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ROI CROYDON 88 PTY LTD

Detailed Site Investigation

15-21 Brighton Avenue, Croydon Park NSW

Report E23959.E02_Rev0

10 September 2018

REPORT DISTRIBUTION

Detailed Site Investigation
15-21 Brighton Avenue, Croydon Park NSW

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1	Soft Copy (PDF – Secured, issued by email)	ROI Croydon 88 Pty Ltd Level 1, 74 Macquarie Street, Parramatta NSW 2150
	Original (Saved to Digital Archives)	EI Australia Suite 6.01, 55 Miller Street, Pyrmont NSW 2009

Author	Technical Reviewer
	
CLARE MADIGAN Environmental Scientist	**NATHAN FOSTER** Senior Environmental Scientist

Revision	Details	Date	Amended By
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EXECUTIVE SUMMARY

Background

ROI Croydon 88 Pty Ltd engaged EI Australia (EI) to conduct a Detailed Site Investigation (DSI) for the property located at 15-21 Brighton Avenue, Croydon Park NSW ('the site'). This assessment was required by Canterbury-Bankstown Council to further assess the proposed residential planning proposal.

Objectives

The main objectives of the assessment were to:

- Evaluate the potential for site contamination on the basis of historical land uses, anecdotal and documentary evidence of possible pollutant sources (Preliminary Site Investigation - PSI);
- To investigate the degree of any potential contamination by means of limited intrusive sampling and laboratory analysis, for relevant contaminants of concern (Detailed Site Investigation – DSI) ; and
- Where site contamination is confirmed, make recommendations for the appropriate management of any contaminated soils.

Findings

- The site, which fronts Brighton Avenue to the west, consists of four allotments (Lot C DP440959, Lot 2A Section 2 DP3010, Lot A & B DP333556, Lot 1 DP123636), covering a total area of 5,074 m². The site is currently used for commercial / industrial purposes;
- Historical records indicated that the site appears to have been residential from the early 1900s to early1970's - 1990's. Land use changed from residential to commercial / industrial, with all residential dwellings demolished, and several large warehouses built across the site. The site is currently used for commercial / industrial purposes (storage and distribution of radiators, air conditioning units and textile goods (including linen and clothing)), present day;
- The site was free of statutory notices issued by the NSW EPA and was not recorded on the List of NSW Contaminated Sites Notified to EPA or the POEO register;
- A search of SafeWork NSW records relating to the site was requested on 24 April 2018 by EI, on behalf of the Client. Correspondence dated 10 May 2018 from the Dangerous Goods Licensing Section, confirmed that SafeWork NSW had no records indicating the storage of dangerous goods on the allotments;
- The sub-surface layers comprised primarily of clayey, gravelly, sand fill materials, overlying residual clays (low to high plasticity) and weathered shale bedrock;
- Groundwater was encountered at depths ranging from 2.98 to 3.90 metres below ground level (mBGL);
- Soil sampling and analysis were conducted at fourteen borehole locations (BH101M to BH114) down to a maximum depth of 8.2 mBGL. The sampling regime was developed using both judgemental and systematic (triangular grid) sampling patterns, with allowance for structural obstacles (e.g. building walls, and other physical obstructions in use by existing, operating businesses);

- All tested analytes for the soil samples collected from (BH101M to BH114) were below the adopted health investigation and screening levels (HIL/HSL) and the ecological criteria, with the following exceptions:
  - BH105_0.3-0.4 exceeded the EIL for copper (150 mg/kg) and Zinc (270 mg/kg); and
  - BH108M_0.4-0.5 exceeded the EIL for zinc (210 mg/kg) and TRH F2 (130 mg/kg).
- Three groundwater monitoring wells (BH101M, BH108M and BH112M) were installed during the investigation. Groundwater was encountered in one of the three monitoring wells during the installation at a depth of 7.0 mBGL. However, during the GME, groundwater was detected in all three monitoring wells with standing water levels between 2.98 mBTOC and 3.90 mBTOC;
- The tested analytes for the groundwater samples collected from BH101M, BH108M and BH112M were below the GIL criteria, with the following exceptions:
  - BH101M-1 exceeded copper (64 µg/L) and zinc (200 µg/L);
  - BH108M-1 exceeded copper (63 µg/L), nickel (89 µg/L) and zinc (300 µg/L); and
  - BH112M-1 exceeded copper (59 µg/L) and zinc (210 µg/L).
- The following data gaps identified in this DSI will require closure by further investigations:
  - The quality of soils beneath building structure areas (including areas of parked vehicles) of the site not assessed during this investigation; and
  - Potential presence of hazardous materials present within the existing structure.

Conclusions and Recommendations

Based on the findings of this investigation, the following recommendations are provided:

- Prior to any future development onsite, this report is to be reviewed in conjunction with the proposed architectural plans;
- Prior to site demolition, carry out a Hazardous Materials Survey on existing site structures to identify potentially hazardous building products that may be released to the environment during demolition;
- Prior to any future redevelopment of the site, supplementary investigations are to be completed to close current investigation data gaps to ascertain if any unknown contamination is present that could require remediation and preparation of a supplementary report;
- Any material being removed from site (including virgin excavated natural materials (VENM)) should be classified for off-site disposal in accordance the EPA (2014) *Waste Classification Guidelines*; and
- Any material being imported to the site should be assessed for potential contamination in accordance with NSW EPA guidelines as being suitable for the intended use or be classified as VENM.

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1. INTRODUCTION

1.1 BACKGROUND AND PURPOSE

ROI Croydon 88 Pty Ltd engaged EI Australia (EI) to conduct a Detailed Site Investigation (DSI) for the property located at 15-21 Brighton Avenue, Croydon Park NSW ('the site').

The site is located approximately 10 km south-west of the Sydney central business district (CBD) (**Figure 1**). The site comprises four allotments (Lot C DP440959, Lot 2A Section 2 DP3010, Lot A & B DP333556, Lot 1 DP123636) and is situated within the Local Government Area of Canterbury-Bankstown Council, covering a total area of approximately 5,074 m², as depicted in **Figure 2**. The site is currently used for commercial / industrial purposes.

This assessment was required by Canterbury-Bankstown Council to further assess the proposed residential planning proposal.

1.2 PROPOSED DEVELOPMENT

EI was not aware of any current proposed development plans. Based on the information provided by the Client, EI understands the site is subject to a rezoning application by Canterbury-Bankstown Council to change the current site zone from industrial / commercial to residential – low to high density. In light of this, EI have assessed soil and groundwater conditions against criteria applicable with residential land use with minimal access to soil (HIL-B). No consideration has been made for recreational open space areas.

1.3 REGULATORY FRAMEWORK

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

- ANZAST (2018) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality;*
- Canterbury Council (2012) Local Environmental Plan;
- Canterbury Council (2012) Development Control Plan;
- EPA (1995) *Sampling Design Guidelines*;
- EPA (2017) *Contaminated Land Management: Guidelines for the NSW Site Auditor Scheme*;
- NEMP (2018) *PFAS National Environmental Management Plan*;
- NEPM (2013) *Schedule B(1) Guideline on Investigation Levels for Soil and Groundwater*;
- NEPM (2013) *Schedule B(2) Guideline on Site Characterisation*;
- *Contaminated Land Management Act 1997*;
- State Environment Protection Policy 55 (SEPP 55) – *Remediation of Land*; and
- OEH (2011) *Guidelines for Consultants Reporting on Contaminated Sites*.

1.4 PROJECT OBJECTIVES

The proponent approached EI, to undertake a detailed site investigation for the purpose of obtaining baseline data on the status of the site prior to redevelopment. The primary objectives of this DSI were therefore to:

- Evaluate the potential for site contamination on the basis of historical land uses, anecdotal and documentary evidence of possible pollutant sources (Preliminary Site Investigation - PSI);
- To investigate the degree of any potential contamination by means of limited intrusive sampling and laboratory analysis, for relevant contaminants of concern (Detailed Site Investigation – DSI) ; and
- Where site contamination is confirmed, make recommendations for the appropriate management of any contaminated soils.

1.5 SCOPE OF WORKS

In accordance with EI fee proposal P16702.1.1 (dated 1 August 2018), to achieve the above objectives, the scope of works was as follows:

1.5.1 Desktop Study

- A review of relevant topographical, geological, hydrogeological and soil landscape maps for the project area;
- Search of historical aerial photographs archived at NSW Land and Property Information to review previous site use and the historical sequence of land development in the neighbouring area;
- Search of SafeWork NSW records for information relating to possible underground tank approvals and locations;
- A land titles search, also conducted through NSW Land and Property Information for information relating to historical ownership of the site;
- A search of Canterbury-Bankstown Council records for information relating to operational site history and/or relevant environmental incidents; and
- A search of NSW EPA Land Information records under the *Contaminated Land Management Act 1997* and *Protection of the Environment Operations Act 1997*.

1.5.2 Field Work & Laboratory Analysis

- A detailed site walkover inspection;
- Drilling of boreholes at fourteen (14) locations across accessible areas of the site. This meets the minimum sampling protocol recommended under EPA (1995);
- Construction of three (3) groundwater monitoring wells to a maximum depth of 6 mBGL (or refusal). The groundwater monitoring bore will be constructed to standard environmental protocols to investigate the potential for groundwater contamination, and migration of contaminants off-site;

- Multiple level soil sampling within fill and natural soils and one round of groundwater sampling from the three constructed groundwater monitoring wells; and

- Laboratory analysis of selected soil and groundwater samples for relevant analytical parameters as determined from the site history survey and field observations during the investigation programme.

1.5.3 Data Analysis and Reporting

Preparation of a DSI report documenting desk top study findings, conceptual site model, data quality objectives, investigation methodologies, and results. The report would also provide a record of observations made during the detailed site walkover inspection, borehole 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	15-21 Brighton Avenue, Croydon Park NSW
Location Description and Site Coordinates	Approx. 9.5 km south-west of Sydney CBD, fronting Brighton Avenue to the west. North-east corner of site (datum GDA94-MGA55): Easting: 325177.537 Northing: 6247756.784 (Source: http://maps.six.nsw.gov.au)
Site Area	5,074 m^2 (Client provided revised area)
Lot and Deposited Plan (DP)	Lot C DP440959, Lot 2A Section 2 DP3010, Lot A & B DP333556, Lot 1 DP123636
State Survey Marks	Four State Survey Marks (SSM) are situated in close proximity (<150 m) to the site: • SS75380D and SS131351 are situated approx. 80 m north-west of the site on the corner of Brighton Avenue & Georges River Road; • SS58608D is situated approx. 150 m north-west of the site on the corner of Dunmore Street and Georges River Road; and • SS137160 is situated approx. 140 m north-east of the site on Croydon Avenue. (Source: http://maps.six.nsw.gov.au)
Local Government Authority	Canterbury-Bankstown Council
Parish	Concord
County	Cumberland
Current Zoning	IN2 – Light Industrial (Canterbury Local Environment Plan, 2012)
Current Land Uses	The site is currently occupied with five warehouses used for the storage / distribution of radiators / air conditioning units and clothing / linen.

2.2 SURROUNDING LAND USE

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

Table 2-2 Surrounding Land Uses

Direction	Land Use Description	Sensitive Receptors (& distance from site)
North	An individual residential dwelling, followed by Croydon Park Uniting Church, commercial properties and Georges River Road	Croydon Park Uniting Church (<65 m north) Croydon Park Public School (approx. 125 m north) Residential Dwellings (<180 m north) St Matts Church Asbury (approx. 280 m north-east)
South	Australia Post warehouse and associated grounds and infrastructure, followed by commercial / industrial warehouses	Seedling Kids Childcare (<135 m south) Residential Dwellings (<150 m south) Croydon Park (parkland) (approx. 460 m south) Cooks River (approx. 590 m south)
East	Individual residential dwellings and town houses, followed by Croydon Avenue	Residential Dwellings (<30 m east) Roberts-Dale Campus SMBC (Christian College) (<200 m east) St Francis Xavier Catholic School & Church (approx. 400 m east) W H Wagener Sporting Oval (approx. 750 m east)
West	Brighton Avenue, followed by individual residential dwellings and two-storey apartment buildings	Residential Dwellings (<60 m west)

Overall, sensitive land uses, such as schools or childcare centres, were not identified within the vicinity (100 m) of the site. However, Seedling Kids Childcare is located approx. 135 m south and hydraulically down gradient of the site.

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	With reference to The Soil Conservation Service of NSW Soil Landscapes of the Sydney 1:100,000 Sheet (Chapman and Murphy, 2002), general site topography consists of gently undulating rises on Wianamatta Group and Hawkesbury shales with local relief 10-30 m and slopes generally <5%, but up to 10%. Crests and ridges are broad (200-600 m) and rounded with convex upper slopes grading into concave lower slopes. Rock outcrop is absent.
Site Drainage	Site drainage is likely to be consistent with the general slope of the site. Stormwater is likely to be collected by pit and pipe drainage, and drain either to the municipal stormwater system or to Cooks River, located approximately 500 m south of the site.

Attribute	Description
Regional Geology	With reference to the 1:100,000 scale Geological Series Sheet 9130 (Sydney), the site is located within close proximity to the contact of the Ashfield Shale and Bringelly Shale. Ashfield Shale is described as black to dark-grey shale and laminite, while Bringelly Shale is described as shale, carbonaceous claystone, laminite, fine to medium-grained lithic sandstone, rare coal and tuff.
Soil Landscapes	The Soil Conservation Service of NSW Soil Landscapes of the Sydney 1:100,000 Sheet (Chapman and Murphy, 2002) indicates that the site overlies the Blacktown (bt) soil landscape, which is described as gently undulating rises on the Wianamatta Group shales, with shallow to moderately deep (<100 cm) red and brown podzolic soils on crests, upper slopes and well drained areas; deep (150 – 300 cm) yellow podzolic soils and soloths on lower slopes and in areas of poor drainage.
Acid Sulfate Soils	The Canterbury City Council LEP 2012 Acid Sulfate Soils Map (Sheet_006) shows the site to be within areas mapped as *Class 5* Acid Sulfate Soils (ASS). Class 5 ASS are located within 500 m on adjacent Class 1, 2, 3 or 4 land. Works in class 5 areas that are likely to lower the water table by 1 mAHD and by which the water table is likely to be lowered below 1 mAHD on adjacent Class 1, 2, 3 or 4 land. With reference to the Prospect Parramatta Acid Sulfate Soil Risk Map (1:25,000 scale; Murphy, 1997), the site is located within an area of no known occurrences.
Typical Soil Profile	Thin surficial sandy fill material overlying residual clay and shale bedrock. **Fill –** Silty CLAY; low to medium plasticity, light brown to light grey, with mottled orange, moist and no dour; Gravelly SAND; medium to coarse grained, reddish brown, with angular to sub-angular, medium to coarse gravels, moist and no odour; Clayey SAND; medium to coarse grained, reddish brown, low to medium plasticity, with sub-angular to angular gravels, moist and no odour; Sandy CLAY; low to medium plasticity, dark brown, with medium to coarse sand, with sub-angular to angular, medium to coarse gravels, moist and no odour; and SAND; medium to coarse grained, brown, moist and no odour. **Residual –** CLAY; low to high plasticity, light grey / orange brown to dark brown with mottled red / orange, with small sub-angular to sub-rounded gravels, moist and no odour. **Bedrock** – SHALE; highly weathered, light brown / orange to brown, dry and no odour.
Depth to Groundwater	Groundwater levels (SWLs) encountered during the current investigation ranged between 2.98 and 3.9 mBGL. Onsite groundwater conditions, including groundwater flow direction, are discussed in **Section 8.2**.
Nearest Surface Water Feature	Cooks River, located approximately 600 m south of the site.
Groundwater Flow Direction	Groundwater is anticipated to flow south towards Cooks River.

2.4 GROUNDWATER BORE RECORDS AND LOCAL GROUNDWATER USE

An online search of registered groundwater bores was conducted by EI on 5 September 2018 through the WaterNSW (Ref. https://www.waternsw.com.au/supply/real-time-data). There were no registered bores within a 500 m radius of the site.

2.5 SITE WALKOVER INSPECTION OBSERVATIONS

Site observations were recorded during a site walkover inspection of the site on 22 August 2018. A summary of site observations is detailed below and site photographs taken during the inspection are present in **Appendix C**. Site observations are summarised in **Table 2-4**.

Table 2-4 Buildings and Infrastructure Summary

Allotment	Buildings	USTs/ASTs	Observations
Lot C DP440959 (15 Brighton Ave)	1 x large commercial warehouse	Not evident	• The site is occupied by a large (rendered brick) commercial ware house. The warehouse is currently being used for the storage and distribution of radiators (**Appendix C**, Photo 1); • The remaining land in front of the warehouse is covered with concrete hardstand for car parking purposes. The concrete is old, but in good conditions with minor cracking and deformation evident (**Appendix C**, Photo 1); • General commercial rubbish (including old office furnishings, timber pallets, and cardboard boxes) is evident directly in front of the warehouse (**Appendix C**, Photo 2); and • The flooring inside the warehouse consisted of flushed, polished concrete in good condition with no crack or deformation evident. The warehouse had at least one concrete slab underneath it. (**Appendix C**, Photo 3).
Lot 2 Section 2A DP 3010 (17 Brighton Ave)	3 x large commercial warehouses	Not evident	• The site is currently occupied with three (3) large commercial warehouses. The warehouses are used for the storage and distribution of radiators; • The westernmost warehouse is constructed with corrugated iron and is very new (<2 years old). The concrete slab in front of this warehouse is brand new, compared to the rest of the site (**Appendix C**, Photo 4); • The middle warehouse is smaller in size, compared to the other two warehouses. It is constructed with corrugated iron. The concrete hardstand south of this ware house is old, with minor cracking and deformation evident (**Appendix C**, Photo 7); • The easternmost warehouse is constructed with rendered brick. The concrete hardstand south and east of this warehouse is in poor condition, with large cracks and deformation evident. A stormwater drain is evident running parallel to this warehouse, along the southern side of the warehouse (**Appendix C**, Photo 13); • The land behind this warehouse is covered with concrete hardstand, with large piles of rubbish. This includes excess radiator parts (electronics), army machinery parts, an old boat, timber pallets, excess cardboard boxes (**Appendix C**, Photo 9 & 10). A shed is car port is also evident along the eastern boundary; and

Allotment	Buildings	USTs/ASTs	Observations
			• The flooring inside the warehouses consisted of flushed, polished concrete in good condition with no crack or deformation evident. The warehouse had at least one concrete slab underneath it. (**Appendix C**, Photo 8).
Lot A & B DP 333556 (19 Brighton Ave)	1 x large commercial warehouse	Not evident	• The site is currently occupied by one large brick warehouse. The front part of the warehouse is currently used as a call centre for the radiator business, whilst the remainder of the warehouse is used for the storage and distribution of radiators; • Surrounding the warehouse, (north and west) the concrete hardstand is in good condition with minor cracking and deformation evident (**Appendix C**, Photo 12); • The concrete hardstand directly east of the warehouse is in poor condition with several large cracks, deformations and large holes present (**Appendix C**, Photo 14); • Directly east of the warehouse, large piles of waste evident. This includes excess electron parts from radiators/air conditioners, cardboard boxes, timber pallets, tyres, car parts, plastic drums, oil drums, empty/full gas bottles etc. (**Appendix C**, Photo 14, 15, 16, 18 & 19); • Overgrown and distressed vegetation was evident along the eastern boundary (**Appendix C**, Photo 18); • Two pits accessing the stormwater drain were evident north to east of the warehouse (**Appendix C**, Photo 13); • West of the warehouse, two small storage containers were present, for the extra storage of radiators (**Appendix C**, Photo 20); • The westernmost portion of the allotment maintained grass was evident, fronting the western site boundary (**Appendix C**, Photo 21); and • The flooring inside the warehouse consisted of flushed, polished concrete in good condition with no crack or deformation evident. The warehouse had at least one concrete slab underneath it.
Lot 1 DP 123636 (21 Brighton Ave)	1 x large commercial warehouse	Not evident	• The site is currently occupied by a large brick commercial warehouse. The warehouse is currently used for the storage and distribution of textile goods (including clothing and linen) (**Appendix C**, Photo 23). The westernmost part of the warehouse is two-storey, with offices occupying both levels (**Appendix C**, Photo 22); • The concrete hardstand driveway / car park west of the warehouse is in good condition with minor cracking and deformation evident (**Appendix C**, Photo 22);

Allotment	Buildings	USTs/ASTs	Observations
			• The vegetation west of the warehouse is overgrown but in good conditions (**Appendix C**, Photo 25). Whilst the vegetation east of the warehouse, is overgrown in poor / distressed conditions, with die-back evident. • The flooring inside the warehouse consisted of flushed, polished concrete in good condition with no crack or deformation evident. The warehouse had at least one concrete slab underneath it. (**Appendix C**, Photo 24).

3. PREVIOUS INVESTIGATIONS

3.1 AVAILABLE DOCUMENTS

EI understands that this report follows on from the previous investigations completed for the site:

- EI Australia (2016) *Preliminary Site Investigation, 15-33 Brighton Avenue, Croydon Park NSW* (ref. E22142 AA_Rev0).

A summary of works and key findings of the previous assessment reports are outlined in **Table 3-1**.

Table 3-1 Summary of Previous Investigation Works and Findings

Assessment Details	Project Tasks and Findings
Preliminary Site Investigation (EI, 2016)	
Background and Objectives	Croydon 88 Pty Ltd ("the Client") engaged Environmental Investigations Australia Pty Ltd (EI) to conduct a Preliminary Site Investigation (PSI) for the property located at address 15-33 Brighton Avenue, Croydon Park NSW ('the site'). This environmental assessment was completed as part of a development application package to Canterbury City Council for the proposed rezoning of the site from industrial to residential with the demolition of existing site structures and the construction of multiple-residential apartment buildings. At the time of this assessment, the site was occupied by six, separate commercial / industrial warehouses. The site covered a total area of 1.47 ha. The main objective of this investigation was to preliminary characterise the environmental conditions of the site on the basis of historical land uses, anecdotal and documentary evidence of possible pollutant sources.
Key Findings	• Historical records review of land titles records and historic aerial photography showed that the site was residential in nature until between the late-1940s and 1980s, and has remained industrial as such until present; • A search of Canterbury City Council records identified that various commercial and industrial activities have been undertaken on the site, since at least 1980s. An environmental assessment was undertaken in 2008 at 17 Brighton Ave, which identified evidence of oil spillage, with no precautionary methods in place to prevent discharge into the stormwater system; • At the time of this assessment the site was occupied by six large commercial / industrial warehouses and one former residential dwelling, with unsealed and sealed areas surrounded the sit building; • The site was free of statutory notices issued by the NSW EPA/OEH. Records pertaining to the site were not identified on the List of NSW contaminated sites notified to EPA or the Protection of the Environment Operations (POEO) public register; • There have been no licences issued for the site and surroundings areas under the POEO Act 1997; • A search of SafeWork NSWs Stored Chemical Information Database (SCID) and the microfiche records for the site could not be initiated due landowner consent, which was pending at the time of writing; • The site walkover inspection identified the following areas of environmental concern: - Access to the properties located at 15 – 21 Brighton Ave, Croydon Park was unavailable at the time of writing, however, it is understood that a radiator mechanical workshop occupies the property at 19 Brighton Ave; - Potential for hazardous building materials to be present in site structures was observed across the site;

Assessment Details	Project Tasks and Findings
	- Potential for fill material of unknown origin to be present across the site; - A possible lift / hoist system was identified at 23 Brighton Ave; and - The presence of a diesel underground storage tank and bowser was identified within the south-western corner of the site (27-33 Brighton Ave). • A conceptual site model (CSM) and subsequent qualitative risk assessment 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 completed during and after the proposed development. The risk assessment was conducted with respect to the proposed development, which involves sensitive land use (residential with minimal access to soils). The qualitative risk assessment identified a general medium risk of contamination to be present at the site.
Conclusions and Recommendations	Given the nature and extent of the proposed rezoning and redevelopment, a soil and groundwater sampling program, as well as a hazardous materials survey, are warranted to quantify any contamination risks and to inform the selection and implementation of remedial and risk mitigation measures (if required). Taking into account the above, EI concluded that there is a moderate risk associated with soil / and or groundwater contamination on site. EI considered that the site could be made suitable for the proposed residential rezoning and residential development provided a Detailed Site Investigation (DSI) is completed to assess soil and groundwater conditions at the site. The following recommendations were provided: • Conduct a detailed site investigation (DSI) to characterise site soils and groundwater to provide baseline data for evaluation of any remedial and management requirements that may be necessary to allow the site to be made suitable for the proposed residential rezoning; and • Conduct a Hazardous Materials Survey (HMS) of current equipment and structures, and stored products, chemicals and wastes present at the site. EI recommend that a HMS is conducted prior to decommissioning and demolition of site structures. The HMS is required to aid post-closure activities and avoid additional site contamination.

4. SITE HISTORY

4.1 LAND TITLES INFORMATION / HISTORIC AERIAL REVIEW

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

- **1930:** 20 February 1930, Map 3428, Run 16, B/W, Sydney Survey;
- **1943:** 1943, Six Maps (http://maps.six.nsw.gov.au/);
- **1951:** May 1951, Map 467, Run 14, NSW 54, B/W, NSW Lands Photo;
- **1970:** 7 July 1970, Map 5096, Run 18, NSW 1909, B/W, NSW Lands Photo;
- **1982:** 6 August 1982, Map 35, Run 23, NSW 3240, Colour, NSW Lands Photo;
- **1991:** 14 August 1991, Map 79, Run 11, NSW 4029, Colour, Lands Department NSW Government;
- **1999:** 4 May 1999, Map 2171, Run 6, NSW 4702, Colour, Department of Lands;
- **2004:** 8 October 2004, Map 2451, Run 6, NSW 4877, Colour, Department of Lands;
- **2016:** 6 April 2016, Six Maps (http://maps.six.nsw.gov.au/); and
- **2018:** 17 July 2018, Near Map (https://www.nearmap.com.au/).

Table 4-1 Summary of Owners and Historical Aerial Photography

Period	Ownership Summary	Site description based on historical aerial photographs	Potential Land Uses
Lot C DP440959 – 15 Brighton Avenue, Croydon Park			
22.05.1916 (1916 to 1938)	Mary Brown McCall (Married Woman) Mary Cook McCall (Spinster) (Now Mary Cook Harrison, Married Woman)	**1930:** The site is occupied by individual residential dwellings, with associated yards, pavement and shrubs.	Residential
13.07.1938 (1938 to 1942)	Mary Cook Harrison (Married Woman)	-	
28.07.1942 (1942 to 1946)	Eric John Harrison (Member of the House of Representatives) (Transmission Application not investigated)	**1943:** The site appears the same as per previous aerial photograph.	
20.03.1946 (1946 to 1962)	Alfred John Reddel (Merchant) Alice Jane Reddel (Married Woman)	**1951:** The site appears the same as per previous aerial photograph.	

Period	Ownership Summary	Site description based on historical aerial photographs	Potential Land Uses
27.07.1962 (1962 to 1972)	Vince Zarrino (Barber) (Now Vincenzo Zarrino) Filomena Zarrino (Married Woman)	**1970:** The site appears the same as per previous aerial photograph.	Residential
15.03.1972 (1972 to 1997)	F Lanci Enterprise Pty Limited	**1982:** The residential dwelling evident previously appears to have been demolished. A large rectangular warehouse is evident occupying the majority of the allotment. The area between the warehouse and Brighton Avenue has been covered with concrete hardstand. **1991:** The site appears the same as per previous aerial photograph.	Commercial
18.07.1997 (1997 to 2000)	John Kenneth Anderson Louise Elizabeth Anderson	**1999:** The previous warehouse evident in 1991 appears to have been demolished and a new large rectangular warehouse is occupying the majority of the allotment. With concrete hardstand evident directly west of the warehouse to the site boundary.	Commercial
28.06.2000 (2000 to 2013)	Kizgrow Pty Limited	**2004:** The site appears the same as per previous aerial photograph.	
09.07.2013 (2013 to 2016)	# Tony Nahabedian (& his deceased estate)	**2016:** The site appears the same as per previous aerial photograph.	
04.06.2016 (2016 to date)	# Salpie Nahabedian (Executor or Administrator of the Estate of Tony Nahabedian)	**2018:** The site appears the same as per previous aerial photograph.	
Leases: - • 17.10.1977 to John Clifford Evans (Manager) & Barbara Frances Evans (Married Woman) – expired 22.10.1988 • 22.10.1988 to John Nicziporczyk & Bozena Przywieczerska – Expires 17.07.1989, also 3 year option 22.10.1988 Transfer of Lease to Verglove Pty Limited • Various leases were found registered from 1900 to date. These have since expired and have not been investigated. **Easements:** - NIL			
Lot 2A, Section 2, DP 3010 – 17 Brighton Avenue, Croydon Park			
21.01.1899 (1899 to 1908)	William Sutherland (Salesman)	**-**	Residential
23.01.1908 (1908 to 1934)	Margaret Gibson (Married Woman)	**1930:** The site is occupied by individual residential dwellings, with associated yards.	
18.06.1934 (1934 to 1951)	George Thomas Henry Douglass (Fire Brigade Officer)	**1943:** The site appears unchanged from the previous aerial photograph. **1951:** The site appears the same as per previous aerial photograph.	

Period	Ownership Summary	Site description based on historical aerial photographs	Potential Land Uses
Lot B DP 333556 – 19 Brighton Avenue, Croydon Park			
22.05.1906 (1906 to 1934)	Fotheringham Davidson (Married Woman)	**1930:** The site is occupied by individual residential dwellings, with associated yards.	
10.12.1934 (1934 to 1936)	Hilda Pearson Davidson (Spinster) Arthur Cameron Johnstone (Manager) David Steel Dawson (Engineer) (Transmission Application not investigated)	-	
15.08.1936 (1936 to 1951)	George Thomas Henry Douglass (Fire Brigade Officer)	**1943:** The site appears unchanged from the previous aerial photograph.	
Search continues as Lot 2A Section 2 DP 3010 & Lot B DP 333556 – 17-19 Brighton Avenue, Croydon Park			
15.08.1951 (1951 to 1951)	Catherine Margaret Douglass (Widow) (Transmission Application not investigated)	**1951:** The site appears the same as per previous aerial photograph.	
05.10.1951 (1951 to 1953)	Emily May Collins (Married Woman)	-	
26.10.1953 (1953 to 1954)	Ernest Frederick William John Collins (Gentleman) (Transmission Application not investigated)	-	
29.03.1954 (1954 to 1957)	Philip Ernest Thompson (Foreman Plumber)	-	
03.04.1957 (1957 to 1961)	Robert Edward Branch (Seaman) Amy Victoria Branch (Married Woman)	-	

Period	Ownership Summary	Site description based on historical aerial photographs	Potential Land Uses
24.10.1961 (1961 to 2001)	Aussies Service Station Pty Limited Now Aussies Special Services Pty Limited	**1970:** The site appears predominantly the same as per previous aerial photograph. However a warehouse is noted east of the residential dwelling at 17 Brighton Avenue. **1982:** The site appears the same as per previous aerial photograph. **1991:** 17 Brighton Avenue appears the same as per previous aerial photograph. The residential dwelling evident previously at 19 Brighton Avenue appears to have been demolished. A large rectangular warehouse is evident occupying the majority of the allotment. The area between the warehouse and Brighton Avenue has been covered with concrete hardstand. **1999:** 17 Brighton Avenue appears predominantly the same as per previous aerial photograph. However, directly west of the large warehouse, a smaller shed is evident in between the existing residential dwelling. 19 Brighton Avenue appears the same as per previous aerial photograph.	
23.05.2001 (2001 to 2008)	Salpie Nahabedian	**2004:** The site appears the same as per previous aerial photograph. However, there is a shed evident behind 17 Brighton Avenue and material stored around this, behind 19 Brighton Avenue as well.	
Easements: - NIL **Leases:** - NIL			
Lot A DP 333556 – 19 Brighton Avenue, Croydon Park			
22.05.1906 (1906 to 1934)	Fotheringham Davidson (Married Woman)	**1930:** The site is occupied by individual residential dwellings, with associated yards.	
10.12.1934 (1934 to 1955)	Hilda Pearson Davidson (Spinster) Arthur Cameron Johnstone (Manager) David Steel Dawson (Engineer) (Transmission Application not investigated)	**1943:** The site appears unchanged from the previous aerial photograph. **1951:** The site appears the same as per previous aerial photograph.	
15.05.1955 (1955 to 1955)	Hilda Pearson Davidson (Spinster) David Steel Dawson (Engineer)	**-**	
15.05.1955 (1955 to 1976)	John Stanley Wilcher (Clerk) Alice May Wilcher (Married Woman)	**1970:** The site appears the same as per previous aerial photograph.	

Period	Ownership Summary	Site description based on historical aerial photographs	Potential Land Uses
13.01.1976 (1976 to 1978)	John Stanley Wilcher (Clerk)	-	
05.12.1978 (1978 to 1980)	Dorothy Catherine Wilcher (Retired Clerk) (Transmission Application not investigated)	-	
06.02.1980 (1980 to 1981)	Troika Pty Limited	-	
27.07.1981 (1981 to 1984)	Paul Musumeci Domenic Musumeci	**1982:** The site appears the same as per previous aerial photograph.	
22.02.1984 (1984 to 1984)	Nicola Bucci Celestina Bucci	-	
19.12.1984 (1984 to 2005)	M.J. Buckley Pty Limited Now MNJ Sales Pty Limited	**1991:** The residential dwelling evident previously at 19 Brighton Avenue appears to have been demolished. A large rectangular warehouse is evident occupying the majority of the allotment. The area between the warehouse and Brighton Avenue has been covered with concrete hardstand. **1999:** 19 Brighton Avenue appears the same as per previous aerial photograph. **2004:** The site appears the same as per previous aerial photograph. However, piles of excess material are stored behind the warehouse at 19 Brighton Avenue.	
15.09.2005 (2005 to date)	# Salpie Nahabedian	**2016:** The site appears the same as per previous aerial photograph. **2018:** The site appears the same as per previous aerial photograph.	
Lot 2A Section 2 DP 3010, Lots A & B DP 333556 – 17-19 Brighton Avenue, Croydon Park			
20.03.2014 (2014 to date)	# Salpie Nahabedian	**2016:** The site appears the same as per previous aerial photograph. **2018:** The residential dwelling located at 17 Brighton Avenue has been demolished. A large rectangular warehouse is evident in the vicinity, adjoining the existing warehouses on the allotment.	
Easements: - NIL **Leases:** - NIL			
Lot 1 DP 123636 – 21 Brighton Avenue, Croydon Park			
20.07.1908 (1908 to 1910)	Thomas Alfred Smith (Clerk)	-	

Period	Ownership Summary	Site description based on historical aerial photographs	Potential Land Uses
15.03.1910 (1910 to 1950)	George Jamieson (Esquire)	**1930:** The site is occupied by individual residential dwellings, with associated yards. **1943:** The site appears unchanged from the previous aerial photograph.	
17.04.1950 (1950 to 1950)	James Wilson Jamieson (Ambulance Officer) Juliette Coulstock May (Married Woman) (Transmission Application not investigated)	-	
14.07.1950 (1950 to 1958)	James Wilson Jamieson (Ambulance Officer)	**1951:** The site appears the same as per previous aerial photograph.	
21.05.1958 (1958 to 1973)	Pantalione Iacozzi (Factory Worker)	**1970:** The site appears the same as per previous aerial photograph.	
14.09.1973 (1973 to 1977)	Matteo Lauriola (Company Director)	-	
18.03.1977 (1977 to 1987)	Builders Licensing Board Now Building and Construction Industry Long Service Payments Corporation	**1982:** The residential dwelling evident previously appears to have been demolished. A large rectangular warehouse is evident occupying the majority of the allotment. The area between the warehouse and Brighton Avenue has been covered with concrete hardstand.	
01.06.1987 (1987 to 1997)	Addlon Insurances Pty Limited	**1991:** The site appears the same as per previous aerial photograph.	
17.07.1997 (1997 to 2000)	Krzysztof Jacek Krawczyk James Ginter David Samuel Collett Jeffrey David Thompson	**1999:** The site appears the same as per previous aerial photograph.	
18.02.2000 (2000 to 2013)	Zhan Yuan Chen Hong Yaa Cai	**2004:** The site appears the same as per previous aerial photograph.	
12.02.2013 (2013 to date)	# Hong Yaa Chen	**2016:** The site appears the same as per previous aerial photograph. **2018:** The site appears the same as per previous aerial photograph.	

Leases: -

- 16.11.1976 to Gresham Mayfair Corporation Pty Limited – expired 08.01.1982
- 08.01.1982 to Gresham Mayfair Corporation Pty Limited – expired 17.07.1986
- 22.12.2005 to Standard Publishing House (Aust) Pty Ltd – expires 30.06.2010, also 5 year option

Easements: - NIL

Period	Ownership Summary	Site description based on historical aerial photographs	Potential Land Uses
# Denotes Current Registered Proprietor			

Overall, the site known as 15-21 Brighton Avenue, Croydon Park appears to have been used for residential land uses from the early 1900s to early1970's - 1990's. The land use changed from residential to commercial / industrial, with all residential dwellings being demolished and several large warehouses were built across the site. The site is currently used for commercial / industrial purposes (storage and distribution of radiators, air conditioning units and textile goods (including linen and clothing)).

4.2 SURROUNDING LAND USE

As part of the review, an assessment of surrounding land uses using historical aerial photographs sourced from NSW Land and Property Information was carried out. A summary of the pertinent information identified at surrounding land parcels from the reviewed photographs is presented in **Table 4-2**.

Table 4-2 Summary of Aerial Photograph Review

Aerial Photograph	Surrounding land uses based on historical aerial photographs
1930 Sydney Survey	The site is surrounded by residential dwellings to the south; vacant land and residential dwellings east; residential dwellings, small warehouse/factories and commercial properties north; and residential dwellings west. South, Brighton Avenue finishes north of the bend in Cooks River. Directly two blocks east of the site, three large vacant blocks of land are evident. Further east of this, a large landfill is evident with residential dwellings surrounding it. Additionally further east another landfill / brick pit is evident, with a possible water tank/ tower. North, along Georges River Road, commercial properties are evident. North, opposite the intersection of Brighton Avenue and Georges River Road, Croydon Park Public School is evident. North-west of the site another landfill is present.
1943 Six Maps (http://maps.six.nsw.gov.au/)	Direct surrounding use of land remains the same as per previous aerial photograph. South of the site, the bend in Cooks River appears to have manipulated in a southerly direction, as Brighton Avenue continues across a bridge over the river. Land adjacent the Cooks River remains cleared and vacant grassland. East along Cooks River a racetrack is evident. East of the site, the previously three vacant blocks of land have been completely developed with individual residential dwellings. The two landfills east of the site remain evident.
1951 NSW Department of Lands	Surrounding land uses remain predominantly unchanged from the previous aerial photograph.
1970 NSW Department of Lands	Directly east and south of the site has been redeveloped with commercial warehouse infrastructure. Directly north-east of the site the land remains cleared, with residential dwellings adjacent. Following this, the block east has been redeveloped with warehouses. Further east, the first landfill has been backfilled to the surface and grassed. Adjacent, two large saw-toothed warehouses are now evident. Further east, the second landfill / brick pit remains. South-west of the site, an oval is evident on half of the vacant land along Cooks River. The previous landfill north-west of the site has been backfilled to the surface and grassed.

Aerial Photograph	Surrounding land uses based on historical aerial photographs
1982 NSW Department of Lands	Surrounding land uses remain predominantly unchanged from the previous aerial photograph. However, directly north-east of the site the area has been redeveloped with buildings representing a motel. South of the site additional commercial warehouses are present. A sporting oval is now present where the landfill that was previously backfilled east of the site.
1991 NSW Department of Lands	Surrounding land use remains predominantly unchanged from the previous aerial photograph. However, the second landfill previously identified due east of the site has been backfilled to the surface and grassed.
1999 NSW Department of Lands	Surrounding land use remains predominantly unchanged from the previous aerial photograph.
2004 NSW Department of Lands	Surrounding land uses remain predominantly unchanged from the previous aerial photograph.
2016 Six Maps (http://maps.six.nsw.gov.au/)	Surrounding land uses remain predominantly unchanged from the previous aerial photograph.
2018 Near Map (https://www.nearmap.com.au)	Surrounding land uses remain predominantly unchanged from the previous aerial photograph.

4.3 COUNCIL INFORMATION

A request to search Canterbury-Bankstown Council records was submitted by EI on the 21 August 2018, on behalf of the client. Available documents in relation to the site were reviewed on 6 September 2019, as summarised in **Table 4-3**.

Table 4-3 Summary of Historical Records Archived at Canterbury-Bankstown Council

15-21 Brighton Avenue, Croydon Park NSW	
Period / Year	**Description**
1997	Proposed use of the existing building for the import and distribution of rehabilitation equipment, located at 15 Brighton Avenue, Croydon Park. Applicant: John K Anderson Owner: J. K. & L. E Anderson Development Application (DA) Number: DA-9084/97 (18 August 1997) Recommendation: Notice of Determination granted 26 September 1997. Previous site use was bathroom ware importers and distributers until July 1997.
1990	Proposed use of 15 Brighton Avenue, Croydon Park for the wholesale and storage of new, reconditioned and factory seconds batteries. Applicant: AAA Battery Recyclers Pty Ltd Owner: F. Lanci Enterprises Pty Ltd DA Number: DA-5017 (21 June 1990) Recommendation: Notice of determination granted 18 July 1990. Previous/ existing site use was for removal and storage.

15-21 Brighton Avenue, Croydon Park NSW	
Period / Year	**Description**
1989	Proposed use of 15 Brighton Avenue, Croydon Park as repair/service of electronic equipment plus warehousing of personal computers, typewriters, facsimile and photocopier machines, and offices. Applicant: Alliance Computer Owner: F. Lanci Enterprises Pty Ltd DA Number: DA-4575 (15 September 1989) Recommendation: Notice of Determination granted 25 October 1989. Previous site use was a furniture warehouse until 25 August 1989.

4.4 SAFEWORK NSW DANGEROUS GOODS REGISTER RECORDS

A search of Safe Work NSW records relating to the site was requested on 21 August 2018 by EI, on behalf of the Client. Correspondence dated 28 August 2018 from the Dangerous Goods Licensing Section, confirmed that SafeWork NSW had no records indicating the storage of dangerous goods at 15-21 Brighton Avenue, Croydon Park NSW.

4.5 EPA ONLINE RECORDS

4.5.1 Contaminated Land – Record of Notices under Section 58 of CLM Act (1997)

On 4 September 2018, an on-line search of the contaminated land public record of NSW Environment Protection Authority (EPA) Notices was conducted. This search confirmed that the NSW OEH had no regulatory involvement in relation to the area of investigation, or properties in proximity to the site. The contaminated land public record is a searchable database of:

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

The search confirmed that the site known as 15-21 Brighton Avenue, Croydon Park NSW or sites within close proximity (<1 km) were not subject to any regulatory notices issued by the NSW EPA.

4.5.2 List of NSW contaminated sites notified to EPA

A search through the List of NSW Contaminated Sites notified to the EPA under Section 60 of the CLM Act 1997 was also conducted on 4 September 2018. This list is maintained by NSW EPA and

includes properties on which contamination has been identified. Not all notified land is deemed to be impacted significantly enough to warrant regulation by the EPA.

The search confirmed that the site known as 15-21 Brighton Avenue, Croydon Park NSW was not subject to any regulatory notices issued by the NSW EPA. However, the search carried out on lands within close proximity (approx. 1 km) to the site identified the following locality:

- Mobil Service Station at 334 Georges River Road, Croydon Park (approx. 815 m SW and hydraulically downgradient of the site) has been notified as contaminated to the EPA due the site being occupied by a service station. However, regulation under the CLM Act is not required.

4.5.3 POEO Public Register

A search of the Protection of the Environment Operations (POEO) Act public register was conducted on 4 September 2018. The public register contains records related to environmental protection licences, applications, notices, audits, pollution studies, and reduction programmes. The search for Croydon Park did not identify any records for the site or surrounding land within close proximity (<1 km).

5. CONCEPTUAL SITE MODEL

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

5.1 SUBSURFACE CONDITIONS

The overall site geological conditions encountered in the DSI are summarised in **Table 9-1** the subsurface was generally shallow to deep gravelly, clayey sand fill overlying residual clay.

5.2 POTENTIAL SOURCES, EXPOSURE PATHWAYS AND RECEPTORS

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

5.3 CONTAMINATION SOURCES

Base on the site history and the site inspection, the primary contaminant sources considered to be present at the site are outlined in **Table 5-1**.

Table 5-1 Contaminant Sources

Contaminant Source	Comment	Potential Impacts
Surface filling	Y	A wide range of potential inorganic and organic chemicals and asbestos
Demolition of former buildings	Y	Potential paint and fibrous cement sheeting fragments potentially containing asbestos
Degradation of building surfaces (including fences)	Y	Priority metals particularly Cu, Pb & Zn, paint fragments and asbestos fines, including friable asbestos from fire damaged building(s).
Potential use of pesticides on or underneath building footprints and sealed surfaces	Y	Potential soil contamination of OCP's, OPP's, and PCBs
Current commercial site activities (repairs, storage and distribution of radiators and air conditioning units) and previous commercial site activities.	Y	A wide range of potential impacts include Heavy metals, BTEX, PAH, TRH, VOCs, Phenols
Contamination from off-site sources (commercial properties)	Y	Potential groundwater contamination from offsite industrial sources, including VOC, TRH, Heavy Metals and BTEX
Potential contamination in areas not accessible during investigations (underneath building footprints)	Y	Potential impact of heavy metals, OCP's, OPP's, BTEX, PCB's and PAH's from future demolition due to structure metals.

Note 1 Y – Yes, N- No, N/A – Not applicable

5.4 CONTAMINANTS OF POTENTIAL CONCERN

Based on the findings of the site contamination appraisal, the contaminants of potential concern (COPC) at the site and the potential media impacts are outlined in **Table 5-2**. For definitions and abbreviations see glossary at end of report.

Table 5-2 Contaminants of Potential Concern

Contaminants of Potential Concern	Soil Impacts[1]	Air Quality Impacts[1]	Groundwater Impacts[1]
Priority metals As, Cd, Cr, Cu, Hg, Ni, Pb, & Zn also commonly known as heavy metals (HMs)	H	L	H
Other metals Be, Co, Cr^{VI}, Mn, Se	L	N/A	L
Total recoverable hydrocarbons (TRH)	M	L	M
Monocyclic aromatic hydrocarbon compounds benzene, toluene, ethyl benzene and xylenes (BTEX)	M	L	M
Polycyclic aromatic hydrocarbons (PAH) including B(a)P TEQ	M	L	M
Volatile organic compounds (VOCs) including Chlorinated volatile organic compounds (cVOCs)	M	L	H
Organochlorine and Organophosphate pesticides (OCP/ OPP)	M	N/A	L
Phenols	L-M	N/A	M
Polychlorinated biphenyls (PCB)	M	N/A	L
Asbestos	M	L	N/A
LNAPL or DNAPL	N/A	N/A	L
Others (See Section 5.5)	L	L	L

Note:
L – low risk.
M – medium/moderate risk.
H – high risk.
N/A – not applicable (or "-")

5.5 OTHER CHEMICALS OF CONCERN

5.5.1 Per or poly-fluoroalkyl substances (PFAS)

The NSW EPA (2017) auditor guidelines and the PFAS National Environmental Management Plan (NEMP) (2018) require that PFAS is considered in assessing contamination. EI use the following decision tree (**Table 5-3**) based on EnRisk (2016) for prioritising the potential for PFAS to be present on site and whether PFAS sampling of soil and water is required.

