Attachment A15

Detailed Site Investigation

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PACIFIC EQUITY PARTNERS PTY LTD

Detailed Site Investigation

242-244 Young Street, Waterloo NSW

Report E23915.E02_Rev0

18 October 2018

REPORT DISTRIBUTION

Detailed Site Investigation
242-244 Young Street, Waterloo NSW

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0	Original	18 October 2018	-

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 4,500m^2. 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 addition 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 m^2, 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	The site directly overlies medium to fine grained “marine” sand with podsols, which is characterised by the deposits forming the Botany Sands (Ref. Geological Map Sydney 1:100,000 Geological Series Sheet 9130 DMR 1991). With reference to the Geological Survey of NSW Bulletin No.18 by R.J Griifin (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. 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.
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	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 *No Known Occurrence*. 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”. The Sydney Local Environmental Plan 2012- Acid Sulfate Soils Risk Class 1:1,000 scale Map indicates that the site lies within a *Class 5* 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.
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 signed of distressed. 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
Environmental Site Investigation (SGA, 2012)	
Scope of Works	• 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	• 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, C_{10}-C_{36} 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
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	
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
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	

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 (*unknown if above or below ground storage*)	Mineral Oil	10,000 L	-	Unknown
		Class 3 Material (Nitro-Cellouse)	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 *If PCB containing pesticides were used onsite*
Were scheduled chemical or wastes (CCO, 2004) used or stored [4]	Yes *If OC pesticides were used onsite*
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)
1. State the Problem Summarise the contamination problem that will require new environmental data, and identify the resources available to resolve the problem; develop a conceptual site model	• The site 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.	-
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	Based on the objectives outlined in **Section 1.4**, the decisions that need to be made are • 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?	-

DQO Steps	Details	Comments (changes during investigation)
3. Identify Information Inputs (Identify inputs to decision) Identify the information needed to support any decision and specify which inputs require new environmental measurements	Inputs to the decision making process include: • 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 *Contaminated Land Management Act 1997*; • 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. 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.	-
4. Define the Boundaries of the Study Specify the spatial and temporal aspects of the environmental media that the data must represent to support decision	• Lateral – the investigation will be conducted within the 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.	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.
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	The decision rules for the investigation were: • 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**.	-

DQO Steps	Details	Comments (changes during investigation)
6. Specify Performance or Acceptance Criteria (Specify limits on decision errors) Specify the decision-maker's acceptable limits on decision errors, which are used to establish performance goals for limiting uncertainties in the data	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: • The null hypothesis for the investigation is that: – 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 m^2 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 – 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.	An additional sampling point was added to the investigation to allow a more complete coverage of the site area. In light of access restrictions onsite, a systematic sampling pattern for assessment could not be adopted for every sampling position. A targeted sampling approach was utilised.
7. Develop the Detailed Plan for Obtaining Data (Optimise the design for obtaining data) Identify the most resource-effective sampling and analysis design for general data that are expected to satisfy the DQOs	• The site area (4,500 m^2) 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.	An additional sampling point was added to the investigation to allow a more complete coverage of the site area. In light of access restrictions onsite, a systematic sampling pattern for assessment could not be adopted for every sampling position. A targeted sampling approach was utilised.

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	**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. **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. **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. **Management Limits for Petroleum Hydrocarbons** Should the HSLs be exceeded for petroleum hydrocarbons, soil samples would also assessed against the NEPM 2013 *Management Limits* for the TRH fractions F1 – F4 to assess propensity for phase-separated hydrocarbons (PSH), fire and explosive hazards & adverse effects on buried infrastructure.

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 Uses	Potable Water	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 *cadmium* and *mercury*. 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) *Guidelines for the Assessment and Management of Groundwater Contamination*.
	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	• 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	*Drilling Equipment* - The drilling rods were decontaminated between sampling locations with potable water until the augers were free of all residual materials. *Sampling Equipment* – 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.
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	Test bores were converted to groundwater monitoring wells as follows: • BH1M, BH9M and BH10M – screen 2.00 – 5.00 mBGL 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. Well construction was in general accordance with the standards described in NUDLC, 2012 and involved the following: • 50 mm, Class 18 uPVC, threaded, machine-slotted screen and casing, with slotted intervals 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	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**. 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.
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	Groundwater purging and sampling was conducted using a low-flow/minimal drawdown sampling method with a MicroPurge kit (MP15) and pump. 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. Groundwater quality was measured repeatedly during purging using a calibrated Hanna Multi Parameter 9829 water quality meter. Three consecutive field measurements recorded within ± 3% for EC, ± 20 mV for redox, ± 20% for DO and ± 0.2 for pH were considered indicative of representative groundwater. Following stabilisation of parameters, groundwater was sampled.
Decontamination Procedure	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.
Sample Preservation	Sample containers were supplied by the laboratory with the following preservatives: • 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). 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.
Quality Control & Laboratory Analysis	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.
Sample Transport	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**.

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 (^{o}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 µS/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, C_{10}-C_{36} 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 addition 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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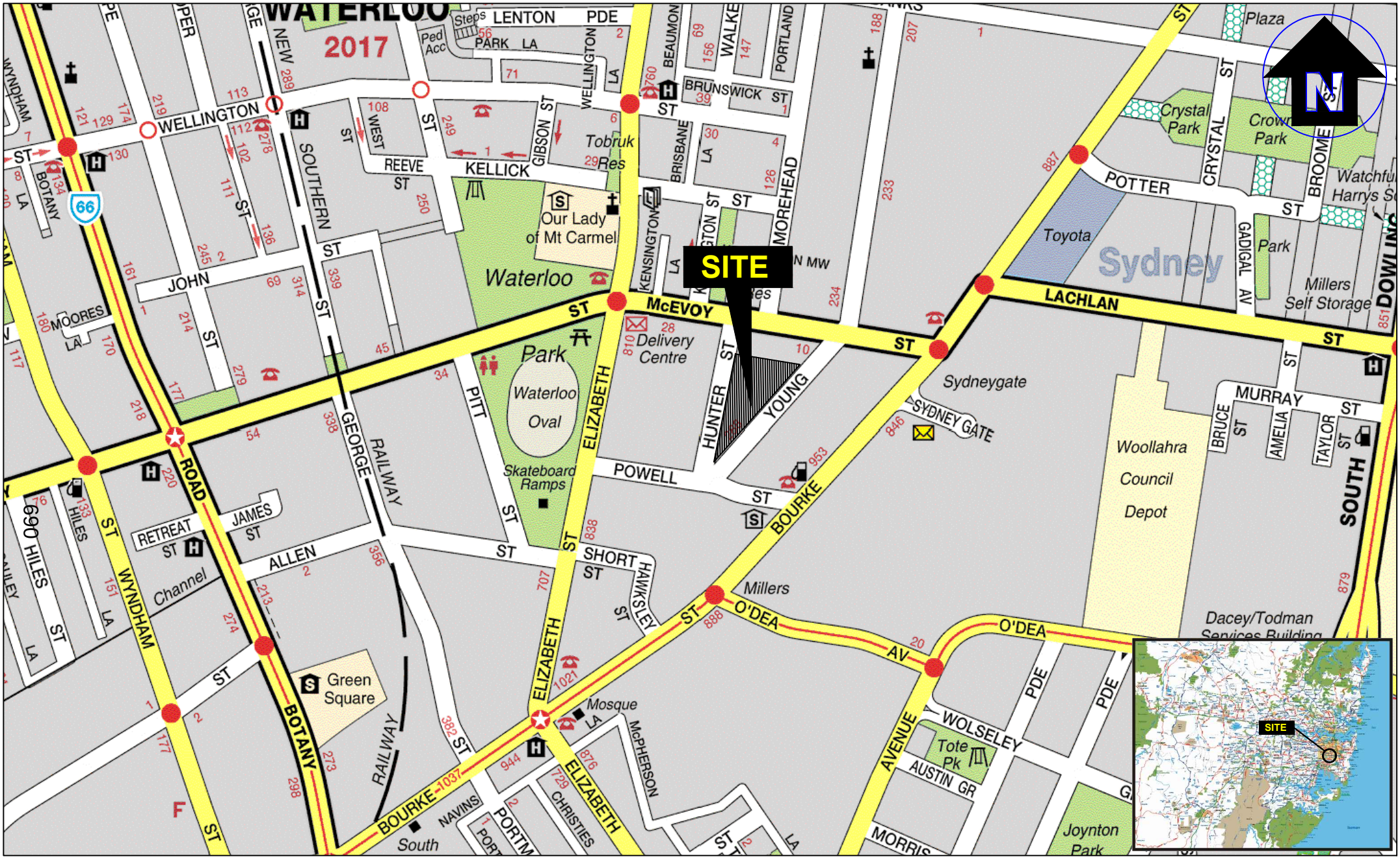
ABBREVIATIONS

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
OCP	Organochlorine Pesticides
OEH	Office of Environment and Heritage, NSW (formerly DEC, DECC, DECCW)
OPP	Organphosphorus 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



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Scale:	Not To Scale

Bennett Murada Architects

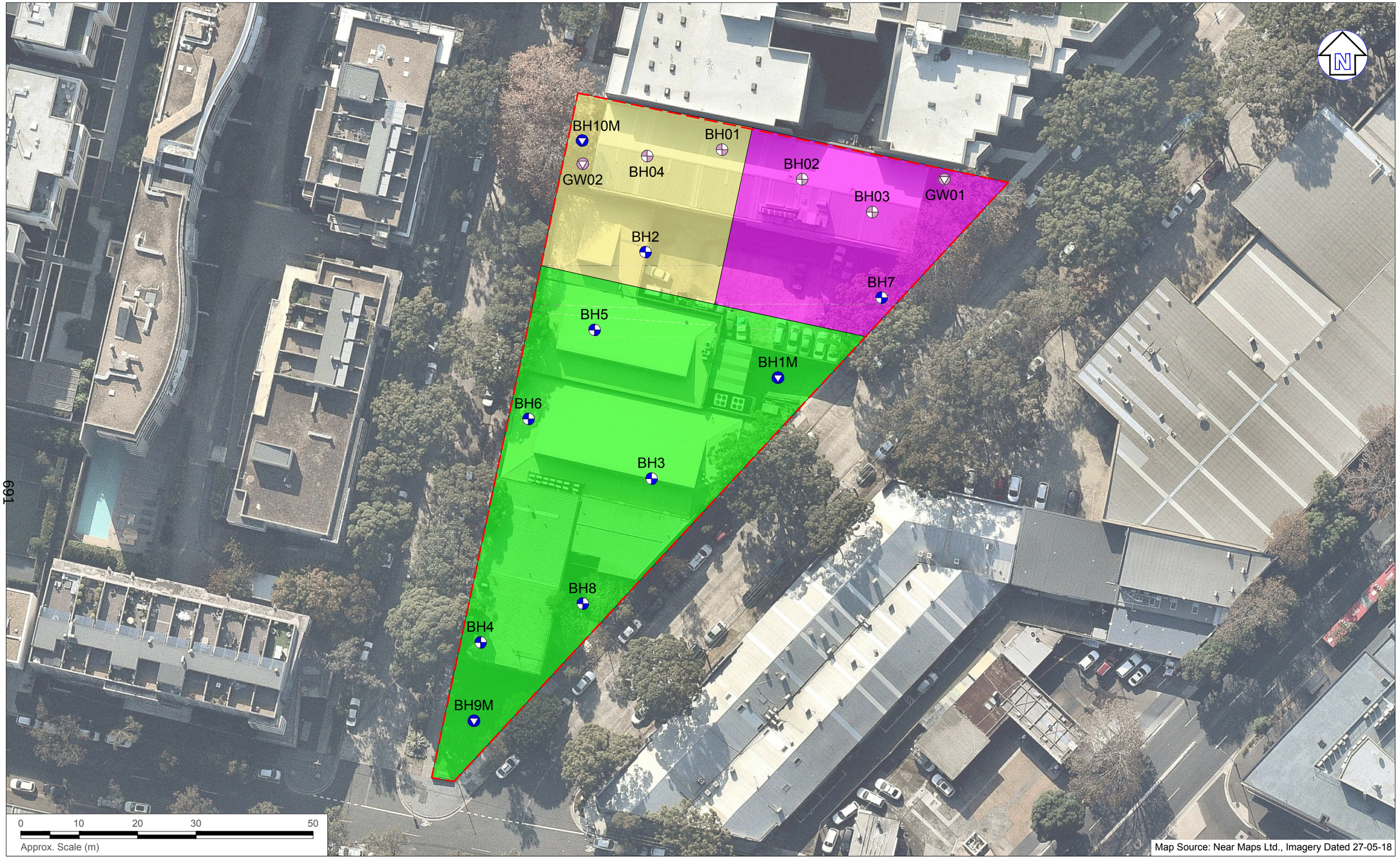
Detailed Site Investigation

242-244 Young Street, Waterloo NSW

Site Locality Plan

Figure: 1

Project: E23915.E02



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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 Hil A NEPM Criteria)
- Approximate area for commercial (Area 2, assessed against Hil B NEPM Criteria)
- Approximate area for residential (Area 3, assessed against Hil B NEPM Criteria)

