

Attachment A15

Detailed Site Investigation



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Detailed Site Investigation

242-244 Young Street, Waterloo NSW

Report E23915.E02_Rev0
18 October 2018



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Detailed Site Investigation
242-244 Young Street, Waterloo NSW

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EXECUTIVE SUMMARY

Background

Pacific Equity Partners Pty Ltd engaged EI Australia (EI) to conduct a Detailed Site Investigation (DSI) for the former commercial property located at 242-244 Young Street, Waterloo NSW ('the site'). This environmental assessment was completed as part of a development application process through Inner West Council to allow site development for mixed residential apartment and commercial building with basement car parking.

Objectives

The main objectives of the assessment were to:

- Characterise site environmental conditions in relation to the nature, degree and sources of any soil, vapour and groundwater impacts;
- Target potentially impacted areas identified during the preliminary stages of the assessment for intrusive investigation;
- Understand the influence of site specific, geologic and hydrogeological conditions on the potential fate and transport of any impacts that may be identified;
- Evaluate potential risks that identified impacts may pose to human health and the environment; and
- Where site contamination is confirmed, provide data to assist in the selection and design of appropriate remedial options.

Findings

The work was conducted with reference to the regulatory framework outlined in **Section 1.3** of this report and assessment findings indicated the following:

- The site comprised an irregular shaped block covering a total area of approximately 4,500m². The site was bound by a construction site (north), Young Street (east), Powell Street (South) and Hunter Street (west).
- The site was free of statutory notices issued by the NSW EPA/DECC;
- SafeWork NSW records confirming the historical presence of UST's at this property. There is no information pertaining if the tanks have been removed from the site. There are some uncertainties of where some of the previous locations of the tanks mentioned are located.
- Soil sampling and analysis were conducted at ten (10) targeted test bore locations (BH1M, BH9M, BH10M and BH2-BH8) down to a maximum depth of 5.5 mBGL. Sampling regime was considered to be appropriate for investigation purposes and comprised a targeted sampling approach as a systematic sampling pattern could not be undertaken due to onsite obstructions;
- The sub-surface layers comprised a layer of granular and cohesive filling overlying cohesive residual soils, with sandstone bedrock below the residual soils;
- Groundwater was encountered during monitoring at depths ranging from 2.60 to 3.29 meters BTOC;

- Soil samples identified the following contaminants at concentrations above the adopted soil investigation levels:
 - BH1M – nickel, zinc, carcinogenic PAHs, F2 and F3
 - BH9M – zinc
 - BH10M – copper, lead and zinc
- Groundwater samples identified the following contaminants at concentrations above the adopted groundwater investigation levels:
 - BH1M & BH10M – copper and zinc
- On review of the Preliminary Conceptual Site Model (CSM) developed as part of this ESA, it was concluded that the model remains valid for the proposed development.

Conclusions and Recommendations

Based on the findings of this report and with consideration of the Statement of Limitations (**Section 13**), EI concludes that widespread contamination was not identified at the site.

It is concluded that the site can be remediated to a standard sufficient for proposed use of mixed commercial/retail and residential purposes as outlined in the proposed development plan. The remediation should follow demolition of the buildings and be undertaken in accordance with a remedial action plan to address the potential USTs that could be present onsite and any unknown or unexpected contamination identified during the demolition and excavation.

It is assumed that during the proposed construction of a basement level car park as part of the development, all fill and residual soil materials will be removed from the site, therefore in view of the above findings and in accordance with the NEPM 2013 guidelines, it is considered that the site will be made suitable for the proposed residential development on completion of the following recommendations:

- Conduct a Hazardous Materials Survey (HMS) of current site structures. EI recommend that a HMS is conducted prior to demolition of site structures;
- An additional site investigation (ASI) should be undertaken to close additional data gaps identified during this investigation. This would include:
 - The re-purging of the groundwater monitoring wells is to be undertaken before an additional round of groundwater sampling collected and tested for contaminants of concern (including PFAS);
- A Remedial Action Plan (RAP) should be prepared in accordance with the NSW Office of Environment and Heritage (2011) *Guidelines for consultants reporting on contaminated sites* prior to the commencement of site works. The RAP will provide details of the methodology and procedures required for effective site remediation, which may include:
 - A site inspection is to be complete after demolition by a qualified environmental consultant, to determine if additional sources of environmental concern can be identified;

- GPRS survey is to be conducted to identify location of potential UST infrastructure onsite;
- Removal and validation of potential UST's present at the site. If no evidence of validation is available, further detailed investigation may be required to confirm the contamination status of the property and its suitability for residential land use;
- Additional soil sampling to confirm the absence of PFAS compounds within soil. If additional investigation indicate the presence of PFAS compounds, impacted soils should be removed and excavations validated;
- If additional groundwater sampling indicates the presence on contaminants at significantly elevated concentrations, three soil vapour wells should be installed at targeted locations across the site footprint, above the depth of groundwater, after the completion of demolition;
- Any material being removed from site (including virgin excavated natural materials (VENM)) should be classified for off-site disposal in accordance the EPA (2014) Waste Classification Guidelines;
- Any material being imported to the site should be assessed for potential contamination in accordance with NSW EPA guidelines as being suitable for the intended use or be classified as VENM;
- Preparation of an unexpected finds protocol for implementation following demolition and during site excavation to ensure any potential contamination sources (e.g. soil staining, asbestos) that maybe identified are managed in accordance with the NSW EPA legislation and guidelines; and
- Preparation of a final site validation report by a qualified environmental consultant, documenting the suitability of site environmental conditions for the proposed development.

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1. INTRODUCTION

1.1 BACKGROUND AND PURPOSE

Mr John Wilkin of Bennet Murda Architects on behalf of Pacific Equity Partners Pty Ltd (the Client) engaged EI Australia (EI) to conduct a Detailed Site Investigation (DSI) for site characterisation at 242-244 Young Street, Waterloo NSW ('the site').

The site currently consists of a number of warehouse, office buildings and a car parking facility, which is located approximately 3.55 km south of the Sydney central business district (**Figure 1**). The site comprises multiple lots (Lot 1 in DP84655 and Lot A&B in DP161650) and is situated within the Local Government Area of City of Sydney Council, covering a total area of approximately 4,500 m², as depicted in the site aerial photo presented as **Figure 2**.

This assessment was conducted as part of an environmental due diligence process and this report is provided in support of a Development Application (DA) to City of Sydney Council and for the purpose of enabling the developer to meet its obligations under the *Contaminated Land Management Act 1997* (CLM Act), for the assessment and management of contaminated soil and/or groundwater.

There has been a previous environmental site investigation conducted by SGA Environmental (Ref. Project No 93099, Dated September 2012). It is important to note that the report only was for the northern allotment of the site (Lot 1 in DP84655).

1.2 PROPOSED DEVELOPMENT

Based on development plans supplied by the Client, EI understands that the proposed redevelopment will include the demolition of existing structures and construction of a multi-storey mixed use structure (school, residential, and commercial/retail) overlying a basement car park.

Plans of the proposed development are included in **Appendix A**.

1.3 REGULATORY FRAMEWORK

The following regulatory framework and guidelines were considered during the preparation of this report:

- ANZG (2018) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*;
- DEC (2007) *Guidelines for the Assessment and Management of Groundwater Contamination*;
- EPA (1995) *Sampling Design Guidelines*;
- EPA (2017) *Guidelines for the NSW Site Auditor Scheme (3rd Edition)*;
- NEMP (2018) *PFAS National Environmental Management Plan*;
- NEPC (2013) *Schedule B(1) Guideline on Investigation Levels for Soil and Groundwater*;
- NEPC (2013) *Schedule B(2) Guideline on Site Characterisation*;
- *Contaminated Land Management Act 1997*;
- State Environment Protection Policy 55 (SEPP 55) – *Remediation of Land*, and

- OEH (2011) *Guidelines for Consultants Reporting on Contaminated Sites*.

1.4 PROJECT OBJECTIVES

The primary objectives of this investigation were therefore to:

- Evaluate the potential for site contamination on the basis of historical land uses, anecdotal and documentary evidence of possible pollutant sources;
- To investigate the degree of any potential contamination by means of limited intrusive sampling and laboratory analysis, for relevant contaminants; and
- Where site contamination is confirmed, make recommendations for the appropriate management of any contaminated soils and/or groundwater.

1.5 SCOPE OF WORKS

In order to achieve the above objectives, the scope of works was as follows:

1.5.1 Desktop Study

- A review of relevant topographical, geological, hydrogeological and soil landscape maps for the project area;
- Review of the previous site investigation report prepared by SGA (2012).
- Search of historical aerial photographs archived at NSW Land and Property Information to review previous site use and the historical sequence of land development in the neighbouring area;
- A land titles search, also conducted through NSW Land and Property Information for information relating to historical ownership of the site;
- A search of City of Sydney Council records for information relating to operational site history and/or relevant environmental incidents;
- A search of NSW EPA Land Information records under the *Contaminated Land Management Act 1997* and *Protection of the Environment Operations Act 1997*;
- A search of the Stored Chemical Information Database (SCID) and microfiche records held by SafeWork NSW relating to possible underground tank approvals and locations, and dangerous goods storages; and
- A review of existing underground services on site.

1.5.2 Field Work & Laboratory Analysis

- A detailed site walkover inspection;
- Drilling of boreholes at ten locations (BH1 to BH10) across the un-investigated accessible areas of the site. It is noted that ten boreholes were proposed as part of the site investigation, in accordance with the minimum sampling protocol recommended under EPA (1995);

- Construction of two groundwater monitoring bores (to a maximum depth of 9 m) in hydraulically up-gradient and down-gradient locations onsite. Groundwater monitoring bores will be constructed to standard environmental protocols to investigate the potential for groundwater contamination, and migration of contaminants off-site;
- Multiple level soil sampling within fill and natural soils and one round of groundwater sampling from the constructed groundwater monitoring bores. Two monitoring wells installed by SGA (2012) will also be used for groundwater sampling purposes; and
- Laboratory analysis of selected soil and groundwater samples for relevant analytical parameters as determined from the site history survey and field observations during the investigation programme.

1.5.3 Data Analysis and Reporting

A DSI report would also be prepared to document desk study findings, the conceptual site model, data quality objectives, investigation methodologies and results. The report would also provide a record of observations made during the detailed site walkover inspection, borehole and monitoring well construction logs and a discussion of 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**.

Table 2-1 Site Identification, Location, and Zoning

Attribute	Description
Street Address	242-244 Young Street, Waterloo NSW
Location Description	Approx. 3.55 km south of Sydney CBD, an irregular shaped block bound by a construction site (north), Young Street (east), Powell Street (South) and Hunter Street (west).
Site Coordinates	Northeast corner of site (GDA94-MGA55): Easting: 334332.297 Northing: 6247371.091 (Source: http://maps.six.nsw.gov.au)
Site Area	Approx. 4,500 m ² (Source: http://maps.six.nsw.gov.au)
Site Owner	Pacific Equity Partners Pty Ltd
Lot and Deposited Plan (DP)	Lot 1 in DP84655 and Lot A&B in DP161650
State Survey Marks	Two State Survey Marks (SSM) are situated in close proximity to the site: SS53805 on McEvoy Street and SS16632 on the corner of Young Street and McEvoy Street (Source: http://maps.six.nsw.gov.au)
Local Government Authority	City of Sydney Council
Parish	Alexandria
County	Cumberland
Current Zoning	B4 – Mixed Use (Sydney Local Environment Plan, 2012)
Current Land Uses	A number of warehouse, office buildings and a car parking facility

2.2 SURROUNDING LAND USE

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

Table 2-2 Surrounding Land Uses

Direction Relative to Site	Land Use Description
North	Residential apartment blocks (under construction).
East	Young Street, followed by commercial properties.
South	Powell Street, followed by high density residential properties.
West	Powell Street, followed by high density residential properties.

2.3 REGIONAL SETTING

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

Table 2-3 Regional Setting Information

Attribute	Description
Topography	The site generally lies flat, with a slight decline to the south west, towards Hunter Street (Ref. http://maps.six.nsw.gov.au)
Site Drainage	Site drainage is expected to be collected by an installed drainage system which discharges to the public wastewater network. The public network is expected to flow south-west towards Sheas Creek.
Regional Geology	<p>The site directly overlies medium to fine grained “marine” sand with podzols, which is characterised by the deposits forming the Botany Sands (Ref. Geological Map Sydney 1:100,000 Geological Series Sheet 9130 DMR 1991).</p> <p>With reference to the Geological Survey of NSW Bulletin No.18 by R.J Griefin (1963), the site is located on aeolian dune sands associated with the Botany Basin. The site runs parallel to Cross Section 6, which shows a sequence of sands over fissured clays over Hawkesbury Sandstone. The Botany Basin basement contour map indicates the top of rock to be greater than 30 m.</p> <p>It is noted that the site is located within the Botany Sand Aquifer and the Botany Groundwater Management Zone 2 which bans domestic groundwater use.</p>
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 an Aeolian Landscape – Tuggerah, which typically includes gently undulating to rolling coastal dune fields. It generally comprises deep (>2.0 m) red and brown podzolic soils on dunes and podzol/ humus podzol intergrade soils on swales
Acid Sulfate Soil Risk	<p>With reference to the Botany Bay Acid Sulfate Soil Risk Map (1:25,000 scale; Murphy, 1997), the subject land lies within the map class description of <i>No Known Occurrence</i>. In such cases, acid sulfate soils (ASS) are not known or expected to occur and “land management activities are not likely to be affected by ASS materials”.</p> <p>The Sydney Local Environmental Plan 2012- Acid Sulfate Soils Risk Class 1:1,000 scale Map indicates that the site lies within a <i>Class 5</i> ASS area. Council consent is therefore required prior to commencing any works within 500 m of Class 1, 2, 3 or 4 land, with a ground elevation of below 5 m Australian Height Datum (AHD) and where the water table is likely to be lowered below 1 mAHD on adjacent Class 1, 2, 3 or 4 land.</p>
Likelihood & Depth of Filling	Fill materials are expected to be present at varying depths across the site associated with levelling of the site during construction of the existing structures.

Attribute	Description
Typical Soil Profile	The typical soil profile is expected to comprise fill materials of varying depths overlying cohesive residual soils on shale bedrock.
Depth to Groundwater	Based on previous investigations on the site conducted by SGA (2012), the average depth to groundwater is anticipated to be approximately 3.05 mBGL.
Groundwater Flow Direction	In view of the local topography, groundwater flow direction in the vicinity of the site is inferred to be towards Sheas Creek located approximately 800 m south-west of the site.
Nearest Surface Water Feature	Sheas Creek located approximately 800 m south-west of the site which then flows into Alexandra Canal. It is understood that Alexandra Canal is tidally influenced and is considered to be a marine system for impact assessment purposes.

2.4 GROUNDWATER BORE RECORDS AND GROUNDWATER USE

An online search of registered groundwater bores was conducted by EI on the 3 September 2018 through the NSW Office of Water (Ref. <http://realtimedata.water.nsw.gov.au/water.stm>). There were 84 registered bores within about 500m of the site. A summary of the closest registered bores is presented with selected details in **Table 2-4**. A bore location plan and detailed information regarding the listed bores is attached in **Appendix B**.

Table 2-4 Summary of Registered Water Bores within 1 km of the site

Bore No.	Date Drilled	Drilled Depth (m)	SWL*/Salinity/Yield	Bore Purpose
GW111959	07/08/2012	6.00	2.60/ - / -	Monitoring
GW111960	07/08/2012	6.00	3.52/ - / -	Monitoring
GW109745	02/08/2002	3.50	-	Monitoring

Notes:

- Data not recorded;
 * SWL – Standing water level measured in mBGL,
 Salinity – units unspecified,
 Yield – measured in L/s.

All of the boreholes identified in close proximity were identified to be used for monitoring purposes. Most of the water bore did not contain information on drilled depth, standing water level, salinity and yield. The drilled bore depths ranged between 6.00 m and 6.50 mBGL. Standing water levels from bores ranged from 2.60 and 3.52 mBGL.

In view of the above information, and the fact 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.

2.5 SITE WALKOVER INSPECTION

EI staff made a number of observations during a detailed site inspection on 31 July 2018. The recorded observations are summarised below:

- The site was used for various commercial purposes, including an engineering workshop, office buildings, and a film school (**Photos 1**);

- A workshop, located in the central portion of the site, was utilised for the manufacturing of engineering materials (**Photo 2**);
- Soil landscaping/vegetation were present on site. Soil in the southern portion of the site were observed to be overall healthy and showed no signs of distress. However, soil located in the eastern portion of the site appears to be unhealthy, due to vehicle parking on top of vegetation (**Photos 2 and 3**);
- Concrete floor slabs & pavements on site were in poor to moderate condition with cracks, staining noted and discrepancies (**Photo 4**);
- Evidence indicative of underground petroleum storage systems (UPSS) or above ground storage tanks (AST) was not observed in accessible site areas during the inspection; and
- Previous installed groundwater monitoring wells were located during the inspection. These wells relate to previous investigation by SGA (2012) (**Photo 5**).

Photographs from the site walkover inspection are included in **Appendix C**.

3. PREVIOUS INVESTIGATIONS

3.1 AVAILABLE DOCUMENTS

The following investigations have been previously conducted for the site:

- SGA (2012) *Environmental Site Investigation*. Ref. 93099, dated September 2012.

A summary works and key findings is outlined in **Table 3-1**.

Table 3-1 Summary of Previous Investigation Works and Findings

Assessment Details	Project Tasks and Findings
<i>Environmental Site Investigation (SGA, 2012)</i>	
Scope of Works	<ul style="list-style-type: none"> • Review of a previous SESL Preliminary Site Investigation report. • Drilling of six boreholes on a grid pattern, and collected of soil samples. • Installation and sampling of two groundwater monitoring wells. • Laboratory analysis of samples for asbestos, heavy metals, petroleum hydrocarbons, mono aromatic hydrocarbons (including benzene, toluene, ethyl benzene and xylene), and polycyclic aromatic hydrocarbons (PAHs). • Provision of a report detailing the findings of the field investigation and the laboratory results.
Investigation Findings and Conclusions	<ul style="list-style-type: none"> • Historical records indicated that site was former used as a foundry. Review of the report has observed some site history information to be missing from the investigation report. Additional site history information has been provided in Section 4. • Concentrations of copper, lead, C₁₀-C₃₆ petroleum hydrocarbons, polycyclic aromatic hydrocarbons (including benzo(a)pyrene) were identified within fill material across the site exceeding NEPC (1999) commercial/industrial guidelines. • SGA concluded that chemicals of concern would not preclude continued commercial use if foreseeable exposure is appropriately managed (i.e. via a site management plan). SGA noted that the contaminants were unlikely to be mobile as negligible concentrations of the elevated contaminants were identified in natural soils and groundwater.

4. ADDITIONAL SITE HISTORICAL INFORMATION

4.1 LAND TITLES INFORMATION / HISTORIC AERIAL REVIEW

A historical land titles search was conducted through Legal Liaison Searching Services Pty Ltd. Copies of relevant documents resulting from this search are presented in **Appendix D**. A summary of all the previous and current registered proprietors (**Table 4-1**), along with information obtained from the available historical aerial photographs, in relation to past potential land uses (**Table 4-2**). The historical aerial photographs reviewed as part of this ESA included:

- 1930: February 1930, Run 16, Map 3428 B/W
- 1943: Sydney 1943 Imagery (source : <http://maps.six.nsw.gov.au/>)
- 1951: May 1951, Run 15, Map 467 – 28 B/W – Lands Photo
- 1961: Run 37E Map 1042 B/W, Cumberland 1961 series NSW 5156 - Lands Photo
- 1986: 02 August 1986, Run 24E, Map 115 NSW 3527 – Land and Property Information
- 1994: 4 October 1994, Run 11, Map 153-164 – Land Information Centre
- 2004: 08 October 2004, Run 7, Map 14-25, NSW 4877 – Department of Land

Table 4-1 Summary of Owner History

Date of Acquisition and term held	Registered Proprietor(s) & Occupations (where documented)
As regards Lot 1 D.P. 84655	
08.08.1912 (1912 to 1940)	James Hunter and Sons Limited Now James Hunter & Sons Pty. Limited
18.03.1940 (1940 to 1968)	Gordon Marr & Sons Pty. Limited
01.11.1968 (1968 to 1986)	P. Rowe Pty Limited
27.05.1986 (1986 to 1986)	Leda Holdings Pty Limited
03.11.1986 (1986 to 1991)	Baese Pty. Limited
29.01.1991 (1991 to 1998)	Tridu Pty. Limited
20.05.1998 (1998 to 2013)	Coates Signco Manufacturing Pty Limited Now Alan Coates Pty Limited

Date of Acquisition and term held	Registered Proprietor(s) & Occupations (where documented)
04.01.2013 (2013 to Date)	# International Screen Academy Property Pty Ltd
<u>Easements:</u> -	
<ul style="list-style-type: none"> 28.07.1986 (D.P. 638902) – Easement for Support 	
<u>Leases:</u> -	
<ul style="list-style-type: none"> 01.11.1968 (L301856) – Gordon Marr & Sons Proprietary Limited – expired 17.05.1979 Numerous leases were found from 29.01.1991 to 30.11.2010 – that have since expired due to effluxion of time, or have been surrendered – these have not been investigated 16.05.2013 (AH734086) – International Screen Academy Property Pty Limited of 242 Young Street, Waterloo - expires 17.12.2015 <ul style="list-style-type: none"> 26.07.2016 (AK625515) – expiry date now 31.12.2017 	
As regards Lot A D.P. 161650	
08.08.1912 (1912 to 1956)	James Hunter and Sons Limited Now James Hunter & Sons Pty. Limited
10.05.1956 (1956 to 1968)	Gordon Marr & Sons Pty. Limited
01.11.1968 (1968 to 1982)	P. Rowe Pty Limited
16.03.1982 (1982 to 1989)	Perpetual Trustee Company Limited
16.03.1989 (1989 to 1995)	John Malcolm Sandilands Beverley Ann Sandilands
02.03.1995 (1995 to 1998)	Beverley Ann Sandilands
23.04.1998 (1998 to Date)	# Charvic Pty Limited
<u>Easements:</u> -	
<ul style="list-style-type: none"> 28.07.1986 (D.P. 638902) – Easement for Support 28.07.1986 (D.P. 638902) – Easement for Maintenance of Gutter 	
<u>Leases:</u> -	
<ul style="list-style-type: none"> 01.11.1968 (L301856) – Gordon Marr & Sons Proprietary Limited – expired 17.05.1979 01.07.1982 (T72760) – P. Rowe Pty Limited – expired 15.09.1988 15.09.1988 (X837002) – P. Rowe Fabrics Pty. Limited – surrendered 06.05.1994 06.05.1994 (U241772) – expired due to effluxion of time, or has been surrendered – this has not been investigated 20.12.2007 (AD653553) – expired due to effluxion of time, or has been surrendered – this has not been investigated 19.05.2017 (AM405465) – Paramount Property Group Pty Limited of Factory, 244 Young Street, Waterloo together with 38 on-site parking spaces numbered 1–38. – expires 01.04.2002 – option of renewal 2 years 	

Date of Acquisition and term held	Registered Proprietor(s) & Occupations (where documented)
As regards Lot B D.P. 161650	
08.08.1912 (1912 to 1966)	James Hunter and Sons Limited Now James Hunter & Sons Pty. Limited
28.01.1966 (1966 to 1982)	P. Rowe Pty Limited
16.03.1982 (1982 to 1989)	Perpetual Trustee Company Limited
16.03.1989 (1989 to 1995)	John Malcolm Sandilands Beverley Ann Sandilands
02.03.1995 (1995 to 1998)	Beverley Ann Sandilands
23.04.1998 (1998 to Date)	# Charvic Pty Limited

Easements: -

- 01.04.2009 (D.P. 1136961) – Easement for Electricity and Other Purposes 3.365 metre(s) wide
- 01.04.2009 (D.P. 1136961) – Right of Carriageway 6.8 metre(s) wide

Leases: -

- 01.07.1982 (T72760) – P. Rowe Pty Limited – expired 15.09.1988
- 15.09.1988 (X837002) – P. Rowe Fabrics Pty. Limited – surrendered 06.05.1994
- 06.05.1994 (U241772) – expired due to effluxion of time, or has been surrendered – this has not been investigated
- 20.12.2007 (AD653553) – expired due to effluxion of time, or has been surrendered – this has not been investigated
- 19.05.2017 (AM405465) – Paramount Property Group Pty Limited of Factory, 244 Young Street, Waterloo together with 38 on-site parking spaces numbered 1–38. – expires 01.04.2002 – option of renewal 2 years

Notes: # Denotes Current Registered Proprietor

Table 4-2 Summary of Aerial Photograph History

	Site description based on historical aerial photographs	Land use
1930 20 February 1930	Due to the resolution of the 1930 photo, individual buildings cannot be distinguished. The site appeared to be utilised as a commercial buildings across the majority of the site. There were buildings located in the southern portion and the northern portion of the site.	Commercial
1943 Six Maps https://maps.six.nsw.gov.au	The site appears unchanged from the previous aerial photograph, with the exception of buildings along the northern portion of the site being redeveloped and a single building being constructed along the northern portion of the site.	
1951 May 1951	The site appeared unchanged from the previous aerial photograph.	

	Site description based on historical aerial photographs	Land use
1961	The site appeared unchanged from the previous aerial photograph.	
1986 2 August 1986	The site appeared unchanged from the previous aerial photograph, with the exception of vacant land in the central portion of the site, being developed with buildings and inferred to be used for commercial purposes.	
1994 4 October 1994	The site appeared unchanged from the previous aerial photograph.	
2004 8 October 2004	The site appeared unchanged from the previous aerial photograph.	
2016 Six Maps https://maps.six.nsw.gov.au	The site appeared unchanged from the previous aerial photograph.	

In summary, review of land titles records and historic aerial photography showed that a commercial development occupied the northern and southern portion of the site since the 1930s. There have been slight alterations to the building since that time but the site has always remained of the same nature till the current date.

4.2 SURROUNDING LAND USE

As part of the review, an assessment of surrounding land uses using historical aerial photographs sourced from NSW Land and Property Information was carried out. A summary of the pertinent information identified at surrounding land parcels from the reviewed photographs is presented in **Table 4-3**.

Table 4-3 Summary of Aerial Photograph Review

Aerial Photograph	Surrounding land uses based on historical aerial photographs
1930 20 February 1930	Site surroundings were predominantly commercial/industrial in nature. There were some residential buildings located further north-west and south east of the site.
1943 Six Maps https://maps.six.nsw.gov.au	Surrounding land use remained primarily unchanged from the previous aerial photograph.
1951 May 1951	Surrounding land use remained primarily unchanged from the previous aerial photograph.
1961	Surrounding land use remained primarily unchanged from the previous aerial photograph.
1986 2 August 1986	Surrounding land use remained primarily unchanged from the previous aerial photograph, except for the redevelopment of residential land to commercial use to the south-east of the site.
1994 4 October 1994	Surrounding land use remained primarily unchanged from the previous aerial, with the exception of the commercial buildings, adjacently north being redeveloped for high density residential purposes.
2004 8 October 2004	Surrounding commercial properties to the south and west have been redeveloped and predominantly used for high density residential purposes.

Aerial Photograph	Surrounding land uses based on historical aerial photographs
2016 Six Maps https://maps.six.nsw.gov.au	Surrounding land use remained primarily unchanged from the previous aerial photograph.

4.3 COUNCIL INFORMATION

An application to access records held by City of Sydney Council was initiated relating to the site was requested by EI, on behalf of the Client. Correspondence has not been during the time of writing of this report. Should pertinent information be identified from council, an addendum to the PSI will be prepared and issued.

However, a check of the Sydney of City Planning street cards identified some development and alterations that occurred on the site. A summary of the Development Applications can be seen in **Table 4-4**.

Table 4-4 Summary of Online Council Records

Reference	Date	DA Application Information
45-1	7-10-32	Refurbish existing building.
41-3-1273	10-09-36	Site usage for sign storage and fabrication of sign prototypes.
2181-55	2-12-55	Reconstruct roof.
148-1-62	27-2-62	Use of premises for the cleaning of drum reconditioners.
435-62	27-2-62	Replace roof.
290-63	15-2-63	Alterations to building.
1014-63	8-5-63	Fire escape stairs.
1228-63	7-6-63	Extension of roof.
1336-63	20-6-63	Septic tank.
2828-63	9-12-63	Alterations
2128-64	4-10-64	Reinstatement after fire.
155-1-65	8-3-65	Construction of vehicles crossing.
212-65	10-3-65	Use of preemies for soap manufacturing.
982-65	1-12-65	Erection of warehouse building offices, alterations and amenities.
544-66	15-3-66	New building warehouse.
87-73	5-3-73	Erection of warehouse building/offices/showroom and amenities.
45-84-5147	28-3-84	Upgrading fire egress & protection
45-86-2103	-	Refurbish building and mezzanine.
45-88-0224	-	Erection of pylon sign and flush wall.

Reference	Date	DA Application Information
210-62	-	Installation of equipment for the cleaning of tallow drum.

4.4 SAFEWORK NSW DATABASE SEARCH

A search of SafeWork NSW dangerous goods records was completed as part of this assessment. Correspondence from SafeWork NSW revealed that the following records pertaining to the premises were held, with details as described in **Table 4-5** (correspondence attached in **Appendix K**).

Table 4-5 Summary of SafeWork Records

Licence Holder / Premises	Type of Infrastructure	Goods Stored	Quantity	Location of storage	Status
P. Rowe Fabrics Pty Ltd/ corner of Powell & Young Street, Waterloo NSW 2017 Dated: 24-10-1988	Underground Tank	Petrol	10,000 L	North eastern portion of the site (See Figure 3)	Unknown
P. Rowe Fabrics Pty Ltd/ corner of Powell & Young Street, Waterloo NSW 2017 Dated: 09-06-1975	Underground Tank	Mineral Spirit	10,000 L	-	Unknown
	Brick-Concrete Storage Facility (<i>unknown if above or below ground storage</i>)	Mineral Oil	10,000 L	-	Unknown
		Class 3 Material (Nitro-Cellulose)	2 x 2,500 kg	-	Unknown

Land title searches revealed the property located at the site to have been previously owned by P. Rowe Pty Ltd, with SafeWork records confirming the historical presence of UST's at this property. There is no information pertaining if the tanks have been removed from the site. There are some uncertainties of where some of the previous locations of the tanks mentioned are located.

4.5 EPA ONLINE RECORDS

On 6 September 2018, an on-line search of the contaminated land public record of NSW Environment Protection Authority (EPA) Notices was conducted. The contaminated land public record is a searchable database of:

- Orders made under Part 3 of the *Contaminated Land Management Act 1997* (CLM Act);
- Approved voluntary management proposals under the CLM Act that have not been fully carried out and where the approval of the EPA has not been revoked;
- Site Audit Statements provided to the EPA under Section 53B of the CLM Act that relate to significantly contaminated land;
- Where practicable, copies of any documentation formerly required to be part of the public record; and
- Actions taken by the EPA under Sections 35 and 36 of the *Environmentally Hazardous Chemicals Act 1985*.

This search confirmed that the NSW OEH had no regulatory involvement in relation to the area of investigation. Properties in proximity to the site which the NSW OEH have been involved with area listed in **Table 4-5**.

Table 4-6 Properties listed on the contaminated land record

Name & Address of Property	Distance & Direction from Site	CLR Entries	Associated Contaminants
887-893 Bourke Street, Waterloo	400 m SE	2005 – Declaration of remediation site 2016 – Notice to end significantly contaminated land declaration	Groundwater – PCE, TCE, DCE, and vinyl chloride

A search through the List of NSW Contaminated Sites notified to the EPA under Section 60 of the CLM Act 1997 was also conducted on 6 September 2018. This list is maintained by NSW EPA and includes properties on which contamination has been identified. Not all notified land is deemed to be impacted significantly enough to warrant regulation by the EPA. The subject site has not been notified as contaminated to the EPA. Properties in proximity to the site which have been notified to the EPA are listed in **Table 4-6**.

Table 4-7 Land notified to NSW EPA

Suburb	Description and Address	Activity that caused contamination	Distance and direction from site	EPA site management class
Waterloo	Diversity Waterloo 1-13 Archibald Avenue	Other Industry	210 m E	Under Assessment
Waterloo	Iconic (Former Chubb Factory) Waterloo 830-838 Elizabeth Street	Other Industry	180 m SW	Regulation under CLM Act not required
Waterloo	Lawrence Dry Cleaners 887-893 Bourke Street	Unclassified	400 m SE	Contamination currently regulated under CLM Act

A search of the Protection of the Environment Operations (POEO) Act public register, regarding environmental protection licences, applications, notices, audits, pollution studies, and reduction programmes, did not identify any record for the site. Records were identified for sites in proximity of the application site, and these are shown in **Table 4-7**.

Table 4-8 POEO public register entries

Suburb	Description and Address	Distance and direction from site	Activity type	POEO Records
Waterloo	Heidelberg Graphic Equipment Limited 50 O'Dea Avenue	460m SE	Hazardous, Industrial or Group A Waste Generation or Storage	POEO Licence, Licence variations
Waterloo	Lawrence Dry Cleaners	400m SE	Hazardous, Industrial or Group A Waste Generation or Storage	POEO Licence, Licence variations

5. CONCEPTUAL SITE MODEL

In accordance with NEPM (2013) *Schedule B2 – Guideline on Site Characterisation* and to aid in the assessment of data collection for the site, EI developed a preliminary conceptual site model (CSM) assessing plausible pollutant linkages between potential contamination sources, migration pathways, and receptors. The CSM provides a framework for the review of the reliability and useability of the data collected and to identify data gaps in the existing site characterisation.

5.1 CHEMICAL HAZARDS AND CONTAMINATION SOURCES

On the basis of site history and search findings described by DLA (2014) (**Section 3**), EI consider potential chemical hazards and onsite contamination sources to be as follows:

- Imported fill soils of unknown origin distributed across the site;
- Impacts from previous commercial - industrial activities at the site;
- Painted surfaces in relation to the structures (buildings) that are currently present on the site;
- Hazardous materials, including potential asbestos-containing materials (ACM) from building products;
- Historical application of pesticides;
- Deeper, natural soils containing residual impacts, representing potential secondary sources of contamination; and
- Migrating contaminants from offsite sources.

5.2 PER OR POLY-FLUOROALKYL SUBSTANCES (PFAS)

The NSW EPA (2017) Auditor Guidelines require that PFAS substances are considered in assessing contamination. EI use the following Decision Tree (**Table 5-1** below) based on EnRisk (2016) for prioritising the potential for PFAS compounds being present on Site and whether PFAS sampling of soil and water is required.

Table 5-1 PFAS Decision Tree

Preliminary Screening	Probability
Did fire training occur onsite?	Low
Did fire training occur, or is an airport or fire station up-gradient of or adjacent to the Site? ¹	Low
Have “fuel” fires ever occurred onsite? e.g. ignition of fuel (solvent, petrol, diesel, kero) tanks?	Low Insufficient site history information available
Have PFAS been used in manufacturing or stored on-Site ? ²	Medium Previous operations included fabric industry use, which are known to use products that may contain PFAS. A large store of nitrocellulose lacquer was noted in Safework records, which could be a possible point source of contamination.

Preliminary Screening	Probability
If Yes to any questions, has site analytical suite been optimised to include preliminary sampling and testing for PFAS in soil (ASLP Testing) and water?	See Section 10 for commentary

Note 1 Runoff from fire training areas may impact surface water, sediment and groundwater.

Note 2 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>)

Although the PFAS decision tree does not identify the need to include PFAS within the testing suite, aerial photography analysis (DLA, 2014) indicates that part of the site may have burnt down. As such, it is considered likely that fire fighting foams were applied to the site and, as such, PFAS are included within the COPC (**Section 4.4**).

5.3 EMERGING CHEMICALS

The NSW EPA uses Chemical Control Orders (CCOs) as a primary legislative tool under the EHC Act (1985) to selectively and specifically control particular chemicals of concern, and limit their potential impact on the environment. CCOs provide the EPA a rapid and flexible mechanism for responding to emerging chemical issues. As with PFAS compounds, EI has considered chemicals controlled by CCOs and other potential emerging chemicals in this assessment as outlined in **Table 5-2** below.

Table 5-2 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	Yes <i>If PCB containing pesticides were used onsite</i>
Were scheduled chemical or wastes (CCO, 2004) used or stored ⁴	Yes <i>If OC pesticides were used onsite</i>
Are other emerging chemicals suspected? ⁵	No
If Yes to any questions, has the site sampling suite been optimised to include specific sampling for other chemicals of concern in soil, air, and water	Yes

Note 1 From burning of certain chemicals, smelting or chemical manufacturing or fire on or near the Site.

Note 2 From anti-fouling paints used or removed at boat & ship yards and marinas.

Note 3 From older transformer oils & electrical capacitors

Note 4 Twenty-four mostly organochlorine pesticides and industrial by-products

Note 5 Other chemicals considered as emerging e.g. 1,4 dioxane (associated with some cVOCs).

5.4 CONTAMINANTS OF POTENTIAL CONCERN

Based on the findings of the site contamination appraisal the contaminants of potential concern (COPC) at the site are considered to be:

- Soil – heavy metals (HMs), petroleum hydrocarbons (TRHs, BTEX compounds), polycyclic aromatic hydrocarbons (PAHs), volatile organic compounds (VOC), including chlorinated VOC (VOCC), organochlorine and organophosphate pesticides (OCP/OPP), polychlorinated biphenyls (PCB), Per- and Polyfluoroalkyl Substances (PFAS), and asbestos.

- Groundwater – HMs, TRH, BTEX, PAH, VOCs and VOCCs (such as trichloroethene (TCE)), and PFAS.

5.5 POTENTIAL SOURCES, EXPOSURE PATHWAYS, AND RECEPTORS

Potential contamination sources, exposure pathways and human and environmental receptors that were considered relevant for this assessment are summarised along with a qualitative assessment of the potential risks posed by complete exposure pathways in **Table 5-3**.

Table 5-3 Conceptual Site Model

Potential Sources	Potential Contaminants	Sensitive Receptor	Migration & Exposure Pathways
Imported Fill	HM, TRH, PAH, BTEX, OCP/OPP, PCB, Asbestos	Site Workers during demolition and construction Future site residents Adjacent land users	Dermal Contact Ingestion Inhalation
		Groundwater	Seepage into the subsurface soils, bedrock, and groundwater.
Historical and present site uses (Including a chemical manufacturer, plastic manufacturer, metal recycler)	HM, TRH, PAH, BTEX, VOC, Asbestos	Site Workers during demolition and remediation. Future site residents Adjacent site users	Dermal Contact Ingestion Inhalation
		Groundwater	Seepage into the subsurface soils, bedrock, and groundwater.
Painted surfaces on existing structures	HM (Lead)	Site Workers during demolition and construction Future site residents Adjacent site users	Dermal Contact Ingestion Inhalation
		Groundwater	Seepage into the subsurface soils, bedrock, and groundwater.
Deleterious materials within the existing structures	Asbestos	Site Workers during demolition and construction Future site residents Adjacent site users	Dermal Contact Ingestion Inhalation
Historical use of firefighting foams	PFAS	Site Workers during demolition and construction Future site residents Adjacent site users	Dermal Contact Ingestion Inhalation
		Groundwater	Seepage into the subsurface soils, bedrock, and groundwater.
Offsite contamination sources	HM, TPH, PAH, BTEX, VOC	Site Workers during demolition and construction Future site residents Adjacent site users	Dermal Contact Ingestion Inhalation

5.6 DATA GAPS

Based on information from the site walkover inspection and site history review, EI considered a programme of intrusive investigation was warranted to conduct targeted sampling at locations of known, potential sources of contamination (as listed in **Section 5.1**), with systematic sampling coverage across the site area.

6. SAMPLING, ANALYTICAL, AND QUALITY PLAN (SAQP)

The SAQP plays a crucial role in ensuring that the data collected as part of this, and ongoing environmental works carried out at the site are representative, and provide a robust basis for site assessment decisions. This SAQP includes the following:

- Data quality objectives, including a summary of the objectives of the ESA;
- Investigation methodology including media to be sampled, details of analytes and parameters to be monitored and a description of intended sampling points;
- Sampling methods and procedures;
- Field screening methods;
- Analysis Methods;
- Sample handling, preservation and storage; and
- Analytical QA/QC.

6.1 DATA QUALITY OBJECTIVES (DQO)

In accordance with the US EPA (2006) *Data Quality Assessment* and the EPA (2017) *Guidelines for the NSW Site Auditor Scheme*, the process of developing Data Quality Objectives (DQO) was used by the EI assessment team to determine the appropriate level of data quality needed for the specific data requirements of the project. The DQO process that was applied for this assessment is documented in **Table 6-1**.

Table 6-1 Summary of Project Data Quality Objectives

DQO Steps	Details	Comments (changes during investigation)
<p>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</p>	<ul style="list-style-type: none"> • The site proposed demolition of existing structures and redevelopment into a mixed use development including a residential apartment building, townhouses and commercial/retail overlying a single level basement (Section 1.2). • Historical information and site inspection identified the potential for contamination to be present in site soil and/or groundwater, contributed by various potential sources, predominantly industrial use, listed in Section 5.1. Based on the site history information collected, a preliminary conceptual site model of the site has been developed, and is present in Section 5.4. • The investigation sampling must provide supportive information on the environmental conditions of the site to determine the site's suitability for the proposed development. 	<p>-</p>
<p>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</p>	<p>Based on the objectives outlined in Section 1.4, the decisions that need to be made are</p> <ul style="list-style-type: none"> • Has the nature, extent and source of any soil, vapour and/or groundwater impacts onsite been defined? • What impact do the site specific, geological, 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 contaminants 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? 	<p>-</p>

DQO Steps	Details	Comments (changes during investigation)
<p>3. Identify Information Inputs (Identify inputs to decision) Identify the information needed to support any decision and specify which inputs require new environmental measurements</p>	<p>Inputs to the decision making process include:</p> <ul style="list-style-type: none"> • Proposed development plans and land use; • Regional and site settings including site geology, topography and surrounding land uses; • Previous investigation completed at the site by SGA Environmental (2012); • Areas of concern identified by SGA Environmental (2012) and during the site inspection prior to intrusive investigations; • National and NSW EPA guidelines under the NSW <i>Contaminated Land Management Act 1997</i>; • Intrusive investigation sampling to characterise environmental conditions at the site and to evaluate the potential risks to sensitive receptors; and • Laboratory analytical results of soil and groundwater samples collected. <p>At the end of the assessment, a decision must be made regarding whether the soils and groundwater are suitable for the proposed development, or if additional investigation or remedial works are required to make the site suitable.</p>	<p>-</p>
<p>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</p>	<ul style="list-style-type: none"> • Lateral – the investigation will be conducted within the site boundaries; which defines the extent of the investigation; • Vertical – From existing ground surface, underlying fill and natural soil and rock horizons, to a maximum depth of 5.50 mBGL; and • Temporal – Results are valid on the day of data and 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. 	<p>Lateral – the extent of the study onsite was limited to accessible areas of the site due to existing building structures, infrastructure, and provision of access, as detailed in Section 7.2. Vertical – BH3 to BH6 terminated within fill due to auger refusal.</p>
<p>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</p>	<p>The decision rules for the investigation were:</p> <ul style="list-style-type: none"> • If the concentrations of contaminants in the soil exceed the adopted land use criteria; then assess the need to further investigate the extent of impacts onsite. • Decision criteria for QA/QC measures are defined by the Data Quality Indicators (DQI) in Table 6-2. 	<p>-</p>

DQO Steps	Details	Comments (changes during investigation)
<p>6. Specify Performance or Acceptance Criteria (Specify limits on decision errors)</p> <p>Specify the decision-maker's acceptable limits on decision errors, which are used to establish performance goals for limiting uncertainties in the data</p>	<p>Specific limits for this project are to be in accordance with the National and NSW EPA guidance, and appropriate indicators of data quality and standard procedures for field sampling and handling. This should include the following points to quantify tolerable limits:</p> <ul style="list-style-type: none"> • The null hypothesis for the investigation is that: <ul style="list-style-type: none"> – The 95% Upper Confidence Limits (UCL) of the mean for contaminants of concern exceeding the adopted criteria across the site. • A minimum of 10 sampling points on a site of area 4,500 m² will allow detection of a circular hotspot with a nominal diameter of 19.9 m with 95% certainty; • The acceptance of the site will be based on the probability that <ul style="list-style-type: none"> – The 95% UCL of the mean of the data will satisfy the given site criteria. Therefore a limit on the decision error will be 5% that a conclusive statement may be incorrect; and – The standard deviation of the results is less than 50% of the relevant remediation acceptance criterion; and – No single result exceeds the remediation acceptance criteria by 250% or more; • Soil concentrations for chemicals of concern that are below investigation criteria made or approved by the NSW EPA will be treated as acceptable and indicative of suitability for the proposed land use(s); • If contaminant concentrations in groundwater exceed the adopted criteria, further investigation will be considered prudent. If no contamination is detected in groundwater, further action will not be warranted. 	<p>An additional sampling point was added to the investigation to allow a more complete coverage of the site area.</p> <p>In light of access restrictions onsite, a systematic sampling pattern for assessment could not be adopted for every sampling position.</p> <p>A targeted sampling approach was utilised.</p>
<p>7. Develop the Detailed Plan for Obtaining Data (Optimise the design for obtaining data)</p> <p>Identify the most resource-effective sampling and analysis design for general data that are expected to satisfy the DQOs</p>	<ul style="list-style-type: none"> • The site area (4,500 m²) required eleven sampling points according to EPA (1995). • Soil sampling locations were set using a systematic sampling pattern across the accessible areas of the site. • An upper soil profile sample (soil extracted immediately beneath the concrete hardstand / pavement / ground level) will be collected at each borehole location and tested for chemicals of concern, to assess the conditions of any fill layer, and impacts from activities above ground. Further sampling would also be carried out at deeper soil layers. These samples would be selected for testing based on field observations (including visual and olfactory evidence, as well as soil vapour screening in headspace samples) whilst giving consideration to characterise the subsurface soil stratigraphy. • Three groundwater monitoring wells were proposed to characterise groundwater quality within the site. • Written instructions will be issued to guide field personnel in the required fieldwork activities. 	<p>An additional sampling point was added to the investigation to allow a more complete coverage of the site area.</p> <p>In light of access restrictions onsite, a systematic sampling pattern for assessment could not be adopted for every sampling position.</p> <p>A targeted sampling approach was utilised.</p>

6.2 DATA QUALITY INDICATORS

To ensure that the investigation data collected was of an acceptable quality, the investigation data set was assessed against the data quality indicators (DQI) outlined in **Table 6-2**, which related to both field and laboratory-based procedures. The assessment of data quality is discussed in **Section 7**.

Table 6-2 Data Quality Indicators

Data Quality Objective	Data Quality Indicator	Acceptable Range
Accuracy	Field – Trip blank (laboratory prepared) Laboratory – Laboratory control spike and matrix spike	< laboratory limit of reporting (LOR) Prescribed by the laboratories
Precision	Field – Blind replicate and spilt duplicate Laboratory – Laboratory duplicate and matrix spike duplicate	< 30 % relative percentage difference (RPD [%]) Prescribed by the laboratories
Representativeness	Field – Trip blank (laboratory prepared) Laboratory – Method blank	< laboratory limit of reporting (LOR) Prescribed by the laboratories
Completeness	Completion (%)	-

7. ASSESSMENT METHODOLOGY

7.1 SAMPLING RATIONALE

With reference to the preliminary CSM described in **Section 5**, soil and groundwater investigation works were planned in accordance with the following rationale:

- Sampling fill and natural soils from ten (10) test bore locations located systematically across the site using a grid-based sampling pattern to characterise in-situ soils;
- Sampling groundwater during a single groundwater monitoring event (GME) at three (3) monitoring wells located across the site to assess for potential groundwater impacts; and
- Laboratory analysis of representative soil and groundwater samples for the identified chemicals of concern.

7.2 INVESTIGATION CONSTRAINTS

The number of test bores drilled and monitoring wells installed during the investigation phase did not achieve the planned investigation scope described in **Section 7.1** due to a number of physical obstructions, which comprised:

- Previous groundwater wells identified in the previous SGA (2012) report, were unable to be re-sampled due to being concrete capped after the previous consultants finalised their report;
- An additional groundwater well was added to the scope of works, to determine an appropriate understanding of groundwater conditions of the site;
- Limited head-clearance for the mechanical drilling rig; and
- Buried impenetrable materials (buried deep slabs and rock boulders), which resulted in hand auger refusal.

Due to access and head clearance restrictions (limited ceiling height) within the existing buildings, proposed sampling locations BH2 to BH6 were completed using a hand auger.

Locations BH2 to BH6 were terminated within fill materials at a depths ranging between 0.30 -0.5 mBGL due to buried obstructions.

7.3 ASSESSMENT CRITERIA

For the purposes of this investigation, the adopted soil assessment criteria are referred to as the Soil Investigation Levels (SILs) and the adopted groundwater assessment criteria are referred to as the Groundwater Investigation Levels (GILs). SILs and GILs are presented alongside the analytical results in the corresponding summary tables, which are discussed in **Section 9**.

7.3.1 Soil

The assessment criteria proposed for this project are outlined in **Error! Not a valid bookmark self-reference..** These were selected from available published guidelines that are endorsed by national or

state regulatory authorities, with due consideration of the exposure scenario that is expected for various parts of the site, the likely exposure pathways and the identified potential receptors.

Table 7-1 Adopted Investigation Levels for Soil

Environmental Media	Adopted Guidelines	Rationale
Soil	NEPM, 2013 Soil HILs, EILs, HSLs, ESLs & Management Limits for TPHs	<p>Soil Health-based Investigation Levels (HILs) Samples from the north-western site area are to be assessed against the NEPM 2013 HIL-A (residential sites with accessible soils). The remainder of the site will be assessed against HIL-B thresholds for residential sites with minimal access to soils.</p> <p>Ecological Investigation Levels (EILs) BH4, BH7 & BH9 soil samples would also be assessed against the NEPM 2013 EILs for arsenic, copper, chromium (III), nickel, lead, zinc, DDT and naphthalene, which have been derived for protection of terrestrial ecosystems.</p> <p>Soil Health-based Screening Levels (HSLs) The NEPM 2013 Soil HSL-D thresholds for commercial/industrial sites for vapour intrusion would be applied to assess for potential human health impacts from residual vapours resulting from petroleum, BTEX, & naphthalene. Commercial/Industrial values have been adopted as Section 2.4.8 of Schedule B(1) of NEPM (2013) indicates that HSLs are applicable to ground floor uses. WADOH (2009) assessment criteria, as presented in NEPM (2013), were not adopted during this investigation. Presence / absence of asbestos (not-detected) were utilised for preliminary screening purposes.</p> <p>Management Limits for Petroleum Hydrocarbons Should the HSLs be exceeded for petroleum hydrocarbons, soil samples would also be assessed against the NEPM 2013 <i>Management Limits</i> for the TRH fractions F1 – F4 to assess propensity for phase-separated hydrocarbons (PSH), fire and explosive hazards & adverse effects on buried infrastructure.</p>

7.3.2 Groundwater

In accordance with DEC (2007) *Guidelines for the Assessment and Management of Groundwater Contamination*, groundwater acceptance criteria are based on environmental values considered relevant for groundwater use at the site and surrounding uses of groundwater and surface waters that may be effected by the site. Potential environmental values include:

- Aquatic ecosystems: surface water and groundwater ecosystems;
- Human Uses: these include but are not limited to potable water supply, agricultural water supply (irrigation and stock watering), industrial water use, aquaculture and human consumption of aquatic foods, recreational use (primary and secondary contact with surface waters), and visual amenity of surface waters;
- Human health in non-use scenarios: this includes consideration of health risks that may arise without direct contact between humans and the groundwater, for example, exposure to volatile contaminants above groundwater contaminant plumes; and

- Buildings and structures: this includes protection from groundwater contaminants that can degrade building materials through contact, for example, the weakening of building footings resulting from chemically aggressive groundwater.

Cultural and spiritual values that are associated with the environment, including groundwater, should also be protected. Cultural and spiritual values may include spiritual relationships, sacred sites, customary uses, the plants and animals associated with the water, drinking water supplies, and recreational activities. In managing groundwater contamination, it is generally considered that cultural and spiritual values will be protected where groundwater quality protects all other relevant environmental values on a site.

EI completed a search of registered groundwater bores within a 500 m radius of the site on the WaterNSW website (**Section 2.4**). 84 groundwater wells were registered within a 500 m radius, however these were all for monitoring purposes.

An assessment of the applicability of groundwater environmental values for the site and off-site is provided in **Table 7-2** below.

Table 7-2 Assessment of Groundwater Environmental Values

Environmental Value	Relevance
Aquatic Ecosystems - Surface water ecosystems and groundwater ecosystems	The nearest down-gradient surface water ecosystem is towards Sheas Creek located approximately 800 m south-west of the site. This environmental value applies to all natural waterways and should be assessed.
Human Potable Water Uses	Potable water for the site will be supplied by municipal reticulated supply. The use of groundwater for potable uses is not registered within 500 m radius of the site, nor within a down-gradient (south easterly) direction from the site. Potable water is not considered to be a relevant environmental value for the site.
Agricultural Water supply (Irrigation and livestock watering)	There is no planned use of groundwater for agricultural purposes (irrigation and stock watering) at the site and the site is situated in an urbanised setting. The use of groundwater for agricultural uses is not registered within 500 m radius of the site nor within a down-gradient (south easterly) direction from the site. Agricultural water supply is not considered to be a relevant environmental value for the site.
Industrial Water use	There is no planned use of groundwater for industrial purposes at the site. Groundwater off-site for industrial purposes may be used however its use would be assessed for specific industrial use. The use of groundwater for industrial uses is not registered within 500 m radius of the site, nor within a down-gradient (south easterly) direction from the site. Industrial water supply is not considered to be a relevant environmental value for the site.
Aquaculture / human consumption of Aquatic foods	There is no planned use of groundwater for aquaculture/human consumption of aquatic foods at the site. EI checked the NSW Department of Primary Industries Aquaculture Industry Directory 2016 for listings of aquaculture businesses in Waterloo and in neighbouring areas. The directory is not inclusive of all producers in NSW but does list businesses nominating to be listed. No businesses were listed for Waterloo or Surrounding Areas. The use of groundwater for aquaculture uses is not registered within 500 m radius of the site, nor within a down-gradient (south easterly) direction from the site. Aquaculture water supply is not considered to be a relevant environmental value for the site.