Table 5-3 PFAS Decision Tree

Preliminary Screening	Decision
Did fire training occur on-site?	No
Did fire training occur, or is an airport or fire station up-gradient of or adjacent to the site? [1]	No
Have "fuel" fires ever occurred on-site? (e.g. ignition of fuel (solvent, petrol, diesel, kerosene) tanks?)	No
Have PFAS been used in manufacturing or stored on-site ?[2]	No
If Yes to any questions, has site analytical suite been optimised to include preliminary sampling and testing for PFAS in soil (ASLP Testing) and water?	**N/A**

Note 1 Runoff from fire training areas may impact surface water, sediment and groundwater.
Note 2 PFAS is used wide range of industrial processes and consumer products, including in the manufacture of non-stick cookware, specialised garments and textiles, Scotchguard™ and similar products (used to protect fabric, furniture, leather and carpets from oils and stains), metal plating and in some types of fire-fighting foam (https://www.nicnas.gov.au/chemical-information/factsheets/chemical-name/perfluorinated-chemicals-pfas)

5.5.2 Emerging Chemicals

The NSW EPA uses Chemical control orders (CCOs) as a primary legislative tool under the EHC Act (1985) to selectively and specifically control particular chemicals of concern, and limit their potential impact on the environment. CCOs provide the EPA a rapid and flexible mechanism for responding to emerging chemical issues. As with PFAS, EI has considered chemicals controlled by CCOs and other potential emerging chemicals in this assessment as outline in **Table 5-4**.

Table 5-4 Emerging or controlled chemicals

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

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

Table 5-5 Conceptual Site Model

Impacted Media	Contaminants of Potential Concern	Transport mechanism	Exposure pathway	Potential receptor
Soil	HM, TRH, PAH, BTEX, OCP, OPP, PCB, and asbestos	Disturbance of surficial and subsurface soils during site redevelopment, future site maintenance and future use of the site post redevelopment	Ingestion; Dermal contact; Inhalation of asbestos fibres and dust particulates	Current commercial occupants at the site Construction and maintenance workers End users of the site post redevelopment
		Atmospheric dispersion from soil to indoor and outdoor air spaces	Inhalation of asbestos fibres and dust particulates	
	HM, TRH, PAH, BTEX, OCP	Plant uptake of contamination present in root zone	Plant uptake	Future ecological receptors (e.g. site vegetation post redevelopment)
Groundwater	HM, TRHs, BTEX, PAHs, volatile organic compounds (VOCs), and Phenols (Total).	Volatilisation of contamination from groundwater to indoor or outdoor air spaces (onsite and offsite)	Inhalation of vapours	End users of the site post-development Basements users (on and offsite)
		Migration of dissolved phase impacts in groundwater	Contaminants arriving at receiving surface water bodies could lead to ingestion and dermal contact	Aquatic ecosystems Ecological Receptors (Cook's River) Recreational water users
	F1 and F2 TRH, BTEXN, Phenols (Total) and VOCs	Potential seepage into deep basement intercepting water table (on and offsite)	Dermal contact Ingestion	Basements users
Building fabrics containing hazardous materials	Lead, PCB and asbestos	Release of hazardous materials during uncontrolled demolition of building fabrics	Ingestion; Dermal contact; Inhalation of airborne contaminants	Construction and maintenance workers

5.6 DATA GAPS

Based on information from the site walkover inspection and site history review, EI considered a programme of intrusive investigation was warranted to conduct targeted sampling at locations of known, potential sources of contamination (as listed in **Section 5.3**), with systematic sampling coverage in site areas where operational site history was not documented.

6. SAMPLING, ANALYTICAL AND QUALITY PLAN (SAQP)

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

- Data quality objectives, including a summary of the objectives of the 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.

6.1 DATA QUALITY OBJECTIVES (DQO)

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

Table 6-1 Summary of Project Data Quality Objectives

DQO Steps	Details	Comments (changes during investigation)
1. State the Problem Summarise the contamination problem that will require new environmental data, and identify the resources available to resolve the problem; develop a conceptual site model	The future development of this site is unknown. The site is subject to re-zoning under Canterbury-Bankstown Council. The purpose of the investigation is to obtain baseline data on site soil/ groundwater conditions prior to the rezoning and future redevelopment of the site (**Section 1.2**). Review of site use history found that the site was likely used for residential purposes until the 1970's, from which it has been used commercially to date. There are a number of potential contamination sources identified in the developed CSM (**Section 5**). A program of intrusive investigation was therefore required, to provide additional data for characterisation of the environmental conditions at the site.	-
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 in this DSI 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	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 development plans and land use; • Regional and site settings including site geology, topography and surrounding land uses; • Information provided in previous investigation (EI, 2016); • Aerial photographs, historical land title records, council records; • 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*; • Intrusive investigation sampling to characterise environmental conditions at the site and to evaluate the potential risks to sensitive receptors; and • Laboratory analytical results of soil and groundwater samples collected.	Future land use and proposed development plans were not known at the time of reporting.
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 – cadastral boundaries of the site; Vertical – for soil investigation, from the existing ground level to at least 0.5 m into the natural soil strata, and underlying water-bearing zones; and 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 onto the site from off-site sources.	Lateral – the extent of the study onsite was limited to accessible areas of the site due to existing building structures, infrastructure, and the location of services, as detailed in **Section 5.6.** Vertical – During the soil investigation the full extent of the soils profiles within the building footprints, could not be completely assessed due to shallow refusal (0.3 mBGL) on additional concrete slabs. During drilling, groundwater was not encountered at the proposed depth of 6 m BGL. A decision was made to keep drilling until groundwater was encountered before the installation of the monitoring wells.

DQO Steps	Details	Comments (changes during investigation)
5. Develop the Analytic Approach (Develop a decision rule) To define the parameter of interest, specify the action level, and integrate previous DQO outputs into a single statement that describes a logical basis for choosing from alternative actions	The decision rules for the investigation were: • If the concentrations of contaminants in the soil data exceed the land use criteria; then assess the need to further investigate the extent of impacts and the need for remedial works onsite. • Decision criteria for QA/QC measures are defined by the Data Quality Indicators (DQI) in **Table 6-2**.	-
6. Specify Performance or Acceptance Criteria (Specify limits on decision errors) Specify the decision-maker's acceptable limits on decision errors, which are used to establish performance goals for limiting uncertainties in the data	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 14.5 m grid will allow detection of a circular hotspot with a nominal diameter of 17 m with 95% certainty; • The acceptance of the site as validated 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; – 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 COPCs 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.	• Due to the existing site structures and other infrastructure on-site, a systematic sampling pattern was not achieved in this DSI. As a result, the reliability of detecting a circular hotspot of diameter X could not be achieved with certainty using the adopted targeted sampling pattern. • The DSI primarily adopted a targeted sampling pattern, focusing on identified areas of environmental concern. As such, individual soil data points were assessed solely against adopted criteria.

DQO Steps	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 site area (5,074 m^2) required fourteen sampling points according to EPA (1995). • Soil sampling locations will be set using a systematic sampling pattern across the site. • An upper soil profile sample (soil extracted immediately beneath the concrete hardstand / pavement will be collected at each borehole location and tested for chemicals of concern, to assess the conditions of fill layer, and impacts from activities above ground. Further sampling would also be carried out at deeper soil layers. These samples would be selected for testing based on field observations (including visual and olfactory evidence, as well as soil vapour screening in headspace samples) whilst giving consideration to characterise the subsurface soil stratigraphy. • Three groundwater monitoring wells were proposed to characterise groundwater quality within the site. • Written instructions will be issued to guide field personnel in the required fieldwork activities.	Due to existing structures and services at the site, a systematic grid pattern could not be achieved

6.2 DATA QUALITY INDICATORS

To ensure that the investigation data collected was of an acceptable quality, the investigation data set was assessed against the data quality indicators (DQI) outlined in **Table 6-2**, which related to both field and laboratory-based procedures. The assessment of data quality is discussed in **Section 8**.

Table 6-2 Data Quality Indicators

Data Quality Objective	Data Quality Indicator	Acceptable Range
Precision – A quantitative measure of the variability (or reproducibility) of data	**Field:** Blind duplicate and triplicate samples	< 30 % relative percentage difference (RPD [%]) in concentrations between the primary and the duplicate sample pair. 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%; and • Heterogeneous materials or volatile compounds are encountered.
	Laboratory: Laboratory duplicates, control spike and matrix spike	Prescribed by the laboratories
Accuracy – A quantitative measure of the closeness of reported data to the "true" value	**Field:** Rinsate blank Trip blank (laboratory prepared)	 < laboratory limit of reporting (LOR) < laboratory limit of reporting (LOR)
	Laboratory: Laboratory control spike, matrix spike, reagent blanks / method blanks and surrogate spikes	Prescribed by the laboratories
Representativeness – The confidence (expressed qualitatively) that data are representative of each medium present onsite	**Field:** Trip blank (laboratory prepared) Trip spike (laboratory prepared)	 < laboratory limit of reporting (LOR) Spike recoveries between 70% - 130%
	Laboratory: Method blank Conformance with specified holding times	Prescribed by the laboratories / NEPM 2013
Comparability – The confidence (expressed qualitatively) that data may be considered to be equivalent for each sampling and analytical event	Same sampling and analytical method Same types of sample Adherence to standard operation procedure	-
Completeness – A measure of the amount of useable data from a data collection activity	Completion (%)	Compliance with the SAQP

7. ASSESSMENT METHODOLOGY

7.1 SAMPLING RATIONALE

With reference to the preliminary CSM described in **Section 5**, soil works were planned in accordance with the following rationale, however site constraints (structures, services and additional concrete slabs) limited the location of boreholes investigation as discussed in **Section 7.2**:

- Sampling fill and natural soils from fourteen (14) borehole locations located systematically across the site using an approximate grid-based sampling pattern to characterise in-situ soils;
- Construction of three (3) groundwater monitoring wells to a maximum depth of 6 mBGL (or refusal) for groundwater characterisation; and
- Laboratory analysis of representative soil samples and groundwater samples for the identified contaminants of potential concern.

7.2 INVESTIGATION CONSTRAINTS

The number of test bores drilled installed during the investigation phase achieved the planned investigation scope described in **Section 7.1**, however there were a number of constraints encountered, including:

- Limited site access within three building footprints located at 17 Brighton Avenue (Lot 2 Section 2A DP 3010), due to low clearance and tight access (storage of boxed goods), as shown in Figure 2; and
- Due to borehole refusal at five of the fourteen borehole locations (on suspected buried pavements) within building footprints, deeper soils could not be satisfactorily investigated.

7.3 ASSESSMENT CRITERIA

The assessment criteria proposed for this project are outlined in **Table 7-1**. 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 7-1 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)** All soil samples will be assessed against the NEPM 2013 HIL-B thresholds for residential sites with minimal access to soils, as these areas would be under slabs. **Ecological Investigation Levels (EILs)** Soil samples will also be assessed against the NEPM 2013 EILs on residential site for areas of the site designated for landscaping. Soil samples will be compared 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. **Table 9-4** provides a summary of adopted Added Contaminant Levels (ACL) and Ambient Background Concentrations for the derivation of copper, chromium (III), nickel, lead, and zinc EILs. Generic EILs were adopted for ecological assessment in relation to arsenic, DDT and naphthalene. **Soil Health-based Screening Levels (HSLs)** <u>Hydrocarbon HSLs:</u> The NEPM (2013) HSL-A&B thresholds for low to high density residential land use were applied to assess for potential human health impacts from residual vapours resulting from petroleum, BTEX & naphthalene. <u>Asbestos HSLs:</u> WADOH (2009) assessment criteria, as presented in NEPM (2013), were not adopted during this investigation. Presence / absence of asbestos (not-detected) were utilised for preliminary screening purposes. **Ecological Screening Levels (ESLs)** Soil samples will be assessed against the NEPM 2013 ESLs for selected petroleum hydrocarbons & TRH fractions for protection of terrestrial ecosystems on residential sites. **Management Limits for Petroleum Hydrocarbons** Should the ESLs and HSLs be exceeded for petroleum hydrocarbons, soil samples will also assessed against the NEPM 2013 *Management Limits* for the TRH fractions F1 – F4 to assess propensity for phase-separated hydrocarbons (PSH), fire and explosive hazards & adverse effects on buried infrastructure.
Groundwater	NEPM, 2013 GILs for Marine Waters	**Groundwater Investigation Levels (GILs) for Marine Water** NEPM 2013 provides GILs for typical, slightly-moderately disturbed aquatic ecosystems, which are based on the ANZAST 2018 Trigger Values (TVs) for the 95% level of protection of aquatic ecosystems; however, the 99% TVs were applied for the bio-accumulative metals *cadmium* and *mercury*. The marine criteria were considered relevant as the closest, potential surface water receptor was Cooks River, located approximately 600 m south of the site.
	NEPM, 2013 Groundwater HSLs,	**Groundwater 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&B* thresholds for low to high-density residential sites were applied for groundwater.
	NEPM, 2013 GILs for Drinking purposes	**Drinking Water GILs** The NEPM (2013) GILs for drinking water quality were applied for the assessment of direct contact with groundwater. These were based on the Australian Drinking Water Guidelines (Ref. NHMRC, 2011).

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

7.4 SOIL INVESTIGATION

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

Table 7-2 Summary of Soil Investigation Methodology

Activity/Item	Details
Fieldwork	The site investigation was conducted 22 August 2018. Majority of the planned test bores were able to be completed to the target depth within the natural soil profile.
Drilling Method & Investigation Depth	Test bores were drilled using a ute mounted drill rig and hand auger. Final bore depths were: • 8.2 mBGL for BH101M; • 0.3 mBGL for BH102; • 0.3 mBGL for BH103; • 1.5 mBGL for BH104; • 1.5 mBGL for BH105; • 1.0 mBGL for BH106; • 1.0 mBGL for BH107; • 6.3 mBGL for BH108M; • 0.3 mBGL for BH109; • 0.3 mBGL for BH110; • 1.0 mBGL for BH111; • 7.5 mBGL for BH112M; • 0.3 mBGL for BH113; and • 0.6 mBGL for BH114.
Soil Logging	Drilled soils were classified in the field with respect to lithological characteristics and evaluated on a qualitative basis for odour and visual signs of contamination. Soil classifications and descriptions were based on Unified Soil Classification System (USCS) and Australian Standard (AS) 4482.1-2005. Bore logs are presented in **Appendix E**.
Field Observations (including visual and olfactory signs of potential contamination)	A summary of field observations is provided, as follows: • No fibre cement sheeting was evident in the 14 boreholes drilled across the site; • Glass fragments was evident in fill samples from BH105; • Charcoal/ ash was evident in fill samples collected from BH105; and • Generally there was no olfactory evidence of contamination, with the exception of BH106 where a weak hydrocarbon odour and dark grey staining was observed within the sandy fill material, approx. 0.3 to 0.4 mBGL.

Activity/Item	Details
Soil Sampling	• Soil samples were collected using a dry grab method (unused, dedicated nitrile gloves) & placed into laboratory-supplied, acid-washed, solvent-rinsed glass jars. • A small amount of duplicate was collected from each soil samples and placed into zip-lock bag for Photo-ionisation Detector (PID) screening. • Blind field duplicates was separated from the primary samples and placed into glass jars. • A small amount of duplicate was separated from all fill samples and placed into a zip-lock bag for asbestos analysis.
Decontamination Procedures	*Auger Equipment* - The auger rods were decontaminated between sampling locations with potable water until the augers were free of all residual materials. *Sampling Equipment* - The equipment were decontaminated between sampling locations with Decon 90 and potable water until instruments were free of all residual materials.
Sample Preservation	Samples were stored in a chilled (ice-filled) chest, whilst on-site and in transit to the laboratory. All samples were submitted and analysed within the required holding period, as documented in laboratory reports discussed in a later section.
Management of Soil Cuttings	Soil cuttings were either used as backfill for completed boreholes or disposed in areas of the site not currently in use.
Quality Control & Laboratory Analysis	A number of soil samples were submitted for analysis of previously-identified COPC by SGS Laboratories (SGS). QA/QC testing comprised intra-laboratory duplicates ('field duplicates') tested blind by SGS and an inter-laboratory field duplicate tested blind by Envirolab Services (Envirolab). All samples were transported under strict Chain-of-Custody (COC) conditions and COC certificates and laboratory sample receipt documentation were provided to EI for confirmation purposes, as discussed in **Section 8**.
Soil Vapour Screening	Screening for potential VOCs in collected soil samples was conducted using a Photo-ionisation Detector (PID).

7.5 GROUNDWATER INVESTIGATION

The groundwater investigation works conducted at the site are described in **Table 7-3**. Monitoring well locations are illustrated in **Figure 2**.

Table 7-3 Summary of Groundwater Investigation Methodology

Activity/Item	Details
Fieldwork	Groundwater monitoring wells were installed and developed on 22 August 2018; whereas, water level gauging, well purging, field testing and groundwater sampling was conducted on 29 August 2018.

Activity/Item	Details
Well Construction	Test bores were converted to groundwater monitoring wells as follows: • One, 7.5 m deep, onsite, up-gradient well identified as BH101M; • One 6.3 m deep, onsite, up-gradient well identified as BH108M; and • One, 7.5 m deep, onsite, down-gradient well identified as BH112M. Drilled by HartGeo using a ute-mounted solid-flight auger rig. Well construction details are tabulated in **Table 9-2** and documented in the bore logs presented in **Appendix E**. Wells were installed to screen the aquifer in the intervals 4.5 to 7.5 mBGL (BH101M), 3.3 to 6.3 mBGL (BH108M) and 4.5 to 7.5 mBGL (BH110M). Well construction was in general accordance with the standards described in NUDLC, 2012 and involved the following: • 50 mm, Class 18 uPVC, threaded, machine-slotted screen and casing, with slotted intervals in shallow wells set to screen to at least 500 mm above the standing water level to allow sampling of phase-separated hydrocarbon product, if present; • Base and top of each well was sealed with a uPVC cap; • Annular, graded sand filter was used to approximately 300 mm above top of screen interval; • Granular bentonite was applied above annular filter to seal the screened interval; • Cuttings backfill just below ground level; and • Surface completion comprised of a -0.5 m plastic J-cap closing the well, with a gatic cover at ground level.
Well Development	Well development was conducted for each well directly following installation. This involved agitation within the full length of the water column using a HDPE disposable bailer, followed by the removal of water and accumulated sediment using a 12V, HDPE submersible bore pump (Proactive Environmental, model Super Twister). Pumping was continued until no further reduction in suspended sediment was observed (i.e. after removal of several well volumes).
Well Gauging & Groundwater Flow Direction	Monitoring wells BH101M, BH108M and BH112M were gauged for standing water level (SWL, depth to groundwater) prior to well purging at the commencement of the GME on 29 August 2018. The measured SWLs are shown in **Table 9-3**. The direction of groundwater flow in the aquifer was inferred to be in a southerly direction. This is consistent with the anticipated groundwater flow direction, as inferred considering the proximity of the site to Cooks River.

Activity/Item	Details
Well Purging & Field Testing	The groundwater monitoring wells were purged and sampled using low-flow/minimal draw-down sampling method with a MicroPurge kit (MP15) and a portable MicroPurge pump following well gauging. The MicroPurge system incorporates a low density poly-ethylene (LDPE) pump bladder, and a Teflon-lined LDPE sample delivery tube. The system used for this investigation employed pressurised carbon dioxide gas to regulate groundwater flow. Pump pressure and pumping cycles were adjusted accordingly to regulate extraction flow rate, and to avoid causing excessive drawdown of water level during the sampling process. Field measurement of water quality parameters was conducted continuously on purged groundwater with a water quality meter (Hanna Multi Parameter 9829) 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 F**), along with the purged water volume at the time of measurement. Groundwater sampling was performed when three consecutive readings of groundwater parameter indicated stabilisation; as per the specified ranges detailed below: • Electrical Conductivity: ± 3% of the read value; • Redox: ± 20 mV; • DO: ± 20% of the read value; • pH: ± 0.2 pH unit; and • Temperature: ± 0.2oC Total water volume purged and stabilised groundwater parameters at each groundwater monitoring well are summarised in **Table 9-3.**
Decontamination Procedure	• The water level probe, water quality kit probes and MicroPurge were washed in a solution of potable water and Decon 90 and then rinsed with potable water between measurements/wells. • All sample containers were supplied by the laboratory for the particular project and only opened once immediately prior to sampling. • While ice was used to keep the samples cool, all melt water was continuously drained from the Esky to prevent cross-contamination of samples.
Sample Preservation	Sample containers were supplied by the laboratory with the following preservatives: • One, 1 litre amber glass, acid-washed and solvent-rinsed bottle; • Two, 40ml glass vials, pre-preserved with dilute hydrochloric acid, Teflon-sealed; and • One, 250mL, HDPE bottle, pre-preserved with dilute nitric acid (1 mL). Samples for metals analysis were field-filtered using 0.45 µm pore-size filters. All containers were filled with sample to the brim then capped and stored in ice-filled chests, until completion of the fieldwork and during sample transit to the laboratory.
Quality Control & Laboratory Analysis	All groundwater samples were submitted for analysis of previously-identified chemicals of concern by SGS Laboratories (SGS). QA/QC testing comprised intra-laboratory duplicates ('field duplicates') tested blind by SGS and an inter-laboratory field duplicate tested blind by Envirolab Services (Envirolab). All samples were transported under strict Chain-of-Custody (COC) conditions and COC certificates and laboratory sample receipt documentation were provided to EI for confirmation purposes.
Sample Transport	After sampling, refrigerated sample chests were transported to SGS Australia Pty Ltd using strict Chain-of-Custody (COC) procedures. Inter-laboratory duplicate (ILD) samples were forwarded to Envirolab Services Pty Ltd (Envirolab) for QA/QC analysis. A Sample Receipt Advice (SRA) was provided by each laboratory to document sample condition upon receipt. Copies of SRA and COC certificates are presented in **Appendix G**.

8. DATA QUALITY ASSESSMENT

The assessment of data quality is defined as the scientific and statistical evaluation of environmental data to determine if the data meets the objectives for the project (US EPA 2006). Data quality assessment included an evaluation of the compliance of the field sampling, field and laboratory duplicates and laboratory analytical procedures and an assessment of the accuracy and precision of these data from the laboratory quality control measurements. The findings of the data quality assessment in relation to the current investigation at the site are discussed in detail in **Appendix G**.

The QC measures generated from the field sampling and laboratory analytical program are summarised in **Table 8-1**:

Table 8-1 Quality Control Process

Data Quality	Control	Conformance [Yes, Part, No]	Report Sections
Preliminaries	Data Quality Objectives established	Yes	See DQO/DQI
Field work	Suitable documentation of fieldwork observations including borehole logs, sample register, field notes, calibration forms	Yes	See Appendices
Sampling Plan	Use of relevant and appropriate sampling plan (density, type, and location)	Yes	See sample rationale
	All media sampled and duplicates collected	Yes	Soil vapour not required
	Use of approved and appropriate sampling methods (soil, groundwater, air quality)	Yes	See methodology
	Selection of soil samples according to field PID readings (where VOCs are present)	Yes	See methodology
	Preservation and storage of samples upon collection and during transport to the laboratory	Yes	See methodology
	Appropriate Rinsate, Field and Trip Blanks taken	Yes	See methodology
	Completed field and analytical laboratory sample COC procedures and documentation	Yes	See laboratory reports
Laboratory	Sample holding times within acceptable limits	Yes	See laboratory QA
	Use of appropriate analytical procedures and NATA-accredited laboratories	Yes	See laboratory report
	LOR/PQL low enough to meet adopted criteria	Yes	See laboratory appendix
	Laboratory blanks	Yes	See laboratory QA/QC
	Laboratory duplicates	Yes	See laboratory QA/QC

Data Quality	Control	Conformance [Yes, Part, No]	Report Sections
	Matrix spike/matrix spike duplicates (MS/MSDs)	Yes	See laboratory QA/QC
	Surrogates (or System Monitoring Compounds)	Yes	See laboratory QA/QC
	Analytical results for replicated samples, including field and laboratory duplicates and inter-laboratory duplicates, expressed as Relative Percentage Difference (RPD)	Yes	See QA Tables **Appendix F**
	Checking for the occurrence of apparently unusual or anomalous results, e.g. laboratory results that appear to be inconsistent with field observations or measurements	Yes	See **Appendix E**
Reporting	Report reviewed by senior staff to assess project meets desired quality, EPA guidelines and project outcomes.	Yes	See document control

8.1 QUALITY OVERVIEW

On the basis of the field and analytical data validation procedure employed, the overall quality of the analytical data produced for the site was considered to be of an acceptable standard for interpretive use and preparation of a conceptual site model (CSM).

9. RESULTS

9.1 SITE INVESTIGATION

9.1.1 Site Geology and Subsurface Conditions

The general site geology encountered during the drilling (solid flight auger and hand auger) of the soil investigation boreholes was a shallow layer of anthropogenic filling consisting of sand, sandy clay, silty clay and gravelly sand overlying residual clay and shale bedrock. The geological information obtained during the investigation is summarised in **Table 9-1** and borehole logs from these works are presented in **Appendix E**.

Table 9-1 Generalised Subsurface Profile

Layer	Description	Depth to top & bottom of layer (mBGL)
		(BH101M – BH114)
Concrete	Concrete Hardstand	0.00 – 0.30
Topsoil	Silty sand; fine to medium grained, brown, with trace rootlets, moist and no odour.	0.00 – 0.05
Fill	Sand; medium to coarse grained, brown, moist and no odour. Dark grey staining and weak hydrocarbon odour was present in BH106.	0.10 – 0.40 +
	Sandy clay; low to medium plasticity, dark brown, with medium to coarse sand, with sub-angular to angular, medium to coarse gravels, moist and no odour. Charcoal / ash and glass fragments were present in BH105.	0.10 – 1.40
	Clayey sand; medium to coarse grained, reddish brown, low to medium plasticity, with sub-angular to angular gravels, moist and no odour.	0.10 – 0.50
	Gravelly sand; medium to coarse grained, reddish brown, with angular to sub-angular, medium to coarse gravels, moist and no odour.	0.10 – 0.50
	Silty clay; low to medium plasticity, light brown to light grey, with mottled orange, moist and no dour.	0.15 – 0.50
Natural	Clay; low to high plasticity, light grey / orange brown to dark brown with mottled red / orange, with small sub-angular to sub-rounded gravels, moist and no odour. Minor charcoal was present at BH104. Greenish brown clay was present at BH108M.	0.30 – 1.5 +
Bedrock	Shale; highly weathered, light brown / orange to brown, dry and no odour.	0.50 – 8.20 +

Notes:
+ Termination depth of borehole

9.1.2 Field Observations and PID Results

Soil samples were obtained from the test bores at various depths ranging between 0.1 m to 1.7 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, etc.) and the following observations were noted:

- No visual or olfactory evidence of hydrocarbon impacts were noted at any of the borehole locations investigated during this assessment. However, BH106 was an exception with a weak hydrocarbon odour and dark grey staining noted from approximately 0.3 to 0.4 mBGL, within fill material;
- Fill material was evident within all borehole locations sampled during this investigation, from approx. 0.1 to 0.7 mBGL;
- Glass fragments were noted within the fill soil material at borehole BH105;
- No fibrous cement sheeting was noted within the fill soil profile at 14 boreholes across the site;
- Charcoal / ash was evident within the fill soil profile at BH105 (central part of the site);
- No slag was observed in any of the examined fill soils; and
- No elevated VOC concentrations were detected in soil samples, which were field-screened using a portable PID fitted with a 10.9 eV lamp. The PID results are shown in the borehole logs (**Appendix G**).

9.2 GROUNDWATER INVESTIGATION RESULTS

9.2.1 Monitoring Well Construction

A total of three (3) groundwater monitoring wells (BH101M, BH108M and BH112M) were installed across the site on 22 August 2018. These groundwater monitoring wells were used by EI on 29 August 2018 during the groundwater monitoring event (GME). Well construction details for the installed groundwater monitoring wells are summarised in **Table 9-2**.

Table 9-2 Monitoring Well Construction Details

Well ID	Bore Depth (mBGL)	Screen Interval (mBGL)	Lithology Screened
BH101M	8.2	4.5 – 7.5	Shale
BH108M	6.3	3.3 – 6.3	Shale
BH112M	7.5	4.5 – 7.5	Shale

Notes:
mBGL - metres below ground level.

9.2.2 Field Observations and Water Test Results

A single GME was conducted on all wells on 29 August 2018. On this date, standing water levels (SWLs) were measured within each well prior to well purging, the results of which were recorded with well purge volumes and field-based water test results. A summary of the recorded field data is presented in **Table 9-3** and copies of the completed Field Data Sheets are included in **Appendix H**.

Table 9-3 Groundwater Field Data

Well ID	SWL (mBTOC)	Purge Volume (L)	Depth of pump Inlet (mBGL)	DO (mg/L)	Field pH	Field EC (µS/cm)	Temp (°C)	Redox (mV)	Comments
BH101M	3.9	2.5	6.3	1.78	5.64	5344	19.96	203.3	Pale yellow / brown, low to medium turbidity, no odour, no sheen.
BH108M	2.98	2.5	4.80	1.43	5.57	4361	19.03	139.1	Light brown to grey, low turbidity, no odour, no sheen.
BH112M	3.37	1.5	6.5	3.46	6.35	4598	19.09	133.5	Brown, medium to high turbidity, no odour, no sheen.

Notes:
[1] GME – Groundwater monitoring event.
[2] SWL – Standing Water Levels as measured from TOC (top of well casing) prior to groundwater sampling.
[3] mBTOC – metres below top of well casing (Note: Ground Level - TOC for the wells).
[4] L – litres (referring to volume of water purged from the well prior to groundwater sample collection).
[5] EC – groundwater electrical conductivity as measured onsite using portable EC meter.
[6] µS/cm – micro Siemens per centimetre (EC units).
[7] DO – Dissolved Oxygen in units of milligrams per litre (mg/L)
[8] All groundwater parameters (pH, EC and DO) were tested on site.
[9] Field Redox (mV) readings adjusted to Standard Hydrogen Electrode (SHE) by adding field electrode potential (205mV)

With reference to **Table 9-3**, groundwater was slightly acidic, oxidising, and saline.

9.3 LABORATORY ANALYTICAL RESULTS

9.3.1 Soil Analytical Results

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

Table 9-4 Summary of Soil Analytical Results

No. of primary samples	Analyte	Min. Conc. (mg/kg)	Max. Conc. (mg/kg)	Sample locations exceeding investigation levels
Hydrocarbons				
20	Benzene	<0.1	<0.1	None
20	Toluene	<0.1	<0.1	None
20	Ethyl benzene	<0.1	<0.1	None
20	Total xylenes	<0.3	<0.3	None
20	F1	<25	<25	None
20	F2	<25	130	BH108M_0.4-0.5 (EIL)
20	F3	<90	160	None
20	F4	<120	<120	None
PAHs				
20	Carcinogenic PAHs	<0.3	<0.3	None
20	Benzo(a)pyrene	<0.1	<0.1	None
20	Total PAHs	<0.8	0.8	None
20	Naphthalene	<0.1	<0.1	None
Heavy Metal				
20	Arsenic	<1	22	None
20	Cadmium	<0.3	0.8	None
20	Chromium (Total)	1.2	17	None
20	Copper	<0.5	150	BH105_0.3-0.4 (EIL)
20	Lead	1	350	None
20	Mercury	<0.05	0.13	None
20	Nickel	<0.5	25	None
20	Zinc	2.8	270	BH105_0.3-0.4, BH108M_0.4-0.5 (EIL)
OCPs				
14		<1	<1	None
OPPs				
14		<1.7	<1.7	None
PCBs				
14		<1	<1	None
Asbestos				
14	Asbestos	No asbestos detected	No asbestos detected	None

Heavy Metals

As shown in **Table T1**, all heavy metals (HM) concentrations were below the corresponding NEPM 2013 health-based HIL-A levels. However, BH105_0.3-0.4 and BH108M_0.4-0.5 exceeded the ecological based soil criteria (EILs) for copper and zinc respectively.

TRHs

As shown in **Table T1**, all total recoverable hydrocarbons (TRH) concentrations were below the corresponding NEPM 2013 health-based HSL-A&B criteria. However, BH108M_0.4-0.5 exceeded EIL for F2.

BTEX and Naphthalene

As shown in **Table T1**, all BTEX and naphthalene concentrations were below the corresponding NEPM 2013 health-based HSL-A&B criteria.

PAHs

As shown in **Table T1**, all PAHs concentrations were below the corresponding NEPM 2013 health-based HIL A levels.

OCPs, OPPs and PCBs

As shown in **Table T1**, all OCPs, OPPs and PCBs concentrations were below the corresponding NEPM 2013 health-based HIL-A levels.

Asbestos

All tested samples concentrations were below the corresponding NEPM 2013 health-based HIL-A levels.

9.3.2 Groundwater Analytical Results

Laboratory analytical results for groundwater samples are summarised in **Table 9-5**, which also include the adopted GILs. Completed documentation used to track groundwater sample movements and laboratory receipt (COC and SRA forms) are copied in **Appendix G**. Copies of the laboratory analytical reports are attached in **Appendix H**.

Table 9-5 Summary of Groundwater Analytical Results

No. of primary samples	Analyte	Min. Conc. (µg/L)	Max. Conc.(µg/L)	Sample locations exceeding investigation levels
Hydrocarbons				
3	F1	<50	<50	None
3	F2	<60	<60	None
3	F3	<500	<500	None
3	F4	<500	<500	None
3	Benzene	<0.5	<0.5	None
3	Toluene	<0.5	<0.5	None
3	Ethylbenzene	<0.5	<0.5	None
3	o-xylene	<0.5	<0.5	None
3	m/p-xylene	<1	<1	None
PAHs				
3	Naphthalene	<0.1	<0.1	None
3	Total PAHs	<1	<1	None
3	Benzo(a)pyrene	<0.1	<0.1	None
Heavy Metal				
3	Arsenic	3	20	None
3	Cadmium	0.4	0.9	None
3	Chromium (Total)	1	2	None
3	Copper	59	64	BH101M, BH108M, BH112M (EIL)
3	Lead	3	4	None
3	Mercury	<0.1	<0.1	None
3	Nickel	35	89	BH108M (EIL)
3	Zinc	200	300	BH101M, BH108M, BH112M (EIL)
VOCs (only detected analytes shown)				
3	Total VOC	<10	19	NC
3	Acetone (2-propanone)	<10	13	NC
Phenolic Compounds				
3	Phenols (Total)	<10	<10	None

Note:
NC - No given criteria

Heavy Metals

With reference to **Table T2** heavy metal concentrations in excess of the adopted freshwater GILs were identified for the following:

- BH101M for Copper (64 µg/L) and Zinc (200 µg/L);
- BH108M for Copper (63 µg/L), Nickel (89 µg/L) and Zinc (300 µg/L); and
- BH112M for Copper (59 µg/L) and Zinc (210 µg/L).

It can be inferred that the detected groundwater metal levels do not pose an immediate threat to human health or the environment. Whether these results are treated as exceedances of the GILs, or representative of urban background groundwater conditions, the identified groundwater concentrations are not considered to represent a cause for environmental concern. Furthermore, exceedances are indicative of the non-site specific criteria used for the site. Total hardness should be analysed to provide an appropriate site specific criteria for exceeding analytes.

TRHs and BTEX

As shown in **Table T2**, tested TRH and BTEX concentrations were below the corresponding GIL, which was adopted from the default criteria for Drinking Water (Ref. NHMRC, 2011).

PAHs and Phenols

As shown in **Table T2**, tested PAH concentrations were below the corresponding GIL, which was adopted from the default criteria for Drinking Water (Ref. NHMRC, 2011).

VOCs (including Naphthalene)

As shown in **Table T2** all analysed samples for VOCs were below the corresponding GIL criteria and laboratory PQLs and do not represent a cause for environmental concern.

10. SITE CHARACTERISATION

10.1 REVIEW OF CONCEPTUAL SITE MODEL

On the basis of investigation findings the preliminary CSM discussed in **Section 5** was considered to appropriately identify contamination sources, migration mechanisms and exposure pathways, as well as potential onsite and offsite receptors. Previously known data gaps, as outlined in **Section 5.5** have largely been addressed; however, the following remaining data gaps need to be addressed in subsequent investigation works:

- The quality of filling and natural soils beneath building structure areas of the site not satisfactorily assessed during this investigation; and
- Potential presence of hazardous materials present within the existing site structures.

10.2 SOIL QUALITY

The drilling completed by EI on 22 August 2018, indicated that fill material encountered across the site exceeded the corresponding ecological based criteria (EILs).

Fill material at the following boreholes indicated criteria exceedances:

- BH105_0.3-0.4 exceeded the EIL for Copper (150 mg/kg) and Zinc (270 mg/kg); and
- BH108M_0.4-0.5 exceeded the EIL for Zinc (210 mg/kg) and TRH F2 (130 mg/kg).

10.3 GROUNDWATER QUALITY

The Groundwater Monitoring Event (GME) completed by EI on 29 August 2018 indicated the ground water encountered across the site marginally exceeded the corresponding groundwater investigation levels (GILs) for marine waters at the following monitoring wells locations:

- BH101M-1 exceeded Copper (64 µg/L) and Zinc (200 µg/L);
- BH108M-1 exceeded Copper (63 µg/L), Nickel (89 µg/L) and Zinc (300 µg/L); and
- BH112M-1 exceeded Copper (59 µg/L) and Zinc (210 µg/L).

Given that elevated heavy metal levels concentrations were identified in the hydraulically up-gradient monitoring well (BH101M), it is concluded that elevated heavy metal concentrations in groundwater onsite is related to background groundwater quality entering the site, and not necessarily from onsite sources.

11. CONCLUSIONS

The property located at 15-21 Brighton Avenue, Croydon Park NSW was the subject of a Detailed Site Investigation (DSI) that was conducted in order to assess the nature and degree of on-site contamination associated with current and former uses of the property. Based on the findings of this assessment it was concluded that:

- The site, which fronts Brighton Avenue to the west, consists of four allotments (Lot C DP440959, Lot 2A Section 2 DP3010, Lot A & B DP333556, Lot 1 DP123636), covering a total area of 5,074 m². The site is currently used for commercial / industrial purposes;
- Historical records indicated that the site appears to have been residential from the early 1900s to early1970's - 1990's. Land use changed from residential to commercial / industrial, with all residential dwellings demolished, and several large warehouses built across the site. The site is currently used for commercial / industrial purposes (storage and distribution of radiators, air conditioning units and textile goods (including linen and clothing)), present day;
- The site was free of statutory notices issued by the NSW EPA and was not recorded on the List of NSW Contaminated Sites Notified to EPA or the POEO register;
- A search of SafeWork NSW records relating to the site was requested on 24 April 2018 by EI, on behalf of the Client. Correspondence dated 10 May 2018 from the Dangerous Goods Licensing Section, confirmed that SafeWork NSW had no records indicating the storage of dangerous goods on the allotments;
- The sub-surface layers comprised primarily of clayey, gravelly, sand fill materials, overlying residual clays (low to high plasticity) and weathered shale bedrock;
- Groundwater was encountered at depths ranging from 2.98 to 3.90 metres below ground level (mBGL);
- Soil sampling and analysis were conducted at fourteen borehole locations (BH101M to BH114) down to a maximum depth of 8.2 mBGL. The sampling regime was developed using both judgemental and systematic (triangular grid) sampling patterns, with allowance for structural obstacles (e.g. building walls, and other physical obstructions in use by existing, operating businesses);
- All tested analytes for the soil samples collected from (BH101M to BH114) were below the adopted health investigation and screening levels (HIL/HSL) and the ecological criteria, with the following exceptions:
  - BH105_0.3-0.4 exceeded the EIL for copper (150 mg/kg) and Zinc (270 mg/kg); and
  - BH108M_0.4-0.5 exceeded the EIL for zinc (210 mg/kg) and TRH F2 (130 mg/kg).
- Three groundwater monitoring wells (BH101M, BH108M and BH112M) were installed during the investigation. Groundwater was encountered in one of the three monitoring wells during the installation at a depth of 7.0 mBGL. However, during the GME, groundwater was detected in all three monitoring wells with standing water levels between 2.98 mBTOC and 3.90 mBTOC;
- The tested analytes for the groundwater samples collected from BH101M, BH108M and BH112M were below the GIL criteria, with the following exceptions:

  - BH101M-1 exceeded copper (64 µg/L) and zinc (200 µg/L);
  - BH108M-1 exceeded copper (63 µg/L), nickel (89 µg/L) and zinc (300 µg/L); and
  - BH112M-1 exceeded copper (59 µg/L) and zinc (210 µg/L).
- The following data gaps identified in this DSI will require closure by further investigations:
  - The quality of soils beneath building structure areas (including areas of parked vehicles) of the site not assessed during this investigation; and
  - Potential presence of hazardous materials present within the existing structure.

Based on the findings from this DSI, conducted in accordance with the investigation scope agreed with the Client, and with consideration of the Statement of Limitations (**Section 13**), contamination exceeding human-health investigation criteria was not identified. While some data gaps remain that require closure by further intrusive investigation, the available quantitative soil and groundwater data does not indicate the presence of contamination that would preclude the site from being rezoned for residential purposes (with minimal access to soils).

Based on the findings of this investigation, a number of recommendations are detailed in **Section 12** for implementation as part of any future redevelopment of the site for residential purposes.

EI note that site contamination can be managed through the development application process in accordance with the *State Environmental Planning Policy 55 (SEPP 55) – Remediation of Land*, with the requirements for remediation and validation incorporated into conditions of development consent.

12. RECOMMENDATIONS

Based on the findings of this investigation, the following recommendations are provided:

- Prior to any future development onsite, this report is to be reviewed in conjunction with the proposed architectural plans;
- Prior to site demolition, carry out a Hazardous Materials Survey on existing site structures to identify potentially hazardous building products that may be released to the environment during demolition;
- Prior to any future redevelopment of the site, supplementary investigations are to be completed to close current investigation data gaps to ascertain if any unknown contamination is present that could require remediation and preparation of a supplementary report;
- Any material being removed from site (including virgin excavated natural materials (VENM)) should be classified for off-site disposal in accordance the EPA (2014) Waste Classification Guidelines; and
- Any material being imported to the site should be assessed for potential contamination in accordance with NSW EPA guidelines as being suitable for the intended use or be classified as VENM.

13. STATEMENT OF LIMITATIONS

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

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

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

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

This report was prepared for the above named client and no responsibility is accepted for use of any part of this report in any other context or for any other purpose or by other third parties. This report does not purport to provide legal advice.

