101
	BH9_0.16-0.28	SE207287.010	%	70 - 130%	129
	BH9_0.42-0.5	SE207287.011	%	70 - 130%	97
	BH10_0.15-0.25	SE207287.012	%	70 - 130%	99
	BH11M_0.66-0.71	SE207287.013	%	70 - 130%	94
d5-nitrobenzene (Surrogate)	BH1_0.1-0.2	SE207287.001	%	70 - 130%	97
	BH2_0.5-0.6	SE207287.002	%	70 - 130%	96
	BH3_2.45-2.49	SE207287.003	%	70 - 130%	94
	BH4_0.2-0.3	SE207287.004	%	70 - 130%	97
	BH5_0.2-0.3	SE207287.005	%	70 - 130%	94
	BH6M_0.4-0.5	SE207287.006	%	70 - 130%	92

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d5-nitrobenzene (Surrogate)	BH6M_1.89-1.97	SE207287.007	%	70 - 130%	93
	BH7_0.35-0.45	SE207287.008	%	70 - 130%	94
	BH8M_1.55-1.62	SE207287.009	%	70 - 130%	95
	BH9_0.16-0.28	SE207287.010	%	70 - 130%	95
	BH9_0.42-0.5	SE207287.011	%	70 - 130%	95
	BH10_0.15-0.25	SE207287.012	%	70 - 130%	96
	BH11M_0.66-0.71	SE207287.013	%	70 - 130%	99

PCBs in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH1_0.1-0.2	SE207287.001	%	60 - 130%	109
	BH2_0.5-0.6	SE207287.002	%	60 - 130%	123
	BH4_0.2-0.3	SE207287.004	%	60 - 130%	109
	BH5_0.2-0.3	SE207287.005	%	60 - 130%	99
	BH6M_0.4-0.5	SE207287.006	%	60 - 130%	121
	BH7_0.35-0.45	SE207287.008	%	60 - 130%	109
	BH9_0.16-0.28	SE207287.010	%	60 - 130%	121
	BH10_0.15-0.25	SE207287.012	%	60 - 130%	120

VOC's in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH1_0.1-0.2	SE207287.001	%	60 - 130%	93
	BH2_0.5-0.6	SE207287.002	%	60 - 130%	89
	BH3_2.45-2.49	SE207287.003	%	60 - 130%	96
	BH4_0.2-0.3	SE207287.004	%	60 - 130%	87
	BH5_0.2-0.3	SE207287.005	%	60 - 130%	83
	BH6M_0.4-0.5	SE207287.006	%	60 - 130%	83
	BH6M_1.89-1.97	SE207287.007	%	60 - 130%	95
	BH7_0.35-0.45	SE207287.008	%	60 - 130%	86
	BH8M_1.55-1.62	SE207287.009	%	60 - 130%	92
	BH9_0.16-0.28	SE207287.010	%	60 - 130%	83
	BH9_0.42-0.5	SE207287.011	%	60 - 130%	89
	BH10_0.15-0.25	SE207287.012	%	60 - 130%	84
	BH11M_0.66-0.71	SE207287.013	%	60 - 130%	85
d4-1,2-dichloroethane (Surrogate)	BH1_0.1-0.2	SE207287.001	%	60 - 130%	108
	BH2_0.5-0.6	SE207287.002	%	60 - 130%	108
	BH3_2.45-2.49	SE207287.003	%	60 - 130%	114
	BH4_0.2-0.3	SE207287.004	%	60 - 130%	106
	BH5_0.2-0.3	SE207287.005	%	60 - 130%	103
	BH6M_0.4-0.5	SE207287.006	%	60 - 130%	104
	BH6M_1.89-1.97	SE207287.007	%	60 - 130%	117
	BH7_0.35-0.45	SE207287.008	%	60 - 130%	107
	BH8M_1.55-1.62	SE207287.009	%	60 - 130%	114
	BH9_0.16-0.28	SE207287.010	%	60 - 130%	105
	BH9_0.42-0.5	SE207287.011	%	60 - 130%	110
	BH10_0.15-0.25	SE207287.012	%	60 - 130%	104
	BH11M_0.66-0.71	SE207287.013	%	60 - 130%	106
d8-toluene (Surrogate)	BH1_0.1-0.2	SE207287.001	%	60 - 130%	106
	BH2_0.5-0.6	SE207287.002	%	60 - 130%	106
	BH3_2.45-2.49	SE207287.003	%	60 - 130%	114
	BH4_0.2-0.3	SE207287.004	%	60 - 130%	104
	BH5_0.2-0.3	SE207287.005	%	60 - 130%	102
	BH6M_0.4-0.5	SE207287.006	%	60 - 130%	102
	BH6M_1.89-1.97	SE207287.007	%	60 - 130%	115
	BH7_0.35-0.45	SE207287.008	%	60 - 130%	106
	BH8M_1.55-1.62	SE207287.009	%	60 - 130%	114
	BH9_0.16-0.28	SE207287.010	%	60 - 130%	103
	BH9_0.42-0.5	SE207287.011	%	60 - 130%	109
	BH10_0.15-0.25	SE207287.012	%	60 - 130%	104
	BH11M_0.66-0.71	SE207287.013	%	60 - 130%	104

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

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

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH1_0.1-0.2	SE207287.001	%	60 - 130%	93
	BH2_0.5-0.6	SE207287.002	%	60 - 130%	89
	BH3_2.45-2.49	SE207287.003	%	60 - 130%	96
	BH4_0.2-0.3	SE207287.004	%	60 - 130%	87
	BH5_0.2-0.3	SE207287.005	%	60 - 130%	83
	BH6M_0.4-0.5	SE207287.006	%	60 - 130%	83
	BH6M_1.89-1.97	SE207287.007	%	60 - 130%	95
	BH7_0.35-0.45	SE207287.008	%	60 - 130%	86
	BH8M_1.55-1.62	SE207287.009	%	60 - 130%	92
	BH9_0.16-0.28	SE207287.010	%	60 - 130%	83
	BH9_0.42-0.5	SE207287.011	%	60 - 130%	89
	BH10_0.15-0.25	SE207287.012	%	60 - 130%	84
	BH11M_0.66-0.71	SE207287.013	%	60 - 130%	85
d4-1,2-dichloroethane (Surrogate)	BH1_0.1-0.2	SE207287.001	%	60 - 130%	108
	BH2_0.5-0.6	SE207287.002	%	60 - 130%	108
	BH3_2.45-2.49	SE207287.003	%	60 - 130%	114
	BH4_0.2-0.3	SE207287.004	%	60 - 130%	106
	BH5_0.2-0.3	SE207287.005	%	60 - 130%	103
	BH6M_0.4-0.5	SE207287.006	%	60 - 130%	104
	BH6M_1.89-1.97	SE207287.007	%	60 - 130%	117
	BH7_0.35-0.45	SE207287.008	%	60 - 130%	107
	BH8M_1.55-1.62	SE207287.009	%	60 - 130%	114
	BH9_0.16-0.28	SE207287.010	%	60 - 130%	105
	BH9_0.42-0.5	SE207287.011	%	60 - 130%	110
	BH10_0.15-0.25	SE207287.012	%	60 - 130%	104
	BH11M_0.66-0.71	SE207287.013	%	60 - 130%	106
d8-toluene (Surrogate)	BH1_0.1-0.2	SE207287.001	%	60 - 130%	106
	BH2_0.5-0.6	SE207287.002	%	60 - 130%	106
	BH3_2.45-2.49	SE207287.003	%	60 - 130%	114
	BH4_0.2-0.3	SE207287.004	%	60 - 130%	104
	BH5_0.2-0.3	SE207287.005	%	60 - 130%	102
	BH6M_0.4-0.5	SE207287.006	%	60 - 130%	102
	BH6M_1.89-1.97	SE207287.007	%	60 - 130%	115
	BH7_0.35-0.45	SE207287.008	%	60 - 130%	106
	BH8M_1.55-1.62	SE207287.009	%	60 - 130%	114
	BH9_0.16-0.28	SE207287.010	%	60 - 130%	103
	BH9_0.42-0.5	SE207287.011	%	60 - 130%	109
	BH10_0.15-0.25	SE207287.012	%	60 - 130%	104
	BH11M_0.66-0.71	SE207287.013	%	60 - 130%	104

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

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

Mercury in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB201657.001	Mercury	mg/kg	0.05	<0.05

OC Pesticides in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB201720.001		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1
		Alpha BHC	mg/kg	0.1	<0.1
		Lindane	mg/kg	0.1	<0.1
		Heptachlor	mg/kg	0.1	<0.1
		Aldrin	mg/kg	0.1	<0.1
		Beta BHC	mg/kg	0.1	<0.1
		Delta BHC	mg/kg	0.1	<0.1
		Heptachlor epoxide	mg/kg	0.1	<0.1
		Alpha Endosulfan	mg/kg	0.2	<0.2
		Gamma Chlordane	mg/kg	0.1	<0.1
		Alpha Chlordane	mg/kg	0.1	<0.1
		p,p'-DDE	mg/kg	0.1	<0.1
		Dieldrin	mg/kg	0.2	<0.2
		Endrin	mg/kg	0.2	<0.2
		Beta Endosulfan	mg/kg	0.2	<0.2
		p,p'-DDD	mg/kg	0.1	<0.1
		p,p'-DDT	mg/kg	0.1	<0.1
		Endosulfan sulphate	mg/kg	0.1	<0.1
		Endrin Aldehyde	mg/kg	0.1	<0.1
		Methoxychlor	mg/kg	0.1	<0.1
		Endrin Ketone	mg/kg	0.1	<0.1
		Isodrin	mg/kg	0.1	<0.1
		Mirex	mg/kg	0.1	<0.1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	105

OP Pesticides in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB201720.001		Dichlorvos	mg/kg	0.5	<0.5
		Dimethoate	mg/kg	0.5	<0.5
		Diazinon (Dimpylate)	mg/kg	0.5	<0.5
		Fenitrothion	mg/kg	0.2	<0.2
		Malathion	mg/kg	0.2	<0.2
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2
		Bromophos Ethyl	mg/kg	0.2	<0.2
		Methidathion	mg/kg	0.5	<0.5
		Ethion	mg/kg	0.2	<0.2
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2
	Surrogates	2-fluorobiphenyl (Surrogate)	%	-	86
		d14-p-terphenyl (Surrogate)	%	-	91

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB201720.001	Naphthalene	mg/kg	0.1	<0.1
	2-methylnaphthalene	mg/kg	0.1	<0.1
	1-methylnaphthalene	mg/kg	0.1	<0.1
	Acenaphthylene	mg/kg	0.1	<0.1
	Acenaphthene	mg/kg	0.1	<0.1
	Fluorene	mg/kg	0.1	<0.1
	Phenanthrene	mg/kg	0.1	<0.1
	Anthracene	mg/kg	0.1	<0.1
	Fluoranthene	mg/kg	0.1	<0.1
	Pyrene	mg/kg	0.1	<0.1
	Benzo(a)anthracene	mg/kg	0.1	<0.1
	Chrysene	mg/kg	0.1	<0.1
	Benzo(a)pyrene	mg/kg	0.1	<0.1

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

Sample Number		Parameter	Units	LOR	Result
LB201720.001		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1
		Dibenzo(ah)anthracene	mg/kg	0.1	<0.1
		Benzo(ghi)perylene	mg/kg	0.1	<0.1
		Total PAH (18)	mg/kg	0.8	<0.8
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	95
		2-fluorobiphenyl (Surrogate)	%	-	86
		d14-p-terphenyl (Surrogate)	%	-	91

PCBs in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB201720.001		Arochlor 1016	mg/kg	0.2	<0.2
		Arochlor 1221	mg/kg	0.2	<0.2
		Arochlor 1232	mg/kg	0.2	<0.2
		Arochlor 1242	mg/kg	0.2	<0.2
		Arochlor 1248	mg/kg	0.2	<0.2
		Arochlor 1254	mg/kg	0.2	<0.2
		Arochlor 1260	mg/kg	0.2	<0.2
		Arochlor 1262	mg/kg	0.2	<0.2
		Arochlor 1268	mg/kg	0.2	<0.2
		Total PCBs (Arochlors)	mg/kg	1	<1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	105

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

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

Sample Number		Parameter	Units	LOR	Result
LB201654.001		Arsenic, As	mg/kg	1	<1
		Cadmium, Cd	mg/kg	0.3	<0.3
		Chromium, Cr	mg/kg	0.5	<0.5
		Copper, Cu	mg/kg	0.5	<0.5
		Nickel, Ni	mg/kg	0.5	<0.5
		Lead, Pb	mg/kg	1	<1
		Zinc, Zn	mg/kg	2	<2.0

TRH (Total Recoverable Hydrocarbons) in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB201720.001		TRH C10-C14	mg/kg	20	<20
		TRH C15-C28	mg/kg	45	<45
		TRH C29-C36	mg/kg	45	<45
		TRH C37-C40	mg/kg	100	<100
		TRH C10-C36 Total	mg/kg	110	<110

VOC's in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB201716.001	Monocyclic Aromatic	Benzene	mg/kg	0.1	<0.1
	Hydrocarbons	Toluene	mg/kg	0.1	<0.1
		Ethylbenzene	mg/kg	0.1	<0.1
		m/p-xylene	mg/kg	0.2	<0.2
		o-xylene	mg/kg	0.1	<0.1
	Polycyclic VOCs	Naphthalene	mg/kg	0.1	<0.1
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	121
		d8-toluene (Surrogate)	%	-	120
		Bromofluorobenzene (Surrogate)	%	-	103
	Totals	Total BTEX	mg/kg	0.6	<0.6

