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DEICORP CONSTRUCTIONS NSW PTY LTD

Preliminary Site Investigation with Limited Sampling

Site C, Pemulwuy Project - Eveleigh Street, Redfern NSW

Report E23309 AA_Rev0

6 April 2017

REPORT DISTRIBUTION

Preliminary Site Investigation with Limited Sampling
Site C, Pemulwuy Project - Eveleigh Street, Redfern NSW

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EXECUTIVE SUMMARY

Background and Objectives

DeiCorp Constructions NSW Pty Ltd engaged EI Australia (EI) to conduct a Preliminary Site Investigation (PSI) with Limited Sampling for a land parcel at Site C Pemulwuy Project – 77-123 Eveleigh Street, Redfern NSW ('the site'). The site covers a total area of approximately 2,500 m^2.

The site, which was largely vacant land at the time of PSI site works but had been used for both commercial and residential purposes previously, is proposed for redevelopment. The development will include construction of a multi storey mixed residential / commercial building. EI consider the development qualifies as a HIL-B / HIL-C Development – *Residential with Minimal Opportunities for Soil Access*, and *Public Open Spaces* as defined in NEPM (2013).

This PSI was completed to provide an appraisal on the environmental conditions at the site for due diligence purposes. The primary objectives of this PSI were to evaluate the potential for site contamination and to investigate the degree of any potential contamination by the means of reviewing site history, intrusive sampling and laboratory analysis.

Key Findings

The work was conducted with reference to the regulatory framework outlined in **Section 1.2** of this report and assessment findings indicated the following:

- The site, which was largely vacant land at the time of PSI site works but had been used for both commercial and residential purposes previously .The newly proposed development will include construction of a multi storey mixed residential / commercial building. EI consider the development qualifies as a HIL-B / HIL-C Development – *Residential with Minimal Opportunities for Soil Access*, and *Public Open Spaces* as defined in NEPM (2013).

- The intrusive investigation program carried out in this PSI comprised the drilling of eight boreholes (identified as BH101M to BH108), followed by installation of one groundwater monitoring wells. Soil samples were collected from depths between 0.1 m to 3.8 mBGL, from both the fill and natural soil horizons;

- The subsurface layers observed during the intrusive investigation comprised a layer of anthropogenic fill / topsoil, overlying residual silty clay, followed by shale bedrock.

- Laboratory analytical results of the tested soil samples indicated heavy metals, TRH, BTEX, PAH, OCP/OPP, PCB, and asbestos below adopted human-health criteria.

- Laboratory analytical results of the tested soil samples identified the following exceedances in ecological investigation levels:

  - Copper concentrations in samples BH107_0.7-0.8 (310 mg/kg) and BH108_0.4-0.5 (63 mg/kg);

  - Nickel concentrations in BH108_0.4-0.5 (81 mg/kg); and

  - Zinc concentrations in sample BH108_0.4-0.5 (560 mg/kg).

- With considerations given to the site development, it will require that the fill soils in and around the landscaping area will be removed during the excavation phase, and therefore not pose a risk of contamination.

- A groundwater monitoring event was completed by sampling at one newly installed monitoring wells (BH101M) and a well installed previously by SMEC (SMEC-BH2) on 14 March 2017;

- Groundwater seepage was not observed during auger drilling of the test bores, down to a maximum depth of 8.8 mBGL. Standing groundwater levels measured in the two monitoring wells were between 4.961 m to 8.015 mBGL. Groundwater flow was inferred to be generally towards the north to north-west.

- Laboratory analytical results indicated the concentrations of BTEX, TRH, PAH, VOCs and total phenols in the collected groundwater samples were below the adopted assessment criteria. Heavy metals concentrations were mostly below the adopted criteria, with the exception of the following:

  - Zinc in all both monitoring wells at concentrations of 46 µg/L (BH101M) and 54 µg/L (SMEC - BH2), exceeded the GILs of 8 µg/L for Fresh Waters;

  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.

- Heavy metal concentrations reported in both wells were largely comparable, demonstrating that there was no material increase of heavy metal concentrations in groundwater at down gradient locations of the site.

- A conceptual site model (CSM) was derived for the site in this PSI. The CSM identified potential contaminating sources that may occur at the site and evaluated the likelihood for relevant exposure pathways to be complete during and after the proposed development. Based on the findings of this assessment, possible risks to sensitive receptors are low.

Conclusions and Recommendations

Based on the findings of this report and with consideration of the Statement of Limitations (**Section 13**), EI concludes that gross and/or widespread contamination was not identified at the site in soils and groundwater, and possible risks to sensitive receptors are low. In light of the proposed demolition of existing structures and the presence of some heavy metals exceeding ecological criteria, recommendations for site management following demolition are provided below:

- Undertake a site inspection of freshly exposed surfaces following the demolition and removal of slab/ hardstand. Inspect particularly for foreign materials, any potential contamination sources, unexpected finds, and hazardous materials (asbestos containing) deposited following demolition;

- Manage fill according to the steps outlined **Section 12**.

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1. INTRODUCTION

1.1 BACKGROUND AND PURPOSE

DeiCorp Constructions NSW Pty Ltd engaged EI Australia (EI) to conduct a Preliminary Site Investigation (PSI) with Limited Sampling for a land parcel at Site C Pemulwuy Project – 77-123 Eveleigh Street, Redfern NSW ('the site').

As shown in **Figure 1**, the site is located approximately 3.5 km south-west of the Sydney Central Business District, within the Local Government Area of the City of Sydney Council. The site comprised of multiple cadastral allotments (see **Table 2-1**) covering a total area of approximately 2,500 m^2. The site comprised largely vacant lots at the time of investigation, with the exception of one large unoccupied concrete building (77-85 Eveleigh Street, Redfern, NSW). A site layout plan is presented as **Figure 2**.

The site was proposed for redevelopment into a multi storey mixed commercial and residential-use development. The primary purposes of this PSI were to characterise the environmental conditions of the site for due diligence purposes.

The Client supplied EI with the following architectural drawings to assist in the preparation of this report:

- Architectural drawings prepared by Nordon Jago Architects Pty Ltd – Project No. DEI00210, Drawing Nos. 0DA011D, 0DA010, dated June 2010;
- Architectural drawings prepared by Bonacci Group Pty Ltd – Project No. 2021886, Drawing No. SK10-SK17, stamped 21 February 2017; and
- Site survey plan prepared Daw & Walton Consulting Surveyors – Project: Detail Survey @ Eveleigh Street, Redfern NSW 2016, Drawn on 12/10/2011.

Based on the above drawings, we understand that the proposed development involves the demolition of all existing site structures and the construction of an 18 storey, mixed commercial and residential building, with minimal opportunities for soil access. Based on the above information, EI considers the development qualifies as a HIL-B / HIL-C Development – Residential with Minimal Opportunities for Soil Access, and Public Open Spaces as defined in NEPM (2013).

Development drawings and site survey plans are attached in **Appendix A**.

1.2 REGULATORY FRAMEWORK

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

- ANZECC & ARMCANZ (2000) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*;
- DEC (2007) *Guidelines for the Assessment and Management of Groundwater Contamination*;
- DEC (2006) *Guidelines for the NSW Site Auditor Scheme (2nd Edition)*;
- EPA (1995) *Sampling Design Guidelines*;

- 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*.

1.3 PROJECT OBJECTIVES

The primary objectives of this investigation were 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 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.

1.4 SCOPE OF WORKS

In order to achieve the above objectives, and in accordance with EI proposal P14419.1 (dated 2 March 2017), the scope of works was as follows:

1.4.1 Desktop Study

- Review of relevant hydrogeological and soil landscape maps for the project area;
- Review of all previous environmental reports;
- Review of existing underground services on site;
- A search of historical aerial photographs archived at the NSW Land and Property Information in order to review previous site use and the historical sequence of land development in the neighbouring area;
- A site history survey involving a detailed search of Council records for information relation to operational site history;
- A limited land titles search based on site history, also conducted through NSW Land and Property Information; and
- A search of NSW EPA Land Information records under the *Contaminated Land Management Act 1997* and *Protection of the Environment Operations Act 1997*;

1.4.2 Field Work & Laboratory Analysis

- A detailed site walkover inspection;

- Drilling of test boreholes at eight locations (identified as BH101M to BH108), distributed in a triangular grid pattern across accessible areas of the site;
- Installation of one groundwater monitoring well to a maximum depth of 9 mBGL, constructed to standard environmental protocols to investigate potential groundwater contamination;
- Multiple level soil sampling within fill and natural soils and one round of groundwater sampling from the newly constructed groundwater monitoring well, as well as monitoring bores previously installed by SMEC Testing Services; 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 program.

1.4.3 Data Analysis and Reporting

The final task of this assessment involved the preparation of this PSI report to document desktop study findings, the conceptual site model, data quality objectives, investigation methodologies and results. The report also provides 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	77-123 Eveleigh Street, Redfern NSW
Location Description	Approx. 3.5 km south-west of Sydney CBD, bounded by residential properties to the north, vacant parcels of land then residential properties to the west, Lawson Street then Redfern Station and commercial / residential properties and south, and a railway corridor to the east. Approximate coordinates for the southern corner of the site under GDA94-MGA56 are: Easting: 333432.152, Northing: 6248420.499, with the northern corner being Easting: 333495.313, Northing: 6248518.921 (Source: http://maps.six.nsw.gov.au).
Site Area	Approx. 2,500 m^2 (Source: http://maps.six.nsw.gov.au)
Lot and Deposited Plan (DP)	The site comprises the following allotments: Lot 1 DP 996782; Lots A&B DP 326761, Lot B DP 81200, Lots 11 and 12 in DP 1183218, Lot 1 DP 996783, Lot 1 DP 741715, Lot 1 DP 779120, Lot A&B DP 439127, Lot 1 DP 797845, Lot 1 DP 194785, Lot 1 DP 88846, Lot 1 DP 708931, Lot 1 DP 996784, Lots 1 to 5 DP 230305, Lot 1 DP 995857 and Lot 1 DP 803299.
State Survey Marks	Two State Survey Marks (SSM) are located within close proximity of the site. SS66942 is situated near the western-central portion of the site, at the corner of Eveleigh Street and Caroline Street. SS57496 is situated approximately 50 m west of the central portion of the site, at the corner of Caroline Street and Louis Street. (Source: http://maps.six.nsw.gov.au)
Local Government Authority	Council of the City of Sydney
Parish	Petersham
County	Cumberland County
Current Zoning	D – Business Zone – Mixed Use (State Environmental Planning Policy [State Significant Precincts] 2005)
Current Land Uses	The site comprised largely vacant lots at the time of investigation, with the exception of one large unoccupied concrete building (77-85 Eveleigh Street, Redfern, NSW).

2.2 SURROUNDING LAND USE

The site is situated within an area of mixed land 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 properties
South	Lawson Street, Redfern Station and then commercial / residential properties.
East	Railway corridor
West	Vacant land / 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 local topography falls slightly towards the north to north-west at approximately 5° to 10°.
Site Drainage	Consistent with the general slope of the site, main drainage pathway for stormwater on site is anticipated to be in the form of overland flow, north to north-west. Some subsurface infiltration is also expected in the grassed areas of the site where ground surface was not sealed.
Regional Geology	The site lies on Ashfield Shale (Rwa) of the Wianamatta Group, based on information referenced from the Department of Mineral Resources Geological Map Sydney 1:100,000 Geological Series Sheet 9130 (DMR 1991). Ashfield Shale typically comprises black to dark-grey shale and laminite.
Soil Landscapes	The Soil Conservation Service of NSW Soil Landscapes of the Sydney 1:100,000 Sheet (Chapman and Murphy, 1989) indicates that the landscape comprises gentle undulating rises on Wianmatta Group shale and Hawkesbury Shale. Local relief to 30m, slopes are usually <5%. Broad rounded crests and ridges are evident with gently inclined slopes. Soils are shallow to moderately deep (<100cm) *Red and Brown Podzolic Soils* on crests, upper slopes and well drained area; deep (150-300cm) *Yellow Podzolic Soils* and *Soloths* on lower slopes and in areas of poor drainage.
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 Council of the City of Sydney Local Environmental Plan 2012- Acid Sulfate Soils Risk Class 1:1,000 scale Map Sheet 016 indicates that the site is located within a Class 5 area. Acid sulfate soils are not typically found in Class 5 areas. Areas classified as Class 5 are located within 500 metres on adjacent Class 1, 2, 3 or 4 land. With reference to SMEC Testing Services Pty Ltd *Acid Sulfate Soil Assessment* (2010), the property is underlain by Ashfield Shale and therefore is not consistent with the geomorphic criteria for the presence of ASS. It is therefore deemed that the need for further Acid Sulphate soil management was considered unwarranted and the risks associated with Acid Sulfate soils were considered negligible.

Attribute	Description
Likelihood & Depth of Filling	Field observations during intrusive investigation indicated that the thickness of fill / top soil layer present on site ranged from approximately 0.0 to 2.8 metres.
Typical Soil Profile	Sandy / silty clay fill overlying residual silty clay, then shale bedrock.
Depth to Groundwater	Groundwater inflow was not encountered during auger drilling of the boreholes, down to a maximum depth of approximately 9.8 mBGL. Standing groundwater levels measured in the two monitoring wells were between 5 m to 8 mBGL approximately.
Aquifer Types	Intermittent seepage may be present in the fill and the residual silty clay layer following rainfall events. The main aquifer is fractured shale, where groundwater moves via the fractures within the rock mass. Based on observations made in this PSI, the encountered shale aquifer appeared to be confined to semi-confined.
Nearest Surface Water Feature	Lake Northam, located approximately 800 m north-west of the site, is expected to be the nearest receiving surface water body.
Groundwater Flow Direction	Groundwater flow direction in the vicinity of the site is inferred to be slightly to the north / north-west.
Hydraulic Conductivity	Groundwater flow through the Ashfield Shale is documented to be influenced by the bedrock fracture system with hydraulic conductivities estimated to range between 8.6 $x10^{-9}$ and $1.7x10^{-4}$ m/day (Domenico and Schwartz, 1990).
Aquifer Porosity	Porosity of shale varies between 0% and 10% (DIPNR, 2005).
Groundwater Seepage Velocity	Based on the estimates of hydraulic conductivity and literature-supplied aquifer hydraulic conductivity and porosity, the potential seepage velocity within the shale aquifer is estimated to be 1.4×10^{-4} to 6×10^{-9} m/day. It should be noted that groundwater seepage velocity in shale aquifer is also highly influenced by the presence of discontinuities in the rock mass.
Groundwater Salinity	Based on the GME data (645 – 1,282 µS/cm), groundwater is generally *fresh* to marginally *brackish* (NSW Public Works, 2011).

2.4 GROUNDWATER BORE RECORDS AND GROUNDWATER USE

An online search of registered groundwater bores was conducted by EI on 22 March 2017 through the NSW Office of Water (Ref. http:// realtimedata.water.nsw.gov.au/water.stm). There was 1 registered bore within 500 m of the site. A summary of the identified registered bore 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 500 m of the site

Bore No.	Drilled Depth (m)	SWL*	Bore Purpose
GW113862	-	-	Monitoring

Notes:
- Data not recorded;
* SWL – Standing water level measured in m BGL.

2.5 SITE WALKOVER INSPECTION

EI staff made a number of observations during a detailed site inspection on 9 March 2017. Selected photos taken during the site walkover inspection are presented in **Appendix C**. The recorded observations are summarised below:

- The site generally slopes towards the north to north-west on approximately a 5-10% gradient.
- The site comprises an area of vacant land next to a railway corridor to the east (**Photograph 1**). The vacant land is covered by bare soil and grass patches in average condition, and contains a number of parked cars. Localised fuel and oil contamination may be apparent, with the possibility of uncontrolled fill being used to cover the area.
- The railway corridor to the east may provide a source for asbestos fibre contamination onto the site.
- A park is also present on site (Pemulwuy Park) which includes a playground (**Photograph 2**) and bitumen covering the area in good condition.
- The area immediately to the north of the park is made up of overgrown grasses and weeds, with branches placed in a small stockpile (**Photograph 3)**.

77-85 Eveleigh Street

- The building is double-storey and cement rendered.
- An apparent electrical sub-station kiosk was located on the exterior of 77-85 Eveleigh Street (**Photograph 4**).
- The flooring and interior roof of the property comprise of concrete in average condition (**Photograph 5**). Some of the concrete flooring has been removed in areas (**Photographs 6 and 7**), with what appears to be cored holes drilled into the ground surface (**Photograph 8**).
- Many of the walls are covered in graffiti, with the floors covered in old appliances and refuse (**Photograph 9**).
- Towards the northern exterior of 77-85 Eveleigh Street, a shed with possible asbestos containing material (ACM) is located (**Photographs 10 and 11**). Further corroding appliances, a gas tank and household rubbish is stored next to the shed (**Photograph 12**) identifying possible contamination into open soils.

Evidence of underground petroleum storage system (UPSS) was not identified during the site walkover inspection.

3. SITE HISTORY AND SEARCHES

3.1 SITE LAND TITLES INFORMATION / HISTORICAL AERIAL REVIEW

A historical land titles search was conducted through Scott Ashwood Pty Ltd. Copies of relevant documents resulting from this search are presented in **Appendix J**. A summary of all the previous and current registered proprietors along with information obtained from the available historical aerial photographs, in relation to past potential land uses are presented in **Table 3-1**. The following historical aerial photographs either received from NSW Land & Property Information or sourced from Six Maps, were reviewed as part of this PSI:

- 1930: 20 February 1930, B/W, Run 16, Map 3428, Sydney Survey Runs;
- 1943: Sydney 1943 Imagery, Six Maps (http://maps.six.nsw.gov.au/);
- 1961: Cumberland Series, B/W, Run 36E, NSW 1042 – 5011, Lands Photo;
- 1986: 2 August 1986, Run 23E, NSW 3527 – 127, Department of Land and Property Information;
- 1994: 4 October 1994, Run 11, NSW 153 – 164, Department of Land and Property Information;
- 2000: 28 September 2000, Google Earth Imagery (http://www.earth.google.com); and
- 2014: 4 January 2014, Six Maps (https://maps.six.nsw.gov.au/).

Table 3-1 Summary of Owners and Historical Aerial Photography

Date of Acquisition and Term Held	Registered Proprietor(s) & Occupations (where documented)	Site Description Based on Historical Aerial Photographs	Associated Business
As regards Lot 1 D.P. 803299			
18.12.1916 (1916 – 1994)	Chief Commissioner for Railways and Tramways. *Now* State Rail Authority of New South Wales	**1930**: The lot appears to be a fenced, grassed area. There is uncertainty in the photograph to properly determine the use of the lot. **1943:** No significant change noted. **1961:** No significant change noted. **1986:** Possible small building erected on the lot. There is uncertainty in the photograph to properly determine the use of the lot.	Residential / Open Space / Commercial
29.11.1994 (1994 to Date)	# Aboriginal Housing Company Limited	**1994**: The lot appears to be a vacant grassed area. There is uncertainty in the photograph to properly determine the use of the Lot. **2004:** No significant change noted. **2014**: No significant change noted.	Open Space

Date of Acquisition and Term Held	Registered Proprietor(s) & Occupations (where documented)	Site Description Based on Historical Aerial Photographs	Associated Business
# Denotes Current Registered Proprietor **Easements & Leases: -NIL**			
As regards Lot B D.P. 81200			
11.03.1925 (1925 to 1930)	Hercules George King (Railway Employee)	**1930**: The lot appears to be residential. There is uncertainty in the photograph to properly determine the use of the lot.	Residential
27.05.1930 (1930 to 1955)	Herbert Henry Arthur (Manufacturer) - Also known as Herbert Henry Pevensey Arthur	**1943:** The lot appears to possibly be commercial, with an apparent warehouse bordering the railway corridor. There is uncertainty in the photograph to properly determine the use of the lot.	Commercial / Residential
17.08.1955 (1955 to 1972)	Kenneth Wilton Crowe (Master Carrier)	**1961:** No significant change noted.	
01.03.1972 (1972 to 1972)	Artis Properties Pty Limited	-	
01.03.1972 (1972 to 1974)	New South Wales Bridge Association Limited	-	
22.11.1974 (1974 to 2013)	Murawina Limited	**1986:** The previous warehouse like building has been demolished and a vacant parcel of land now is now present across the lot. What looks like a children's playground encompasses part of the lot. **1994**: No significant change noted. **2004:** No significant change noted.	Open Space
22.05.2013 (2013 to 2013)	Australian Securities and Investments Commission	-	
22.05.2013 (2013 to Date)	# Aboriginal Housing Company Limited	**2014**: No significant change noted.	
# Denotes Current Registered Proprietor **Easements & Leases: - NIL**			
As regards Lot A D.P. 326761			
01.05.1919 (1919 to 1928)	Thomas Hill (Ironfounder)	-	-
27.03.1928 (1928 to 1928)	Rowland Wesley Small (Medical Bio Chemist)	-	-

Date of Acquisition and Term Held	Registered Proprietor(s) & Occupations (where documented)	Site Description Based on Historical Aerial Photographs	Associated Business
21.11.1928 (1928 to 1930)	George Cross (Estate Agent)	**1930:** The lot appears to be residential in nature.	Residential
17.09.1930 (1930 to 1955)	Herbert Henry Arthur (Manufacturer) Also known as Herbert Henry Pevensey Arthur	**1943:** No significant change noted.	
17.08.1955 (1955 to 1972)	Kenneth Wilton Crowe (Master Carrier)	**1961:** No significant change noted.	
01.03.1972 (1972 to 1972)	Artis Properties Pty Limited	**-**	
01.03.1972 (1972 to 1974)	New South Wales Bridge Association Limited	**-**	Residential / Commercial / Recreational
22.11.1974 (1974 to 2013)	Murawina Limited	**1986:** A building has been erected encompassing the entire lot and neighbouring lot. **1994**: No significant change noted **2004:** No significant change noted.	
22.05.2013 (2013 to 2013)	Australian Securities and Investments Commission	**-**	
22.05.2013 (2013 to Date)	# Aboriginal Housing Company Limited	**2014**: No significant change noted.	
# Denotes Current Registered Proprietor **Easements & Leases: - NIL**			
As regards Lot B D.P. 326761			
01.05.1919 (1919 to 1928)	Thomas Hill (Ironfounder)	**-**	**-**
27.03.1928 (1928 to 1928)	Rowland Wesley Small (Medical Bio Chemist)	**-**	**-**
21.11.1928 (1928 to 1945)	George Cross (Estate Agent)	**1930:** The lot appears to be residential in nature. **1943:** No significant change noted.	Residential

Date of Acquisition and Term Held	Registered Proprietor(s) & Occupations (where documented)	Site Description Based on Historical Aerial Photographs	Associated Business
02.10.1945 (1945 to 1955)	Herbert Henry Pevensey Arthur (Company Director) Also known as Herbert Henry Arthur	-	
17.08.1955 (1955 to 1972)	Kenneth Wilton Crowe (Master Carrier)	**1961:** No significant change noted.	
01.03.1972 (1972 to 1972)	Artis Properties Pty Limited	-	
01.03.1972 (1972 to 1974)	New South Wales Bridge Association Limited	-	Residential / Commercial / Recreational
22.11.1974 (1974 to 2013)	Murawina Limited	**1986:** A large building has been erected encompassing the entire lot and neighbouring lot. **1994**: No significant change noted **2004:** No significant change noted.	
22.05.2013 (2013 to 2013)	Australian Securities and Investments Commission	-	
22.05.2013 (2013 to Date)	# Aboriginal Housing Company Limited	**2014**: No significant change noted.	
# Denotes Current Registered Proprietor **Easements & Leases: - NIL**			
As regards Lot 1 D.P. 996782			
17.11.1920 (1920 to 1928)	William Ernest Keats (Builder)	-	-
26.11.1928 (1928 to 1945)	George Cross (Clerk)	**1930:** The lot appears to be residential in nature. **1943:** No significant change noted.	Residential
02.10.1945 (1945 to 1955)	Herbert Henry Pevensey Arthur (Company Director) Also known as Herbert Henry Arthur	-	
17.08.1955 (1955 to 1972)	Kenneth Wilton Crowe (Master Carrier)	**1961:** No significant change noted.	

Date of Acquisition and Term Held	Registered Proprietor(s) & Occupations (where documented)	Site Description Based on Historical Aerial Photographs	Associated Business
01.03.1972 (1972 to 1972)	Artis Properties Pty Limited	-	-
01.03.1972 (1972 to 1974)	New South Wales Bridge Association Limited	-	Residential / Commercial / Recreational
22.11.1974 (1974 to 2013)	Murawina Limited	**1986:** A large building has been erected encompassing the entire lot and neighbouring lot. **1994**: No significant change noted **2004:** No significant change noted.	
22.05.2013 (2013 to 2013)	Australian Securities and Investments Commission	-	
22.05.2013 (2013 to Date)	# Aboriginal Housing Company Limited	**2014**: No significant change noted.	
# Denotes Current Registered Proprietor **Easements & Leases: -NIL**			

In summary, available land title records and historical aerial photography indicated that the site has historically been used for a variety of purposes. Up until the 1960s and 1970s it apparent use was largely residential with light commercial business, however moving forward evidence of commercial and community use can be seen. Certain portions of the site have also remained vacant for some decades.

3.2 SURROUNDING LANDS HISTORICAL AERIAL PHOTOGRAPH REVIEW

As part of the Site Land Titles Information / Historic Aerial 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 3-2**.

Table 3-2 Summary of Aerial Photograph Review

Aerial Photograph	Surrounding Land Uses Based on Historical Aerial Photographs
1930	The surrounding area appears to consist of light commercial / industrial and low-medium density residential properties. A railway corridor is evident to the east of the site.
1943	The surrounding land use remained primarily unchanged.
1961	The surrounding land use remained primarily unchanged.
1986	The surrounding land use remained primarily unchanged, with the exception of medium-high residential properties being built in the region.

Aerial Photograph	Surrounding Land Uses Based on Historical Aerial Photographs
1994	The surrounding land use remained primarily unchanged.
2000	The surrounding land use remained primarily unchanged, with the exception of residential properties to the west of the site being cleared and a field left vacant.
2014	The surrounding land use remained primarily unchanged.

3.3 COUNCIL INFORMATION

An application to access records held by Council of the City of Sydney was initiated on 8 March 2017. Council correspondence was received 15 March 2017 by The City of Sydney Council. A review of the Building and Development Applications identified a letter, dated 13 November 1986, from the Murawina Aboriginal Pre-School and Women's Hostel, to the Council of the Municipality of South Sydney, concern about a 'grease pit' within the children's playground is made known. The grease pit supposedly needs to be cleaned manually once per month, and was referred to external contractors by the council.

There were no further records to outline what may have occurred past this date, however such a matter may be a potential source of contamination for future activity and construction.

3.4 NSW EPA DATABASES

3.4.1 Contaminated Land Record of Notices Under Section 58 of the CLM Act 1997

An on-line search of the contaminated land public record of EPA Notices was conducted on 23 March 2017.

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 Environment Protection Authority (EPA) has not been revoked;
- Site audit statements provided to the NSW EPA under section 53B of the CLM Act that relate to significantly contaminated land;
- Where practicable, copies of anything formerly required to be part of the public record; and
- Actions taken by NSW EPA under section 35 or 36 of the *Environmentally Hazardous Chemicals Act 1985* (EHC Act).

The search identified no properties within notices under Section 58 of the CLM Act 1997 within close proximity to the site.

3.4.2 List of NSW Contaminated Sites Notified to the EPA

A search through the List of NSW Contaminated Sites notified to the EPA under Section 60 of the CLM Act 1997 was conducted on 23 March 2017. 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 NSW EPA. The search identified the following properties:

- BP Service Station (116 Regent Street, Redfern NSW) located approximately 250 m south-east of the site, whose management class is under assessment from the EPA. Given the distance from the site, it is considered to pose a low risk as a potential off-site contamination source.

- Frasers Development (Wellington Street, Chippendale NSW) located approximately 500 m north of the site, whose management class is under assessment from the EPA. Given the distance from the site, it is considered to pose a low risk as a potential off-site contamination source.

3.4.3 POEO Public Register

A search of the Protection of the Environment Operations (POEO) Act public register was conducted on 23 March 2017. The public register contains records relating to environmental protection licences, applications, notices, audits, pollution studies, and reduction programmes. The search did not identify the site, or any location ≤500 m of the site on the register.

4. 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 adopted a preliminary conceptual site model (CSM) to assess 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 existing and future site characterisation.

4.1 CHEMICAL HAZARDS AND CONTAMINATION SOURCES

On the basis of site history findings (described in **Section 3**) EI consider potential chemical hazards and on-site contamination sources to be as follows:

- Fill material imported from unknown origin and of unknown quality;
- Potential use of pesticides on or underneath building pads and sealed surfaces;
- Hydrocarbon spills and leakages from vehicles, from the use of car parking areas;
- Degradation of painted and metallic surfaces on building exteriors;
- Any contamination resulting from possible un-controlled demolition of building structures;
- Potential asbestos-containing materials in building structures; and
- Deeper, natural soils containing residual impacts, acting as potential secondary sources of contamination.

4.2 CHEMICALS OF CONCERN

The following chemicals of concern were selected for screening purposes in this DSI, based on findings from the PSI and field observations made during the site walkover inspection:

- Soil – heavy metals (HMs), Total Recoverable Hydrocarbons (TRH), Polycyclic Aromatic Hydrocarbons (PAHs), the monocyclic aromatic hydrocarbon (MAH) compounds: *benzene, toluene, ethylbenzene and total xylenes* (BTEX), organochlorine and organophosphorus pesticides (OCP/ OPP), polychlorinated biphenyls (PCB), and asbestos.
- Groundwater – HMs, TRH, BTEX, PAH, Phenols, and volatile organic compounds (VOC).

4.3 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 4-1**.

Table 4-1 Preliminary Conceptual Site Model

Contaminated Media	Transport Mechanism	Exposure Pathway	Potential Receptor	Likelihood of Exposure and Comments
Impacted soils	Disturbance of surficial and subsurface soils during construction, future maintenance, and use of the site post redevelopment	Ingestion and dermal contact, inhalation of asbestos fibres, dust particulates, volatile organic compounds during site redevelopment and/or future use	Construction and maintenance workers End users of the site post redevelopment	**Possible** If redevelopment commences. **Unlikely for end users** If the site has been successfully remediated before conclusion of the redevelopment works.
	Atmospheric dispersion from soil to outdoor air spaces	Inhalation of asbestos fibres from impacted soil Inhalation of particles of contaminated soil.	Construction and maintenance workers End users of the site post redevelopment	**Possible** If uncontrolled demolition of site structures has resulted in release of asbestos-containing materials (ACM) to surficial soils. Possible exposure to mobilised asbestos dust during site excavation. Risk can be reduced by carrying out Hazardous Materials Survey to identify possible ACM, and removing ACM by a qualified person in accordance with WorkCover requirements using appropriate WH&S measures. **Unlikely for end users** If the site has been successfully remediated before conclusion of the redevelopment works.
	Volatilisation & diffusion from soil to indoor air spaces	Inhalation of vapours from VOC impacted soil	Construction and maintenance workers End users of the site post redevelopment	**Possible** Risk of volatile intrusion into indoor air spaces may require further assessment if significant contamination is identified. Volatile intrusion in outdoor areas is considered a very low risk due to high levels of ventilation.
	Plant uptake of contamination present in root zone	Plant uptake	Ecological receptors (e.g. future site vegetation)	**Unlikely** No signs of stress were observed on existing site vegetation. Unlikely an issue for future site vegetation if the site has been successfully remediated before conclusion of the redevelopment works.

Impacted Groundwater	Contact with impacted groundwater	Dermal contact, ingestion and inhalation of vapours Potential seepage into deep basements	Construction and maintenance workers Offsite groundwater users Offsite users of constructed basements that are not water tight	**Low likelihood** There is no basement construction, therefore interception of the water table is unlikely. **Low likelihood for off-site groundwater users** Beneficial domestic groundwater users were not identified within 500 m of the site. Reticulated water supply is available in the region.
	Volatilisation from groundwater to indoor or outdoor air spaces	Contact with groundwater if extracted for recreational use	Offsite groundwater users	**Low likelihood** Beneficial recreational groundwater users were not identified within 500 m of the site. Reticulated water supply is available in the region.
		Inhalation of vapours from impacted groundwater	End users of the site	**Low likelihood** The majority of residential areas will be built on concrete slabs.
Building fabrics containing hazardous materials	Release of hazardous materials during uncontrolled demolition of building fabrics	Ingestion and dermal contact, inhalation of airborne contaminants	Construction and maintenance workers End users of the site post redevelopment	**Possible** If uncontrolled demolition of site structures has resulted in release of hazardous materials. Risk can be reduced by carrying out Hazardous Materials Survey to identify possible hazardous materials, and removing hazardous materials by a qualified person in accordance with WorkCover requirements using appropriate WH&S measures.

4.4 DATA GAPS

The following data gaps within the CSM were identified:

- Uncertainty in regard to the presence of onsite contamination from identified sources (listed in **Section 4.1**) require confirmation;
- The degree and extent of contamination on site, if any; and
- Potential presence of any contamination from other unknown onsite and offsite sources.

5. 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 DSI;
- 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.

5.1 DATA QUALITY OBJECTIVES (DQO)

In accordance with the USEPA (2006) *Data Quality Assessment* and the DEC (2006) *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 5-1**.

Table 5-1 Summary of Project Data Quality Objectives

DQO Steps (NSW DEC, 2006)	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 is to be redeveloped into a multi storey mixed commercial and residential-use development. • Historical information and site inspection identified the potential for contamination to be present in site soil and/or groundwater, contributed by various potential sources listed in **Section 4.1**: Based on the site history information collected, a preliminary conceptual site model of the site has been developed, and is present in **Section 4**. • The PSI was required to provide data to characterise the environmental conditions of the site, and to verify if the site is suitable, or can be made suitable for the proposed development.	-
2. Identify the Goal of the Study (Identify the decisions) Identify the decisions that need to be made on the contamination problem and the new environmental data required to make them	The decisions needed 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, geologic and hydrogeological conditions have on the fate and transport of any impacts that may be identified? • Does the level of impact coupled with the fate and transport of identified 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 (NSW DEC, 2006)	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	The main inputs to the decision making process include: • Proposed future land use and layout of the development; • Regional and site settings including site geology, topography and surrounding land uses; • Observations and information gathered from a site walkover inspection and review of historical site records (aerial photographs, historical land title records, council records, etc.); • Areas of concern identified during the site inspection prior to intrusive investigations; • National and NSW EPA guidelines under the NSW *Contaminated Land Management Act 1997*; • Investigation sampling to verify the presence of onsite contamination and to evaluate the potential risks to sensitive receptors; and • 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 cadastral site boundaries, presented in **Table 2.1**; Vertical – from the existing ground level to a maximum depth of 9.8 mBGL for soil and groundwater investigation; Temporal – Results are valid on the day of 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.	Vertical – depth of investigation was limited in the northern portion of the site due to auger refusal infilling, as detailed in **Section** Error! Reference source not found..
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 data exceed the land use criteria; then assess the need to further investigate the extent of impacts onsite and the need for remediation works. • Decision criteria for QA/QC measures are defined by the Data Quality Indicators (DQI) in **Table 5-2**	-

DQO Steps (NSW DEC, 2006)	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 exceed relevant residential, recreational, or commercial / industrial land use criteria across the site. • Sampling on a 17.5 m grid will allow detection of a circular hotspot with a nominal diameter of 20.5 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 results exceeds the remediation acceptance criteria by 250% or more; and • 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); and • 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.	-

DQO Steps (NSW DEC, 2006)	Details	Comments (changes during investigation)
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 minimum sampling points for the site is eight (8) based on the site area (EPA, 1995); • Soil sampling locations were set using a combined targeted and systematic sampling pattern across the accessible areas of the site; • An upper soil profile sample (soil extracted immediately beneath the concrete hardstand / pavement, or at approximately 0.1 m below ground level where surface cover was absent) was collected to test for chemicals of concern, in order to assess the conditions of the fill layer and impacts from activities above ground; • Further sampling was also carried out at deeper intervals. 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 deeper soil horizons; • One groundwater monitoring well was installed at the site to characterise groundwater quality entering and exiting the site; and • Instructions were issued to guide field personnel in the required fieldwork activities.	-

5.2 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 5-2**, which related to both field and laboratory-based procedures. The assessment of data quality is discussed in **Section 7**.

Table 5-2 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. In cases where an RPD value was considered unacceptable, the analytical results of primary and duplicate samples were both reviewed against the adopted assessment criteria. If the review indicates the variations in data between the primary and duplicate samples would result in a different conclusion (i.e. the higher concentration is failing the assessment criteria), the higher concentration would be used for assessment.
Accuracy – A quantitative measure of the closeness of reported data to the "true" value	Data accuracy would be assessed through the analysis of: • Field trip blank samples to assess potential cross contamination; • Laboratory method blanks, which are analysed for the analytes targeted in the primary samples; • Laboratory matrix spike and matrix spike duplicate sample sets; • Laboratory control samples; • Calibration of instruments against known standards; and • Variation in results reported by the primary and secondary laboratories for primary and duplicate samples.
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: • Field trip spike samples to assess potential volatile loss during sample transportation; • 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; • 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); and • Consistency between field vapour screening information and laboratory results.

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 for sampling protocols were adhered to; • 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; and • Investigation works completed were generally consistent with the proposed scope of works (**Section 1.4**).
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 standard operation procedures and regulator-endorsed or published guidelines and standards on each data gathering activity. • Sampling was conducted by the same sampler where possible to enhance project continuity and minimise variability in sampling technique; • Sampling under inclement weather conditions was avoided to minimise variability contributed by weather conditions; and • In addition, the data will be collected by experienced samplers and NATA-accredited laboratory methodologies will be employed in all laboratory testing programs.

6. ASSESSMENT METHODOLOGY

6.1 SAMPLING RATIONALE

With reference to the preliminary CSM described in **Section 4**, soil and groundwater investigation works were planned in accordance with the following rationale:

- Drilling of test boreholes at eight locations (identified as BH101M to BH108), distributed in a triangular grid pattern across accessible areas of the site;
- Installation of one groundwater monitoring well to a maximum depth of 9 mBGL, constructed to standard environmental protocols to investigate potential groundwater contamination;
- Multiple level soil sampling within fill and natural soils and one round of groundwater sampling from the newly constructed groundwater monitoring well, as well as monitoring bores previously installed by SMEC Testing Services; 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 program.

6.2 INVESTIGATION CONSTRAINTS

The locations and completion depths of sampled test bores did not fully achieve the planned investigation scope described in the DQO (**Table 5-1**), due to the following physical obstruction;

- Buried materials (possibly buried slabs, rock boulders or iron-indurated gravel) within site filling resulted in auger refusal.

Two of the boreholes, (BH107 and BH108) encountered auger refusal before reaching the target depth (0.5 m below the natural soil interface). BH107 was completed within the fill horizon (0.8 mBGL) as was BH08 (0.6 mBGL).

6.3 ASSESSMENT CRITERIA

The assessment criteria proposed for this project are outlined in **Table 6-1**. 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 6-1 Adopted Investigation Levels for Soil and Groundwater

Environmental Media	Adopted Guidelines	Rationale
Soil	NEPM, 2013 Soil HILs, EILs, HSLs, ESLs & Management Limits for TPHs	**Soil Health-based Investigation Levels (HILs)** Soil samples to be assessed against the NEPM 2013 HIL-B and HIL-C thresholds. HIL-B for residential sites with minimal access to soils and HIL-C for developed open spaces (which applies to parks, playgrounds, playing fields, secondary schools and footpaths) based on the proposed development layout. For boreholes located in or around the proposed landscaping areas (BH107 and BH108), soil samples are assessed against the HIL-C thresholds for public open space, as explained in Schedule B7 in NEPM 2013. **Ecological Investigation Levels (EILs)** Soil samples located in or around the proposed landscaping area (BH107 and BH108) are also 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. EILs only apply to the top 2 m of soil (root zone). **Soil Health-based Screening Levels (HSLs)** The NEPM 2013 Soil HSL-A&B thresholds for residential sites for vapour intrusion are applied to assess for potential human health impacts from residual vapours resulting from petroleum, BTEX & naphthalene. Soils in the proposed landscaping areas may be assessed against HSL-C for public open space, however HSL A&B is considered more conservative than HSL-C and HSL-D. Therefore, in this regard soil samples are only assessed against HSL A&B. Soils asbestos results to be assessed against the NEPM 2013 Soil HSL thresholds for “all forms of asbestos”. **Ecological Screening Levels (ESLs)** Soil samples located in or around the proposed landscaping areas (BH107 and BH108), are assessed against the NEPM 2013 ESLs for selected petroleum hydrocarbons & TRH fractions for protection of terrestrial ecosystems. ESLs only apply to the top 2m of soil (root zone). **Management Limits for Petroleum Hydrocarbons** Should the ESLs and HSLs be exceeded for petroleum hydrocarbons, soil samples will also be 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.
Groundwater	NEPM, 2013 GILs for Fresh Waters and Marine Waters	**Groundwater Investigation Levels (GILs) for Fresh Waters and Marine Waters** NEPM 2013 provides GILs for typical, slightly-moderately disturbed aquatic ecosystems, which are based on the ANZECC & ARMCANZ 2000 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 nearest receiving surface water receptor, Lake Northam, is considered to be of freshwater (OEH, 2006). Therefore Freshwater GILs are adopted for assessment in this DSI. Due to the ANZECC (2000) criteria for TRH being below the laboratory limit of reporting, the PQL for each TRH fraction was adopted as the GIL for aquatic ecosystems, in accordance with the procedure described in DEC (2007) *Guidelines for the Assessment and Management of Groundwater Contamination*.