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

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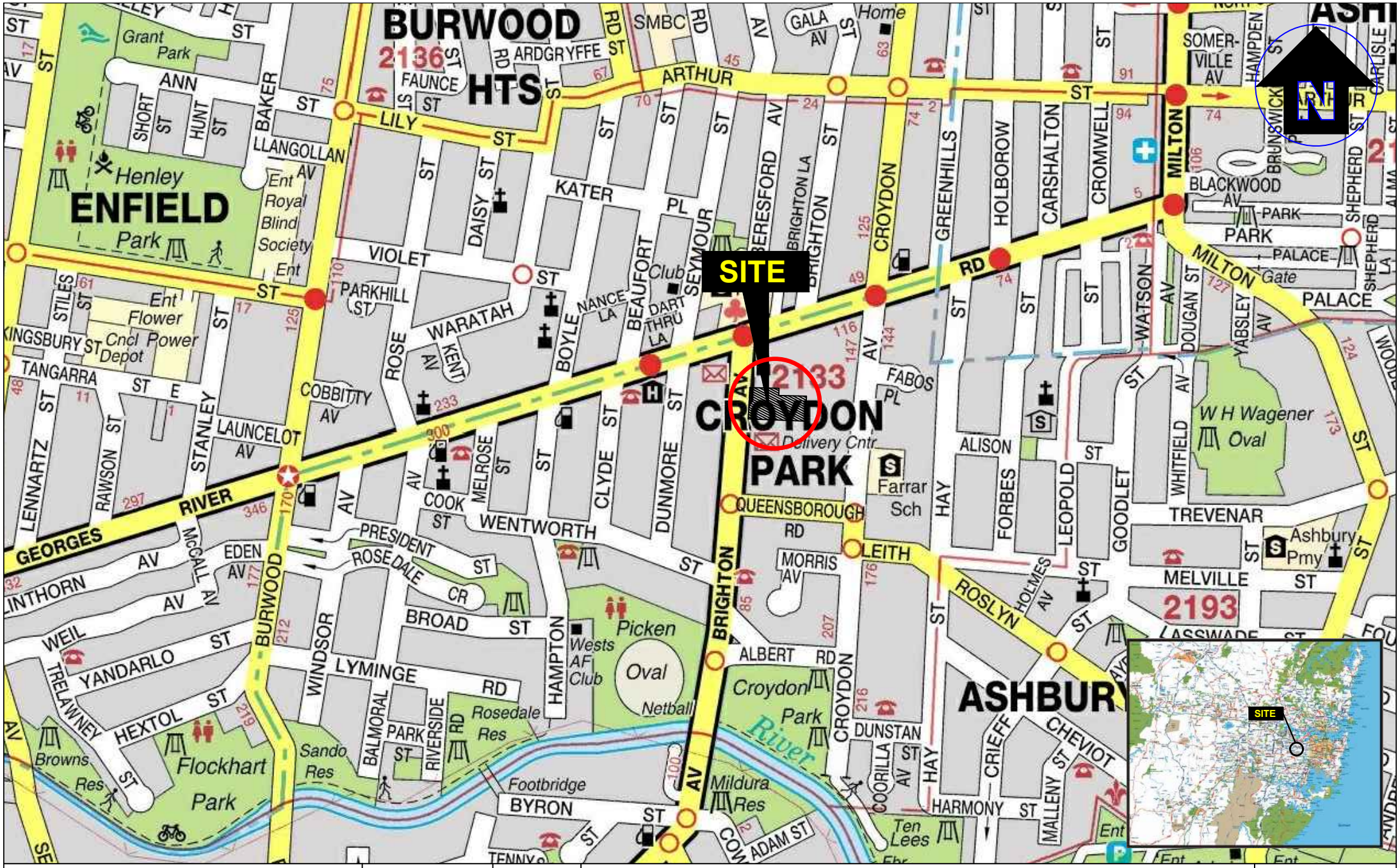
ABBREVIATIONS

ACM	Asbestos-containing materials
ASS	Acid sulfate soils
ANZAST	Australian and New Zealand and Australian State and Territory Governments
B(a)P	Benzo(a)pyrene (a PAH compound), - B(a)P TEQ Toxicity Equivalent Quotient
BH	Borehole
BTEX	Benzene, Toluene, Ethylbenzene, Xylene
CLM	Contaminated Land Management
COC	Chain of Custody
COPC	Contaminants of Potential Concern
CSM	Conceptual Site Model
DEC	Department of Environment and Conservation, NSW (see OEH)
DECC	Department of Environment and Climate Change, NSW (see OEH)
DECCW	Department of Environment, Climate Change and Water, NSW (see OEH)
DA	Development Application
DNAPL	Dense, non-aqueous phase liquid
DO	Dissolved Oxygen
DP	Deposited Plan
EC	Electrical Conductivity
Eh	Redox potential
EIL	Ecological Investigation Level
EMP	Environmental Management Plan
EPA	Environment Protection Authority
ESL	Ecological Screening Level
F1	TRH $C_6 – C_{10}$ less the sum of BTEX concentrations (Ref. NEPM 2013, Schedule B1)
F2	TRH $>C_{10} – C_{16}$ less the concentration of naphthalene (Ref. NEPM 2013, Schedule B1)
GIL	Groundwater Investigation Level
GME	Groundwater Monitoring Event
HIL	Health-based Investigation Level
HSL	Health-based Screening Level
km	Kilometres
LNAPL	Light, non-aqueous phase liquid (also referred to as PSH)
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
OCP	Organochlorine Pesticides
OEH	Office of Environment and Heritage, NSW (formerly DEC, DECC, DECCW)
OPP	Organ-phosphorus Pesticides
PAHs	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
PFAS	Per or poly-fluoroalkyl substances

pH	Measure of the acidity or basicity of an aqueous solution
POEO	Protection of the Environment Operations
PQL	Practical Quantitation Limit (limit of detection for respective laboratory instruments)
PSH	Phase-separated hydrocarbons (also referred to as LNAPL)
QA/QC	Quality Assurance / Quality Control
RAP	Remediation Action Plan
SRA	Sample receipt advice (document confirming laboratory receipt of samples)
SWL	Standing Water Level
TCLP	Toxicity characteristic leaching procedure
TDS	Total dissolved solids (a measure of water salinity)
TPH	Total Petroleum Hydrocarbons (superseded term equivalent to TRH)
TRH	Total Recoverable Hydrocarbons (non-specific analysis of organic compounds)
UCL	Upper Confidence Limit of the mean
USEPA	United States Environmental Protection Agency
UPSS	Underground Petroleum Storage Systems
UST	Underground Storage Tank
VOCs	Volatile Organic Compounds (specific organic compounds which are volatile)

FIGURES



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Approved:	N.F.
Date:	21-08-18
Scale:	Not To Scale

ROI Croydon 88 Pty Ltd

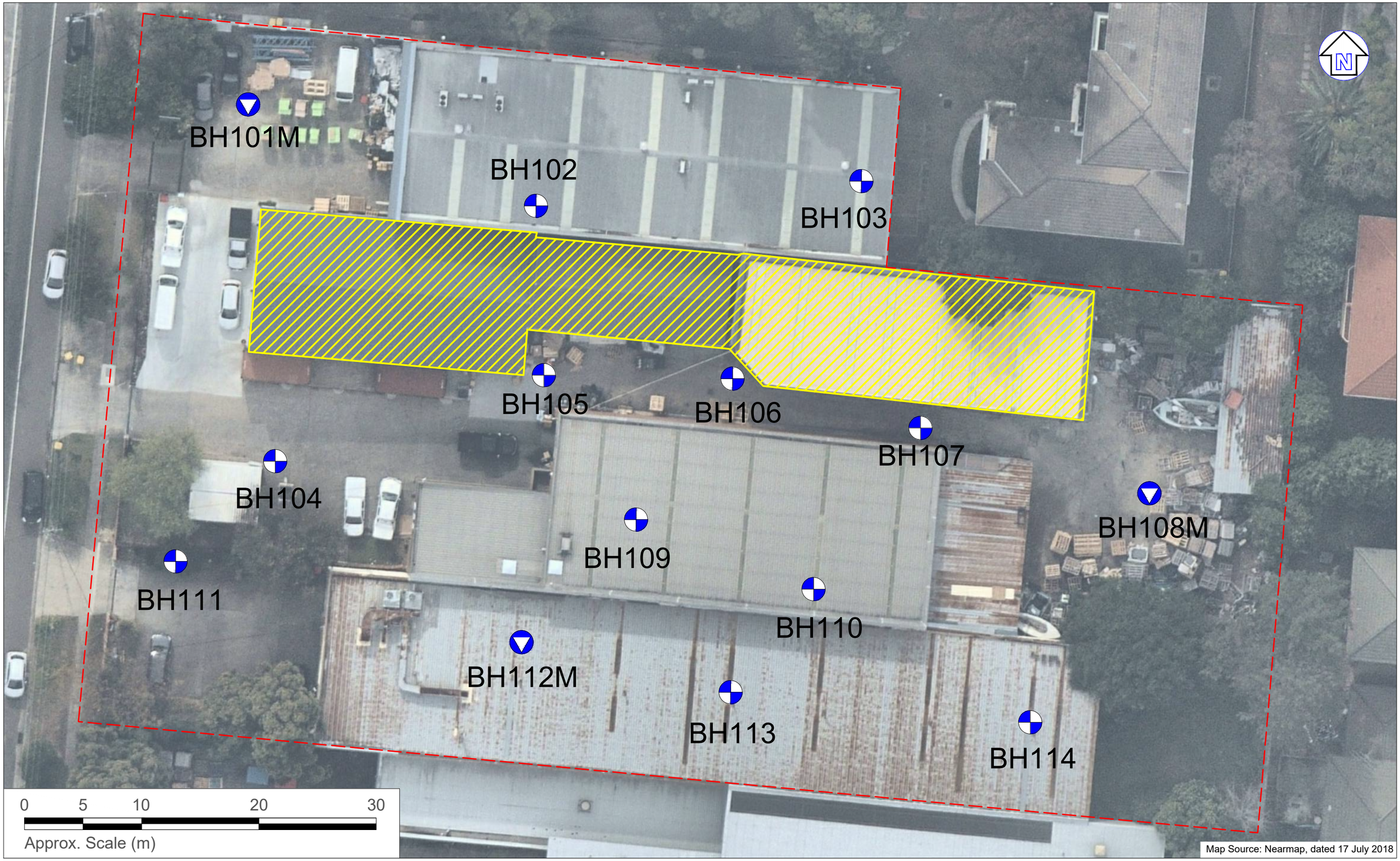
Detailed Site Investigation

15-21 Brighton Avenue, Croydon Park NSW

Site Locality Plan

Figure: 1

Project: E23959.E02_Rev0



LEGEND

- Approximate site boundary
- Approximate borehole location
- Approximate groundwater monitoring well location
- Approximate area unable to be assessed during the investigation

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

Drawn:	C.M.
Approved:	N.F.
Date:	10-09-18

Croydon 88 Unit Trust
Detailed Site Investigation
15-21 Brighton Avenue, Croydon Park NSW

Sampling Location Plan

Figure: 2

Project: E23959.E02 _Rev0

TABLES

Table T1 - Summary of Soil Analytical Results

E23959 - Croydon Park

Sample ID	Material	Date	Heavy Metals								PAHs				BTEX				TRH				Pesticides		PCBs	Asbestos
			As	Cd	Cr VI	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	OCPs	OPPs	Total	Presence / absence
EI Australia, 2018																										
BH101M_0.4-0.5	Fill	22/8/2018	7	<0.3	4.6	19	11	<0.05	1.3	14	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No
BH102_0.2-0.3			<1	<0.3	1.2	<0.5	2	<0.05	<0.5	2.8	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No
BH103_0.2-0.3			3	<0.3	2.5	15	6	<0.05	1.9	14	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No
BH104_0.2-0.3			2	<0.3	2.6	3.3	12	<0.05	1.6	6.0	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No
BH104_0.7-0.8			7	<0.3	14	15	19	<0.05	4.0	23	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No
BH105_0.3-0.4			22	0.8	8.3	150	350	0.13	4.6	270	<0.3	<0.1	0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No
BH106_0.3-0.4			7	<0.3	7.5	15	36	<0.05	2.7	47	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No
BH107_0.2-0.3			2	<0.3	14	63	150	<0.05	25	150	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No
BH108M_0.4-0.5			8	0.4	17	59	250	0.06	13	210	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	130	160	<120	<1	<1.7	<1	No
BH109_0.1-0.2			10	<0.3	5.3	6.0	2	<0.05	1.1	4.3	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No
BH110_0.1-0.2			9	<0.3	4.9	0.9	1	<0.05	0.6	2.9	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No
BH111_0.4-0.5			5	<0.3	14	16	19	<0.05	3.7	24	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No
BH112M_0.3-0.4			7	<0.3	11	30	44	<0.05	1.8	51	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No
BH113_0.2-0.3			6	<0.3	4.7	13	37	<0.05	1.6	31	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No
BH101M_0.6-0.7	Natural		6	<0.3	4.8	26	12	<0.05	5.1	36	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	N/A	N/A	N/A	N/A
BH105_0.8-0.9			7	<0.3	6.3	17	11	<0.05	1.1	15	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	N/A	N/A	N/A	N/A
BH106_0.8-0.9			5	<0.3	8.3	26	13	<0.05	2.5	22	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	N/A	N/A	N/A	N/A
BH108M_0.9-1.0			6	<0.3	10	31	23	<0.05	1.6	20	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	N/A	N/A	N/A	N/A
BH111_0.8-0.9			7	<0.3	5.1	16	11	<0.05	0.5	7.4	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	N/A	N/A	N/A	N/A
BH114_0.4-0.5			4	<0.3	7.0	24	12	<0.05	0.6	12	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	N/A	N/A	N/A	N/A
Statistical Analysis																										
Maximum Concentration			22	0.8	17	150	350	0.13	25	270	<0.3	<0.1	0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	130	160	<120	<1	<1.7	<1	No
Mean			6.8421053	0.6	7.655	28.694737	51.05	0.095	3.9105263	48.12	NC	NC	0.8	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Standard Deviation			4.2460852	0.2828427	4.3985015	33.456713	92.406126	0.0494975	5.837893	73.674895	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
95% UCL			NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
SILs																										
HIL B - *Residential*			500	150	500 Cr (VI)	30,000	1,200	120	1,200	60,000	4		400										600		1	
HSL A & B - Residential			Source depths (0 m to <1 m BGL)											5	0.7	480	NL	110	50	280	NR					
			Source depths (1 m to <2 m BGL)											NL	1	NL	NL	310	90	NL						
			Source depths (2 m to <4 m BGL)											NL	2	NL	NL	NL	150	NL						
			Source depths (4m +)											NL	3	NL	NL	NL	290	NL						
EILs / ESLs			100		205	90	1,260		35	190		0.7		170	50	85	70	105	180	120	300	2,800	180			
Management Limits – *Residential, parkland and public open space* Coarse grained soil texture[1]																			700	1,000	3,500	10,000				
Asbestos contamination HSL – A&B *Residential* Bonded ACM (%w/w)																										0.01
Asbestos contamination HSL for Non Bonded / Friable Asbestos (%w/w)																										0.001

Notes:

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

Highlighted valuses indicate concentration exceeds Human Helath Based Soil Criteria
Highlighted values indicates concentration exceeds Ecological Based Soil Criteria
Highlighted indicates NEPM 2013 criteria exceeded

HIL B	NEPM 1999 Amendment 2013 'HIL B' Health Based Investigation Levels applicable for residential with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments.
HSL A & B	NEPM 1999 Amendement 2013 'HSL A & B' Health Based Investigation Levels applicable for low to high density residential use.
NA	'Not Analysed' i.e. the sample was not analysed.
NC	Not Calculated'
ND	'Not detected' i.e. all concentrations of the compounds within the analyte group were found to be below the laboratory limits of detection.
NL	'Not Limiting' - The soil vapour limit exceeds the soil concentration at which the pore water phase cannot dissolve any more of the individual chemical.
NR	No current published criterion.
1	Coarse Grained soil values were applied, being the most conservative of the material types.
F1	To obtain F1 subtract the sum of BTEX concentrations from the C6-C10 fraction.
F2	To obtain F2 subtract Naphthalene from the >C10-C16 fraction.
F3	(>C16-C34)
F4	(>C34-C40)
*	Benzo(a)pyrene criteria based on CRC Care Technical Report No. 39, 'Risk-based management guidance for benzo(a)pyrene' (2017).

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Table T2 – Summary of Groundwater Investigation Results **E23959 - Croydon Park**

Sample Identification		Date	Heavy Metals								PAHs			BTEX					TRHs				Other	VOCs	
			As	Cd	Cr	Cu	Pb	Hg	Ni	Zn	Total PAHs	Benzo(a)pyrene	Naphthalene	Benzene	Toluene	Ethylbenzene	o-xylene	m/p-xylene	F1	F2	F3	F4	Phenols (Total)	Total VOC	Acetone (2-propanone)
BH101M-1		29/8/2018	14	0.4	2	64	4	<0.1	35	200	<1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<1	<50	<60	<500	<500	<10	17	13
BH108M-1			20	0.9	2	63	4	<0.1	89	300	<1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<1	<50	<60	<500	<500	<10	19	12
BH112M-1			3	0.7	1	59	3	<0.1	47	210	<1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<1	<50	<60	<500	<500	<10	<10	<10
Statistical Analysis																									
Maximum Concentration			20	0.9	2	64	4	<0.1	89	300	<1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<1	<50	<60	<500	<500	<10	19	13
Mean			12.333333	0.6666667	2	62	3.6666667	NC	57.0	236.7	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	18	12.5
GILs																									
HSL A & B - Low to High Density Residential			2 m to < 4m										NL	5	NL	NL			NL	NL					
			4 m to <8 m										NL	5	NL	NL			NL	NL					
			8 m +										NL	5	NL	NL			NL	NL					
ANZAST (2018)	**Fresh Water** [4]		24 (AsIII) [4] 13 (AsV)	0.2 [4]	3.3 (CrIII) [4] 0.4 (Cr VI)	1.4 [4]	3.4 [4]	0.6 [4]	11 [4]	8 [4]			16 [4]	950 [4]	180 [8,4]	80 [9]	350 [8,4]	275 [8,4]	50 [7]	60 [7]	500 [7]	500 [7]	320 [4]		
	Marine Water [4]			5.5	27.4 (CrIII) [4] 4.4 (Cr VI)	1.3 [4]	4.4 [4]	0.4 [4]	70 [4]	15 [2,4]			70 [4]	700 [4]	180 [9]	5 [4]	350 [9]	275 [9]					400 [4]		
NHMRC (2017)	**Recreational Water** [5,6]		100	20	50	1000 *	100	10	200	3000		0.01		10	25 *	3 *	20 *	20 *					2		

Notes:

All values are µg/L unless stated otherwise

NL = Not Limiting

NA = 'Not Analysed' i.e. the sample was not analysed.

NR = No currently recommended criteria

ND = Not Detected - i.e. concentration below the laboratory PQL

F1 To obtain F1 subtract the sum of BTEX concentrations from the C6-C10 fraction.

F2 To obtain F2 subtract naphthalene from the >C10-C16 fraction.

F3 (>C16-C34)

F4 (>C34-C40)

2 = Figure may not protect key species from chronic toxicity, refer to ANZAST (2018) for further guidance.

3 = Chemical for which possible bioaccumulation and secondary poisoning effects should be considered, refer to ANZAST (2018) for further guidance.

4 = NEPM (2013) Groundwater Investigation Levels for fresh and marine water quality, based on ANZAST (2018).

5 = Based on NHMRC (2017) Drinking Water Guidelines. The lowest of the Health Guideline x10 or the Aesthetic Guideline has been chosen as the assessment criteria. Aesthetic based criteria have been indicated by *.

6 = Where no NHMRC (2017) Recreational Water Criteria provided, ANZAST (2018) Recreational Criteria have been utilised.

7 = In lack of a criteria the laboratory PQL has been used (DEC, 2007).

8 = Low and moderate reliability toxicity data, refer to ANZAST (2018).

9 = Unknown reliability of species protection, refer to ANZAST (2018).

Highlighted indicates ecological criteria exceeded

Highlighted indicates criteria exceeded

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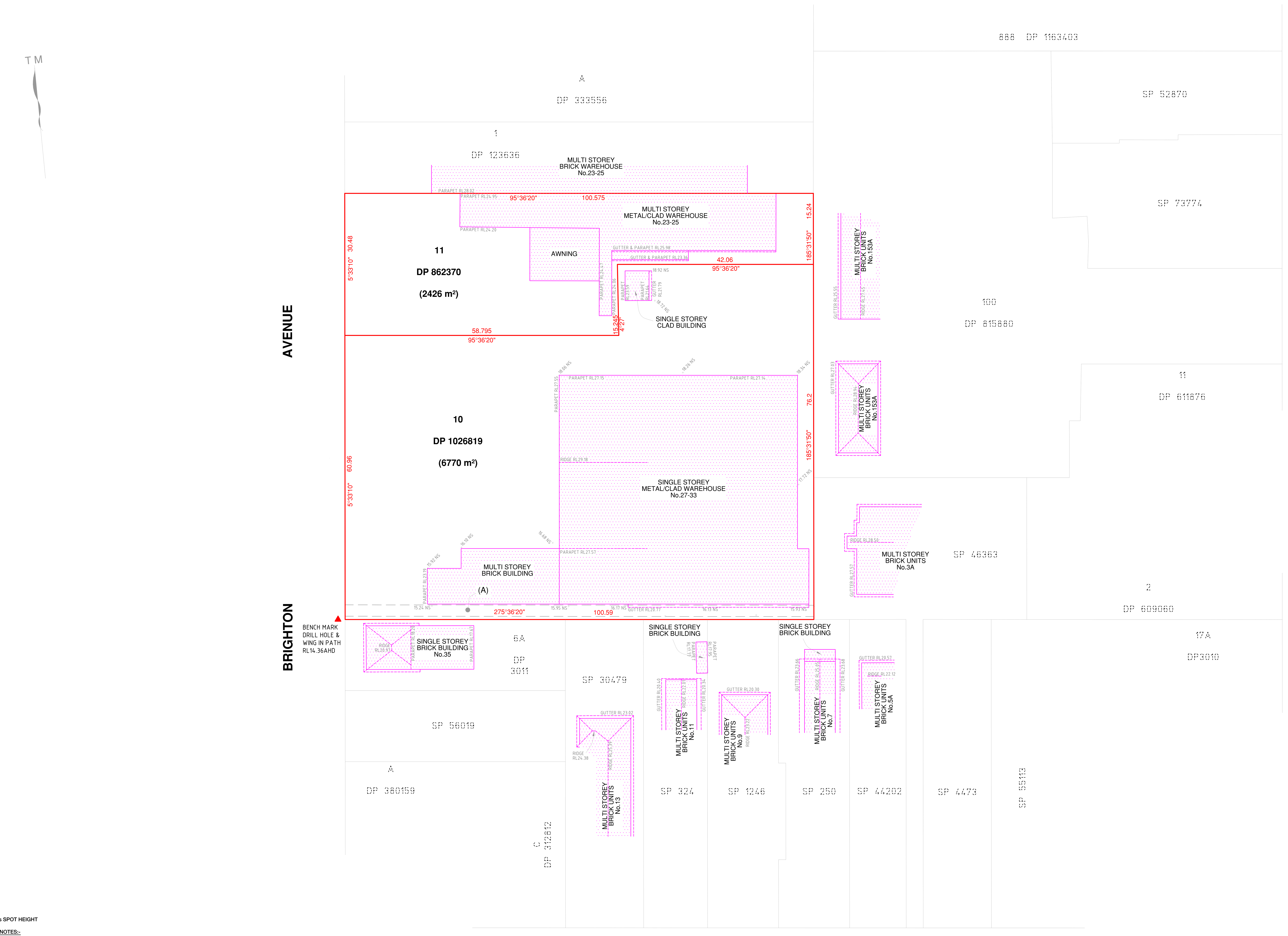
Table-T3 - RPD QAQC **E23959.E02**

Sample identification	Sampling Date	Description	TRH				BTEX				Heavy Metals							
			F1	F2	F3	F4	Benzene	Toluene	Ethylbenzene	Total Xylenes	As	Cd	Cr	Cu	Pb	Hg	Ni	Zn
Intra-laboratory Duplicate - Soil Investigation																		
BH101M_0.4-0.5	22/08/2018	Soil	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	7	<0.3	4.6	19	11	<0.05	1.3	14
BH_QD1		Duplicate of BH101M_0.4-0.5	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	9	<0.3	8.9	33	19	<0.05	2.5	31
RPD			*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*25.00*	*0.00*	63.70	53.85	53.33	*0.00*	63.16	75.56
Inter-laboratory Duplicate - Soil Investigation																		
BH101M_0.4-0.5	22/08/2018	Soil	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	7	<0.3	4.6	19	11	<0.05	1.3	14
BH_QT1		Triplicate of BH101M_0.4-0.5	<25	<50	<100	<100	<0.2	<0.5	<1	<1	7	<0.4	8	27	15	<0.1	3	26
RPD			*0.00*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*0.00*	*NA*	53.97	*34.78*	*30.77*	*NA*	79.07	60.00
Intra-laboratory Duplicate - Groundwater Investigation																		
BH101M-1	29/08/2018	Water	<50	<60	<500	<500	<0.5	<0.5	<0.5	<1.5	14	0.4	2	64	4	<0.1	35	200
GWQD1		Duplicate of BH101M-1	<50	<60	<500	<500	<0.5	<0.5	<0.5	<1.5	14	0.5	<1	9	<1	<0.1	37	130
RPD			*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*22.22*	80.00	150.68	133.33	*0.00*	*5.56*	*42.42*
Inter-laboratory Duplicate - Groundwater Investigation																		
BH101M-1	29/08/2018	Water	<50	<60	<500	<500	<0.5	<0.5	<0.5	<1.5	14	0.4	2	64	4	<0.1	35	200
GWQT1		Triplicate of BH101M-1	<10	100	<100	<100	<1	<1	<1	<3	12	0.4	<1	10	<1	<0.05	37	150
RPD			*NA*	61.54	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*15.38*	*0.00*	80.00	145.95	133.33	*NA*	*5.56*	*28.57*
Rinsate Blank																		
BH_QR1	22/08/2018	Water	<50	<60	<500	<500	<0.5	<0.5	<0.5	<1.5	<1	<0.1	<1	<1	<1	<0.1	<1	<5
GWQR1	29/08/2018	Water	<50	<60	<500	<500	<0.5	<0.5	<0.5	<1.5	<1	<0.1	<1	<1	<1	<0.1	<1	<5
Trip Blank																		
QTB	22/08/2018	Soil	N.A.	N.A.	N.A.	N.A.	<0.5	<0.5	<0.5	<1.5	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
GWQTB	29/08/2018	Water	N.A.	N.A.	N.A.	N.A.	<0.5	<0.5	<0.5	<1.5	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Trip Spike																		
QTS	22/08/2018	Soil	N.A.	N.A.	N.A.	N.A.	[91%]	[87%]	[94%]	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
GWQTS	29/08/2018	Water	N.A.	N.A.	N.A.	N.A.	[103%]	[104%]	[91%]	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

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

NA	Different PQLs
*	Calculated according to NEPM 2013
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



TM
888 DP 1163403
A
DP 333556
SP 52670
1
DP 123636
MULTI STOREY BRICK WAREHOUSE No.23-25
95°36'20"
100.575
MULTI STOREY METAL/CLAD WAREHOUSE No.23-25
SP 73774
11
DP 862370
(2426 m²)
AWNING
42.06
95°36'20"
15.24
185°31'50"
MULTI STOREY BRICK UNITS No.153A
SINGLE STOREY CLAD BUILDING
5°33'10" 30.48
58.795
95°36'20"
15.245
4.27
100
DP 615660
AVENUE
11
DP 611676
10
DP 1026819
(6770 m²)
5°33'10" 60.96
76.2
185°31'50"
SINGLE STOREY METAL/CLAD WAREHOUSE No.27-33
MULTI STOREY BRICK UNITS No.153A
MULTI STOREY BRICK UNITS No.3A
SP 46363
MULTI STOREY BRICK BUILDING
(A)
275°36'20"
100.59
2
DP 609060
BRIGHTON
BENCH MARK
DRILL HOLE & WING IN PATH
RL14.36AHD
SINGLE STOREY BRICK BUILDING No.35
6A
DP 3011
SP 30479
SINGLE STOREY BRICK BUILDING
SINGLE STOREY BRICK BUILDING
17A
DP3010
CROYDON
SP 56019
MULTI STOREY BRICK UNITS No.11
MULTI STOREY BRICK UNITS No.9
MULTI STOREY BRICK UNITS No.7
MULTI STOREY BRICK UNITS No.5A
MULTI STOREY BRICK UNITS No.13
A
DP 380159
SP 324
SP 1246
SP 250
SP 44202
SP 4473
SP 55113
C
DP 312812

LEGEND

NS denotes SPOT HEIGHT

GENERAL NOTES:-

1. BOUNDARY DIMENSIONS & AREA HAVE BEEN COMPILED FROM DP 862370 & DP 1026819 AND HAVE NOT BEEN VERIFIED BY SURVEY.
2. PART OF THE LOT 10 IN DP 1026819 IS BURDENED BY COVENANTS AS SET OUT IN INSTRUMENT NOs. 319912 & 329503.
3. LOT 10 IN DP 1026819 IS BURDENED BY AN EASEMENT TO DRAIN WATER 2.44 WIDE DESIGNATED 'A' AND AS SETOUT IN INSTRUMENT No. A324102.
4. THE ORIENTATION OF THIS PLAN IS BASED ON DP 1026819.
5. ALL SETOUT LEVELS MUST BE REFERRED TO THE BENCH MARK.

BENCH MARK
SSM58803 IN KERB
RL10.74 AHD

QUEENSBOROUGH ROAD

2 4 6 8 10 20 30 40
1:400

ISSUE	DATE	AMENDMENT

CLIENT: DYLDAM DEVELOPMENTS PTY LTD

SCALE 1:400
ORIGIN OF LEVELS: SSM58803 RL 10.74
DATUM: A.H.D.
REF.: 5893
DATE: 21/06/2013
SURV/CHK: EE/GE
SHEET 1 OF 1 SHEETS
PLAN A1
ISSUE A

SITE ANALYSIS SURVEY OF LOT 10 IN DP 1026819
27-33 BRIGHTON AVENUE
CROYDON

SDG LAND DEVELOPMENT SOLUTIONS
A.B.N. 85 213 523 621
Unit 7 1B Kleins Road
NORTHMEAD 2152
P.O.Box 2572
NORTH PARRAMATTA 1750
t: (02) 9630 7955
e: office@sdg.net.au
w: www.sdg.net.au

APPENDIX B
NSW Office of Water Groundwater Bore Search

State Overview
State Overview

Rivers and Streams
favourites · search · download sites · find a site
Real Time Data - Rivers And Streams

Daily River Reports
Daily River Reports

Dams
favourites · search · download sites · find a site
Real Time Data - Major Dams

Groundwater (Telemetered data)
favourites · search · download sites · find a site
Real Time Data - Bores

All Groundwater Site details
search · download sites · find a site
All Groundwater Map

Meteorology
favourites · search · download sites · find a site
Real Time Data - Weather Stations

Hunter Integrated Telemetry System
Hunter Integrated Telemetry System

bandwidth ◉ high ○ low

glossary and metadata

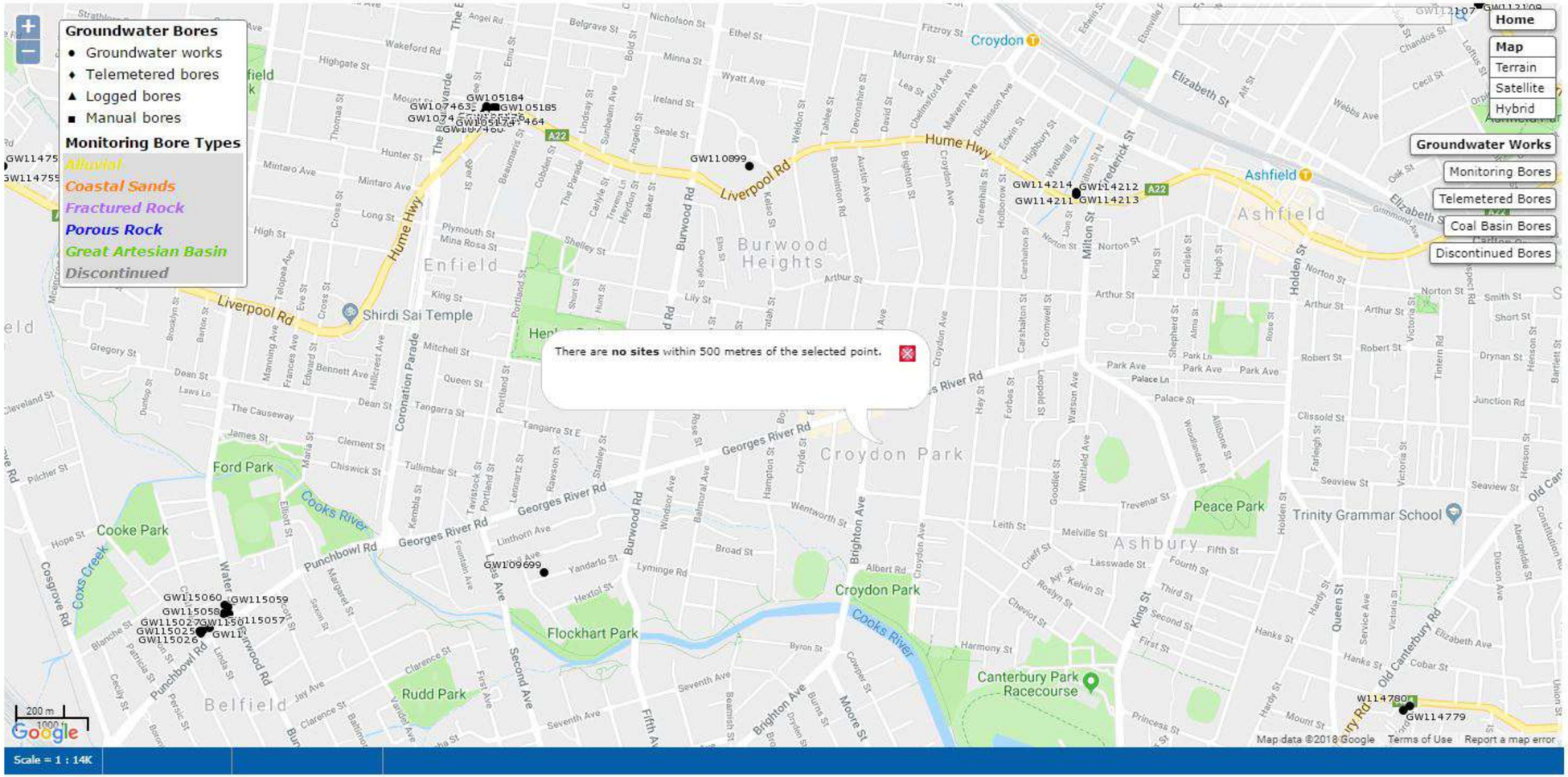
All Groundwater Site Details

All Groundwater Map

bookmark this page

All data times are Eastern Standard Time

Map | Info



APPENDIX C
Site Photographs

Photograph 1: Western / front façade of the commercial warehouse located at 15 Brighton Avenue

Photograph 2: Commercial rubbish accumulated west of 15 Brighton Avenue

Photograph 3: Conditions inside the commercial warehouse located at 15 Brighton Avenue

Photograph 4: The new commercial warehouse located in the westernmost portion of 17 Brighton Avenue

Photograph 5: Concrete hardstand and the external conditions of 17 Brighton Avenue

Photograph 6: Warehouse located in the middle of 17 Brighton Avenue

Photograph 7: Eastern view of site from the middle of 17 Brighton Avenue

Photograph 8: Easternmost warehouse on 17 Brighton Avenue

Photograph 9: East of the third warehouse located on 17 Brighton Avenue

Photograph 10: Material accumulated east of the third warehouse at 17 Brighton Avenue

Photograph 11: Western portion of 19 Brighton Avenue

Photograph 12: Concrete hardstand west of warehouse located at 19 Brighton Avenue

Photograph 13: Stormwater drain in between the warehouses at 17 & 19 Brighton Avenue, running parallel to the buildings

Photograph 14: Material accumulated east of the warehouse located at 19 Brighton Avenue

Photograph 15: Excess radiator parts and timber pallets accumulated east of 19 Brighton Avenue

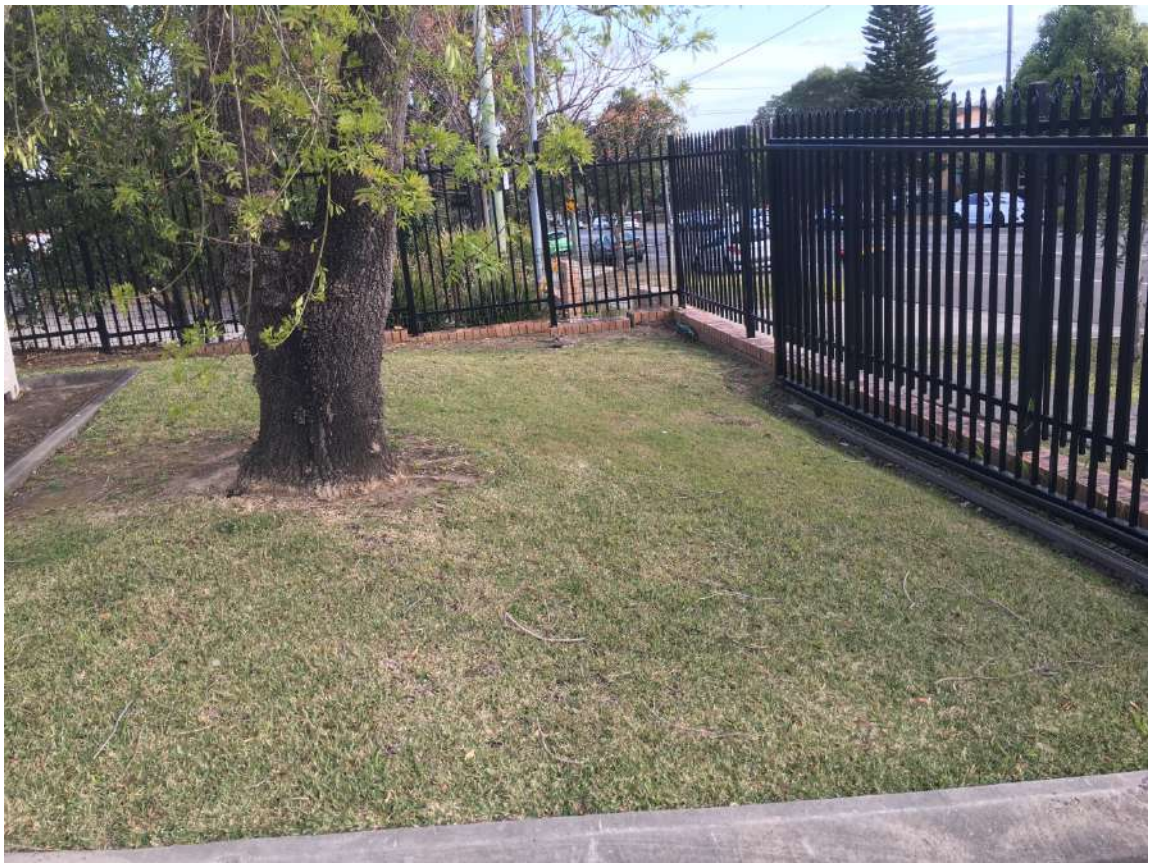
Photograph 16: Timber pallets accumulated east towards the site boundary at 19 Brighton Avenue

Photograph 17: Stormwater pit located east of the warehouse at 19 Brighton Avenue

Photograph 18: Overgrown/distressed vegetation along the eastern site boundary of 19 Brighton Ave

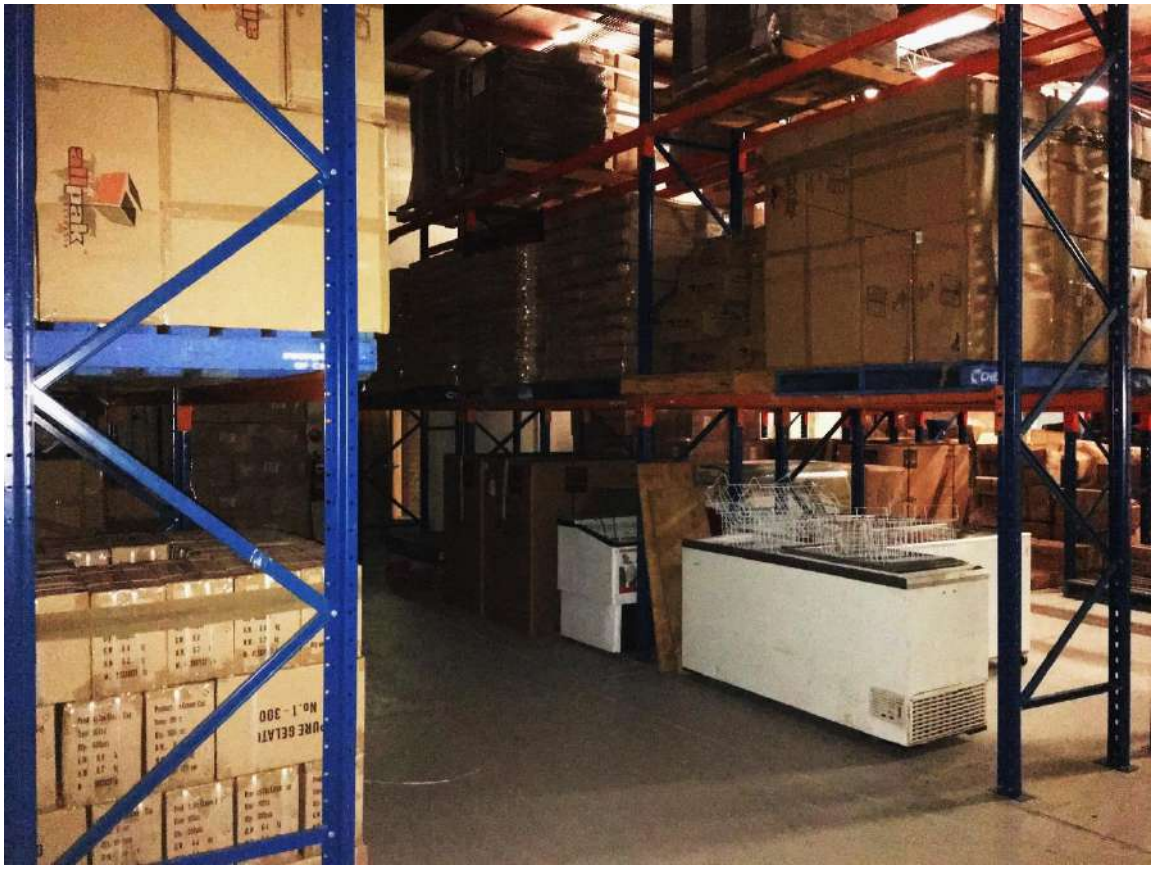
Photograph 19: Tub of mouldy water and excess waste directly adjacent 19 Brighton Avenue

Photograph 20: Storage containers located west of the warehouse at 19 Brighton Avenue

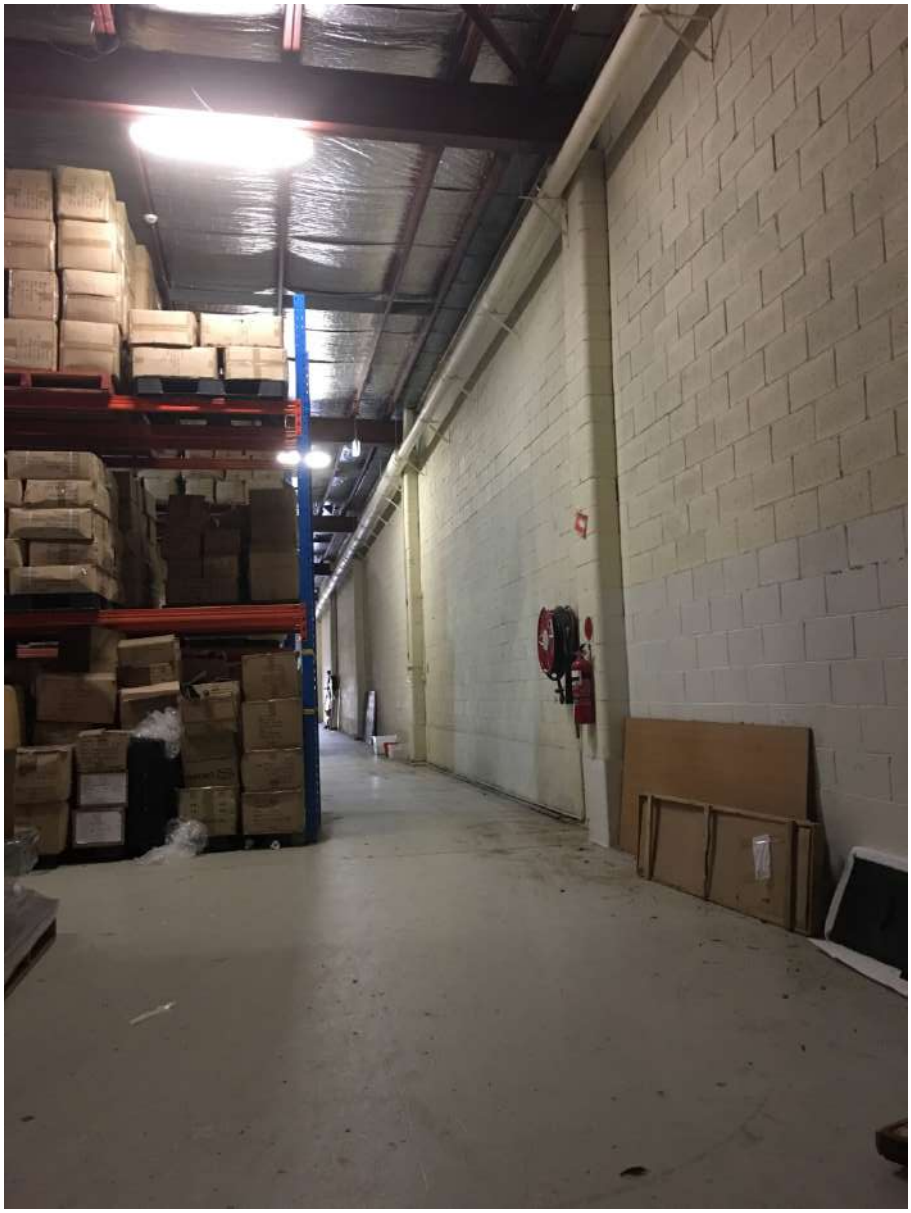


Photograph 21: Maintained grass evident along the western site boundary of 19 Brighton Avenue

Photograph 22: Western façade of the warehouse located at 21 Brighton Avenue



Photograph 23: Goods stored inside the warehouse located at 19 Brighton Avenue



Photograph 24: Internal condition of the warehouse located at 19 Brighton Avenue

Photograph 25: Overgrown/ distressed vegetation directly behind the warehouse at 21 Brighton Ave

Photograph 26: Stormwater drain located directly west of the warehouse at 21 Brighton Avenue

Photograph 27: Material from borehole BH111, in the south-western portion of the site (21 Brighton Avenue)

APPENDIX D
Historical Property Titles Search

ABN: 36 092 724 251
Ph: 02 9099 7400
(0412 199 304)

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

Summary of Owners Report

LPI **Sydney**

Address: - 15 to 21 Brighton Avenue, Croydon Park

Description: -
Lot C D.P. 440959, Lot 2A Section 2 D.P. 3010
Also
Lots A & B D.P. 333556 & Lot 1 D.P. 123636

Updated from 18th May 2016

As regards Lot C D.P. 440959

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
20.03.2014 (2014 to date)	# Tony Nahabedian (& His deceased estate)	C/440959
04.06.2016 (2016 to date)	# Salpie Nahabedian (Executor or Administrator of the Estate of Tony Nahabedian)	C/440959

# Denotes Current Registered Proprietor

Easements & Leases: - NIL

As regards Lot 2A Section 2 D.P. 3010 Lots A & B D.P. 333556

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
20.03.2014 (2014 to date)	# Salpie Nahabedian	Auto Consol 12875-194 Also A/333556

# Denotes Current Registered Proprietor

Easements & Leases: - NIL

ABN: 36 092 724 251
Ph: 02 9099 7400
(0412 199 304)

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

As regards Lot 1 D.P. 123636

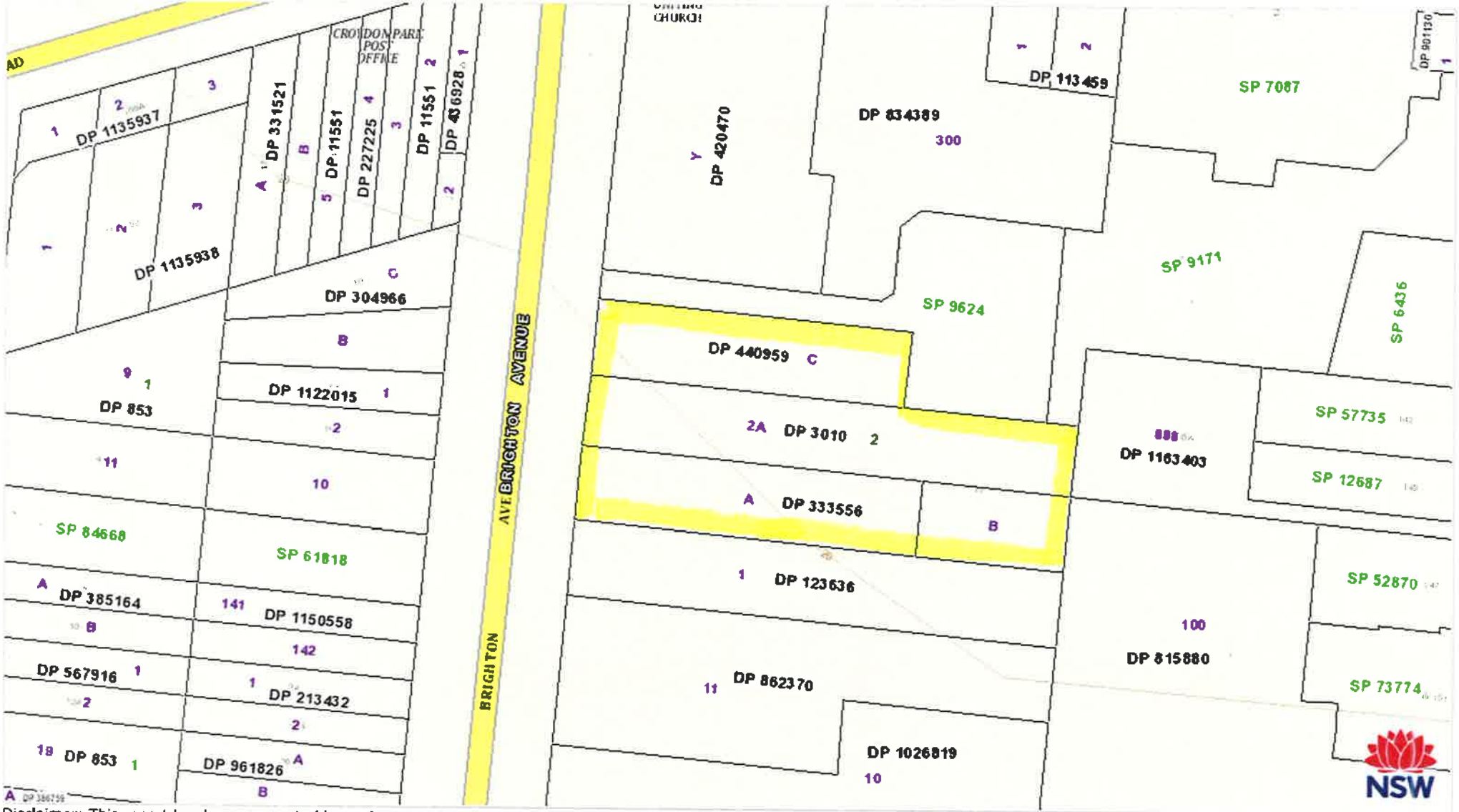
Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
20.03.2014 (2014 to date)	# Hong Yaa Cai	1/123636

# Denotes Current Registered Proprietor

Easements & Leases: - NIL

Yours Sincerely
Mark Groll
22 August 2018

S



LAND REGISTRY SERVICES

Historical Title

InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
22/8/2018 2:33PM

FOLIO: C/440959

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 8042 FOL 180

Recorded	Number	Type of Instrument	C.T. Issue
31/8/1989		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
3/11/1989		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
23/2/1990	Y859033	LEASE	EDITION 1
1/9/1994	U583126	LEASE	EDITION 2
18/7/1997	3248916	TRANSFER	EDITION 3
31/7/1998	5169015	REQUEST	EDITION 4
28/6/2000	6898927	TRANSFER	EDITION 5
19/6/2013	AH810068	APPLICATION FOR REPLACEMENT CERTIFICATE OF TITLE	EDITION 6
9/7/2013	AH866533	TRANSFER	EDITION 7
4/6/2016	AK489084	TRANSMISSION APPLICATION (EXECUTOR, ADMINISTRATOR, TRUSTEE)	EDITION 8

*** END OF SEARCH ***

croydon park PRINTED ON 22/8/2018

LAND REGISTRY SERVICES Title Search

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: C/440959

SEARCH DATE	TIME	EDITION NO	DATE
22/8/2018	2:33 PM	8	4/6/2016

LAND

LOT C IN DEPOSITED PLAN 440959
AT CROYDON PARK
LOCAL GOVERNMENT AREA CANTERBURY-BANKSTOWN
PARISH OF CONCORD COUNTY OF CUMBERLAND
TITLE DIAGRAM DP440959

FIRST SCHEDULE

SALPIE NAHABEDIAN (AE AK489084)

SECOND SCHEDULE (1 NOTIFICATION)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

croydon PRINTED ON 22/8/2018

LAND REGISTRY SERVICES Title Search

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: AUTO CONSOL 12875-194

SEARCH DATE	TIME	EDITION NO	DATE
22/8/2018	2:33 PM	4	21/10/2008

LAND

LAND DESCRIBED IN SCHEDULE OF PARCELS
LOCAL GOVERNMENT AREA CANTERBURY-BANKSTOWN
PARISH OF CONCORD COUNTY OF CUMBERLAND
TITLE DIAGRAM SEE SCHEDULE OF PARCELS

FIRST SCHEDULE

SALPIE NAHABEDIAN (T AE277816)

SECOND SCHEDULE (2 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 AE277817 MORTGAGE TO COMMONWEALTH BANK OF AUSTRALIA

NOTATIONS

UNREGISTERED DEALINGS: NIL

SCHEDULE OF PARCELS	TITLE DIAGRAM
LOT 2A SEC. 2 IN DP3010	DP3010
LOT B IN DP333556	DP333556.