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

Figure: 2

Project: E23915.E02

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 C_6-C_{10} less the sum concentration of BTEX.
F2	TPH $C_{>10}$-C_{16} less the concentration of Naphthalene.
F3	TPH $C_{>16}$-C_{34}
F4	TPH $C_{>34}$-C_{40}

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**						

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**											

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, simulations 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-Smirnoff 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**											

					Lognormal Statistics						
				Minimum of Logged Data	-1.897				Mean of logged Data	-0.922	
				Maximum of Logged Data	2.639				SD of logged Data	1.456	
					Assuming Lognormal Distribution						
				95% H-UCL	3.763				90% Chebyshev (MVUE) UCL	2.28	
				95% Chebyshev (MVUE) UCL	2.845				97.5% Chebyshev (MVUE) UCL	3.629	
				99% Chebyshev (MVUE) UCL	5.168						
					Nonparametric Distribution Free UCL Statistics						
					Data do not follow a Discernible Distribution (0.05)						
					Nonparametric Distribution Free UCLs						
				95% CLT UCL	2.755				95% Jackknife UCL	2.83	
				95% Standard Bootstrap UCL	2.721				95% Bootstrap-t UCL	6.249	
				95% Hall's Bootstrap UCL	6.798				95% Percentile Bootstrap UCL	2.956	
				95% BCA Bootstrap UCL	3.781						
				90% Chebyshev(Mean, Sd) UCL	3.815				95% Chebyshev(Mean, Sd) UCL	4.878	
				97.5% Chebyshev(Mean, Sd) UCL	6.352				99% Chebyshev(Mean, Sd) UCL	9.249	
					Suggested UCL to Use						
				95% Chebyshev (Mean, Sd) UCL	4.878						
				Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
				These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)							
				and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.							
				For additional insight the user may want to consult a statistician.							
F2											
					General Statistics						
				Total Number of Observations	18				Number of Distinct Observations	3	
									Number of Missing Observations	0	
				Minimum	12.5				Mean	23.78	
				Maximum	180				Median	12.5	
				SD	39.87				Std. Error of Mean	9.398	
				Coefficient of Variation	1.677				Skewness	3.971	
					Normal GOF Test						
				Shapiro Wilk Test Statistic	0.323				**Shapiro Wilk GOF Test**		
				5% Shapiro Wilk Critical Value	0.897				Data Not Normal at 5% Significance Level		
				Lilliefors Test Statistic	0.5				**Lilliefors GOF Test**		
				5% Lilliefors Critical Value	0.209				Data Not Normal at 5% Significance Level		
					Data Not Normal at 5% Significance Level						
					Assuming Normal Distribution						
				95% Normal UCL					**95% UCLs (Adjusted for Skewness)**		
				95% Student's-t UCL	40.13				95% Adjusted-CLT UCL (Chen-1995)	48.64	
									95% Modified-t UCL (Johnson-1978)	41.59	

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									Approximate Chi Square Value (0.05)	16.08		
350					Adjusted Level of Significance	0.0357			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, simulations results will not cover all Real World data sets.											
388	For additional insight the user may want to consult a statistician.											
389												

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**						

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**											

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, simulations 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**		

STRATEGY D - GROUND LEVEL

HUNTER STREET

709

POWELL STREET

YOUNG STREET

1

2

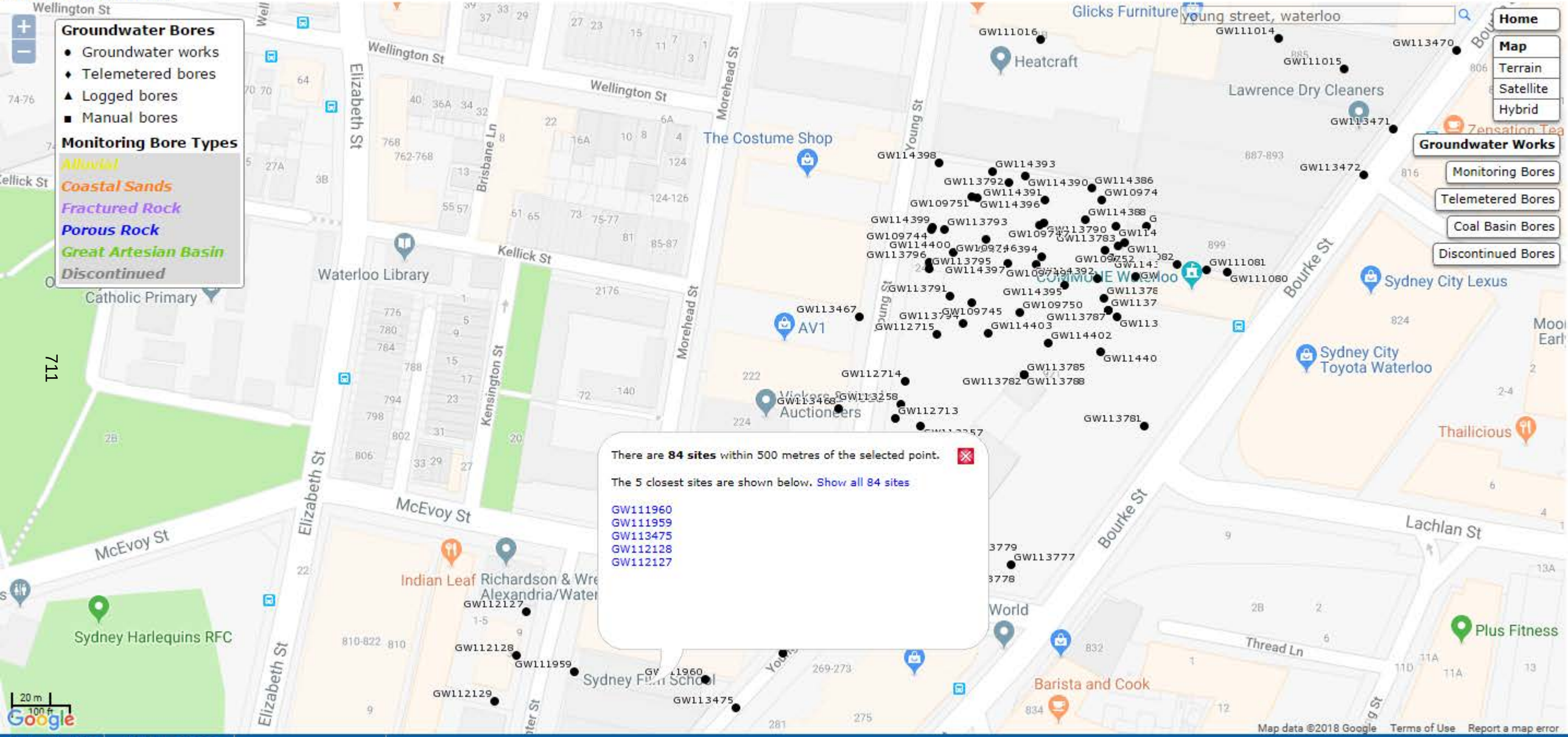
3

STRATEGY D - LEVELS 1-3

APPENDIX B
Groundwater Bore Search

Map | Info

current site: GW111959



711

Scale = 1 : 1693 | 151.208, -33.900

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

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
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
- Numerious 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

Email: james.mcdonnell@infotrack.com.au

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 A D.P. 161650

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
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

Email: james.mcdonnell@infotrack.com.au

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

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
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

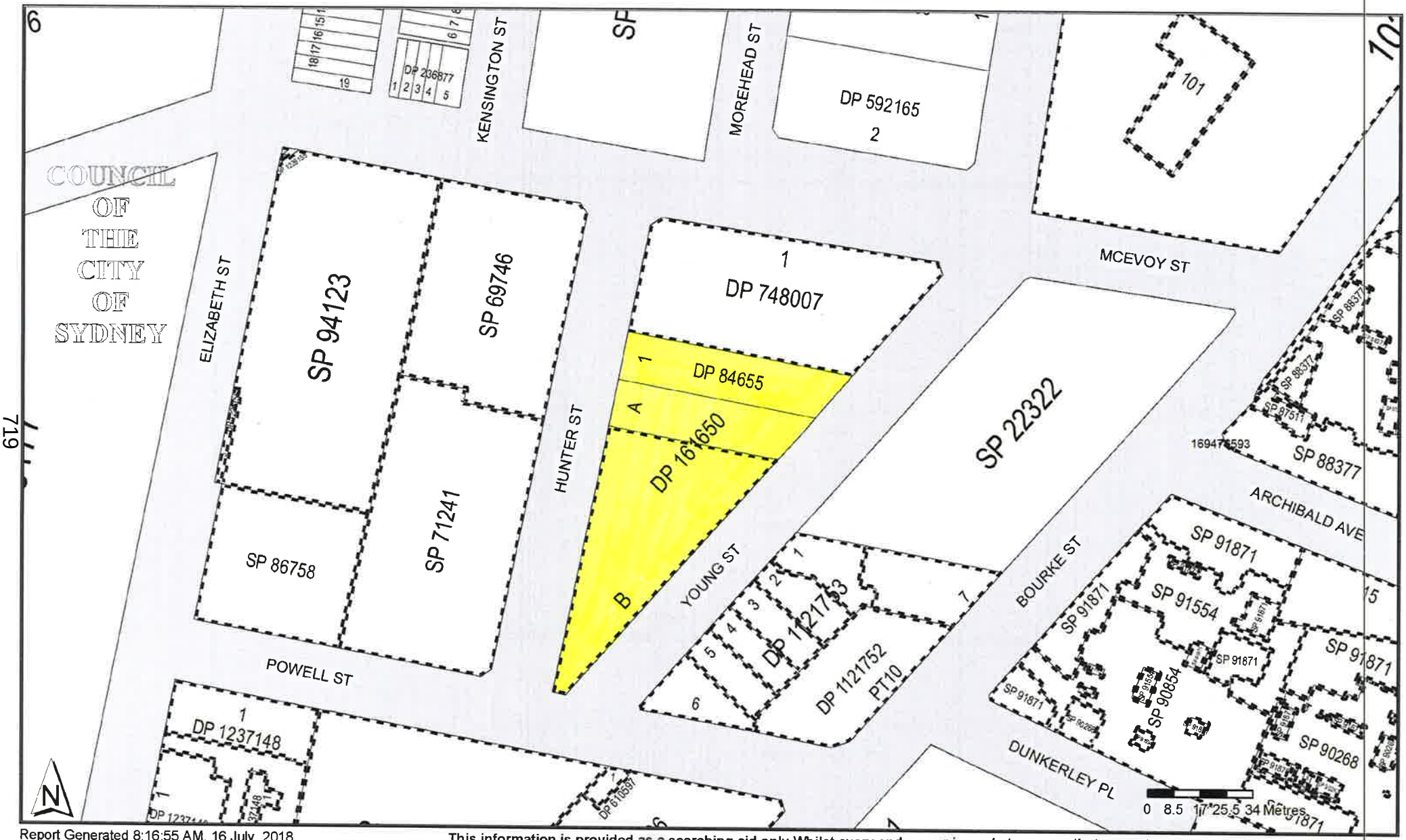
Yours Sincerely
James McDonnell
16 July 2018

LAND REGISTRY SERVICES

Cadastral Records Enquiry Report : Lot A DP 161650

Ref : NOUSER

Locality : WATERLOO
LGA : SYDNEY
Parish : ALEXANDRIA
County : CUMBERLAND



This information is provided as a searching aid only.Whilst every endeavour is made to ensure that current map, plan and titling information is accurately reflected, the Registrar General cannot guarantee the information provided. For ALL ACTIVITY PRIOR TO SEPTEMBER 2002 you must refer to the RGs Charting and Reference Maps

InfoTrack

720

DP 84655

Muny. of Waterloo.

