

HOLDMARK



Environmental Site Assessment



Stage A - 155 to 157 Church Street, Ryde

Document Control

Report Title: Environmental Site Assessment

Report No: E2009 E02 DSI Rev 1a

Copies	Recipient
1 Soft Copy (PDF – Secured, issued by email)	Gavin Carrier Holdmark Suite 2/2-4 Giffnock Ave, Macquarie Park NSW 2113
2 Original (Saved to Digital Archives) (\\Pahlei07 - Projects\E2009 - S&N Environmental - Meadowbank - Stages A, 6-7 & 8-9\E2009 AC_E02 - DSI Stage A\E2009 E02 DSI Rev 1a_Stage A_155-157 Church St Ryde.docx)	EI Australia Suite 6.01, 55 Miller Street, PYRMONT NSW 2009

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Revision	Details	Date	Amended By
0	Original	7 November 2017	

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1. INTRODUCTION

1.1 Background

The Shepherds Bay Urban Renewal Concept Plan (MP09_0216 Mod 2) was approved in 16 January 2017 and required:

Clause 38 Future Development Applications shall include a detailed contamination assessment (involving sampling and testing of soil) including the presence of acid sulphate soils and salinity.

Clause 39 A groundwater assessment (involving sampling and testing of groundwater) shall be undertaken across the entire Concept Plan prior to the first Development Application being lodged for Stage 2 or any other stage of the development.

Clause 40 Future Development Applications where necessary shall include a targeted groundwater assessment for the specific stage (based on the recommendations of the groundwater assessment undertaken for the entire Concept Plan).

Environmental Investigations Australia, subsequently renamed EI Australia (EI) was engaged by Mr Gavin Carrier of Holdmark to conduct an Environmental Site Assessment (ESA) for site characterisation purposes within Stage A of the Shepherds Bay Urban Renewal Development Project, which comprises 155 to 157 Church Street, Ryde (henceforth 'the site'). The assessment was conducted in 2014, with the findings reported in a report titled *Stage A of the Shepherds Bay Urban Renewal Project Environmental Site Assessment* (Ref. EI Report E2009 AC_Rev 0, dated 2 June 2014).

The information provided herein is presented to update the consent authority as to environmental assessment findings in relation to the site, with due regard for the revisions to the development concept, as described in **Section 1.2**.

The Shepherds Bay Urban Renewal Project is located approximately 11km northwest of Sydney's central business district (see **Figure 1**), with Stage A of this development comprising Lots 13 to 15 DP 738232, Lot 7 DP 809282 and Lot 100 DP 851723. The site is situated within the Local Government Area of the City of Ryde Council and covers a total approximate area of 0.04 hectares (3,952m²), as depicted in the site plan presented as **Figure 2**.

1.2 Proposed Development

Stage A of the development has been designated for the construction of a multi storey development intended for mixed (commercial and residential) land uses. As illustrated in the revised development plans (attached as **Appendix A**), the entire site will be utilised for the development and will involve the construction of a building 15 storeys high (Ground level plus up to 14 upper levels), including a publicly accessible plaza, basement retail and additional four-levels of basement car parking. No significant green, open spaces are proposed within Stage A.

1.3 Regulatory Framework

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

- NEPC (2013) *Schedule B(1) Guideline on Investigation Levels for Soil and Groundwater*, National Environment Protection (Assessment of Site Contamination) Measure 1999 – Amendment 2013, National Environment Protection Council, May 2013;
- NEPC (2013) *Schedule B(2) Guideline on Site Characterisation*, National Environment Protection (Assessment of Site Contamination) Measure 1999 – Amendment 2013, National Environment Protection Council, May 2013;
- ANZECC & ARMCANZ (2000) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*;
- NSW EPA (1995) *Sampling Design Guidelines*;
- NSW EPA (1997) *Contaminated Land Management Act*;
- NSW EPA (1997) *Protection of The Environment Operations Act*;
- NSW EPA (1979) *Environmental Planning and Assessment Act*;
- NSW EPA (1998) *State Environmental Planning Policy (SEPP) No. 55 – Remediation of Land*; and
- NSW EPA (2017) *Guidelines for the NSW Site Auditor Scheme*, 3rd Edn.

2. OBJECTIVES AND SCOPE OF WORK

2.1 Objectives

In accordance with the Concept Approval (Clause 38) the proponent is required to undertake a detailed contamination assessment for any future development applications. The primary objectives of this ESA were therefore to:

- Evaluate the potential for site contamination on the basis of historical land uses, anecdotal and documentary evidence of possible pollutant sources; and
- To investigate the degree of any potential contamination by means of limited intrusive sampling and laboratory analysis, for relevant contaminants.

2.2 Scope of Works

In order to achieve the above objective, and in keeping the project cost-effective while generally complying with the requirements of the NSW EPA guidelines, the scope of works was as follows:

Desktop Study

- A review of relevant topographical, geological, hydrogeological and soil landscape maps for the project area;
- A review of the previous environmental reports readily available for the site;
- Search of historical aerial photographs archived at NSW Land and Property Information in order to review previous site use and the historical sequence of land development in the neighbouring area;
- A land titles search, also conducted through NSW Land and Property Information for information relating to site ownership;
- Site history survey involving a detailed search of Ryde Council records for information relating to operational site history and/or relevant environmental incidents;
- A search through the NSW EPA / OEH Land Information records to confirm that there are no statutory notices current on the site under the Unhealthy Building Land Act (1990) or the Contaminated Land Management Act (1997);
- A search of the Stored Chemical Information Database (SCID) and microfiche records held by WorkCover NSW relating to possible underground tank approvals and locations; and
- A review of existing underground services on site.

Field Work

- A detailed site walkover inspection;
- Construction of test boreholes at nine preliminary locations (BH701 – BH709) distributed in a herringbone pattern across accessible areas of the site;
- Multiple level soil sampling down to natural soils;
- Laboratory analysis of selected soil samples for relevant analytical parameters as determined from the site history survey and field observations during the investigation program; and
- Data interpretation and reporting.

3. SITE DESCRIPTION

3.1 Property Identification, Location and Physical Setting

The site identification details and associated information are presented in **Table 3-1**, while the site locality is shown in **Figure 1**.

Table 3-1 Site Identification, Location and Zoning

Attribute	Description
Street Address	155 to 157 Church Street, Ryde
Location Description	Approx. 11 km north west of Sydney central business district, a square shaped block bound by Well Street (north), Church Street (east), and The Loop Road (south and west).
Site Area/GDA	Stage A of the development has an approximate area of 0.04 hectares (3,952 m ² , based on SIX Maps, Ref: www.six.nsw.gov.au) Northern corner GDA Lat: -33.821539545, Long: 151.096558689
Site Owner	Church Street Property Investments Pty Ltd, considered to be a subsidiary company of Holdmark Pty Ltd.
Lot and Deposited Plan (DP)	Lots 13 to 15 DP 738232, Lot 7 DP 809282 and Lot 100 DP 851723
State Survey Marks	A State Survey Mark (SSM) is situated within the northern roundabout, at the intersection of The Loop Road and Well Street, being SS122866. (Ref: www.six.nsw.gov.au)
Local Government Authority	City of Ryde Council
Parish	Hunters Hill
County	Cumberland
Current Zoning	B4 – Mixed Use (Ryde Draft Local Environment Plan, 2011)

At the time of this assessment, the site was occupied by 'Golf Cart World' a retail and service outlet for golf carts. A site plan illustrating the assessment area is shown in **Figure 2**.

3.2 Local Land Use

The site is situated within an area of mixed use. Current uses on surrounding land are described in **Table 3-2**.

Table 3-2 Local Land Use

Direction Relative to Site	Land Use Description
North	Well Street, followed by the construction of a high density residential development, and residential land uses beyond.
East	Church Street, followed by residential and recreational land uses.
South	The Loop Road as well as the Parramatta Valley Cycleway, followed by Parramatta River
West	The Loop Road, followed by high density residential land uses.

3.3 Regional Settings

The topographical, geological, soil landscape for the locality is summarised in **Table 3-3**, and a summary of the hydrogeological setting is presented in **Table 3-4**.

Table 3-3 Topographical and Geological Information

Attribute	Description
Topography	The site is present at the edge of a ridgeline which descends to the south towards Parramatta River, from a RL of approximately 10 - 12m AHD along the northern boundary of the site, to approximately 10m AHD along the southern boundary (Ref: H Ramsay & Co. Pty Ltd Survey). The shores of Parramatta River are located directly to the south of the site, along with typical features of a marine estuary (sands, mangroves, exposed rock). The site topography is generally flat.
Regional Geology	The site is likely underlain by Hawkesbury Sandstone (<i>Rh</i>). Hawkesbury Sandstone is described as medium to coarse-grained quartz sandstone, very minor shale and laminite lenses. Estuarine deposits may be present along the southern boundary of the site. (Ref: 1:100 000 Geological Series Sheet 9130 –Sydney)
Soil Landscapes	<p>The Soil Conservation Service of NSW <i>Soil Landscapes of the Sydney 1:100,000 Sheet</i> (Ref: Chapman and Murphy, 1989) indicated that the site overlies a <i>Gymea</i> (<i>Gy</i>) soil landscape. This landscape includes undulating to rolling rises and low hills on Hawkesbury Sandstone. With shallow to moderately deep <i>Yellow Earths</i> and <i>Earthy Sands</i> on crests and inside of benches, localised <i>Gleyed Podzolic Soils</i> and <i>Yellow Podzolic Soils</i> on shale lenses, and <i>Siliceous and Leached Sands</i> along drainage lines.</p> <p>Limitations of this soil profile include localised steep slopes, high soil erosion, rock outcrops, and shallow highly permeable soils with very low soil fertility.</p>
Acid Sulfate Soil Risk	<p>The <i>Acid Sulfate Soil Risk Map</i> (Ref: <i>Prospect Parramatta 1:25,000 scale</i>; Murphy, 1997) indicates the subject land lies within the map class description of No Known Occurrence. In such cases, acid sulfate soils (ASS) are not known or expected to occur and "land management activities are not likely to be affected by ASS materials"</p> <p>The <i>City of Ryde Council Draft Local Environmental Plan 2011- Acid Sulfate Soils Risk Class Map</i> indicates that the site lies within a Class 5 ASS area. Council consent is therefore required prior to commencing any works within 500m of Class 1, 2, 3 or 4 land, with a ground elevation of below 5m Australian Height Datum (AHD) and where the water table is likely to be lowered below 1m AHD on adjacent Class 1, 2, 3 or 4 land.</p>
Soil Salinity Risk	Considering that the underlying bedrock comprises sandstone of the Hawkesbury formation, EI considers that the salinity risk to the development is low (Ref: Salinity Potential in Western Sydney, 2002). Salinity testing of residual sandy clay soils in development Stages 6 to 9 indicated 'non sodic' soil conditions within residual soils, with an ESP value of 1.33%. Furthermore, the calculated salinity for this 'loam' unit was found to be 0.1 dS/m, classed as non-saline (<i>Site Investigations for Urban Salinity, Department of Land and Water Conservation, 2002</i>).