Environmental Value	Relevance
Recreational use (primary and secondary contact)	There is no planned use of groundwater for recreational use at the site. The use of groundwater for recreational uses in swimming pools (i.e. pumping groundwater) is not registered within 500 m radius of the site. The use of groundwater for primary contact recreational uses is considered unlikely; however secondary contact may occur within the Sheas Creek. Recreational use is considered to be a relevant environmental value for the site.
Visual amenity to surface waters	Given the distance of Sheas Creek from the site, this environmental value is not considered relevant to the site.
Human health in non-use scenarios	The potential for vapour exposure from groundwater, without direct contact with groundwater, may occur if groundwater is contaminated with volatile contaminants. This Environmental Value should be assessed.
Buildings and structures	Foundations may be in contact with groundwater. This environmental value should be assessed.

Based on the above assessment, the environmental values (REVs) to be further assessed are: Aquatic Ecosystems, Recreational Use, and Buildings and Structures.

For the relevant environmental values, the adopted GILs are summarised in **Table 7-3** below.

Table 7-3 Adopted Investigation Levels for Groundwater

Adopted Guidelines	Rationale
Groundwater NEPM, 2013 GILs for Fresh Waters	Groundwater Investigation Levels (GILs) for Fresh Water NEPM 2013 provides GILs for typical, slightly-moderately disturbed aquatic ecosystems, which are based on the ANZG (2018) Trigger Values (TVs) for the 95% level of protection of aquatic ecosystems; however, the 99% TVs were applied for the bio-accumulative metals <i>cadmium</i> and <i>mercury</i> . The fresh water criteria were considered relevant as the closest, potential surface water receptor was Alexandra Canal, located 920 m south-east of the site. Due to the ANZECC (2000) criteria for petroleum hydrocarbons being below the laboratory limit of reporting, the PQL for each TRH fraction was adopted as the GIL for aquatic ecosystems, as per the guidance provided in DEC (2007) <i>Guidelines for the Assessment and Management of Groundwater Contamination</i> .
NEPM, 2013 GILs for Drinking purposes	Drinking Water GILs The NEPM (2013) GILs for drinking water quality were applied for the assessment of direct contact with groundwater. Drinking Water values are multiplied by a factor of 100 to address potential groundwater contact by basement users, and construction and maintenance workers. These values are based on the Australian Drinking Water Guidelines (Ref. NHMRC, 2011).

For the purposes of this investigation, the adopted soil assessment criteria are referred to as the Soil Investigation Levels (SILs) and the adopted groundwater assessment criteria are referred to as the Groundwater Investigation Levels (GILs). SILs and GILs are presented alongside the analytical results in the corresponding summary tables, which are discussed in **Section 9**.

7.4 SOIL INVESTIGATION

The soil investigation works conducted at the site are described in **Table 7-4**. Test bore locations are illustrated in **Figure 2**.

Table 7-4 Summary of Soil Investigation Methodology

Activity/Item	Details
Fieldwork	The site investigation was conducted on 15 August 2018. Ten boreholes were completed, with three of these converted into monitoring wells (BH1M, BH9M, & BH10M).
Drilling Method & Investigation Depth	Boreholes BH1M, BH7, BH8, BH9M and BH10M were drilled using a ute-mounted solid flight auger drilling rig. Final bore depths were between 2.00 – 5.00 mBGL. Boreholes BH2 to BH6 were drilled using the hand auger method due to height/access restrictions within the buildings. Manual auger refusal was experienced at borehole BH3 to BH6 due to obstructions within fill soils.
Soil Logging	Drilled 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 Unified Soil Classification System (USCS) and Australian Standard (AS) 4482.1-2005. Bore logs are presented in Appendix E .
Field Observations (including visual and olfactory signs of potential contamination)	A summary of field observations is provided in borehole log descriptions (Appendix E), and summarised in Section 9.1.2 .
Soil Sampling	<ul style="list-style-type: none"> • Soil samples were collected using a dry grab method (unused, dedicated latex gloves) & placed into laboratory-supplied, acid-washed, solvent-rinsed glass jars. • Blind field duplicates was separated from the primary samples and placed into glass jars. • A small amount of duplicate was collected from each soil samples and placed into zip-lock bag for Photo-ionisation Detector (PID) screening. • A small amount of duplicate was separated from all fill samples and placed into a zip-lock bag for asbestos analysis.
Decontamination Procedures	<p><i>Drilling Equipment</i> - The drilling rods were decontaminated between sampling locations with potable water until the augers were free of all residual materials.</p> <p><i>Sampling Equipment</i> – Tools (i.e. stainless steel hand trowel) were wiped clean using unused paper between near-surface sampling points, except where residue was observed after sampling, in which case they were washed with a potable water/phosphate-free detergent mixture, then rinsed with potable water and wiped with unused paper. Sampling gloves were replaced between sampling locations.</p>
Sample Preservation	Samples were stored in a chilled (with ice-blocks) chest, whilst on-site and in transit to the laboratory. All samples were submitted and analysed within the required holding period, as documented in laboratory reports discussed in a later section.
Management of Soil Cuttings	Soil cuttings were used as backfill for completed boreholes.
Quality Control & Laboratory Analysis	A number of soil samples were submitted for analysis of previously-identified COPC by SGS Laboratories (SGS). QA/QC testing comprised intra-laboratory duplicates ('field duplicates') tested blind by SGS and an inter-laboratory field duplicate tested blind by Envirolab Services (Envirolab). All samples were transported under strict Chain-of-Custody (COC) conditions and COC certificates and laboratory sample receipt documentation were provided to EI for confirmation purposes, as discussed in Section 8 .
Soil Vapour Screening	Screening for potential VOCs in collected soil samples was conducted using a Photo-ionisation Detector (PID).

7.5 GROUNDWATER INVESTIGATION

The groundwater investigation works conducted at the site are described in **Table 7-5**. Monitoring well locations are illustrated in **Figure 3**.

Table 7-5 Summary of Groundwater Investigation Methodology

Activity/Item	Details
Fieldwork	Groundwater monitoring wells were installed and developed on 15 August 2018; whereas, water level gauging, well purging, field testing and groundwater sampling was conducted on 24 August 2018.
Well Construction	<p>Test bores were converted to groundwater monitoring wells as follows:</p> <ul style="list-style-type: none"> BH1M, BH9M and BH10M – screen 2.00 – 5.00 mBGL <p>Drilling was undertaken by HartGeo Pty Ltd using a ute-mounted solid flight auger drilling rig. Well construction details are tabulated in Table 9-2 and documented in the bore logs presented in Appendix E. All three wells were installed to screen the shale bedrock.</p> <p>Well construction was in general accordance with the standards described in NUDLC, 2012 and involved the following:</p> <ul style="list-style-type: none"> 50 mm, Class 18 uPVC, threaded, machine-slotted screen and casing, with slotted intervals in shallow wells set to screen to at least 500 mm above the standing water level to allow sampling of phase-separated hydrocarbon product, if present; Base and top of each well was sealed with a uPVC cap; Annular, graded sand filter was used to approximately 300mm above top of screen interval; Granular bentonite was applied above 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 a steel road box cover set in neat cement and finished flush with the concrete slab level.
Well Development	Well development was conducted for each well directly following installation. This involved agitation within the full length of the water column using a stainless steel bailer, followed by removal of water and accumulated sediment. Water was removed from the wells until dry.
Well Survey (Elevation and location)	Well elevations at ground level were extrapolated from the spot elevations marked on the survey plan provided by the client (Figure 3). Well elevations at ground level were extrapolated in metres relative to Australian Height Datum (m AHD).
Well Gauging & Groundwater Flow Direction	<p>Monitoring wells BH1M, BH2M, and BH3M were gauged for standing water level (SWL, depth to groundwater) prior to well purging at the commencement of the GME on 14 May 2018. The measured SWLs are shown in Table 9-2.</p> <p>Based on the reduced water levels (RWLs, i.e. SWLs corrected to AHD) calculated at each monitoring well (Table 9-3), the direction of groundwater flow was inferred to be southwest.</p>
Well Purging & Field Testing	No volatile organic odours were detected during any stage of well purging. Measurement of water quality parameters was conducted repeatedly during well purging and were recorded onto field data sheets (Appendix F) once water quality parameters stabilised. In all wells groundwater was described as having moderate/low-moderate turbidity. Field measurements for Dissolved Oxygen (DO), Electrical Conductivity (EC) and pH of the purged water were also recorded during well purging. Purged water volumes removed from each well and field test results are summarised in Table 9-3 .

Activity/Item	Details
Groundwater sampling	<p>Groundwater purging and sampling was conducted using a low-flow/minimal drawdown sampling method with a MicroPurge kit (MP15) and pump.</p> <p>The MicroPurge system incorporates a low density poly-ethylene (LDPE) pump bladder, and a Teflon-lined LDPE sample delivery tube. The system used for this investigation employed pressurised carbon dioxide gas to regulate groundwater flow. Pump pressure and pumping cycles were adjusted accordingly to regulate extraction flow rate, and to avoid causing excessive drawdown of water level during the sampling process.</p> <p>Groundwater quality was measured repeatedly during purging using a calibrated Hanna Multi Parameter 9829 water quality meter. Three consecutive field measurements recorded within $\pm 3\%$ for EC, ± 20 mV for redox, $\pm 20\%$ for DO and ± 0.2 for pH were considered indicative of representative groundwater. Following stabilisation of parameters, groundwater was sampled.</p>
Decontamination Procedure	<p>The water level probe and water quality kit probes were washed in a solution of potable water and Decon 90 and then rinsed with potable water between measurements/wells.</p>
Sample Preservation	<p>Sample containers were supplied by the laboratory with the following preservatives:</p> <ul style="list-style-type: none"> • One, 1 litre amber glass, acid-washed and solvent-rinsed bottle; • Two, 40ml glass vials, pre-preserved with dilute hydrochloric acid, Teflon-sealed; and • One, 250mL, HDPE bottle, pre-preserved with dilute nitric acid (1 mL). <p>Samples for metals analysis were field-filtered using 0.45 μm pore-size filters. All containers were filled with sample to the brim then capped and stored in ice-filled chests, until completion of the fieldwork and during sample transit to the laboratory.</p>
Quality Control & Laboratory Analysis	<p>All groundwater samples were submitted for analysis of previously-identified chemicals of concern by SGS Laboratories (SGS). QA/QC testing comprised intra-laboratory duplicates ('field duplicates') tested blind by SGS and an inter-laboratory field duplicate tested blind by Envirolab Services (Envirolab). All samples were transported under strict Chain-of-Custody (COC) conditions and COC certificates and laboratory sample receipt documentation were provided to EI for confirmation purposes.</p>
Sample Transport	<p>After sampling, refrigerated sample chests were transported to SGS Australia Pty Ltd using strict Chain-of-Custody (COC) procedures. Inter-laboratory duplicate (ILD) samples were forwarded to Envirolab Services Pty Ltd (Envirolab) for QA/QC analysis. A Sample Receipt Advice (SRA) was provided by each laboratory to document sample condition upon receipt. Copies of SRA and COC certificates are presented in Appendix G.</p>

8. DATA QUALITY ASSESSMENT

The assessment of data quality is defined as the scientific and statistical evaluation of environmental data to determine if these data meet the objectives of the project (Ref. USEPA 2006). Data quality assessment includes an evaluation of the compliance of the field sampling and laboratory analytical procedures and an assessment of the accuracy and precision of these data from the laboratory quality control measurements obtained.

The data quality assessment process for this assessment included a review of analytical procedures to confirm compliance with established laboratory protocols and an assessment of the accuracy and precision of analytical data from a range of quality control measurements. The QC measures generated from the field sampling and analytical program were as follows:

- Suitable records of fieldwork observations including borehole logs;
- Relevant and appropriate sampling plan (density, type, and location);
- Use of approved and appropriate sampling methods;
- Preservation and storage of samples upon collection and during transport to the laboratory;
- Complete field and analytical laboratory sample COC procedures and documentation;
- Sample holding times within acceptable limits;
- Use of appropriate analytical procedures and NATA-accredited laboratories; and
- Required LOR (to allow for comparison with adopted IL);
- Frequency of conducting quality control measurements;
- Laboratory blanks;
- Field duplicates;
- Laboratory duplicates;
- Matrix spike/matrix spike duplicates (MS/MSDs);
- Surrogates (or System Monitoring Compounds);
- Analytical results for replicated samples, including field and laboratory duplicates and inter-laboratory duplicates, expressed as Relative Percentage Difference (RPD); and
- Checking for the occurrence of apparently unusual or anomalous results, e.g. laboratory results that appear to be inconsistent with field observations or measurements.

The findings of the data quality assessment in relation to the soil and groundwater investigations at the site are discussed in detail in **Appendix I**. QA/QC policies and DQOs are presented in **Appendix J**.

On the basis of the analytical data validation procedure employed the overall quality of the soil and groundwater analytical data produced for the site were considered to be of an acceptable standard for interpretive use.

9. RESULTS

9.1 SOIL INVESTIGATION RESULTS

9.1.1 Site Geology and Subsurface Conditions

The general site geology encountered during the drilling of the soil investigation boreholes, installation of monitoring wells may be described as a layer of anthropogenic filling overlying Botany Sands, with Hawkesbury Sandstone at depth. The geological information obtained during the investigation is summarised in **Table 9-1** and borehole logs from these works are presented in **Appendix E**.

Table 9-1 Generalised Subsurface Profile

Layer	Description	Depth to top and bottom of strata (mBGL)
Fill	CONCRETE	0.00 – 0.15
	Gravelly Clayey SAND; fine to medium grained, light brown/orange/grey, with low to medium plasticity clay and fine, sub-angular to angular gravels, with plastics and bark fragments.	0.12 – 0.80
	SAND: fine to medium grained, dark brown, with organics.	0.10 – 0.20
	Gravelly CLAY; low to medium grained, brown, with fine to coarse gravels.	0.15 – 1.50
	Gravelly SAND; fine to medium grained, brown, with fine to coarse, sub-angular to angular gravels,	0.00 – 0.70
Residual Soil	SAND; fine grained, light grey, brown, dark brown.	0.60 – 5.00 +
	Silty CLAY (PEAT); medium plasticity, dark brown.	1.50 – 2.00
	CLAY; medium to high plasticity, brown.	
Bedrock	SANDSTONE; fine grained, yellow, with coarse, sub-angular to angular sandstone fragments.	0.20 – 5.50+

Notes:

+ Termination depth of borehole

9.1.2 Field Observations and PID Results

Soil samples were obtained from the test bores at various depths ranging between 0.1 m to 3.5mBGL. 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 and charcoal) and the following observations were noted:

- Visual or olfactory evidence of sulfate and hydrocarbon impacts were noted in boreholes BH1M, BH2, BH4 and BH6 during this assessment;
- No brick and tile fragments were noted in the fill layers at any of the borehole locations investigated during this assessment;
- No fibrous cement sheeting, ash or charcoal was observed in any of the examined fill soils. However, slag was noted in BH5; and

- Slightly elevated VOC concentrations ranging was detected in natural soil material in BH1M_3.4-3.5 (23.1ppm), which were field-screened using a portable PID fitted with a 10.9 eV lamp. The PID results are shown in the borehole logs (**Appendix E**) and the samples showing higher PID values were therefore assigned for laboratory VOC and SVOC analysis.

9.2 GROUNDWATER INVESTIGATION RESULTS

9.2.1 Monitoring Well Construction

A total of three groundwater monitoring wells were installed across the site (BH1M, BH9M, and BH10M). Well construction details for the installed groundwater monitoring wells are summarised in **Table 9-2**.

Table 9-2 Monitoring Well Construction Details

Well ID	Bore Depth (mBGL)	Screen Interval (mBGL)	Lithology Screened
BH1M	5.00	2.00-5.00	Sand
BH9M	5.00	2.00-5.00	Sand
BH10M	5.50	2.00-5.00	Sand

Notes:

mBGL - metres below ground level.

RL - Reduced Level – Surveyed elevation in metres relative to Australian Height Datum (mAHD).

TOC - top of well casing.

RL (TOC) - Surveyed elevation at TOC in mAHD.

9.2.2 Field Observations and Water Test Results

A single GME was conducted on all wells in 14 May 2018. On this date, standing water levels (SWLs) were measured within each well prior to well purging, the results of which were recorded with well purge volumes and field-based water test results. A summary of the recorded field data is presented in **Table 9-3** and copies of the completed Field Data Sheets are included in **Appendix F**.

Table 9-3 Groundwater Field Data

Well ID	SWL (mBTOC)	Purge Volume (L)	DO (mg/L)	Field pH	Field EC (µS/cm)	Temp (°C)	Redox (mV)	Odours / Turbidity
BH1M	3.29	2.0	0.31	7.16	783	18.74	167.3	Hydrocarbon/ Very high
BH9M	2.60	2.0	1.43	6.62	605	17.15	181.6	None/ Very high
BH10M	2.64	2.0	1.54	6.48	226	19.46	168.5	None/ High

Notes:

GME – Groundwater monitoring event.

SWL – Standing Water Levels as measured from TOC (top of well casing) prior to groundwater sampling.

m BTOC – metres below top of well casing (Note: Ground Level = TOC for the wells MW110, MW112 and MW114).

RL (TOC) – Reduced Level, elevation at TOC in metres relative to Australian Height Datum (mAHD).

† WL - Calculated groundwater level, in m AHD (calculated as RL – SWL) Note: these values were used for groundwater contouring analysis.

L – litres (referring to volume of water purged from the well prior to groundwater sample collection).

EC – groundwater electrical conductivity as measured onsite using portable EC meter.

µS/cm – micro Siemens per centimetre (EC units).

DO – Dissolved Oxygen in units of milligrams per litre (mg/L)

All groundwater parameters (pH, EC and DO) were tested on site.

* Well not found, presumed damaged.

SWLs recorded during the GME indicate that groundwater flows in a south-westerly direction (**Figure 3**).

The field pH data indicated that the groundwater was circumneutral (pH ranged from 6.48 – 7.16). Electrical Conductivity (EC) measurements were recorded in the range 226 to 783 $\mu\text{S}/\text{cm}$ indicating that the groundwater was fresh in terms of water salinity.

9.3 LABORATORY ANALYTICAL RESULTS

9.3.1 Soil Analytical Results

A summary of laboratory results showing test sample quantities, minimum/maximum analyte concentrations and samples found to exceed the SILs, is presented in **Table 9-4**. More detailed tabulations of results showing the tested concentrations for individual samples alongside the adopted soil criteria are presented in **Table T1** at the end of this report. Completed documentation used to track soil sample movements and laboratory receipt (i.e. COC and SRA forms) are copied in **Appendix G** and all laboratory analytical reports for tested soil samples are presented in **Appendix H**.

Table 9-4 Summary of Soil Analytical Results

No. of primary samples	Analyte	Min. Conc. (mg/kg)	Max. Conc. (mg/kg)	Sample locations exceeding investigation levels
Hydrocarbons				
18	TRH F1	<25	<25	None
18	TRH F2	<25	180	HILs - None EILs - BH1M_0.3-0.4
18	TRH F3	<90	1,300	HILs - None EILs - BH1M_0.3-0.4
18	TRH F4	<120	<120	None
18	Benzene	<0.1	0.4	None
18	Toluene	<0.1	1.8	None
18	Ethyl benzene	<0.1	0.4	None
18	Total xylenes	<0.3	3.3	None
18	Naphthalene	<0.1	8.9	None
18	Benzo(a)pyrene	<0.1	10	None
18	Carcinogenic PAH	<0.3	14	HILs - BH1M_0.3-0.4 EILs - None
18	Total PAH	<0.8	170	None
Heavy Metals				
18	Arsenic	1	15	None
18	Cadmium	<0.3	2.6	None
18	Chromium (Total)	0.5	34	None
18	Copper	1.5	7,100	HILs - BH10M_0.4-0.5 EILs - BH10M_0.4-0.5

No. of primary samples	Analyte	Min. Conc. (mg/kg)	Max. Conc. (mg/kg)	Sample locations exceeding investigation levels
18	Lead	2	850	HILs - BH10M_0.4-0.5
18	Mercury	<0.05	0.53	None
18	Nickel	<0.5	59	HILs - None EILs - BH1M_0.3-0.4
18	Zinc	2.1	3,800	HILs - None EILs - BH1M_0.5-0.6, BH9M_0.3-0.4 and BH10M_0.4-0.5
OCPs				
11	Total OCPs	<1	6	None
OPPs				
11	Total OPPs	<1.7	<1.7	None
PCBs				
11	Total PCBs	<1	<1	None
Asbestos				
11	Asbestos	No asbestos detected	No asbestos detected	None

Heavy Metals

With reference to **Table T1**, heavy metals concentrations in sample BH10M_0.4-0.5 (7100 mg/kg for copper and 850 mg/kg for lead), exceeded health based SILs.

Exceedances of the EILs for copper, nickel and zinc were also identified in samples BH1M 0.3-0.4 (59 mg/kg for nickel) BH1M_0.5-0.6 (1200 mg/kg for zinc), and BH9M_0.3-0.4 (420 mg/kg for zinc) and BH10M_0.4-0.5 (7100 mg/kg for copper, 3800 mg/kg for zinc).

TRHs

As shown in **Table T1**, total recoverable hydrocarbons (TRH) were reported below the corresponding adopted SILs.

Exceedances of the EILs for F2 and F3 in BH1M_0.3-0.4 (180 mg/kg for F2 and 1,300 mg/kg for F3).

BTEX and Naphthalene

BTEX was below the corresponding SIL and ESL criteria, as shown in **Table T1**.

Naphthalene concentrations were also below the adopted SIL and ESL criteria.

PAHs

As summarised in **Table T1**, no exceedances of the adopted EILs were identified during testing.

Exceedances of the adopted SIL criteria for were also identified in sample BH1M_0.3-0.4 (14 mg/kg) for Carcinogenic PAH criteria.

OCPs, OPPs, and PCBs

With reference to **Table T1**, no detectable concentration of any of the screened OCP, OPP, and PCB compounds was identified in any of the tested samples. All laboratory PQLs were also within the corresponding SILs and EILs/ESLs criteria.

Asbestos

As summarised in **Table T1**, asbestos fibres were not identified by the laboratory in samples collected from shallow fill.

9.3.2 Groundwater Analytical Results

Laboratory analytical results for groundwater samples are summarised in **Table T2**, which also include the adopted GILs. Completed documentation used to track groundwater sample movements and laboratory receipt (COC and SRA forms) are copied in **Appendix G**. Copies of the laboratory analytical reports are attached in **Appendix H**.

Table 9-5 Summary of Groundwater Analytical Results

No. of primary samples	Analyte	Min. Conc. (µg/L)	Max. Conc. (µg/L)	Sample locations exceeding investigation levels
Hydrocarbons				
3	F1 (C ₆ -C ₁₀)	<50	160	GILs Fresh Water Criteria: BH1M-1
3	F2 (>C ₁₀ -C ₁₆)	<60	190	GILs Fresh Water Criteria: BH1M-1
3	F3 (>C ₁₆ -C ₃₄)	<500	<1000	None
3	F4 (>C ₃₄ -C ₄₀)	<500	<1000	None
3	Benzene	<0.5	<0.5	None
3	Toluene	<0.5	<0.5	None
3	Ethylbenzene	<0.5	<0.5	None
3	o-xylene	<1	<1	None
3	m/p-xylene	<0.5	<0.5	None
PAHs				
3	Benzo(a)pyrene	<0.1	<0.2	None
3	Naphthalene	<0.1	<0.2	None
Heavy Metals				
3	Arsenic	<1	6	None
3	Cadmium	<0.1	<0.1	None
3	Chromium (Total)	<1	3	None
3	Copper	2	85	GILs Fresh Water Criteria: BH1M-1, BH3M-1
3	Lead	1	3	None
3	Mercury	<0.1	<0.1	None
3	Nickel	<1	3	None
3	Zinc	10	110	GILs Fresh Water Criteria: BH1M-1, BH3M-1
VOCs				
3	Total VOC	<10	20	None
Phenols				
3	Total Phenolics	<0.05	<0.05	None

Heavy Metals

With reference to **Table T2** concentrations in excess of the adopted GILs were identified for groundwater as follows:

- Copper (85 µg/L in BH1M-1 and 110 µg/L in BH3M-1)
- Zinc (65 µg/L in BH1M-1 and 92 µg/L in BH3M-1).

Based on EI's experience, heavy metal concentrations exceeding water quality criteria are ubiquitous in groundwater systems in long-standing urban/industrial environments, and not considered to represent a cause for environmental concern.

TRHs and BTEX

With reference to **Table T2** concentrations in excess of the adopted GILs were identified for groundwater as follows:

- F1 (160 µg/L in BH1M-1)
- F2 (190 µg/L in BH1M-1).

PAHs and Phenols

PAHs and Phenols were below detected above the quantitation limits (PQLs) in any sample tested. All PQLs for PAHs were below the corresponding GILs, as shown in **Table T2**.

SVOCs & VOCs

As shown in **Table T2**, all laboratory results for the tested groundwater samples BH1M and BH7M showed non-detectable levels of SVOCs and VOCs.

10. SITE CHARACTERISATION

10.1 REVIEW OF CONCEPTUAL SITE MODEL

On the basis of investigation findings the CSM discussed in **Section 5** was considered to appropriately identify contamination sources, migration mechanisms and exposure pathways, as well as potential onsite and offsite receptors.

The following data gaps have been identified:

- Potential for soil and groundwater PFAS contamination has been identified from review of council information, presented in **Section 4.3**. Records indicate that site structures were re-established following a fire onsite. In addition a review of previous historical site usages (**Section 4.1**) indicated that the site was previously used for fabric manufacturing. In light of these findings, an additional round of soil and groundwater sampling for PFAS analysis must be conducted; and
- The quality of deeper fill and natural soils in the vicinity of borehole locations BH2, BH3, BH5, and BH6 where boreholes encountered obstructions in fill.

10.2 CONFIRMED POLLUTANT LINKAGES

Based on information that was gathered from soil and groundwater sampling conducted, the following confirmed pollutant linkages have been summarised in **Table 10-1**.

Table 10-1 Pollutant Linkages Model

Confirmed Contaminants	Contaminant Media	Migration & Exposure Pathways	Sensitive Receptor
F2 (BH1M_0.3-0.4)	Soil	Volatilisation Inhalation	Construction workers Future site users
Carcinogenic PAHs (BH1M_0.3-0.4)	Soil	Ingestion Inhalation Direct contact	Construction workers Future site users
F3 (BH1M_0.3-0.4) Copper (BH10M_0.4-0.5) Lead (BH10M_0.4-0.5) Nickel (BH1M_0.3-0.4) Zinc (BH1M_0.5-0.6, BH9M_0.3-0.4 & BH10M_0.4-0.5)	Soil	Direct contact /root uptake	Vegetation in future landscaping
F1 & F2 (BH1M-1)	Groundwater	Volatilisation Inhalation	Construction workers Future site users
Copper & Zinc (BH1M-1 & BH10M-1)	Groundwater	Ingestion Inhalation Direct contact	Construction workers Future site users

11. CONCLUSIONS

The property located at 242-244 Young Street, Waterloo NSW was the subject of a Detailed Site Investigation that was conducted in order to assess the nature and degree of on-site contamination associated with current and former uses of the property. Findings of this investigation identified the following:

- Historical records indicate that the site has been used for commercial/industrial purposes since the 1930s, with uses including soap and fabric manufacturing, and drum re-conditioning. Previous investigation by SGA (2012) also a former foundry was present at the site. Records also indicated that site structures were re-established following a fire onsite in the 1960s.
- SafeWork NSW records confirmed the presence of USTs at the property historically. While no information was identified indicating that tanks had been removed from the site, the tanks locations of the tanks could not be identified.
- Previous intrusive investigation by SGA (2012), in the very northern portion of the site, identified concentrations of copper, lead, C₁₀-C₃₆ petroleum hydrocarbons, polycyclic aromatic hydrocarbons (including benzo(a)pyrene) in fill material at levels exceeding NEPC (1999) commercial/industrial guidelines. The compounds identified indicate that the contamination is likely associated with former foundry use
- As part of this investigation, soil sampling and analysis were conducted at ten (10) targeted test bore locations (BH1M, BH9M, BH10M and BH2-BH8) down to a maximum depth of 5.5 mBGL. Sampling regime was considered to be appropriate for investigation purposes and comprised a targeted sampling approach, as a systematic sampling pattern could not be undertaken due to onsite obstructions;
- The sub-surface layers comprised a layer of granular and cohesive filling overlying cohesive residual soils, with sandstone bedrock below the residual soils;
- Groundwater was encountered during monitoring at depths ranging from 2.60 to 3.29 meters BTOC;
- Soil samples identified the following contaminants at concentrations above the adopted soil investigation levels:
 - BH1M – nickel, zinc, carcinogenic PAHs, F2-TRH, and F3-TRH
 - BH9M – zinc
 - BH10M – copper, lead and zinc
- Groundwater samples identified the following contaminants at concentrations above the adopted groundwater investigation levels:
 - BH1M & BH10M – copper and zinc
- The following data gaps identified in this DSI will require closure by further investigations:
 - Potential for PFAS contamination of soil and groundwater as a result of historical site activities; and

- The quality of deeper fill and natural soils in the vicinity of borehole locations BH2, BH3, BH5, and BH6 where boreholes encountered obstructions in fill.

Based on the findings of this report, and with consideration of the Statement of Limitations (**Section 13**), EI concludes that localised contamination, and the presence of UPSS at the site, will require remediation to be performed at the site. EI consider that the site can be made suitable for the proposed development, subject to the implementation of the recommendations detailed in **Section 12** are

The works required to satisfactorily characterise and remediate the site should be completed following the demolition of all site structures. The requirement to complete these additional works can be included in Council's DA consent conditions.

12. RECOMMENDATIONS

It is assumed that during the proposed construction of a basement level car park as part of the development, all fill and residual soil materials will be removed from the site, therefore in view of the above findings and in accordance with the NEPM 2013 guidelines, it is considered that the site will be made suitable for the proposed residential development on completion of the following recommendations:

- Conduct a Hazardous Materials Survey (HMS) of current site structures. EI recommend that a HMS is conducted prior to demolition of site structures;
- An additional site investigation (ASI) should be undertaken to close additional data gaps identified during this investigation. This would include:
 - The re-purging of the groundwater monitoring wells is to be undertaken before an additional round of groundwater sampling. Samples collected are to be tested for contaminants of concern (including PFAS);
- A Remedial Action Plan (RAP) should be prepared in accordance with the NSW Office of Environment and Heritage (2011) *Guidelines for consultants reporting on contaminated sites* prior to the commencement of site works as part of the proposed development. The RAP will provide details of the methodology and procedures required for effective site remediation, including:
 - A site inspection after demolition by a qualified environmental consultant, to determine if additional sources of environmental concern can be identified;
 - A ground penetrating radar (GPR) survey to identify the location of potential UPSS infrastructure onsite;
 - Removal of UPSS and validation resulting excavations;
 - Additional soil sampling and laboratory analysis for PFAS compounds. If additional investigation indicates the presence of PFAS compounds, impacted soils should be removed and excavations validated;
 - If additional groundwater sampling indicates the presence on hydrocarbon contamination at significantly elevated concentrations, three soil vapour wells should be installed at targeted locations across the site footprint, above the depth of groundwater, after the completion of demolition;
 - Any material being removed from site (including virgin excavated natural materials (VENM)) should be classified for off-site disposal in accordance the EPA (2014) Waste Classification Guidelines;
 - Any material being imported to the site should be assessed for potential contamination in accordance with NSW EPA guidelines as being suitable for the intended use or be classified as VENM;
 - Preparation of an unexpected finds protocol for implementation following demolition and during site excavation to ensure any potential contamination sources (e.g. soil staining,

- asbestos) that maybe identified are managed in accordance with the NSW EPA legislation and guidelines; and
- Preparation of a site validation report by a qualified environmental consultant, documenting the suitability of site environmental conditions for the proposed development.

13. STATEMENT OF LIMITATIONS

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 investigation 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 investigations and assessment.

EI's assessment is necessarily based upon the result of the site investigation and the restricted program of surface and subsurface sampling, screening and chemical testing which was set out in the 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 the above named client 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.

This report and associated documents remain the property of EI subject to payment of all fees due for this assessment. The report shall not be reproduced except in full and with prior written permission by EI.

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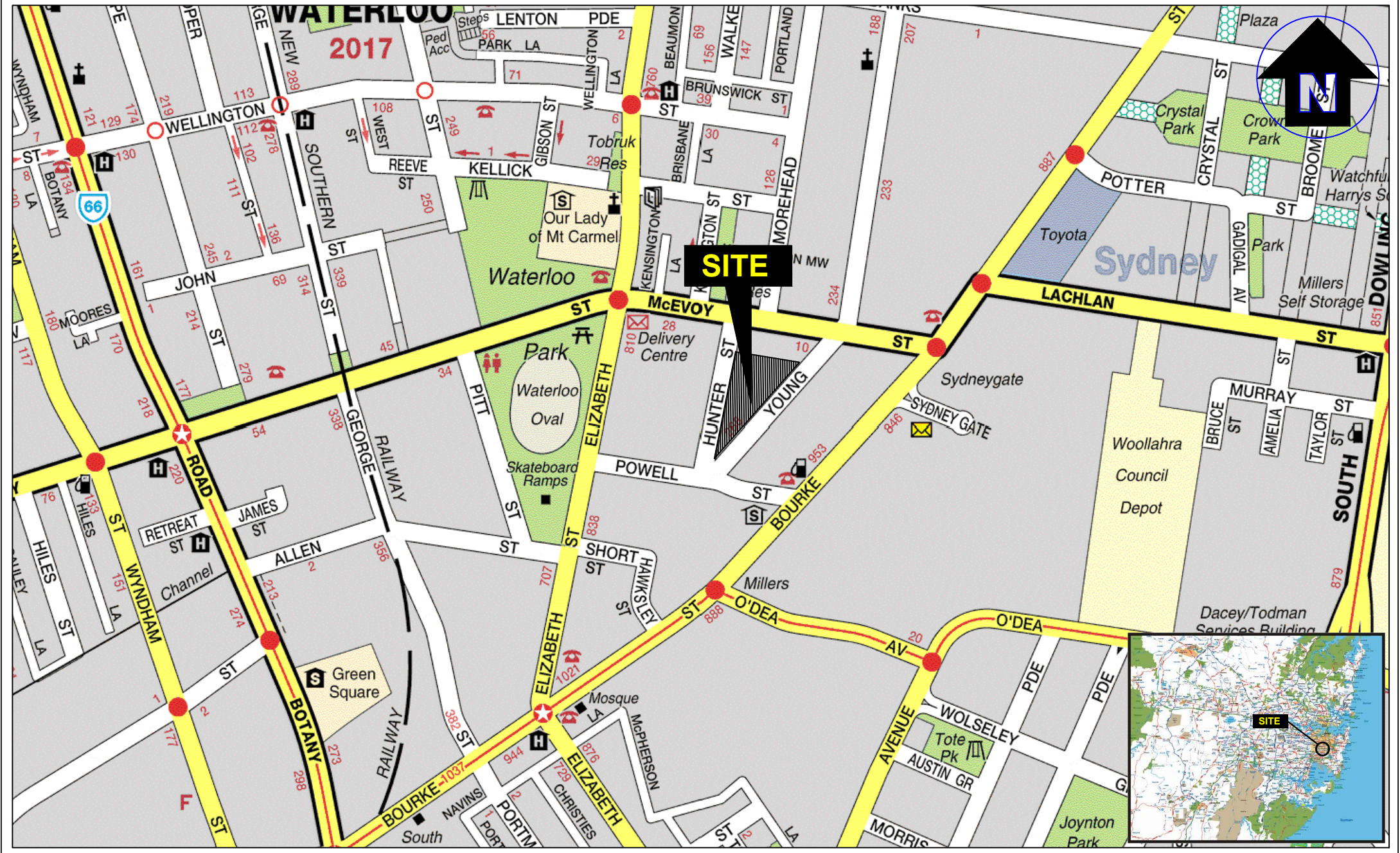
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ABBREVIATIONS

ACM	Asbestos-containing materials
ASI	Additional site investigation
ASS	Acid sulfate soils
B(a)P	Benzo(a)pyrene (a PAH compound)
BH	Borehole
BTEX	Benzene, Toluene, Ethylbenzene, Xylene
COC	Chain of Custody
COPC	Contaminants of Potential Concern
cVOCs	Chlorinated Volatile Organic Compounds (a sub-set of the VOC analysis suite)
DEC	Department of Environment and Conservation, NSW (see OEH)
DECC	Department of Environment and Climate Change, NSW (see OEH)
DECCW	Department of Environment, Climate Change and Water, NSW (see OEH)
DA	Development Application
DO	Dissolved Oxygen
DP	Deposited Plan
EC	Electrical Conductivity
Eh	Redox potential
EI	EI Australia
EIL	Ecological Investigation Level
EPA	Environment Protection Authority
ESL	Ecological Screening Level
F1	TRH C ₆ – C ₁₀ less the sum of BTEX concentrations (Ref. NEPM 2013, Schedule B1)
F2	TRH >C ₁₀ – C ₁₆ less the concentration of naphthalene (Ref. NEPM 2013, Schedule B1)
GIL	Groundwater Investigation Level
GME	Groundwater Monitoring Event
HIL	Health-based Investigation Level
HSL	Health-based Screening Level
km	Kilometres
LNAPL	Light, non-aqueous phase liquid (also referred to as PSH)
DNAPL	Dense, non-aqueous phase liquid
EIL	Ecological Investigation Level
ESL	Ecological Screening Level
m	Metres
MAH	Monocyclic Aromatic Hydrocarbons
mAHD	Metres Australian Height Datum
mBGL	Metres Below Ground Level
mg/L	Milligrams per litre
µg/L	Micrograms per litre
MW	Monitoring well
NATA	National Association of Testing Authorities, Australia
NEPC	National Environmental Protection Council
NEPM	National Environmental Protection Measure
NSW	New South Wales
OC	Organochlorine Pesticides
OEH	Office of Environment and Heritage, NSW (formerly DEC, DECC, DECCW)
OPP	Organophosphorus Pesticides
PAHs	Polycyclic Aromatic Hydrocarbons

PCB	Polychlorinated Biphenyl
PFAS	Per or Poly-Fluoroalkyl Substances
pH	Measure of the acidity or basicity of an aqueous solution
PQL	Practical Quantitation Limit (limit of detection for respective laboratory instruments)
QA/QC	Quality Assurance / Quality Control
RAP	Remediation Action Plan
SRA	Sample receipt advice (document confirming laboratory receipt of samples)
SWL	Standing Water Level
TDS	Total dissolved solids (a measure of water salinity)
TPH	Total Petroleum Hydrocarbons (superseded term equivalent to TRH)
TRH	Total Recoverable Hydrocarbons (non-specific analysis of organic compounds)
USEPA	United States Environmental Protection Agency
VOCs	Volatile Organic Compounds (specific organic compounds which are volatile)
WADOH	Western Australian Department of Health

FIGURES



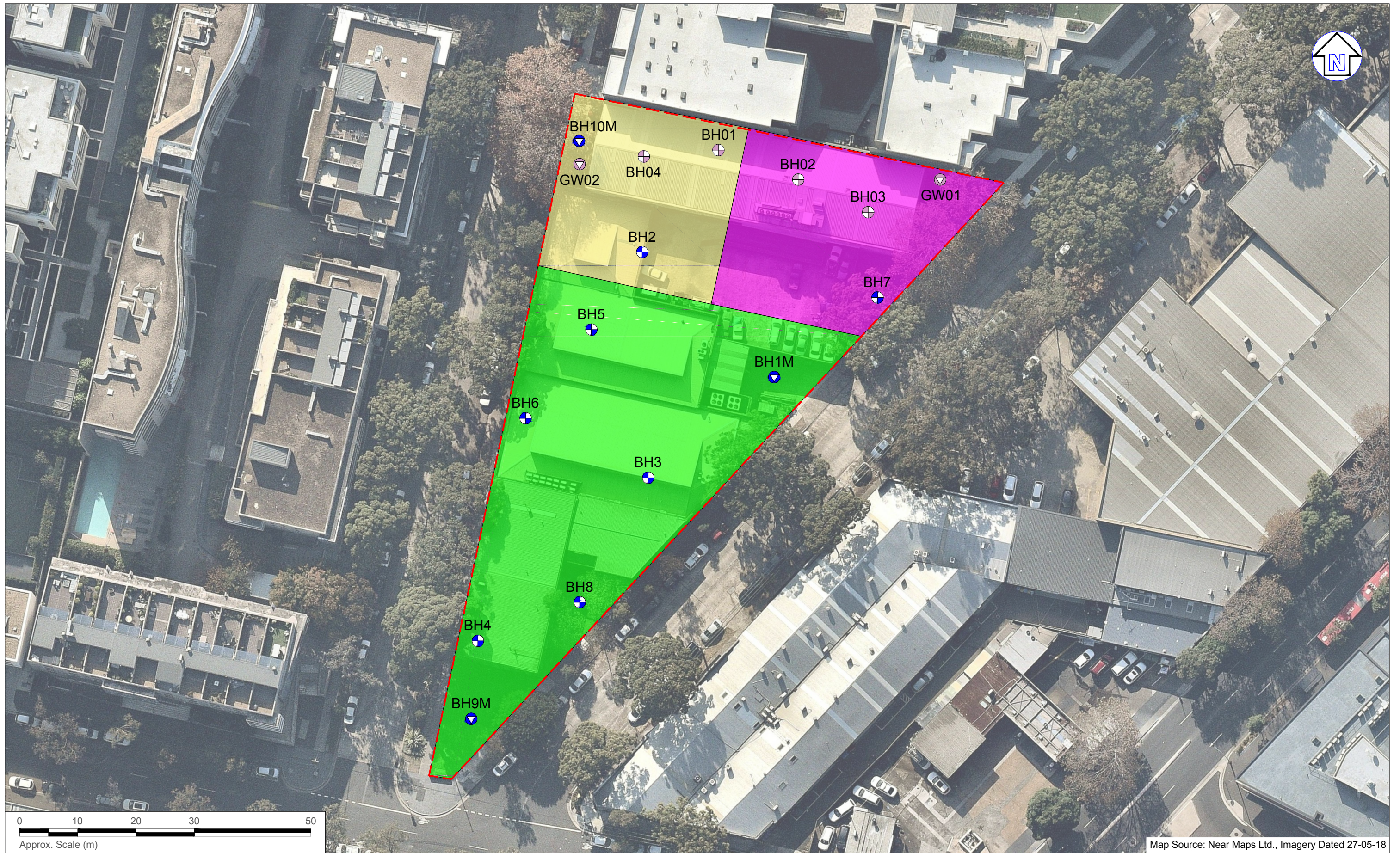
Suite 6.01, 55 Miller Street, PYRMONT 2009
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Drawn:	D.R.
Approved:	C.S.
Date:	21-08-18
Scale:	Not To Scale

Bennett Murada Architects
Detailed Site Investigation
242-244 Young Street, Waterloo NSW

Site Locality Plan

Figure:
1
Project: E23915.E02



LEGEND

- Approximate site boundary
- ⊕ Approximate borehole location
- ⊕ Approximate borehole location (SGA, 2012)
- ⊕ Approximate borehole/monitoring well location
- ⊕ Approximate borehole/monitoring well location (SGA, 2012)
- Approximate area for schooling (Area 1, assessed against Hii A NEPM Criteria)
- Approximate area for commercial (Area 2, assessed against Hii B NEPM Criteria)
- Approximate area for residential (Area 3, assessed against Hii B NEPM Criteria)



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Date:	18-10-18

Pacific Equity Partners Pty Ltd
Detailed Site Investigation
242-244 Young Street, Waterloo NSW
Sampling Location Plan

Figure:
2
Project: E23915.E02

Map Source: Near Maps Ltd., Imagery Dated 27-05-18

TABLES

Table T1 - Summary of Soil Analytical results

Sample ID	Media	Heavy Metals								PAHs				BTEX				TRHs				Total OCps	Total OPps	Total PCBs	Asbestos				
		As	Cd	Cr	Cu	Pb	Hg	Ni	Zn	Carcinogenic PAHs (as B[a]P TEQ)	Benzo(a)pyrene	Total PAHs	Naphthalene	Benzene	Toluene	Ethylbenzene	Total Xylenes	F1	F2	F3	F4								
BH1M_0.3-0.4	Fill	15	0.5	34	50	76	0.42	59	140	14	10	170	8.9	<0.1	<0.1	<0.1	<0.3	<25	180	1300	<120	1	<1.7	<1	No				
BH1M_0.5-0.6	Fill	4	1	14	34	84	0.53	30	1200	4	2.9	69	4	0.4	1.8	0.4	3.3	<25	48	300	<120	<1	<1.7	<1	No				
BH1M_1.2-1.3	Natural Sand	2	<0.3	0.5	1.5	5	<0.05	<0.5	87	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	NA	NA	NA	NA				
BH1M_3.4-3.5	Natural Sand	1	<0.3	2.7	2.2	10	<0.05	0.8	66	<0.3	<0.1	<0.8	0.1	<0.1	0.2	<0.1	<0.3	<25	<25	<90	<120	NA	NA	NA	NA				
BH2_0.1-0.2	Fill	3	<0.3	15	16	24	<0.05	12	70	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	110	<120	<1	<1.7	<1	No				
BH2_0.3-0.4	Natural Sandstone	2	<0.3	2.7	4.2	9	<0.05	2.2	15	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	NA	NA	NA	NA				
BH3_0.2-0.3	Fill	3	<0.3	6.5	14	13	<0.05	21	56	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No				
BH4_0.2-0.3	Fill	5	0.7	8.9	50	180	0.25	4.3	290	1.1	0.7	9.6	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No				
BH5_0.1-0.2	Fill	3	0.3	11	28	140	0.17	10	110	1.4	1	10	0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	110	<120	6	<1.7	<1	No				
BH6_0.2-0.3	Fill	3	<0.3	2.3	6.7	19	<0.05	1.9	27	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No				
BH7_0.3-0.4	Fill	5	0.4	9.3	31	73	0.16	6.3	150	3.1	2.3	20	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	160	<120	<1	<1.7	<1	No				
BH8_0.3-0.4	Fill	2	<0.3	5.5	16	33	0.07	4	55	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No				
BH8_1.7-1.8	Natural Sand	2	0.3	1.9	5	61	0.09	<0.5	43	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	NA	NA	NA	NA				
BH9M_0.3-0.4	Fill	7	1	12	52	210	0.23	5.8	420	0.9	0.6	6.3	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No				
BH9M_1.8-1.9	Natural Sand	2	<0.3	2.3	2	19	<0.05	0.6	3.5	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	NA	NA	NA	NA				
BH10M_0.4-0.5	Fill	9	2.6	5	7100	850	0.09	12	3800	0.3	0.2	1.7	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No				
BH10M_1.7-1.8	Peat	9	<0.3	5.2	9.9	10	<0.05	2.1	18	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	NA	NA	NA	NA				
BH10M_2.4-2.5	Natural Sand	2	<0.3	3.5	2.4	2	<0.05	0.7	2.1	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	NA	NA	NA	NA				
Statistical Analysis																													
Maximum Concentration		15	2.6	34	7100	850	0.53	59	3800	14	10	170	8.9	0.4	1.8	0.4	3.3	<25	180	1300	<120	6	<1.7	<1	No				
95% UCL		NC	NC	NC	4327	NC	NC	19	2480	4.878	NC	NC	NC	NC	NC	NC	NC	NC	64.74	446.7	NC	NC	NC	NC	NC				
SILs																													
HIL B - Residential with minimal opportunities for soil access		500	150	500 Cr(VI)	30000	1200	120	1200	60000	4	NR	400											NR	NR	1				
HSL D - Commercial/Industrial Soil texture classification - Sand 1	Source depths 0 m to <1 mBGL												NL	3	NL	NL	230	260	NL										
	Source depths 1 m to <2 mBGL												NL	3	NL	NL	NL	370	NL										
	Source depths 2 m to <4 mBGL												NL	3	NL	NL	NL	630	NL										
	Source depths >4 mBGL												NL	3	NL	NL	NL	NL	NL										
EILs / ESLs - Residential ¹	105			205 ³	125 ³	1260 ³			35 ³	350 ³			33 ²			170	50	85	70	105	180	120	300	2,800	180				
Management Limits - Residential, parkland and public open space Coarse grained soil texture ¹																			700	1000	2500	10000							
Asbestos contamination HSL - Residential B																							0.01						
Bonded ACM (%w/w)																													
Asbestos contamination HSL for																							0.001						

Notes:

- Highlighted values indicates concentration exceeds Human Health Based Soil Criteria
- Highlighted values indicates concentration exceeds Ecological Based Soil Criteria

- HIL B NEPC 1999 Amendment 2013 'HIL B' Health Based Investigation Levels applicable for residential exposure settings with minimal opportunities for soil access, including dwellings with fully and permanently paved yard space such as high rise buildings and apartments.
- NEPM (2013) ESL Moderate Reliability Criteria
- NR No current published criterion.
- NL Not Limiting' If the derived soil vapour limit exceeds the soil concentration at which the pore water phase cannot dissolve any more of the individual chemical
- 'Not Tested' i.e. the sample as not analysed.
- 1 Coarse Grained soil values were applied, being the most conservative of the material types.
- 2 Ecological criteria for Benzo(a)pyrene selected from CRC Care Report No. 39 (2017)
- 3 EIL Criteria is calculated from summing the ACL and the ABC threshold values
- F1 TPH C₆-C₁₀ less the sum concentration of BTEX.
- F2 TPH C₁₀-C₁₆ less the concentration of Naphthalene.
- F3 TPH C₁₆-C₃₄
- F4 TPH C₃₄-C₄₀

A	B	C	D	E	F	G	H	I	J	K	L
1	UCL Statistics for Uncensored Full Data Sets										
2											
3	User Selected Options										
4	Date/Time of Computation		3/09/2018 10:01:44 AM								
5	From File		WorkSheet.xls								
6	Full Precision		OFF								
7	Confidence Coefficient		95%								
8	Number of Bootstrap Operations		2000								
9											
10											
11	Copper										
12											
13	General Statistics										
14	Total Number of Observations			18		Number of Distinct Observations			16		
15						Number of Missing Observations			0		
16	Minimum			1.5		Mean			412.5		
17	Maximum			7100		Median			15		
18	SD			1669		Std. Error of Mean			393.4		
19	Coefficient of Variation			4.046		Skewness			4.242		
20											
21	Normal GOF Test										
22	Shapiro Wilk Test Statistic			0.261		Shapiro Wilk GOF Test					
23	5% Shapiro Wilk Critical Value			0.897		Data Not Normal at 5% Significance Level					
24	Lilliefors Test Statistic			0.53		Lilliefors GOF Test					
25	5% Lilliefors Critical Value			0.209		Data Not Normal at 5% Significance Level					
26	Data Not Normal at 5% Significance Level										
27											
28	Assuming Normal Distribution										
29	95% Normal UCL					95% UCLs (Adjusted for Skewness)					
30	95% Student's-t UCL			1097		95% Adjusted-CLT UCL (Chen-1995)			1480		
31						95% Modified-t UCL (Johnson-1978)			1162		
32											
33	Gamma GOF Test										
34	A-D Test Statistic			3.734		Anderson-Darling Gamma GOF Test					
35	5% A-D Critical Value			0.88		Data Not Gamma Distributed at 5% Significance Level					
36	K-S Test Statistic			0.449		Kolmogrov-Smirnoff Gamma GOF Test					
37	5% K-S Critical Value			0.225		Data Not Gamma Distributed at 5% Significance Level					
38	Data Not Gamma Distributed at 5% Significance Level										
39											
40	Gamma Statistics										
41	k hat (MLE)			0.22		k star (bias corrected MLE)			0.22		
42	Theta hat (MLE)			1874		Theta star (bias corrected MLE)			1871		
43	nu hat (MLE)			7.924		nu star (bias corrected)			7.937		
44	MLE Mean (bias corrected)			412.5		MLE Sd (bias corrected)			878.5		
45						Approximate Chi Square Value (0.05)			2.699		
46	Adjusted Level of Significance			0.0357		Adjusted Chi Square Value			2.414		
47											
48	Assuming Gamma Distribution										
49	95% Approximate Gamma UCL (use when n>=50)			1213		95% Adjusted Gamma UCL (use when n<50)			1356		
50											
51	Lognormal GOF Test										
52	Shapiro Wilk Test Statistic			0.833		Shapiro Wilk Lognormal GOF Test					