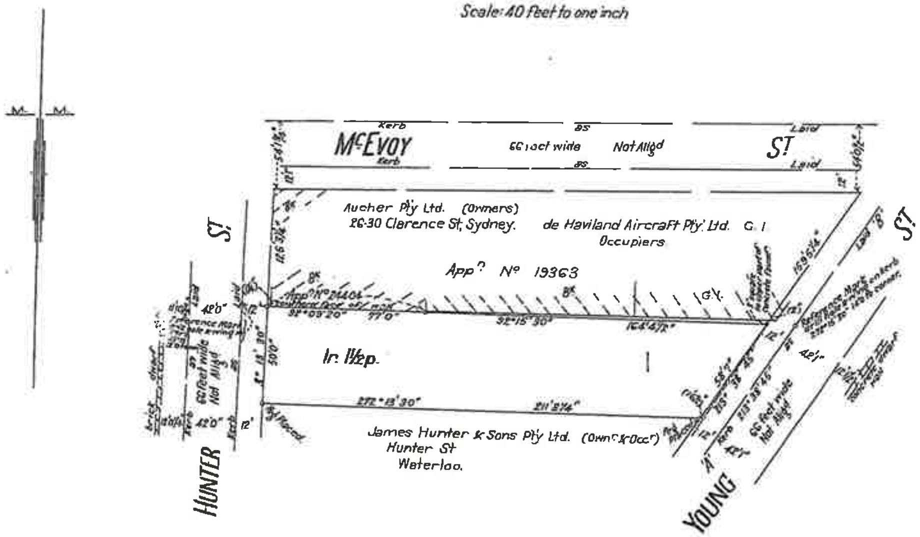
P.A.34655

PLAN

of part of J. T. Campbell's 185ac. Grant

Parish of Alexandria County of Cumberland

Scale: 40 feet to one inch



I, William Deane Cowdery, of Sydney, a Surveyor registered under the Surveyors' Act 1929, do hereby solemnly and sincerely declare (a) that all boundaries and measurements shown on this plan are correct, (b) that all survey marks found and relevant physical objects on or adjacent to the boundaries are correctly represented, (c) that all physical objects indicated actually exist in the positions shown, (d) that the whole of the material facts in relation to the land are correctly represented and that the survey represented in this plan has been made in accordance with the Survey Practice Regulations, 1933, by me, and the Reference Mark has been placed as shown hereon, and was completed on the 20th day of September 1940.

And I make this solemn declaration conscientiously believing the same to be true and by virtue of the provisions of the Oaths Act, 1900.

Subscribed and declared before me,
at Sydney this 27th day of September 1940.

W. D. Cowdery.

John Hawley J.P. Surveyor registered under the Surveyors' Act, 1929

Datum line of Azimuth A-B.

1622/101 6. 31/7/40

PLAN AMENDED IN L.T.O. 19.6.1990

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

DP 84655

FEET	INCHES	METRES
-	1 1/4	0.032
-	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	-	12.802
42	1	12.827
50	-	15.240
54	0 1/2	16.472
54	1 3/4	16.504
58	7	17.856
66	-	20.117
77	-	23.470
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

AMENDMENTS AND/OR ADDITIONS MADE ON PLAN IN THE LAND TITLES OFFICE

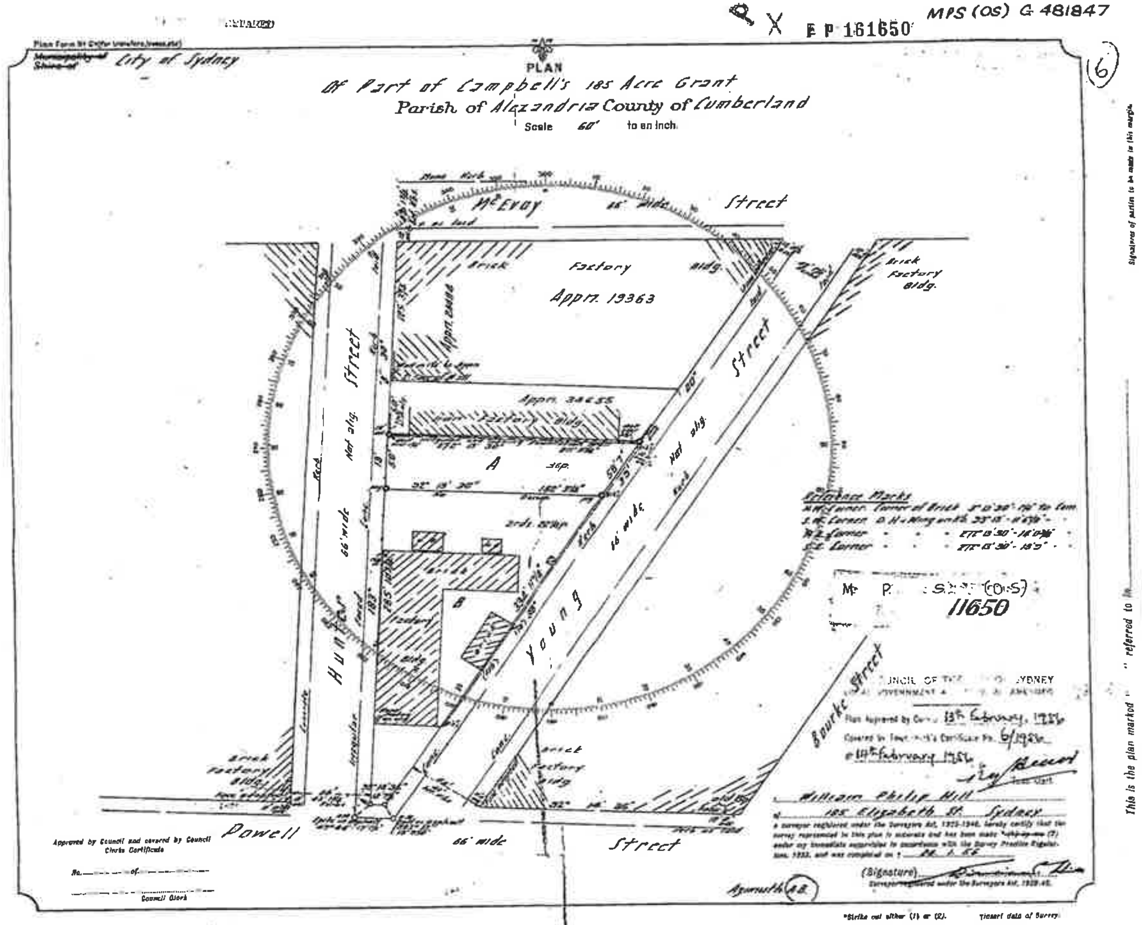
10	20	30	40	50	60	70 Table of mm	110	120	130	140

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

721

MPS (OS) G 481847

D P 161650



Copy of plan filed as 35674

CONVERSION TABLE ADDED IN DEPARTMENT OF LANDS

DP 161650

FEET	INCHES	METRES
-	1 3/4	0.044
-	3 1/2	0.089
1	-	0.305
1	3 1/2	0.394
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	4.191
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	12.833
42	1 3/4	12.846
50	-	15.240
58	7	17.856
66	-	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
334	11 7/8	102.105

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

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 3rd day of November, 1977

1

Historical Title

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

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	I995265	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

waterloo

PRINTED ON 3/7/2018

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
3/7/2018 6:13PM

FOLIO: 1/84655 PAGE 2

Recorded	Number	Type of Instrument	C.T. Issue
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

$1.00

OFFICE OF STATE REVENUE (N.S.W. TREASURY) 1990/91 $11 DULY STAMPED

Z 438289 B

TRANSFER

REAL PROPERTY ACT, 1900

(See Instructions for Completion on back of form)

T 3 | 6 of 7 | X

$ 47

R1/3

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

DESCRIPTION OF LAND
Note (a)

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:)

BAESE PTY. LIMITED Common Seal

Director

Name of Witness (BLOCK LETTERS)

Secretary

Address and occupation of Witness

Signature of Transferor

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:)

TRIDU PTY. LIMITED Common Seal

Director

Name of Witness (BLOCK LETTERS)

Secretary

Address and occupation of Witness

Signature of Transferee

WESTPAC TRANSFER

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

LODGED BY Westpac Banking Corporation
THE BANKING HOUSE, 228 PITT STREET
SYDNEY 2000. PHONE: 260-6756
DELIVERY BOX No. 37Y

Ref.: 032027 910836 S.
Delivery Box Number

CT	OTHER	LOCATION OF DOCUMENTS
✓	WY, DM, T, M	Herewith.
		In R.G.O. with
		Produced by

OFFICE USE ONLY

Checked	Passed	REGISTERED — — 19
Signed	Extra Fee	29 JAN 1991

Secondary Directions: 2ND R.

Delivery Directions: 2935288

Form: 97-01T
Licence: AUS/0634/96

TRANSFER

New South Wales
Real Property Act 1900

3998515 S

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

Office of State Revenue use only

070598 1822 04 20143858Z/03 $2.00

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 (12 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) **TRANSFEREE**

T TS (s713 LGA) TW (Sheriff)	COATES SIGNCO MANUFACTURING PTY LIMITED ACN 067 970 807

(G) ~~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.

Common Seal TRIDU PTY. LIMITED A.C.N. 001 958 854

Secretary

Director

Signature of Witness

Name of Witness (BLOCK LETTERS)

Address of Witness

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

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.

Page 1 of .....

Checked by (LTO use) .....

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

CHANGE OF N

New South Wales
Real Property Act 19

AF717501C

PRIVACY NOTE: Section 31B of the Real Property Act 1900 (RP Act) authori... 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	Name, Address or DX and Telephone	CODE
479P	LLPN: 123339U Clinch Long Letherbarrow Pty Limited DX 13090 SYDNEY MARKET STREET Tel: 9279 4888 Reference: DJW:JAQ:100030	CN

(D) **REGISTERED PROPRIETOR**

COATES SIGNCO MANUFACTURING PTY LIMITED ACN 067 970 807

(E) **NEW NAME**

ALAN COATES PTY LIMITED ACN 067 970 807 Ø

Ø ASIC website searched. SMIO # 28.9.10

(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

Name of witness: X B. MELLANDER

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

Qualification of witness: X JP 168808

Signature of applicant: X

ALL HANDWRITING MUST BE IN BLOCK CAPITALS

LAND REGISTRY SERVICES Title Search

InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

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 ***

waterloo PRINTED ON 13/7/2018

* Any entries preceded by an asterisk do not appear on the current edition of the Certificate of Title. Warning: the information appearing under notations has not been formally recorded in the Register. InfoTrack an approved NSW Information Broker hereby certifies that the information contained in this document has been provided electronically by the Registrar General in accordance with Section 96B(2) of the Real Property Act 1900.

LAND REGISTRY SERVICES

Historical Title

InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL 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

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NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
3/7/2018 6:13PM

FOLIO: A/161650

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

*** END OF SEARCH ***

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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	Name, Address or DX and Telephone
46A	NATIONAL AUSTRALIA BANK LIMITED National Australia Bank House 255 George Street, Sydney 237 - 1111 FAX 237 - 1284 REFERENCE (max. 15 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) **TRANSFEREE**

T	BEVERLEY ANN SANDILANDS

(G) ~~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

J M Sandilands
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
Solicitor acting for
Signature of Transferee

☞ INSTRUCTIONS FOR FILLING OUT THIS FORM ARE AVAILABLE FROM THE LAND TITLES OFFICE

CHECKED BY (office use only)

LAND REGISTRY SERVICES **Title Search** InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

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 ***

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LAND REGISTRY SERVICES

Historical Title

InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

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

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NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
3/7/2018 6:13PM

FOLIO: B/161650 PAGE 2

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

*** END OF SEARCH ***

waterloo PRINTED ON 3/7/2018

RP13

(2)

TRANSFER

Real Property Act, 1900

0
056953 W

Office of

140B

(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	Name, Address or DX and Telephone
45A	NATIONAL AUSTRALIA BANK LIMITED National Australia Bank House 255 George Street, Sydney 237 - 1111 FAX 237 - 1284 REFERENCE (max. 15 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) **TRANSFEREE**

T	BEVERLEY ANN SANDILANDS

(G) ~~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

J M Sandilands
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
Solicitor acting for
Signature of Transferee

☞ INSTRUCTIONS FOR FILLING OUT THIS FORM ARE AVAILABLE FROM THE LAND TITLES OFFICE

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LAND REGISTRY SERVICES **Title Search** InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

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 ***

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Received: 13/07/2018 10:46:55

APPENDIX E
Borehole Logs

BOREHOLE: BH1M

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation			Sheet	1 OF 1
Location	242-244 Young Street, Waterloo NSW			Date Started	15/8/18
Position	Refer to Figure 2			Date Completed	15/8/18
Job No.	E23915	Contractor	HartGeo Pty Ltd	Logged DR	Date: 15/8/18
Client	Bennet Murada Architects	Drill Rig	Ute-mounted Solid Flight Auger	Checked CS	Date: 21/8/18
		Inclination	-90°		

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS ID / Static Water Level
DT			0	0.12	BH1M_0.3-0.4 ES QD1 QT1 PID = 1.9 ppm			-	CONCRETE: 120mm thick.	-		BH1M: Gatic Cover; Concrete
								-	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.			Cuttings
				0.80	BH1M_0.5-0.6 ES PID = 5.6 ppm							50 mm uPVC Casing
			1					S	SAND; fine grained, light grey, no odour.			Bentonite
					BH1M_1.2-1.3 ES PID = 0.3 ppm					M		
			2	2.20								
AD/T	-				BH1M_2.4-2.5 ES PID = 0.7 ppm				From 2.2m, brown.	M - W	-	
			3	3.00					From 3.0m, dark brown, strong hydrocarbon odour.			Sand
		▽			BH1M_3.4-3.5 ES PID = 23.1 ppm							50 mm uPVC Screen
			4							W		
			5	5.00					Hole Terminated at 5.00 m Target Depth Reached. Borehole Converted into Monitoring Well.			
			6									
			7									
			8									
			9									
			10									

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

BOREHOLE: BH2

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation			Sheet	1 OF 1
Location	242-244 Young Street, Waterloo NSW			Date Started	15/8/18
Position	Refer to Figure 2			Date Completed	15/8/18
Job No.	E23915	Contractor	N/A	Logged DR	Date: 15/8/18
Client	Bennet Murada Architects	Drill Rig	Hand Auger	Checked CS	Date: 21/8/18
		Inclination	-90°		

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

BOREHOLE: BH3

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Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation			Sheet	1 OF 1
Location	242-244 Young Street, Waterloo NSW			Date Started	15/8/18
Position	Refer to Figure 2			Date Completed	15/8/18
Job No.	E23915	Contractor	N/A	Logged DR	Date: 15/8/18
Client	Bennet Murada Architects	Drill Rig	Hand Auger	Checked CS	Date: 21/8/18
		Inclination	-90°		

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
DT	-	GWNE	0.0					-	CONCRETE: 150mm thick.	-		CONCRETE HARDSTAND
				0.15								
AD/T					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.	M	-	FILL
				0.35								
									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.