Volatile Petroleum Hydrocarbons in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB201716.001		TRH C6-C9	mg/kg	20	<20
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	121

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 %
SE207286.022	LB201657.021	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE207287.010	LB201657.014	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 %
SE207287.010	LB201723.011	% Moisture	%w/w	1	8.1	9.2	42	14
SE207396.007	LB201723.022	% Moisture	%w/w	1	18.132854578	05.8895705521	36	13

OC Pesticides in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE207287.006	LB201720.028		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	0	200	0
			Alpha BHC	mg/kg	0.1	<0.1	0	200	0
			Lindane	mg/kg	0.1	<0.1	0	200	0
			Heptachlor	mg/kg	0.1	<0.1	0	200	0
			Aldrin	mg/kg	0.1	<0.1	0	200	0
			Beta BHC	mg/kg	0.1	<0.1	0	200	0
			Delta BHC	mg/kg	0.1	<0.1	0	200	0
			Heptachlor epoxide	mg/kg	0.1	<0.1	0	200	0
			o,p'-DDE	mg/kg	0.1	<0.1	0	200	0
			Alpha Endosulfan	mg/kg	0.2	<0.2	0	200	0
			Gamma Chlordane	mg/kg	0.1	<0.1	0	200	0
			Alpha Chlordane	mg/kg	0.1	<0.1	0	200	0
			trans-Nonachlor	mg/kg	0.1	<0.1	0	200	0
			p,p'-DDE	mg/kg	0.1	<0.1	0	200	0
			Dieldrin	mg/kg	0.2	<0.2	0	200	0
			Endrin	mg/kg	0.2	<0.2	0	200	0
			o,p'-DDD	mg/kg	0.1	<0.1	0	200	0
			o,p'-DDT	mg/kg	0.1	<0.1	0	200	0
			Beta Endosulfan	mg/kg	0.2	<0.2	0	200	0
			p,p'-DDD	mg/kg	0.1	<0.1	0	200	0
			p,p'-DDT	mg/kg	0.1	<0.1	0	200	0
			Endosulfan sulphate	mg/kg	0.1	<0.1	0	200	0
			Endrin Aldehyde	mg/kg	0.1	<0.1	0	200	0
			Methoxychlor	mg/kg	0.1	<0.1	0	200	0
			Endrin Ketone	mg/kg	0.1	<0.1	0	200	0
			Isodrin	mg/kg	0.1	<0.1	0	200	0
			Mirex	mg/kg	0.1	<0.1	0	200	0
			Total CLP OC Pesticides	mg/kg	1	<1	0	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.18	0.173	30	5

OP Pesticides in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE207396.007	LB201720.027		Dichlorvos	mg/kg	0.5	0	0	200	0
			Dimethoate	mg/kg	0.5	0.002134925	60.0014389143	200	0
			Diazinon (Dimpylate)	mg/kg	0.5	0	0	200	0
			Fenitrothion	mg/kg	0.2	0	0	200	0
			Malathion	mg/kg	0.2	0	0	200	0
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	0	0	200	0
			Parathion-ethyl (Parathion)	mg/kg	0.2	0	0	200	0
			Bromophos Ethyl	mg/kg	0.2	0	0	200	0
			Methidathion	mg/kg	0.5	0	0	200	0
			Ethion	mg/kg	0.2	0.0006633224	0	200	0
			Azinphos-methyl (Guthion)	mg/kg	0.2	0	0	200	0
			Total OP Pesticides*	mg/kg	1.7	0	0	200	0
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.3698721055	0.355	30	4
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.6324028779	0.6386751642	30	1

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Original	Duplicate	Parameter	Units	LOR

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

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

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE207287.006	LB201720.028		Naphthalene	mg/kg	0.1	<0.1	0.0027221598	200	0
			2-methylnaphthalene	mg/kg	0.1	<0.1	0.0004897326	200	0
			1-methylnaphthalene	mg/kg	0.1	<0.1	0.0005585341	200	0
			Acenaphthylene	mg/kg	0.1	<0.1	0.0088070744	200	0
			Acenaphthene	mg/kg	0.1	<0.1	0.0011413257	200	0
			Fluorene	mg/kg	0.1	<0.1	0.0013176728	200	0
			Phenanthrene	mg/kg	0.1	<0.1	0.0154478132	200	0
			Anthracene	mg/kg	0.1	<0.1	0.0163289351	200	0
			Fluoranthene	mg/kg	0.1	<0.1	0.0693026292	172	0
			Pyrene	mg/kg	0.1	<0.1	0.0752344402	153	0
			Benzo(a)anthracene	mg/kg	0.1	<0.1	0.0342790972	200	0
			Chrysene	mg/kg	0.1	<0.1	0	200	0
			Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	0.0562893998	200	0
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	0.0384530724	200	0
			Benzo(a)pyrene	mg/kg	0.1	<0.1	0.0198557466	200	0
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	0.0099309230	200	0
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	0	200	0
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	0.0198639738	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=0	mg/kg	0.2	<0.2	0	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	mg/kg	0.3	<0.3	0.242	134	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	mg/kg	0.2	<0.2	0.121	175	0
			Total PAH (18)	mg/kg	0.8	<0.8	0	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.4606587977	30	0
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.3845188111	30	1
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.6	0.5566173963	30	12
SE207396.007	LB201720.027		Naphthalene	mg/kg	0.1	0.000948466	90.0009517254	200	0
			2-methylnaphthalene	mg/kg	0.1	0	0.0001687613	200	0
			1-methylnaphthalene	mg/kg	0.1	0.0007250629	0	200	0
			Acenaphthylene	mg/kg	0.1	0	0	200	0
			Acenaphthene	mg/kg	0.1	0.000624606	60.0003988159	200	0
			Fluorene	mg/kg	0.1	0.0006117593	0	200	0
			Phenanthrene	mg/kg	0.1	0.002117309	60.0015899004	200	0
			Anthracene	mg/kg	0.1	0.002245061	70.0016952073	200	0
			Fluoranthene	mg/kg	0.1	0	0	200	0
			Pyrene	mg/kg	0.1	0	0	200	0
			Benzo(a)anthracene	mg/kg	0.1	0.009814766	20.0095182414	200	0
			Chrysene	mg/kg	0.1	0.006004303	10.0060272164	200	0
			Benzo(b&j)fluoranthene	mg/kg	0.1	0	0	200	0
			Benzo(k)fluoranthene	mg/kg	0.1	0	0	200	0
			Benzo(a)pyrene	mg/kg	0.1	0.005018911	30.0054401703	200	0
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	0	0	200	0
			Dibenzo(ah)anthracene	mg/kg	0.1	0	0	200	0
			Benzo(ghi)perylene	mg/kg	0.1	0	0	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=0	mg/kg	0.2	0	0	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	mg/kg	0.3	0.242	0.242	134	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	mg/kg	0.2	0.121	0.121	175	0
			Total PAH (18)	mg/kg	0.8	0	0	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.484557552	00.4709090457	30	3
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.3698721055	0.355	30	4
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.632402877	90.6386751642	30	1

PCBs in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE207287.006	LB201720.028	Arochlor 1016	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1221	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1232	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1242	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1248	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1254	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1260	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1262	mg/kg	0.2	<0.2	0	200	0

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

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

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

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

PCBs in Soil (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE207287.006	LB201720.028		Arochlor 1268	mg/kg	0.2	<0.2	0	200	0
			Total PCBs (Arochlors)	mg/kg	1	<1	0	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0.173	30	5

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

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE207286.022	LB201654.021		Arsenic, As	mg/kg	1	2	2	81	8
			Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
			Chromium, Cr	mg/kg	0.5	11	16	34	43 ②
			Copper, Cu	mg/kg	0.5	0.7	0.7	101	14
			Nickel, Ni	mg/kg	0.5	0.7	0.7	103	10
			Lead, Pb	mg/kg	1	4	4	56	9
			Zinc, Zn	mg/kg	2	17	17	42	2
SE207287.010	LB201654.014		Arsenic, As	mg/kg	1	<1	<1	200	0
			Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
			Chromium, Cr	mg/kg	0.5	4.0	3.9	43	2
			Copper, Cu	mg/kg	0.5	22	24	32	7
			Nickel, Ni	mg/kg	0.5	33	31	32	5
			Lead, Pb	mg/kg	1	5	4	53	16
			Zinc, Zn	mg/kg	2	30	33	36	7

TRH (Total Recoverable Hydrocarbons) in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE207287.006	LB201720.028		TRH C10-C14	mg/kg	20	<20	0	200	0
			TRH C15-C28	mg/kg	45	<45	0	200	0
			TRH C29-C36	mg/kg	45	<45	0	200	0
			TRH C37-C40	mg/kg	100	<100	0	200	0
			TRH C10-C36 Total	mg/kg	110	<110	0	200	0
			TRH >C10-C40 Total (F bands)	mg/kg	210	<210	0	200	0
		TRH F Bands	TRH >C10-C16	mg/kg	25	<25	0	200	0
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	0	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	0	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	0	200	0
SE207396.007	LB201720.027		TRH C10-C14	mg/kg	20	0	0	200	0
			TRH C15-C28	mg/kg	45	0	0	200	0
			TRH C29-C36	mg/kg	45	0	0	200	0
			TRH C37-C40	mg/kg	100	0	0	200	0
			TRH C10-C36 Total	mg/kg	110	0	0	200	0
			TRH >C10-C40 Total (F bands)	mg/kg	210	0	0	200	0
		TRH F Bands	TRH >C10-C16	mg/kg	25	0	0	200	0
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	0	0	200	0
			TRH >C16-C34 (F3)	mg/kg	90	0	0	200	0
			TRH >C34-C40 (F4)	mg/kg	120	0	0	200	0

VOC's in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE207287.010	LB201716.014	Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
		Aromatic	Toluene	mg/kg	0.1	<0.1	<0.1	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	10.5	10.2	50	3
			d8-toluene (Surrogate)	mg/kg	-	10.3	10.2	50	1
			Bromofluorobenzene (Surrogate)	mg/kg	-	8.3	8.4	50	1
		Totals	Total Xylenes	mg/kg	0.3	<0.3	<0.3	200	0
			Total BTEX	mg/kg	0.6	<0.6	<0.6	200	0
SE207396.007	LB201716.025	Monocyclic	Benzene	mg/kg	0.1	0.00372598420	0.0036663871	200	0
		Aromatic	Toluene	mg/kg	0.1	0.02192407780	0.0220566219	200	0
			Ethylbenzene	mg/kg	0.1	0.01048787440	0.0103085091	200	0
			m/p-xylene	mg/kg	0.2	0.01700092560	0.0165931638	200	0
			o-xylene	mg/kg	0.1	0.00352447880	0.0033578426	200	0

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

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

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

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

VOC's in Soil (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE207396.007	LB201716.025	Polycyclic	Naphthalene	mg/kg	0.1	0	0	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	10.7687821768	12.2490950803	50	13
			d8-toluene (Surrogate)	mg/kg	-	10.6415518619	12.1414286922	50	13
			Bromofluorobenzene (Surrogate)	mg/kg	-	8.6208941633	10.1112487073	50	16
		Totals	Total Xylenes	mg/kg	0.3	0.0205254045	0.0199510065	200	0
			Total BTEX	mg/kg	0.6	0	0	200	0

Volatile Petroleum Hydrocarbons in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE207287.010	LB201716.014		TRH C6-C10	mg/kg	25	<25	<25	200	0
			TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	10.5	10.2	30	3
			d8-toluene (Surrogate)	mg/kg	-	10.3	10.2	30	1
			Bromofluorobenzene (Surrogate)	mg/kg	-	8.3	8.4	30	1
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0
SE207396.007	LB201716.025		TRH C6-C10	mg/kg	25	0	0	200	0
			TRH C6-C9	mg/kg	20	0	0	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	10.7687821768	12.2490950803	30	13
			d8-toluene (Surrogate)	mg/kg	-	10.6415518619	12.1414286922	30	13
			Bromofluorobenzene (Surrogate)	mg/kg	-	8.6208941633	10.1112487073	30	16
		VPH F Bands	Benzene (F0)	mg/kg	0.1	0.0037259842	0.0036663871	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	0	0	200	0

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

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

Mercury in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB201657.002	Mercury	mg/kg	0.05	0.23	0.2	70 - 130	116

OC Pesticides in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB201720.002		Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	110
		Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	110
		Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	108
		Dieldrin	mg/kg	0.2	0.2	0.2	60 - 140	106
		Endrin	mg/kg	0.2	0.2	0.2	60 - 140	103
		p,p'-DDT	mg/kg	0.1	0.1	0.2	60 - 140	72
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.15	0.15	40 - 130	99

OP Pesticides in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB201720.002		Dichlorvos	mg/kg	0.5	1.5	2	60 - 140	75
		Diazinon (Dimpylate)	mg/kg	0.5	1.7	2	60 - 140	87
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	1.9	2	60 - 140	94
		Ethion	mg/kg	0.2	1.6	2	60 - 140	82
	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	84
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	74

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB201720.002		Naphthalene	mg/kg	0.1	4.1	4	60 - 140	102
		Acenaphthylene	mg/kg	0.1	3.9	4	60 - 140	99
		Acenaphthene	mg/kg	0.1	3.9	4	60 - 140	97
		Phenanthrene	mg/kg	0.1	3.9	4	60 - 140	99
		Anthracene	mg/kg	0.1	3.0	4	60 - 140	76
		Fluoranthene	mg/kg	0.1	3.8	4	60 - 140	96
		Pyrene	mg/kg	0.1	4.0	4	60 - 140	99
		Benzo(a)pyrene	mg/kg	0.1	4.0	4	60 - 140	101
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	95
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	84
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	74