A	B	C	D	E	F	G	H	I	J	K	L
53	5% Shapiro Wilk Critical Value			0.897	Data Not Lognormal at 5% Significance Level						
54	Lilliefors Test Statistic			0.209	Lilliefors Lognormal GOF Test						
55	5% Lilliefors Critical Value			0.209	Data Not Lognormal at 5% Significance Level						
56	Data Not Lognormal at 5% Significance Level										
57											
58	Lognormal Statistics										
59	Minimum of Logged Data			0.405	Mean of logged Data						2.729
60	Maximum of Logged Data			8.868	SD of logged Data						1.941
61											
62	Assuming Lognormal Distribution										
63	95% H-UCL			729.6	90% Chebyshev (MVUE) UCL						209.6
64	95% Chebyshev (MVUE) UCL			268.7	97.5% Chebyshev (MVUE) UCL						350.8
65	99% Chebyshev (MVUE) UCL			512							
66											
67	Nonparametric Distribution Free UCL Statistics										
68	Data do not follow a Discernible Distribution (0.05)										
69											
70	Nonparametric Distribution Free UCLs										
71	95% CLT UCL			1060	95% Jackknife UCL						1097
72	95% Standard Bootstrap UCL			1067	95% Bootstrap-t UCL						43435
73	95% Hall's Bootstrap UCL			19506	95% Percentile Bootstrap UCL						1198
74	95% BCA Bootstrap UCL			1597							
75	90% Chebyshev(Mean, Sd) UCL			1593	95% Chebyshev(Mean, Sd) UCL						2127
76	97.5% Chebyshev(Mean, Sd) UCL			2869	99% Chebyshev(Mean, Sd) UCL						4327
77											
78	Suggested UCL to Use										
79	99% Chebyshev (Mean, Sd) UCL			4327							
80											
81	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.										
82	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)										
83	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.										
84	For additional insight the user may want to consult a statistician.										
85											
86											
87	Nickel										
88											
89	General Statistics										
90	Total Number of Observations			18	Number of Distinct Observations						16
91					Number of Missing Observations						0
92	Minimum			0.25	Mean						9.622
93	Maximum			59	Median						4.15
94	SD			14.68	Std. Error of Mean						3.461
95	Coefficient of Variation			1.526	Skewness						2.61
96											
97	Normal GOF Test										
98	Shapiro Wilk Test Statistic			0.659	Shapiro Wilk GOF Test						
99	5% Shapiro Wilk Critical Value			0.897	Data Not Normal at 5% Significance Level						
100	Lilliefors Test Statistic			0.269	Lilliefors GOF Test						
101	5% Lilliefors Critical Value			0.209	Data Not Normal at 5% Significance Level						
102	Data Not Normal at 5% Significance Level										
103											
104	Assuming Normal Distribution										

A	B	C	D	E	F	G	H	I	J	K	L
105	95% Normal UCL					95% UCLs (Adjusted for Skewness)					
106	95% Student's-t UCL				15.64	95% Adjusted-CLT UCL (Chen-1995)					17.59
107						95% Modified-t UCL (Johnson-1978)					16
108											
109	Gamma GOF Test										
110	A-D Test Statistic				0.334	Anderson-Darling Gamma GOF Test					
111	5% A-D Critical Value				0.79	Detected data appear Gamma Distributed at 5% Significance Level					
112	K-S Test Statistic				0.125	Kolmogrov-Smirnoff Gamma GOF Test					
113	5% K-S Critical Value				0.213	Detected data appear Gamma Distributed at 5% Significance Level					
114	Detected data appear Gamma Distributed at 5% Significance Level										
115											
116	Gamma Statistics										
117	k hat (MLE)				0.609	k star (bias corrected MLE)				0.545	
118	Theta hat (MLE)				15.79	Theta star (bias corrected MLE)				17.66	
119	nu hat (MLE)				21.94	nu star (bias corrected)				19.62	
120	MLE Mean (bias corrected)				9.622	MLE Sd (bias corrected)				13.03	
121						Approximate Chi Square Value (0.05)				10.57	
122	Adjusted Level of Significance				0.0357	Adjusted Chi Square Value				9.936	
123											
124	Assuming Gamma Distribution										
125	95% Approximate Gamma UCL (use when n>=50)				17.86	95% Adjusted Gamma UCL (use when n<50)				19	
126											
127	Lognormal GOF Test										
128	Shapiro Wilk Test Statistic				0.971	Shapiro Wilk Lognormal GOF Test					
129	5% Shapiro Wilk Critical Value				0.897	Data appear Lognormal at 5% Significance Level					
130	Lilliefors Test Statistic				0.1	Lilliefors Lognormal GOF Test					
131	5% Lilliefors Critical Value				0.209	Data appear Lognormal at 5% Significance Level					
132	Data appear Lognormal at 5% Significance Level										
133											
134	Lognormal Statistics										
135	Minimum of Logged Data				-1.386	Mean of logged Data				1.253	
136	Maximum of Logged Data				4.078	SD of logged Data				1.595	
137											
138	Assuming Lognormal Distribution										
139	95% H-UCL				50.23	90% Chebyshev (MVUE) UCL				25.45	
140	95% Chebyshev (MVUE) UCL				32.05	97.5% Chebyshev (MVUE) UCL				41.2	
141	99% Chebyshev (MVUE) UCL				59.18						
142											
143	Nonparametric Distribution Free UCL Statistics										
144	Data appear to follow a Discernible Distribution at 5% Significance Level										
145											
146	Nonparametric Distribution Free UCLs										
147	95% CLT UCL				15.32	95% Jackknife UCL				15.64	
148	95% Standard Bootstrap UCL				15.3	95% Bootstrap-t UCL				23.29	
149	95% Hall's Bootstrap UCL				38.44	95% Percentile Bootstrap UCL				15.76	
150	95% BCA Bootstrap UCL				18.22						
151	90% Chebyshev(Mean, Sd) UCL				20.01	95% Chebyshev(Mean, Sd) UCL				24.71	
152	97.5% Chebyshev(Mean, Sd) UCL				31.24	99% Chebyshev(Mean, Sd) UCL				44.06	
153											
154	Suggested UCL to Use										
155	95% Adjusted Gamma UCL				19						
156											

A	B	C	D	E	F	G	H	I	J	K	L
157	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.										
158	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)										
159	and Singh and Singh (2003). However, simulation results will not cover all Real World data sets.										
160	For additional insight the user may want to consult a statistician.										
161											
162											
163	Carc PAHs										
164											
165	General Statistics										
166	Total Number of Observations			18		Number of Distinct Observations			8		
167						Number of Missing Observations			0		
168	Minimum			0.15		Mean			1.469		
169	Maximum			14		Median			0.15		
170	SD			3.317		Std. Error of Mean			0.782		
171	Coefficient of Variation			2.257		Skewness			3.555		
172											
173	Normal GOF Test										
174	Shapiro Wilk Test Statistic			0.46		Shapiro Wilk GOF Test					
175	5% Shapiro Wilk Critical Value			0.897		Data Not Normal at 5% Significance Level					
176	Lilliefors Test Statistic			0.345		Lilliefors GOF Test					
177	5% Lilliefors Critical Value			0.209		Data Not Normal at 5% Significance Level					
178	Data Not Normal at 5% Significance Level										
179											
180	Assuming Normal Distribution										
181	95% Normal UCL					95% UCLs (Adjusted for Skewness)					
182	95% Student's-t UCL			2.83		95% Adjusted-CLT UCL (Chen-1995)			3.456		
183						95% Modified-t UCL (Johnson-1978)			2.939		
184											
185	Gamma GOF Test										
186	A-D Test Statistic			2.615		Anderson-Darling Gamma GOF Test					
187	5% A-D Critical Value			0.803		Data Not Gamma Distributed at 5% Significance Level					
188	K-S Test Statistic			0.354		Kolmogrov-Smirnov Gamma GOF Test					
189	5% K-S Critical Value			0.215		Data Not Gamma Distributed at 5% Significance Level					
190	Data Not Gamma Distributed at 5% Significance Level										
191											
192	Gamma Statistics										
193	k hat (MLE)			0.488		k star (bias corrected MLE)			0.444		
194	Theta hat (MLE)			3.011		Theta star (bias corrected MLE)			3.312		
195	nu hat (MLE)			17.57		nu star (bias corrected)			15.97		
196	MLE Mean (bias corrected)			1.469		MLE Sd (bias corrected)			2.206		
197						Approximate Chi Square Value (0.05)			7.944		
198	Adjusted Level of Significance			0.0357		Adjusted Chi Square Value			7.404		
199											
200	Assuming Gamma Distribution										
201	95% Approximate Gamma UCL (use when n>=50)			2.955		95% Adjusted Gamma UCL (use when n<50)			3.17		
202											
203	Lognormal GOF Test										
204	Shapiro Wilk Test Statistic			0.721		Shapiro Wilk Lognormal GOF Test					
205	5% Shapiro Wilk Critical Value			0.897		Data Not Lognormal at 5% Significance Level					
206	Lilliefors Test Statistic			0.36		Lilliefors Lognormal GOF Test					
207	5% Lilliefors Critical Value			0.209		Data Not Lognormal at 5% Significance Level					
208	Data Not Lognormal at 5% Significance Level										

	A	B	C	D	E	F	G	H	I	J	K	L	
209													
210	Lognormal Statistics												
211	Minimum of Logged Data				-1.897						Mean of logged Data		-0.922
212	Maximum of Logged Data				2.639						SD of logged Data		1.456
213													
214	Assuming Lognormal Distribution												
215	95% H-UCL				3.763						90% Chebyshev (MVUE) UCL		2.28
216	95% Chebyshev (MVUE) UCL				2.845						97.5% Chebyshev (MVUE) UCL		3.629
217	99% Chebyshev (MVUE) UCL				5.168								
218													
219	Nonparametric Distribution Free UCL Statistics												
220	Data do not follow a Discernible Distribution (0.05)												
221													
222	Nonparametric Distribution Free UCLs												
223	95% CLT UCL				2.755						95% Jackknife UCL		2.83
224	95% Standard Bootstrap UCL				2.721						95% Bootstrap-t UCL		6.249
225	95% Hall's Bootstrap UCL				6.798						95% Percentile Bootstrap UCL		2.956
226	95% BCA Bootstrap UCL				3.781								
227	90% Chebyshev(Mean, Sd) UCL				3.815						95% Chebyshev(Mean, Sd) UCL		4.878
228	97.5% Chebyshev(Mean, Sd) UCL				6.352						99% Chebyshev(Mean, Sd) UCL		9.249
229													
230	Suggested UCL to Use												
231	95% Chebyshev (Mean, Sd) UCL				4.878								
232													
233	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.												
234	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)												
235	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.												
236	For additional insight the user may want to consult a statistician.												
237													
238													
239	F2												
240													
241	General Statistics												
242	Total Number of Observations				18						Number of Distinct Observations		3
243											Number of Missing Observations		0
244	Minimum				12.5						Mean		23.78
245	Maximum				180						Median		12.5
246	SD				39.87						Std. Error of Mean		9.398
247	Coefficient of Variation				1.677						Skewness		3.971
248													
249	Normal GOF Test												
250	Shapiro Wilk Test Statistic				0.323						Shapiro Wilk GOF Test		
251	5% Shapiro Wilk Critical Value				0.897						Data Not Normal at 5% Significance Level		
252	Lilliefors Test Statistic				0.5						Lilliefors GOF Test		
253	5% Lilliefors Critical Value				0.209						Data Not Normal at 5% Significance Level		
254	Data Not Normal at 5% Significance Level												
255													
256	Assuming Normal Distribution												
257	95% Normal UCL										95% UCLs (Adjusted for Skewness)		
258	95% Student's-t UCL				40.13						95% Adjusted-CLT UCL (Chen-1995)		48.64
259											95% Modified-t UCL (Johnson-1978)		41.59
260													

A	B	C	D	E	F	G	H	I	J	K	L
261	Gamma GOF Test										
262	A-D Test Statistic			5.596		Anderson-Darling Gamma GOF Test					
263	5% A-D Critical Value			0.76		Data Not Gamma Distributed at 5% Significance Level					
264	K-S Test Statistic			0.532		Kolmogrov-Smirnoff Gamma GOF Test					
265	5% K-S Critical Value			0.208		Data Not Gamma Distributed at 5% Significance Level					
266	Data Not Gamma Distributed at 5% Significance Level										
267											
268	Gamma Statistics										
269	k hat (MLE)			1.332		k star (bias corrected MLE)			1.147		
270	Theta hat (MLE)			17.85		Theta star (bias corrected MLE)			20.73		
271	nu hat (MLE)			47.96		nu star (bias corrected)			41.3		
272	MLE Mean (bias corrected)			23.78		MLE Sd (bias corrected)			22.2		
273						Approximate Chi Square Value (0.05)			27.57		
274	Adjusted Level of Significance			0.0357		Adjusted Chi Square Value			26.5		
275											
276	Assuming Gamma Distribution										
277	95% Approximate Gamma UCL (use when n>=50))			35.62		95% Adjusted Gamma UCL (use when n<50)			37.06		
278											
279	Lognormal GOF Test										
280	Shapiro Wilk Test Statistic			0.377		Shapiro Wilk Lognormal GOF Test					
281	5% Shapiro Wilk Critical Value			0.897		Data Not Lognormal at 5% Significance Level					
282	Lilliefors Test Statistic			0.516		Lilliefors Lognormal GOF Test					
283	5% Lilliefors Critical Value			0.209		Data Not Lognormal at 5% Significance Level					
284	Data Not Lognormal at 5% Significance Level										
285											
286	Lognormal Statistics										
287	Minimum of Logged Data			2.526		Mean of logged Data			2.749		
288	Maximum of Logged Data			5.193		SD of logged Data			0.687		
289											
290	Assuming Lognormal Distribution										
291	95% H-UCL		28.66		90% Chebyshev (MVUE) UCL			29.51			
292	95% Chebyshev (MVUE) UCL		34.06		97.5% Chebyshev (MVUE) UCL			40.37			
293	99% Chebyshev (MVUE) UCL		52.77								
294											
295	Nonparametric Distribution Free UCL Statistics										
296	Data do not follow a Discernible Distribution (0.05)										
297											
298	Nonparametric Distribution Free UCLs										
299	95% CLT UCL		39.24		95% Jackknife UCL			40.13			
300	95% Standard Bootstrap UCL		N/A		95% Bootstrap-t UCL			N/A			
301	95% Hall's Bootstrap UCL		N/A		95% Percentile Bootstrap UCL			N/A			
302	95% BCA Bootstrap UCL		N/A								
303	90% Chebyshev(Mean, Sd) UCL		51.97		95% Chebyshev(Mean, Sd) UCL			64.74			
304	97.5% Chebyshev(Mean, Sd) UCL		82.47		99% Chebyshev(Mean, Sd) UCL			117.3			
305											
306	Suggested UCL to Use										
307	95% Chebyshev (Mean, Sd) UCL		64.74								
308											
309	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.										
310	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)										
311	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.										
312	For additional insight the user may want to consult a statistician.										

	A	B	C	D	E	F	G	H	I	J	K	L
313												
314												
315	F3											
316												
317	General Statistics											
318	Total Number of Observations				18		Number of Distinct Observations				5	
319	Number of Missing Observations				0							
320	Minimum				45		Mean				142.5	
321	Maximum				1300		Median				45	
322	SD				296.1		Std. Error of Mean				69.79	
323	Coefficient of Variation				2.078		Skewness				3.932	
324												
325	Normal GOF Test											
326	Shapiro Wilk Test Statistic				0.376		Shapiro Wilk GOF Test					
327	5% Shapiro Wilk Critical Value				0.897		Data Not Normal at 5% Significance Level					
328	Lilliefors Test Statistic				0.377		Lilliefors GOF Test					
329	5% Lilliefors Critical Value				0.209		Data Not Normal at 5% Significance Level					
330	Data Not Normal at 5% Significance Level											
331												
332	Assuming Normal Distribution											
333	95% Normal UCL						95% UCLs (Adjusted for Skewness)					
334	95% Student's-t UCL				263.9		95% Adjusted-CLT UCL (Chen-1995)				326.4	
335	95% Modified-t UCL (Johnson-1978)				274.7							
336												
337	Gamma GOF Test											
338	A-D Test Statistic				3.761		Anderson-Darling Gamma GOF Test					
339	5% A-D Critical Value				0.773		Data Not Gamma Distributed at 5% Significance Level					
340	K-S Test Statistic				0.416		Kolmogrov-Smirnoff Gamma GOF Test					
341	5% K-S Critical Value				0.211		Data Not Gamma Distributed at 5% Significance Level					
342	Data Not Gamma Distributed at 5% Significance Level											
343												
344	Gamma Statistics											
345	k hat (MLE)				0.852		k star (bias corrected MLE)				0.747	
346	Theta hat (MLE)				167.2		Theta star (bias corrected MLE)				190.7	
347	nu hat (MLE)				30.68		nu star (bias corrected)				26.9	
348	MLE Mean (bias corrected)				142.5		MLE Sd (bias corrected)				164.8	
349	Adjusted Level of Significance				0.0357		Approximate Chi Square Value (0.05)				16.08	
350	Adjusted Chi Square Value				15.27							
351												
352	Assuming Gamma Distribution											
353	95% Approximate Gamma UCL (use when n>=50)				238.5		95% Adjusted Gamma UCL (use when n<50)				251	
354												
355	Lognormal GOF Test											
356	Shapiro Wilk Test Statistic				0.592		Shapiro Wilk Lognormal GOF Test					
357	5% Shapiro Wilk Critical Value				0.897		Data Not Lognormal at 5% Significance Level					
358	Lilliefors Test Statistic				0.415		Lilliefors Lognormal GOF Test					
359	5% Lilliefors Critical Value				0.209		Data Not Lognormal at 5% Significance Level					
360	Data Not Lognormal at 5% Significance Level											
361												
362	Lognormal Statistics											
363	Minimum of Logged Data				3.807		Mean of logged Data				4.269	
364	Maximum of Logged Data				7.17		SD of logged Data				0.916	

	A	B	C	D	E	F	G	H	I	J	K	L
365												
366	Assuming Lognormal Distribution											
367	95% H-UCL				190.3		90% Chebyshev (MVUE) UCL				180.2	
368	95% Chebyshev (MVUE) UCL				214.1		97.5% Chebyshev (MVUE) UCL				261.2	
369	99% Chebyshev (MVUE) UCL				353.7							
370												
371	Nonparametric Distribution Free UCL Statistics											
372	Data do not follow a Discernible Distribution (0.05)											
373												
374	Nonparametric Distribution Free UCLs											
375	95% CLT UCL				257.3		95% Jackknife UCL				263.9	
376	95% Standard Bootstrap UCL				249.3		95% Bootstrap-t UCL				898.8	
377	95% Hall's Bootstrap UCL				675.2		95% Percentile Bootstrap UCL				271.9	
378	95% BCA Bootstrap UCL				341.7							
379	90% Chebyshev(Mean, Sd) UCL				351.9		95% Chebyshev(Mean, Sd) UCL				446.7	
380	97.5% Chebyshev(Mean, Sd) UCL				578.4		99% Chebyshev(Mean, Sd) UCL				836.9	
381												
382	Suggested UCL to Use											
383	95% Chebyshev (Mean, Sd) UCL				446.7							
384												
385	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
386	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
387	and Singh and Singh (2003). However, simulation results will not cover all Real World data sets.											
388	For additional insight the user may want to consult a statistician.											
389												

A	B	C	D	E	F	G	H	I	J	K	L
1	UCL Statistics for Uncensored Full Data Sets										
2											
3	User Selected Options										
4	Date/Time of Computation		3/09/2018 10:20:21 AM								
5	From File		WorkSheet.xls								
6	Full Precision		OFF								
7	Confidence Coefficient		95%								
8	Number of Bootstrap Operations		2000								
9											
10											
11	Zinc										
12											
13	General Statistics										
14	Total Number of Observations			18		Number of Distinct Observations			18		
15						Number of Missing Observations			0		
16	Minimum			2.1		Mean			364		
17	Maximum			3800		Median			68		
18	SD			902.1		Std. Error of Mean			212.6		
19	Coefficient of Variation			2.478		Skewness			3.671		
20											
21	Normal GOF Test										
22	Shapiro Wilk Test Statistic			0.431		Shapiro Wilk GOF Test					
23	5% Shapiro Wilk Critical Value			0.897		Data Not Normal at 5% Significance Level					
24	Lilliefors Test Statistic			0.372		Lilliefors GOF Test					
25	5% Lilliefors Critical Value			0.209		Data Not Normal at 5% Significance Level					
26	Data Not Normal at 5% Significance Level										
27											
28	Assuming Normal Distribution										
29	95% Normal UCL					95% UCLs (Adjusted for Skewness)					
30	95% Student's-t UCL			733.9		95% Adjusted-CLT UCL (Chen-1995)			910.4		
31						95% Modified-t UCL (Johnson-1978)			764.6		
32											
33	Gamma GOF Test										
34	A-D Test Statistic			1.201		Anderson-Darling Gamma GOF Test					
35	5% A-D Critical Value			0.819		Data Not Gamma Distributed at 5% Significance Level					
36	K-S Test Statistic			0.259		Kolmogrov-Smirnoff Gamma GOF Test					
37	5% K-S Critical Value			0.218		Data Not Gamma Distributed at 5% Significance Level					
38	Data Not Gamma Distributed at 5% Significance Level										
39											
40	Gamma Statistics										
41	k hat (MLE)			0.409		k star (bias corrected MLE)			0.378		
42	Theta hat (MLE)			890.4		Theta star (bias corrected MLE)			963.7		
43	nu hat (MLE)			14.72		nu star (bias corrected)			13.6		
44	MLE Mean (bias corrected)			364		MLE Sd (bias corrected)			592.3		
45						Approximate Chi Square Value (0.05)			6.298		
46	Adjusted Level of Significance			0.0357		Adjusted Chi Square Value			5.826		
47											
48	Assuming Gamma Distribution										
49	95% Approximate Gamma UCL (use when n>=50)			786.1		95% Adjusted Gamma UCL (use when n<50)			849.8		
50											
51	Lognormal GOF Test										
52	Shapiro Wilk Test Statistic			0.975		Shapiro Wilk Lognormal GOF Test					

A	B	C	D	E	F	G	H	I	J	K	L
53			5% Shapiro Wilk Critical Value		0.897					Data appear Lognormal at 5% Significance Level	
54			Lilliefors Test Statistic		0.126					Lilliefors Lognormal GOF Test	
55			5% Lilliefors Critical Value		0.209					Data appear Lognormal at 5% Significance Level	
56	Data appear Lognormal at 5% Significance Level										
57											
58	Lognormal Statistics										
59			Minimum of Logged Data		0.742					Mean of logged Data	4.293
60			Maximum of Logged Data		8.243					SD of logged Data	1.836
61											
62	Assuming Lognormal Distribution										
63			95% H-UCL		2362					90% Chebyshev (MVUE) UCL	821.9
64			95% Chebyshev (MVUE) UCL		1049					97.5% Chebyshev (MVUE) UCL	1363
65			99% Chebyshev (MVUE) UCL		1981						
66											
67	Nonparametric Distribution Free UCL Statistics										
68	Data appear to follow a Discernible Distribution at 5% Significance Level										
69											
70	Nonparametric Distribution Free UCLs										
71			95% CLT UCL		713.8					95% Jackknife UCL	733.9
72			95% Standard Bootstrap UCL		695.7					95% Bootstrap-t UCL	2753
73			95% Hall's Bootstrap UCL		2112					95% Percentile Bootstrap UCL	759
74			95% BCA Bootstrap UCL		963.9						
75			90% Chebyshev(Mean, Sd) UCL		1002					95% Chebyshev(Mean, Sd) UCL	1291
76			97.5% Chebyshev(Mean, Sd) UCL		1692					99% Chebyshev(Mean, Sd) UCL	2480
77											
78	Suggested UCL to Use										
79			99% Chebyshev (Mean, Sd) UCL		2480						
80											
81	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.										
82	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)										
83	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.										
84	For additional insight the user may want to consult a statistician.										
85											
86											
87	B(a)P										
88											
89	General Statistics										
90			Total Number of Observations		18					Number of Distinct Observations	8
91										Number of Missing Observations	0
92			Minimum		0.05					Mean	1.014
93			Maximum		10					Median	0.05
94			SD		2.39					Std. Error of Mean	0.563
95			Coefficient of Variation		2.357					Skewness	3.509
96											
97	Normal GOF Test										
98			Shapiro Wilk Test Statistic		0.467					Shapiro Wilk GOF Test	
99			5% Shapiro Wilk Critical Value		0.897					Data Not Normal at 5% Significance Level	
100			Lilliefors Test Statistic		0.343					Lilliefors GOF Test	
101			5% Lilliefors Critical Value		0.209					Data Not Normal at 5% Significance Level	
102	Data Not Normal at 5% Significance Level										
103											
104	Assuming Normal Distribution										

A	B	C	D	E	F	G	H	I	J	K	L
105	95% Normal UCL					95% UCLs (Adjusted for Skewness)					
106	95% Student's-t UCL			1.994		95% Adjusted-CLT UCL (Chen-1995)					2.438
107						95% Modified-t UCL (Johnson-1978)					2.072
108											
109	Gamma GOF Test										
110	A-D Test Statistic			2.442		Anderson-Darling Gamma GOF Test					
111	5% A-D Critical Value			0.825		Data Not Gamma Distributed at 5% Significance Level					
112	K-S Test Statistic			0.364		Kolmogrov-Smirnoff Gamma GOF Test					
113	5% K-S Critical Value			0.219		Data Not Gamma Distributed at 5% Significance Level					
114	Data Not Gamma Distributed at 5% Significance Level										
115											
116	Gamma Statistics										
117	k hat (MLE)			0.379		k star (bias corrected MLE)			0.353		
118	Theta hat (MLE)			2.672		Theta star (bias corrected MLE)			2.87		
119	nu hat (MLE)			13.66		nu star (bias corrected)			12.72		
120	MLE Mean (bias corrected)			1.014		MLE Sd (bias corrected)			1.706		
121						Approximate Chi Square Value (0.05)			5.704		
122	Adjusted Level of Significance			0.0357		Adjusted Chi Square Value			5.258		
123											
124	Assuming Gamma Distribution										
125	95% Approximate Gamma UCL (use when n>=50))			2.261		95% Adjusted Gamma UCL (use when n<50)			2.452		
126											
127	Lognormal GOF Test										
128	Shapiro Wilk Test Statistic			0.732		Shapiro Wilk Lognormal GOF Test					
129	5% Shapiro Wilk Critical Value			0.897		Data Not Lognormal at 5% Significance Level					
130	Lilliefors Test Statistic			0.37		Lilliefors Lognormal GOF Test					
131	5% Lilliefors Critical Value			0.209		Data Not Lognormal at 5% Significance Level					
132	Data Not Lognormal at 5% Significance Level										
133											
134	Lognormal Statistics										
135	Minimum of Logged Data			-2.996		Mean of logged Data			-1.735		
136	Maximum of Logged Data			2.303		SD of logged Data			1.793		
137											
138	Assuming Lognormal Distribution										
139	95% H-UCL			4.887		90% Chebyshev (MVUE) UCL			1.829		
140	95% Chebyshev (MVUE) UCL			2.329		97.5% Chebyshev (MVUE) UCL			3.023		
141	99% Chebyshev (MVUE) UCL			4.385							
142											
143	Nonparametric Distribution Free UCL Statistics										
144	Data do not follow a Discernible Distribution (0.05)										
145											
146	Nonparametric Distribution Free UCLs										
147	95% CLT UCL			1.941		95% Jackknife UCL			1.994		
148	95% Standard Bootstrap UCL			1.905		95% Bootstrap-t UCL			4.219		
149	95% Hall's Bootstrap UCL			4.823		95% Percentile Bootstrap UCL			2.092		
150	95% BCA Bootstrap UCL			2.636							
151	90% Chebyshev(Mean, Sd) UCL			2.704		95% Chebyshev(Mean, Sd) UCL			3.469		
152	97.5% Chebyshev(Mean, Sd) UCL			4.532		99% Chebyshev(Mean, Sd) UCL			6.619		
153											
154	Suggested UCL to Use										
155	99% Chebyshev (Mean, Sd) UCL			6.619							
156											

	A	B	C	D	E	F	G	H	I	J	K	L
157	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
158	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
159	and Singh and Singh (2003). However, simulation results will not cover all Real World data sets.											
160	For additional insight the user may want to consult a statistician.											
161												

Table T2 – Summary of Groundwater Analytical Results

Sample Identification	Heavy Metals								PAHs			BTEX					TRHs				VOCs Total	Phenols (Total)	PFAS	
	As	Cd	Cr	Cu	Pb	Hg	Ni	Zn	Total PAHs	Benzo(a)pyrene	Naphthalene	Benzene	Toluene	Ethylbenzene	o-xylene	m/p-xylene	F1	F2	F3	F4			PFOS	PFOA
BH1M-1	6	<0.1	3	85	3	<0.1	3	110	2	<0.2*	<0.2*	<0.5	<0.5	<0.5	<1	<0.5	160	190	<1000*	<1000*	20	<0.05	NA	NA
BH9M-1	3	<0.1	<1	2	1	<0.1	<1	10	<1	<0.1	<0.1	<0.5	<0.5	<0.5	<1	<0.5	<50	<60	<500	<500	<10	<0.05	NA	NA
BH10M-1	<1	<0.1	<1	65	2	<0.1	2	92	<1	<0.1	<0.1	<0.5	<0.5	<0.5	<1	<0.5	<50	<60	<500	<500	<10	<0.05	NA	NA
Maximum Concentration	6	<0.1	3	85	3	<0.1	3	110	2	<0.2	<0.1	<0.5	<0.5	<0.5	<1	<0.5	160	190	<1000	<1000	20	<0.05	NA	NA
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
GILs																								
GIL	Fresh Water ⁴	24 (AsIII) 13 (AsV)	1.04 ^{H1}	4.50 ^{H1} (CR VI)	6.2 ^{H1}	40.61 ^{H1}	0.06 ³	52.76 ^{H1}	38.37 ^{H1}	/	16	950	180 ⁹	80 ⁹	350 ⁹	275 ⁹	50 ⁸	60 ⁸	500 ⁸	500 ⁸	/	320	/	/
	Recreational Water ^{6,7}	100	20	500	20,000	100	10	200	/	0.01	/	1	800	300	600	/	/	/	/	/	/	/	/	/
	Direct Contact ¹¹	1000	200	5,000	200,000	1,000	100	2,000	/	0.1	/	10	8,000	3,000	6,000	/	/	/	/	/	/	/	/	/

Notes:
 All values are µg/L unless stated otherwise
 NL = Not Limiting
 NA = 'Not Analysed' i.e. the sample was not analysed.
 ND = Not Detected - i.e. concentration below the laboratory PQL
 F1 = (C6-C10) minus BTEX.
 F2 = (>C10-C16) minus Naphthalene.
 F3 = (>C16-C34).
 F4 = (>C34-C40).

H1 = Modified hardness trigger values
 1 = Values have been calculated using a hardness of 30mg/L CaCO3 refer to ANZECC & ARMCANZ (2000) for further guidance on recalculating for site-specific hardness
 2 = Figure may not protect key species from chronic toxicity, refer to ANZAST (2018) for further guidance
 3 = Chemical for which possible bioaccumulation and secondary poisoning effects should be considered, refer to ANZAST (2018) for further guidance
 4 = NEPM (2013) Groundwater Investigation Levels for fresh and marine water quality, based on ANZAST (2018).
 5 = NEPC (2013) Table 1A(4) Groundwater HSL A&B and HSL D for vapour intrusion at the contaminant source depth ranges in sand 2m to <4m, as a conservative approach.
 6 = NEPM (2013) Groundwater Investigation Levels for drinking water quality, based on Australian Drinking Water Guidelines (NHMRC 2017).
 7 = Drinking Water value has been used multiplied by a factor of 10 to address the secondary contact recreation.
 8 = In lack of a criteria the laboratory PQL has been used (DEC, 2007).
 9 = Low reliability toxicity data, refer to ANZECC & ARMCANZ (2000)
 10 = Maximum concentration derived from duplicate sample
 11 = Australian Drinking Water Guidelines multiplied by 100
 * = laboratory PQL has been raised due to interferences from the sample matrix

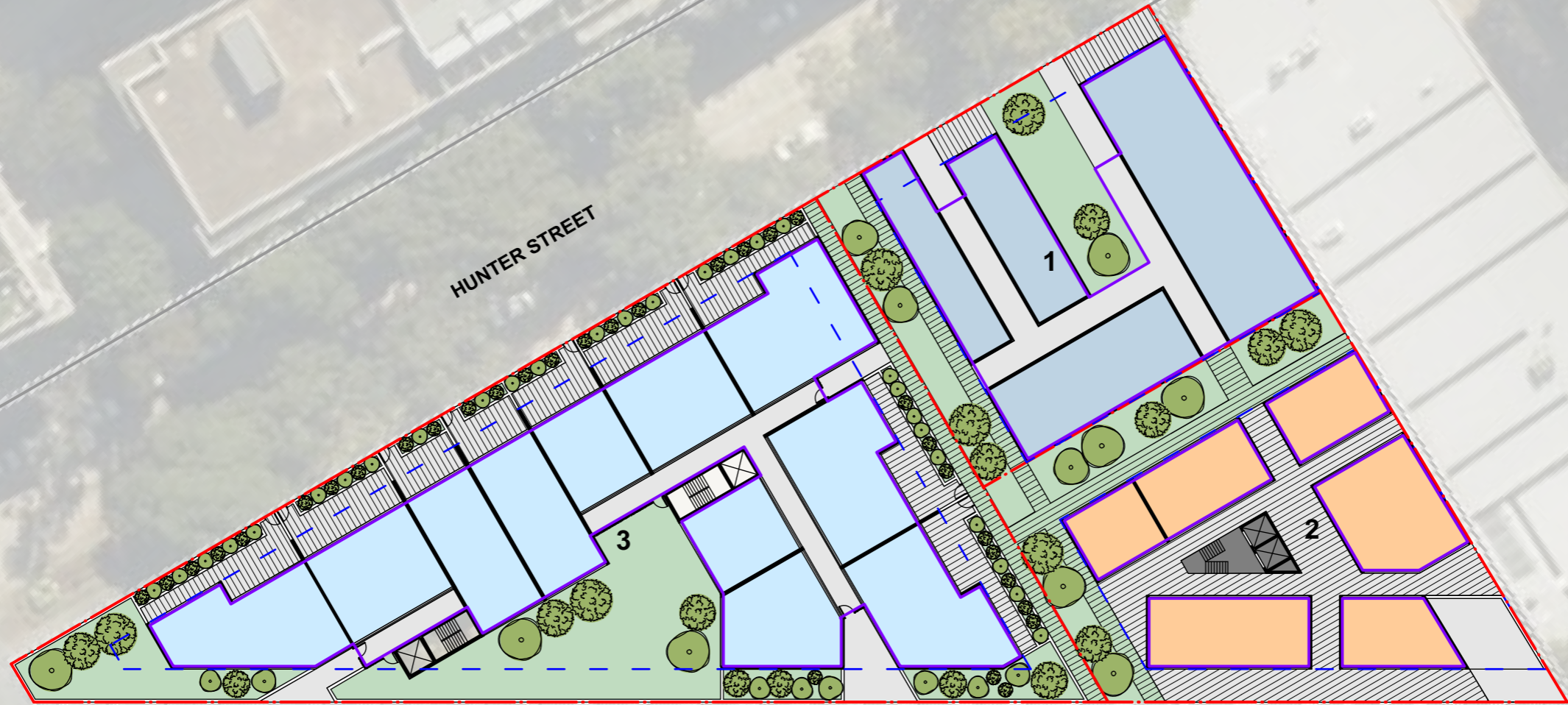
	Highlighted indicates analyte concentration value exceeding the adopted human health criteria
	Highlighted indicates analyte concentration value exceeding the adopted recreational and direct criteria
	Highlighted indicates criteria exceeded

APPENDIX A

Proposed Development Plans

STRATEGY D CALCULATIONS

KEY	SITE	SITE AREA	GFA	FSR
1	School	1042.0 sqm	2043 sqm	2.0:1
2	Commercial/Student Housing	1150.5 sqm	2328 sqm	2.0:1
3	Residential	2351.5 sqm	4609 sqm	2.0:1

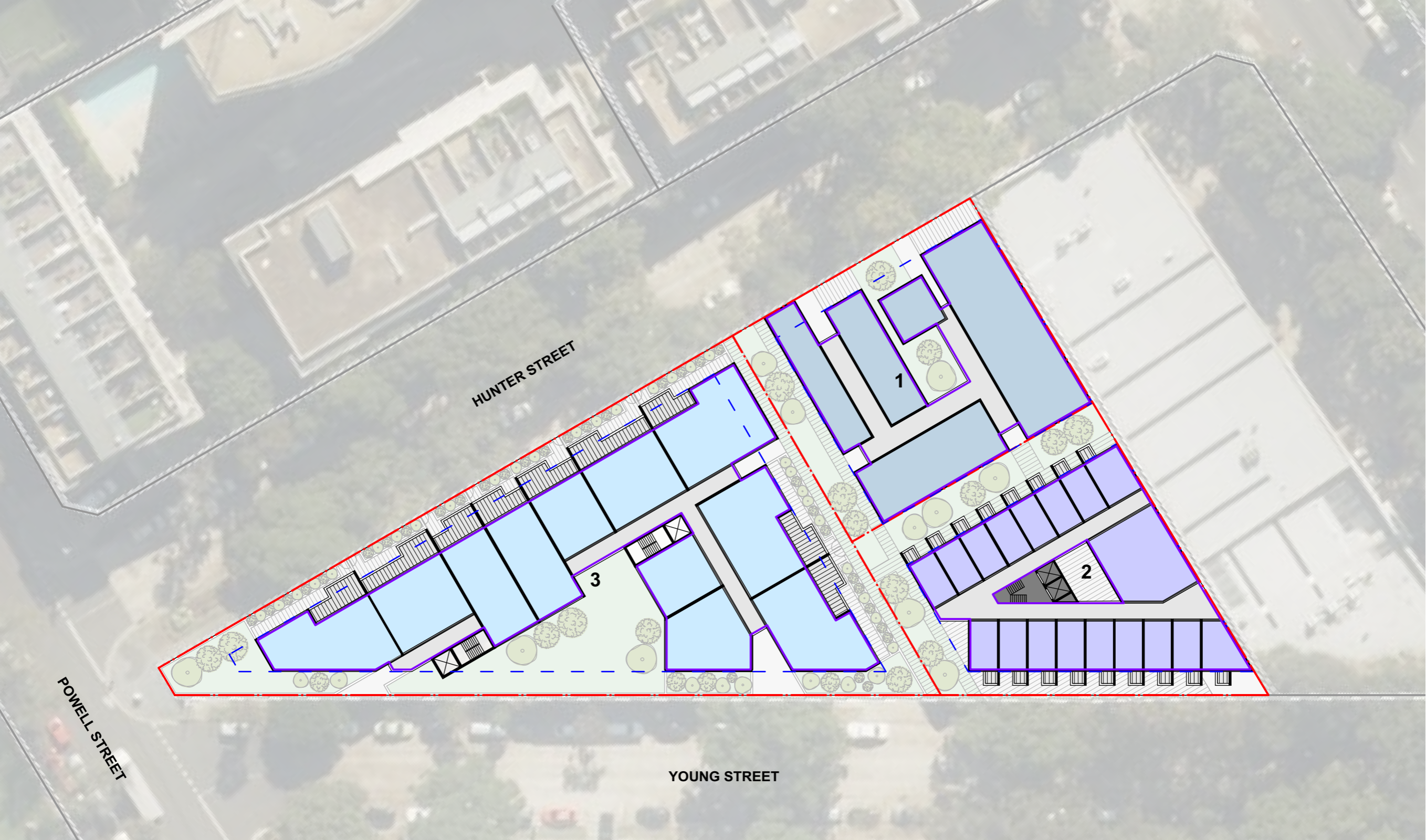
Total Site Area**4544 sqm****Allowed FSR****2:1**

HUNTER STREET

POWELL STREET

YOUNG STREET

STRATEGY D - GROUND LEVEL



HUNTER STREET

POWELL STREET

YOUNG STREET

1

2

3

STRATEGY D - LEVELS 1-3

APPENDIX B

Groundwater Bore Search

current site: GW111959

Groundwater Bores

- Groundwater works
- ◆ Telemetered bores
- ▲ Logged bores
- Manual bores

Monitoring Bore Types

- Alluvial
- Coastal Sands
- Fractured Rock
- Porous Rock
- Great Artesian Basin
- Discontinued

- Home
- Map
- Terrain
- Satellite
- Hybrid

- Groundwater Works
- Monitoring Bores
- Telemetered Bores
- Coal Basin Bores
- Discontinued Bores

There are **84 sites** within 500 metres of the selected point. ✖

The 5 closest sites are shown below. [Show all 84 sites](#)

- GW111960
- GW111959
- GW113475
- GW112128
- GW112127



APPENDIX C

Site Photographs



Photograph 1: Commercial building (film school) located at 242-244 Young Street, Waterloo (the site), looking south-east.



Photograph 2: Manufacturing workshop located at the site, looking south-west.



Photograph 3: Commercial building (offices) located at the site, north.



Photograph 4: Interior of the manufacturing workshop located at the site.

APPENDIX D

Historical Property Titles Search



ABN: 36 092 724 251
Ph: 02 9099 7400

Level 14, 135 King Street, Sydney 2000
GPO Box 4103 Sydney NSW 2001
DX 967 Sydney

Report

NSW LRS
(Formerly LPI)

Sydney

Address: 242 & 244 – 258 Young Street, Waterloo

Description: - Lot 1 D.P. 84655 & Lots A & B D.P. 161650

As regards Lot 1 D.P. 84655

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
08.08.1912 (1912 to 1940)	James Hunter and Sons Limited Now James Hunter & Sons Pty. Limited	Book 976 No. 257
18.03.1940 (1940 to 1968)	Gordon Marr & Sons Pty. Limited	Book 1867 No. 316 Now Vol 5239 Fol 116
01.11.1968 (1968 to 1986)	P. Rowe Pty Limited	Vol 5239 Fol 116
27.05.1986 (1986 to 1986)	Leda Holdings Pty Limited	Vol 5239 Fol 116
03.11.1986 (1986 to 1991)	Baese Pty. Limited	Vol 5239 Fol 116 Now 1/84655
29.01.1991 (1991 to 1998)	Tridu Pty. Limited	1/84655
20.05.1998 (1998 to 2013)	Coates Signco Manufacturing Pty Limited Now Alan Coates Pty Limited	1/84655
04.01.2013 (2013 to Date)	# International Screen Academy Property Pty Ltd	1/84655

Denotes Current Registered Proprietor

Easements: -

- 28.07.1986 (D.P. 638902) – Easement for Support

Leases: -

- 01.11.1968 (L301856) – Gordon Marr & Sons Proprietary Limited – expired 17.05.1979
- Numerous Leases were found from 29.01.1991 to 30.11.2010 – that have since expired due to effluxion of time, or have been surrendered – these have not been investigated
- 16.05.2013 (AH734086) – International Screen Academy Property Pty Limited of 242 Young Street, Waterloo – expires 17.12.2015
 - 26.07.2016 (AK625515) – expiry date now 31.12.2017

As regards Lot A D.P. 161650

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
08.08.1912 (1912 to 1956)	James Hunter and Sons Limited Now James Hunter & Sons Pty. Limited	Book 976 No. 257
10.05.1956 (1956 to 1968)	Gordon Marr & Sons Pty. Limited	Book 2387 No. 363 Now Vol 8211 Fol 238
01.11.1968 (1968 to 1982)	P. Rowe Pty Limited	Vol 8211 Fol 238
16.03.1982 (1982 to 1989)	Perpetual Trustee Company Limited	Vol 8211 Fol 238
16.03.1989 (1989 to 1995)	John Malcolm Sandilands Beverley Ann Sandilands	Vol 8211 Fol 238 Now A/161650
02.03.1995 (1995 to 1998)	Beverley Ann Sandilands	A/161650
23.04.1998 (1998 to Date)	# Charvic Pty Limited	A/161650

Denotes Current Registered Proprietor

Easements: -

- 28.07.1986 (D.P. 638902) – Easement for Support
- 28.07.1986 (D.P. 638902) – Easement for Maintenance of Gutter

Leases: -

- 01.11.1968 (L301856) – Gordon Marr & Sons Proprietary Limited – expired 17.05.1979
- 01.07.1982 (T72760) – P. Rowe Pty Limited – expired 15.09.1988
- 15.09.1988 (X837002) – P. Rowe Fabrics Pty. Limited – surrendered 06.05.1994
- 06.05.1994 (U241772) – expired due to effluxion of time, or has been surrendered – this has not been investigated
- 20.12.2007 (AD653553) – expired due to effluxion of time, or has been surrendered – this has not been investigated
- 19.05.2017 (AM405465) – Paramount Property Group Pty Limited of Factory, 244 Young Street, Waterloo together with 38 on-site parking spaces numbered 1–38. – expires 01.04.2002 – option of renewal 2 years



ABN: 36 092 724 251
Ph: 02 9099 7400

Level 14, 135 King Street, Sydney 2000
GPO Box 4103 Sydney NSW 2001
DX 967 Sydney

As regards Lot B D.P. 161650

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
08.08.1912 (1912 to 1966)	James Hunter and Sons Limited Now James Hunter & Sons Pty. Limited	Book 976 No. 257 Now Vol 7448 Fol 29
28.01.1966 (1966 to 1982)	P. Rowe Pty Limited	Vol 7448 Fol 29
16.03.1982 (1982 to 1989)	Perpetual Trustee Company Limited	Vol 7448 Fol 29
16.03.1989 (1989 to 1995)	John Malcolm Sandilands Beverley Ann Sandilands	Vol 7448 Fol 29 Now B/161650
02.03.1995 (1995 to 1998)	Beverley Ann Sandilands	B/161650
23.04.1998 (1998 to Date)	# Charvic Pty Limited	B/161650

Denotes Current Registered Proprietor

Easements: -

- 01.04.2009 (D.P. 1136961) – Easement for Electricity and Other Purposes 3.365 metre(s) wide
- 01.04.2009 (D.P. 1136961) – Right of Carriageway 6.8 metre(s) wide

Leases: -

- 01.07.1982 (T72760) – P. Rowe Pty Limited – expired 15.09.1988
- 15.09.1988 (X837002) – P. Rowe Fabrics Pty. Limited – surrendered 06.05.1994
- 06.05.1994 (U241772) – expired due to effluxion of time, or has been surrendered – this has not been investigated
- 20.12.2007 (AD653553) – expired due to effluxion of time, or has been surrendered – this has not been investigated
- 19.05.2017 (AM405465) – Paramount Property Group Pty Limited of Factory, 244 Young Street, Waterloo together with 38 on-site parking spaces numbered 1–38. – expires 01.04.2002 – option of renewal 2 years

Yours Sincerely
James McDonnell
16 July 2018

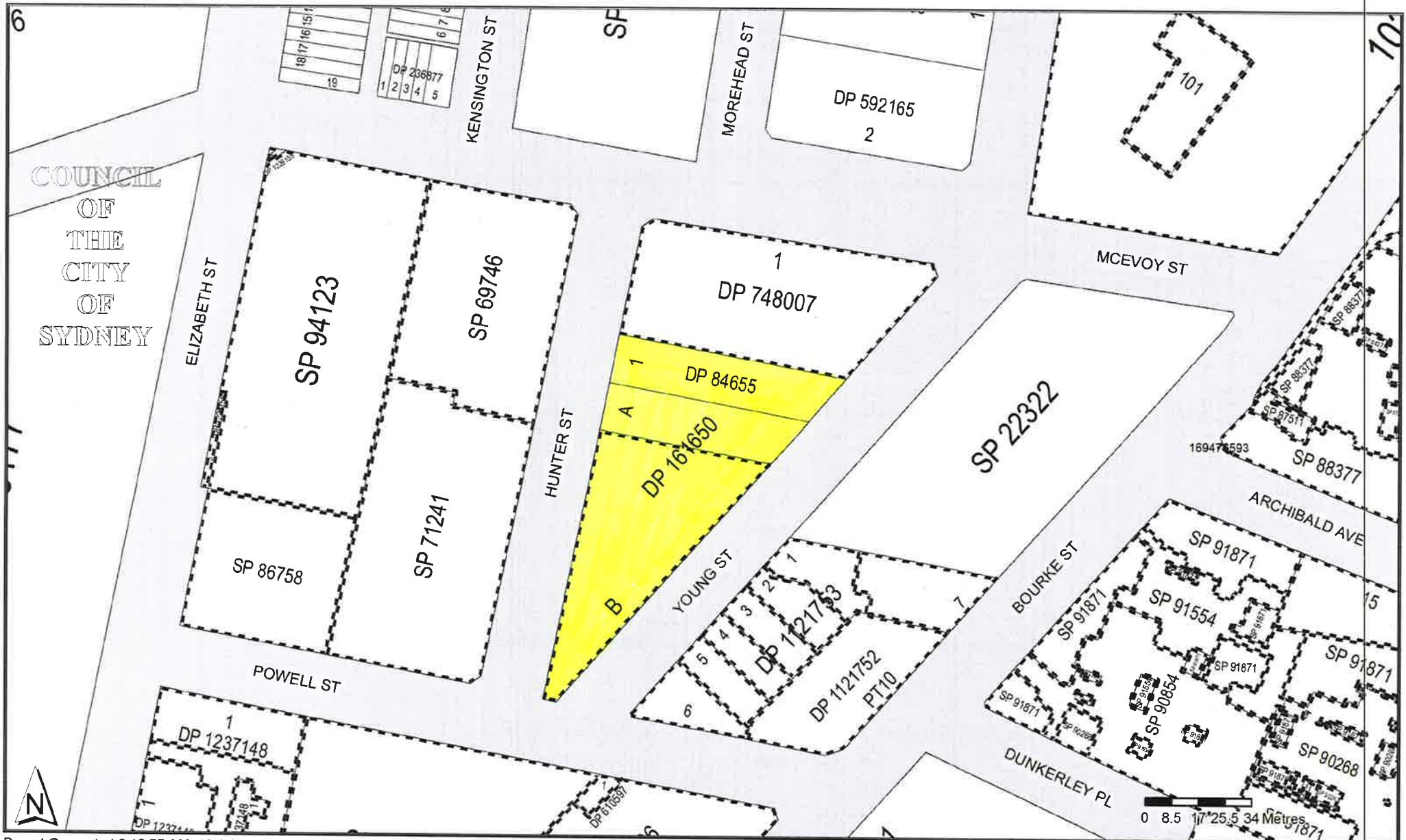
Cadastral Records Enquiry Report : Lot A DP 161650

Locality : WATERLOO

Parish : ALEXANDRIA

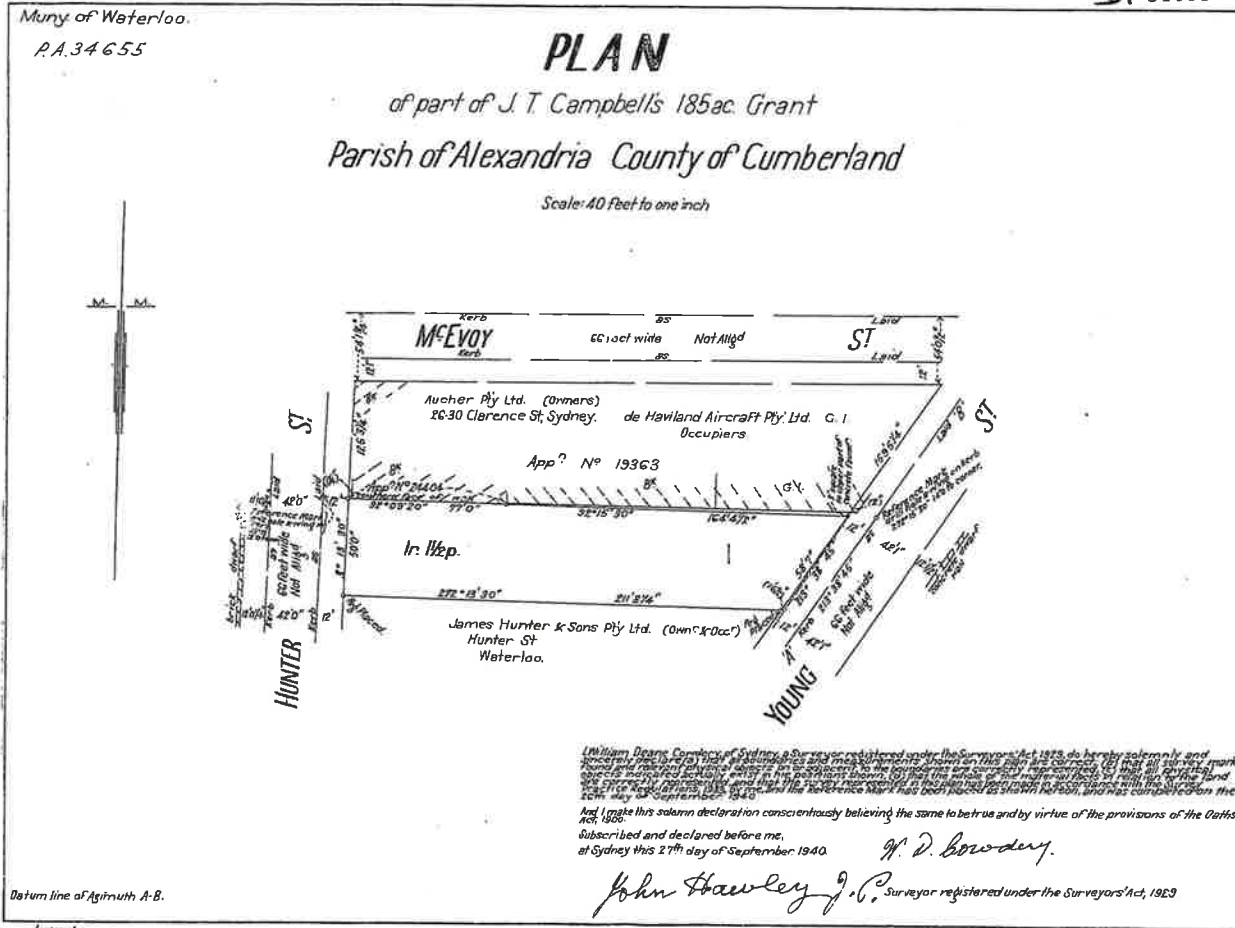
LGA : SYDNEY

County : CUMBERLAND



DP 84655

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT



DP 84655

FEET	INCHES	METRES
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-	2	0.051
1	6 1/2	0.470
11	10 1/2	3.620
12	-	3.658
12	0 1/4	3.664
12	1	3.683
12	1 1/2	3.696
16	5 3/4	5.023
42	-	12.002
42	1	12.027
50	-	15.240
54	0 1/2	16.472
54	1 3/4	16.504
58	7	17.856
66	-	20.117
77	-	24.470
125	3 1/4	38.183
159	5 1/4	48.597
164	4 1/2	50.102
211	8 1/4	64.522