Table 3-4 Hydrogeological Information

Attribute	Description
Site Drainage	Stormwater at the site appears to drain to the municipal stormwater system via onsite drainage. The land present at the north of the site was found vacant and covered with graded gravels. No drainage was apparent. Therefore within this part of the site it is expected that stormwater would discharge to land.

Attribute	Description
Typical Vadose Zone Soil Types	Thin surficial sandy fill overlying weathered sandstone.
Depth to Groundwater	Groundwater was encountered at 7.0 m BTOC during the groundwater investigation and based on local topography it is assumed to generally flow in a southerly direction, toward Parramatta River.
Groundwater Types	Groundwater is expected to occur in the underlying sandstone fractures and bedding planes and is expected to flow toward Parramatta River.
Nearest Water Body	Parramatta River is located approximately 60 meters (m) south of the site, which is considered to be the nearest receiving water body, and is considered to be marine and part of Sydney Harbour.

3.4 Groundwater Bore Records and Local Groundwater Use

Online searches of registered groundwater bores were conducted through the NSW Natural Resource Atlas database (Ref. <http://www.nratlas.nsw.gov.au>), on the 9 May 2014 and again on 3 November 2017. Both searches produced identical results, showing two separate clusters of registered bores: a group of three bores about 1 km west to northwest of the site and a second group of four bores approximately 50 to 100 m west of the site, as shown in **Photo 1**. Bore information was not available for any of these bores; however, clusters of registered bores are usually installed on sites for environmental monitoring purposes, in which case groundwater would not be utilised for beneficial uses.

All identified bores were located cross-gradient of the site, with regards to anticipated groundwater flow direction. Due to the cross gradient location of the bores, they were not considered to represent possible receptors for any potential site contamination that may be present at the site.

Diagram 1 NR Atlas Search map of groundwater bores within 1 km radius of the site



4. PREVIOUS INVESTIGATIONS

The findings of a previous groundwater quality assessment for the Shepherds Bay Urban Development site as a whole, which included the Stage A development, were documented in the report titled *Groundwater Investigation, Shepherds Bay Urban Renewal Project, Meadowbank*, EI Report No.E2008 AC, 29 January 2014. The works and key findings of that assessment are outlined in **Table 4-1**.

Table 4-1 Summary of Previous Investigations and Key Findings

Assessment Details	Project Tasks and Findings
Groundwater Investigation (EI, 2014)	
Work Objectives	The objectives of the groundwater investigation were to evaluate the potential for site groundwater contamination on the basis of historical land uses, anecdotal and documentary evidence of possible pollutant sources, and to make recommendations as to whether further targeted groundwater assessment was required for any of the specific stages of the development, in accordance with Clause 39 and 40 of the Concept Approval of the Shepherds Bay Urban Renewal Project.
Scope of Works	<ul style="list-style-type: none"> • Review of the Concept Plan Application, Approval and associated technical documents including the preliminary contamination assessment reports; • Review of available topographical, geological, hydrogeological (including registered water bores), soil landscape and acid sulfate soil maps for the project area; • Review of selected historical aerial photographs archived at NSW Land and Property Information in order to review previous site use and the historical sequence of land development in the neighbouring area; • Review of existing contamination reports the main development stages (e.g. Stage 1, Stages 2 & 3 and Stages 4 & 5); • Development of a preliminary conceptual site model (CSM) to assess potential receptors, migration and exposure pathways and risk of exposure; • A review of existing underground services on site and Dial Before You Dig (DBYD) searches; • A detailed site walkover inspection (carried out in conjunction with the various contamination assessment reports for the various stages); • Drilling and installation of 14 boreholes which were converted to monitoring wells (GW101 to GW114) located in a broad grid pattern across the site; • Well development, water level gauging and measurement of physio-chemical parameters to assess depth to water, field water quality and groundwater flow direction; • Laboratory analysis of groundwater samples for relevant chemicals of concern, as determined from the site history survey and field observations during the investigation program; and • Data interpretation and reporting.
Conclusions	<ul style="list-style-type: none"> • The site slopes essentially south toward the Parramatta River from a RL of approximately 10 to 20m AHD on Constitution Road (H Ramsay & Co. Pty Ltd Survey) to approximately 5m to 2m AHD on Rothesay Avenue. The Stage A site is on a slight knoll ranging from 10.5 to 13 m AHD. The western third of the site is generally lower (less than 10 m AHD) than the

Assessment Details

Project Tasks and Findings

eastern two-thirds and contains a main drainage line which drains the urban catchment to the north of Constitution Road and the eastern two thirds of the site which is essentially a broad ridgeline area. The land generally drains toward the south toward Shepherds Bay

- The site was free of statutory notices issued by the NSW EPA. One notified site is located near the concept area and is the former Council depot located in Parsonage Street, Ryde;
- WorkCover searches revealed a number of USTs many of which have been removed. There is, however, limited or no data confirming these were removed in accordance with current UPSS regulations;
- The site is underlain at shallow depths by Hawkesbury Sandstone which comprises medium to coarse-grained quartz sandstone, very minor shale and laminite lenses. There is small lobe of Ashfield Shale/Mittagong Formation just extending into the north eastern corner of the concept area near Constitution and Belmore Road intersection.
- Potential alluvial material/residual soils occur in the drainage depression in the western third of the site. Some estuarine sediments (potential acid sulfate soils) also occur in the south-west corner of the site (near well GW104).
- Fourteen (14) groundwater monitoring wells were installed over the site on a broad grid. Six (6) previous monitoring wells were also installed on the Stage 1 property (EI, 2013). The wells were installed to 9 and 12 m in depth.
- Groundwater was encountered at depths ranging from 1.3 to 7.4 meters below top of casing, with groundwater flow expected to be toward Shepherds Bay. Groundwater is generally present in the underlying sandstone or within the alluvial/residual soil materials in the western third of the site.
- Groundwater sampling identified Cadmium, Copper and Zinc concentrations exceeded fresh water and marine GILs in all wells,
- Groundwater sampling identified Nickel concentrations in excess of the fresh water and marine GILs in the majority of the wells except GW1, GW101 and GW105.
- Petroleum hydrocarbons compounds, PAHs, BTEX compounds and the volatile organic compounds trichloroethene, cis-1,2-dichloroethene and acetone, were also detected in groundwater at low concentrations, in selected wells, but at levels that were below the marine GILs or NEPM 2013 vapour intrusion HSLs.
- The heavy metals detected in the groundwater were considered to be a regional impact and therefore were considered a low risk to the environment.
- The conceptual site model suggests that dermal contact was the main exposure pathway to site workers during construction. A low risk to surface water from various heavy metals was also indicated.

In summary and within the limitations of normal environmental assessments (Section 14 of the groundwater assessment report), it was considered that there was a low risk of widespread groundwater contamination within the Shepherds Bay Urban Renewal Project. It was also deemed unlikely that any groundwater impacts would prevent site redevelopment for residential and open space land uses.

Assessment Details	Project Tasks and Findings
Recommendations	<p>The following works were recommended:</p> <ol style="list-style-type: none">1. Completion of the individual staged environmental site assessments including WorkCover Dangerous Goods searches, to assess potential for further underground or above ground contamination sources;2. Completion of additional groundwater monitor wells and groundwater gauging and sampling in the additional stages to:<ol style="list-style-type: none">a) Assess the impact of the potential sources identified in 1) above;b) Confirm or modify the existing conceptual site model based on any new or additional information (including any potential changes in groundwater flow direction); andc) Assess whether dewatering or other hydraulic control measures are required for the construction of any basements particularly in Concept Plan Stages 6, 7, 8 and 9. Any future off-site disposal of site groundwater from site excavations would require waste classification in accordance with the DECCW (2009) <i>Waste Classification Guidelines</i>, or sampling and analysis against surface water quality guidelines for marine and Sydney Harbour Water Quality Objectives.3. Preparation and implementation of a Remediation Action Plan for the Development Stages to outline the removal of any soil contamination hotspot identified, as well as the known USTs and any unexpected finds;4. A Validation assessment to confirm that development areas were effectively remediated in accordance with respective EPA guidelines;5. Preparation of a final site validation report by a qualified environmental consultant, certifying site suitability for the proposed development; and6. A well head elevation and location survey for the assessment of groundwater flow direction. This would require that all new and existing wells be located and surveyed for elevation relative to Australian Height Datum and to Geocentric Datum of Australia 1994 (GDA94) (latitude and longitude) or Grid coordinates: (Map Grid of Australia 1994 (MGA94) and water levels gauged by experienced environmental consultant.

5. SITE HISTORY

5.1 Site Land Titles Information / Historic Aerial Review

A historical land titles search was conducted through Service First Registration Pty Ltd on 23 January 2014, with the findings from the land titles information, including a summary of previous and current registered proprietors along with information obtained from the available historical aerial photographs. The table provides an indication of the site and surrounding, potential land uses, as presented in **Tables 5 - 1 to 5 - 3**. Copies of relevant documents resulting from this search are presented in **Appendix B**.

Historical aerial photographs reviewed as part of this ESA included:

- **1930:** March 1930, Run 4, Map 3424 B/W - Commonwealth Australia Crown
- **1943:** Sydney 1943 Imagery (source : <http://maps.six.nsw.gov.au/>)
- **1951:** May 1951, Run 10, Map 468 – 92 B/W - Lands Photo
- **1961:** Run 31 Map 1050 B/W, Cumberland 1961 series - Dept of Lands NSW 5118
- **1986 :** 03 August 1986, Run 20, Map 115-162 - Department of Lands NSW 3528
- **1999:** 4 May 1999, Run 2, Map 10-29 - Land and Property Information NSW 4702
- **2005:** 10 December 2005, Run 9, Map 246-259 - Department of Lands NSW4937
- **2014:** Sydney 2014 Imagery (source : <http://maps.six.nsw.gov.au/>)