*** END OF SEARCH ***

croydon PRINTED ON 22/8/2018

LAND REGISTRY SERVICES Title Search

InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: A/333556

SEARCH DATE	TIME	EDITION NO	DATE
22/8/2018	2:33 PM	1	15/9/2005

LAND

LOT A IN DEPOSITED PLAN 333556
AT CROYDON PARK
LOCAL GOVERNMENT AREA CANTERBURY-BANKSTOWN
PARISH OF CONCORD COUNTY OF CUMBERLAND
TITLE DIAGRAM DP333556

FIRST SCHEDULE

SALPIE NAHABEDIAN (T AB773205)

SECOND SCHEDULE (2 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 AB773206 MORTGAGE TO COMMONWEALTH BANK OF AUSTRALIA

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

croydon PRINTED ON 22/8/2018

LAND REGISTRY SERVICES **Title Search** InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 1/123636

SEARCH DATE	TIME	EDITION NO	DATE
22/8/2018	2:33 PM	4	12/2/2013

LAND

LOT 1 IN DEPOSITED PLAN 123636
LOCAL GOVERNMENT AREA CANTERBURY-BANKSTOWN
PARISH OF CONCORD COUNTY OF CUMBERLAND
TITLE DIAGRAM DP123636

FIRST SCHEDULE

HONG YAA CAI (TZ AH546670)

SECOND SCHEDULE (2 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 AC6863 LEASE TO STANDARD PUBLISHING HOUSE (AUST) PTY LTD
EXPIRES: 30/6/2010. OPTION OF RENEWAL: 5 YEARS.

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

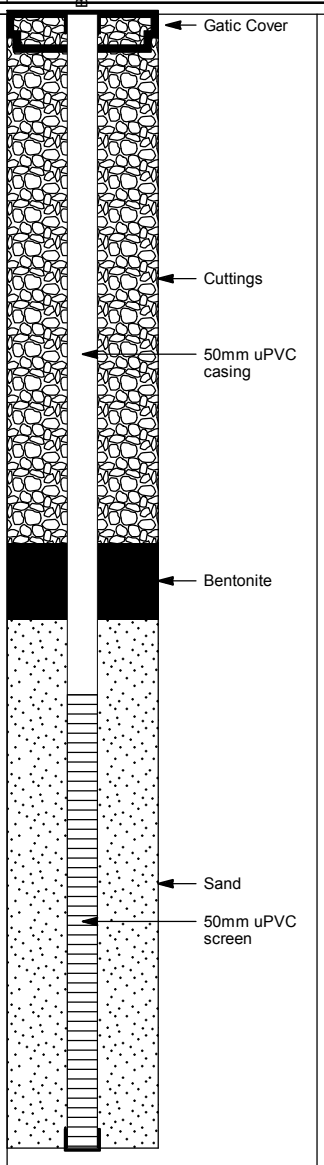
croydon PRINTED ON 22/8/2018

APPENDIX E
Borehole Logs

BOREHOLE: BH101M

Project	Detailed Site Investigation			Sheet	1 OF 1
Location	15-21 Brighton Avenue, Croydon Park NSW			Date Started	22/8/18
Position	Refer to Figure 2			Date Completed	22/8/18
Job No.	E23959.E02	Contractor	Hart Geo	Logged	CM/CZ
Client	CROYDON 88 UNIT TRUST	Drill Rig	Ute-Mounted Rig	Checked	NF
		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	0	0.15				-	Concrete Hardstand	-		BH101M
								-	FILL: Silty CLAY; low to medium plasticity, light brown to light grey with motted orange, no odour.	M		
				0.50	BH101M_0.4-0.5 PID = 1.1 ppm BH101M_0.6-0.7 PID = 1.3 ppm				SHALE; Highly weathered, light brown to orange, no odour.			
			1									
			2	2.00					Colour change to medium brown.	D	-	
			3									
			4									
			5									
			6									
			7									
			8	8.20					Hole Terminated at 8.20 mBGL; Target Depth Reached.			
			9									
			10									



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

BOREHOLE: BH102

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation			Sheet	1 OF 1
Location	15-21 Brighton Avenue, Croydon Park NSW			Date Started	22/8/18
Position	Refer to Figure 2			Date Completed	22/8/18
Job No.	E23959.E02	Contractor	Hart Geo	Logged	CM/CZ
Client	CROYDON 88 UNIT TRUST	Drill Rig	Hand Auger	Checked	NF
		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
HA	-	GWNE	0	0.15				-	Concrete Hardstand	-	-	CONCRETE HARDSTAND
				0.30	BH102_0.2-0.3			-	FILL: SAND; medium to coarse grained, brown, no odour.	M		FILL
					PID = 1.4 ppm				Hole Terminated at 0.30 mBGL; Resfusal on Concrete Slab.			
			1									
			2									
			3									
			4									
			5									
			6									
			7									
			8									
			9									
			10									

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

BOREHOLE: BH103

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation			Sheet	1 OF 1
Location	15-21 Brighton Avenue, Croydon Park NSW			Date Started	22/8/18
Position	Refer to Figure 2			Date Completed	22/8/18
Job No.	E23959.E02	Contractor	Hart Geo	Logged	CM/CZ
Client	CROYDON 88 UNIT TRUST	Drill Rig	Hand Auger	Checked	NF
		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
HA	-	GWNE	0	0.15				-	Concrete Hardstand	-	-	CONCRETE HARDSTAND
				0.30	BH103_0.2-0.3			-	FILL: SAND; medium to coarse grained, brown, no odour.	M		FILL
					PID = 0.9 ppm				Hole Terminated at 0.30 mBGL; Resfusal on Road-base Gravel.			
			1									
			2									
			3									
			4									
			5									
			6									
			7									
			8									
			9									
			10									

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

BOREHOLE: BH104

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation			Sheet	1 OF 1
Location	15-21 Brighton Avenue, Croydon Park NSW			Date Started	22/8/18
Position	Refer to Figure 2			Date Completed	22/8/18
Job No.	E23959.E02	Contractor	Hart Geo	Logged	CM/CZ
Client	CROYDON 88 UNIT TRUST	Drill Rig	Ute-Mounted Rig	Checked	NF
		Inclination	-90°		

Drilling					Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
			0	0.13				-	Concrete Hardstand	-		CONCRETE HARDSTAND
AD/T	-	GWNE			BH104_0.2-0.3 PID = 1.4 ppm			-	FILL: Gravelly SAND; medium to coarse grained, reddish brown, with angular to subangular, medium to coarse gravels, no odour.	M		FILL
				0.50				CL	CLAY; low to medium plasticity, brown with light grey to orange, with with subangular to subrounded, medium to coarse gravels and charcoal, no odour.			RESIDUAL SOIL
			1		BH104_0.7-0.8 PID = 1.2 ppm					M	-	
				1.50					Hole Terminated at 1.50 mBGL; Target Depth Reached.			
			2									
			3									
			4									
			5									
			6									
			7									
			8									
			9									
			10									

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

BOREHOLE: BH105

Project	Detailed Site Investigation		
Location	15-21 Brighton Avenue, Croydon Park NSW		
Position	Refer to Figure 2		
Job No.	E23959.E02	Contractor	Hart Geo
Client	CROYDON 88 UNIT TRUST	Drill Rig	Ute-Mounted Rig
		Inclination	-90°

Sheet 1 OF 1
Date Started 22/8/18
Date Completed 22/8/18
Logged CM/CZ
Checked NF

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	0.10				-	Concrete Hardstand	-		CONCRETE HARDSTAND
					BH105_0.3-0.4			-	FILL: Sandy CLAY; low to medium plasticity, dark brown, medium to coarse sand, with angular to subangular, medium to coarse gravels with charcoal, with glass fragment, no odour.	M		FILL
				0.50	PID = 1.2 ppm			-		M		
				0.70	BH105_0.3-0.4			CL	FILL: CLAY; low to medium plasticity, brown with light grey to orange, with with subangular to subround, medium to coarse gravels, no odour.	M	-	RESIDUAL SOIL
			1	1.10	PID = 1.5 ppm				CLAY; low to medium plasticity, light grey to orange brown, with small subangular to subrounded gravels, no odour.	D		BEDROCK
				1.50	BH105_1.3-1.4				SHALE; Highly weathered, light brown to orange, no odour.			
					PID = 2.3 ppm				Hole Terminated at 1.50 mBGL; Target Depth Reached.			
			2									
			3									
			4									
			5									
			6									
			7									
			8									
			9									
			10									

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

BOREHOLE: BH106

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation			Sheet	1 OF 1
Location	15-21 Brighton Avenue, Croydon Park NSW			Date Started	22/8/18
Position	Refer to Figure 2			Date Completed	22/8/18
Job No.	E23959.E02	Contractor	Hart Geo	Logged	CM/CZ
Client	CROYDON 88 UNIT TRUST	Drill Rig	Ute-Mounted Rig	Checked	NF
		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	0.30				-	Concrete Hardstand	-		CONCRETE HARDSTAND
				0.40	BH106_0.3-0.4 PID = 2.3 ppm			-	FILL: SAND; medium to coarse grained, dark brown to grey, with dark grey staining, no odour .	M	-	FILL
				0.70	BH106_0.4-0.5 PID = 2.4 ppm			-		M		
				1.00	BH106_0.4-0.5 PID = 1.5 ppm			CI	Sandy CLAY: low to medium plasticity, dark brown, medium to coarse sand, with angular to subangular, medium to coarse gravels, no odour.	M		RESIDUAL SOIL
			1						CLAY: medium to high plasticity, brown with light grey to orange, no odour.			
									Hole Terminated at 1.00 mBGL; Target Depth Reached.			
			2									
			3									
			4									
			5									
			6									
			7									
			8									
			9									
			10									

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

BOREHOLE: BH107

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation			Sheet	1 OF 1
Location	15-21 Brighton Avenue, Croydon Park NSW			Date Started	22/8/18
Position	Refer to Figure 2			Date Completed	22/8/18
Job No.	E23959.E02	Contractor	Hart Geo	Logged	CM/CZ
Client	CROYDON 88 UNIT TRUST	Drill Rig	Ute-Mounted Rig	Checked	NF
		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	0.10				-	Concrete Hardstand	-		CONCRETE HARDSTAND
				0.30	BH107_0.2-0.3			-	FILL: Gravelly SAND; medium to coarse grained, light grey to dark brown, sub-angular to angular, medium to coarse gravels, no odour.	M		FILL
					PID = 1.2 ppm			CL				RESIDUAL SOIL
					BH107_0.7-0.8				CLAY: low to medium plasticity, dark brown with mottled reddish orange, with with subangular to subround, no odour.	M	-	
				1.00	PID = 1.2 ppm							
			1						Hole Terminated at 1.00 mBGL; Target Depth Reached.			
			2									
			3									
			4									
			5									
			6									
			7									
			8									
			9									
			10									

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

BOREHOLE: BH108M

Project	Detailed Site Investigation			Sheet	1 OF 1
Location	15-21 Brighton Avenue, Croydon Park NSW			Date Started	22/8/18
Position	Refer to Figure 2			Date Completed	22/8/18
Job No.	E23959.E02	Contractor	Hart Geo	Logged	CM/CZ
Client	CROYDON 88 UNIT TRUST	Drill Rig	Ute-Mounted Rig	Checked	NF
		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 BH108M
AD/T	-	GWNE	0					-	Concrete Hardstand			BH108M
								-	FILL: Sandy CLAY; low to medium plasticity, dark brown, medium to coarse grained sand, with angular to subangular, medium to coarse gravels, no odour.	M		
				0.50	BH108M_0.3-0.4 PID = 1.6 ppm			CI	CLAY: low to medium plasticity, greenish brown, no odour.			
			1		BH108M_.0.9-0.8 PID = 1.9 ppm					M		
				1.40					SHALE; weathered, light brown, no odour.			
			2		BH108M_.1.7-1.8 PID = 1.1 ppm							
			3								-	
			4							D		
			5									
			6	6.30								
									Hole Terminated at 6.30 mBGL; Resfusal on Shale.			
			7									
			8									
			9									
			10									

Gatic Cover
Cuttings
50mm uPVC casing
Bentonite
Sand
50mm uPVC screen

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

BOREHOLE: BH109

Project	Detailed Site Investigation		
Location	15-21 Brighton Avenue, Croydon Park NSW		
Position	Refer to Figure 2		
Job No.	E23959.E02	Contractor	Hart Geo
Client	CROYDON 88 UNIT TRUST	Drill Rig	Hand Auger
		Inclination	-90°

Sheet	1 OF 1
Date Started	22/8/18
Date Completed	22/8/18
Logged	CM/CZ
Checked	NF

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
HA	-	GWNE	0	0.10					Concrete Hardstand	-		CONCRETE HARDSTAND
				0.30	BH109_0.1-0.2 PID = 1.1 ppm			-	FILL: SAND; medium to coarse grained, yellow, no odour.	M	-	FILL
									Hole Terminated at 0.30 mBGL; Resfusal on 0.3m Road Base Gravels.			
			1									
			2									
			3									
			4									
			5									
			6									
			7									
			8									
			9									
			10									

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

BOREHOLE: BH110

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Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation			Sheet	1 OF 1
Location	15-21 Brighton Avenue, Croydon Park NSW			Date Started	22/8/18
Position	Refer to Figure 2			Date Completed	22/8/18
Job No.	E23959.E02	Contractor	Hart Geo	Logged	CM/CZ
Client	CROYDON 88 UNIT TRUST	Drill Rig	Hand Auger	Checked	NF
		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
HA	-	DWNE	0	0.10				-	Concrete Hardstand	-		CONCRETE HARDSTAND
				0.30	BH110_0.1-0.2 PID =0.8 ppm			-	FILL: SAND; medium to coarse grained, yellow, no odour.	M	-	FILL
									Hole Terminated at 0.30 mBGL; Resfusal on 0.3m Road Base Gravels.			
			1									
			2									
			3									
			4									
			5									
			6									
			7									
			8									
			9									
			10									

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

BOREHOLE: BH111

Project	Detailed Site Investigation			Sheet	1 OF 1
Location	15-21 Brighton Avenue, Croydon Park NSW			Date Started	22/8/18
Position	Refer to Figure 2			Date Completed	22/8/18
Job No.	E23959.E02	Contractor	Hart Geo	Logged	CM/CZ
Client	CROYDON 88 UNIT TRUST	Drill Rig	Ute-Mounted Rig	Checked	NF
		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					-	Topsoil: Silty SAND; fine to medium grained, brown, with rootlets, no odour.	-		TOPSOIL
								-	Concrete Hardstand	M		CONCRETE HARDSTAND
				0.50				-				FILL
					BH111_0.4-0.5 PID = 0.6 ppm			CL	FILL: Clayey SAND; medium to coarse grained, reddish brown, low to medium plasticity, with subangular to angular gravel, no odour.	D	-	RESIDUAL SOIL
				1.00	BH111_0.8-0.9 PID = 0.8 ppm				CLAY: low to medium plasicity, light brown to orange, no odour.			
			1						Hole Terminated at 1.00 mBGL; Target Depth Reached.			
			2									
			3									
			4									
			5									
			6									
			7									
			8									
			9									
			10									

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

BOREHOLE: BH112M

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation			Sheet	1 OF 1
Location	15-21 Brighton Avenue, Croydon Park NSW			Date Started	22/8/18
Position	Refer to Figure 2			Date Completed	22/8/18
Job No.	E23959.E02	Contractor	Hart Geo	Logged	CM/CZ
Client	CROYDON 88 UNIT TRUST	Drill Rig	Ute-Mounted Rig	Checked	NF
		Inclination	-90°		

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS ID / Static Water Level
AD/T	-	▽	0	0.13				-	Concrete Hardstand	-		BH112M
					BH112M_0.3-0.4 PID = 0.9 ppm			-	FILL: Sandy CLAY; low to medium plasticity, dark brown, medium to coarse sand, with angular to subangular, medium to coarse gravels, no odour.	M		Gatic Cover
			1		BH112M_0.8-0.9 PID = 0.8 ppm							
				1.40					SHALE; Highly weathered, light brown to orange, no odour.			Cuttings
			2		BH112M_1.7-1.8 PID = 0.7 ppm							50mm uPVC casing
			3								-	
			4							D		Bentonite
			5									
			6									Sand
												50mm uPVC screen
		▽	7	7.50						W		
			8						Hole Terminated at 7.50 mBGL; Target Depth Reached.			
			9									
			10									

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

BOREHOLE: BH113

Project	Detailed Site Investigation		
Location	15-21 Brighton Avenue, Croydon Park NSW		
Position	Refer to Figure 2		
Job No.	E23959.E02	Contractor	Hart Geo
Client	CROYDON 88 UNIT TRUST	Drill Rig	Hand Auger
		Inclination	-90°

Sheet	1 OF 1
Date Started	22/8/18
Date Completed	22/8/18
Logged	CM/CZ
Checked	NF

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
HA	-	GWNE	0	0.10				-	Concrete Hardstand	-		CONCRETE HARDSTAND
				0.35	BH113_0.2-0.3 PID = 1.0 ppm			-	FILL: Clayey SAND; medium to coarse grained, reddish brown, no odour.	M	-	FILL
									Hole Terminated at 0.35 mBGL; Resfusal on Road-base Gravel.			
			1									
			2									
			3									
			4									
			5									
			6									
			7									
			8									
			9									
			10									

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

BOREHOLE: BH114

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation			Sheet	1 OF 1
Location	15-21 Brighton Avenue, Croydon Park NSW			Date Started	22/8/18
Position	Refer to Figure 2			Date Completed	22/8/18
Job No.	E23959.E02	Contractor	Hart Geo	Logged	CM/CZ
Client	CROYDON 88 UNIT TRUST	Drill Rig	Hand Auger	Checked	NF
		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
HA	-	GWNE	0	0.10				-	Concrete Hardstand	-		CONCRETE HARDSTAND
				0.20	BH114_0.2-0.3			-	FILL: SAND: medium to coarse grained, yellow, no odour.	M		FILL
				0.40	PID = 1.4 ppm			-	FILL: SAND; medium to coarse grained, reddish brown, no odour.	M	-	
				0.60				CL		M		RESIDUAL SOIL
					BH114_0.7-0.8				CLAY: low to medium plasticity, light grey to brown with orange, no odour.			
					PID = 1.2 ppm				Hole Terminated at 0.60 mBGL; Resfusal on Clay.			
			1									
			2									
			3									
			4									
			5									
			6									
			7									
			8									
			9									
			10									

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

APPENDIX F
Field Data Sheets

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

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

Project Number:	E23959	Engineer Name:	CM/CZ
Date:	22-8-18	Time ON Site:	7:05am
Travel Time:	1hr 30min	Time OFF Site:	4:50pm

Site Address/Location: 15-21 Brighton Ave, Croydon Park NSW

Climatic Conditions: sunny to cloudy

Current Site Uses: 5 warehouses → 4 used for storage/distribution of radiators, 1 - used for clothing/linen distribution/storage — w associated concrete driveways

Surrounding Land Uses:

North: Individual Res dwelling, church, followed by commercial shops + Georges River Road.

South: Australia Post warehouse, followed by additional commercial/industrial (hardware) warehouses

East: Individual residential dwellings + townhouses, followed by Croydon Ave.

West: Brighton Avenue, followed by individual residential dwellings + two-storey flats

Current Site Condition

Buildings Structures:

☒ slab on ground ☒ suspended slab ☐ basement ..... Level(s) ☐ sub-stations ☐ service pits / sumps

☐ potential ACM ☒ potential lead paint ☒ accessible soils (locations)

☐ Other (please decsribe):

Soil / Vegetation (overgrown, distressed, bare soil patches): overgrown veg fronting all properties. Minimal soil + vegetation present on site. overgrown/distressed vegetation noted behind 19-21 Brighton Ave. Maintained healthy grass present @ front of 19 Brighton Ave.

stray cats noted here

Condition of concrete, bitumen roading, flooring etc.: concrete hardstand inside warehouses was painted in generally good condt. with minimal flaking. Concrete surrounding newly renovated @ 17 Brighton Ave - brand new, no cracking/deformation, older concrete surrounding other warehouses, older with minimal cracking

Evidence of USTs / UPSS Infrastructure: concrete behind 17-19 Brighton Ave - highly deformed with large cracking evident.

None.

Evidence of Groundwater Monitoring Wells:

None.

Presence of Waste / Rubbish / Stockpiles: Rubbish + skip bins noted across the site. In front of 15 Brighton Ave - dumped office furnishings noted. Behind 17-19 Brighton Ave accumulation of timber pallets, electronics, cardboard, army machinary parts, old boat,

Unusual Odours:

None.

Signed: ~~CMadigan~~ Name: Clare Madigan Date: 22-8-18

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

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

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

site slopes south along Brighton Ave

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

Site buildings were generally constructed from brick of metal. However ACM could be present within building structures, especially window frames, awnings, down pipes + guttering, + in wet areas.

Anecdotal Information:

—

Notes:

Each warehouse was filled with with boxed goods — see photos

Signed: CCmadigan Name: Claire Madigan Date: 22-8-18

Daily Inspection / Work Summary Card - Remediation & Validation Form

OP 005a (Rev 2)

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

Project Number:	E23959	Engineer Name:	CM/CZ	Page:	1 of 2
Date:	22-8-18	Time ON Site:	7:05am		
Travel Time:	1hr 30min	Time OFF Site:	4:50pm		

Site Address/Location: 15-21 Brighton Ave, Croydon Park NSW

Climatic Conditions: sunny to cloudy

Completed Works:

- 14 x BH's
  - 3 converted to monitoring wells
  - 6 Hand Augered BH's in warehouses
  - Fill + natural samples taken @ each BH
- site walkover
- 1x GW well developed

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

Chemaine Shehaden - 0416 927 457 Dyldam

Times:
Leave home @ 5:30am
At site @ 7:05am
Drilling commence @ 7:30am
Drillers water delivery @ 11:30am (Terry)
pack up + offsite @ 4:50pm

QA/QC taken @ BH101m.

Signed by: CMadigan

Daily Remediation and Validation Report Card

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Suite 6.01, 55 Miller Street
PYRMONT, NSW, 2009
ABN 42 909 129 957
E service@eiaustralia.com.au
W www.eiaustralia.com.au
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Fresh air calibration completed?	Y
Span gas calibration completed?	Y

Primary Samples:	Max PID Reading (ppm):	QA/QC Samples:	Sample Description, etc. (Type of strata, colour, consistency, particle size, particle shape, grading, secondary materials, moisture, odour)
BH112M_0.8-0.9	0.8		* Refer to BH Logs *
BH112M_1.7-1.8	0.7		
BH110_0.1-0.2	0.8		
BH109_0.1-0.2	1.1		
BH111_0.8-0.9	0.8		
BH111_0.4-0.5	0.6		
BH108M 1.7-1.8	1.1		
BH113_0.2-0.3	1.0		
BH107_0.7-0.8	1.2		
BH103_0.2-0.3	0.9		
BH102_0.2-0.3	1.4		
BH107_0.2-0.3	1.2		
BH106_0.8-0.9	1.5		
BH112M_0.3-0.4	0.9		
BH114_0.4-0.5	1.2		
BH114_0.1-0.2	1.3		
BH108M 0.9-1.0	1.9		
BH108M 0.4-0.5	1.6		
BH106_0.4-0.5	2.4		
BH106_0.3-0.4	2.3		
BH105_1.3-1.4	2.3		
BH105_0.8-0.9	1.5		
BH105_0.3-0.4	1.2		
BH101M_0.4-0.5	1.1	QA/QC	
BH109_0.7-0.8	1.2		
BH108M 0.6-0.7	1.3		
BH104_0.2-0.3	1.4		

= FILL
= Natural

Signed by: [signature]

= site boundary ⊗ = Borehole

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Fax: (02) 9516 0744
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BH No: BH101M
Sheet: 1 of 1A
Job No: E23959

Borehole Log

Client: Roi Croydon 88 Pty Ltd
Principal:
Project: DSI
Location: 15-21 Brighton Ave, Croydon Park NSW
Equipment: Ute Mounted Rig
Diameter:
Slope: -90°
Bearing: --

Started: 22/8/18
Finished: 22/8/18
Logged: CM/C2
Checked:
RL Surface:
Datum:

drilling information					material information					
method	water	samples	sample method / QC	depth (m)	PID reading	material code	material description: soil type, particle characteristics or fines plasticity, colour, secondary and minor components	moisture + density/consistency	Odour (Y/N)	well construction
				0.15			150mm concrete Hardstand			
						FI	SILTY CLAY: 1-m plas, light brown to light grey with mottled orange	M	N	
				0.4	1.1					
				0.5						
				0.6	1.3	N1	SHALE: highly weathered, light brown/orange	D	N	
				0.7						
ADT	GWNE			2.0			colour change to medium brown			
				8.2			EOH - TDR @ 8.2m			

3.5m
4.0W
4.5m
7.5m
8.2m

NOT TO SCALE!

method
AS auger screw*
AD auger drill*
RR roller/tricone
W washbore
CB claw or blade bit
HA hand auger
D diatube
V V-bit
T TC-bit
NMLC NMLC core
NQ, HQ, PQ wireline core
*bit shown by suffix e.g. ADV

odour index
HC hydrocarbon
S solvent
Su sulfur

odour strength index
w weak
m moderate
s strong
vs very strong

weathering
XW extremely weatherd
HW highly weathered
MW moderately weathered
SW slightly weathered
FR fresh

water
level at date / time
inflow
complete outflow
partial outflow

Classification symbols and soil description based on unified classification system. Refer accompanying description sheets for further information.

moisture
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

grain size
vf very fine
f fine
m medium
c coarse

consistency
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable

density index
VL very loose
L loose
MD medium dense
D dense
VD very dense

material boundaries
known boundary
probable boundary
possible boundary

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Borehole Log

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Ph: (02) 9516 0722
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BH No: BH102
Sheet: 2 of 14
Job No: E23959

Client: KOI Croydon 88 Pty Ltd
Principal:
Project: DSI
Location: 15-21 Brighton Ave, Croydon Park NSW

Started: 22-8-18
Finished: 22-8-18
Logged: CM/CZ
Checked:

Equipment: Hand Auger
Diameter:

Slope: -90°
Bearing: -

RL Surface:
Datum:

drilling information					material information					
method	water	samples	sample method / QC	depth (m)	PID reading	material code	material description soil type, particle characteristics or fines plasticity, colour, secondary and minor components	moisture + density/consistency	Odour (Y/N)	well construction
HA	GWNE						50mm concrete			
				0.2-0.3	1.4	FILL	SAND: brown, M-C grained	M	N	
							EOH @ 0.3			
							Refusal at concrete slab			

method

AS	auger screw*
AD	auger drill*
RR	roller/tricone
W	washbore
CB	claw or blade bit
HA	hand auger
D	diatube
V	V-bit
T	TC-bit
NMLC	NMLC core
NQ, HQ, PQ	wireline core

*bit shown by suffix e.g. ADV

odour index

HC	hydrocarbon
S	solvent
Su	sulfur

odour strength index

w	weak
m	moderate
s	strong
vs	very strong

weathering

XW	extremely weatherd
HW	highly weathered
MW	moderately weathered
SW	slightly weathered
FR	fresh

water

level at date / time
inflow
complete outflow
partial outflow

Classification symbols and soil description based on unified classification system. Refer accompanying description sheets for further information.

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
Wl	liquid limit

grain size

vf	very fine
f	fine
m	medium
c	coarse

consistency

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable

density index

VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

material boundaries

known boundary
probable boundary
possible boundary

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BH No: BH103
Sheet: 3 of 14
Job No: E23959

Borehole Log

Client: ROI Croydon 88 Pty Ltd
Principal:
Project: DSI
Location: 15-21 Brighton Ave, Croydon Park NSW
Equipment: Hand Auger
Diameter:
Slope: -90°
Bearing: --
Started: 22-8-18
Finished: 22-8-18
Logged: CM/CZ
Checked:
RL Surface:
Datum:

drilling information					material information					
method	water	samples	sample method / QC	depth (m)	PID reading	material code	material description soil type, particle characteristics or fines plasticity, colour, secondary and minor components	moisture + density/consistency	Odour (Y/N)	well construction
HA	Dry			0.2 0.3	0.9	F1	150 mm concrete with gravel. FILL @ 0.3 refusal with gravel Sand-base	M	N	

method		odour index		weathering		Classification symbols and soil description based on unified classification system. Refer accompanying description sheets for further information.	consistency		density index	
AS	auger screw*	HC	hydrocarbon	XW	extremely weatherd		VS	very soft	VL	very loose
AD	auger drill*	S	solvent	HW	highly weathered		S	soft	L	loose
RR	roller/tricone	Su	sulfur	MW	moderately weathered		F	firm	MD	medium dense
W	washbore			SW	slightly weathered		St	stiff	D	dense
CB	claw or blade bit			FR	fresh		VSt	very stiff	VD	very dense
HA	hand auger	odour strength index		water		moisture	H	hard		
D	diatube	w	weak		level at date / time	D dry	Fb	friable		
V	V-bit	m	moderate		inflow	M moist	material boundaries			
T	TC-bit	s	strong		complete outflow	W wet		known boundary		
NMLC	NMLC core	vs	very strong		partial outflow	Wp plastic limit		probable boundary		
NQ, HQ, PQ	wireline core					Wl liquid limit		possible boundary		
*bit shown by suffix e.g. ADV						grain size vf very fine f fine m medium c coarse				

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BH No: BH104
Sheet: 1 of 1
Job No: E23959

Borehole Log

Client: DoT Croydon 88 Pty Ltd.
Principal:
Project: DSI
Location: 15-21 Brighton Ave, Croydon Park NSW
Started: 22-8-18
Finished: 22-8-18
Logged: CM/CZ
Checked:
Equipment: JTE Mounted Rig
Diameter:
Slope: -90°
Bearing: --
RL Surface:
Datum:

drilling information					material information					
method	water	samples	sample method / QC	depth (m)	PID reading	material code	material description: soil type, particle characteristics or fines plasticity, colour, secondary and minor components	moisture + density/consistency	Odour (Y/N)	well construction
				0.125			125 mm Concrete			
				0.2	1.4	F2	Gravelly SAND: reddish-brown, high medium to ~~fine~~ grained,	M	N	
				0.5			with A to SA, medium to ~~coarse~~ coarse gravel.			
				0.7	1.2					
				1.0		N2	CLAY: L-M plas, brown w light grey, to orange w small SA-SR m-c gravels ~ charcoal.	M	N	
				1.5			EOH - TD			
AD/T	CASING									

method
AS auger screw*
AD auger drill*
RR roller/tricone
W washbore
CB claw or blade bit
HA hand auger
D diatube
V V-bit
T TC-bit
NMLC NMLC core
NQ, HQ, PQ wireline core
*bit shown by suffix e.g. ADV

odour index
HC hydrocarbon
S solvent
Su sulfur

odour strength index
w weak
m moderate
s strong
vs very strong

weathering
XW extremely weatherd
HW highly weathered
MW moderately weathered
SW slightly weathered
FR fresh

water
level at date / time
inflow
complete outflow
partial outflow

Classification symbols and soil description based on unified classification system. Refer accompanying description sheets for further information.

moisture
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

grain size
vf very fine
f fine
m medium
c coarse

consistency
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable

density index
VL very loose
L loose
MD medium dense
D dense
VD very dense

material boundaries
known boundary
probable boundary
possible boundary

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BH No: BH105
Sheet: 5 of 14
Job No: E23959

Borehole Log

Client: RDI Croydon 88 Pty Ltd
Principal:
Project: DSI
Location: 15-21 Brighton Ave, Croydon Park NSW
Equipment: Late Mounted Rig
Diameter:
Slope: -90°
Bearing: --

Started: 22-8-18
Finished: 22-8-18
Logged: CM/CZ
Checked:
RL Surface:
Datum:

drilling information					material information					
method	water	samples	sample method / QC	depth (m)	PID reading	material code	material description soil type, particle characteristics or fines plasticity, colour, secondary and minor components	moisture + density/consistency	Odour (Y/N)	well construction
				0.1			100mm concrete			
							FILL: sandy CLAY: l-m plas, dk brown m-c sand w sa-a m-c gravels & charcoal, with glass fragments	M	N	
				0.3	1.2	F5				
				0.5						
						F3				
				0.7						
				0.8	1.5	NL	CLAY: light grey to orange brown w small sub-angular - sub-rounded gravels	M	N	
				1.1				D	N	
				1.3	2.3	N1	SHALE: highly weathered light brown - orange			
AD/T	CWNE			1.5			EOH - TDR			

method

AS	auger screw*
AD	auger drill*
RR	roller/tricone
W	washbore
CB	claw or blade bit
HA	hand auger
D	diatube
V	V-bit
T	TC-bit
NMLC	NMLC core
NQ, HQ, PQ	wireline core

*bit shown by suffix e.g. ADV

odour index

HC	hydrocarbon
S	solvent
Su	sulfur

odour strength index

w	weak
m	moderate
s	strong
vs	very strong

weathering

XW	extremely weatherd
HW	highly weathered
MW	moderately weathered
SW	slightly weathered
FR	fresh

water

- level at date / time
- inflow
- complete outflow
- partial outflow

Classification symbols and soil description based on unified classification system. Refer accompanying description sheets for further information.

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
Wl	liquid limit

grain size

vf	very fine
f	fine
m	medium
c	coarse

consistency

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable

density index

VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

material boundaries

- known boundary
- probable boundary
- ?— possible boundary

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Ph: (02) 9516 0722
Fax: (02) 9516 0744
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BH No: BH106
Sheet: 6 of 14
Job No: E23959

Borehole Log

Client: Rol Croydon 88 Pty Ltd
Principal:
Project: 051
Location: 15-21 Brighton Ave, Croydon Park NSW
Equipment: Ute Mounted Rig
Diameter:
Slope: -90°
Bearing: --

Started: 22-8-18
Finished: 22-8-18
Logged: CM/CZ
Checked:
RL Surface:
Datum:

drilling information					material information						
method	water	samples	sample method / QC	depth (m)	PID reading	material code	material description soil type, particle characteristics or fines plasticity, colour, secondary and minor components	moisture + density/consistency	Odour (Y/N)	well construction
AD/T	GWNE						300mm concrete Hardstand			
				0.3						
				0.4	2.3	F4	SAND: m-c gr, dark brown/grey	M.	Y	Slight HC odour
				0.5	2.4	F5	with dark grey staining	W		
							~~CLAY: m-H plas~~ Sandy CLAY	M-W	N	
				0.7						
				0.9	1.5	N2	CLAY: m-H plas:	M	N	
				1.0						
							EOH - TDR			

method
AS auger screw*
AD auger drill*
RR roller/tricone
W washbore
CB claw or blade bit
HA hand auger
D diatube
V V-bit
T TC-bit
NMLC NMLC core
NQ, HQ, PQ wireline core
*bit shown by suffix e.g. ADV

odour index
HC hydrocarbon
S solvent
Su sulfur

odour strength index
w weak
m moderate
s strong
vs very strong

weathering
XW extremely weatherd
HW highly weathered
MW moderately weathered
SW slightly weathered
FR fresh

water
level at date / time
inflow
complete outflow
partial outflow

Classification symbols and soil description based on unified classification system. Refer accompanying description sheets for further information.

moisture
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

grain size
vf very fine
f fine
m medium
c coarse

consistency
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard*
Fb friable

density index
VL very loose
L loose
MD medium dense
D dense
VD very dense

material boundaries
known boundary
probable boundary
possible boundary

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BH No: BH107
Sheet: 7 of 14
Job No: E23a59

Borehole Log

Client: Lot Croydon 88 Pty Ltd
Principal:
Project: DSI
Location: 15-21 Brighton Ave, Croydon Park NSW
Equipment: UTE mounted Rig
Diameter:

Started: 22-8-18
Finished: 24-8-18
Logged: CM/CL
Checked:
Slope: -90°
Bearing: --
RL Surface:
Datum:

drilling information					material information					
method	water	samples	sample method / QC	depth (m)	PID reading	material code	material description soil type, particle characteristics or fines plasticity, colour, secondary and minor components	moisture + density/consistency	Odour (Y/N)	well construction
AD/T	GWNE			0.1			125mm concrete			
				0.3	1.2	FB	Gravelly SAND: Light grey to DK brown, sa-u, m-c gravels, m-coarse	M	N	
				0.5						
				0.7	1.2	N2	DK brown w mottled reddish orange	M	N	
				1.0			EOH - TDR			

method
AS auger screw*
AD auger drill*
RR roller/tricone
W washbore
CB claw or blade bit
HA hand auger
D diatube
V V-bit
T TC-bit
NMLC NMLC core
NQ, HQ, PQ wireline core
*bit shown by suffix e.g. ADV

odour index
HC hydrocarbon
S solvent
Su sulfur

odour strength index
w weak
m moderate
s strong
vs very strong

weathering
XW extremely weatherd
HW highly weathered
MW moderately weathered
SW slightly weathered
FR fresh

water
level at date / time
inflow
complete outflow
partial outflow

Classification symbols and soil description based on unified classification system. Refer accompanying description sheets for further information.

moisture
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

grain size
vf very fine
f fine
m medium
c coarse

consistency
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable

density index
VL very loose
L loose
MD medium dense
D dense
VD very dense

material boundaries
known boundary
probable boundary
possible boundary

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Borehole Log

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BH No: BH108M
Sheet: 8 of 14
Job No: E23959

Client: ROI Croydon 88 Pty Ltd
Principal:
Project: DSI
Location: 15-21 Brighton Ave, Croydon Park NSW
Equipment: Ute Mounted Rig
Diameter:
Slope: -90°
Bearing: --
Started: 22-8-18
Finished: 22-8-18
Logged: CM/CZ
Checked:
RL Surface:
Datum:

drilling information					material information					
method	water	samples	sample method / QC	depth (m)	PID reading	material code	material description soil type, particle characteristics or fines plasticity, colour, secondary and minor components	moisture + density/consistency	Odour (Y/N)	well construction
AD/T	GWNE			0.1			100mm concrete			
				0.5	1.6	FS	sandy CLAY:	m	N	
				0.9	1.9	N2	greenish brown	m	N	
				1.0						
				1.4			STABLE: weathered, brown, light	D	N	
				1.7	1.1					
				1.8						
				6.3			EOH - Refusal			

2.2
2.8
3.3
6.3

NOT TO SCALE!

method
AS auger screw*
AD auger drill*
RR roller/tricone
W washbore
CB claw or blade bit
HA hand auger
D diatube
V V-bit
T TC-bit
NMLC NMLC core
NQ, HQ, PQ wireline core
*bit shown by suffix e.g. ADV

odour index
HC hydrocarbon
S solvent
Su sulfur

odour strength index
w weak
m moderate
s strong
vs very strong

weathering
XW extremely weatherd
HW highly weathered
MW moderately weathered
SW slightly weathered
FR fresh

water
level at date / time
inflow
complete outflow
partial outflow

Classification symbols and soil description based on unified classification system. Refer accompanying description sheets for further information.

moisture
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

grain size
vf very fine
f fine
m medium
c coarse

consistency
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable

density index
VL very loose
L loose
MD medium dense
D dense
VD very dense

material boundaries
known boundary
probable boundary
possible boundary

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Borehole Log

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Pyrmont, NSW 2009
Ph: (02) 9516 0722
Fax: (02) 9516 0744
service@eiaustralia.com.au

BH No: BH109 / BH110
Sheet: 9 of 14
Job No: E23959

Client: Rot Croydon 88 Pty Ltd
Principal:
Project: DSI
Location: 15-21 Brighton Ave, Croydon Park NSW
Equipment: Hand Auger
Diameter:

Started: 22-8-18
Finished: 22-8-18
Logged: CM/CZ
Checked:
Slope: -90°
Bearing: --
RL Surface:
Datum:

drilling information					material information					
method	water	samples	sample method / QC	depth (m)	PID reading	material code	material description soil type, particle characteristics or fines plasticity, colour, secondary and minor components	moisture + density/consistency	Odour (Y/N)	well construction
HA	GRNE			0.1			100mm concrete			
					1.1/69	FA	SAND: m-cgr, yellow	M	N	
				0.3			Refusal @ 0.3m - road base gravels			
							EOH			

method
AS auger screw*
AD auger drill*
RR roller/tricone
W washbore
CB claw or blade bit
HA hand auger
D diatube
V V-bit
T TC-bit
NMLC NMLC core
NQ, HQ, PQ wireline core
*bit shown by suffix e.g. ADV

odour index
HC hydrocarbon
S solvent
Su sulfur

odour strength index
w weak
m moderate
s strong
vs very strong

weathering
XW extremely weatherd
HW highly weathered
MW moderately weathered
SW slightly weathered
FR fresh

water
level at date / time
inflow
complete outflow
partial outflow

Classification symbols and soil description based on unified classification system. Refer accompanying description sheets for further information.

moisture
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

grain size
vf very fine
f fine
m medium
c coarse

consistency
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable

density index
VL very loose
L loose
MD medium dense
D dense
VD very dense

material boundaries
known boundary
probable boundary
possible boundary

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Ph: (02) 9516 0722
Fax: (02) 9516 0744
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BH No: BH111
Sheet: 11 of 14
Job No: E23959

Borehole Log

Client: RDI Croydon 88 Pty Ltd
Principal:
Project: DSI
Location: 15-21 Brighton Ave, Croydon Park NSW
Equipment: Ute mounted Rig
Diameter:
Slope: -90°
Bearing: --

Started: 22-8-18
Finished: 22-8-18
Logged: CM/CZ
Checked:
RL Surface:
Datum:

drilling information					material information					
method	water	samples	sample method / QC	depth (m)	PID reading	material code	material description: soil type, particle characteristics or fines plasticity, colour, secondary and minor components	moisture + density/consistency	Odour (Y/N)	well construction
							50mm Topsoil - brown, rootlets, silty sand			
				0.1			50mm - Old concrete slab			
				0.4		FA	FILL: clayey SAND: m-cgr, reddish brown, l-m plas, sa-a gravels	m	N	
				0.5						
						N2	CLAY: light brown-orange, L plas;	D	N	
				0.8	0.8					
				1.0			EOH - TDR			
AD/T, GWNE										

method
AS auger screw*
AD auger drill*
RR roller/tricone
W washbore
CB claw or blade bit
HA hand auger
D diatube
V V-bit
T TC-bit
NMLC NMLC core
NQ, HQ, PQ wireline core
*bit shown by suffix e.g. ADV

odour index
HC hydrocarbon
S solvent
Su sulfur

odour strength index
w weak
m moderate
s strong
vs very strong

weathering
XW extremely weatherd
HW highly weathered
MW moderately weathered
SW slightly weathered
FR fresh

water
level at date / time
inflow
complete outflow
partial outflow

Classification symbols and soil description based on unified classification system. Refer accompanying description sheets for further information.

moisture
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

grain size
vf very fine
f fine
m medium
c coarse

consistency
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable

density index
VL very loose
L loose
MD medium dense
D dense
VD very dense

material boundaries
known boundary
probable boundary
possible boundary

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Borehole Log

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BH No: BH112M
Sheet: 1 of 1
Job No: E23959

Client: ROI Croydon 88 Pty Ltd
Principal:
Project: DSI
Location: 15-21 Brighton Ave, Croydon Park NSW
Started: 22-8-18
Finished: 22-8-18
Logged: CM / CZ
Checked:
Equipment: Ute mounted Rig
Slope: -90°
Bearing: --
RL Surface:
Datum:
Diameter:

drilling information					material information					
method	water	samples	sample method / QC	depth (m)	PID reading	material code	material description soil type, particle characteristics or fines plasticity, colour, secondary and minor components	moisture + density/consistency	Odour (Y/N)	well construction
							125 mm concrete			
AD/T				0.3	0.9	FS	Sandy CLAY: l-m plas, dk grey, brown, w sa-g, m-c gravels	m	N	
				0.8	0.8					
				1.0						
				1.4						
						NI	SHALE: highly weathered, light brown-orange	D	N	
				1.7	0.7					
										3.5
										4.0
										4.5
				7.0			Seepage	M-W		
								D		
				7.5			EOH - Refusal on bedrock			7.5

method
AS auger screw*
AD auger drill*
RR roller/tricone
W washbore
CB claw or blade bit
HA hand auger
D diatube
V V-bit
T TC-bit
NMLC NMLC core
NQ, HQ, PQ wireline core
*bit shown by suffix e.g. ADV

odour index
HC hydrocarbon
S solvent
Su sulfur

odour strength index
w weak
m moderate
s strong
vs very strong

weathering
XW extremely weatherd
HW highly weathered
MW moderately weathered
SW slightly weathered
FR fresh

water
level at date / time
inflow
complete outflow
partial outflow

Classification symbols and soil description based on unified classification system. Refer accompanying description sheets for further information.

moisture
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

grain size
vf very fine
f fine
m medium
c coarse

consistency
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable

density index
VL very loose
L loose
MD medium dense
D dense
VD very dense

material boundaries
known boundary
probable boundary
possible boundary

NOT TO SCALE!