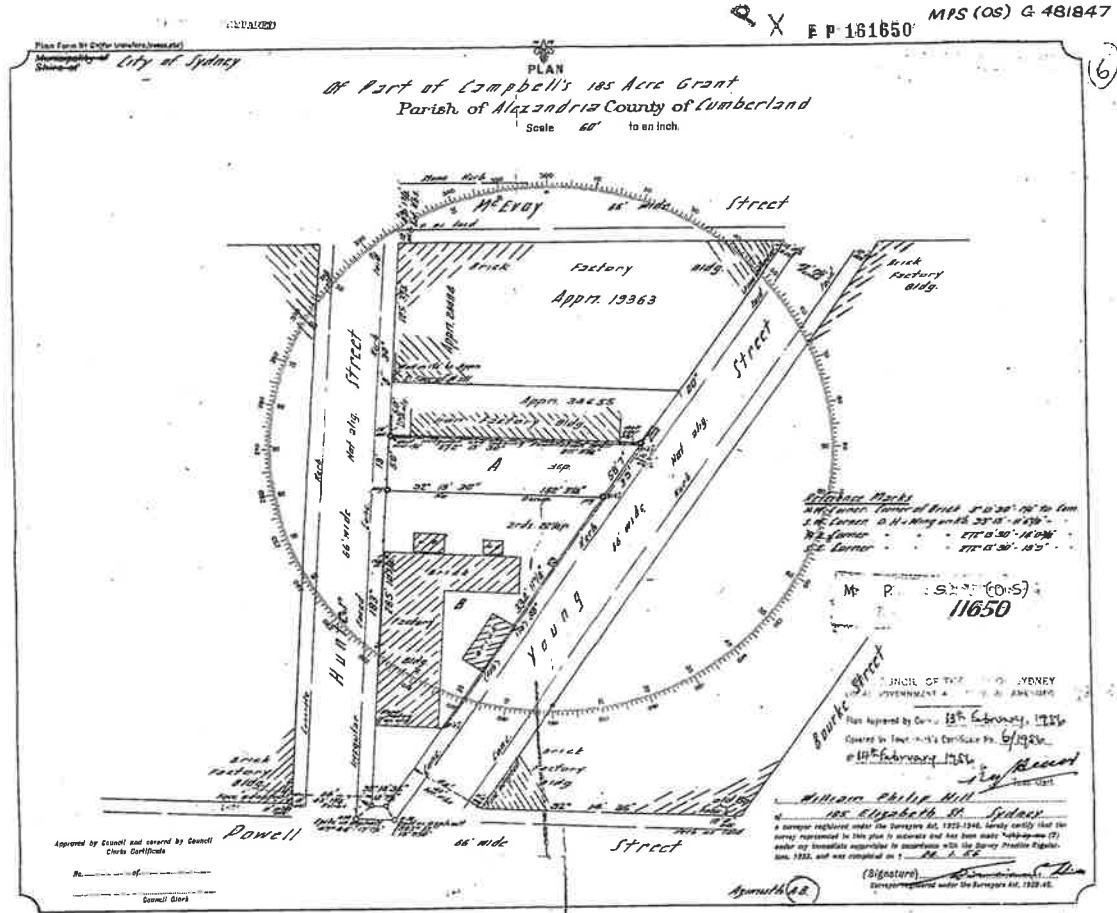
AC	RD	P	SQ	M
-	1	1 1/2	1050	

AC	RD	P	HA
185	-	-	74.87

PLAN AS SHOWN IN L.T.O. P 19. 6. 1940

AMENDMENTS AND/OR ADDITIONS MADE ON PLAN IN THE LAND TITLES OFFICE	This negative is a photograph made as a permanent record of a document in the custody of the Registrar General this day. 20th June, 1990												
<table border="1" style="width: 100%; text-align: center;"> <tr> <td>10</td><td>20</td><td>30</td><td>40</td><td>50</td><td>60</td><td>70</td><td>Table of mm</td><td>110</td><td>120</td><td>130</td><td>140</td> </tr> </table>	10	20	30	40	50	60	70	Table of mm	110	120	130	140	
10	20	30	40	50	60	70	Table of mm	110	120	130	140		

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copy of plan filed as 35674 C

CONVERSION TABLE ADDED IN DEPARTMENT OF LANDS

DP 161650

FEET	INCHES	METRES
-	1 3/4	0.4044
-	3 1/2	0.8089
1	-	0.3048
1	3 1/2	0.3994
1	4	0.406
1	6	0.457
6	7 1/4	2.013
11	6 7/8	3.527
11	11	3.632
11	11 3/4	3.651
12	-	3.658
12	0 1/2	3.670
12	7 1/2	3.848
13	9	4.11
13	9 1/8	4.194
14	-	4.267
14	0 3/4	4.286
30	-	9.144
30	1 1/4	9.176
42	-	12.802
42	1 1/4	12.823
42	1 3/4	12.846
50	-	15.240
50	7	17.056
60	-	20.117
125	3 1/4	38.183
182	3 1/4	55.556
211	11 1/4	64.599
285	10 3/4	87.141
394	11 7/8	102.105

AC	RD	P	SO	M
-	-	36		910.5
-	2	22 1/4		2586

Signature of person to be made in this margin

This is the plan marked " " referred to in

Dated

I, Bruce Richard Davies, Registrar General for New South Wales, certify that this negative is a photograph made as a permanent record of a document in my custody this 2nd day of November, 1977

Bruce Richard Davies



SEARCH DATE

3/7/2018 6:13PM

FOLIO: 1/84655

First Title(s): SEE PRIOR TITLE(S)

Prior Title(s): VOL 5239 FOL 116

Recorded	Number	Type of Instrument	C.T. Issue
2/9/1989		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
22/5/1990		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
19/11/1990	Z340072	CAVEAT	
28/11/1990	DP644174	DEPOSITED PLAN	EDITION 1
5/12/1990	Z370018	CAVEAT	
22/1/1991	Z438284	WITHDRAWAL OF CAVEAT	
22/1/1991	Z438285	WITHDRAWAL OF CAVEAT	
22/1/1991	Z438286	DISCHARGE OF MORTGAGE	
22/1/1991	Z438287	DISCHARGE OF MORTGAGE	
22/1/1991	Z438288	DISCHARGE OF MORTGAGE	EDITION 2
29/1/1991	Z438289	TRANSFER	
29/1/1991	Z438290	MORTGAGE	
29/1/1991	Z445561	LEASE	EDITION 3
3/2/1994	1995265	VARIATION OF LEASE	EDITION 4
28/2/1995	O51110	LEASE	EDITION 5
4/9/1997		AMENDMENT: LOCAL GOVT AREA	
20/5/1998	3998514	DISCHARGE OF MORTGAGE	
20/5/1998	3998515	TRANSFER	
20/5/1998	3998516	MORTGAGE	EDITION 6
14/3/2004	AA472866	DEPARTMENTAL DEALING	
31/10/2005	AB876363	LEASE	EDITION 7
30/11/2010	AF717501	CHANGE OF NAME	
30/11/2010	AF717502	LEASE	
30/11/2010	AF717503	LEASE	EDITION 8
30/11/2010	AF911416	DEPARTMENTAL DEALING	EDITION 9

END OF PAGE 1 - CONTINUED OVER

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE

3/7/2018 6:13PM

FOLIO: 1/84655

PAGE 2

<u>Recorded</u>	<u>Number</u>	<u>Type of Instrument</u>	<u>C.T. Issue</u>
24/8/2012	AH195909	CAVEAT	
31/10/2012	AH310950	CAVEAT	
18/12/2012	AH446824	WITHDRAWAL OF CAVEAT	
18/12/2012	AH446825	WITHDRAWAL OF CAVEAT	
18/12/2012	AH446826	CAVEAT	
4/1/2013	AH466173	DISCHARGE OF MORTGAGE	
4/1/2013	AH466174	REQUEST	
4/1/2013	AH466175	TRANSFER	EDITION 10
16/5/2013	AH734086	LEASE	EDITION 11
26/8/2014	AI844090	VARIATION OF LEASE	
26/7/2016	AK625515	VARIATION OF LEASE	

*** END OF SEARCH ***

waterloo

PRINTED ON 3/7/2018

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Received: 03/07/2018 18:13:38



Waterloo
 Comby
 Pk.



4382898

TRANSFER

REAL PROPERTY ACT, 1900

(See Instructions for Completion on back of form)

T 3 | 6^{of} 7 | X
 \$ 47 | | R1/3

DESCRIPTION OF LAND
 Note (a)

Torrens Title Reference	If Part Only, Delete Whole and Give Details	Location
Folio Identifier 1/84655	WHOLE	Waterloo

TRANSFEROR
 Note (b)

BAESE PTY. LIMITED

ESTATE
 Note (c)

(the abovenamed TRANSFEROR) hereby acknowledges receipt of the consideration of \$ 1,700,000.00 and transfers an estate in fee simple in the land above described to the TRANSFEREE

TRANSFEREE
 Note (b)

TRIDU PTY. LIMITED, a duly incorporated company of Suite 628, 6th Floor, 3 Small Street, Broadway

OFFICE USE ONLY
 S

TENANCY
 Note (d)

as joint tenants/tenants in common

PRIOR ENCUMBRANCES
 Note (e)

subject to the following PRIOR ENCUMBRANCES 1. DP638902 Easement for support
 2. 3.

DATE OF TRANSFER 6th December 1990

We hereby certify this dealing to be correct for the purposes of the Real Property Act, 1900

Signed in my presence by the transferor who is personally known to me
 THE COMMON SEAL of **BAESE PTY. LIMITED** was hereunto affixed by authority of the Board of Directors and in the presence of:

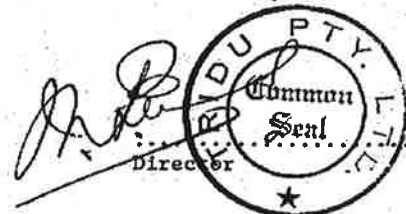


Signature of Transferor

Name of Witness (BLOCK LETTERS)

Secretary
 Address and occupation of Witness

Signed in my presence by the transferee who is personally known to me
 THE COMMON SEAL of **TRIDU PTY. LIMITED** was hereunto affixed by authority of the Board of Directors and in the presence of:



Signature of Transferee

Name of Witness (BLOCK LETTERS)

Secretary
 Address and occupation of Witness

TO BE COMPLETED BY LODGING PARTY
 Notes (g) and (h)

LODGED BY		Westpac Banking Corporation		CT	OTHER	LOCATION OF DOCUMENTS
		THE BANKING HOUSE, 228 PITT STREET SYDNEY 2000. PHONE: 260-6758 DELIVERY BOX No. 37Y		✓	WY, DN, T, M	Herewith.
Ref.: 032027		910 836 S.				In R.G.O. with
Delivery Box Number						Produced by
Checked	Passed	REGISTERED	-- 19	Secondary Directions		240 R
Signed	Extra Fee		29 JAN 1991	Delivery Directions		2938288

OFFICE USE ONLY

WESTPAC TRANSFER
 980155501542020308

Ref:waterloo /Src:M

Form: 97-01T

Licence: AUS/0634/96

TRANSFER

3998515 S

New South Wales
Real Property Act 1900



Instructions for filling out
this form are available
from the Land Titles Office

Office of State Revenue use only

00.20\$

2-20
070598 1822 04 201438562/03

N.S.W. STAMP DUTY

(A) **LAND TRANSFERRED**
If appropriate, specify the
share or part transferred.

1/84655

(B) **LODGED BY**

LTO Box

Name, Address or DX and Telephone

NATIONAL AUSTRALIA BANK LIMITED

National Australia Bank Limited

255 George Street, Sydney

237-1111 FAX 237-1284

Reference (15 character maximum):

98IB3802

(C) **TRANSFEROR** TRIDU PTY LIMITED ACN 001 958 854

(D) acknowledges receipt of the consideration of \$1,630,000.00

and as regards the land specified above transfers to the transferee an estate in fee simple.

(E) Encumbrances (if applicable): 1. 2. 3.

(F) **TRANSFEEE**

T
TS
(s/13 LGA)

COATES SIGNCO MANUFACTURING PTY LIMITED
ACN 067 970 807

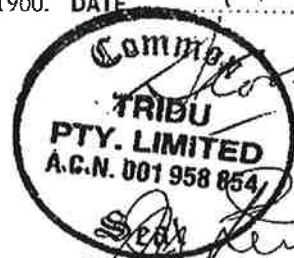
(G)

TW
(Sheriff)

TENANCY:

(H) We certify this dealing correct for the purposes of the Real Property Act 1900. DATE 14.5.98

Signed in my presence by the transferor who is personally known to me.



SECRETARY

Signature of Witness

Name of Witness (BLOCK LETTERS)

Address of Witness

Signature of Transferor

DIRECTOR

Signed in my presence by the transferee who is personally known to me.

Signature of Witness

Name of Witness (BLOCK LETTERS)

Address of Witness

H W EDWARDS Signature of Transferee

Solicitor for Transferee

If signed on the transferee's behalf by a solicitor or licensed conveyancer, show the signatory's full name in block letters.

Form: 10CN
Licence: 01-05-069
Licensee: LEAP Legal Software Pty Limited
Firm name: Clinch Long Letherbarrow Pty Limited

CHANGE OF NAME



nal

New South Wales
Real Property Act 1990

AF717501C

PRIVACY NOTE: Section 31B of the Real Property Act 1900 (RP Act) authorises the use of the information required by this form for the establishment and maintenance of the Real Property Act Register. Section 96B RP Act requires that the Register is made available to any person for search upon payment of a fee, if any.

(A) LAND	Torrens Title 1/84655		
(B) REGISTERED DEALING	Number	Torrens Title	
(C) LODGED BY	Delivery Box 479P	Name, Address or DX and Telephone LLPN: 123339U Clinch Long Letherbarrow Pty Limited DX 13090 SYDNEY MARKET STREET Tel: 9279 4888 Reference: DJW:JAQ:100030	CODE CN
(D) REGISTERED PROPRIETOR	COATES SIGNCO MANUFACTURING PTY LIMITED ACN 067 970 807		
(E) NEW NAME	ALAN COATES PTY LIMITED ACN 067 970 807		

ASIC website searched. SM10 # 2-8-9-10

(F) The abovenamed registered proprietor of the land referred to above applies to have his/her new name recorded in the Register in respect of that land.

(G) STATUTORY DECLARATION BY THE APPLICANT

I Alan Bernard Coates,

solemnly and sincerely declare that-

1. I am the Sole Director/Secretary of the Registered Proprietor;
2. On 30 June 2008 Coates Signco Manufacturing Pty Limited ACN 067 970 807 changed its name to Alan Coates Pty Limited ACN 067 970 807.

I make this solemn declaration conscientiously believing the same to be true and by virtue of the provisions of the Oaths Act 1900, and I certify this application to be correct for the purposes of the Real Property Act 1900.

Made and subscribed at X WATERLOO N.S.W

in the State of New South Wales

on X 30th JUNE 2010

in the presence of-

Signature of witness: X

Signature of applicant:

Name of witness: X B. MELLANDER

Address of witness: X 12/25 HALVEY ST., PYRMONT 2009

Qualification of witness: X JP 168308



FOLIO: 1/84655

SEARCH DATE	TIME	EDITION NO	DATE
13/7/2018	10:46 AM	11	16/5/2013

LAND

LOT 1 IN DEPOSITED PLAN 84655
LOCAL GOVERNMENT AREA SYDNEY
PARISH OF ALEXANDRIA COUNTY OF CUMBERLAND
TITLE DIAGRAM DP84655

FIRST SCHEDULE

INTERNATIONAL SCREEN ACADEMY PROPERTY PTY LTD (T AH466175)

SECOND SCHEDULE (7 NOTIFICATIONS)

- 1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
- 2 DP638902 EASEMENT FOR SUPPORT AFFECTING THE PART OF THE LAND WITHIN DESCRIBED SHOWN SO BURDENED IN DP638902
- 3 DP638902 EASEMENT FOR SUPPORT APPURTENANT TO THE LAND ABOVE DESCRIBED
- 4 DP638902 EASEMENT FOR MAINTENANCE OF GUTTER APPURTENANT TO THE LAND ABOVE DESCRIBED
- 5 DP644174 EASEMENT FOR SUPPORT APPURTENANT TO THE LAND ABOVE DESCRIBED
- 6 DP644174 EASEMENT FOR MAINTENANCE OF GUTTER AND FLASHING APPURTENANT TO THE LAND ABOVE DESCRIBED
- 7 AH734086 LEASE TO INTERNATIONAL SCREEN ACADEMY PTY LIMITED OF 242 YOUNG STREET, WATERLOO. EXPIRES: 17/12/2015.
- * AI844090 VARIATION OF LEASE AH734086
- * AK625515 VARIATION OF LEASE AH734086 EXPIRY DATE NOW 31/12/2017.

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***



SEARCH DATE

3/7/2018 6:13PM

FOLIO: A/161650

First Title(s): SEE PRIOR TITLE(S)

Prior Title(s): VOL 8211 FOL 238

Recorded	Number	Type of Instrument	C.T. Issue
31/8/1989		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
11/10/1989		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
6/5/1994	U241771	SURRENDER OF LEASE	
6/5/1994	U241772	LEASE	EDITION 1
2/3/1995	O56952	DISCHARGE OF MORTGAGE	
2/3/1995	O56953	TRANSFER	
2/3/1995	O56954	MORTGAGE	EDITION 2
3/9/1997		AMENDMENT: LOCAL GOVT AREA	
23/4/1998	3937680	DISCHARGE OF MORTGAGE	
23/4/1998	3937682	TRANSFER	EDITION 3
14/3/2004	AA472866	DEPARTMENTAL DEALING	
20/12/2007	AD653553	LEASE	EDITION 4
22/12/2008	AE406620	CAVEAT	
3/4/2009	AE595205	WITHDRAWAL OF CAVEAT	
5/7/2011	AG347378	VARIATION OF LEASE	
4/9/2012	AH212838	CHANGE OF NAME	
4/9/2012	AH212839	VARIATION OF LEASE	
18/6/2015	AJ575230	VARIATION OF LEASE	
19/5/2017	AM405464	SURRENDER OF LEASE	
19/5/2017	AM405465	LEASE	EDITION 5
1/6/2017	AM442236	CAVEAT	
15/6/2017	AM477806	CAVEAT	

END OF PAGE 1 - CONTINUED OVER

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE

3/7/2018 6:13PM

FOLIO: A/161650

PAGE 2

<u>Recorded</u>	<u>Number</u>	<u>Type of Instrument</u>	<u>C.T. Issue</u>
27/7/2017	AM596514	WITHDRAWAL OF CAVEAT	

*** END OF SEARCH ***

waterloo

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Received: 03/07/2018 18:13:38

RP13

(2)

TRANSFER

Real Property Act, 1900



0
056953 W



Office of
740B

(A) **LAND TRANSFERRED**
Show no more than 20 References to Title.
If appropriate, specify the share transferred.

VOLUME 8211 FOLIO 238 and Now being A/161650
VOLUME 7448 FOLIO 29 and B/161650

(B) **LODGED BY**

L.T.O. Box 45A	Name, Address or DX and Telephone NATIONAL AUSTRALIA BANK LIMITED National Australia Bank House 255 George Street, Sydney 237-1111 FAX 237-1284 REFERENCE (max. 45 characters): Tx3702
-------------------	--

(C) **TRANSFEROR**

JOHN MALCOLM SANDILANDS

(D) acknowledges receipt of the consideration of pursuant to Orders made on 19 January 1994 by the Family Court of Australia and as regards the land specified above transfers to the transferee an estate in fee simple

(E) subject to the following **ENCUMBRANCES** 1. U241772 2. 3.

(F) **TRANSFEEE**

T	BEVERLEY ANN SANDILANDS
as joint tenants/tenants in common	

(G)

(H) We certify this dealing correct for the purposes of the Real Property Act, 1900. DATE
Signed in my presence by the transferor who is personally known to me.

Joanna Budden
Signature of Witness

JOANNA BUDDEN
Name of Witness (BLOCK LETTERS)

11 HENRIETTA ST WAVERLEY
Address of Witness

JMSandilands
Signature of Transferor

Signed in my presence by the transferee who is personally known to me.

Signature of Witness

Name of Witness (BLOCK LETTERS)

Address of Witness

Stuart Grant Fowler
Signature of Transferee

Stuart Grant Fowler
Solicitor acting for
CHECKED BY (office use only)



FOLIO: A/161650

SEARCH DATE	TIME	EDITION NO	DATE
13/7/2018	10:46 AM	5	19/5/2017

LAND

LOT A IN DEPOSITED PLAN 161650
AT WATERLOO
LOCAL GOVERNMENT AREA SYDNEY
PARISH OF ALEXANDRIA COUNTY OF CUMBERLAND
TITLE DIAGRAM DP161650

FIRST SCHEDULE

CHARVIC PTY LIMITED

(T 3937682)

SECOND SCHEDULE (5 NOTIFICATIONS)

- 1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
- 2 DP638902 EASEMENT FOR SUPPORT AFFECTING THE PART OF THE LAND SO BURDENED IN DP638902
- 3 DP638902 EASEMENT FOR SUPPORT APPURTENANT TO THE LAND ABOVE DESCRIBED
- 4 DP638902 EASEMENT FOR MAINTENANCE OF GUTTER AFFECTING THE PART OF THE LAND SHOWN SO BURDENED IN DP638902
- 5 AM405465 LEASE TO PARAMOUNT PROPERTY GROUP PTY LIMITED OF FACTORY, 244 YOUNG STREET, WATERLOO TOGETHER WITH 38 ON-SITE PARKING SPACES NUMBERED 1-38. EXPIRES: 1/4/2020. OPTION OF RENEWAL: 2 YEARS.

* AM442236 CAVEAT AFFECTING LEASE AM405465 CAVEAT BY HANSON PRECAST PTY LTD

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

waterloo

PRINTED ON 13/7/2018



SEARCH DATE

3/7/2018 6:13PM

FOLIO: B/161650

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 7448 FOL 29

Recorded	Number	Type of Instrument	C.T. Issue
29/7/1989		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
17/1/1990		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
1/7/1992	E577823	DEPARTMENTAL DEALING	
6/5/1994	U241771	SURRENDER OF LEASE	
6/5/1994	U241772	LEASE	EDITION 1
2/3/1995	O56952	DISCHARGE OF MORTGAGE	
2/3/1995	O56953	TRANSFER	
2/3/1995	O56954	MORTGAGE	EDITION 2
3/9/1997		AMENDMENT: LOCAL GOVT AREA	
23/4/1998	3937681	DISCHARGE OF MORTGAGE	
23/4/1998	3937682	TRANSFER	EDITION 3
14/3/2004	AA472866	DEPARTMENTAL DEALING	
20/12/2007	AD653553	LEASE	EDITION 4
22/12/2008	AE406620	CAVEAT	
1/4/2009	DP1136961	DEPOSITED PLAN	EDITION 5
3/4/2009	AE595205	WITHDRAWAL OF CAVEAT	
5/7/2011	AG347378	VARIATION OF LEASE	
4/9/2012	AH212838	CHANGE OF NAME	
4/9/2012	AH212839	VARIATION OF LEASE	
18/6/2015	AJ575230	VARIATION OF LEASE	
19/5/2017	AM405464	SURRENDER OF LEASE	
19/5/2017	AM405465	LEASE	EDITION 6

END OF PAGE 1 - CONTINUED OVER

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE

3/7/2018 6:13PM

FOLIO: B/161650

PAGE 2

<u>Recorded</u>	<u>Number</u>	<u>Type of Instrument</u>	<u>C.T. Issue</u>
1/6/2017	AM442236	CAVEAT	
15/6/2017	AM477806	CAVEAT	
27/7/2017	AM596514	WITHDRAWAL OF CAVEAT	

*** END OF SEARCH ***

waterloo

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Received: 03/07/2018 18:13:38

RP13

(2)

TRANSFER

Real Property Act, 1900



0
056953 W



Office of
740B

(A) LAND TRANSFERRED

Show no more than 20 References to Title.
If appropriate, specify the share transferred.

VOLUME 8211 FOLIO 238 and Now being A/161650
VOLUME 7448 FOLIO 29 and B/161650

(B) LODGED BY

L.T.O. Box <i>45A</i>	Name, Address or DX and Telephone NATIONAL AUSTRALIA BANK LIMITED National Australia Bank House 255 George Street, Sydney 237-1111 FAX 237-1284 REFERENCE (max. 45 characters): <i>Jx3702</i>
--------------------------	---

(C) TRANSFEROR

JOHN MALCOLM SANDILANDS

(D) acknowledges receipt of the consideration of pursuant to Orders made on 19 January 1994 by the Family Court of Australia and as regards the land specified above transfers to the transferee an estate in fee simple

(E) subject to the following ENCUMBRANCES 1. U241772 2. 3.

(F) TRANSFEREE

T	BEVERLEY ANN SANDILANDS as joint tenants/tenants in common
----------	---

(H) We certify this dealing correct for the purposes of the Real Property Act, 1900. DATE

Signed in my presence by the transferor who is personally known to me.

Joanna Budden
Signature of Witness

JOANNA BUDDEN
Name of Witness (BLOCK LETTERS)

11 HENRIETTA ST WAVERLEY
Address of Witness

JMSandilands
Signature of Transferor

Signed in my presence by the transferee who is personally known to me.

Signature of Witness

Name of Witness (BLOCK LETTERS)

Address of Witness

Stuart Grant Fowler
Signature of Transferee

Stuart Grant Fowler

Solicitor acting for

CHECKED BY (office use only)

26/7/18



FOLIO: B/161650

SEARCH DATE	TIME	EDITION NO	DATE
13/7/2018	10:46 AM	6	19/5/2017

LAND

LOT B IN DEPOSITED PLAN 161650
AT WATERLOO
LOCAL GOVERNMENT AREA SYDNEY
PARISH OF ALEXANDRIA COUNTY OF CUMBERLAND
TITLE DIAGRAM DP161650

FIRST SCHEDULE

CHARVIC PTY LIMITED (T 3937682)

SECOND SCHEDULE (4 NOTIFICATIONS)

- 1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 DP1136961 EASEMENT FOR ELECTRICITY AND OTHER PURPOSES 3.365 METRE(S) WIDE AFFECTING THE PART(S) SHOWN SO BURDENED IN DP1136961
3 DP1136961 RIGHT OF CARRIAGEWAY 6.8 METRE(S) WIDE AFFECTING THE PART(S) SHOWN SO BURDENED IN DP1136961
4 AM405465 LEASE TO PARAMOUNT PROPERTY GROUP PTY LIMITED OF FACTORY, 244 YOUNG STREET, WATERLOO TOGETHER WITH 38 ON-SITE PARKING SPACES NUMBERED 1-38. EXPIRES: 1/4/2020. OPTION OF RENEWAL: 2 YEARS.

* AM442236 CAVEAT AFFECTING LEASE AM405465 CAVEAT BY HANSON PRECAST PTY LTD

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

APPENDIX E

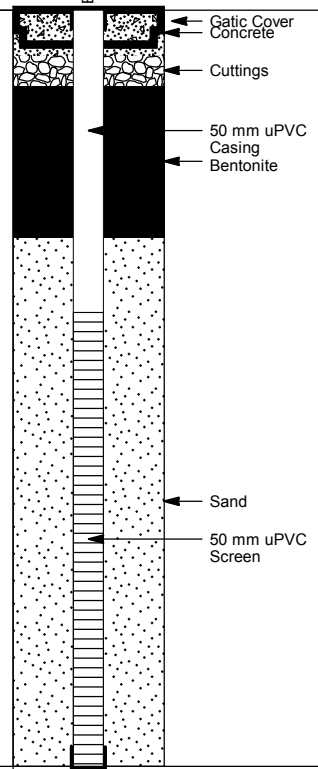
Borehole Logs

Project Detailed Site Investigation
 Location 242-244 Young Street, Waterloo NSW
 Position Refer to Figure 2
 Job No. E23915
 Client Bennet Murada Architects

Contractor HartGeo Pty Ltd
 Drill Rig Ute-mounted Solid Flight Auger
 Inclination -90°

Sheet 1 OF 1
 Date Started 15/8/18
 Date Completed 15/8/18
 Logged DR Date: 15/8/18
 Checked CS Date: 21/8/18

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	PIEZOMETER DETAILS
												ID Static Water Level BH1M
DT			0	0.12	BH1M_0.3-0.4 ES OD1 QT1 PID = 1.9 ppm			-	CONCRETE: 120mm thick.			
			0.80		BH1M_0.5-0.6 ES PID = 5.6 ppm				FILL: Gravelly Clayey SAND; medium grained, light brown/orange/grey, with low to medium plasticity clay and fine, sub-angular to angular gravels, weak hydrocarbon odour.			
			1		BH1M_1.2-1.3 ES PID = 0.3 ppm			S	SAND; fine grained, light grey, no odour.	M		
			2	2.20	BH1M_2.4-2.5 ES PID = 0.7 ppm				From 2.2m, brown.			
			3	3.00	BH1M_3.4-3.5 ES PID = 23.1 ppm				From 3.0m, dark brown, strong hydrocarbon odour.	M-W		
			4									
			5	5.00								
			6									
			7									
			8									
			9									
			10						Hole Terminated at 5.00 m Target Depth Reached. Borehole Converted into Monitoring Well.			



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



Project Detailed Site Investigation
 Location 242-244 Young Street, Waterloo NSW
 Position Refer to Figure 2
 Job No. E23915
 Client Bennet Murada Architects

Contractor N/A
 Drill Rig Hand Auger
 Inclination -90°

BOREHOLE: BH2

Sheet 1 OF 1
 Date Started 15/8/18
 Date Completed 15/8/18
 Logged DR Date: 15/8/18
 Checked CS Date: 21/8/18

Drilling				Sampling			Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
DT			0.0			-	CONCRETE: 100mm thick.				CONCRETE HARDSTAND
			0.10	BH2_0.1-0.2 ES PID = 2.2 ppm		-	FILL: SAND: fine to medium grained, dark brown, with organics, slight hydrocarbon odour.				FILL
AD/T		GWNE	0.20			-	SANDSTONE; fine grained, yellow, with coarse, sub-angular to angular sandstone fragments, no odour.		M		BEDROCK
			0.40	BH2_0.3-0.4 ES PID = 1.4 ppm							
			0.5				Hole Terminated at 0.40 m Refusal on Sandstone Bedrock. Backfilled with Drilling Spoil.				
			1.0								
			1.5								
			2.0								

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



Project Detailed Site Investigation
 Location 242-244 Young Street, Waterloo NSW
 Position Refer to Figure 2
 Job No. E23915
 Client Bennet Murada Architects

Contractor N/A
 Drill Rig Hand Auger
 Inclination -90°

BOREHOLE: BH3

Sheet 1 OF 1
 Date Started 15/8/18
 Date Completed 15/8/18
 Logged DR Date: 15/8/18
 Checked CS Date: 21/8/18

Drilling				Sampling			Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
			0.0				CONCRETE: 150mm thick.				CONCRETE HARDSTAND
			0.15								
			0.35	BH3 0.2-0.3 ES PID = 2.1 ppm			FILL: Gravelly CLAY; low to medium grained, brown, with fine to coarse gravels, no odour.				FILL
							Hole Terminated at 0.35 m Refusal on Second Concrete Slab. Backfilled with Drilling Spoil.				
			0.5								
			1.0								
			1.5								
			2.0								

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



Project Detailed Site Investigation
 Location 242-244 Young Street, Waterloo NSW
 Position Refer to Figure 2
 Job No. E23915
 Client Bennet Murada Architects

Contractor N/A
 Drill Rig Hand Auger
 Inclination -90°

BOREHOLE: BH4

Sheet 1 OF 1
 Date Started 15/8/18
 Date Completed 15/8/18
 Logged DR Date: 15/8/18
 Checked CS Date: 21/8/18

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
			0.0					CONCRETE: 150mm thick.				CONCRETE HARDSTAND
			0.15									
			0.30		BH4_0.2-0.3 ES PID = 2.1 ppm			FILL: Gravelly Clayey SAND; medium grained, light brown/orange/grey, with low to medium plasticity clay and fine, sub-angular to angular gravels, with plastics and bark fragments, weak hydrocarbon odour.		M		FILL
								Hole Terminated at 0.30 m Refusal on Coarse Concrete Gravels. Backfilled with Drilling Spoil.				
			0.5									
			1.0									
			1.5									
			2.0									

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



Project Detailed Site Investigation
 Location 242-244 Young Street, Waterloo NSW
 Position Refer to Figure 2
 Job No. E23915
 Client Bennet Murada Architects

Contractor N/A
 Drill Rig Hand Auger
 Inclination -90°

BOREHOLE: BH5

Sheet 1 OF 1
 Date Started 15/8/18
 Date Completed 15/8/18
 Logged DR Date: 15/8/18
 Checked CS Date: 21/8/18

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
			0.0					CONCRETE: 100mm thick.				CONCRETE HARDSTAND
DT			0.10		BH5_0.1-0.2 ES PID = 2.1 ppm		-					
ADT		GWNE					-	FILL: Gravelly SAND; fine to medium grained, brown, with fine to coarse, sub-angular to angular gravels, with slag, with sulfate and hydrocarbon odour.	M			FILL
			0.30					Hole Terminated at 0.30 m Refusal. PVC pipe encountered and hand augering stopped due to being potential service. Backfilled with Drilling Spoil.				
			0.5									
			1.0									
			1.5									
			2.0									

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



Project Detailed Site Investigation
 Location 242-244 Young Street, Waterloo NSW
 Position Refer to Figure 2
 Job No. E23915
 Client Bennet Murada Architects

Contractor N/A
 Drill Rig Hand Auger
 Inclination -90°

BOREHOLE: BH6

Sheet 1 OF 1
 Date Started 15/8/18
 Date Completed 15/8/18
 Logged DR Date: 15/8/18
 Checked CS Date: 21/8/18

Drilling				Sampling			Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
			0.0				CONCRETE: 150mm thick.				CONCRETE HARDSTAND
			0.15	BH6 0.2-0.3 ES PID = 1.8 ppm			FILL: Gravelly Clayey SAND; medium grained, light brown/brown/grey, with low to medium plasticity clay and fine, sub-angular to angular gravels, weak hydrocarbon odour.				FILL
			0.50				Hole Terminated at 0.50 m Refusal on Coarse Gravels. Backfilled with Drilling Spoil.				

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



Project Detailed Site Investigation
 Location 242-244 Young Street, Waterloo NSW
 Position Refer to Figure 2
 Job No. E23915
 Client Bennet Murada Architects

Contractor HartGeo Pty Ltd
 Drill Rig Ute-mounted Solid Flight Auger
 Inclination -90°

BOREHOLE: BH7

Sheet 1 OF 1
 Date Started 15/8/18
 Date Completed 15/8/18
 Logged DR Date: 15/8/18
 Checked CS Date: 21/8/18

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
			0.0					FILL: Gravelly SAND; fine grained, brown, with fine, sub-angular to angular gravels, no odour.		FILL
					BH7_0.3-0.4 ES PID = 4.7 ppm					
			0.60				S	SAND; fine grained, light grey, no odour.		ALLUVIUM
					BH7_1.5-1.6 ES PID = 3.7 ppm					
			2.00					Hole Terminated at 2.00 m Target Depth Reached. Backfilled with Drilling Spoil.		

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



Project Detailed Site Investigation
 Location 242-244 Young Street, Waterloo NSW
 Position Refer to Figure 2
 Job No. E23915
 Client Bennet Murada Architects

Contractor HartGeo Pty Ltd
 Drill Rig Ute-mounted Solid Flight Auger
 Inclination -90°

BOREHOLE: BH8

Sheet 1 OF 1
 Date Started 15/8/18
 Date Completed 15/8/18
 Logged DR Date: 15/8/18
 Checked CS Date: 21/8/18


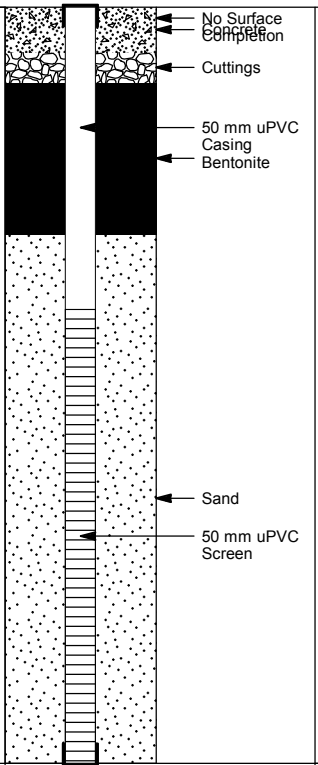

Drilling				Sampling			Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
			0.0			-	FILL: Gravelly SAND; fine grained, brown, with fine, sub-angular to angular gravels, no odour.				FILL
			0.70	BH8 0.3-0.4 ES PID = 2.1 ppm							
			0.70			S	SAND; fine grained, light grey, no odour.				ALLUVIUM
			2.00	BH8 1.7-1.8 ES PID = 1.1 ppm							
			2.00				Hole Terminated at 2.00 m Target Depth Reached. Backfilled with Drilling Spoil.				

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

Project Detailed Site Investigation
 Location 242-244 Young Street, Waterloo NSW
 Position Refer to Figure 2
 Job No. E23915
 Client Bennet Murada Architects

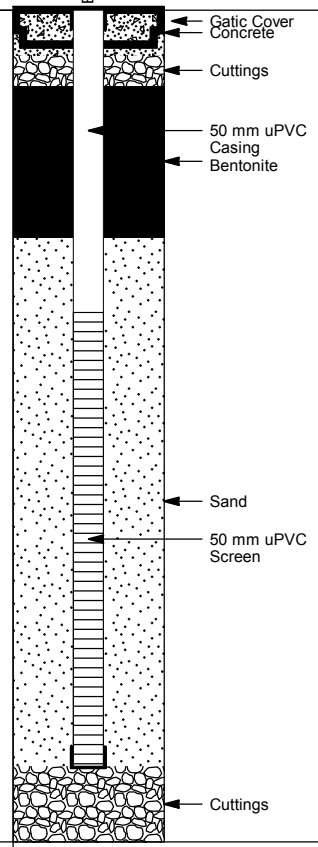
Contractor HartGeo Pty Ltd
 Drill Rig Ute-mounted Solid Flight Auger
 Inclination -90°

Sheet 1 OF 1
 Date Started 15/8/18
 Date Completed 15/8/18
 Logged DR Date: 15/8/18
 Checked CS Date: 21/8/18

Drilling				Sampling			Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	PIEZOMETER DETAILS	PIEZOMETER DETAILS	
			DEPTH RL							ID Static Water Level BH9M		
AD/T			0	BH9M_0.3-0.4 ES PID = 1.8 ppm		-	FILL: Gravelly SAND; fine grained, brown, with fine, sub-angular to angular gravels, no odour.				 <p>No Surface Corrosion Cuttings 50 mm uPVC Casing Bentonite Sand 50 mm uPVC Screen</p>	
			0.80			S	SAND; fine grained, light grey, no odour.					
			2	BH9M_1.8-1.9 ES PID = 1.7 ppm								
			3									
			4									
			5									
			5.00									
			6									
			7									
			8									
			9									
			10									
							Hole Terminated at 5.00 m Target Depth Reached. Borehole Converted into Monitoring Well.					

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

Drilling				Sampling			Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	PIEZOMETER DETAILS	
			DEPTH RL							ID Static Water Level BH10M	
DT			0				CONCRETE: 150mm thick.				
			0.15	BH10M_0.4-0.5 ES PID = 1.4 ppm			FILL: Gravelly CLAY; low to medium grained, brown, with fine to coarse gravels, no odour.				
			1.50			CI	Silty CLAY (PEAT); medium plasticity, dark brown, no odour.				
			2.00	BH10M_1.7-1.8 ES PID = 2.4 ppm		S	SAND; fine grained, light grey, no odour.				
			2.00	BH10M_2.4-2.5 ES PID = 1.7 ppm							
			4.50			CI-CH	CLAY; medium to high plasticity, brown, no odour.				
			5.00				SANDSTONE; fine grained, yellow, no odour.				
			5.50								
			6				Hole Terminated at 5.50 m Target Depth Reached. Borehole Converted into Monitoring Well.				



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

APPENDIX F

Field Data Sheets

Site Inspection Card - CLM Projects
Form OP 005 (Rev 2)



EI Australia
 Suite 6.01, 55 Miller Street
 PYRMONT, NSW, 2009
 ABN 42 909 129 957
 E service@eiaustralia.com.au
 W www.eiaustralia.com.au
 T 02 9516 0722

Project Number:	E2395	Engineer Name:	DRCS
Date:	31/7/18	Time ON Site:	8:30
Travel Time:	1 hr	Time OFF Site:	10:00
Site Address/Location: 242-244 Plot Young Street, Waterloo NSW			
Climatic Conditions: Cloudy / Sunny			
Current Site Uses: Film school, engineering / manufacturing workshop & offices for development company			
Surrounding Land Uses:			
North: Apartment block			
South: Open space & apartments			
East: Offices / workshops and general retail (hair dresser & cafes)			
West: Apartments			
Current Site Condition			
Buildings Structures:			
<input checked="" type="checkbox"/> slab on ground <input type="checkbox"/> suspended slab <input type="checkbox"/> basement Level(s) <input checked="" type="checkbox"/> sub-stations <input type="checkbox"/> service pits / sumps			
<input checked="" type="checkbox"/> potential ACM <input type="checkbox"/> potential lead paint <input checked="" type="checkbox"/> accessible soils (locations)			
<input type="checkbox"/> Other (please describe):			
Soil / Vegetation (overgrown, distressed, bare soil patches):			
Locally good condition / locally poor condition (due to vehicle movement)			
Condition of concrete, bitumen roading, flooring etc.:			
Yes, generally in good condition, with slight cracking & staining.			
Evidence of USTs / UPSS Infrastructure:			
No			
Evidence of Groundwater Monitoring Wells:			
Presence of Waste / Rubbish / Stockpiles:			
Storage by company under carpark.			
Unusual Odours:			
NO			
Signed:	DR	Name:	DR
		Date:	EA 31/7/18

Site Topography (slope of site, surface water, drainage, closest receptor etc.)

Number of level changes throughout the building (loading bays)
Hunter Street at lower elevation than Young St.

Hazardous materials / activities: (presence of asbestos, solid or liquid hazardous materials, infrastructure)

Numerous engineering machinery (lathes & turners)

Anecdotal Information:

- Previous occupants: fibre optic cable manufacturer (Finsar?)

Notes:

- Access for drilling rig was also completed.

Signed:

Name:

Date:

CALIBRATION CERTIFICATE FOR PHOTO IONISATION DETECTOR

Instrument: Mini RAE 3000

Serial Number: 592-906667 - EI PID02 OR 592-901345 - EI PID03

Instrument Conditions: Good

Calibration gas species: Isobutylene.

Calibration gas concentration: ~~400~~¹⁰⁰ ppm

Gas bottle number: 676450-178

This PID has been calibrated to Isobutylene gas with the span concentration displayed as ~~100~~¹⁰⁰ ppm at ~~99.7~~^{99.7} ppm span setting (allowable range +/-10ppm from span setting).

The PID is initially zero calibrated in fresh air.

Remaining gas in bottle: 400 psi (if reading is <250 psi, notify Equipment Manager to arrange new gas bottle order)

The above detector was calibrated in accordance with manufacturer's specifications.

Signed: [Signature]

Date: 14/8/18

Time: 3:00 pm



Map Source: Near Maps Ltd., Imagery Dated 27-05-18

LEGEND

--- Approximate site boundary



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

Drawn:	D.R.
Approved:	-
Date:	04-07-18

Mr Tim Sims
 Detailed Site Investigation
 242-244 Young Street, Waterloo NSW
 Proposed Sampling Location Plan

Figure:

X

Project: E23915.E02.Rev0

WATER SAMPLING FIELD SHEET



Site Address: 242-244 Young St, Waterloo	Job Number: E23915
Client: Pacific Equity Partners Pty Ltd	Date: 24/08/18
Field Staff: LB	Sampling Location ID BH9M
Well Location: southern boundary (corner) (Fig 2)	Round No: 1

MEDIUM Groundwater Surface Water Stormwater Other:

SAMPLING POINT INFO

Well Installation Date:	Stick up / <u>down</u> (m): - 0.08 (+ above ground - below ground)
Initial Well Depth (mBTC):	Screen Interval (mBTC):
Previous Sampling Date:	Previous SWL (mBTC):

PID READINGS

PID Headspace (ppm):	PID Background (ppm):
PID Breathing Space (ppm):	

PRE PURGE

Total Well Depth (mBTC): 4.84	Well Head Condition: good
SWL (mBTC): 2.60	Water Column (m): 2.24

PHASE SEPARATED HYDROCARBONS (PSH)

Depth to PSH (mBTC):	PSH Visually Confirmed (Bailer):
PSH Thickness (mm):	

PURGE AND SAMPLE

Sampling Method <input checked="" type="checkbox"/> Bladder <input type="checkbox"/> Peristaltic <input type="checkbox"/> Submersible <input type="checkbox"/> Other:	
Depth of Pump Inlet (mBTC): 3.50	Fill Timer:
Pump Pressure Regulator (psi): 60 psi	Discharge Timer:
Weather Conditions: Raining	Cycle: CPM4
Pump on time: 1:30	Pump off time: 2:30

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.)
1:45	0.5	2.64	17.28	702	180.2	1.84	6.63	brown/grey, h-turbidity,
1:47	1.0	2.61	17.20	671	180.4	1.37	6.63	
1:51	1.5	2.60	17.26	606	181.5	2.32	6.62	no, no - ↓
1:59	2.0	2.61	17.15	605	181.6	1.43	6.62	
Stabilisation range: 3 consecutive readings			±0.2°C	±3%	±20mV	±10%	±0.2	

OTHER COMMENTS/OBSERVATIONS:
AD and AT taken @ BH9M.

SIGNATURE: *[Signature]*

APPENDIX G

Chain of Custody and Sample Receipt Forms

Sheet <u>1</u> of <u>2</u>					Sample Matrix										Analysis										Comments	
Site: <u>242-244 Young Street, Waterloo NSW</u>				Project No:	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	HM ^A Arsenic Cadmium Chromium Copper Lead Mercury Nickel Zinc HM ^B Arsenic Cadmium Chromium Lead Mercury Nickel	
				E23915																						
Laboratory:		SGS Australia Unit 16, 33 Maddox Street, ALEXANDRIA NSW 2015 P: 02 8594 0400 F: 02 8594 0499			Date	Time																				
Sample ID	Laboratory ID	Container Type	Sampling																							
BH1M-0.3-0.4	1	J, ZLB	15/8/18	AM/PM		X		X																		Dewatering Suite
↓ - 0.5-0.6	2	↓						X																		pH & EC
↓ - 1.2-1.3	3	J							X						X											TDS / TDU
↓ - 2.4-2.5	4	J							X	X																Hardness
BH1M = 2.4-3.5 BH2-0.1-0.2	5	J, ZLB						X																		Total Cyanide
↓ - 0.3-0.4	6	J							X						X											Metals (Al, As, Cd, Cr, Cu, Pb, Hg, Ni, Zn)
BH3-0.2-0.3	7	J, ZLB						X																		TRH (F1, F2, F3, F4)
BH4-0.2-0.3	8	↓						X																		BTEX
BH5-0.1-0.2	9	↓						X																		PAH
BH6-0.2-0.3	10	↓						X																		Total Phenol
BH7-0.3-0.4	11	↓						X																		
BH7-1.5-1.6		J																								

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): <i>Print</i> David Rizkala	Received by (SGS): <i>Print</i> Nessa
<i>Signature</i> 	<i>Signature</i>
Date 16/8/18	Date 16/8/18 12:25

SGS EHS Alexandria Laboratory

SE182724 COC
 Received: 16 - Aug - 2018

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

Sheet <u>2</u> of <u>2</u>					Sample Matrix										Analysis										Comments
Site: <u>242-244 Young Street, Waterloo</u>				Project No: <u>E23915</u>	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	HM A Arsenic Cadmium Chromium Copper Lead Mercury Nickel Zinc HM B Arsenic Cadmium Chromium Lead Mercury Nickel	
Sample ID	Laboratory ID	Container Type	Sampling																						
			Date	Time																					
BH8-0.3-0.4	12	J,ZLB	15/8/18	4:45PM		X		X																Dewatering Suite pH & EC TDS / TDU Hardness Total Cyanide	
BH8-1.7-1.8	13	J							X						X									Metals (Al, As, Cd, Cr, Cu, Pb, Hg, Ni, Zn) TRH (F1, F2, F3, F4) BTEX PAH Total Phenol	
BH9M-0.3-0.4	14	J,ZLB						X																	
↓ - 1.8-1.9	15	J							X						X										
BH10M-0.4-0.5	16	J,ZLB						X																	
BH10M-1.7-1.8	17	J							X						X										
BH10M-2.4-2.5	18	↓							X																
QD2	19	J								X															
TS	20	VC									X														
TB	21	VC									X														
QR2	22	S,P,ZVC				X				X															
QR2L		↓				X				X															

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): <i>Print</i> David Rizkalla	Received by (SGS): <i>Print</i> Nessa
<i>Signature</i> 	<i>Signature</i>
Date 16/8/18	Date 16/8/18 12:25

Sampler's Comments:

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



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

COC March 2018 FORM v.4 - SGS



SAMPLE RECEIPT ADVICE

SE182724

CLIENT DETAILS

Contact David Rizkalla
Client EI AUSTRALIA
Address SUITE 6.01
55 MILLER STREET
PYRMONT NSW 2009

Telephone 61 2 95160722
Facsimile (Not specified)
Email david.rizkallar@eiaustralia.com.au

Project **E23915 242-244 Young St Waterloo NSW**
Order Number **E23915**
Samples 22

LABORATORY DETAILS

Manager Huong Crawford
Laboratory SGS Alexandria Environmental
Address Unit 16, 33 Maddox St
Alexandria NSW 2015

Telephone +61 2 8594 0400
Facsimile +61 2 8594 0499
Email au.environmental.sydney@sgs.com

Samples Received Thu 16/8/2018
Report Due Thu 23/8/2018
SGS Reference **SE182724**

SUBMISSION DETAILS

This is to confirm that 22 samples were received on Thursday 16/8/2018. Results are expected to be ready by COB Thursday 23/8/2018. Please quote SGS reference SE182724 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	21 Soil, 1 Water
Date documentation received	16/8/2018	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	4.1°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

Unless otherwise instructed, water and bulk samples will be held for one month from date of report, and soil samples will be held for two months.

COMMENTS

2 soil and 1 water samples on hold.