PCBs in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB201720.002	Arochlor 1260	mg/kg	0.2	0.4	0.4	60 - 140	94

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

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB201654.002	Arsenic, As	mg/kg	1	310	318.22	80 - 120	98
	Cadmium, Cd	mg/kg	0.3	4.5	5.41	80 - 120	83
	Chromium, Cr	mg/kg	0.5	34	38.31	80 - 120	89
	Copper, Cu	mg/kg	0.5	280	290	80 - 120	95
	Nickel, Ni	mg/kg	0.5	170	187	80 - 120	90
	Lead, Pb	mg/kg	1	84	89.9	80 - 120	93
	Zinc, Zn	mg/kg	2	250	273	80 - 120	92

TRH (Total Recoverable Hydrocarbons) in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB201720.002		TRH C10-C14	mg/kg	20	37	40	60 - 140	93
		TRH C15-C28	mg/kg	45	<45	40	60 - 140	80
		TRH C29-C36	mg/kg	45	<45	40	60 - 140	80
	TRH F Bands	TRH >C10-C16	mg/kg	25	35	40	60 - 140	88
		TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	80
		TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	85

VOC's in Soil

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

Sample Number	Parameter	Units	LOR

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

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

VOC's in Soil (continued)

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB201716.002	Monocyclic	Benzene	mg/kg	0.1	3.8	5	60 - 140	77
	Aromatic	Toluene	mg/kg	0.1	4.0	5	60 - 140	79
		Ethylbenzene	mg/kg	0.1	4.0	5	60 - 140	80
		m/p-xylene	mg/kg	0.2	8.1	10	60 - 140	81
		o-xylene	mg/kg	0.1	4.0	5	60 - 140	80
	Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	11.1	10	70 - 130	111
		d8-toluene (Surrogate)	mg/kg	-	11.3	10	70 - 130	113
		Bromofluorobenzene (Surrogate)	mg/kg	-	9.6	10	70 - 130	96

Volatile Petroleum Hydrocarbons in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB201716.002		TRH C6-C10	mg/kg	25	67	92.5	60 - 140	72
		TRH C6-C9	mg/kg	20	62	80	60 - 140	78
	Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	11.1	10	70 - 130	111
		Bromofluorobenzene (Surrogate)	mg/kg	-	9.6	10	70 - 130	96
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	43	62.5	60 - 140	69

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%
SE207287.001	LB201657.004	Mercury	mg/kg	0.05	0.22	<0.05	0.2	95

OC Pesticides in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE207287.001	LB201720.004		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha BHC	mg/kg	0.1	<0.1	<0.1	-	-
			Lindane	mg/kg	0.1	<0.1	<0.1	-	-
			Heptachlor	mg/kg	0.1	0.2	<0.1	0.2	117
			Aldrin	mg/kg	0.1	0.2	<0.1	0.2	117
			Beta BHC	mg/kg	0.1	<0.1	<0.1	-	-
			Delta BHC	mg/kg	0.1	0.2	<0.1	0.2	120
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	-	-
			o,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	-	-
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
			Dieldrin	mg/kg	0.2	0.2	<0.2	0.2	111
			Endrin	mg/kg	0.2	0.2	<0.2	0.2	108
			o,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
			o,p'-DDT	mg/kg	0.1	<0.1	<0.1	-	-
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
			p,p'-DDT	mg/kg	0.1	0.2	<0.1	0.2	79
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	-	-
			Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	-	-
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	-	-
			Endrin Ketone	mg/kg	0.1	<0.1	<0.1	-	-
			Isodrin	mg/kg	0.1	<0.1	<0.1	-	-
			Mirex	mg/kg	0.1	<0.1	<0.1	-	-
			Total CLP OC Pesticides	mg/kg	1	1	<1	-	-
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.17	0.16	-	113

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE207287.001	LB201720.004		Naphthalene	mg/kg	0.1	3.9	<0.1	4	98
			2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
			1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
			Acenaphthylene	mg/kg	0.1	3.7	<0.1	4	92
			Acenaphthene	mg/kg	0.1	3.8	<0.1	4	96
			Fluorene	mg/kg	0.1	<0.1	<0.1	-	-
			Phenanthrene	mg/kg	0.1	3.7	<0.1	4	93
			Anthracene	mg/kg	0.1	3.2	<0.1	4	80
			Fluoranthene	mg/kg	0.1	4.5	<0.1	4	112
			Pyrene	mg/kg	0.1	4.8	<0.1	4	119
			Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	-	-
			Chrysene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(a)pyrene	mg/kg	0.1	3.9	<0.1	4	96
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	-	-
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	3.9	<0.2	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	4.0	<0.3	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	3.9	<0.2	-	-
			Total PAH (18)	mg/kg	0.8	32	<0.8	-	-
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5	-	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.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE207287.001	LB201720.004	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	-	71
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	-	84

PCBs in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE207287.001	LB201720.004		Arochlor 1016	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1221	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1232	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1242	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1248	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1254	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1260	mg/kg	0.2	0.4	<0.2	0.4	103
			Arochlor 1262	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1268	mg/kg	0.2	<0.2	<0.2	-	-
			Total PCBs (Arochlors)	mg/kg	1	<1	<1	-	-
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	-	112

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

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE207287.001	LB201654.004	Arsenic, As	mg/kg	1	48	<1	50	95
		Cadmium, Cd	mg/kg	0.3	41	<0.3	50	82
		Chromium, Cr	mg/kg	0.5	49	1.4	50	95
		Copper, Cu	mg/kg	0.5	71	13	50	115
		Nickel, Ni	mg/kg	0.5	50	1.6	50	97
		Lead, Pb	mg/kg	1	62	8	50	108
		Zinc, Zn	mg/kg	2	60	5.7	50	108

TRH (Total Recoverable Hydrocarbons) in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE207287.001	LB201720.004		TRH C10-C14	mg/kg	20	41	<20	40	103
			TRH C15-C28	mg/kg	45	46	<45	40	115
			TRH C29-C36	mg/kg	45	<45	<45	40	60
			TRH C37-C40	mg/kg	100	<100	<100	-	-
			TRH C10-C36 Total	mg/kg	110	<110	<110	-	-
			TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	-	-
		TRH F Bands	TRH >C10-C16	mg/kg	25	40	<25	40	100
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	36	<25	-	-
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	40	108
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	-	-

VOC's in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE207287.001	LB201716.004	Monocyclic Aromatic	Benzene	mg/kg	0.1	3.5	<0.1	5	70
			Toluene	mg/kg	0.1	3.7	<0.1	5	73
			Ethylbenzene	mg/kg	0.1	3.7	<0.1	5	74
			m/p-xylene	mg/kg	0.2	7.6	<0.2	10	76
			o-xylene	mg/kg	0.1	3.7	<0.1	5	75
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	10.0	10.8	10	100
			d8-toluene (Surrogate)	mg/kg	-	10.2	10.6	10	102
			Bromofluorobenzene (Surrogate)	mg/kg	-	8.6	9.3	10	86
		Totals	Total Xylenes	mg/kg	0.3	11	<0.3	-	-
			Total BTEX	mg/kg	0.6	22	<0.6	-	-

Volatile Petroleum Hydrocarbons in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE207287.001	LB201716.004		TRH C6-C10	mg/kg	25	61	<25	92.5	66
			TRH C6-C9	mg/kg	20	57	<20	80	71
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	10.0	10.8	10	100
			d8-toluene (Surrogate)	mg/kg	-	10.2	10.6	10	102
			Bromofluorobenzene (Surrogate)	mg/kg	-	8.6	9.3	-	86
		VPH F Bands	Benzene (F0)	mg/kg	0.1	3.5	<0.1	-	-
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	39	<25	62.5	62

MATRIX SPIKE DUPLICATES

SE207287 R0

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

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

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

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

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

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

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

*	NATA accreditation does not cover the performance of this service.
**	Indicative data, theoretical holding time exceeded.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.

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

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Ian Watts
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Project	**E24614 48 Cumberland StreetThe Rocks**
Order Number	**E24614**
Samples	13

LABORATORY DETAILS

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Email	au.environmental.sydney@sgs.com
SGS Reference	**SE207287A R0**
Date Received	10/6/2020
Date Reported	17/6/2020

COMMENTS

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

SIGNATORIES

Dong LIANG
Metals/Inorganics Team Leader

Shane MCDERMOTT
Inorganic/Metals Chemist

pH in soil (1:5) [AN101] Tested: 15/6/2020

PARAMETER	UOM	LOR	BH3_2.45-2.49 SOIL - 4/6/2020 SE207287A.003	BH7_0.35-0.45 SOIL - 5/6/2020 SE207287A.008
pH	pH Units	0.1	**6.5**	**6.8**

Conductivity and TDS by Calculation - Soil [AN106] Tested: 15/6/2020

PARAMETER	UOM	LOR	BH3_2.45-2.49 SOIL - 4/6/2020 SE207287A.003	BH7_0.35-0.45 SOIL - 5/6/2020 SE207287A.008
Conductivity of Extract (1:5 dry sample basis)	µS/cm	1	8	190

Soluble Anions (1:5) in Soil by Ion Chromatography [AN245] Tested: 16/6/2020

PARAMETER	UOM	LOR	BH3_2.45-2.49 SOIL - 4/6/2020 SE207287A.003	BH7_0.35-0.45 SOIL - 5/6/2020 SE207287A.008
Chloride	mg/kg	0.25	**2.6**	**11**
Sulfate	mg/kg	5	**7.4**	**510**

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+.
AN106	Conductivity and TDS by Calculation: Conductivity is measured by meter with temperature compensation and is calibrated against a standard solution of potassium chloride. Conductivity is generally reported as µmhos /cm or µS/cm @ 25°C. For soils, an extract of as received sample with water is made at a ratio of 1:5 and the EC determined and reported on the extract, or calculated back to the as-received sample. Salinity can be estimated from conductivity using a conversion factor, which for natural waters, is in the range 0.55 to 0.75. Reference APHA 2510 B.
AN245	Anions by Ion Chromatography: A water sample is injected into an eluent stream that passes through the ion chromatographic system where the anions of interest ie Br, Cl, NO2, NO3 and SO4 are separated on their relative affinities for the active sites on the column packing material. Changes to the conductivity and the UV-visible absorbance of the eluent enable identification and quantitation of the anions based on their retention time and peak height or area. APHA 4110 B

FOOTNOTES

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

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the " Total" LOR will be the sum of those two LORs.

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

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:

a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au/en-gb/environment-health-and-safety.

STATEMENT OF QA/QC PERFORMANCE

SE207287A R0

CLIENT DETAILS

Contact	Ian Watts
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Facsimile	(Not specified)
Email	ian.watts@eiaustralia.com.au
Project	**E24614 48 Cumberland StreetThe Rocks**
Order Number	**E24614**
Samples	13

LABORATORY DETAILS

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SGS Reference	**SE207287A R0**
Date Received	10 Jun 2020
Date Reported	17 Jun 2020

COMMENTS

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

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

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

Extraction Date	Conductivity and TDS by Calculation - Soil	2 items
	pH in soil (1:5)	2 items
	Soluble Anions (1:5) in Soil by Ion Chromatography	2 items
Analysis Date	Conductivity and TDS by Calculation - Soil	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	2 Soil
Date documentation received	10/6/2020	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	7.5°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

HOLDING TIME SUMMARY

SE207287A 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.

Conductivity and TDS by Calculation - Soil

Method: ME-(AU)-[ENV]AN106

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH3_2.45-2.49	SE207287A.003	LB201918	04 Jun 2020	10 Jun 2020	11 Jun 2020	15 Jun 2020†	11 Jun 2020	17 Jun 2020†
BH7_0.35-0.45	SE207287A.008	LB201918	05 Jun 2020	10 Jun 2020	12 Jun 2020	15 Jun 2020†	12 Jun 2020	17 Jun 2020†

pH in soil (1:5)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH3_2.45-2.49	SE207287A.003	LB201918	04 Jun 2020	10 Jun 2020	11 Jun 2020	15 Jun 2020†	16 Jun 2020	16 Jun 2020
BH7_0.35-0.45	SE207287A.008	LB201918	05 Jun 2020	10 Jun 2020	12 Jun 2020	15 Jun 2020†	16 Jun 2020	16 Jun 2020

Soluble Anions (1:5) in Soil by Ion Chromatography

Method: ME-(AU)-[ENV]AN245

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH3_2.45-2.49	SE207287A.003	LB202017	04 Jun 2020	10 Jun 2020	11 Jun 2020	16 Jun 2020†	14 Jul 2020	17 Jun 2020
BH7_0.35-0.45	SE207287A.008	LB202017	05 Jun 2020	10 Jun 2020	12 Jun 2020	16 Jun 2020†	14 Jul 2020	17 Jun 2020

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.

Conductivity and TDS by Calculation - Soil

Method: ME-(AU)-[ENV]AN106

Sample Number	Parameter	Units	LOR	Result
LB201918.001	Conductivity of Extract (1:5 dry sample basis)	µS/cm	1	0

Soluble Anions (1:5) in Soil by Ion Chromatography

Method: ME-(AU)-[ENV]AN245

Sample Number	Parameter	Units	LOR	Result
LB202017.001	Chloride	mg/kg	0.25	<0.25
	Sulfate	mg/kg	5	<5.0

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.