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BH No: BH113
Sheet: 13 of 14
Job No: E23959

Borehole Log

Client: Roi Croydon 88 Pty Ltd
Principal:
Project: DSI
Location: 15-21 Brighton Ave, Croydon Park NSW

Started: 22-8-18
Finished: 22-8-18
Logged: CM ICZ
Checked:

Equipment: Hand Auger
Diameter:

Slope: -90°
Bearing: --

RL Surface:
Datum:

drilling information					material information					
method	water	samples	sample method / QC	depth (m)	PID reading	material code	material description soil type, particle characteristics or fines plasticity, colour, secondary and minor components	moisture + density/consistency	Odour (Y/N)	well construction
HA	GWNE			0.1			125mm concrete			
				0.2	1.0	FB	clayey SAND: m-c gr, reddish brown	M W	N	
				0.3			Refusal on road base gravels — EOH			

method
AS auger screw*
AD auger drill*
RR roller/tricone
W washbore
CB claw or blade bit
HA hand auger
D diatube
V V-bit
T TC-bit
NMLC NMLC core
NQ, HQ, PQ wireline core
*bit shown by suffix e.g. ADV

odour index
HC hydrocarbon
S solvent
Su sulfur

odour strength index
w weak
m moderate
s strong
vs very strong

weathering
XW extremely weatherd
HW highly weathered
MW moderately weathered
SW slightly weathered
FR fresh

water
level at date / time
inflow
complete outflow
partial outflow

Classification symbols and soil description based on unified classification system. Refer accompanying description sheets for further information.

moisture
D dry
M moist
W wet
Wp plastic limit
Wl liquid limit

grain size
vf very fine
f fine
m medium
c coarse

consistency
VS very soft
S soft
F firm
St stiff
VSt very stiff
H hard
Fb friable

density index
VL very loose
L loose
MD medium dense
D dense
VD very dense

material boundaries
known boundary
probable boundary
?— possible boundary

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Ph: (02) 9516 0722
Fax: (02) 9516 0744
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BH No: BH114
Sheet: 1A of 1A
Job No: E23959

Borehole Log

Client: ROI Croydon Pty Ltd
Principal:
Project: DSI
Location: 15-21 Brighton Ave, Croydon Park NSW

Started: 22-8-18
Finished: 22-8-18
Logged: CM IC2
Checked:

Equipment: Hand Auger
Diameter:

Slope: -90°
Bearing: --

RL Surface:
Datum:

drilling information					material information					
method	water	samples	sample method / QC	depth (m)	PID reading	material code	material description soil type, particle characteristics or fines plasticity, colour, secondary and minor components	moisture + density/consistency	Odour (Y/N)	well construction
HA	DRY			0.1			125mm concrete			
				0.2	1.3	FT	SAND - orange-red	M	N	
				0.3		FB	Sandy CLAY	M	N	
				0.4						
				0.5	1.2	N2	CLAY	M	N	
				0.6			EOH - Refusal in CLAY			

method

AS	auger screw*
AD	auger drill*
RR	roller/tricone
W	washbore
CB	claw or blade bit
HA	hand auger
D	diatube
V	V-bit
T	TC-bit
NMLC	NMLC core
NQ, HQ, PQ	wireline core

*bit shown by suffix e.g. ADV

odour index

HC	hydrocarbon
S	solvent
Su	sulfur

odour strength index

w	weak
m	moderate
s	strong
vs	very strong

weathering

XW	extremely weatherd
HW	highly weathered
MW	moderately weathered
SW	slightly weathered
FR	fresh

water

level at date / time
inflow
complete outflow
partial outflow

Classification symbols and soil description based on unified classification system. Refer accompanying description sheets for further information.

moisture

D	dry
M	moist
W	wet
Wp	plastic limit
Wl	liquid limit

grain size

vf	very fine
f	fine
m	medium
c	coarse

consistency

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable

density index

VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

material boundaries

known boundary
probable boundary
possible boundary

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

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

CALIBRATION CERTIFICATE FOR PHOTO IONISATION DETECTOR

Instrument: Mini RAE 3000

Serial Number: 592-906667 - EI **PID02** ☐ **OR** 592-901345 - EI **PID03** ☑

Instrument Conditions: good

Calibration gas species: Isobutylene.

Calibration gas concentration: 100 ppm

Gas bottle number: 676450 / 176

This PID has been calibrated to Isobutylene gas with the span concentration displayed as 99.7 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: 400 psi (if reading is <250 psi, notify Equipment Manager to arrange new gas bottle order)

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

Signed: Charles Chao

Date: 23-08-18

Time: 10:35 am

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FIELD DATA SHEET

Project: DSI — Sheet: 1 of 1
Site Address: 15-21 Brighton Ave, Croydon Park NSW — Engineer: CM/CZ
Client: RO1 Croydon 88 Pty Ltd — Sampling Date: 22-8-18

Monitoring Bore ID: BH101M Date Drilled: 22-8-18 Date Developed: 22-8-18 Drilled Depth: 8.25 mBGL Hole Size: 50 mm Measured Bore Depth: 7.47 mBTOC
Bore Location Description: NW corner of site (upgradient) TOC Stickup: -0.10 m (Relative to Ground Level)
Date Purged: 22-8-18 Purging Method: —
SWL Before Purging (m BTOC): 7.17 Time of SWL: — Sampling Method: — Time Sample Taken: —

Volume Purged (L)	Temp (°C)	pH (units)	EC (µs/cm) OR mS/cm	TDS (ppm)	DO (mg/L)	Redox (mV)	Odours (Y/N)	Sample Description
								* Note: well not developed due to minor amount of water in well

Monitoring Bore ID: BH108M Date Drilled: 22-8-18 Date Developed: 22-8-18 Drilled Depth: 6.3 mBGL Hole Size: 50 mm Measured Bore Depth: 5.74 mBTOC
Bore Location Description: easternmost portion of the site TOC Stickup: -0.04 m (Relative to Ground Level)
Date Purged: — Purging Method: —
SWL Before Purging (m BTOC): — Time of SWL: — Sampling Method: — Time Sample Taken: —

Volume Purged (L)	Temp (°C)	pH (units)	EC (µs/cm) OR mS/cm	TDS (ppm)	DO (mg/L)	Redox (mV)	Odours (Y/N)	Sample Description
								* Note: well was dry!

Monitoring Bore ID: BH112M Date Drilled: 22-8-18 Date Developed: 22-8-18 Drilled Depth: — mBGL Hole Size: 50 mm Measured Bore Depth: 7.48 mBTOC
Bore Location Description: central-southern part of site TOC Stickup: -0.09 m (Relative to Ground Level)
Date Purged: 22-8-18 Purging Method: bailer
SWL Before Purging (m BTOC): 5.90 Time of SWL: 4:15pm Sampling Method: — Time Sample Taken: —

Volume Purged (L)	Temp (°C)	pH (units)	EC (µs/cm) OR mS/cm	TDS (ppm)	DO (mg/L)	Redox (mV)	Odours (Y/N)	Sample Description
								well was baled dry.
								L. Brown, medium to high turbidity, no sheen, no odour.

Daily Inspection / Work Summary Card - Remediation & Validation Form

OP 005a (Rev 2)

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

Project Number:	E23959	Engineer Name:	CM/CZ	Page:	1 of 1
Date:	29-8-18	Time ON Site:	10:30am		
Travel Time:	20min	Time OFF Site:	3:30pm		

Site Address/Location: 15-21 Brighton Ave, Croydon Park NSW

Climatic Conditions: sunny

Completed Works:

* GME → 3 GW wells sampled (BH101M, BH108M + BH112M)
  ↳ QA/QC sample taken @ BH101M

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

Client: Chemaine (Pyldam)

* onsite @ 10:30am.
  ↳ Low flow pump very dirty from previous site + unable to be completely pulled apart.
  → Gas bottle needed to be changed over @ 1st well (BH101M).
* offsite @ 3:30pm.

Signed by: C Madigan

WATER SAMPLING FIELD SHEET

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Site Address: 15-21 Brighton Ave, Croydon	Job Number: E23959
Client: ROI Croydon Pty Ltd Park NSW	Date: 29-8-18
Field Staff: CM / CZ	Sampling Location ID BH10m
Well Location: NW corner of the site.	Round No: 1
MEDIUM ☒Groundwater ☐Surface Water	☐Stormwater ☐Other:
SAMPLING POINT INFO	
Well Installation Date: 22-8-18	Stickup (m): -0.10m (+ 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): 7.90 mbtoc	Well Head Condition: Good
SWL (mbtoc): 3.90m mbtoc	Water Column (m): 3.80m
PHASE SEPARATED HYDROCARBONS (PSH)	
Depth to PSH (mbtoc):	PSH Visually Confirmed (Bailer):
PSH Thickness (mm):	
PURGE AND SAMPLE	
Sampling Method ☒Bladder ☐Peristaltic ☐Submersible ☐Other:	
Depth of Pump Inlet: 6.3m	Fill Timer: 5
Pump Pressure Regulator (psi): 20	Discharge Timer: 10
Weather Conditions: Sunny	Cycle: CPM4
Pump on time: 11:43am	Pump off time: 12:20pm
WATER QUALITY PARAMETERS	
Probe Make and Model:	Bump Test Date and Time:

Time	Volume (L)	SWL (mbtoc)	Temp (°C)	EC (µS/cm)	Redox (mV)	DO (mg/L)	pH (units)	Comments (colour, turbidity, odour, sheen etc.)
11:46	2.5	3.80	20.39	5784	119.4	4.59	6.46	pale yellow/Brown, L-M
11:50		4.40	20.04	5670	115.3	4.37	6.53	turbidity, no odour,
11:54		4.64	20.14	5462	166.5	1.04	5.80	no sheen
11:58		4.89	20.11	5424	195.4	1.03	5.62	
12:02		5.26	19.96	5349	203.3	1.08	5.64	
Stabilisation range: 3 consecutive readings			±0.2°C	±3%	±20mV	±10%	±0.2	

OTHER COMMENTS/OBSERVATIONS:

*changed gas bottle
*QA/QC samples taken GWQD1 + GWQT1

SIGNATURE: CMadiga

WATER SAMPLING FIELD SHEET

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Site Address: 15 - 21 Brighton Ave, Croydon Park	Job Number: E23957
Client: ROI Croydon 88 pty Ltd	Date: 29-8-18
Field Staff: CM / CZ	Sampling Location ID BH108M
Well Location: Eastern Boundary	Round No: 1
MEDIUM ☑Groundwater ☐Surface Water	☐Stormwater ☐Other:

SAMPLING POINT INFO

Well Installation Date: 22-8-18	Stickup (m): -0.07m (+ 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): 5.90	Well Head Condition: Good
SWL (mbtoc): 2.98 mbtoc	Water Column (m): 2.92 m

PHASE SEPARATED HYDROCARBONS (PSH)

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

PURGE AND SAMPLE

Sampling Method ☑Bladder ☐Peristaltic ☐Submersible ☐Other:

Depth of Pump Inlet: 4.80m	Fill Timer: 5
Pump Pressure Regulator (psi): 20	Discharge Timer: 10
Weather Conditions: Sunny	Cycle: CPM4
Pump on time: 1:10pm	Pump off time: 1:40pm

WATER QUALITY PARAMETERS

Probe Make and Model:	Bump Test Date and Time:

Time	Volume (L)	SWL (mbtoc)	Temp (°C)	EC (µS/cm)	Redox (mV)	DO (mg/L)	pH (units)	Comments (colour, turbidity, odour, sheen etc.)
1:13		2.89	19.72	5366	154.7	3.89	6.56	pale brown/grey, low turbidity
1:16		3.09	19.28	4838	150.6	2.97	6.20	no odour, no sheen
1:19		3.18	19.11	4484	158.0	2.68	5.71	" "
1:22		3.40	19.04	4412	161.2	1.73	5.63	" "
1:25		3.55	19.03	4361	139.1	1.43	5.57	" "
Stabilisation range: 3 consecutive readings			±0.2°C	±3%	±20mV	±10%	±0.2	

OTHER COMMENTS/OBSERVATIONS:

SIGNATURE: CMadigar

WATER SAMPLING FIELD SHEET

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Site Address: 15-21 ~~Brighton~~ Ave, Croydon Park	Job Number: E23959
Client: Ro1 88 Croydon Pty Ltd	Date: 29-8-18
Field Staff: CM / CZ	Sampling Location ID BH112M
Well Location: Southern boundary	Round No: 1
MEDIUM ☑Groundwater ☐Surface Water	☐Stormwater ☐Other:
SAMPLING POINT INFO	
Well Installation Date: 22-8-18	Stickup (m): -0.12m (+ 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): 7.54m ~~btoc~~ bgl	Well Head Condition: Good
SWL (mbtoc): 3.37 mbgl	Water Column (m): 4.17m
PHASE SEPARATED HYDROCARBONS (PSH)	
Depth to PSH (mbtoc):	PSH Visually Confirmed (Bailer): None
PSH Thickness (mm):	
PURGE AND SAMPLE	
Sampling Method ☐Bladder ☐Peristaltic ☐Submersible	☑Other: Bailer
Depth of Pump Inlet:	Fill Timer:
Pump Pressure Regulator (psi):	Discharge Timer:
Weather Conditions: Indoors (mild)	Cycle:
Pump on time: 2:50pm	Pump off time:
WATER QUALITY PARAMETERS	
Probe Make and Model:	Bump Test Date and Time:

Time	Volume (L)	SWL (mbtoc)	Temp (°C)	EC (µS/cm)	Redox (mV)	DO (mg/L)	pH (units)	Comments (colour, turbidity, odour, sheen etc.)	
2:52		-	18.91	4820	141.9	3.27	6.76	Brown, ~~dark~~ turbidity,	2
2:54		-	19.07	4656	142.2	3.32	6.49	no odour, no sheen	2
2:56		4.42	19.09	4598	133.5	3.46	6.35	" "	2
Stabilisation range: 3 consecutive readings			±0.2°C	±3%	±20mV	±10%	±0.2		

OTHER COMMENTS/OBSERVATIONS:
Low Flow pump would not work- bad connection
4 After muddying around decided to use bailer.

SIGNATURE: ~~CMadigan~~

= site boundary ⊗ = Borehole

APPENDIX G
Chain of Custody and Sample Receipt Forms

Sheet 1 of 3

Site: 15-21 Brighton Ave, Croydon Park NSW

Project No: E23959 · E02

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

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	WATER	SOIL	OTHERS (i.e. Fibro, Paint, etc.)	HM [A] /TRH/BTEX/PAHs OCP/OP/PCB/Asbestos	HM [A] /TRH/BTEX/PAHs	HM [A] /TRH/BTEX	BTEX	VOCs	Asbestos	Asbestos Quantification	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	Dewatering Suite	sPOCAS	PFAS				TCLP HM [B] / PAH
BH101M_0.4-0.5	1	J/ZLB	22-8-18	AM/PM		X		X															
BH102_0.2-0.3	2	↓	↓	↓		↓		↓															
BH103_0.2-0.3	3																						
BH104_0.7-0.8	4																						
BH105_0.3-0.4	5																						
BH106_0.3-0.4	6																						
BH107_0.2-0.3	7																						
BH108M_0.4-0.5	8																						
BH109_0.1-0.2	9																						
BH110_0.1-0.2	10																						
BH111_0.4-0.5	11																						
BH112M_0.3-0.4	12	↓	↓	↓		↓		↓															

Comments

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

HM [B]
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

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

LABORATORY TURNAROUND

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

SGS EHS Alexandria Laboratory

SE183030 COC
Received: 23 – Aug – 2018

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

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

Report with EI Waste Classification Table ☐

Sampler's Name (EI): CM / CZ	Received by (SGS):
Print: Clare Madigan	Print: Ness
Signature: CMadigan	Signature:
Date: 23-8-18	Date: 23/8/18 3:30

Sampler's Comments:

E-MAILED 23/8/18 @ 3:44pm

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

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

Sheet 2 of 3

Site: 15-21 Brighton Ave, Croydon Park NSW

Project No: E23459 - EC2

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

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	Sample Matrix: WATER	SOIL	OTHERS (i.e. Fibro, Paint, etc.)	Analysis: HM [A] /TRH/BTEX/PAHs OCP/OP/PCB/Asbestos	HM [A] /TRH/BTEX/PAHs	HM [A] /TRH/BTEX	BTEX	VOCs	Asbestos	Asbestos Quantification	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	Dewatering Suite	sPOCAS	PFAS	HOLD			TCLP HM [B] / PAH
BH113_0.2-0.3	13	J/ZLB	22-8-18	AM/PM		X		X															
BH104_0.2-0.3	14	↓	↓	↓		↓		X															
BH106_0.4-0.5																				X			
BH112M_0.8-0.9																				X			
BH114_0.1-0.2																				X			
BH101M_0.6-0.7	15								X														
BH105_0.8-0.9	16								X														
BH106_0.8-0.9	17								X														
BH108M_0.9-1.0	18								X														
BH111_0.8-0.9	19								X														
BH114_0.4-0.5	20								X														
BH105_1.3-1.4		↓	↓	↓		↓														X			

Comments

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

HM [B]
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

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

LABORATORY TURNAROUND

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

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

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

Report with EI Waste Classification Table ☐

Sampler's Name (EI): CM/CZ	Received by (SGS):
Print: Clare Madigan	Print: Ness
Signature: CCMadigan	Signature:
Date: 23-8-18	Date: 23/8/18 3:30

Sampler's Comments:

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

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

Sheet 3 of 3

Site: 15-21 Brighton Ave, Croydon Park NSW

Project No: E23459 - EO2

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

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	Sample Matrix: WATER	SOIL	OTHERS (i.e. Fibro, Paint, etc.)	Analysis: HM [A] /TRH/BTEX/PAHs OCP/OP/PCB/Asbestos	HM [A] /TRH/BTEX/PAHs	HM [A] /TRH/BTEX	BTEX	VOCs	Asbestos	Asbestos Quantification	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	Dewatering Suite	sPOCAS	PFAS	HOLD			TCLP HM [B] / PAH
BH107_0.7-0.8		J12LB	22-8-18	AM/PM		X														X			
BH108M_1.7-1.8		↓	↓	↓		↓														X			
BH112M_1.7-1.8		↓																		X			
BH-QD1	21	J				↓				X													
BH-QR1	22	P, J + 2xVC			X					X													
BH-QRB		↓			X															X			
Trip Blank	23	2xVC	↓	↓	X						X												
Trip Spike	24	LAB PREPARED				X					X												

Comments

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

HM [B]
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

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

LABORATORY TURNAROUND

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

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

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

Report with EI Waste Classification Table ☐

Sampler's Name (EI): CM/CZ

Print: Clare Madigan

Signature: C~~Cmadigan~~

Date: 23-8-18

Received by (SGS):

Print: Ness

Signature:

Date: 23/8/18 3:30

Sampler's Comments:

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

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

SAMPLE RECEIPT ADVICE

SE183030

CLIENT DETAILS

Contact	Clare Madigan
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	clare.madigan@eiaustralia.com.au
Project	**E23959.E02 15-21 Brighton Ave Croydon PK**
Order Number	**E23959.E02**
Samples	24

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Thu 23/8/2018
Report Due	Thu 30/8/2018
SGS Reference	**SE183030**

SUBMISSION DETAILS

This is to confirm that 24 samples were received on Thursday 23/8/2018. Results are expected to be ready by COB Thursday 30/8/2018. Please quote SGS reference SE183030 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	22 Soils 2 Waters
Date documentation received	24/8/2018	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	7.3C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

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

COMMENTS

7 Soils and 1 water on hold

SAMPLE RECEIPT ADVICE

SE183030

CLIENT DETAILS

Client EI AUSTRALIA

Project E23959.E02 15-21 Brighton Ave Croydon PK

SUMMARY OF ANALYSIS

No.	Sample ID	OC Pesticides in Soil	OP Pesticides in Soil	PAH (Polynuclear Aromatic Hydrocarbons) in Soil	PCBs in Soil	Total Recoverable Elements in Soil/Waste	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
001	BH101M_0.4-0.5	29	14	26	11	7	10	12	8
002	BH102_0.2-0.3	29	14	26	11	7	10	12	8
003	BH103_0.2-0.3	29	14	26	11	7	10	12	8
004	BH104_0.7-0.8	29	14	26	11	7	10	12	8
005	BH105_0.3-0.4	29	14	26	11	7	10	12	8
006	BH106_0.3-0.4	29	14	26	11	7	10	12	8
007	BH107_0.2-0.3	29	14	26	11	7	10	12	8
008	BH108M_0.4-0.5	29	14	26	11	7	10	12	8
009	BH109_0.1-0.2	29	14	26	11	7	10	12	8
010	BH110_0.1-0.2	29	14	26	11	7	10	12	8
011	BH111_0.4-0.5	29	14	26	11	7	10	12	8
012	BH112M_0.3-0.4	29	14	26	11	7	10	12	8
013	BH113_0.2-0.3	29	14	26	11	7	10	12	8
014	BH104_0.2-0.3	29	14	26	11	7	10	12	8
015	BH101M_0.6-0.7	-	-	26	-	7	10	12	8
016	BH105_0.8-0.9	-	-	26	-	7	10	12	8
017	BH106_0.8-0.9	-	-	26	-	7	10	12	8
018	BH108M_0.9-1.0	-	-	26	-	7	10	12	8
019	BH111_0.8-0.9	-	-	26	-	7	10	12	8
020	BH114_0.4-0.5	-	-	26	-	7	10	12	8
021	BH_QD1	-	-	-	-	7	10	12	8
024	Trip Spike	-	-	-	-	-	-	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

SE183030

CLIENT DETAILS

Client EI AUSTRALIA

Project E23959.E02 15-21 Brighton Ave Croydon PK

SUMMARY OF ANALYSIS

No.	Sample ID	Fibre Identification in soil	Mercury in Soil	Moisture Content	VOCs in Water
001	BH101M_0.4-0.5	2	1	1	-
002	BH102_0.2-0.3	2	1	1	-
003	BH103_0.2-0.3	2	1	1	-
004	BH104_0.7-0.8	2	1	1	-
005	BH105_0.3-0.4	2	1	1	-
006	BH106_0.3-0.4	2	1	1	-
007	BH107_0.2-0.3	2	1	1	-
008	BH108M_0.4-0.5	2	1	1	-
009	BH109_0.1-0.2	2	1	1	-
010	BH110_0.1-0.2	2	1	1	-
011	BH111_0.4-0.5	2	1	1	-
012	BH112M_0.3-0.4	2	1	1	-
013	BH113_0.2-0.3	2	1	1	-
014	BH104_0.2-0.3	2	1	1	-
015	BH101M_0.6-0.7	2	1	1	-
016	BH105_0.8-0.9	2	1	1	-
017	BH106_0.8-0.9	2	1	1	-
018	BH108M_0.9-1.0	2	1	1	-
019	BH111_0.8-0.9	2	1	1	-
020	BH114_0.4-0.5	2	1	1	-
021	BH_QD1	2	1	1	-
022	BH_QR1	-	-	-	12
023	Trip Blank	-	-	-	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

SE183030

CLIENT DETAILS

Client EI AUSTRALIA

Project E23959.E02 15-21 Brighton Ave Croydon PK

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
022	BH_QR1	1	7	10	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 1

Site: 15-21 Brighton Ave, Croydon Park NSW

Project No: E23459. E02

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

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	Sample Matrix: WATER	SOIL	OTHERS (i.e. Fibro, Paint, etc.)	Analysis: HM [A] /TRH/BTEX/PAHs OCP/OP/PCB/Asbestos	HM [A] /TRH/BTEX/PAHs	HM [A] /TRH/BTEX	BTEX	VOCs	Asbestos	Asbestos Quantification	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	Dewatering Suite	sPOCAS	PFAS				TCLP HM [B] / PAH
BH- QT1	(1)	J	22-8-18	AM/PM		X				X													

Comments

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

HM [B]
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

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

LABORATORY TURNAROUND

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

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

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

Sampler's Name (EI): CM/CL	Received by (Envirolab)
Print: Claire Madigan	Print: LW
Signature: CMadigan	Signature:
Date: 23-8-18	Date: 23/8/18 15:15

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

Report with EI Waste Classification Table ☐

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

Sampler's Comments

Job No: 199110

Date Received: 23/8/18
Time Received: 15:15
Received By: LW
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

eiaustralia
Contamination | Remediation | Geotechnical

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

COC March 2018 FORM v.4 - SGS

Sheet 1 of 1

Site: 15-21 Brighton Avenue, Croydon Park NSW

Project No: E22959. E02

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

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	Sample Matrix: WATER	SOIL	OTHERS (i.e. Fibro, Paint, etc.)	Analysis: HM [A] /TRH/BTEX/PAHs OCP/OP/PCB/Asbestos	HM [A] /TRH/BTEX/PAHs	HM [A] /TRH/BTEX	BTEX	VOCs	Asbestos	Asbestos Quantification	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	Dewatering Suite	sPOCAS	PFAS	phenols (total)	HOLD		TCLP HM [B] / PAH
BH101M-1	1	2x VC, A	29-8-18	AM/pm	X				X			X								X			
BH108M-1	2	↓	↓	↓					X			X								X			
BH112M-1	3								X			X								X			
GWQD1	4									X													
GWQR1	5									X													
GWQRB		↓	↓	↓																	X		
GWQTB	6	VC	Lab prepared								X												
GWQTS	7	↓	↓								X												

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

Comments

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

HM [B]
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

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

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

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

Report with EI Waste Classification Table ☐

Sampler's Name (EI): CM/CZ	Received by (SGS):
Print: Clare Madigan	Print: NSK
Signature: C Madigan	Signature:
Date: 30-8-18	Date: 30/8/18 1:15

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

Sampler's Comments:

SGS EHS Alexandria Laboratory

SE183285 COC
Received: 30 – Aug – 2018

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

Harley, Paul (Sydney)

From: Clare Madigan - ElAustralia <clare.madigan@eiaustralia.com.au>
Sent: Thursday, 30 August 2018 2:48 PM
To: AU.SampleReceipt.Sydney (Sydney)
Cc: AU.Environmental.Sydney (Sydney); Harley, Paul (Sydney)
Subject: E23959 - Croydon Park COC

Hi SGS,

You should receive some groundwater samples today for 15-21 Brighton Avenue, Croydon Park (E23959.E02).

On the COC standard TAT was requested. Can you please change this to **72hr TAT**.

Should you have any queries, please do not hesitate to contact me.

Kind Regards,

Clare Madigan | Environmental Scientist

eiaustralia
Contamination | Remediation | Geotechnical

T: 02 9516 0722 M: 0467 639 062
E: clare.madigan@eiaustralia.com.au

Suite 6.01, 55 Miller Street, Pyrmont, NSW 2009
www.eiaustralia.com.au

SAMPLE RECEIPT ADVICE

SE183285

CLIENT DETAILS

Contact	Clare Madigan
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	clare.madigan@eiaustralia.com.au
Project	**E23959-E02 15-21 Brighton Ave Croydon**
Order Number	**E23959-E02**
Samples	7

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Thu 30/8/2018
Report Due	Tue 4/9/2018
SGS Reference	**SE183285**

SUBMISSION DETAILS

This is to confirm that 7 samples were received on Thursday 30/8/2018. Results are expected to be ready by COB Tuesday 4/9/2018. Please quote SGS reference SE183285 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	7 Waters
Date documentation received	30/8/2018	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	4.2°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

1 Water sample on hold

SAMPLE RECEIPT ADVICE

SE183285

CLIENT DETAILS

Client EI AUSTRALIA

Project E23959-E02 15-21 Brighton Ave Croydon

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury (dissolved) in Water	PAH (Polynuclear Aromatic Hydrocarbons) in Water	Total Phenolics in Water	Trace Metals (Dissolved) in Water by ICPMS	TRH (Total Recoverable Hydrocarbons) in Water	VOCs in Water	Volatile Petroleum Hydrocarbons in Water
001	BH101M-1	1	22	1	7	10	79	8
002	BH108M-1	1	22	1	7	10	79	8
003	BH112M-1	1	22	1	7	10	79	8
004	GWQD1	1	-	-	7	10	12	8
005	GWQR1	1	-	-	7	10	12	8
006	GWQTB	-	-	-	-	-	12	-
007	GWQTS	-	-	-	-	-	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: 15-21 Brighton Ave, Croydon Park NSW

Project No: E23959. E02

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

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	WATER	SOIL	OTHERS (i.e. Fibro, Paint, etc.)	HM [A] /TRH/BTEX/PAHs OCP/OP/PCB/Asbestos	HM [A] /TRH/BTEX/PAHs	HM [A] /TRH/BTEX	BTEX	VOCs	Asbestos	Asbestos Quantification	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	Dewatering Suite	sPOCAS	PFAS				TCLP HM [B] / PAH
GWQT1	1	P, A 2xVt	29-8-18	Am/Pm	X					X													

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

Job No: 199643
Date Received: 30.8.18
Time Received: 15:30
Received By: JE 14.7°C
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Comments

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

HM [B]
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

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

LABORATORY TURNAROUND

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

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

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

Report with EI Waste Classification Table ☐

Sampler's Name (EI): CM/CZ	Received by (Envirolab)
Print: Clare Madigan	Print: JE
Signature: C.Madigan	Signature:
Date: 30-8-18	Date: 30.8.18

Sampler's Comments:

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

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

APPENDIX H
Laboratory Analytical Reports

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Clare Madigan
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	clare.madigan@eiaustralia.com.au
Project	**E23959.E02 15-21 Brighton Ave Croydon PK**
Order Number	**E23959.E02**
Samples	24

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	**SE183030 R0**
Date Received	23/8/2018
Date Reported	31/8/2018

COMMENTS

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

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

Asbestos analysed by Approved Identifier Yusuf Kuthpudin .

SIGNATORIES

Akheeqar Beniameen
Chemist

Bennet Lo
Senior Organic Chemist/Metals Chemist

Kamrul Ahsan
Senior Chemist

Ly Kim Ha
Organic Section Head

Ravee Sivasubramaniam
Hygiene Team Leader

Shane McDermott
Inorganic/Metals Chemist

VOC's in Soil [AN433] Tested: 28/8/2018

PARAMETER	UOM	LOR	BH101M_0.4-0.5 SOIL - 22/8/2018 SE183030.001	BH102_0.2-0.3 SOIL - 22/8/2018 SE183030.002	BH103_0.2-0.3 SOIL - 22/8/2018 SE183030.003	BH104_0.7-0.8 SOIL - 22/8/2018 SE183030.004	BH105_0.3-0.4 SOIL - 22/8/2018 SE183030.005
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	BH106_0.3-0.4 SOIL - 22/8/2018 SE183030.006	BH107_0.2-0.3 SOIL - 22/8/2018 SE183030.007	BH108M_0.4-0.5 SOIL - 22/8/2018 SE183030.008	BH109_0.1-0.2 SOIL - 22/8/2018 SE183030.009	BH110_0.1-0.2 SOIL - 22/8/2018 SE183030.010
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	BH111_0.4-0.5 SOIL - 22/8/2018 SE183030.011	BH112M_0.3-0.4 SOIL - 22/8/2018 SE183030.012	BH113_0.2-0.3 SOIL - 22/8/2018 SE183030.013	BH104_0.2-0.3 SOIL - 22/8/2018 SE183030.014	BH101M_0.6-0.7 SOIL - 22/8/2018 SE183030.015
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

PARAMETER	UOM	LOR	BH105_0.8-0.9 SOIL - 22/8/2018 SE183030.016	BH106_0.8-0.9 SOIL - 22/8/2018 SE183030.017	BH108M_0.9-1.0 SOIL - 22/8/2018 SE183030.018	BH111_0.8-0.9 SOIL - 22/8/2018 SE183030.019	BH114_0.4-0.5 SOIL - 22/8/2018 SE183030.020
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

VOC's in Soil [AN433] Tested: 28/8/2018 (continued)

PARAMETER	UOM	LOR	BH_QD1 SOIL - 22/8/2018 SE183030.021	Trip Spike SOIL - 22/8/2018 SE183030.024
Benzene	mg/kg	0.1	<0.1	[91%]
Toluene	mg/kg	0.1	<0.1	[87%]
Ethylbenzene	mg/kg	0.1	<0.1	[94%]
m/p-xylene	mg/kg	0.2	<0.2	[96%]
o-xylene	mg/kg	0.1	<0.1	[94%]
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: 28/8/2018

PARAMETER	UOM	LOR	BH101M_0.4-0.5 SOIL - 22/8/2018 SE183030.001	BH102_0.2-0.3 SOIL - 22/8/2018 SE183030.002	BH103_0.2-0.3 SOIL - 22/8/2018 SE183030.003	BH104_0.7-0.8 SOIL - 22/8/2018 SE183030.004	BH105_0.3-0.4 SOIL - 22/8/2018 SE183030.005
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	BH106_0.3-0.4 SOIL - 22/8/2018 SE183030.006	BH107_0.2-0.3 SOIL - 22/8/2018 SE183030.007	BH108M_0.4-0.5 SOIL - 22/8/2018 SE183030.008	BH109_0.1-0.2 SOIL - 22/8/2018 SE183030.009	BH110_0.1-0.2 SOIL - 22/8/2018 SE183030.010
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	BH111_0.4-0.5 SOIL - 22/8/2018 SE183030.011	BH112M_0.3-0.4 SOIL - 22/8/2018 SE183030.012	BH113_0.2-0.3 SOIL - 22/8/2018 SE183030.013	BH104_0.2-0.3 SOIL - 22/8/2018 SE183030.014	BH101M_0.6-0.7 SOIL - 22/8/2018 SE183030.015
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	BH105_0.8-0.9 SOIL - 22/8/2018 SE183030.016	BH106_0.8-0.9 SOIL - 22/8/2018 SE183030.017	BH108M_0.9-1.0 SOIL - 22/8/2018 SE183030.018	BH111_0.8-0.9 SOIL - 22/8/2018 SE183030.019	BH114_0.4-0.5 SOIL - 22/8/2018 SE183030.020
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	BH_QD1 SOIL - 22/8/2018 SE183030.021
TRH C6-C9	mg/kg	20	<20
Benzene (F0)	mg/kg	0.1	<0.1
TRH C6-C10	mg/kg	25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25

TRH (Total Recoverable Hydrocarbons) in Soil [AN403] Tested: 28/8/2018

PARAMETER	UOM	LOR	BH101M_0.4-0.5 SOIL - 22/8/2018 SE183030.001	BH102_0.2-0.3 SOIL - 22/8/2018 SE183030.002	BH103_0.2-0.3 SOIL - 22/8/2018 SE183030.003	BH104_0.7-0.8 SOIL - 22/8/2018 SE183030.004	BH105_0.3-0.4 SOIL - 22/8/2018 SE183030.005
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110
TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	BH106_0.3-0.4 SOIL - 22/8/2018 SE183030.006	BH107_0.2-0.3 SOIL - 22/8/2018 SE183030.007	BH108M_0.4-0.5 SOIL - 22/8/2018 SE183030.008	BH109_0.1-0.2 SOIL - 22/8/2018 SE183030.009	BH110_0.1-0.2 SOIL - 22/8/2018 SE183030.010
TRH C10-C14	mg/kg	20	<20	<20	**77**	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	**190**	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	**130**	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	**130**	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	**160**	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	**270**	<110	<110
TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	**290**	<210	<210

PARAMETER	UOM	LOR	BH111_0.4-0.5 SOIL - 22/8/2018 SE183030.011	BH112M_0.3-0.4 SOIL - 22/8/2018 SE183030.012	BH113_0.2-0.3 SOIL - 22/8/2018 SE183030.013	BH104_0.2-0.3 SOIL - 22/8/2018 SE183030.014	BH101M_0.6-0.7 SOIL - 22/8/2018 SE183030.015
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110
TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210	<210

TRH (Total Recoverable Hydrocarbons) in Soil [AN403] Tested: 28/8/2018 (continued)

PARAMETER	UOM	LOR	BH105_0.8-0.9 SOIL - 22/8/2018 SE183030.016	BH106_0.8-0.9 SOIL - 22/8/2018 SE183030.017	BH108M_0.9-1.0 SOIL - 22/8/2018 SE183030.018	BH111_0.8-0.9 SOIL - 22/8/2018 SE183030.019	BH114_0.4-0.5 SOIL - 22/8/2018 SE183030.020
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110
TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	BH_QD1 SOIL - 22/8/2018 SE183030.021
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-C16	mg/kg	25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120
TRH C10-C36 Total	mg/kg	110	<110
TRH C10-C40 Total (F bands)	mg/kg	210	<210

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 28/8/2018

PARAMETER	UOM	LOR	BH101M_0.4-0.5 SOIL - 22/8/2018 SE183030.001	BH102_0.2-0.3 SOIL - 22/8/2018 SE183030.002	BH103_0.2-0.3 SOIL - 22/8/2018 SE183030.003	BH104_0.7-0.8 SOIL - 22/8/2018 SE183030.004	BH105_0.3-0.4 SOIL - 22/8/2018 SE183030.005
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	**0.2**
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	**0.2**
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	**0.2**
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	**0.1**
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	**0.1**
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	**0.8**
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	**0.8**

PARAMETER	UOM	LOR	BH106_0.3-0.4 SOIL - 22/8/2018 SE183030.006	BH107_0.2-0.3 SOIL - 22/8/2018 SE183030.007	BH108M_0.4-0.5 SOIL - 22/8/2018 SE183030.008	BH109_0.1-0.2 SOIL - 22/8/2018 SE183030.009	BH110_0.1-0.2 SOIL - 22/8/2018 SE183030.010
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 28/8/2018 (continued)

PARAMETER	UOM	LOR	BH111_0.4-0.5 SOIL - 22/8/2018 SE183030.011	BH112M_0.3-0.4 SOIL - 22/8/2018 SE183030.012	BH113_0.2-0.3 SOIL - 22/8/2018 SE183030.013	BH104_0.2-0.3 SOIL - 22/8/2018 SE183030.014	BH101M_0.6-0.7 SOIL - 22/8/2018 SE183030.015
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8

PARAMETER	UOM	LOR	BH105_0.8-0.9 SOIL - 22/8/2018 SE183030.016	BH106_0.8-0.9 SOIL - 22/8/2018 SE183030.017	BH108M_0.9-1.0 SOIL - 22/8/2018 SE183030.018	BH111_0.8-0.9 SOIL - 22/8/2018 SE183030.019	BH114_0.4-0.5 SOIL - 22/8/2018 SE183030.020
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8

OC Pesticides in Soil [AN420] Tested: 28/8/2018

PARAMETER	UOM	LOR	BH101M_0.4-0.5 SOIL - 22/8/2018 SE183030.001	BH102_0.2-0.3 SOIL - 22/8/2018 SE183030.002	BH103_0.2-0.3 SOIL - 22/8/2018 SE183030.003	BH104_0.7-0.8 SOIL - 22/8/2018 SE183030.004	BH105_0.3-0.4 SOIL - 22/8/2018 SE183030.005
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
Total CLP OC Pesticides	mg/kg	1	<1	<1	<1	<1	<1

OC Pesticides in Soil [AN420] Tested: 28/8/2018 (continued)

PARAMETER	UOM	LOR	BH106_0.3-0.4 SOIL - 22/8/2018 SE183030.006	BH107_0.2-0.3 SOIL - 22/8/2018 SE183030.007	BH108M_0.4-0.5 SOIL - 22/8/2018 SE183030.008	BH109_0.1-0.2 SOIL - 22/8/2018 SE183030.009	BH110_0.1-0.2 SOIL - 22/8/2018 SE183030.010
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
Total CLP OC Pesticides	mg/kg	1	<1	<1	<1	<1	<1

OC Pesticides in Soil [AN420] Tested: 28/8/2018 (continued)

PARAMETER	UOM	LOR	BH111_0.4-0.5 SOIL - 22/8/2018 SE183030.011	BH112M_0.3-0.4 SOIL - 22/8/2018 SE183030.012	BH113_0.2-0.3 SOIL - 22/8/2018 SE183030.013	BH104_0.2-0.3 SOIL - 22/8/2018 SE183030.014
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	<1	<1	<1

OP Pesticides in Soil [AN420] Tested: 28/8/2018

PARAMETER	UOM	LOR	BH101M_0.4-0.5 SOIL - 22/8/2018 SE183030.001	BH102_0.2-0.3 SOIL - 22/8/2018 SE183030.002	BH103_0.2-0.3 SOIL - 22/8/2018 SE183030.003	BH104_0.7-0.8 SOIL - 22/8/2018 SE183030.004	BH105_0.3-0.4 SOIL - 22/8/2018 SE183030.005
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	<1.7	<1.7	<1.7

PARAMETER	UOM	LOR	BH106_0.3-0.4 SOIL - 22/8/2018 SE183030.006	BH107_0.2-0.3 SOIL - 22/8/2018 SE183030.007	BH108M_0.4-0.5 SOIL - 22/8/2018 SE183030.008	BH109_0.1-0.2 SOIL - 22/8/2018 SE183030.009	BH110_0.1-0.2 SOIL - 22/8/2018 SE183030.010
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	<1.7	<1.7	<1.7

PARAMETER	UOM	LOR	BH111_0.4-0.5 SOIL - 22/8/2018 SE183030.011	BH112M_0.3-0.4 SOIL - 22/8/2018 SE183030.012	BH113_0.2-0.3 SOIL - 22/8/2018 SE183030.013	BH104_0.2-0.3 SOIL - 22/8/2018 SE183030.014
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	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
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	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
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	<1.7	<1.7

PCBs in Soil [AN420] Tested: 28/8/2018

PARAMETER	UOM	LOR	BH101M_0.4-0.5 SOIL - 22/8/2018 SE183030.001	BH102_0.2-0.3 SOIL - 22/8/2018 SE183030.002	BH103_0.2-0.3 SOIL - 22/8/2018 SE183030.003	BH104_0.7-0.8 SOIL - 22/8/2018 SE183030.004	BH105_0.3-0.4 SOIL - 22/8/2018 SE183030.005
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_0.3-0.4 SOIL - 22/8/2018 SE183030.006	BH107_0.2-0.3 SOIL - 22/8/2018 SE183030.007	BH108M_0.4-0.5 SOIL - 22/8/2018 SE183030.008	BH109_0.1-0.2 SOIL - 22/8/2018 SE183030.009	BH110_0.1-0.2 SOIL - 22/8/2018 SE183030.010
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	BH111_0.4-0.5 SOIL - 22/8/2018 SE183030.011	BH112M_0.3-0.4 SOIL - 22/8/2018 SE183030.012	BH113_0.2-0.3 SOIL - 22/8/2018 SE183030.013	BH104_0.2-0.3 SOIL - 22/8/2018 SE183030.014
Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1	<1

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 28/8/2018

PARAMETER	UOM	LOR	BH101M_0.4-0.5 SOIL - 22/8/2018 SE183030.001	BH102_0.2-0.3 SOIL - 22/8/2018 SE183030.002	BH103_0.2-0.3 SOIL - 22/8/2018 SE183030.003	BH104_0.7-0.8 SOIL - 22/8/2018 SE183030.004	BH105_0.3-0.4 SOIL - 22/8/2018 SE183030.005
Arsenic, As	mg/kg	1	7	<1	3	7	22
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	0.8
Chromium, Cr	mg/kg	0.3	4.6	1.2	2.5	14	8.3
Copper, Cu	mg/kg	0.5	19	<0.5	15	15	150
Lead, Pb	mg/kg	1	11	2	6	19	350
Nickel, Ni	mg/kg	0.5	1.3	<0.5	1.9	4.0	4.6
Zinc, Zn	mg/kg	2	14	2.8	14	23	270

PARAMETER	UOM	LOR	BH106_0.3-0.4 SOIL - 22/8/2018 SE183030.006	BH107_0.2-0.3 SOIL - 22/8/2018 SE183030.007	BH108M_0.4-0.5 SOIL - 22/8/2018 SE183030.008	BH109_0.1-0.2 SOIL - 22/8/2018 SE183030.009	BH110_0.1-0.2 SOIL - 22/8/2018 SE183030.010
Arsenic, As	mg/kg	1	7	2	8	10	9
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	0.4	<0.3	<0.3
Chromium, Cr	mg/kg	0.3	7.5	14	17	5.3	4.9
Copper, Cu	mg/kg	0.5	15	63	59	6.0	0.9
Lead, Pb	mg/kg	1	36	150	250	2	1
Nickel, Ni	mg/kg	0.5	2.7	25	13	1.1	0.6
Zinc, Zn	mg/kg	2	47	150	210	4.3	2.9

PARAMETER	UOM	LOR	BH111_0.4-0.5 SOIL - 22/8/2018 SE183030.011	BH112M_0.3-0.4 SOIL - 22/8/2018 SE183030.012	BH113_0.2-0.3 SOIL - 22/8/2018 SE183030.013	BH104_0.2-0.3 SOIL - 22/8/2018 SE183030.014	BH101M_0.6-0.7 SOIL - 22/8/2018 SE183030.015
Arsenic, As	mg/kg	1	5	7	6	2	6
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.3	14	11	4.7	2.6	4.8
Copper, Cu	mg/kg	0.5	16	30	13	3.3	26
Lead, Pb	mg/kg	1	19	44	37	12	12
Nickel, Ni	mg/kg	0.5	3.7	1.8	1.6	1.6	5.1
Zinc, Zn	mg/kg	2	24	51	31	6.0	36

PARAMETER	UOM	LOR	BH105_0.8-0.9 SOIL - 22/8/2018 SE183030.016	BH106_0.8-0.9 SOIL - 22/8/2018 SE183030.017	BH108M_0.9-1.0 SOIL - 22/8/2018 SE183030.018	BH111_0.8-0.9 SOIL - 22/8/2018 SE183030.019	BH114_0.4-0.5 SOIL - 22/8/2018 SE183030.020
Arsenic, As	mg/kg	1	7	5	6	7	4
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.3	6.3	8.3	10	5.1	7.0
Copper, Cu	mg/kg	0.5	17	26	31	16	24
Lead, Pb	mg/kg	1	11	13	23	11	12
Nickel, Ni	mg/kg	0.5	1.1	2.5	1.6	0.5	0.6
Zinc, Zn	mg/kg	2	15	22	20	7.4	12

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 28/8/2018

(continued)

PARAMETER	UOM	LOR	BH_QD1 SOIL - 22/8/2018 SE183030.021
Arsenic, As	mg/kg	1	**9**
Cadmium, Cd	mg/kg	0.3	<0.3
Chromium, Cr	mg/kg	0.3	**8.9**
Copper, Cu	mg/kg	0.5	**33**
Lead, Pb	mg/kg	1	**19**
Nickel, Ni	mg/kg	0.5	**2.5**
Zinc, Zn	mg/kg	2	**31**

Mercury in Soil [AN312] Tested: 28/8/2018

PARAMETER	UOM	LOR	BH101M_0.4-0.5 SOIL - 22/8/2018 SE183030.001	BH102_0.2-0.3 SOIL - 22/8/2018 SE183030.002	BH103_0.2-0.3 SOIL - 22/8/2018 SE183030.003	BH104_0.7-0.8 SOIL - 22/8/2018 SE183030.004	BH105_0.3-0.4 SOIL - 22/8/2018 SE183030.005
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	**0.13**

PARAMETER	UOM	LOR	BH106_0.3-0.4 SOIL - 22/8/2018 SE183030.006	BH107_0.2-0.3 SOIL - 22/8/2018 SE183030.007	BH108M_0.4-0.5 SOIL - 22/8/2018 SE183030.008	BH109_0.1-0.2 SOIL - 22/8/2018 SE183030.009	BH110_0.1-0.2 SOIL - 22/8/2018 SE183030.010
Mercury	mg/kg	0.05	<0.05	<0.05	**0.06**	<0.05	<0.05