Table 5-1 Summary of Owners, Lot 15 DP 738232, 155 - 157 Church Street, Ryde

Date of Acquisition	Registered Proprietor(s) & Occupations where available	Review of Historical Aerial Photographs	
		Aerial Photo and Site Description	Potential on-site Land Uses
11.03.1902 (1902 to 1939)	Edward William Parsonage (Clerk)	1930 – Mostly vacant property, however poor photo resolution makes the site boundary difficult to define.	1930 – Vacant
06.01.1939 (1939 to 1943)	Carl Frederick Spencer Glasgow (Solicitor) (Transmission Application not investigated)	1943 – Appears to be vacant property with small square shaped (residential in appearance) structures present within the north western corner of the site.	1943 – Vacant / residential
17.05.1943 (1943 to 1945)	Gibson James McMillan (Garage Proprietor)		
21.09.1945 (1945 to 1948)	Thomas Layton Kenwood (Architect)		
24.03.1948 (1948 to 1950)	Ian George Hudson (Timber Merchant)		
05.07.1950 (1950 to 1965)	Metropolitan Bottling Co. (Sydney) Pty Limited	1951 – Appears to be a large industrial/commercial building on property, similar in appearance to the structure present today.	1951 – Industrial/Commercial
		1961 – Appears unchanged from 1951	1961 – Industrial/Commercial
24.06.1965 (1965 to 1981)	Expandite (Aust) Pty Limited	-	-
25.03.1981 (1981 to 1984)	157 Church Street Pty Limited	-	-
23.01.1984 (1984 to 1995)	Stuart Bros. Pty Limited Now Stuart Bros (Holdings) Pty Limited	1986 - Appears unchanged from 1951	1986 - Industrial/Commercial
	Industrial Property Management Services Pty Limited Now ICA Investments Pty Limited		
24.10.1995 (1995 to 2003)	ICA Investments Pty Limited	1999 - Appears unchanged from 1951	1999 - Industrial/Commercial
11.04.2003 (2003 to 2011)	Kavlyn Pty Limited	2005 - Appears unchanged from 1951	2005 - Industrial/Commercial
10.02.2011 (2011 to date)	# Church Street Property Investments Pty Ltd	2013 - Appears unchanged from 1951	2013 - Industrial/Commercial

Table 5-2 Summary of Owners, Lot 13 & 14 DP 738232, 14

Date of Acquisition	Registered Proprietor(s) & Occupations where available	Review of Historic
		Aerial Photo and S
12.03.1895 (1895 to 1921)	George Drury (Dairyman)	-
13.06.1921 (1921 to 1922)	Arthur Henry Drury (Draftsman) Frederick Albert Drury (Motor Agent) (Transmission Application not investigated)	-
18.10.1922 (1922 to 1946)	Peter Melvin (Grazier)	1930 – Appears to be property with a single encompassing large land. 1943 – Appears under previous aerial. Greater this aerial shows a lot the property and large suppo
08.03.1946 (1946 to 1946)	Victor Read (Manufacturer) Eddie Parsonage (Fitter) (Transmission Application not investigated)	-
23.04.1946 (1946 to 1946)	Mabel Sarah Parsonage (Married Woman)	-
11.07.1946 (1946 to 1948)	Florence Ida Peach (Married Woman)	-
06.11.1948 (1948 to 1954)	Kevin Joseph Collins (Electrical Storeman)	1951 - previo
12.02.1954 (1954 to 1958)	Ada Florence Pacey (Married Woman)	-
17.11.1958 (1958 to 1988)	Edward Collins (Panel Beater)	1961 - have to the ex 1986 - previo detail attach owner may have and then may have

Date of Acquisition	Registered Proprietor(s) & Occupations where available	Review of Historical Aerial Photographs	
		Aerial Photo and Site Description	Potential on-site Land Uses
13.01.1988 (1988 to 1993)	Commissioner for Main Roads Now Roads and Traffic Authority for New South Wales	-	-
04.02.1993 (1993 to 1995)	Stuart Bros Pty Limited Now Stuart Bros (Holdings) Pty Limited	-	-
24.10.1995 (1995 to 2003)	Industrial Property Management Services Pty Limited Now ICA Investments Pty Limited	1999 – Site appears to be vacant, however at the time of photographing it appears to be used for vehicular parking.	1999 – Commercial/Industrial
11.04.2003 (2003 to 2011)	Kavlyn Pty Ltd	2005 – Appears unchanged from previous aerial	2005 – Commercial/Industrial
10.02.2011 (2011 to date)	# Church Street Property Investments Pty Ltd	2014 - Appears unchanged from previous aerial	2014 - Commercial/Industrial

Denotes Current Registered Proprietor

Leases: -

- 01.08.2012 to Golf Cart World Pty Ltd – Expires 10.05.2017, also 5 year option

Easements: - NIL

Table 5-3 Summary of Owners, Lot 100 DP 851723, 155 – 157 Church Street, Ryde

Date of Acquisition	Registered Proprietor(s) & Occupations where available	Review of Historical Aerial Photographs	
		Aerial Photo and Site Description	Potential on-site Land Uses
26.06.1991 (1991 to 1993)	Roads and Traffic Authority for New South Wales	-	-
04.02.1993 (1993 to 1995)	Stuart Bros Pty Limited Now Stuart Bros (Holdings) Pty Limited	-	-
24.10.1995 (1995 to 2003)	Industrial Property Management Services Pty Limited Now ICA Investments Pty Limited	1999 – Parcel of land was known to be a road, however it appears to be unused due to the construction of Porter Street	1999 – Roads/Unused
11.04.2003 (2003 to 2011)	Kavlyn Pty Ltd	2005 – Appears unchanged from previous aerial	2005 – Unused
10.02.2011 (2011 to date)	# Church Street Property Investments Pty Ltd	2014 – Appears unchanged from previous aerial	2014 – Unused
<u># Denotes Current Registered Proprietor</u>			
<u>Leases: -</u>			
<ul style="list-style-type: none"> 01.08.2012 to Golf Cart World Pty Ltd – Expires 10.05.2017, also 5 year option 			
<u>Easements: -</u>			
<ul style="list-style-type: none"> 06.08.1992 Easement for S.C.C. Cables (E 636841) 			

5.2 Surrounding Lands Historical Aerial Photography Review

As part of the Site Land Titles Information / Historic Aerial Review, an assessment of surrounding land uses using historical aerial photographs sourced from NSW Land and Property Information was carried out. A summary of the pertinent information identified at surrounding land parcels from the reviewed photographs is presented in **Table 5-4**.

Table 5-4 Summary of Aerial Photograph Review

Aerial Photograph	Surrounding
March 1930	
Run 4, Map 3424 B/W Commonwealth Australia Crown	Land use to the north, east and west of the site appear as vacant land with scattered residential uses. Present to the south is Parramatta River, with mangrove type trees present at the water's edge.
1943	
Sydney 1943 Imagery http://maps.six.nsw.gov.au/	Land remains primarily unchanged from previous aerial.
May 1951	
Run 10, Map 468 – 92 B/W Lands Photo	Land remains primarily unchanged from previous aerial.
1961	
Run 31 Map 1050 B/W Lands photo, Cumberland 1961 series NSW 5118	Land use to the north has been developed for what appears to be commercial / industrial land uses, with residential / open space beyond. Residential land uses remain to the east, unchanged from the previous aerial. Land use to the west and south also remains primarily unchanged from the previous aerial.
03 August 1986	
Run 20, Map 115-162 Department of Lands NSW 3528 Colour 1:16,000 Scale	Surrounding land uses remain primarily unchanged, with the exception of land uses to the west of the site, which appear to have undergone development, for commercial / industrial land uses.
4 May 1999	
Run 2, Map 10-29 Land and Property Information NSW 4702 Colour 1:12,000 Scale	Land remains primarily unchanged from previous aerial.
10 December 2005	
Run 9, Map 246-259 Department of Lands NSW4937 Colour 1:25,000 Scale	Surrounding land uses remain primarily unchanged, with the exception of land uses to the north and west of the site, which appear to have undergone development, for high density residential uses.

5.3 Council Information

The search of site history records held by City of Ryde Council was initiated on 24th of March, 2014. The search was still in progress and was not finalised at the time of report preparation. Should Council records suggest the potential for contamination from past site activities, an addendum would be prepared under a separate cover.

5.4 WorkCover NSW Authority Search

A search of WorkCover NSW Authority records relating to the site was requested on 24 January, 2014 by EI, on behalf of the client. Correspondence dated 6 February, 2014 from the Dangerous Goods Licensing Section received by EI (**Appendix C**), confirmed that a search of Stored Chemical Information Database (SCID) and the microfiche records held by WorkCover was conducted and revealed that the following records pertaining to the premises were held, with details as described in **Table 5-5** below.

Table 5-5 Summary of WorkCover Records

Licence Holder / Premises	Type of Infrastructure	Goods Stored	Quantity	Location of storage	Status
Stuart Bros Pty Ltd 157 Church Street, RYDE NSW 2212	Underground Tank	Petrol / Flammable Liquids	4,500 litres	Eastern central part of site, at corner of building	Decommissioned
	Underground Tank	Petrol / Flammable Liquids	4,500 litres	Eastern central part of site, at corner of building	Unknown

The WorkCover searches revealed two underground storage tanks have been present at 157 Church Street, Ryde NSW 2112, previously used by Stuart Bros Pty Ltd, a building company. A letter from Emcal Engineering Pty Ltd, issued on 16 October 1995, provided notification of the abandonment of a single, disused 5,000 litre underground storage tank (UST), using the concrete filling method. Vent, suction and fill lines were removed and concrete filled. No information was provided as to the status of the second UST. No evidence of validation works was obtained through this search; therefore the suitability of the surrounding soils remaining at the site could not be confirmed and will require further investigation.

During the site investigation activities, two USTs were noted, within the eastern central portion of the site and a third UST suspected within the central western area. A small UST present along the eastern boundary was found to be concrete in composition, and appeared to have formerly stored kerosene, possibly for heating of the commercial building in the central southern part of the site. A second tank was unable to be opened, but appeared to be a UST used for fuel storage (i.e. dip and filling points present), which is consistent with the letter of tank abandonment resulting from the WorkCover searches. The third suspected UST was identified within the western central part of the site, and although the exact location could not be confirmed, visual observations of tank dipping points and vent lines were noted.

5.5 Hazardous Chemicals and Regulatory Compliance

On 6 May, 2014, an on-line search of the *Contaminated Land – Record of EPA Notices* was conducted, this being a database that is maintained by the NSW OEH. This search confirmed that the NSW OEH has no involvements or regulations under Section 58 of the *Contaminated Land Management Act 1997* for the NSW property identified as 155 – 157 Church Street, Ryde. Section 58 of the *CLM Act 1997* relates to the investigation, remediation and management of

sites where contamination poses a significant risk of harm, and includes Sections 35 and 36 of the *Environmentally Hazardous Chemicals Act 1985*.

5.6 Site Walkover Inspection

Ms Sari Eru (EI, Environmental Scientist) made the following observations during an inspection of the site on 31 January, 2014:

- The site comprised of a square shaped commercial block, bound by Well Street to the north, Church Street to the east and The Loop Road to the west and south;
- Ground surface topography was generally flat, with a decline towards the south of approximately 1m vertical to 10m horizontal beyond the southern boundary; and
- The site encompassed what appeared as four to five separate land parcels, as described in **Table 5-6**.