This document is issued by the Company under its General Conditions of Service accessible at www.sgs.com/en/Terms-and-Conditions.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

CLIENT DETAILS

Client **EI AUSTRALIA**

Project **E23915 242-244 Young St Waterloo NSW**

SUMMARY OF ANALYSIS

No.	Sample ID	OC Pesticides in Soil	OP Pesticides in Soil	PAH (Polynuclear Aromatic Hydrocarbons) in Soil	PCBs in Soil	pH in soil (1:5)	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
001	BH1M_0.3-0.4	29	14	26	11	-	10	12	8
002	BH1M_0.5-0.6	29	14	26	11	-	10	12	8
003	BH1M_1.2-1.3	-	-	26	-	1	10	12	8
004	BH1M_3.4-3.5	-	-	26	-	-	10	12	8
005	BH2_0.1-0.2	29	14	26	11	-	10	12	8
006	BH2_0.3-0.4	-	-	26	-	1	10	12	8
007	BH3_0.2-0.3	29	14	26	11	-	10	12	8
008	BH4_0.2-0.3	29	14	26	11	-	10	12	8
009	BH5_0.1-0.2	29	14	26	11	-	10	12	8
010	BH6_0.2-0.3	29	14	26	11	-	10	12	8
011	BH7_0.3-0.4	29	14	26	11	-	10	12	8
012	BH8_0.3-0.4	29	14	26	11	-	10	12	8
013	BH8_1.7-1.8	-	-	26	-	1	10	12	8
014	BH9M_0.3-0.4	29	14	26	11	-	10	12	8
015	BH9M_1.8-1.9	-	-	26	-	1	10	12	8
016	BH10M_0.4-0.5	29	14	26	11	-	10	12	8
017	BH10M_1.7-1.8	-	-	26	-	1	10	12	8
018	BH10M_2.4-2.5	-	-	26	-	-	10	12	8
019	QD1	-	-	-	-	-	10	12	8
020	TS	-	-	-	-	-	-	12	-
021	TB	-	-	-	-	-	-	12	-

CONTINUED OVERLEAF

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

CLIENT DETAILS

Client **EI AUSTRALIA**

Project **E23915 242-244 Young St Waterloo NSW**

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	Fibre Identification in soil	Mercury in Soil	Moisture Content	Total Recoverable Elements in Soil/Waste
001	BH1M_0.3-0.4	-	2	1	1	7
002	BH1M_0.5-0.6	-	2	1	1	7
003	BH1M_1.2-1.3	13	-	1	1	7
004	BH1M_3.4-3.5	-	-	1	1	7
005	BH2_0.1-0.2	-	2	1	1	7
006	BH2_0.3-0.4	13	-	1	1	7
007	BH3_0.2-0.3	-	2	1	1	7
008	BH4_0.2-0.3	-	2	1	1	7
009	BH5_0.1-0.2	-	2	1	1	7
010	BH6_0.2-0.3	-	2	1	1	7
011	BH7_0.3-0.4	-	2	1	1	7
012	BH8_0.3-0.4	-	2	1	1	7
013	BH8_1.7-1.8	13	-	1	1	7
014	BH9M_0.3-0.4	-	2	1	1	7
015	BH9M_1.8-1.9	13	-	1	1	7
016	BH10M_0.4-0.5	-	2	1	1	7
017	BH10M_1.7-1.8	13	-	1	1	7
018	BH10M_2.4-2.5	-	-	1	1	7
019	QD1	-	-	1	1	7
020	TS	-	-	-	1	-

CONTINUED OVERLEAF

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

CLIENT DETAILS

Client **EI AUSTRALIA**


Project **E23915 242-244 Young St Waterloo NSW**

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury (dissolved) in Water	Trace Metals (Dissolved) in Water by ICPMS	TRH (Total Recoverable Hydrocarbons) in Water	VOCs in Water	Volatile Petroleum Hydrocarbons in Water
022	QR1	1	7	10	12	8

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

Sheet <u>1</u> of <u>1</u>					Sample Matrix		Analysis												Comments			
Site: <u>242-244 Yang Street, Water 100 NSW</u>			Project No: <u>E296</u>		WATER	SOIL	OTHERS (i.e. Fibro, Paint, etc.)	HM A /TRH/BTEX/PAHs OCPI/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	HM A Arsenic Cadmium Chromium Copper Lead Mercury Nickel Zinc HM B 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	
Sample ID	Laboratory ID	Container Type	Sampling																			
			Date	Time																		
<u>QT1</u>	<u>(1)</u>	<u>J</u>	<u>16/8/18</u>	<u>AM/PM</u>		<u>X</u>			<u>X</u>													


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

Job No: 198586
 Date Received: 16/8/18
 Time Received: 10:13:00
 Received by: [Signature]
 Temp: Good/Ambient
 Cooling: Ice/Inspack
 Security: Unlabeled/Broken/None

LABORATORY TURNAROUND
 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): <i>Print</i> <u>Daria Rizkalo</u>	Received by (Envirolab) <u>ZLB</u> <i>Print</i> <u>Karin My</u>
<i>Signature</i> <u>[Signature]</u>	<i>Signature</i> <u>[Signature]</u>
<i>Date</i> <u>16/8/18</u>	<i>Date</i> <u>16/8/18</u>

Sampler's Comments:

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



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

SAMPLE RECEIPT ADVICE

Client Details

Client	EI Australia
Attention	Lab Email

Sample Login Details

Your reference	E23915, Waterloo
Envirolab Reference	198566
Date Sample Received	16/08/2018
Date Instructions Received	16/08/2018
Date Results Expected to be Reported	23/08/2018

Sample Condition

Samples received in appropriate condition for analysis	YES
No. of Samples Provided	1 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	11.2
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie

Phone: 02 9910 6200
Fax: 02 9910 6201
Email: ahie@envirolab.com.au

Jacinta Hurst

Phone: 02 9910 6200
Fax: 02 9910 6201
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 Soil	svTRH (C10-C40) in Soil	Acid Extractable metals in soil
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.

Sheet <u>1</u> of <u>1</u>					Sample Matrix		Analysis													Comments				
Site: <u>242-244 Young St</u> <u>WATERLOO</u>			Project No: <u>E23915</u> <u>E02</u>		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	ALUMINIUM	PHENOL (TOTAL)	HARDNESS	TCLP HM ^B / PAH	HM ^A Arsenic Cadmium Chromium Copper Lead Mercury Nickel Zinc
Laboratory: SGS Australia Unit 16, 33 Maddox Street, ALEXANDRIA NSW 2015 P: 02 8594 0400 F: 02 8594 0499			Sampling																					HM ^B Arsenic Cadmium Chromium Lead Mercury Nickel
Sample ID	Laboratory ID	Container Type	Date	Time																				
BH1M-1	S,2xVC,P	1	24/8/18	PM	X			X			X				X				X	X	X		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	
BH9M-1	↓	2	↓	↓	↓			↓			↓				↓				↓	↓	↓			
BH10M-1	↓	3	↓	↓	↓																			
QDA-GW	↓	4	↓	↓	↓				X															
BHR-1	↓	5	↓	↓	↓				X															
GWQTBI	VC	6	LAB		X					X														
GWQTSI	VC	7	PREPARED		X					X														



SGS EHS Alexandria Laboratory

SE183173 COC
 Received: 28 - Aug - 2018

- 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): Print <u>CHRIS SOLDT</u>	Received by (SGS): Print <u>Suba</u>
Signature 	Signature 
Date <u>28.8.18</u>	Date <u>28/08/18 @ 3:20</u>

Sampler's Comments:
PLEASE CC
david.rizkalla@eiaustralia.com.au



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

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



SAMPLE RECEIPT ADVICE

SE183173

CLIENT DETAILS

Contact Chris Sordy
Client EI AUSTRALIA
Address SUITE 6.01
55 MILLER STREET
PYRMONT NSW 2009

Telephone 61 2 95160722
Facsimile (Not specified)
Email christopher.sordy@eiaustralia.com.au

Project **E23915-E02 - 242-244 Young St Waterloo**
Order Number **E23915-E02**
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 Tue 28/8/2018
Report Due Tue 4/9/2018
SGS Reference **SE183173**

SUBMISSION DETAILS

This is to confirm that 7 samples were received on Tuesday 28/8/2018. Results are expected to be ready by COB Tuesday 4/9/2018. Please quote SGS reference SE183173 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	28/8/2018	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	7.2°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

This document is issued by the Company under its General Conditions of Service accessible at www.sgs.com/en/Terms-and-Conditions.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

CLIENT DETAILS

Client **EI AUSTRALIA**

Project **E23915-E02 - 242-244 Young St Waterloo**

SUMMARY OF ANALYSIS

No.	Sample ID	Conductivity and TDS by Calculation - Water	Metals in Water (Dissolved) by ICPOES	PAH (Polynuclear Aromatic Hydrocarbons) in Water	pH in water	Total Phenolics in Water	TRH (Total Recoverable Hydrocarbons) in Water	VOCs in Water	Volatile Petroleum Hydrocarbons in Water
001	BH1M-1	1	1	22	1	1	10	79	8
002	BH9M-1	1	1	22	1	1	10	79	8
003	BH10M-1	1	1	22	1	1	10	79	8
004	GW-QD1	-	-	-	-	-	10	12	8
005	BHR-1	-	-	-	-	-	10	12	8
006	GWQTB1	-	-	-	-	-	-	12	-
007	GWQTS1	-	-	-	-	-	-	12	-

CONTINUED OVERLEAF

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

CLIENT DETAILS

Client **EI AUSTRALIA**

Project **E23915-E02 - 242-244 Young St Waterloo**

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury (dissolved) in Water	Trace Metals (Dissolved) in Water by ICPMS
001	BH1M-1	1	8
002	BH9M-1	1	8
003	BH10M-1	1	8
004	GW-QD1	1	7
005	BHR-1	1	7

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

Sheet <u>1</u> of <u>1</u>					Sample Matrix		Analysis												Comments			
Site: <u>242-244 Young St</u> <u>WATERLOO</u>				Project No: <u>E23915.</u> <u>E02</u>		WATER	SOIL	OTHERS (i.e. Fibro, Paint, etc.)	HM A /TRH/BTEX/PAHS OC/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	HM A Arsenic Cadmium Chromium Copper Lead Mercury Nickel Zinc HM B 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
Sample ID	Laboratory ID	Container Type	Sampling																			
			Date	Time																		
<u>QT-1-GW</u>	<u>/</u>	<u>S,P,VCx2</u>	<u>24-8-18</u>	<u>PM</u>	<u>X</u>					<u>X</u>												

Envirolab Services
ENVIROLAB
 12 Ashley St
 Chatswood NSW 2067
 Ph: (02) 9910 6200
 Job No: 199432
 Date Received: 28/8/18
 Time Received: 15:30
 Received By: LN
 Temp: Cool/Ambient
 Cooling: Ice/icepack
 Security: Intact/Broken/None

LABORATORY TURNAROUND

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): <i>Print</i> <u>CHRIS SORDY</u>	Received by (Envirolab): <i>Print</i> <u>LN</u>
<i>Signature</i>	<i>Signature</i>
<i>Date</i> <u>28-8-18</u>	<i>Date</i> <u>28/8/18</u>

Sampler's Comments:
PLEASE CC
david.rizkalla@eiaustralia.com.au

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



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

SAMPLE RECEIPT ADVICE

Client Details

Client	EI Australia
Attention	David Rizkalla

Sample Login Details

Your reference	E23915.E02
Envirolab Reference	199432
Date Sample Received	28/08/2018
Date Instructions Received	28/08/2018
Date Results Expected to be Reported	04/09/2018

Sample Condition

Samples received in appropriate condition for analysis	YES
No. of Samples Provided	1 Water
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	10.6
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie

Phone: 02 9910 6200
Fax: 02 9910 6201
Email: ahie@envirolab.com.au

Jacinta Hurst

Phone: 02 9910 6200
Fax: 02 9910 6201
Email: jhurst@envirolab.com.au

Analysis Underway, details on the following page:



Sample ID	VTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	HM in water - dissolved
QT-1-GW	✓	✓	✓

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.

APPENDIX H

Laboratory Analytical Reports

CLIENT DETAILS

Contact David Rizkalla
 Client EI AUSTRALIA
 Address SUITE 6.01
 55 MILLER STREET
 PYRMONT NSW 2009

Telephone 61 2 95160722
 Facsimile (Not specified)
 Email david.rizkallar@eiaustralia.com.au

Project **E23915 242-244 Young St Waterloo NSW**
 Order Number **E23915**
 Samples 22

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 **SE182724 R0**
 Date Received 16/8/2018
 Date Reported 23/8/2018

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



Akheeque Beniamen
 Chemist



Bennet Lo
 Senior Organic Chemist/Metals Chemist



Huong Crawford
 Production Manager



Kamrul Ahsan
 Senior Chemist



Ravee Sivasubramaniam
 Hygiene Team Leader



Shane McDermott
 Inorganic/Metals Chemist

VOC's in Soil [AN433] Tested: 22/8/2018

PARAMETER	UOM	LOR	BH1M_0.3-0.4	BH1M_0.5-0.6	BH1M_1.2-1.3	BH1M_3.4-3.5	BH2_0.1-0.2
			SOIL	SOIL	SOIL	SOIL	SOIL
			15/8/2018 SE182724.001	15/8/2018 SE182724.002	15/8/2018 SE182724.003	15/8/2018 SE182724.004	15/8/2018 SE182724.005
Benzene	mg/kg	0.1	<0.1	0.4	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	1.8	<0.1	0.2	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	0.4	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	2.7	<0.2	0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	0.5	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	3.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	5.8	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	0.3	2.0	<0.1	<0.1	<0.1

PARAMETER	UOM	LOR	BH2_0.3-0.4	BH3_0.2-0.3	BH4_0.2-0.3	BH5_0.1-0.2	BH6_0.2-0.3
			SOIL	SOIL	SOIL	SOIL	SOIL
			15/8/2018 SE182724.006	15/8/2018 SE182724.007	15/8/2018 SE182724.008	15/8/2018 SE182724.009	15/8/2018 SE182724.010
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	BH7_0.3-0.4	BH8_0.3-0.4	BH8_1.7-1.8	BH9M_0.3-0.4	BH9M_1.8-1.9
			SOIL	SOIL	SOIL	SOIL	SOIL
			15/8/2018 SE182724.011	15/8/2018 SE182724.012	15/8/2018 SE182724.013	15/8/2018 SE182724.014	15/8/2018 SE182724.015
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	BH10M_0.4-0.5	BH10M_1.7-1.8	BH10M_2.4-2.5	QD1	TS
			SOIL	SOIL	SOIL	SOIL	SOIL
			15/8/2018 SE182724.016	15/8/2018 SE182724.017	15/8/2018 SE182724.018	15/8/2018 SE182724.019	15/8/2018 SE182724.020
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	[86%]
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	[88%]
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	[80%]
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	[80%]
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	[86%]
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	-
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	-
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-

VOC's in Soil [AN433] Tested: 22/8/2018 (continued)

PARAMETER	UOM	LOR	TB
			SOIL - 15/8/2018 SE182724.021
Benzene	mg/kg	0.1	<0.1
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
Total Xylenes	mg/kg	0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1

Volatile Petroleum Hydrocarbons in Soil [AN433] Tested: 22/8/2018

PARAMETER	UOM	LOR	BH1M_0.3-0.4	BH1M_0.5-0.6	BH1M_1.2-1.3	BH1M_3.4-3.5	BH2_0.1-0.2
			SOIL	SOIL	SOIL	SOIL	SOIL
			15/8/2018 SE182724.001	15/8/2018 SE182724.002	15/8/2018 SE182724.003	15/8/2018 SE182724.004	15/8/2018 SE182724.005
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	0.4	<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	BH2_0.3-0.4	BH3_0.2-0.3	BH4_0.2-0.3	BH5_0.1-0.2	BH6_0.2-0.3
			SOIL	SOIL	SOIL	SOIL	SOIL
			15/8/2018 SE182724.006	15/8/2018 SE182724.007	15/8/2018 SE182724.008	15/8/2018 SE182724.009	15/8/2018 SE182724.010
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	BH7_0.3-0.4	BH8_0.3-0.4	BH8_1.7-1.8	BH9M_0.3-0.4	BH9M_1.8-1.9
			SOIL	SOIL	SOIL	SOIL	SOIL
			15/8/2018 SE182724.011	15/8/2018 SE182724.012	15/8/2018 SE182724.013	15/8/2018 SE182724.014	15/8/2018 SE182724.015
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	BH10M_0.4-0.5	BH10M_1.7-1.8	BH10M_2.4-2.5	QD1
			SOIL	SOIL	SOIL	SOIL
			15/8/2018 SE182724.016	15/8/2018 SE182724.017	15/8/2018 SE182724.018	15/8/2018 SE182724.019
TRH C6-C9	mg/kg	20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25

TRH (Total Recoverable Hydrocarbons) in Soil [AN403] Tested: 22/8/2018

PARAMETER	UOM	LOR	BH1M_0.3-0.4	BH1M_0.5-0.6	BH1M_1.2-1.3	BH1M_3.4-3.5	BH2_0.1-0.2
			SOIL	SOIL	SOIL	SOIL	SOIL
			15/8/2018 SE182724.001	15/8/2018 SE182724.002	15/8/2018 SE182724.003	15/8/2018 SE182724.004	15/8/2018 SE182724.005
TRH C10-C14	mg/kg	20	100	32	<20	<20	<20
TRH C15-C28	mg/kg	45	1100	270	<45	<45	88
TRH C29-C36	mg/kg	45	190	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	180	50	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	180	48	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	1300	300	<90	<90	110
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	1400	310	<110	<110	<110
TRH C10-C40 Total (F bands)	mg/kg	210	1400	350	<210	<210	<210

PARAMETER	UOM	LOR	BH2_0.3-0.4	BH3_0.2-0.3	BH4_0.2-0.3	BH5_0.1-0.2	BH6_0.2-0.3
			SOIL	SOIL	SOIL	SOIL	SOIL
			15/8/2018 SE182724.006	15/8/2018 SE182724.007	15/8/2018 SE182724.008	15/8/2018 SE182724.009	15/8/2018 SE182724.010
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	86	<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	110	<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	BH7_0.3-0.4	BH8_0.3-0.4	BH8_1.7-1.8	BH9M_0.3-0.4	BH9M_1.8-1.9
			SOIL	SOIL	SOIL	SOIL	SOIL
			15/8/2018 SE182724.011	15/8/2018 SE182724.012	15/8/2018 SE182724.013	15/8/2018 SE182724.014	15/8/2018 SE182724.015
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	110	<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	160	<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

TRH (Total Recoverable Hydrocarbons) in Soil [AN403] Tested: 22/8/2018 (continued)

PARAMETER	UOM	LOR	BH10M_0.4-0.5	BH10M_1.7-1.8	BH10M_2.4-2.5	QD1
			SOIL - 15/8/2018 SE182724.016	SOIL - 15/8/2018 SE182724.017	SOIL - 15/8/2018 SE182724.018	SOIL - 15/8/2018 SE182724.019
TRH C10-C14	mg/kg	20	<20	<20	<20	25
TRH C15-C28	mg/kg	45	<45	<45	<45	200
TRH C29-C36	mg/kg	45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	42
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	42
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	210
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	220
TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	250

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 22/8/2018

PARAMETER	UOM	LOR	BH1M_0.3-0.4	BH1M_0.5-0.6	BH1M_1.2-1.3	BH1M_3.4-3.5	BH2_0.1-0.2
			SOIL	SOIL	SOIL	SOIL	SOIL
			15/8/2018 SE182724.001	15/8/2018 SE182724.002	15/8/2018 SE182724.003	15/8/2018 SE182724.004	15/8/2018 SE182724.005
Naphthalene	mg/kg	0.1	8.9	4.0	<0.1	0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	6.7	2.4	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	5.6	2.0	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	5.8	1.6	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	1.4	0.5	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	9.2	4.2	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	20	16	<0.1	<0.1	0.1
Anthracene	mg/kg	0.1	7.3	3.2	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	24	9.7	<0.1	<0.1	0.2
Pyrene	mg/kg	0.1	23	9.0	<0.1	<0.1	0.2
Benzo(a)anthracene	mg/kg	0.1	11	4.0	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	10	3.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	11	2.9	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	3.9	1.3	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	10	2.9	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	4.1	1.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	0.5	0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	3.7	0.9	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	14	4.0	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	14	4.0	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	14	4.0	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	170	69	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	150	65	<0.8	<0.8	<0.8

PARAMETER	UOM	LOR	BH2_0.3-0.4	BH3_0.2-0.3	BH4_0.2-0.3	BH5_0.1-0.2	BH6_0.2-0.3
			SOIL	SOIL	SOIL	SOIL	SOIL
			15/8/2018 SE182724.006	15/8/2018 SE182724.007	15/8/2018 SE182724.008	15/8/2018 SE182724.009	15/8/2018 SE182724.010
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	0.2	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	1.0	0.9	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	0.3	0.3	<0.1
Fluoranthene	mg/kg	0.1	0.1	<0.1	2.0	1.6	<0.1
Pyrene	mg/kg	0.1	0.1	<0.1	1.9	1.6	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	0.9	1.0	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	0.8	0.9	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	0.8	1.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	0.4	0.5	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	0.7	1.0	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	0.3	0.5	<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	0.3	0.5	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	1.0	1.3	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	1.1	1.4	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	1.0	1.4	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	9.6	10	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	9.6	10	<0.8

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 22/8/2018 (continued)

PARAMETER	UOM	LOR	BH7_0.3-0.4	BH8_0.3-0.4	BH8_1.7-1.8	BH9M_0.3-0.4	BH9M_1.8-1.9
			SOIL	SOIL	SOIL	SOIL	SOIL
			15/8/2018 SE182724.011	15/8/2018 SE182724.012	15/8/2018 SE182724.013	15/8/2018 SE182724.014	15/8/2018 SE182724.015
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	0.2	<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	0.8	<0.1	<0.1	0.4	<0.1
Anthracene	mg/kg	0.1	0.3	<0.1	<0.1	0.1	<0.1
Fluoranthene	mg/kg	0.1	3.0	0.1	<0.1	1.2	<0.1
Pyrene	mg/kg	0.1	3.2	0.1	<0.1	1.2	<0.1
Benzo(a)anthracene	mg/kg	0.1	2.1	<0.1	<0.1	0.7	<0.1
Chrysene	mg/kg	0.1	1.9	<0.1	<0.1	0.6	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	2.5	<0.1	<0.1	0.6	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	1.2	<0.1	<0.1	0.3	<0.1
Benzo(a)pyrene	mg/kg	0.1	2.3	<0.1	<0.1	0.6	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	1.1	<0.1	<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	1.0	<0.1	<0.1	0.3	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	3.1	<0.2	<0.2	0.8	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	3.1	<0.3	<0.3	0.9	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	3.1	<0.2	<0.2	0.8	<0.2
Total PAH (18)	mg/kg	0.8	20	<0.8	<0.8	6.3	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	20	<0.8	<0.8	6.3	<0.8

PARAMETER	UOM	LOR	BH10M_0.4-0.5	BH10M_1.7-1.8	BH10M_2.4-2.5
			SOIL	SOIL	SOIL
			15/8/2018 SE182724.016	15/8/2018 SE182724.017	15/8/2018 SE182724.018
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	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	0.3	<0.1	<0.1
Pyrene	mg/kg	0.1	0.4	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	0.2	<0.1	<0.1
Chrysene	mg/kg	0.1	0.2	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	0.2	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	0.2	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	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
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	0.3	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	1.7	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	1.7	<0.8	<0.8

OC Pesticides in Soil [AN420] Tested: 22/8/2018

PARAMETER	UOM	LOR	BH1M_0.3-0.4	BH1M_0.5-0.6	BH2_0.1-0.2	BH3_0.2-0.3	BH4_0.2-0.3
			SOIL - 15/8/2018 SE182724.001	SOIL - 15/8/2018 SE182724.002	SOIL - 15/8/2018 SE182724.005	SOIL - 15/8/2018 SE182724.007	SOIL - 15/8/2018 SE182724.008
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	0.3	0.2	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	0.9	0.6	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	1	<1	<1	<1	<1

OC Pesticides in Soil [AN420] Tested: 22/8/2018 (continued)

PARAMETER	UOM	LOR	BH5_0.1-0.2	BH6_0.2-0.3	BH7_0.3-0.4	BH8_0.3-0.4	BH9M_0.3-0.4
			SOIL	SOIL	SOIL	SOIL	SOIL
			15/8/2018 SE182724.009	15/8/2018 SE182724.010	15/8/2018 SE182724.011	15/8/2018 SE182724.012	15/8/2018 SE182724.014
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	0.5	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	0.4	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	5.1	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	6	<1	<1	<1	<1

OC Pesticides in Soil [AN420] Tested: 22/8/2018 (continued)

PARAMETER	UOM	LOR	BH10M_0.4-0.5
			SOIL - 15/8/2018 SE182724.016
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: 22/8/2018

PARAMETER	UOM	LOR	BH1M_0.3-0.4	BH1M_0.5-0.6	BH2_0.1-0.2	BH3_0.2-0.3	BH4_0.2-0.3
			SOIL	SOIL	SOIL	SOIL	SOIL
			15/8/2018 SE182724.001	15/8/2018 SE182724.002	15/8/2018 SE182724.005	15/8/2018 SE182724.007	15/8/2018 SE182724.008
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	BH5_0.1-0.2	BH6_0.2-0.3	BH7_0.3-0.4	BH8_0.3-0.4	BH9M_0.3-0.4
			SOIL	SOIL	SOIL	SOIL	SOIL
			15/8/2018 SE182724.009	15/8/2018 SE182724.010	15/8/2018 SE182724.011	15/8/2018 SE182724.012	15/8/2018 SE182724.014
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	BH10M_0.4-0.5
			SOIL
			15/8/2018 SE182724.016
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
Total OP Pesticides*	mg/kg	1.7	<1.7

PCBs in Soil [AN420] Tested: 22/8/2018

PARAMETER	UOM	LOR	BH1M_0.3-0.4	BH1M_0.5-0.6	BH2_0.1-0.2	BH3_0.2-0.3	BH4_0.2-0.3
			SOIL	SOIL	SOIL	SOIL	SOIL
			15/8/2018 SE182724.001	15/8/2018 SE182724.002	15/8/2018 SE182724.005	15/8/2018 SE182724.007	15/8/2018 SE182724.008
Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1	<1	<1

PARAMETER	UOM	LOR	BH5_0.1-0.2	BH6_0.2-0.3	BH7_0.3-0.4	BH8_0.3-0.4	BH9M_0.3-0.4
			SOIL	SOIL	SOIL	SOIL	SOIL
			15/8/2018 SE182724.009	15/8/2018 SE182724.010	15/8/2018 SE182724.011	15/8/2018 SE182724.012	15/8/2018 SE182724.014
Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1	<1	<1

PARAMETER	UOM	LOR	BH10M_0.4-0.5
			SOIL
			15/8/2018 SE182724.016
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

pH in soil (1:5) [AN101] Tested: 22/8/2018

			BH1M_1.2-1.3	BH2_0.3-0.4	BH8_1.7-1.8	BH9M_1.8-1.9	BH10M_1.7-1.8
			SOIL	SOIL	SOIL	SOIL	SOIL
			-	-	-	-	-
			15/8/2018	15/8/2018	15/8/2018	15/8/2018	15/8/2018
PARAMETER	UOM	LOR	SE182724.003	SE182724.006	SE182724.013	SE182724.015	SE182724.017
pH	pH Units	0.1	7.6	9.6	8.9	8.8	7.2

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) [AN122] Tested: 17/8/2018

PARAMETER	UOM	LOR	BH1M_1.2-1.3	BH2_0.3-0.4	BH8_1.7-1.8	BH9M_1.8-1.9	BH10M_1.7-1.8
			SOIL	SOIL	SOIL	SOIL	SOIL
			15/8/2018 SE182724.003	15/8/2018 SE182724.006	15/8/2018 SE182724.013	15/8/2018 SE182724.015	15/8/2018 SE182724.017
Exchangeable Sodium, Na	mg/kg	2	15	150	37	18	11
Exchangeable Sodium, Na	meq/100g	0.01	0.06	0.66	0.16	0.08	0.05
Exchangeable Sodium Percentage*	%	0.1	6.8	21.5	6.9	3.3	0.2
Exchangeable Potassium, K	mg/kg	2	9	64	10	11	50
Exchangeable Potassium, K	meq/100g	0.01	0.02	0.16	0.03	0.03	0.13
Exchangeable Potassium Percentage*	%	0.1	2.3	5.3	1.1	1.1	0.6
Exchangeable Calcium, Ca	mg/kg	2	160	290	410	420	4200
Exchangeable Calcium, Ca	meq/100g	0.01	0.81	1.5	2.1	2.1	21
Exchangeable Calcium Percentage*	%	0.1	84.9	47.8	87.5	87.5	93.6
Exchangeable Magnesium, Mg	mg/kg	2	7	96	13	23	150
Exchangeable Magnesium, Mg	meq/100g	0.02	0.06	0.78	0.11	0.19	1.3
Exchangeable Magnesium Percentage*	%	0.1	6.1	25.4	4.5	8.1	5.6
Cation Exchange Capacity	meq/100g	0.02	0.96	3.1	2.3	2.4	22

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 22/8/2018

PARAMETER	UOM	LOR	BH1M_0.3-0.4	BH1M_0.5-0.6	BH1M_1.2-1.3	BH1M_3.4-3.5	BH2_0.1-0.2
			SOIL	SOIL	SOIL	SOIL	SOIL
			15/8/2018 SE182724.001	15/8/2018 SE182724.002	15/8/2018 SE182724.003	15/8/2018 SE182724.004	15/8/2018 SE182724.005
Arsenic, As	mg/kg	1	15	4	2	1	3
Cadmium, Cd	mg/kg	0.3	0.5	1.0	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.3	34	14	0.5	2.7	15
Copper, Cu	mg/kg	0.5	50	34	1.5	2.2	16
Lead, Pb	mg/kg	1	76	84	5	10	24
Nickel, Ni	mg/kg	0.5	59	30	<0.5	0.8	12
Zinc, Zn	mg/kg	2	140	1200	87	66	70

PARAMETER	UOM	LOR	BH2_0.3-0.4	BH3_0.2-0.3	BH4_0.2-0.3	BH5_0.1-0.2	BH6_0.2-0.3
			SOIL	SOIL	SOIL	SOIL	SOIL
			15/8/2018 SE182724.006	15/8/2018 SE182724.007	15/8/2018 SE182724.008	15/8/2018 SE182724.009	15/8/2018 SE182724.010
Arsenic, As	mg/kg	1	2	3	5	3	3
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	0.7	0.3	<0.3
Chromium, Cr	mg/kg	0.3	2.7	6.5	8.9	11	2.3
Copper, Cu	mg/kg	0.5	4.2	14	50	28	6.7
Lead, Pb	mg/kg	1	9	13	180	140	19
Nickel, Ni	mg/kg	0.5	2.2	21	4.3	10	1.9
Zinc, Zn	mg/kg	2	15	56	290	110	27

PARAMETER	UOM	LOR	BH7_0.3-0.4	BH8_0.3-0.4	BH8_1.7-1.8	BH9M_0.3-0.4	BH9M_1.8-1.9
			SOIL	SOIL	SOIL	SOIL	SOIL
			15/8/2018 SE182724.011	15/8/2018 SE182724.012	15/8/2018 SE182724.013	15/8/2018 SE182724.014	15/8/2018 SE182724.015
Arsenic, As	mg/kg	1	5	2	2	7	2
Cadmium, Cd	mg/kg	0.3	0.4	<0.3	0.3	1.0	<0.3
Chromium, Cr	mg/kg	0.3	9.3	5.5	1.9	12	2.3
Copper, Cu	mg/kg	0.5	31	16	5.0	52	2.0
Lead, Pb	mg/kg	1	73	33	61	210	19
Nickel, Ni	mg/kg	0.5	6.3	4.0	<0.5	5.8	0.6
Zinc, Zn	mg/kg	2	150	55	43	420	3.5

PARAMETER	UOM	LOR	BH10M_0.4-0.5	BH10M_1.7-1.8	BH10M_2.4-2.5	QD1
			SOIL	SOIL	SOIL	SOIL
			15/8/2018 SE182724.016	15/8/2018 SE182724.017	15/8/2018 SE182724.018	15/8/2018 SE182724.019
Arsenic, As	mg/kg	1	9	9	2	4
Cadmium, Cd	mg/kg	0.3	2.6	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.3	5.0	5.2	3.5	8.5
Copper, Cu	mg/kg	0.5	7100	9.9	2.4	11
Lead, Pb	mg/kg	1	850	10	2	210
Nickel, Ni	mg/kg	0.5	12	2.1	0.7	3.4
Zinc, Zn	mg/kg	2	3800	18	2.1	54

Mercury in Soil [AN312] Tested: 22/8/2018

			BH1M_0.3-0.4	BH1M_0.5-0.6	BH1M_1.2-1.3	BH1M_3.4-3.5	BH2_0.1-0.2
			SOIL	SOIL	SOIL	SOIL	SOIL
			-	-	-	-	-
			15/8/2018	15/8/2018	15/8/2018	15/8/2018	15/8/2018
PARAMETER	UOM	LOR	SE182724.001	SE182724.002	SE182724.003	SE182724.004	SE182724.005
Mercury	mg/kg	0.05	0.42	0.53	<0.05	<0.05	<0.05

			BH2_0.3-0.4	BH3_0.2-0.3	BH4_0.2-0.3	BH5_0.1-0.2	BH6_0.2-0.3
			SOIL	SOIL	SOIL	SOIL	SOIL
			-	-	-	-	-
			15/8/2018	15/8/2018	15/8/2018	15/8/2018	15/8/2018
PARAMETER	UOM	LOR	SE182724.006	SE182724.007	SE182724.008	SE182724.009	SE182724.010
Mercury	mg/kg	0.05	<0.05	<0.05	0.25	0.17	<0.05

			BH7_0.3-0.4	BH8_0.3-0.4	BH8_1.7-1.8	BH9M_0.3-0.4	BH9M_1.8-1.9
			SOIL	SOIL	SOIL	SOIL	SOIL
			-	-	-	-	-
			15/8/2018	15/8/2018	15/8/2018	15/8/2018	15/8/2018
PARAMETER	UOM	LOR	SE182724.011	SE182724.012	SE182724.013	SE182724.014	SE182724.015
Mercury	mg/kg	0.05	0.16	0.07	0.09	0.23	<0.05

			BH10M_0.4-0.5	BH10M_1.7-1.8	BH10M_2.4-2.5	QD1
			SOIL	SOIL	SOIL	SOIL
			-	-	-	-
			15/8/2018	15/8/2018	15/8/2018	15/8/2018
PARAMETER	UOM	LOR	SE182724.016	SE182724.017	SE182724.018	SE182724.019
Mercury	mg/kg	0.05	0.09	<0.05	<0.05	0.11

Moisture Content [AN002] Tested: 22/8/2018

			BH1M_0.3-0.4	BH1M_0.5-0.6	BH1M_1.2-1.3	BH1M_3.4-3.5	BH2_0.1-0.2
			SOIL	SOIL	SOIL	SOIL	SOIL
			-	-	-	-	-
			15/8/2018	15/8/2018	15/8/2018	15/8/2018	15/8/2018
PARAMETER	UOM	LOR	SE182724.001	SE182724.002	SE182724.003	SE182724.004	SE182724.005
% Moisture	%w/w	0.5	12	6.9	1.6	7.4	9.9

			BH2_0.3-0.4	BH3_0.2-0.3	BH4_0.2-0.3	BH5_0.1-0.2	BH6_0.2-0.3
			SOIL	SOIL	SOIL	SOIL	SOIL
			-	-	-	-	-
			15/8/2018	15/8/2018	15/8/2018	15/8/2018	15/8/2018
PARAMETER	UOM	LOR	SE182724.006	SE182724.007	SE182724.008	SE182724.009	SE182724.010
% Moisture	%w/w	0.5	9.3	11	12	8.9	6.4

			BH7_0.3-0.4	BH8_0.3-0.4	BH8_1.7-1.8	BH9M_0.3-0.4	BH9M_1.8-1.9
			SOIL	SOIL	SOIL	SOIL	SOIL
			-	-	-	-	-
			15/8/2018	15/8/2018	15/8/2018	15/8/2018	15/8/2018
PARAMETER	UOM	LOR	SE182724.011	SE182724.012	SE182724.013	SE182724.014	SE182724.015
% Moisture	%w/w	0.5	5.3	9.0	5.5	4.4	2.8

			BH10M_0.4-0.5	BH10M_1.7-1.8	BH10M_2.4-2.5	QD1	TS
			SOIL	SOIL	SOIL	SOIL	SOIL
			-	-	-	-	-
			15/8/2018	15/8/2018	15/8/2018	15/8/2018	15/8/2018
PARAMETER	UOM	LOR	SE182724.016	SE182724.017	SE182724.018	SE182724.019	SE182724.020
% Moisture	%w/w	0.5	11	21	16	13	4.3

Fibre Identification in soil [AN602] Tested: 21/8/2018

			BH1M_0.3-0.4	BH1M_0.5-0.6	BH2_0.1-0.2	BH3_0.2-0.3	BH4_0.2-0.3
			SOIL	SOIL	SOIL	SOIL	SOIL
			-	-	-	-	-
			15/8/2018	15/8/2018	15/8/2018	15/8/2018	15/8/2018
PARAMETER	UOM	LOR	SE182724.001	SE182724.002	SE182724.005	SE182724.007	SE182724.008
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

			BH5_0.1-0.2	BH6_0.2-0.3	BH7_0.3-0.4	BH8_0.3-0.4	BH9M_0.3-0.4
			SOIL	SOIL	SOIL	SOIL	SOIL
			-	-	-	-	-
			15/8/2018	15/8/2018	15/8/2018	15/8/2018	15/8/2018
PARAMETER	UOM	LOR	SE182724.009	SE182724.010	SE182724.011	SE182724.012	SE182724.014
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

			BH10M_0.4-0.5
			SOIL
			-
			15/8/2018
PARAMETER	UOM	LOR	SE182724.016
Asbestos Detected	No unit	-	No
Estimated Fibres*	%w/w	0.01	<0.01

VOCs in Water [AN433] Tested: 17/8/2018

			QR1
			WATER
			-
			15/8/2018
			SE182724.022
PARAMETER	UOM	LOR	
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
Total Xylenes	µg/L	1.5	<1.5
Total BTEX	µg/L	3	<3
Naphthalene	µg/L	0.5	<0.5

Volatile Petroleum Hydrocarbons in Water [AN433] Tested: 17/8/2018

			QR1
			WATER
			-
			15/8/2018
			SE182724.022
PARAMETER	UOM	LOR	
TRH C6-C9	µg/L	40	<40
Benzene (F0)	µg/L	0.5	<0.5
TRH C6-C10	µg/L	50	<50
TRH C6-C10 minus BTEX (F1)	µg/L	50	<50

TRH (Total Recoverable Hydrocarbons) in Water [AN403] Tested: 17/8/2018

			QR1
			WATER
			-
			15/8/2018
PARAMETER	UOM	LOR	SE182724.022
TRH C10-C14	µg/L	50	<50
TRH C15-C28	µg/L	200	<200
TRH C29-C36	µg/L	200	<200
TRH C37-C40	µg/L	200	<200
TRH >C10-C16	µg/L	60	<60
TRH >C16-C34 (F3)	µg/L	500	<500
TRH >C34-C40 (F4)	µg/L	500	<500
TRH C10-C36	µg/L	450	<450
TRH C10-C40	µg/L	650	<650
TRH >C10-C16 - Naphthalene (F2)	µg/L	60	<60

Trace Metals (Dissolved) in Water by ICPMS [AN318] Tested: 20/8/2018

			QR1
			WATER
			-
			15/8/2018
			SE182724.022
PARAMETER	UOM	LOR	
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

Mercury (dissolved) in Water [AN311(Perth)/AN312] Tested: 17/8/2018

			QR1
			WATER
			-
			15/8/2018
			SE182724.022
PARAMETER	UOM	LOR	
Mercury	mg/L	0.0001	<0.0001

METHOD

METHODOLOGY SUMMARY

- AN002** The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
- AN020** Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
- AN040/AN320** A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
- AN040** A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analysis by ASS or ICP as per USEPA Method 200.8.
- AN101** pH in Soil Sludge Sediment and Water: pH is measured electrometrically using a combination electrode and is calibrated against 3 buffers purchased commercially. For soils, sediments and sludges, an extract with water (or 0.01M CaCl₂) is made at a ratio of 1:5 and the pH determined and reported on the extract. Reference APHA 4500-H+.
- AN122** Exchangeable Cations, CEC and ESP: Soil sample is extracted in 1M Ammonium Acetate at pH=7 (or 1M Ammonium Chloride at pH=7) with cations (Na, K, Ca & Mg) then determined by ICP OES/ICP MS and reported as Exchangeable Cations. For saline soils, these results can be corrected for water soluble cations and reported as Exchangeable cations in meq/100g or soil can be pre-treated (aqueous ethanol/aqueous glycerol) prior to extraction. Cation Exchange Capacity (CEC) is the sum of the exchangeable cations in meq/100g.
- AN122** The Exchangeable Sodium Percentage (ESP) is calculated as the exchangeable sodium divided by the CEC (all in meq/100g) times 100.
ESP can be used to categorise the sodicity of the soil as below :
- | | |
|-----------|----------------|
| ESP < 6% | non-sodic |
| ESP 6-15% | sodic |
| ESP >15% | strongly sodic |
- Method is referenced to Rayment and Lyons, 2011, sections 15D3 and 15N1.-
- AN311(Perth)/AN312** Mercury by Cold Vapour AAS in Waters: Mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500.
- AN312** Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid, mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500
- AN318** Determination of elements at trace level in waters by ICP-MS technique, in accordance with USEPA 6020A.
- AN403** Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is reported directly and also corrected by subtracting Naphthalene (from VOC method AN433) where available.
- AN403** Additionally, the volatile C6-C9 fraction may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Petroleum Hydrocarbons (TPH) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents .
- AN403** The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
- AN420** (SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
- AN420** SVOC Compounds: Semi-Volatile Organic Compounds (SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).

AN433

VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC's are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.

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 unequivocally 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.
**	Indicative data, theoretical holding time exceeded.	NVL	Not validated.	LOR	Limit of Reporting.
		IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
		LNR	Sample listed, but not received.		

Samples analysed as received.
Solid samples expressed on a dry weight basis.

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

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

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

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

Note that in terms of units of radioactivity:

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

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

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

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CERTIFICATE OF ANALYSIS 198566

Client Details

Client	El Australia
Attention	Lab Email
Address	Suite 6.01, 55 Miller Street, Pyrmont, NSW, 2009

Sample Details

Your Reference	<u>E23915, Waterloo</u>
Number of Samples	1 Soil
Date samples received	16/08/2018
Date completed instructions received	16/08/2018

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	23/08/2018
Date of Issue	21/08/2018
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. Tests not covered by NATA are denoted with *	

Results Approved By

Jeremy Faircloth, Organics Supervisor
Long Pham, Team Leader, Metals
Steven Luong, Senior Chemist

Authorised By

Jacinta Hurst, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil		
Our Reference		198566-1
Your Reference	UNITS	QT1
Date Sampled		16/08/2018
Type of sample		Soil
Date extracted	-	17/08/2018
Date analysed	-	20/08/2018
TRH C ₆ - C ₉	mg/kg	<25
TRH C ₆ - C ₁₀	mg/kg	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
naphthalene	mg/kg	<1
Total +ve Xylenes	mg/kg	<1
Surrogate aaa-Trifluorotoluene	%	97

svTRH (C10-C40) in Soil		
Our Reference		198566-1
Your Reference	UNITS	QT1
Date Sampled		16/08/2018
Type of sample		Soil
Date extracted	-	17/08/2018
Date analysed	-	18/08/2018
TRH C ₁₀ - C ₁₄	mg/kg	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100
Total +ve TRH (>C10-C40)	mg/kg	<50
Surrogate o-Terphenyl	%	108

Acid Extractable metals in soil		
Our Reference		198566-1
Your Reference	UNITS	QT1
Date Sampled		16/08/2018
Type of sample		Soil
Date prepared	-	17/08/2018
Date analysed	-	17/08/2018
Arsenic	mg/kg	6
Cadmium	mg/kg	<0.4
Chromium	mg/kg	10
Copper	mg/kg	15
Lead	mg/kg	26
Mercury	mg/kg	0.1
Nickel	mg/kg	4
Zinc	mg/kg	110

Moisture		
Our Reference		198566-1
Your Reference	UNITS	QT1
Date Sampled		16/08/2018
Type of sample		Soil
Date prepared	-	17/08/2018
Date analysed	-	20/08/2018
Moisture	%	11

Method ID	Methodology Summary
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

Client Reference: E23915, Waterloo

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			17/08/2018	[NT]	[NT]	[NT]	[NT]	17/08/2018	[NT]
Date analysed	-			20/08/2018	[NT]	[NT]	[NT]	[NT]	20/08/2018	[NT]
TRH C ₆ - C ₉	mg/kg	25	Org-016	<25	[NT]	[NT]	[NT]	[NT]	76	[NT]
TRH C ₆ - C ₁₀	mg/kg	25	Org-016	<25	[NT]	[NT]	[NT]	[NT]	76	[NT]
Benzene	mg/kg	0.2	Org-016	<0.2	[NT]	[NT]	[NT]	[NT]	72	[NT]
Toluene	mg/kg	0.5	Org-016	<0.5	[NT]	[NT]	[NT]	[NT]	73	[NT]
Ethylbenzene	mg/kg	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	72	[NT]
m+p-xylene	mg/kg	2	Org-016	<2	[NT]	[NT]	[NT]	[NT]	81	[NT]
o-Xylene	mg/kg	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	78	[NT]
naphthalene	mg/kg	1	Org-014	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	99	[NT]	[NT]	[NT]	[NT]	96	[NT]

Client Reference: E23915, Waterloo

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			17/08/2018	[NT]	[NT]	[NT]	[NT]	17/08/2018	[NT]
Date analysed	-			18/08/2018	[NT]	[NT]	[NT]	[NT]	17/08/2018	[NT]
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	113	[NT]
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	104	[NT]
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	90	[NT]
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	113	[NT]
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	104	[NT]
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	90	[NT]
Surrogate o-Terphenyl	%		Org-003	117	[NT]	[NT]	[NT]	[NT]	113	[NT]

Client Reference: E23915, Waterloo

QUALITY CONTROL: Acid Extractable metals in soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			17/08/2018	[NT]	[NT]	[NT]	[NT]	17/08/2018	[NT]
Date analysed	-			17/08/2018	[NT]	[NT]	[NT]	[NT]	17/08/2018	[NT]
Arsenic	mg/kg	4	Metals-020	<4	[NT]	[NT]	[NT]	[NT]	110	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	[NT]	[NT]	[NT]	[NT]	105	[NT]
Chromium	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Copper	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	107	[NT]
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	[NT]	[NT]	111	[NT]
Nickel	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Zinc	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	104	[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.
<p>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.</p>	

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

CLIENT DETAILS

LABORATORY DETAILS

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Project **E23915-E02 - 242-244 Young St Waterloo**
 Order Number **E23915-E02**
 Samples 7

SGS Reference **SE183173 R0**
 Date Received 28/8/2018
 Date Reported 4/9/2018

COMMENTS

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

TRH/PAH- The Limit of Reporting (LOR) has been raised due to interferences from the sample matrix.

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VOCs in Water [AN433] Tested: 31/8/2018

PARAMETER	UOM	LOR	BH1M-1	BH9M-1	BH10M-1	GW-QD1	BHR-1
			WATER - 24/8/2018 SE183173.001	WATER - 24/8/2018 SE183173.002	WATER - 24/8/2018 SE183173.003	WATER - 24/8/2018 SE183173.004	WATER - 24/8/2018 SE183173.005
Benzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<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	13	<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	<0.5	<0.5	<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	1.8	-	-
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: 31/8/2018 (continued)

PARAMETER	UOM	LOR	BH1M-1	BH9M-1	BH10M-1	GW-QD1	BHR-1
			WATER - 24/8/2018 SE183173.001	WATER - 24/8/2018 SE183173.002	WATER - 24/8/2018 SE183173.003	WATER - 24/8/2018 SE183173.004	WATER - 24/8/2018 SE183173.005
Isopropylbenzene (Cumene)	µg/L	0.5	0.6	<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	20	<10	<10	-	-

VOCs in Water [AN433] Tested: 31/8/2018 (continued)

PARAMETER	UOM	LOR	GWQTB1	GWQTS1
			WATER - 24/8/2018 SE183173.006	WATER - 24/8/2018 SE183173.007
Benzene	µg/L	0.5	<0.5	[96%]
Toluene	µg/L	0.5	<0.5	[96%]
Ethylbenzene	µg/L	0.5	<0.5	[93%]
m/p-xylene	µg/L	1	<1	[88%]
o-xylene	µg/L	0.5	<0.5	[87%]
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: 31/8/2018 (continued)

PARAMETER	UOM	LOR	GWQTB1	GWQTS1
			WATER - 24/8/2018 SE183173.006	WATER - 24/8/2018 SE183173.007
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: 31/8/2018

PARAMETER	UOM	LOR	BH1M-1	BH9M-1	BH10M-1	GW-QD1	BHR-1
			WATER - 24/8/2018 SE183173.001	WATER - 24/8/2018 SE183173.002	WATER - 24/8/2018 SE183173.003	WATER - 24/8/2018 SE183173.004	WATER - 24/8/2018 SE183173.005
TRH C6-C9	µg/L	40	150	<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	160	<50	<50	<50	<50
TRH C6-C10 minus BTEX (F1)	µg/L	50	160	<50	<50	<50	<50

TRH (Total Recoverable Hydrocarbons) in Water [AN403] Tested: 30/8/2018

PARAMETER	UOM	LOR	BH1M-1	BH9M-1	BH10M-1	GW-QD1	BHR-1
			WATER - 24/8/2018 SE183173.001	WATER - 24/8/2018 SE183173.002	WATER - 24/8/2018 SE183173.003	WATER - 24/8/2018 SE183173.004	WATER - 24/8/2018 SE183173.005
TRH C10-C14	µg/L	50	170	<50	<50	<50	<50
TRH C15-C28	µg/L	200	<400 †	<200	<200	<200	<200
TRH C29-C36	µg/L	200	<400 †	<200	<200	<200	<200
TRH C37-C40	µg/L	200	<400 †	<200	<200	<200	<200
TRH >C10-C16	µg/L	60	190	<60	<60	<60	<60
TRH >C16-C34 (F3)	µg/L	500	<1000 †	<500	<500	<500	<500
TRH >C34-C40 (F4)	µg/L	500	<1000 †	<500	<500	<500	<500
TRH C10-C36	µg/L	450	<900 †	<450	<450	<450	<450
TRH C10-C40	µg/L	650	<1300 †	<650	<650	<650	<650
TRH >C10-C16 - Naphthalene (F2)	µg/L	60	190	<60	<60	<60	<60

PAH (Polynuclear Aromatic Hydrocarbons) in Water [AN420] Tested: 30/8/2018

PARAMETER	UOM	LOR	BH1M-1	BH9M-1	BH10M-1
			WATER - 24/8/2018 SE183173.001	WATER - 24/8/2018 SE183173.002	WATER - 24/8/2018 SE183173.003
Naphthalene	µg/L	0.1	<0.2†	<0.1	<0.1
2-methylnaphthalene	µg/L	0.1	<0.2†	<0.1	<0.1
1-methylnaphthalene	µg/L	0.1	<0.2†	<0.1	<0.1
Acenaphthylene	µg/L	0.1	<0.2†	<0.1	<0.1
Acenaphthene	µg/L	0.1	<0.2†	<0.1	<0.1
Fluorene	µg/L	0.1	<0.2†	<0.1	<0.1
Phenanthrene	µg/L	0.1	<0.2†	<0.1	<0.1
Anthracene	µg/L	0.1	<0.2†	<0.1	<0.1
Fluoranthene	µg/L	0.1	0.2	0.1	<0.1
Pyrene	µg/L	0.1	0.3	0.1	<0.1
Benzo(a)anthracene	µg/L	0.1	<0.2†	<0.1	<0.1
Chrysene	µg/L	0.1	<0.2†	<0.1	<0.1
Benzo(b&j)fluoranthene	µg/L	0.1	<0.2†	<0.1	<0.1
Benzo(k)fluoranthene	µg/L	0.1	<0.2†	<0.1	<0.1
Benzo(a)pyrene	µg/L	0.1	<0.2†	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.2†	<0.1	<0.1
Dibenzo(ah)anthracene	µg/L	0.1	<0.2†	<0.1	<0.1
Benzo(ghi)perylene	µg/L	0.1	<0.2†	<0.1	<0.1
Total PAH (18)	µg/L	1	2	<1	<1

pH in water [AN101] Tested: 29/8/2018

PARAMETER	UOM	LOR	BH1M-1	BH9M-1	BH10M-1
			WATER - 24/8/2018 SE183173.001	WATER - 24/8/2018 SE183173.002	WATER - 24/8/2018 SE183173.003
pH**	No unit	-	6.3	7.2	5.0

Conductivity and TDS by Calculation - Water [AN106] Tested: 29/8/2018

PARAMETER	UOM	LOR	BH1M-1	BH9M-1	BH10M-1
			WATER - 24/8/2018 SE183173.001	WATER - 24/8/2018 SE183173.002	WATER - 24/8/2018 SE183173.003
Conductivity @ 25 C	µS/cm	2	880	850	290

Total Phenolics in Water [AN289] Tested: 3/9/2018

PARAMETER	UOM	LOR	BH1M-1	BH9M-1	BH10M-1
			WATER - 24/8/2018 SE183173.001	WATER - 24/8/2018 SE183173.002	WATER - 24/8/2018 SE183173.003
Total Phenols	mg/L	0.05	<0.05	<0.05	<0.05

Metals in Water (Dissolved) by ICPOES [AN320] Tested: 30/8/2018

PARAMETER	UOM	LOR	BH1M-1	BH9M-1	BH10M-1
			WATER - 24/8/2018 SE183173.001	WATER - 24/8/2018 SE183173.002	WATER - 24/8/2018 SE183173.003
Total Hardness by Calculation	mg CaCO3/L	5	330	240	25

Trace Metals (Dissolved) in Water by ICPMS [AN318] Tested: 30/8/2018

PARAMETER	UOM	LOR	BH1M-1	BH9M-1	BH10M-1	GW-QD1	BHR-1
			WATER	WATER	WATER	WATER	WATER
			24/8/2018 SE183173.001	24/8/2018 SE183173.002	24/8/2018 SE183173.003	24/8/2018 SE183173.004	24/8/2018 SE183173.005
Arsenic, As	µg/L	1	6	3	<1	4	<1
Cadmium, Cd	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium, Cr	µg/L	1	3	<1	<1	<1	<1
Copper, Cu	µg/L	1	85	2	65	54	<1
Lead, Pb	µg/L	1	3	1	2	3	<1
Nickel, Ni	µg/L	1	3	<1	2	2	<1
Zinc, Zn	µg/L	5	110	10	92	66	<5
Aluminium, Al	µg/L	5	59	29	15	-	-

Mercury (dissolved) in Water [AN311(Perth)/AN312] Tested: 30/8/2018

PARAMETER	UOM	LOR	BH1M-1	BH9M-1	BH10M-1	GW-QD1	BHR-1
			WATER - 24/8/2018 SE183173.001	WATER - 24/8/2018 SE183173.002	WATER - 24/8/2018 SE183173.003	WATER - 24/8/2018 SE183173.004	WATER - 24/8/2018 SE183173.005
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.
- AN101** pH in Soil Sludge Sediment and Water: pH is measured electrometrically using a combination electrode (glass plus reference electrode) and is calibrated against 3 buffers purchased commercially. For soils, an extract with water 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 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. Total Dissolved Salts can be estimated from conductivity using a conversion factor, which for natural waters, is in the range 0.55 to 0.75. SGS use 0.6. Reference APHA 2510 B.
- AN106** Salinity may be calculated in terms of NaCl from the sample conductivity. This assumes all soluble salts present, measured by the conductivity, are present as NaCl.
- 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, in accordance with USEPA 6020A.
- AN320** Metals by ICP-OES: Samples are preserved with 10% nitric acid for a wide range of metals and some non-metals. This solution is measured by Inductively Coupled Plasma. Solutions are aspirated into an argon plasma at 8000-10000K and emit characteristic energy or light as a result of electron transitions through unique energy levels. The emitted light is focused onto a diffraction grating where it is separated into components.
- AN320** Photomultipliers or CCDs are used to measure the light intensity at specific wavelengths. This intensity is directly proportional to concentration. Corrections are required to compensate for spectral overlap between elements. Reference APHA 3120 B.
- AN403** Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). 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 Recoverable 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.
**	Indicative data, theoretical holding time exceeded.	NVL	Not validated.	LOR	Limit of Reporting.
		IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
		LNR	Sample listed, but not received.		