Environmental Media	Adopted Guidelines	Rationale
	NEPM, 2013 Groundwater HSLs for Vapour Intrusion	**Health-based Screening Levels (HSLs)** The NEPM 2013 groundwater HSLs for vapour intrusion were used to assess for potential human health impacts from residual vapours resulting from petroleum, BTEX and naphthalene impacts. The *HSL A* and *HSL B* thresholds for residential sites are applied for groundwater. *HSL C* thresholds for public open space may be applied at well locations within the proposed landscaping area. HSL A&B is considered more conservative than HSL-C and HSL-D, therefore in this regard groundwater samples are only assessed against HSL A&B.

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 8.3**.

6.4 SOIL INVESTIGATION

The soil investigation works conducted at the site are described in **Table 6-2**. Test bore locations are illustrated in **Figure 2**.

Table 6-2 Summary of Soil Investigation Methodology

Activity/Item	Details
Fieldwork	Soil Investigations were carried out on 3 March 2017. Eight boreholes (named BH101M to BH108) were drilled and sampled, followed by installation of a groundwater monitoring well at BH101M. Soil sampling and logging of subsurface conditions were completed by an EI Engineer.
Drilling Method & Investigation Depth	Boreholes BH101M to BH108 were drilled with a track-mounted drilling rig fitted with solid flight augers, to depths between 0.6 m and 9.8 mBGL approximately. Borehole locations are provided on **Figure 2**.
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 the Unified Soil Classification System (USCS) and Australian Standard (AS) 4482.1-2005. Bore logs are presented in **Appendix D**.
Field Observations (including visual and olfactory signs of potential contamination)	Field observations, including observed anthropogenic inclusions in soils, staining and odour, were recorded on borehole logs. A summary of recorded field observations is provided in **Section 8.1**.
Soil Sampling	Soil samples were collected using a dry grab method (unused, dedicated nitrile gloves) and placed into laboratory-supplied, acid-washed, solvent-rinsed glass jars with Teflon-lined lids. Gloves were replaced between sampling locations. Blind field duplicates were split from the primary samples without mixing and placed into glass jars. A small amount of duplicate was split from each soil sample and placed into a zip-lock bag for VOC screening by Photo-ionisation Detector (PID). A small amount of duplicate was split from each fill sample and placed into a zip-lock bag for asbestos analysis.

Activity/Item	Details
Decontamination Procedures	*Drilling Equipment* - The drilling rods, hand auger and trowel were decontaminated between sampling locations with potable water until the augers were free of all residual materials. *Sampling Equipment* – Decontamination was not required as the sampling gloves were replaced between sampling locations.
Sample Preservation	Samples were stored in cooled (ice brick-filled) chests, 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 chemicals of concern by SGS Laboratories (SGS). QA/QC testing comprised intra-laboratory duplicates ('field duplicates') tested blind by the primary laboratory SGS and an inter-laboratory field duplicate tested by the secondary laboratory Envirolab Services (Envirolab). All samples were transported under strict Chain-of-Custody (COC) conditions. COC certificates and laboratory sample receipt documentation were provided to EI for confirmation purposes, as discussed in **Section 7**.
Soil Vapour Screening	Screening for potential VOCs in all collected soil samples was conducted in field using a Photo-ionisation Detector (PID) fitted with a 10.6 eV lamp.

6.5 GROUNDWATER INVESTIGATION

The groundwater investigation works conducted at the site are described in **Table 6-3**. Monitoring well locations are illustrated in **Figure 2**.

Table 6-3 Summary of Groundwater Investigation Methodology

Activity/Item	Details
Fieldwork	One groundwater monitoring well was installed and developed on 9 March 2017. One groundwater monitoring well installed in a previous geotechnical investigation performed by SMEC (2010) was also used for this assessment (SMEC – BH2). Water level gauging, well purging, field testing and groundwater sampling was carried out on 19 March 2017, in a Groundwater Monitoring Event (GME). Well development and the GME were both carried out by an EI Engineer.
Well Construction	Test bores were converted to groundwater monitoring wells as follows: • One, 8.8 m deep well identified as BH101M. Well construction details are tabulated in **Table 8-2** and documented in the bore logs presented in **Appendix D**. The monitoring well was installed to screen the shale water bearing zone.

Activity/Item	Details
Well Construction	Well construction was in general accordance with the standards described in Victoria EPA, 2000 and involved the following: • 50 mm, Class 18 uPVC, threaded, machine-slotted screen and casing; • base and top of each well was sealed with a uPVC cap; • annular, graded sand filter was used to approximately 500 mm above top of screen interval; • granular bentonite was applied above the annular filter to the ground level, in order to seal the screened interval; • surface completion comprised a steel gatic cover set in neat cement and finished flush with the ground level.
Well Development	Well development was conducted for the well following installation. This involved agitation within the full length of the water column using a dedicated, HDPE, disposable bailer, followed by removal of water and accumulated sediment using a the same bailer, until no further reduction in suspended sediment was observed (i.e. after removal of several well volumes), or the well was purged dry.
Well Survey (Elevation and location)	Locations of the monitoring wells were measured from fixed points marked on the site survey plan provided by the client (**Appendix A**). Well elevations at ground level were extrapolated from the spot elevations marked on the survey plan. Well elevations at ground level were extrapolated in metres relative to Australian Height Datum (m AHD).
Well Gauging & Groundwater Flow Direction	Monitoring wells BH101M and SMEC – BH2 were gauged for standing water level (SWL, depth to groundwater) prior to well purging at the commencement of the GME on 14 March 2017. The measured standing water levels were converted to RL in metres relative to Australian Height Datum (mAHD) based on extrapolated ground elevation, measured well stick-up and water levels. Groundwater flow direction was inferred based on the calculated SWL in RL (**Table 8-3**).
Well Purging & Field Testing	Monitoring well BH101M was purged and sampled using low-flow/minimal drawdown sampling method with a MicroPurge kit (MP15) and a portable MicroPurge pump following well gauging. The MicroPurge system incorporates a low-density polyethylene (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 minimise drawdown of water level during the sampling process. Field measurement of water quality parameters was conducted continuously on purged groundwater with a water quality meter (Hanna Multi Parameter 9828) positioned within an open flow-through cell. Groundwater parameters tested in the field were Dissolved Oxygen (DO), Electrical Conductivity (EC), Redox, Temperature and pH. The measured parameters were recorded onto a field data sheet (**Appendix E**), along with the purged water volume at the time of measurement. Groundwater sampling was performed when three consecutive readings of groundwater parameter indicated stabilisation. Total water volume purged and stabilised groundwater parameters at each groundwater monitoring well are summarised in **Table 8-3**.
Groundwater sampling	For BH101M, once three consecutive stabilised field measurements were recorded for the purged waters, this was considered to indicate that representative groundwater quality had been achieved and final physio-chemical measurements were recorded. Groundwater samples were then collected by decanting samples directly into containers via sample delivery tube (if the MicroPurge system was used). For SMEC-BH2 the low-flow/minimal drawdown sampling method could not be used due to the installed well being too narrow in size to allow for the placement of the MicroPurge pump.. Therefore, a disposable bailer was used to purge and sample the monitoring bore.

Activity/Item	**Details**
Decontamination Procedure	Decontamination was not required on the bailer, pump bladder and delivery tube of the MicroPurge System, as they were dedicated to each groundwater monitoring well. The remainder of the MicroPurge system, the interface probe and the water quality meter were decontaminated with a solution of potable water and Decon 90. This was followed by rinsing with potable water, then a final rinse with de-ionised rinsate water (supplied by the primary laboratory) between each sampling location.
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 brick-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 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, cooled sample chests were transported to SGS Australia Pty Ltd using strict Chain-of-Custody (COC) procedures. Inter-laboratory duplicate 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 F**.

7. 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 investigation levels);
- 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 H**. QA/QC policies and DQOs are presented in **Appendix I**.

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.

8. RESULTS

8.1 SOIL INVESTIGATION RESULTS

8.1.1 Site Geology and Subsurface Conditions

The general site geology encountered during the drilling of soil investigation was a layer of anthropogenic fill / topsoil, overlying residual silty clay, followed by shale bedrock. The geological information obtained during the investigation is summarised in **Table 8-1** and borehole logs from these works are presented in **Appendix D**.

Table 8-1 Generalised Subsurface Profile

Layer	Description	Observed depths to top & bottom of layer	
		Top (mBGL)	Bottom (mBGL)
Fill / Topsoil	Concrete or asphalt (where present) up to 180 mm thick, overlying SAND / Silty CLAY / Sandy CLAY fill materials, generally black-dark brown-grey, with rootlets inclusions at boreholes outside building footprints, occasionally with, gravel inclusions, no odour.	0.0	2.8
Residual soil	Silty CLAY, medium to high plasticity, grey - orange mottled red - grey, no odour.	0.9	3.5
Bedrock	SHALE, brown-light grey grading to dark brown-black, no odour.	3.5	9.8+

Notes:
+ Termination depth of borehole

8.1.2 Field Observations and PID Results

Soil samples were obtained from the test bores at various depths ranging between 0.1 m and 3.8 mBGL. All examined soil samples were evaluated on a qualitative basis for odour and visual signs of contamination (e.g. hydrocarbon odours, oil staining, petrochemical filming, asbestos fragments, ash, charcoal) and the following observations were noted:

- Asbestos fragments were not observed in examined drilling cuttings or on ground surfaces, however, loose fibrous cemented sheeting fragments however were note on external buildings and on a shed around the exterior or 77-85 Eveleigh Street (**Section 2.5**).
- Unusual odours were not detected in drilling cuttings; and
- Soil headspace samples were field-screened using a portable PID.. The PID results of soil headspace samples ranged between 0.2 and 4.8 ppm. PID results are detailed in borehole logs presented in **Appendix D**.

8.2 GROUNDWATER INVESTIGATION RESULTS

8.2.1 Monitoring Well Construction

A total of one groundwater monitoring wells was installed at the site. Well construction details for the installed groundwater monitoring wells are summarised in **Table 8-2**.

Table 8-2 Monitoring Well Construction Details

Well ID	Well Depth (mBGL)	Ground Level RL (mAHD)	Stick-up (m)	RL TOC (mAHD)	Screen Interval (mBGL)	Lithology Screened
BH101M	8.8	25.17	-0.12	25.05	5.8 – 8.8	Shale

Notes:
mBGL - metres below ground level.
RL - Reduced Level – ground level extrapolated from the site survey plan, in metres relative to Australian Height Datum (m AHD).
Stick-up - Distance from the top of well casing to ground level. Negative values indicate stick-up is below ground level.
RL TOC - Reduce level at the top of well casing in mAHD.

8.2.2 Field Observations and Water Test Results

A GME was conducted on the installed well (BH101M), along with the well installed by SMEC (SMEC-BH2) on 14 March 2017. 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 8-3** and copies of the completed Field Data Sheets are included in **Appendix E**.

Table 8-3 Groundwater Field Data

SWL (m BTOC)	RL (TOC)	WL† (m AHD)	Purge Volume (L)	DO (mg/L)	Field pH	Field EC (µS/cm)	Temp (°C)	Redox (mV)
BH101M (Grey, moderate turbidity, no sheen, no odour)								
4.961	25.17	20.209	3.0	2.09	7.58	1267	20.91	-31.7
SMEC-BH2 (Grey, moderate turbidity, no sheen, no odour)								
8.015	27.80	19.785	2.0	1.71	6.35	1282	21.77	30.1

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
RL (TOC) – Reduced Level, elevation at TOC in metres relative to Australian Height Datum (m AHD).
† WL - Calculated groundwater level, in m AHD (calculated as RL (TOC) – SWL)
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)
Redox – Oxidation and reduction potential. Redox reported in **Table 8-3** has been adjusted relative to standard hydrogen electrode (by adding 205 mV to field reading, as advised by the test equipment manufacturer). Refer to **Appendix E** for field redox readings pre-adjustment.
All groundwater parameters (pH, EC, Redox, Temperature and DO) were tested on site.

With reference to **Table 8-3**, groundwater flow direction was inferred to be generally towards the north to north-west. The field pH data indicated that the groundwater ranged between mildly acidic and

mildly alkaline (pH ranged from 6.35 to 7.58) with oxidising conditions. Electrical conductivity measurements (EC) which ranged from 645 to 1,282 µS/cm indicated that the groundwater was fresh in terms of water salinity.

8.3 LABORATORY ANALYTICAL RESULTS

8.3.1 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 8-4**. More detailed tabulations of results showing the tested concentrations for individual samples alongside the adopted soil criteria are presented in **Tables T1** and **T2** 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 F** and all laboratory analytical reports for tested soil samples are presented in **Appendix G**.

Table 8-4 Summary of Soil Analytical Results

No. of primary samples	Analyte	Min. Conc. (mg/kg)	Max. Conc. (mg/kg)	Sample locations exceeding investigation levels
Heavy Metal				
13	Arsenic	<3	36	None
13	Cadmium	<0.3	1.2	None
13	Chromium (Total)	2	18	None
13	Copper	1	310	Samples exceeding adopted ESL: BH107_0.7-0.8 (310 mg/kg) BH108_0.4-0.5 (63 mg/kg)
13	Lead	8	630	None
13	Mercury	<0.5	0.23	None
13	Nickel	<0.5	81	Samples exceeding adopted ESL: BH108_0.4-0.5 (81 mg/kg)
13	Zinc	4	560	Samples exceeding adopted ESL: BH108_0.4-0.5 (560 mg/kg)
Hydrocarbons				
13	F1 TRH	<25	<25	None
13	F2 TRH	<25	26	None
13	F3 TRH	<90	180	None
13	F4 TRH	<120	<120	None
13	Benzene	<0.1	<0.1	None
13	Toluene	<0.1	<0.1	None
13	Ethylbenzene	<0.1	<0.1	None
13	Total xylenes	<0.3	<0.3	None
13	Naphthalene	<0.1	<0.1	None
PAHs				
13	Benzo(a)pyrene	<0.1	4.4	None

No. of primary samples	Analyte	Min. Conc. (mg/kg)	Max. Conc. (mg/kg)	Sample locations exceeding investigation levels
13	Carcinogenic PAHs	<0.3	6.3	None
13	Total PAH	<0.8	44	None
Asbestos				
8	Asbestos	No asbestos detected	No asbestos detected	None detected in tested soil samples
OCPs, OPPs and PCBs				
8	OCPs	Not Detected	Not Detected	None
8	OPP	Not Detected	Not Detected	None
8	Total PCBs	<1	<1	None

Heavy Metals

With reference to **Table T1 and T2**, all heavy metals concentrations were below HIL B - *Residential Sites with Minimal Access to Soils*, and HIL-C - *Proposed Open Spaces.*

Copper concentrations in samples BH107_0.7-0.8 (310 mg/kg) and BH108_0.4-0.5 (63 mg/kg) exceeded the derived ecological investigation level (EIL) of 60 mg/kg. Nickel concentrations in BH108_0.4-0.5 (81 mg/kg) exceeded an EIL of 30 mg/kg. Finally, Zinc concentrations in sample BH108_0.4-0.5 (560 mg/kg) also exceeded the derived EIL (70 mg/kg).

Samples BH107_0.7-0.8 and BH108_0.4-0.5 were collected from the fill horizon, with a deeper sample not collected due to manual auger refusal.

TRHs

As shown in **Table T1 and T2**, all total recoverable hydrocarbons (TRH) concentrations were below adopted human health HSL A&B criteria and ecological ESLs criteria.

BTEX and Naphthalene

As shown in **Table T1 and** T2, all BTEX and Naphthalene concentrations in the tested soil samples were below the laboratory's practical quantitation limits (PQLs) and below the adopted human health and ecological risk assessment criteria.

PAHs

As shown in **Table T1 and T2**, all PAH concentrations were below human health criteria adopted for risk assessment HSL A&B, and the criteria for ecological risk assessment ESLs.

Asbestos

As summarised in **Table T1**, no detectable asbestos concentrations or traces of respirable fibres were identified in any of the tested soil samples.

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.

8.3.2 Groundwater Analytical Results

Laboratory analytical results for groundwater samples are summarised in **Table T3**, 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 F**. Copies of the laboratory analytical reports are attached in **Appendix G**.

Table 8-5 Summary of Groundwater Analytical Results

No. of primary samples	Analyte	Min. Conc. (µg/L)	Max. Conc. (µg/L)	Sample locations exceeding investigation levels
Heavy Metal				
2	Arsenic	<1	6	None
2	Cadmium	<0.1	0.1	None
2	Chromium (Total)	<1	<1	None
2	Copper	<1	1	None
2	Lead	<1	<1	None
2	Mercury	<0.0001	<0.0001	None
2	Nickel	5	7	None
2	Zinc	46	54	Samples exceeding adopted GIL: BH101M (46 µg/L) SMEC-BH2 (54 µg/L)
Hydrocarbons				
2	F1 TRH	<50	<50	None
2	F2 TRH	<60	<60	None
2	F3 TRH	<500	<500	None
2	F4 TRH	<500	<500	None
2	Benzene	<0.5	<0.5	None
2	Toluene	<0.5	<0.5	None
2	Ethyl benzene	<0.5	<0.5	None
2	o-xylene	<0.5	<0.5	None
2	m/p-xylene	<1	<1	None
PAHs				
2	Benzo(a)pyrene	<0.1	<0.1	None
2	Naphthalene	<0.1	<0.1	None

9. SITE CHARACTERISATION

9.1 FILL MATERIALS ON SITE

Soil samples analysed by the testing laboratory indicated concentrations of heavy metals, TRH, BTEX, PAH, OCP/OPP, PCB, and asbestos below adopted human-health criteria. Ecological exceedances were identified in two locations (BH107_0.7-0.8 and BH108_0.4-0.5). Copper concentrations in samples BH107_0.7-0.8 (310 mg/kg) and BH108_0.4-0.5 (63 mg/kg), as well as Nickel concentrations in BH108_0.4-0.5 (81 mg/kg) and finally, Zinc concentrations in sample BH108_0.4-0.5 (560 mg/kg), were observed to be above adopted ecological investigation levels (EILs). Both of these samples were collected from the fill horizon, with a deeper sample not able to be collected due to manual auger refusal at both locations. Although ecological exceedances were noted, health investigation levels were considerably under their respective limits (HIL-C).

Furthermore, with considerations given to the site development, it is recommended that surface filling soils are stripped and removed from the site following demolition works and prior to construction. Fill soils in and around the proposed landscaping area should also be removed prior to construction to minimise any potential effects to plants used for landscaping. A guide for the excavation, waste classification and offsite removal of filling materials is provided in **Section 12**.

9.2 GROUNDWATER CHARACTERISATION

Groundwater samples were collected from the two monitoring wells on-site. Laboratory analytical results indicated that BTEX, TRH, PAHs and VOC concentrations in all groundwater samples were below the adopted assessment criteria. Most of the tested heavy metal concentrations were below the adopted criteria, with the exception of zinc in both monitoring wells (BH101M, 46 µg/L) (SMEC-BH2, 54 µg/L). Based on EI's experience, heavy metal concentrations exceeding water quality criteria are ubiquitous in groundwater systems in long-standing urbanised environments, and are not considered to represent a cause for environmental concern.

9.3 REVIEW OF CONCEPTUAL SITE MODEL

On the basis of investigation findings, the preliminary CSM discussed in **Section 4** was considered appropriate in identifying contamination sources, migration mechanisms and exposure pathways, as well as potential onsite and offsite receptors. Previously known data gaps, as outlined in **Section 4.4,** have largely been addressed.

10. CONCLUSIONS

The property located at 77-123 Eveleigh Street, Redfern NSW was the subject of a Preliminary Site Investigation (PSI) with Limited Sampling. This PSI was completed to provide an appraisal on the environmental conditions at the site for due diligence purposes. The primary objectives of this PSI were to evaluate the potential for site contamination and to investigate the degree of any potential contamination by the means of reviewing site history, intrusive sampling and laboratory analysis. The key findings of this assessment are as follows:

- The site, which was largely vacant land at the time of PSI site works but had been used for both commercial and residential purposes previously .The newly proposed development will include construction of a multi storey mixed residential / commercial building. EI consider the development qualifies as a HIL-B / HIL-C Development – *Residential with Minimal Opportunities for Soil Access*, and *Public Open Spaces* as defined in NEPM (2013).

- The intrusive investigation program carried out in this PSI comprised the drilling of eight boreholes (identified as BH101M to BH108), followed by installation of one groundwater monitoring wells. Soil samples were collected from depths between 0.1 m to 3.8 mBGL, from both the fill and natural soil horizons;

- The subsurface layers observed during the intrusive investigation comprised a layer of anthropogenic fill / topsoil, overlying residual silty clay, followed by shale bedrock.

- Laboratory analytical results of the tested soil samples indicated heavy metals, TRH, BTEX, PAH, OCP/OPP, PCB, and asbestos below adopted human-health criteria .

- Laboratory analytical results of the tested soil samples identified the following exceedances in ecological investigation levels:

  - Copper concentrations in samples BH107_0.7-0.8 (310 mg/kg) and BH108_0.4-0.5 (63 mg/kg);

  - Nickel concentrations in BH108_0.4-0.5 (81 mg/kg); and

  - Zinc concentrations in sample BH108_0.4-0.5 (560 mg/kg).

- With considerations given to the site development, it will require that the fill soils in and around the landscaping area will be removed during the excavation phase, and therefore not pose a risk of contamination.

- A groundwater monitoring event was completed by sampling at one newly installed monitoring wells (BH101M) and a well installed previously by SMEC (SMEC-BH2) on 14 March 2017;

- Groundwater seepage was not observed during auger drilling of the test bores, down to a maximum depth of 8.8 mBGL. Standing groundwater levels measured in the two monitoring wells were between 4.961 m to 8.015 mBGL. Groundwater flow was inferred to be generally towards the north to north-west.

- Laboratory analytical results indicated the concentrations of BTEX, TRH, PAH, VOCs and total phenols in the collected groundwater samples were below the adopted assessment criteria.

Heavy metals concentrations were mostly below the adopted criteria, with the exception of the following:

- Zinc in all both monitoring wells at concentrations of 46 µg/L (BH101M) and 54 µg/L (SMEC - BH2), exceeded the GILs of 8 µg/L for Fresh Waters;.

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.

- Heavy metal concentrations reported in both wells were largely comparable, demonstrating that there was no material increase of heavy metal concentrations in groundwater at down gradient locations of the site.

- A conceptual site model (CSM) was derived for the site in this PSI. The CSM identified potential contaminating sources that may occur at the site and evaluated the likelihood for relevant exposure pathways to be complete during and after the proposed development. Based on the findings of this assessment, possible risks to sensitive receptors are low.

Based on the findings of this report and with consideration of the Statement of Limitations (**Section 13**), EI concludes that gross and/or widespread contamination was not identified at the site in soils and groundwater, and possible risks to sensitive receptors are low. In light of the proposed demolition of existing structures and the presence of some heavy metals exceeding ecological criteria, recommendations for site management following demolition are provided in **Section 11**.

11. RECOMMENDATIONS

Based on the findings of the PSI, EI recommend the following:

- Undertake a site inspection of freshly exposed surfaces following the demolition and removal of slab/ hardstand. Inspect particularly for foreign materials, any potential contamination sources, unexpected finds, and hazardous materials (asbestos containing) deposited following demolition;
- Manage fill according to the steps outlined **Section 12**.

12. SITE FILL MANAGEMENT

Following demolition, surficial filling soils are to be removed from the development footprint, as well filling soils located within the proposed landscaping area. The following steps are to be undertaken post-demolition by an environmental consultant:

- While asbestos was not reported in tested fill samples, or detected during examination of drilling cuttings, the presence of asbestos-containing materials (ACM) on existing site structures was observed. As such, an inspection of the site is to be performed following demolition. The site inspection should include observation of freshly exposed surfaces following demolition and slab/hardstand removal to assist with identifying any foreign materials, any potential contamination sources, unexpected finds, and hazardous materials;

- Surficial filling soils should be stripped from the site footprint and placed into stockpiles for waste classification purposes. Stockpiles should be managed in accordance with development consent requirements;

- The collection of representative soil samples from each of stockpiled materials for laboratory analytical testing should be completed In accordance with the NEPM (2013) guidelines. Stockpiled soils will be sampled for waste classification purposes in accordance with the following methodology:

  - Collection of one sample per 25 m^3 of stockpiled material for the fill/soils, as per NEPM (2013) guidelines A minimum of three samples is required for waste classification of stockpiles < 25 m^3;

  - For stockpiles > 200 m^3 in size (up to 2,500 m^3), a minimum of ten samples are to be collected with statistical analysis applied and classification according to the 95 % UCL of the average concentration of the assessed analytes

  - Collection of one intra-laboratory duplicate for every 10 primary samples collected and one inter-laboratory duplicate for every 20 primary samples collected;

  - Collection of one rinsate blank per sampling round;

- Collected samples of fill should be analysed by NATA registered laboratory for chemicals of concern of heavy metals (arsenic, cadmium, chromium, copper, lead, nickel, mercury, zinc), petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene, xylenes (BTEX), polycyclic aromatic hydrocarbons (PAHs), organochlorine pesticides (OCPs), organophosphorous pesticides (OPPs), polychlorinated biphenyls (PCBs) and asbestos (presence/absence), sufficient for waste classification. Leachate analysis following TCLP testing may also be required;

- Assess laboratory data against criteria listed in NSW EPA (2014) *Waste Classification Guidelines* and prepare a waste classification certificate (WCC) for the fill;

- The fill should be excavated and disposed of, at an appropriately licence landfill according to the determination of the WCC. Documentary receipts and evidence of disposal of classified waste fill/soils at an appropriately-licensed landfill facility should be retained. NSW EPA requires a cradle to grave approach in the management of waste, as such; non-compliance with the waste guidelines can result in significant fines in accordance with the NSW *Protection of the Environment Operations Act 1997*.

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

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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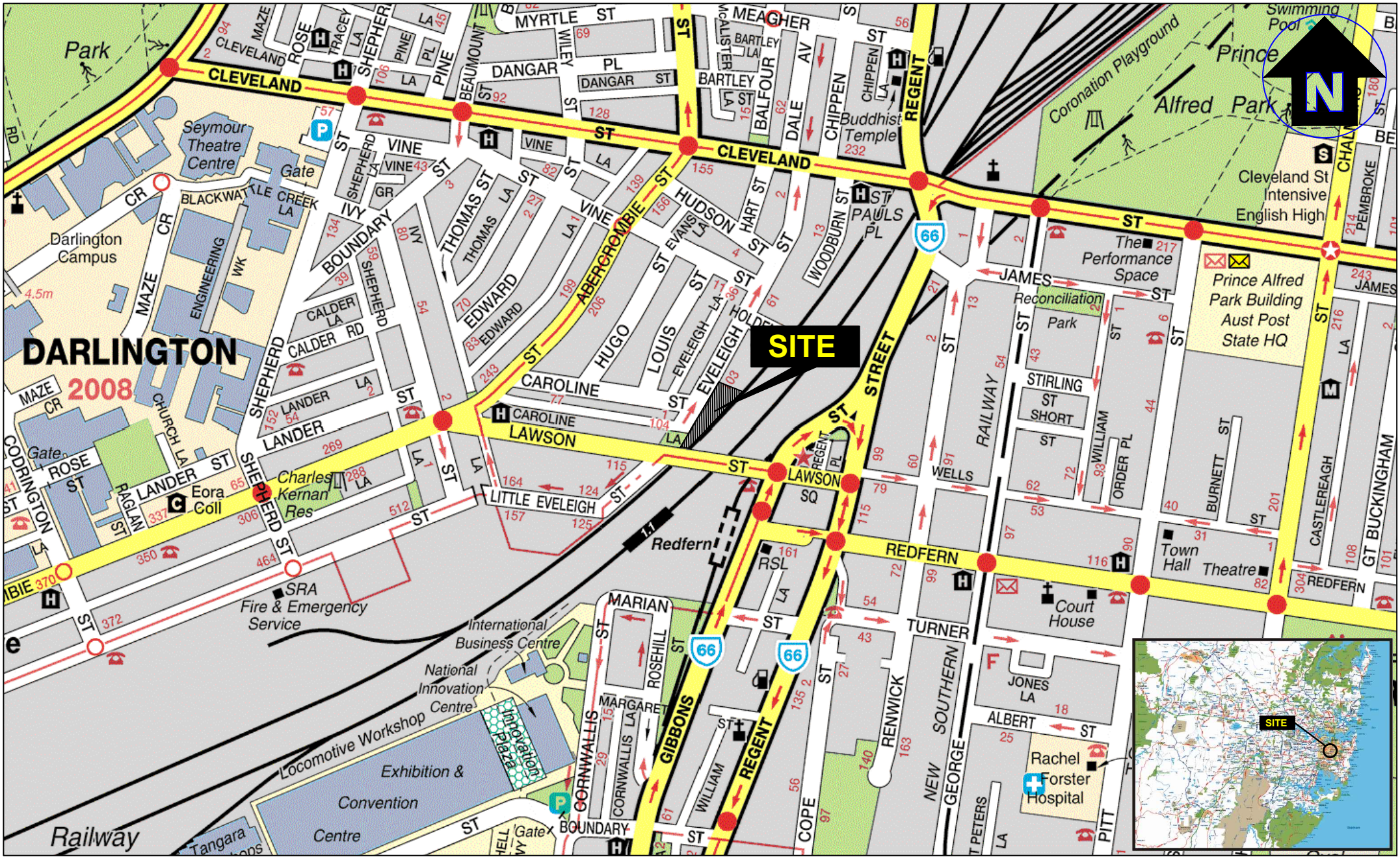
ABBREVIATIONS

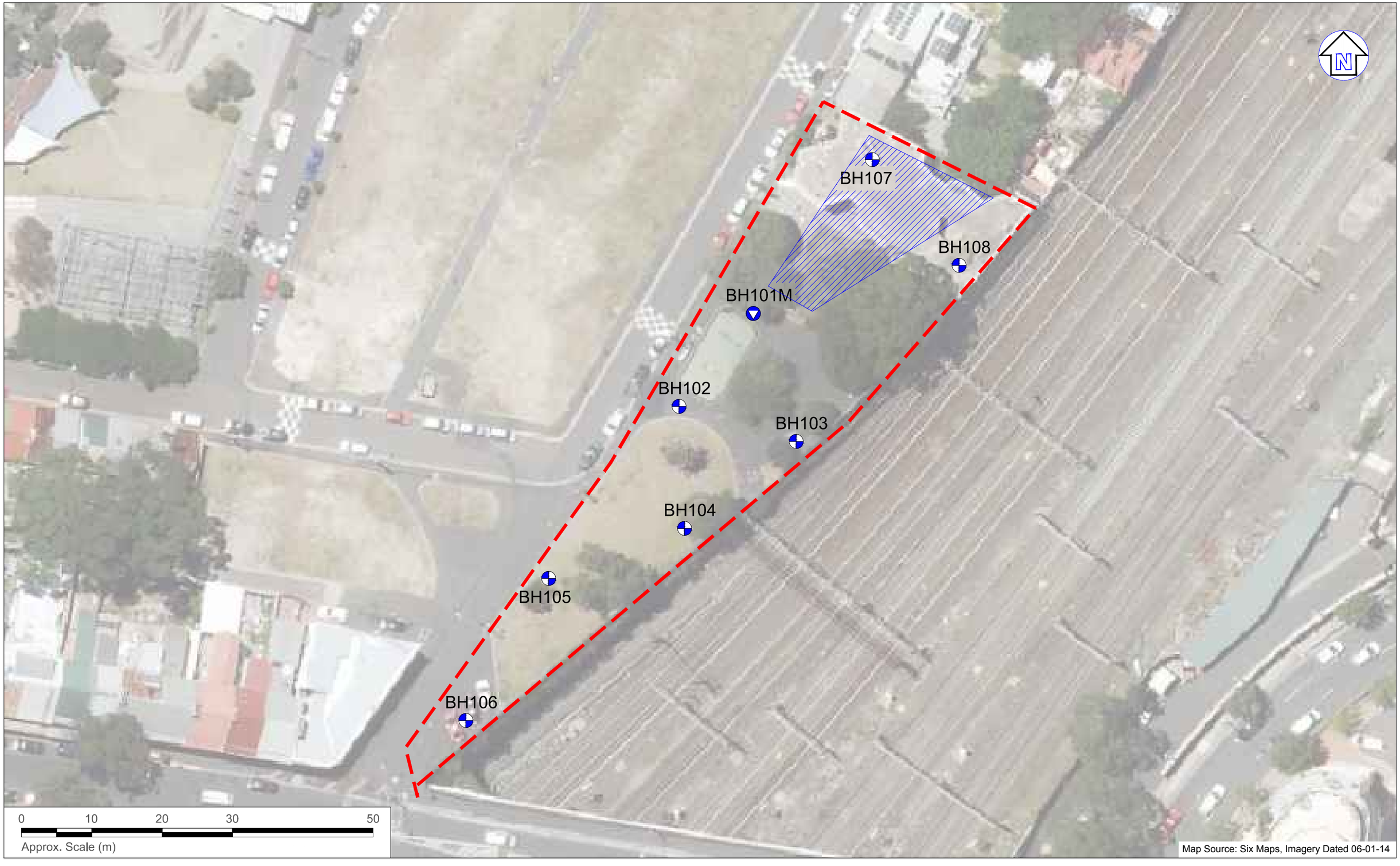
ACM	Asbestos-containing materials
ASS	Acid sulfate soils
ANZECC	Australian and New Zealand Environment Conservation Council
ARMCANZ	Agriculture and Resource Management Council of Australia and New Zealand
B(α)P	Benzo(α)pyrene (a PAH compound), - B(α)P TEQ Toxicity Equivalent Quotient
BH	Borehole
BTEX	Benzene, Toluene, Ethylbenzene, Xylene
COC	Chain of Custody
DA	Development Application
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)
DIPNR	Department of Infrastructure, Planning, and Natural Resources
DNAPL	Dense, non-aqueous phase liquid
DO	Dissolved Oxygen
DP	Deposited Plan
EC	Electrical Conductivity
EI	EI Australia
EIL	Ecological Investigation Level
EPA	Environment Protection Authority
ESL	Ecological Screening Level
F1 TRH	TRH $C_6 – C_{10}$ less the sum of BTEX concentrations (Ref. NEPM 2013, Schedule B1)
F2 TRH	TRH $>C_{10} – C_{16}$ less the concentration of naphthalene (Ref. NEPM 2013, Schedule B1)
F3 TRH	TRH $>C_{16} – C_{34}$
F4 TRH	TRH $>C_{34} – C_{40}$
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
m	Metres
mAHD	Metres Australian Height Datum
mBGL	Metres Below Ground Level
mg/L	Milligrams per litre
µg/L	Micrograms per litre
mV	Millivolts
MW	Monitoring well
NATA	National Association of Testing Authorities, Australia
NEPC	National Environmental Protection Council
NSW	New South Wales
OEH	Office of Environment and Heritage, NSW (formerly DEC, DECC, DECCW)
PAHs	Polycyclic Aromatic Hydrocarbons
pH	Measure of the acidity or basicity of an aqueous solution
PSH	Phase-separated hydrocarbons
PSI	Preliminary Site Investigation
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)
TCLP	Toxicity Characteristics Leaching Procedure
TPH	Total Petroleum Hydrocarbons (superseded term equivalent to TRH)
TRH	Total Recoverable Hydrocarbons (non-specific analysis of organic compounds)
THM	Trihalomethane
UCL	Upper Confidence Limit
USEPA	United States Environmental Protection Agency
UPSS	Underground Petroleum Storage System
UST	Underground Storage Tank
VOCs	Volatile Organic Compounds (specific organic compounds which are volatile)

FIGURES



eiaustralia Contamination | Remediation | Geotechnical Suite 6.01, 55 Miller Street, PYRMONT 2009 Ph 02 9516 0722 Fax 02 9518 5088	Drawn:	D.R.	**DeiCorp Constructions (NSW) Pty Ltd** Preliminary Site Investigation w Limited Sampling 77-123 Eveleigh Street, Redfern NSW Site Locality Plan
	Approved:	C.Y.	Figure: 1
	Date:	13-03-17	
	Scale:	Not To Scale	Project: E23309 AA Rev0



LEGEND

- Approximate site boundary
- Approximate borehole location
- Approximate borehole / monitoring well location
- Approximate location of proposed landscaping area

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

Drawn:	D.R.
Approved:	C.Y.
Date:	13-03-17

DeiCorp Constructions (NSW) Pty Ltd
Preliminary Site Investigation
w/ Limited Sampling
77-123 Eveleigh Street, Redfern NSW

Sampling Location Plan

Figure: 2

Project: E23309 AA Rev0

TABLES

Table T1 - Summary of Soil Analytical results (Proposed Residential Area)

Site Area	Sample ID	Sampling Depth (@ m BGL)	Sampling Date	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				
Proposed Residential Dwellings	BH101M	0.6-0.7	9/03/2017	5	0.4	13	45	630	<0.05	4.9	360	2.8	2.0	19	0.2	<0.1	<0.1	<0.1	<0.3	<25	<25	180	<120	ND	ND	<1	ND
	BH101M	1.5-1.6		14	<0.3	15	4	12	<0.05	<0.5	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
	BH102	0.5-0.6		<3	<0.3	4	1	8	<0.05	1.0	6	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	ND	ND	<1	ND
	BH103	0.2-0.3		4	<0.3	9.9	23	130	0.08	8.1	86	3.1	2.2	20	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	110	<120	ND	ND	<1	ND
	BH103	1.9-2.0		22	0.5	18.0	6	40	<0.05	0.9	23	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	ND	NA	NA	NA
	BH104	0.6-0.7		36	0.6	13	53	160	0.13	6.7	280	3.1	2.2	23	0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	97	<120	ND	ND	<1	ND
	BH104	1.9-2.0		6	0.4	18.0	2.3	22	<0.05	<0.5	16.0	<0.3	0.1	1.9	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	NA	NA	NA	NA
	BH105	0.1-0.2		<3	<0.3	5.6	13.0	45	0.07	3.8	54.0	0.7	0.4	4.5	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	ND	ND	<1	ND
	BH105	2.7-2.8		7	0.6	15	7	30	<0.05	0.9	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
	BH106	0.2-0.3		11	0.4	10	51	85	0.05	9.4	130	1.6	1.1	9.6	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	170	<120	ND	ND	<1	ND
	BH106	1.5-1.6		<3	<0.3	2	1.9	10	<0.05	<0.5	4	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	NA	NA	NA	NA
'	BH107	0.7-0.8		NA	NA	NA	NA	NA	NA	NA	NA	0.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	BH108	0.4-0.5		NA	NA	NA	NA	NA	NA	NA	NA	<0.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SILs																											
HIL B - *Residential with minimal opportunities for soil access*				500	150	500 Cr(VI)	30,000	1,200	120	1,200	60,000	4	NR	400										NR	NR	1	
HSL A/B -- Low - High *Density Residential Soil texture classification – Sand*				Source depths 0 m to <1 mBGL											3	0.5	160	55	40	45	110						
				Source depths 1 m to <2 mBGL											NL	0.5	220	NL	60	70	240						
				Source depths 2 m to <4 mBGL											NL	0.5	310	NL	95	110	440						
				Source depths >4 mBGL											NL	0.5	540	NL	170	200	NL						
EILs / ESLs - *urban residential and public open space* [1]				100	NR	190	60	1,100	NR	30	70	NR	0.7	NR	170	50	85	70	105	180*	120*	300*	2800*	180	NR	NR	NR
Management Limits – *Residential, parkland and public open space* - Coarse grained soil texture [1]																				700	1000	2500	10000				
Asbestos contamination HSL – Bonded ACM (%w/w) ResIdential-B																											0.04
Asbestos contamination HSL for Non Bonded / Friable Asbestos (%w/w)																											0.001

Notes: All results are recorded in mg/kg

Highlighted values indicates concentration exceeds Human Helath Based Soil Criteria

Highlighted values indicates concentration exceeds EIL / ESL.