Table 5-6 Summary of buildings and infrastructure

Area of Site	Buildings	USTs/ASTs	Observations
Northern part of site	Small metallic awnings present along the north eastern boundary line. Bitumen paving present along roadway with graded gravels covering the remainder of this area.	No evidence of USTs identified	No surface water drainage apparent, with all surface water appearing to discharge to land. Numerous cars, mini busses and golf carts present, with the majority of the site used for parking. Small awnings used for weather protection for golf carts. Driveway access present along Well Street, with metallic fencing surrounding the property.
Central and Southern part of site	Located across the majority of the site is a large commercial warehouse type structure of metallic construction.	Two small USTs identified, Tank 1 and 2, along the eastern boundary of the site, with a third tank suspected along the western boundary.	Warehouse was in use by 'Golf Cart World' for the sale and maintenance of golf carts. Warehouse appeared to be in good condition with minimal rusting and peeling. Concrete hardstand was apparent throughout the structure, which appeared to be in good condition, with minimal cracking or deterioration. Stormwater appeared to drain to the municipal stormwater system along Church Street, via onsite drainage.

6. PRELIMINARY CONCEPTUAL SITE MODEL

In accordance with the National Environmental Protection (Assessment of Site Contamination) Measure 1999 (Amendment 2013) Schedule B2 – Guideline on Site Characterisation (NEPM 2013), and to aid in the assessment of data collection for the site, EI has developed a preliminary conceptual site model (CSM) with an assessment of plausible pollutant linkages whereby a source of contamination can migrate along a given pathway and have an effect on a particular receptor.

The CSM provides a framework to allow for the review of any information collected to ascertain the reliability and useability of the data collected, and to identify any gaps in field investigations. Each migration and exposure pathway is summarised in **Table 6-1**, along with an assessment that provides a qualitative opinion of the potential risk of each complete exposure pathway.

Table 6-1 Preliminary Conceptual Site Model

Site	Subsurface Profile	Potential Sources	Potential Contaminants	Media	Sensitive Receptor	Migration & Exposure Pathways	Risk of Complete Exposure Pathway
Northern part of site (Vacant land / Car parking along Well Street)	Residual soils present over Hawkesbury Sandstone bedrock. Thin layer of bitumen covering the majority of the area, with no major infrastructure present. Majority of this part of site used for car parking.	Vehicle storage, general waste.	Heavy Metals (especially lead), petroleum hydrocarbons (including PAHs), asbestos (from car brakes), unknown.	Soils/Bedrock	Parramatta River	Seepage into the subsurface soils, bedrock and groundwater.	M - L (based on presence of contamination)
				Groundwater	Site Workers during demolition and construction		
				Air/Soil Vapour		Dermal Contact	M – L (based on presence of contamination)
				LNAPL/DNAPL (if present)	Future site residents	Ingestion	L (post development)
						Inhalation	
Central and southern part of site (Inclusive of large commercial structure)	Residual soil overlying shallow Hawkesbury Sandstone. Depth of sandstone approx. 0.5 m. Hardstand concrete covering the majority of this part of the site. A high pressure Caltex fuel distribution line is present along the southern and eastern boundary of the site that may act as a potential preferential pathway for contaminants present within Parramatta River.	Commercial / Industrial activities including vehicle detailing, maintenance and storage, USTs, asbestos sheeting, lead paint, termiticides, general waste.	Pesticides, heavy metals, petroleum hydrocarbons (including PAHs), OCPs, OPPs, PCBs, phenols, asbestos, VOCs.	Building fabric	Parramatta River	Dermal Contact	M – L (based on presence of contamination)
				Soils/Bedrock	Site Workers during demolition and construction	Ingestion	L (post development)
				Groundwater		Inhalation	
				Air/Soil Vapour	Future site residents		
				LNAPL/DNAPL (if present)		Seepage from Caltex fuel line (preferential pathway)	Low / unknown

7. SAMPLING, ANALYTICAL AND QUALITY PLAN (SAQP)

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

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

7.1 Data Quality Objectives (DQO)

The scope of the ESA works was devised broadly in accordance with the following Data Quality Objective (DQO) process, as defined in NSW Environmental Protection Agency (EPA) 2006 *Guidelines for the NSW Site Auditor Scheme (2nd Edition)*, which were the relevant guidelines at the time of the investigation, and the Australian Standard “Guide to the Sampling and Investigation of Potentially Contaminated Soil Part 1: Non-volatile and semi-volatile compounds” (AS 4482.1 – 2005). The DQO process for the ESA is outlined in **Table 7-1** below.

Table 7-1 Data Quality Objectives

DQO Process Steps	Inputs / Outputs
<u>Step 1 – State The Problem</u>	
Summary of the contamination problem	For redevelopment purposes the site needs to be assessed for its suitability to residential land uses with minimal opportunities for soils access, in accordance with NSW EPA guidelines.
Planning team / Stakeholders	<ul style="list-style-type: none"> • Site owner / client (main contracting body) – Holdmark Pty Ltd; • Environmental Consultant – EI Australia Pty Ltd and all related subcontracting bodies for this assessment; • LGA – Ryde City Council; • NSW EPA; and • End Site Users
Define Exposure Scenarios	Based on the proposed development plans, it is expected that the majority of the fill materials and subsurface soils currently present at the site will be removed, thereby removing many of the potential sources of contamination for end users of the site, the current exposure scenario (i.e. site workers and visitors through direct contact with soil or inhalation of vapours) is of most concern. Consideration should be given to exposure to potentially impacted

DQO Process Steps	Inputs / Outputs
	groundwater if present.
Available Resources	<ul style="list-style-type: none"> • Project budget for human resource hire, field sampling programme and laboratory analysis; • Human Resources which include EI Consultants and all subcontracting personnel hired to undertake the required project tasks; • NATA accredited laboratories for the analyses of the field samples being collected; and • Shepherds Bay Urban Renewal Project website, providing information on the proposed development plans for the site.

Step 2 – Identify the Decision

Identify Decision	Are the soils present at the site suitable for the 'residential with soil access' land use? Does groundwater present at the site pose a risk for the end users at the site? Furthermore, do soils designated to remain at the site, suitable for the receiving ecological communities?
Identify alternative actions	<ul style="list-style-type: none"> • Use a response action, such as remediation and/or complete a risk assessment at the site to restrict access and potential exposure, or recommend further investigation; versus • Recommending no further assessment.

Step 3 – Identify the Inputs to the Decision

Identify Inputs	Data collected from the Phase 1 component of this assessment, as well as soil and groundwater analysis data and anecdotal information collected onsite.
Define Limits for Screening	Limits as defined by HIL B – NEPC 2013, as well as the HSL A&B for fine / coarse grained soil types, followed by the ecological investigation and screening levels, derived for the site. (Ref: NEPC 2013 – Schedule B [1]). As these are conservative values for the proposed mixed use, should any exceedences be identified, the HIL C may be used.
Identify Analytical Methods	All contracted laboratories are accredited by NATA for the analyses undertaken and use analytical methods as defined in NEPC 2013 – Schedule B (3).

Step 4 – Define the Study Boundaries

<p>The ESA investigation will focus on soil sampling across the site, targeting areas considered to be of concern based on the findings of the Phase 1 assessment, as well as any areas identified as contaminated.</p> <p>The spatial boundaries of the assessment were limited as follows:</p>	<ul style="list-style-type: none"> • Lateral - the geographical boundary of the assessment was defined by the site boundary, as illustrated in Figure 2. However it may also include areas beyond the site boundaries if there are evidence being uncovered indicating that the contamination has occurred; • Vertical - from the existing ground level to the proposed depth of excavation for the basement car park; and • Temporal - the findings of this assessment will hold true for as long as the site use remains passive in nature; that is, for as long as the site is used for commercial/residential uses and there are no activities taking place onsite or on the immediately
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DQO Process Steps	Inputs / Outputs
	<p>adjacent properties that may compromise onsite environmental conditions</p> <p>Sampling will be completed within areas which can be practicably accessed, which will be limited by onsite constraints such as underground services, the exclusion zone of the offsite Caltex oil line, and current buildings.</p>
<u>Step 5 – Develop a Decision Rule</u>	
Specify Parameter of Interest	<p>‘True Mean’ individual contaminant concentration in each area of environmental concern (See Section 6). However, as the evaluation of this parameter requires numerous samples to be collected and analysed, the maximum composite concentration, or ‘Max Test’ shall be used.</p>
Specify Investigation / Screening Levels	<p>The screening levels are calculated using the data provided in NEPC 2013 – Schedule B(1) as well as site specific data being collected (i.e. soil physicochemical properties, bore logs etc.). Overall the laboratory analytical results will be assessed against the adopted:</p> <ul style="list-style-type: none"> • Relevant soil investigation and screening levels (SILs) (Table 7-4); and • Relevant groundwater investigation and screening levels (GILs) (Table 7-5). <p>Furthermore, as site is known to contain un-homogenous fill materials, and clay like residual soils, the acceptable RPD % values applied to assess the quality control of a site shall be 50%</p>
Confirm that detection limits are appropriate	<p>Laboratory methodologies will be adopted in accordance with NEPC Schedule B (3), with all laboratory limits of reporting (LOR) checked to confirm that the LOR values are below the adopted criteria.</p>
Specify “If . . . , then . . . ” decision rule	<p>If the ‘true mean’ concentration at a particular sampling location is found to exceed the adopted SIL for the respective individual contaminant of concern (COC), then additional investigation and/or a risk assessment will be required.</p> <p>If the ‘true mean’ concentration at a particular sampling location is found to be less than the adopted SIL for the respective individual contaminant of concern then the soils at the site are considered not to pose an unacceptable risk from the COC to the identified on- and off- site environmental receptors, and therefore no further investigation is required.</p> <p>If the ‘true mean’ concentration of the respective contaminant of concern within groundwater is found to exceed the adopted GIL values, then further investigation and a site based risk assessment should be undertaken to define the risk to the identified on- and off-site environmental receptors.</p> <p>If the ‘true mean’ concentration of the respective contaminant of concern within groundwater is found to be below the adopted GIL, then the groundwater at that location will be defined as unaffected for the respective COC and will be considered as posing no unacceptable risk from the COC to the identified environmental receptors, and therefore no further investigation is required.</p>

DQO Process Steps

Inputs / Outputs

Step 6- Specify Limits on Decision Errors

Define the null hypothesis	The null hypothesis is that the site is suitable for 'residential land uses with minimal access to soils' as defined by the NEPC 2013. This hypothesis will be kept until overwhelming evidence suggests otherwise, at which time the site will require remediation.
Define the grey region	Where soils and or groundwater concentrations are just above, just below or meet the adopted criteria.
Define Type 1 and 2 decision errors	<p>Type 1 error –do not remove soils with 'true mean' concentrations exceeding the soil criteria by 2.5 times, or do not further assess groundwater with 'true mean' concentrations exceeding the groundwater criteria by 2.5 times.</p> <p>Type 2 error – remove soils with 'true mean' concentrations which do not exceed the soil screening levels, or further assess groundwater with 'true mean' concentrations exceeding the groundwater criteria by 2.5 times.</p>
Identify Consequences	<p>Type 1 error results in soils remaining on site which could pose a risk to human health and the end users of the site, or impacted groundwater to remain at an unacceptable level of contamination which could pose a risk to human health and the end users of the site.</p> <p>Type 2 error results in unnecessary removal of soils to landfill, or unnecessary remediation / further assessment of groundwater at an unnecessary cost.</p>