Conductivity and TDS by Calculation - Soil

Method: ME-(AU)-[ENV]AN106

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE207269.005	LB201918.023	Conductivity of Extract (1:5 dry sample basis)	µS/cm	1	76	31.5095938787	33	7

pH in soil (1:5)

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE207269.005	LB201918.023	pH	pH Units	0.1	5.6	5.543	32	1
SE207340.018	LB201918.014	pH	pH Units	0.1	6.3	6.3	32	0

Soluble Anions (1:5) in Soil by Ion Chromatography

Method: ME-(AU)-[ENV]AN245

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE207287A.008	LB202017.006	Chloride	mg/kg	0.25	11	10	32	4
		Sulfate	mg/kg	5	510	660	31	26

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.

Conductivity and TDS by Calculation - Soil

Method: ME-(AU)-[ENV]AN106

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB201918.002	Conductivity of Extract (1:5 dry sample basis)	µS/cm	1	NA	303	85 - 115	100

pH in soil (1:5)

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB201918.003	pH	pH Units	0.1	7.4	7.415	98 - 102	100

Soluble Anions (1:5) in Soil by Ion Chromatography

Method: ME-(AU)-[ENV]AN245

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB202017.002	Chloride	mg/kg	0.25	99	100	70 - 130	99
	Sulfate	mg/kg	5	95	100	70 - 130	95

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

*	NATA accreditation does not cover the performance of this service.
**	Indicative data, theoretical holding time exceeded.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.

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

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

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Project	**E24614 2-60 Cumberland St, The Rocks**
Order Number	**E24614**
Samples	7

LABORATORY DETAILS

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SGS Reference	**SE207730 R0**
Date Received	19/6/2020
Date Reported	26/6/2020

COMMENTS

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

SIGNATORIES

Dong LIANG
Metals/Inorganics Team Leader

Ly Kim HA
Organic Section Head

Shane MCDERMOTT
Inorganic/Metals Chemist

VOCs in Water [AN433] Tested: 24/6/2020

PARAMETER	UOM	LOR	GW_BH6m-1 WATER - 19/6/2020 SE207730.001	GW_BH8M-1 WATER - 19/6/2020 SE207730.002	GW_BH11M-1 WATER - 19/6/2020 SE207730.003	GW_QD-1 WATER - 19/6/2020 SE207730.004	GW_QR-1 WATER - 19/6/2020 SE207730.005
Benzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5	<0.5	**1.0**	<0.5	**1.0**	<0.5
Ethylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
m/p-xylene	µg/L	1	<1	<1	<1	<1	<1
o-xylene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Xylenes	µg/L	1.5	<1.5	<1.5	<1.5	<1.5	<1.5
Total BTEX	µg/L	3	<3	<3	<3	<3	<3
Naphthalene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane (CFC-12)	µg/L	5	<5	<5	<5	-	-
Chloromethane	µg/L	5	<5	<5	<5	-	-
Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3	<0.3	<0.3	-	-
Bromomethane	µg/L	10	<10	<10	<10	-	-
Chloroethane	µg/L	5	<5	<5	<5	-	-
Trichlorofluoromethane	µg/L	1	<1	<1	<1	-	-
Acetone (2-propanone)	µg/L	10	<10	<10	<10	-	-
Iodomethane	µg/L	5	<5	<5	<5	-	-
1,1-dichloroethene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Acrylonitrile	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Dichloromethane (Methylene chloride)	µg/L	5	<5	<5	<5	-	-
Allyl chloride	µg/L	2	<2	<2	<2	-	-
Carbon disulfide	µg/L	2	<2	<2	<2	-	-
trans-1,2-dichloroethene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
MtBE (Methyl-tert-butyl ether)	µg/L	2	<2	<2	<2	-	-
1,1-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Vinyl acetate	µg/L	10	<10	<10	<10	-	-
MEK (2-butanone)	µg/L	10	<10	<10	<10	-	-
cis-1,2-dichloroethene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Bromochloromethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Chloroform (THM)	µg/L	0.5	**0.6**	**0.7**	<0.5	-	-
2,2-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,1,1-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,1-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Carbon tetrachloride	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Dibromomethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
2-nitropropane	µg/L	100	<100	<100	<100	-	-
Bromodichloromethane (THM)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
MIBK (4-methyl-2-pentanone)	µg/L	5	<5	<5	<5	-	-
cis-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
trans-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,1,2-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,3-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Dibromochloromethane (THM)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
2-hexanone (MBK)	µg/L	5	<5	<5	<5	-	-
1,2-dibromoethane (EDB)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Chlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Bromoform (THM)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
cis-1,4-dichloro-2-butene	µg/L	1	<1	<1	<1	-	-
Styrene (Vinyl benzene)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2,3-trichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
trans-1,4-dichloro-2-butene	µg/L	1	<1	<1	<1	-	-

VOCs in Water [AN433] Tested: 24/6/2020 (continued)

PARAMETER	UOM	LOR	GW_BH6m-1 WATER - 19/6/2020 SE207730.001	GW_BH8M-1 WATER - 19/6/2020 SE207730.002	GW_BH11M-1 WATER - 19/6/2020 SE207730.003	GW_QD-1 WATER - 19/6/2020 SE207730.004	GW_QR-1 WATER - 19/6/2020 SE207730.005
Isopropylbenzene (Cumene)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Bromobenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
n-propylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
2-chlorotoluene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
4-chlorotoluene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,3,5-trimethylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
tert-butylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2,4-trimethylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
sec-butylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,3-dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,4-dichlorobenzene	µg/L	0.3	<0.3	<0.3	<0.3	-	-
p-isopropyltoluene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2-dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
n-butylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2,4-trichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Hexachlorobutadiene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2,3-trichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Total VOC	µg/L	10	<10	<10	<10	-	-

VOCs in Water [AN433] Tested: 24/6/2020 (continued)

PARAMETER	UOM	LOR	GW_Trip Blank WATER - 19/6/2020 SE207730.006	GW_Trip Spike WATER - 19/6/2020 SE207730.007
Benzene	µg/L	0.5	<0.5	[101%]
Toluene	µg/L	0.5	<0.5	[100%]
Ethylbenzene	µg/L	0.5	<0.5	[100%]
m/p-xylene	µg/L	1	<1	[99%]
o-xylene	µg/L	0.5	<0.5	[100%]
Total Xylenes	µg/L	1.5	<1.5	-
Total BTEX	µg/L	3	<3	-
Naphthalene	µg/L	0.5	<0.5	-
Dichlorodifluoromethane (CFC-12)	µg/L	5	-	-
Chloromethane	µg/L	5	-	-
Vinyl chloride (Chloroethene)	µg/L	0.3	-	-
Bromomethane	µg/L	10	-	-
Chloroethane	µg/L	5	-	-
Trichlorofluoromethane	µg/L	1	-	-
Acetone (2-propanone)	µg/L	10	-	-
Iodomethane	µg/L	5	-	-
1,1-dichloroethene	µg/L	0.5	-	-
Acrylonitrile	µg/L	0.5	-	-
Dichloromethane (Methylene chloride)	µg/L	5	-	-
Allyl chloride	µg/L	2	-	-
Carbon disulfide	µg/L	2	-	-
trans-1,2-dichloroethene	µg/L	0.5	-	-
MtBE (Methyl-tert-butyl ether)	µg/L	2	-	-
1,1-dichloroethane	µg/L	0.5	-	-
Vinyl acetate	µg/L	10	-	-
MEK (2-butanone)	µg/L	10	-	-
cis-1,2-dichloroethene	µg/L	0.5	-	-
Bromochloromethane	µg/L	0.5	-	-
Chloroform (THM)	µg/L	0.5	-	-
2,2-dichloropropane	µg/L	0.5	-	-
1,2-dichloroethane	µg/L	0.5	-	-
1,1,1-trichloroethane	µg/L	0.5	-	-
1,1-dichloropropene	µg/L	0.5	-	-
Carbon tetrachloride	µg/L	0.5	-	-
Dibromomethane	µg/L	0.5	-	-
1,2-dichloropropane	µg/L	0.5	-	-
Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	-	-
2-nitropropane	µg/L	100	-	-
Bromodichloromethane (THM)	µg/L	0.5	-	-
MIBK (4-methyl-2-pentanone)	µg/L	5	-	-
cis-1,3-dichloropropene	µg/L	0.5	-	-
trans-1,3-dichloropropene	µg/L	0.5	-	-
1,1,2-trichloroethane	µg/L	0.5	-	-
1,3-dichloropropane	µg/L	0.5	-	-
Dibromochloromethane (THM)	µg/L	0.5	-	-
2-hexanone (MBK)	µg/L	5	-	-
1,2-dibromoethane (EDB)	µg/L	0.5	-	-
Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	-	-
1,1,1,2-tetrachloroethane	µg/L	0.5	-	-
Chlorobenzene	µg/L	0.5	-	-
Bromoform (THM)	µg/L	0.5	-	-
cis-1,4-dichloro-2-butene	µg/L	1	-	-
Styrene (Vinyl benzene)	µg/L	0.5	-	-
1,1,2,2-tetrachloroethane	µg/L	0.5	-	-
1,2,3-trichloropropane	µg/L	0.5	-	-
trans-1,4-dichloro-2-butene	µg/L	1	-	-

VOCs in Water [AN433] Tested: 24/6/2020 (continued)

PARAMETER	UOM	LOR	GW_Trip Blank WATER - 19/6/2020 SE207730.006	GW_Trip Spike WATER - 19/6/2020 SE207730.007
Isopropylbenzene (Cumene)	µg/L	0.5	-	-
Bromobenzene	µg/L	0.5	-	-
n-propylbenzene	µg/L	0.5	-	-
2-chlorotoluene	µg/L	0.5	-	-
4-chlorotoluene	µg/L	0.5	-	-
1,3,5-trimethylbenzene	µg/L	0.5	-	-
tert-butylbenzene	µg/L	0.5	-	-
1,2,4-trimethylbenzene	µg/L	0.5	-	-
sec-butylbenzene	µg/L	0.5	-	-
1,3-dichlorobenzene	µg/L	0.5	-	-
1,4-dichlorobenzene	µg/L	0.3	-	-
p-isopropyltoluene	µg/L	0.5	-	-
1,2-dichlorobenzene	µg/L	0.5	-	-
n-butylbenzene	µg/L	0.5	-	-
1,2-dibromo-3-chloropropane	µg/L	0.5	-	-
1,2,4-trichlorobenzene	µg/L	0.5	-	-
Hexachlorobutadiene	µg/L	0.5	-	-
1,2,3-trichlorobenzene	µg/L	0.5	-	-
Total VOC	µg/L	10	-	-

Volatile Petroleum Hydrocarbons in Water [AN433] Tested: 24/6/2020

PARAMETER	UOM	LOR	GW_BH6m-1 WATER - 19/6/2020 SE207730.001	GW_BH8M-1 WATER - 19/6/2020 SE207730.002	GW_BH11M-1 WATER - 19/6/2020 SE207730.003	GW_QD-1 WATER - 19/6/2020 SE207730.004	GW_QR-1 WATER - 19/6/2020 SE207730.005
TRH C6-C9	µg/L	40	<40	<40	<40	<40	<40
Benzene (F0)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TRH C6-C10	µg/L	50	<50	<50	<50	<50	<50
TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	<50	<50	<50	<50

TRH (Total Recoverable Hydrocarbons) in Water [AN403] Tested: 23/6/2020

PARAMETER	UOM	LOR	GW_BH6m-1 WATER - 19/6/2020 SE207730.001	GW_BH8M-1 WATER - 19/6/2020 SE207730.002	GW_BH11M-1 WATER - 19/6/2020 SE207730.003	GW_QD-1 WATER - 19/6/2020 SE207730.004	GW_QR-1 WATER - 19/6/2020 SE207730.005
TRH C10-C14	µg/L	50	**150**	**280**	<50	**700**	<50
TRH C15-C28	µg/L	200	**240**	**220**	<200	**230**	<200
TRH C29-C36	µg/L	200	<200	<200	<200	**440**	<200
TRH C37-C40	µg/L	200	<200	<200	<200	<200	<200
TRH >C10-C16	µg/L	60	**140**	**280**	<60	**690**	<60
TRH >C10-C16 - Naphthalene (F2)	µg/L	60	**140**	**280**	<60	**690**	<60
TRH >C16-C34 (F3)	µg/L	500	<500	<500	<500	**570**	<500
TRH >C34-C40 (F4)	µg/L	500	<500	<500	<500	<500	<500
TRH C10-C40	µg/L	320	**390**	**500**	<320	**1400**	<320

PAH (Polynuclear Aromatic Hydrocarbons) in Water [AN420] Tested: 23/6/2020

PARAMETER	UOM	LOR	GW_BH6m-1 WATER - 19/6/2020 SE207730.001	GW_BH8M-1 WATER - 19/6/2020 SE207730.002	GW_BH11M-1 WATER - 19/6/2020 SE207730.003
Naphthalene	µg/L	0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	µg/L	0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	µg/L	0.1	<0.1	<0.1	<0.1
Acenaphthylene	µg/L	0.1	<0.1	<0.1	<0.1
Acenaphthene	µg/L	0.1	<0.1	<0.1	<0.1
Fluorene	µg/L	0.1	<0.1	<0.1	<0.1
Phenanthrene	µg/L	0.1	<0.1	<0.1	<0.1
Anthracene	µg/L	0.1	<0.1	<0.1	<0.1
Fluoranthene	µg/L	0.1	<0.1	<0.1	<0.1
Pyrene	µg/L	0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	0.1	<0.1	<0.1	<0.1
Chrysene	µg/L	0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	µg/L	0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	µg/L	0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	µg/L	0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	µg/L	0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	µg/L	0.1	<0.1	<0.1	<0.1
Total PAH (18)	µg/L	1	<1	<1	<1