Highlighted values indicates concentration exceeds Management Limits

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
NA	'Not Analysed i.e. the sample as not analysed.
ND	Not Detected' i.e. the sample was below detection limits.
1	Coarse Grained soil values were applied, being the most conservative of the material types.
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}

Table T2 - Summary of Soil Analytical results - Proposed Landscape / Open Space Area

Site Area	Sample ID	Sampling Depth (@ m BGL)	Sampling Date	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				
Proposed Landscape Space	BH107	0.7 - 0.8	9/03/2017	9	1.2	18	310	280	0.23	24	560	0.4	0.2	2.1	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	ND	ND	<1	ND
	BH108	0.4 - 0.5		<3	0.4	6	63	8	<0.05	81.0	48	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	ND	ND	<1	ND
SILs																											
HIL C - *Public Open Space*				300	90	300 Cr(VI)	17,000	600	80	1,200	30,000	3	NR	300										NR	NR	1	
HSL C - *Recreational / Open Space Soil Texture Classification - Sand*				Source depths 0 m to <1 mBGL											NL	NL	NL	NL	NL	NL	NL						
				Source depths 1 m to <2 mBGL											NL	NL	NL	NL	NL	NL	NL						
				Source depths 2 m to <4 mBGL											NL	NL	NL	NL	NL	NL	NL						
				Source depths >4 mBGL											NL	NL	NL	NL	NL	NL	NL						
EILs / ESLs - *urban residential and public open space* [1]				100	NR	190	60	1,100	NR	30	70	NR	0.7	NR	170	50	85	70	105	180*	120*	300*	2800*	180	NR	NR	NR
Management Limits – *Residential, parkland and public open space* Coarse grained soil texture [1]																				700	1000	2500	10000				
Asbestos contamination HSL – Bonded ACM (%w/w) *Recreational C*																											0.02
Asbestos contamination HSL for Non Bonded / Friable Asbestos (%w/w)																											0.001

Notes: All results are recorded in mg/kg

Highlighted values indicates concentration exceeds Human Helath Based Soil Criteria

Highlighted values indicates concentration exceeds EIL / ESL.

Highlighted values indicates concentration exceeds Management Limits

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
NA	'Not Analysed i.e. the sample as not analysed.
ND	Not Detected' i.e. the sample was below detection limits.
1	Coarse Grained soil values were applied, being the most conservative of the material types.
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}

Table T3 – Summary of Groundwater Investigation Results

Sample ID	Heavy Metals								BTEX					TRHs				PAHs		Total VOCs	Acetone	Total Phenolics
	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	Benzene	Toluene	Ethylbenzene	o-xylene	m/p-xylene	F1	F2	F3	F4	Benzo(a)pyrene	Naphthalene			
BH101M	6	<0.1	<1	<1	<1	<0.1	7	46	<0.5	<0.5	<0.5	<0.5	<1	<50	<60	<500	<500	<0.1	<0.1	<10	<10	NA
SMEC-BH2	<1	0.1	<1	1	<1	<0.1	5	54	<0.5	<0.5	<0.5	<0.5	<1	<50	<60	<500	<500	<0.1	<0.1	<10	<10	NA
GIL	24 as AS(III) 13 as AS(V)	0.2	N.R. (Cr III) 1[1] (Cr VI)	1.4	3.4	0.06	11	8[1]	800[2]	NR[2]	NR[2]	350	200	1000[2]	1000[2]	N.R.	N.R.	N.R.	16	N.R.	N.R.	320
ANZECC *Low Reliability*	-	-	3.3 (CrIII) - (Cr VI)	-	-	-	-	-	-	180	80	-	-	-	-	-	-	0.2	-	N.R.	N.R.	-

Notes: All results are in units of µg/L.

GIL Groundwater Investigation Level. All GIL values sourced from *National Environment Protection (Assessment of Site Contamination) Measure 1999 – Amendment 2013 Schedule (B1) -* Guideline on Investigation Levels for Soil and Groundwater, (NEPC) Investigation levels apply to Fresh Waters for typical slightly-moderately disturbed systems.

N.R. No current publish criterion.

N.D. Not Detected.

N.A. Not analysed.

1 Indicated threshold value may not protect key species from chronic toxicity, refer to ANZECC & ARMCANZ (2000) for further guidance.

2 NEPM (2013) Table 1A(4) Groundwater HSL A & HSL B for vapour intrusion at the contaminant source depth ranges in sands 2m to <4m, considered most representative of fractured bedrock aquifer.

3 Chemical for which possible bioaccumulation and secondary poisoning effects should be considered, refer to ANZECC & ARMCANZ (2000) for further guidance.

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}

Indicates concentration value exceeding the adopted GIL.

Indicates concentration value exceeding ANZECC low reliability values

Table T4 - Summary of Soil RPD Data

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 - Soil Investigation																	
BH101M_0.6-0.7	FILL - SAND	<25	<25	180	<120	<0.1	<0.1	<0.1	<0.3	5	0.4	13.0	45	630	<0.05	4.9	360
QD1	BFD	<25	<25	100	<120	<0.1	<0.1	<0.1	<0.3	5	0.4	1.3	60	720	0.16	3.5	390
	RPD	*0.00*	*0.00*	57.14	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	163.64	*28.57*	*13.33*	104.76	*33.33*	*8.00*
Inter-Laboratory Duplicate - Soil Investigation																	
BH101M_0.6-0.7	FILL - SAND	<25	<25	180	<120	<0.1	<0.1	<0.1	<0.3	5	0.4	13.0	45	630	<0.05	4.9	360
QT1	BFD	<25	<50	130	<100	<0.2	<0.5	<1	<1	5	<0.4	16	46	580	0.2	6	320
	RPD	*0.00*	*NA*	*32.26*	*NA*	*NA*	*NA*	*NA*	*NA*	*0.00*	*0.00*	*20.69*	*2.20*	*8.26*	120.00	*20.18*	*11.76*
Trip Blank																	
TB	Soil					<.01	<0.1	<0.1	<0.3	-	-	-	-	-	-	-	-
Trip Spikes																	
TS	Soil	-	-	-	-	95%	95%	97%	NA	-	-	-	-	-	-	-	-
Rinsate Blanks																	
QR1	De-ionised water	<50	<60	<500	<500	<0.5	1.2	<0.5	<1.5	<1	<0.1	<1	<1	<1	<0.0001	<1	<5
QR1B	De-ionised water	<50	<60	<500	<500	<0.5	1.1	<0.5	<1.5	<1	<0.1	<1	<1	<1	<0.0001	<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)
52.87	RPD exceeds 30-50% range referenced from AS4482.1 (2005)

Table T5 - Summary of Groundwater RPD Data

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																	
BH101M	Groundwater	<50	<60	<500	<500	<0.5	<0.5	<0.5	<1.5	6	<0.1	<1	<1	<1	<0.0001	7	46
GWQD1	BFD	<50	<60	<500	<500	<0.5	<0.5	<0.5	<1.5	6	<0.1	<1	1	<1	<0.0001	7	47
RPD		*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*2.15*
Trip Blank																	
TB	De-ionised water	-	-	-	-	<0.5	<0.5	<0.5	<1.5	-	-	-	-	-	-	-	-
Trip Spikes																	
TS	Soil	-	-	-	-	94%	95%	96%	-	-	-	-	-	-	-	-	-
Rinsate Blanks																	
QR1	De-ionised water	<50	<60	<500	<500	<0.5	1.8	<0.5	<1.5	<1	<0.1	<1	4	<1	<0.0001	<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)

APPENDIX A

PROPOSED DEVELOPMENT PLANS & SITE SURVEY PLAN

Precinct 2

Caroline Street

Precinct 1

Eveleigh Street

+27.570

+26.862

+27.162

+27.675

+25.170

+23.030

Site Boundary
Façade Articulation Zone
12m Setback
Site Boundary

Building A

SEARs Approved Envelope

Building Over at Level 2

Laundry
A: 51 m²

TV / Games
A: 119 m²

Living Room
A: 157 m²

Store
A: 28 m²

Lobby 2

Switch
A: 23 m²

FCI
A: 28 m²

Fire Services

Bin Store
A: 41 m²

Loading Dock

10m

MRV Turntable

Common Corridor

FS01

Store

Amen

FSR

L02

L01

Lobby

L03

Gym
A: 140 m²

Common Corridor

Landscaped Courtyard Below
A: 347 m²

Site Boundary

+21.870

Building B

Cinema
A: 38 m²

FS03

Studio Type B
A: 18 m²

Studio Type B
A: 18 m²

Studio Type B
A: 18 m²

Studio Type B
A: 18 m²

5(a)

250

5(b)

5(d)

5(e)

5Bed Cluster Type C
A: 135 m²

Common Corridor

12m Setback
Site Boundary

Railway Corridor

Bike Store (Below)
A: 135 m²

Redfern Railway Station

Lawson Street

(250) RC

(250) PC

C1

C5

Preliminary Column Schedule

C1 - 1000x150 (to u/s L6)
C2 - 3000x200 (L1 - L7)
- 2500x200 (L8 - 10)
- 2000x200 (L11 - 15)
- 1500x200 (L16 to roof)
C3 - 1000x200 (L1 to L10)
- 1000x150 (L11 to roof)
C4 - 2000x200 (L1 - L9)
- 1500x200 (L10 - 15)
- 1000x200 (L16 to roof)
C5 - 1000x300 (L1 - L10)
- 1000x250 (L11 - L15)
- 1000x200 (L16 to roof)

Pemulwuy Precinct 3 - Student Housing

Project No. 16107

Lower Ground Level

Rev. A Response to DRP No.2 Comments & Bluesky Briefing Session 1:400 @A3 21.02.17

06

NOTES

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Rev	Description	Date	By	App
P1	Issued for Review	08/03/17	RC	

CLIENT :
DEICORP BUILT TO DELIVER
Level 3, 161 Redfern St,
Redfern NSW 2016
T: 02 8665 4100 | F: 02 8665 4111

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www.bonaccigroup.com

Project Name: Pemulwuy Precinct 3

Drawing Title: Lower Ground Floor Precast Concrete Profile

Designed RC
Drawn
Scale 1:200
Date @ A1
Sheet

Project Director Approved Date

North

Project Ref 2021886
Drawing No SK10
Rev P1

Preliminary Column Schedule

C1 - 1000x150 (to u/s L6)
C2 - 3000x200 (L1 - L7)
- 2500x200 (L8 - 10)
- 2000x200 (L11 - 15)
- 1500x200 (L16 to roof)
C3 - 1000x200 (L1 to L10)
- 1000x150 (L11 to roof)
C4 - 2000x200 (L1 - L9)
- 1500x200 (L10 - 15)
- 1000x200 (L16 to roof)
C5 - 1000x300 (L1 - L10)
- 1000x250 (L11 - L15)
- 1000x200 (L16 to roof)

Pemulwuy Precinct 3 - Student Housing

Project No. 16107

NOTES

07

Upper Ground Level

Rev. A Response to DRP No.2 Comments & Bluesky Briefing Session 1:400 @A3 21.02.17

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Rev	Description	Date	By	App
P1	Issued for Review	08/03/17	RC	

CLIENT :
DEICORP BUILT TO DELIVER
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Redfern NSW 2016
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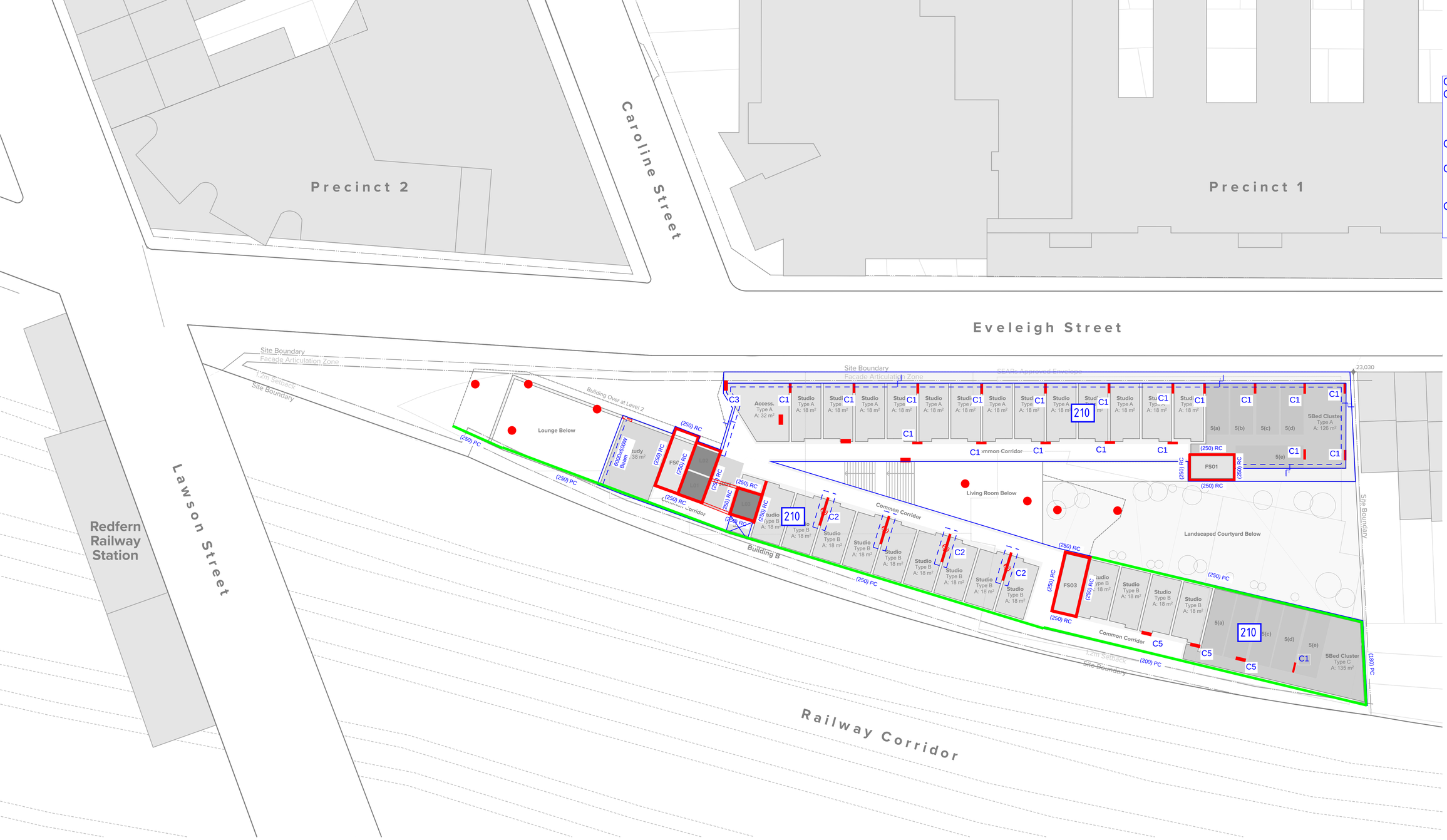
Project Name: Pemulwuy Precinct 3
Drawing Title: Upper Ground Floor Precast Concrete Profile

Designed	RC
Drawn	
Scale	1:200
Date	@ A1
Sheet	
Project Director Approved	Date
Project Ref	2021886
Drawing No	SK12
Rev	P1



Preliminary
Column Schedule

C1 - 1000x150 (to u/s L6)
C2 - 3000x200 (L1 - L7)
- 2500x200 (L8 - 10)
- 2000x200 (L11 - 15)
- 1500x200 (L16 to roof)
C3 - 1000x200 (L1 to L10)
- 1000x150 (L11 to roof)
C4 - 2000x200 (L1 - L9)
- 1500x200 (L10 - 15)
- 1000x200 (L16 to roof)
C5 - 1000x300 (L1 - L10)
- 1000x250 (L11 - L15)
- 1000x200 (L16 to roof)

Pemulwuy Precinct 3 - Student Housing

Project No. 16107

Level 1

Rev. A Response to DRP No.2 Comments & Bluesky Briefing Session 1:400 @A3 21.02.17

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Rev	Description	Date	By	App
P1	Issued for Review	08/03/17	RC	

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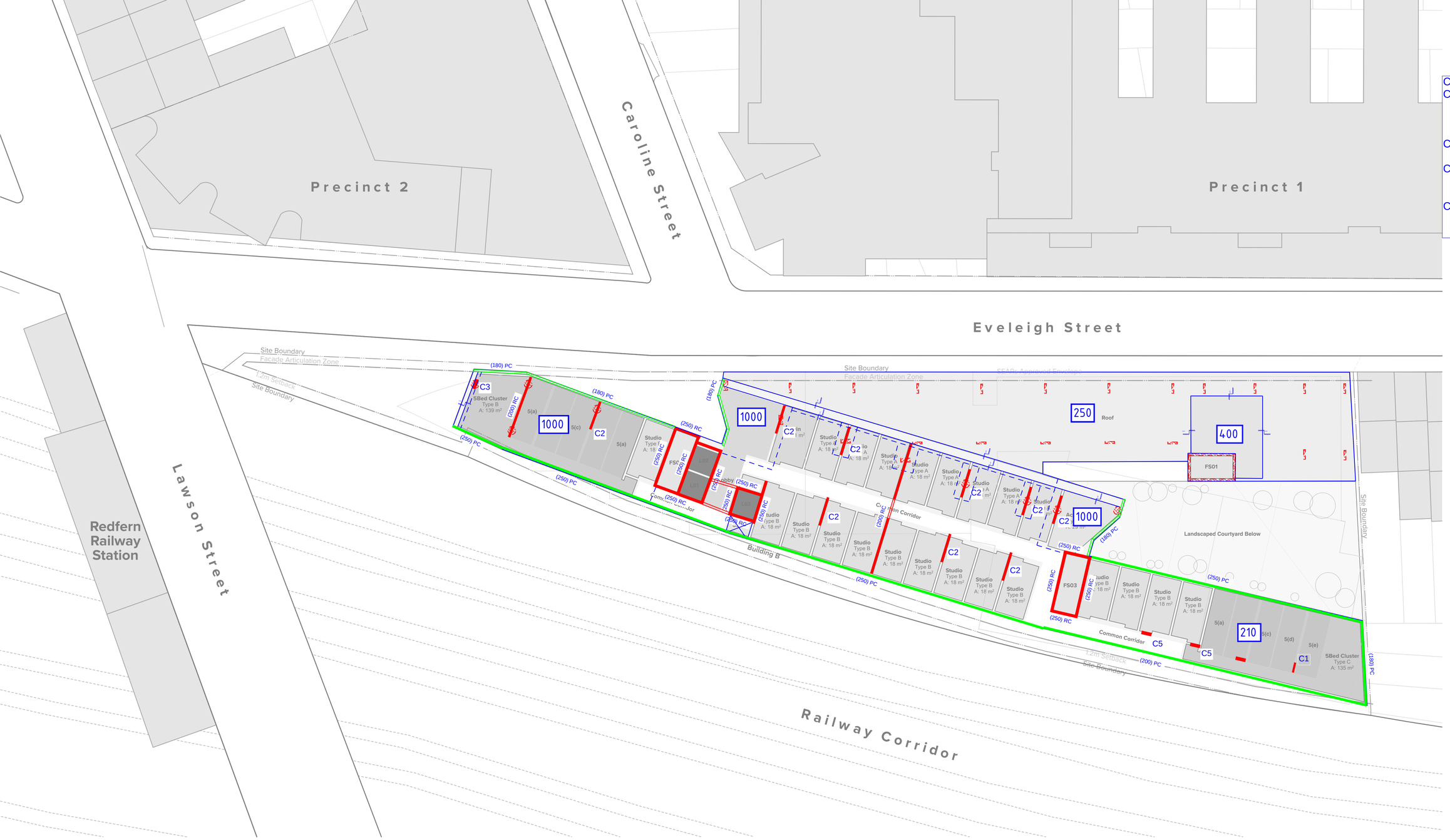
Project Name: Pemulwuy Precinct 3
Drawing Title: Level 1 Precast Concrete Profile
Designed: RC
Drawn:
Scale: 1:200
Date: @ A1
Sheet:
Project Director Approved: Date:
North
Project Ref: 2021886
Drawing No: SK13
Rev: P1



Preliminary Column Schedule

C1 - 1000x150 (to u/s L6)
C2 - 3000x200 (L1 - L7)
- 2500x200 (L8 - 10)
- 2000x200 (L11 - 15)
- 1500x200 (L16 to roof)
C3 - 1000x200 (L1 to L10)
- 1000x150 (L11 to roof)
C4 - 2000x200 (L1 - L9)
- 1500x200 (L10 - 15)
- 1000x200 (L16 to roof)
C5 - 1000x300 (L1 - L10)
- 1000x250 (L11 - L15)
- 1000x200 (L16 to roof)

Pemulwuy Precinct 3 - Student Housing

Project No. 16107

Level 2

Rev. A Response to DRP No.2 Comments & Bluesky Briefing Session 1:400 @A3 21.02.17

NOTES

DLCS Quality Endorsed Company. ISO 9001:2008, Registration Number 20476
Nominated Architect: Nicholas Turner 6695, ABN 86 064 084 911

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Project Name: Pemulwuy Precinct 3
Drawing Title: Level 2 - Precast Concrete Profile
Designed: RC
Drawn:
Scale: 1:200
Date: @ A1
Sheet:
Project Director Approved: Date:
North
Project Ref: 2021886
Drawing No: SK14
Rev: P1

Precinct 2

Caroline Street

Precinct 1

Study (Level 5)

Eveleigh Street

Site Boundary
Façade Articulation Zone
1.5m Setback
Site Boundary

Building A

Site Boundary
Façade Articulation Zone
55ABz Approved Envelope

Roof Below

Landscaped Courtyard Below

Site Boundary

Building B

Common Corridor

1.2m Setback
Site Boundary

Redfern Railway Station

Lawson Street

Railway Corridor

Preliminary Column Schedule

C1 - 1000x150 (to u/s L6)
C2 - 3000x200 (L1 - L7)
- 2500x200 (L8 - 10)
- 2000x200 (L11 - 15)
- 1500x200 (L16 to roof)
C3 - 1000x200 (L1 to L10)
- 1000x150 (L11 to roof)
C4 - 2000x200 (L1 - L9)
- 1500x200 (L10 - 15)
- 1000x200 (L16 to roof)
C5 - 1000x300 (L1 - L10)
- 1000x250 (L11 - L15)
- 1000x200 (L16 to roof)

Pemulwuy Precinct 3 - Student Housing

Project No. 16107

Level 3, 4, 5

Rev. A Response to DRP No.2 Comments & Bluesky Briefing Session 1:400 @A3 21.02.17

10

DLCS Quality Endorsed Company: ISO 9001:2008, Registration Number 20476
Nominated Architect: Nicholas Turner 8935, ABN 86 264 064 911

Rev	Description	Date	By	App
P1	Issued for Review	08/03/17	RC	

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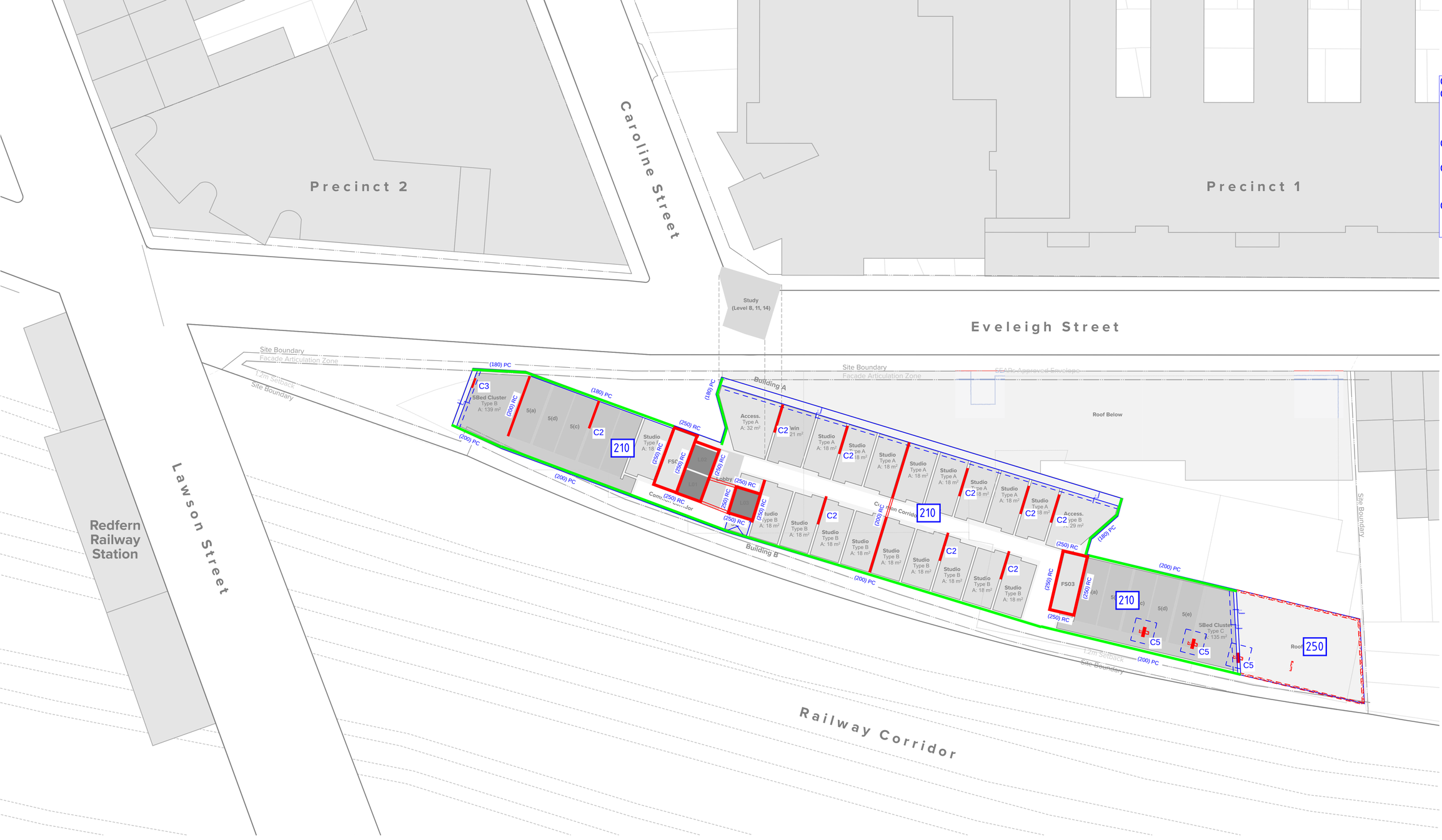
Project Name: Pemulwuy Precinct 3

Drawing Title: Level 3-5 Precast Concrete Profile

Designed: RC
Drawn:
Scale: 1:200
Date: @ A1
Sheet:

Project Director Approved: Date: North

Project Ref: 2021886
Drawing No: SK15
Rev: P1



Preliminary Column Schedule

C1 - 1000x150 (to u/s L6)
C2 - 3000x200 (L1 - L7)
- 2500x200 (L8 - 10)
- 2000x200 (L11 - 15)
- 1500x200 (L16 to roof)
C3 - 1000x200 (L1 to L10)
- 1000x150 (L11 to roof)
C4 - 2000x200 (L1 - L9)
- 1500x200 (L10 - 15)
- 1000x200 (L16 to roof)
C5 - 1000x300 (L1 - L10)
- 1000x250 (L11 - L15)
- 1000x200 (L16 to roof)

Pemulwuy Precinct 3 - Student Housing

Project No. 16107

Level 6 - 16

NOTES

11

Rev	Description	Date	By	App
P1	Issued for Review	08/03/17	RC	
Rev. A	Response to DRP No.2 Comments & Bluesky Briefing Session	1:400 @A3	21.02.17	

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Project Name: Pemulwuy Precinct 3
Drawing Title: Level 6-16 Precast Concrete Profile

Designed RC
Drawn
Scale 1:200
Date @ A1
Sheet

Project Director Approved Date North

Project Ref 2021886
Drawing No SK16
Rev P1

Precinct 2

Caroline Street

Precinct 1

Eveleigh Street

Site Boundary
Facade Articulation Zone
1.2m Setback
Site Boundary

(180) PC

C3
5Bed Cluster
Type B
A: 139 m²

C2
5(a)
5(b)
210

Studio
Type B
A: 18 m²

FS02
L02
L01
L03
Lobby
Serv.
Kitchen / Dining
A: 43 m²

Landscaped Rooftop Terrace
A: 2
360
210

Roof Below

Site Boundary
Facade Articulation Zone
SEARs Approved Envelope

Building B
Common Corridor

Access.
Type C
A: 30 m²

FS03
5(a)
5(b)
5(c)
210
5(e)
5Bed Cluster
Type C
A: 135 m²
C5

Roof Below

1.2m Setback
Site Boundary

Site Boundary

Lawson Street

Redfern Railway Station

Railway Corridor

Preliminary Column Schedule

C1 - 1000x150 (to u/s L6)
C2 - 3000x200 (L1 - L7)
- 2500x200 (L8 - 10)
- 2000x200 (L11 - 15)
- 1500x200 (L16 to roof)
C3 - 1000x200 (L1 to L10)
- 1000x150 (L11 to roof)
C4 - 2000x200 (L1 - L9)
- 1500x200 (L10 - 15)
- 1000x200 (L16 to roof)
C5 - 1000x300 (L1 - L10)
- 1000x250 (L11 - L15)
- 1000x200 (L16 to roof)

Pemulwuy Precinct 3 - Student Housing

Project No. 16107

NOTES

12

Level 17

Rev. A Response to DRP No.2 Comments & Bluesky Briefing Session 1:400 @A3 21.02.17

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P1	Issued for Review	08/03/17	RC	

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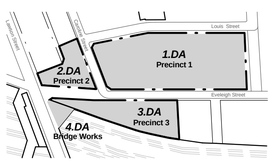
Project Name: Pemulwuy Precinct 3
Drawing Title: Level 17 Precast Concrete Profile

Designed RC
Drawn
Scale 1:200
Date @ A1
Sheet

Project Director Approved Date North

Project Ref 2021886 | Drawing No SK17 | Rev P1



Survey Adapted From PDF Copy Of Survey Prepared By Denny Linker

General Notes:

Architectural Drawings To Be Read In Conjunction With All Other Consultants Detailed Drawings, Reports And Specifications.

All Levels Indicated Taken To Australian Height Datum (AHD)

Refer To 0DA900 For Abbreviation Schedule And Proposed Outline Colour Seclections And Finishes Selections.

Site Underlay Based On Survey Carried Out By Denny Linker For Previous Application and Subsequent Survey Work Carried Out By Daw & Walton Consulting Surveyors - Refer To Drawing 302808.

Development Application

Rev	Description	Date
A	Preliminary DA Issue For Review	11.07.11
B	Preliminary DA Issue For Review	20.07.11
C	Preliminary Environmental Assessment Issue (PEA)	28.07.11
D	Site Plan Extension	12.10.11
E	Development Application Issue	14.12.11

NORDON · JAGO ARCHITECTS

CNR PARRAMATTA RD & JOHNSTON ST - PO BOX 254 - ANNANDALI - NSW 2038 - T.02 9517 2822 F.02 9517 2833
STEPHEN J. NORDON REGISTRATION No. NSW - 4704 GRAHAM P. JAGO REGISTRATION No. NSW - 4926

0m 5m 10m 15m 20m 25m 50m
Scale Bar 1:500

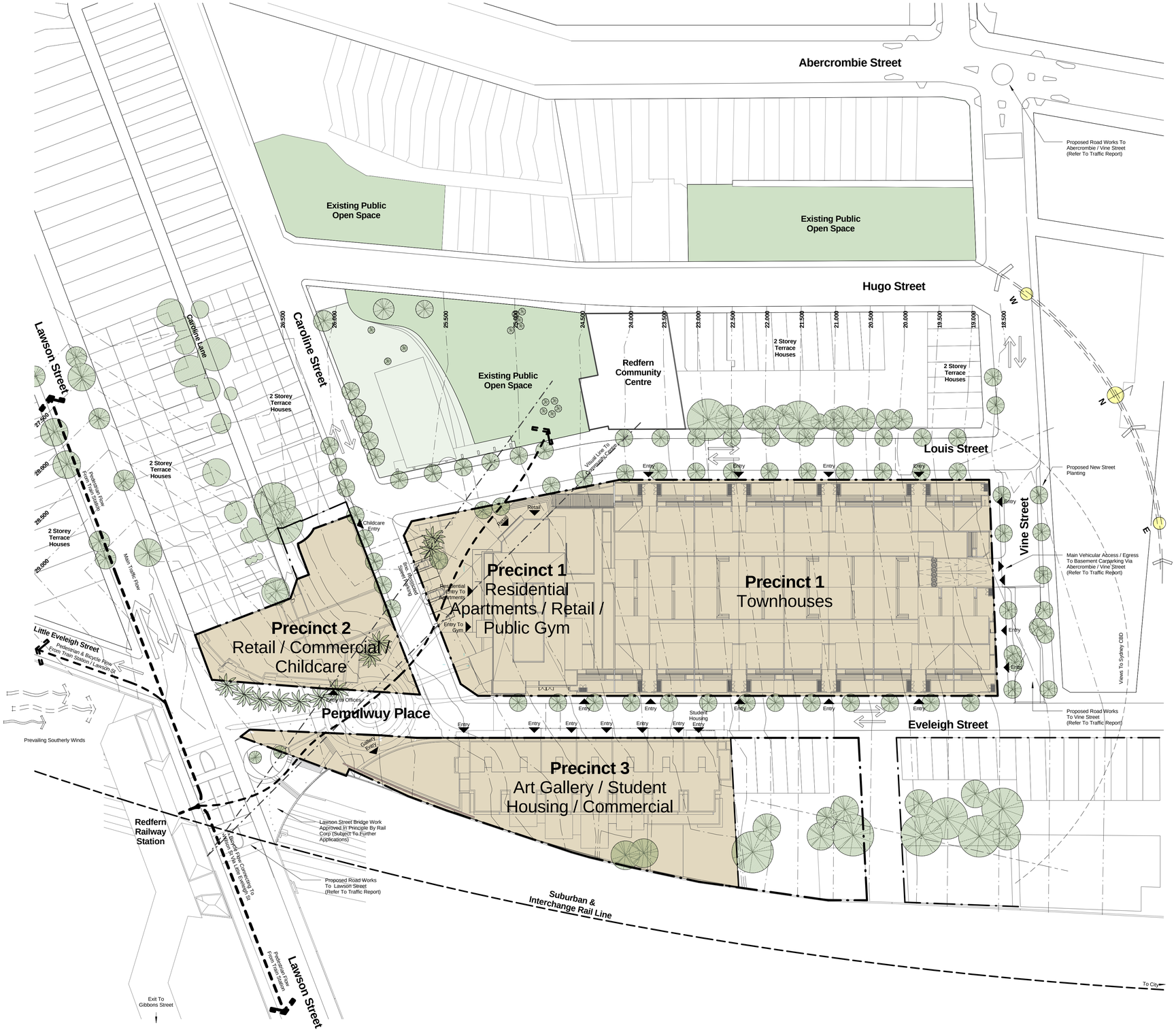
Pemulwuy Project, Mixed Use Development, REDFERN

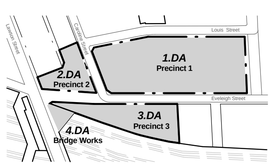
J:\DEI00210 Pemulwuy Project\4 NJA Documentation\5 CADD\3 DA\01 Models\01 Current\DEI00210_0DA Site Master 111212.rvt

TITLE

Existing Site Plan

JOB No.	DEI00210
DATE	June 2010
SCALE	A1 @ As indicated
DWG No.	0DA010 E





General Notes:

Architectural Drawings To Be Read In Conjunction With All Other Consultants Detailed Drawings, Reports And Specifications.

All Levels Indicated Taken To Australian Height Datum (AHD)

Refer To 0DA900 For Abbreviation Schedule And Proposed Outline Colour Seclections And Finishes Selections.

Site Underlay Based On Survey Carried Out By Denny Linker For Previous Application and Subsequent Survey Work Carried Out By Daw & Walton Consulting Surveyors - Refer To Drawing 302808.

Development Application

Rev	Description	Date
A	Preliminary DA Issue For Review	11.07.11
B	Preliminary DA Issue For Review	20.07.11
C	Development Application Issue	14.12.11
D	Dop Amendments	24.08.12

NORDON · JAGO ARCHITECTS

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STEPHEN J. NORDON REGISTRATION No. NSW - 4704 GRAHAM P. JAGO REGISTRATION No. NSW - 4926

Pemulwuy Project, Mixed Use Development, REDFERN

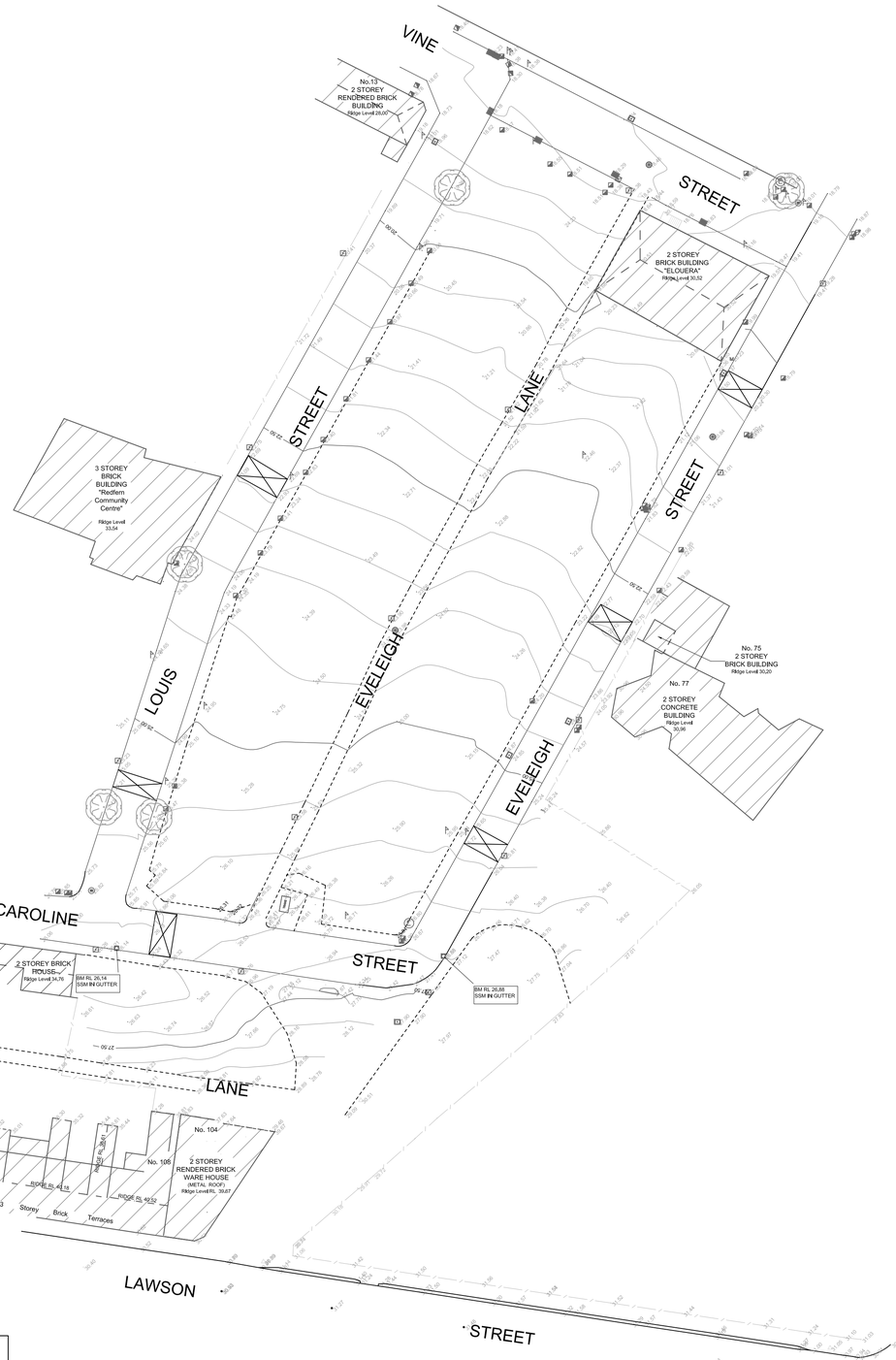
0m 5m 10m 15m 20m 25m 50m
Scale Bar 1:500

J:\DEI\00210 Pemulwuy Project\4 NJA Documentation\5 CADD\3 DA\01 Model\01 Current\DEI00210_0DA Site Master 120417.rvt

TITLE

Proposed Site Plan

JOB No.	DEI00210
DATE	June 2010
SCALE	A1 @ As indicated
DWG No.	0DA011 D



T.N.