PARAMETER	UOM	LOR	BH111_0.4-0.5 SOIL - 22/8/2018 SE183030.011	BH112M_0.3-0.4 SOIL - 22/8/2018 SE183030.012	BH113_0.2-0.3 SOIL - 22/8/2018 SE183030.013	BH104_0.2-0.3 SOIL - 22/8/2018 SE183030.014	BH101M_0.6-0.7 SOIL - 22/8/2018 SE183030.015
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	BH105_0.8-0.9 SOIL - 22/8/2018 SE183030.016	BH106_0.8-0.9 SOIL - 22/8/2018 SE183030.017	BH108M_0.9-1.0 SOIL - 22/8/2018 SE183030.018	BH111_0.8-0.9 SOIL - 22/8/2018 SE183030.019	BH114_0.4-0.5 SOIL - 22/8/2018 SE183030.020
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	BH_QD1 SOIL - 22/8/2018 SE183030.021
Mercury	mg/kg	0.05	<0.05

Moisture Content [AN002] Tested: 29/8/2018

PARAMETER	UOM	LOR	BH101M_0.4-0.5 SOIL - 22/8/2018 SE183030.001	BH102_0.2-0.3 SOIL - 22/8/2018 SE183030.002	BH103_0.2-0.3 SOIL - 22/8/2018 SE183030.003	BH104_0.7-0.8 SOIL - 22/8/2018 SE183030.004	BH105_0.3-0.4 SOIL - 22/8/2018 SE183030.005
% Moisture	%w/w	0.5	19	3.8	6.0	17	17

PARAMETER	UOM	LOR	BH106_0.3-0.4 SOIL - 22/8/2018 SE183030.006	BH107_0.2-0.3 SOIL - 22/8/2018 SE183030.007	BH108M_0.4-0.5 SOIL - 22/8/2018 SE183030.008	BH109_0.1-0.2 SOIL - 22/8/2018 SE183030.009	BH110_0.1-0.2 SOIL - 22/8/2018 SE183030.010
% Moisture	%w/w	0.5	20	16	21	16	13

PARAMETER	UOM	LOR	BH111_0.4-0.5 SOIL - 22/8/2018 SE183030.011	BH112M_0.3-0.4 SOIL - 22/8/2018 SE183030.012	BH113_0.2-0.3 SOIL - 22/8/2018 SE183030.013	BH104_0.2-0.3 SOIL - 22/8/2018 SE183030.014	BH101M_0.6-0.7 SOIL - 22/8/2018 SE183030.015
% Moisture	%w/w	0.5	11	26	19	11	8.1

PARAMETER	UOM	LOR	BH105_0.8-0.9 SOIL - 22/8/2018 SE183030.016	BH106_0.8-0.9 SOIL - 22/8/2018 SE183030.017	BH108M_0.9-1.0 SOIL - 22/8/2018 SE183030.018	BH111_0.8-0.9 SOIL - 22/8/2018 SE183030.019	BH114_0.4-0.5 SOIL - 22/8/2018 SE183030.020
% Moisture	%w/w	0.5	14	23	23	17	22

PARAMETER	UOM	LOR	BH_QD1 SOIL - 22/8/2018 SE183030.021
% Moisture	%w/w	0.5	22

Fibre Identification in soil [AN602] Tested: 28/8/2018

PARAMETER	UOM	LOR	BH101M_0.4-0.5 SOIL - 22/8/2018 SE183030.001	BH102_0.2-0.3 SOIL - 22/8/2018 SE183030.002	BH103_0.2-0.3 SOIL - 22/8/2018 SE183030.003	BH104_0.7-0.8 SOIL - 22/8/2018 SE183030.004	BH105_0.3-0.4 SOIL - 22/8/2018 SE183030.005
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_0.3-0.4 SOIL - 22/8/2018 SE183030.006	BH107_0.2-0.3 SOIL - 22/8/2018 SE183030.007	BH108M_0.4-0.5 SOIL - 22/8/2018 SE183030.008	BH109_0.1-0.2 SOIL - 22/8/2018 SE183030.009	BH110_0.1-0.2 SOIL - 22/8/2018 SE183030.010
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	BH111_0.4-0.5 SOIL - 22/8/2018 SE183030.011	BH112M_0.3-0.4 SOIL - 22/8/2018 SE183030.012	BH113_0.2-0.3 SOIL - 22/8/2018 SE183030.013	BH104_0.2-0.3 SOIL - 22/8/2018 SE183030.014
Asbestos Detected	No unit	-	No	No	No	No
Estimated Fibres*	%w/w	0.01	<0.01	<0.01	<0.01	<0.01

VOCs in Water [AN433] Tested: 28/8/2018

PARAMETER	UOM	LOR	BH_QR1 WATER - 22/8/2018 SE183030.022	Trip Blank WATER - 22/8/2018 SE183030.023
Benzene	µg/L	0.5	<0.5	<0.5
Toluene	µg/L	0.5	<0.5	<0.5
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: 28/8/2018

PARAMETER	UOM	LOR	BH_QR1 WATER - 22/8/2018 SE183030.022
TRH C6-C9	µg/L	40	<40
Benzene (F0)	µg/L	0.5	<0.5
TRH C6-C10	µg/L	50	<50
TRH C6-C10 minus BTEX (F1)	µg/L	50	<50

TRH (Total Recoverable Hydrocarbons) in Water [AN403] Tested: 24/8/2018

PARAMETER	UOM	LOR	BH_QR1 WATER - 22/8/2018 SE183030.022
TRH C10-C14	µg/L	50	<50
TRH C15-C28	µg/L	200	<200
TRH C29-C36	µg/L	200	<200
TRH C37-C40	µg/L	200	<200
TRH >C10-C16	µg/L	60	<60
TRH >C16-C34 (F3)	µg/L	500	<500
TRH >C34-C40 (F4)	µg/L	500	<500
TRH C10-C36	µg/L	450	<450
TRH C10-C40	µg/L	650	<650
TRH >C10-C16 - Naphthalene (F2)	µg/L	60	<60

Trace Metals (Dissolved) in Water by ICPMS [AN318] Tested: 27/8/2018

PARAMETER	UOM	LOR	BH_QR1 WATER - 22/8/2018 SE183030.022
Arsenic, As	µg/L	1	<1
Cadmium, Cd	µg/L	0.1	<0.1
Chromium, Cr	µg/L	1	<1
Copper, Cu	µg/L	1	<1
Lead, Pb	µg/L	1	<1
Nickel, Ni	µg/L	1	<1
Zinc, Zn	µg/L	5	<5

Mercury (dissolved) in Water [AN311(Perth)/AN312] Tested: 28/8/2018

PARAMETER	UOM	LOR	BH_QR1 WATER - 22/8/2018 SE183030.022
Mercury	mg/L	0.0001	<0.0001

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
AN040/AN320	A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analysis by ASS or ICP as per USEPA Method 200.8.
AN311(Perth)/AN312	Mercury by Cold Vapour AAS in Waters: Mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500.
AN312	Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid , mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser . Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500
AN318	Determination of elements at trace level in waters by ICP-MS technique, in accordance with USEPA 6020A.
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is reported directly and also corrected by subtracting Naphthalene (from VOC method AN433) where available.
AN403	Additionally, the volatile C6-C9 fraction may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Petroleum Hydrocarbons (TPH) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents .
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN420	SVOC Compounds: Semi-Volatile Organic Compounds (SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols in soils, sediments and waters are determined by GCMS /ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN433	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.
AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602	Fibres/material that cannot be unequivocably identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf) The fibres detected may or may not be asbestos fibres.
AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples, Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection limit of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."

AN602	The sample can be reported “no asbestos found at the reporting limit of 0.1 g/kg” (<0.01%w/w) where AN602 section 4.5 of this method has been followed, and if- (a) no trace asbestos fibres have been detected (i.e. no ‘respirable’ fibres): (b) the estimated weight of non-respirable asbestos fibre bundles and/or the estimated weight of asbestos in asbestos-containing materials are found to be less than 0.1g/kg: and (c) these non-respirable asbestos fibre bundles and/or the asbestos containing materials are only visible under stereo-microscope viewing conditions.

FOOTNOTES

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

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

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

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

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

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

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

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

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

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Clare Madigan
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	clare.madigan@eiaustralia.com.au
Project	**E23959.E02 15-21 Brighton Ave Croydon PK**
Order Number	**E23959.E02**
Samples	14

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	**SE183030 R0**
Date Received	23 Aug 2018
Date Reported	31 Aug 2018

COMMENTS

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

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

Asbestos analysed by Approved Identifier Yusuf Kuthpudin .

SIGNATORIES

Akheeqar Beniameen
Chemist

Bennet Lo
Senior Organic Chemist/Metals Chemis

Kamrul Ahsan
Senior Chemist

Ly Kim Ha
Organic Section Head

Ravee Sivasubramaniam
Hygiene Team Leader

Shane McDermott
Inorganic/Metals Chemist

RESULTS

Fibre Identification in soil — Method AN602

Laboratory Reference	Client Reference	Matrix	Sample Description	Date Sampled	Fibre Identification	Est.%w/w*
SE183030.001	BH101M_0.4-0.5	Soil	125g Clay	22 Aug 2018	No Asbestos Found	<0.01
SE183030.002	BH102_0.2-0.3	Soil	147g Sand,Soil	22 Aug 2018	No Asbestos Found	<0.01
SE183030.003	BH103_0.2-0.3	Soil	129g Sand,Rocks	22 Aug 2018	No Asbestos Found	<0.01
SE183030.004	BH104_0.7-0.8	Soil	137g Clay,Rocks	22 Aug 2018	No Asbestos Found	<0.01
SE183030.005	BH105_0.3-0.4	Soil	177g Clay,Sand,Soil, Rocks	22 Aug 2018	No Asbestos Found	<0.01
SE183030.006	BH106_0.3-0.4	Soil	169g Clay,Sand,Soil, Rocks	22 Aug 2018	No Asbestos Found	<0.01
SE183030.007	BH107_0.2-0.3	Soil	129g Clay,Sand,Soil, Rocks	22 Aug 2018	No Asbestos Found	<0.01
SE183030.008	BH108M_0.4-0.5	Soil	280g Clay,Sand,Soil, Rocks	22 Aug 2018	No Asbestos Found	<0.01
SE183030.009	BH109_0.1-0.2	Soil	73g Sand,Rocks	22 Aug 2018	No Asbestos Found	<0.01
SE183030.010	BH110_0.1-0.2	Soil	117g Sand	22 Aug 2018	No Asbestos Found	<0.01
SE183030.011	BH111_0.4-0.5	Soil	215g Clay,Rocks	22 Aug 2018	No Asbestos Found	<0.01
SE183030.012	BH112M_0.3-0.4	Soil	270g Clay,Rocks	22 Aug 2018	No Asbestos Found	<0.01
SE183030.013	BH113_0.2-0.3	Soil	125g Clay,Sand,Rocks	22 Aug 2018	No Asbestos Found	<0.01
SE183030.014	BH104_0.2-0.3	Soil	161g Clay,Sand,Rocks	22 Aug 2018	No Asbestos Found	<0.01

METHOD SUMMARY

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

FOOTNOTES

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

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

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

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

CERTIFICATE OF ANALYSIS 199110

Client Details

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

Sample Details

Your Reference	**E23959.E02, Croydon Park**
Number of Samples	1 Soil
Date samples received	23/08/2018
Date completed instructions received	23/08/2018

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

Date results requested by	30/08/2018
Date of Issue	03/09/2018
Reissue Details	This report replaces R00 created on 29/08/2018 due to: Project ID amended.

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Jeremy Faircloth, Organics Supervisor
Leon Ow, Chemist

Authorised By

Jacinta Hurst, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil		
Our Reference		199110-1
Your Reference	UNITS	BH-QT1
Date Sampled		22/08/2018
Type of sample		Soil
Date extracted	-	24/08/2018
Date analysed	-	27/08/2018
TRH C_6 - C_9	mg/kg	<25
TRH C_6 - C_{10}	mg/kg	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
naphthalene	mg/kg	<1
Total +ve Xylenes	mg/kg	<1
Surrogate aaa-Trifluorotoluene	%	104

svTRH (C10-C40) in Soil		
Our Reference		199110-1
Your Reference	UNITS	BH-QT1
Date Sampled		22/08/2018
Type of sample		Soil
Date extracted	-	24/08/2018
Date analysed	-	25/08/2018
TRH C_{10} - C_{14}	mg/kg	<50
TRH C_{15} - C_{28}	mg/kg	<100
TRH C_{29} - C_{36}	mg/kg	<100
TRH >C_{10} -C_{16}	mg/kg	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50
TRH >C_{16} -C_{34}	mg/kg	<100
TRH >C_{34} -C_{40}	mg/kg	<100
Total +ve TRH (>C10-C40)	mg/kg	<50
Surrogate o-Terphenyl	%	82

Acid Extractable metals in soil		
Our Reference		199110-1
Your Reference	UNITS	BH-QT1
Date Sampled		22/08/2018
Type of sample		Soil
Date prepared	-	24/08/2018
Date analysed	-	27/08/2018
Arsenic	mg/kg	7
Cadmium	mg/kg	<0.4
Chromium	mg/kg	8
Copper	mg/kg	27
Lead	mg/kg	15
Mercury	mg/kg	<0.1
Nickel	mg/kg	3
Zinc	mg/kg	26

Moisture		
Our Reference		199110-1
Your Reference	UNITS	BH-QT1
Date Sampled		22/08/2018
Type of sample		Soil
Date prepared	-	24/08/2018
Date analysed	-	27/08/2018
Moisture	%	20

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

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Clare Madigan
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	clare.madigan@eiaustralia.com.au
Project	**E23959-E02 15-21 Brighton Ave Croydon**
Order Number	**E23959-E02**
Samples	7

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE183285 R0**
Date Received	30/8/2018
Date Reported	4/9/2018

COMMENTS

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

SIGNATORIES

Akheeqar Beniameen
Chemist

Kamrul Ahsan
Senior Chemist

Shane McDermott
Inorganic/Metals Chemist

Teresa Nguyen
Organic Chemist

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

PARAMETER	UOM	LOR	BH101M-1 WATER - 29/8/2018 SE183285.001	BH108M-1 WATER - 29/8/2018 SE183285.002	BH112M-1 WATER - 29/8/2018 SE183285.003	GWQD1 WATER - 29/8/2018 SE183285.004	GWQR1 WATER - 29/8/2018 SE183285.005
Benzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
m/p-xylene	µg/L	1	<1	<1	<1	<1	<1
o-xylene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Xylenes	µg/L	1.5	<1.5	<1.5	<1.5	<1.5	<1.5
Total BTEX	µg/L	3	<3	<3	<3	<3	<3
Naphthalene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane (CFC-12)	µg/L	5	<5	<5	<5	-	-
Chloromethane	µg/L	5	<5	<5	<5	-	-
Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3	<0.3	<0.3	-	-
Bromomethane	µg/L	10	<10	<10	<10	-	-
Chloroethane	µg/L	5	<5	<5	<5	-	-
Trichlorofluoromethane	µg/L	1	<1	<1	<1	-	-
Acetone (2-propanone)	µg/L	10	**13**	**12**	<10	-	-
Iodomethane	µg/L	5	<5	<5	<5	-	-
1,1-dichloroethene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Acrylonitrile	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Dichloromethane (Methylene chloride)	µg/L	5	<5	<5	<5	-	-
Allyl chloride	µg/L	2	<2	<2	<2	-	-
Carbon disulfide	µg/L	2	<2	<2	<2	-	-
trans-1,2-dichloroethene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
MtBE (Methyl-tert-butyl ether)	µg/L	2	<2	<2	<2	-	-
1,1-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Vinyl acetate	µg/L	10	<10	<10	<10	-	-
MEK (2-butanone)	µg/L	10	<10	<10	<10	-	-
cis-1,2-dichloroethene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Bromochloromethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Chloroform (THM)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
2,2-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,1,1-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,1-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Carbon tetrachloride	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Dibromomethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
2-nitropropane	µg/L	100	<100	<100	<100	-	-
Bromodichloromethane (THM)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
MIBK (4-methyl-2-pentanone)	µg/L	5	<5	<5	<5	-	-
cis-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
trans-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,1,2-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,3-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Dibromochloromethane (THM)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
2-hexanone (MBK)	µg/L	5	<5	<5	<5	-	-
1,2-dibromoethane (EDB)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Chlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Bromoform (THM)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
cis-1,4-dichloro-2-butene	µg/L	1	<1	<1	<1	-	-
Styrene (Vinyl benzene)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2,3-trichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
trans-1,4-dichloro-2-butene	µg/L	1	<1	<1	<1	-	-

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

PARAMETER	UOM	LOR	BH101M-1 WATER - 29/8/2018 SE183285.001	BH108M-1 WATER - 29/8/2018 SE183285.002	BH112M-1 WATER - 29/8/2018 SE183285.003	GWQD1 WATER - 29/8/2018 SE183285.004	GWQR1 WATER - 29/8/2018 SE183285.005
Isopropylbenzene (Cumene)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Bromobenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
n-propylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
2-chlorotoluene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
4-chlorotoluene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,3,5-trimethylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
tert-butylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2,4-trimethylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
sec-butylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,3-dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,4-dichlorobenzene	µg/L	0.3	<0.3	<0.3	<0.3	-	-
p-isopropyltoluene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2-dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
n-butylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2,4-trichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Hexachlorobutadiene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2,3-trichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Total VOC	µg/L	10	**17**	**19**	<10	-	-

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

PARAMETER	UOM	LOR	GWQTB WATER - 29/8/2018 SE183285.006	GWQTS WATER - 29/8/2018 SE183285.007
Benzene	µg/L	0.5	<0.5	[103%]
Toluene	µg/L	0.5	<0.5	[104%]
Ethylbenzene	µg/L	0.5	<0.5	[91%]
m/p-xylene	µg/L	1	<1	[82%]
o-xylene	µg/L	0.5	<0.5	[86%]
Total Xylenes	µg/L	1.5	<1.5	-
Total BTEX	µg/L	3	<3	-
Naphthalene	µg/L	0.5	<0.5	-
Dichlorodifluoromethane (CFC-12)	µg/L	5	-	-
Chloromethane	µg/L	5	-	-
Vinyl chloride (Chloroethene)	µg/L	0.3	-	-
Bromomethane	µg/L	10	-	-
Chloroethane	µg/L	5	-	-
Trichlorofluoromethane	µg/L	1	-	-
Acetone (2-propanone)	µg/L	10	-	-
Iodomethane	µg/L	5	-	-
1,1-dichloroethene	µg/L	0.5	-	-
Acrylonitrile	µg/L	0.5	-	-
Dichloromethane (Methylene chloride)	µg/L	5	-	-
Allyl chloride	µg/L	2	-	-
Carbon disulfide	µg/L	2	-	-
trans-1,2-dichloroethene	µg/L	0.5	-	-
MtBE (Methyl-tert-butyl ether)	µg/L	2	-	-
1,1-dichloroethane	µg/L	0.5	-	-
Vinyl acetate	µg/L	10	-	-
MEK (2-butanone)	µg/L	10	-	-
cis-1,2-dichloroethene	µg/L	0.5	-	-
Bromochloromethane	µg/L	0.5	-	-
Chloroform (THM)	µg/L	0.5	-	-
2,2-dichloropropane	µg/L	0.5	-	-
1,2-dichloroethane	µg/L	0.5	-	-
1,1,1-trichloroethane	µg/L	0.5	-	-
1,1-dichloropropene	µg/L	0.5	-	-
Carbon tetrachloride	µg/L	0.5	-	-
Dibromomethane	µg/L	0.5	-	-
1,2-dichloropropane	µg/L	0.5	-	-
Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	-	-
2-nitropropane	µg/L	100	-	-
Bromodichloromethane (THM)	µg/L	0.5	-	-
MIBK (4-methyl-2-pentanone)	µg/L	5	-	-
cis-1,3-dichloropropene	µg/L	0.5	-	-
trans-1,3-dichloropropene	µg/L	0.5	-	-
1,1,2-trichloroethane	µg/L	0.5	-	-
1,3-dichloropropane	µg/L	0.5	-	-
Dibromochloromethane (THM)	µg/L	0.5	-	-
2-hexanone (MBK)	µg/L	5	-	-
1,2-dibromoethane (EDB)	µg/L	0.5	-	-
Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	-	-
1,1,1,2-tetrachloroethane	µg/L	0.5	-	-
Chlorobenzene	µg/L	0.5	-	-
Bromoform (THM)	µg/L	0.5	-	-
cis-1,4-dichloro-2-butene	µg/L	1	-	-
Styrene (Vinyl benzene)	µg/L	0.5	-	-
1,1,2,2-tetrachloroethane	µg/L	0.5	-	-
1,2,3-trichloropropane	µg/L	0.5	-	-
trans-1,4-dichloro-2-butene	µg/L	1	-	-

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

PARAMETER	UOM	LOR	GWQTB WATER - 29/8/2018 SE183285.006	GWQTS WATER - 29/8/2018 SE183285.007
Isopropylbenzene (Cumene)	µg/L	0.5	-	-
Bromobenzene	µg/L	0.5	-	-
n-propylbenzene	µg/L	0.5	-	-
2-chlorotoluene	µg/L	0.5	-	-
4-chlorotoluene	µg/L	0.5	-	-
1,3,5-trimethylbenzene	µg/L	0.5	-	-
tert-butylbenzene	µg/L	0.5	-	-
1,2,4-trimethylbenzene	µg/L	0.5	-	-
sec-butylbenzene	µg/L	0.5	-	-
1,3-dichlorobenzene	µg/L	0.5	-	-
1,4-dichlorobenzene	µg/L	0.3	-	-
p-isopropyltoluene	µg/L	0.5	-	-
1,2-dichlorobenzene	µg/L	0.5	-	-
n-butylbenzene	µg/L	0.5	-	-
1,2-dibromo-3-chloropropane	µg/L	0.5	-	-
1,2,4-trichlorobenzene	µg/L	0.5	-	-
Hexachlorobutadiene	µg/L	0.5	-	-
1,2,3-trichlorobenzene	µg/L	0.5	-	-
Total VOC	µg/L	10	-	-

Volatile Petroleum Hydrocarbons in Water [AN433] Tested: 31/8/2018

PARAMETER	UOM	LOR	BH101M-1 WATER - 29/8/2018 SE183285.001	BH108M-1 WATER - 29/8/2018 SE183285.002	BH112M-1 WATER - 29/8/2018 SE183285.003	GWQD1 WATER - 29/8/2018 SE183285.004	GWQR1 WATER - 29/8/2018 SE183285.005
TRH C6-C9	µg/L	40	<40	<40	<40	<40	<40
Benzene (F0)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TRH C6-C10	µg/L	50	<50	<50	<50	<50	<50
TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	<50	<50	<50	<50

TRH (Total Recoverable Hydrocarbons) in Water [AN403] Tested: 3/9/2018

PARAMETER	UOM	LOR	BH101M-1 WATER - 29/8/2018 SE183285.001	BH108M-1 WATER - 29/8/2018 SE183285.002	BH112M-1 WATER - 29/8/2018 SE183285.003	GWQD1 WATER - 29/8/2018 SE183285.004	GWQR1 WATER - 29/8/2018 SE183285.005
TRH C10-C14	µg/L	50	<50	<50	<50	<50	<50
TRH C15-C28	µg/L	200	<200	<200	<200	<200	<200
TRH C29-C36	µg/L	200	<200	<200	<200	<200	<200
TRH C37-C40	µg/L	200	<200	<200	<200	<200	<200
TRH >C10-C16	µg/L	60	<60	<60	<60	<60	<60
TRH >C16-C34 (F3)	µg/L	500	<500	<500	<500	<500	<500
TRH >C34-C40 (F4)	µg/L	500	<500	<500	<500	<500	<500
TRH C10-C36	µg/L	450	<450	<450	<450	<450	<450
TRH C10-C40	µg/L	650	<650	<650	<650	<650	<650
TRH >C10-C16 - Naphthalene (F2)	µg/L	60	<60	<60	<60	<60	<60

PAH (Polynuclear Aromatic Hydrocarbons) in Water [AN420] Tested: 3/9/2018

PARAMETER	UOM	LOR	BH101M-1 WATER - 29/8/2018 SE183285.001	BH108M-1 WATER - 29/8/2018 SE183285.002	BH112M-1 WATER - 29/8/2018 SE183285.003
Naphthalene	µg/L	0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	µg/L	0.1	<0.1	**0.1**	<0.1
1-methylnaphthalene	µg/L	0.1	<0.1	**0.1**	<0.1
Acenaphthylene	µg/L	0.1	<0.1	<0.1	<0.1
Acenaphthene	µg/L	0.1	<0.1	<0.1	<0.1
Fluorene	µg/L	0.1	<0.1	<0.1	<0.1
Phenanthrene	µg/L	0.1	<0.1	<0.1	<0.1
Anthracene	µg/L	0.1	<0.1	<0.1	<0.1
Fluoranthene	µg/L	0.1	<0.1	<0.1	<0.1
Pyrene	µg/L	0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	0.1	<0.1	<0.1	<0.1
Chrysene	µg/L	0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	µg/L	0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	µg/L	0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	µg/L	0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	µg/L	0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	µg/L	0.1	<0.1	<0.1	<0.1
Total PAH (18)	µg/L	1	<1	<1	<1

Total Phenolics in Water [AN289] Tested: 4/9/2018

PARAMETER	UOM	LOR	BH101M-1 WATER - 29/8/2018 SE183285.001	BH108M-1 WATER - 29/8/2018 SE183285.002	BH112M-1 WATER - 29/8/2018 SE183285.003
Total Phenols	mg/L	0.01	<0.01	<0.01	<0.01

Trace Metals (Dissolved) in Water by ICPMS [AN318] Tested: 31/8/2018

PARAMETER	UOM	LOR	BH101M-1 WATER - 29/8/2018 SE183285.001	BH108M-1 WATER - 29/8/2018 SE183285.002	BH112M-1 WATER - 29/8/2018 SE183285.003	GWQD1 WATER - 29/8/2018 SE183285.004	GWQR1 WATER - 29/8/2018 SE183285.005
Arsenic, As	µg/L	1	14	20	3	14	<1
Cadmium, Cd	µg/L	0.1	0.4	0.9	0.7	0.5	<0.1
Chromium, Cr	µg/L	1	2	2	1	<1	<1
Copper, Cu	µg/L	1	64	63	59	9	<1
Lead, Pb	µg/L	1	4	4	3	<1	<1
Nickel, Ni	µg/L	1	35	89	47	37	<1
Zinc, Zn	µg/L	5	200	300	210	130	<5

Mercury (dissolved) in Water [AN311(Perth)/AN312] Tested: 3/9/2018

PARAMETER	UOM	LOR	BH101M-1 WATER - 29/8/2018 SE183285.001	BH108M-1 WATER - 29/8/2018 SE183285.002	BH112M-1 WATER - 29/8/2018 SE183285.003	GWQD1 WATER - 29/8/2018 SE183285.004	GWQR1 WATER - 29/8/2018 SE183285.005
Mercury	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

METHOD	METHODOLOGY SUMMARY
AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
AN289	Analysis of Total Phenols in Soil Sediment and Water: Steam distillable phenols react with 4-aminoantipyrine at pH 7.9±0.1 in the presence of potassium ferricyanide to form a coloured antipyrine dye analysed by Discrete Analyser. Reference APHA 5530 B/D.
AN311(Perth)/AN312	Mercury by Cold Vapour AAS in Waters: Mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500.
AN318	Determination of elements at trace level in waters by ICP-MS technique, 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

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

CERTIFICATE OF ANALYSIS 199643

Client Details

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

Sample Details

Your Reference	**E23959.E02**
Number of Samples	1 Water
Date samples received	30/08/2018
Date completed instructions received	30/08/2018

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

Date results requested by	06/09/2018
Date of Issue	06/09/2018

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

Authorised By

Jacinta Hurst, Laboratory Manager

vTRH(C6-C10)/BTEXN in Water		
Our Reference		199643-1
Your Reference	UNITS	GWQT1
Date Sampled		29/08/2018
Type of sample		Water
Date extracted	-	31/08/2018
Date analysed	-	03/09/2018
TRH C_6 - C_9	µg/L	<10
TRH C_6 - C_{10}	µg/L	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Naphthalene	µg/L	<1
Surrogate Dibromofluoromethane	%	100
Surrogate toluene-d8	%	98
Surrogate 4-BFB	%	100

svTRH (C10-C40) in Water		
Our Reference	UNITS	199643-1
Your Reference		GWQT1
Date Sampled		29/08/2018
Type of sample		Water
Date extracted	-	03/09/2018
Date analysed	-	03/09/2018
TRH C_{10} - C_{14}	µg/L	130
TRH C_{15} - C_{28}	µg/L	<100
TRH C_{29} - C_{36}	µg/L	<100
TRH >C_{10} - C_{16}	µg/L	100
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	100
TRH >C_{16} - C_{34}	µg/L	<100
TRH >C_{34} - C_{40}	µg/L	<100
Surrogate o-Terphenyl	%	99

HM in water - dissolved		
Our Reference		199643-1
Your Reference	UNITS	GWQT1
Date Sampled		29/08/2018
Type of sample		Water
Date prepared	-	31/08/2018
Date analysed	-	31/08/2018
Arsenic-Dissolved	µg/L	12
Cadmium-Dissolved	µg/L	0.4
Chromium-Dissolved	µg/L	<1
Copper-Dissolved	µg/L	10
Lead-Dissolved	µg/L	<1
Mercury-Dissolved	µg/L	<0.05
Nickel-Dissolved	µg/L	37
Zinc-Dissolved	µg/L	150

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

APPENDIX I
QA/QC Assessment

I1 QUALITY CONTROL PROGRAM

I1.1 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 QC samples. Details of the field and laboratory QC samples are provided, with the allowable acceptance ranges for the data presented in **Table I-1**.

Table I-1 Sampling Data Quality Indicators

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

QA/QC Measures	Data Quality Indicators
Comparability – The confidence (expressed qualitatively) that data may be considered to be equivalent for each sampling and analytical event	Given that a reported data set can comprise several data sets from separate sampling episodes, issues of comparability between data sets are reduced through adherence to SOPs and regulator-endorsed or published guidelines and standards on each data gathering activity. In addition the data will be collected by experienced samplers and NATA-accredited laboratory methodologies will be employed in all laboratory testing programs.

I1.2 CALCULATION OF RELATIVE PERCENTAGE DIFFERENCE (RPD)

The RPD values were calculated using the following equation:

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

Where:

C_O = Concentration obtained for the primary sample; and

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

I2 FIELD QA/QC DATA EVALUATION

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

- One blind field duplicates (water/soil);
- One inter-laboratory duplicate (water/soil);
- One trip blank (soil); and
- One trip spikes (soil); and

Analytical results for tested soil QA/QC samples, including the calculated RPD values between primary and duplicate samples, are presented in **Table 3 (T3)**.

I2.1 SOIL INVESTIGATION

I2.1.1 Blind Field Duplicate

Sample BH-QD1 was collected as a blind field duplicate (BFD) of the primary sample BH101M_0.4-0.5 on 22 August 2018. 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 exceptions of chromium (63.70%), copper (53.85%), lead (53.33%), nickel (63.16%) and zinc (75.56%) for

BH101M_0.4-0.5 (**Table T3**). These results were considered to reflect the non-homogenous nature of the fill material.

I2.1.2 Inter-Laboratory Duplicate

Sample BH-QT1 was collected as an inter-laboratory duplicate (ILD) of the primary sample BH101_0.4-0.5 on 22 August 2018. The preparation of the ILD sample was identical to the BFD sample, as described above, and was analysed for TRHs, BTEX, and selected heavy metals.

The calculated RPD values were within the Data Acceptance Criteria, with the exception of chromium (53.97%), Nickel (79.07%) and Zinc (60.00%). The exceedances can be noted to occur between the sample and triplicate sample (QT1) which can be attributed to material heterogeneity.

Analytical results indicated that the samples collected were representative of the soils present at respective sampling locations.

I2.1.3 Trip Blank

One soil trip blank (QTB1) 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.

I2.1.4 Trip Spike

One soil trip spike (QTS1) sample was submitted to the primary laboratory for BTEX analysis, the results for which were reported within the RPD acceptance levels for trip spike recovery. It was therefore concluded that satisfactory sample transport and handling conditions were achieved.

I2.2 GROUNDWATER INVESTIGATION

H2.2.1 Blind Field Duplicates

Sample GWQD1 was collected as a blind field duplicate of the primary sample BH101M-1 on 29 August 2018. The preparation of BFD samples involved the decanting of the groundwater collected from the respective monitoring well into two separate groups of appropriately labelled sampling containers. Volumes were split equally between the groups of sampling bottles such that the sample contained in each individual bottle, contained a similar proportion of each water volume. Sample mixing did not occur prior to decanting, in order to preserve the concentrations of volatiles potentially present within the sample. The duplicate sample was then presented blind to the primary laboratory (SGS) to avoid any potential analytical bias. The BFDs were analysed for TRHs, BTEX and selected heavy metals. The RPD values calculated for all the analytes tested were found to be within the Data Acceptance Criteria (DAC) with the exception of Chromium (80.00%), Copper (150.68%) and Lead (133.33%) for groundwater investigation sample BH101M-1.

I2.2.2 Inter-Laboratory Duplicate

Sample GWQT1 was collected as an inter-laboratory duplicate (ILD) of the primary sample BH101M-1 on 29 August 2018. The preparation of a groundwater ILD sample was identical to the BFD sample as described above and also analysed for TRHs, BTEX and selected heavy metals. The RPD values calculated for the ILD samples were found to be within the Data Acceptance Criteria, with the exception of TRH F2 (61.54%), Chromium (80.00%), Copper (145.95%) and

Lead (133.33%) for groundwater sample BH101M-1. The data quality was considered to be acceptable, in accordance with the laboratory DQOs presented in **Table T3**.

I2.2.3 Trip Blanks

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

I2.2.4 Trip Spikes

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

I2.2.5 Rinsate Blanks

One rinsate blank sample (GWQR1) was submitted to the primary laboratory for TRHs, BTEX and selected heavy metals analyses. Analytical results were reported below the laboratory LOR for all analytes.

I2.3 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.

I3 LABORATORY QA/QC

I3.1 LABORATORY ACCREDITATION

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

In relation to contingencies, should the pre-determined DQOs not be achieved, in accordance with each laboratory’s QC policy (**Appendix J)**, respective tests 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 J**.

I3.2 SAMPLE HOLDING TIMES

All sample holding times were within standard environmental protocols as tabulated in **Appendix J**.

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

Practical Quantitation Limits for the tested parameters during the assessments of soils are presented in **Appendix J**.

I3.4 METHOD BLANKS

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

I3.5 LABORATORY DUPLICATE SAMPLES

The 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 arsenic (53%) and copper (42%) from sample SE18303.019 due to sample heterogeneity.

I3.6 LABORATORY CONTROL SAMPLES

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

I3.7 MATRIX SPIKES

The matrix spikes of the analysis batches were within acceptable ranges and conformed to the DAC.

I3.8 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 laboratory testing were valid and useable for interpretation purposes.

APPENDIX J
Laboratory QA/AC Policies and DQOs

STATEMENT OF QA/QC PERFORMANCE

SE183030 R0

CLIENT DETAILS

Contact	Clare Madigan
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	clare.madigan@eiaustralia.com.au
Project	**E23959.E02 15-21 Brighton Ave Croydon PK**
Order Number	**E23959.E02**
Samples	24

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	**SE183030 R0**
Date Received	23 Aug 2018
Date Reported	03 Sep 2018

COMMENTS

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

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

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

Duplicate	Total Recoverable Elements 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	22 Soils 2 Waters
Date documentation received	24/8/2018	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	7.3C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

HOLDING TIME SUMMARY

SE183030 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
BH101M_0.4-0.5	SE183030.001	LB155229	22 Aug 2018	23 Aug 2018	22 Aug 2019	28 Aug 2018	22 Aug 2019	30 Aug 2018
BH102_0.2-0.3	SE183030.002	LB155229	22 Aug 2018	23 Aug 2018	22 Aug 2019	28 Aug 2018	22 Aug 2019	30 Aug 2018
BH103_0.2-0.3	SE183030.003	LB155229	22 Aug 2018	23 Aug 2018	22 Aug 2019	28 Aug 2018	22 Aug 2019	30 Aug 2018
BH104_0.7-0.8	SE183030.004	LB155229	22 Aug 2018	23 Aug 2018	22 Aug 2019	28 Aug 2018	22 Aug 2019	30 Aug 2018
BH105_0.3-0.4	SE183030.005	LB155229	22 Aug 2018	23 Aug 2018	22 Aug 2019	28 Aug 2018	22 Aug 2019	30 Aug 2018
BH106_0.3-0.4	SE183030.006	LB155229	22 Aug 2018	23 Aug 2018	22 Aug 2019	28 Aug 2018	22 Aug 2019	30 Aug 2018
BH107_0.2-0.3	SE183030.007	LB155229	22 Aug 2018	23 Aug 2018	22 Aug 2019	28 Aug 2018	22 Aug 2019	30 Aug 2018
BH108M_0.4-0.5	SE183030.008	LB155229	22 Aug 2018	23 Aug 2018	22 Aug 2019	28 Aug 2018	22 Aug 2019	30 Aug 2018
BH109_0.1-0.2	SE183030.009	LB155229	22 Aug 2018	23 Aug 2018	22 Aug 2019	28 Aug 2018	22 Aug 2019	30 Aug 2018
BH110_0.1-0.2	SE183030.010	LB155229	22 Aug 2018	23 Aug 2018	22 Aug 2019	28 Aug 2018	22 Aug 2019	30 Aug 2018
BH111_0.4-0.5	SE183030.011	LB155229	22 Aug 2018	23 Aug 2018	22 Aug 2019	28 Aug 2018	22 Aug 2019	30 Aug 2018
BH112M_0.3-0.4	SE183030.012	LB155229	22 Aug 2018	23 Aug 2018	22 Aug 2019	28 Aug 2018	22 Aug 2019	30 Aug 2018
BH113_0.2-0.3	SE183030.013	LB155229	22 Aug 2018	23 Aug 2018	22 Aug 2019	28 Aug 2018	22 Aug 2019	30 Aug 2018
BH104_0.2-0.3	SE183030.014	LB155229	22 Aug 2018	23 Aug 2018	22 Aug 2019	28 Aug 2018	22 Aug 2019	30 Aug 2018
BH101M_0.6-0.7	SE183030.015	LB155229	22 Aug 2018	23 Aug 2018	22 Aug 2019	28 Aug 2018	22 Aug 2019	30 Aug 2018
BH105_0.8-0.9	SE183030.016	LB155229	22 Aug 2018	23 Aug 2018	22 Aug 2019	28 Aug 2018	22 Aug 2019	30 Aug 2018
BH106_0.8-0.9	SE183030.017	LB155229	22 Aug 2018	23 Aug 2018	22 Aug 2019	28 Aug 2018	22 Aug 2019	30 Aug 2018
BH108M_0.9-1.0	SE183030.018	LB155229	22 Aug 2018	23 Aug 2018	22 Aug 2019	28 Aug 2018	22 Aug 2019	30 Aug 2018
BH111_0.8-0.9	SE183030.019	LB155229	22 Aug 2018	23 Aug 2018	22 Aug 2019	28 Aug 2018	22 Aug 2019	30 Aug 2018
BH114_0.4-0.5	SE183030.020	LB155229	22 Aug 2018	23 Aug 2018	22 Aug 2019	28 Aug 2018	22 Aug 2019	30 Aug 2018
BH_QD1	SE183030.021	LB155229	22 Aug 2018	23 Aug 2018	22 Aug 2019	28 Aug 2018	22 Aug 2019	30 Aug 2018

Mercury (dissolved) in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH_QR1	SE183030.022	LB155138	22 Aug 2018	23 Aug 2018	19 Sep 2018	28 Aug 2018	19 Sep 2018	28 Aug 2018

Mercury in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101M_0.4-0.5	SE183030.001	LB155243	22 Aug 2018	23 Aug 2018	19 Sep 2018	28 Aug 2018	19 Sep 2018	30 Aug 2018
BH102_0.2-0.3	SE183030.002	LB155243	22 Aug 2018	23 Aug 2018	19 Sep 2018	28 Aug 2018	19 Sep 2018	30 Aug 2018
BH103_0.2-0.3	SE183030.003	LB155243	22 Aug 2018	23 Aug 2018	19 Sep 2018	28 Aug 2018	19 Sep 2018	30 Aug 2018
BH104_0.7-0.8	SE183030.004	LB155243	22 Aug 2018	23 Aug 2018	19 Sep 2018	28 Aug 2018	19 Sep 2018	30 Aug 2018
BH105_0.3-0.4	SE183030.005	LB155243	22 Aug 2018	23 Aug 2018	19 Sep 2018	28 Aug 2018	19 Sep 2018	30 Aug 2018
BH106_0.3-0.4	SE183030.006	LB155243	22 Aug 2018	23 Aug 2018	19 Sep 2018	28 Aug 2018	19 Sep 2018	30 Aug 2018
BH107_0.2-0.3	SE183030.007	LB155243	22 Aug 2018	23 Aug 2018	19 Sep 2018	28 Aug 2018	19 Sep 2018	30 Aug 2018
BH108M_0.4-0.5	SE183030.008	LB155243	22 Aug 2018	23 Aug 2018	19 Sep 2018	28 Aug 2018	19 Sep 2018	30 Aug 2018
BH109_0.1-0.2	SE183030.009	LB155243	22 Aug 2018	23 Aug 2018	19 Sep 2018	28 Aug 2018	19 Sep 2018	30 Aug 2018
BH110_0.1-0.2	SE183030.010	LB155243	22 Aug 2018	23 Aug 2018	19 Sep 2018	28 Aug 2018	19 Sep 2018	30 Aug 2018
BH111_0.4-0.5	SE183030.011	LB155243	22 Aug 2018	23 Aug 2018	19 Sep 2018	28 Aug 2018	19 Sep 2018	30 Aug 2018
BH112M_0.3-0.4	SE183030.012	LB155243	22 Aug 2018	23 Aug 2018	19 Sep 2018	28 Aug 2018	19 Sep 2018	30 Aug 2018
BH113_0.2-0.3	SE183030.013	LB155243	22 Aug 2018	23 Aug 2018	19 Sep 2018	28 Aug 2018	19 Sep 2018	30 Aug 2018
BH104_0.2-0.3	SE183030.014	LB155243	22 Aug 2018	23 Aug 2018	19 Sep 2018	28 Aug 2018	19 Sep 2018	30 Aug 2018
BH101M_0.6-0.7	SE183030.015	LB155243	22 Aug 2018	23 Aug 2018	19 Sep 2018	28 Aug 2018	19 Sep 2018	30 Aug 2018
BH105_0.8-0.9	SE183030.016	LB155243	22 Aug 2018	23 Aug 2018	19 Sep 2018	28 Aug 2018	19 Sep 2018	30 Aug 2018
BH106_0.8-0.9	SE183030.017	LB155243	22 Aug 2018	23 Aug 2018	19 Sep 2018	28 Aug 2018	19 Sep 2018	30 Aug 2018
BH108M_0.9-1.0	SE183030.018	LB155243	22 Aug 2018	23 Aug 2018	19 Sep 2018	28 Aug 2018	19 Sep 2018	30 Aug 2018
BH111_0.8-0.9	SE183030.019	LB155243	22 Aug 2018	23 Aug 2018	19 Sep 2018	28 Aug 2018	19 Sep 2018	30 Aug 2018
BH114_0.4-0.5	SE183030.020	LB155243	22 Aug 2018	23 Aug 2018	19 Sep 2018	28 Aug 2018	19 Sep 2018	30 Aug 2018
BH_QD1	SE183030.021	LB155243	22 Aug 2018	23 Aug 2018	19 Sep 2018	28 Aug 2018	19 Sep 2018	30 Aug 2018

Moisture Content

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101M_0.4-0.5	SE183030.001	LB155276	22 Aug 2018	23 Aug 2018	05 Sep 2018	29 Aug 2018	03 Sep 2018	29 Aug 2018
BH102_0.2-0.3	SE183030.002	LB155276	22 Aug 2018	23 Aug 2018	05 Sep 2018	29 Aug 2018	03 Sep 2018	29 Aug 2018
BH103_0.2-0.3	SE183030.003	LB155276	22 Aug 2018	23 Aug 2018	05 Sep 2018	29 Aug 2018	03 Sep 2018	29 Aug 2018
BH104_0.7-0.8	SE183030.004	LB155276	22 Aug 2018	23 Aug 2018	05 Sep 2018	29 Aug 2018	03 Sep 2018	29 Aug 2018
BH105_0.3-0.4	SE183030.005	LB155276	22 Aug 2018	23 Aug 2018	05 Sep 2018	29 Aug 2018	03 Sep 2018	29 Aug 2018
BH106_0.3-0.4	SE183030.006	LB155276	22 Aug 2018	23 Aug 2018	05 Sep 2018	29 Aug 2018	03 Sep 2018	29 Aug 2018
BH107_0.2-0.3	SE183030.007	LB155276	22 Aug 2018	23 Aug 2018	05 Sep 2018	29 Aug 2018	03 Sep 2018	29 Aug 2018
BH108M_0.4-0.5	SE183030.008	LB155276	22 Aug 2018	23 Aug 2018	05 Sep 2018	29 Aug 2018	03 Sep 2018	29 Aug 2018

HOLDING TIME SUMMARY

SE183030 R0

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

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

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

Moisture Content (continued)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH109_0.1-0.2	SE183030.009	LB155276	22 Aug 2018	23 Aug 2018	05 Sep 2018	29 Aug 2018	03 Sep 2018	29 Aug 2018
BH110_0.1-0.2	SE183030.010	LB155276	22 Aug 2018	23 Aug 2018	05 Sep 2018	29 Aug 2018	03 Sep 2018	29 Aug 2018
BH111_0.4-0.5	SE183030.011	LB155276	22 Aug 2018	23 Aug 2018	05 Sep 2018	29 Aug 2018	03 Sep 2018	29 Aug 2018
BH112M_0.3-0.4	SE183030.012	LB155276	22 Aug 2018	23 Aug 2018	05 Sep 2018	29 Aug 2018	03 Sep 2018	29 Aug 2018
BH113_0.2-0.3	SE183030.013	LB155276	22 Aug 2018	23 Aug 2018	05 Sep 2018	29 Aug 2018	03 Sep 2018	29 Aug 2018
BH104_0.2-0.3	SE183030.014	LB155276	22 Aug 2018	23 Aug 2018	05 Sep 2018	29 Aug 2018	03 Sep 2018	29 Aug 2018
BH101M_0.6-0.7	SE183030.015	LB155276	22 Aug 2018	23 Aug 2018	05 Sep 2018	29 Aug 2018	03 Sep 2018	29 Aug 2018
BH105_0.8-0.9	SE183030.016	LB155276	22 Aug 2018	23 Aug 2018	05 Sep 2018	29 Aug 2018	03 Sep 2018	29 Aug 2018
BH106_0.8-0.9	SE183030.017	LB155276	22 Aug 2018	23 Aug 2018	05 Sep 2018	29 Aug 2018	03 Sep 2018	29 Aug 2018
BH108M_0.9-1.0	SE183030.018	LB155276	22 Aug 2018	23 Aug 2018	05 Sep 2018	29 Aug 2018	03 Sep 2018	29 Aug 2018
BH111_0.8-0.9	SE183030.019	LB155276	22 Aug 2018	23 Aug 2018	05 Sep 2018	29 Aug 2018	03 Sep 2018	29 Aug 2018
BH114_0.4-0.5	SE183030.020	LB155276	22 Aug 2018	23 Aug 2018	05 Sep 2018	29 Aug 2018	03 Sep 2018	29 Aug 2018
BH_QD1	SE183030.021	LB155276	22 Aug 2018	23 Aug 2018	05 Sep 2018	29 Aug 2018	03 Sep 2018	29 Aug 2018

OC Pesticides in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101M_0.4-0.5	SE183030.001	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH102_0.2-0.3	SE183030.002	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH103_0.2-0.3	SE183030.003	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH104_0.7-0.8	SE183030.004	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH105_0.3-0.4	SE183030.005	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH106_0.3-0.4	SE183030.006	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH107_0.2-0.3	SE183030.007	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH108M_0.4-0.5	SE183030.008	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH109_0.1-0.2	SE183030.009	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH110_0.1-0.2	SE183030.010	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH111_0.4-0.5	SE183030.011	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH112M_0.3-0.4	SE183030.012	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH113_0.2-0.3	SE183030.013	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH104_0.2-0.3	SE183030.014	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH101M_0.6-0.7	SE183030.015	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH105_0.8-0.9	SE183030.016	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH106_0.8-0.9	SE183030.017	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH108M_0.9-1.0	SE183030.018	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH111_0.8-0.9	SE183030.019	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH114_0.4-0.5	SE183030.020	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH_QD1	SE183030.021	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018

OP Pesticides in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101M_0.4-0.5	SE183030.001	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH102_0.2-0.3	SE183030.002	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH103_0.2-0.3	SE183030.003	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH104_0.7-0.8	SE183030.004	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH105_0.3-0.4	SE183030.005	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH106_0.3-0.4	SE183030.006	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH107_0.2-0.3	SE183030.007	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH108M_0.4-0.5	SE183030.008	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH109_0.1-0.2	SE183030.009	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH110_0.1-0.2	SE183030.010	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH111_0.4-0.5	SE183030.011	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH112M_0.3-0.4	SE183030.012	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH113_0.2-0.3	SE183030.013	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH104_0.2-0.3	SE183030.014	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH101M_0.6-0.7	SE183030.015	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH105_0.8-0.9	SE183030.016	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH106_0.8-0.9	SE183030.017	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH108M_0.9-1.0	SE183030.018	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH111_0.8-0.9	SE183030.019	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH114_0.4-0.5	SE183030.020	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH_QD1	SE183030.021	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018

HOLDING TIME SUMMARY

SE183030 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.