Define tolerable limits

Define tolerable limits	<ul style="list-style-type: none"> A decision can be made based on the probability that a contamination hotspot of a certain circular diameter will be detected with 95% confidence using a selected density of systematic data points. The decision error will be limited to a probability of 5% that a contamination hotspot may not be detected. A decision can be made based on a probability that 95% of the data, which is collected using a systematic sampling pattern, will satisfy the given site criteria. Therefore a limit on the decision error will be 5% that a conclusive statement may be incorrect
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Step 7 – Optimise the Design for Obtaining the Data

Determine how to best estimate 'true mean'	<p>Samples collected from random locations, are considered to represent of the overall soils present at the site, then using the reported laboratory concentrations as a conservative estimate of the 'true mean' of contaminant concentrations present in soils at the site.</p> <p>Using groundwater samples collected from predefined, monitoring bore locations present up and down the hydraulic gradient of the site, the maximum contaminant concentrations reported by the laboratory will be used as a conservative estimate of the 'true mean' for groundwater present within the site.</p>
Determine expected variability of surface soil and groundwater	As the residual soils present at the site are known to contain fill materials of unknown sources, overlying a non-homogenous residual

DQO Process Steps	Inputs / Outputs
contaminant concentrations	clay material, variability at the site is expected. Therefore, variability between soil sampling locations is expected, and the highest sampling density (while acknowledging budgetary constraints) shall be collected, being 9 sampling locations.
Design Sampling Strategy	Lowest cost sample design is preferred, with selection of sampling locations using a herringbone systematic sampling regime. Push tube drilling methods are to be applied wherever possible to preserve sample integrity.
Develop planning documents for the field investigation.	NSW EPA <i>Sample Design Guidelines</i> (1995), this SAQP as well as EI's operating procedures.

7.2 Data Quality Indicators

To ensure the data collected as part of the ESA was of quality, the following data quality assurance procedures were adopted, as presented in **Table 7-2** below. An assessment of the data quality indicators (DQI) relating to both field and laboratory procedures shall be carried out, with the details of the assessment presented in

Table 7-3 below.

Table 7-2 Data Quality Assurance Procedures

Item	Objectives
Environmental Consultant	The Environmental Consultant should maintain Quality Assurance Systems certified to AS/NZS ISO 9001:2000. Work would be undertaken by appropriately qualified and experienced personnel.
Sample handling and Storage	<p>Work should be undertaken general in accordance with field procedures based on industry accepted standard practice and in accordance with:</p> <ul style="list-style-type: none"> Australian Standard AS4482.1 (2005) Guide to the investigation and sampling of sites with potentially contaminated soil – Part 1: Non-volatile and semi-volatile compounds; Australian / New Zealand Standard AS/NZS 5667.11 (1998) Guidance on sampling of groundwater; NSW EPA (March 2004) Approved Methods for the sampling and analysis of water pollutants in New South Wales; and National Environment Protection (Assessment of Site Contamination) Measure 1999 – Amendment 2013, National Environment Protection Council, May 2013.
Transport	<p>Samples would be stored in an ice brick-cooled esky and transported to the laboratory. To ensure the integrity of the samples from collection to receipt by the analytical laboratory, samples will be sent to the laboratories under "chain of custody" (CoC) describing sample preservation and transport duration.</p> <p>One trip blank per sample batch sent to laboratory. Results for trip blanks should all be non-detected.</p>
Volatile losses	One spiked sample should be analysed per batch for soils. Volatile losses should be less than 10 percent in the trip spike. As previous sampling has not identified volatiles as being present within groundwater, the requirement of this sample within the groundwater monitoring event was deemed unnecessary.

Item	Objectives
QA samples	<p>Field and laboratory QA samples will be analysed as follows:</p> <ul style="list-style-type: none"> intra-laboratory duplicate samples at a rate of 1 in 10 primary samples inter-laboratory duplicate samples at a rate of 1 in 20 primary samples. <p>Field and Laboratory acceptable limits are between 30–50% RPD as stated by AS 4482.1–2005. Non-compliance is to be documented in the report and sample to be re-analysed or higher level to be conservatively adopted.</p>
Laboratory analyses	<p>The selected laboratories would comply with the respective ISO 9001 quality assurance programs, be NATA registered for the analysis to be undertaken and perform their own internal QA/QC programs, and would use appropriate detection limits for the analyses to be undertaken.</p>
Laboratory Quality Control – Duplicates, spikes, blanks and surrogates – Acceptable Limits	<p>Primary laboratory QA/QC acceptance limits are expected to be as follows:</p> <ul style="list-style-type: none"> surrogates: 70% to 130% recovery matrix Spikes: 70% to 130% recovery for organics or 80%-120% recovery for inorganics control Samples: 70% to 130% recovery for soil or 80% to 120% recovery for waters duplicate Samples: <4PQL - +/- 2PQL, 4-10PQL – 0-.25 or 50%RPD, >10PQL – 0-10 or 30%RPD method Blanks: zero to <PQL.

Table 7-3 Data Quality Indicators (NSW DEC, 2005)

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

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

8. ASSESSMENT METHODOLOGY

8.1 Soil Investigation

The methodology used to conduct the soil investigation is summarised in **Table 8-1**.

Table 8-1 Soil Sampling Methodology

Activity/Item	Details
Fieldwork Date	4 February, 2014 (Soil investigation works)
Investigation Method	Nine soil boreholes were advanced using a geoprobe drill rig, which was small enough to operate within the buildings and fitted with push tube capabilities. Drilling was continued until natural soils were encountered.
Rationale	<p>In order to comply with the minimum sampling density requirements recommended under the EPA (1995) <i>Sampling Design Guidelines</i> for a site area of approximately 0.04 hectares (3,952 m²) (being Stage A of the development), as well as the EPA (1994) <i>Minimum Soil Sampling Protocol</i> for imported fill soils, approximately <u>five</u> test locations would be required.</p> <p>Nine separate test boreholes (BH701 to BH7093) were selected using a herringbone sampling pattern, with allowance for structural obstacles (e.g. building walls, underground and overhanging services and other physical obstructions in use by existing operating businesses).</p>
Bores Drilled and Target Depth	<p>Sampling was continued down to 'clean' natural soils, or 0.5 m beyond the extent of observed contamination, whichever was greater. Boreholes situated within the vicinities of the identified USTs were extended to approximately 4m BGL, assumed to be the base depth of each UST.</p> <p>As Hawkesbury sandstone of high strength was likely to be present at surface, auger refusal was expected, which would be considered appropriate for the purposes of this investigation.</p>
Soil Logging	<p>Stratigraphic descriptions and any other relevant information obtained during drilling and the installation of the monitoring wells (if any) was recorded by appropriately qualified personnel.</p> <p>Soil classifications and descriptions were based on Unified Soil Classification System (USCS) and Australian Standard (AS) 4482.1-1997. The bore logs produced during the investigation are presented in Appendix D.</p>
Sample collection	<p>Soil samples were collected at the following depth intervals:</p> <ul style="list-style-type: none"> Close to the ground surface (0.0-0.2 m BGL) 0.3-0.6 m BGL 1.0 BGL and at 1.0 intervals thereafter until the total borehole depth where changes in lithology were detected (i.e. where 'clean' natural soils were encountered), evidence of contamination was observed, or elevated portable photo-ionisation detector (PID) readings were noted. <p>Samples were collected from the auger and/or directly from the trowel and sampling equipment were cleaned with phosphate-free detergent and rinsed with distilled water between samples.</p>

Activity/Item	Details
Field screening	All drain outlets in soil samples collected during the works were screened for volatile organic compounds (VOCs) using a portable PID, to assess if volatile contaminants are present.
Laboratory analyses	<p>Based on the VOC screening results and field observations, soil samples were selected for laboratory analysis for a range of potential contaminants of concern including :</p> <ul style="list-style-type: none"> Metals; Total Petroleum Hydrocarbons (TPH); Benzene/Toluene/Ethyl benzene/Xylene (BTEX); Polycyclic Aromatic Hydrocarbons (PAH); Pesticides (OCP, OPP, PCB); and Asbestos. <p>In addition to the analysis of primary soil samples, QAQC samples were also analysed, as per Section 9 of this report.</p>
Soil Sampling	Soil samples were collected using a hand trowel and placed into clean, laboratory-supplied acid washed, solvent rinsed glass jars using dedicated nitrile gloves.
Decontamination Procedures	<p>The drilling rods were decontaminated between sampling locations with potable water.</p> <p>The stainless steel trowel used was decontaminated using Decon 90, followed by a rinse with potable water and a final rinse with laboratory-prepared, volatile-free, rinsate water.</p>
Sample Preservation	Samples were stored in an insulated chest, which was maintained at low temperatures using ice-bricks, whilst on-site and in transit to the laboratory. All samples were submitted and analysed within the required holding periods.
Sampling locations reinstatement after sampling	Soil cuttings were used as backfill for drilled boreholes, as the site was in the process of excavation or soon to be excavated. Sampling locations were reinstated to pre-investigation conditions. Excess spoil that could not be returned to the boreholes was placed in drums by the drilling contractor and removed from site for appropriate disposal.
Quality Control & Laboratory Analysis	A number of soil samples were submitted for analysis by SGS Laboratories (SGS). QA/QC testing comprised intra-laboratory duplicates ('field duplicates') tested by SGS and inter-laboratory field duplicate tested by Envirolab Services (Envirolab). Selected samples were submitted for analysis of previously-identified PCOC.

8.2 Groundwater Investigation

The methodology used to conduct the groundwater investigation is summarised in **Table 8-2**.