BOREHOLE: BH4

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation			Sheet	1 OF 1
Location	242-244 Young Street, Waterloo NSW			Date Started	15/8/18
Position	Refer to Figure 2			Date Completed	15/8/18
Job No.	E23915	Contractor	N/A	Logged DR	Date: 15/8/18
Client	Bennet Murada Architects	Drill Rig	Hand Auger	Checked CS	Date: 21/8/18
		Inclination	-90°		

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
DT	-	GWNE	0.0					-	CONCRETE: 150mm thick.	-		CONCRETE HARDSTAND
				0.15								
AD/T					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
				0.30					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.

BOREHOLE: BH5

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation			Sheet	1 OF 1
Location	242-244 Young Street, Waterloo NSW			Date Started	15/8/18
Position	Refer to Figure 2			Date Completed	15/8/18
Job No.	E23915	Contractor	N/A	Logged DR	Date: 15/8/18
Client	Bennet Murada Architects	Drill Rig	Hand Auger	Checked CS	Date: 21/8/18
		Inclination	-90°		

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
DT			0.0					-	CONCRETE: 100mm thick.	-		CONCRETE HARDSTAND
				0.10								
AD/T	-	GWNE			BH5_0.1-0.2 ES PID = 2.1 ppm			-	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.

BOREHOLE: BH6

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Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation			Sheet	1 OF 1
Location	242-244 Young Street, Waterloo NSW			Date Started	15/8/18
Position	Refer to Figure 2			Date Completed	15/8/18
Job No.	E23915	Contractor	N/A	Logged DR	Date: 15/8/18
Client	Bennet Murada Architects	Drill Rig	Hand Auger	Checked CS	Date: 21/8/18
		Inclination	-90°		

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
DT			0.0					-	CONCRETE: 150mm thick.	-		CONCRETE HARDSTAND
				0.15								
AD/T	-	GWNE			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.	M	-	FILL
			0.5	0.50					Hole Terminated at 0.50 m Refusal on Coarse Gravels. 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.

BOREHOLE: BH7

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Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation			Sheet	1 OF 1
Location	242-244 Young Street, Waterloo NSW			Date Started	15/8/18
Position	Refer to Figure 2			Date Completed	15/8/18
Job No.	E23915	Contractor	HartGeo Pty Ltd	Logged DR	Date: 15/8/18
Client	Bennet Murada Architects	Drill Rig	Ute-mounted Solid Flight Auger	Checked CS	Date: 21/8/18
		Inclination	-90°		

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
AD/T	-	GWNE	0.0		BH7_0.3-0.4 ES PID = 4.7 ppm			-	FILL: Gravelly SAND; fine grained, brown, with fine, sub-angular to angular gravels, no odour.			FILL
			0.5	0.60				S	SAND; fine grained, light grey, no odour.	M	-	ALLUVIUM
			1.0									
			1.5		BH7_1.5-1.6 ES PID = 3.7 ppm							
			2.0	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.

BOREHOLE: BH8

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Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation			Sheet	1 OF 1
Location	242-244 Young Street, Waterloo NSW			Date Started	15/8/18
Position	Refer to Figure 2			Date Completed	15/8/18
Job No.	E23915	Contractor	HartGeo Pty Ltd	Logged DR	Date: 15/8/18
Client	Bennet Murada Architects	Drill Rig	Ute-mounted Solid Flight Auger	Checked CS	Date: 21/8/18
		Inclination	-90°		

Drilling					Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
			0.0					-	FILL: Gravelly SAND; fine grained, brown, with fine, sub-angular to angular gravels, no odour.			FILL
					BH8_0.3-0.4 ES PID = 2.1 ppm							
			0.5									
				0.70				S	SAND; fine grained, light grey, no odour.			ALLUVIUM
AD/T	-	GWNE	1.0							M	-	
					BH8_1.7-1.8 ES PID = 1.1 ppm							
			1.5									
									Hole Terminated at 2.00 m Target Depth Reached. Backfilled with Drilling Spoil.			
			2.0	2.00								

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

BOREHOLE: BH9M

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation			Sheet	1 OF 1
Location	242-244 Young Street, Waterloo NSW			Date Started	15/8/18
Position	Refer to Figure 2			Date Completed	15/8/18
Job No.	E23915	Contractor	HartGeo Pty Ltd	Logged DR	Date: 15/8/18
Client	Bennet Murada Architects	Drill Rig	Ute-mounted Solid Flight Auger	Checked CS	Date: 21/8/18
		Inclination	-90°		

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

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

BOREHOLE: BH10M

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation			Sheet	1 OF 1
Location	242-244 Young Street, Waterloo NSW			Date Started	15/8/18
Position	Refer to Figure 2			Date Completed	15/8/18
Job No.	E23915	Contractor	HartGeo Pty Ltd	Logged DR	Date: 15/8/18
Client	Bennet Murada Architects	Drill Rig	Ute-mounted Solid Flight Auger	Checked CS	Date: 21/8/18
		Inclination	-90°		

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS ID / Static Water Level
DT			0	0.15				-	CONCRETE: 150mm thick.	-		BH10M: Gatic Cover; Concrete
AD/T	-				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.			Cuttings; 50 mm uPVC Casing; Bentonite
			1	1.50				CI	Silty CLAY (PEAT); medium plasticity, dark brown, no odour.	M		
				2.00	BH10M_1.7-1.8 ES PID = 2.4 ppm			S	SAND; fine grained, light grey, no odour.			
			2		BH10M_2.4-2.5 ES PID = 1.7 ppm							
			3									Sand; 50 mm uPVC Screen
			4							W		
				4.50				CI-CH	CLAY; medium to high plasticity, brown, no odour.			
			5	5.00				-	SANDSTONE; fine grained, yellow, no odour.			Cuttings
				5.50					Hole Terminated at 5.50 m Target Depth Reached. Borehole Converted into Monitoring Well.			
			6									
			7									
			8									
			9									
			10									

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:	DR/CS
Date:	31/7/18	Time ON Site:	8:30
Travel Time:	1 hr	Time OFF Site:	10:00

Site Address/Location: 242 - 244 ~~Alot~~ 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:

- ☑ slab on ground
- ☐ suspended slab
- ☐ basement ..... Level(s)
- ☑ sub-stations
- ☐ service pits / sumps
- ☐ potential ACM
- ☐ potential lead paint
- ☑ accessible soils (locations)
- ☐ Other (please decsribe):

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:	31/7/18

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

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

Numbe 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 occupiants: fibre optic cable manufacturer (Finsar ?)

Notes:

- Access for drilling rig was also completed.

Signed:	Name:	Date:

Site Inspection Card - General

Form OP 005b (Rev 1)

eiaustralia
Contamination | Remediation | Geotechnical

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:	E23915	Sheet: 1 of 1	Date: 15/8/18
Project Name:	Waterloo - DSI	Time at ARRIVAL: 7:30	(am)/pm
Client Contact:		Time at DEPARTURE: 2:30	am/(pm)
Site Address/Location:	242-244 Young St, Waterloo NSW		
Climatic Conditions:			

Completed Works (Describe site conditions, stage of works, relevant environmental conditions) (Take photos)

7:30: Arrive onsite

9:30: Dano's auger get stuck, started doing hand augers while he fixed the rig.

11:30: finished hand augering and & first well construction.

12:30: completed two augered holes and second monitoring well.

1:15: finish find monitoring wells.

1:45: finished concreting holes

2:15: finished developing wells.

2:30: packed up and started going back to office.

Comments / Issues / Conclusions / Further Testing Required / Actions to be Undertaken / Timing of Actions:

Name: Signed:

EI Australia
Suite 6.01, 55 Miller Street
PYRMONT, NSW, 2009

ABN 33 102 449 507
E service@eiaustralia.com.au
W www.eiaustralia.com.au
T 02 9516 0722

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: 100 ~~100~~ ppm

Gas bottle number: 676450 - 178

This PID has been calibrated to Isobutylene gas with the span concentration displayed as

100
~~99.7~~ ppm at 99.7 ppm span setting (allowable range +/-10ppm from span setting).

The PID is initially zero calibrated in fresh air.

Remaining gas in bottle: 430 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

752

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

Site Inspection Card - General

Form OP 005b (Rev 1)

El 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:	E23915.E02	Sheet: 1 of 1	Date: 24/08/18
Project Name:		Time at ARRIVAL:	11:30 am/pm
Client Contact:		Time at DEPARTURE:	3:40 am/pm
Site Address/Location:	242 - 244 Young St, Waterloo, NSW		
Climatic Conditions:	raining		

Completed Works (Describe site conditions, stage of works, relevant environmental conditions) (Take photos)

3 Ground samples (BH1M-1, BH9M-1, BH10M-1)

QD and QT taken @ BH9M

Comments / Issues / Conclusions / Further Testing Required / Actions to be Undertaken / Timing of Actions:

Name: NB Signed:

WATER SAMPLING FIELD SHEET

eiaustralia

Site Address: 242 - 244 Young St, Waterloo	Job Number: E23915.E02
Client: Pacific Equity Partners Pty Ltd	Date: 24/8/18
Field Staff: LB	Sampling Location ID BH1M
Well Location: See Fig 2	Round No: 1

MEDIUM ☑Groundwater ☐Surface Water ☐Stormwater ☐Other:

SAMPLING POINT INFO

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

PID READINGS

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

PRE PURGE

Total Well Depth (mBTOC): 4.79	Well Head Condition: good
SWL (mBTOC): 3.29	Water Column (m): 1.5

PHASE SEPARATED HYDROCARBONS (PSH)

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

PURGE AND SAMPLE

Sampling Method ☑Bladder ☐Peristaltic ☐Submersible ☐Other:

Depth of Pump Inlet (mBTOC): 4.00	Fill Timer:
Pump Pressure Regulator (psi): ~~25 psi~~ 60 psi	Discharge Timer:
Weather Conditions: raining	Cycle:
Pump on time: 12:21	Pump off time: 12:50

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.)
12:33	0.5	3.31	18.67	1385	167.2	1.58	7.22	brown, very h turb, yes (HC)
12:37	1.0	3.30	18.60	860	166.6	0.34	7.21	
12:39	1.5	3.30	18.72	799	167.1	0.35	7.17	yes (sheen a bit)
12:41	2.0	3.32	18.74	783	167.3	0.31	7.16	
Stabilisation range: 3 consecutive readings			±0.2°C	±3%	±20mV	±10%	±0.2	

OTHER COMMENTS/OBSERVATIONS:

SIGNATURE: LB

WATER SAMPLING FIELD SHEET

eiaustralia

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 / down (m): - 0.08 (+ above ground - below ground)
Initial Well Depth (mBTOC):	Screen Interval (mBTOC):
Previous Sampling Date:	Previous SWL (mBTOC):
PID READINGS	
PID Headspace (ppm):	PID Background (ppm):
PID Breathing Space (ppm):	
PRE PURGE	
Total Well Depth (mBTOC): 4.84	Well Head Condition: good
SWL (mBTOC): 2.60	Water Column (m): 2.24
PHASE SEPARATED HYDROCARBONS (PSH)	
Depth to PSH (mBTOC):	PSH Visually Confirmed (Bailer):
PSH Thickness (mm):	
PURGE AND SAMPLE	
Sampling Method ☑Bladder ☐Peristaltic ☐Submersible ☐Other:	
Depth of Pump Inlet (mBTOC): 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:

QD and QT taken @ BH9M.