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
BH101M_0.4-0.5	SE183030.001	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH102_0.2-0.3	SE183030.002	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH103_0.2-0.3	SE183030.003	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH104_0.7-0.8	SE183030.004	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH105_0.3-0.4	SE183030.005	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH106_0.3-0.4	SE183030.006	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH107_0.2-0.3	SE183030.007	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH108M_0.4-0.5	SE183030.008	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH109_0.1-0.2	SE183030.009	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH110_0.1-0.2	SE183030.010	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH111_0.4-0.5	SE183030.011	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH112M_0.3-0.4	SE183030.012	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH113_0.2-0.3	SE183030.013	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH104_0.2-0.3	SE183030.014	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH101M_0.6-0.7	SE183030.015	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH105_0.8-0.9	SE183030.016	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH106_0.8-0.9	SE183030.017	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH108M_0.9-1.0	SE183030.018	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH111_0.8-0.9	SE183030.019	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH114_0.4-0.5	SE183030.020	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH_QD1	SE183030.021	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018

PCBs in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101M_0.4-0.5	SE183030.001	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH102_0.2-0.3	SE183030.002	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH103_0.2-0.3	SE183030.003	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH104_0.7-0.8	SE183030.004	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH105_0.3-0.4	SE183030.005	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH106_0.3-0.4	SE183030.006	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH107_0.2-0.3	SE183030.007	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH108M_0.4-0.5	SE183030.008	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH109_0.1-0.2	SE183030.009	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH110_0.1-0.2	SE183030.010	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH111_0.4-0.5	SE183030.011	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH112M_0.3-0.4	SE183030.012	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH113_0.2-0.3	SE183030.013	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH104_0.2-0.3	SE183030.014	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH101M_0.6-0.7	SE183030.015	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH105_0.8-0.9	SE183030.016	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH106_0.8-0.9	SE183030.017	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH108M_0.9-1.0	SE183030.018	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH111_0.8-0.9	SE183030.019	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH114_0.4-0.5	SE183030.020	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH_QD1	SE183030.021	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018

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

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101M_0.4-0.5	SE183030.001	LB155244	22 Aug 2018	23 Aug 2018	18 Feb 2019	28 Aug 2018	18 Feb 2019	29 Aug 2018
BH102_0.2-0.3	SE183030.002	LB155244	22 Aug 2018	23 Aug 2018	18 Feb 2019	28 Aug 2018	18 Feb 2019	29 Aug 2018
BH103_0.2-0.3	SE183030.003	LB155244	22 Aug 2018	23 Aug 2018	18 Feb 2019	28 Aug 2018	18 Feb 2019	29 Aug 2018
BH104_0.7-0.8	SE183030.004	LB155244	22 Aug 2018	23 Aug 2018	18 Feb 2019	28 Aug 2018	18 Feb 2019	29 Aug 2018
BH105_0.3-0.4	SE183030.005	LB155244	22 Aug 2018	23 Aug 2018	18 Feb 2019	28 Aug 2018	18 Feb 2019	29 Aug 2018
BH106_0.3-0.4	SE183030.006	LB155244	22 Aug 2018	23 Aug 2018	18 Feb 2019	28 Aug 2018	18 Feb 2019	29 Aug 2018
BH107_0.2-0.3	SE183030.007	LB155244	22 Aug 2018	23 Aug 2018	18 Feb 2019	28 Aug 2018	18 Feb 2019	29 Aug 2018
BH108M_0.4-0.5	SE183030.008	LB155244	22 Aug 2018	23 Aug 2018	18 Feb 2019	28 Aug 2018	18 Feb 2019	29 Aug 2018
BH109_0.1-0.2	SE183030.009	LB155244	22 Aug 2018	23 Aug 2018	18 Feb 2019	28 Aug 2018	18 Feb 2019	29 Aug 2018
BH110_0.1-0.2	SE183030.010	LB155244	22 Aug 2018	23 Aug 2018	18 Feb 2019	28 Aug 2018	18 Feb 2019	29 Aug 2018
BH111_0.4-0.5	SE183030.011	LB155244	22 Aug 2018	23 Aug 2018	18 Feb 2019	28 Aug 2018	18 Feb 2019	29 Aug 2018
BH112M_0.3-0.4	SE183030.012	LB155244	22 Aug 2018	23 Aug 2018	18 Feb 2019	28 Aug 2018	18 Feb 2019	29 Aug 2018
BH113_0.2-0.3	SE183030.013	LB155244	22 Aug 2018	23 Aug 2018	18 Feb 2019	28 Aug 2018	18 Feb 2019	29 Aug 2018

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

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

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

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

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH104_0.2-0.3	SE183030.014	LB155244	22 Aug 2018	23 Aug 2018	18 Feb 2019	28 Aug 2018	18 Feb 2019	29 Aug 2018
BH101M_0.6-0.7	SE183030.015	LB155244	22 Aug 2018	23 Aug 2018	18 Feb 2019	28 Aug 2018	18 Feb 2019	29 Aug 2018
BH105_0.8-0.9	SE183030.016	LB155244	22 Aug 2018	23 Aug 2018	18 Feb 2019	28 Aug 2018	18 Feb 2019	29 Aug 2018
BH106_0.8-0.9	SE183030.017	LB155244	22 Aug 2018	23 Aug 2018	18 Feb 2019	28 Aug 2018	18 Feb 2019	29 Aug 2018
BH108M_0.9-1.0	SE183030.018	LB155244	22 Aug 2018	23 Aug 2018	18 Feb 2019	28 Aug 2018	18 Feb 2019	29 Aug 2018
BH111_0.8-0.9	SE183030.019	LB155244	22 Aug 2018	23 Aug 2018	18 Feb 2019	28 Aug 2018	18 Feb 2019	29 Aug 2018
BH114_0.4-0.5	SE183030.020	LB155244	22 Aug 2018	23 Aug 2018	18 Feb 2019	28 Aug 2018	18 Feb 2019	29 Aug 2018
BH_QD1	SE183030.021	LB155244	22 Aug 2018	23 Aug 2018	18 Feb 2019	28 Aug 2018	18 Feb 2019	29 Aug 2018

Trace Metals (Dissolved) in Water by ICPMS

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH_QR1	SE183030.022	LB155022	22 Aug 2018	23 Aug 2018	18 Feb 2019	27 Aug 2018	18 Feb 2019	28 Aug 2018

TRH (Total Recoverable Hydrocarbons) in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101M_0.4-0.5	SE183030.001	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH102_0.2-0.3	SE183030.002	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH103_0.2-0.3	SE183030.003	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH104_0.7-0.8	SE183030.004	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH105_0.3-0.4	SE183030.005	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH106_0.3-0.4	SE183030.006	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH107_0.2-0.3	SE183030.007	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH108M_0.4-0.5	SE183030.008	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH109_0.1-0.2	SE183030.009	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH110_0.1-0.2	SE183030.010	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH111_0.4-0.5	SE183030.011	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH112M_0.3-0.4	SE183030.012	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH113_0.2-0.3	SE183030.013	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH104_0.2-0.3	SE183030.014	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH101M_0.6-0.7	SE183030.015	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH105_0.8-0.9	SE183030.016	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH106_0.8-0.9	SE183030.017	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH108M_0.9-1.0	SE183030.018	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH111_0.8-0.9	SE183030.019	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH114_0.4-0.5	SE183030.020	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	30 Aug 2018
BH_QD1	SE183030.021	LB155216	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	29 Aug 2018

TRH (Total Recoverable Hydrocarbons) in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH_QR1	SE183030.022	LB154996	22 Aug 2018	23 Aug 2018	29 Aug 2018	24 Aug 2018	03 Oct 2018	28 Aug 2018

VOC's in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101M_0.4-0.5	SE183030.001	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH102_0.2-0.3	SE183030.002	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH103_0.2-0.3	SE183030.003	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH104_0.7-0.8	SE183030.004	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH105_0.3-0.4	SE183030.005	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH106_0.3-0.4	SE183030.006	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH107_0.2-0.3	SE183030.007	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH108M_0.4-0.5	SE183030.008	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH109_0.1-0.2	SE183030.009	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH110_0.1-0.2	SE183030.010	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH111_0.4-0.5	SE183030.011	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH112M_0.3-0.4	SE183030.012	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH113_0.2-0.3	SE183030.013	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH104_0.2-0.3	SE183030.014	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH101M_0.6-0.7	SE183030.015	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH105_0.8-0.9	SE183030.016	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH106_0.8-0.9	SE183030.017	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018

HOLDING TIME SUMMARY

SE183030 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.

VOC's in Soil (continued)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH108M_0.9-1.0	SE183030.018	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH111_0.8-0.9	SE183030.019	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH114_0.4-0.5	SE183030.020	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH_QD1	SE183030.021	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
Trip Spike	SE183030.024	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018

VOCs in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH_QR1	SE183030.022	LB155248	22 Aug 2018	23 Aug 2018	29 Aug 2018	28 Aug 2018	07 Oct 2018	29 Aug 2018
Trip Blank	SE183030.023	LB155248	22 Aug 2018	23 Aug 2018	29 Aug 2018	28 Aug 2018	07 Oct 2018	29 Aug 2018

Volatile Petroleum Hydrocarbons in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101M_0.4-0.5	SE183030.001	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH102_0.2-0.3	SE183030.002	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH103_0.2-0.3	SE183030.003	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH104_0.7-0.8	SE183030.004	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH105_0.3-0.4	SE183030.005	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH106_0.3-0.4	SE183030.006	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH107_0.2-0.3	SE183030.007	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH108M_0.4-0.5	SE183030.008	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH109_0.1-0.2	SE183030.009	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH110_0.1-0.2	SE183030.010	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH111_0.4-0.5	SE183030.011	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH112M_0.3-0.4	SE183030.012	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH113_0.2-0.3	SE183030.013	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH104_0.2-0.3	SE183030.014	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH101M_0.6-0.7	SE183030.015	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH105_0.8-0.9	SE183030.016	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH106_0.8-0.9	SE183030.017	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH108M_0.9-1.0	SE183030.018	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH111_0.8-0.9	SE183030.019	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH114_0.4-0.5	SE183030.020	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
BH_QD1	SE183030.021	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018
Trip Spike	SE183030.024	LB155214	22 Aug 2018	23 Aug 2018	05 Sep 2018	28 Aug 2018	07 Oct 2018	31 Aug 2018

Volatile Petroleum Hydrocarbons in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH_QR1	SE183030.022	LB155248	22 Aug 2018	23 Aug 2018	29 Aug 2018	28 Aug 2018	07 Oct 2018	29 Aug 2018
Trip Blank	SE183030.023	LB155248	22 Aug 2018	23 Aug 2018	29 Aug 2018	28 Aug 2018	07 Oct 2018	29 Aug 2018

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

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

OC Pesticides in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH101M_0.4-0.5	SE183030.001	%	60 - 130%	86
	BH102_0.2-0.3	SE183030.002	%	60 - 130%	89
	BH103_0.2-0.3	SE183030.003	%	60 - 130%	83
	BH104_0.7-0.8	SE183030.004	%	60 - 130%	85
	BH105_0.3-0.4	SE183030.005	%	60 - 130%	81
	BH106_0.3-0.4	SE183030.006	%	60 - 130%	88
	BH107_0.2-0.3	SE183030.007	%	60 - 130%	87
	BH108M_0.4-0.5	SE183030.008	%	60 - 130%	86
	BH109_0.1-0.2	SE183030.009	%	60 - 130%	88
	BH110_0.1-0.2	SE183030.010	%	60 - 130%	89
	BH111_0.4-0.5	SE183030.011	%	60 - 130%	80
	BH112M_0.3-0.4	SE183030.012	%	60 - 130%	91
	BH113_0.2-0.3	SE183030.013	%	60 - 130%	86
	BH104_0.2-0.3	SE183030.014	%	60 - 130%	84

OP Pesticides in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH101M_0.4-0.5	SE183030.001	%	60 - 130%	84
	BH102_0.2-0.3	SE183030.002	%	60 - 130%	90
	BH103_0.2-0.3	SE183030.003	%	60 - 130%	92
	BH104_0.7-0.8	SE183030.004	%	60 - 130%	90
	BH105_0.3-0.4	SE183030.005	%	60 - 130%	88
	BH106_0.3-0.4	SE183030.006	%	60 - 130%	94
	BH107_0.2-0.3	SE183030.007	%	60 - 130%	92
	BH108M_0.4-0.5	SE183030.008	%	60 - 130%	90
	BH109_0.1-0.2	SE183030.009	%	60 - 130%	94
	BH110_0.1-0.2	SE183030.010	%	60 - 130%	90
	BH111_0.4-0.5	SE183030.011	%	60 - 130%	96
	BH112M_0.3-0.4	SE183030.012	%	60 - 130%	76
	BH113_0.2-0.3	SE183030.013	%	60 - 130%	100
	BH104_0.2-0.3	SE183030.014	%	60 - 130%	84
d14-p-terphenyl (Surrogate)	BH101M_0.4-0.5	SE183030.001	%	60 - 130%	88
	BH102_0.2-0.3	SE183030.002	%	60 - 130%	86
	BH103_0.2-0.3	SE183030.003	%	60 - 130%	82
	BH104_0.7-0.8	SE183030.004	%	60 - 130%	86
	BH105_0.3-0.4	SE183030.005	%	60 - 130%	90
	BH106_0.3-0.4	SE183030.006	%	60 - 130%	92
	BH107_0.2-0.3	SE183030.007	%	60 - 130%	94
	BH108M_0.4-0.5	SE183030.008	%	60 - 130%	92
	BH109_0.1-0.2	SE183030.009	%	60 - 130%	100
	BH110_0.1-0.2	SE183030.010	%	60 - 130%	98
	BH111_0.4-0.5	SE183030.011	%	60 - 130%	94
	BH112M_0.3-0.4	SE183030.012	%	60 - 130%	74
	BH113_0.2-0.3	SE183030.013	%	60 - 130%	94
	BH104_0.2-0.3	SE183030.014	%	60 - 130%	82

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH101M_0.4-0.5	SE183030.001	%	70 - 130%	84
	BH102_0.2-0.3	SE183030.002	%	70 - 130%	90
	BH103_0.2-0.3	SE183030.003	%	70 - 130%	92
	BH104_0.7-0.8	SE183030.004	%	70 - 130%	90
	BH105_0.3-0.4	SE183030.005	%	70 - 130%	88
	BH106_0.3-0.4	SE183030.006	%	70 - 130%	94
	BH107_0.2-0.3	SE183030.007	%	70 - 130%	92
	BH108M_0.4-0.5	SE183030.008	%	70 - 130%	90
	BH109_0.1-0.2	SE183030.009	%	70 - 130%	94
	BH110_0.1-0.2	SE183030.010	%	70 - 130%	90
	BH111_0.4-0.5	SE183030.011	%	70 - 130%	96
	BH112M_0.3-0.4	SE183030.012	%	70 - 130%	76
	BH113_0.2-0.3	SE183030.013	%	70 - 130%	100
	BH104_0.2-0.3	SE183030.014	%	70 - 130%	84

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH101M_0.6-0.7	SE183030.015	%	70 - 130%	84
	BH105_0.8-0.9	SE183030.016	%	70 - 130%	92
	BH106_0.8-0.9	SE183030.017	%	70 - 130%	88
	BH108M_0.9-1.0	SE183030.018	%	70 - 130%	82
	BH111_0.8-0.9	SE183030.019	%	70 - 130%	92
	BH114_0.4-0.5	SE183030.020	%	70 - 130%	96
d14-p-terphenyl (Surrogate)	BH101M_0.4-0.5	SE183030.001	%	70 - 130%	88
	BH102_0.2-0.3	SE183030.002	%	70 - 130%	86
	BH103_0.2-0.3	SE183030.003	%	70 - 130%	82
	BH104_0.7-0.8	SE183030.004	%	70 - 130%	86
	BH105_0.3-0.4	SE183030.005	%	70 - 130%	90
	BH106_0.3-0.4	SE183030.006	%	70 - 130%	92
	BH107_0.2-0.3	SE183030.007	%	70 - 130%	94
	BH108M_0.4-0.5	SE183030.008	%	70 - 130%	92
	BH109_0.1-0.2	SE183030.009	%	70 - 130%	100
	BH110_0.1-0.2	SE183030.010	%	70 - 130%	98
	BH111_0.4-0.5	SE183030.011	%	70 - 130%	94
	BH112M_0.3-0.4	SE183030.012	%	70 - 130%	74
	BH113_0.2-0.3	SE183030.013	%	70 - 130%	94
	BH104_0.2-0.3	SE183030.014	%	70 - 130%	82
	BH101M_0.6-0.7	SE183030.015	%	70 - 130%	84
	BH105_0.8-0.9	SE183030.016	%	70 - 130%	82
	BH106_0.8-0.9	SE183030.017	%	70 - 130%	84
	BH108M_0.9-1.0	SE183030.018	%	70 - 130%	72
	BH111_0.8-0.9	SE183030.019	%	70 - 130%	82
	BH114_0.4-0.5	SE183030.020	%	70 - 130%	100
d5-nitrobenzene (Surrogate)	BH101M_0.4-0.5	SE183030.001	%	70 - 130%	88
	BH102_0.2-0.3	SE183030.002	%	70 - 130%	96
	BH103_0.2-0.3	SE183030.003	%	70 - 130%	92
	BH104_0.7-0.8	SE183030.004	%	70 - 130%	90
	BH105_0.3-0.4	SE183030.005	%	70 - 130%	90
	BH106_0.3-0.4	SE183030.006	%	70 - 130%	90
	BH107_0.2-0.3	SE183030.007	%	70 - 130%	92
	BH108M_0.4-0.5	SE183030.008	%	70 - 130%	94
	BH109_0.1-0.2	SE183030.009	%	70 - 130%	98
	BH110_0.1-0.2	SE183030.010	%	70 - 130%	94
	BH111_0.4-0.5	SE183030.011	%	70 - 130%	94
	BH112M_0.3-0.4	SE183030.012	%	70 - 130%	80
	BH113_0.2-0.3	SE183030.013	%	70 - 130%	100
	BH104_0.2-0.3	SE183030.014	%	70 - 130%	86
	BH101M_0.6-0.7	SE183030.015	%	70 - 130%	84
	BH105_0.8-0.9	SE183030.016	%	70 - 130%	90
	BH106_0.8-0.9	SE183030.017	%	70 - 130%	88
	BH108M_0.9-1.0	SE183030.018	%	70 - 130%	76
	BH111_0.8-0.9	SE183030.019	%	70 - 130%	86
	BH114_0.4-0.5	SE183030.020	%	70 - 130%	94

PCBs in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH101M_0.4-0.5	SE183030.001	%	60 - 130%	86
	BH102_0.2-0.3	SE183030.002	%	60 - 130%	89
	BH103_0.2-0.3	SE183030.003	%	60 - 130%	83
	BH104_0.7-0.8	SE183030.004	%	60 - 130%	85
	BH105_0.3-0.4	SE183030.005	%	60 - 130%	81
	BH106_0.3-0.4	SE183030.006	%	60 - 130%	88
	BH107_0.2-0.3	SE183030.007	%	60 - 130%	87
	BH108M_0.4-0.5	SE183030.008	%	60 - 130%	86
	BH109_0.1-0.2	SE183030.009	%	60 - 130%	88
	BH110_0.1-0.2	SE183030.010	%	60 - 130%	89
	BH111_0.4-0.5	SE183030.011	%	60 - 130%	80
	BH112M_0.3-0.4	SE183030.012	%	60 - 130%	91

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.

PCBs in Soil (continued) — Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH113_0.2-0.3	SE183030.013	%	60 - 130%	86
	BH104_0.2-0.3	SE183030.014	%	60 - 130%	84

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH101M_0.4-0.5	SE183030.001	%	60 - 130%	75
	BH102_0.2-0.3	SE183030.002	%	60 - 130%	83
	BH103_0.2-0.3	SE183030.003	%	60 - 130%	84
	BH104_0.7-0.8	SE183030.004	%	60 - 130%	79
	BH105_0.3-0.4	SE183030.005	%	60 - 130%	79
	BH106_0.3-0.4	SE183030.006	%	60 - 130%	84
	BH107_0.2-0.3	SE183030.007	%	60 - 130%	79
	BH108M_0.4-0.5	SE183030.008	%	60 - 130%	80
	BH109_0.1-0.2	SE183030.009	%	60 - 130%	83
	BH110_0.1-0.2	SE183030.010	%	60 - 130%	78
	BH111_0.4-0.5	SE183030.011	%	60 - 130%	77
	BH112M_0.3-0.4	SE183030.012	%	60 - 130%	85
	BH113_0.2-0.3	SE183030.013	%	60 - 130%	74
	BH104_0.2-0.3	SE183030.014	%	60 - 130%	79
	BH101M_0.6-0.7	SE183030.015	%	60 - 130%	86
	BH105_0.8-0.9	SE183030.016	%	60 - 130%	83
	BH106_0.8-0.9	SE183030.017	%	60 - 130%	79
	BH108M_0.9-1.0	SE183030.018	%	60 - 130%	81
	BH111_0.8-0.9	SE183030.019	%	60 - 130%	84
	BH114_0.4-0.5	SE183030.020	%	60 - 130%	87
	BH_QD1	SE183030.021	%	60 - 130%	73
	Trip Spike	SE183030.024	%	60 - 130%	75
d4-1,2-dichloroethane (Surrogate)	BH101M_0.4-0.5	SE183030.001	%	60 - 130%	94
	BH102_0.2-0.3	SE183030.002	%	60 - 130%	107
	BH103_0.2-0.3	SE183030.003	%	60 - 130%	106
	BH104_0.7-0.8	SE183030.004	%	60 - 130%	103
	BH105_0.3-0.4	SE183030.005	%	60 - 130%	103
	BH106_0.3-0.4	SE183030.006	%	60 - 130%	99
	BH107_0.2-0.3	SE183030.007	%	60 - 130%	97
	BH108M_0.4-0.5	SE183030.008	%	60 - 130%	98
	BH109_0.1-0.2	SE183030.009	%	60 - 130%	99
	BH110_0.1-0.2	SE183030.010	%	60 - 130%	94
	BH111_0.4-0.5	SE183030.011	%	60 - 130%	95
	BH112M_0.3-0.4	SE183030.012	%	60 - 130%	100
	BH113_0.2-0.3	SE183030.013	%	60 - 130%	90
	BH104_0.2-0.3	SE183030.014	%	60 - 130%	104
	BH101M_0.6-0.7	SE183030.015	%	60 - 130%	118
	BH105_0.8-0.9	SE183030.016	%	60 - 130%	102
	BH106_0.8-0.9	SE183030.017	%	60 - 130%	97
	BH108M_0.9-1.0	SE183030.018	%	60 - 130%	98
	BH111_0.8-0.9	SE183030.019	%	60 - 130%	109
	BH114_0.4-0.5	SE183030.020	%	60 - 130%	103
	BH_QD1	SE183030.021	%	60 - 130%	80
	Trip Spike	SE183030.024	%	60 - 130%	90
d8-toluene (Surrogate)	BH101M_0.4-0.5	SE183030.001	%	60 - 130%	74
	BH102_0.2-0.3	SE183030.002	%	60 - 130%	87
	BH103_0.2-0.3	SE183030.003	%	60 - 130%	84
	BH104_0.7-0.8	SE183030.004	%	60 - 130%	86
	BH105_0.3-0.4	SE183030.005	%	60 - 130%	84
	BH106_0.3-0.4	SE183030.006	%	60 - 130%	79
	BH107_0.2-0.3	SE183030.007	%	60 - 130%	81
	BH108M_0.4-0.5	SE183030.008	%	60 - 130%	80
	BH109_0.1-0.2	SE183030.009	%	60 - 130%	85
	BH110_0.1-0.2	SE183030.010	%	60 - 130%	81
	BH111_0.4-0.5	SE183030.011	%	60 - 130%	80
	BH112M_0.3-0.4	SE183030.012	%	60 - 130%	84

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

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

VOC's in Soil (continued)

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d8-toluene (Surrogate)	BH113_0.2-0.3	SE183030.013	%	60 - 130%	75
	BH104_0.2-0.3	SE183030.014	%	60 - 130%	83
	BH101M_0.6-0.7	SE183030.015	%	60 - 130%	96
	BH105_0.8-0.9	SE183030.016	%	60 - 130%	83
	BH106_0.8-0.9	SE183030.017	%	60 - 130%	80
	BH108M_0.9-1.0	SE183030.018	%	60 - 130%	82
	BH111_0.8-0.9	SE183030.019	%	60 - 130%	88
	BH114_0.4-0.5	SE183030.020	%	60 - 130%	85
	BH_QD1	SE183030.021	%	60 - 130%	76
	Trip Spike	SE183030.024	%	60 - 130%	79
Dibromofluoromethane (Surrogate)	BH101M_0.4-0.5	SE183030.001	%	60 - 130%	89
	BH102_0.2-0.3	SE183030.002	%	60 - 130%	100
	BH103_0.2-0.3	SE183030.003	%	60 - 130%	100
	BH104_0.7-0.8	SE183030.004	%	60 - 130%	100
	BH105_0.3-0.4	SE183030.005	%	60 - 130%	99
	BH106_0.3-0.4	SE183030.006	%	60 - 130%	94
	BH107_0.2-0.3	SE183030.007	%	60 - 130%	87
	BH108M_0.4-0.5	SE183030.008	%	60 - 130%	96
	BH109_0.1-0.2	SE183030.009	%	60 - 130%	94
	BH110_0.1-0.2	SE183030.010	%	60 - 130%	92
	BH111_0.4-0.5	SE183030.011	%	60 - 130%	92
	BH112M_0.3-0.4	SE183030.012	%	60 - 130%	98
	BH113_0.2-0.3	SE183030.013	%	60 - 130%	84
	BH104_0.2-0.3	SE183030.014	%	60 - 130%	95
	BH101M_0.6-0.7	SE183030.015	%	60 - 130%	111
	BH105_0.8-0.9	SE183030.016	%	60 - 130%	95
	BH106_0.8-0.9	SE183030.017	%	60 - 130%	93
	BH108M_0.9-1.0	SE183030.018	%	60 - 130%	94
	BH111_0.8-0.9	SE183030.019	%	60 - 130%	102
	BH114_0.4-0.5	SE183030.020	%	60 - 130%	95
	BH_QD1	SE183030.021	%	60 - 130%	75
	Trip Spike	SE183030.024	%	60 - 130%	82

VOCs in Water

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH_QR1	SE183030.022	%	40 - 130%	90
	Trip Blank	SE183030.023	%	40 - 130%	93
d4-1,2-dichloroethane (Surrogate)	BH_QR1	SE183030.022	%	40 - 130%	123
	Trip Blank	SE183030.023	%	40 - 130%	128
d8-toluene (Surrogate)	BH_QR1	SE183030.022	%	40 - 130%	109
	Trip Blank	SE183030.023	%	40 - 130%	114
Dibromofluoromethane (Surrogate)	BH_QR1	SE183030.022	%	40 - 130%	125
	Trip Blank	SE183030.023	%	40 - 130%	114

Volatile Petroleum Hydrocarbons in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH101M_0.4-0.5	SE183030.001	%	60 - 130%	75
	BH102_0.2-0.3	SE183030.002	%	60 - 130%	83
	BH103_0.2-0.3	SE183030.003	%	60 - 130%	84
	BH104_0.7-0.8	SE183030.004	%	60 - 130%	79
	BH105_0.3-0.4	SE183030.005	%	60 - 130%	79
	BH106_0.3-0.4	SE183030.006	%	60 - 130%	84
	BH107_0.2-0.3	SE183030.007	%	60 - 130%	79
	BH108M_0.4-0.5	SE183030.008	%	60 - 130%	80
	BH109_0.1-0.2	SE183030.009	%	60 - 130%	83
	BH110_0.1-0.2	SE183030.010	%	60 - 130%	78
	BH111_0.4-0.5	SE183030.011	%	60 - 130%	77
	BH112M_0.3-0.4	SE183030.012	%	60 - 130%	85
	BH113_0.2-0.3	SE183030.013	%	60 - 130%	74
	BH104_0.2-0.3	SE183030.014	%	60 - 130%	79
	BH101M_0.6-0.7	SE183030.015	%	60 - 130%	86
	BH105_0.8-0.9	SE183030.016	%	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 %
Bromofluorobenzene (Surrogate)	BH106_0.8-0.9	SE183030.017	%	60 - 130%	79
	BH108M_0.9-1.0	SE183030.018	%	60 - 130%	81
	BH111_0.8-0.9	SE183030.019	%	60 - 130%	84
	BH114_0.4-0.5	SE183030.020	%	60 - 130%	87
	BH_QD1	SE183030.021	%	60 - 130%	73
d4-1,2-dichloroethane (Surrogate)	BH101M_0.4-0.5	SE183030.001	%	60 - 130%	94
	BH102_0.2-0.3	SE183030.002	%	60 - 130%	107
	BH103_0.2-0.3	SE183030.003	%	60 - 130%	106
	BH104_0.7-0.8	SE183030.004	%	60 - 130%	103
	BH105_0.3-0.4	SE183030.005	%	60 - 130%	103
	BH106_0.3-0.4	SE183030.006	%	60 - 130%	99
	BH107_0.2-0.3	SE183030.007	%	60 - 130%	97
	BH108M_0.4-0.5	SE183030.008	%	60 - 130%	98
	BH109_0.1-0.2	SE183030.009	%	60 - 130%	99
	BH110_0.1-0.2	SE183030.010	%	60 - 130%	94
	BH111_0.4-0.5	SE183030.011	%	60 - 130%	95
	BH112M_0.3-0.4	SE183030.012	%	60 - 130%	100
	BH113_0.2-0.3	SE183030.013	%	60 - 130%	90
	BH104_0.2-0.3	SE183030.014	%	60 - 130%	104
	BH101M_0.6-0.7	SE183030.015	%	60 - 130%	118
	BH105_0.8-0.9	SE183030.016	%	60 - 130%	102
	BH106_0.8-0.9	SE183030.017	%	60 - 130%	97
	BH108M_0.9-1.0	SE183030.018	%	60 - 130%	98
	BH111_0.8-0.9	SE183030.019	%	60 - 130%	109
	BH114_0.4-0.5	SE183030.020	%	60 - 130%	103
	BH_QD1	SE183030.021	%	60 - 130%	80
d8-toluene (Surrogate)	BH101M_0.4-0.5	SE183030.001	%	60 - 130%	74
	BH102_0.2-0.3	SE183030.002	%	60 - 130%	87
	BH103_0.2-0.3	SE183030.003	%	60 - 130%	84
	BH104_0.7-0.8	SE183030.004	%	60 - 130%	86
	BH105_0.3-0.4	SE183030.005	%	60 - 130%	84
	BH106_0.3-0.4	SE183030.006	%	60 - 130%	79
	BH107_0.2-0.3	SE183030.007	%	60 - 130%	81
	BH108M_0.4-0.5	SE183030.008	%	60 - 130%	80
	BH109_0.1-0.2	SE183030.009	%	60 - 130%	85
	BH110_0.1-0.2	SE183030.010	%	60 - 130%	81
	BH111_0.4-0.5	SE183030.011	%	60 - 130%	80
	BH112M_0.3-0.4	SE183030.012	%	60 - 130%	84
	BH113_0.2-0.3	SE183030.013	%	60 - 130%	75
	BH104_0.2-0.3	SE183030.014	%	60 - 130%	83
	BH101M_0.6-0.7	SE183030.015	%	60 - 130%	96
	BH105_0.8-0.9	SE183030.016	%	60 - 130%	83
	BH106_0.8-0.9	SE183030.017	%	60 - 130%	80
	BH108M_0.9-1.0	SE183030.018	%	60 - 130%	82
	BH111_0.8-0.9	SE183030.019	%	60 - 130%	88
	BH114_0.4-0.5	SE183030.020	%	60 - 130%	85
	BH_QD1	SE183030.021	%	60 - 130%	76
Dibromofluoromethane (Surrogate)	BH101M_0.4-0.5	SE183030.001	%	60 - 130%	89
	BH102_0.2-0.3	SE183030.002	%	60 - 130%	100
	BH103_0.2-0.3	SE183030.003	%	60 - 130%	100
	BH104_0.7-0.8	SE183030.004	%	60 - 130%	100
	BH105_0.3-0.4	SE183030.005	%	60 - 130%	99
	BH106_0.3-0.4	SE183030.006	%	60 - 130%	94
	BH107_0.2-0.3	SE183030.007	%	60 - 130%	87
	BH108M_0.4-0.5	SE183030.008	%	60 - 130%	96
	BH109_0.1-0.2	SE183030.009	%	60 - 130%	94
	BH110_0.1-0.2	SE183030.010	%	60 - 130%	92
	BH111_0.4-0.5	SE183030.011	%	60 - 130%	92
	BH112M_0.3-0.4	SE183030.012	%	60 - 130%	98
	BH113_0.2-0.3	SE183030.013	%	60 - 130%	84
	BH104_0.2-0.3	SE183030.014	%	60 - 130%	95

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 %
Dibromofluoromethane (Surrogate)	BH101M_0.6-0.7	SE183030.015	%	60 - 130%	111
	BH105_0.8-0.9	SE183030.016	%	60 - 130%	95
	BH106_0.8-0.9	SE183030.017	%	60 - 130%	93
	BH108M_0.9-1.0	SE183030.018	%	60 - 130%	94
	BH111_0.8-0.9	SE183030.019	%	60 - 130%	102
	BH114_0.4-0.5	SE183030.020	%	60 - 130%	95
	BH_QD1	SE183030.021	%	60 - 130%	75

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH_QR1	SE183030.022	%	40 - 130%	90
d4-1,2-dichloroethane (Surrogate)	BH_QR1	SE183030.022	%	60 - 130%	123
d8-toluene (Surrogate)	BH_QR1	SE183030.022	%	40 - 130%	109
Dibromofluoromethane (Surrogate)	BH_QR1	SE183030.022	%	40 - 130%	125

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
LB155138.001	Mercury	mg/L	0.0001	<0.0001

Mercury in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB155243.001	Mercury	mg/kg	0.05	<0.05

OC Pesticides in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB155216.001		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)	%	-	82

OP Pesticides in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB155216.001		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)	%	-	94
		d14-p-terphenyl (Surrogate)	%	-	92

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB155216.001	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
LB155216.001		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)	%	-	100
		2-fluorobiphenyl (Surrogate)	%	-	94
		d14-p-terphenyl (Surrogate)	%	-	92

PCBs in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB155216.001		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)	%	-	82

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

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

Sample Number	Parameter	Units	LOR	Result
LB155244.001	Arsenic, As	mg/kg	1	<1
	Cadmium, Cd	mg/kg	0.3	<0.3
	Chromium, Cr	mg/kg	0.3	<0.3
	Copper, Cu	mg/kg	0.5	<0.5
	Nickel, Ni	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Zinc, Zn	mg/kg	2	<2.0

Trace Metals (Dissolved) in Water by ICPMS

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

Sample Number	Parameter	Units	LOR	Result
LB155022.001	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
LB155216.001	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
LB154996.001	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
LB155214.001	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)	%	-	103
		d4-1,2-dichloroethane (Surrogate)	%	-	109
		d8-toluene (Surrogate)	%	-	86
		Bromofluorobenzene (Surrogate)	%	-	83
	Totals	Total BTEX	mg/kg	0.6	<0.6

VOCs in Water

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

Sample Number		Parameter	Units	LOR	Result
LB155248.001	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)	%	-	126
		d4-1,2-dichloroethane (Surrogate)	%	-	120
		d8-toluene (Surrogate)	%	-	96
		Bromofluorobenzene (Surrogate)	%	-	105

Volatile Petroleum Hydrocarbons in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB155214.001		TRH C6-C9	mg/kg	20	<20
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	103
		d4-1,2-dichloroethane (Surrogate)	%	-	109
		d8-toluene (Surrogate)	%	-	86

Volatile Petroleum Hydrocarbons in Water

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

Sample Number		Parameter	Units	LOR	Result
LB155248.001		TRH C6-C9	µg/L	40	<40
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	126
		d4-1,2-dichloroethane (Surrogate)	%	-	120
		d8-toluene (Surrogate)	%	-	106
		Bromofluorobenzene (Surrogate)	%	-	94

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

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

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

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

Mercury in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE183030.010	LB155243.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE183030.019	LB155243.024	Mercury	mg/kg	0.05	<0.05	<0.05	200	0

Moisture Content

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE183029.010	LB155276.056	% Moisture	%w/w	0.5	10	10	40	3
SE183029.017	LB155276.063	% Moisture	%w/w	0.5	0.7	0.6	188	0
SE183030.010	LB155276.019	% Moisture	%w/w	0.5	13	14	38	9
SE183030.020	LB155276.030	% Moisture	%w/w	0.5	22	23	34	6
SE183046.005	LB155276.037	% Moisture	%w/w	0.5	10	10	40	1
SE183046.013	LB155276.045	% 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 %
SE183030.010	LB155216.014		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Lindane	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor	mg/kg	0.1	<0.1	<0.1	200	0
			Aldrin	mg/kg	0.1	<0.1	<0.1	200	0
			Beta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Delta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Dieldrin	mg/kg	0.2	<0.2	<0.2	200	0
			Endrin	mg/kg	0.2	<0.2	<0.2	200	0
			o,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	200	0
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Ketone	mg/kg	0.1	<0.1	<0.1	200	0
			Isodrin	mg/kg	0.1	<0.1	<0.1	200	0
			Mirex	mg/kg	0.1	<0.1	<0.1	200	0
			Total CLP OC Pesticides	mg/kg	1	<1	<1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.13	0.14	30	3

OP Pesticides in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE183030.010	LB155216.014		Dichlorvos	mg/kg	0.5	<0.5	<0.5	200	0
			Dimethoate	mg/kg	0.5	<0.5	<0.5	200	0
			Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	200	0
			Fenitrothion	mg/kg	0.2	<0.2	<0.2	200	0
			Malathion	mg/kg	0.2	<0.2	<0.2	200	0
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	200	0
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	200	0
			Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	200	0
			Methidathion	mg/kg	0.5	<0.5	<0.5	200	0
			Ethion	mg/kg	0.2	<0.2	<0.2	200	0
			Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	200	0
			Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	200	0
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	2
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.4	30	15

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

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

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE183030.010	LB155216.014		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	mg/kg	0.2	<0.2	<0.2	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	mg/kg	0.3	<0.3	<0.3	134	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	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	0.5	30	2
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	2
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.4	30	15

PCBs in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE183030.010	LB155216.014		Arochlor 1016	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1221	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1232	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1242	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1248	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1254	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1260	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1262	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1268	mg/kg	0.2	<0.2	<0.2	200	0
			Total PCBs (Arochlors)	mg/kg	1	<1	<1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	30	3

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

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE183030.010	LB155244.014	Arsenic, As	mg/kg	1	9	9	42	0
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	168	0
		Chromium, Cr	mg/kg	0.3	4.9	5.0	40	4
		Copper, Cu	mg/kg	0.5	0.9	1.5	72	52
		Nickel, Ni	mg/kg	0.5	0.6	1.1	88	52
		Lead, Pb	mg/kg	1	1	2	84	63
		Zinc, Zn	mg/kg	2	2.9	3.6	91	20
SE183030.019	LB155244.030	Arsenic, As	mg/kg	1	7	4	47	53 ②
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.3	5.1	3.5	42	38
		Copper, Cu	mg/kg	0.5	16	10	34	42 ②
		Nickel, Ni	mg/kg	0.5	0.5	<0.5	159	0
		Lead, Pb	mg/kg	1	11	10	39	10
		Zinc, Zn	mg/kg	2	7.4	3.9	65	62

Trace Metals (Dissolved) in Water by ICPMS

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE183007.005	LB155022.014	Arsenic, As	µg/L	1	<1	<1	200	0
		Cadmium, Cd	µg/L	0.1	<0.1	<0.1	200	0
		Chromium, Cr	µg/L	1	<1	<1	200	0

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

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

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

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

Trace Metals (Dissolved) in Water by ICPMS (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE183007.005	LB155022.014		Copper, Cu	µg/L	1	<1	<1	200	0
			Lead, Pb	µg/L	1	<1	<1	200	0
			Nickel, Ni	µg/L	1	2	2	65	9
			Zinc, Zn	µg/L	5	26	25	35	1
SE183031.017	LB155022.020		Arsenic, As	µg/L	1	<1	<1	200	0
			Cadmium, Cd	µg/L	0.1	<0.1	<0.1	200	0
			Chromium, Cr	µg/L	1	<1	<1	156	0
			Lead, Pb	µg/L	1	<1	<1	200	0
			Nickel, Ni	µg/L	1	<1	<1	200	0
			Zinc, Zn	µg/L	5	<5	<5	200	0

TRH (Total Recoverable Hydrocarbons) in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE183030.010	LB155216.014		TRH C10-C14	mg/kg	20	<20	<20	200	0
			TRH C15-C28	mg/kg	45	<45	<45	200	0
			TRH C29-C36	mg/kg	45	<45	<45	200	0
			TRH C37-C40	mg/kg	100	<100	<100	200	0
			TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
			TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	200	0
		TRH F Bands	TRH >C10-C16	mg/kg	25	<25	<25	200	0
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0
SE183030.020	LB155216.032		TRH C10-C14	mg/kg	20	<20	<20	200	0
			TRH C15-C28	mg/kg	45	<45	<45	200	0
			TRH C29-C36	mg/kg	45	<45	<45	200	0
			TRH C37-C40	mg/kg	100	<100	<100	200	0
			TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
			TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	200	0
		TRH F Bands	TRH >C10-C16	mg/kg	25	<25	<25	200	0
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0

TRH (Total Recoverable Hydrocarbons) in Water

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE183065.006	LB154996.019		TRH C10-C14	µg/L	50	68	73	101	7
			TRH C15-C28	µg/L	200	260	265	107	3
			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	338	166	0
			TRH C10-C40	µg/L	650	<650	338	200	0
		TRH F Bands	TRH >C10-C16	µg/L	60	87	92	97	6
			TRH >C10-C16 - Naphthalene (F2)	µg/L	60	87	92	97	6
			TRH >C16-C34 (F3)	µg/L	500	<500	0	200	0
			TRH >C34-C40 (F4)	µg/L	500	<500	0	200	0

VOC's in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE183030.010	LB155214.015	Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
		Aromatic	Toluene	mg/kg	0.1	<0.1	<0.1	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.6	4.4	50	5
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.7	4.6	50	3
			d8-toluene (Surrogate)	mg/kg	-	4.1	3.9	50	4
			Bromofluorobenzene (Surrogate)	mg/kg	-	3.9	4.0	50	2
		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
SE183030.021	LB155214.032	Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0

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

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

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

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

VOC's in Soil (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE183030.021	LB155214.032	Monocyclic	Toluene	mg/kg	0.1	<0.1	<0.1	200	0
		Aromatic	Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	3.8	4.5	50	18
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.0	4.9	50	20
			d8-toluene (Surrogate)	mg/kg	-	3.8	4.0	50	6
			Bromofluorobenzene (Surrogate)	mg/kg	-	3.6	4.0	50	8
		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

VOCs in Water

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE183117.001	LB155248.027	Monocyclic	Benzene	µg/L	0.5	<0.5	0.09	200	0
		Aromatic	Toluene	µg/L	0.5	<0.5	0.18	200	0
			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	0.04	200	0
		Polycyclic	Naphthalene	µg/L	0.5	<0.5	0.02	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	5.8	6.37	30	9
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	6.4	6.36	30	1
			d8-toluene (Surrogate)	µg/L	-	4.9	4.7	30	4
			Bromofluorobenzene (Surrogate)	µg/L	-	5.7	5.31	30	8

Volatile Petroleum Hydrocarbons in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE183030.010	LB155214.015		TRH C6-C10	mg/kg	25	<25	<25	200	0
			TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.6	4.4	30	5
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.7	4.6	30	3
			d8-toluene (Surrogate)	mg/kg	-	4.1	3.9	30	4
			Bromofluorobenzene (Surrogate)	mg/kg	-	3.9	4.0	30	2
		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
SE183030.021	LB155214.032		TRH C6-C10	mg/kg	25	<25	<25	200	0
			TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	3.8	4.5	30	18
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.0	4.9	30	20
			d8-toluene (Surrogate)	mg/kg	-	3.8	4.0	30	6
			Bromofluorobenzene (Surrogate)	mg/kg	-	3.6	4.0	30	8
		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

Volatile Petroleum Hydrocarbons in Water

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE183117.001	LB155248.027		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	-	6.3	5.94	30	6
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	6.4	6.12	30	5
			d8-toluene (Surrogate)	µg/L	-	5.1	5.04	30	2
			Bromofluorobenzene (Surrogate)	µg/L	-	4.4	4.28	30	2
		VPH F Bands	Benzene (F0)	µg/L	0.5	<0.5	0.09	200	0
			TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	-0.45	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 %
LB155243.002	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 %
LB155216.002		Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	98
		Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	99
		Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	98
		Dieldrin	mg/kg	0.2	0.2	0.2	60 - 140	103
		Endrin	mg/kg	0.2	0.2	0.2	60 - 140	106
		p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	93
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.13	0.15	40 - 130	89