Table 8-2 Groundwater Sampling Methodology

Activity/Item	Details
Date of Field Work	<p>26 February 2014 (Groundwater Sampling)</p> <p>Two, flush-mounted, groundwater monitoring wells (MW 112 installed over bore</p>

Activity/Item	Details
	<p>BH702 and MW 113 installed over bore BH708) were used for the assessment of groundwater quality at the site (<i>Ref: EI Groundwater Investigation, January 2014</i>). Relative locations of the monitoring wells are illustrated in Figure 2.</p> <p>Note: During the groundwater monitoring event, the well MW 113 appeared to have been tampered with. Fresh hydrocarbon product was present within the steel gatic well cover and was unable to be removed. Due to the resulting uncertainty regarding the integrity of the well and groundwater at MW113, this location was excluded from the groundwater sampling event.</p>
Well Gauging	<p>The depth to groundwater (SWL) was measured at each well prior to sampling. Monitoring wells were gauged for depth to groundwater and a transparent HDPE bailer was used to visually assess the presence of phase-separated hydrocarbons (PSH) prior to the commencement of well purging. No PSH was detected within any of the groundwater monitoring wells at the time of development.</p>
Well Purging & field testing	<p>Purging and sampling of a single onsite groundwater monitoring well was undertaken on 26 February 2014 using a dedicated HDPE bailer. Measurement of water quality parameters was conducted post well purging, due to the slow recovery of groundwater within the monitoring well. Groundwater was observed to be light brown/orange and turbid. The purged volume removed from each well and field test results are detailed in Section 7 and summarised as follows:</p> <ul style="list-style-type: none"> • Groundwater sampled from monitoring wells was classified as slightly acidic (pH 5.6) and fresh (TDS 120 mg/L) • No odours or sheens were noted as present within monitoring well MW112, sampled during this investigation; and • As explained above, groundwater sampling was not conducted at MW113, due to well tampering and potential uncertainty in relation to sample integrity.
Groundwater sampling	<p>Once wells had been purged dry and allowed to recover, it was considered that representative groundwater quality had been achieved to a practical extent and final physico-chemical measurements on the fresh groundwater seepage were recorded. Groundwater samples were then collected by direct transfer from bailer to laboratory-prepared containers, using a low flow attachment ('nib') to minimise the potential loss of volatiles during sampling.</p> <p>Due to a laboratory error, the primary groundwater sample, GW112 and the duplicate sample, GWB-3 were mistakenly sampled, with the GWB-3 sample being analysed as the primary, and the GW112 sample analysed for the shortened duplicate analysis set. Due to this, sample GWB-3 was utilised as the primary sample for use within the data set, with sample GW112 used as the BFD QC sample.</p>
Decontamination Procedure	<p>Decontamination was not required on most sampling equipment as it was dedicated to each individual well. The water level probe and exterior of the field water quality probes were washed in a solution of potable water and Decon 90, followed by rinsing with potable water and a final rinse of laboratory-prepared, deionised, VOC-free water, between sampling locations.</p>
Sample Preservation	<p>Sample containers were supplied by the laboratory with the following preservatives:</p> <ul style="list-style-type: none"> • one, 1 litre amber glass, acid-washed and solvent-rinsed bottle; • two, 40ml glass vials, pre-preserved with dilute hydrochloric acid, Teflon-sealed; and • one 250mL, HDPE bottle, pre-preserved with dilute nitric acid (1 mL). <p>Samples for metals analysis were field-filtered using 0.45 µm pore-size filters. All containers were filled with sample to the brim then capped and stored in ice-brick filled chests on-site and during transit to the laboratory.</p>

Activity/Item	Details
Sample Transport	After sampling, refrigerated sample chests were transported to SGS Australia Pty Ltd using strict Chain-of-Custody (COC) procedures. Inter-laboratory QC duplicate samples were forwarded to Envirolab Services Pty Ltd (Envirolab) for QA/QC analysis. A Sample Receipt Advice (SRA) was provided by each laboratory to document sample condition upon receipt. Copies of SRA and COC certificates are presented in Appendix E .

9. DATA QUALITY ASSESSMENT

9.1 Quality Assurance Programme

In order to satisfy the objectives of the environmental site assessment (ESA) works, Environmental Investigations (EI) implemented a quality assurance programme, including:

- The use of appropriately qualified / trained Environmental professional staff with over ten years of continuous relevant experience in the assessment and management of contaminated sites, to carry out the environmental site assessment investigation works;
- Calibration of equipment prior to application on site and recording the results of the calibration in appropriate site documentation.
- Appropriate storage (esky and ice bricks) and handling of quality control (QC) samples received from the laboratories for use on site, prior to and during ESA investigation works;
- Undertaking appropriate equipment decontamination and use of a new pair of nitrile gloves by site personnel prior to the collection of each soil sample directly from the push tube liner or drill rig auger;
- Use of a cooler with ice to store collected samples prior to and during transport to the laboratories;
- The collection and analysis of field quality control samples during the ESA investigation works;
- The use of chain of custody (CoC) procedures to ensure the traceability of sample transport and handling; and
- The use of laboratories accredited by the National Association of Testing Authorities (NATA) for the analysis of soil samples collected during the monitoring well installation works.

9.2 Adopted Assessment Criteria

Soil Criteria

The Soil Investigation Levels (SILs) that would be used as the action levels for the assessment are summarised in the analytical tables, being **Tables 10-3 to 10-6**. Analytical methods have been selected to be relevant for the selected SILs with respect to contaminant detection limits and these are presented in detail in **Appendix F, Table QC3**.

The Soil Investigation Levels (SILs) that would be used as the action levels for the assessment were the:

- NEPC (2013) Schedule B1 – Table 1A(1) Health-Based Investigation Levels (HIL-B) for residential with minimal opportunities for soil access; which includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments. Even though commercial land uses would also take place on the site, the HIL-B criteria were considered to be the most conservative criteria for the proposed mixed land uses.
- NEPC (2013) Schedule B1 – Table 1A(3) Soil Health Screening Levels (HSL-A&B) for vapour intrusion (for TPHs F1 and F2, BTEX and Naphthalene).

- NEPC (2013) Schedule B1 – Table 1B(6) Ecological Screening Levels (ESLs) for Urban residential and public open space, in regards to TPH fractions F1 – F4, BTEX and Benzo(α)pyrene in soil;
- NEPC (2013) Schedule B1 – Table 1B(7) Management Limits for Residential, parkland and public open space, in relation to TPH fractions F1 – F4; and
- NEPC (2013) Schedule B1 – Table 7 Health Screening Levels for asbestos contamination in soil (Asbestos HSLs).

Ecological soil criteria for heavy metals (EILs) were calculated using BH705-1, which was representative of silty topsoil present at the site, which reported a pH of 7.5 and a cation exchange capacity (CEC) of 12 cmolc/kg. Added contaminant limits (ACL) were selected using associated physiochemical properties, with all concentrations of heavy metals identified at the site considered to be aged. Values were calculated in accordance with NEPC 2013 Schedule B1, Tables 1B(1) – 1B(3), as follows:

- Aged Zinc: ACL of 400 + average contaminant concentration;
- Aged copper: ACL of 190 + average contaminant concentration;
- Aged Chromium III (total chromium concentration assumed as chromium III): ACL of 190 + average contaminant concentration; and
- Aged Nickel: ACL of 170 + average contaminant concentration.

Calculated values are displayed within **Table 10-2** of this report.

Groundwater Criteria

The Groundwater Investigation Levels (GILs) that would be used as the action levels for the assessment are summarised in the analytical tables, being **Table 10-8**. Analytical methods were selected to be relevant for the adopted GILs with respect to contaminant detection limits and are outlined as follows:

- NEPC (2013) Schedule B1 – Table 1A(4) Groundwater Health Screening Levels (HSLs) for vapour intrusion (for TPHs F1 and F2, BTEX and Naphthalene);
- NEPC (2013) Schedule B1 – Table 1C Groundwater Health-Based Investigation Levels (GIL) for fresh and marine waters in line with the ANZECC (2000); and
- ANZECC and ARMANZ (2000) Guidelines for Fresh and Marine Water Quality, National Water Quality Management Strategy.

As Parramatta River is considered to be a tidally-influenced water feature, the marine water criteria were applied.

9.3 Quality Control Program

For the purpose of assessing the quality of data presented in this ESA, 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 in **Table 9-4**, with the allowable acceptance ranges for the data presented in **Table 9-1**.

Table 9-1 Data quality objectives for QA/QC samples

Data Quality Indicator	Quality Objective / Sample type	Acceptable Results Range
Accuracy	Field – Rinsate Blank (laboratory prepared) & Trip Blanks Laboratory – Laboratory control spike and matrix spike	70 – 130 % recovery Prescribed by the laboratories
Precision	Field – Blind replicate and spilt duplicate Laboratory – Laboratory duplicate and matrix spike duplicate	< 30 % relative percentage difference (RPD [%]) Prescribed by the laboratories
Representativeness	All samples collected in accordance with SAQP	-
Completeness	Completion (%)	-

Calculation of Relative Percentage Difference (RPD)

The RPD values were calculated using the following equation:

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

C_O = Concentration obtained from the primary sample.

C_R = Concentration obtained from the blind replicate or split sample.

Calculation of Spike Recovery

The trip spike sample recovery values were calculated using the following equation:

$$\frac{X}{T} \times 100 \%$$

X = Observed Value

T = True Value

9.3.1 Field QA/QC Data Evaluation

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

- Blind field duplicate;
- Inter laboratory duplicate;
- Trip blank;
- Trip spike; and
- Rinsate Blank.

QA/QC results including the calculated RPD values are presented in **Table 9-2**.

Blind Field Duplicate

Soils:

A single blind field duplicate (BFD) sample, being sample B700, was collected from the primary samples BH701-1. 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 was analysed for TPH, BTEX and selected heavy metals with the RPD values calculated found to be within the Data Acceptance Criteria (**Ref. Appendix F, Table QC5**), indicating that the soils collected were representative of the soils present at the respective sampling locations.

Groundwater:

A single BFD sample, being sample GWB-3, was collected from the primary sample GW112 taken from groundwater monitoring well MW112. The preparation of the BFD sample involved the collection of a bulk quantity of groundwater from the same monitoring well location without mixing, before dividing the material into identical sampling bottles. The duplicate sample was then presented blind to the primary laboratory (SGS) to avoid any potential analytical bias.

Due to a laboratory error, the primary groundwater sample, GW112 and the duplicate sample, GWB-3 were mistakenly sampled, with the GWB-3 sample being analysed as the primary, and the GW112 sample analysed for the shortened duplicate analysis set. Due to this, sample GWB-3 was utilised as the primary sample for use within the data set, with sample GW112 used as the BFD sample. The BFD was analysed for TPH, BTEX and selected heavy metals with the RPD values calculated found to be within the Data Acceptance Criteria (**Ref. Appendix F, Table QC5**), with the exception of Nickel (RPD = 100%). This exceedence was considered to be representative of the small concentrations of the contaminant identified within groundwater, however as these concentrations were within the same magnitude, the exceedence was not considered to affect the representativeness of the dataset, but may be suggestive of variation within the fractured rock aquifer within this site.

Inter Laboratory Duplicate

Soils:

One (1) inter laboratory duplicate (ILD) sample, being sample I700, was collected from the primary sample BH701-1. The preparation of sample I700 was identical to the BFD sample as described above, and analysed for TPH, BTEX and selected heavy metals. The RPD values calculated for the ILD sample were found to be within the Data Acceptance Criteria (**Ref. Appendix F, Table QC5**), therefore based on the calculated RPD %, it is considered that the samples collected were representative of the soils present at the respective sampling locations.

Groundwater:

One (1) inter laboratory duplicate (ILD) sample, being sample GWI-3, was collected from the primary sample GW112 taken from groundwater monitoring well MW112. The preparation of the GWI-1 sample was identical to the BFD sample as described above, and analysed for TPH, BTEX and selected heavy metals. The RPD values calculated for the ILD sample were found to be within the Data Acceptance Criteria (**Ref. Appendix F, Table QC5**), indicating that the samples collected were representative of the groundwater present at the respective sampling locations.