Total Phenolics in Water [AN289] Tested: 25/6/2020

PARAMETER	UOM	LOR	GW_BH6m-1 WATER - 19/6/2020 SE207730.001	GW_BH8M-1 WATER - 19/6/2020 SE207730.002	GW_BH11M-1 WATER - 19/6/2020 SE207730.003
Total Phenols	mg/L	0.01	<0.01	<0.01	<0.01

Trace Metals (Dissolved) in Water by ICPMS [AN318] Tested: 22/6/2020

PARAMETER	UOM	LOR	GW_BH6m-1 WATER - 19/6/2020 SE207730.001	GW_BH8M-1 WATER - 19/6/2020 SE207730.002	GW_BH11M-1 WATER - 19/6/2020 SE207730.003	GW_QD-1 WATER - 19/6/2020 SE207730.004	GW_QR-1 WATER - 19/6/2020 SE207730.005
Arsenic, As	µg/L	1	1	4	<1	2	<1
Cadmium, Cd	µg/L	0.1	<0.1	<0.1	0.1	0.1	<0.1
Chromium, Cr	µg/L	1	<1	<1	<1	<1	<1
Copper, Cu	µg/L	1	16	3	18	<1	<1
Lead, Pb	µg/L	1	<1	<1	<1	<1	<1
Nickel, Ni	µg/L	1	6	12	6	15	<1
Zinc, Zn	µg/L	5	32	19	41	43	<5

Mercury (dissolved) in Water [AN311(Perth)/AN312] Tested: 24/6/2020

PARAMETER	UOM	LOR	GW_BH6m-1 WATER - 19/6/2020 SE207730.001	GW_BH8M-1 WATER - 19/6/2020 SE207730.002	GW_BH11M-1 WATER - 19/6/2020 SE207730.003	GW_QD-1 WATER - 19/6/2020 SE207730.004	GW_QR-1 WATER - 19/6/2020 SE207730.005
Mercury	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

METHOD	METHODOLOGY SUMMARY
AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
AN289	Analysis of Total Phenols in Soil Sediment and Water: Steam distillable phenols react with 4-aminoantipyrine at pH 7.9±0.1 in the presence of potassium ferricyanide to form a coloured antipyrine dye analysed by Discrete Analyser. Reference APHA 5530 B/D.
AN311(Perth)/AN312	Mercury by Cold Vapour AAS in Waters: Mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500.
AN318	Determination of elements at trace level in waters by ICP-MS technique,, referenced to USEPA 6020B and USEPA 200.8 (5.4).
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). Where F2 is corrected for Naphthalene, the VOC data for Naphthalene is used.
AN403	Additionally, the volatile C6-C9/C6-C10 fractions may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Recoveerable Hydrocarbons - Silica (TRH-Silica) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents.
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN433	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.

FOOTNOTES

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

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the " Total" LOR will be the sum of those two LORs.

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

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:

a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au/en-gb/environment-health-and-safety.

STATEMENT OF QA/QC PERFORMANCE

SE207730 R0

CLIENT DETAILS

Contact	Emily Scanlon
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Project	**E24614 2-60 Cumberland St, The Rocks**
Order Number	**E24614**
Samples	7

LABORATORY DETAILS

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SGS Reference	**SE207730 R0**
Date Received	19 Jun 2020
Date Reported	26 Jun 2020

COMMENTS

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

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

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

Matrix Spike	Volatile Petroleum Hydrocarbons in Water	1 item

SAMPLE SUMMARY

HOLDING TIME SUMMARY

SE207730 R0

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

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

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

Mercury (dissolved) in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
GW_BH6m-1	SE207730.001	LB202599	19 Jun 2020	19 Jun 2020	17 Jul 2020	24 Jun 2020	17 Jul 2020	24 Jun 2020
GW_BH8M-1	SE207730.002	LB202599	19 Jun 2020	19 Jun 2020	17 Jul 2020	24 Jun 2020	17 Jul 2020	24 Jun 2020
GW_BH11M-1	SE207730.003	LB202599	19 Jun 2020	19 Jun 2020	17 Jul 2020	24 Jun 2020	17 Jul 2020	24 Jun 2020
GW_QD-1	SE207730.004	LB202599	19 Jun 2020	19 Jun 2020	17 Jul 2020	24 Jun 2020	17 Jul 2020	24 Jun 2020
GW_QR-1	SE207730.005	LB202599	19 Jun 2020	19 Jun 2020	17 Jul 2020	24 Jun 2020	17 Jul 2020	24 Jun 2020

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
GW_BH6m-1	SE207730.001	LB202508	19 Jun 2020	19 Jun 2020	26 Jun 2020	23 Jun 2020	02 Aug 2020	25 Jun 2020
GW_BH8M-1	SE207730.002	LB202508	19 Jun 2020	19 Jun 2020	26 Jun 2020	23 Jun 2020	02 Aug 2020	25 Jun 2020
GW_BH11M-1	SE207730.003	LB202508	19 Jun 2020	19 Jun 2020	26 Jun 2020	23 Jun 2020	02 Aug 2020	25 Jun 2020
GW_QD-1	SE207730.004	LB202508	19 Jun 2020	19 Jun 2020	26 Jun 2020	23 Jun 2020	02 Aug 2020	26 Jun 2020
GW_QR-1	SE207730.005	LB202508	19 Jun 2020	19 Jun 2020	26 Jun 2020	23 Jun 2020	02 Aug 2020	26 Jun 2020

Total Phenolics in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
GW_BH6m-1	SE207730.001	LB202741	19 Jun 2020	19 Jun 2020	17 Jul 2020	25 Jun 2020	17 Jul 2020	25 Jun 2020
GW_BH8M-1	SE207730.002	LB202741	19 Jun 2020	19 Jun 2020	17 Jul 2020	25 Jun 2020	17 Jul 2020	25 Jun 2020
GW_BH11M-1	SE207730.003	LB202741	19 Jun 2020	19 Jun 2020	17 Jul 2020	25 Jun 2020	17 Jul 2020	25 Jun 2020

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
GW_BH6m-1	SE207730.001	LB202424	19 Jun 2020	19 Jun 2020	16 Dec 2020	22 Jun 2020	16 Dec 2020	23 Jun 2020
GW_BH8M-1	SE207730.002	LB202424	19 Jun 2020	19 Jun 2020	16 Dec 2020	22 Jun 2020	16 Dec 2020	23 Jun 2020
GW_BH11M-1	SE207730.003	LB202424	19 Jun 2020	19 Jun 2020	16 Dec 2020	22 Jun 2020	16 Dec 2020	23 Jun 2020
GW_QD-1	SE207730.004	LB202424	19 Jun 2020	19 Jun 2020	16 Dec 2020	22 Jun 2020	16 Dec 2020	23 Jun 2020
GW_QR-1	SE207730.005	LB202424	19 Jun 2020	19 Jun 2020	16 Dec 2020	22 Jun 2020	16 Dec 2020	23 Jun 2020

TRH (Total Recoverable Hydrocarbons) in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
GW_BH6m-1	SE207730.001	LB202508	19 Jun 2020	19 Jun 2020	26 Jun 2020	23 Jun 2020	02 Aug 2020	25 Jun 2020
GW_BH8M-1	SE207730.002	LB202508	19 Jun 2020	19 Jun 2020	26 Jun 2020	23 Jun 2020	02 Aug 2020	25 Jun 2020
GW_BH11M-1	SE207730.003	LB202508	19 Jun 2020	19 Jun 2020	26 Jun 2020	23 Jun 2020	02 Aug 2020	25 Jun 2020
GW_QD-1	SE207730.004	LB202508	19 Jun 2020	19 Jun 2020	26 Jun 2020	23 Jun 2020	02 Aug 2020	25 Jun 2020
GW_QR-1	SE207730.005	LB202508	19 Jun 2020	19 Jun 2020	26 Jun 2020	23 Jun 2020	02 Aug 2020	25 Jun 2020

VOCs in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
GW_BH6m-1	SE207730.001	LB202634	19 Jun 2020	19 Jun 2020	26 Jun 2020	24 Jun 2020	03 Aug 2020	25 Jun 2020
GW_BH8M-1	SE207730.002	LB202634	19 Jun 2020	19 Jun 2020	26 Jun 2020	24 Jun 2020	03 Aug 2020	25 Jun 2020
GW_BH11M-1	SE207730.003	LB202634	19 Jun 2020	19 Jun 2020	26 Jun 2020	24 Jun 2020	03 Aug 2020	25 Jun 2020
GW_QD-1	SE207730.004	LB202634	19 Jun 2020	19 Jun 2020	26 Jun 2020	24 Jun 2020	03 Aug 2020	25 Jun 2020
GW_QR-1	SE207730.005	LB202634	19 Jun 2020	19 Jun 2020	26 Jun 2020	24 Jun 2020	03 Aug 2020	25 Jun 2020
GW_Trip Blank	SE207730.006	LB202634	19 Jun 2020	19 Jun 2020	26 Jun 2020	24 Jun 2020	03 Aug 2020	25 Jun 2020
GW_Trip Spike	SE207730.007	LB202634	19 Jun 2020	19 Jun 2020	26 Jun 2020	24 Jun 2020	03 Aug 2020	25 Jun 2020

Volatile Petroleum Hydrocarbons in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
GW_BH6m-1	SE207730.001	LB202634	19 Jun 2020	19 Jun 2020	26 Jun 2020	24 Jun 2020	03 Aug 2020	25 Jun 2020
GW_BH8M-1	SE207730.002	LB202634	19 Jun 2020	19 Jun 2020	26 Jun 2020	24 Jun 2020	03 Aug 2020	25 Jun 2020
GW_BH11M-1	SE207730.003	LB202634	19 Jun 2020	19 Jun 2020	26 Jun 2020	24 Jun 2020	03 Aug 2020	25 Jun 2020
GW_QD-1	SE207730.004	LB202634	19 Jun 2020	19 Jun 2020	26 Jun 2020	24 Jun 2020	03 Aug 2020	25 Jun 2020
GW_QR-1	SE207730.005	LB202634	19 Jun 2020	19 Jun 2020	26 Jun 2020	24 Jun 2020	03 Aug 2020	25 Jun 2020
GW_Trip Blank	SE207730.006	LB202634	19 Jun 2020	19 Jun 2020	26 Jun 2020	24 Jun 2020	03 Aug 2020	26 Jun 2020
GW_Trip Spike	SE207730.007	LB202634	19 Jun 2020	19 Jun 2020	26 Jun 2020	24 Jun 2020	03 Aug 2020	26 Jun 2020

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	GW_BH6m-1	SE207730.001	%	40 - 130%	40
	GW_BH8M-1	SE207730.002	%	40 - 130%	86
	GW_BH11M-1	SE207730.003	%	40 - 130%	84
d14-p-terphenyl (Surrogate)	GW_BH6m-1	SE207730.001	%	40 - 130%	74
	GW_BH8M-1	SE207730.002	%	40 - 130%	98
	GW_BH11M-1	SE207730.003	%	40 - 130%	104
d5-nitrobenzene (Surrogate)	GW_BH6m-1	SE207730.001	%	40 - 130%	50
	GW_BH8M-1	SE207730.002	%	40 - 130%	68
	GW_BH11M-1	SE207730.003	%	40 - 130%	72

VOCs in Water

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	GW_BH6m-1	SE207730.001	%	40 - 130%	107
	GW_BH8M-1	SE207730.002	%	40 - 130%	106
	GW_BH11M-1	SE207730.003	%	40 - 130%	106
	GW_QD-1	SE207730.004	%	40 - 130%	106
	GW_QR-1	SE207730.005	%	40 - 130%	106
	GW_Trip Blank	SE207730.006	%	40 - 130%	107
	GW_Trip Spike	SE207730.007	%	40 - 130%	101
d4-1,2-dichloroethane (Surrogate)	GW_BH6m-1	SE207730.001	%	40 - 130%	97
	GW_BH8M-1	SE207730.002	%	40 - 130%	100
	GW_BH11M-1	SE207730.003	%	40 - 130%	98
	GW_QD-1	SE207730.004	%	40 - 130%	99
	GW_QR-1	SE207730.005	%	40 - 130%	98
	GW_Trip Blank	SE207730.006	%	40 - 130%	98
	GW_Trip Spike	SE207730.007	%	40 - 130%	102
d8-toluene (Surrogate)	GW_BH6m-1	SE207730.001	%	40 - 130%	98
	GW_BH8M-1	SE207730.002	%	40 - 130%	99
	GW_BH11M-1	SE207730.003	%	40 - 130%	98
	GW_QD-1	SE207730.004	%	40 - 130%	98
	GW_QR-1	SE207730.005	%	40 - 130%	99
	GW_Trip Blank	SE207730.006	%	40 - 130%	99
	GW_Trip Spike	SE207730.007	%	40 - 130%	101

Volatile Petroleum Hydrocarbons in Water

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	GW_BH6m-1	SE207730.001	%	40 - 130%	107
	GW_BH8M-1	SE207730.002	%	40 - 130%	106
	GW_BH11M-1	SE207730.003	%	40 - 130%	106
	GW_QD-1	SE207730.004	%	40 - 130%	106
	GW_QR-1	SE207730.005	%	40 - 130%	106
d4-1,2-dichloroethane (Surrogate)	GW_BH6m-1	SE207730.001	%	60 - 130%	97
	GW_BH8M-1	SE207730.002	%	60 - 130%	100
	GW_BH11M-1	SE207730.003	%	60 - 130%	98
	GW_QD-1	SE207730.004	%	60 - 130%	99
	GW_QR-1	SE207730.005	%	60 - 130%	98
d8-toluene (Surrogate)	GW_BH6m-1	SE207730.001	%	40 - 130%	98
	GW_BH8M-1	SE207730.002	%	40 - 130%	99
	GW_BH11M-1	SE207730.003	%	40 - 130%	98
	GW_QD-1	SE207730.004	%	40 - 130%	98
	GW_QR-1	SE207730.005	%	40 - 130%	99