Samples analysed as received.
Solid samples expressed on a dry weight basis.

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

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

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

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

Note that in terms of units of radioactivity:

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

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

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

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CERTIFICATE OF ANALYSIS 199432

Client Details

Client	El Australia
Attention	David Rizkalla
Address	Suite 6.01, 55 Miller Street, Pyrmont, NSW, 2009

Sample Details

Your Reference	<u>E23915.E02</u>
Number of Samples	1 Water
Date samples received	28/08/2018
Date completed instructions received	28/08/2018

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	04/09/2018
Date of Issue	03/09/2018
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Results Approved By

Jaimie Loa-Kum-Cheung, Senior Chemist
Jeremy Faircloth, Organics Supervisor
Steven Luong, Senior Chemist

Authorised By

Jacinta Hurst, Laboratory Manager

vTRH(C6-C10)/BTEXN in Water		
Our Reference		199432-1
Your Reference	UNITS	QT-1-GW
Date Sampled		24/08/2018
Type of sample		Water
Date extracted	-	29/08/2018
Date analysed	-	30/08/2018
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	%	100
Surrogate toluene-d8	%	98
Surrogate 4-BFB	%	97

svTRH (C10-C40) in Water		
Our Reference		199432-1
Your Reference	UNITS	QT-1-GW
Date Sampled		24/08/2018
Type of sample		Water
Date extracted	-	02/09/2018
Date analysed	-	03/09/2018
TRH C ₁₀ - C ₁₄	µg/L	<50
TRH C ₁₅ - C ₂₈	µg/L	<100
TRH C ₂₉ - C ₃₆	µg/L	<100
TRH >C ₁₀ - C ₁₆	µg/L	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	µg/L	<50
TRH >C ₁₆ - C ₃₄	µg/L	<100
TRH >C ₃₄ - C ₄₀	µg/L	<100
Surrogate o-Terphenyl	%	70

HM in water - dissolved		
Our Reference		199432-1
Your Reference	UNITS	QT-1-GW
Date Sampled		24/08/2018
Type of sample		Water
Date prepared	-	29/08/2018
Date analysed	-	29/08/2018
Arsenic-Dissolved	µg/L	3
Cadmium-Dissolved	µg/L	<0.1
Chromium-Dissolved	µg/L	<1
Copper-Dissolved	µg/L	4
Lead-Dissolved	µg/L	<1
Mercury-Dissolved	µg/L	<0.05
Nickel-Dissolved	µg/L	<1
Zinc-Dissolved	µg/L	5

Method ID	Methodology Summary
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-013	Water samples are analysed directly by purge and trap GC-MS.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.

Client Reference: E23915.E02

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			29/08/2018	[NT]	[NT]	[NT]	[NT]	29/08/2018	[NT]
Date analysed	-			30/08/2018	[NT]	[NT]	[NT]	[NT]	30/08/2018	[NT]
TRH C ₆ - C ₉	µg/L	10	Org-016	<10	[NT]	[NT]	[NT]	[NT]	123	[NT]
TRH C ₆ - C ₁₀	µg/L	10	Org-016	<10	[NT]	[NT]	[NT]	[NT]	123	[NT]
Benzene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	125	[NT]
Toluene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	128	[NT]
Ethylbenzene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	120	[NT]
m+p-xylene	µg/L	2	Org-016	<2	[NT]	[NT]	[NT]	[NT]	122	[NT]
o-xylene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	120	[NT]
Naphthalene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-016	105	[NT]	[NT]	[NT]	[NT]	107	[NT]
Surrogate toluene-d8	%		Org-016	96	[NT]	[NT]	[NT]	[NT]	99	[NT]
Surrogate 4-BFB	%		Org-016	95	[NT]	[NT]	[NT]	[NT]	96	[NT]

Client Reference: E23915.E02

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			02/09/2018	[NT]	[NT]	[NT]	[NT]	02/09/2018	[NT]
Date analysed	-			03/09/2018	[NT]	[NT]	[NT]	[NT]	03/09/2018	[NT]
TRH C ₁₀ - C ₁₄	µg/L	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	113	[NT]
TRH C ₁₅ - C ₂₈	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	100	[NT]
TRH C ₂₉ - C ₃₆	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	118	[NT]
TRH >C ₁₀ - C ₁₆	µg/L	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	113	[NT]
TRH >C ₁₆ - C ₃₄	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	100	[NT]
TRH >C ₃₄ - C ₄₀	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	118	[NT]
Surrogate o-Terphenyl	%		Org-003	81	[NT]	[NT]	[NT]	[NT]	96	[NT]

Client Reference: E23915.E02

QUALITY CONTROL: HM in water - dissolved				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			29/08/2018	[NT]	[NT]	[NT]	[NT]	29/08/2018	[NT]
Date analysed	-			29/08/2018	[NT]	[NT]	[NT]	[NT]	29/08/2018	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	[NT]	[NT]	[NT]	[NT]	96	[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]	98	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	[NT]	[NT]	[NT]	[NT]	107	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	93	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	94	[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.
<p>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.</p>	

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; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

APPENDIX I

QA/QC Assessment

I1 QUALITY CONTROL PROGRAM

I1.1 INTRODUCTION

For the purpose of assessing the quality of data presented in this Contaminant Delineation Report, EI collected field QC samples for analysis. The primary laboratory, SGS Australia Pty Ltd (SGS) and secondary laboratory, Envirolab Services Pty Ltd (Envirolab) also prepared and analysed internal QC samples. Details of the field and laboratory QC samples, with the allowable data acceptance ranges are presented in **Table I-1**.

Table I-1 Sampling Data Quality Indicators

QA/QC Measures	Data Quality Indicators
<p>Precision – A quantitative measure of the variability (or reproducibility) of data</p>	<p>Data precision would be assessed by reviewing the performance of blind field duplicate sample sets, through calculation of relative percentage differences (RPD). Data precision would be deemed acceptable if RPDs are found to be less than 30%. RPDs that exceed this range may be considered acceptable where:</p> <p>Results are less than 10 times the limits of reporting (LOR);</p> <p>Results are less than 20 times the LOR and the RPD is less than 50%; or</p> <p>Heterogeneous materials or volatile compounds are encountered.</p>
<p>Accuracy – A quantitative measure of the closeness of reported data to the “true” value</p>	<p>Data accuracy would be assessed through the analysis of:</p> <p>Method blanks, which are analysed for the analytes targeted in the primary samples;</p> <p>Matrix spike and matrix spike duplicate sample sets;</p> <p>Laboratory control samples; and</p> <p>Calibration of instruments against known standards.</p>
<p>Representativeness – The confidence (expressed qualitatively) that data are representative of each medium present onsite</p>	<p>To ensure the data produced by the laboratory is representative of conditions encountered in the field, the laboratory would carry out the following:</p> <p>Blank samples will be run in parallel with field samples to confirm there are no unacceptable instances of laboratory artefacts;</p> <p>Review of relative percentage differences (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</p> <p>The appropriateness of collection methodologies, handling, storage and preservation techniques will be 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).</p>

QA/QC Measures	Data Quality Indicators
Completeness – A measure of the amount of useable data from a data collection activity	<p>Analytical data sets acquired during the assessment will be evaluated as complete, upon confirmation that:</p> <p>Standard operating procedures (SOPs) for sampling protocols were adhered to; and</p> <p>Copies of all COC documentation are presented, reviewed and found to be properly completed.</p> <p>It can therefore be considered whether the proportion of “useable data” generated in the data collection activities is sufficient for the purposes of the land use assessment.</p>
Comparability – The confidence (expressed qualitatively) that data may be considered to be equivalent for each sampling and analytical event	<p>Given that a reported data set can comprise several data sets from separate sampling episodes, issues of comparability between data sets are reduced through adherence to SOPs and regulator-endorsed or published guidelines and standards on each data gathering activity.</p> <p>In addition the data will be collected by experienced samplers and NATA-accredited laboratory methodologies will be employed in all laboratory testing programs.</p>

11.2 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.

12 FIELD QA/QC DATA EVALUATION

The field quality assurance/quality control (QA/QC) soil and groundwater samples collected during the investigations were as follows:

- Blind field duplicates;
- Inter-laboratory duplicates;
- Trip blanks;
- Trip spikes; and
- Rinsate blanks.

Analytical results for tested soil and groundwater QA/QC samples, including calculated RPD values between primary and duplicate samples, are presented in **Table I-2** and **Table I-3**, respectively.

I2.1 SOIL INVESTIGATION & SOIL VALIDATION

I2.1.1 Blind Field Duplicates

One blind field duplicate (BFD) soil sample were collected in total, as follows:

- Sample QD1 was collected from the primary sample BH1M_0.3-0.4 on 15 August 2018.

The preparation of the BFD samples involved the collection of a bulk quantity of soil from the same sampling point without mixing, before dividing the material into identical sampling vessels. The duplicate sample was then presented blind to the primary laboratory (SGS) to avoid any potential analytical bias. BFD soil sample was analysed for TRHs, BTEX, and selected heavy metals. Calculated RPD values were found to be within the Data Acceptance Criteria, with the exception of F2 (124.32%), F3 (144.37%), arsenic (115.79%), chromium (120.00%), copper (127.87%), lead (93.71%), mercury (116.98%), nickel (178.21%) and zinc (88.66%). These exceedances are not considered to be significant due to the heterogeneity of the fill. Duplicate samples for lead was identified to be higher than the primary sample, however, did not exceeded identified soil investigation criteria.

I2.1.2 Inter-Laboratory Duplicate

Sample QT1 was collected as an inter-laboratory duplicate (ILD) of the primary sample BH1M_0.3-0.4 on 7 May 2018. The preparation of the ILD sample was identical to the BFD sample, as described above, and was analysed for TRHs, BTEX, and selected heavy metals. The calculated RPD values were found to be within the Data Acceptance Criteria, with the exception of F2 (113.04%), F3 (171.43%), arsenic (85.71%), chromium (109.09%), copper (107.69%), lead (98.04%), mercury (123.08%) and nickel (174.60%). These exceedances are not considered to be significant due to the heterogeneity of the fill.

I2.1.3 Trip Blank

One trip blank (TB1) sample was prepared and analysed by the primary laboratory for BTEX. Analytical results for this sample were below the laboratory LOR, indicating that ideal sample transport and handling conditions were achieved.

I2.1.4 Trip Spike

One trip spike (TS1) sample was submitted to the primary laboratory for BTEX analysis, the results for which were reported within the RPD acceptance levels for trip spike recovery. It was therefore concluded that satisfactory sample transport and handling conditions were achieved.

I2.1.5 Rinsate Blank

One rinsate blank sample QR1 was submitted to the primary laboratory for TRHs, BTEX, and selected heavy metals analysis, the results for which were reported below laboratory LOR; therefore, it was concluded that decontamination procedures performed during the field works had been effective.

I2.2 GROUNDWATER INVESTIGATION

I2.2.1 Blind Field Duplicates

One groundwater BFD sample was collected, as follows:

- GW-QD1 was collected from the primary sample BH1M during fieldwork on 24 August 2018.

The preparation of BFD samples involved the decanting of the groundwater collected from the respective monitoring well into two separate groups of appropriately labelled sampling containers. Volumes were split equally between the groups of sampling bottles such that the sample contained in each individual bottle, contained a similar proportion of each water volume. Sample mixing did not occur prior to decanting, in order to preserve the concentrations of volatiles potentially present within the sample. The duplicate sample was then presented blind to the primary laboratory (SGS) to avoid any potential analytical bias. The BFDs were analysed for TRHs, BTEX, and selected heavy metals.

The RPD values calculated for all the analytes tested were found to be within the Data Acceptance Criteria (DAC), with the exception of copper (185.71%), lead (100.00%), mercury (66.67%) and zinc (147.37%). These exceedances are not considered to be significant due to variation that occurs in heavy metal concentrations in urban areas.

I2.2.2 Inter-Laboratory Duplicate

One ILD sample was collected in total, as follows:

- GW-QT1 was collected from the primary sample BH1M during fieldwork on 24 August 2018.

The preparation of a groundwater ILD sample was identical to the BFD sample as described above and also analysed for TRHs, BTEX, and selected heavy metals. The RPD values calculated for the ILD samples were found to be within the Data Acceptance Criteria, with the exception of copper (66.67%) and zinc (66.67%). These exceedances are not considered to be significant due to the marginal RPD exceedances and the concentration for copper and zinc duplicates were less than ten times the laboratory detection limit.

I2.2.3 Trip Blanks

One trip blank sample (GWTB1), prepared by the primary laboratory, was analysed for BTEX by the primary laboratory during groundwater testing. TB results were reported below the laboratory LOR, indicating that ideal sample transport and handling conditions were achieved.

I2.2.4 Trip Spikes

One TS sample (GWTS1) was submitted to the primary laboratory for BTEX analysis, the results for which were all reported within the RPD acceptance levels for trip spike recovery. It was therefore concluded that satisfactory sample transport and handling conditions were achieved.

I2.2.5 Rinsate Blanks

One rinsate blank sample (BHR-1) were submitted to the primary laboratory for TRHs, BTEX and selected heavy metals analyses. Analytical results were reported below the laboratory LOR for all analytes. In view of this finding it was concluded that decontamination procedures performed during the field works had been effective.

I2.4 ASSESSMENT OF FIELD QA/QC DATA

All samples were classified in the field with respect to soil/fill characteristics and any observable signs of contamination based on visual and odour assessment, in regards to soil and groundwater.

All samples, including field QC samples, were transported to the primary and secondary laboratories under strict Chain-of-Custody conditions and appropriate copies of relevant documentation were included in the respective reports.

The overall completeness of documentation produced under the field program of the subject assessment was considered to be adequate for the purposes of drawing valid conclusions regarding the environmental condition of the site.

Based on the results of the field QA/QC data EI considered the field QA/QC programme carried out during the investigations to be appropriate and the results to be acceptable.

Table H-2 RPD QC for soil

Sample identification	Description	TRH				BTEX				Heavy Metals							
		F1*	F2**	F3 (>C ₁₆ - C ₃₄)	F4 (>C ₃₄ - C ₄₀)	Benzene	Toluene	Ethylbenzene	Xylene (total)	Arsenic	Cadmium	Chromium (Total)	Copper	Lead	Mercury	Nickel	Zinc
Intra-laboratory Duplicates - Soil Validation																	
BH1M_0.3-0.4	Fill	<25	180	1300	<120	<0.1	<0.1	<0.1	<0.3	15	0.5	34	50.0	76.0	0.42	59	140
OD1	BFD of BH1M_0.3-0.4	<25	42	210	<120	<0.1	<0.1	<0.1	<0.3	4	<0.3	8.5	11.0	210	0.11	3.4	54
RPD		0.00	124.32	144.37	0.00	0.00	0.00	0.00	0.00	115.79	50.00	120.00	127.87	93.71	116.98	178.21	88.66
Inter-laboratory Duplicate - Soil Validation																	
BH1M_0.3-0.4	Fill	<25	180	1300	<120	<0.1	<0.1	<0.1	<0.3	15	0.5	34	50	76	0.42	59	140
QT1	ILD of BH1M_0.3-0.4	<25	<50	<100	<100	<0.2	<0.5	<1	<3	6	<0.4	10	15	26	0.1	4	110
RPD		0.00	113.04	171.43	NA	NA	NA	NA	NA	85.71	22.22	109.09	107.69	98.04	123.08	174.60	24.00
Trip Blank/Trip Spike																	
TB1	Sand	-	-	-	-	<0.1	<0.1	<0.1	<0.3	-	-	-	-	-	-	-	-
TS1	Sand	-	-	-	-	[86%]	[88%]	[80%]	[80%]	-	-	-	-	-	-	-	-
Rinsate/Rinsate Blanks																	
QR1	De-ionised water	<50	<60	<500	<500	<0.5	<0.5	<0.5	<1.5	<1	<0.1	<1	<1	<1	<0.1	<1	<5

NOTE: All results are reported in mg/kg (soil) or µg/L (water)

0.00	RPD calculated by halving detection limit exceeds 30-50% range referenced from AS4482.1 (2005)
80.00	RPD exceeds 30-50% range referenced from AS4482.1 (2005)

Table H-3 RPD QC for groundwater

Sample identification	Description	TRH				BTEX				Heavy Metals							
		F1*	F2**	F3 (>C ₁₆ - C ₃₄)	F4 (>C ₃₄ - C ₄₀)	Benzene	Toluene	Ethylbenzene	Xylene (total)	Arsenic	Cadmium	Chromium (Total)	Copper	Lead	Mercury	Nickel	Zinc
Intra-laboratory Duplicate - Groundwater Investigation																	
GW-QD1		<50	<60	<500	<500	<0.5	<0.5	<0.5	<1.5	3	<0.1	<1	2	1	<1	<0.1	10
GW-QD1	BFD of BH9M-1	<50	<60	<500	<500	<0.5	<0.5	<0.5	<1.5	4	<0.1	<1	54	3	2	<0.1	66
	<i>RPD</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>28.57</i>	<i>0.00</i>	<i>0.00</i>	<i>185.71</i>	<i>100.00</i>	<i>66.67</i>	<i>0.00</i>	<i>147.37</i>
Inter-laboratory Duplicate - Groundwater Investigation																	
GW-QD1		<50	<60	<500	<500	<0.5	<0.5	<0.5	<1.5	3	<0.1	<1	2	1	<1	<0.1	10
GW-QD1	ILD of BH9M-1	<10	<50	<100	<100	<1	<1	<1	<3	3	<0.1	<1	4	<1	<0.05	<1	5
	<i>RPD</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>66.67</i>	<i>0.00</i>	<i>NA</i>	<i>NA</i>	<i>66.67</i>
Trip Blank/Trip Spike																	
GWTB1	De-ionised water	NS	NS	NS	NS	<0.5	<0.5	<0.5	<1.5	NS	NS	NS	NS	NS	NS	NS	NS
GWTS1	De-ionised water	NS	NS	NS	NS	[96%]	[96%]	[93%]	[88%]	NS	NS	NS	NS	NS	NS	NS	NS
Rinsate/Rinsate Blanks																	
BHR-1	De-ionised water	<50	<60	<500	<500	<0.5	<0.5	<0.5	<1.5	<1	<0.1	<1	<1	<1	<0.1	<1	<5

NOTE: All results are reported in mg/kg (soil) or µg/L (water)

66.67 RPD calculated by halving detection limit exceeds 30-50% range referenced from AS4482.1 (2005)
66.67 RPD exceeds 30-50% range referenced from AS4482.1 (2005)

I3 LABORATORY QA/QC

I3.1 LABORATORY ACCREDITATION

To undertake all analytical testing, EI commissioned SGS as the primary laboratory and Envirolab as the secondary laboratory. SGS and Envirolab, both established analytical laboratories which operate in accordance with the guidelines set out in ISO/IEC Guide 25 “General requirements for the competence of calibration and testing laboratories”, conducted all respective analyses using National Association Testing Authorities (NATA)-registered procedures.

In relation to contingencies, should the pre-determined DQOs not be achieved, in accordance with each laboratory’s QC policy (**Appendix J**), respective tests would be accordingly repeated. Should the results again fall outside the DQOs, then sample heterogeneity may be assumed and written comment will be provided to this effect on the final laboratory certificate. The laboratory QA/QC reports are included in **Appendix J**.

I3.2 SAMPLE HOLDING TIMES

Sample holding times were within the laboratory DQOs, which were consistent with standard environmental protocols as tabulated in **Appendix J, Tables QC1 and QC2**.

I3.3 TEST METHODS AND PRACTICAL QUANTITATION LIMITS (PQLs)

Practical Quantitation Limits for all tested parameters during the assessment of soils and groundwater are presented in **Appendix J, Tables QC3 and QC4, with the exception of samples with the following job;**

- SE183173 (Groundwater Samples) – 3 samples for pH in water.

I3.4 METHOD BLANKS

Concentrations of all parameters in method blanks during the assessment were below the laboratory PQLs and were therefore within the DAC.

I3.5 LABORATORY DUPLICATE SAMPLES

The Laboratory Duplicate Samples (LDS) for the analysis batches showed calculated RPDs that were within acceptable ranges and conformed to the DAC, with the exception of samples within the following job:

- SE182724 (Soil Samples) – three samples for total recoverable metals.

I3.6 LABORATORY CONTROL SAMPLES

The Laboratory Control Samples for the analysis batches were within acceptable ranges and conformed to the DAC.

I3.7 MATRIX SPIKES

All matrix spikes for the respective sample batches were within acceptable ranges and conformed to the DAC, with the exception of samples within the following job:

- SE182724 (Soil Samples) – one sample for mercury, three samples for total recoverable metals and 3 samples for TRH.

I3.8 SURROGATE

Recovery results for all surrogate samples conformed to the DAC.

I3.9 CONCLUDING REMARK

Based on the laboratory QA/QC results EI considers that although one discrepancy was identified, which was attributed to the non-homogenous nature of the submitted sample, the data generally confirms that the analytical results for the various phases of laboratory testing were valid and useable for interpretation purposes.

APPENDIX J

Laboratory QA/AC Policies and DQOs

SGS Environmental Services is accredited by NATA for Chemical Testing (Reg.No.2562) and Quality System compliance to ISO/IEC 17025. The QC parameters contained within are designed to meet NEPM 1999 requirements.

Quality Control samples included in any analytical run are listed below.

<p>Reagent/Analysis Blank (BLK) Method Blank (MB)</p>	<p>Sample free reagents carried through the preparation/extraction/digestion procedure and analysed at the beginning of every sample batch analysis. A reagent blank is prepared and analysed with every batch of samples plus with each new batch of solvent prior to use.</p>
<p>Sample Matrix Spike (MS) & Matrix Spike Duplicate (MSD)</p>	<p>Sample replicates spiked with identical concentrations of target analyte(s). The spiking occurs during the sample preparation and <u>prior to the extraction/digestion procedure</u>. They are used to document the precision and bias of a method in a given sample matrix. Where there is not enough sample available to prepare a spiked sample, another known soil/sand or water may be used. A duplicate spiked sample is analysed at least every 20 samples.</p>
<p>Surrogate Spike (SS)</p>	<p>At least one but up to three surrogate compounds are added to all samples requiring analysis for organics prior to extraction. Used to determine the extraction efficiency. They are organic compounds which are similar to the target analyte(s) in chemical composition and behaviour in the analytical process, but which are not normally found in environmental samples. Where possible they are surrogate compounds recommended by the USEPA.</p>
<p>Control Matrix Spike (CMS)</p>	<p>To ensure spike recoveries can be determined for every batch of samples a control matrix is spiked with identical concentrations of target analyte(s) and then analysed. These results allow recoveries to be determined in the event that the matrix spikes are unusable (eg. matrix spikes performed on heavily contaminated samples). These are analysed at least every 20 samples.</p>
<p>Internal Standard (IS)</p>	<p>Added to all samples requiring analysis for organics (where relevant) after the extraction process; the compounds serve to give a standard of retention time and response, which is invariant from run-to-run with the instruments. Where possible they are standard compounds recommended by the USEPA.</p>
<p>Lab Duplicates (D)</p>	<p>A separate portion of a sample being analysed that is treated the same as the other samples in the batch. One duplicate is processed at least every 10 samples.</p>
<p>Lab Control Standards/Samples (LCS)</p>	<p>Prepared from a source independent of the calibration standards. At least one control standard is included in each run to confirm calibration validity. Thereafter they are analysed at least every one in 20 samples plus at the end of each analytical run. This data is not reported.</p>
<p>Continuous Calibration Verification (CCV) or Calibration Check Standard & Blank</p>	<p>A calibration check standard or CCV and blank are run after every 20 samples of an instrumental analysis run to assess analytical drift. Calibration Standards are checked old versus new with a criteria of $\pm 10\%$</p>

Quality Assurance Programs are listed below:

<p>Statistical analysis of Quality Control data (SQC)</p>	<p>Quality control data is plotted on control charts using the APHA procedure with warning and control limits at 2 and 3 standard deviations respectively. See also QMS Procedure "Statistical Quality Control".</p>
<p>Certified Reference Materials (CRM/SRM)</p>	<p>Certified Reference Materials and Standards are regularly analysed. These materials/standards have certified reference values for various parameters.</p>
<p>Proficiency Testing</p>	<p>Regular proficiency test samples are analysed by our laboratories. SGS Environmental participates in a number of programs. Results and proficiency status are compiled and sent to participating laboratory post data interpretation. Failure to comply with acceptable values result in further investigations.</p>
<p>Inter-laboratory & Intra-laboratory Testing</p>	<p>SGS Environmental Services has schedules in the Quality Systems to participate in Inter/Intra laboratory testing conducted internally and by other parties.</p>
<p>Data Acceptance Criteria</p> <p>Unless otherwise specified in the method or method manual the following general criteria apply to all inorganic tests.</p> <p>All recoveries are to be reported to 3 significant figures.</p>	<p>Failure to meet the internal acceptance criteria will result in sample batch repeats dependent upon investigation outcomes. For data to be accepted:</p> <p><u>Inorganics (water samples)</u></p> <ul style="list-style-type: none"> • For all inorganic analytes the Reagent & Method Blanks must be less than the LOR. • The Calibration Check Standards or Continuous Calibration Verification (CCV) must be within $\pm 15\%$. • Control Standards must be 80-120% of the accepted value. • The Calibration Check Blanks must be less than the LOR. • Lab Duplicates RPD to be $<15\%$*. Note: If client <u>field</u> duplicates do not meet this criteria it may indicate heterogeneity and shall be noted on the data reports for QC samples. • Sample (and if applicable Control) Matrix Spike^d Duplicate recovery RPD to be $<30\%$. • Where CRMs are used, results to be within ± 2 standard deviations of the expected value. <p><u>Inorganics (soil samples)</u></p> <ul style="list-style-type: none"> • For all inorganic analytes the Reagent & Method Blanks must be less than the LOR. • The Calibration Check Standards or Continuous Calibration Verification (CCV) must be within $\pm 15\%$. • Control Standards must be 80-120% of the accepted value. • The Calibration Check Blanks must be less than the LOR. • Lab duplicate RPD to be $<30\%$* for sample results greater than 10 times LOR. • Sample Matrix Spike Duplicate (MS^d/MSD) recovery RPD to be $<30\%$. In the event that the matrix spike has been applied to samples whose matrix or contamination is problematic to the method then these acceptance criteria apply to the Control Matrix Spike (CMS/D). • Where CRMs are used, results to be within ± 2 standard deviations of the expected value.

<p>Data Acceptance Criteria</p> <p>Unless otherwise specified in the method or method manual the following general criteria apply to all organic tests.</p> <p>All recoveries are to be reported to 3 significant figures.</p>	<p><u>Organics</u></p> <ul style="list-style-type: none"> • Volatile & extractable Reagent & Method Blanks must contain levels less than or equal to LOR. • The Calibration Check Standards or Continuous Calibration Verification (CCV) must be within $\pm 25\%$. Some analytes may have specific criteria. • Control Standards (LCS/CMS) and Certified Reference Materials (CRM) recoveries are to be within established control limits or as a default 60-140% unless compound specific limits apply. • Retention times are to vary by no more than 0.2 min. • At least two of three routine level soil sample Surrogate Spike (SS) recoveries 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 acceptance criterion. Any recoveries outside these limits will have comment. • Water sample Surrogates Spike (SS) recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion. Any recoveries outside these limits will have comment. • Lab Duplicates (D) must have a RPD $<30\%^*$. • Sample Matrix Spike Duplicate (MS[♯]/MSD) recovery RPD to be $<30\%$. In the event that the matrix spike has been applied to samples whose matrix or contamination is problematic to the method then these acceptance criteria apply to the Control Matrix Spike (CMS/D).
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*Only if results are at least 10 times the LOR otherwise no acceptance criteria for RPD's apply. Application of more stringent criteria shall be applied for clean water sample from water boards and any other nominated client contracts. Nominal 10xLOR criteria are dropped to 5xLOR where specified.

♯Matrix do not readily equate to definitive recovery due to inherent matrix interferences and thus do not have recovery compliance values set. As a guide inorganic recoveries should be between 70-130% and for organics 60-130%

Batch Structure Summary

An analytical batch is nominally considered as 20 samples or smaller. As a standard template the following should be **used as a guide** according to the above Quality Control Types:

1	MB	16	UNK_DUP
2	STD1	17	MS
3	STD2	18	MS_DUP
4	STD3	19	UNK 11
5	LCS	20	UNK 12
6	BLK	21	UNK 13
7	UNK 1	22	UNK 14
8	UNK 2	23	UNK 15
9	UNK 3	24	UNK 16
10	UNK 4	25	UNK 17
11	UNK 5	26	UNK 18
12	UNK 6	27	UNK 19
13	UNK 7	28	UNK 20 (SS if applicable)
14	UNK 8	29	UNK_DUP
15	UNK 9	30	CCV
16	UNK 10 (SS if applicable)	31	CRM / SRM / CMS / LCS

Table QC1 - Containers, Preservation Requirements and Holding Times - Soil			
Parameter	Container	Preservation	Maximum Holding Time
Acid digestible metals and metalloids - Total and TCLP (As,Cd.,Cu,Cr,Ni,Pb,Zn)	Glass with Teflon Lid	Nil	6 months
Mercury	Glass with Teflon Lid	Nil	28 days
TPH / BTEX / VOC / SVOC / CHC	Glass with Teflon Lid	4°C, zero headspace	14 days
PAHs (total and TCLP)	Glass with Teflon Lid	4°C ¹	14 days
Phenols	Glass with Teflon Lid	4°C ¹	14 days
OCPs, OPPs and total PCBs	Glass with Teflon Lid	4°C ¹	14 days
Asbestos	Sealed Plastic Bag	Nil	N/A

Table QC2 - Containers, Preservation Requirements and Holding Times - Water			
Parameter	Container Volume (mL)	Preservation	Maximum Holding Time
Heavy Metals	125mL Plastic	Field filtration 0.45µm HNO ₃ / 4°C	6 months
Cyanide	125mL Amber Glass	pH > 12 NaOH / 4°C	6 months
TPH (C6-C9) / BTEX / VOCs SVOCs / CHCs	4 x 43mL Glass	HCl / 4°C ¹	14 days
TPH (C10-C36) / PAH / Phenolics OCP / OPP / TDS / pH	3 x 1L Amber Glass	None / 4°C ¹	28 days

Notes: ¹ = Extraction within 14 days, Analysis within 40 days.

Table QC3 - Analytical Parameters, PQLs and Methods - Soil			
Parameter	Unit	PQL	Method Reference
Metals in Soil			
Arsenic - As ¹	mg / kg	1	USEPA 200.7
Cadmium - Cd ¹	mg / kg	0.5	USEPA 200.7
Chromium - Cr ¹	mg / kg	1	USEPA 200.7
Copper - Cu ¹	mg / kg	1	USEPA 200.7
Lead - Pb ¹	mg / kg	1	USEPA 200.7
Mercury - Hg ²	mg / kg	0.1	USEPA 7471A
Nickel - Ni ¹	mg / kg	1	USEPA 200.7
Zinc - Zn ¹	mg / kg	1	USEPA 200.7
Total Petroleum Hydrocarbons (TPHs) in Soil			
C ₆ -C ₉ fraction	mg / kg	25	USEPA 8260
C ₁₀ -C ₁₄ fraction	mg / kg	50	USEPA 8000
C ₁₅ -C ₂₈ fraction	mg / kg	100	USEPA 8000
C ₂₉ -C ₃₆ fraction	mg / kg	100	USEPA 8000
BTEX in Soil			
Benzene	mg / kg	1	USEPA 8260
Toluene	mg / kg	1	USEPA 8260
Ethylbenzene	mg / kg	1	USEPA 8260
m & p Xylene	mg / kg	2	USEPA 8260
o- Xylene	mg / kg	1	USEPA 8260
Other Organic Contaminants in Soil			
PAHs	mg / kg	0.05-0.2	USEPA 8270
CHCs	mg / kg	1	USEPA 8260
VOCs	mg / kg	1	USEPA 8260
SVOCs	mg / kg	1	USEPA 8260
OCPs	mg / kg	0.1	USEPA 8140, 8080
OPPs	mg / kg	0.1	USEPA 8140, 8080
PCBs	mg / kg	0.1	USEPA 8080
Phenolics	mg / kg	5	APHA 5530
Asbestos			
Asbestos	mg / kg	Presence / Absence	AS4964-2004

Notes:

1. Acid Soluble Metals by ICP-AES
2. Total Recoverable Mercury

Table QC4 - Analytical Parameters, PQLs and Methods - Groundwater

Parameter	Unit	PQL	Method	Parameter	Unit	PQL	Method
Heavy Metals				Chlorinated Hydrocarbons (CHCs)			
Antimony - Sb	µg/L	1	USEPA 200.8	1,2-dichlorobenzene	µg/L	1	USEPA 8260B
Arsenic - As	µg/L	1	USEPA 200.8	1,3-dichlorobenzene	µg/L	1	USEPA 8260B
Beryllium - Be	µg/L	0.5	USEPA 200.8	1,4-dichlorobenzene	µg/L	1	USEPA 8260B
Cadmium - Cd	µg/L	0.1	USEPA 200.8	1,2,3-trichlorobenzene	µg/L	1	USEPA 8260B
Chromium - Cr	µg/L	1	USEPA 200.8	1,2,4-trichlorobenzene	µg/L	1	USEPA 8260B
Cobalt - Co	µg/L	1	USEPA 200.8	Hexachlorobutadiene	µg/L	1	USEPA 8260B
Copper - Cu	µg/L	1	USEPA 200.8	1,1,2-trichloroethane	µg/L	1	USEPA 8260B
Lead - Pb	µg/L	1	USEPA 200.8	Hexachloroethane	µg/L	10	USEPA 8270D
Mercury - Hg	µg/L	0.5	USEPA 7471A	Other CHCs	µg/L	1	USEPA 8260B
Molybdenum - Mo	µg/L	1	USEPA 200.8	Volatile Organic Compounds (VOCs)			
Nickel - Ni	µg/L	1	USEPA 200.8	Aniline	µg/L	10	USEPA 8260B
Selenium - Se	µg/L	1	USEPA 200.8	2,4-dichloroaniline	µg/L	10	USEPA 8260B
Silver - Ag	µg/L	1	USEPA 200.8	3,4-dichloroaniline	µg/L	10	USEPA 8260B
Tin (inorg.) - Sn	µg/L	1	USEPA 200.8	Nitrobenzene	µg/L	50	USEPA 8260B
Nickel - Ni	µg/L	1	USEPA 200.8	2,4-dinitrotoluene	µg/L	50	USEPA 8260B
Zinc - Zn	µg/L	1	USEPA 200.8	2,4,6-trinitrotoluene	µg/L	50	USEPA 8260B
Total Petroleum Hydrocarbons (TPHs)				Phenolic Compounds			
C ₆ -C ₉ fraction	µg/L	10	USEPA 8220A / 8000	Phenol	µg/L	10	USEPA 8041
C ₁₀ -C ₁₄ fraction	µg/L	50	USEPA 8000	2-chlorophenol	µg/L	10	USEPA 8041
C ₁₅ -C ₂₈ fraction	µg/L	100	USEPA 8000	4-chlorophenol	µg/L	10	USEPA 8041
C ₂₉ -C ₃₆ fraction	µg/L	100	USEPA 8000	2, 4-dichlorophenol	µg/L	10	USEPA 8041
BTEX				2,4,6-trichlorophenol	µg/L	10	USEPA 8041
Benzene	µg/L	1	USEPA 8220A	2,3,4,6-tetrachlorophenol	µg/L	10	USEPA 8041
Toluene	µg/L	1	USEPA 8220A	Pentachlorophenol	µg/L	10	USEPA 8041
Ethylbenzene	µg/L	1	USEPA 8220A	2,4-dinitrophenol	µg/L	10	USEPA 8041
m- & p-Xylene	µg/L	2	USEPA 8220A	Miscellaneous Parameters			
o-Xylene	µg/L	1	USEPA 8220A	Total Cyanide	µg/L	5	APHA 4500C&E-CN
Polycyclic Aromatic Hydrocarbons (PAHs)				Fluoride	µg/L	10	APHA 4500 F-C
PAHs	µg/L	0.1	USEPA 8270	Salinity (TDS)	mg/L	1	APHA 2510
Benzo(a)pyrene	µg/L	0.01	USEPA 8270	pH	units	0.1	APHA 4500H+
OrganoChlorine Pesticides (OCPs)				OrganoPhosphate Pesticides (OPPs)			
Aldrin	µg/L	0.001	USEPA 8081	Azinphos Methyl	µg/L	0.01	USEPA 8141
Chlordane	µg/L	0.001	USEPA 8081	Chloropyrifos	µg/L	0.01	USEPA 8141
DDT	µg/L	0.001	USEPA 8081	Diazinon	µg/L	0.01	USEPA 8141
Dieldrin	µg/L	0.001	USEPA 8081	Dimethoate	µg/L	0.01	USEPA 8141
Endosulfan	µg/L	0.001	USEPA 8081	Fenitrothion	µg/L	0.01	USEPA 8141
Endrin	µg/L	0.001	USEPA 8081	Malathion	µg/L	0.01	USEPA 8141
Heptachlor	µg/L	0.001	USEPA 8081	Parathion	µg/L	0.01	USEPA 8141
Lindane	µg/L	0.001	USEPA 8081	Temephos	µg/L	0.01	USEPA 8141
Toxaphene	µg/L	0.001	USEPA 8081	Polychlorinated Biphenyls (PCBs)			
				Individual PCBs	µg/L	0.01	USEPA 8081

Table QC5 - QC Sample Data Acceptance Criteria

QC Sample Type	Method of Assessment	Acceptable Range
Field QC		
Blind Duplicates and Split Samples	<p>The assessment of split duplicate is undertaken by calculating the Relative Percent Difference (RPD) of the duplicate concentration compared with the primary sample concentration. The RPD is defined as:</p> $RPD = 100 \times \frac{ X_1 - X_2 }{\text{mean}(X_1, X_2)}$ <p>Where: X₁ and X₂ are the concentrations of the primary and duplicate samples.</p>	<p>The acceptable range depends upon the levels detected:</p> <ul style="list-style-type: none"> - 0-150% RPD (when the average concentration is <5 times the LOR/PQL) - 0-75% RPD (when the average concentration is 5 to 10 times the LOR/PQL) - 0-50% RPD (when the average concentration is >10 times the LOR/PQL)
Rinsate & Trip Blanks	Each blank is analysed as per the original samples.	Analytical Result <LOR/PQL
Laboratory prepared Trip Spike	The Trip Spike is analysed after returning from the field and the % recovery of the known spike is calculated.	70 - 130%
Laboratory QC		
Laboratory Duplicates	Assessment of Lab Duplicate RPD as per Blind Duplicates and Split Samples.	Lab Duplicate RPD < 15% (Inorganics) Lab Duplicate RPD < 30% (Organics) for sample results > 10 LOR
Surrogates	Assessment is undertaken by determining the percent recovery of the known surrogate spike (SS) or addition to the sample.	at least 2 SS recoveries to be within 70-130% subject to matrix effects (Organics)
Matrix Spikes Laboratory Control Samples	$\% \text{ Recovery} = 100 \times \frac{C - A}{B}$ <p>Where: A = Concentration of analyte determined in the original sample; B = Added Concentration; and C = Calculated Concentration.</p>	<p>80-120% (Inorganics / Metals) 60-140% (Organics) 10-140% (SVOC and Speciated Phenols)</p> <p>If the result is outside the above ranges, the result must be <3x Standard Deviation of the Historical Mean (calculated over the past 12 months).</p>
Sample Matrix Spike Duplicates	Recovery RPD	<30% (Inorganics & Organics)
Calibration Check Standards	Continuous Calibration Verification (CCV)	CCV must be within ±15% (inorganics) CCV must be within ±25% (inorganics)
Reagent, Method & Calibration Check Blanks	Each blank is analysed as per the original samples.	Analytical Result <LOR/PQL
<p>Note: PQL - Laboratory Practical Quantitation Limit (PQL) or the minimum detection limit for a particular analyte. LOR = Limit of Reporting</p>		



STATEMENT OF QA/QC PERFORMANCE

SE182724 R0

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Order Number **E23915**
Samples 22

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SGS Reference **SE182724 R0**
Date Received 16 Aug 2018
Date Reported 23 Aug 2018

COMMENTS

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

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

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

Duplicate	Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES	3 items
Matrix Spike	Mercury in Soil	1 item
	Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES	3 items
	TRH (Total Recoverable Hydrocarbons) in Soil	3 items

SAMPLE SUMMARY

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

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

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

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

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M_1.2-1.3	SE182724.003	LB154426	15 Aug 2018	16 Aug 2018	12 Sep 2018	17 Aug 2018	12 Sep 2018	23 Aug 2018
BH2_0.3-0.4	SE182724.006	LB154426	15 Aug 2018	16 Aug 2018	12 Sep 2018	17 Aug 2018	12 Sep 2018	23 Aug 2018
BH8_1.7-1.8	SE182724.013	LB154426	15 Aug 2018	16 Aug 2018	12 Sep 2018	17 Aug 2018	12 Sep 2018	23 Aug 2018
BH9M_1.8-1.9	SE182724.015	LB154426	15 Aug 2018	16 Aug 2018	12 Sep 2018	17 Aug 2018	12 Sep 2018	23 Aug 2018
BH10M_1.7-1.8	SE182724.017	LB154426	15 Aug 2018	16 Aug 2018	12 Sep 2018	17 Aug 2018	12 Sep 2018	23 Aug 2018

Fibre Identification in soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M_0.3-0.4	SE182724.001	LB154622	15 Aug 2018	16 Aug 2018	15 Aug 2019	21 Aug 2018	15 Aug 2019	23 Aug 2018
BH1M_0.5-0.6	SE182724.002	LB154622	15 Aug 2018	16 Aug 2018	15 Aug 2019	21 Aug 2018	15 Aug 2019	23 Aug 2018
BH2_0.1-0.2	SE182724.005	LB154622	15 Aug 2018	16 Aug 2018	15 Aug 2019	21 Aug 2018	15 Aug 2019	23 Aug 2018
BH3_0.2-0.3	SE182724.007	LB154622	15 Aug 2018	16 Aug 2018	15 Aug 2019	21 Aug 2018	15 Aug 2019	23 Aug 2018
BH4_0.2-0.3	SE182724.008	LB154622	15 Aug 2018	16 Aug 2018	15 Aug 2019	21 Aug 2018	15 Aug 2019	23 Aug 2018
BH5_0.1-0.2	SE182724.009	LB154622	15 Aug 2018	16 Aug 2018	15 Aug 2019	21 Aug 2018	15 Aug 2019	23 Aug 2018
BH6_0.2-0.3	SE182724.010	LB154622	15 Aug 2018	16 Aug 2018	15 Aug 2019	21 Aug 2018	15 Aug 2019	23 Aug 2018
BH7_0.3-0.4	SE182724.011	LB154622	15 Aug 2018	16 Aug 2018	15 Aug 2019	21 Aug 2018	15 Aug 2019	23 Aug 2018
BH8_0.3-0.4	SE182724.012	LB154622	15 Aug 2018	16 Aug 2018	15 Aug 2019	21 Aug 2018	15 Aug 2019	23 Aug 2018
BH9M_0.3-0.4	SE182724.014	LB154622	15 Aug 2018	16 Aug 2018	15 Aug 2019	21 Aug 2018	15 Aug 2019	23 Aug 2018
BH10M_0.4-0.5	SE182724.016	LB154622	15 Aug 2018	16 Aug 2018	15 Aug 2019	21 Aug 2018	15 Aug 2019	23 Aug 2018

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
QR1	SE182724.022	LB154385	15 Aug 2018	16 Aug 2018	12 Sep 2018	17 Aug 2018	12 Sep 2018	20 Aug 2018

Mercury in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M_0.3-0.4	SE182724.001	LB154680	15 Aug 2018	16 Aug 2018	12 Sep 2018	22 Aug 2018	12 Sep 2018	23 Aug 2018
BH1M_0.5-0.6	SE182724.002	LB154680	15 Aug 2018	16 Aug 2018	12 Sep 2018	22 Aug 2018	12 Sep 2018	23 Aug 2018
BH1M_1.2-1.3	SE182724.003	LB154680	15 Aug 2018	16 Aug 2018	12 Sep 2018	22 Aug 2018	12 Sep 2018	23 Aug 2018
BH1M_3.4-3.5	SE182724.004	LB154680	15 Aug 2018	16 Aug 2018	12 Sep 2018	22 Aug 2018	12 Sep 2018	23 Aug 2018
BH2_0.1-0.2	SE182724.005	LB154680	15 Aug 2018	16 Aug 2018	12 Sep 2018	22 Aug 2018	12 Sep 2018	23 Aug 2018
BH2_0.3-0.4	SE182724.006	LB154680	15 Aug 2018	16 Aug 2018	12 Sep 2018	22 Aug 2018	12 Sep 2018	23 Aug 2018
BH3_0.2-0.3	SE182724.007	LB154680	15 Aug 2018	16 Aug 2018	12 Sep 2018	22 Aug 2018	12 Sep 2018	23 Aug 2018
BH4_0.2-0.3	SE182724.008	LB154680	15 Aug 2018	16 Aug 2018	12 Sep 2018	22 Aug 2018	12 Sep 2018	23 Aug 2018
BH5_0.1-0.2	SE182724.009	LB154680	15 Aug 2018	16 Aug 2018	12 Sep 2018	22 Aug 2018	12 Sep 2018	23 Aug 2018
BH6_0.2-0.3	SE182724.010	LB154680	15 Aug 2018	16 Aug 2018	12 Sep 2018	22 Aug 2018	12 Sep 2018	23 Aug 2018
BH7_0.3-0.4	SE182724.011	LB154680	15 Aug 2018	16 Aug 2018	12 Sep 2018	22 Aug 2018	12 Sep 2018	23 Aug 2018
BH8_0.3-0.4	SE182724.012	LB154680	15 Aug 2018	16 Aug 2018	12 Sep 2018	22 Aug 2018	12 Sep 2018	23 Aug 2018
BH8_1.7-1.8	SE182724.013	LB154680	15 Aug 2018	16 Aug 2018	12 Sep 2018	22 Aug 2018	12 Sep 2018	23 Aug 2018
BH9M_0.3-0.4	SE182724.014	LB154680	15 Aug 2018	16 Aug 2018	12 Sep 2018	22 Aug 2018	12 Sep 2018	23 Aug 2018
BH9M_1.8-1.9	SE182724.015	LB154680	15 Aug 2018	16 Aug 2018	12 Sep 2018	22 Aug 2018	12 Sep 2018	23 Aug 2018
BH10M_0.4-0.5	SE182724.016	LB154680	15 Aug 2018	16 Aug 2018	12 Sep 2018	22 Aug 2018	12 Sep 2018	23 Aug 2018
BH10M_1.7-1.8	SE182724.017	LB154680	15 Aug 2018	16 Aug 2018	12 Sep 2018	22 Aug 2018	12 Sep 2018	23 Aug 2018
BH10M_2.4-2.5	SE182724.018	LB154680	15 Aug 2018	16 Aug 2018	12 Sep 2018	22 Aug 2018	12 Sep 2018	23 Aug 2018
QD1	SE182724.019	LB154680	15 Aug 2018	16 Aug 2018	12 Sep 2018	22 Aug 2018	12 Sep 2018	23 Aug 2018

Moisture Content

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M_0.3-0.4	SE182724.001	LB154681	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	27 Aug 2018	22 Aug 2018
BH1M_0.5-0.6	SE182724.002	LB154681	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	27 Aug 2018	22 Aug 2018
BH1M_1.2-1.3	SE182724.003	LB154681	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	27 Aug 2018	22 Aug 2018
BH1M_3.4-3.5	SE182724.004	LB154681	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	27 Aug 2018	22 Aug 2018
BH2_0.1-0.2	SE182724.005	LB154681	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	27 Aug 2018	22 Aug 2018
BH2_0.3-0.4	SE182724.006	LB154681	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	27 Aug 2018	22 Aug 2018
BH3_0.2-0.3	SE182724.007	LB154681	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	27 Aug 2018	22 Aug 2018
BH4_0.2-0.3	SE182724.008	LB154681	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	27 Aug 2018	22 Aug 2018
BH5_0.1-0.2	SE182724.009	LB154681	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	27 Aug 2018	22 Aug 2018
BH6_0.2-0.3	SE182724.010	LB154681	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	27 Aug 2018	22 Aug 2018
BH7_0.3-0.4	SE182724.011	LB154681	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	27 Aug 2018	22 Aug 2018
BH8_0.3-0.4	SE182724.012	LB154681	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	27 Aug 2018	22 Aug 2018
BH8_1.7-1.8	SE182724.013	LB154681	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	27 Aug 2018	22 Aug 2018

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

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

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

Moisture Content (continued)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH9M_0.3-0.4	SE182724.014	LB154681	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	27 Aug 2018	22 Aug 2018
BH9M_1.8-1.9	SE182724.015	LB154681	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	27 Aug 2018	22 Aug 2018
BH10M_0.4-0.5	SE182724.016	LB154681	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	27 Aug 2018	22 Aug 2018
BH10M_1.7-1.8	SE182724.017	LB154681	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	27 Aug 2018	22 Aug 2018
BH10M_2.4-2.5	SE182724.018	LB154681	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	27 Aug 2018	22 Aug 2018
QD1	SE182724.019	LB154681	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	27 Aug 2018	22 Aug 2018
TS	SE182724.020	LB154681	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	27 Aug 2018	22 Aug 2018

OC Pesticides in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M_0.3-0.4	SE182724.001	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH1M_0.5-0.6	SE182724.002	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH1M_1.2-1.3	SE182724.003	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH1M_3.4-3.5	SE182724.004	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH2_0.1-0.2	SE182724.005	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH2_0.3-0.4	SE182724.006	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH3_0.2-0.3	SE182724.007	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH4_0.2-0.3	SE182724.008	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH5_0.1-0.2	SE182724.009	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH6_0.2-0.3	SE182724.010	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH7_0.3-0.4	SE182724.011	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH8_0.3-0.4	SE182724.012	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH8_1.7-1.8	SE182724.013	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH9M_0.3-0.4	SE182724.014	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH9M_1.8-1.9	SE182724.015	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH10M_0.4-0.5	SE182724.016	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH10M_1.7-1.8	SE182724.017	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH10M_2.4-2.5	SE182724.018	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
QD1	SE182724.019	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018

OP Pesticides in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M_0.3-0.4	SE182724.001	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH1M_0.5-0.6	SE182724.002	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH1M_1.2-1.3	SE182724.003	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH1M_3.4-3.5	SE182724.004	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH2_0.1-0.2	SE182724.005	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH2_0.3-0.4	SE182724.006	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH3_0.2-0.3	SE182724.007	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH4_0.2-0.3	SE182724.008	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH5_0.1-0.2	SE182724.009	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH6_0.2-0.3	SE182724.010	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH7_0.3-0.4	SE182724.011	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH8_0.3-0.4	SE182724.012	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH8_1.7-1.8	SE182724.013	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH9M_0.3-0.4	SE182724.014	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH9M_1.8-1.9	SE182724.015	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH10M_0.4-0.5	SE182724.016	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH10M_1.7-1.8	SE182724.017	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH10M_2.4-2.5	SE182724.018	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
QD1	SE182724.019	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018

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
BH1M_0.3-0.4	SE182724.001	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH1M_0.5-0.6	SE182724.002	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH1M_1.2-1.3	SE182724.003	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH1M_3.4-3.5	SE182724.004	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH2_0.1-0.2	SE182724.005	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH2_0.3-0.4	SE182724.006	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH3_0.2-0.3	SE182724.007	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018

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

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH4_0.2-0.3	SE182724.008	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH5_0.1-0.2	SE182724.009	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH6_0.2-0.3	SE182724.010	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH7_0.3-0.4	SE182724.011	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH8_0.3-0.4	SE182724.012	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH8_1.7-1.8	SE182724.013	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH9M_0.3-0.4	SE182724.014	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH9M_1.8-1.9	SE182724.015	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH10M_0.4-0.5	SE182724.016	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH10M_1.7-1.8	SE182724.017	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH10M_2.4-2.5	SE182724.018	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
QD1	SE182724.019	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018

PCBs in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M_0.3-0.4	SE182724.001	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH1M_0.5-0.6	SE182724.002	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH1M_1.2-1.3	SE182724.003	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH1M_3.4-3.5	SE182724.004	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH2_0.1-0.2	SE182724.005	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH2_0.3-0.4	SE182724.006	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH3_0.2-0.3	SE182724.007	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH4_0.2-0.3	SE182724.008	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH5_0.1-0.2	SE182724.009	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH6_0.2-0.3	SE182724.010	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH7_0.3-0.4	SE182724.011	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH8_0.3-0.4	SE182724.012	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH8_1.7-1.8	SE182724.013	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH9M_0.3-0.4	SE182724.014	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH9M_1.8-1.9	SE182724.015	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH10M_0.4-0.5	SE182724.016	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH10M_1.7-1.8	SE182724.017	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH10M_2.4-2.5	SE182724.018	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
QD1	SE182724.019	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018

pH in soil (1:5)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M_1.2-1.3	SE182724.003	LB154726	15 Aug 2018	16 Aug 2018	22 Aug 2018	22 Aug 2018	23 Aug 2018	22 Aug 2018
BH2_0.3-0.4	SE182724.006	LB154726	15 Aug 2018	16 Aug 2018	22 Aug 2018	22 Aug 2018	23 Aug 2018	22 Aug 2018
BH8_1.7-1.8	SE182724.013	LB154726	15 Aug 2018	16 Aug 2018	22 Aug 2018	22 Aug 2018	23 Aug 2018	22 Aug 2018
BH9M_1.8-1.9	SE182724.015	LB154726	15 Aug 2018	16 Aug 2018	22 Aug 2018	22 Aug 2018	23 Aug 2018	22 Aug 2018
BH10M_1.7-1.8	SE182724.017	LB154726	15 Aug 2018	16 Aug 2018	22 Aug 2018	22 Aug 2018	23 Aug 2018	22 Aug 2018

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
BH1M_0.3-0.4	SE182724.001	LB154675	15 Aug 2018	16 Aug 2018	11 Feb 2019	22 Aug 2018	11 Feb 2019	23 Aug 2018
BH1M_0.5-0.6	SE182724.002	LB154675	15 Aug 2018	16 Aug 2018	11 Feb 2019	22 Aug 2018	11 Feb 2019	23 Aug 2018
BH1M_1.2-1.3	SE182724.003	LB154675	15 Aug 2018	16 Aug 2018	11 Feb 2019	22 Aug 2018	11 Feb 2019	23 Aug 2018
BH1M_3.4-3.5	SE182724.004	LB154675	15 Aug 2018	16 Aug 2018	11 Feb 2019	22 Aug 2018	11 Feb 2019	23 Aug 2018
BH2_0.1-0.2	SE182724.005	LB154675	15 Aug 2018	16 Aug 2018	11 Feb 2019	22 Aug 2018	11 Feb 2019	23 Aug 2018
BH2_0.3-0.4	SE182724.006	LB154675	15 Aug 2018	16 Aug 2018	11 Feb 2019	22 Aug 2018	11 Feb 2019	23 Aug 2018
BH3_0.2-0.3	SE182724.007	LB154675	15 Aug 2018	16 Aug 2018	11 Feb 2019	22 Aug 2018	11 Feb 2019	23 Aug 2018
BH4_0.2-0.3	SE182724.008	LB154675	15 Aug 2018	16 Aug 2018	11 Feb 2019	22 Aug 2018	11 Feb 2019	23 Aug 2018
BH5_0.1-0.2	SE182724.009	LB154675	15 Aug 2018	16 Aug 2018	11 Feb 2019	22 Aug 2018	11 Feb 2019	23 Aug 2018
BH6_0.2-0.3	SE182724.010	LB154675	15 Aug 2018	16 Aug 2018	11 Feb 2019	22 Aug 2018	11 Feb 2019	23 Aug 2018
BH7_0.3-0.4	SE182724.011	LB154675	15 Aug 2018	16 Aug 2018	11 Feb 2019	22 Aug 2018	11 Feb 2019	23 Aug 2018
BH8_0.3-0.4	SE182724.012	LB154675	15 Aug 2018	16 Aug 2018	11 Feb 2019	22 Aug 2018	11 Feb 2019	23 Aug 2018
BH8_1.7-1.8	SE182724.013	LB154675	15 Aug 2018	16 Aug 2018	11 Feb 2019	22 Aug 2018	11 Feb 2019	23 Aug 2018
BH9M_0.3-0.4	SE182724.014	LB154675	15 Aug 2018	16 Aug 2018	11 Feb 2019	22 Aug 2018	11 Feb 2019	23 Aug 2018
BH9M_1.8-1.9	SE182724.015	LB154675	15 Aug 2018	16 Aug 2018	11 Feb 2019	22 Aug 2018	11 Feb 2019	23 Aug 2018
BH10M_0.4-0.5	SE182724.016	LB154675	15 Aug 2018	16 Aug 2018	11 Feb 2019	22 Aug 2018	11 Feb 2019	23 Aug 2018

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

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

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

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES (continued)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH10M_1.7-1.8	SE182724.017	LB154675	15 Aug 2018	16 Aug 2018	11 Feb 2019	22 Aug 2018	11 Feb 2019	23 Aug 2018
BH10M_2.4-2.5	SE182724.018	LB154675	15 Aug 2018	16 Aug 2018	11 Feb 2019	22 Aug 2018	11 Feb 2019	23 Aug 2018
QD1	SE182724.019	LB154675	15 Aug 2018	16 Aug 2018	11 Feb 2019	22 Aug 2018	11 Feb 2019	23 Aug 2018

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
QR1	SE182724.022	LB154475	15 Aug 2018	16 Aug 2018	11 Feb 2019	20 Aug 2018	11 Feb 2019	21 Aug 2018

TRH (Total Recoverable Hydrocarbons) in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M_0.3-0.4	SE182724.001	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH1M_0.5-0.6	SE182724.002	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH1M_1.2-1.3	SE182724.003	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH1M_3.4-3.5	SE182724.004	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH2_0.1-0.2	SE182724.005	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH2_0.3-0.4	SE182724.006	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH3_0.2-0.3	SE182724.007	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH4_0.2-0.3	SE182724.008	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH5_0.1-0.2	SE182724.009	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH6_0.2-0.3	SE182724.010	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH7_0.3-0.4	SE182724.011	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH8_0.3-0.4	SE182724.012	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH8_1.7-1.8	SE182724.013	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH9M_0.3-0.4	SE182724.014	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH9M_1.8-1.9	SE182724.015	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH10M_0.4-0.5	SE182724.016	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH10M_1.7-1.8	SE182724.017	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH10M_2.4-2.5	SE182724.018	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
QD1	SE182724.019	LB154679	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018

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
QR1	SE182724.022	LB154392	15 Aug 2018	16 Aug 2018	22 Aug 2018	17 Aug 2018	26 Sep 2018	22 Aug 2018

VOC's in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M_0.3-0.4	SE182724.001	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	22 Aug 2018
BH1M_0.5-0.6	SE182724.002	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	22 Aug 2018
BH1M_1.2-1.3	SE182724.003	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH1M_3.4-3.5	SE182724.004	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH2_0.1-0.2	SE182724.005	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH2_0.3-0.4	SE182724.006	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH3_0.2-0.3	SE182724.007	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH4_0.2-0.3	SE182724.008	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH5_0.1-0.2	SE182724.009	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH6_0.2-0.3	SE182724.010	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH7_0.3-0.4	SE182724.011	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH8_0.3-0.4	SE182724.012	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH8_1.7-1.8	SE182724.013	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH9M_0.3-0.4	SE182724.014	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH9M_1.8-1.9	SE182724.015	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH10M_0.4-0.5	SE182724.016	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH10M_1.7-1.8	SE182724.017	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH10M_2.4-2.5	SE182724.018	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
QD1	SE182724.019	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
TS	SE182724.020	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
TB	SE182724.021	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018

VOCs in Water

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

Sample Name	Sample No.	QC Ref
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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.