SIGNATURE:

WATER SAMPLING FIELD SHEET

eiaustralia

Site Address: 242 - 244 Young St, Waterloo	Job Number: E23915
Client: Pacific Equity Partners Pty Ltd	Date: 24/8/18
Field Staff: LB	Sampling Location ID BH10M
Well Location: See Fig 2	Round No: 1

MEDIUM ☑Groundwater ☐Surface Water ☐Stormwater ☐Other:

SAMPLING POINT INFO

Well Installation Date:	Stick up / (down) (m): -0.10 (+ above ground - below ground)
Initial Well Depth (mBTOC):	Screen Interval (mBTOC):
Previous Sampling Date:	Previous SWL (mBTOC):

PID READINGS

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

PRE PURGE

Total Well Depth (mBTOC): 5.10	Well Head Condition: good
SWL (mBTOC): 2.64	Water Column (m): 2.46

PHASE SEPARATED HYDROCARBONS (PSH)

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

PURGE AND SAMPLE

Sampling Method ☑Bladder ☐Peristaltic ☐Submersible ☐Other:

Depth of Pump Inlet (mBTOC):	Fill Timer:
Pump Pressure Regulator (psi):	Discharge Timer:
Weather Conditions:	Cycle:
Pump on time: 2:35	Pump off time:

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.)
2:42	0.5	2.67	19.18	254	167.6	1.66	6.48	brown/grey, h, n, n.
2:44	1.0	2.67	19.31	251	167.9	1.47	6.49	↓
2:48	1.5	2.76	19.49	228	168.3	1.35	6.48	
2:51	2.0	2.79	19.46	226	168.5	1.54	6.48	
Stabilisation range: 3 consecutive readings			±0.2°C	±3%	±20mV	±10%	±0.2	

OTHER COMMENTS/OBSERVATIONS:

SIGNATURE: AB

APPENDIX G
Chain of Custody and Sample Receipt Forms

Sheet 1 of 2

Site: 242 - 244 Young Street, Waterloo NSW

Project No: E23915

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

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	Sample Matrix: WATER	SOIL	OTHERS (i.e. Fibro, Paint, etc.)	Analysis: HM [A] /TRH/BTEX/PAHs OCP/OP/PCB/Asbestos	HM [A] /TRH/BTEX/PAHs	HM [A] /TRH/BTEX	BTEX	VOCs	Asbestos	Asbestos Quantification	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	Dewatering Suite	sPOCAS	PFAS				TCLP HM [B] / PAH
BH1M_0.3-0.4	1	J, ZLB	15/8/18	AM/PM		X		X															
_0.5-0.6	2	↓						X															
_1.2-1.3	3	J							X						X								
_2.4-2.5		↓																					
BH1M_2.4-2.5	4	J							X														
BH2_0.1-0.2	5	J, ZLB						X															
_0.3-0.4	6	J							X						X								
BH3_0.2-0.3	7	J, ZLB						X															
BH4_0.2-0.3	8	↓						X															
BH5_0.1-0.2	9							X															
BH6_0.2-0.3	10							X															
BH7_0.3-0.4	11	↓						X															
BH7_1.5-1.6		J	↓	↓		↓																	

Comments

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

LABORATORY TURNAROUND

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

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

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

Report with EI Waste Classification Table ☐

Sampler's Name (EI):	Received by (SGS):
Print: David Rizkalla	Print: Ness
Signature:	Signature:
Date: 16/8/18	Date: 16/8/18 12:25

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

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

COC March 2018 FORM v.4 - SGS

SGS EHS Alexandria Laboratory

SE182724 COC
Received: 16 – Aug – 2018

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Sheet 2 of 2

Site: 242-244 Young Street, Waterloo

Project No: E23915

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

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	Sample Matrix: WATER	SOIL	OTHERS (i.e. Fibro, Paint, etc.)	Analysis: HM Δ /TRH/BTEX/PAHs OCP/OP/PCB/Asbestos	HM Δ /TRH/BTEX/PAHs	HM Δ /TRH/BTEX	BTEX	VOCs	Asbestos	Asbestos Quantification	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	Dewatering Suite	sPOCAS	PFAS				TCLP HM B / PAH
BH8_0.3-0.4	12	J, ZLB	15/8/18	AM/PM		X		X															
BH8_1.7-1.8	13	J	↓	↓		↓			X						X								
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														
QD1	19	J								X													
TS	20	VC									X												
TB	21	VC				↓					X												
QR1	22	S, P, 2VC			X					X													
QRBL		↓	↓	↓	↓																		

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Comments

HM Δ
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

LABORATORY TURNAROUND

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

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

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

Report with EI Waste Classification Table ☐

Sampler's Name (EI):	Received by (SGS):
Print: David Rizkalla	Print: Nessa
Signature: [signature]	Signature: [signature]
Date: 16/8/18	Date: 16/8/18 12:25

Sampler's Comments:

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

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

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	4.1ºC	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.

SAMPLE RECEIPT ADVICE

SE182724

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.

SAMPLE RECEIPT ADVICE

SE182724

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.

SAMPLE RECEIPT ADVICE

SE182724

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.

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Sheet 1 of 1

Site: 242-244 Young Street, Wedderburn NSW

Project No: E2295

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

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	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
BT1	1	J	16/8/18	AM/PM		X				X													

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ENVIROLAB

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

Job No: 198566

Date Received: 16/8/18

Time Received: 13:00

Received by:

Temp: Cool/Ambient

Cooling: Ice/Icepack

Security: Intact/Broken/None

Comments

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

HM[B]
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

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

LABORATORY TURNAROUND

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

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

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

Report with EI Waste Classification Table [ ]

Sampler's Name (EI):	Received by (Envirolab) 3.8
Print: Dana Rizkallo	Print: Kevin Ng
Signature:	Signature:
Date: 16/8/18	Date: 16/8/18

Sampler's Comments:

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

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

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

SAMPLE RECEIPT ADVICE

Client Details

Client	EI Australia
Attention	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	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

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

Sample ID	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	Acid Extractable metalsin 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 1 of 1

Site: 242 - 244 YOUNG ST WATERLOO

Project No: E23915. E02

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

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	Sample Matrix: WATER	SOIL	OTHERS (i.e. Fibro, Paint, etc.)	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
BH1M-1	S,2xVC,P	1	24/8/18	PM	X				X			X				X				X	X	X	
BH9M-1	↓	2	↓	↓	↓				↓			↓				↓				↓	↓	↓	
BH10M-1	↓	3	↓	↓	↓				↓			↓				↓				↓	↓	↓	
QD1-GW	↓	4	↓	↓	↓					X													
	↓		↓	↓	↓																		
BHR-1	↓	5	↓	↓	↓					X													
GWQTB1	VC	6	LAB		X						X												
GWQTS1	VC	7	PREPARED		X						X												

Comments

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

HM [B]
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

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

LABORATORY TURNAROUND

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

SGS EHS Alexandria Laboratory

SE183173 COC
Received: 28 – Aug – 2018

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

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

Report with EI Waste Classification Table ☐

Sampler's Name (EI):	Received by (SGS):
Print: CHRIS SORDY	Print: Suba
Signature:	Signature:
Date: 28.8.18	Date: 29/08/18 @ 3:20

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

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

eiaustralia
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

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	7.2ºC	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

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

COMMENTS

SAMPLE RECEIPT ADVICE

SE183173

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.

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SAMPLE RECEIPT ADVICE

SE183173

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 1 of 1

Site: 242-244 YOUNG ST WATERLOO

Project No: E23915.E02

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

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	Sample Matrix: WATER	SOIL	OTHERS (i.e. Fibro, Paint, etc.)	Analysis: HM[A] /TRH/BTEX/PAHs OCP/OP/PCB/Asbestos	HM[A] /TRH/BTEX/PAHs	HM[A] /TRH/BTEX	BTEX	VOCs	Asbestos	Asbestos Quantification	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	Dewatering Suite	sPOCAS	PFAS				TCLP HM[B] / PAH
QT-1-GW	1	S,P,VCx2	24-8-18	PM	X					X													

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

Job No: 190432

Date Received: 28/8/18
Time Received: 15:30
Received By: LN
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Comments

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

HM[B]
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

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

LABORATORY TURNAROUND

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

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

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

Report with EI Waste Classification Table ☐

Sampler's Name (EI):	Received by (Envirolab)
Print: CHRIS SORDY	Print: LN
Signature:	Signature:
Date: 28-8-18	Date: 28/8/18

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

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

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

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

SAMPLE RECEIPT ADVICE

Client Details

Client	EI Australia
Attention	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	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

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

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

ANALYTICAL REPORT

Accreditation No. 2562

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

Akheeqar Beniameen
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 SOIL - 15/8/2018 SE182724.001	BH1M_0.5-0.6 SOIL - 15/8/2018 SE182724.002	BH1M_1.2-1.3 SOIL - 15/8/2018 SE182724.003	BH1M_3.4-3.5 SOIL - 15/8/2018 SE182724.004	BH2_0.1-0.2 SOIL - 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 SOIL - 15/8/2018 SE182724.006	BH3_0.2-0.3 SOIL - 15/8/2018 SE182724.007	BH4_0.2-0.3 SOIL - 15/8/2018 SE182724.008	BH5_0.1-0.2 SOIL - 15/8/2018 SE182724.009	BH6_0.2-0.3 SOIL - 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 SOIL - 15/8/2018 SE182724.011	BH8_0.3-0.4 SOIL - 15/8/2018 SE182724.012	BH8_1.7-1.8 SOIL - 15/8/2018 SE182724.013	BH9M_0.3-0.4 SOIL - 15/8/2018 SE182724.014	BH9M_1.8-1.9 SOIL - 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 SOIL - 15/8/2018 SE182724.016	BH10M_1.7-1.8 SOIL - 15/8/2018 SE182724.017	BH10M_2.4-2.5 SOIL - 15/8/2018 SE182724.018	QD1 SOIL - 15/8/2018 SE182724.019	TS SOIL - 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 SOIL - 15/8/2018 SE182724.001	BH1M_0.5-0.6 SOIL - 15/8/2018 SE182724.002	BH1M_1.2-1.3 SOIL - 15/8/2018 SE182724.003	BH1M_3.4-3.5 SOIL - 15/8/2018 SE182724.004	BH2_0.1-0.2 SOIL - 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 SOIL - 15/8/2018 SE182724.006	BH3_0.2-0.3 SOIL - 15/8/2018 SE182724.007	BH4_0.2-0.3 SOIL - 15/8/2018 SE182724.008	BH5_0.1-0.2 SOIL - 15/8/2018 SE182724.009	BH6_0.2-0.3 SOIL - 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 SOIL - 15/8/2018 SE182724.011	BH8_0.3-0.4 SOIL - 15/8/2018 SE182724.012	BH8_1.7-1.8 SOIL - 15/8/2018 SE182724.013	BH9M_0.3-0.4 SOIL - 15/8/2018 SE182724.014	BH9M_1.8-1.9 SOIL - 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 SOIL - 15/8/2018 SE182724.016	BH10M_1.7-1.8 SOIL - 15/8/2018 SE182724.017	BH10M_2.4-2.5 SOIL - 15/8/2018 SE182724.018	QD1 SOIL - 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 SOIL - 15/8/2018 SE182724.001	BH1M_0.5-0.6 SOIL - 15/8/2018 SE182724.002	BH1M_1.2-1.3 SOIL - 15/8/2018 SE182724.003	BH1M_3.4-3.5 SOIL - 15/8/2018 SE182724.004	BH2_0.1-0.2 SOIL - 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 SOIL - 15/8/2018 SE182724.006	BH3_0.2-0.3 SOIL - 15/8/2018 SE182724.007	BH4_0.2-0.3 SOIL - 15/8/2018 SE182724.008	BH5_0.1-0.2 SOIL - 15/8/2018 SE182724.009	BH6_0.2-0.3 SOIL - 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 SOIL - 15/8/2018 SE182724.011	BH8_0.3-0.4 SOIL - 15/8/2018 SE182724.012	BH8_1.7-1.8 SOIL - 15/8/2018 SE182724.013	BH9M_0.3-0.4 SOIL - 15/8/2018 SE182724.014	BH9M_1.8-1.9 SOIL - 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 SOIL - 15/8/2018 SE182724.016	BH10M_1.7-1.8 SOIL - 15/8/2018 SE182724.017	BH10M_2.4-2.5 SOIL - 15/8/2018 SE182724.018	QD1 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 SOIL - 15/8/2018 SE182724.001	BH1M_0.5-0.6 SOIL - 15/8/2018 SE182724.002	BH1M_1.2-1.3 SOIL - 15/8/2018 SE182724.003	BH1M_3.4-3.5 SOIL - 15/8/2018 SE182724.004	BH2_0.1-0.2 SOIL - 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 SOIL - 15/8/2018 SE182724.006	BH3_0.2-0.3 SOIL - 15/8/2018 SE182724.007	BH4_0.2-0.3 SOIL - 15/8/2018 SE182724.008	BH5_0.1-0.2 SOIL - 15/8/2018 SE182724.009	BH6_0.2-0.3 SOIL - 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 SOIL - 15/8/2018 SE182724.011	BH8_0.3-0.4 SOIL - 15/8/2018 SE182724.012	BH8_1.7-1.8 SOIL - 15/8/2018 SE182724.013	BH9M_0.3-0.4 SOIL - 15/8/2018 SE182724.014	BH9M_1.8-1.9 SOIL - 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 SOIL - 15/8/2018 SE182724.016	BH10M_1.7-1.8 SOIL - 15/8/2018 SE182724.017	BH10M_2.4-2.5 SOIL - 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 SOIL - 15/8/2018 SE182724.001	BH1M_0.5-0.6 SOIL - 15/8/2018 SE182724.002	BH2_0.1-0.2 SOIL - 15/8/2018 SE182724.005	BH3_0.2-0.3 SOIL - 15/8/2018 SE182724.007	BH4_0.2-0.3 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 SOIL - 15/8/2018 SE182724.009	BH6_0.2-0.3 SOIL - 15/8/2018 SE182724.010	BH7_0.3-0.4 SOIL - 15/8/2018 SE182724.011	BH8_0.3-0.4 SOIL - 15/8/2018 SE182724.012	BH9M_0.3-0.4 SOIL - 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 SOIL - 15/8/2018 SE182724.001	BH1M_0.5-0.6 SOIL - 15/8/2018 SE182724.002	BH2_0.1-0.2 SOIL - 15/8/2018 SE182724.005	BH3_0.2-0.3 SOIL - 15/8/2018 SE182724.007	BH4_0.2-0.3 SOIL - 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 SOIL - 15/8/2018 SE182724.009	BH6_0.2-0.3 SOIL - 15/8/2018 SE182724.010	BH7_0.3-0.4 SOIL - 15/8/2018 SE182724.011	BH8_0.3-0.4 SOIL - 15/8/2018 SE182724.012	BH9M_0.3-0.4 SOIL - 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 SOIL - 15/8/2018 SE182724.001	BH1M_0.5-0.6 SOIL - 15/8/2018 SE182724.002	BH2_0.1-0.2 SOIL - 15/8/2018 SE182724.005	BH3_0.2-0.3 SOIL - 15/8/2018 SE182724.007	BH4_0.2-0.3 SOIL - 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 SOIL - 15/8/2018 SE182724.009	BH6_0.2-0.3 SOIL - 15/8/2018 SE182724.010	BH7_0.3-0.4 SOIL - 15/8/2018 SE182724.011	BH8_0.3-0.4 SOIL - 15/8/2018 SE182724.012	BH9M_0.3-0.4 SOIL - 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