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

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

Mercury (dissolved) in Water

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

Sample Number	Parameter	Units	LOR	Result
LB202599.001	Mercury	mg/L	0.0001	<0.0001

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Sample Number		Parameter	Units	LOR	Result
LB202508.001		Naphthalene	µg/L	0.1	<0.1
		2-methylnaphthalene	µg/L	0.1	<0.1
		1-methylnaphthalene	µg/L	0.1	<0.1
		Acenaphthylene	µg/L	0.1	<0.1
		Acenaphthene	µg/L	0.1	<0.1
		Fluorene	µg/L	0.1	<0.1
		Phenanthrene	µg/L	0.1	<0.1
		Anthracene	µg/L	0.1	<0.1
		Fluoranthene	µg/L	0.1	<0.1
		Pyrene	µg/L	0.1	<0.1
		Benzo(a)anthracene	µg/L	0.1	<0.1
		Chrysene	µg/L	0.1	<0.1
		Benzo(a)pyrene	µg/L	0.1	<0.1
		Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1
		Dibenzo(ah)anthracene	µg/L	0.1	<0.1
		Benzo(ghi)perylene	µg/L	0.1	<0.1
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	70
		2-fluorobiphenyl (Surrogate)	%	-	74
		d14-p-terphenyl (Surrogate)	%	-	110

Total Phenolics in Water

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

Sample Number	Parameter	Units	LOR	Result
LB202741.001	Total Phenols	mg/L	0.01	<0.01

Trace Metals (Dissolved) in Water by ICPMS

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

Sample Number	Parameter	Units	LOR	Result
LB202424.001	Arsenic, As	µg/L	1	<1
	Cadmium, Cd	µg/L	0.1	<0.1
	Chromium, Cr	µg/L	1	<1
	Copper, Cu	µg/L	1	<1
	Lead, Pb	µg/L	1	<1
	Nickel, Ni	µg/L	1	<1
	Zinc, Zn	µg/L	5	<5

TRH (Total Recoverable Hydrocarbons) in Water

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

Sample Number	Parameter	Units	LOR	Result
LB202508.001	TRH C10-C14	µg/L	50	<50
	TRH C15-C28	µg/L	200	<200
	TRH C29-C36	µg/L	200	<200
	TRH C37-C40	µg/L	200	<200

VOCs in Water

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

Sample Number		Parameter	Units	LOR	Result
LB202634.001	Fumigants	2,2-dichloropropane	µg/L	0.5	<0.5
		1,2-dichloropropane	µg/L	0.5	<0.5
		cis-1,3-dichloropropene	µg/L	0.5	<0.5
		trans-1,3-dichloropropene	µg/L	0.5	<0.5
		1,2-dibromoethane (EDB)	µg/L	0.5	<0.5
	Halogenated Aliphatics	Dichlorodifluoromethane (CFC-12)	µg/L	5	<5
		Chloromethane	µg/L	5	<5
		Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3
		Bromomethane	µg/L	10	<10
		Chloroethane	µg/L	5	<5
		Trichlorofluoromethane	µg/L	1	<1
		Iodomethane	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.

VOCs in Water (continued)

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

Sample Number		Parameter	Units	LOR	Result
LB202634.001	Halogenated Aliphatics	1,1-dichloroethene	µg/L	0.5	<0.5
		Dichloromethane (Methylene chloride)	µg/L	5	<5
		Allyl chloride	µg/L	2	<2
		trans-1,2-dichloroethene	µg/L	0.5	<0.5
		1,1-dichloroethane	µg/L	0.5	<0.5
		cis-1,2-dichloroethene	µg/L	0.5	<0.5
		Bromochloromethane	µg/L	0.5	<0.5
		1,2-dichloroethane	µg/L	0.5	<0.5
		1,1,1-trichloroethane	µg/L	0.5	<0.5
		1,1-dichloropropene	µg/L	0.5	<0.5
		Carbon tetrachloride	µg/L	0.5	<0.5
		Dibromomethane	µg/L	0.5	<0.5
		Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	<0.5
		1,1,2-trichloroethane	µg/L	0.5	<0.5
		1,3-dichloropropane	µg/L	0.5	<0.5
		Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	<0.5
		1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5
		cis-1,4-dichloro-2-butene	µg/L	1	<1
		1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5
		1,2,3-trichloropropane	µg/L	0.5	<0.5
		trans-1,4-dichloro-2-butene	µg/L	1	<1
		1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5
		Hexachlorobutadiene	µg/L	0.5	<0.5
	Halogenated Aromatics	Chlorobenzene	µg/L	0.5	<0.5
		Bromobenzene	µg/L	0.5	<0.5
		2-chlorotoluene	µg/L	0.5	<0.5
		4-chlorotoluene	µg/L	0.5	<0.5
		1,3-dichlorobenzene	µg/L	0.5	<0.5
		1,4-dichlorobenzene	µg/L	0.3	<0.3
		1,2-dichlorobenzene	µg/L	0.5	<0.5
		1,2,4-trichlorobenzene	µg/L	0.5	<0.5
		1,2,3-trichlorobenzene	µg/L	0.5	<0.5
	Monocyclic Aromatic Hydrocarbons	Benzene	µg/L	0.5	<0.5
		Toluene	µg/L	0.5	<0.5
		Ethylbenzene	µg/L	0.5	<0.5
		m/p-xylene	µg/L	1	<1
		o-xylene	µg/L	0.5	<0.5
		Styrene (Vinyl benzene)	µg/L	0.5	<0.5
		Isopropylbenzene (Cumene)	µg/L	0.5	<0.5
		n-propylbenzene	µg/L	0.5	<0.5
		1,3,5-trimethylbenzene	µg/L	0.5	<0.5
		tert-butylbenzene	µg/L	0.5	<0.5
		1,2,4-trimethylbenzene	µg/L	0.5	<0.5
		sec-butylbenzene	µg/L	0.5	<0.5
		p-isopropyltoluene	µg/L	0.5	<0.5
		n-butylbenzene	µg/L	0.5	<0.5
	Nitrogenous Compounds	Acrylonitrile	µg/L	0.5	<0.5
	Oxygenated Compounds	Acetone (2-propanone)	µg/L	10	<10
		MtBE (Methyl-tert-butyl ether)	µg/L	2	<1
		Vinyl acetate	µg/L	10	<10
		MEK (2-butanone)	µg/L	10	<10
		MIBK (4-methyl-2-pentanone)	µg/L	5	<5
		2-hexanone (MBK)	µg/L	5	<5
	Polycyclic VOCs	Naphthalene	µg/L	0.5	<0.5
	Sulphonated	Carbon disulfide	µg/L	2	<2
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	96
		d8-toluene (Surrogate)	%	-	96
		Bromofluorobenzene (Surrogate)	%	-	103
	Trihalomethanes	Chloroform (THM)	µg/L	0.5	<0.5
		Bromodichloromethane (THM)	µg/L	0.5	<0.5
		Dibromochloromethane (THM)	µg/L	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.

VOCs in Water (continued)

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

Sample Number		Parameter	Units	LOR	Result
LB202634.001	Trihalomethanes	Bromoform (THM)	µg/L	0.5	<0.5

Volatile Petroleum Hydrocarbons in Water

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

Sample Number		Parameter	Units	LOR	Result
LB202634.001		TRH C6-C9	µg/L	40	<40
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	96
		d8-toluene (Surrogate)	%	-	96
		Bromofluorobenzene (Surrogate)	%	-	103

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

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

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE207730.003	LB202508.028		Naphthalene	µg/L	0.1	<0.1	0.01	200	0
			2-methylnaphthalene	µg/L	0.1	<0.1	0	200	0
			1-methylnaphthalene	µg/L	0.1	<0.1	0	200	0
			Acenaphthylene	µg/L	0.1	<0.1	0.01	200	0
			Acenaphthene	µg/L	0.1	<0.1	0	200	0
			Fluorene	µg/L	0.1	<0.1	0	200	0
			Phenanthrene	µg/L	0.1	<0.1	0.02	200	0
			Anthracene	µg/L	0.1	<0.1	0.01	200	0
			Fluoranthene	µg/L	0.1	<0.1	0.01	200	0
			Pyrene	µg/L	0.1	<0.1	0.01	200	0
			Benzo(a)anthracene	µg/L	0.1	<0.1	0.02	200	0
			Chrysene	µg/L	0.1	<0.1	0.02	200	0
			Benzo(b&j)fluoranthene	µg/L	0.1	<0.1	0	200	0
			Benzo(k)fluoranthene	µg/L	0.1	<0.1	0	200	0
			Benzo(a)pyrene	µg/L	0.1	<0.1	0.01	200	0
			Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1	0	200	0
			Dibenzo(ah)anthracene	µg/L	0.1	<0.1	0	200	0
			Benzo(ghi)perylene	µg/L	0.1	<0.1	0	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	µg/L	-	0.4	0.35	30	3
			2-fluorobiphenyl (Surrogate)	µg/L	-	0.4	0.4	30	5
			d14-p-terphenyl (Surrogate)	µg/L	-	0.5	0.51	30	2

Total Phenolics in Water

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE207810.003	LB202741.014	Total Phenols	mg/L	0.01	0.02008	0.01773	200	0

Trace Metals (Dissolved) in Water by ICPMS

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE207693.001	LB202424.014	Arsenic, As	µg/L	1	1	1	112	1
		Cadmium, Cd	µg/L	0.1	<0.1	<0.1	200	0
		Chromium, Cr	µg/L	1	<1	<1	173	0
		Copper, Cu	µg/L	1	<1	<1	137	0
		Lead, Pb	µg/L	1	<1	<1	200	0
		Nickel, Ni	µg/L	1	3	2	54	5
		Zinc, Zn	µg/L	5	<5	<5	200	0
SE207730.004	LB202424.028	Arsenic, As	µg/L	1	2	2	56	6
		Cadmium, Cd	µg/L	0.1	0.1	0.1	94	8
		Chromium, Cr	µg/L	1	<1	<1	142	0
		Copper, Cu	µg/L	1	<1	<1	200	0
		Lead, Pb	µg/L	1	<1	<1	200	0
		Nickel, Ni	µg/L	1	15	15	22	0
		Zinc, Zn	µg/L	5	43	45	26	4
SE207730.005	LB202424.029	Arsenic, As	µg/L	1	<1	<1	200	0
		Cadmium, Cd	µg/L	0.1	<0.1	<0.1	200	0
		Chromium, Cr	µg/L	1	<1	<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

TRH (Total Recoverable Hydrocarbons) in Water

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE207730.003	LB202508.014		TRH C10-C14	µg/L	50	<50	<50	200	0
			TRH C15-C28	µg/L	200	<200	<200	200	0
			TRH C29-C36	µg/L	200	<200	<200	200	0
			TRH C37-C40	µg/L	200	<200	<200	200	0
			TRH C10-C40	µg/L	320	<320	<320	200	0
		TRH F Bands	TRH >C10-C16	µg/L	60	<60	<60	200	0
			TRH >C10-C16 - Naphthalene (F2)	µg/L	60	<60	<60	200	0
			TRH >C16-C34 (F3)	µg/L	500	<500	<500	200	0

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

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

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

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

TRH (Total Recoverable Hydrocarbons) in Water (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE207730.003	LB202508.014	TRH F Bands	TRH >C34-C40 (F4)	µg/L	500	<500	<500	200	0