Trip Blank

A single trip blank (TB) sample, prepared by the primary laboratory, was used for the soil sampling investigation, and analysed for BTEX by the primary laboratory. The soil TB sample results were reported below the laboratory LOR, indicating that ideal sample transport and handling conditions were achieved.

Rinsate Blank

Two rinsate blank (RB) samples were submitted to the primary laboratory for TPH, BTEX and selected heavy metals. The RB sample results were reported below the laboratory LOR, and it was therefore concluded that decontamination procedures performed during the field works had been effective.

Assessment of Field QA/QC Data

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 ESA works to be appropriate and the results to be acceptable.

9.3.2 Laboratory QA/QC Data Evaluation

Details of the laboratory QA/QC data is provided in the *Laboratory Analytical Reports (Appendix G)*. As part of their NATA accreditation, the primary and secondary laboratories carried out a comprehensive QA/QC assessment.

EI note that soil samples were analysed within the holding times prescribed by the laboratories.

The laboratory QA/QC samples collected during the ESA works were as follows:

- Laboratory duplicate (DUP);
- Method blank (MB);
- Laboratory control spike (LCS);
- Matrix spike (MS); and
- Matrix spike duplicate (MSD).

No QC outliers were reported by the primary or secondary laboratories.

The laboratories used for this assessment used certified methods pursuant with their respective NATA accreditations. All laboratory duplicates (DUP), method blanks (MB), laboratory control spikes (LCS), matrix spikes (MS) and matrix spike duplicates (MSD) were compliant with internal laboratory recovery limits. Due to the rigorous NATA accreditation process and the laboratory QC sample results reviewed, EI considered that the results were within acceptable control limits specified by SGS and Envirolab, in accordance with their NATA accreditation. Therefore the integrity of the analytical data was considered to be suitable for interpretative use.

9.4 OVERALL DATA ASSESSMENT

The QA/QC assessment of the field and laboratory data indicated that for the purpose of the ESA works, the results of the field and laboratory QA/QC programme were considered acceptable for use as outlined in the data assessment below.

9.4.1 Accuracy

The blank recovery results for the field (laboratory prepared) RB/TB samples were within the acceptable range, therefore EI considered that the accuracy of the overall field QA/QC data assessed during the ESA works was effectively maintained.

9.4.2 Precision

The inter and intra lab sample results for the field blind and inter-laboratory samples were within the acceptable range, therefore EI considered that the precision of the overall field QA/QC data assessed during the ESA works was effectively maintained.

9.4.3 Representativeness

All fieldworks were carried out in accordance with the relevant EI procedures and NSW guidance, therefore EI considered that the precision of the overall field QA/QC data assessed during the ESA works was effectively maintained.

9.4.4 Completeness

EI has considered the overall completeness of the data set and assessed it is suitable for use in this ESA.

Table 9-2 Summary of laboratory results for field quality control samples

Sample identification	Description	TRH				BTEX				Heavy Metals								
		F1	F2	F3	F4	Benzene	Toluene	Ethylbenzene	Xylene (total)	Arsenic	Cadmium	Chromium (Total)	Copper	Lead	Mercury	Nickel	Zinc	
Intra-laboratory Duplicate																		
BH701-1	Fill Material	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	<3	<0.3	9.6	32	26	0.25	33	56	
B700	Replicate of BH701 - 1	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	<3	<0.3	11	28	27	0.28	23	45	
RPD		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.59	13.33	3.77	11.32	35.71	21.78	
GWB-3	Groundwater	<50	<60	<500	<500	<0.5	<0.5	<0.5	<1.5	<1	<0.1	<1	7	<1	<0.0001	4	31	
GW112	Replicate of GWB-3	<50	<60	<500	<500	<0.5	<0.5	<0.5	<1.5	<1	<0.1	<1	8	<1	<0.0001	12	33	
RPD		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.33	0.00	0.00	100.00	6.25	
Inter-laboratory Duplicate																		
BH701-1	Fill Material	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	<3	<0.3	9.6	32	26	0.25	33	56	
I700	Replicate of BH701 - 1	<25	<25	130	<120	<0.1	<0.1	<0.1	<0.3	<4	<0.4	11	38	24	0.3	29	61	
RPD		0.00	0.00	45.71	0.00	0.00	0.00	0.00	0.00	NA	NA	13.59	17.14	8.00	18.18	12.90	8.55	
GWB-3	Fill Material	<50	<60	<500	<500	<0.5	<0.5	<0.5	<1.5	<1	<0.1	<1	7	<1	<0.0001	4	31	
GWI-3	Replicate of GWB-3	<10	<50	<100	<100	<1	<1	<1	<3	<1	<0.1	<1	5	<1	<0.05	3	29	
RPD		NA	NA	NA	NA	NA	NA	NA	NA	0.00	0.00	0.00	33.33	0.00	NA	28.57	6.67	
Trip Blanks																		
TB4	Trip Blank	-	-	-	-	<0.5	<0.5	<0.5	<1.5	-	-	-	-	-	-	-	-	
Rinsate Blanks																		
RB700	De-ionised water	<50	<60	<500	<500	<0.5	<0.5	<0.5	<1.5	<1	<0.1	<1	15	<1	<0.0001	<1	<5	

52.17	Vale exceeds allowable limit of rinsate blank
82.35	RPD exceeds 30-50% range referenced from AS4482.1 (2005)

Note: all soil analysis is reported in mg/kg and waters are reported in µg/L

NA = Sample results were less than the laboratory limit of reporting, and differed between laboratories, therefore the RPD values could not be calculated.

NR = 'No Result' i.e. no analysis was performed.

10. RESULTS AND DISCUSSION

10.1 Soil Investigation

10.1.1 Soil Sampling and Field Observations

Soil samples were obtained from the test bores BH701 – BH709 at various depths ranging between 0.0 to 1.5 m BGL. The depth of soil investigations was limited due to the presence of shallow Hawkesbury Sandstone bedrock, which caused drill bit refusal. All examined soils 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 field observations were noted:

- Visual and olfactory evidence of hydrocarbon impacts to soil were noted within borehole BH707, located in the south west corner of the commercial warehouse. No further visual or olfactory evidence of hydrocarbon impacts were identified within the remaining soil borehole locations at the site during this assessment; and
- No fibrous cement sheeting, charcoal, ash or slag was observed in any of the examined fill soils.

Borehole logs were prepared for all test bores and are included with sample descriptions in **Appendix D**.

10.1.2 Sub-Surface Conditions

On the basis of observations made during the drilling investigation, a summary of site sub-surface conditions is presented in **Table 10-1**.

Table 10-1 General site geology

Strata Type	General Description
Fill layer	CONCRETE or BITUMEN / ROADBASE ranging from approximately 0.0 to 0.1 m overlying lenses of varied fill to depths as great as 1.2m BGL, comprising brown/grey silty SAND with some clay and organics, or orange/brown/red gravelly CLAY, of medium plasticity, inferred stiff.
Residual Soil	Occasional lenses of SILT, light brown/orange with minor clay of low plasticity (BH704) and BH705), followed by light orange/brown silty CLAY of medium plasticity inferred stiff, to a maximum depth of 1.5m.
Bedrock	Hawkesbury Sandstone, orange/brown and orange/red, inferred extremely to distinctly weathered.

10.1.3 Soil Laboratory Results

Laboratory analytical results for the representative discrete soil samples are summarised alongside the adopted soil criteria in **Tables 10-3 to 10-5** and presented in detail in copies of the laboratory analytical reports in **Appendix G**.

Metals

Results of soil samples collected from soil test boreholes BH701 to BH709 showed all metal concentrations of the screened heavy metals to be below the adopted human health based SILs.

Results of the soil samples collected from the soil test boreholes BH701 to BH709 reported concentrations of the screened metals to be below the adopted ecological criteria derived for the site, with the exception of soil sample BH702-1, which exceeded the ecological criteria for Zinc (2,700 mg/kg).

TPHs and BTEX

Results of soil samples collected from soil test boreholes BH701 to BH709 reported concentrations of screened TPH fractions to be below the adopted human health based SILs, with no detectable BTEX concentrations were identified in any of the tested samples.

Furthermore, results of the soil samples collected from the above mentioned soil test boreholes reported all concentrations of the screened TPH fractions to be below the adopted ecological SILs.

PAHs

Results of soil samples collected from soil test boreholes BH701 to BH709 reported concentrations of the screened PAH compounds to be either non-detectable or trace concentrations, being within the adopted human health based and ecological criteria.

Asbestos

No detectable asbestos concentrations or traces of respirable fibres were identified in the tested soil samples.

Other Organics

Non-detectable concentrations of the screened OCP, OPP or PCB compounds were identified in samples, with all laboratory quantitation limits being below the corresponding SILs.

Table 10-2 Summary of Laboratory Results for Metals in Soils

Sample ID	Arsenic (mg/kg)	Cadmium (mg/kg)	Chromium* (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Nickel (mg/kg)	Zinc (mg/kg)
BH701-1	<3	<0.3	9.6	32	26	0.25	33	56
BH702-1	14	0.6	7.3	99	95	0.04	13	2700
BH703-1	5	<0.3	23	<0.5	10	0.01	1.2	3.6
BH704-1	4	<0.3	20	1.4	7	0.03	3.1	49
BH704-2	<3	<0.3	11	<0.5	7	0.01	0.6	1.7
BH704-3	<3	<0.3	8.8	<0.5	15	0.02	<0.5	0.8
BH705-1	4	<0.3	15	4.4	10	0.04	1.9	53
BH706-1	<3	<0.3	9.4	0.5	8	<0.01	<0.5	1.5
BH707-1	3	<0.3	5.7	0.5	23	0.10	<0.5	4.2
BH707-2	6	<0.3	13	17	160	0.72	2.6	93
BH707-3	5	<0.3	26	0.5	15	0.02	1.6	3.3
BH708-1	6	0.4	15	12	66	0.03	2.3	28
BH708-2	4	<0.3	14	15	110	0.17	2.5	61
BH708-3	5	<0.3	25	0.5	21	0.01	1.1	2.6
BH708-4	<3	<0.3	8.7	<0.5	4	<0.01	<0.5	1.4
BH709-1	5	<0.3	13	11	34	0.03	2.4	22
BH709-2	4	<0.3	24	<0.5	14	<0.01	0.7	2.9
Adopted Criteria								
HIL B	500	150	500 ²	30,000	1,200	120	1,200	60,000
EILs	100 ¹	NR	205	194.4 ³	1100	NR	171.9	453 ⁴

Notes: All results are in units of mg/kg, unless otherwise noted

All SILs are sourced from (NEPC 2013) *National Environment Protection (Assessment of Site Contamination) Measure 1999 – Amendment 2013, Schedule (B1) - Guideline on Investigation Levels for Soil and Groundwater*, unless otherwise indicated

HIL B NEPM (2013) Health Investigation Levels (HILs) for Soil Contaminants – Residential with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high rise buildings and apartments, Table 1A(1)

EIL NEPM (2013) Soil-specific added contaminant limits for aged zinc (Table 1B[1]), copper (Table 1B[2]), chromium III and nickel (Table 1B[3]), unless otherwise indicated. Values are derived by calculating the sum off the respective added contaminant limit to values as defined within Table 10.2 of this report.