PARAMETER	UOM	LOR	BH1M_1.2-1.3 SOIL - 15/8/2018 SE182724.003	BH2_0.3-0.4 SOIL - 15/8/2018 SE182724.006	BH8_1.7-1.8 SOIL - 15/8/2018 SE182724.013	BH9M_1.8-1.9 SOIL - 15/8/2018 SE182724.015	BH10M_1.7-1.8 SOIL - 15/8/2018 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 SOIL - 15/8/2018 SE182724.003	BH2_0.3-0.4 SOIL - 15/8/2018 SE182724.006	BH8_1.7-1.8 SOIL - 15/8/2018 SE182724.013	BH9M_1.8-1.9 SOIL - 15/8/2018 SE182724.015	BH10M_1.7-1.8 SOIL - 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 SOIL - 15/8/2018 SE182724.001	BH1M_0.5-0.6 SOIL - 15/8/2018 SE182724.002	BH1M_1.2-1.3 SOIL - 15/8/2018 SE182724.003	BH1M_3.4-3.5 SOIL - 15/8/2018 SE182724.004	BH2_0.1-0.2 SOIL - 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 SOIL - 15/8/2018 SE182724.006	BH3_0.2-0.3 SOIL - 15/8/2018 SE182724.007	BH4_0.2-0.3 SOIL - 15/8/2018 SE182724.008	BH5_0.1-0.2 SOIL - 15/8/2018 SE182724.009	BH6_0.2-0.3 SOIL - 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 SOIL - 15/8/2018 SE182724.011	BH8_0.3-0.4 SOIL - 15/8/2018 SE182724.012	BH8_1.7-1.8 SOIL - 15/8/2018 SE182724.013	BH9M_0.3-0.4 SOIL - 15/8/2018 SE182724.014	BH9M_1.8-1.9 SOIL - 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 SOIL - 15/8/2018 SE182724.016	BH10M_1.7-1.8 SOIL - 15/8/2018 SE182724.017	BH10M_2.4-2.5 SOIL - 15/8/2018 SE182724.018	QD1 SOIL - 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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

PARAMETER	UOM	LOR	QR1 WATER - 15/8/2018 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

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

PARAMETER	UOM	LOR	QR1 WATER - 15/8/2018 SE182724.022
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 unequivocably identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf) The fibres detected may or may not be asbestos fibres.
AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples, Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection limit of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."
AN602	The sample can be reported “no asbestos found at the reporting limit of 0.1 g/kg” (<0.01%w/w) where AN602 section 4.5 of this method has been followed, and if- (a) no trace asbestos fibres have been detected (i.e. no ‘respirable’ fibres): (b) the estimated weight of non-respirable asbestos fibre bundles and/or the estimated weight of asbestos in asbestos-containing materials are found to be less than 0.1g/kg: and (c) these non-respirable asbestos fibre bundles and/or the asbestos containing materials are only visible under stereo-microscope viewing conditions.

FOOTNOTES

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

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

Sample Details

Your Reference	**E23915, Waterloo**
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

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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.

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]

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]

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.

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.

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.

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

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

LABORATORY DETAILS

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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.

SIGNATORIES

Akheeqar Beniameen
Chemist

Huong Crawford
Production Manager

Kamrul Ahsan
Senior Chemist

Ly Kim Ha
Organic Section Head

Teresa Nguyen
Organic Chemist

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

PARAMETER	UOM	LOR	BH1M-1 WATER - 24/8/2018 SE183173.001	BH9M-1 WATER - 24/8/2018 SE183173.002	BH10M-1 WATER - 24/8/2018 SE183173.003	GW-QD1 WATER - 24/8/2018 SE183173.004	BHR-1 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 WATER - 24/8/2018 SE183173.001	BH9M-1 WATER - 24/8/2018 SE183173.002	BH10M-1 WATER - 24/8/2018 SE183173.003	GW-QD1 WATER - 24/8/2018 SE183173.004	BHR-1 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 WATER - 24/8/2018 SE183173.006	GWQTS1 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	-	-

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

PARAMETER	UOM	LOR	GWQTB1 WATER - 24/8/2018 SE183173.006	GWQTS1 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 WATER - 24/8/2018 SE183173.001	BH9M-1 WATER - 24/8/2018 SE183173.002	BH10M-1 WATER - 24/8/2018 SE183173.003	GW-QD1 WATER - 24/8/2018 SE183173.004	BHR-1 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 WATER - 24/8/2018 SE183173.001	BH9M-1 WATER - 24/8/2018 SE183173.002	BH10M-1 WATER - 24/8/2018 SE183173.003	GW-QD1 WATER - 24/8/2018 SE183173.004	BHR-1 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 WATER - 24/8/2018 SE183173.001	BH9M-1 WATER - 24/8/2018 SE183173.002	BH10M-1 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 WATER - 24/8/2018 SE183173.001	BH9M-1 WATER - 24/8/2018 SE183173.002	BH10M-1 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 WATER - 24/8/2018 SE183173.001	BH9M-1 WATER - 24/8/2018 SE183173.002	BH10M-1 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 WATER - 24/8/2018 SE183173.001	BH9M-1 WATER - 24/8/2018 SE183173.002	BH10M-1 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 WATER - 24/8/2018 SE183173.001	BH9M-1 WATER - 24/8/2018 SE183173.002	BH10M-1 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 WATER - 24/8/2018 SE183173.001	BH9M-1 WATER - 24/8/2018 SE183173.002	BH10M-1 WATER - 24/8/2018 SE183173.003	GW-QD1 WATER - 24/8/2018 SE183173.004	BHR-1 WATER - 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 WATER - 24/8/2018 SE183173.001	BH9M-1 WATER - 24/8/2018 SE183173.002	BH10M-1 WATER - 24/8/2018 SE183173.003	GW-QD1 WATER - 24/8/2018 SE183173.004	BHR-1 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 Recoveerable Hydrocarbons - Silica (TRH-Silica) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents.
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN433	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.

FOOTNOTES

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

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

Sample Details

Your Reference	**E23915.E02**
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	UNITS	199432-1
Your Reference		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	UNITS	199432-1
Your Reference		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.

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]

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]

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.

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.

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
Precision – A quantitative measure of the variability (or reproducibility) of data	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: Results are less than 10 times the limits of reporting (LOR); Results are less than 20 times the LOR and the RPD is less than 50%; or Heterogeneous materials or volatile compounds are encountered.
Accuracy – A quantitative measure of the closeness of reported data to the "true" value	Data accuracy would be assessed through the analysis of: Method blanks, which are analysed for the analytes targeted in the primary samples; Matrix spike and matrix spike duplicate sample sets; Laboratory control samples; and Calibration of instruments against known standards.
Representativeness – The confidence (expressed qualitatively) that data are representative of each medium present onsite	To ensure the data produced by the laboratory is representative of conditions encountered in the field, the laboratory would carry out the following: Blank samples will be run in parallel with field samples to confirm there are no unacceptable instances of laboratory artefacts; 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 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).

QA/QC Measures	Data Quality Indicators
Completeness – A measure of the amount of useable data from a data collection activity	Analytical data sets acquired during the assessment will be evaluated as complete, upon confirmation that: Standard operating procedures (SOPs) for sampling protocols were adhered to; and Copies of all COC documentation are presented, reviewed and found to be properly completed. 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.
Comparability – The confidence (expressed qualitatively) that data may be considered to be equivalent for each sampling and analytical event	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. In addition the data will be collected by experienced samplers and NATA-accredited laboratory methodologies will be employed in all laboratory testing programs.

I1.2 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.

I2 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 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
QD1	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
RPD		*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*28.57*	*0.00*	*0.00*	185.71	100.00	66.67	*0.00*	147.37
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
RPD		*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*0.00*	*0.00*	*0.00*	66.67	*0.00*	*NA*	*NA*	66.67
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.

Reagent/Analysis Blank (BLK) **Method Blank (MB)**	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.
Sample Matrix Spike (MS) & Matrix Spike Duplicate (MSD)	Sample replicates spiked with identical concentrations of target analyte(s). The spiking occurs during the sample preparation and prior to the extraction/digestion procedure. 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.
Surrogate Spike (SS)	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.
Control Matrix Spike (CMS)	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.
Internal Standard (IS)	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.
Lab Duplicates (D)	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.
Lab Control Standards/Samples (LCS)	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.
Continuous Calibration Verification (CCV) or **Calibration Check Standard & Blank**	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 ±10%

Quality Assurance Programs are listed below:

Statistical analysis of Quality Control data (SQC)	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".
Certified Reference Materials (CRM/SRM)	Certified Reference Materials and Standards are regularly analysed. These materials/standards have certified reference values for various parameters.
Proficiency Testing	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.
Inter-laboratory & Intra-laboratory Testing	SGS Environmental Services has schedules in the Quality Systems to participate in Inter/Intra laboratory testing conducted internally and by other parties.
Data Acceptance Criteria Unless otherwise specified in the method or method manual the following general criteria apply to all inorganic tests. All recoveries are to be reported to 3 significant figures.	Failure to meet the internal acceptance criteria will result in sample batch repeats dependent upon investigation outcomes. For data to be accepted: <u>Inorganics (water samples)</u> • 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 ±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♬ Duplicate recovery RPD to be <30%. • Where CRMs are used, results to be within ± 2 standard deviations of the expected value. <u>Inorganics (soil samples)</u> • 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 ±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♬/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.

Data Acceptance Criteria Unless otherwise specified in the method or method manual the following general criteria apply to all organic tests. All recoveries are to be reported to 3 significant figures.	Organics • 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 ±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).