M.G.A

LEGEND

- ELECTRICAL POLE
- TELSTRA PIT
- HYDRANT
- WATER METER
- TRANSFORMER (TRANS)
- SIGNPOST
- ELECTRICITY PILLAR
- UNKNOWN PIT
- TREE
- SEWER MAN HOLE

NOTES

- TREE SPREADS SHOWN 'APPROXIMATELY' ONLY
- VISIBLE SERVICES (AT TIME OF SURVEY) SHOWN ONLY
- NO SERVICE PITS ACCESSED/OPENED SHOWN AS LABELED
- ALL PITS SHOULD BE ACCESSED, CONFIRMED AND HAVE SUBSURFACE EXTENTS MEASURED BY THE RELEVANT AUTHORITIES, PRIOR TO ADOPTION.
- ALL PIPES, CABLES & DUCTS IN THE EXCAVATION AREA SHOULD BE ACCURATELY LOCATED BY A "PIPE LOCATOR" OR BY THE RELEVANT AUTHORITY, PRIOR TO ANY EXCAVATION IS UNDERTAKEN.

daw & walton PTY LTD
CONSULTING SURVEYORS
ABN 65 120 413 372

PO BOX 3222,
REDFERN, NSW, 2016
Ph: (02) 8065 1156
Fax: (02) 8065 1297

Project: DETAIL SURVEY @ EVELEIGH STREET, REDFERN NSW 2016		Scale: 1:500 (@A1)
	Surveyed on: DECEMBER 2011 by: Martin Elliott	North: MGA
		Datum: SSM 66942 RL: 26.88 (AHD)
Client: THE PEMULWUY PROJECT	Drawn on:12/10/2011 by: Martin Elliott	Contour Int: 2.5 Major, 0.5 Minor

APPENDIX B
Registered Groundwater Bore Search

All Groundwater
find a site
All Groundwater Map

bandwidth (•) high ( ) low

glossary and metadata

All Groundwater

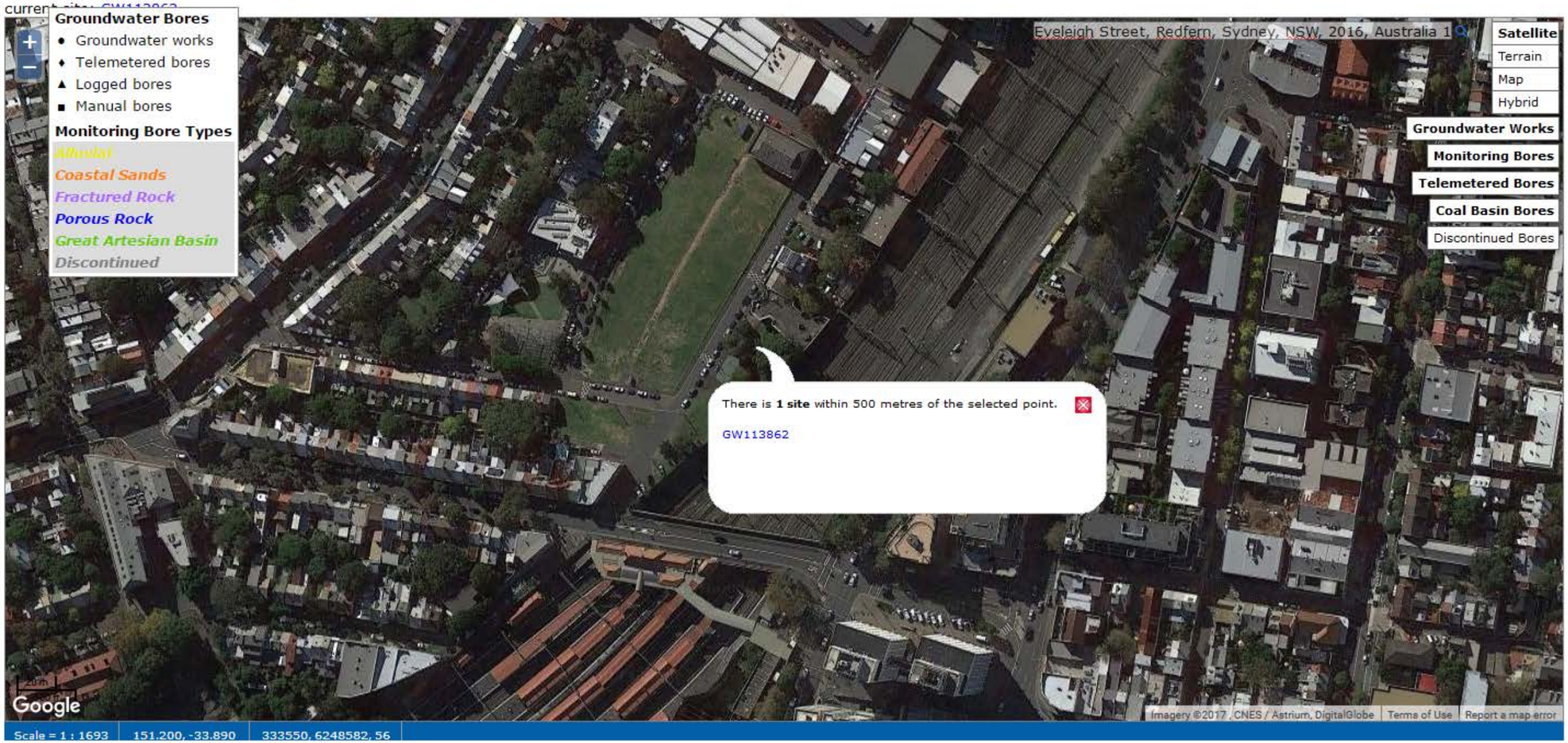
All Groundwater Map

bookmark this page

All data times are Eastern Standard Time

Map | Info

current site: GW113862



APPENDIX C
Site Photographs

Photo 1: Area of vacant land next to railway corridor

Photo 2: Pemulwuy Park.

Photo 3: Overgrown grasses to the north of Pemulwuy Park.

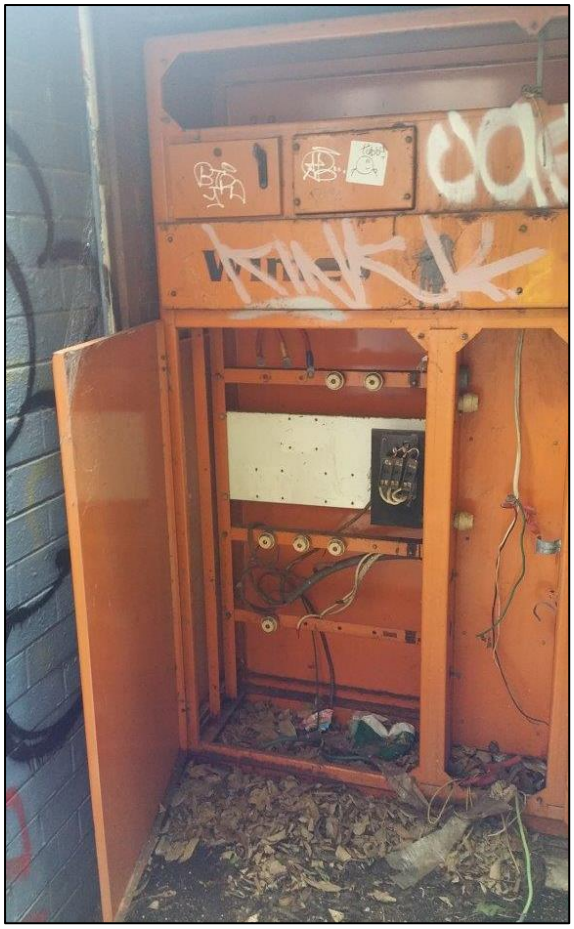


Photo 4: Electrical Kiosk

Photo 5: Flooring and interior of 77-85 Eveleigh Street.

Photo 6; Area of removed flooring at 77-85 Eveleigh Street.

Photo 7: Area of removed flooring at 77-85 Eveleigh Street.

Photo 8: Cored holes at removed section of flooring at 77-85 Eveleigh Street.

Photo 9: Areas of 77-85 Eveleigh Street covered in graffiti.

Photo 10: Area at the north side of 77-85 Eveleigh Street, with possible ACM around the shed.

Photo 11: Possible ACM at the north side of 77-85 Eveleigh Street.

Photo 12: Household appliances next to the shed.

APPENDIX D
Borehole Logs

BOREHOLE: BH101M

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Contamination | Remediation | Geotechnical

Project	Preliminary Site Investigation w/ Limited Sampling			Sheet	1 OF 1
Location	77-123 Eveleigh St, Redfern NSW			Date Started	9/3/17
Position	Refer to Figure 2			Date Completed	9/3/17
Job No.	E23309	Contractor	Geosense Drilling Pty Ltd	Logged CY	Date: 9/3/17
Client	DeiCorp Constrctions (NSW) Pty Ltd	Drill Rig	Hanjin D&B 8D	Checked NF	Date:30/3/17
		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	-	GWNE 08/03/17	0 1 2 3 4 5 6 7 8 9 10	0.80 1.20 3.50 5.00 8.80 9.80	BH101M_0.2-0.3 ES 0.20-0.30 m 0.20 m PID = 0.7 ppm BH101M_0.6-0.7 ES QD1 QT1 0.60-0.70 m 0.60 m PID = 0.5 ppm BH101M_1.0-1.1 ES 1.00-1.10 m 1.00 m PID = 0.9 ppm BH101M_1.5-1.6 ES 1.50-1.60 m 1.50 m PID = 4.4 ppm BH101M_2.0-2.1 ES 2.00-2.10 m 2.00 m PID = 2.8 ppm			-	ASPHALT: 90mm thick. FILL: SAND; fine to coarse grained, dark brown-dark grey, with trace gravel, slag, nails, glass and brick fragments, no odour. FILL: Sandy CLAY; medium plasticity, with fine to medium grained sand, with trace rootlets, no odour. Silty CLAY; medium to high plasticity, grey mottled red, with some ferruginised materials, no odour. SHALE; pale grey mottled red, extremely weathered, no odour. From 5.0m, pale grey, distinctly weathered. From 8.8m, grey. Hole Terminated at 9.80 m Refusal. Borehole Converted into Monitoring Well.	- D - M M M M	-	BH101M Gatic Cover Cuttings 50 mm uPVC Casing Bentonite Sand 50 mm uPVC Screen Collpased Cuttings

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

BOREHOLE: BH102

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Project	Preliminary Site Investigation w/ Limited Sampling			Sheet	1 OF 1
Location	77-123 Eveleigh St, Redfern NSW			Date Started	9/3/17
Position	Refer to Figure 2			Date Completed	9/3/17
Job No.	E23309	Contractor	Geosense Drilling Pty Ltd	Logged CY	Date: 9/3/17
Client	DeiCorp Constrctions (NSW) Pty Ltd	Drill Rig	Hanjin D&B 8D	Checked NF	Date: 30/3/17
		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	0.05				-	ASPHALT: 50mm thick.	-		PAVEMENT
								-	FILL: SAND; fine to coarse grained, dark brown-dark grey, with trace gravel, brick and concrete fragments, no odour.			FILL
					BH102_0.2-0.3 ES 0.20-0.30 m 0.20 m PID = 2.5 ppm							
				0.40				-	From 0.4m, dark brown, with trace of clay and gravel fragments.	D - M		
			0.5		BH102_0.5-0.6 ES 0.50-0.60 m 0.50 m PID = 0.2 ppm							
				0.90								
					BH102_0.9-1.0 ES 0.90-1.00 m 0.90 m PID = 1 ppm			CI	Silty CLAY; medium plasticity, orange, no odour.			RESIDUAL SOIL
			1.0	1.10					From 1.1m, grey mottled red.		-	
			1.5		BH102_1.5-1.6 ES 1.50-1.60 m 1.50 m PID = 1.6 ppm					M		
			2.0	2.10	BH102_2.0-2.1 ES 2.00-2.10 m 2.00 m PID = 1.1 ppm				Hole Terminated at 2.10 m Target Depth Reached. Borehole Backfilled with Drilling Spoil.			
			2.5									
			3.0									
			3.5									
			4.0									
			4.5									
			5.0									

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

BOREHOLE: BH103

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Contamination | Remediation | Geotechnical

Project	Preliminary Site Investigation w/ Limited Sampling			Sheet	1 OF 1
Location	77-123 Eveleigh St, Redfern NSW			Date Started	9/3/17
Position	Refer to Figure 2			Date Completed	9/3/17
Job No.	E23309	Contractor	Geosense Drilling Pty Ltd	Logged CY	Date: 9/3/17
Client	DeiCorp Constrctions (NSW) Pty Ltd	Drill Rig	Hanjin D&B 8D	Checked NF	Date: 30/3/17
		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					-	ASPHALT: 30mm thick.	-		PAVEMENT
								-	FILL: SAND; fine to medium grained, pale grey, with some fine to coarse gravel, no odour.			FILL
					BH103_0.2-0.2 ES 0.20-0.30 m 0.20 m PID = 1.3 ppm							
			0.5		BH103_0.5-0.6 ES 0.50-0.60 m 0.50 m PID = 3.8 ppm					M		
			1.0									
				1.20				-	FILL: Sandy CLAY; medium plasticity, pale grey, with fine grained sand, no odour.		-	
			1.5		BH103_1.5-1.6 ES 1.50-1.60 m 1.50 m PID = 4.8 ppm							
				1.80				CI-CH	Silty CLAY; medium to high plasticity, grey mottled red, no odour.	M		RESIDUAL SOIL
			2.0		BH103_1.9-2.0 ES 1.90-2.00 m 1.90 m PID = 3 ppm							
				2.50	BH103_2.4-2.5 ES 2.40-2.50 m 2.40 m PID = 2.2 ppm				Hole Terminated at 2.50 m Target Depth Reached. Borehole Backfilled with Drilling Spoil.			
			2.5									
			3.0									
			3.5									
			4.0									
			4.5									
			5.0									

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

BOREHOLE: BH104

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Contamination | Remediation | Geotechnical

Project	Preliminary Site Investigation w/ Limited Sampling			Sheet	1 OF 1
Location	77-123 Eveleigh St, Redfern NSW			Date Started	9/3/17
Position	Refer to Figure 2			Date Completed	9/3/17
Job No.	E23309	Contractor	Geosense Drilling Pty Ltd	Logged CY	Date: 9/3/17
Client	DeiCorp Constrctions (NSW) Pty Ltd	Drill Rig	Hanjin D&B 8D	Checked NF	Date: 30/3/17
		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		BH104_0.1-0.2 ES 0.10-0.20 m 0.10 m PID = 2.2 ppm			-	FILL: SAND; fine to coarse grained, black, with trace gravel, no odour.	M	-	FILL
			0.5		BH104_0.6-0.7 ES 0.60-0.70 m 0.60 m PID = 4.4 ppm							
			1.0	*1.00*	BH104_1.0-1.1 ES 1.00-1.10 m 1.00 m PID = 2.5 ppm			-	FILL: Silty SAND; fine to medium grained, yellow-pale brown, no odour.			
				1.30				-	FILL: Silty CLAY; medium plasticity, orange, with trace sand and fine gravel, no odour.			
			1.5		BH104_1.5-1.6 ES 1.50-1.60 m 1.50 m PID = 1.2 ppm							
				1.70				CI-CH	Silty CLAY; medium to high plasticity, orange mottled grey, no odour.	M		RESIDUAL SOIL
			2.0		BH104_1.9-2.0 ES 1.90-2.00 m 1.90 m PID = 2.8 ppm							
			2.5	*2.50*	BH104_2.4-2.5 ES 2.40-2.50 m 2.40 m PID = 4.2 ppm				Hole Terminated at 2.50 m Target Depth Reached. Borehole Backfilled with Drilling Spoil.			
			3.0									
			3.5									
			4.0									
			4.5									
			5.0									

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

BOREHOLE: BH105

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Contamination | Remediation | Geotechnical

Project	Preliminary Site Investigation w/ Limited Sampling			Sheet	1 OF 1
Location	77-123 Eveleigh St, Redfern NSW			Date Started	9/3/17
Position	Refer to Figure 2			Date Completed	9/3/17
Job No.	E23309	Contractor	Geosense Drilling Pty Ltd	Logged CY	Date: 9/3/17
Client	DeiCorp Constrctions (NSW) Pty Ltd	Drill Rig	Hanjin D&B 8D	Checked NF	Date: 30/3/17
		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		BH105_0.1-0.2 ES 0.10-0.20 m 0.10 m PID = 2.7 ppm			-	FILL: SAND; fine to coarse grained, dark brown, with trace rootlets, no odour.			FILL
			0.5		BH105_0.5-0.6 ES 0.50-0.60 m 0.50 m PID = 2.4 ppm							
				0.90				-	From 0.9m, fine to medium grained, yellow, with trace fine to coarse gravel and rootlets, no odour.	M		
			1.0		BH105_1.0-1.1 ES 1.00-1.10 m 1.00 m PID = 1.1 ppm							
			1.5	*1.80*				-	FILL: Sandy CLAY; medium plasticity, orange, with fine to medium grained sand, no odour.		-	
			2.0		BH150_1.9-2.0 ES 1.90-2.00 m 1.90 m PID = 1.8 ppm							
				2.40				CI-CH	Silty CLAY; medium to high plasticity, orange mottled grey, no odour.			RESIDUAL SOIL
			2.5							M		
			3.0		BH105_2.7-2.8 ES 2.70-2.80 m 2.70 m PID = 0.6 ppm							
			3.5	*3.50*	BH105_3.4-3.5 ES 3.40-3.50 m 3.40 m PID = 1.2 ppm				Hole Terminated at 3.50 m Target Depth Reached. Borehole Backfilled with Drilling Spoil.			
			4.0									
			4.5									
			5.0									

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

BOREHOLE: BH106

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Project	Preliminary Site Investigation w/ Limited Sampling			Sheet	1 OF 1
Location	77-123 Eveleigh St, Redfern NSW			Date Started	9/3/17
Position	Refer to Figure 2			Date Completed	9/3/17
Job No.	E23309	Contractor	Geosense Drilling Pty Ltd	Logged	CY Date: 9/3/17
Client	DeiCorp Constrctions (NSW) Pty Ltd	Drill Rig	Hanjin D&B 8D	Checked	NF Date: 30/3/17
		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	0.10				-	ASPHALT: 100mm thick.	-		PAVEMENT
					BH106_0.2-0.3 ES 0.20-0.30 m 0.20 m PID = 1.5 ppm			-	FILL: Gravelly SAND; fine to medium grained, with fine to coarse gravel, trace glass and brick fragments, no odour.			FILL
			0.5		BH106_0.5-0.6 ES 0.50-0.60 m 0.50 m PID = 0.5 ppm							
				0.80				-	FILL: SAND; fine to medium grained, yellow-dark brown, with trace fine to medium gravel, no odour.			
			1.0		BH106_1.0-1.1 ES 1.00-1.10 m 1.00 m PID = 1 ppm							
				1.30					From 1.3m, pale grey.	M		
			1.5		BH106_1.5-1.6 ES 1.50-1.60 m 1.50 m PID = 2.5 ppm							
			2.0								-	
				2.20					From 2.2m, pale yellow.			
			2.5		BH106_2.4-2.5 ES 2.40-2.50 m 2.40 m PID = 0.5 ppm							
				2.80				CI-CH	Silty CLAY; medium to high plasticity, red mottled grey, no odour.			RESIDUAL SOIL
			3.0									
					BH106_3.2-3.3 ES 3.20-3.30 m 3.20 m PID = 4.7 ppm					M		
			3.5									
					BH106_3.7-3.8 ES 3.70-3.80 m 3.70 m PID = 4.1 ppm							
				3.90					Hole Terminated at 3.90 m Target Depth Reached. Borehole Backfilled with Drilling Spoil.			
			4.0									
			4.5									
			5.0									

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

BOREHOLE: BH107

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Project	Preliminary Site Investigation w/ Limited Sampling			Sheet	1 OF 1
Location	77-123 Eveleigh St, Redfern NSW			Date Started	9/3/17
Position	Refer to Figure 2			Date Completed	9/3/17
Job No.	E23309	Contractor	Geosense Drilling Pty Ltd	Logged	CY Date: 9/3/17
Client	DeiCorp Constrctions (NSW) Pty Ltd	Drill Rig	Hanjin D&B 8D	Checked	NF Date: 30/3/17
		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	0.15				-	CONCRETE: 150mm thick.	-		CONCRETE HARDSTAND
AD/T	-	GWNE	0.5	0.50	BH107_0.3-0.4 ES 0.30-0.40 m 0.30 m PID = 1.4 ppm			-	FILL: SAND; fine grained, pale yellow, with trace rootlets, no odour.	D	-	FILL
									From 0.5m, dark grey.			
				0.80	BH107_0.7-0.8 ES 0.70-0.80 m 0.70 m PID = 2.2 ppm				Hole Terminated at 0.80 m Refusal in fill.. Borehole Backfilled with Drilling Spoil.			
			1.0									
			1.5									
			2.0									
			2.5									
			3.0									
			3.5									
			4.0									
			4.5									
			5.0									

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

BOREHOLE: BH108

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Contamination | Remediation | Geotechnical

Project	Preliminary Site Investigation w/ Limited Sampling			Sheet	1 OF 1
Location	77-123 Eveleigh St, Redfern NSW			Date Started	9/3/17
Position	Refer to Figure 2			Date Completed	9/3/17
Job No.	E23309	Contractor	Geosense Drilling Pty Ltd	Logged CY	Date: 9/3/17
Client	DeiCorp Constrctions (NSW) Pty Ltd	Drill Rig	Hanjin D&B 8D	Checked NF	Date: 30/3/17
		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	0.18				-	CONCRETE: 180mm thick.	-		CONCRETE HARDSTAND
AD/T	-	GWNE	0.5	0.60	BH108_0.4-0.5 ES 0.40-0.50 m 0.40 m PID = 1.8 ppm			-	FILL: SAND; fine to coarse grained, dark grey to black, with medium to coarse gravel, no odour.	M	-	FILL
									Hole Terminated at 0.60 m Refusal in fill. Borehole Backfilled with Drilling Spoil.			
			1.0									
			1.5									
			2.0									
			2.5									
			3.0									
			3.5									
			4.0									
			4.5									
			5.0									

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

APPENDIX E
Field Data Sheets & Calibration Records

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WATER SAMPLING FIELD SHEET

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Site Address: 77-123 Eveleigh St, Redfern	Job Number: E23309
Client: Aush Reicorp	Date: 14/3/17
Field Staff: CW	Sampling Location ID BH101M
Well Location: BH101	Round No:

MEDIUM ☐Groundwater ☐Surface Water ☐Stormwater ☐Other:

SAMPLING POINT INFO

Well Installation Date: 8/5/17	Stickup (m): ~~-0.0~~ +0.12 (+ above ground - below ground)
Initial Well Depth (mbgl): 9.6	Screen Interval (mBTOC): 6.6-9.6
Previous Sampling Date:	Previous SWL (mBTOC):

PID READINGS

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

PRE PURGE

Total Well Depth (mbgl): 8.62	Well Head Condition: Good
SWL (mbtoc): 4.961	Water Column (m):

PHASE SEPARATED HYDROCARBONS (PSH)

Depth to PSH (mbtoc): none	PSH Visually Confirmed (Bailer): none
PSH Thickness (mm): NA	

PURGE AND SAMPLE

Sampling Method ☑Bladder ☐Peristaltic ☐Submersible ☐Other:

Depth of Pump Inlet: 7.5	Fill Timer:
Pump Pressure Regulator (psi): 15-18	Discharge Timer: 10 5
Weather Conditions: Rain	Cycle: CPM2
Pump on time: 1:50 pm	Pump off time: 2:09 pm

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 etc.)
1:50	0.5	4.961	21.73	645	-77.1	4.11	7.67	Grey Moderate turbidity
1:53	1.0	↓	21.34	957	-53.4	2.79	7.63	no sheen, no odour
1:57	1.5		20.99	1141	-37.1	2.41	7.60	
2:00	2.0		20.91	1267	-29.1	2.09	7.58	
2:03	2.5		20.91	1265	-33.1	2.09	7.58	
2:09	3.0		20.91	1267	-31.7	2.09	7.58	
Stabilisation range: 3 consecutive readings			±0.2°C	±3%	±20mV	±10%	±0.2	

OTHER COMMENTS/OBSERVATIONS:

SIGNATURE:

WATER SAMPLING FIELD SHEET

eiaustralia

Site Address: Redfern	Job Number: E23309
Client: Reicorp	Date: 14/3/17
Field Staff: CW	Sampling Location ID BH~~104~~ (CBHZM)
Well Location: BH104 / (CBHZM)	Round No: 2

MEDIUM ☑Groundwater ☐Surface Water ☐Stormwater ☐Other:

SAMPLING POINT INFO

Well Installation Date:	Stickup (m): ^0.012 (+ above ground - below ground)
Initial Well Depth (mbgl):	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 (mbgl): ^ 17.8	Well Head Condition: ^ Good
SWL (mbtoc): ^ 8.015 m (mbtoc)	Water Column (m): ^

PHASE SEPARATED HYDROCARBONS (PSH)

Depth to PSH (mbtoc): none	PSH Visually Confirmed (Bailer): none
PSH Thickness (mm): N/A	

PURGE AND SAMPLE

Sampling Method ☐Bladder ☐Peristaltic ☐Submersible ☑Other:

Depth of Pump Inlet:	Fill Timer:
Pump Pressure Regulator (psi):	Discharge Timer: Bailer (thin)
Weather Conditions:	Cycle:
Pump on time:	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 etc.)
								Grey, moderate turbidity, no sheen, no odour.
			Purged 2L then Sampled					
	2L		21.77	1282	30.1	1.71	6.35	
Stabilisation range: 3 consecutive readings			±0.2°C	±3%	±20mV	±10%	±0.2	

OTHER COMMENTS/OBSERVATIONS:

SIGNATURE:

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

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 ppm

Gas bottle number: Lot 218055 Cyl 4

This PID has been calibrated to Isobutylene gas with the span concentration displayed as 100.0 ppm at 100 ppm span setting (allowable range +/-10ppm from span setting).

The PID is initially zero calibrated in fresh air.

Remaining gas in bottle: 270 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: CARMEN YI

Date: 9/3/2017

Time: 6:30 AM

APPENDIX F
Chain of Custody and Sample Receipt Forms

eiaustralia

SAMPLE RECEIPT ADVICE

SE163046

CLIENT DETAILS

Contact	Emmanuel Woelders
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	emmanuel.woelders@eiaustralia.com.au
Project	**E23309 - Eveleigh St, Redfern**
Order Number	**E23309**
Samples	6

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Wed 15/3/2017
Report Due	Mon 20/3/2017
SGS Reference	**SE163046**

SUBMISSION DETAILS

This is to confirm that 6 samples were received on Wednesday 15/3/2017. Results are expected to be ready by Monday 20/3/2017. Please quote SGS reference SE163046 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	6 Water
Date documentation received	15/3/2017	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	11.1°C	Sufficient sample for analysis	Yes
Turnaround time requested	Three Days		

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

SE163046

CLIENT DETAILS

Client EI AUSTRALIA

Project E23309 - Eveleigh St, Redfern

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury (dissolved) in Water	PAH (Polynuclear Aromatic Hydrocarbons) in Water	Trace Metals (Dissolved) in Water by ICPMS	TRH (Total Recoverable Hydrocarbons) in Water	VOCs in Water	Volatile Petroleum Hydrocarbons in Water
001	BH101M	1	22	7	9	79	8
002	BH104M	1	22	7	9	79	8
003	GWQD1	1	-	7	9	12	8
004	GWQR1	1	-	7	9	12	8
005	GWQTB1	-	-	-	-	12	-
006	GWQTS1	-	-	-	-	12	-

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: Eveleigh St, Redfern

Project No: E23309

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	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	TRH/BTEX/Lead	TRH/BTEX	PAHs	VOCs	Asbestos	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	sPOCAS	BTEX			TCLP PAHs	TCLP HM[A]	TCLP HM[B]
BH101M	1	J, P, VC							✓					✓										
BH104M	2	↓							✓					✓										
GWQD1	3	↓								✓														
GWQR1	4	↓								✓														
GWQTB1	5	VC																	✓					
GWQTS1	6	VC																	✓					

SGS EHS Alexandria Laboratory

SE163046 COC
Received: 15–Mar–2017

Comments

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

HM[B]
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

LABORATORY TURNAROUND

- ☐ Standard
- ☐ 24 Hours
- ☐ 48 Hours
- ☑ 72 Hours
- ☐ Other_____

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

Sampler's Comments:

Sampler's Name (EI):	Received by (SGS):
Print: Emmanuel Welders	Print: Owen
Signature:	Signature:
Date:	Date: 15/3/17 @ 11:30

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

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

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

SAMPLE RECEIPT ADVICE

SE162924

CLIENT DETAILS

Contact	Carmen Yi
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	carmen.yi@eiaustralia.com.au
Project	**E23309 - 77-123 Eveleigh St, Redfern**
Order Number	**E23309**
Samples	18

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Fri 10/3/2017
Report Due	Fri 17/3/2017
SGS Reference	**SE162924**

SUBMISSION DETAILS

This is to confirm that 18 samples were received on Friday 10/3/2017. Results are expected to be ready by Friday 17/3/2017. Please quote SGS reference SE162924 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	16 Soil, 2 Water
Date documentation received	10/3/2017	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	11.3°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

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

COMMENTS

Extra sample received, BH106_1.0-1.1.
24 soil samples have been placed on hold.

SAMPLE RECEIPT ADVICE

SE162924

CLIENT DETAILS

Client EI AUSTRALIA

Project E23309 - 77-123 Eveleigh St, Redfern

SUMMARY OF ANALYSIS

No.	Sample ID	OC Pesticides in Soil	OP Pesticides in Soil	PAH (Polynuclear Aromatic Hydrocarbons) in Soil	PCBs in Soil	Total Recoverable Metals in Soil/Waste	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
001	BH101_0.6-0.7	28	13	26	11	7	10	12	8
002	BH101_1.5-1.6	-	-	26	-	7	10	12	8
003	BH102_0.5-0.6	28	13	26	11	7	10	12	8
004	BH103_0.2-0.3	28	13	26	11	7	10	12	8
005	BH103_1.9-2.0	-	-	26	-	7	10	12	8
006	BH104_0.6-0.7	28	13	26	11	7	10	12	8
007	BH104_1.9-2.0	-	-	26	-	7	10	12	8
008	BH105_0.1-0.2	28	13	26	11	7	10	12	8
009	BH105_2.7-2.8	-	-	26	-	7	10	12	8
010	BH106_0.2-0.3	28	13	26	11	7	10	12	8
011	BH106_1.5-1.6	-	-	26	-	7	10	12	8
012	BH107_0.7-0.8	28	13	26	11	7	10	12	8
013	BH108_0.4-0.5	28	13	26	11	7	10	12	8
014	QD1	-	-	-	-	7	10	12	8
015	TS1	-	-	-	-	-	-	9	-
016	TB1	-	-	-	-	-	-	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

SE162924

CLIENT DETAILS

Client EI AUSTRALIA

Project E23309 - 77-123 Eveleigh St, Redfern

SUMMARY OF ANALYSIS

No.	Sample ID	Fibre Identification in soil	Mercury in Soil	Moisture Content	VOCs in Water
001	BH101_0.6-0.7	2	1	1	-
002	BH101_1.5-1.6	-	1	1	-
003	BH102_0.5-0.6	2	1	1	-
004	BH103_0.2-0.3	2	1	1	-
005	BH103_1.9-2.0	-	1	1	-
006	BH104_0.6-0.7	2	1	1	-
007	BH104_1.9-2.0	-	1	1	-
008	BH105_0.1-0.2	2	1	1	-
009	BH105_2.7-2.8	-	1	1	-
010	BH106_0.2-0.3	2	1	1	-
011	BH106_1.5-1.6	-	1	1	-
012	BH107_0.7-0.8	2	1	1	-
013	BH108_0.4-0.5	2	1	1	-
014	QD1	-	1	1	-
016	TB1	-	-	1	-
017	QR1	-	-	-	12
018	QR1B	-	-	-	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

SE162924

CLIENT DETAILS

Client EI AUSTRALIA

Project E23309 - 77-123 Eveleigh St, Redfern

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury (dissolved) in Water	Trace Metals (Dissolved) in Water by ICPMS	TRH (Total Recoverable Hydrocarbons) in Water	Volatile Petroleum Hydrocarbons in Water
017	QR1	1	7	9	8
018	QR1B	1	7	9	8

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

Sheet 1 of 4

Site: 77 - 123 Eveleigh Street Redfern

Project No: E23309

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	TRH/BTEX/Lead	TRH/BTEX	PAHs	VOCs	Asbestos	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	sPOCAS	TCLP PAHs	TCLP HM A	TCLP HM B
BH101 - 0.2-0.3		J, ZLB	9/3/2017	AM/PM		X															
" - 0.6-0.7	1					X		X													
" - 1.0-1.1																					
" - 1.5-1.6	2								X												
" - 2.0-2.1																					
BH102 - 0.2-0.3																					
" - 0.5-0.6	3							X													
" - 0.9-1.0																					
" - 1.5-1.6																					
" - 2.0-2.1																					
BH103 - 0.2-0.3	4							X													
" - 0.5-0.6																					

Comments

HM A
Arsenic
Cadmium
Chromium
Copper
Lead
Mercury
Nickel
Zinc

HM B
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

SGS EHS Alexandria Laboratory

SE162924 COC
Received: 10 – Mar – 2017

LABORATORY TURNAROUND

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

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

Sampler's Comments:

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

Sampler's Name (EI): CARMEN YI
Print
Signature
Date 10/3/2017

Received by (SGS):
Print A. Odisho
Signature
Date 10/3/17 @ 3:30

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

Sheet 2 of 4

Site: 77 - 123 Eveleigh Street Redfern

Project No: E23309

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	TRH/BTEX/Lead	TRH/BTEX	PAHs	VOCs	Asbestos	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	sPOCAS				TCLP PAHs	TCLP HM [A]	TCLP HM [B]
BH103_1.5-1.6		J, ZLB	9/3/2017	AM/PM		X																		
" _1.9-2.0	5								X															
" _2.4-2.5																								
BH104_0.1-0.2																								
" _0.6-0.7	6							X																
" _1.0-1.1																								
" _1.5-1.6																								
" _1.9-2.0	7								X															
" _2.4-2.5																								
BH105_0.1-0.2	8							X																
" _0.5-0.6																								
" _1.0-1.1																								

Comments

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

HM [B]
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

LABORATORY TURNAROUND

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

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

Sampler's Comments:

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

Sampler's Name (EI):

Print

Signature

Date

Received by (SGS):

Print: A. Odisho

Signature

Date: 10/3/17 @ 3:30

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

Sheet 3 of 4

Site: 77 - 123 Eveleigh Street Redfern

Project No: E23509

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	TRH/BTEX/Lead	TRH/BTEX	PAHs	VOCs	Asbestos	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	sPOCAS				TCLP PAHs	TCLP HM[A]	TCLP HM[B]
4 - 1.9-2.0		J, ZLB	9/3/2017	AM/PM		X																		
" - 2.7-2.8	9								X															
" - 3.4-3.5																								
BH106-0.2-0.3	10							X																
BH106-0.5-0.6																								
BH106-1.5-1.6	11								X															
BH106-2.4-2.5																								
BH106-3.2-3.3																								
BH106-3.7-3.8																								
BH107-0.3-0.4																								
" - 0.7-0.8	12							X																
BH108-0.4-0.5	13	↓	↓	↓		↓		X																

Comments

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

HM[B]
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

LABORATORY TURNAROUND

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

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

Sampler's Comments:

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

Sampler's Name (EI):	Received by (SGS):
As per sheet 1	
Print:	Print: A. Odisho
Signature:	Signature:
Date:	Date: 10/3/17 @ 3:30

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

Sheet 4 of 4

Site: 77 - 123 Eveleigh Street Redfern

Project No: E23509

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	TRH/BTEX/Lead	TRH/BTEX	PAHs	VOCs	Asbestos	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	sPOCAS	BTEX			TCLP PAHs	TCLP HM[A]	TCLP HM[B]
QD1	14	J	9/3/2017	AM/PM		X				X														
////																								
TS1	15	VC	LAB PREPARED			X													X					
TB1	16	VC	↓			X													X					
QR1	17	1S, 1P, 2VC	9/3/2017	AM/PM	X					X														
QR1B	18	↓	↓	↓	X					X														

Comments

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

HM[B]
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

LABORATORY TURNAROUND

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

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

Sampler's Comments:

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

Sampler's Name (EI):	Received by (SGS):
As per sheet 1	
Print	Print A. Odisho
Signature	Signature
Date	Date 10/3/17 @ 3:50

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
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

SAMPLE RECEIPT ADVICE

Client Details	
Client	EI Australia
Attention	Carmen Yi

Sample Login Details	
Your Reference	E23309, Redfern
Envirolab Reference	**163319**
Date Sample Received	10/03/2017
Date Instructions Received	10/03/2017
Date Results Expected to be Reported	**17/03/2017**

Sample Condition	
Samples received in appropriate condition for analysis	YES
No. of Samples Provided	1 Soil
Turnaround Time Requested	Standard
Temperature on receipt (°C)	12.5
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments
Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	Phone: 02 9910 6200
Fax: 02 9910 6201	Fax: 02 9910 6201
Email: ahie@envirolabservices.com.au	Email: jhurst@envirolabservices.com.au

Sample and Testing Details on following page

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

Sample Id	*vTRH(C6-C10)/BTEXN in Soil*	*svTRH (C10-C40) in Soil*	*Acid Extractable metals in soil*
QT1	✓	✓	✓

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

Sheet 1 of 1

Site: 77-123 Evoleigh Street, Redfern

Project No: E23309

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	TRH/BTEX/Lead	TRH/BTEX	PAHs	VOCs	Asbestos	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	sPOCAS				TCLP PAHs	TCLP HM [A]	TCLP HM [B]
QT1	1	J	9/3/2017	AM/PM		X				X														

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

Job No: 163319
Date Received: 10.03.17
Time Received: 12:30
Received by: M.R
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

LABORATORY TURNAROUND

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

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

Sampler's Comments:

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

Sampler's Name (EI):	Received by (Envirolab):
CARMEN YE	
Print	Print Nicholas
Signature	Signature
Date 10/3/2017	Date 10.03.17

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

APPENDIX G
Laboratory Analytical Reports

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Carmen Yi
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	carmen.yi@eiaustralia.com.au
Project	**E23309 - 77-123 Eveleigh St, Redfern**
Order Number	**E23309**
Samples	18

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	**SE162924 R1**
Date Received	10/3/2017
Date Reported	4/4/2017

COMMENTS

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

This report cancels and supersedes the report No.SE162942R0. dated 17/3/17 issued by SGS Environment, Health and Safety due to amended PAH results for #1 following re-analysis.

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

Asbestos analysed by Approved Identifier Yusuf Kuthpudin.