VOCs in Water

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE207730.002	LB202634.016	Fumigants	2,2-dichloropropane	µg/L	0.5	<0.5	0	200	0
			1,2-dichloropropane	µg/L	0.5	<0.5	0	200	0
			cis-1,3-dichloropropene	µg/L	0.5	<0.5	0	200	0
			trans-1,3-dichloropropene	µg/L	0.5	<0.5	0.0337851503	200	0
			1,2-dibromoethane (EDB)	µg/L	0.5	<0.5	0	200	0
		Halogenated	Dichlorodifluoromethane (CFC-12)	µg/L	5	<5	0	200	0
		Aliphatics	Chloromethane	µg/L	5	<5	0	200	0
			Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3	0	200	0
			Bromomethane	µg/L	10	<10	0.0242601684	200	0
			Chloroethane	µg/L	5	<5	0.0027148836	200	0
			Trichlorofluoromethane	µg/L	1	<1	0.0019180195	200	0
			Iodomethane	µg/L	5	<5	0.0186068892	200	0
			1,1-dichloroethene	µg/L	0.5	<0.5	0.0108755822	200	0
			Dichloromethane (Methylene chloride)	µg/L	5	<5	0	200	0
			Allyl chloride	µg/L	2	<2	0.0121218165	200	0
			trans-1,2-dichloroethene	µg/L	0.5	<0.5	0.0092188133	200	0
			1,1-dichloroethane	µg/L	0.5	<0.5	0.0325995010	200	0
			cis-1,2-dichloroethene	µg/L	0.5	<0.5	0.0018108446	200	0
			Bromochloromethane	µg/L	0.5	<0.5	0.0623468920	200	0
			1,2-dichloroethane	µg/L	0.5	<0.5	0.0198002669	200	0
			1,1,1-trichloroethane	µg/L	0.5	<0.5	0	200	0
			1,1-dichloropropene	µg/L	0.5	<0.5	0	200	0
			Carbon tetrachloride	µg/L	0.5	<0.5	0	200	0
			Dibromomethane	µg/L	0.5	<0.5	0.0073864677	200	0
			Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	<0.5	0.0149705464	200	0
			1,1,2-trichloroethane	µg/L	0.5	<0.5	0	200	0
			1,3-dichloropropane	µg/L	0.5	<0.5	0	200	0
			Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	<0.5	0.0014859148	200	0
			1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5	0	200	0
			cis-1,4-dichloro-2-butene	µg/L	1	<1	0.0214053565	200	0
			1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5	0.0441379514	200	0
			1,2,3-trichloropropane	µg/L	0.5	<0.5	0.0068482040	200	0
			trans-1,4-dichloro-2-butene	µg/L	1	<1	0	200	0
			1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5	0	200	0
			Hexachlorobutadiene	µg/L	0.5	<0.5	0	200	0
		Halogenated	Chlorobenzene	µg/L	0.5	<0.5	0.0261002031	200	0
		Aromatics	Bromobenzene	µg/L	0.5	<0.5	0.0474607341	200	0
			2-chlorotoluene	µg/L	0.5	<0.5	0.0068428078	200	0
			4-chlorotoluene	µg/L	0.5	<0.5	0.0046992672	200	0
			1,3-dichlorobenzene	µg/L	0.5	<0.5	0.0075318393	200	0
			1,4-dichlorobenzene	µg/L	0.3	<0.3	0.0066194719	200	0
			1,2-dichlorobenzene	µg/L	0.5	<0.5	0.0336149238	200	0
			1,2,4-trichlorobenzene	µg/L	0.5	<0.5	0.0021960069	200	0
			1,2,3-trichlorobenzene	µg/L	0.5	<0.5	0.0020284627	200	0
		Monocyclic	Benzene	µg/L	0.5	<0.5	0.0510076440	200	0
		Aromatic	Toluene	µg/L	0.5	1.0	1.0656323010	78	5
			Ethylbenzene	µg/L	0.5	<0.5	0.1056169872	200	0
			m/p-xylene	µg/L	1	<1	0.2573909662	200	0
			o-xylene	µg/L	0.5	<0.5	0.1504018054	200	0
			Styrene (Vinyl benzene)	µg/L	0.5	<0.5	0.0228280076	200	0
			Isopropylbenzene (Cumene)	µg/L	0.5	<0.5	0.0100912611	200	0
			n-propylbenzene	µg/L	0.5	<0.5	0.0056358733	200	0
			1,3,5-trimethylbenzene	µg/L	0.5	<0.5	0.0133362938	200	0
			tert-butylbenzene	µg/L	0.5	<0.5	0.0079213611	200	0
			1,2,4-trimethylbenzene	µg/L	0.5	<0.5	0.0466813007	200	0
			sec-butylbenzene	µg/L	0.5	<0.5	0.0016230458	200	0
			p-isopropyltoluene	µg/L	0.5	<0.5	0.0053811503	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.

VOCs in Water (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE207730.002	LB202634.016	Monocyclic	n-butylbenzene	µg/L	0.5	<0.5	0.0021308861	200	0
		Nitrogenous	Acrylonitrile	µg/L	0.5	<0.5	0.0706028208	200	0
		Oxygenated	Acetone (2-propanone)	µg/L	10	<10	3.6939367634	200	0
		Compounds	MtBE (Methyl-tert-butyl ether)	µg/L	2	<2	0.0241267447	200	0
			Vinyl acetate	µg/L	10	<10	0.0993505915	200	0
			MEK (2-butanone)	µg/L	10	<10	0	200	0
			MIBK (4-methyl-2-pentanone)	µg/L	5	<5	0.2257705486	200	0
			2-hexanone (MBK)	µg/L	5	<5	0	200	0
		Polycyclic	Naphthalene	µg/L	0.5	<0.5	0.3083343565	200	0
		Sulphonated	Carbon disulfide	µg/L	2	<2	0	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	10.0	9.7375329824	30	2
			d8-toluene (Surrogate)	µg/L	-	9.9	9.5695603000	30	3
			Bromofluorobenzene (Surrogate)	µg/L	-	10.6	10.313787277	30	3
		Trihalomethan	Chloroform (THM)	µg/L	0.5	0.7	0.6856412104	103	1
		es	Bromodichloromethane (THM)	µg/L	0.5	<0.5	0.0100728897	200	0
			Dibromochloromethane (THM)	µg/L	0.5	<0.5	0.0057941885	200	0
			Bromoform (THM)	µg/L	0.5	<0.5	0	200	0

Volatile Petroleum Hydrocarbons in Water

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE207730.002	LB202634.018		TRH C6-C10	µg/L	50	<50	9.5196	200	0
			TRH C6-C9	µg/L	40	<40	7.9456	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	10.0	9.7375329824	30	2
			d8-toluene (Surrogate)	µg/L	-	9.9	9.5695603000	30	3
			Bromofluorobenzene (Surrogate)	µg/L	-	10.6	10.313787277	30	3
		VPH F Bands	Benzene (F0)	µg/L	0.5	<0.5	0.0510076440	200	0
			TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	8.4539676989	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.

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB202508.002		Naphthalene	µg/L	0.1	31	40	60 - 140	76
		Acenaphthylene	µg/L	0.1	36	40	60 - 140	90
		Acenaphthene	µg/L	0.1	32	40	60 - 140	80
		Phenanthrene	µg/L	0.1	38	40	60 - 140	95
		Anthracene	µg/L	0.1	31	40	60 - 140	77
		Fluoranthene	µg/L	0.1	36	40	60 - 140	90
		Pyrene	µg/L	0.1	36	40	60 - 140	89
		Benzo(a)pyrene	µg/L	0.1	40	40	60 - 140	101
	Surrogates	d5-nitrobenzene (Surrogate)	µg/L	-	0.4	0.5	40 - 130	86
		2-fluorobiphenyl (Surrogate)	µg/L	-	0.4	0.5	40 - 130	84
		d14-p-terphenyl (Surrogate)	µg/L	-	0.5	0.5	40 - 130	94

Total Phenolics in Water

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB202741.002	Total Phenols	mg/L	0.01	0.22	0.25	80 - 120	90

Trace Metals (Dissolved) in Water by ICPMS

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB202424.002	Arsenic, As	µg/L	1	19	20	80 - 120	97
	Cadmium, Cd	µg/L	0.1	22	20	80 - 120	110
	Chromium, Cr	µg/L	1	22	20	80 - 120	111
	Copper, Cu	µg/L	1	22	20	80 - 120	112
	Lead, Pb	µg/L	1	21	20	80 - 120	107
	Nickel, Ni	µg/L	1	22	20	80 - 120	108
	Zinc, Zn	µg/L	5	21	20	80 - 120	103

TRH (Total Recoverable Hydrocarbons) in Water

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB202508.002		TRH C10-C14	µg/L	50	950	1200	60 - 140	79
		TRH C15-C28	µg/L	200	1200	1200	60 - 140	100
		TRH C29-C36	µg/L	200	1200	1200	60 - 140	96
	TRH F Bands	TRH >C10-C16	µg/L	60	1000	1200	60 - 140	87
		TRH >C16-C34 (F3)	µg/L	500	1300	1200	60 - 140	107
		TRH >C34-C40 (F4)	µg/L	500	540	600	60 - 140	90

VOCs in Water

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB202634.002	Halogenated	1,1-dichloroethene	µg/L	0.5	44	45.45	60 - 140	98
	Aliphatics	1,2-dichloroethane	µg/L	0.5	49	45.45	60 - 140	108
		Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	46	45.45	60 - 140	102
	Halogenated	Chlorobenzene	µg/L	0.5	54	45.45	60 - 140	119
	Monocyclic	Benzene	µg/L	0.5	47	45.45	60 - 140	104
	Aromatic	Toluene	µg/L	0.5	48	45.45	60 - 140	105
		Ethylbenzene	µg/L	0.5	47	45.45	60 - 140	103
		m/p-xylene	µg/L	1	93	90.9	60 - 140	102
		o-xylene	µg/L	0.5	47	45.45	60 - 140	103
	Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	10.6	10	60 - 140	106
		d8-toluene (Surrogate)	µg/L	-	10.3	10	70 - 130	103
		Bromofluorobenzene (Surrogate)	µg/L	-	10.2	10	70 - 130	102
	Trihalomethan	Chloroform (THM)	µg/L	0.5	52	45.45	60 - 140	114

Volatile Petroleum Hydrocarbons in Water

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB202634.002		TRH C6-C10	µg/L	50	710	946.63	60 - 140	75
		TRH C6-C9	µg/L	40	620	818.71	60 - 140	75
	Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	10.6	10	60 - 140	106
		d8-toluene (Surrogate)	µg/L	-	10.3	10	70 - 130	103
		Bromofluorobenzene (Surrogate)	µg/L	-	10.2	10	70 - 130	102
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	430	639.67	60 - 140	67

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%
SE207730.001	LB202599.004	Mercury	mg/L	0.0001	0.0064	<0.0001	0.008	79

Total Phenolics in Water

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE207668.002	LB202741.004	Total Phenols	mg/L	0.01	0.28	0.05	0.25	90

Trace Metals (Dissolved) in Water by ICPMS

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE207678.001	LB202424.004	Arsenic, As	µg/L	1	22	<1	20	108
		Cadmium, Cd	µg/L	0.1	23	<0.1	20	113
		Chromium, Cr	µg/L	1	22	<1	20	108
		Copper, Cu	µg/L	1	19	<1	20	102
		Lead, Pb	µg/L	1	22	<1	20	109
		Nickel, Ni	µg/L	1	19	<1	20	97
		Zinc, Zn	µg/L	5	16	<5	20	78

VOCs in Water

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

QC Sample	Sample Number		Parameter	Units	LOR	Original	Spike	Recovery%
SE207730.005	LB202634.017	Monocyclic Aromatic	Benzene	µg/L	0.5	<0.5	45.45	91
			Toluene	µg/L	0.5	<0.5	45.45	92
			Ethylbenzene	µg/L	0.5	<0.5	45.45	93
			m/p-xylene	µg/L	1	<1	90.9	93
			o-xylene	µg/L	0.5	<0.5	45.45	92
		Polycyclic	Naphthalene	µg/L	0.5	<0.5	-	-
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	9.8	-	104
			d8-toluene (Surrogate)	µg/L	-	9.9	-	102
			Bromofluorobenzene (Surrogate)	µg/L	-	10.6	-	101

Volatile Petroleum Hydrocarbons in Water

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

QC Sample	Sample Number		Parameter	Units	LOR	Original	Spike	Recovery%
SE207730.005	LB202634.017		TRH C6-C10	µg/L	50	<50	946.63	65
			TRH C6-C9	µg/L	40	<40	818.71	65
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	9.8	-	104
			d8-toluene (Surrogate)	µg/L	-	9.9	-	102
			Bromofluorobenzene (Surrogate)	µg/L	-	10.6	-	101
		VPH F Bands	Benzene (F0)	µg/L	0.5	<0.5	-	-
			TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	639.67	56 ④

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

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

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

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

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

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

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

*	NATA accreditation does not cover the performance of this service.
**	Indicative data, theoretical holding time exceeded.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.

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

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CERTIFICATE OF ANALYSIS 245272

Client Details

Client	EI Australia
Attention	Luiza Barbosa, Emily Scanlon
Address	Suite 6.01, 55 Miller Street, Pyrmont, NSW, 2009

Sample Details

Your Reference	**E24614, The Rocks**
Number of Samples	1 Water
Date samples received	19/06/2020
Date completed instructions received	19/06/2020

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.