*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^oC, zero headspace	14 days
PAHs (total and TCLP)	Glass with Teflon Lid	4^oC [1]	14 days
Phenols	Glass with Teflon Lid	4^oC [1]	14 days
OCPs, OPPs and total PCBs	Glass with Teflon Lid	4^oC [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^oC	6 months
Cyanide	125mL Amber Glass	pH > 12 NaOH / 4^oC	6 months
TPH (C6-C9) / BTEX / VOCs SVOCs / CHCs	4 x 43mL Glass	HCl / 4^oC [1]	14 days
TPH (C10-C36) / PAH / Phenolics OCP / OPP / TDS / pH	3 x 1L Amber Glass	None / 4^oC [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
Heavy Metals			
Antimony - Sb	µg/L	1	USEPA 200.8
Arsenic - As	µg/L	1	USEPA 200.8
Beryllium - Be	µg/L	0.5	USEPA 200.8
Cadmium - Cd	µg/L	0.1	USEPA 200.8
Chromium - Cr	µg/L	1	USEPA 200.8
Cobalt - Co	µg/L	1	USEPA 200.8
Copper - Cu	µg/L	1	USEPA 200.8
Lead - Pb	µg/L	1	USEPA 200.8
Mercury - Hg	µg/L	0.5	USEPA 7471A
Molybdenum - Mo	µg/L	1	USEPA 200.8
Nickel - Ni	µg/L	1	USEPA 200.8
Selenium - Se	µg/L	1	USEPA 200.8
Silver - Ag	µg/L	1	USEPA 200.8
Tin (inorg.) - Sn	µg/L	1	USEPA 200.8
Nickel - Ni	µg/L	1	USEPA 200.8
Zinc - Zn	µg/L	1	USEPA 200.8
Total Petroleum Hydrocarbons (TPHs)			
C_6-C_9 fraction	µg/L	10	USEPA 8220A / 8000
C_{10}-C_{14} fraction	µg/L	50	USEPA 8000
C_{15}-C_{28} fraction	µg/L	100	USEPA 8000
C_{29}-C_{36} fraction	µg/L	100	USEPA 8000
BTEX			
Benzene	µg/L	1	USEPA 8220A
Toluene	µg/L	1	USEPA 8220A
Ethylbenzene	µg/L	1	USEPA 8220A
m- & p-Xylene	µg/L	2	USEPA 8220A
o-Xylene	µg/L	1	USEPA 8220A
Polyciclic Aromatic Hydrocarbons (PAHs)			
PAHs	µg/L	0.1	USEPA 8270
Benzo(a)pyrene	µg/L	0.01	USEPA 8270
OrganoChlorine Pesticides (OCPs)			
Aldrin	µg/L	0.001	USEPA 8081
Chlordane	µg/L	0.001	USEPA 8081
DDT	µg/L	0.001	USEPA 8081
Dieldrin	µg/L	0.001	USEPA 8081
Endosulfan	µg/L	0.001	USEPA 8081
Endrin	µg/L	0.001	USEPA 8081
Heptachlor	µg/L	0.001	USEPA 8081
Lindane	µg/L	0.001	USEPA 8081
Toxaphene	µg/L	0.001	USEPA 8081

Parameter	Unit	PQL	Method
Chlorinated Hydrocarbons (CHCs)			
1,2-dichlorobenzene	µg/L	1	USEPA 8260B
1,3-dichlorobenzene	µg/L	1	USEPA 8260B
1,4-dichlorobenzene	µg/L	1	USEPA 8260B
1,2,3-trichlorobenzene	µg/L	1	USEPA 8260B
1,2,4-trichlorobenzene	µg/L	1	USEPA 8260B
Hexachlorobutadeine	µg/L	1	USEPA 8260B
1,1,2-trichloroethane	µg/L	1	USEPA 8260B
Hexachloroethane	µg/L	10	USEPA 8270D
Other CHCs	µg/L	1	USEPA 8260B
Volatile Organic Compounds (VOCs)			
Aniline	µg/L	10	USEPA 8260B
2,4-dichloroaniline	µg/L	10	USEPA 8260B
3,4-dichloroaniline	µg/L	10	USEPA 8260B
Nitrobenzene	µg/L	50	USEPA 8260B
2,4-dinitrotoluene	µg/L	50	USEPA 8260B
2,4,6-trinitrotoluene	µg/L	50	USEPA 8260B
Phenolic Compounds			
Phenol	µg/L	10	USEPA 8041
2-chlorophenol	µg/L	10	USEPA 8041
4-chlorophenol	µg/L	10	USEPA 8041
2, 4-dichlorophenol	µg/L	10	USEPA 8041
2,4,6-trichlorophenol	µg/L	10	USEPA 8041
2,3,4,6-tetrachlorophenol	µg/L	10	USEPA 8041
Pentachlorophenol	µg/L	10	USEPA 8041
2,4-dinitrophenol	µg/L	10	USEPA 8041
Miscellaneous Parameters			
Total Cyanide	µg/L	5	APHA 4500C&E-CN
Fluoride	µg/L	10	APHA 4500 F-C
Salinity (TDS)	mg/L	1	APHA 2510
pH	units	0.1	APHA 4500H+
OrganoPhosphate Pesticides (OPPs)			
Azinphos Methyl	µg/L	0.01	USEPA 8141
Chloropyrifos	µg/L	0.01	USEPA 8141
Diazinon	µg/L	0.01	USEPA 8141
Dimethoate	µg/L	0.01	USEPA 8141
Fenitrothion	µg/L	0.01	USEPA 8141
Malathion	µg/L	0.01	USEPA 8141
Parathion	µg/L	0.01	USEPA 8141
Temephos	µg/L	0.01	USEPA 8141
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	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: $RPD = 100 \times \frac{\lvert X_1 - X_2 \rvert}{\text{mean}(X1, X2)}$ Where: X_1 and X_2 are the concentrations of the primary and duplicate samples.	The acceptable range depends upon the levels detected: - 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	$\%\ Recovery = 100 \times \frac{C - A}{B}$ Where: A = Concentration of analyte determined in the original sample; B = Added Concentration; and C = Calculated Concentration.	80-120% (Inorganics / Metals) 60-140% (Organics) 10-140% (SVOC and Speciated Phenols) 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).
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

Note: PQL - Laboratory Practical Quantitation Limit (PQL) or the minimum detection limit for a particular analyte.
LOR = Limit of Reporting

STATEMENT OF QA/QC PERFORMANCE

SE182724 R0

CLIENT DETAILS

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Order Number	**E23915**
Samples	22

LABORATORY DETAILS

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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

HOLDING TIME SUMMARY

SE182724 R0

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

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

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

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

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
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

HOLDING TIME SUMMARY

SE182724 R0

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

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

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

Moisture Content (continued)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
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

HOLDING TIME SUMMARY

SE182724 R0

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

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

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

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

OC Pesticides in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	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
	BH10M_0.4-0.5	SE182724.016	%	60 - 130%	88
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 identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d14-p-terphenyl (Surrogate)	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 identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

VOC's in Soil (continued) **Method: ME-(AU)-[ENV]AN433**

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
	TB	SE182724.021	%	60 - 130%	83
d4-1,2-dichloroethane (Surrogate)	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

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

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

VOC's in Soil (continued)

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

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%	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
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

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

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

Volatile Petroleum Hydrocarbons in Soil (continued)

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

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

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)	%	-	76
		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)	%	-	107

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	Benzene	mg/kg	0.1	<0.1
	Hydrocarbons	Toluene	mg/kg	0.1	<0.1
		Ethylbenzene	mg/kg	0.1	<0.1
		m/p-xylene	mg/kg	0.2	<0.2
		o-xylene	mg/kg	0.1	<0.1
	Polycyclic VOCs	Naphthalene	mg/kg	0.1	<0.1
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	96
		d4-1,2-dichloroethane (Surrogate)	%	-	110
		d8-toluene (Surrogate)	%	-	124
		Bromofluorobenzene (Surrogate)	%	-	74
	Totals	Total BTEX	mg/kg	0.6	<0.6

VOCs in Water

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

Sample Number		Parameter	Units	LOR	Result
LB154459.001	Monocyclic Aromatic	Benzene	µg/L	0.5	<0.5
	Hydrocarbons	Toluene	µg/L	0.5	<0.5
		Ethylbenzene	µg/L	0.5	<0.5
		m/p-xylene	µg/L	1	<1
		o-xylene	µg/L	0.5	<0.5
	Polycyclic VOCs	Naphthalene	µg/L	0.5	<0.5
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	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 = | OriginalResult - ReplicateResult | x 100 / Mean

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

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

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

Mercury (dissolved) in Water

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
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	13.922356091(	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
		Methidathion	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 | x 100 / Mean

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

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

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

OP Pesticides in Soil (continued)

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

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
			Methidathion	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)-[ENV]AN420

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 | x 100 / Mean

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

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
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 ②
		Zinc, Zn	mg/kg	2	27	18	39	41 ②
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 ②
		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

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

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

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

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

TRH (Total Recoverable Hydrocarbons) in Soil (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
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
			TRH >C34-C40 (F4)	mg/kg	120	<120	0	200	0
SE182724.016	LB154679.025		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)-[ENV]AN433

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)-[ENV]AN433

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

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

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

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

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

VOCs in Water (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
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)-[ENV]AN433

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
		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
SE182724.019	LB154678.032		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
			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	0.1	<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)-[ENV]AN433

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
		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
SE182734.001	LB154459.021		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
			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]AN122

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]AN312

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]AN420

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]AN420

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	80
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	96

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

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]AN420

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]AN101

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]AN040/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	87
		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	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	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	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 identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury (dissolved) in Water

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
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 ④

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

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

QC Sample	Sample Number		Parameter	Units	LOR	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	-	82
			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 ④
		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 ④
		Zinc, Zn	mg/kg	2	220	140	50	174 ④

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

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

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

TRH (Total Recoverable Hydrocarbons) in Soil (continued)

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

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]AN433

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]AN433

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

Volatile Petroleum Hydrocarbons in Soil

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

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

Volatile Petroleum Hydrocarbons in Water

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

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 | x 100 / Mean

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

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

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

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

QC Sample	Sample Number	Parameter	Units	LOR

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.

STATEMENT OF QA/QC PERFORMANCE

SE183173 R0

CLIENT DETAILS

Contact	Chris Sordy
Client	EI AUSTRALIA
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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

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Laboratory	SGS Alexandria Environmental
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Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
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		

HOLDING TIME SUMMARY

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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.

Conductivity and TDS by Calculation - Water

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

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]AN311(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]AN320

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]AN420

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]AN101

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]AN289

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]AN318

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]AN403

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]AN433

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

HOLDING TIME SUMMARY

SE183173 R0

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

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

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

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	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

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

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

Volatile Petroleum Hydrocarbons in 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)-[ENV]AN433

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	<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 | x 100 / Mean

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

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

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

Conductivity and TDS by Calculation - 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	Benzene	µg/L	0.5	<0.5	0.04	200	0
		Aromatic	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	Benzene	µg/L	0.5	<0.5	0.06	200	0
		Aromatic	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

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

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

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

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

VOCs in Water (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
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)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE183169.001	LB155586.023		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
			Bromofluorobenzene (Surrogate)	µg/L	-	4.8	4.54	30	5
		VPH F Bands	Benzene (F0)	µg/L	0.5	<0.5	0.04	200	0
			TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	-0.35	200	0
SE183169.003	LB155586.024		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	-	4.9	4.9	30	1
			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
		VPH F Bands	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]AN106

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]AN420

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]AN101

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]AN289

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]AN318

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]AN403

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]AN433

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

Mercury (dissolved) in Water

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
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	109
			Ethylbenzene	µg/L	0.5	<0.5	45.45	112
			m/p-xylene	µg/L	1	<1	90.9	111
			o-xylene	µg/L	0.5	<0.5	45.45	111
		Polycyclic	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	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

SE183173 R0

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

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

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

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

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

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

QC criteria are subject to internal review according to the SGS QA/QC plan and may be provided on request or alternatively can be found here: http://www.sgs.com.au/~/media/Local/Australia/Documents/Technical 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.

APPENDIX K
SafeWork NSW Records

NSW GOVERNMENT | SafeWork NSW

Locked Bag 2906, Lisarow NSW 2252
Customer Experience 13 10 50
ABN 81 913 830 179 | www.safework.nsw.gov.au

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

Form [illegible]GI

Department of Industrial Relations

DANGEROUS GOODS ACT, 1975

LICENCE No. 35-004633-4

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.
$15.00 for amendment or transfer. N/Fee

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: Product being stored	C & C Office use only
1	Underground Tank	10,000L	PETROL	
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				

DEPARTMENTAL MAIL 26 OCT 1988 Dept of Industrial Relations and Employment

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). CALTEX.