SIGNATORIES

Andy Sutton
Senior Organic Chemist

Huong Crawford
Production Manager

Kamrul Ahsan
Senior Chemist

Ly Kim Ha
Organic Section Head

Ravee Sivasubramaniam
Hygiene Team Leader

VOC's in Soil [AN433] Tested: 13/3/2017

PARAMETER	UOM	LOR	BH101_0.6-0.7 SOIL - 9/3/2017 SE162924.001	BH101_1.5-1.6 SOIL - 9/3/2017 SE162924.002	BH102_0.5-0.6 SOIL - 9/3/2017 SE162924.003	BH103_0.2-0.3 SOIL - 9/3/2017 SE162924.004	BH103_1.9-2.0 SOIL - 9/3/2017 SE162924.005
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes*	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

PARAMETER	UOM	LOR	BH104_0.6-0.7 SOIL - 9/3/2017 SE162924.006	BH104_1.9-2.0 SOIL - 9/3/2017 SE162924.007	BH105_0.1-0.2 SOIL - 9/3/2017 SE162924.008	BH105_2.7-2.8 SOIL - 9/3/2017 SE162924.009	BH106_0.2-0.3 SOIL - 9/3/2017 SE162924.010
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	BH106_1.5-1.6 SOIL - 9/3/2017 SE162924.011	BH107_0.7-0.8 SOIL - 9/3/2017 SE162924.012	BH108_0.4-0.5 SOIL - 9/3/2017 SE162924.013	QD1 SOIL - 9/3/2017 SE162924.014	TS1 SOIL - 9/3/2017 SE162924.015
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	[95%]
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	[97%]
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	[97%]
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	[100%]
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	[95%]
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	-

PARAMETER	UOM	LOR	TB1 SOIL - 9/3/2017 SE162924.016
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: 13/3/2017

PARAMETER	UOM	LOR	BH101_0.6-0.7 SOIL - 9/3/2017 SE162924.001	BH101_1.5-1.6 SOIL - 9/3/2017 SE162924.002	BH102_0.5-0.6 SOIL - 9/3/2017 SE162924.003	BH103_0.2-0.3 SOIL - 9/3/2017 SE162924.004	BH103_1.9-2.0 SOIL - 9/3/2017 SE162924.005
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	BH104_0.6-0.7 SOIL - 9/3/2017 SE162924.006	BH104_1.9-2.0 SOIL - 9/3/2017 SE162924.007	BH105_0.1-0.2 SOIL - 9/3/2017 SE162924.008	BH105_2.7-2.8 SOIL - 9/3/2017 SE162924.009	BH106_0.2-0.3 SOIL - 9/3/2017 SE162924.010
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	BH106_1.5-1.6 SOIL - 9/3/2017 SE162924.011	BH107_0.7-0.8 SOIL - 9/3/2017 SE162924.012	BH108_0.4-0.5 SOIL - 9/3/2017 SE162924.013	QD1 SOIL - 9/3/2017 SE162924.014
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: 14/3/2017

PARAMETER	UOM	LOR	BH101_0.6-0.7 SOIL - 9/3/2017 SE162924.001	BH101_1.5-1.6 SOIL - 9/3/2017 SE162924.002	BH102_0.5-0.6 SOIL - 9/3/2017 SE162924.003	BH103_0.2-0.3 SOIL - 9/3/2017 SE162924.004	BH103_1.9-2.0 SOIL - 9/3/2017 SE162924.005
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	**130**	<45	<45	**67**	<45
TRH C29-C36	mg/kg	45	**65**	<45	<45	**48**	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16 (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 (F2) - Naphthalene	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	**180**	<90	<90	**110**	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	**190**	<110	<110	**120**	<110
TRH C10-C40 Total	mg/kg	210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	BH104_0.6-0.7 SOIL - 9/3/2017 SE162924.006	BH104_1.9-2.0 SOIL - 9/3/2017 SE162924.007	BH105_0.1-0.2 SOIL - 9/3/2017 SE162924.008	BH105_2.7-2.8 SOIL - 9/3/2017 SE162924.009	BH106_0.2-0.3 SOIL - 9/3/2017 SE162924.010
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	**61**	<45	<45	<45	**67**
TRH C29-C36	mg/kg	45	<45	<45	<45	<45	**150**
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16 (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 (F2) - Naphthalene	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	**97**	<90	<90	<90	**170**
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	**220**
TRH C10-C40 Total	mg/kg	210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	BH106_1.5-1.6 SOIL - 9/3/2017 SE162924.011	BH107_0.7-0.8 SOIL - 9/3/2017 SE162924.012	BH108_0.4-0.5 SOIL - 9/3/2017 SE162924.013	QD1 SOIL - 9/3/2017 SE162924.014
TRH C10-C14	mg/kg	20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	**71**
TRH C29-C36	mg/kg	45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100
TRH >C10-C16 (F2)	mg/kg	25	<25	<25	<25	<25
TRH >C10-C16 (F2) - Naphthalene	mg/kg	25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	**100**
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110
TRH C10-C40 Total	mg/kg	210	<210	<210	<210	<210

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 14/3/2017

PARAMETER	UOM	LOR	BH101_0.6-0.7 SOIL - 9/3/2017 SE162924.001	BH101_1.5-1.6 SOIL - 9/3/2017 SE162924.002	BH102_0.5-0.6 SOIL - 9/3/2017 SE162924.003	BH103_0.2-0.3 SOIL - 9/3/2017 SE162924.004	BH103_1.9-2.0 SOIL - 9/3/2017 SE162924.005
Naphthalene	mg/kg	0.1	0.2	<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	0.3	<0.1	<0.1	0.3	<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	1.5	<0.1	<0.1	1.2	<0.1
Anthracene	mg/kg	0.1	0.3	<0.1	<0.1	0.2	<0.1
Fluoranthene	mg/kg	0.1	3.2	<0.1	0.1	2.3	<0.1
Pyrene	mg/kg	0.1	3.4	<0.1	0.2	3.4	<0.1
Benzo(a)anthracene	mg/kg	0.1	2.1	<0.1	<0.1	1.7	<0.1
Chrysene	mg/kg	0.1	1.6	<0.1	<0.1	1.7	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	2.1	<0.1	<0.1	1.7	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	1.1	<0.1	<0.1	1.5	<0.1
Benzo(a)pyrene	mg/kg	0.1	2.0	<0.1	<0.1	2.2	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	0.8	<0.1	<0.1	1.6	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	0.1	<0.1	<0.1	0.3	<0.1
Benzo(ghi)perylene	mg/kg	0.1	0.9	<0.1	<0.1	1.5	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ	0.2	2.8	<0.2	<0.2	3.1	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	2.8	<0.3	<0.3	3.1	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	2.8	<0.2	<0.2	3.1	<0.2
Total PAH (18)	mg/kg	0.8	19	<0.8	<0.8	20	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	19	<0.8	<0.8	20	<0.8

PARAMETER	UOM	LOR	BH104_0.6-0.7 SOIL - 9/3/2017 SE162924.006	BH104_1.9-2.0 SOIL - 9/3/2017 SE162924.007	BH105_0.1-0.2 SOIL - 9/3/2017 SE162924.008	BH105_2.7-2.8 SOIL - 9/3/2017 SE162924.009	BH106_0.2-0.3 SOIL - 9/3/2017 SE162924.010
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	0.5	<0.1	<0.1	<0.1	0.3
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	0.2	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	1.8	0.3	0.4	<0.1	0.4
Anthracene	mg/kg	0.1	0.4	<0.1	0.1	<0.1	0.2
Fluoranthene	mg/kg	0.1	4.2	0.3	0.6	<0.1	0.8
Pyrene	mg/kg	0.1	3.5	0.5	0.9	<0.1	1.3
Benzo(a)anthracene	mg/kg	0.1	1.9	0.1	0.3	<0.1	0.5
Chrysene	mg/kg	0.1	1.9	0.1	0.4	<0.1	0.7
Benzo(b&j)fluoranthene	mg/kg	0.1	2.0	0.2	0.4	<0.1	1.0
Benzo(k)fluoranthene	mg/kg	0.1	1.1	<0.1	0.2	<0.1	0.6
Benzo(a)pyrene	mg/kg	0.1	2.2	0.1	0.4	<0.1	1.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	1.4	0.1	0.4	<0.1	1.2
Dibenzo(ah)anthracene	mg/kg	0.1	0.3	<0.1	<0.1	<0.1	0.2
Benzo(ghi)perylene	mg/kg	0.1	1.3	0.1	0.3	<0.1	1.5
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ	0.2	3.1	<0.2	0.6	<0.2	1.6
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	3.1	<0.3	0.7	<0.3	1.6
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	3.1	0.2	0.6	<0.2	1.6
Total PAH (18)	mg/kg	0.8	23	1.9	4.5	<0.8	9.6
Total PAH (NEPM/WHO 16)	mg/kg	0.8	23	1.9	4.5	<0.8	9.6

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 14/3/2017 (continued)

PARAMETER	UOM	LOR	BH106_1.5-1.6 SOIL - 9/3/2017 SE162924.011	BH107_0.7-0.8 SOIL - 9/3/2017 SE162924.012	BH108_0.4-0.5 SOIL - 9/3/2017 SE162924.013
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	**0.2**	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	**0.4**	<0.1
Pyrene	mg/kg	0.1	<0.1	**0.3**	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	**0.2**	<0.1
Chrysene	mg/kg	0.1	<0.1	**0.3**	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	**0.3**	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	**0.1**	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	**0.2**	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	**0.2**	<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	0.2	<0.2	**0.3**	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	**0.4**	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	**0.3**	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	**2.1**	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	**2.1**	<0.8

OC Pesticides in Soil [AN420] Tested: 14/3/2017

PARAMETER	UOM	LOR	BH101_0.6-0.7 SOIL - 9/3/2017 SE162924.001	BH102_0.5-0.6 SOIL - 9/3/2017 SE162924.003	BH103_0.2-0.3 SOIL - 9/3/2017 SE162924.004	BH104_0.6-0.7 SOIL - 9/3/2017 SE162924.006	BH105_0.1-0.2 SOIL - 9/3/2017 SE162924.008
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	<0.1	<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	<0.1	<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	<0.2	<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

OC Pesticides in Soil [AN420] Tested: 14/3/2017 (continued)

PARAMETER	UOM	LOR	BH106_0.2-0.3 SOIL - 9/3/2017 SE162924.010	BH107_0.7-0.8 SOIL - 9/3/2017 SE162924.012	BH108_0.4-0.5 SOIL - 9/3/2017 SE162924.013
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1

OP Pesticides in Soil [AN420] Tested: 14/3/2017

PARAMETER	UOM	LOR	BH101_0.6-0.7 SOIL - 9/3/2017 SE162924.001	BH102_0.5-0.6 SOIL - 9/3/2017 SE162924.003	BH103_0.2-0.3 SOIL - 9/3/2017 SE162924.004	BH104_0.6-0.7 SOIL - 9/3/2017 SE162924.006	BH105_0.1-0.2 SOIL - 9/3/2017 SE162924.008
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

PARAMETER	UOM	LOR	BH106_0.2-0.3 SOIL - 9/3/2017 SE162924.010	BH107_0.7-0.8 SOIL - 9/3/2017 SE162924.012	BH108_0.4-0.5 SOIL - 9/3/2017 SE162924.013
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2

PCBs in Soil [AN420] Tested: 14/3/2017

PARAMETER	UOM	LOR	BH101_0.6-0.7 SOIL - 9/3/2017 SE162924.001	BH102_0.5-0.6 SOIL - 9/3/2017 SE162924.003	BH103_0.2-0.3 SOIL - 9/3/2017 SE162924.004	BH104_0.6-0.7 SOIL - 9/3/2017 SE162924.006	BH105_0.1-0.2 SOIL - 9/3/2017 SE162924.008
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	BH106_0.2-0.3 SOIL - 9/3/2017 SE162924.010	BH107_0.7-0.8 SOIL - 9/3/2017 SE162924.012	BH108_0.4-0.5 SOIL - 9/3/2017 SE162924.013
Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1

Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 15/3/2017

PARAMETER	UOM	LOR	BH101_0.6-0.7 SOIL - 9/3/2017 SE162924.001	BH101_1.5-1.6 SOIL - 9/3/2017 SE162924.002	BH102_0.5-0.6 SOIL - 9/3/2017 SE162924.003	BH103_0.2-0.3 SOIL - 9/3/2017 SE162924.004	BH103_1.9-2.0 SOIL - 9/3/2017 SE162924.005
Arsenic, As	mg/kg	3	5	14	<3	4	22
Cadmium, Cd	mg/kg	0.3	0.4	<0.3	<0.3	<0.3	0.5
Chromium, Cr	mg/kg	0.3	13	15	3.8	9.9	18
Copper, Cu	mg/kg	0.5	45	4.4	1.0	23	6.2
Lead, Pb	mg/kg	1	630	12	8	130	40
Nickel, Ni	mg/kg	0.5	4.9	<0.5	1.0	8.1	0.9
Zinc, Zn	mg/kg	0.5	360	5.3	5.8	86	23

PARAMETER	UOM	LOR	BH104_0.6-0.7 SOIL - 9/3/2017 SE162924.006	BH104_1.9-2.0 SOIL - 9/3/2017 SE162924.007	BH105_0.1-0.2 SOIL - 9/3/2017 SE162924.008	BH105_2.7-2.8 SOIL - 9/3/2017 SE162924.009	BH106_0.2-0.3 SOIL - 9/3/2017 SE162924.010
Arsenic, As	mg/kg	3	36	6	<3	7	11
Cadmium, Cd	mg/kg	0.3	0.6	0.4	<0.3	0.6	0.4
Chromium, Cr	mg/kg	0.3	13	18	5.6	15	10
Copper, Cu	mg/kg	0.5	53	2.3	13	7.3	51
Lead, Pb	mg/kg	1	160	22	45	30	85
Nickel, Ni	mg/kg	0.5	6.7	<0.5	3.8	0.9	9.4
Zinc, Zn	mg/kg	0.5	280	16	54	15	130

PARAMETER	UOM	LOR	BH106_1.5-1.6 SOIL - 9/3/2017 SE162924.011	BH107_0.7-0.8 SOIL - 9/3/2017 SE162924.012	BH108_0.4-0.5 SOIL - 9/3/2017 SE162924.013	QD1 SOIL - 9/3/2017 SE162924.014
Arsenic, As	mg/kg	3	<3	9	<3	5
Cadmium, Cd	mg/kg	0.3	<0.3	1.2	0.4	0.4
Chromium, Cr	mg/kg	0.3	1.9	18	5.8	13
Copper, Cu	mg/kg	0.5	1.9	310	63	60
Lead, Pb	mg/kg	1	10	280	8	720
Nickel, Ni	mg/kg	0.5	<0.5	24	81	3.5
Zinc, Zn	mg/kg	0.5	3.6	560	48	390

Mercury in Soil [AN312] Tested: 16/3/2017

PARAMETER	UOM	LOR	BH101_0.6-0.7 SOIL - 9/3/2017 SE162924.001	BH101_1.5-1.6 SOIL - 9/3/2017 SE162924.002	BH102_0.5-0.6 SOIL - 9/3/2017 SE162924.003	BH103_0.2-0.3 SOIL - 9/3/2017 SE162924.004	BH103_1.9-2.0 SOIL - 9/3/2017 SE162924.005
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	**0.08**	<0.05

PARAMETER	UOM	LOR	BH104_0.6-0.7 SOIL - 9/3/2017 SE162924.006	BH104_1.9-2.0 SOIL - 9/3/2017 SE162924.007	BH105_0.1-0.2 SOIL - 9/3/2017 SE162924.008	BH105_2.7-2.8 SOIL - 9/3/2017 SE162924.009	BH106_0.2-0.3 SOIL - 9/3/2017 SE162924.010
Mercury	mg/kg	0.05	**0.13**	<0.05	**0.07**	<0.05	**0.05**

PARAMETER	UOM	LOR	BH106_1.5-1.6 SOIL - 9/3/2017 SE162924.011	BH107_0.7-0.8 SOIL - 9/3/2017 SE162924.012	BH108_0.4-0.5 SOIL - 9/3/2017 SE162924.013	QD1 SOIL - 9/3/2017 SE162924.014
Mercury	mg/kg	0.05	<0.05	**0.23**	<0.05	**0.16**

Moisture Content [AN002] Tested: 15/3/2017

PARAMETER	UOM	LOR	BH101_0.6-0.7 SOIL - 9/3/2017 SE162924.001	BH101_1.5-1.6 SOIL - 9/3/2017 SE162924.002	BH102_0.5-0.6 SOIL - 9/3/2017 SE162924.003	BH103_0.2-0.3 SOIL - 9/3/2017 SE162924.004	BH103_1.9-2.0 SOIL - 9/3/2017 SE162924.005
% Moisture	%w/w	0.5	11	19	10	6.3	16

PARAMETER	UOM	LOR	BH104_0.6-0.7 SOIL - 9/3/2017 SE162924.006	BH104_1.9-2.0 SOIL - 9/3/2017 SE162924.007	BH105_0.1-0.2 SOIL - 9/3/2017 SE162924.008	BH105_2.7-2.8 SOIL - 9/3/2017 SE162924.009	BH106_0.2-0.3 SOIL - 9/3/2017 SE162924.010
% Moisture	%w/w	0.5	9.2	18	5.1	13	5.1

PARAMETER	UOM	LOR	BH106_1.5-1.6 SOIL - 9/3/2017 SE162924.011	BH107_0.7-0.8 SOIL - 9/3/2017 SE162924.012	BH108_0.4-0.5 SOIL - 9/3/2017 SE162924.013	QD1 SOIL - 9/3/2017 SE162924.014	TB1 SOIL - 9/3/2017 SE162924.016
% Moisture	%w/w	0.5	1.7	15	7.0	13	<0.5

Fibre Identification in soil [AN602] Tested: 16/3/2017

PARAMETER	UOM	LOR	BH101_0.6-0.7 SOIL - 9/3/2017 SE162924.001	BH102_0.5-0.6 SOIL - 9/3/2017 SE162924.003	BH103_0.2-0.3 SOIL - 9/3/2017 SE162924.004	BH104_0.6-0.7 SOIL - 9/3/2017 SE162924.006	BH105_0.1-0.2 SOIL - 9/3/2017 SE162924.008
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	BH106_0.2-0.3 SOIL - 9/3/2017 SE162924.010	BH107_0.7-0.8 SOIL - 9/3/2017 SE162924.012	BH108_0.4-0.5 SOIL - 9/3/2017 SE162924.013
Asbestos Detected	No unit	-	No	No	No
Estimated Fibres*	%w/w	0.01	<0.01	<0.01	<0.01

VOCs in Water [AN433] Tested: 13/3/2017

PARAMETER	UOM	LOR	QR1 WATER - 9/3/2017 SE162924.017	QR1B WATER - 9/3/2017 SE162924.018
Benzene	µg/L	0.5	<0.5	<0.5
Toluene	µg/L	0.5	**1.2**	**1.1**
Ethylbenzene	µg/L	0.5	<0.5	<0.5
m/p-xylene	µg/L	1	<1	<1
o-xylene	µg/L	0.5	<0.5	<0.5
Total Xylenes	µg/L	1.5	<1.5	<1.5
Total BTEX	µg/L	3	<3	<3
Naphthalene	µg/L	0.5	<0.5	<0.5

Volatile Petroleum Hydrocarbons in Water [AN433] Tested: 13/3/2017

PARAMETER	UOM	LOR	QR1 WATER - 9/3/2017 SE162924.017	QR1B WATER - 9/3/2017 SE162924.018
TRH C6-C9	µg/L	40	<40	<40
Benzene (F0)	µg/L	0.5	<0.5	<0.5
TRH C6-C10	µg/L	50	<50	<50
TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	<50

TRH (Total Recoverable Hydrocarbons) in Water [AN403] Tested: 13/3/2017

PARAMETER	UOM	LOR	QR1 WATER - 9/3/2017 SE162924.017	QR1B WATER - 9/3/2017 SE162924.018
TRH C10-C14	µg/L	50	<50	<50
TRH C15-C28	µg/L	200	<200	<200
TRH C29-C36	µg/L	200	<200	<200
TRH C37-C40	µg/L	200	<200	<200
TRH >C10-C16 (F2)	µg/L	60	<60	<60
TRH >C16-C34 (F3)	µg/L	500	<500	<500
TRH >C34-C40 (F4)	µg/L	500	<500	<500
TRH C10-C36	µg/L	450	<450	<450
TRH C10-C40	µg/L	650	<650	<650

Trace Metals (Dissolved) in Water by ICPMS [AN318] Tested: 13/3/2017

PARAMETER	UOM	LOR	QR1 WATER - 9/3/2017 SE162924.017	QR1B WATER - 9/3/2017 SE162924.018
Arsenic, As	µg/L	1	<1	<1
Cadmium, Cd	µg/L	0.1	<0.1	<0.1
Chromium, Cr	µg/L	1	<1	<1
Copper, Cu	µg/L	1	<1	<1
Lead, Pb	µg/L	1	<1	<1
Nickel, Ni	µg/L	1	<1	<1
Zinc, Zn	µg/L	5	<5	<5

Mercury (dissolved) in Water [AN311(Perth)/AN312] Tested: 16/3/2017

PARAMETER	UOM	LOR	QR1 WATER - 9/3/2017 SE162924.017	QR1B WATER - 9/3/2017 SE162924.018
Mercury	mg/L	0.0001	<0.0001	<0.0001

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
AN040/AN320	A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analysis by ASS or ICP as per USEPA Method 200.8.
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).
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

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

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Project	**E23309 - 77-123 Eveleigh St, Redfern**
Order Number	**E23309**
Samples	8

LABORATORY DETAILS

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SGS Reference	**SE162924 R1**
Date Received	10 Mar 2017
Date Reported	04 Apr 2017

COMMENTS

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

This report cancels and supersedes the report No.SE162942R0. dated 17/3/17 issued by SGS Environment, Health and Safety due to amended PAH results for #1 following re-analysis.

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

Asbestos analysed by Approved Identifier Yusuf Kuthpudin.

SIGNATORIES

Andy Sutton
Senior Organic Chemist

Huong Crawford
Production Manager

Kamrul Ahsan
Senior Chemist

Ly Kim Ha
Organic Section Head

Ravee Sivasubramaniam
Hygiene Team Leader

ANALYTICAL REPORT

RESULTS

Fibre Identification in soil — Method AN602

Laboratory Reference	Client Reference	Matrix	Sample Description	Date Sampled	Fibre Identification	Est.%w/w*
SE162924.001	BH101_0.6-0.7	Soil	106g Sand, Soil, Rocks	09 Mar 2017	No Asbestos Found Organic Fibres Detected	<0.01
SE162924.003	BH102_0.5-0.6	Soil	137g Sand, Soil	09 Mar 2017	No Asbestos Found	<0.01
SE162924.004	BH103_0.2-0.3	Soil	102g Sand, Soil, Rocks	09 Mar 2017	No Asbestos Found	<0.01
SE162924.006	BH104_0.6-0.7	Soil	140g Sand, Soil, Rocks	09 Mar 2017	No Asbestos Found	<0.01
SE162924.008	BH105_0.1-0.2	Soil	60g Sand, Soil, Rocks	09 Mar 2017	No Asbestos Found	<0.01
SE162924.010	BH106_0.2-0.3	Soil	127g Sand, Soil, Rocks	09 Mar 2017	No Asbestos Found	<0.01
SE162924.012	BH107_0.7-0.8	Soil	145g Sand, Soil, Rocks	09 Mar 2017	No Asbestos Found	<0.01
SE162924.013	BH108_0.4-0.5	Soil	72g Sand, Soil, Rocks	09 Mar 2017	No Asbestos Found	<0.01

METHOD SUMMARY

SE162924 R1

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

FOOTNOTES

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

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

Sampled by the client.

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

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

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

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

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Project	**E23309 - Eveleigh St, Redfern**
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SGS Reference	**SE163046 R0**
Date Received	15/3/2017
Date Reported	20/3/2017

COMMENTS

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

SIGNATORIES

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Ly Kim Ha
Organic Section Head

VOCs in Water [AN433] Tested: 16/3/2017

PARAMETER	UOM	LOR	BH101M WATER - 15/3/2017 SE163046.001	BH104M WATER - 15/3/2017 SE163046.002	GWQD1 WATER - 15/3/2017 SE163046.003	GWQR1 WATER - 15/3/2017 SE163046.004	GWQTB1 WATER - 15/3/2017 SE163046.005
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	**1.8**	<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	-	-	-
Chloromethane	µg/L	5	<5	<5	-	-	-
Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3	<0.3	-	-	-
Bromomethane	µg/L	10	<10	<10	-	-	-
Chloroethane	µg/L	5	<5	<5	-	-	-
Trichlorofluoromethane	µg/L	1	<1	<1	-	-	-
Acetone (2-propanone)	µg/L	10	<10	<10	-	-	-
Iodomethane	µg/L	5	<5	<5	-	-	-
1,1-dichloroethene	µg/L	0.5	<0.5	<0.5	-	-	-
Acrylonitrile	µg/L	0.5	<0.5	<0.5	-	-	-
Dichloromethane (Methylene chloride)	µg/L	5	<5	<5	-	-	-
Allyl chloride	µg/L	2	<2	<2	-	-	-
Carbon disulfide	µg/L	2	<2	<2	-	-	-
trans-1,2-dichloroethene	µg/L	0.5	<0.5	<0.5	-	-	-
MtBE (Methyl-tert-butyl ether)	µg/L	2	<2	<2	-	-	-
1,1-dichloroethane	µg/L	0.5	<0.5	<0.5	-	-	-
Vinyl acetate	µg/L	10	<10	<10	-	-	-
MEK (2-butanone)	µg/L	10	<10	<10	-	-	-
cis-1,2-dichloroethene	µg/L	0.5	<0.5	<0.5	-	-	-
Bromochloromethane	µg/L	0.5	<0.5	<0.5	-	-	-
Chloroform (THM)	µg/L	0.5	<0.5	<0.5	-	-	-
2,2-dichloropropane	µg/L	0.5	<0.5	<0.5	-	-	-
1,2-dichloroethane	µg/L	0.5	<0.5	<0.5	-	-	-
1,1,1-trichloroethane	µg/L	0.5	<0.5	<0.5	-	-	-
1,1-dichloropropene	µg/L	0.5	<0.5	<0.5	-	-	-
Carbon tetrachloride	µg/L	0.5	<0.5	<0.5	-	-	-
Dibromomethane	µg/L	0.5	<0.5	<0.5	-	-	-
1,2-dichloropropane	µg/L	0.5	<0.5	<0.5	-	-	-
Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	<0.5	<0.5	-	-	-
2-nitropropane	µg/L	100	<100	<100	-	-	-
Bromodichloromethane (THM)	µg/L	0.5	<0.5	<0.5	-	-	-
MIBK (4-methyl-2-pentanone)	µg/L	5	<5	<5	-	-	-
cis-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	-	-	-
trans-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	-	-	-
1,1,2-trichloroethane	µg/L	0.5	<0.5	<0.5	-	-	-
1,3-dichloropropane	µg/L	0.5	<0.5	<0.5	-	-	-
Dibromochloromethane (THM)	µg/L	0.5	<0.5	<0.5	-	-	-
2-hexanone (MBK)	µg/L	5	<5	<5	-	-	-
1,2-dibromoethane (EDB)	µg/L	0.5	<0.5	<0.5	-	-	-
Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	<0.5	<0.5	-	-	-
1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	-	-	-
Chlorobenzene	µg/L	0.5	<0.5	<0.5	-	-	-
Bromoform (THM)	µg/L	0.5	<0.5	<0.5	-	-	-
cis-1,4-dichloro-2-butene	µg/L	1	<1	<1	-	-	-
Styrene (Vinyl benzene)	µg/L	0.5	<0.5	<0.5	-	-	-
1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	-	-	-
1,2,3-trichloropropane	µg/L	0.5	<0.5	<0.5	-	-	-
trans-1,4-dichloro-2-butene	µg/L	1	<1	<1	-	-	-

VOCs in Water [AN433] Tested: 16/3/2017 (continued)

PARAMETER	UOM	LOR	BH101M WATER - 15/3/2017 SE163046.001	BH104M WATER - 15/3/2017 SE163046.002	GWQD1 WATER - 15/3/2017 SE163046.003	GWQR1 WATER - 15/3/2017 SE163046.004	GWQTB1 WATER - 15/3/2017 SE163046.005
Isopropylbenzene (Cumene)	µg/L	0.5	<0.5	<0.5	-	-	-
Bromobenzene	µg/L	0.5	<0.5	<0.5	-	-	-
n-propylbenzene	µg/L	0.5	<0.5	<0.5	-	-	-
2-chlorotoluene	µg/L	0.5	<0.5	<0.5	-	-	-
4-chlorotoluene	µg/L	0.5	<0.5	<0.5	-	-	-
1,3,5-trimethylbenzene	µg/L	0.5	<0.5	<0.5	-	-	-
tert-butylbenzene	µg/L	0.5	<0.5	<0.5	-	-	-
1,2,4-trimethylbenzene	µg/L	0.5	<0.5	<0.5	-	-	-
sec-butylbenzene	µg/L	0.5	<0.5	<0.5	-	-	-
1,3-dichlorobenzene	µg/L	0.5	<0.5	<0.5	-	-	-
1,4-dichlorobenzene	µg/L	0.3	<0.3	<0.3	-	-	-
p-isopropyltoluene	µg/L	0.5	<0.5	<0.5	-	-	-
1,2-dichlorobenzene	µg/L	0.5	<0.5	<0.5	-	-	-
n-butylbenzene	µg/L	0.5	<0.5	<0.5	-	-	-
1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5	<0.5	-	-	-
1,2,4-trichlorobenzene	µg/L	0.5	<0.5	<0.5	-	-	-
Hexachlorobutadiene	µg/L	0.5	<0.5	<0.5	-	-	-
1,2,3-trichlorobenzene	µg/L	0.5	<0.5	<0.5	-	-	-
Total VOC	µg/L	10	<10	<10	-	-	-

VOCs in Water [AN433] Tested: 16/3/2017 (continued)

PARAMETER	UOM	LOR	GWQTS1 WATER - 15/3/2017 SE163046.006
Benzene	µg/L	0.5	[94%]
Toluene	µg/L	0.5	[95%]
Ethylbenzene	µg/L	0.5	[96%]
m/p-xylene	µg/L	1	[94%]
o-xylene	µg/L	0.5	[98%]
Total Xylenes	µg/L	1.5	-
Total BTEX	µg/L	3	-
Naphthalene	µg/L	0.5	-
Dichlorodifluoromethane (CFC-12)	µg/L	5	-
Chloromethane	µg/L	5	-
Vinyl chloride (Chloroethene)	µg/L	0.3	-
Bromomethane	µg/L	10	-
Chloroethane	µg/L	5	-
Trichlorofluoromethane	µg/L	1	-
Acetone (2-propanone)	µg/L	10	-
Iodomethane	µg/L	5	-
1,1-dichloroethene	µg/L	0.5	-
Acrylonitrile	µg/L	0.5	-
Dichloromethane (Methylene chloride)	µg/L	5	-
Allyl chloride	µg/L	2	-
Carbon disulfide	µg/L	2	-
trans-1,2-dichloroethene	µg/L	0.5	-
MtBE (Methyl-tert-butyl ether)	µg/L	2	-
1,1-dichloroethane	µg/L	0.5	-
Vinyl acetate	µg/L	10	-
MEK (2-butanone)	µg/L	10	-
cis-1,2-dichloroethene	µg/L	0.5	-
Bromochloromethane	µg/L	0.5	-
Chloroform (THM)	µg/L	0.5	-
2,2-dichloropropane	µg/L	0.5	-
1,2-dichloroethane	µg/L	0.5	-
1,1,1-trichloroethane	µg/L	0.5	-
1,1-dichloropropene	µg/L	0.5	-
Carbon tetrachloride	µg/L	0.5	-
Dibromomethane	µg/L	0.5	-
1,2-dichloropropane	µg/L	0.5	-
Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	-
2-nitropropane	µg/L	100	-
Bromodichloromethane (THM)	µg/L	0.5	-
MIBK (4-methyl-2-pentanone)	µg/L	5	-
cis-1,3-dichloropropene	µg/L	0.5	-
trans-1,3-dichloropropene	µg/L	0.5	-
1,1,2-trichloroethane	µg/L	0.5	-
1,3-dichloropropane	µg/L	0.5	-
Dibromochloromethane (THM)	µg/L	0.5	-
2-hexanone (MBK)	µg/L	5	-
1,2-dibromoethane (EDB)	µg/L	0.5	-
Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	-
1,1,1,2-tetrachloroethane	µg/L	0.5	-
Chlorobenzene	µg/L	0.5	-
Bromoform (THM)	µg/L	0.5	-
cis-1,4-dichloro-2-butene	µg/L	1	-
Styrene (Vinyl benzene)	µg/L	0.5	-
1,1,2,2-tetrachloroethane	µg/L	0.5	-
1,2,3-trichloropropane	µg/L	0.5	-
trans-1,4-dichloro-2-butene	µg/L	1	-

VOCs in Water [AN433] Tested: 16/3/2017 (continued)

PARAMETER	UOM	LOR	GWQTS1 WATER - 15/3/2017 SE163046.006
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: 16/3/2017

PARAMETER	UOM	LOR	BH101M WATER - 15/3/2017 SE163046.001	BH104M WATER - 15/3/2017 SE163046.002	GWQD1 WATER - 15/3/2017 SE163046.003	GWQR1 WATER - 15/3/2017 SE163046.004
TRH C6-C9	µg/L	40	<40	<40	<40	<40
Benzene (F0)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
TRH C6-C10	µg/L	50	<50	<50	<50	<50
TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	<50	<50	<50

TRH (Total Recoverable Hydrocarbons) in Water [AN403] Tested: 16/3/2017

PARAMETER	UOM	LOR	BH101M WATER - 15/3/2017 SE163046.001	BH104M WATER - 15/3/2017 SE163046.002	GWQD1 WATER - 15/3/2017 SE163046.003	GWQR1 WATER - 15/3/2017 SE163046.004
TRH C10-C14	µg/L	50	<50	<50	<50	<50
TRH C15-C28	µg/L	200	<200	<200	<200	<200
TRH C29-C36	µg/L	200	<200	<200	<200	<200
TRH C37-C40	µg/L	200	<200	<200	<200	<200
TRH >C10-C16 (F2)	µg/L	60	<60	<60	<60	<60
TRH >C16-C34 (F3)	µg/L	500	<500	<500	<500	<500
TRH >C34-C40 (F4)	µg/L	500	<500	<500	<500	<500
TRH C10-C36	µg/L	450	<450	<450	<450	<450
TRH C10-C40	µg/L	650	<650	<650	<650	<650

PAH (Polynuclear Aromatic Hydrocarbons) in Water [AN420] Tested: 16/3/2017

PARAMETER	UOM	LOR	BH101M WATER - 15/3/2017 SE163046.001	BH104M WATER - 15/3/2017 SE163046.002
Naphthalene	µg/L	0.1	<0.1	<0.1
2-methylnaphthalene	µg/L	0.1	<0.1	<0.1
1-methylnaphthalene	µg/L	0.1	<0.1	<0.1
Acenaphthylene	µg/L	0.1	<0.1	<0.1
Acenaphthene	µg/L	0.1	<0.1	<0.1
Fluorene	µg/L	0.1	<0.1	<0.1
Phenanthrene	µg/L	0.1	<0.1	<0.1
Anthracene	µg/L	0.1	<0.1	<0.1
Fluoranthene	µg/L	0.1	<0.1	<0.1
Pyrene	µg/L	0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	0.1	<0.1	<0.1
Chrysene	µg/L	0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	µg/L	0.1	<0.1	<0.1
Benzo(k)fluoranthene	µg/L	0.1	<0.1	<0.1
Benzo(a)pyrene	µg/L	0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1	<0.1
Dibenzo(ah)anthracene	µg/L	0.1	<0.1	<0.1
Benzo(ghi)perylene	µg/L	0.1	<0.1	<0.1
Total PAH (18)	µg/L	1	<1	<1

Trace Metals (Dissolved) in Water by ICPMS [AN318] Tested: 17/3/2017

PARAMETER	UOM	LOR	BH101M WATER - 15/3/2017 SE163046.001	BH104M WATER - 15/3/2017 SE163046.002	GWQD1 WATER - 15/3/2017 SE163046.003	GWQR1 WATER - 15/3/2017 SE163046.004
Arsenic, As	µg/L	1	**6**	<1	**6**	<1
Cadmium, Cd	µg/L	0.1	<0.1	**0.1**	<0.1	<0.1
Chromium, Cr	µg/L	1	<1	<1	<1	<1
Copper, Cu	µg/L	1	<1	**1**	**1**	**4**
Lead, Pb	µg/L	1	<1	<1	<1	<1
Nickel, Ni	µg/L	1	**7**	**5**	**7**	<1
Zinc, Zn	µg/L	5	**46**	**54**	**47**	<5

Mercury (dissolved) in Water [AN311(Perth)/AN312] Tested: 17/3/2017

PARAMETER	UOM	LOR	BH101M WATER - 15/3/2017 SE163046.001	BH104M WATER - 15/3/2017 SE163046.002	GWQD1 WATER - 15/3/2017 SE163046.003	GWQR1 WATER - 15/3/2017 SE163046.004
Mercury	mg/L	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.
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.
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

APPENDIX H
QA/QC Assessment

H1 QUALITY CONTROL PROGRAM

H1.1 INTRODUCTION

For the purpose of assessing the quality of data presented in this Detailed Site Investigation, 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, and other Data Quality Indicators used in this DSI are reviewed in **Table H-1**.

Table H-13-1 Sampling Data Quality Indicators

For the purpose of assessing the quality of data presented in this Detailed Site Investigation, 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 QC samples. Details of the field and laboratory QC samples are provided, with the allowable acceptance ranges for the data presented in **Table H-1**.

Table H-13-2 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.

H1.2 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.

H2 FIELD QA/QC DATA EVALUATION

The field quality assurance/quality control (QA/QC) samples collected during the soil investigation works were as follows:

- Two blind field duplicates (water/soil);
- Two inter-laboratory duplicate (water/soil);
- Two trip blanks (water/soil);
- Two trip spikes (water/soil); and
- Two rinsate blanks (water/soil).

Analytical results for tested soil QA/QC samples, including the calculated RPD values between primary and duplicate samples, are presented in **Table 4 and 5 (T4-T5)**.

H2.1 SOIL INVESTIGATION

H2.1.1 Blind Field Duplicate

Sample QD-1 was collected as a blind field duplicate (BFD) of the primary sample BH101M_0.6-0.7 on 9 March 2017. The preparation of the BFD sample 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. The BFD soil sample was analysed for TRHs, BTEX, selected heavy metals.

Calculated RPD values were found to be within the Data Acceptance Criteria, with the exception of heavy metals; chromium (163.64%), and mercury (104.76%), as well as TRH (F3) (57.14%). Exceedances can be attributed to material heterogeneity.

H2.1.2 Inter-Laboratory Duplicate

Sample QT-1 was collected as an inter-laboratory duplicate (ILD) of the primary ample BH101M_0.6-0.7 on 9 March 2017. 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 within the Data Acceptance Criteria, with the exception of mercury (120%). Exceedances can be attributed to material heterogeneity.

Furthermore, soil samples were placed immediately into jars following sampling to reduce the loss of volatiles from samples. Analytical results indicated that the samples collected were representative of the soils present at respective sampling locations.

H2.1.3 Trip Blank

One soil trip blank (QTB-1) sample was prepared and analysed by the primary laboratory (SGS) for BTEX. Analytical results for this sample were below the laboratory LOR, indicating that satisfactory sample transport and handling conditions were achieved.

H2.1.4 Trip Spike

One soil trip spike (QTS-1) 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.

H2.1.5 Rinsate Blank

One equipment rinsate blank sample (QR1) was submitted to the primary laboratory for TRHs, BTEX and selected heavy metals analyses. Analytical results were reported below the laboratory LOR, with the exception of toluene (1.2 µg/L). One rinsate blank (QR1B) consisting of clean rinsate water, was submitted to the primary laboratory and tested for toluene. Reported concentrations of toluene (1.1 µg/L) suggest that the hit of toluene within QR1 was in fact a result of laboratory supplied rinsate, and not a result of incorrect sampling procedures. Furthermore, it was concluded that decontamination procedures performed during the field works had been effective.

H2.1 GROUNDWATER INVESTIGATION

H2.1.1 Blind Field Duplicate

One groundwater BFD sample was collected in total, as follows:

Sample GWQD1 was collected from the primary sample BH101M on 14 March 2017.

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).

H2.1.3 Trip Blank

A trip blank (TB) sample (GWQTB1), 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.

H2.1.4 Trip Spike

A trip spike (TS) sample (GWQTS1) 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.

H2.1.5 Rinsate Blank

A rinsate blank (RB) sample (GWQR1) was submitted to the primary laboratory for TRHs, BTEX and selected heavy metals analyses. Analytical results were reported below the laboratory LOR for most analytes, with the exception of toluene (1.8 µg/L) and copper (4.0 µg/L). It was noted that concentrations of toluene in groundwater sampled on the same date were recorded under PQLs. As the concentration of toluene in the rinsate sample was much higher than recorded in the groundwater, cross-contamination was ruled out as the cause of the elevated toluene level. With regard to copper, it was noted that concentrations in groundwater sampled on the same date were below PQLs. Heavy metal concentrations exceeding water quality criteria are ubiquitous in groundwater systems in long-standing urban/industrial environments, and therefore, cross-contamination was ruled out as the cause for an elevated copper level.