Report Details

Date results requested by	26/06/2020
Date of Issue	26/06/2020

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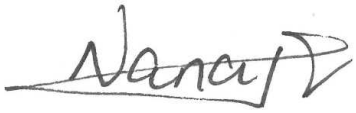
Results Approved By
Dragana Tomas, Senior Chemist
Hannah Nguyen, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Water		
Our Reference		245272-1
Your Reference	UNITS	GW-QT1
Date Sampled		19/06/2020
Type of sample		Water
Date extracted	-	23/06/2020
Date analysed	-	24/06/2020
TRH C_6 - C_9	µg/L	<10
TRH C_6 - C_{10}	µg/L	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10
Benzene	µg/L	<1
Toluene	µg/L	1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Naphthalene	µg/L	<1
Surrogate Dibromofluoromethane	%	110
Surrogate toluene-d8	%	96
Surrogate 4-BFB	%	92

svTRH (C10-C40) in Water		
Our Reference	UNITS	245272-1
Your Reference		GW-QT1
Date Sampled		19/06/2020
Type of sample		Water
Date extracted	-	23/06/2020
Date analysed	-	23/06/2020
TRH C_{10} - C_{14}	µg/L	61
TRH C_{15} - C_{28}	µg/L	<100
TRH C_{29} - C_{36}	µg/L	<100
TRH >C_{10} - C_{16}	µg/L	60
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	60
TRH >C_{16} - C_{34}	µg/L	<100
TRH >C_{34} - C_{40}	µg/L	<100
Surrogate o-Terphenyl	%	107

HM in water - dissolved		
Our Reference		245272-1
Your Reference	UNITS	GW-QT1
Date Sampled		19/06/2020
Type of sample		Water
Date prepared	-	23/06/2020
Date analysed	-	23/06/2020
Arsenic-Dissolved	µg/L	3
Cadmium-Dissolved	µg/L	<0.1
Chromium-Dissolved	µg/L	<1
Copper-Dissolved	µg/L	2
Lead-Dissolved	µg/L	<1
Mercury-Dissolved	µg/L	<0.05
Nickel-Dissolved	µg/L	10
Zinc-Dissolved	µg/L	17

Method ID	Methodology Summary
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
Date extracted	-			23/06/2020	1	23/06/2020	23/06/2020		23/06/2020	[NT]
Date analysed	-			24/06/2020	1	24/06/2020	24/06/2020		24/06/2020	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	1	<10	<10	0	97	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	1	<10	<10	0	97	[NT]
Benzene	µg/L	1	Org-023	<1	1	<1	<1	0	100	[NT]
Toluene	µg/L	1	Org-023	<1	1	1	<1	0	97	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	96	[NT]
m+p-xylene	µg/L	2	Org-023	<2	1	<2	<2	0	96	[NT]
o-xylene	µg/L	1	Org-023	<1	1	<1	<1	0	97	[NT]
Naphthalene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	106	1	110	110	0	98	[NT]
Surrogate toluene-d8	%		Org-023	95	1	96	99	3	100	[NT]
Surrogate 4-BFB	%		Org-023	91	1	92	105	13	98	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			23/06/2020	1	23/06/2020	23/06/2020		23/06/2020	[NT]
Date analysed	-			23/06/2020	1	23/06/2020	23/06/2020		23/06/2020	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	1	61	<50	20	96	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	1	<100	<100	0	90	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	1	<100	<100	0	113	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	1	60	<50	18	96	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	1	<100	<100	0	90	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	1	<100	<100	0	113	[NT]
Surrogate o-Terphenyl	%		Org-020	99	1	107	68	45	87	[NT]

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
Date prepared	-			23/06/2020	[NT]	[NT]	[NT]	[NT]	23/06/2020	[NT]
Date analysed	-			23/06/2020	[NT]	[NT]	[NT]	[NT]	23/06/2020	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	103	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	[NT]	[NT]	[NT]	[NT]	92	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	95	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

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.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

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: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-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.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Appendix H – QA/QC Assessment

H.1 Quality Control Program

QA for this project comprised an assessment of the reliability of the field procedures and laboratory analytical results against standard industry practices and the SAQP.

For the purpose of assessing the quality of the analytical data presented in this validation report, EI collected and tested field groundwater QC samples (alongside the primary samples). The contracted laboratories, SGS, also prepared and analysed internal QC samples for soil and groundwater. Details of the field and laboratory QC measures integrated into the site validation phase are provided in **Table H-1**.

Table H-1 QA/QC Protocols

Task	Protocol	Details
Field QA/QC		
General	Work undertaken following standard field procedures which are based on industry accepted standard practice.	Yes. Soil samples were generally collected directly off the auger flights. Groundwater collected via low flow method. Samples were placed in suitable, laboratory-supplied containers, which were filled to minimise headspace, and sealed using Teflon-coated lids.
	All fieldwork supervised by a suitably qualified and experienced scientist or engineer.	Yes
Rinsate Sample	One rinsate blank collected per groundwater sampling event and analysed for the primary contaminants. All results should be non-detect.	Yes. All analytes in GW-QR-1 were below laboratory quantitation limits (see **Table 3**).
Trip Blank	Trip blank samples prepared and analysed by the primary laboratory for BTEX. Analytical results for trip blank samples below the laboratory PQLs, indicating that ideal sample transport and handling conditions were achieved.	Yes. All analytes in the water trip blank (GW-Trip Blank) were below laboratory quantitation limits (see **Table 3**).
Trip Spike	Trip spike samples were prepared and analysed by the primary laboratory for BTEX. Acceptance criteria of spike recoveries were between 70-130%.	Yes. Recoveries for water trip spike (GW-Trip Spike) were 100-101% (see **Table 3**).

Task	Protocol	Details
QC samples	Field and laboratory QC samples analysed as follows: Intra-laboratory and inter-laboratory duplicate samples collected at a rate of 1 pair per 20 primary samples.	Yes. See **Table 3**. Calculated RPD values between most primary and field duplicate samples were within the acceptance criterion (≤30% RPD; **Section H2**), except: Between groundwater sample GW-BH8M-1 and GW-QD-1 for: ▪ TRH F2 (RPD=84.54%); ▪ Arsenic (RPD=66.67%); ▪ Copper (RPD=114.29%); and ▪ Zinc (RPD=77.42%). Between groundwater sample GW-BH8M-1 and GW-QT-1 for TRH F2 (RPD = 129.41%) The exceedance was considered a result of low analyte concentrations and/or sample heterogeneity.
Laboratory QA/QC		
Laboratory Analysis	The laboratories selected were NATA accredited for the analytes selected and performed their own internal QA/QC programs	Yes SGS Australia The laboratory QA/QC reports are included in **Appendix G**.
	Appropriate detection limits used for the analyses to be undertaken.	Practical Quantitation Limits for all tested parameters were presented in laboratory analytical reports (**Appendix G**).
	Methods followed were generally in accordance with the requirements of NEPC (2013).	Yes
Holding Times	Holding times are the maximum permissible elapsed time in days from the collection of the sample to its extraction and/or analysis. All extraction and analyses should be completed within standard guidelines.	Yes
Laboratory Duplicates	Laboratory duplicates are samples that are split in the laboratory and subsequently analysed a number of times in the same batch. These sub-samples are selected by the laboratory to assess the accuracy and precision of the analytical method. The selected laboratories should undertake QA/QC procedures such as calibration standards, laboratory control samples, surrogates, reference materials, sample duplicates and matrix spikes. Intra-laboratory duplicates should be performed at a frequency of 1 per 10 samples.	The laboratory duplicate samples met the data quality objectives, with the exception of: ▪ Soil sample SE207286.022 for Chromium (RPD=43%), where RPD failed acceptance criteria due to sample heterogeneity.

Task	Protocol	Details
Laboratory Control Standard	A laboratory control standard is a standard reference material used in preparing primary standards. The concentration should be equivalent to a mid-range standard to confirm the primary calibration. Laboratory control samples should be performed on a frequency of 1 per 20 samples or at least one per analytical run.	The Laboratory Control Samples for the analysis batches were within acceptable ranges.
Matrix Spikes / Matrix Spike Duplicates	MS/MSDs are field samples to which a predetermined stock solution of known concentration has been added. The samples are then analysed for recovery of the known addition. Recoveries should be within the stated laboratory control limits of 70 to 130% and duplicates should have RPDs of less than 50%.	Matrix spikes for the analysis batches were within acceptable ranges, with the exception of: ▪ Groundwater sample SE207730.005 for TRH F1, which matrix spike recovery was 56%. Recovery failed acceptance criteria due to matrix interference.
Surrogate Spikes	Surrogate spikes provide a means of checking, for every analysis that no gross errors have occurred at any stage of the procedure leading to significant analyte loss. Recoveries should be within the stated laboratory control limits of 60 to 130%.	Surrogate spikes for the analysis batches were all within acceptable ranges.
QA/QC Conclusion	The QA/QC indicators should either all comply with the required standards or showed no variations that would have no significant effect on the quality of the data.	EI considers that although a small number of discrepancies were identified, which in most cases could be attributed to low analyte concentrations of the submitted samples, the data generally confirms that the analytical results for the various phases of laboratory testing were valid and useable for interpretation purposes.

H.2 Calculation of Relative Percentage Difference (RPD)

The RPD values were calculated using the following equation:

$$RPD = \frac{|C_O - C_R|}{[(C_O + C_R)/2]} \times 100$$

Where:

C_O = Concentration obtained for the primary sample; and

C_R = Concentration obtained for the blind replicate or split duplicate sample.

Data precision was deemed acceptable if RPDs were less than 30%. RPDs that exceed this range were considered acceptable where:

- Results were less than 10 times the limits of reporting (LOR);
- Results were less than 20 times the LOR and the RPD is less than 50%; or
- Heterogeneous materials or volatile compounds were encountered.

In cases where RPD value was considered unacceptable, the analytical results of primary and duplicate samples were both reviewed against the adopted assessment criteria. If the review

indicates the variations in data between the primary and duplicate samples would result in a different conclusion (e.g. the higher concentration is failing the assessment criteria), the need for re-sampling / validation would be considered.

H.3 Field QA Program

H.3.1 Field QC Samples

The field quality control samples collected during the investigation works are summarised in **Table H-2**. Analytical results for the field QC samples are tabulated in **Tables 3**, alongside calculated RPDs between the primary and field duplicate samples, where applicable.

Table H-2 Field QC Sampling Program

Activity	Matrix	Number Primary Samples	Primary Sample	Intra-Lab Duplicate	Inter-Lab Duplicate	Number Duplicates	Duplicate Ratio
Field QC Samples - Duplicates							
Groundwater Sampling	Water	3	GW-BH8M-1	GW-QD-1	GW-QT-1	1	3 :1
Other Field QC Samples							
Groundwater Sampling	Water	GW-Trip Blank; GW-Trip Spike; GW-QR-1 (equipment rinsate).					

H.3.2 Review of Field QA

QA for the field work component is reviewed in **Table H-3** below.

Table H-3 Field QA Review

QA/QC Component	Item	Conformance / Comments
Accuracy – A quantitative measure of the closeness of reported data to the "true" value	Standard operation procedures appropriate and complied with	Yes
	Results for inter-laboratory (split field) duplicates acceptable	Yes
Precision – A quantitative measure of the variability (or reproducibility) of data	Standard operation procedures appropriate and complied with	Yes
	Results for intra-laboratory (blind field) duplicates acceptable	Yes
Completeness – A measure of the amount of useable data from a data collection activity	Each critical location sampled	Yes
	Samples collected at targeted locations and depth	Yes
	SAQP appropriate and complied with	Yes
	Experienced sampler	Yes
	Field documentation correct	Yes
Comparability – The confidence (expressed qualitatively) that	Same sampling method used on each occasion/location	Yes

QA/QC Component	Item	Conformance / Comments
data may be considered to be equivalent for each sampling and analytical event	Experienced sampler	Yes
	Climatic conditions (temperature, rainfall, wind)	Climate conditions were recorded as sunny and cold; hence, unlikely to have had significant influence on the investigation results.
	Same type of samples collected (filtered, size, fractions)	Yes
Representativeness – The confidence (expressed qualitatively) that data are representative of each medium present onsite	Appropriate media sampled according to SAQP	Yes
	Each media identified in SAQP sampled	Yes
	Appropriate sample collection methodologies, handling, storage and preservation techniques used	Yes
	Consistency between field observations and laboratory results.	Yes

H.3.3 Conclusion for the Field QA

All field work, including equipment decontamination and sample preservation and transport, was conducted in accordance with the SAQP and SOPs, which were devised with reference to industry-approved guidelines. Appropriate QC measures were integrated into each sampling event and the DQI were met, or if not, the variability was suitably justified.

All samples, including field QC samples, were transported to the primary and secondary laboratories under refrigerated conditions, using strict COC procedures. Relevant documents (COC forms) were presented with the samples at the times of delivery. All supporting documents (COCs and SRAs) were completed in full and signed, where appropriate. Copies of these were included in the DSI report (**Appendix F**). EI considered the field QA/QC program carried out during the investigation to be appropriate.

H.4 Laboratory QA Program

H.4.1 Laboratory Accreditation and DQIs

QA for the laboratory analysis components is reviewed in **Table H-4** below.

Table H-4 Laboratory QA Review

QA/QC Component	Item	Conformance / Comments
Accuracy – A quantitative measure of the closeness of reported data to the "true" value	Analysis of method blanks	Yes
	Analysis of matrix spikes (MS)	Yes
	Analysis of matrix spike duplicates (MSD)	Yes
	Analysis of surrogate spikes	Yes
	Analysis of laboratory control samples	Yes
Precision – A quantitative measure of the variability (or reproducibility) of data	Analysis of laboratory duplicates	Yes
Completeness – A measure of the amount of useable data from a data collection activity	All critical samples analysed according to SAQP and proposal	Yes
	All analytes analysed according to SAQP in proposal	Yes
	Appropriate methods and PQLs	Yes
	Sample documentation complete	Yes
	Sample holding times complied with	Yes
Comparability – The confidence (expressed qualitatively) that data may be considered to be equivalent for each sampling and analytical event	Same sample analytical methods used (including clean-up)	Yes
	Same Sample PQLs	Yes
	Same laboratories (NATA-accredited)	Yes
	Same units	Yes
Representativeness – The confidence (expressed qualitatively) that data are representative of each medium present onsite	All key samples analysed according to SAQP in the proposal.	Yes
	Analysis of laboratory-prepared volatile trip spikes and trip blanks	Yes

H.4.2 Conclusion for the Laboratory QA

Both contracted laboratories (SGS and Envirolab) were accredited by NATA for the analyses undertaken. All analytical procedures used were industry recognised and endorsed, standard methods. Appropriate QC measures were integrated into each testing batch and the DQI were met, or if not, the variability was suitably justified.

All final reports were submitted in full and included all requested analyses, as per the signed COC forms. EI considered the laboratory QA/QC program carried out during the investigation to be appropriate.

H.5 Conclusion for the Project QA/QC

The project DQOs specified in **Section 5.3**, **Table 5-1** were considered to have been achieved. The adopted QA/QC program ensured that the data collated during the investigation were accurate, precise and representative of the site conditions. The data were therefore useable for interpretation (site assessment) purposes.

Appendix I – Site Photographs

Photograph 1: Site overview, facing south-east (photo taken on 21/05/2020

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Photograph 2: First level basement (photo taken on 19/12/2019)

Photograph 3: Exposed sandstone bedrock in lower basement (photo taken on 05/06/2020)