VOCs in Water (continued)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QR1	SE182724.022	LB154459	15 Aug 2018	16 Aug 2018	22 Aug 2018	17 Aug 2018	26 Sep 2018	21 Aug 2018

Volatile Petroleum Hydrocarbons in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M_0.3-0.4	SE182724.001	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	22 Aug 2018
BH1M_0.5-0.6	SE182724.002	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	22 Aug 2018
BH1M_1.2-1.3	SE182724.003	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH1M_3.4-3.5	SE182724.004	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH2_0.1-0.2	SE182724.005	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH2_0.3-0.4	SE182724.006	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH3_0.2-0.3	SE182724.007	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH4_0.2-0.3	SE182724.008	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH5_0.1-0.2	SE182724.009	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH6_0.2-0.3	SE182724.010	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH7_0.3-0.4	SE182724.011	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH8_0.3-0.4	SE182724.012	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH8_1.7-1.8	SE182724.013	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH9M_0.3-0.4	SE182724.014	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH9M_1.8-1.9	SE182724.015	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH10M_0.4-0.5	SE182724.016	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH10M_1.7-1.8	SE182724.017	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
BH10M_2.4-2.5	SE182724.018	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
QD1	SE182724.019	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
TS	SE182724.020	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018
TB	SE182724.021	LB154678	15 Aug 2018	16 Aug 2018	29 Aug 2018	22 Aug 2018	01 Oct 2018	23 Aug 2018

Volatile Petroleum Hydrocarbons in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QR1	SE182724.022	LB154459	15 Aug 2018	16 Aug 2018	22 Aug 2018	17 Aug 2018	26 Sep 2018	21 Aug 2018

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 identifier 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)	BH1M_0.3-0.4	SE182724.001	%	60 - 130%	110
	BH1M_0.5-0.6	SE182724.002	%	60 - 130%	114
	BH2_0.1-0.2	SE182724.005	%	60 - 130%	125
	BH3_0.2-0.3	SE182724.007	%	60 - 130%	126
	BH4_0.2-0.3	SE182724.008	%	60 - 130%	119
	BH5_0.1-0.2	SE182724.009	%	60 - 130%	119
	BH6_0.2-0.3	SE182724.010	%	60 - 130%	121
	BH7_0.3-0.4	SE182724.011	%	60 - 130%	120
	BH8_0.3-0.4	SE182724.012	%	60 - 130%	117
	BH9M_0.3-0.4	SE182724.014	%	60 - 130%	114
BH10M_0.4-0.5	SE182724.016	%	60 - 130%	107	

OP Pesticides in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH1M_0.3-0.4	SE182724.001	%	60 - 130%	82
	BH1M_0.5-0.6	SE182724.002	%	60 - 130%	82
	BH2_0.1-0.2	SE182724.005	%	60 - 130%	80
	BH3_0.2-0.3	SE182724.007	%	60 - 130%	82
	BH4_0.2-0.3	SE182724.008	%	60 - 130%	78
	BH5_0.1-0.2	SE182724.009	%	60 - 130%	80
	BH6_0.2-0.3	SE182724.010	%	60 - 130%	78
	BH7_0.3-0.4	SE182724.011	%	60 - 130%	82
	BH8_0.3-0.4	SE182724.012	%	60 - 130%	78
	BH9M_0.3-0.4	SE182724.014	%	60 - 130%	76
d14-p-terphenyl (Surrogate)	BH1M_0.3-0.4	SE182724.001	%	60 - 130%	84
	BH1M_0.5-0.6	SE182724.002	%	60 - 130%	88
	BH2_0.1-0.2	SE182724.005	%	60 - 130%	84
	BH3_0.2-0.3	SE182724.007	%	60 - 130%	82
	BH4_0.2-0.3	SE182724.008	%	60 - 130%	78
	BH5_0.1-0.2	SE182724.009	%	60 - 130%	78
	BH6_0.2-0.3	SE182724.010	%	60 - 130%	80
	BH7_0.3-0.4	SE182724.011	%	60 - 130%	94
	BH8_0.3-0.4	SE182724.012	%	60 - 130%	80
	BH9M_0.3-0.4	SE182724.014	%	60 - 130%	80
BH10M_0.4-0.5	SE182724.016	%	60 - 130%	86	

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH1M_0.3-0.4	SE182724.001	%	70 - 130%	82
	BH1M_0.5-0.6	SE182724.002	%	70 - 130%	82
	BH1M_1.2-1.3	SE182724.003	%	70 - 130%	82
	BH1M_3.4-3.5	SE182724.004	%	70 - 130%	80
	BH2_0.1-0.2	SE182724.005	%	70 - 130%	80
	BH2_0.3-0.4	SE182724.006	%	70 - 130%	80
	BH3_0.2-0.3	SE182724.007	%	70 - 130%	82
	BH4_0.2-0.3	SE182724.008	%	70 - 130%	78
	BH5_0.1-0.2	SE182724.009	%	70 - 130%	80
	BH6_0.2-0.3	SE182724.010	%	70 - 130%	78
	BH7_0.3-0.4	SE182724.011	%	70 - 130%	82
	BH8_0.3-0.4	SE182724.012	%	70 - 130%	78
	BH8_1.7-1.8	SE182724.013	%	70 - 130%	76
	BH9M_0.3-0.4	SE182724.014	%	70 - 130%	76
	BH9M_1.8-1.9	SE182724.015	%	70 - 130%	84
	BH10M_0.4-0.5	SE182724.016	%	70 - 130%	88
	BH10M_1.7-1.8	SE182724.017	%	70 - 130%	86
	BH10M_2.4-2.5	SE182724.018	%	70 - 130%	82
d14-p-terphenyl (Surrogate)	BH1M_0.3-0.4	SE182724.001	%	70 - 130%	84
	BH1M_0.5-0.6	SE182724.002	%	70 - 130%	88
	BH1M_1.2-1.3	SE182724.003	%	70 - 130%	84
	BH1M_3.4-3.5	SE182724.004	%	70 - 130%	82
	BH2_0.1-0.2	SE182724.005	%	70 - 130%	84

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 identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d14-p-terphenyl (Surrogate)	BH2_0.3-0.4	SE182724.006	%	70 - 130%	82
	BH3_0.2-0.3	SE182724.007	%	70 - 130%	82
	BH4_0.2-0.3	SE182724.008	%	70 - 130%	78
	BH5_0.1-0.2	SE182724.009	%	70 - 130%	78
	BH6_0.2-0.3	SE182724.010	%	70 - 130%	80
	BH7_0.3-0.4	SE182724.011	%	70 - 130%	94
	BH8_0.3-0.4	SE182724.012	%	70 - 130%	80
	BH8_1.7-1.8	SE182724.013	%	70 - 130%	76
	BH9M_0.3-0.4	SE182724.014	%	70 - 130%	80
	BH9M_1.8-1.9	SE182724.015	%	70 - 130%	86
	BH10M_0.4-0.5	SE182724.016	%	70 - 130%	86
	BH10M_1.7-1.8	SE182724.017	%	70 - 130%	86
	BH10M_2.4-2.5	SE182724.018	%	70 - 130%	80
d5-nitrobenzene (Surrogate)	BH1M_0.3-0.4	SE182724.001	%	70 - 130%	80
	BH1M_0.5-0.6	SE182724.002	%	70 - 130%	82
	BH1M_1.2-1.3	SE182724.003	%	70 - 130%	76
	BH1M_3.4-3.5	SE182724.004	%	70 - 130%	74
	BH2_0.1-0.2	SE182724.005	%	70 - 130%	82
	BH2_0.3-0.4	SE182724.006	%	70 - 130%	78
	BH3_0.2-0.3	SE182724.007	%	70 - 130%	78
	BH4_0.2-0.3	SE182724.008	%	70 - 130%	76
	BH5_0.1-0.2	SE182724.009	%	70 - 130%	76
	BH6_0.2-0.3	SE182724.010	%	70 - 130%	76
	BH7_0.3-0.4	SE182724.011	%	70 - 130%	80
	BH8_0.3-0.4	SE182724.012	%	70 - 130%	76
	BH8_1.7-1.8	SE182724.013	%	70 - 130%	76
	BH9M_0.3-0.4	SE182724.014	%	70 - 130%	74
	BH9M_1.8-1.9	SE182724.015	%	70 - 130%	80
	BH10M_0.4-0.5	SE182724.016	%	70 - 130%	78
	BH10M_1.7-1.8	SE182724.017	%	70 - 130%	78
	BH10M_2.4-2.5	SE182724.018	%	70 - 130%	74

PCBs in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH1M_0.3-0.4	SE182724.001	%	60 - 130%	110
	BH1M_0.5-0.6	SE182724.002	%	60 - 130%	114
	BH2_0.1-0.2	SE182724.005	%	60 - 130%	125
	BH3_0.2-0.3	SE182724.007	%	60 - 130%	126
	BH4_0.2-0.3	SE182724.008	%	60 - 130%	119
	BH5_0.1-0.2	SE182724.009	%	60 - 130%	119
	BH6_0.2-0.3	SE182724.010	%	60 - 130%	121
	BH7_0.3-0.4	SE182724.011	%	60 - 130%	120
	BH8_0.3-0.4	SE182724.012	%	60 - 130%	117
	BH9M_0.3-0.4	SE182724.014	%	60 - 130%	114
	BH10M_0.4-0.5	SE182724.016	%	60 - 130%	107

VOC's in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH1M_0.3-0.4	SE182724.001	%	60 - 130%	84
	BH1M_0.5-0.6	SE182724.002	%	60 - 130%	100
	BH1M_1.2-1.3	SE182724.003	%	60 - 130%	73
	BH1M_3.4-3.5	SE182724.004	%	60 - 130%	77
	BH2_0.1-0.2	SE182724.005	%	60 - 130%	71
	BH2_0.3-0.4	SE182724.006	%	60 - 130%	74
	BH3_0.2-0.3	SE182724.007	%	60 - 130%	74
	BH4_0.2-0.3	SE182724.008	%	60 - 130%	88
	BH5_0.1-0.2	SE182724.009	%	60 - 130%	90
	BH6_0.2-0.3	SE182724.010	%	60 - 130%	73
	BH7_0.3-0.4	SE182724.011	%	60 - 130%	91
	BH8_0.3-0.4	SE182724.012	%	60 - 130%	122
	BH8_1.7-1.8	SE182724.013	%	60 - 130%	118
	BH9M_0.3-0.4	SE182724.014	%	60 - 130%	105

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 identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

VOC's in Soil (continued)

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH9M_1.8-1.9	SE182724.015	%	60 - 130%	91
	BH10M_0.4-0.5	SE182724.016	%	60 - 130%	92
	BH10M_1.7-1.8	SE182724.017	%	60 - 130%	101
	BH10M_2.4-2.5	SE182724.018	%	60 - 130%	79
	QD1	SE182724.019	%	60 - 130%	97
	TS	SE182724.020	%	60 - 130%	106
d4-1,2-dichloroethane (Surrogate)	TB	SE182724.021	%	60 - 130%	83
	BH1M_0.3-0.4	SE182724.001	%	60 - 130%	82
	BH1M_0.5-0.6	SE182724.002	%	60 - 130%	85
	BH1M_1.2-1.3	SE182724.003	%	60 - 130%	102
	BH1M_3.4-3.5	SE182724.004	%	60 - 130%	89
	BH2_0.1-0.2	SE182724.005	%	60 - 130%	80
	BH2_0.3-0.4	SE182724.006	%	60 - 130%	93
	BH3_0.2-0.3	SE182724.007	%	60 - 130%	116
	BH4_0.2-0.3	SE182724.008	%	60 - 130%	123
	BH5_0.1-0.2	SE182724.009	%	60 - 130%	123
	BH6_0.2-0.3	SE182724.010	%	60 - 130%	113
	BH7_0.3-0.4	SE182724.011	%	60 - 130%	103
	BH8_0.3-0.4	SE182724.012	%	60 - 130%	129
	BH8_1.7-1.8	SE182724.013	%	60 - 130%	115
	BH9M_0.3-0.4	SE182724.014	%	60 - 130%	113
	BH9M_1.8-1.9	SE182724.015	%	60 - 130%	98
	BH10M_0.4-0.5	SE182724.016	%	60 - 130%	125
BH10M_1.7-1.8	SE182724.017	%	60 - 130%	112	
BH10M_2.4-2.5	SE182724.018	%	60 - 130%	108	
QD1	SE182724.019	%	60 - 130%	115	
TS	SE182724.020	%	60 - 130%	124	
TB	SE182724.021	%	60 - 130%	100	
d8-toluene (Surrogate)	BH1M_0.3-0.4	SE182724.001	%	60 - 130%	87
	BH1M_0.5-0.6	SE182724.002	%	60 - 130%	118
	BH1M_1.2-1.3	SE182724.003	%	60 - 130%	83
	BH1M_3.4-3.5	SE182724.004	%	60 - 130%	114
	BH2_0.1-0.2	SE182724.005	%	60 - 130%	105
	BH2_0.3-0.4	SE182724.006	%	60 - 130%	83
	BH3_0.2-0.3	SE182724.007	%	60 - 130%	111
	BH4_0.2-0.3	SE182724.008	%	60 - 130%	128
	BH5_0.1-0.2	SE182724.009	%	60 - 130%	126
	BH6_0.2-0.3	SE182724.010	%	60 - 130%	116
	BH7_0.3-0.4	SE182724.011	%	60 - 130%	85
	BH8_0.3-0.4	SE182724.012	%	60 - 130%	82
	BH8_1.7-1.8	SE182724.013	%	60 - 130%	88
	BH9M_0.3-0.4	SE182724.014	%	60 - 130%	95
	BH9M_1.8-1.9	SE182724.015	%	60 - 130%	96
	BH10M_0.4-0.5	SE182724.016	%	60 - 130%	96
	BH10M_1.7-1.8	SE182724.017	%	60 - 130%	97
BH10M_2.4-2.5	SE182724.018	%	60 - 130%	104	
QD1	SE182724.019	%	60 - 130%	97	
TS	SE182724.020	%	60 - 130%	101	
TB	SE182724.021	%	60 - 130%	90	
Dibromofluoromethane (Surrogate)	BH1M_0.3-0.4	SE182724.001	%	60 - 130%	82
	BH1M_0.5-0.6	SE182724.002	%	60 - 130%	88
	BH1M_1.2-1.3	SE182724.003	%	60 - 130%	90
	BH1M_3.4-3.5	SE182724.004	%	60 - 130%	94
	BH2_0.1-0.2	SE182724.005	%	60 - 130%	75
	BH2_0.3-0.4	SE182724.006	%	60 - 130%	101
	BH3_0.2-0.3	SE182724.007	%	60 - 130%	115
	BH4_0.2-0.3	SE182724.008	%	60 - 130%	84
	BH5_0.1-0.2	SE182724.009	%	60 - 130%	104
	BH6_0.2-0.3	SE182724.010	%	60 - 130%	75
	BH7_0.3-0.4	SE182724.011	%	60 - 130%	102
	BH8_0.3-0.4	SE182724.012	%	60 - 130%	102

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 identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

VOC's in Soil (continued)

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Dibromofluoromethane (Surrogate)	BH8_1.7-1.8	SE182724.013	%	60 - 130%	85
	BH9M_0.3-0.4	SE182724.014	%	60 - 130%	97
	BH9M_1.8-1.9	SE182724.015	%	60 - 130%	98
	BH10M_0.4-0.5	SE182724.016	%	60 - 130%	89
	BH10M_1.7-1.8	SE182724.017	%	60 - 130%	107
	BH10M_2.4-2.5	SE182724.018	%	60 - 130%	105
	QD1	SE182724.019	%	60 - 130%	84
	TS	SE182724.020	%	60 - 130%	90
	TB	SE182724.021	%	60 - 130%	85

VOCs in Water

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	QR1	SE182724.022	%	40 - 130%	95
d4-1,2-dichloroethane (Surrogate)	QR1	SE182724.022	%	40 - 130%	114
d8-toluene (Surrogate)	QR1	SE182724.022	%	40 - 130%	111
Dibromofluoromethane (Surrogate)	QR1	SE182724.022	%	40 - 130%	119

Volatile Petroleum Hydrocarbons in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH1M_0.3-0.4	SE182724.001	%	60 - 130%	84
	BH1M_0.5-0.6	SE182724.002	%	60 - 130%	100
	BH1M_1.2-1.3	SE182724.003	%	60 - 130%	73
	BH1M_3.4-3.5	SE182724.004	%	60 - 130%	77
	BH2_0.1-0.2	SE182724.005	%	60 - 130%	71
	BH2_0.3-0.4	SE182724.006	%	60 - 130%	74
	BH3_0.2-0.3	SE182724.007	%	60 - 130%	74
	BH4_0.2-0.3	SE182724.008	%	60 - 130%	88
	BH5_0.1-0.2	SE182724.009	%	60 - 130%	90
	BH6_0.2-0.3	SE182724.010	%	60 - 130%	73
	BH7_0.3-0.4	SE182724.011	%	60 - 130%	91
	BH8_0.3-0.4	SE182724.012	%	60 - 130%	122
	BH8_1.7-1.8	SE182724.013	%	60 - 130%	118
	BH9M_0.3-0.4	SE182724.014	%	60 - 130%	105
	BH9M_1.8-1.9	SE182724.015	%	60 - 130%	91
	BH10M_0.4-0.5	SE182724.016	%	60 - 130%	92
	BH10M_1.7-1.8	SE182724.017	%	60 - 130%	101
	BH10M_2.4-2.5	SE182724.018	%	60 - 130%	79
	QD1	SE182724.019	%	60 - 130%	97
	d4-1,2-dichloroethane (Surrogate)	BH1M_0.3-0.4	SE182724.001	%	60 - 130%
BH1M_0.5-0.6		SE182724.002	%	60 - 130%	85
BH1M_1.2-1.3		SE182724.003	%	60 - 130%	102
BH1M_3.4-3.5		SE182724.004	%	60 - 130%	89
BH2_0.1-0.2		SE182724.005	%	60 - 130%	80
BH2_0.3-0.4		SE182724.006	%	60 - 130%	93
BH3_0.2-0.3		SE182724.007	%	60 - 130%	116
BH4_0.2-0.3		SE182724.008	%	60 - 130%	123
BH5_0.1-0.2		SE182724.009	%	60 - 130%	123
BH6_0.2-0.3		SE182724.010	%	60 - 130%	113
BH7_0.3-0.4		SE182724.011	%	60 - 130%	103
BH8_0.3-0.4		SE182724.012	%	60 - 130%	129
BH8_1.7-1.8		SE182724.013	%	60 - 130%	115
BH9M_0.3-0.4		SE182724.014	%	60 - 130%	113
BH9M_1.8-1.9		SE182724.015	%	60 - 130%	98
BH10M_0.4-0.5		SE182724.016	%	60 - 130%	125
BH10M_1.7-1.8		SE182724.017	%	60 - 130%	112
BH10M_2.4-2.5		SE182724.018	%	60 - 130%	108
QD1		SE182724.019	%	60 - 130%	115
d8-toluene (Surrogate)		BH1M_0.3-0.4	SE182724.001	%	60 - 130%
	BH1M_0.5-0.6	SE182724.002	%	60 - 130%	118
	BH1M_1.2-1.3	SE182724.003	%	60 - 130%	83
	BH1M_3.4-3.5	SE182724.004	%	60 - 130%	114
	BH2_0.1-0.2	SE182724.005	%	60 - 130%	105

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 identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Volatile Petroleum Hydrocarbons in Soil (continued)

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d8-toluene (Surrogate)	BH2_0.3-0.4	SE182724.006	%	60 - 130%	83
	BH3_0.2-0.3	SE182724.007	%	60 - 130%	111
	BH4_0.2-0.3	SE182724.008	%	60 - 130%	128
	BH5_0.1-0.2	SE182724.009	%	60 - 130%	126
	BH6_0.2-0.3	SE182724.010	%	60 - 130%	116
	BH7_0.3-0.4	SE182724.011	%	60 - 130%	85
	BH8_0.3-0.4	SE182724.012	%	60 - 130%	82
	BH8_1.7-1.8	SE182724.013	%	60 - 130%	88
	BH9M_0.3-0.4	SE182724.014	%	60 - 130%	95
	BH9M_1.8-1.9	SE182724.015	%	60 - 130%	96
	BH10M_0.4-0.5	SE182724.016	%	60 - 130%	96
	BH10M_1.7-1.8	SE182724.017	%	60 - 130%	97
	BH10M_2.4-2.5	SE182724.018	%	60 - 130%	104
	QD1	SE182724.019	%	60 - 130%	97
Dibromofluoromethane (Surrogate)	BH1M_0.3-0.4	SE182724.001	%	60 - 130%	82
	BH1M_0.5-0.6	SE182724.002	%	60 - 130%	88
	BH1M_1.2-1.3	SE182724.003	%	60 - 130%	90
	BH1M_3.4-3.5	SE182724.004	%	60 - 130%	94
	BH2_0.1-0.2	SE182724.005	%	60 - 130%	75
	BH2_0.3-0.4	SE182724.006	%	60 - 130%	101
	BH3_0.2-0.3	SE182724.007	%	60 - 130%	115
	BH4_0.2-0.3	SE182724.008	%	60 - 130%	84
	BH5_0.1-0.2	SE182724.009	%	60 - 130%	104
	BH6_0.2-0.3	SE182724.010	%	60 - 130%	75
	BH7_0.3-0.4	SE182724.011	%	60 - 130%	102
	BH8_0.3-0.4	SE182724.012	%	60 - 130%	102
	BH8_1.7-1.8	SE182724.013	%	60 - 130%	85
	BH9M_0.3-0.4	SE182724.014	%	60 - 130%	97
	BH9M_1.8-1.9	SE182724.015	%	60 - 130%	98
	BH10M_0.4-0.5	SE182724.016	%	60 - 130%	89
	BH10M_1.7-1.8	SE182724.017	%	60 - 130%	107
	BH10M_2.4-2.5	SE182724.018	%	60 - 130%	105
	QD1	SE182724.019	%	60 - 130%	84

Volatile Petroleum Hydrocarbons in Water

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	QR1	SE182724.022	%	40 - 130%	95
d4-1,2-dichloroethane (Surrogate)	QR1	SE182724.022	%	60 - 130%	114
d8-toluene (Surrogate)	QR1	SE182724.022	%	40 - 130%	111
Dibromofluoromethane (Surrogate)	QR1	SE182724.022	%	40 - 130%	119

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

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

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

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

Sample Number	Parameter	Units	LOR	Result
LB154426.001	Exchangeable Sodium, Na	mg/kg	2	0
	Exchangeable Potassium, K	mg/kg	2	0
	Exchangeable Calcium, Ca	mg/kg	2	0
	Exchangeable Magnesium, Mg	mg/kg	2	0

Mercury (dissolved) in Water

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

Sample Number	Parameter	Units	LOR	Result
LB154385.001	Mercury	mg/L	0.0001	<0.0001

Mercury in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB154680.001	Mercury	mg/kg	0.05	<0.05

OC Pesticides in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB154679.001	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)	%	-	107

OP Pesticides in Soil

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

Sample Number	Parameter	Units	LOR	Result	
LB154679.001	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)	%	-	84
		d14-p-terphenyl (Surrogate)	%	-	86

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Number	Parameter	Units	LOR
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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
LB154679.001	Naphthalene	mg/kg	0.1	<0.1
	2-methylnaphthalene	mg/kg	0.1	<0.1
	1-methylnaphthalene	mg/kg	0.1	<0.1
	Acenaphthylene	mg/kg	0.1	<0.1
	Acenaphthene	mg/kg	0.1	<0.1
	Fluorene	mg/kg	0.1	<0.1
	Phenanthrene	mg/kg	0.1	<0.1
	Anthracene	mg/kg	0.1	<0.1
	Fluoranthene	mg/kg	0.1	<0.1
	Pyrene	mg/kg	0.1	<0.1
	Benzo(a)anthracene	mg/kg	0.1	<0.1
	Chrysene	mg/kg	0.1	<0.1
	Benzo(a)pyrene	mg/kg	0.1	<0.1
	Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1
	Dibenzo(ah)anthracene	mg/kg	0.1	<0.1
	Benzo(ghi)perylene	mg/kg	0.1	<0.1
	Total PAH (18)	mg/kg	0.8	<0.8
	Surrogates	d5-nitrobenzene (Surrogate)	%	-
2-fluorobiphenyl (Surrogate)		%	-	84
d14-p-terphenyl (Surrogate)		%	-	86

PCBs in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB154679.001	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)	%	-

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

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

Sample Number	Parameter	Units	LOR	Result
LB154675.001	Arsenic, As	mg/kg	1	2
	Cadmium, Cd	mg/kg	0.3	<0.3
	Chromium, Cr	mg/kg	0.3	<0.3
	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

Trace Metals (Dissolved) in Water by ICPMS

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

Sample Number	Parameter	Units	LOR	Result
LB154475.001	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 Soil

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

Sample Number	Parameter	Units	LOR	Result
LB154679.001	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

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

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

TRH (Total Recoverable Hydrocarbons) in Water

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

Sample Number	Parameter	Units	LOR	Result
LB154392.001	TRH C10-C14	µg/L	50	<50
	TRH C15-C28	µg/L	200	<200
	TRH C29-C36	µg/L	200	<200
	TRH C37-C40	µg/L	200	<200

VOC's in Soil

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

Sample Number	Parameter	Units	LOR	Result	
LB154678.001	Monocyclic Aromatic Hydrocarbons	Benzene	mg/kg	0.1	<0.1
		Toluene	mg/kg	0.1	<0.1
		Ethylbenzene	mg/kg	0.1	<0.1
		m/p-xylene	mg/kg	0.2	<0.2
	Polycyclic VOCs	o-xylene	mg/kg	0.1	<0.1
		Naphthalene	mg/kg	0.1	<0.1
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	96
		d4-1,2-dichloroethane (Surrogate)	%	-	110
		d8-toluene (Surrogate)	%	-	124
		Bromofluorobenzene (Surrogate)	%	-	74
		Totals	Total BTEX	mg/kg	0.6

VOCs in Water

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

Sample Number	Parameter	Units	LOR	Result	
LB154459.001	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
	Polycyclic VOCs	o-xylene	µg/L	0.5	<0.5
		Naphthalene	µg/L	0.5	<0.5
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	101
		d4-1,2-dichloroethane (Surrogate)	%	-	96
		d8-toluene (Surrogate)	%	-	97
		Bromofluorobenzene (Surrogate)	%	-	105

Volatile Petroleum Hydrocarbons in Soil

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

Sample Number	Parameter	Units	LOR	Result	
LB154678.001	TRH C6-C9	mg/kg	20	<20	
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	96
		d4-1,2-dichloroethane (Surrogate)	%	-	110
		d8-toluene (Surrogate)	%	-	124

Volatile Petroleum Hydrocarbons in Water

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

Sample Number	Parameter	Units	LOR	Result	
LB154459.001	TRH C6-C9	µg/L	40	<40	
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	108
		d4-1,2-dichloroethane (Surrogate)	%	-	106
		d8-toluene (Surrogate)	%	-	104
		Bromofluorobenzene (Surrogate)	%	-	94

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: $RPD = | \text{OriginalResult} - \text{ReplicateResult} | \times 100 / \text{Mean}$

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: $MAD = 100 \times \text{SDL} / \text{Mean} + \text{LR}$

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 identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury (dissolved) in Water

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182734.001	LB154385.008	Mercury	µg/L	0.0001	<0.00005	<0.00005	200	188

Mercury in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182724.010	LB154680.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE182724.019	LB154680.024	Mercury	mg/kg	0.05	0.11	0.08	82	26

Moisture Content

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182724.010	LB154681.011	% Moisture	%w/w	0.5	6.4	6.0	46	7
SE182724.019	LB154681.021	% Moisture	%w/w	0.5	13	13.922356091C	37	6
SE182724.020	LB154681.023	% Moisture	%w/w	0.5	4.3	4.7	52	8

OC Pesticides in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %	
SE182724.011	LB154679.028	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	0.183	30	2

OP Pesticides in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182724.009	LB154679.026	Dichlorvos	mg/kg	0.5	<0.5	0	200	0
		Dimethoate	mg/kg	0.5	<0.5	0	200	0
		Diazinon (Dimpylate)	mg/kg	0.5	<0.5	0	200	0
		Fenitrothion	mg/kg	0.2	<0.2	0	200	0
		Malathion	mg/kg	0.2	<0.2	0	200	0
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	0.04	200	0
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	0.06	200	0
		Bromophos Ethyl	mg/kg	0.2	<0.2	0.02	200	0
		Methodathion	mg/kg	0.5	<0.5	0	200	0
		Ethion	mg/kg	0.2	<0.2	0	200	0
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	0	200	0
		Total OP Pesticides*	mg/kg	1.7	<1.7	0	200	0

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

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: $MAD = 100 \times SDL / Mean + LR$

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 identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

OP Pesticides in Soil (continued)

Method: ME-(AU)-ENVJAN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %		
SE182724.009	LB154679.026	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	0	
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	3	
SE182724.016	LB154679.025		Dichlorvos	mg/kg	0.5	<0.5	0	200	0	
			Dimethoate	mg/kg	0.5	<0.5	0	200	0	
			Diazinon (Dimpylate)	mg/kg	0.5	<0.5	0	200	0	
			Fenitrothion	mg/kg	0.2	<0.2	0	200	0	
			Malathion	mg/kg	0.2	<0.2	0	200	0	
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	0	200	0	
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	0	200	0	
			Bromophos Ethyl	mg/kg	0.2	<0.2	0	200	0	
			Methodathion	mg/kg	0.5	<0.5	0	200	0	
			Ethion	mg/kg	0.2	<0.2	0.07	200	0	
			Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	0	200	0	
			Total OP Pesticides*	mg/kg	1.7	<1.7	0	200	0	
			Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.41	30	7
				d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.41	30	5

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-ENVJAN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %	
SE182724.009	LB154679.026		Naphthalene	mg/kg	0.1	0.1	0.12	113	0
			2-methylnaphthalene	mg/kg	0.1	<0.1	0.08	155	0
			1-methylnaphthalene	mg/kg	0.1	<0.1	0.06	197	0
			Acenaphthylene	mg/kg	0.1	0.1	0.1	117	26
			Acenaphthene	mg/kg	0.1	<0.1	0.03	200	0
			Fluorene	mg/kg	0.1	<0.1	0.07	163	0
			Phenanthrene	mg/kg	0.1	0.9	0.76	42	16
			Anthracene	mg/kg	0.1	0.3	0.28	65	4
			Fluoranthene	mg/kg	0.1	1.6	1.36	37	19
			Pyrene	mg/kg	0.1	1.6	1.35	37	19
			Benzo(a)anthracene	mg/kg	0.1	1.0	0.69	42	32
			Chrysene	mg/kg	0.1	0.9	0.67	43	33
			Benzo(b&j)fluoranthene	mg/kg	0.1	1.1	0.9	40	22
			Benzo(k)fluoranthene	mg/kg	0.1	0.5	0.46	51	10
			Benzo(a)pyrene	mg/kg	0.1	1.0	0.88	41	15
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	0.5	0.44	51	17
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	0.04	200	0
			Benzo(ghi)perylene	mg/kg	0.1	0.5	0.44	52	11
			Carcinogenic PAHs, BaP TEQ <LOR=0	mg/kg	0.2	1.3	1.1401	26	16
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	mg/kg	0.3	1.4	1.2401	32	15
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	mg/kg	0.2	1.4	1.1901	25	16
	Total PAH (18)	mg/kg	0.8	10	8.45	39	19		
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.36	30	5	
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	0	
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	3	
SE182724.016	LB154679.025		Naphthalene	mg/kg	0.1	<0.1	0.02	200	0
			2-methylnaphthalene	mg/kg	0.1	<0.1	0	200	0
			1-methylnaphthalene	mg/kg	0.1	<0.1	0	200	0
			Acenaphthylene	mg/kg	0.1	<0.1	0.03	200	0
			Acenaphthene	mg/kg	0.1	<0.1	0	200	0
			Fluorene	mg/kg	0.1	<0.1	0	200	0
			Phenanthrene	mg/kg	0.1	0.1	0.11	117	9
			Anthracene	mg/kg	0.1	<0.1	0.04	200	0
			Fluoranthene	mg/kg	0.1	0.3	0.34	60	3
			Pyrene	mg/kg	0.1	0.4	0.37	57	3
			Benzo(a)anthracene	mg/kg	0.1	0.2	0.23	77	14
			Chrysene	mg/kg	0.1	0.2	0.21	78	0
			Benzo(b&j)fluoranthene	mg/kg	0.1	0.2	0.22	80	20
			Benzo(k)fluoranthene	mg/kg	0.1	0.1	0.12	117	9
			Benzo(a)pyrene	mg/kg	0.1	0.2	0.2	83	11
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	0.1	141	0
	Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	0.01	200	0		

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

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: $MAD = 100 \times SDL / Mean + LR$

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 identifier 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 %	
SE182724.016	LB154679.025	Benzo(ghi)perylene	mg/kg	0.1	<0.1	0.1	135	0	
		Carcinogenic PAHs, BaP TEQ <LOR=0	mg/kg	0.2	0.2	0.2691	90	15	
		Carcinogenic PAHs, BaP TEQ <LOR=LOR	mg/kg	0.3	0.3	0.3691	94	7	
		Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	mg/kg	0.2	0.3	0.3191	76	10	
		Total PAH (18)	mg/kg	0.8	1.7	1.99	73	16	
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.36	30	8
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.41	30	7	
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.41	30	5	

PCBs in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182724.011	LB154679.026	Arochlor 1016	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1221	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1232	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1242	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1248	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1254	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1260	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1262	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1268	mg/kg	0.2	<0.2	0	200	0
		Total PCBs (Arochlors)	mg/kg	1	<1	0	200	0
Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0.183	30	2	

pH in soil (1:5)

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182724.017	LB154726.021	pH	pH Units	0.1	7.2	6.617	31	9
SE182877A.012	LB154726.022	pH	pH Units	0.1	5.9	5.846	32	0

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 %
SE182724.010	LB154675.014	Arsenic, As	mg/kg	1	3	2	74	23
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.3	2.3	2.0	54	15
		Copper, Cu	mg/kg	0.5	6.7	7.7	37	14
		Nickel, Ni	mg/kg	0.5	1.9	2.0	56	2
		Lead, Pb	mg/kg	1	19	13	36	43 @
		Zinc, Zn	mg/kg	2	27	18	39	41 @
SE182724.019	LB154675.024	Arsenic, As	mg/kg	1	4	6	49	30
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.3	8.5	10	35	18
		Copper, Cu	mg/kg	0.5	11	11	35	6
		Nickel, Ni	mg/kg	0.5	3.4	3.5	45	4
		Lead, Pb	mg/kg	1	210	57	31	116 @
		Zinc, Zn	mg/kg	2	54	68	33	24

Trace Metals (Dissolved) in Water by ICPMS

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182734.001	LB154475.011	Arsenic, As	µg/L	1	1	1	104	0
		Cadmium, Cd	µg/L	0.1	<0.1	<0.1	189	0
		Chromium, Cr	µg/L	1	10	10	25	0
		Copper, Cu	µg/L	1	11	11	24	0
		Lead, Pb	µg/L	1	9	9	26	0
		Nickel, Ni	µg/L	1	3	3	47	2
		Zinc, Zn	µg/L	5	59	60	23	0

TRH (Total Recoverable Hydrocarbons) in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182724.009	LB154679.027	TRH C10-C14	mg/kg	20	<20	0	200	0
		TRH C15-C28	mg/kg	45	86	67	89	25
		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	67	174	0

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

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: $MAD = 100 \times SDL / Mean + LR$

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 identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

TRH (Total Recoverable Hydrocarbons) in Soil (continued)

Method: ME-(AU)-IENVJAN433

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182724.009	LB154679.027	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	110	80	127	16
SE182724.016	LB154679.025	TRH >C34-C40 (F4)	mg/kg	120	<120	0	200	0
		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		

VOC's in Soil

Method: ME-(AU)-IENVJAN433

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %			
SE182724.010	LB154678.015	Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0		
		Aromatic	Toluene	mg/kg	0.1	<0.1	<0.1	200	0		
			Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0		
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0		
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0		
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0		
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	3.8	3.7	50	1		
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.6	5.2	50	8		
			d8-toluene (Surrogate)	mg/kg	-	5.8	5.7	50	2		
			Bromofluorobenzene (Surrogate)	mg/kg	-	3.6	3.7	50	3		
		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		
		SE182724.019	LB154678.032	Monocyclic	Benzene	mg/kg	0.1	<0.1	0	200	0
				Aromatic	Toluene	mg/kg	0.1	<0.1	0	200	0
	Ethylbenzene			mg/kg	0.1	<0.1	0	200	0		
	m/p-xylene			mg/kg	0.2	<0.2	0.03	200	0		
	o-xylene			mg/kg	0.1	<0.1	0.01	200	0		
Polycyclic	Naphthalene			mg/kg	0.1	<0.1	0	200	0		
Surrogates	Dibromofluoromethane (Surrogate)			mg/kg	-	4.2	4.57	50	8		
	d4-1,2-dichloroethane (Surrogate)			mg/kg	-	5.8	5.84	50	1		
	d8-toluene (Surrogate)			mg/kg	-	4.9	4.65	50	4		
	Bromofluorobenzene (Surrogate)			mg/kg	-	4.9	5.12	50	5		
Totals	Total Xylenes			mg/kg	0.3	<0.3	0.04	200	0		
	Total BTEX			mg/kg	0.6	<0.6	0.04	200	0		

VOCs in Water

Method: ME-(AU)-IENVJAN433

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %	
SE182733.001	LB154459.020	Monocyclic	Benzene	µg/L	0.5	1.1	1.04	76	7
		Aromatic	Toluene	µg/L	0.5	<0.5	0.13	200	0
			Ethylbenzene	µg/L	0.5	<0.5	0.12	200	0
			m/p-xylene	µg/L	1	<1	0.12	200	0
			o-xylene	µg/L	0.5	<0.5	0.07	200	0
		Polycyclic	Naphthalene	µg/L	0.5	<0.5	0.1	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	5.4	4.09	30	27
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.1	3.76	30	29
			d8-toluene (Surrogate)	µg/L	-	4.8	5.27	30	10
			Bromofluorobenzene (Surrogate)	µg/L	-	4.5	4.59	30	1
SE182734.001	LB154459.019	Monocyclic	Benzene	µg/L	0.5	<0.5	0.2	200	0
		Aromatic	Toluene	µg/L	0.5	<0.5	0.34	169	0
			Ethylbenzene	µg/L	0.5	<0.5	0.06	200	0
			m/p-xylene	µg/L	1	<1	0	200	0
			o-xylene	µg/L	0.5	<0.5	0	200	0
		Polycyclic	Naphthalene	µg/L	0.5	<0.5	0	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	5.2	4.61	30	11

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

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: $MAD = 100 \times SDL / Mean + LR$

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 identifier 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)-JENVJAN433

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %	
SE182734.001	LB154459.019	Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.1	4.73	30	7
			d8-toluene (Surrogate)	µg/L	-	4.8	5.27	30	9
			Bromofluorobenzene (Surrogate)	µg/L	-	5.3	5.12	30	3

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-JENVJAN433

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %	
SE182724.010	LB154678.015	TRH C6-C10	mg/kg	25	<25	<25	200	0	
		TRH C6-C9	mg/kg	20	<20	<20	200	0	
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	3.8	3.7	30	1
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.6	5.2	30	8
			d8-toluene (Surrogate)	mg/kg	-	5.8	5.7	30	2
			Bromofluorobenzene (Surrogate)	mg/kg	-	3.6	3.7	30	3
SE182724.019	LB154678.032	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
		TRH C6-C10	mg/kg	25	<25	0	200	0	
		TRH C6-C9	mg/kg	20	<20	0	200	0	
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.2	4.57	30	8
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.8	5.84	30	1
SE182733.001	LB154459.020		d8-toluene (Surrogate)	mg/kg	-	4.9	4.65	30	4
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.9	5.12	30	5
		VPH F Bands	Benzene (F0)	mg/kg	0.5	<0.1	0	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	-0.04	200	0

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-JENVJAN433

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %	
SE182733.001	LB154459.020	TRH C6-C10	µg/L	50	<50	16.74	200	0	
		TRH C6-C9	µg/L	40	<40	21.01	199	0	
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	5.4	4.09	30	27
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.1	3.76	30	29
			d8-toluene (Surrogate)	µg/L	-	4.8	5.27	30	10
			Bromofluorobenzene (Surrogate)	µg/L	-	4.5	4.59	30	1
SE182734.001	LB154459.021	VPH F Bands	Benzene (F0)	µg/L	0.5	1.1	1.04	76	7
			TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	15.26	200	0
		TRH C6-C10	µg/L	50	<50	0	200	0	
		TRH C6-C9	µg/L	40	<40	0	200	0	
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	5.5	4.95	30	11
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.6	5.72	30	3
SE182734.001	LB154459.021		d8-toluene (Surrogate)	µg/L	-	5.1	5.71	30	11
			Bromofluorobenzene (Surrogate)	µg/L	-	4.5	4.23	30	6
		VPH F Bands	Benzene (F0)	µg/L	0.5	<0.5	0.22	200	0
			TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	-0.69	200	0

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

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

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

Method: ME-(AU)-[ENV]JAN122

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB154426.002	Exchangeable Sodium, Na	mg/kg	2	NA	72.68	80 - 120	105
	Exchangeable Potassium, K	mg/kg	2	NA	238.12	80 - 120	106
	Exchangeable Calcium, Ca	mg/kg	2	NA	692	80 - 120	93
	Exchangeable Magnesium, Mg	mg/kg	2	NA	134.2	80 - 120	100

Mercury in Soil

Method: ME-(AU)-[ENV]JAN312

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB154680.002	Mercury	mg/kg	0.05	0.19	0.2	70 - 130	93

OC Pesticides in Soil

Method: ME-(AU)-[ENV]JAN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB154679.002	Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	124
	Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	112
	Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	112
	Dieldrin	mg/kg	0.2	0.2	0.2	60 - 140	112
	Endrin	mg/kg	0.2	0.2	0.2	60 - 140	104
	p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	80
Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.17	0.15	40 - 130	111

OP Pesticides in Soil

Method: ME-(AU)-[ENV]JAN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB154679.002	Dichlorvos	mg/kg	0.5	1.8	2	60 - 140	90
	Diazinon (Dimpylate)	mg/kg	0.5	1.9	2	60 - 140	94
	Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	2.0	2	60 - 140	102
	Ethion	mg/kg	0.2	1.6	2	60 - 140	81
	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130
	d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	96

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]JAN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %	
LB154679.002	Naphthalene	mg/kg	0.1	4.2	4	60 - 140	105	
	Acenaphthylene	mg/kg	0.1	4.1	4	60 - 140	103	
	Acenaphthene	mg/kg	0.1	4.2	4	60 - 140	105	
	Phenanthrene	mg/kg	0.1	4.5	4	60 - 140	112	
	Anthracene	mg/kg	0.1	4.1	4	60 - 140	103	
	Fluoranthene	mg/kg	0.1	4.9	4	60 - 140	122	
	Pyrene	mg/kg	0.1	4.9	4	60 - 140	122	
	Benzo(a)pyrene	mg/kg	0.1	4.0	4	60 - 140	100	
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	78
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	80
	d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	96	

PCBs in Soil

Method: ME-(AU)-[ENV]JAN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB154679.002	Arochlor 1260	mg/kg	0.2	0.4	0.4	60 - 140	100

pH in soil (1:5)

Method: ME-(AU)-[ENV]JAN101

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB154726.003	pH	pH Units	0.1	7.4	7.415	98 - 102	100

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

Method: ME-(AU)-[ENV]JAN040/AN320

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB154675.002	Arsenic, As	mg/kg	1	350	336.32	79 - 120	103
	Cadmium, Cd	mg/kg	0.3	420	416.6	69 - 131	101
	Chromium, Cr	mg/kg	0.3	30	35.2	80 - 120	85
	Copper, Cu	mg/kg	0.5	320	370.46	80 - 120	85
	Nickel, Ni	mg/kg	0.5	180	210.88	79 - 120	86
	Lead, Pb	mg/kg	1	94	107.87	79 - 120	87

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

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

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES (continued)

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB154675.002	Zinc, Zn	mg/kg	2	280	301.27	80 - 121	93

Trace Metals (Dissolved) in Water by ICPMS

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB154475.002	Arsenic, As	µg/L	1	20	20	80 - 120	98
	Cadmium, Cd	µg/L	0.1	19	20	80 - 120	96
	Chromium, Cr	µg/L	1	19	20	80 - 120	96
	Copper, Cu	µg/L	1	20	20	80 - 120	98
	Lead, Pb	µg/L	1	20	20	80 - 120	102
	Nickel, Ni	µg/L	1	19	20	80 - 120	96
	Zinc, Zn	µg/L	5	20	20	80 - 120	102

TRH (Total Recoverable Hydrocarbons) in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %	
LB154679.002	TRH C10-C14	mg/kg	20	30	40	60 - 140	75	
	TRH C15-C28	mg/kg	45	<45	40	60 - 140	75	
	TRH C29-C36	mg/kg	45	<45	40	60 - 140	75	
	TRH F Bands	TRH >C10-C16	mg/kg	25	30	40	60 - 140	75
	TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	75	
	TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	85	

TRH (Total Recoverable Hydrocarbons) in Water

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %	
LB154392.002	TRH C10-C14	µg/L	50	1100	1200	60 - 140	95	
	TRH C15-C28	µg/L	200	1300	1200	60 - 140	112	
	TRH C29-C36	µg/L	200	1100	1200	60 - 140	90	
	TRH F Bands	TRH >C10-C16	µg/L	60	1200	1200	60 - 140	100
	TRH >C16-C34 (F3)	µg/L	500	1300	1200	60 - 140	109	
	TRH >C34-C40 (F4)	µg/L	500	520	600	60 - 140	86	

VOC's in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %	
LB154678.002	Monocyclic	Benzene	mg/kg	0.1	2.0	2.9	60 - 140	70
		Aromatic	Toluene	mg/kg	0.1	2.5	2.9	60 - 140
	Ethylbenzene		mg/kg	0.1	2.1	2.9	60 - 140	71
	m/p-xylene		mg/kg	0.2	4.6	5.8	60 - 140	80
	o-xylene		mg/kg	0.1	2.1	2.9	60 - 140	74
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	5.3	5	60 - 140	106
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.2	5	60 - 140	103
		d8-toluene (Surrogate)	mg/kg	-	6.2	5	60 - 140	124
		Bromofluorobenzene (Surrogate)	mg/kg	-	5.2	5	60 - 140	104

VOCs in Water

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %	
LB154459.002	Monocyclic	Benzene	µg/L	0.5	50	45.45	60 - 140	110
		Aromatic	Toluene	µg/L	0.5	50	45.45	60 - 140
	Ethylbenzene		µg/L	0.5	50	45.45	60 - 140	110
	m/p-xylene		µg/L	1	100	90.9	60 - 140	110
	o-xylene		µg/L	0.5	50	45.45	60 - 140	109
	Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	3.9	5	60 - 140	77
		d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.2	5	60 - 140	83
		d8-toluene (Surrogate)	µg/L	-	4.7	5	60 - 140	93
		Bromofluorobenzene (Surrogate)	µg/L	-	5.2	5	60 - 140	104

Volatile Petroleum Hydrocarbons in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %	
LB154678.002	TRH C6-C10	TRH C6-C10	mg/kg	25	<25	24.65	60 - 140	89
		TRH C6-C9	mg/kg	20	<20	23.2	60 - 140	78
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	5.3	5	60 - 140	106
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.2	5	60 - 140	103
		d8-toluene (Surrogate)	mg/kg	-	6.2	5	60 - 140	124
		Bromofluorobenzene (Surrogate)	mg/kg	-	5.2	5	60 - 140	104
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	7.25	60 - 140	117

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.