In view of this finding it was concluded that decontamination procedures performed during the field works had been effective.

H2.3 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 investigation works to be appropriate and the results to be acceptable.

H3 LABORATORY QA/QC

H3.1 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 G)**, respective tests are 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 G**.

H3.2 SAMPLE HOLDING TIMES

All sample holding times were within standard environmental protocols as tabulated in **Appendix G**, **Tables QC1** and **QC2**.

H3.3 TEST METHODS AND PRACTICAL QUANTITATION LIMITS (PQLS)

Practical Quantitation Limits for the tested parameters during the assessments of soils are presented in **Appendix G**, **Tables QC3** and **QC4**.

H3.4 METHOD BLANKS

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

H3.5 LABORATORY DUPLICATE SAMPLES

The RPD values of Laboratory Duplicate Samples (LDS) for the analysis batches were all within acceptable ranges and conformed to the DAC, with the exception of chromium for sample SE 162924.010 due to sample heterogeneity.

H3.6 LABORATORY CONTROL SAMPLES

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

H3.7 MATRIX SPIKES

The matrix spikes of the analysis batches were within acceptable ranges and conformed to the DAC, with the exception of lead and zinc for sample SE 162924.001 due to sample heterogeneity.

H3.8 CONCLUDING REMARK

Based on the laboratory QA/QC results, EI considers that although a small number of discrepancies were identified, the data generally confirms that the analytical results for soil and groundwater laboratory testing were valid and useable for interpretation purposes.

APPENDIX I
Laboratory QA/AC Policies and DQOs

STATEMENT OF QA/QC PERFORMANCE

SE163046 R0

CLIENT DETAILS

Contact	Emmanuel Woelders
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	emmanuel.woelders@eiaustralia.com.au
Project	**E23309 - Eveleigh St, Redfern**
Order Number	**E23309**
Samples	6

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	**SE163046 R0**
Date Received	15 Mar 2017
Date Reported	20 Mar 2017

COMMENTS

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

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

All Data Quality Objectives were met (within the SGS Alexandria Environmental laboratory).

SAMPLE SUMMARY

HOLDING TIME SUMMARY

SE163046 R0

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

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

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

Mercury (dissolved) in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101M	SE163046.001	LB120601	15 Mar 2017	15 Mar 2017	12 Apr 2017	17 Mar 2017	12 Apr 2017	20 Mar 2017
BH104M	SE163046.002	LB120601	15 Mar 2017	15 Mar 2017	12 Apr 2017	17 Mar 2017	12 Apr 2017	20 Mar 2017
GWQD1	SE163046.003	LB120601	15 Mar 2017	15 Mar 2017	12 Apr 2017	17 Mar 2017	12 Apr 2017	20 Mar 2017
GWQR1	SE163046.004	LB120601	15 Mar 2017	15 Mar 2017	12 Apr 2017	17 Mar 2017	12 Apr 2017	20 Mar 2017

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
BH101M	SE163046.001	LB120488	15 Mar 2017	15 Mar 2017	22 Mar 2017	16 Mar 2017	25 Apr 2017	16 Mar 2017
BH104M	SE163046.002	LB120488	15 Mar 2017	15 Mar 2017	22 Mar 2017	16 Mar 2017	25 Apr 2017	16 Mar 2017
GWQD1	SE163046.003	LB120488	15 Mar 2017	15 Mar 2017	22 Mar 2017	16 Mar 2017	25 Apr 2017	16 Mar 2017
GWQR1	SE163046.004	LB120488	15 Mar 2017	15 Mar 2017	22 Mar 2017	16 Mar 2017	25 Apr 2017	16 Mar 2017

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
BH101M	SE163046.001	LB120608	15 Mar 2017	15 Mar 2017	11 Sep 2017	17 Mar 2017	11 Sep 2017	20 Mar 2017
BH104M	SE163046.002	LB120608	15 Mar 2017	15 Mar 2017	11 Sep 2017	17 Mar 2017	11 Sep 2017	20 Mar 2017
GWQD1	SE163046.003	LB120608	15 Mar 2017	15 Mar 2017	11 Sep 2017	17 Mar 2017	11 Sep 2017	20 Mar 2017
GWQR1	SE163046.004	LB120608	15 Mar 2017	15 Mar 2017	11 Sep 2017	17 Mar 2017	11 Sep 2017	20 Mar 2017

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
BH101M	SE163046.001	LB120488	15 Mar 2017	15 Mar 2017	22 Mar 2017	16 Mar 2017	25 Apr 2017	17 Mar 2017
BH104M	SE163046.002	LB120488	15 Mar 2017	15 Mar 2017	22 Mar 2017	16 Mar 2017	25 Apr 2017	17 Mar 2017
GWQD1	SE163046.003	LB120488	15 Mar 2017	15 Mar 2017	22 Mar 2017	16 Mar 2017	25 Apr 2017	17 Mar 2017
GWQR1	SE163046.004	LB120488	15 Mar 2017	15 Mar 2017	22 Mar 2017	16 Mar 2017	25 Apr 2017	17 Mar 2017

VOCs in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101M	SE163046.001	LB120493	15 Mar 2017	15 Mar 2017	22 Mar 2017	16 Mar 2017	25 Apr 2017	20 Mar 2017
BH104M	SE163046.002	LB120493	15 Mar 2017	15 Mar 2017	22 Mar 2017	16 Mar 2017	25 Apr 2017	20 Mar 2017
GWQD1	SE163046.003	LB120493	15 Mar 2017	15 Mar 2017	22 Mar 2017	16 Mar 2017	25 Apr 2017	20 Mar 2017
GWQR1	SE163046.004	LB120493	15 Mar 2017	15 Mar 2017	22 Mar 2017	16 Mar 2017	25 Apr 2017	20 Mar 2017
GWQTB1	SE163046.005	LB120493	15 Mar 2017	15 Mar 2017	22 Mar 2017	16 Mar 2017	25 Apr 2017	20 Mar 2017
GWQTS1	SE163046.006	LB120493	15 Mar 2017	15 Mar 2017	22 Mar 2017	16 Mar 2017	25 Apr 2017	20 Mar 2017

Volatile Petroleum Hydrocarbons in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101M	SE163046.001	LB120493	15 Mar 2017	15 Mar 2017	22 Mar 2017	16 Mar 2017	25 Apr 2017	17 Mar 2017
BH104M	SE163046.002	LB120493	15 Mar 2017	15 Mar 2017	22 Mar 2017	16 Mar 2017	25 Apr 2017	17 Mar 2017
GWQD1	SE163046.003	LB120493	15 Mar 2017	15 Mar 2017	22 Mar 2017	16 Mar 2017	25 Apr 2017	17 Mar 2017
GWQR1	SE163046.004	LB120493	15 Mar 2017	15 Mar 2017	22 Mar 2017	16 Mar 2017	25 Apr 2017	17 Mar 2017
GWQTB1	SE163046.005	LB120493	15 Mar 2017	15 Mar 2017	22 Mar 2017	16 Mar 2017	25 Apr 2017	20 Mar 2017
GWQTS1	SE163046.006	LB120493	15 Mar 2017	15 Mar 2017	22 Mar 2017	16 Mar 2017	25 Apr 2017	20 Mar 2017

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH101M	SE163046.001	%	40 - 130%	84
	BH104M	SE163046.002	%	40 - 130%	82
d14-p-terphenyl (Surrogate)	BH101M	SE163046.001	%	40 - 130%	100
	BH104M	SE163046.002	%	40 - 130%	106
d5-nitrobenzene (Surrogate)	BH101M	SE163046.001	%	40 - 130%	90
	BH104M	SE163046.002	%	40 - 130%	86

VOCs in Water

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH101M	SE163046.001	%	40 - 130%	107
	BH104M	SE163046.002	%	40 - 130%	113
	GWQD1	SE163046.003	%	40 - 130%	100
	GWQR1	SE163046.004	%	40 - 130%	105
	GWQTB1	SE163046.005	%	40 - 130%	105
	GWQTS1	SE163046.006	%	40 - 130%	105
d4-1,2-dichloroethane (Surrogate)	BH101M	SE163046.001	%	40 - 130%	105
	BH104M	SE163046.002	%	40 - 130%	123
	GWQD1	SE163046.003	%	40 - 130%	110
	GWQR1	SE163046.004	%	40 - 130%	112
	GWQTB1	SE163046.005	%	40 - 130%	118
	GWQTS1	SE163046.006	%	40 - 130%	118
d8-toluene (Surrogate)	BH101M	SE163046.001	%	40 - 130%	100
	BH104M	SE163046.002	%	40 - 130%	93
	GWQD1	SE163046.003	%	40 - 130%	106
	GWQR1	SE163046.004	%	40 - 130%	106
	GWQTB1	SE163046.005	%	40 - 130%	111
	GWQTS1	SE163046.006	%	40 - 130%	114
Dibromofluoromethane (Surrogate)	BH101M	SE163046.001	%	40 - 130%	118
	BH104M	SE163046.002	%	40 - 130%	127
	GWQD1	SE163046.003	%	40 - 130%	108
	GWQR1	SE163046.004	%	40 - 130%	105
	GWQTB1	SE163046.005	%	40 - 130%	111
	GWQTS1	SE163046.006	%	40 - 130%	104

Volatile Petroleum Hydrocarbons in Water

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH101M	SE163046.001	%	40 - 130%	100
	BH104M	SE163046.002	%	40 - 130%	121
	GWQD1	SE163046.003	%	40 - 130%	100
	GWQR1	SE163046.004	%	40 - 130%	105
d4-1,2-dichloroethane (Surrogate)	BH101M	SE163046.001	%	60 - 130%	114
	BH104M	SE163046.002	%	60 - 130%	121
	GWQD1	SE163046.003	%	60 - 130%	110
	GWQR1	SE163046.004	%	60 - 130%	112
d8-toluene (Surrogate)	BH101M	SE163046.001	%	40 - 130%	107
	BH104M	SE163046.002	%	40 - 130%	93
	GWQD1	SE163046.003	%	40 - 130%	106
	GWQR1	SE163046.004	%	40 - 130%	106
Dibromofluoromethane (Surrogate)	BH101M	SE163046.001	%	40 - 130%	108
	BH104M	SE163046.002	%	40 - 130%	118
	GWQD1	SE163046.003	%	40 - 130%	108
	GWQR1	SE163046.004	%	40 - 130%	105

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

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

Mercury (dissolved) in Water

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

Sample Number	Parameter	Units	LOR	Result
LB120601.001	Mercury	mg/L	0.0001	<0.0001

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Sample Number		Parameter	Units	LOR	Result
LB120488.001		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)	%	-	104
		2-fluorobiphenyl (Surrogate)	%	-	122
		d14-p-terphenyl (Surrogate)	%	-	112

Trace Metals (Dissolved) in Water by ICPMS

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

Sample Number	Parameter	Units	LOR	Result
LB120608.001	Arsenic, As	µg/L	1	<1
	Cadmium, Cd	µg/L	0.1	<0.1
	Chromium, Cr	µg/L	1	<1
	Copper, Cu	µg/L	1	<1
	Lead, Pb	µg/L	1	<1
	Nickel, Ni	µg/L	1	<1
	Zinc, Zn	µg/L	5	<5

TRH (Total Recoverable Hydrocarbons) in Water

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

Sample Number	Parameter	Units	LOR	Result
LB120488.001	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
LB120493.001	Fumigants	2,2-dichloropropane	µg/L	0.5	<0.5
		1,2-dichloropropane	µg/L	0.5	<0.5
		cis-1,3-dichloropropene	µg/L	0.5	<0.5
		trans-1,3-dichloropropene	µg/L	0.5	<0.5
		1,2-dibromoethane (EDB)	µg/L	0.5	<0.5
	Halogenated Aliphatics	Dichlorodifluoromethane (CFC-12)	µg/L	5	<5
		Chloromethane	µg/L	5	<5
		Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3
		Bromomethane	µg/L	10	<10
		Chloroethane	µg/L	5	<5
		Trichlorofluoromethane	µg/L	1	<1
		Iodomethane	µg/L	5	<5
		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

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
LB120493.001	Halogenated Aliphatics	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
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	91
		d4-1,2-dichloroethane (Surrogate)	%	-	96
		d8-toluene (Surrogate)	%	-	103
		Bromofluorobenzene (Surrogate)	%	-	105
	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

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.

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

Sample Number		Parameter	Units	LOR	Result
LB120493.001		TRH C6-C9	µg/L	40	<40
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	87
		d4-1,2-dichloroethane (Surrogate)	%	-	103
		d8-toluene (Surrogate)	%	-	99
		Bromofluorobenzene (Surrogate)	%	-	107

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

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

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

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

Mercury (dissolved) in Water

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE163029.087	LB120601.014	Mercury	µg/L	0.0001	-0.0196	-0.018	200	0
SE163046.004	LB120601.019	Mercury	µg/L	0.0001	<0.0001	<0.0001	200	0

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE163046.001	LB120488.012		Naphthalene	µg/L	0.1	<0.1	0.01	200	0
			2-methylnaphthalene	µg/L	0.1	<0.1	0	200	0
			1-methylnaphthalene	µg/L	0.1	<0.1	0	200	0
			Acenaphthylene	µg/L	0.1	<0.1	0	200	0
			Acenaphthene	µg/L	0.1	<0.1	0	200	0
			Fluorene	µg/L	0.1	<0.1	0	200	0
			Phenanthrene	µg/L	0.1	<0.1	0.01	200	0
			Anthracene	µg/L	0.1	<0.1	0.01	200	0
			Fluoranthene	µg/L	0.1	<0.1	0	200	0
			Pyrene	µg/L	0.1	<0.1	0	200	0
			Benzo(a)anthracene	µg/L	0.1	<0.1	0.01	200	0
			Chrysene	µg/L	0.1	<0.1	0.01	200	0
			Benzo(b&j)fluoranthene	µg/L	0.1	<0.1	0	200	0
			Benzo(k)fluoranthene	µg/L	0.1	<0.1	0	200	0
			Benzo(a)pyrene	µg/L	0.1	<0.1	0	200	0
			Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1	0	200	0
			Dibenzo(ah)anthracene	µg/L	0.1	<0.1	0	200	0
			Benzo(ghi)perylene	µg/L	0.1	<0.1	0	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	µg/L	-	0.5	0.39	30	14
			2-fluorobiphenyl (Surrogate)	µg/L	-	0.4	0.36	30	15
			d14-p-terphenyl (Surrogate)	µg/L	-	0.5	0.47	30	6

Trace Metals (Dissolved) in Water by ICPMS

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE163053.003	LB120608.014	Arsenic, As	µg/L	1	-0.006	-0.01	200	0
		Cadmium, Cd	µg/L	0.1	0.004	0	200	0
		Chromium, Cr	µg/L	1	0.174	0.181	200	0
		Copper, Cu	µg/L	1	0.657	0.62	172	0
		Lead, Pb	µg/L	1	0.026	0.016	200	0
		Zinc, Zn	µg/L	5	1.502	1.284	200	0
SE163093.005	LB120608.024	Zinc, Zn	µg/L	5	101.647	102.197	20	1

TRH (Total Recoverable Hydrocarbons) in Water

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE163046.001	LB120488.012		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 (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 %
SE162968.002	LB120493.020	Monocyclic	Benzene	µg/L	0.5	<0.5	0	200	0
		Aromatic	Toluene	µg/L	0.5	1.5	1.54	62	0
			Ethylbenzene	µg/L	0.5	<0.5	0	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	-	5.0	4.98	30	0
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.5	4.82	30	13
			d8-toluene (Surrogate)	µg/L	-	4.9	4.93	30	1
			Bromofluorobenzene (Surrogate)	µg/L	-	4.8	5.53	30	14

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 %
SE163046.004	LB120493.021	Monocyclic	Benzene	µg/L	0.5	<0.5	0	200	0
		Aromatic	Toluene	µg/L	0.5	1.8	1.6	60	10
			Ethylbenzene	µg/L	0.5	<0.5	0	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	-	5.3	5	30	5
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.6	4.85	30	14
			d8-toluene (Surrogate)	µg/L	-	5.3	4.91	30	8
			Bromofluorobenzene (Surrogate)	µg/L	-	5.3	5.65	30	7

Volatile Petroleum Hydrocarbons in Water

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE162968.002	LB120493.020		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	-	5.0	4.98	30	0
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.5	4.82	30	13
			d8-toluene (Surrogate)	µg/L	-	4.9	4.93	30	1
			Bromofluorobenzene (Surrogate)	µg/L	-	4.8	5.53	30	14
		VPH F Bands	Benzene (F0)	µg/L	0.5	<0.5	0	200	0
			TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	0	200	0
SE163046.004	LB120493.021		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	-	5.3	5	30	5
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.6	4.85	30	14
			d8-toluene (Surrogate)	µg/L	-	5.3	4.91	30	8
			Bromofluorobenzene (Surrogate)	µg/L	-	5.3	5.65	30	7
		VPH F Bands	Benzene (F0)	µg/L	0.5	<0.5	0	200	0
			TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	0	200	0

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB120488.002		Naphthalene	µg/L	0.1	25	40	60 - 140	62
		Acenaphthylene	µg/L	0.1	29	40	60 - 140	73
		Acenaphthene	µg/L	0.1	27	40	60 - 140	69
		Phenanthrene	µg/L	0.1	29	40	60 - 140	74
		Anthracene	µg/L	0.1	30	40	60 - 140	75
		Fluoranthene	µg/L	0.1	33	40	60 - 140	82
		Pyrene	µg/L	0.1	34	40	60 - 140	85
		Benzo(a)pyrene	µg/L	0.1	31	40	60 - 140	76
	Surrogates	d5-nitrobenzene (Surrogate)	µg/L	-	0.5	0.5	40 - 130	92
		2-fluorobiphenyl (Surrogate)	µg/L	-	0.4	0.5	40 - 130	84
		d14-p-terphenyl (Surrogate)	µg/L	-	0.5	0.5	40 - 130	98

Trace Metals (Dissolved) in Water by ICPMS

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB120608.002	Arsenic, As	µg/L	1	21	20	80 - 120	103
	Cadmium, Cd	µg/L	0.1	22	20	80 - 120	110
	Chromium, Cr	µg/L	1	22	20	80 - 120	110
	Copper, Cu	µg/L	1	22	20	80 - 120	112
	Lead, Pb	µg/L	1	23	20	80 - 120	113
	Nickel, Ni	µg/L	1	22	20	80 - 120	110
	Zinc, Zn	µg/L	5	22	20	80 - 120	109

TRH (Total Recoverable Hydrocarbons) in Water

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB120488.002		TRH C10-C14	µg/L	50	900	1200	60 - 140	75
		TRH C15-C28	µg/L	200	1300	1200	60 - 140	107
		TRH C29-C36	µg/L	200	1600	1200	60 - 140	132
	TRH F Bands	TRH >C10-C16 (F2)	µg/L	60	1100	1200	60 - 140	88
		TRH >C16-C34 (F3)	µg/L	500	1500	1200	60 - 140	126
		TRH >C34-C40 (F4)	µg/L	500	770	600	60 - 140	129

VOCs in Water

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB120493.002	Halogenated	1,1-dichloroethene	µg/L	0.5	50	45.45	60 - 140	109
	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	109
	Monocyclic	Benzene	µg/L	0.5	50	45.45	60 - 140	109
	Aromatic	Toluene	µg/L	0.5	50	45.45	60 - 140	109
		Ethylbenzene	µg/L	0.5	50	45.45	60 - 140	109
		m/p-xylene	µg/L	1	100	90.9	60 - 140	109
		o-xylene	µg/L	0.5	50	45.45	60 - 140	109
	Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.7	5	60 - 140	93
		d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.0	5	60 - 140	99
		d8-toluene (Surrogate)	µg/L	-	4.8	5	60 - 140	96
		Bromofluorobenzene (Surrogate)	µg/L	-	4.3	5	60 - 140	86
	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 %
LB120493.002		TRH C6-C10	µg/L	50	940	946.63	60 - 140	99
		TRH C6-C9	µg/L	40	760	818.71	60 - 140	93
	Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	5.5	5	60 - 140	110
		d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.7	5	60 - 140	113
		d8-toluene (Surrogate)	µg/L	-	5.6	5	60 - 140	112
		Bromofluorobenzene (Surrogate)	µg/L	-	5.1	5	60 - 140	102
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	640	639.67	60 - 140	101

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

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

Mercury (dissolved) in Water

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE162968.001	LB120601.004	Mercury	mg/L	0.0001	0.0086	<0.0001	0.008	107

Trace Metals (Dissolved) in Water by ICPMS

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE163046.001	LB120608.004	Arsenic, As	µg/L	1	28	6	20	110
		Cadmium, Cd	µg/L	0.1	23	<0.1	20	112
		Chromium, Cr	µg/L	1	22	<1	20	108
		Copper, Cu	µg/L	1	21	<1	20	103
		Lead, Pb	µg/L	1	22	<1	20	108
		Nickel, Ni	µg/L	1	28	7	20	105
		Zinc, Zn	µg/L	5	67	46	20	107

VOCs in Water

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE162968.001	LB120493.022	Monocyclic	Benzene	µg/L	0.5	45	<0.5	45.45	98
		Aromatic	Toluene	µg/L	0.5	45	<0.5	45.45	100
			Ethylbenzene	µg/L	0.5	47	<0.5	45.45	104
			m/p-xylene	µg/L	1	94	<1	90.9	103
			o-xylene	µg/L	0.5	48	<0.5	45.45	106
		Polycyclic	Naphthalene	µg/L	0.5	<0.5	<0.5	-	-
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	5.6	4.7	-	113
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.6	5.1	-	113
			d8-toluene (Surrogate)	µg/L	-	5.6	4.3	-	112
			Bromofluorobenzene (Surrogate)	µg/L	-	5.6	5.6	-	111

Volatile Petroleum Hydrocarbons in Water

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE162968.001	LB120493.022		TRH C6-C10	µg/L	50	870	<50	946.63	92
			TRH C6-C9	µg/L	40	740	<40	818.71	90
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	5.6	4.7	-	113
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.6	5.1	-	113
			d8-toluene (Surrogate)	µg/L	-	5.6	4.3	-	112
			Bromofluorobenzene (Surrogate)	µg/L	-	5.6	5.6	-	111
		VPH F	Benzene (F0)	µg/L	0.5	45	<0.5	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	590	<50	639.67	92

MATRIX SPIKE DUPLICATES

SE163046 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 tthe performance of this service.
-	Sample not analysed for this analyte.

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

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

STATEMENT OF QA/QC PERFORMANCE

SE162924 R0

CLIENT DETAILS

Contact	Carmen Yi
Client	EI AUSTRALIA
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Telephone	61 2 95160722
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Email	carmen.yi@eiaustralia.com.au
Project	**E23309 - 77-123 Eveleigh St, Redfern**
Order Number	**E23309**
Samples	18

LABORATORY DETAILS

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Laboratory	SGS Alexandria Environmental
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Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE162924 R0**
Date Received	10 Mar 2017
Date Reported	17 Mar 2017

COMMENTS

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

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

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

Duplicate	Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES	1 item
Matrix Spike	Total Recoverable Metals in Soil/Waste Solids/Materials by ICPOES	2 items

SAMPLE SUMMARY

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	16 Soil, 2 Water
Date documentation received	10/3/2017	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	11.3°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

HOLDING TIME SUMMARY

SE162924 R0

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

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

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

Fibre Identification in soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101_0.6-0.7	SE162924.001	LB120533	09 Mar 2017	10 Mar 2017	09 Mar 2018	16 Mar 2017	09 Mar 2018	17 Mar 2017
BH102_0.5-0.6	SE162924.003	LB120533	09 Mar 2017	10 Mar 2017	09 Mar 2018	16 Mar 2017	09 Mar 2018	17 Mar 2017
BH103_0.2-0.3	SE162924.004	LB120533	09 Mar 2017	10 Mar 2017	09 Mar 2018	16 Mar 2017	09 Mar 2018	17 Mar 2017
BH104_0.6-0.7	SE162924.006	LB120533	09 Mar 2017	10 Mar 2017	09 Mar 2018	16 Mar 2017	09 Mar 2018	17 Mar 2017
BH105_0.1-0.2	SE162924.008	LB120533	09 Mar 2017	10 Mar 2017	09 Mar 2018	16 Mar 2017	09 Mar 2018	17 Mar 2017
BH106_0.2-0.3	SE162924.010	LB120533	09 Mar 2017	10 Mar 2017	09 Mar 2018	16 Mar 2017	09 Mar 2018	17 Mar 2017
BH107_0.7-0.8	SE162924.012	LB120533	09 Mar 2017	10 Mar 2017	09 Mar 2018	16 Mar 2017	09 Mar 2018	17 Mar 2017
BH108_0.4-0.5	SE162924.013	LB120533	09 Mar 2017	10 Mar 2017	09 Mar 2018	16 Mar 2017	09 Mar 2018	17 Mar 2017

Mercury (dissolved) in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QR1	SE162924.017	LB120504	09 Mar 2017	10 Mar 2017	06 Apr 2017	16 Mar 2017	06 Apr 2017	16 Mar 2017
QR1B	SE162924.018	LB120504	09 Mar 2017	10 Mar 2017	06 Apr 2017	16 Mar 2017	06 Apr 2017	16 Mar 2017

Mercury in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101_0.6-0.7	SE162924.001	LB120491	09 Mar 2017	10 Mar 2017	06 Apr 2017	16 Mar 2017	06 Apr 2017	17 Mar 2017
BH101_1.5-1.6	SE162924.002	LB120491	09 Mar 2017	10 Mar 2017	06 Apr 2017	16 Mar 2017	06 Apr 2017	17 Mar 2017
BH102_0.5-0.6	SE162924.003	LB120491	09 Mar 2017	10 Mar 2017	06 Apr 2017	16 Mar 2017	06 Apr 2017	17 Mar 2017
BH103_0.2-0.3	SE162924.004	LB120491	09 Mar 2017	10 Mar 2017	06 Apr 2017	16 Mar 2017	06 Apr 2017	17 Mar 2017
BH103_1.9-2.0	SE162924.005	LB120491	09 Mar 2017	10 Mar 2017	06 Apr 2017	16 Mar 2017	06 Apr 2017	17 Mar 2017
BH104_0.6-0.7	SE162924.006	LB120491	09 Mar 2017	10 Mar 2017	06 Apr 2017	16 Mar 2017	06 Apr 2017	17 Mar 2017
BH104_1.9-2.0	SE162924.007	LB120491	09 Mar 2017	10 Mar 2017	06 Apr 2017	16 Mar 2017	06 Apr 2017	17 Mar 2017
BH105_0.1-0.2	SE162924.008	LB120491	09 Mar 2017	10 Mar 2017	06 Apr 2017	16 Mar 2017	06 Apr 2017	17 Mar 2017
BH105_2.7-2.8	SE162924.009	LB120491	09 Mar 2017	10 Mar 2017	06 Apr 2017	16 Mar 2017	06 Apr 2017	17 Mar 2017
BH106_0.2-0.3	SE162924.010	LB120491	09 Mar 2017	10 Mar 2017	06 Apr 2017	16 Mar 2017	06 Apr 2017	17 Mar 2017
BH106_1.5-1.6	SE162924.011	LB120491	09 Mar 2017	10 Mar 2017	06 Apr 2017	16 Mar 2017	06 Apr 2017	17 Mar 2017
BH107_0.7-0.8	SE162924.012	LB120491	09 Mar 2017	10 Mar 2017	06 Apr 2017	16 Mar 2017	06 Apr 2017	17 Mar 2017
BH108_0.4-0.5	SE162924.013	LB120491	09 Mar 2017	10 Mar 2017	06 Apr 2017	16 Mar 2017	06 Apr 2017	17 Mar 2017
QD1	SE162924.014	LB120491	09 Mar 2017	10 Mar 2017	06 Apr 2017	16 Mar 2017	06 Apr 2017	17 Mar 2017

Moisture Content

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101_0.6-0.7	SE162924.001	LB120406	09 Mar 2017	10 Mar 2017	23 Mar 2017	15 Mar 2017	20 Mar 2017	16 Mar 2017
BH101_1.5-1.6	SE162924.002	LB120406	09 Mar 2017	10 Mar 2017	23 Mar 2017	15 Mar 2017	20 Mar 2017	16 Mar 2017
BH102_0.5-0.6	SE162924.003	LB120406	09 Mar 2017	10 Mar 2017	23 Mar 2017	15 Mar 2017	20 Mar 2017	16 Mar 2017
BH103_0.2-0.3	SE162924.004	LB120406	09 Mar 2017	10 Mar 2017	23 Mar 2017	15 Mar 2017	20 Mar 2017	16 Mar 2017
BH103_1.9-2.0	SE162924.005	LB120406	09 Mar 2017	10 Mar 2017	23 Mar 2017	15 Mar 2017	20 Mar 2017	16 Mar 2017
BH104_0.6-0.7	SE162924.006	LB120406	09 Mar 2017	10 Mar 2017	23 Mar 2017	15 Mar 2017	20 Mar 2017	16 Mar 2017
BH104_1.9-2.0	SE162924.007	LB120406	09 Mar 2017	10 Mar 2017	23 Mar 2017	15 Mar 2017	20 Mar 2017	16 Mar 2017
BH105_0.1-0.2	SE162924.008	LB120406	09 Mar 2017	10 Mar 2017	23 Mar 2017	15 Mar 2017	20 Mar 2017	16 Mar 2017
BH105_2.7-2.8	SE162924.009	LB120406	09 Mar 2017	10 Mar 2017	23 Mar 2017	15 Mar 2017	20 Mar 2017	16 Mar 2017
BH106_0.2-0.3	SE162924.010	LB120406	09 Mar 2017	10 Mar 2017	23 Mar 2017	15 Mar 2017	20 Mar 2017	16 Mar 2017
BH106_1.5-1.6	SE162924.011	LB120406	09 Mar 2017	10 Mar 2017	23 Mar 2017	15 Mar 2017	20 Mar 2017	16 Mar 2017
BH107_0.7-0.8	SE162924.012	LB120406	09 Mar 2017	10 Mar 2017	23 Mar 2017	15 Mar 2017	20 Mar 2017	16 Mar 2017
BH108_0.4-0.5	SE162924.013	LB120406	09 Mar 2017	10 Mar 2017	23 Mar 2017	15 Mar 2017	20 Mar 2017	16 Mar 2017
QD1	SE162924.014	LB120406	09 Mar 2017	10 Mar 2017	23 Mar 2017	15 Mar 2017	20 Mar 2017	16 Mar 2017
TB1	SE162924.016	LB120406	09 Mar 2017	10 Mar 2017	23 Mar 2017	15 Mar 2017	20 Mar 2017	16 Mar 2017

OC Pesticides in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101_0.6-0.7	SE162924.001	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
BH101_1.5-1.6	SE162924.002	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
BH102_0.5-0.6	SE162924.003	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
BH103_0.2-0.3	SE162924.004	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
BH103_1.9-2.0	SE162924.005	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
BH104_0.6-0.7	SE162924.006	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
BH104_1.9-2.0	SE162924.007	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
BH105_0.1-0.2	SE162924.008	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
BH105_2.7-2.8	SE162924.009	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
BH106_0.2-0.3	SE162924.010	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
BH106_1.5-1.6	SE162924.011	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017

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

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

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

OC Pesticides in Soil (continued)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH107_0.7-0.8	SE162924.012	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
BH108_0.4-0.5	SE162924.013	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
QD1	SE162924.014	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017

OP Pesticides in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101_0.6-0.7	SE162924.001	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	16 Mar 2017
BH101_1.5-1.6	SE162924.002	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
BH102_0.5-0.6	SE162924.003	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	16 Mar 2017
BH103_0.2-0.3	SE162924.004	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	16 Mar 2017
BH103_1.9-2.0	SE162924.005	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
BH104_0.6-0.7	SE162924.006	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	16 Mar 2017
BH104_1.9-2.0	SE162924.007	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
BH105_0.1-0.2	SE162924.008	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
BH105_2.7-2.8	SE162924.009	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
BH106_0.2-0.3	SE162924.010	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
BH106_1.5-1.6	SE162924.011	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
BH107_0.7-0.8	SE162924.012	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
BH108_0.4-0.5	SE162924.013	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
QD1	SE162924.014	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017

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
BH101_0.6-0.7	SE162924.001	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	16 Mar 2017
BH101_1.5-1.6	SE162924.002	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	16 Mar 2017
BH102_0.5-0.6	SE162924.003	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	16 Mar 2017
BH103_0.2-0.3	SE162924.004	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	16 Mar 2017
BH103_1.9-2.0	SE162924.005	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	16 Mar 2017
BH104_0.6-0.7	SE162924.006	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	16 Mar 2017
BH104_1.9-2.0	SE162924.007	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
BH105_0.1-0.2	SE162924.008	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
BH105_2.7-2.8	SE162924.009	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
BH106_0.2-0.3	SE162924.010	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
BH106_1.5-1.6	SE162924.011	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
BH107_0.7-0.8	SE162924.012	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
BH108_0.4-0.5	SE162924.013	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
QD1	SE162924.014	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017

PCBs in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101_0.6-0.7	SE162924.001	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
BH101_1.5-1.6	SE162924.002	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
BH102_0.5-0.6	SE162924.003	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
BH103_0.2-0.3	SE162924.004	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
BH103_1.9-2.0	SE162924.005	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
BH104_0.6-0.7	SE162924.006	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
BH104_1.9-2.0	SE162924.007	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
BH105_0.1-0.2	SE162924.008	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
BH105_2.7-2.8	SE162924.009	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
BH106_0.2-0.3	SE162924.010	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
BH106_1.5-1.6	SE162924.011	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
BH107_0.7-0.8	SE162924.012	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
BH108_0.4-0.5	SE162924.013	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017
QD1	SE162924.014	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	17 Mar 2017

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

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101_0.6-0.7	SE162924.001	LB120475	09 Mar 2017	10 Mar 2017	05 Sep 2017	15 Mar 2017	05 Sep 2017	17 Mar 2017
BH101_1.5-1.6	SE162924.002	LB120475	09 Mar 2017	10 Mar 2017	05 Sep 2017	15 Mar 2017	05 Sep 2017	17 Mar 2017
BH102_0.5-0.6	SE162924.003	LB120475	09 Mar 2017	10 Mar 2017	05 Sep 2017	15 Mar 2017	05 Sep 2017	17 Mar 2017
BH103_0.2-0.3	SE162924.004	LB120475	09 Mar 2017	10 Mar 2017	05 Sep 2017	15 Mar 2017	05 Sep 2017	17 Mar 2017
BH103_1.9-2.0	SE162924.005	LB120475	09 Mar 2017	10 Mar 2017	05 Sep 2017	15 Mar 2017	05 Sep 2017	17 Mar 2017

HOLDING TIME SUMMARY

SE162924 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.