OP Pesticides in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB155216.002		Dichlorvos	mg/kg	0.5	1.7	2	60 - 140	87
		Diazinon (Dimpylate)	mg/kg	0.5	1.8	2	60 - 140	90
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	1.9	2	60 - 140	94
		Ethion	mg/kg	0.2	1.9	2	60 - 140	94
	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	94
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	94

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB155216.002		Naphthalene	mg/kg	0.1	4.8	4	60 - 140	119
		Acenaphthylene	mg/kg	0.1	4.5	4	60 - 140	112
		Acenaphthene	mg/kg	0.1	4.4	4	60 - 140	110
		Phenanthrene	mg/kg	0.1	4.7	4	60 - 140	117
		Anthracene	mg/kg	0.1	4.6	4	60 - 140	114
		Fluoranthene	mg/kg	0.1	4.5	4	60 - 140	112
		Pyrene	mg/kg	0.1	4.5	4	60 - 140	113
		Benzo(a)pyrene	mg/kg	0.1	4.6	4	60 - 140	116
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	96
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	94
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	94

PCBs in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB155216.002	Arochlor 1260	mg/kg	0.2	0.3	0.4	60 - 140	86

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

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB155244.002	Arsenic, As	mg/kg	1	350	336.32	79 - 120	105
	Cadmium, Cd	mg/kg	0.3	430	416.6	69 - 131	104
	Chromium, Cr	mg/kg	0.3	38	35.2	80 - 120	107
	Copper, Cu	mg/kg	0.5	340	370.46	80 - 120	90
	Nickel, Ni	mg/kg	0.5	180	210.88	79 - 120	87
	Lead, Pb	mg/kg	1	92	107.87	79 - 120	85
	Zinc, Zn	mg/kg	2	290	301.27	80 - 121	95

Trace Metals (Dissolved) in Water by ICPMS

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB155022.002	Arsenic, As	µg/L	1	20	20	80 - 120	99
	Cadmium, Cd	µg/L	0.1	19	20	80 - 120	97
	Chromium, Cr	µg/L	1	20	20	80 - 120	101
	Copper, Cu	µg/L	1	19	20	80 - 120	96
	Lead, Pb	µg/L	1	21	20	80 - 120	103
	Nickel, Ni	µg/L	1	20	20	80 - 120	102
	Zinc, Zn	µg/L	5	21	20	80 - 120	103

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 %
LB155216.002		TRH C10-C14	mg/kg	20	40	40	60 - 140	100
		TRH C15-C28	mg/kg	45	<45	40	60 - 140	110
		TRH C29-C36	mg/kg	45	<45	40	60 - 140	85
	TRH F Bands	TRH >C10-C16	mg/kg	25	40	40	60 - 140	100
		TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	103
		TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	95

TRH (Total Recoverable Hydrocarbons) in Water

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB154996.002		TRH C10-C14	µg/L	50	1100	1200	60 - 140	94
		TRH C15-C28	µg/L	200	1600	1200	60 - 140	134
		TRH C29-C36	µg/L	200	1100	1200	60 - 140	88
	TRH F Bands	TRH >C10-C16	µg/L	60	1400	1200	60 - 140	114
		TRH >C16-C34 (F3)	µg/L	500	1500	1200	60 - 140	121
		TRH >C34-C40 (F4)	µg/L	500	530	600	60 - 140	88

VOC's in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB155214.002	Monocyclic	Benzene	mg/kg	0.1	2.0	2.9	60 - 140	69
	Aromatic	Toluene	mg/kg	0.1	2.2	2.9	60 - 140	74
		Ethylbenzene	mg/kg	0.1	2.1	2.9	60 - 140	72
		m/p-xylene	mg/kg	0.2	4.8	5.8	60 - 140	83
		o-xylene	mg/kg	0.1	2.2	2.9	60 - 140	75
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.0	5	60 - 140	79
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.3	5	60 - 140	86
		d8-toluene (Surrogate)	mg/kg	-	3.8	5	60 - 140	75
		Bromofluorobenzene (Surrogate)	mg/kg	-	3.7	5	60 - 140	73

VOCs in Water

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB155248.002	Monocyclic	Benzene	µg/L	0.5	50	45.45	60 - 140	110
	Aromatic	Toluene	µg/L	0.5	50	45.45	60 - 140	110
		Ethylbenzene	µg/L	0.5	50	45.45	60 - 140	110
		m/p-xylene	µg/L	1	100	90.9	60 - 140	110
		o-xylene	µg/L	0.5	50	45.45	60 - 140	110
	Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	3.9	5	60 - 140	78
		d4-1,2-dichloroethane (Surrogate)	µg/L	-	3.9	5	60 - 140	78
		d8-toluene (Surrogate)	µg/L	-	5.3	5	60 - 140	105
		Bromofluorobenzene (Surrogate)	µg/L	-	4.6	5	60 - 140	92

Volatile Petroleum Hydrocarbons in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB155214.002		TRH C6-C10	mg/kg	25	<25	24.65	60 - 140	85
		TRH C6-C9	mg/kg	20	21	23.2	60 - 140	90
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.0	5	60 - 140	79
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.3	5	60 - 140	86
		d8-toluene (Surrogate)	mg/kg	-	3.8	5	60 - 140	75
		Bromofluorobenzene (Surrogate)	mg/kg	-	3.7	5	60 - 140	73
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	7.25	60 - 140	107

Volatile Petroleum Hydrocarbons in Water

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB155248.002		TRH C6-C10	µg/L	50	930	946.63	60 - 140	98
		TRH C6-C9	µg/L	40	760	818.71	60 - 140	93
	Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.5	5	60 - 140	90
		d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.6	5	60 - 140	93
		d8-toluene (Surrogate)	µg/L	-	4.9	5	60 - 140	97
		Bromofluorobenzene (Surrogate)	µg/L	-	4.7	5	60 - 140	95
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	620	639.67	60 - 140	97

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%
SE183007.001	LB155138.004	Mercury	mg/L	0.0001	0.0085	<0.0001	0.008	106

Mercury in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE183030.001	LB155243.004	Mercury	mg/kg	0.05	0.19	<0.05	0.2	93

OC Pesticides in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE183030.002	LB155216.031		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha BHC	mg/kg	0.1	<0.1	<0.1	-	-
			Lindane	mg/kg	0.1	<0.1	<0.1	-	-
			Heptachlor	mg/kg	0.1	0.2	<0.1	0.2	80
			Aldrin	mg/kg	0.1	0.2	<0.1	0.2	76
			Beta BHC	mg/kg	0.1	<0.1	<0.1	-	-
			Delta BHC	mg/kg	0.1	0.2	<0.1	0.2	101
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	-	-
			o,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	-	-
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
			Dieldrin	mg/kg	0.2	0.2	<0.2	0.2	109
			Endrin	mg/kg	0.2	<0.2	<0.2	0.2	95
			o,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
			o,p'-DDT	mg/kg	0.1	<0.1	<0.1	-	-
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
			p,p'-DDT	mg/kg	0.1	0.2	<0.1	0.2	105
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	-	-
			Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	-	-
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	-	-
			Endrin Ketone	mg/kg	0.1	<0.1	<0.1	-	-
			Isodrin	mg/kg	0.1	<0.1	<0.1	-	-
			Mirex	mg/kg	0.1	<0.1	<0.1	-	-
			Total CLP OC Pesticides	mg/kg	1	1	<1	-	-
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.12	0.13	-	79

OP Pesticides in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE183030.002	LB155216.031		Dichlorvos	mg/kg	0.5	2.1	<0.5	2	105
			Dimethoate	mg/kg	0.5	<0.5	<0.5	-	-
			Diazinon (Dimpylate)	mg/kg	0.5	1.7	<0.5	2	84
			Fenitrothion	mg/kg	0.2	<0.2	<0.2	-	-
			Malathion	mg/kg	0.2	<0.2	<0.2	-	-
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	2.0	<0.2	2	98
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	-	-
			Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	-	-
			Methidathion	mg/kg	0.5	<0.5	<0.5	-	-
			Ethion	mg/kg	0.2	1.9	<0.2	2	97
			Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	-	-
			Total OP Pesticides*	mg/kg	1.7	7.7	<1.7	-	-
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	-	76
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.4	-	76

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE183030.002	LB155216.031		Naphthalene	mg/kg	0.1	3.6	<0.1	4	90
			2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
			1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
			Acenaphthylene	mg/kg	0.1	3.4	<0.1	4	86
			Acenaphthene	mg/kg	0.1	3.4	<0.1	4	86
			Fluorene	mg/kg	0.1	<0.1	<0.1	-	-
			Phenanthrene	mg/kg	0.1	3.8	<0.1	4	96
			Anthracene	mg/kg	0.1	3.7	<0.1	4	92
			Fluoranthene	mg/kg	0.1	3.7	<0.1	4	92
			Pyrene	mg/kg	0.1	3.8	<0.1	4	94
			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	3.5	<0.1	4	88
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	-	-
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	3.5	<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	3.6	<0.2	-	-
			Total PAH (18)	mg/kg	0.8	29	<0.8	-	-
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.5	-	72
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	-	76
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.4	-	76

PCBs in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE183030.002	LB155216.031		Arochlor 1016	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1221	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1232	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1242	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1248	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1254	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1260	mg/kg	0.2	0.4	<0.2	0.4	96
			Arochlor 1262	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1268	mg/kg	0.2	<0.2	<0.2	-	-
			Total PCBs (Arochlors)	mg/kg	1	<1	<1	-	-
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	-	81

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

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE183030.001	LB155244.004	Arsenic, As	mg/kg	1	53	7	50	92
		Cadmium, Cd	mg/kg	0.3	48	<0.3	50	96
		Chromium, Cr	mg/kg	0.3	53	4.6	50	96
		Copper, Cu	mg/kg	0.5	69	19	50	100
		Nickel, Ni	mg/kg	0.5	48	1.3	50	93
		Lead, Pb	mg/kg	1	59	11	50	96
		Zinc, Zn	mg/kg	2	65	14	50	101

TRH (Total Recoverable Hydrocarbons) in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE183030.002	LB155216.031		TRH C10-C14	mg/kg	20	37	<20	40	93
			TRH C15-C28	mg/kg	45	<45	<45	40	90
			TRH C29-C36	mg/kg	45	<45	<45	40	75
			TRH C37-C40	mg/kg	100	<100	<100	-	-
			TRH C10-C36 Total	mg/kg	110	<110	<110	-	-
			TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	-	-
		TRH F Bands	TRH >C10-C16	mg/kg	25	36	<25	40	90
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	36	<25	-	-
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	40	88
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	-	-

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.

VOC's in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE183030.001	LB155214.004	Monocyclic	Benzene	mg/kg	0.1	2.1	<0.1	2.9	71
		Aromatic	Toluene	mg/kg	0.1	2.3	<0.1	2.9	79
			Ethylbenzene	mg/kg	0.1	2.1	<0.1	2.9	73
			m/p-xylene	mg/kg	0.2	5.0	<0.2	5.8	86
			o-xylene	mg/kg	0.1	2.3	<0.1	2.9	79
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.5	4.5	-	89
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.7	4.7	-	93
			d8-toluene (Surrogate)	mg/kg	-	4.1	3.7	-	82
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.2	3.8	-	83
		Totals	Total Xylenes	mg/kg	0.3	7.3	<0.3	-	-
			Total BTEX	mg/kg	0.6	14	<0.6	-	-

VOCs in Water

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE182865.001	LB155248.028	Monocyclic	Benzene	µg/L	0.5	56	<0.5	45.45	123
		Aromatic	Toluene	µg/L	0.5	59	<0.5	45.45	130
			Ethylbenzene	µg/L	0.5	55	<0.5	45.45	120
			m/p-xylene	µg/L	1	110	<1	90.9	119
			o-xylene	µg/L	0.5	59	<0.5	45.45	129
		Polycyclic	Naphthalene	µg/L	0.5	54	<0.5	-	-
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	5.2	5.7	-	105
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.5	5.5	-	109
			d8-toluene (Surrogate)	µg/L	-	4.9	5.1	-	99
			Bromofluorobenzene (Surrogate)	µg/L	-	4.5	4.5	-	91

Volatile Petroleum Hydrocarbons in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE183030.001	LB155214.005		TRH C6-C10	mg/kg	25	<25	<25	24.65	90
			TRH C6-C9	mg/kg	20	21	<20	23.2	92
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.5	4.5	-	89
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.7	4.7	-	93
			d8-toluene (Surrogate)	mg/kg	-	4.1	3.7	-	82
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.2	3.8	-	83
		VPH F	Benzene (F0)	mg/kg	0.1	2.1	<0.1	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	7.25	116

Volatile Petroleum Hydrocarbons in Water

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE182865.001	LB155248.028		TRH C6-C10	µg/L	50	850	<50	946.63	90
			TRH C6-C9	µg/L	40	700	<40	818.71	85
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	5.2	5.7	-	105
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.5	5.5	-	109
			d8-toluene (Surrogate)	µg/L	-	4.9	5.1	-	99
			Bromofluorobenzene (Surrogate)	µg/L	-	4.5	4.5	-	91
		VPH F	Benzene (F0)	µg/L	0.5	56	<0.5	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	520	<50	639.67	81

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

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

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

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

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

QC Sample	Sample Number	Parameter	Units	LOR

Samples analysed as received.

Solid samples expressed on a dry weight basis.

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

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

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

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date extracted	-			24/08/2018	[NT]	[NT]	[NT]	[NT]	24/08/2018	[NT]
Date analysed	-			27/08/2018	[NT]	[NT]	[NT]	[NT]	27/08/2018	[NT]
TRH C_6 - C_9	mg/kg	25	Org-016	<25	[NT]	[NT]	[NT]	[NT]	113	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-016	<25	[NT]	[NT]	[NT]	[NT]	113	[NT]
Benzene	mg/kg	0.2	Org-016	<0.2	[NT]	[NT]	[NT]	[NT]	103	[NT]
Toluene	mg/kg	0.5	Org-016	<0.5	[NT]	[NT]	[NT]	[NT]	110	[NT]
Ethylbenzene	mg/kg	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	115	[NT]
m+p-xylene	mg/kg	2	Org-016	<2	[NT]	[NT]	[NT]	[NT]	119	[NT]
o-Xylene	mg/kg	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	118	[NT]
naphthalene	mg/kg	1	Org-014	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	108	[NT]	[NT]	[NT]	[NT]	114	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date extracted	-			24/08/2018	[NT]	[NT]	[NT]	[NT]	24/08/2018	[NT]
Date analysed	-			25/08/2018	[NT]	[NT]	[NT]	[NT]	25/08/2018	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	107	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	88	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	106	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	107	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	88	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	106	[NT]
Surrogate o-Terphenyl	%		Org-003	93	[NT]	[NT]	[NT]	[NT]	100	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date prepared	-			24/08/2018	[NT]	[NT]	[NT]	[NT]	24/08/2018	[NT]
Date analysed	-			27/08/2018	[NT]	[NT]	[NT]	[NT]	27/08/2018	[NT]
Arsenic	mg/kg	4	Metals-020	<4	[NT]	[NT]	[NT]	[NT]	101	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	[NT]	[NT]	[NT]	[NT]	111	[NT]
Chromium	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Copper	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	109	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Nickel	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	111	[NT]
Zinc	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	114	[NT]

Result Definitions

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

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

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

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

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

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

STATEMENT OF QA/QC PERFORMANCE

SE183285 R0

CLIENT DETAILS

Contact	Clare Madigan
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	clare.madigan@eiaustralia.com.au
Project	**E23959-E02 15-21 Brighton Ave Croydon**
Order Number	**E23959-E02**
Samples	7

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE183285 R0**
Date Received	30 Aug 2018
Date Reported	04 Sep 2018

COMMENTS

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

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

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

SAMPLE SUMMARY

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	7 Waters
Date documentation received	30/8/2018	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	4.2°C	Sufficient sample for analysis	Yes
Turnaround time requested	Three Days		

HOLDING TIME SUMMARY

SE183285 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-1	SE183285.001	LB155648	29 Aug 2018	30 Aug 2018	26 Sep 2018	03 Sep 2018	26 Sep 2018	03 Sep 2018
BH108M-1	SE183285.002	LB155648	29 Aug 2018	30 Aug 2018	26 Sep 2018	03 Sep 2018	26 Sep 2018	03 Sep 2018
BH112M-1	SE183285.003	LB155648	29 Aug 2018	30 Aug 2018	26 Sep 2018	03 Sep 2018	26 Sep 2018	03 Sep 2018
GWQD1	SE183285.004	LB155648	29 Aug 2018	30 Aug 2018	26 Sep 2018	03 Sep 2018	26 Sep 2018	03 Sep 2018
GWQR1	SE183285.005	LB155648	29 Aug 2018	30 Aug 2018	26 Sep 2018	03 Sep 2018	26 Sep 2018	03 Sep 2018

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101M-1	SE183285.001	LB155641	29 Aug 2018	30 Aug 2018	05 Sep 2018	03 Sep 2018	13 Oct 2018	04 Sep 2018
BH108M-1	SE183285.002	LB155641	29 Aug 2018	30 Aug 2018	05 Sep 2018	03 Sep 2018	13 Oct 2018	04 Sep 2018
BH112M-1	SE183285.003	LB155641	29 Aug 2018	30 Aug 2018	05 Sep 2018	03 Sep 2018	13 Oct 2018	04 Sep 2018
GWQD1	SE183285.004	LB155641	29 Aug 2018	30 Aug 2018	05 Sep 2018	03 Sep 2018	13 Oct 2018	04 Sep 2018
GWQR1	SE183285.005	LB155641	29 Aug 2018	30 Aug 2018	05 Sep 2018	03 Sep 2018	13 Oct 2018	04 Sep 2018

Total Phenolics in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101M-1	SE183285.001	LB155767	29 Aug 2018	30 Aug 2018	26 Sep 2018	04 Sep 2018	26 Sep 2018	04 Sep 2018
BH108M-1	SE183285.002	LB155767	29 Aug 2018	30 Aug 2018	26 Sep 2018	04 Sep 2018	26 Sep 2018	04 Sep 2018
BH112M-1	SE183285.003	LB155767	29 Aug 2018	30 Aug 2018	26 Sep 2018	04 Sep 2018	26 Sep 2018	04 Sep 2018

Trace Metals (Dissolved) in Water by ICPMS

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101M-1	SE183285.001	LB155549	29 Aug 2018	30 Aug 2018	25 Feb 2019	31 Aug 2018	25 Feb 2019	31 Aug 2018
BH108M-1	SE183285.002	LB155549	29 Aug 2018	30 Aug 2018	25 Feb 2019	31 Aug 2018	25 Feb 2019	31 Aug 2018
BH112M-1	SE183285.003	LB155549	29 Aug 2018	30 Aug 2018	25 Feb 2019	31 Aug 2018	25 Feb 2019	31 Aug 2018
GWQD1	SE183285.004	LB155549	29 Aug 2018	30 Aug 2018	25 Feb 2019	31 Aug 2018	25 Feb 2019	31 Aug 2018
GWQR1	SE183285.005	LB155549	29 Aug 2018	30 Aug 2018	25 Feb 2019	31 Aug 2018	25 Feb 2019	31 Aug 2018

TRH (Total Recoverable Hydrocarbons) in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101M-1	SE183285.001	LB155641	29 Aug 2018	30 Aug 2018	05 Sep 2018	03 Sep 2018	13 Oct 2018	04 Sep 2018
BH108M-1	SE183285.002	LB155641	29 Aug 2018	30 Aug 2018	05 Sep 2018	03 Sep 2018	13 Oct 2018	04 Sep 2018
BH112M-1	SE183285.003	LB155641	29 Aug 2018	30 Aug 2018	05 Sep 2018	03 Sep 2018	13 Oct 2018	04 Sep 2018
GWQD1	SE183285.004	LB155641	29 Aug 2018	30 Aug 2018	05 Sep 2018	03 Sep 2018	13 Oct 2018	04 Sep 2018
GWQR1	SE183285.005	LB155641	29 Aug 2018	30 Aug 2018	05 Sep 2018	03 Sep 2018	13 Oct 2018	04 Sep 2018

VOCs in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101M-1	SE183285.001	LB155587	29 Aug 2018	30 Aug 2018	05 Sep 2018	31 Aug 2018	10 Oct 2018	04 Sep 2018
BH108M-1	SE183285.002	LB155587	29 Aug 2018	30 Aug 2018	05 Sep 2018	31 Aug 2018	10 Oct 2018	04 Sep 2018
BH112M-1	SE183285.003	LB155587	29 Aug 2018	30 Aug 2018	05 Sep 2018	31 Aug 2018	10 Oct 2018	04 Sep 2018
GWQD1	SE183285.004	LB155587	29 Aug 2018	30 Aug 2018	05 Sep 2018	31 Aug 2018	10 Oct 2018	04 Sep 2018
GWQR1	SE183285.005	LB155587	29 Aug 2018	30 Aug 2018	05 Sep 2018	31 Aug 2018	10 Oct 2018	04 Sep 2018
GWQTB	SE183285.006	LB155587	29 Aug 2018	30 Aug 2018	05 Sep 2018	31 Aug 2018	10 Oct 2018	04 Sep 2018
GWQTS	SE183285.007	LB155587	29 Aug 2018	30 Aug 2018	05 Sep 2018	31 Aug 2018	10 Oct 2018	04 Sep 2018

Volatile Petroleum Hydrocarbons in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101M-1	SE183285.001	LB155587	29 Aug 2018	30 Aug 2018	05 Sep 2018	31 Aug 2018	10 Oct 2018	04 Sep 2018
BH108M-1	SE183285.002	LB155587	29 Aug 2018	30 Aug 2018	05 Sep 2018	31 Aug 2018	10 Oct 2018	04 Sep 2018
BH112M-1	SE183285.003	LB155587	29 Aug 2018	30 Aug 2018	05 Sep 2018	31 Aug 2018	10 Oct 2018	04 Sep 2018
GWQD1	SE183285.004	LB155587	29 Aug 2018	30 Aug 2018	05 Sep 2018	31 Aug 2018	10 Oct 2018	04 Sep 2018
GWQR1	SE183285.005	LB155587	29 Aug 2018	30 Aug 2018	05 Sep 2018	31 Aug 2018	10 Oct 2018	04 Sep 2018
GWQTB	SE183285.006	LB155587	29 Aug 2018	30 Aug 2018	05 Sep 2018	31 Aug 2018	10 Oct 2018	04 Sep 2018
GWQTS	SE183285.007	LB155587	29 Aug 2018	30 Aug 2018	05 Sep 2018	31 Aug 2018	10 Oct 2018	04 Sep 2018

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH101M-1	SE183285.001	%	40 - 130%	82
	BH108M-1	SE183285.002	%	40 - 130%	82
	BH112M-1	SE183285.003	%	40 - 130%	76
d14-p-terphenyl (Surrogate)	BH101M-1	SE183285.001	%	40 - 130%	88
	BH108M-1	SE183285.002	%	40 - 130%	84
	BH112M-1	SE183285.003	%	40 - 130%	82
d5-nitrobenzene (Surrogate)	BH101M-1	SE183285.001	%	40 - 130%	80
	BH108M-1	SE183285.002	%	40 - 130%	72
	BH112M-1	SE183285.003	%	40 - 130%	66

VOCs in Water

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH101M-1	SE183285.001	%	40 - 130%	100
	BH108M-1	SE183285.002	%	40 - 130%	104
	BH112M-1	SE183285.003	%	40 - 130%	108
	GWQD1	SE183285.004	%	40 - 130%	91
	GWQR1	SE183285.005	%	40 - 130%	94
	GWQTB	SE183285.006	%	40 - 130%	88
	GWQTS	SE183285.007	%	40 - 130%	92
d4-1,2-dichloroethane (Surrogate)	BH101M-1	SE183285.001	%	40 - 130%	90
	BH108M-1	SE183285.002	%	40 - 130%	94
	BH112M-1	SE183285.003	%	40 - 130%	90
	GWQD1	SE183285.004	%	40 - 130%	106
	GWQR1	SE183285.005	%	40 - 130%	105
	GWQTB	SE183285.006	%	40 - 130%	110
	GWQTS	SE183285.007	%	40 - 130%	107
d8-toluene (Surrogate)	BH101M-1	SE183285.001	%	40 - 130%	105
	BH108M-1	SE183285.002	%	40 - 130%	110
	BH112M-1	SE183285.003	%	40 - 130%	107
	GWQD1	SE183285.004	%	40 - 130%	95
	GWQR1	SE183285.005	%	40 - 130%	96
	GWQTB	SE183285.006	%	40 - 130%	101
	GWQTS	SE183285.007	%	40 - 130%	107
Dibromofluoromethane (Surrogate)	BH101M-1	SE183285.001	%	40 - 130%	81
	BH108M-1	SE183285.002	%	40 - 130%	85
	BH112M-1	SE183285.003	%	40 - 130%	81
	GWQD1	SE183285.004	%	40 - 130%	94
	GWQR1	SE183285.005	%	40 - 130%	94
	GWQTB	SE183285.006	%	40 - 130%	98
	GWQTS	SE183285.007	%	40 - 130%	94

Volatile Petroleum Hydrocarbons in Water

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH101M-1	SE183285.001	%	40 - 130%	87
	BH108M-1	SE183285.002	%	40 - 130%	91
	BH112M-1	SE183285.003	%	40 - 130%	86
	GWQD1	SE183285.004	%	40 - 130%	91
	GWQR1	SE183285.005	%	40 - 130%	94
d4-1,2-dichloroethane (Surrogate)	BH101M-1	SE183285.001	%	60 - 130%	98
	BH108M-1	SE183285.002	%	60 - 130%	106
	BH112M-1	SE183285.003	%	60 - 130%	101
	GWQD1	SE183285.004	%	60 - 130%	106
	GWQR1	SE183285.005	%	60 - 130%	105
d8-toluene (Surrogate)	BH101M-1	SE183285.001	%	40 - 130%	90
	BH108M-1	SE183285.002	%	40 - 130%	96
	BH112M-1	SE183285.003	%	40 - 130%	88
	GWQD1	SE183285.004	%	40 - 130%	95
	GWQR1	SE183285.005	%	40 - 130%	96
Dibromofluoromethane (Surrogate)	BH101M-1	SE183285.001	%	40 - 130%	88
	BH108M-1	SE183285.002	%	40 - 130%	94
	BH112M-1	SE183285.003	%	40 - 130%	90
	GWQD1	SE183285.004	%	40 - 130%	94

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

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

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Dibromofluoromethane (Surrogate)	GWQR1	SE183285.005	%	40 - 130%	94

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
LB155648.001	Mercury	mg/L	0.0001	<0.0001

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Sample Number		Parameter	Units	LOR	Result
LB155641.001		Naphthalene	µg/L	0.1	<0.1
		2-methylnaphthalene	µg/L	0.1	<0.1
		1-methylnaphthalene	µg/L	0.1	<0.1
		Acenaphthylene	µg/L	0.1	<0.1
		Acenaphthene	µg/L	0.1	<0.1
		Fluorene	µg/L	0.1	<0.1
		Phenanthrene	µg/L	0.1	<0.1
		Anthracene	µg/L	0.1	<0.1
		Fluoranthene	µg/L	0.1	<0.1
		Pyrene	µg/L	0.1	<0.1
		Benzo(a)anthracene	µg/L	0.1	<0.1
		Chrysene	µg/L	0.1	<0.1
		Benzo(a)pyrene	µg/L	0.1	<0.1
		Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1
		Dibenzo(ah)anthracene	µg/L	0.1	<0.1
		Benzo(ghi)perylene	µg/L	0.1	<0.1
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	68
		2-fluorobiphenyl (Surrogate)	%	-	72
		d14-p-terphenyl (Surrogate)	%	-	86

Total Phenolics in Water

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

Sample Number	Parameter	Units	LOR	Result
LB155767.001	Total Phenols	mg/L	0.01	<0.01

Trace Metals (Dissolved) in Water by ICPMS

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

Sample Number	Parameter	Units	LOR	Result
LB155549.001	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
LB155641.001	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
LB155587.001	Fumigants	2,2-dichloropropane	µg/L	0.5	<0.5
		1,2-dichloropropane	µg/L	0.5	<0.5
		cis-1,3-dichloropropene	µg/L	0.5	<0.5
		trans-1,3-dichloropropene	µg/L	0.5	<0.5
		1,2-dibromoethane (EDB)	µg/L	0.5	<0.5
	Halogenated Aliphatics	Dichlorodifluoromethane (CFC-12)	µg/L	5	<5
		Chloromethane	µg/L	5	<5
		Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3
		Bromomethane	µg/L	10	<10
		Chloroethane	µg/L	5	<5
		Trichlorofluoromethane	µg/L	1	<1
		Iodomethane	µg/L	5	<5

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

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

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

Sample Number		Parameter	Units	LOR	Result
LB155587.001	Halogenated Aliphatics	1,1-dichloroethene	µg/L	0.5	<0.5
		Dichloromethane (Methylene chloride)	µg/L	5	<5
		Allyl chloride	µg/L	2	<2
		trans-1,2-dichloroethene	µg/L	0.5	<0.5
		1,1-dichloroethane	µg/L	0.5	<0.5
		cis-1,2-dichloroethene	µg/L	0.5	<0.5
		Bromochloromethane	µg/L	0.5	<0.5
		1,2-dichloroethane	µg/L	0.5	<0.5
		1,1,1-trichloroethane	µg/L	0.5	<0.5
		1,1-dichloropropene	µg/L	0.5	<0.5
		Carbon tetrachloride	µg/L	0.5	<0.5
		Dibromomethane	µg/L	0.5	<0.5
		Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	<0.5
		1,1,2-trichloroethane	µg/L	0.5	<0.5
		1,3-dichloropropane	µg/L	0.5	<0.5
		Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	<0.5
		1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5
		cis-1,4-dichloro-2-butene	µg/L	1	<1
		1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5
		1,2,3-trichloropropane	µg/L	0.5	<0.5
		trans-1,4-dichloro-2-butene	µg/L	1	<1
		1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5
		Hexachlorobutadiene	µg/L	0.5	<0.5
	Halogenated Aromatics	Chlorobenzene	µg/L	0.5	<0.5
		Bromobenzene	µg/L	0.5	<0.5
		2-chlorotoluene	µg/L	0.5	<0.5
		4-chlorotoluene	µg/L	0.5	<0.5
		1,3-dichlorobenzene	µg/L	0.5	<0.5
		1,4-dichlorobenzene	µg/L	0.3	<0.3
		1,2-dichlorobenzene	µg/L	0.5	<0.5
		1,2,4-trichlorobenzene	µg/L	0.5	<0.5
		1,2,3-trichlorobenzene	µg/L	0.5	<0.5
	Monocyclic Aromatic Hydrocarbons	Benzene	µg/L	0.5	<0.5
		Toluene	µg/L	0.5	<0.5
		Ethylbenzene	µg/L	0.5	<0.5
		m/p-xylene	µg/L	1	<1
		o-xylene	µg/L	0.5	<0.5
		Styrene (Vinyl benzene)	µg/L	0.5	<0.5
		Isopropylbenzene (Cumene)	µg/L	0.5	<0.5
		n-propylbenzene	µg/L	0.5	<0.5
		1,3,5-trimethylbenzene	µg/L	0.5	<0.5
		tert-butylbenzene	µg/L	0.5	<0.5
		1,2,4-trimethylbenzene	µg/L	0.5	<0.5
		sec-butylbenzene	µg/L	0.5	<0.5
		p-isopropyltoluene	µg/L	0.5	<0.5
		n-butylbenzene	µg/L	0.5	<0.5
	Nitrogenous Compounds	Acrylonitrile	µg/L	0.5	<0.5
	Oxygenated Compounds	Acetone (2-propanone)	µg/L	10	<10
		MtBE (Methyl-tert-butyl ether)	µg/L	2	<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)	%	-	83
		d4-1,2-dichloroethane (Surrogate)	%	-	93
		d8-toluene (Surrogate)	%	-	92
		Bromofluorobenzene (Surrogate)	%	-	89
	Trihalomethanes	Chloroform (THM)	µg/L	0.5	<0.5
		Bromodichloromethane (THM)	µg/L	0.5	<0.5

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

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

VOCs in Water (continued)

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

Sample Number		Parameter	Units	LOR	Result
LB155587.001	Trihalomethanes	Dibromochloromethane (THM)	µg/L	0.5	<0.5
		Bromoform (THM)	µg/L	0.5	<0.5

Volatile Petroleum Hydrocarbons in Water

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

Sample Number		Parameter	Units	LOR	Result
LB155587.001		TRH C6-C9	µg/L	40	<40
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	83
		d4-1,2-dichloroethane (Surrogate)	%	-	93
		d8-toluene (Surrogate)	%	-	92
		Bromofluorobenzene (Surrogate)	%	-	89

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 %
SE183330.001	LB155648.014	Mercury	µg/L	0.0001	0.0244	0.029	200	17
SE183339.008	LB155648.017	Mercury	µg/L	0.0001	-0.005	0.0108	200	198

Total Phenolics in Water

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE183184.001	LB155767.004	Total Phenols	mg/L	0.01	0.03	0.03	182	0

Trace Metals (Dissolved) in Water by ICPMS

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE183285.005	LB155549.014	Arsenic, As	µg/L	1	<1	<1	200	0
		Cadmium, Cd	µg/L	0.1	<0.1	<0.1	200	0
		Chromium, Cr	µg/L	1	<1	<1	200	0
		Copper, Cu	µg/L	1	<1	<1	200	0
		Lead, Pb	µg/L	1	<1	<1	200	0
		Nickel, Ni	µg/L	1	<1	<1	200	0
		Zinc, Zn	µg/L	5	<5	<5	200	0

TRH (Total Recoverable Hydrocarbons) in Water

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE183244.004	LB155641.025		TRH C10-C14	µg/L	50	0	0	200	0
			TRH C15-C28	µg/L	200	0	0	200	0
			TRH C29-C36	µg/L	200	0	0	200	0
			TRH C37-C40	µg/L	200	0	0	200	0
			TRH C10-C36	µg/L	450	0	0	200	0
			TRH C10-C40	µg/L	650	0	0	200	0
		TRH F Bands	TRH >C10-C16	µg/L	60	0	0	200	0
			TRH >C10-C16 - Naphthalene (F2)	µg/L	60	0	0	200	0
			TRH >C16-C34 (F3)	µg/L	500	0	0	200	0
			TRH >C34-C40 (F4)	µg/L	500	0	0	200	0
SE183285.004	LB155641.024		TRH C10-C14	µg/L	50	<50	0	200	0
			TRH C15-C28	µg/L	200	<200	0	200	0
			TRH C29-C36	µg/L	200	<200	0	200	0
			TRH C37-C40	µg/L	200	<200	0	200	0
			TRH C10-C36	µg/L	450	<450	0	200	0
			TRH C10-C40	µg/L	650	<650	0	200	0
		TRH F Bands	TRH >C10-C16	µg/L	60	<60	0	200	0
			TRH >C10-C16 - Naphthalene (F2)	µg/L	60	<60	0	200	0
			TRH >C16-C34 (F3)	µg/L	500	<500	0	200	0
			TRH >C34-C40 (F4)	µg/L	500	<500	0	200	0

VOCs in Water

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE183179.001	LB155587.019	Fumigants	2,2-dichloropropane	µg/L	0.5	<0.5	0	200	0
			1,2-dibromoethane (EDB)	µg/L	0.5	<0.5	0	200	0
		Halogenated	Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3	0	200	0
		Aliphatics	trans-1,4-dichloro-2-butene	µg/L	1	<1	0	200	0
			1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5	0	200	0
		Monocyclic	Benzene	µg/L	0.5	<0.5	0.37	200	0
		Aromatic	Toluene	µg/L	0.5	<0.5	0.38	200	0
			Ethylbenzene	µg/L	0.5	<0.5	0.16	200	0
			m/p-xylene	µg/L	1	<1	0.57	200	0
			o-xylene	µg/L	0.5	<0.5	0	200	0
		Oxygenated	Acetone (2-propanone)	µg/L	10	<10	0	200	0
		Compounds	MEK (2-butanone)	µg/L	10	<10	0	200	0
			2-hexanone (MBK)	µg/L	5	<5	0	200	0
		Polycyclic	Naphthalene	µg/L	0.5	<0.5	0.24	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.2	3.7	30	12
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.6	3.94	30	15
			d8-toluene (Surrogate)	µg/L	-	5.6	5.51	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.

VOCs in Water (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE183179.001	LB155587.019	Surrogates	Bromofluorobenzene (Surrogate)	µg/L	-	5.2	5.11	30	2
SE183179.005	LB155587.020	Fumigants	1,2-dibromoethane (EDB)	µg/L	0.5	<0.5	0	200	0
		Halogenated	Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3	0	200	0
		Aliphatics	Dichloromethane (Methylene chloride)	µg/L	5	<5	0	200	0
			1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5	0	200	0
		Monocyclic	Benzene	µg/L	0.5	<0.5	0.43	200	0
		Aromatic	Toluene	µg/L	0.5	<0.5	0	200	0
			Ethylbenzene	µg/L	0.5	<0.5	0.36	200	0
			m/p-xylene	µg/L	1	<1	0.84	200	0
			o-xylene	µg/L	0.5	<0.5	0	200	0
			Styrene (Vinyl benzene)	µg/L	0.5	<0.5	0	200	0
		Oxygenated	Acetone (2-propanone)	µg/L	10	<10	0	200	0
		Compounds	MEK (2-butanone)	µg/L	10	<10	0	200	0
			2-hexanone (MBK)	µg/L	5	<5	0	200	0
		Polycyclic	Naphthalene	µg/L	0.5	<0.5	0	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.1	4.12	30	0
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.5	4.39	30	3
			d8-toluene (Surrogate)	µg/L	-	5.6	5.68	30	2
			Bromofluorobenzene (Surrogate)	µg/L	-	5.2	5.1	30	1
		Trihalomethan	Chloroform (THM)	µg/L	0.5	<0.5	0	200	0

Volatile Petroleum Hydrocarbons in Water

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE183179.001	LB155587.019		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	-	4.6	4.01	30	14
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.2	4.35	30	17
			d8-toluene (Surrogate)	µg/L	-	5.1	4.6	30	9
			Bromofluorobenzene (Surrogate)	µg/L	-	4.8	4.56	30	4
		VPH F Bands	Benzene (F0)	µg/L	0.5	<0.5	0.37	200	0
			TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	-1.48	200	0
SE183179.005	LB155587.020		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	-	4.4	4.5	30	3
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.9	4.91	30	0
			d8-toluene (Surrogate)	µg/L	-	4.7	5.12	30	9
			Bromofluorobenzene (Surrogate)	µg/L	-	4.6	4.59	30	0
		VPH F Bands	Benzene (F0)	µg/L	0.5	<0.5	0.43	200	0
			TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	-1.63	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 %
LB155641.002		Naphthalene	µg/L	0.1	32	40	60 - 140	80
		Acenaphthylene	µg/L	0.1	34	40	60 - 140	86
		Acenaphthene	µg/L	0.1	32	40	60 - 140	81
		Phenanthrene	µg/L	0.1	39	40	60 - 140	98
		Anthracene	µg/L	0.1	36	40	60 - 140	89
		Fluoranthene	µg/L	0.1	37	40	60 - 140	93
		Pyrene	µg/L	0.1	37	40	60 - 140	92
		Benzo(a)pyrene	µg/L	0.1	38	40	60 - 140	94
	Surrogates	d5-nitrobenzene (Surrogate)	µg/L	-	0.4	0.5	40 - 130	78
		2-fluorobiphenyl (Surrogate)	µg/L	-	0.4	0.5	40 - 130	88
		d14-p-terphenyl (Surrogate)	µg/L	-	0.5	0.5	40 - 130	94

Total Phenolics in Water

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB155767.002	Total Phenols	mg/L	0.01	0.24	0.25	80 - 120	97

Trace Metals (Dissolved) in Water by ICPMS

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB155549.002		Arsenic, As	µg/L	1	20	20	80 - 120	98
		Cadmium, Cd	µg/L	0.1	20	20	80 - 120	99
		Chromium, Cr	µg/L	1	19	20	80 - 120	97
		Copper, Cu	µg/L	1	20	20	80 - 120	99
		Lead, Pb	µg/L	1	21	20	80 - 120	105
		Nickel, Ni	µg/L	1	20	20	80 - 120	98
		Zinc, Zn	µg/L	5	19	20	80 - 120	97

TRH (Total Recoverable Hydrocarbons) in Water

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB155641.002		TRH C10-C14	µg/L	50	1100	1200	60 - 140	92
		TRH C15-C28	µg/L	200	1400	1200	60 - 140	116
		TRH C29-C36	µg/L	200	1400	1200	60 - 140	116
	TRH F Bands	TRH >C10-C16	µg/L	60	1200	1200	60 - 140	98
		TRH >C16-C34 (F3)	µg/L	500	1600	1200	60 - 140	134
		TRH >C34-C40 (F4)	µg/L	500	610	600	60 - 140	102

VOCs in Water

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB155587.002	Halogenated	1,1-dichloroethene	µg/L	0.5	50	45.45	60 - 140	110
	Aliphatics	1,2-dichloroethane	µg/L	0.5	50	45.45	60 - 140	110
		Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	50	45.45	60 - 140	110
	Halogenated	Chlorobenzene	µg/L	0.5	50	45.45	60 - 140	110
	Monocyclic	Benzene	µg/L	0.5	50	45.45	60 - 140	110
	Aromatic	Toluene	µg/L	0.5	50	45.45	60 - 140	110
		Ethylbenzene	µg/L	0.5	50	45.45	60 - 140	110
		m/p-xylene	µg/L	1	100	90.9	60 - 140	110
		o-xylene	µg/L	0.5	50	45.45	60 - 140	110
	Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.1	5	60 - 140	81
		d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.1	5	60 - 140	83
		d8-toluene (Surrogate)	µg/L	-	4.8	5	60 - 140	96
		Bromofluorobenzene (Surrogate)	µg/L	-	5.0	5	60 - 140	100
	Trihalomethan	Chloroform (THM)	µg/L	0.5	50	45.45	60 - 140	109

Volatile Petroleum Hydrocarbons in Water

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB155587.002		TRH C6-C10	µg/L	50	940	946.63	60 - 140	100
		TRH C6-C9	µg/L	40	770	818.71	60 - 140	94
	Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.5	5	60 - 140	89
		d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.4	5	60 - 140	88
		d8-toluene (Surrogate)	µg/L	-	4.7	5	60 - 140	93
		Bromofluorobenzene (Surrogate)	µg/L	-	4.9	5	60 - 140	97
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	640	639.67	60 - 140	101

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

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

Total Phenolics in Water

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE183335.001	LB155767.014	Total Phenols	mg/L	0.01	0.23	-0.00023	0.25	93

Trace Metals (Dissolved) in Water by ICPMS

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE183193.001	LB155549.004	Arsenic, As	µg/L	1	67	49	20	93
		Cadmium, Cd	µg/L	0.1	18	<0.1	20	92
		Chromium, Cr	µg/L	1	18	<1	20	87
		Copper, Cu	µg/L	1	35	18	20	88
		Lead, Pb	µg/L	1	19	<1	20	94
		Nickel, Ni	µg/L	1	24	6	20	87
		Zinc, Zn	µg/L	5	38	21	20	86

TRH (Total Recoverable Hydrocarbons) in Water

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

QC Sample	Sample Number		Parameter	Units	LOR	Original	Spike	Recovery%
SE183244.005	LB155641.023		TRH C10-C14	µg/L	50	0	1200	80
			TRH C15-C28	µg/L	200	0	1200	87
			TRH C29-C36	µg/L	200	0	1200	94
			TRH C37-C40	µg/L	200	0	-	-
			TRH C10-C36	µg/L	450	0	-	-
			TRH C10-C40	µg/L	650	0	-	-
		TRH F Bands	TRH >C10-C16	µg/L	60	0	1200	84
			TRH >C10-C16 - Naphthalene (F2)	µg/L	60	0	-	-
			TRH >C16-C34 (F3)	µg/L	500	0	1200	89
			TRH >C34-C40 (F4)	µg/L	500	0	600	99

VOCs in Water

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

QC Sample	Sample Number		Parameter	Units	LOR	Original	Spike	Recovery%
SE183179.002	LB155587.021	Monocyclic Aromatic	Benzene	µg/L	0.5	<0.5	45.45	108
			Toluene	µg/L	0.5	<0.5	45.45	107
			Ethylbenzene	µg/L	0.5	<0.5	45.45	94
			m/p-xylene	µg/L	1	<1	90.9	107
			o-xylene	µg/L	0.5	<0.5	45.45	109
		Polycyclic	Naphthalene	µg/L	0.5	<0.5	-	-
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	3.9	-	101
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.3	-	104
			d8-toluene (Surrogate)	µg/L	-	5.4	-	97
			Bromofluorobenzene (Surrogate)	µg/L	-	4.9	-	98

Volatile Petroleum Hydrocarbons in Water

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

QC Sample	Sample Number		Parameter	Units	LOR	Original	Spike	Recovery%
SE183179.002	LB155587.021		TRH C6-C10	µg/L	50	<50	946.63	96
			TRH C6-C9	µg/L	40	<40	818.71	92
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.4	-	101
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.9	-	104
			d8-toluene (Surrogate)	µg/L	-	4.8	-	97
			Bromofluorobenzene (Surrogate)	µg/L	-	4.3	-	98
		VPH F Bands	Benzene (F0)	µg/L	0.5	<0.5	-	-
			TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	639.67	96

MATRIX SPIKE DUPLICATES

SE183285 R0

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

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

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

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

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

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

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

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

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

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			31/08/2018	[NT]	[NT]	[NT]	[NT]	31/08/2018	[NT]
Date analysed	-			03/09/2018	[NT]	[NT]	[NT]	[NT]	03/09/2018	[NT]
TRH C_6 - C_9	µg/L	10	Org-016	<10	[NT]	[NT]	[NT]	[NT]	105	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-016	<10	[NT]	[NT]	[NT]	[NT]	105	[NT]
Benzene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Toluene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Ethylbenzene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	108	[NT]
m+p-xylene	µg/L	2	Org-016	<2	[NT]	[NT]	[NT]	[NT]	105	[NT]
o-xylene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Naphthalene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-016	99	[NT]	[NT]	[NT]	[NT]	101	[NT]
Surrogate toluene-d8	%		Org-016	102	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate 4-BFB	%		Org-016	94	[NT]	[NT]	[NT]	[NT]	103	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	199643-1
Date extracted	-			03/09/2018	[NT]	[NT]	[NT]	[NT]	03/09/2018	03/09/2018
Date analysed	-			03/09/2018	[NT]	[NT]	[NT]	[NT]	03/09/2018	03/09/2018
TRH C_{10} - C_{14}	µg/L	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	85	116
TRH C_{15} - C_{28}	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	71	94
TRH C_{29} - C_{36}	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	82	127
TRH >C_{10} - C_{16}	µg/L	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	85	116
TRH >C_{16} - C_{34}	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	71	94
TRH >C_{34} - C_{40}	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	82	127
Surrogate o-Terphenyl	%		Org-003	92	[NT]	[NT]	[NT]	[NT]	94	110

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date prepared	-			31/08/2018	1	31/08/2018	31/08/2018		31/08/2018	[NT]
Date analysed	-			31/08/2018	1	31/08/2018	31/08/2018		31/08/2018	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	1	12	[NT]		118	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	1	0.4	[NT]		119	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		112	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	1	10	[NT]		114	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	1	<1	[NT]		120	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	1	<0.05	<0.05	0	108	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	1	37	[NT]		116	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	1	150	[NT]		116	[NT]

Result Definitions

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

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

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

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

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

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.