Volatile Petroleum Hydrocarbons in Water

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %	
LB154459.002	TRH C6-C10	µg/L	50	960	946.63	60 - 140	102	
	TRH C6-C9	µg/L	40	790	818.71	60 - 140	96	
	Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.2	5	60 - 140	84
		d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.2	5	60 - 140	84
		d8-toluene (Surrogate)	µg/L	-	4.9	5	60 - 140	97
		Bromofluorobenzene (Surrogate)	µg/L	-	4.9	5	60 - 140	97
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	650	639.67	60 - 140	102

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 identifier 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%
SE182704.004	LB154385.004	Mercury	mg/L	0.0001	0.0068	<0.0001	0.008	85

Mercury in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE182724.001	LB154680.004	Mercury	mg/kg	0.05	0.42	0.42	0.2	3 @

OC Pesticides in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Original	Spike	Recovery%
SE182724.005	LB154679.027	Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	-	-
		Alpha BHC	mg/kg	0.1	<0.1	-	-
		Lindane	mg/kg	0.1	<0.1	-	-
		Heptachlor	mg/kg	0.1	<0.1	0.2	125
		Aldrin	mg/kg	0.1	<0.1	0.2	122
		Beta BHC	mg/kg	0.1	<0.1	-	-
		Delta BHC	mg/kg	0.1	<0.1	0.2	117
		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	0.2	109
		Endrin	mg/kg	0.2	<0.2	0.2	125
		o,p'-DDD	mg/kg	0.1	<0.1	-	-
		o,p'-DDT	mg/kg	0.1	<0.1	-	-
		Beta Endosulfan	mg/kg	0.2	<0.2	-	-
		p,p'-DDD	mg/kg	0.1	<0.1	-	-
		p,p'-DDT	mg/kg	0.1	<0.1	0.2	114
		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	-	-		
Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.19	-	124	

OP Pesticides in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Original	Spike	Recovery%	
SE182724.005	LB154679.027	Dichlorvos	mg/kg	0.5	<0.5	2	84	
		Dimethoate	mg/kg	0.5	<0.5	-	-	
		Diazinon (Dimpylate)	mg/kg	0.5	<0.5	2	90	
		Fenitrothion	mg/kg	0.2	<0.2	-	-	
		Malathion	mg/kg	0.2	<0.2	-	-	
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	2	99	
		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	2	76	
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	-	-	
		Total OP Pesticides*	mg/kg	1.7	<1.7	-	-	
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	-	84
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	-	94	

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR
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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 identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

QC Sample	Sample Number	Parameter	Units	LOR	Original	Spike	Recovery%
SE182724.005	LB154679.027	Naphthalene	mg/kg	0.1	<0.1	4	104
		2-methylnaphthalene	mg/kg	0.1	<0.1	-	-
		1-methylnaphthalene	mg/kg	0.1	<0.1	-	-
		Acenaphthylene	mg/kg	0.1	<0.1	4	102
		Acenaphthene	mg/kg	0.1	<0.1	4	106
		Fluorene	mg/kg	0.1	<0.1	-	-
		Phenanthrene	mg/kg	0.1	0.1	4	117
		Anthracene	mg/kg	0.1	<0.1	4	113
		Fluoranthene	mg/kg	0.1	0.2	4	109
		Pyrene	mg/kg	0.1	0.2	4	111
		Benzo(a)anthracene	mg/kg	0.1	<0.1	-	-
		Chrysene	mg/kg	0.1	<0.1	-	-
		Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	-	-
		Benzo(k)fluoranthene	mg/kg	0.1	<0.1	-	-
		Benzo(a)pyrene	mg/kg	0.1	<0.1	4	91
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	-	-
		Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	-	-
		Benzo(ghi)perylene	mg/kg	0.1	<0.1	-	-
		Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	-	-
		Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	-	-
		Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	-	-
		Total PAH (18)	mg/kg	0.8	<0.8	-	-
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	-
	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	-	84	
	d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	-	94	

PCBs in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Original	Spike	Recovery%
SE182724.005	LB154679.025	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	0.4	121
		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)	mg/kg	-	0	-	126	

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%
SE182724.001	LB154675.004	Arsenic, As	mg/kg	1	49	15	50	66 ⊕
		Cadmium, Cd	mg/kg	0.3	47	0.5	50	92
		Chromium, Cr	mg/kg	0.3	76	34	50	84
		Copper, Cu	mg/kg	0.5	99	50	50	98
		Nickel, Ni	mg/kg	0.5	100	59	50	86
		Lead, Pb	mg/kg	1	150	76	50	138 ⊕
		Zinc, Zn	mg/kg	2	220	140	50	174 ⊕

Trace Metals (Dissolved) in Water by ICPMS

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE182704.004	LB154475.004	Arsenic, As	µg/L	1	27	4	20	114
		Cadmium, Cd	µg/L	0.1	20	<0.1	20	100
		Chromium, Cr	µg/L	1	20	<1	20	95
		Copper, Cu	µg/L	1	17	2	20	74
		Lead, Pb	µg/L	1	22	2	20	101
		Nickel, Ni	µg/L	1	23	4	20	92
		Zinc, Zn	µg/L	5	28	10	20	89

TRH (Total Recoverable Hydrocarbons) in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR
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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 identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

TRH (Total Recoverable Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]JAN403

QC Sample	Sample Number	Parameter	Units	LOR	Original	Spike	Recovery%	
SE182724.002	LB154679.026	TRH C10-C14	mg/kg	20	32	40	80	
		TRH C15-C28	mg/kg	45	270	40	-205 @	
		TRH C29-C36	mg/kg	45	<45	40	100	
		TRH C37-C40	mg/kg	100	<100	-	-	
		TRH C10-C36 Total	mg/kg	110	310	-	-	
		TRH C10-C40 Total (F bands)	mg/kg	210	350	-	-	
		TRH F Bands	TRH >C10-C16	mg/kg	25	50	40	48 @
		TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	48	-	-	
		TRH >C16-C34 (F3)	mg/kg	90	300	40	-220 @	
		TRH >C34-C40 (F4)	mg/kg	120	<120	-	-	

VOC's in Soil

Method: ME-(AU)-[ENV]JAN433

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%	
SE182724.001	LB154678.004	Monocyclic	Benzene	mg/kg	0.1	2.5	<0.1	2.9	85
		Aromatic	Toluene	mg/kg	0.1	2.9	<0.1	2.9	99
			Ethylbenzene	mg/kg	0.1	1.9	<0.1	2.9	64
			m/p-xylene	mg/kg	0.2	4.2	<0.2	5.8	72
			o-xylene	mg/kg	0.1	2.0	<0.1	2.9	68
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	5.4	4.1	-	109
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.9	4.1	-	99
			d8-toluene (Surrogate)	mg/kg	-	6.3	4.4	-	126
			Bromofluorobenzene (Surrogate)	mg/kg	-	5.1	4.2	-	102
			Totals	Total Xylenes	mg/kg	0.3	6.2	<0.3	-
			Total BTEX	mg/kg	0.6	13	<0.6	-	-

VOCs in Water

Method: ME-(AU)-[ENV]JAN433

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%	
SE182724.022	LB154459.022	Monocyclic	Benzene	µg/L	0.5	44	<0.5	45.45	96
		Aromatic	Toluene	µg/L	0.5	46	<0.5	45.45	101
			Ethylbenzene	µg/L	0.5	48	<0.5	45.45	105
			m/p-xylene	µg/L	1	88	<1	90.9	97
			o-xylene	µg/L	0.5	40	<0.5	45.45	87
		Polycyclic	Naphthalene	µg/L	0.5	51	<0.5	-	-
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.8	6.0	-	95
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.6	5.7	-	93
			d8-toluene (Surrogate)	µg/L	-	4.7	5.6	-	94
			Bromofluorobenzene (Surrogate)	µg/L	-	4.6	4.8	-	92

Volatiles Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]JAN433

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%	
SE182724.001	LB154678.004	TRH C6-C10	mg/kg	25	<25	<25	24.65	97	
		TRH C6-C9	mg/kg	20	<20	<20	23.2	81	
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	5.4	4.1	-	109
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.9	4.1	-	99
			d8-toluene (Surrogate)	mg/kg	-	6.3	4.4	-	126
			Bromofluorobenzene (Surrogate)	mg/kg	-	5.1	4.2	-	102
		VPH F	Benzene (F0)	mg/kg	0.1	2.5	<0.1	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	7.25	131

Volatiles Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]JAN433

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%	
SE182724.022	LB154459.022	TRH C6-C10	µg/L	50	820	<50	946.63	86	
		TRH C6-C9	µg/L	40	680	<40	818.71	82	
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.8	6.0	-	95
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.6	5.7	-	93
			d8-toluene (Surrogate)	µg/L	-	4.7	5.6	-	94
			Bromofluorobenzene (Surrogate)	µg/L	-	4.6	4.8	-	92
		VPH F	Benzene (F0)	µg/L	0.5	44	<0.5	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	550	<50	639.67	86

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

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: $MAD = 100 \times SDL / Mean + LR$

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 identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

QC Sample	Sample Number	Parameter	Units	LOR
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Samples analysed as received.

Solid samples expressed on a dry weight basis.

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

- * NATA accreditation does not cover the performance of this service .
 - ** 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 Analytical Report comments for further information.

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STATEMENT OF QA/QC PERFORMANCE

SE183173 R0

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Project **E23915-E02 - 242-244 Young St Waterloo**
Order Number **E23915-E02**
Samples 7

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SGS Reference **SE183173 R0**
Date Received 28 Aug 2018
Date Reported 04 Sep 2018

COMMENTS

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

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

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

Extraction Date	pH in water	3 items
Analysis Date	pH in water	3 items

SAMPLE SUMMARY

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	7 Water
Date documentation received	28/8/2018	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	7.2°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

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

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

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

Conductivity and TDS by Calculation - Water

Method: ME-(AU)-[ENV]JAN106

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M-1	SE183173.001	LB155386	24 Aug 2018	28 Aug 2018	21 Sep 2018	29 Aug 2018	21 Sep 2018	29 Aug 2018
BH9M-1	SE183173.002	LB155386	24 Aug 2018	28 Aug 2018	21 Sep 2018	29 Aug 2018	21 Sep 2018	29 Aug 2018
BH10M-1	SE183173.003	LB155386	24 Aug 2018	28 Aug 2018	21 Sep 2018	29 Aug 2018	21 Sep 2018	29 Aug 2018

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]JAN311(Perth)/AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M-1	SE183173.001	LB155391	24 Aug 2018	28 Aug 2018	21 Sep 2018	30 Aug 2018	21 Sep 2018	30 Aug 2018
BH9M-1	SE183173.002	LB155391	24 Aug 2018	28 Aug 2018	21 Sep 2018	30 Aug 2018	21 Sep 2018	30 Aug 2018
BH10M-1	SE183173.003	LB155391	24 Aug 2018	28 Aug 2018	21 Sep 2018	30 Aug 2018	21 Sep 2018	30 Aug 2018
GW-QD1	SE183173.004	LB155391	24 Aug 2018	28 Aug 2018	21 Sep 2018	30 Aug 2018	21 Sep 2018	30 Aug 2018
BHR-1	SE183173.005	LB155391	24 Aug 2018	28 Aug 2018	21 Sep 2018	30 Aug 2018	21 Sep 2018	30 Aug 2018

Metals in Water (Dissolved) by ICPOES

Method: ME-(AU)-[ENV]JAN320

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M-1	SE183173.001	LB155413	24 Aug 2018	28 Aug 2018	20 Feb 2019	30 Aug 2018	20 Feb 2019	30 Aug 2018
BH9M-1	SE183173.002	LB155413	24 Aug 2018	28 Aug 2018	20 Feb 2019	30 Aug 2018	20 Feb 2019	30 Aug 2018
BH10M-1	SE183173.003	LB155413	24 Aug 2018	28 Aug 2018	20 Feb 2019	30 Aug 2018	20 Feb 2019	30 Aug 2018

PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]JAN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M-1	SE183173.001	LB155396	24 Aug 2018	28 Aug 2018	31 Aug 2018	30 Aug 2018	09 Oct 2018	03 Sep 2018
BH9M-1	SE183173.002	LB155396	24 Aug 2018	28 Aug 2018	31 Aug 2018	30 Aug 2018	09 Oct 2018	03 Sep 2018
BH10M-1	SE183173.003	LB155396	24 Aug 2018	28 Aug 2018	31 Aug 2018	30 Aug 2018	09 Oct 2018	03 Sep 2018
GW-QD1	SE183173.004	LB155396	24 Aug 2018	28 Aug 2018	31 Aug 2018	30 Aug 2018	09 Oct 2018	03 Sep 2018
BHR-1	SE183173.005	LB155396	24 Aug 2018	28 Aug 2018	31 Aug 2018	30 Aug 2018	09 Oct 2018	03 Sep 2018

pH in water

Method: ME-(AU)-[ENV]JAN101

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M-1	SE183173.001	LB155386	24 Aug 2018	28 Aug 2018	25 Aug 2018	29 Aug 2018†	25 Aug 2018	29 Aug 2018†
BH9M-1	SE183173.002	LB155386	24 Aug 2018	28 Aug 2018	25 Aug 2018	29 Aug 2018†	25 Aug 2018	29 Aug 2018†
BH10M-1	SE183173.003	LB155386	24 Aug 2018	28 Aug 2018	25 Aug 2018	29 Aug 2018†	25 Aug 2018	29 Aug 2018†

Total Phenolics in Water

Method: ME-(AU)-[ENV]JAN289

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M-1	SE183173.001	LB155620	24 Aug 2018	28 Aug 2018	21 Sep 2018	03 Sep 2018	21 Sep 2018	03 Sep 2018
BH9M-1	SE183173.002	LB155620	24 Aug 2018	28 Aug 2018	21 Sep 2018	03 Sep 2018	21 Sep 2018	03 Sep 2018
BH10M-1	SE183173.003	LB155620	24 Aug 2018	28 Aug 2018	21 Sep 2018	03 Sep 2018	21 Sep 2018	03 Sep 2018

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]JAN318

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M-1	SE183173.001	LB155415	24 Aug 2018	28 Aug 2018	20 Feb 2019	30 Aug 2018	20 Feb 2019	30 Aug 2018
BH9M-1	SE183173.002	LB155415	24 Aug 2018	28 Aug 2018	20 Feb 2019	30 Aug 2018	20 Feb 2019	30 Aug 2018
BH10M-1	SE183173.003	LB155415	24 Aug 2018	28 Aug 2018	20 Feb 2019	30 Aug 2018	20 Feb 2019	30 Aug 2018
GW-QD1	SE183173.004	LB155415	24 Aug 2018	28 Aug 2018	20 Feb 2019	30 Aug 2018	20 Feb 2019	30 Aug 2018
BHR-1	SE183173.005	LB155415	24 Aug 2018	28 Aug 2018	20 Feb 2019	30 Aug 2018	20 Feb 2019	30 Aug 2018

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]JAN403

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M-1	SE183173.001	LB155396	24 Aug 2018	28 Aug 2018	31 Aug 2018	30 Aug 2018	09 Oct 2018	31 Aug 2018
BH9M-1	SE183173.002	LB155396	24 Aug 2018	28 Aug 2018	31 Aug 2018	30 Aug 2018	09 Oct 2018	31 Aug 2018
BH10M-1	SE183173.003	LB155396	24 Aug 2018	28 Aug 2018	31 Aug 2018	30 Aug 2018	09 Oct 2018	31 Aug 2018
GW-QD1	SE183173.004	LB155396	24 Aug 2018	28 Aug 2018	31 Aug 2018	30 Aug 2018	09 Oct 2018	31 Aug 2018
BHR-1	SE183173.005	LB155396	24 Aug 2018	28 Aug 2018	31 Aug 2018	30 Aug 2018	09 Oct 2018	31 Aug 2018

VOCs in Water

Method: ME-(AU)-[ENV]JAN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M-1	SE183173.001	LB155586	24 Aug 2018	28 Aug 2018	31 Aug 2018	31 Aug 2018	10 Oct 2018	04 Sep 2018
BH9M-1	SE183173.002	LB155586	24 Aug 2018	28 Aug 2018	31 Aug 2018	31 Aug 2018	10 Oct 2018	04 Sep 2018
BH10M-1	SE183173.003	LB155586	24 Aug 2018	28 Aug 2018	31 Aug 2018	31 Aug 2018	10 Oct 2018	04 Sep 2018
GW-QD1	SE183173.004	LB155586	24 Aug 2018	28 Aug 2018	31 Aug 2018	31 Aug 2018	10 Oct 2018	04 Sep 2018
BHR-1	SE183173.005	LB155586	24 Aug 2018	28 Aug 2018	31 Aug 2018	31 Aug 2018	10 Oct 2018	04 Sep 2018
GWQTB1	SE183173.006	LB155586	24 Aug 2018	28 Aug 2018	31 Aug 2018	31 Aug 2018	10 Oct 2018	04 Sep 2018
GWQTS1	SE183173.007	LB155586	24 Aug 2018	28 Aug 2018	31 Aug 2018	31 Aug 2018	10 Oct 2018	04 Sep 2018

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.

Volatiles Petroleum Hydrocarbons in Water

Method: ME-(AU)-ENVJAN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M-1	SE183173.001	LB155586	24 Aug 2018	28 Aug 2018	31 Aug 2018	31 Aug 2018	10 Oct 2018	04 Sep 2018
BH9M-1	SE183173.002	LB155586	24 Aug 2018	28 Aug 2018	31 Aug 2018	31 Aug 2018	10 Oct 2018	04 Sep 2018
BH10M-1	SE183173.003	LB155586	24 Aug 2018	28 Aug 2018	31 Aug 2018	31 Aug 2018	10 Oct 2018	04 Sep 2018
GW-QD1	SE183173.004	LB155586	24 Aug 2018	28 Aug 2018	31 Aug 2018	31 Aug 2018	10 Oct 2018	04 Sep 2018
BHR-1	SE183173.005	LB155586	24 Aug 2018	28 Aug 2018	31 Aug 2018	31 Aug 2018	10 Oct 2018	04 Sep 2018
GWQTB1	SE183173.006	LB155586	24 Aug 2018	28 Aug 2018	31 Aug 2018	31 Aug 2018	10 Oct 2018	04 Sep 2018
GWQTS1	SE183173.007	LB155586	24 Aug 2018	28 Aug 2018	31 Aug 2018	31 Aug 2018	10 Oct 2018	04 Sep 2018

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 identifier 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)	BH1M-1	SE183173.001	%	40 - 130%	64
	BH9M-1	SE183173.002	%	40 - 130%	72
	BH10M-1	SE183173.003	%	40 - 130%	70
d14-p-terphenyl (Surrogate)	BH1M-1	SE183173.001	%	40 - 130%	92
	BH9M-1	SE183173.002	%	40 - 130%	84
	BH10M-1	SE183173.003	%	40 - 130%	88
d5-nitrobenzene (Surrogate)	BH1M-1	SE183173.001	%	40 - 130%	50
	BH9M-1	SE183173.002	%	40 - 130%	60
	BH10M-1	SE183173.003	%	40 - 130%	62

VOCs in Water

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH1M-1	SE183173.001	%	40 - 130%	105
	BH9M-1	SE183173.002	%	40 - 130%	106
	BH10M-1	SE183173.003	%	40 - 130%	106
	GW-QD1	SE183173.004	%	40 - 130%	86
	BHR-1	SE183173.005	%	40 - 130%	88
	GWQTB1	SE183173.006	%	40 - 130%	92
	GWQTS1	SE183173.007	%	40 - 130%	92
d4-1,2-dichloroethane (Surrogate)	BH1M-1	SE183173.001	%	40 - 130%	100
	BH9M-1	SE183173.002	%	40 - 130%	98
	BH10M-1	SE183173.003	%	40 - 130%	100
	GW-QD1	SE183173.004	%	40 - 130%	111
	BHR-1	SE183173.005	%	40 - 130%	120
	GWQTB1	SE183173.006	%	40 - 130%	112
	GWQTS1	SE183173.007	%	40 - 130%	95
d8-toluene (Surrogate)	BH1M-1	SE183173.001	%	40 - 130%	106
	BH9M-1	SE183173.002	%	40 - 130%	106
	BH10M-1	SE183173.003	%	40 - 130%	109
	GW-QD1	SE183173.004	%	40 - 130%	96
	BHR-1	SE183173.005	%	40 - 130%	106
	GWQTB1	SE183173.006	%	40 - 130%	98
	GWQTS1	SE183173.007	%	40 - 130%	91
Dibromofluoromethane (Surrogate)	BH1M-1	SE183173.001	%	40 - 130%	91
	BH9M-1	SE183173.002	%	40 - 130%	89
	BH10M-1	SE183173.003	%	40 - 130%	91
	GW-QD1	SE183173.004	%	40 - 130%	98
	BHR-1	SE183173.005	%	40 - 130%	107
	GWQTB1	SE183173.006	%	40 - 130%	97
	GWQTS1	SE183173.007	%	40 - 130%	83

Volatile Petroleum Hydrocarbons in Water

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH1M-1	SE183173.001	%	40 - 130%	97
	BH9M-1	SE183173.002	%	40 - 130%	93
	BH10M-1	SE183173.003	%	40 - 130%	85
	GW-QD1	SE183173.004	%	40 - 130%	86
	BHR-1	SE183173.005	%	40 - 130%	88
d4-1,2-dichloroethane (Surrogate)	BH1M-1	SE183173.001	%	60 - 130%	110
	BH9M-1	SE183173.002	%	60 - 130%	112
	BH10M-1	SE183173.003	%	60 - 130%	110
	GW-QD1	SE183173.004	%	60 - 130%	111
	BHR-1	SE183173.005	%	60 - 130%	120
d8-toluene (Surrogate)	BH1M-1	SE183173.001	%	40 - 130%	89
	BH9M-1	SE183173.002	%	40 - 130%	99
	BH10M-1	SE183173.003	%	40 - 130%	94
	GW-QD1	SE183173.004	%	40 - 130%	96
	BHR-1	SE183173.005	%	40 - 130%	106
Dibromofluoromethane (Surrogate)	BH1M-1	SE183173.001	%	40 - 130%	99
	BH9M-1	SE183173.002	%	40 - 130%	99
	BH10M-1	SE183173.003	%	40 - 130%	98
	GW-QD1	SE183173.004	%	40 - 130%	98

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 charred 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 identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Volatile Petroleum Hydrocarbons in Water (continued)

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Dibromofluoromethane (Surrogate)	BHR-1	SE183173.005	%	40 - 130%	107

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 - Water

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

Sample Number	Parameter	Units	LOR	Result
LB155386.001	Conductivity @ 25 C	µS/cm	2	<2

Mercury (dissolved) in Water

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

Sample Number	Parameter	Units	LOR	Result
LB155391.001	Mercury	mg/L	0.0001	<0.0001

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Sample Number	Parameter	Units	LOR	Result
LB155396.001	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)	%	-	68
	2-fluorobiphenyl (Surrogate)	%	-	72
	d14-p-terphenyl (Surrogate)	%	-	90

Total Phenolics in Water

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

Sample Number	Parameter	Units	LOR	Result
LB155620.001	Total Phenols	mg/L	0.05	<0.05

Trace Metals (Dissolved) in Water by ICPMS

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

Sample Number	Parameter	Units	LOR	Result
LB155415.001	Aluminium, Al	µg/L	5	<5
	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
LB155396.001	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	
LB155586.001	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

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)-ENVJAN433

Sample Number	Parameter	Units	LOR	Result	
LB155586.001	Halogenated Aliphatics	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
		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
	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	<2	
	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	

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
LB155586.001	Surrogates	Dibromofluoromethane (Surrogate)	%	-	100
		d4-1,2-dichloroethane (Surrogate)	%	-	114
		d8-toluene (Surrogate)	%	-	106
		Bromofluorobenzene (Surrogate)	%	-	92
	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
		Bromoform (THM)	µg/L	0.5	<0.5

Volatile Petroleum Hydrocarbons in Water

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

Sample Number		Parameter	Units	LOR	Result
LB155586.001		TRH C6-C9	µg/L	40	<40
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	100
		d4-1,2-dichloroethane (Surrogate)	%	-	114
		d8-toluene (Surrogate)	%	-	106
		Bromofluorobenzene (Surrogate)	%	-	92

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

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: $MAD = 100 \times SDL / Mean + LR$

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 identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Conductivity and TDS by Calculation - Water

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE183187.001	LB155386.014	Conductivity @ 25 C	µS/cm	2	3100	3200	15	2

Mercury (dissolved) in Water

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE183192.006	LB155391.014	Mercury	µg/L	0.0001	<0.0001	0.0000	200	40

Total Phenolics in Water

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE183169.001	LB155620.004	Total Phenols	mg/L	0.05	<0.05	<0.05	200	0

Trace Metals (Dissolved) in Water by ICPMS

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE183173.005	LB155415.012	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 %	
SE183173.005	LB155396.022	TRH C10-C14	µg/L	50	<50	0	200	0	
		TRH C15-C28	µg/L	200	<200	0	200	0	
		TRH C29-C36	µg/L	200	<200	0	200	0	
		TRH C37-C40	µg/L	200	<200	0	200	0	
		TRH C10-C36	µg/L	450	<450	0	200	0	
		TRH C10-C40	µg/L	650	<650	0	200	0	
		TRH F Bands	TRH >C10-C16	µg/L	60	<60	0	200	0
		TRH >C10-C16 - Naphthalene (F2)	µg/L	60	<60	0	200	0	
		TRH >C16-C34 (F3)	µg/L	500	<500	0	200	0	
		TRH >C34-C40 (F4)	µg/L	500	<500	0	200	0	

VOCs in Water

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %	
SE183169.001	LB155586.023	Fumigants	1,2-dibromoethane (EDB)	µg/L	0.5	<0.5	0	200	0
		Halogenated	1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5	0	200	0
		Monocyclic Aromatic	Benzene	µg/L	0.5	<0.5	0.04	200	0
			Toluene	µg/L	0.5	<0.5	0.09	200	0
			Ethylbenzene	µg/L	0.5	<0.5	0.02	200	0
			m/p-xylene	µg/L	1	<1	0.1	200	0
			o-xylene	µg/L	0.5	<0.5	0.1	200	0
		Oxygenated	MEK (2-butanone)	µg/L	10	<10	0	200	0
		Compounds	2-hexanone (MBK)	µg/L	5	<5	0	200	0
		Polycyclic	Naphthalene	µg/L	0.5	<0.5	0.04	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.8	4.26	30	11
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.3	4.59	30	14
			d8-toluene (Surrogate)	µg/L	-	5.7	4.99	30	12
			Bromofluorobenzene (Surrogate)	µg/L	-	5.6	4.54	30	21
SE183169.003	LB155586.024	Monocyclic Aromatic	Benzene	µg/L	0.5	<0.5	0.06	200	0
		Toluene	µg/L	0.5	<0.5	0.1	200	0	
		Ethylbenzene	µg/L	0.5	<0.5	0.02	200	0	
		m/p-xylene	µg/L	1	<1	0.04	200	0	
		o-xylene	µg/L	0.5	<0.5	0.02	200	0	
		Polycyclic	Naphthalene	µg/L	0.5	<0.5	0.01	200	0
Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.9	4.9	30	1		

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

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: $MAD = 100 \times SDL / Mean + LR$

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 identifier 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)-IENVJAN433

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %	
SE183169.003	LB155586.024	Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.6	5.03	30	10
			d8-toluene (Surrogate)	µg/L	-	4.8	4.77	30	1
			Bromofluorobenzene (Surrogate)	µg/L	-	4.6	4.01	30	13

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-IENVJAN433

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %	
SE183169.001	LB155586.023	TRH C6-C10	TRH C6-C10	µg/L	50	<50	0	200	0
			TRH C6-C9	µg/L	40	<40	0	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	5.2	4.26	30	21
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.9	4.59	30	25
			d8-toluene (Surrogate)	µg/L	-	5.3	4.99	30	5
		VPH F Bands	Bromofluorobenzene (Surrogate)	µg/L	-	4.8	4.54	30	5
			Benzene (F0)	µg/L	0.5	<0.5	0.04	200	0
SE183169.003	LB155586.024	TRH C6-C10	TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	-0.35	200	0
			TRH C6-C9	µg/L	50	<50	0	200	0
		Surrogates	TRH C6-C9	µg/L	40	<40	0	200	0
			Dibromofluoromethane (Surrogate)	µg/L	-	4.9	4.9	30	1
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.6	5.03	30	10
		VPH F Bands	d8-toluene (Surrogate)	µg/L	-	4.8	4.77	30	1
			Bromofluorobenzene (Surrogate)	µg/L	-	4.6	4.01	30	13
	Benzene (F0)	µg/L	0.5	<0.5	0.06	200	0		
	TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	-0.24	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.

Conductivity and TDS by Calculation - Water

Method: ME-(AU)-[ENV]JAN106

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB155386.002	Conductivity @ 25 C	µS/cm	2	290	303	90 - 110	95

PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]JAN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %	
LB155396.002	Naphthalene	µg/L	0.1	32	40	60 - 140	81	
	Acenaphthylene	µg/L	0.1	36	40	60 - 140	90	
	Acenaphthene	µg/L	0.1	33	40	60 - 140	82	
	Phenanthrene	µg/L	0.1	36	40	60 - 140	89	
	Anthracene	µg/L	0.1	35	40	60 - 140	87	
	Fluoranthene	µg/L	0.1	36	40	60 - 140	89	
	Pyrene	µg/L	0.1	37	40	60 - 140	92	
	Benzo(a)pyrene	µg/L	0.1	37	40	60 - 140	91	
	Surrogates	d5-nitrobenzene (Surrogate)	µg/L	-	0.4	0.5	40 - 130	82
		2-fluorobiphenyl (Surrogate)	µg/L	-	0.5	0.5	40 - 130	90
d14-p-terphenyl (Surrogate)		µg/L	-	0.5	0.5	40 - 130	94	

pH in water

Method: ME-(AU)-[ENV]JAN101

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB155386.003	pH**	No unit	-	7.4	7.415	98 - 102	100

Total Phenolics in Water

Method: ME-(AU)-[ENV]JAN289

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB155620.002	Total Phenols	mg/L	0.05	0.24	0.25	80 - 120	95

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]JAN318

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB155415.002	Aluminium, Al	µg/L	5	18	20	80 - 120	90
	Arsenic, As	µg/L	1	20	20	80 - 120	100
	Cadmium, Cd	µg/L	0.1	19	20	80 - 120	97
	Chromium, Cr	µg/L	1	19	20	80 - 120	97
	Copper, Cu	µg/L	1	19	20	80 - 120	96
	Lead, Pb	µg/L	1	20	20	80 - 120	102
	Nickel, Ni	µg/L	1	19	20	80 - 120	96
	Zinc, Zn	µg/L	5	20	20	80 - 120	101

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]JAN403

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %	
LB155396.002	TRH C10-C14	µg/L	50	1100	1200	60 - 140	91	
	TRH C15-C28	µg/L	200	1400	1200	60 - 140	116	
	TRH C29-C36	µg/L	200	1400	1200	60 - 140	116	
	TRH F Bands	TRH >C10-C16	µg/L	60	1200	1200	60 - 140	96
		TRH >C16-C34 (F3)	µg/L	500	1600	1200	60 - 140	135
		TRH >C34-C40 (F4)	µg/L	500	610	600	60 - 140	102

VOCs in Water

Method: ME-(AU)-[ENV]JAN433

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %		
LB155586.002	Halogenated	1,1-dichloroethene	µg/L	0.5	50	45.45	60 - 140	110	
		Aliphatics	1,2-dichloroethane	µg/L	0.5	50	45.45	60 - 140	110
			Trichloroethene (Trichloroethylene, TCE)	µg/L	0.5	50	45.45	60 - 140	110
	Halogenated	Chlorobenzene	µg/L	0.5	50	45.45	60 - 140	110	
	Monocyclic	Benzene	µg/L	0.5	50	45.45	60 - 140	110	
	Aromatic	Toluene	µg/L	0.5	50	45.45	60 - 140	110	
		Ethylbenzene	µg/L	0.5	50	45.45	60 - 140	110	
		m/p-xylene	µg/L	1	100	90.9	60 - 140	110	
		o-xylene	µg/L	0.5	50	45.45	60 - 140	110	
	Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.1	5	60 - 140	81	
		d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.1	5	60 - 140	83	
		d8-toluene (Surrogate)	µg/L	-	4.8	5	60 - 140	96	

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.

VOCs in Water (continued)

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %	
LB155586.002	Surrogates	Bromofluorobenzene (Surrogate)	µg/L	-	5.0	5	60 - 140	100
	Trihalomethan	Chloroform (THM)	µg/L	0.5	50	45.45	60 - 140	109

Volatile Petroleum Hydrocarbons in Water

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %		
LB155586.002		TRH C6-C10	µg/L	50	940	946.63	60 - 140	100	
		TRH C6-C9	µg/L	40	770	818.71	60 - 140	94	
	Surrogates		Dibromofluoromethane (Surrogate)	µg/L	-	4.5	5	60 - 140	89
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.4	5	60 - 140	88
			d8-toluene (Surrogate)	µg/L	-	4.7	5	60 - 140	93
			Bromofluorobenzene (Surrogate)	µg/L	-	4.9	5	60 - 140	97
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	640	639.67	60 - 140	99	

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 identifier 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%
SE183169.001	LB155391.004	Mercury	mg/L	0.0001	0.0078	<0.0001	0.008	97

Trace Metals (Dissolved) in Water by ICPMS

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE183169.001	LB155415.004	Aluminium, Al	µg/L	5	240	230	20	79
		Arsenic, As	µg/L	1	21	<1	20	105
		Cadmium, Cd	µg/L	0.1	20	<0.1	20	98
		Chromium, Cr	µg/L	1	20	<1	20	94
		Copper, Cu	µg/L	1	31	14	20	89
		Lead, Pb	µg/L	1	21	<1	20	100
		Nickel, Ni	µg/L	1	22	4	20	91
		Zinc, Zn	µg/L	5	88	69	20	93

VOCs in Water

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

QC Sample	Sample Number	Parameter	Units	LOR	Original	Spike	Recovery%	
SE183169.002	LB155586.025	Monocyclic	Benzene	µg/L	0.5	<0.5	45.45	110
			Aromatic	Toluene	µg/L	0.5	<0.5	45.45
		Ethylbenzene		µg/L	0.5	<0.5	45.45	112
		m/p-xylene		µg/L	1	<1	90.9	111
		Polycyclic	o-xylene	µg/L	0.5	<0.5	45.45	111
			Naphthalene	µg/L	0.5	<0.5	-	-
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.4	-	102
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.0	-	116
			d8-toluene (Surrogate)	µg/L	-	4.5	-	103
			Bromofluorobenzene (Surrogate)	µg/L	-	4.3	-	99

Volatile Petroleum Hydrocarbons in Water

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

QC Sample	Sample Number	Parameter	Units	LOR	Original	Spike	Recovery%	
SE183169.002	LB155586.025	TRH C6-C10	TRH C6-C10	µg/L	50	<50	946.63	86
			TRH C6-C9	µg/L	40	<40	818.71	89
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.4	-	102
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.0	-	116
			d8-toluene (Surrogate)	µg/L	-	4.5	-	103
			Bromofluorobenzene (Surrogate)	µg/L	-	4.3	-	99
		VPH F	Benzene (F0)	µg/L	0.5	<0.5	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	639.67	80

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: $RPD = | \text{OriginalResult} - \text{ReplicateResult} | \times 100 / \text{Mean}$

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: $MAD = 100 \times \text{SDL} / \text{Mean} + \text{LR}$

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 identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

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

- * NATA accreditation does not cover the performance of this service .
 - ** 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 Analytical Report comments for further information.

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APPENDIX K

SafeWork NSW Records



Our Ref: D18/155466

17 July 2018

Mr David Rizkalla
EI AUSTRALIA
Suite 6.01, 55 Miller Street
PYRMONT NSW 2009

Dear Mr Rizkalla

RE SITE: 242-244 Young Street, WATERLOO NSW 2017

I refer to your site search request received by SafeWork NSW on 3 July 2018 requesting information on Storage of Hazardous Chemicals for the above site.

Enclosed are copies of the documents that SafeWork NSW holds on record number 35/004633 relating to the storage of Hazardous Chemicals at the above-mentioned premises.

For further information or if you have any questions, please call us on 13 10 50 or email licensing@safework.nsw.gov.au

Yours sincerely

Customer Service Officer
Customer Experience - Operations
SafeWork NSW



APPLICATION FOR LICENCE (or AMENDMENT or TRANSFER of LICENCE)*
FOR THE KEEPING OF DANGEROUS GOODS

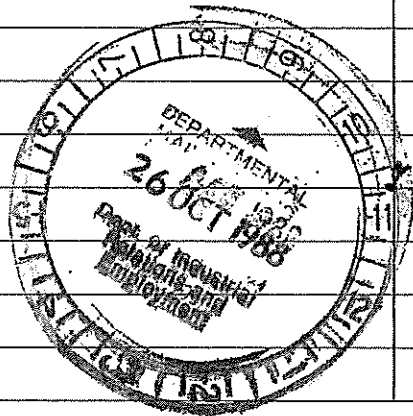
(* delete whichever is not required)

FEE: \$15.00 per Depot for new licence. N/Fee
\$15.00 for amendment or transfer.

Name of Applicant in full (see Item 1 - Explanatory notes - page 4)	P. ROWE FABRICS PTY LIMITED		
Trading name or occupier's name (if any)	ROWE FABRICS.		
Postal Address	PO BOX 206 WATERLOO.	Postcode	2017
Address of the premises to be licensed. (Including Street No.)	POWELL & YOUNG STREETS WATERLOO	Postcode	2017
Nature of premises (See Item 2 - Explanatory notes - page 4)	WAREHOUSE FOR FABRICS and OFFICES.		
Telephone number of applicant	STD Code 02	Number	319 3399

Particulars of type of depots and maximum quantities of dangerous goods to be kept at any one time.

Depot number	Type of depot (See item 3 - Explanatory notes - page 4)	Storage capacity	Dangerous goods	C & C Office use only
			Product being stored	
1	underground Tank	10,000L	PETROL	
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				



Has site plan been approved by the Dangerous Goods Branch? Yes No If yes, no plans required. If no, please attach site plan, or provide sketch plan overleaf.

Have premises previously been licensed? Yes No If, yes, state name of previous occupier, and licence No. (if known). Amendment only - Depot 2 deleted

Name of oil company supplying flammable liquid (if applicable). CARTEX.

Signature of applicant: *Michael Ball* Date: 24/10/88

For external explosives magazine(s), please fill in page 3. *Michael Ball Company Secretary*

FOR OFFICE USE ONLY CERTIFICATE OF INSPECTION

I, *George L. Brooks* being an Inspector under the Dangerous Goods Act, 1975, do hereby certify that the premises described above do comply with the requirements of the Dangerous Goods Act, 1975, and the Dangerous Goods Regulation with regard to their situation and construction for the keeping of dangerous goods of the nature and in the quantity specified.

Signature of Inspector: *George L. Brooks* Date: 28.2.89

RS2 (1)

INFLAMMABLE LIQUID ACT, 1915

APPLICATION FOR:

REGISTRATION OF PREMISES
STORE LICENCE
AMENDMENT TO REGISTRATION OR LICENCE

B.
FOR THE KEEPING OF
INFLAMMABLE LIQUID **7**
AND/OR DANGEROUS GOODS.

Name of Occupier P. Rowe Pty Limited
(Surname) (First Names)

Trading Name (if any) _____

Postal Address Box 3455, G.P.O., SYDNEY Postcode 2001

Address of the premises in which the depot or depots are situated cnr Powell & Young Streets, WATERLOO Postcode 2017

Occupation fabrics & automotive finishes

Nature of Premises warehouse & offices

Particulars of construction of depots and maximum quantities of inflammable liquid and/or dangerous goods to be kept at any one time.

PLEASE SKETCH SITE ON BACK OR ATTACH PLAN

Depot No.	Construction of depots *			Inflammable Liquid		Dangerous Goods						
	Walls	Roof	Floor	Mineral spirit litres	Mineral oil litres	Class 1 litres	Class 2 litres	Class 3 kg	Class 4 m ³	Class 5A# litres	Class 5B# litres	Class 9 litres
1	brick	concrete	concrete	N.I.L				2500				
2	brick	concrete	concrete	N.I.L				2500				
3	brick	concrete	concrete	N.I.L								
4	underground tank			10000								
5												
6												
7												
8												
9												
10												
TOTAL												

* If kept in tanks describe depots as underground or aboveground tanks.

Insert water capacity of tanks or cylinders.

Name of Company supplying inflammable liquid _____

Have premises previously been licensed? Yes B.4633 (7)

If known, state name of previous occupier P. Rowe & Co. Pty Limited

Signature of applicant *J. Antonico* Date 18.7.75

Insp.
Metrop.

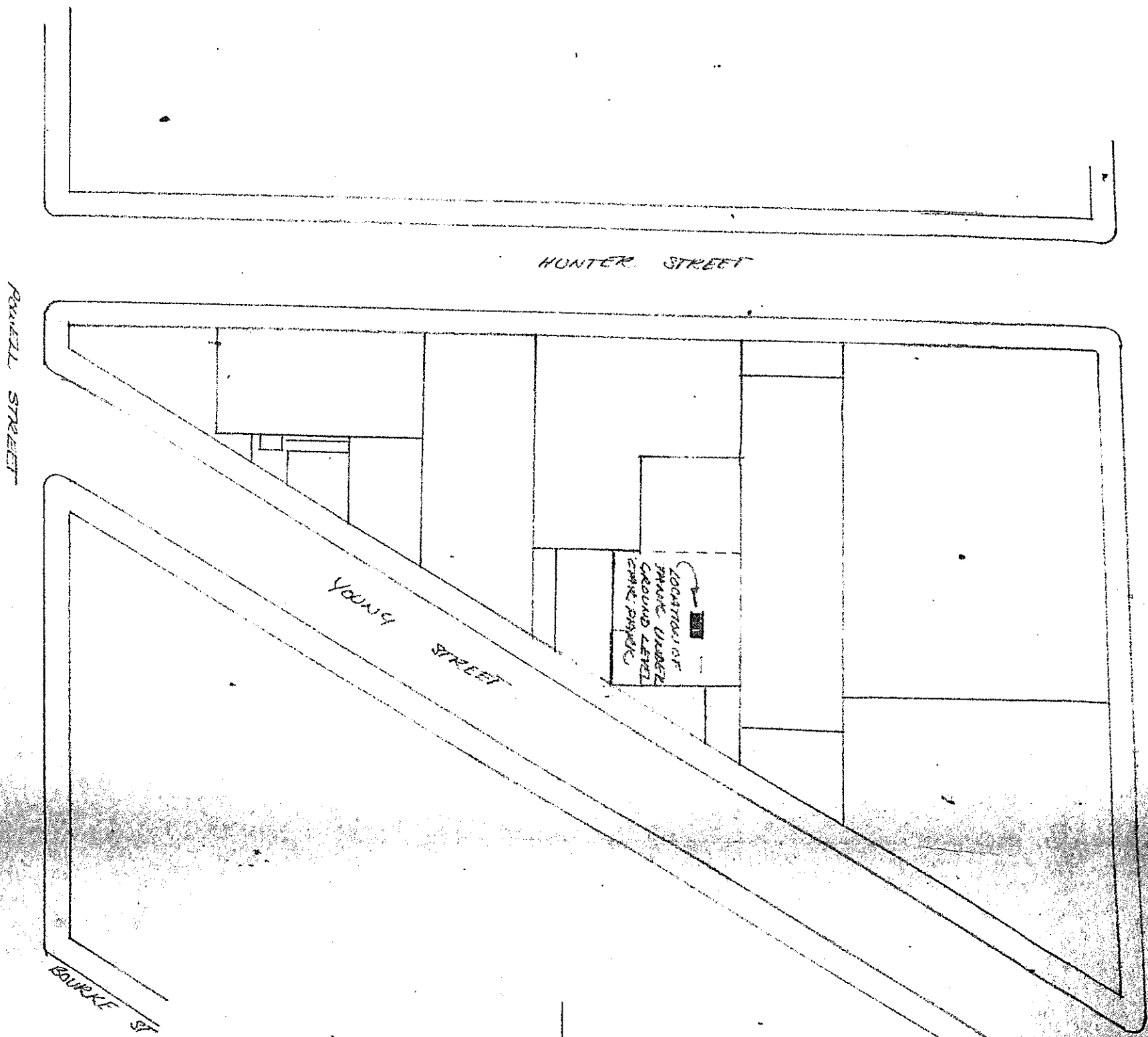
CERTIFICATE OF INSPECTION

I, *James Arthur Conway* being an Inspector under the Inflammable Liquid Act, 1915, do hereby certify that the premises or store described above does comply with the requirements of that Act and regulations with regard to its situation and construction for the keeping of inflammable liquid and/or dangerous goods in quantity and nature specified.

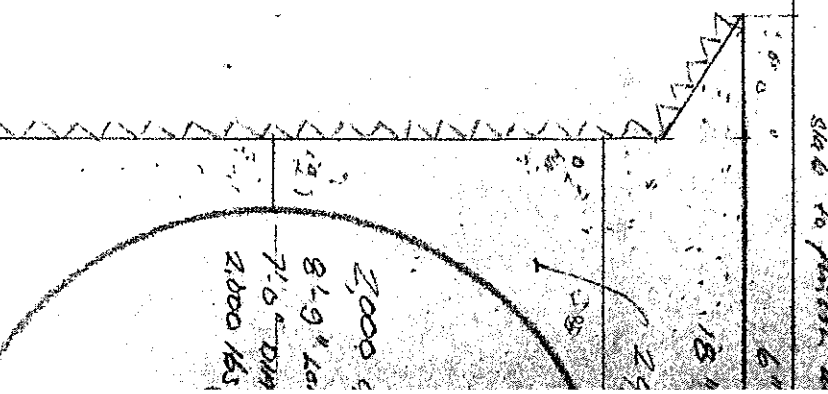
Signature of Inspector *J. Conway*

A B C D E F G

LOCATIONS PLANS
SCALE - 1" = 40'-0"



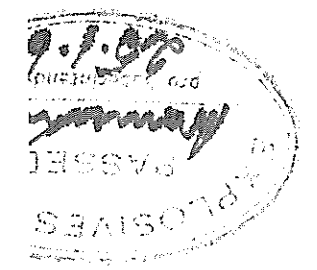
CROSS SECTION
SCALE - 1/2"



DO NOT SCALE. USE FIGURED DIMENSIONS. CONTRACTORS MUST VERIFY ALL DIMENSIONS AT THE JOB BEFORE COMMENCING WORK OR MAKING ANY SHOP DRAWINGS.

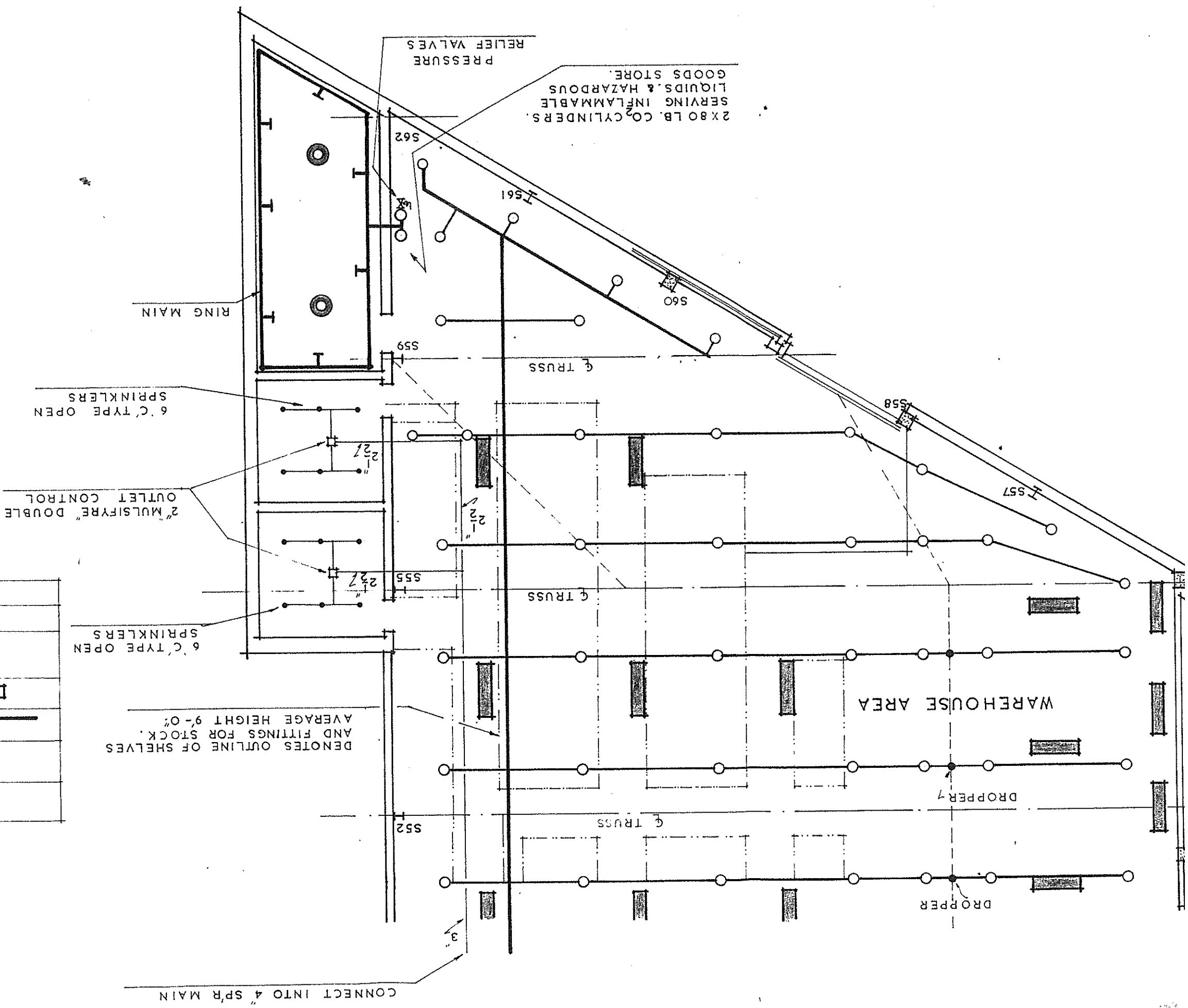
FOWELL MANSFIELD JAMES
 ARCHITECTS ENGINEERS
 11 RANGERS ROAD NE
 TELEPHONE 909-2144

JOHN R. WALLIS, SPRATT & ASSOC.
 CONSULTING CHARTERED ENGINEERS
 20-22 MOUNT STREET, NORTH SYDNEY, 921
 FOWELL, MANSFIELD, JARVIS & MACLE
 CHARTERED ARCHITECTS
 87 BERRY ST. NORTH SYDNEY, 92404.
 P. ROWE PTY. LTD.
 WAREHOUSE & OFFICE, WATERLOO
 FIRE PROTECTION
 NITRO - CELLULOSE STO



LEGEND

SPRINKLER POINT (WATER)	
DISCHARGE POINT CO ₂	
FLUORESCENT FITTING	
FLAMEPROOF INCANDESCENT FITTING	
STOP VALVE	S.V.
CHECK VALVE	C.V.



DENOTES OUTLINE OF SHELVES
AND FITTINGS FOR STOCK.
AVERAGE HEIGHT 9'-0"

2 X 80 LB. CO₂ CYLINDERS
SERVING INFLAMMABLE
LIQUIDS & HAZARDOUS
GOODS STORE.

RELIEF VALVES
PRESSURE

6" C' TYPE OPEN
SPRINKLERS

2" MULTISYRE" DOUBLE
OUTLET CONTROL

6" C' TYPE OPEN
SPRINKLERS

CONNECT INTO 4" SPR MAIN

S52

S55

S59

S62

6" TRUSS

6" TRUSS

6" TRUSS

DROPPER

DROPPER

WAREHOUSE AREA

S57

S58

S61

S60