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

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH104_0.6-0.7	SE162924.006	LB120475	09 Mar 2017	10 Mar 2017	05 Sep 2017	15 Mar 2017	05 Sep 2017	17 Mar 2017
BH104_1.9-2.0	SE162924.007	LB120475	09 Mar 2017	10 Mar 2017	05 Sep 2017	15 Mar 2017	05 Sep 2017	17 Mar 2017
BH105_0.1-0.2	SE162924.008	LB120475	09 Mar 2017	10 Mar 2017	05 Sep 2017	15 Mar 2017	05 Sep 2017	17 Mar 2017
BH105_2.7-2.8	SE162924.009	LB120475	09 Mar 2017	10 Mar 2017	05 Sep 2017	15 Mar 2017	05 Sep 2017	17 Mar 2017
BH106_0.2-0.3	SE162924.010	LB120475	09 Mar 2017	10 Mar 2017	05 Sep 2017	15 Mar 2017	05 Sep 2017	17 Mar 2017
BH106_1.5-1.6	SE162924.011	LB120475	09 Mar 2017	10 Mar 2017	05 Sep 2017	15 Mar 2017	05 Sep 2017	17 Mar 2017
BH107_0.7-0.8	SE162924.012	LB120475	09 Mar 2017	10 Mar 2017	05 Sep 2017	15 Mar 2017	05 Sep 2017	17 Mar 2017
BH108_0.4-0.5	SE162924.013	LB120475	09 Mar 2017	10 Mar 2017	05 Sep 2017	15 Mar 2017	05 Sep 2017	17 Mar 2017
QD1	SE162924.014	LB120475	09 Mar 2017	10 Mar 2017	05 Sep 2017	15 Mar 2017	05 Sep 2017	17 Mar 2017

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	SE162924.017	LB120297	09 Mar 2017	10 Mar 2017	05 Sep 2017	13 Mar 2017	05 Sep 2017	14 Mar 2017
QR1B	SE162924.018	LB120297	09 Mar 2017	10 Mar 2017	05 Sep 2017	13 Mar 2017	05 Sep 2017	14 Mar 2017

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
BH101_0.6-0.7	SE162924.001	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	16 Mar 2017
BH101_1.5-1.6	SE162924.002	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	16 Mar 2017
BH102_0.5-0.6	SE162924.003	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	16 Mar 2017
BH103_0.2-0.3	SE162924.004	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	16 Mar 2017
BH103_1.9-2.0	SE162924.005	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	16 Mar 2017
BH104_0.6-0.7	SE162924.006	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	16 Mar 2017
BH104_1.9-2.0	SE162924.007	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	16 Mar 2017
BH105_0.1-0.2	SE162924.008	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	16 Mar 2017
BH105_2.7-2.8	SE162924.009	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	16 Mar 2017
BH106_0.2-0.3	SE162924.010	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	16 Mar 2017
BH106_1.5-1.6	SE162924.011	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	16 Mar 2017
BH107_0.7-0.8	SE162924.012	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	16 Mar 2017
BH108_0.4-0.5	SE162924.013	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	16 Mar 2017
QD1	SE162924.014	LB120317	09 Mar 2017	10 Mar 2017	23 Mar 2017	14 Mar 2017	23 Apr 2017	16 Mar 2017

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	SE162924.017	LB120279	09 Mar 2017	10 Mar 2017	16 Mar 2017	13 Mar 2017	22 Apr 2017	14 Mar 2017
QR1B	SE162924.018	LB120279	09 Mar 2017	10 Mar 2017	16 Mar 2017	13 Mar 2017	22 Apr 2017	14 Mar 2017

VOC's in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101_0.6-0.7	SE162924.001	LB120283	09 Mar 2017	10 Mar 2017	23 Mar 2017	13 Mar 2017	22 Apr 2017	15 Mar 2017
BH101_1.5-1.6	SE162924.002	LB120283	09 Mar 2017	10 Mar 2017	23 Mar 2017	13 Mar 2017	22 Apr 2017	15 Mar 2017
BH102_0.5-0.6	SE162924.003	LB120283	09 Mar 2017	10 Mar 2017	23 Mar 2017	13 Mar 2017	22 Apr 2017	15 Mar 2017
BH103_0.2-0.3	SE162924.004	LB120283	09 Mar 2017	10 Mar 2017	23 Mar 2017	13 Mar 2017	22 Apr 2017	15 Mar 2017
BH103_1.9-2.0	SE162924.005	LB120283	09 Mar 2017	10 Mar 2017	23 Mar 2017	13 Mar 2017	22 Apr 2017	15 Mar 2017
BH104_0.6-0.7	SE162924.006	LB120283	09 Mar 2017	10 Mar 2017	23 Mar 2017	13 Mar 2017	22 Apr 2017	15 Mar 2017
BH104_1.9-2.0	SE162924.007	LB120283	09 Mar 2017	10 Mar 2017	23 Mar 2017	13 Mar 2017	22 Apr 2017	15 Mar 2017
BH105_0.1-0.2	SE162924.008	LB120283	09 Mar 2017	10 Mar 2017	23 Mar 2017	13 Mar 2017	22 Apr 2017	15 Mar 2017
BH105_2.7-2.8	SE162924.009	LB120283	09 Mar 2017	10 Mar 2017	23 Mar 2017	13 Mar 2017	22 Apr 2017	15 Mar 2017
BH106_0.2-0.3	SE162924.010	LB120283	09 Mar 2017	10 Mar 2017	23 Mar 2017	13 Mar 2017	22 Apr 2017	15 Mar 2017
BH106_1.5-1.6	SE162924.011	LB120283	09 Mar 2017	10 Mar 2017	23 Mar 2017	13 Mar 2017	22 Apr 2017	15 Mar 2017
BH107_0.7-0.8	SE162924.012	LB120283	09 Mar 2017	10 Mar 2017	23 Mar 2017	13 Mar 2017	22 Apr 2017	15 Mar 2017
BH108_0.4-0.5	SE162924.013	LB120283	09 Mar 2017	10 Mar 2017	23 Mar 2017	13 Mar 2017	22 Apr 2017	15 Mar 2017
QD1	SE162924.014	LB120283	09 Mar 2017	10 Mar 2017	23 Mar 2017	13 Mar 2017	22 Apr 2017	15 Mar 2017
TS1	SE162924.015	LB120283	09 Mar 2017	10 Mar 2017	23 Mar 2017	13 Mar 2017	22 Apr 2017	15 Mar 2017
TB1	SE162924.016	LB120283	09 Mar 2017	10 Mar 2017	23 Mar 2017	13 Mar 2017	22 Apr 2017	15 Mar 2017

VOCs in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QR1	SE162924.017	LB120292	09 Mar 2017	10 Mar 2017	16 Mar 2017	13 Mar 2017	22 Apr 2017	14 Mar 2017
QR1B	SE162924.018	LB120292	09 Mar 2017	10 Mar 2017	16 Mar 2017	13 Mar 2017	22 Apr 2017	14 Mar 2017

Volatile Petroleum Hydrocarbons in Soil

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

Sample Name	Sample No.	QC Ref

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 Soil (continued)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101_0.6-0.7	SE162924.001	LB120283	09 Mar 2017	10 Mar 2017	23 Mar 2017	13 Mar 2017	22 Apr 2017	15 Mar 2017
BH101_1.5-1.6	SE162924.002	LB120283	09 Mar 2017	10 Mar 2017	23 Mar 2017	13 Mar 2017	22 Apr 2017	15 Mar 2017
BH102_0.5-0.6	SE162924.003	LB120283	09 Mar 2017	10 Mar 2017	23 Mar 2017	13 Mar 2017	22 Apr 2017	15 Mar 2017
BH103_0.2-0.3	SE162924.004	LB120283	09 Mar 2017	10 Mar 2017	23 Mar 2017	13 Mar 2017	22 Apr 2017	15 Mar 2017
BH103_1.9-2.0	SE162924.005	LB120283	09 Mar 2017	10 Mar 2017	23 Mar 2017	13 Mar 2017	22 Apr 2017	15 Mar 2017
BH104_0.6-0.7	SE162924.006	LB120283	09 Mar 2017	10 Mar 2017	23 Mar 2017	13 Mar 2017	22 Apr 2017	15 Mar 2017
BH104_1.9-2.0	SE162924.007	LB120283	09 Mar 2017	10 Mar 2017	23 Mar 2017	13 Mar 2017	22 Apr 2017	15 Mar 2017
BH105_0.1-0.2	SE162924.008	LB120283	09 Mar 2017	10 Mar 2017	23 Mar 2017	13 Mar 2017	22 Apr 2017	15 Mar 2017
BH105_2.7-2.8	SE162924.009	LB120283	09 Mar 2017	10 Mar 2017	23 Mar 2017	13 Mar 2017	22 Apr 2017	15 Mar 2017
BH106_0.2-0.3	SE162924.010	LB120283	09 Mar 2017	10 Mar 2017	23 Mar 2017	13 Mar 2017	22 Apr 2017	15 Mar 2017
BH106_1.5-1.6	SE162924.011	LB120283	09 Mar 2017	10 Mar 2017	23 Mar 2017	13 Mar 2017	22 Apr 2017	15 Mar 2017
BH107_0.7-0.8	SE162924.012	LB120283	09 Mar 2017	10 Mar 2017	23 Mar 2017	13 Mar 2017	22 Apr 2017	15 Mar 2017
BH108_0.4-0.5	SE162924.013	LB120283	09 Mar 2017	10 Mar 2017	23 Mar 2017	13 Mar 2017	22 Apr 2017	15 Mar 2017
QD1	SE162924.014	LB120283	09 Mar 2017	10 Mar 2017	23 Mar 2017	13 Mar 2017	22 Apr 2017	15 Mar 2017
TS1	SE162924.015	LB120283	09 Mar 2017	10 Mar 2017	23 Mar 2017	13 Mar 2017	22 Apr 2017	15 Mar 2017
TB1	SE162924.016	LB120283	09 Mar 2017	10 Mar 2017	23 Mar 2017	13 Mar 2017	22 Apr 2017	15 Mar 2017

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	SE162924.017	LB120292	09 Mar 2017	10 Mar 2017	16 Mar 2017	13 Mar 2017	22 Apr 2017	14 Mar 2017
QR1B	SE162924.018	LB120292	09 Mar 2017	10 Mar 2017	16 Mar 2017	13 Mar 2017	22 Apr 2017	14 Mar 2017

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

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

OC Pesticides in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH101_0.6-0.7	SE162924.001	%	60 - 130%	82
	BH102_0.5-0.6	SE162924.003	%	60 - 130%	79
	BH103_0.2-0.3	SE162924.004	%	60 - 130%	79
	BH104_0.6-0.7	SE162924.006	%	60 - 130%	80
	BH105_0.1-0.2	SE162924.008	%	60 - 130%	75
	BH106_0.2-0.3	SE162924.010	%	60 - 130%	78
	BH107_0.7-0.8	SE162924.012	%	60 - 130%	85
	BH108_0.4-0.5	SE162924.013	%	60 - 130%	87

OP Pesticides in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH101_0.6-0.7	SE162924.001	%	60 - 130%	82
	BH102_0.5-0.6	SE162924.003	%	60 - 130%	100
	BH103_0.2-0.3	SE162924.004	%	60 - 130%	102
	BH104_0.6-0.7	SE162924.006	%	60 - 130%	82
	BH105_0.1-0.2	SE162924.008	%	60 - 130%	100
	BH106_0.2-0.3	SE162924.010	%	60 - 130%	82
	BH107_0.7-0.8	SE162924.012	%	60 - 130%	96
	BH108_0.4-0.5	SE162924.013	%	60 - 130%	100
d14-p-terphenyl (Surrogate)	BH101_0.6-0.7	SE162924.001	%	60 - 130%	72
	BH102_0.5-0.6	SE162924.003	%	60 - 130%	96
	BH103_0.2-0.3	SE162924.004	%	60 - 130%	92
	BH104_0.6-0.7	SE162924.006	%	60 - 130%	72
	BH105_0.1-0.2	SE162924.008	%	60 - 130%	98
	BH106_0.2-0.3	SE162924.010	%	60 - 130%	70
	BH107_0.7-0.8	SE162924.012	%	60 - 130%	96
	BH108_0.4-0.5	SE162924.013	%	60 - 130%	88

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH101_0.6-0.7	SE162924.001	%	70 - 130%	82
	BH101_1.5-1.6	SE162924.002	%	70 - 130%	82
	BH102_0.5-0.6	SE162924.003	%	70 - 130%	100
	BH103_0.2-0.3	SE162924.004	%	70 - 130%	102
	BH103_1.9-2.0	SE162924.005	%	70 - 130%	92
	BH104_0.6-0.7	SE162924.006	%	70 - 130%	82
	BH104_1.9-2.0	SE162924.007	%	70 - 130%	98
	BH105_0.1-0.2	SE162924.008	%	70 - 130%	100
	BH105_2.7-2.8	SE162924.009	%	70 - 130%	116
	BH106_0.2-0.3	SE162924.010	%	70 - 130%	82
	BH106_1.5-1.6	SE162924.011	%	70 - 130%	90
	BH107_0.7-0.8	SE162924.012	%	70 - 130%	96
	BH108_0.4-0.5	SE162924.013	%	70 - 130%	100
d14-p-terphenyl (Surrogate)	BH101_0.6-0.7	SE162924.001	%	70 - 130%	72
	BH101_1.5-1.6	SE162924.002	%	70 - 130%	84
	BH102_0.5-0.6	SE162924.003	%	70 - 130%	96
	BH103_0.2-0.3	SE162924.004	%	70 - 130%	92
	BH103_1.9-2.0	SE162924.005	%	70 - 130%	114
	BH104_0.6-0.7	SE162924.006	%	70 - 130%	72
	BH104_1.9-2.0	SE162924.007	%	70 - 130%	94
	BH105_0.1-0.2	SE162924.008	%	70 - 130%	98
	BH105_2.7-2.8	SE162924.009	%	70 - 130%	116
	BH106_0.2-0.3	SE162924.010	%	70 - 130%	70
	BH106_1.5-1.6	SE162924.011	%	70 - 130%	78
	BH107_0.7-0.8	SE162924.012	%	70 - 130%	96
	BH108_0.4-0.5	SE162924.013	%	70 - 130%	88
d5-nitrobenzene (Surrogate)	BH101_0.6-0.7	SE162924.001	%	70 - 130%	82
	BH101_1.5-1.6	SE162924.002	%	70 - 130%	84
	BH102_0.5-0.6	SE162924.003	%	70 - 130%	94
	BH103_0.2-0.3	SE162924.004	%	70 - 130%	92
	BH103_1.9-2.0	SE162924.005	%	70 - 130%	104
	BH104_0.6-0.7	SE162924.006	%	70 - 130%	74

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d5-nitrobenzene (Surrogate)	BH104_1.9-2.0	SE162924.007	%	70 - 130%	88
	BH105_0.1-0.2	SE162924.008	%	70 - 130%	92
	BH105_2.7-2.8	SE162924.009	%	70 - 130%	108
	BH106_0.2-0.3	SE162924.010	%	70 - 130%	72
	BH106_1.5-1.6	SE162924.011	%	70 - 130%	96
	BH107_0.7-0.8	SE162924.012	%	70 - 130%	94
	BH108_0.4-0.5	SE162924.013	%	70 - 130%	94

PCBs in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH101_0.6-0.7	SE162924.001	%	60 - 130%	82
	BH102_0.5-0.6	SE162924.003	%	60 - 130%	79
	BH103_0.2-0.3	SE162924.004	%	60 - 130%	79
	BH104_0.6-0.7	SE162924.006	%	60 - 130%	80
	BH105_0.1-0.2	SE162924.008	%	60 - 130%	75
	BH106_0.2-0.3	SE162924.010	%	60 - 130%	78
	BH107_0.7-0.8	SE162924.012	%	60 - 130%	85
	BH108_0.4-0.5	SE162924.013	%	60 - 130%	87

VOC's in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH101_0.6-0.7	SE162924.001	%	60 - 130%	79
	BH101_1.5-1.6	SE162924.002	%	60 - 130%	85
	BH102_0.5-0.6	SE162924.003	%	60 - 130%	79
	BH103_0.2-0.3	SE162924.004	%	60 - 130%	97
	BH103_1.9-2.0	SE162924.005	%	60 - 130%	84
	BH104_0.6-0.7	SE162924.006	%	60 - 130%	87
	BH104_1.9-2.0	SE162924.007	%	60 - 130%	85
	BH105_0.1-0.2	SE162924.008	%	60 - 130%	86
	BH105_2.7-2.8	SE162924.009	%	60 - 130%	89
	BH106_0.2-0.3	SE162924.010	%	60 - 130%	96
	BH106_1.5-1.6	SE162924.011	%	60 - 130%	88
	BH107_0.7-0.8	SE162924.012	%	60 - 130%	82
	BH108_0.4-0.5	SE162924.013	%	60 - 130%	82
	QD1	SE162924.014	%	60 - 130%	84
	TS1	SE162924.015	%	60 - 130%	90
	TB1	SE162924.016	%	60 - 130%	97
d4-1,2-dichloroethane (Surrogate)	BH101_0.6-0.7	SE162924.001	%	60 - 130%	73
	BH101_1.5-1.6	SE162924.002	%	60 - 130%	76
	BH102_0.5-0.6	SE162924.003	%	60 - 130%	98
	BH103_0.2-0.3	SE162924.004	%	60 - 130%	87
	BH103_1.9-2.0	SE162924.005	%	60 - 130%	78
	BH104_0.6-0.7	SE162924.006	%	60 - 130%	76
	BH104_1.9-2.0	SE162924.007	%	60 - 130%	78
	BH105_0.1-0.2	SE162924.008	%	60 - 130%	76
	BH105_2.7-2.8	SE162924.009	%	60 - 130%	82
	BH106_0.2-0.3	SE162924.010	%	60 - 130%	89
	BH106_1.5-1.6	SE162924.011	%	60 - 130%	83
	BH107_0.7-0.8	SE162924.012	%	60 - 130%	76
	BH108_0.4-0.5	SE162924.013	%	60 - 130%	79
	QD1	SE162924.014	%	60 - 130%	81
	TS1	SE162924.015	%	60 - 130%	86
	TB1	SE162924.016	%	60 - 130%	93
d8-toluene (Surrogate)	BH101_0.6-0.7	SE162924.001	%	60 - 130%	70
	BH101_1.5-1.6	SE162924.002	%	60 - 130%	73
	BH102_0.5-0.6	SE162924.003	%	60 - 130%	78
	BH103_0.2-0.3	SE162924.004	%	60 - 130%	86
	BH103_1.9-2.0	SE162924.005	%	60 - 130%	74
	BH104_0.6-0.7	SE162924.006	%	60 - 130%	71
	BH104_1.9-2.0	SE162924.007	%	60 - 130%	74
	BH105_0.1-0.2	SE162924.008	%	60 - 130%	73
	BH105_2.7-2.8	SE162924.009	%	60 - 130%	79

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 %
d8-toluene (Surrogate)	BH106_0.2-0.3	SE162924.010	%	60 - 130%	88
	BH106_1.5-1.6	SE162924.011	%	60 - 130%	81
	BH107_0.7-0.8	SE162924.012	%	60 - 130%	71
	BH108_0.4-0.5	SE162924.013	%	60 - 130%	73
	QD1	SE162924.014	%	60 - 130%	73
	TS1	SE162924.015	%	60 - 130%	84
	TB1	SE162924.016	%	60 - 130%	90
Dibromofluoromethane (Surrogate)	BH101_0.6-0.7	SE162924.001	%	60 - 130%	79
	BH101_1.5-1.6	SE162924.002	%	60 - 130%	93
	BH102_0.5-0.6	SE162924.003	%	60 - 130%	77
	BH103_0.2-0.3	SE162924.004	%	60 - 130%	78
	BH103_1.9-2.0	SE162924.005	%	60 - 130%	98
	BH104_0.6-0.7	SE162924.006	%	60 - 130%	88
	BH104_1.9-2.0	SE162924.007	%	60 - 130%	87
	BH105_0.1-0.2	SE162924.008	%	60 - 130%	98
	BH105_2.7-2.8	SE162924.009	%	60 - 130%	70
	BH106_0.2-0.3	SE162924.010	%	60 - 130%	78
	BH106_1.5-1.6	SE162924.011	%	60 - 130%	71
	BH107_0.7-0.8	SE162924.012	%	60 - 130%	77
	BH108_0.4-0.5	SE162924.013	%	60 - 130%	92
	QD1	SE162924.014	%	60 - 130%	90
	TS1	SE162924.015	%	60 - 130%	71
	TB1	SE162924.016	%	60 - 130%	77

VOCs in Water

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	QR1	SE162924.017	%	40 - 130%	115
	QR1B	SE162924.018	%	40 - 130%	114
d4-1,2-dichloroethane (Surrogate)	QR1	SE162924.017	%	40 - 130%	85
	QR1B	SE162924.018	%	40 - 130%	83
d8-toluene (Surrogate)	QR1	SE162924.017	%	40 - 130%	86
	QR1B	SE162924.018	%	40 - 130%	85
Dibromofluoromethane (Surrogate)	QR1	SE162924.017	%	40 - 130%	85
	QR1B	SE162924.018	%	40 - 130%	83

Volatile Petroleum Hydrocarbons in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH101_0.6-0.7	SE162924.001	%	60 - 130%	79
	BH101_1.5-1.6	SE162924.002	%	60 - 130%	85
	BH102_0.5-0.6	SE162924.003	%	60 - 130%	79
	BH103_0.2-0.3	SE162924.004	%	60 - 130%	97
	BH103_1.9-2.0	SE162924.005	%	60 - 130%	84
	BH104_0.6-0.7	SE162924.006	%	60 - 130%	87
	BH104_1.9-2.0	SE162924.007	%	60 - 130%	85
	BH105_0.1-0.2	SE162924.008	%	60 - 130%	86
	BH105_2.7-2.8	SE162924.009	%	60 - 130%	89
	BH106_0.2-0.3	SE162924.010	%	60 - 130%	96
	BH106_1.5-1.6	SE162924.011	%	60 - 130%	88
	BH107_0.7-0.8	SE162924.012	%	60 - 130%	82
	BH108_0.4-0.5	SE162924.013	%	60 - 130%	82
	QD1	SE162924.014	%	60 - 130%	84
d4-1,2-dichloroethane (Surrogate)	BH101_0.6-0.7	SE162924.001	%	60 - 130%	73
	BH101_1.5-1.6	SE162924.002	%	60 - 130%	76
	BH102_0.5-0.6	SE162924.003	%	60 - 130%	98
	BH103_0.2-0.3	SE162924.004	%	60 - 130%	87
	BH103_1.9-2.0	SE162924.005	%	60 - 130%	78
	BH104_0.6-0.7	SE162924.006	%	60 - 130%	76
	BH104_1.9-2.0	SE162924.007	%	60 - 130%	78
	BH105_0.1-0.2	SE162924.008	%	60 - 130%	76
	BH105_2.7-2.8	SE162924.009	%	60 - 130%	82
	BH106_0.2-0.3	SE162924.010	%	60 - 130%	89
	BH106_1.5-1.6	SE162924.011	%	60 - 130%	83

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 %
d4-1,2-dichloroethane (Surrogate)	BH107_0.7-0.8	SE162924.012	%	60 - 130%	76
	BH108_0.4-0.5	SE162924.013	%	60 - 130%	79
	QD1	SE162924.014	%	60 - 130%	81
d8-toluene (Surrogate)	BH101_0.6-0.7	SE162924.001	%	60 - 130%	70
	BH101_1.5-1.6	SE162924.002	%	60 - 130%	73
	BH102_0.5-0.6	SE162924.003	%	60 - 130%	78
	BH103_0.2-0.3	SE162924.004	%	60 - 130%	86
	BH103_1.9-2.0	SE162924.005	%	60 - 130%	74
	BH104_0.6-0.7	SE162924.006	%	60 - 130%	71
	BH104_1.9-2.0	SE162924.007	%	60 - 130%	74
	BH105_0.1-0.2	SE162924.008	%	60 - 130%	73
	BH105_2.7-2.8	SE162924.009	%	60 - 130%	79
	BH106_0.2-0.3	SE162924.010	%	60 - 130%	88
	BH106_1.5-1.6	SE162924.011	%	60 - 130%	81
	BH107_0.7-0.8	SE162924.012	%	60 - 130%	71
	BH108_0.4-0.5	SE162924.013	%	60 - 130%	73
	QD1	SE162924.014	%	60 - 130%	73
Dibromofluoromethane (Surrogate)	BH101_0.6-0.7	SE162924.001	%	60 - 130%	79
	BH101_1.5-1.6	SE162924.002	%	60 - 130%	93
	BH102_0.5-0.6	SE162924.003	%	60 - 130%	77
	BH103_0.2-0.3	SE162924.004	%	60 - 130%	78
	BH103_1.9-2.0	SE162924.005	%	60 - 130%	98
	BH104_0.6-0.7	SE162924.006	%	60 - 130%	88
	BH104_1.9-2.0	SE162924.007	%	60 - 130%	87
	BH105_0.1-0.2	SE162924.008	%	60 - 130%	98
	BH105_2.7-2.8	SE162924.009	%	60 - 130%	70
	BH106_0.2-0.3	SE162924.010	%	60 - 130%	78
	BH106_1.5-1.6	SE162924.011	%	60 - 130%	71
	BH107_0.7-0.8	SE162924.012	%	60 - 130%	77
	BH108_0.4-0.5	SE162924.013	%	60 - 130%	92
	QD1	SE162924.014	%	60 - 130%	90

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	QR1	SE162924.017	%	40 - 130%	115
	QR1B	SE162924.018	%	40 - 130%	114
d4-1,2-dichloroethane (Surrogate)	QR1	SE162924.017	%	60 - 130%	85
	QR1B	SE162924.018	%	60 - 130%	83
d8-toluene (Surrogate)	QR1	SE162924.017	%	40 - 130%	86
	QR1B	SE162924.018	%	40 - 130%	85
Dibromofluoromethane (Surrogate)	QR1	SE162924.017	%	40 - 130%	85
	QR1B	SE162924.018	%	40 - 130%	83

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

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

Mercury (dissolved) in Water

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

Sample Number	Parameter	Units	LOR	Result
LB120504.001	Mercury	mg/L	0.0001	<0.0001

Mercury in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB120491.001	Mercury	mg/kg	0.05	<0.05

OC Pesticides in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB120317.001		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)	%	-	81

OP Pesticides in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB120317.001		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)	%	-	72
		d14-p-terphenyl (Surrogate)	%	-	74

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB120317.001	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

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
LB120317.001		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)	%	-	72
		d14-p-terphenyl (Surrogate)	%	-	74

PCBs in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB120317.001		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)	%	-	81

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

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

Sample Number	Parameter	Units	LOR	Result
LB120475.001	Arsenic, As	mg/kg	3	<3
	Cadmium, Cd	mg/kg	0.3	<0.3
	Chromium, Cr	mg/kg	0.3	<0.3
	Copper, Cu	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Nickel, Ni	mg/kg	0.5	<0.5
	Zinc, Zn	mg/kg	0.5	<0.5

Trace Metals (Dissolved) in Water by ICPMS

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

Sample Number	Parameter	Units	LOR	Result
LB120297.001	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
LB120317.001	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

TRH (Total Recoverable Hydrocarbons) in Water

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

Sample Number	Parameter	Units	LOR	Result
LB120279.001	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

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.

VOC's in Soil (continued)

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

Sample Number		Parameter	Units	LOR	Result
LB120283.001	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)	%	-	77
		d4-1,2-dichloroethane (Surrogate)	%	-	82
		d8-toluene (Surrogate)	%	-	80
		Bromofluorobenzene (Surrogate)	%	-	89
	Totals	Total BTEX	mg/kg	0.6	<0.6

VOCs in Water

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

Sample Number		Parameter	Units	LOR	Result
LB120292.001	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)	%	-	82
		d4-1,2-dichloroethane (Surrogate)	%	-	83
		d8-toluene (Surrogate)	%	-	85
		Bromofluorobenzene (Surrogate)	%	-	111

Volatile Petroleum Hydrocarbons in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB120283.001		TRH C6-C9	mg/kg	20	<20
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	77
		d4-1,2-dichloroethane (Surrogate)	%	-	82
		d8-toluene (Surrogate)	%	-	80

Volatile Petroleum Hydrocarbons in Water

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

Sample Number		Parameter	Units	LOR	Result
LB120292.001		TRH C6-C9	µg/L	40	<40
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	82
		d4-1,2-dichloroethane (Surrogate)	%	-	83
		d8-toluene (Surrogate)	%	-	85
		Bromofluorobenzene (Surrogate)	%	-	111

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 %
SE162928.013	LB120504.014	Mercury	µg/L	0.0001	-0.0344	-0.0308	168	0
SE162994.083	LB120504.016	Mercury	µg/L	0.0001	<0.0001	<0.0001	189	0

Mercury in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE162924.005	LB120491.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE162924.014	LB120491.024	Mercury	mg/kg	0.05	0.16	0.14	63	15

Moisture Content

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE162877.005	LB120406.011	% Moisture	%w/w	0.5	14	14	37	1
SE162904.001	LB120406.022	% Moisture	%w/w	0.5	6.7	6.8	45	0
SE162908.006	LB120406.033	% Moisture	%w/w	0.5	65	66	32	0
SE162924.010	LB120406.044	% Moisture	%w/w	0.5	5.1	5.6	49	9
SE162924.016	LB120406.050	% Moisture	%w/w	0.5	<0.5	<0.5	200	0

OC Pesticides in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE162924.010	LB120317.026		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
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.12	0.112	30	4

OP Pesticides in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE162924.010	LB120317.026	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	200	0
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	0	200	0
		Bromophos Ethyl	mg/kg	0.2	<0.2	0.01	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

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 %
SE162924.010	LB120317.026	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.45	30	9
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.41	30	16

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE162873.003	LB120317.025		Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthylene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluorene	mg/kg	0.1	<0.1	<0.1	200	0
			Phenanthrene	mg/kg	0.1	<0.1	<0.1	200	0
			Anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Chrysene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	134	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	175	0
			Total PAH (18)	mg/kg	0.8	<0.8	<0.8	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.6	30	7
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	2
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	30	9
SE162924.010	LB120317.026		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	0.3	0.26	67	7
			Acenaphthene	mg/kg	0.1	<0.1	0	200	0
			Fluorene	mg/kg	0.1	<0.1	0.01	200	0
			Phenanthrene	mg/kg	0.1	0.4	0.25	63	36
			Anthracene	mg/kg	0.1	0.2	0.16	84	27
			Fluoranthene	mg/kg	0.1	0.8	0.65	44	16
			Pyrene	mg/kg	0.1	1.3	0.99	39	26
			Benzo(a)anthracene	mg/kg	0.1	0.5	0.5	50	2
			Chrysene	mg/kg	0.1	0.7	0.7	44	1
			Benzo(b&j)fluoranthene	mg/kg	0.1	1.0	1.03	40	1
			Benzo(k)fluoranthene	mg/kg	0.1	0.6	0.47	49	23
			Benzo(a)pyrene	mg/kg	0.1	1.1	1.1	39	2
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	1.2	1.15	38	6
			Dibenzo(ah)anthracene	mg/kg	0.1	0.2	0.13	97	27
			Benzo(ghi)perylene	mg/kg	0.1	1.5	1.41	37	8
			Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	1.6	1.5721	23	2
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	1.6	1.5721	29	2
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	1.6	1.5721	23	2
			Total PAH (18)	mg/kg	0.8	9.6	8.86	39	8
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.43	30	18
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.45	30	9
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.41	30	16

PCBs in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE162924.010	LB120317.024	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

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

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

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

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

PCBs in Soil (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE162924.010	LB120317.024		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	0.112	30	4

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

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE162924.010	LB120475.014	Arsenic, As	mg/kg	3	11	10	39	16
		Cadmium, Cd	mg/kg	0.3	0.4	0.4	107	17
		Chromium, Cr	mg/kg	0.3	10	15	34	34 ②
		Copper, Cu	mg/kg	0.5	51	58	31	13
		Lead, Pb	mg/kg	1	85	72	31	17
		Nickel, Ni	mg/kg	0.5	9.4	11	35	15
		Zinc, Zn	mg/kg	0.5	130	130	32	4
SE162928.008	LB120475.027	Arsenic, As	mg/kg	3	5.20247247055	5.6555772673	48	8
		Cadmium, Cd	mg/kg	0.3	0.84764851760	0.8211744633	66	3
		Chromium, Cr	mg/kg	0.3	13.87647152944	4.8511084356	33	7
		Copper, Cu	mg/kg	0.5	33.26202980354	4.6189916831	31	2
		Lead, Pb	mg/kg	1	18.2353427451	8.755351287	31	0
		Nickel, Ni	mg/kg	0.5	12.40678980394	4.0130186136	31	4
		Zinc, Zn	mg/kg	0.5	62.156072941	51.026198811	31	4

Trace Metals (Dissolved) in Water by ICPMS

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE162928.013	LB120297.009	Arsenic, As	µg/L	1	-0.012	0.01	200	0
		Cadmium, Cd	µg/L	0.1	-0.002	-0.001	200	0
		Chromium, Cr	µg/L	1	-0.02	-0.017	200	0
		Copper, Cu	µg/L	1	-0.07	-0.054	200	0
		Lead, Pb	µg/L	1	-0.379	-0.395	200	0
		Nickel, Ni	µg/L	1	-0.011	0.001	200	0
		Zinc, Zn	µg/L	5	-0.02	0.096	200	0

TRH (Total Recoverable Hydrocarbons) in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE162873.003	LB120317.026		TRH C10-C14	mg/kg	20	<20	<20	200	0
			TRH C15-C28	mg/kg	45	120	110	70	5
			TRH C29-C36	mg/kg	45	170	160	57	6
			TRH C37-C40	mg/kg	100	<100	<100	200	0
			TRH C10-C36 Total	mg/kg	110	290	270	69	6
			TRH C10-C40 Total	mg/kg	210	260	240	115	7
		TRH F Bands	TRH >C10-C16 (F2)	mg/kg	25	<25	<25	200	0
			TRH >C10-C16 (F2) - Naphthalene	mg/kg	25	<25	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	260	240	66	7
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0
SE162924.010	LB120317.025		TRH C10-C14	mg/kg	20	<20	0	200	0
			TRH C15-C28	mg/kg	45	67	71	95	6
			TRH C29-C36	mg/kg	45	150	166	58	9
			TRH C37-C40	mg/kg	100	<100	0	200	0
			TRH C10-C36 Total	mg/kg	110	220	237	78	8
			TRH C10-C40 Total	mg/kg	210	<210	186	147	0
		TRH F Bands	TRH >C10-C16 (F2)	mg/kg	25	<25	0	200	0
			TRH >C10-C16 (F2) - Naphthalene	mg/kg	25	<25	0	200	0
			TRH >C16-C34 (F3)	mg/kg	90	170	186	80	8
			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

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

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

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

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

VOC's in Soil (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE162924.010	LB120283.014	Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
		Aromatic	Toluene	mg/kg	0.1	<0.1	<0.1	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	3.9	3.7	50	7
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.5	4.4	50	3
			d8-toluene (Surrogate)	mg/kg	-	4.4	4.2	50	5
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.8	4.5	50	6
		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
SE162924.014	LB120283.022	Monocyclic	Benzene	mg/kg	0.1	<0.1	0	200	0
		Aromatic	Toluene	mg/kg	0.1	<0.1	0.05	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	0.02	200	0
			m/p-xylene	mg/kg	0.2	<0.2	0.06	200	0
			o-xylene	mg/kg	0.1	<0.1	0.02	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	0.05	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.5	3.99	50	12
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.0	3.84	50	5
			d8-toluene (Surrogate)	mg/kg	-	3.7	3.59	50	2
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.2	4.18	50	0
		Totals	Total Xylenes*	mg/kg	0.3	<0.3	0.08	200	0
			Total BTEX	mg/kg	0.6	<0.6	0.15	200	0

VOCs in Water

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE162924.017	LB120292.011	Monocyclic	Benzene	µg/L	0.5	<0.5	0.05	200	0
		Aromatic	Toluene	µg/L	0.5	1.2	0.83	80	36
			Ethylbenzene	µg/L	0.5	<0.5	0.03	200	0
			m/p-xylene	µg/L	1	<1	0.11	200	0
			o-xylene	µg/L	0.5	<0.5	0.05	200	0
		Polycyclic	Naphthalene	µg/L	0.5	<0.5	0.04	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.3	4.18	30	2
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.3	4.16	30	2
			d8-toluene (Surrogate)	µg/L	-	4.3	3.67	30	16
			Bromofluorobenzene (Surrogate)	µg/L	-	5.7	4.98	30	14

Volatile Petroleum Hydrocarbons in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE162924.010	LB120283.014		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	-	3.9	3.7	30	7
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.5	4.4	30	3
			d8-toluene (Surrogate)	mg/kg	-	4.4	4.2	30	5
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.8	4.5	30	6
		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
SE162924.014	LB120283.022		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	-	4.5	3.99	30	12
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.0	3.84	30	5
			d8-toluene (Surrogate)	mg/kg	-	3.7	3.59	30	2
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.2	4.18	30	0
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	0	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	-0.15	200	0

Volatile Petroleum Hydrocarbons in Water

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE162924.017	LB120292.011		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	-	4.3	4.18	30	2

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

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

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

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

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE162924.017	LB120292.011	Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.3	4.16	30	2
			d8-toluene (Surrogate)	µg/L	-	4.3	3.67	30	16
			Bromofluorobenzene (Surrogate)	µg/L	-	5.7	4.98	30	14
		VPH F Bands	Benzene (F0)	µg/L	0.5	<0.5	0.05	200	0
			TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	-1.07	200	0

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

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

Mercury in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB120491.002	Mercury	mg/kg	0.05	0.20	0.2	70 - 130	99

OC Pesticides in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB120317.002		Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	89
		Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	94
		Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	114
		Dieldrin	mg/kg	0.2	<0.2	0.2	60 - 140	89
		Endrin	mg/kg	0.2	<0.2	0.2	60 - 140	97
		p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	102
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.12	0.15	40 - 130	79

OP Pesticides in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB120317.002		Dichlorvos	mg/kg	0.5	2.5	2	60 - 140	124
		Diazinon (Dimpylate)	mg/kg	0.5	2.5	2	60 - 140	124
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	1.9	2	60 - 140	97
		Ethion	mg/kg	0.2	2.2	2	60 - 140	110
	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.6	0.5	40 - 130	118
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	108

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB120317.002		Naphthalene	mg/kg	0.1	4.3	4	60 - 140	107
		Acenaphthylene	mg/kg	0.1	4.2	4	60 - 140	104
		Acenaphthene	mg/kg	0.1	4.3	4	60 - 140	109
		Phenanthrene	mg/kg	0.1	4.3	4	60 - 140	106
		Anthracene	mg/kg	0.1	4.4	4	60 - 140	111
		Fluoranthene	mg/kg	0.1	3.4	4	60 - 140	84
		Pyrene	mg/kg	0.1	4.4	4	60 - 140	111
		Benzo(a)pyrene	mg/kg	0.1	3.6	4	60 - 140	90
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.6	0.5	40 - 130	112
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.6	0.5	40 - 130	118
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	108

PCBs in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB120317.002	Arochlor 1260	mg/kg	0.2	0.5	0.4	60 - 140	119

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

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB120475.002	Arsenic, As	mg/kg	3	47	50	80 - 120	95
	Cadmium, Cd	mg/kg	0.3	48	50	80 - 120	97
	Chromium, Cr	mg/kg	0.3	48	50	80 - 120	97
	Copper, Cu	mg/kg	0.5	47	50	80 - 120	95
	Lead, Pb	mg/kg	1	49	50	80 - 120	98
	Nickel, Ni	mg/kg	0.5	49	50	80 - 120	98
	Zinc, Zn	mg/kg	0.5	48	50	80 - 120	95

Trace Metals (Dissolved) in Water by ICPMS

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB120297.002	Arsenic, As	µg/L	1	21	20	80 - 120	106
	Cadmium, Cd	µg/L	0.1	22	20	80 - 120	109
	Chromium, Cr	µg/L	1	22	20	80 - 120	109
	Copper, Cu	µg/L	1	22	20	80 - 120	109
	Lead, Pb	µg/L	1	22	20	80 - 120	111
	Nickel, Ni	µg/L	1	21	20	80 - 120	106
	Zinc, Zn	µg/L	5	21	20	80 - 120	107

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

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

TRH (Total Recoverable Hydrocarbons) in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB120317.002		TRH C10-C14	mg/kg	20	38	40	60 - 140	95
		TRH C15-C28	mg/kg	45	<45	40	60 - 140	103
		TRH C29-C36	mg/kg	45	<45	40	60 - 140	93
	TRH F Bands	TRH >C10-C16 (F2)	mg/kg	25	39	40	60 - 140	98
		TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	108
		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 %
LB120279.002		TRH C10-C14	µg/L	50	1000	1200	60 - 140	85
		TRH C15-C28	µg/L	200	1200	1200	60 - 140	101
		TRH C29-C36	µg/L	200	1400	1200	60 - 140	117
	TRH F Bands	TRH >C10-C16 (F2)	µg/L	60	1100	1200	60 - 140	93
		TRH >C16-C34 (F3)	µg/L	500	1300	1200	60 - 140	110
		TRH >C34-C40 (F4)	µg/L	500	730	600	60 - 140	122

VOC's in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB120283.002	Monocyclic	Benzene	mg/kg	0.1	2.3	2.9	60 - 140	78
	Aromatic	Toluene	mg/kg	0.1	2.3	2.9	60 - 140	81
		Ethylbenzene	mg/kg	0.1	2.6	2.9	60 - 140	89
		m/p-xylene	mg/kg	0.2	5.2	5.8	60 - 140	89
		o-xylene	mg/kg	0.1	2.6	2.9	60 - 140	88
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.3	5	60 - 140	85
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.6	5	60 - 140	92
		d8-toluene (Surrogate)	mg/kg	-	4.6	5	60 - 140	92
		Bromofluorobenzene (Surrogate)	mg/kg	-	5.1	5	60 - 140	101

VOCs in Water

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB120292.002	Monocyclic	Benzene	µg/L	0.5	51	45.45	60 - 140	112
	Aromatic	Toluene	µg/L	0.5	51	45.45	60 - 140	112
		Ethylbenzene	µg/L	0.5	51	45.45	60 - 140	112
		m/p-xylene	µg/L	1	100	90.9	60 - 140	111
		o-xylene	µg/L	0.5	51	45.45	60 - 140	112
	Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.7	5	60 - 140	93
		d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.0	5	60 - 140	99
		d8-toluene (Surrogate)	µg/L	-	4.8	5	60 - 140	96
		Bromofluorobenzene (Surrogate)	µg/L	-	4.3	5	60 - 140	86

Volatile Petroleum Hydrocarbons in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB120283.002		TRH C6-C10	mg/kg	25	<25	24.65	60 - 140	99
		TRH C6-C9	mg/kg	20	21	23.2	60 - 140	90
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.3	5	60 - 140	85
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.6	5	60 - 140	92
		d8-toluene (Surrogate)	mg/kg	-	4.6	5	60 - 140	92
		Bromofluorobenzene (Surrogate)	mg/kg	-	5.1	5	60 - 140	101
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	7.25	60 - 140	130

Volatile Petroleum Hydrocarbons in Water

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB120292.002		TRH C6-C10	µg/L	50	940	946.63	60 - 140	99
		TRH C6-C9	µg/L	40	760	818.71	60 - 140	93
	Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	5.5	5	60 - 140	110
		d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.7	5	60 - 140	113
		d8-toluene (Surrogate)	µg/L	-	5.6	5	60 - 140	112
		Bromofluorobenzene (Surrogate)	µg/L	-	5.1	5	60 - 140	102
	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%
SE162994.083	LB120504.017	Mercury	mg/L	0.0001	0.0075	<0.0001	0.008	94

Mercury in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE162908.004	LB120491.004	Mercury	mg/kg	0.05	0.17	<0.05	0.2	71

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE162924.002	LB120317.024		Naphthalene	mg/kg	0.1	4.1	<0.1	4	102
			2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
			1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
			Acenaphthylene	mg/kg	0.1	4.0	<0.1	4	101
			Acenaphthene	mg/kg	0.1	3.9	<0.1	4	99
			Fluorene	mg/kg	0.1	<0.1	<0.1	-	-
			Phenanthrene	mg/kg	0.1	4.0	<0.1	4	101
			Anthracene	mg/kg	0.1	3.9	<0.1	4	98
			Fluoranthene	mg/kg	0.1	3.5	<0.1	4	87
			Pyrene	mg/kg	0.1	4.2	<0.1	4	104
			Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	-	-
			Chrysene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(a)pyrene	mg/kg	0.1	3.6	<0.1	4	90
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	-	-
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ	0.2	3.6	<0.2	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	3.7	<0.3	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	3.7	<0.2	-	-
			Total PAH (18)	mg/kg	0.8	31	<0.8	-	-
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.4	-	74
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	-	80
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.4	-	72

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

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE162924.001	LB120475.004	Arsenic, As	mg/kg	3	50	5	50	90
		Cadmium, Cd	mg/kg	0.3	45	0.4	50	90
		Chromium, Cr	mg/kg	0.3	58	13	50	89
		Copper, Cu	mg/kg	0.5	93	45	50	94
		Lead, Pb	mg/kg	1	720	630	50	171 ⑨
		Nickel, Ni	mg/kg	0.5	49	4.9	50	88
		Zinc, Zn	mg/kg	0.5	390	360	50	63 ⑨

Trace Metals (Dissolved) in Water by ICPMS

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE162904.005	LB120297.004	Lead, Pb	µg/L	1	22	<1	20	113

TRH (Total Recoverable Hydrocarbons) in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE162924.002	LB120317.024	TRH C10-C14	mg/kg	20	36	<20	40	90
		TRH C15-C28	mg/kg	45	<45	<45	40	93
		TRH C29-C36	mg/kg	45	<45	<45	40	93
		TRH C37-C40	mg/kg	100	<100	<100	-	-
		TRH C10-C36 Total	mg/kg	110	110	<110	-	-
		TRH C10-C40 Total	mg/kg	210	<210	<210	-	-

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	Result	Original	Spike	Recovery%
SE162924.002	LB120317.024	TRH F Bands	TRH >C10-C16 (F2)	mg/kg	25	36	<25	40	90
			TRH >C10-C16 (F2) - Naphthalene	mg/kg	25	36	<25	-	-
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	40	98
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	-	-

VOC's in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE162924.001	LB120283.004	Monocyclic Aromatic	Benzene	mg/kg	0.1	2.0	<0.1	2.9	69
			Toluene	mg/kg	0.1	2.1	<0.1	2.9	70
			Ethylbenzene	mg/kg	0.1	2.3	<0.1	2.9	77
			m/p-xylene	mg/kg	0.2	4.5	<0.2	5.8	76
			o-xylene	mg/kg	0.1	2.3	<0.1	2.9	76
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.2	4.0	-	84
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	3.7	3.7	-	74
			d8-toluene (Surrogate)	mg/kg	-	3.7	3.5	-	75
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.1	4.0	-	82
		Totals	Total Xylenes*	mg/kg	0.3	6.8	<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%
SE162927.019	LB120292.012	Monocyclic Aromatic	Benzene	µg/L	0.5		0.06	45.45	106
			Toluene	µg/L	0.5		0.08	45.45	88
			Ethylbenzene	µg/L	0.5		0.04	45.45	105
			m/p-xylene	µg/L	1		0.14	90.9	103
			o-xylene	µg/L	0.5		0.05	45.45	107
		Polycyclic	Naphthalene	µg/L	0.5		0.06	-	-
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.8	4.61	-	95
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.0	4.65	-	101
			d8-toluene (Surrogate)	µg/L	-	4.9	4.13	-	98
			Bromofluorobenzene (Surrogate)	µg/L	-	5.7	5.52	-	114

Volatile Petroleum Hydrocarbons in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE162924.001	LB120283.004		TRH C6-C10	mg/kg	25	<25	<25	24.65	90
			TRH C6-C9	mg/kg	20	<20	<20	23.2	81
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.2	4.0	-	84
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	3.7	3.7	-	74
			d8-toluene (Surrogate)	mg/kg	-	3.7	3.5	-	75
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.1	4.0	-	82
		VPH F Bands	Benzene (F0)	mg/kg	0.1	2.0	<0.1	-	-
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	7.25	128

Volatile Petroleum Hydrocarbons in Water

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

QC Sample	Sample Number		Parameter	Units	LOR	Original	Spike	Recovery%
SE162927.019	LB120292.012		TRH C6-C10	µg/L	50	0	946.63	98
			TRH C6-C9	µg/L	40	0	818.71	104
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.61	-	95
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.65	-	101
			d8-toluene (Surrogate)	µg/L	-	4.13	-	98
			Bromofluorobenzene (Surrogate)	µg/L	-	5.52	-	114
		VPH F Bands	Benzene (F0)	µg/L	0.5	0.06	-	-
			TRH C6-C10 minus BTEX (F1)	µg/L	50	-0.37	639.67	101

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

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

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

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

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

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

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

*	NATA accreditation does not cover tthe performance of this service.
-	Sample not analysed for this analyte.