Signature of applicant ..... 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, Leonard E. 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 ..... Date 28-2-89

RS2 901 (1)

INFLAMMABLE LIQUID ACT, 1915

APPLICATION FOR: REGISTRATION OF PREMISES / STORE LICENCE / AMENDMENT TO REGISTRATION OR LICENCE } FOR THE KEEPING OF INFLAMMABLE LIQUID AND/OR DANGEROUS GOODS. B. 7

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 2017 Postcode

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	10000							
4	underground tank			10000								
5												
6												
7												
8												
9												
10												
TOTAL												

PUBLIC REVENUE A/c
Cash 25.00
9/6/75
(Date)
Receipt No. 3879

* 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. Antonio Date 18.7.75

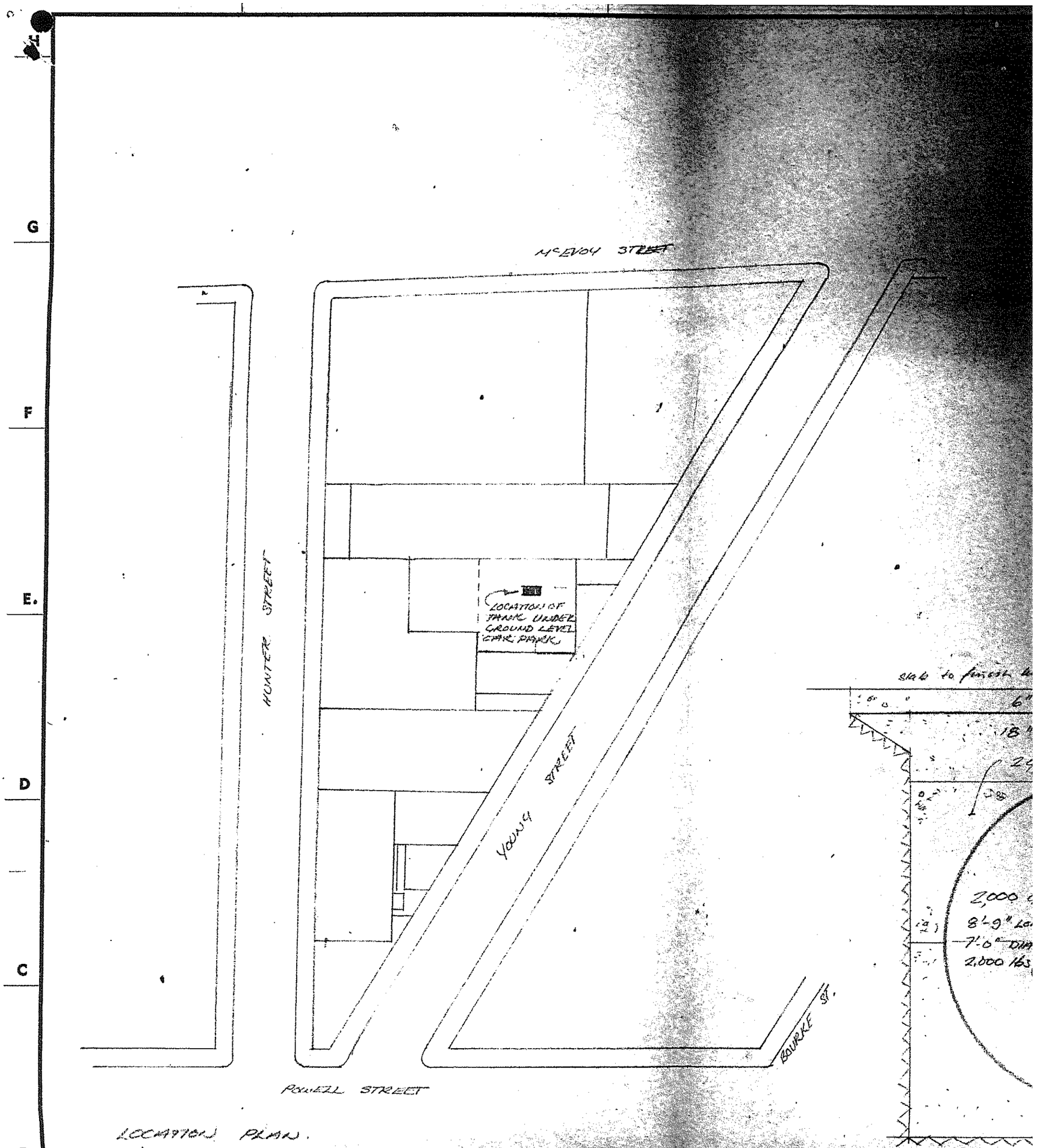
Insp.
Metrop.

CERTIFICATE OF INSPECTION

I, Harold Arthur Bonney being an Inspector under th Inflammable Liquid Act, 1915, do hereby certify that the premises or store described above does comply with th requirements of that Act and regulations with regard to its situation and construction for the keeping of inflammabl liquid and/or dangerous goods in quantity and nature specified.

902

Signature of Inspector H. Bonney

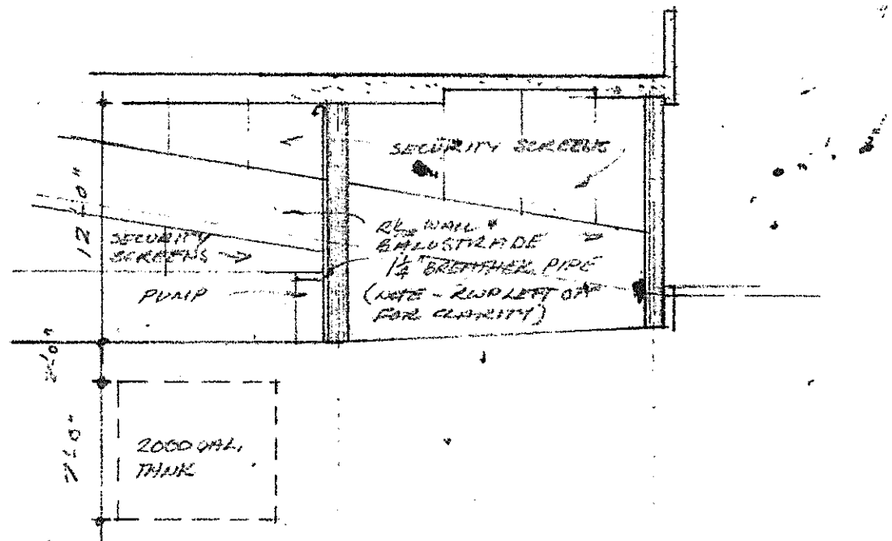


DO NOT SCALE. USE FIGURED DIMENSIONS. CONTRACTORS MUST VERIFY ALL DIMENSIONS AT THE JOB BEFORE COMMENCING WORK OR MAKING ANY SHOP DRAWINGS.

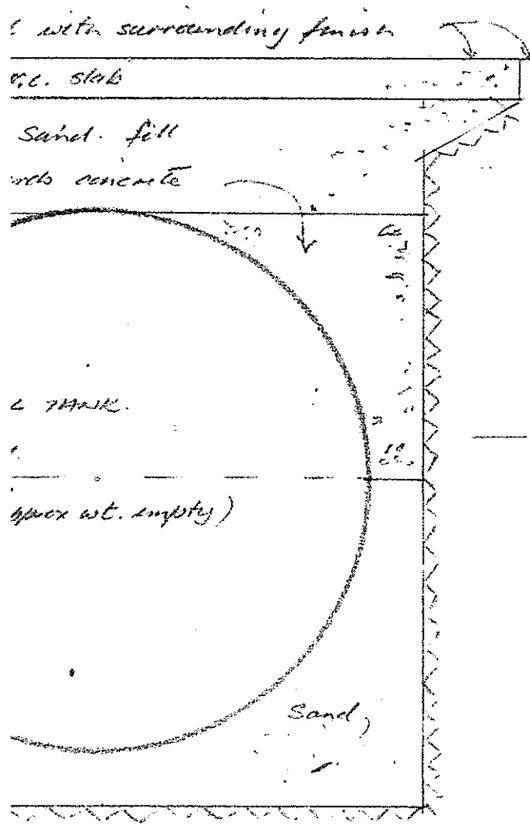
FOWELL MANSFIELD JA

ARCHITECTS ENGINEERS T
GRA

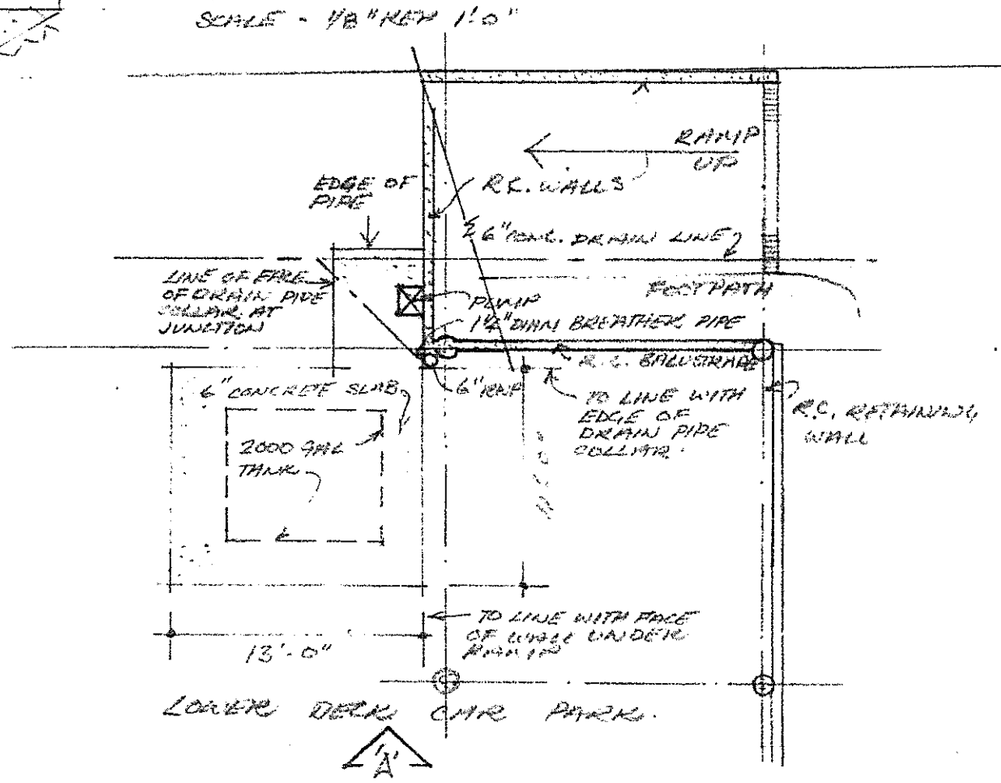
11 RANGERS ROAD NE
TELEPHONE 909-2144



ELEVATION 'A'
SCALE - ⅛" REDN 1'-0"



) THRO' INSTALLATION.
EP. 1'-0"



PLAN SHOWING LOCATION OF TANK.
SCALE - ⅛" REDN 1'-0"

EXPLOSIVES DEPARTMENT
PASSED
M. Conway
for CHIEF INSPECTOR
741 05 127.
SUBJECT TO COMPLIANCE WITH
REGULATIONS

IS & MACLURCAN PTY LTD
VN PLANNERS LANDSCAPE ARCHITECTS
C DESIGNERS
TRAL BAY JUNCTION 2089
TELEGRAMS 'CINQUEFOIL'

DRAWN EBM	P. ROWE PTY. LTD. NEW WAREHOUSE HUNTER ST. WATERLOO	PROJECT NO 2726/A
CHECKED		
DATE 17 MAY 94	PETROL TANK INSTALLATION	DRAWING NO 12.
SCALE AS NOTED		

CONNECT INTO 4" SP'R MAIN

3"

DROPPER

DROPPER

℄ TRUSS

S52

WAREHOUSE AREA

DENOTES OUTLINE OF SHELVES AND FITTINGS FOR STOCK. AVERAGE HEIGHT 9'-0"

6 'C' TYPE OPEN SPRINKLERS

℄ TRUSS

S55

$2\frac{1}{2}$"

$2\frac{1}{2}$"

2" "MULSIFYRE" DOUBLE OUTLET CONTROL

$2\frac{1}{2}$"

S57

S58

6 'C' TYPE OPEN SPRINKLERS

℄ TRUSS

S59

RING MAIN

S60

S61

S62

2 X 80 LB. CO_2 CYLINDERS. SERVING INFLAMMABLE LIQUIDS & HAZARDOUS GOODS STORE.

PRESSURE RELIEF VALVES

LEGEND

O	SPRINKLER POINT (WATER)
T	DISCHARGE POINT CO_2
▭	FLUORESCENT FITTING
◎	FLAMEPROOF INCANDESCENT FITTING
S.V.	STOP VALVE
C.V.	CHECK VALVE

905

EXPLOSIVES ACT PASSED 25.1.6

JOHN R. WALLIS, SPRATT & ASSOC
CONSULTING CHARTERED ENGINEERS
20-22 MOUNT STREET. NORTH SYDNEY. 925

FOWELL, MANSFIELD, JARVIS & MACL
CHARTERED ARCHITECTS
87 BERRY ST. NORTH SYDNEY. 92404

P. ROWE PTY. LTD.
WAREHOUSE & OFFICE. WATERLOC

FIRE PROTECTION

NITRO-CELLULOSE STO