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

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

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

Table QC2 - Containers, Preservation Requirements and Holding Times - Water			
Parameter	Container Volume (mL)	Preservation	Maximum Holding Time
Heavy Metals	125mL Plastic	Field filtration 0.45μm HNO_3 / 4°C	6 months
Cyanide	125mL Amber Glass	pH > 12 NaOH / 4°C	6 months
TPH (C6-C9) / BTEX / VOCs SVOCs / CHCs	4 x 43mL Glass	HCl / 4°C [1]	14 days
TPH (C10-C36) / PAH / Phenolics OCP / OPP / TDS / pH	3 x 1L Amber Glass	None / 4°C [1]	28 days

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

Table QC3 - Analytical Parameters, PQLs and Methods - Soil			
Parameter	**Unit**	**PQL**	**Method Reference**
Metals in Soil			
Arsenic - As[1]	mg / kg	1	USEPA 200.7
Cadmium - Cd[1]	mg / kg	0.5	USEPA 200.7
Chromium - Cr[1]	mg / kg	1	USEPA 200.7
Copper - Cu[1]	mg / kg	1	USEPA 200.7
Lead - Pb[1]	mg / kg	1	USEPA 200.7
Mercury - Hg[2]	mg / kg	0.1	USEPA 7471A
Nickel - Ni[1]	mg / kg	1	USEPA 200.7
Zinc - Zn[1]	mg / kg	1	USEPA 200.7
Total Petroleum Hydrocarbons (TPHs) in Soil			
C_6-C_9 fraction	mg / kg	25	USEPA 8260
C_{10}-C_{14} fraction	mg / kg	50	USEPA 8000
C_{15}-C_{28} fraction	mg / kg	100	USEPA 8000
C_{29}-C_{36} fraction	mg / kg	100	USEPA 8000
BTEX in Soil			
Benzene	mg / kg	1	USEPA 8260
Toluene	mg / kg	1	USEPA 8260
Ethylbenzene	mg / kg	1	USEPA 8260
m & p Xylene	mg / kg	2	USEPA 8260
o- Xylene	mg / kg	1	USEPA 8260
Other Organic Contaminants in Soil			
PAHs	mg / kg	0.05-0.2	USEPA 8270
CHCs	mg / kg	1	USEPA 8260
VOCs	mg / kg	1	USEPA 8260
SVOCs	mg / kg	1	USEPA 8260
OCPs	mg / kg	0.1	USEPA 8140, 8080
OPPs	mg / kg	0.1	USEPA 8140, 8080
PCBs	mg / kg	0.1	USEPA 8080
Phenolics	mg / kg	5	APHA 5530
Asbestos			
Asbestos	mg / kg	Presence / Absence	AS4964-2004

Notes:

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

Table QC4 - Analytical Parameters, PQLs and Methods - Groundwater

Parameter	Unit	PQL	Method
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 Matrix Spikes Laboratory Control Samples	Assessment is undertaken by determining the percent recovery of the known surrogate spike (SS) or addition to the sample. $\%\ Recovery = 100 \times \frac{C - A}{B}$ Where: A = Concentration of analyte determined in the original sample; B = Added Concentration; and C = Calculated Concentration.	at least 2 SS recoveries to be within 70-130% subject to matrix effects (Organics) 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 Standars	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

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

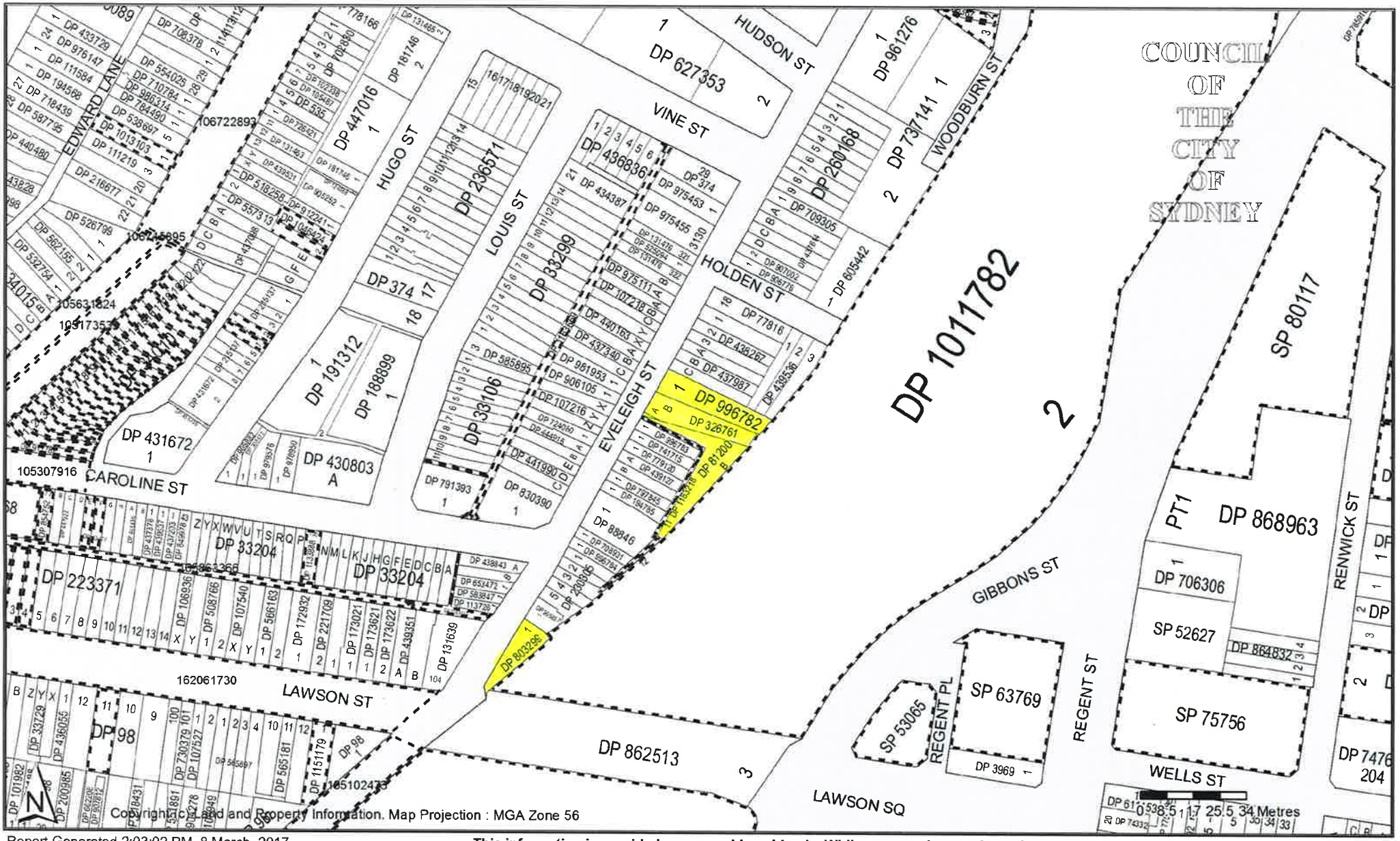
APPENDIX J
Land Title Records

NSW Land & Property Information

Cadastral Records Enquiry Report

Requested Parcel : Lot B DP 326761 **Identified Parcel** : Lot B DP 326761

Locality : REDFERN **LGA** : SYDNEY **Parish** : ALEXANDRIA **County** : CUMBERLAND



Report Generated 2:03:02 PM, 8 March, 2017

This information is provided as a searching aid only. While every endeavour is made to ensure the current cadastral pattern is accurately reflected, the Registrar General cannot guarantee the information provided. For all ACTIVITY PRIOR to SEPT 2002 you must refer to the RGs Charting and Reference Maps.

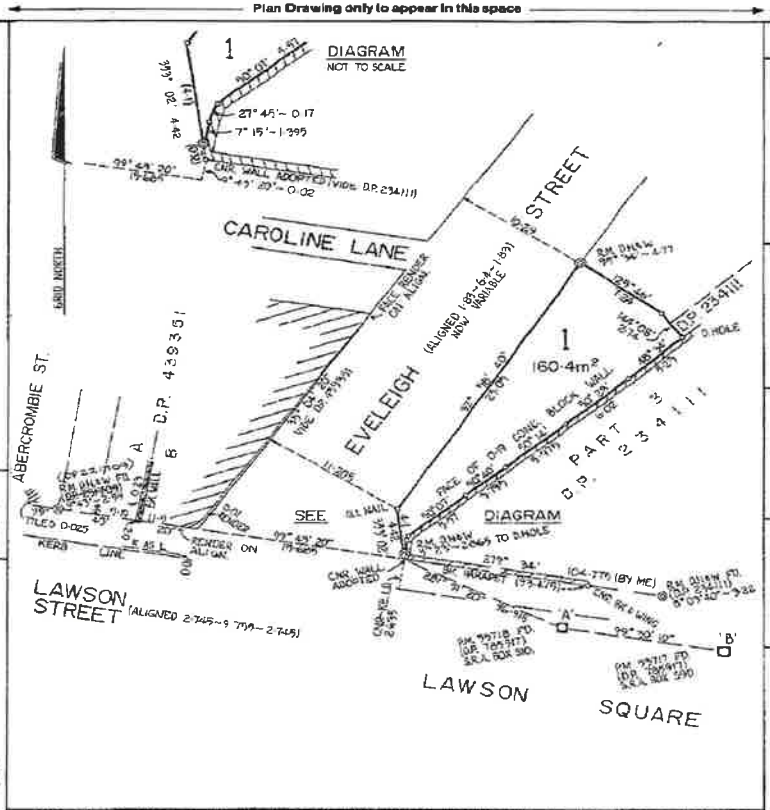
PLAN FORM 1

Plan Drawing only to appear in this space

*OFFICE USE ONLY

DP 803299

SIGNATURES, SEALS AND STATEMENTS of intention to dedicate public roads or to create public reserves, drainage reserves, easements, restrictions on the use of land or positive covenants.



Registered: 2·7·1990

C.A.:

Title System: OLD SYSTEM

Purpose: REDESIGNATION

Ref. Map: SOUTH SYDNEY 54

Last Plan: DP 234111

PLAN OF PART OF THE LAND IN CONV. 552, BOOK 1102.

Lengths are in metres. Reduction Ratio 1:250

~~Municipality~~ City: SOUTH SYDNEY

Locality: REDFERN

~~Parish~~: ALEXANDRIA

County: CUMBERLAND

Plans used in preparation of survey/compilation.
D.P. 221709
D.P. 234111
D.P. 439351
D.P. 785917
(-1911 (ALIGN. PLAN)

I, IAN STUART JONES
of CITYRAIL S.R.A. OF N.S.W.
a surveyor registered under the Surveyors Act, 1929, as amended, hereby certify that the survey represented in this plan
is accurate and has been made in accordance with the Survey Practice Regulation, 1933 and the latest requirements of the Department of Lands, and was completed on
9·4·1990
Signature
Surveyor registered under the Surveyors Act, 1929, as amended.
Datum Line of Azimuth: A ~ B'
Relevant date of survey.

Crown Lands Office Approval

PLAN APPROVED
Authorised Officer
Land District
Paper No.
Field Book pages

Council Clerk's Certificate

I hereby certify that —

(a) the requirements of the Local Government Act, 1919 (other than the requirement for the registration of plans), and

*(b) the requirements of section 345 of the Metropolitan Water, Sewerage and Drainage Act, 1924, as amended,) Hunter District Water, Sewerage, and Drainage Act, 1938, as amended

have been complied with by the applicant in relation to the proposed
(Insert "new road", "subdivision" or "consolidation of 1 lot cut in half")

Subdivision No.
Date
(Signature)
Council Clerk
Council File No.

*This part of certificate to be omitted where the application is for a consolidation lot or the opening of a new road or where the land to be subdivided is wholly outside the areas of operations of the Metropolitan Water, Sewerage and Drainage Board and the Hunter District Water Board.

† Delete if inapplicable.

SURVEYOR'S REFERENCE:
FILE: 224-609

S.R.A. OF N.S.W.
196-219

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

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, 3rd July, 1990

CONVERSION TABLE ADDED IN DEPARTMENT OF LANDS

DP 81200

FEET INCHES	METRES
- - 1/2	0.025
- - 2	0.051
- - 9	0.229
- 3	0.914
- 3 1/2	0.991
4	1.130
5 1/2	1.219
6	1.740
6	1.829
13 6 1/4	4.115
14 3	4.267
14 6	4.420
15 3/4	4.495
21	6.401
23	7.010
25	7.620
25 1	7.671
26 2 3/4	7.925
30 8 1/2	9.360
35 1	10.658
38 1/4	11.614
44	13.564
74 3/4	22.727
104 3 1/4	31.762
112 9 3/4	34.385

AC RD P	SQ M
- - 11 1/4	284.5
- - 11 1/2	290.9

AC RD P	HA
95 - -	38.85

SQ FT	SQ M
56	6.1

DP 81200

Plan Form 8/5 (for 4pp^rs on)

Municipality of Redfern
Shire of
RA 81200

PLAN

of part of Chippendale Est.
also part of 35ac. grant to Wm. Chippendale on 31st May 1809.
Parish of Alexandria. County of Cumberland

Scale 20 Feet - to an Inch.

Area amended in Reg. Gen. Dept. 8.6.62

I Norman Keppel Bennett of 28 Martin Place, Sydney, Licensed Surveyor specially licensed under the Real Property Act, 1900, 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, (e) that the survey has been made under my immediate supervision, 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 2nd day of September A.D. 1930

G. L. Levy J.P.

Norman K. Bennett ... Licensed Surveyor

J.P. Date of Survey August 1930

Obtain fine of Azimuth AB

AMENDMENTS AND/OR ADDITIONS NOTED ON PLAN IN REGISTRAR GENERAL'S OFFICE.

I, Bruce Richard Davies, Under Secretary for Lands and 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 day.

23rd March, 1992

C16336

Plans Forms No. 7 (Non compilations)

F.P.326761

M.P.S.(R.P.)26761

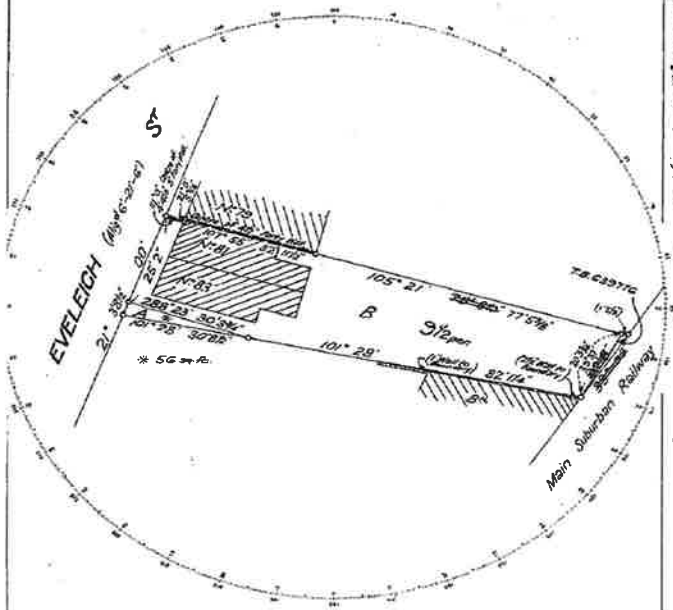
PLAN

Municipality of Redfern
Shire of

of the land in C.T. Vol. 4134 Fo. 109

Parish of Alexandria County of Cumberland

Scale 20 Feet to an Inch.



Plan amended by me on 4-11-30.
Norman K. Bennett

I certify that this plan has been compiled from the information shown on Real Property Application No. 21475 and is correct for the purpose of the Real Property Act.

FOR EVIDENCE OF COUNCIL'S APPROVAL SEE DEALING

Norman K. Bennett
Licensed Surveyor.

CA 55 of 27-8-30

This is the plan marked "A" referred to in ... dated ...

CONVERSION TABLE ADDED IN DEPARTMENT OF LANDS

DP 326761

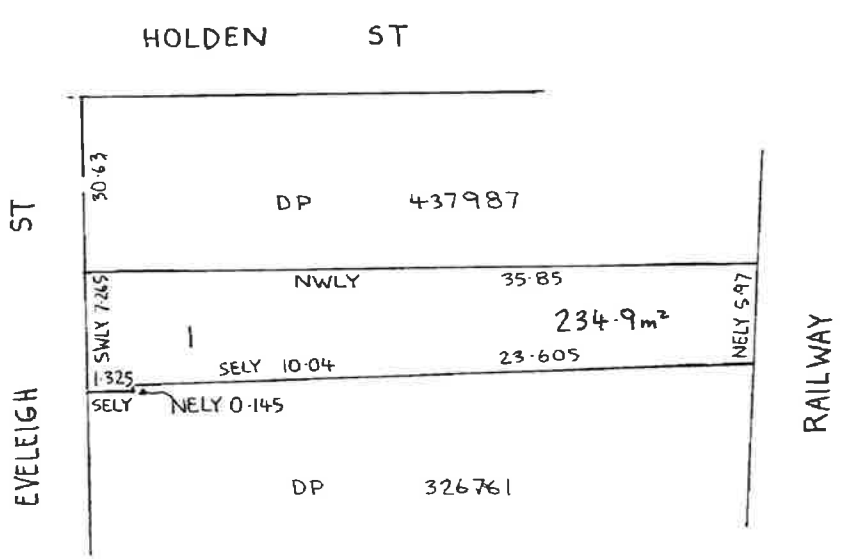
FEET	INCHES	METRES
-	1	0.025
-	2 1/2	0.064
-	5 3/4	0.146
-	9	0.229
1	3 1/8	0.384
3	6 1/2	1.130
4	4 1/4	1.327
6	-	1.829
20	3 3/4	6.191
21	-	6.401
25	2	7.671
30	3 3/4	9.239
30	8 1/2	9.360
32	11 1/2	10.046
77	5 3/8	23.806
82	1 1/4	25.025

AC	RD	P	SQ M
-	-	9 1/2	240.3

SQ FT	SQ M
56	5.2

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 22nd day of May, 1975

1



⊠ AREA BY CALCULATION

DP 996782

Registered: MK 8-12-1994

Title System: OLD SYSTEM

Purpose: LIMITED FOLIO CREATION

Ref. Map: SOUTH SYDNEY SHT 5#

Last Plan: ---------

C.A. 63606
PLAN OF LAND COMPRISED IN
DEED BK. 3175 NO. 609

Lengths are in metres.
Reduction Ratio 1: 250

L.G.A.: SOUTH SYDNEY

LOCALITY: REDFERN

PARISH: ALEXANDRIA

COUNTY: CUMBERLAND

THIS PLAN WAS PREPARED SOLELY TO IDENTIFY THE LAND IN THE ABOVE DEED AND THE BOUNDARIES HAVE NOT BEEN INVESTIGATED BY THE REGISTRAR GENERAL

THIS PLAN IS NOT A CURRENT PLAN IN TERMS OF SEC. 327AA LOCAL GOVERNMENT ACT, 1919.

NO01D1D

G.D.B. ----

Form No. 4

SUBSTITUTED PLAN D P 234111

Registered: 26-6-1968

This is Sheet 3 of my plan in 3 Sheets dated 27th of September, 1966

Surveyor registered under Surveyors Act 1929 as amended.

This is Sheet of the plan of Sheets covered by my Certificate No. of

Council Clerk

NOTES SEE BACK OF THIS SHEET

70323

Not to Scale

EVELEIGH (Aligned 6'-21'-6') STREET

HOLDEN (At 5.20.51) ST.

LAWSON

SQUARE

REGENT ST.

HOLDEN ST.

20' WIDE LANE ADOPTED

KERB AS LAID

KERB LINE AS FIXED BY CITY COUNCIL

BRICK WALL (LOWER SECTION)

CONCRETE PARAPET WALL

R.M. in conc Drill Hole & Wing

R.M. in kerb Drill Hole & Wing

D.P. 234111

P. 230305

P. A. 4768 33226(4)

P. A. 21475

P. A. 9734

P. A. 4763

C.T. Vol. 4134 Fol. 97 (12 sq. ft.)

C.T. Vol. 4361 Fol. 161 (3/4 p.)

C.T. Vol. 695 Fol. 24 (1/4 p.)

C.T. Vol. 2107 Fol. 161 (33 1/2 p.)

Resumed vide Gaz. No. 3 (C.T. Vol. 6014 Fol. 90) (1 p.)

C.T. Vol. 1647 Fol. 123 (2r. 32 3/4 p.)

C.T. Vol. 2116 Fol. 39 (1r. 10 1/2 p.)

Part C.T. Vol. 988 Fol. 129 (10) (4 1/2 p.)

Part C.T. Vol. 2013 Fol. 91 (12 1/4 p.)

Vol. 2272 Fol. 237

735917

2a. 3r. 0 1/2 p.

See Sheet 2

See Sheet 1

TRAVERSE

No	BEARING	DIST.
7	200° 36' 30"	147' 11¼"
8	180° 13' 30"	117' 2"
9	270° 12' 50"	120' 1"
10	180° 12' 00"	108' 9⅞"
11	270° 00' 50"	343' 10⅛"
12	343° 29' 00"	14' 6"
13	73° 25' 30"	87' 2¼"
14	116° 13' 00"	23' 9"
15	134° 35' 00"	3' 10¼"
16	46° 25' 00"	15' 8"
17	45° 03' 20"	40' 0¾"
18	40° 17' 30"	27' 2½"
19	40° 40' 00"	72' 8¼"
20	38° 28' 30"	38' 1¾"
21	36° 00' 30"	14' 8¼"
22	33° 24' 30"	14' 8¼"
23	33° 57' 50"	15' 10¾"
24	33° 29' 50"	15' 3"
25	33° 14' 50"	13' 6"
26	32° 38' 00"	13' 6"
27	29° 30' 50"	11' 0" 1¾"
28	20° 51' 00"	37' 0⅛"
29	23° 45' 00"	30' 1¾"

Scale: 40 feet to an inch

DEPARTMENT OF RAILWAYS N.S.W. 206-37

Fee 65/807426 R.2 F.B. Miree 3310 C.B. 172-178

Surveyor's Reference

Historical Title

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
7/3/2017 9:22PM

FOLIO: 1/803299

First Title(s): OLD SYSTEM
Prior Title(s): CA46577

Recorded	Number	Type of Instrument	C.T. Issue
3/7/1990	CA46577	CONVERSION ACTION	FOLIO CREATED EDITION 1
29/11/1994	U826862	TRANSFER	EDITION 2
4/9/1997		AMENDMENT: LOCAL GOVT AREA	
14/3/2004	AA472866	DEPARTMENTAL DEALING	
14/9/2015	AJ811575	DEPARTMENTAL DEALING	

*** END OF SEARCH ***

eveleigh PRINTED ON 7/3/2017

Title Search

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 1/803299

SEARCH DATE	TIME	EDITION NO	DATE
8/3/2017	2:05 PM	2	29/11/1994

LAND

LOT 1 IN DEPOSITED PLAN 803299
AT REDFERN
LOCAL GOVERNMENT AREA SYDNEY
PARISH OF ALEXANDRIA COUNTY OF CUMBERLAND
TITLE DIAGRAM DP803299

FIRST SCHEDULE

ABORIGINAL HOUSING COMANY LIMITED (T U826862)

SECOND SCHEDULE (2 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 U826862 COVENANT

NOTATIONS

NOTE: THE CERTIFICATE OF TITLE FOR THIS FOLIO OF THE REGISTER DOES NOT INCLUDE SECURITY FEATURES INCLUDED ON COMPUTERISED CERTIFICATES OF TITLE ISSUED FROM 4TH JANUARY, 2004. IT IS RECOMMENDED THAT STRINGENT PROCESSES ARE ADOPTED IN VERIFYING THE IDENTITY OF THE PERSON(S) CLAIMING A RIGHT TO DEAL WITH THE LAND COMPRISED IN THIS FOLIO.

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

eveleigh PRINTED ON 8/3/2017

Historical Title

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
7/3/2017 9:22PM

FOLIO: B/81200

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 4493 FOL 228

Recorded	Number	Type of Instrument	C.T. Issue
2/9/1989		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
13/8/1993		CONVERTED TO AUTO CONSOL 4493-228	CONSOL CREATED CT NOT ISSUED
14/3/2004	AA472866	DEPARTMENTAL DEALING	

*** END OF SEARCH ***

eveleigh PRINTED ON 7/3/2017

Historical Title

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
7/3/2017 9:23PM

FOLIO: AUTO CONSOL 4493-228

Recorded	Number	Type of Instrument	C.T. Issue
13/8/1993		CONSOL HISTORY RECORD CREATED FOR AUTO CONSOL 4493-228 PARCELS IN CONSOL ARE: A-B/81200.	
29/11/1996		A/326761 ADDED	
29/11/1996		A/81200 EXCISED	
22/5/2013	AH542886	APPLICATION FOR REPLACEMENT CERTIFICATE OF TITLE	
22/5/2013	AH622818	APPLICATION TO RECORD A NEW REGISTERED PROPRIETOR	
22/5/2013	AH542931	TRANSFER WITHOUT MONETARY CONSIDERATION	EDITION 1

*** END OF SEARCH ***

eveleigh PRINTED ON 7/3/2017

Form: 04RP
Release: 40

APPLICATION TO RECORD NEW REGISTERED PROPRIETO

New South Wales
Section 46C Real Property Act 1900
Section 12(4) Trustee Act 1925

AH622818Y

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

STAMP DUTY

Office of State Revenue use only

(2)

NEW SOUTH WALES DUTY
13-03-2013 000701437-001
SECTION 308-ORIGINAL
NO DUTY PAYABLE

(A) **TORRENS TITLE** Folio Identifier 1/996782 and Auto Consol 4493 Folio 228

(B) **REGISTERED DEALING**

Number	Torrens Title

(C) **LODGED BY**

Document Collection Box	Name, Address or DX, Telephone, and Customer Account Number if any	CODE
238N	Customer Account Number:123155F Ashurst Australia DX 388 Sydney Tel: 02 9258 6000 Reference: CST RKP 02 2036 9163	RP

(D) **APPLICANT** AUSTRALIAN SECURITIES AND INVESTMENTS COMMISSION

(E) **PRESENT REG'D PROPRIETOR** MURAWINA LIMITED ø

(F) **NEW REG'D PROPRIETOR** AUSTRALIAN SECURITIES AND INVESTMENTS COMMISSION

ø ACN 001 244 257 (Deregistered) 22/11/09

(G) **APPLICATION UNDER SECTION 46C REAL PROPERTY ACT 1900**

In regard to the above land, the applicant requests the Registrar General to record the new registered proprietor on the above folio of the Register, the land having vested in the new registered proprietor pursuant to—

(H) Section 601AD(2) Corporations Act 2001 upon the deregistration of Murawina Limited ACN 001 244 257 on 22 November 2009

(G) **APPLICATION UNDER SECTION 12(4) TRUSTEE ACT 1925**

In regard to the above LAND, the applicant requests the Registrar General to record the new registered proprietor on the folio of the Register consequent on—

(I)

DATE 19/2/2013

I certify I am an eligible witness and that the applicant signed this dealing in my presence.
[See note* below]

Signature of witness:

MYRA JOSEPHINE POON

Name of witness: LAWYER

Address of witness: 240 QUEEN ST BRIS QLD 4001

Certified correct for the purposes of the Real Property Act 1900 by the applicant.

Signature of applicant:

The Common Seal of the Australian Securities and Investments Commission is affixed pursuant to Section 601AE(2) of the Corporations Act 2001

A Delegate of the Australian Securities and Investments Commission.

COMMON SEAL AUSTRALIAN SECURITIES AND INVESTMENTS COMMISSION

(K) *This section is to be completed where a notice of sale is required and the relevant data has been forwarded through eNOS.*

The applicant certifies that the eNOS data relevant to this dealing has been submitted and stored under eNOS ID No. Full name: Signature:

** s117 RP Act requires that you must have known the signatory for more than 12 months or have sighted identifying documentation.*

ALL HANDWRITING MUST BE IN BLOCK CAPITALS

Title Search

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: AUTO CONSOL 4493-228

SEARCH DATE	TIME	EDITION NO	DATE
8/3/2017	2:05 PM	1	22/5/2013

LAND

LAND DESCRIBED IN SCHEDULE OF PARCELS
LOCAL GOVERNMENT AREA SYDNEY
PARISH OF ALEXANDRIA COUNTY OF CUMBERLAND
TITLE DIAGRAM SEE SCHEDULE OF PARCELS

FIRST SCHEDULE

ABORIGINAL HOUSING CO LTD (TZ AH542931)

SECOND SCHEDULE (2 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 AH542886 THIS EDITION ISSUED PURSUANT TO S.111 REAL PROPERTY ACT, 1900

NOTATIONS

UNREGISTERED DEALINGS: NIL

SCHEDULE OF PARCELS	TITLE DIAGRAM
LOT B IN DP81200	DP81200
LOT A IN DP326761	DP326761.

*** END OF SEARCH ***

Historical Title

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
7/3/2017 9:22PM

FOLIO: B/326761

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 4461 FOL 213

Recorded	Number	Type of Instrument	C.T. Issue
2/9/1989		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
16/2/1990		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
4/9/1997		AMENDMENT: LOCAL GOVT AREA	
14/3/2004	AA472866	DEPARTMENTAL DEALING	
3/8/2012	AH138990	DEPARTMENTAL DEALING	
22/5/2013	AH542886	APPLICATION FOR REPLACEMENT CERTIFICATE OF TITLE	
22/5/2013	AH713826	APPLICATION TO RECORD A NEW REGISTERED PROPRIETOR	
22/5/2013	AH542914	TRANSFER WITHOUT MONETARY CONSIDERATION	EDITION 1

*** END OF SEARCH ***

eveleigh PRINTED ON 7/3/2017

Form: 04RP
Release: 4·1

(1)

APPLICATION TO RECOR NEW REGISTERED PROPRIE

New South Wales
Section 46C Real Property Act 19(
Section 12(4) Trustee Act 1925

AH713826T

PRIVACY NOTE: Section 31B of the Real Property Act 1900 (RP Act) authorises the l 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.

STAMP DUTY

Office of State Revenue use only

NEW SOUTH WALES DUTY
29-04-2013 0007934010-001
SECTION 308-ORIGINAL
NO DUTY PAYABLE

(A) **TORRENS TITLE** B/326761 Currently Being Vol 4461 Fol 213

(B) **REGISTERED DEALING**

Number	Torrens Title

(C) **LODGED BY**

Document Collection Box	Name, Address or DX, Telephone, and Customer Account Number if any	CODE
238N	Customer Account Number: 123155F Ashurst Australia DX 388 Sydney Tel: 02 9258 6000 Reference: CST RKP 02 2036 9163	RP

(D) **APPLICANT** Australian Securities and Investments Commission

(E) **PRESENT REG'D PROPRIETOR** MURAWINA LIMITED Ø

(F) **NEW REG'D PROPRIETOR** AUSTRALIAN SECURITIES AND INVESTMENTS COMMISSION

(G) **APPLICATION UNDER SECTION 46C REAL PROPERTY ACT 1900**

In regard to the above land , the applicant requests the Registrar General to record the new registered proprietor on the above folio of the Register, the land having vested in the new registered proprietor pursuant to—

(H) Section 601AD(2) Corporations Act 2001 upon deregistration of Murawina Limited ACN 001 244 257 on 22 November 2009

(G) **APPLICATION UNDER SECTION 12(4) TRUSTEE ACT 1925**

In regard to the above , the applicant requests the Registrar General to record the new registered proprietor on the folio of the Register consequent on—

(I)

DATE 22/4/2013

I certify I am an eligible witness and that the applicant signed this dealing in my presence. [See note* below]

Signature of witness:

Name of witness: MYRA JOSEPHINE POON
Address of witness: LAWYER, ASIC
240 QUEEN ST
BRIS Q 4000

Certified correct for the purposes of the Real Property Act 1900 by the applicant.

COMMON SEAL AUSTRALIAN SECURITIES AND INVESTMENTS COMMISSION

Signature of applicant:

The Common Seal of the Australian Securities and Investments Commission is affixed pursuant to Section 601AE(2) of the Corporations Act 2001

Peter Robert Witham ..... A Delegate of the Australian Securities and Investments Commission.

(K) *This section is to be completed where a notice of sale is required and the relevant data has been forwarded through eNOS.*

The applicant certifies that the eNOS data relevant to this dealing has been submitted and stored under eNOS ID No. Full name: Signature:

* *s117 RP Act requires that you must have known the signatory for more than 12 months or have sighted identifying documentation.*

ALL HANDWRITING MUST BE IN BLOCK CAPITALS

1303

ACN 001 244 257 (deregistered) 22/5/13.

Title Search

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: B/326761

SEARCH DATE	TIME	EDITION NO	DATE
8/3/2017	2:05 PM	1	22/5/2013

LAND

LOT B IN DEPOSITED PLAN 326761
LOCAL GOVERNMENT AREA SYDNEY
PARISH OF ALEXANDRIA COUNTY OF CUMBERLAND
TITLE DIAGRAM DP326761

FIRST SCHEDULE

ABORIGINAL HOUSING CO LTD (TZ AH542914)

SECOND SCHEDULE (2 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 AH542886 THIS EDITION ISSUED PURSUANT TO S.111 REAL PROPERTY ACT, 1900

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

eveleigh PRINTED ON 8/3/2017

Historical Title

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
7/3/2017 9:22PM

FOLIO: 1/996782

First Title(s): OLD SYSTEM
Prior Title(s): CA73674

Recorded	Number	Type of Instrument	C.T. Issue
13/12/1994	DP996782	DEPOSITED PLAN	LOT RECORDED FOLIO NOT CREATED
5/9/1997		AMENDMENT: LOCAL GOVT AREA	
15/12/1997	CA73674	CONVERSION ACTION	FOLIO CREATED EDITION 1
14/3/2004	AA472866	DEPARTMENTAL DEALING	
22/5/2013	AH622818	APPLICATION TO RECORD A NEW REGISTERED PROPRIETOR	
22/5/2013	AH542931	TRANSFER WITHOUT MONETARY CONSIDERATION	EDITION 2

*** END OF SEARCH ***

eveleigh PRINTED ON 7/3/2017

Form: 04RP
Release: 40

APPLICATION TO RECORD NEW REGISTERED PROPRIETO

New South Wales
Section 46C Real Property Act 1900
Section 12(4) Trustee Act 1925

AH622818Y

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

STAMP DUTY

Office of State Revenue use only

(2)

NEW SOUTH WALES DUTY
13-03-2013 000701437-001
SECTION 308-ORIGINAL
NO DUTY PAYABLE

(A) **TORRENS TITLE**

Folio Identifier 1/996782 and Auto Consol 4493 Folio 228

(B) **REGISTERED DEALING**

Number	Torrens Title

(C) **LODGED BY**

Document Collection Box	Name, Address or DX, Telephone, and Customer Account Number if any	CODE
238N	Customer Account Number:123155F Ashurst Australia DX 388 Sydney Tel: 02 9258 6000 Reference: CST RKP 02 2036 9163	RP

(D) **APPLICANT**

AUSTRALIAN SECURITIES AND INVESTMENTS COMMISSION

(E) **PRESENT REG'D PROPRIETOR**

MURAWINA LIMITED ø

(F) **NEW REG'D PROPRIETOR**

AUSTRALIAN SECURITIES AND INVESTMENTS COMMISSION

(G) **APPLICATION UNDER SECTION 46C REAL PROPERTY ACT 1900**

In regard to the above land, the applicant requests the Registrar General to record the new registered proprietor on the above folio of the Register, the land having vested in the new registered proprietor pursuant to—

(H) Section 601AD(2) Corporations Act 2001 upon the deregistration of Murawina Limited ACN 001 244 257 on 22 November 2009

(G) **APPLICATION UNDER SECTION 12(4) TRUSTEE ACT 1925**

In regard to the above LAND, the applicant requests the Registrar General to record the new registered proprietor on the folio of the Register consequent on—

(I)

DATE 19/2/2013

I certify I am an eligible witness and that the applicant signed this dealing in my presence.
[See note* below]

Signature of witness:

Name of witness: MYRA JOSEPHINE POON

Address of witness: LAWYER
240 QUEEN ST
BRIS QLD 4001

Certified correct for the purposes of the Real Property Act 1900 by the applicant.

Signature of applicant:

The Common Seal of the Australian Securities and Investments Commission is affixed pursuant to Section 601AE(2) of the Corporations Act 2001

Peter Richard ..... A Delegate of the Australian Securities and Investments Commission.

COMMON SEAL
AUSTRALIAN SECURITIES AND INVESTMENTS COMMISSION

(K) *This section is to be completed where a notice of sale is required and the relevant data has been forwarded through eNOS.*

The applicant certifies that the eNOS data relevant to this dealing has been submitted and stored under eNOS ID No. ____ Full name: Signature:

* *s117 RP Act requires that you must have known the signatory for more than 12 months or have sighted identifying documentation.*

ALL HANDWRITING MUST BE IN BLOCK CAPITALS

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ø ACN 001 244 257 (deregistered) 22/5/13

Title Search

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 1/996782

SEARCH DATE	TIME	EDITION NO	DATE
8/3/2017	2:05 PM	2	22/5/2013

LAND

LOT 1 IN DEPOSITED PLAN 996782
AT RDEFERN
LOCAL GOVERNMENT AREA SYDNEY
PARISH OF ALEXANDRIA COUNTY OF CUMBERLAND
TITLE DIAGRAM DP996782

FIRST SCHEDULE

ABORIGINAL HOUSING CO LTD (TZ AH542931)

SECOND SCHEDULE (2 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 LIMITED TITLE. LIMITATION PURSUANT TO SECTION 28T(4) OF THE REAL PROPERTY ACT, 1900. THE BOUNDARIES OF THE LAND COMPRISED HEREIN HAVE NOT BEEN INVESTIGATED BY THE REGISTRAR GENERAL.

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***