NR No recommended criteria currently available for the indicated parameter(s)

***** As clay content was not analysed within the data set, the most conservative value was applied, being 1%

1 Referenced value is sourced from NEPM (2013) Generic Ecological Investigation Levels (EILs) for aged As, fresh DDT and fresh naphthalene in soils irrespective of their physiochemical properties – Table 1B(5)

2 NEPM 2013 thresholds are for Chromium VI. It is assumed all detected Chromium is Chromium (III), as Chromium (VI) would be too unstable to exist under normal circumstances.

3 Value is calculated using CEC based added contaminant limit for copper (Table 1B(2))

4 Referenced value is sourced from NEPM (2013) Soil Specific added contaminant limits for aged zinc in soil – Table 1B(1)

Bolded values indicate metal concentration exceeding the adopted EILs

Table 10-3 Summary of Laboratory Results for TPH & BTEX in Soils

Sample ID	Depth (m)	Total Petroleum Hydrocarbons				Benzene	Toluene	Ethyl benzene	Total Xylenes
		F1	F2	F3	F4				
BH701-1	0.1	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3
BH702-1	0.1	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3
BH703-1	0.2	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3
BH704-1	0.1	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3
BH704-2	0.2	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3
BH704-3	0.6	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3
BH705-1	0.1	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3
BH706-1	0.3	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3
BH707-1	0.3	<25	<25	130	<120	<0.1	<0.1	<0.1	<0.3
BH707-2	0.7	<25	<25	<90	<120	<0.1	<0.1	0.5	<0.3
BH707-3	1.5	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3
BH708-1	0.3	<25	<25	140	<120	<0.1	<0.1	<0.1	<0.3
BH708-2	0.9	<25	<25	150	<120	<0.1	<0.1	0.3	0.4
BH708-3	1.2	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3
BH708-4	1.4	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3
BH709-1	0.3	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3
BH709-2	0.9	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3
Adopted Criteria									
HSL A & B (Silt)	0 m to <1 m	40	230	NR	NR	0.6	390	55	95
	1 m to <2 m	65	NL	NR	NR	0.7	NL	NL	NL
HSL A & B (Clay)	0 m to <1 m	50	280	NL	NL	0.7	480	NL	110
	1 m to <2 m	90	NL	NL	NL	1	NL	NL	310
ESLs	Coarse grained	180 ⁵	120 ⁵	300	2,800	50	85	70	105
	Fine grained			1,300	5,600	65	105	125	45
Management Limits	Coarse grained	700	1,000	2,500	10,000	NR	NR	NR	NR
	Fine grained	800		3,500		NR	NR	NR	NR

Notes: All results are in units of mg/kg, unless otherwise noted

All SILs are sourced from *National Environment Protection (Assessment of Site Contamination) Measure 1999 – Amendment 2013, Schedule (B1)* - Guideline on Investigation Levels for Soil and Groundwater, (NEPM 2013), unless otherwise indicated.

HSL A&B NEPM (2013) Soil Health Screening Levels (HSLs) for vapour intrusion – low to high density residential, Table 1A(3).

ESLs NEPM (2013) Ecological Screening Levels (ESLs) for TPH fractions F1 – F4, BTEX and Benzo(a)pyrene in soils– urban residential and public open space, Table 1B(6). ESLs are of low reliability except where indicated by ¹ which indicates that the ESL is of moderate reliability.

Management Limits – NEPM (2013) Management Limits for TPH fractions F1 – F4 in soil, Table 1B(7).

NL = 'not limiting' – HSL exceeds soil saturation concentration for the analyte group and soil vapour source concentration cannot exceed maximum allowable vapour risk.

NR = No recommended criteria currently available for the indicated parameter(s)

F1 = concentration of TPH C₆-C₁₀ fraction less the sum of BTEX

F2 = concentration of TPH >C₁₀-C₁₆ fraction less Naphthalene

F3 = concentration of TPH >C₁₆-C₃₄ fraction

F4 = concentration of TPH >C₃₄-C₄₀ fraction

Bolded values indicate analyte concentration exceeding the adopted ecological SILs / Management Limits

Table 10-4 Summary of Laboratory Results for PAHs in Soils

Sample Identification	Polyaromatic Hydrocarbons			
	Carcinogenic PAHs (as Benzo[a]pyrene TEQ) ⁴	Benzo(a)pyrene	Total PAHs	Naphthalene
BH701-1	0.7	0.5	5.2	<0.1
BH702-1	0.8	0.6	5.2	<0.1
BH703-1	<0.2	<0.1	<0.8	<0.1
BH704-1	<0.2	<0.1	<0.8	<0.1
BH704-2	<0.2	<0.1	<0.8	<0.1
BH704-3	<0.2	<0.1	<0.8	<0.1
BH705-1	<0.2	<0.1	<0.8	<0.1
BH706-1	<0.2	<0.1	<0.8	<0.1
BH707-1	<0.2	<0.1	<0.8	<0.1
BH707-2	0.5	0.4	2.9	<0.1
BH707-3	<0.2	<0.1	<0.8	<0.1
BH708-1	<0.2	0.1	1.1	<0.1
BH708-2	0.3	0.2	2.1	<0.1
BH708-3	<0.2	<0.1	<0.8	<0.1
BH708-4	<0.2	<0.1	<0.8	<0.1
BH709-1	<0.2	<0.1	<0.8	<0.1
BH709-2	<0.2	<0.1	<0.8	<0.1
Adopted Criteria				
HIL B	4	NR	400	3 / 5 ¹
HIL D	40	NR	4,000	NL
EIL/ESLs	NR	0.7 ³	NR	170 ²

Notes: All results are in units of mg/kg, unless otherwise noted

All SILs are sourced from *National Environment Protection (Assessment of Site Contamination) Measure 1999 – Amendment 2013, Schedule (B1)* - Guideline on Investigation Levels for Soil and Groundwater, (NEPM 2013), unless otherwise indicated

HIL B NEPM (2013) Health Investigation Levels (HILs) for Soil Contaminants – Residential with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high rise buildings and apartments, Table 1A(1)

1 Referenced value is sourced from NEPM (2013) Soil Health Screening Levels (HSLs) for vapour intrusion – low to high density residential, Table 1A(3) for *Sand* (3 mg/kg) and *Clay* (5 mg/kg) soils

2 Referenced value is sourced from NEPM (2013) Generic Ecological Investigation Levels (EILs) for aged As, fresh DDT and fresh naphthalene in soils irrespective of their physiochemical properties – Table 1B(5)

3 Referenced value is sourced from NEPM (2013) Ecological Screening Levels (ESLs) for TPH fractions F1 – F4, BTEX and benzo(a)pyrene in soil – Table 1B(6)

4 Carcinogenic PAHs: SIL is based on the 8 carcinogenic PAHs and their TEFs (potency related to B(a)P) adopted by CCME 2008 (Refer schedule B7). TEQ is calculated by multiplying the concentration of each carcinogenic PAH in the sample by its B(a)P TEF, and summarising the products.

NR = No Recommended criteria are currently available for the indicated parameter(s)

Bolded values indicate analyte concentration exceeding the adopted ecological SILs

Table 10-5 Summary of Laboratory Results for Asbestos in Soils

Sample Identification	Asbestos (% w/w)
BH701-1	No Asbestos Detected
BH702-1	No Asbestos Detected
BH703-1	No Asbestos Detected
BH704-1	No Asbestos Detected
BH705-1	No Asbestos Detected
BH706-1	No Asbestos Detected
BH707-1	No Asbestos Detected
BH708-1	No Asbestos Detected
BH709-1	No Asbestos Detected
Adopted Criteria	0.04 % ¹ / 0.05% ²

Notes: All SILs are sourced from *National Environment Protection (Assessment of Site Contamination) Measure 1999 – Amendment 2013, Schedule (B1) - Guideline on Investigation Levels for Soil and Groundwater*, (NEPM 2013), Table 7 – *Health screening levels for asbestos contamination in soil* unless otherwise indicated

1 HIL B Criteria

2 HIL D Criteria

Table 10-6 Summary of Laboratory Results for OCPs, PCBs & OPPs in Soils

Sample ID	OCPs								Total OPPs	Total PCBs
	aldrin	dieldrin	endrin	chlordan	heptachlor	DDT	DDD	DDE		
BH701-1	<0.1	<0.2	<0.2	<0.2	<0.1	<0.2	<0.2	<0.1	N.D	<1
BH702-1	<0.1	<0.2	<0.2	<0.2	<0.1	<0.2	<0.2	<0.1	N.D	<1
BH703-1	<0.1	<0.2	<0.2	<0.2	<0.1	<0.2	<0.2	<0.1	N.D	<1
BH704-1	<0.1	<0.2	<0.2	<0.2	<0.1	<0.2	<0.2	<0.1	N.D	<1
BH705-1	<0.1	<0.2	<0.2	<0.2	<0.1	<0.2	<0.2	<0.1	N.D	<1
BH706-1	<0.1	<0.2	<0.2	<0.2	<0.1	<0.2	<0.2	<0.1	N.D	<1
BH707-1	<0.1	<0.2	<0.2	<0.2	<0.1	<0.2	<0.2	<0.1	N.D	<1
BH708-1	<0.1	<0.2	<0.2	<0.2	<0.1	<0.2	<0.2	<0.1	N.D	<1
BH709-1	<0.1	<0.2	<0.2	<0.2	<0.1	<0.2	<0.2	<0.1	N.D	<1
Adopted Criteria										
HIL B	Total 10	20	90	10	Total 600	NR	50			
HIL D	Total 45	100	530	50	Total 3,600	NR	7			

Notes: All results are in units of mg/kg, unless otherwise noted.

All SILs are sourced from *National Environment Protection (Assessment of Site Contamination) Measure 1999 – Amendment 2013, Schedule (B1) - Guideline on Investigation Levels for Soil and Groundwater*, (NEPM 2013), unless otherwise indicated.

HIL B NEPM (2013) Health Investigation Levels (HILs) for Soil Contaminants – Residential with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high rise buildings and apartments, Table 1A(1).

NR No Recommended criteria are currently available for the indicated parameter(s).

ND Not Detected, i.e. all concentrations for the respective contaminant were reported to be below laboratory limits of detection.

10.1.4 Discussion of Soil Results

Metals

Metal concentrations in soil sample BH702-1 were found to exceed the ecological criteria for Zinc (2,700 mg/kg). This soil sample was collected from within a residual clay material present at the north western corner of the site, within the car parking area. As the proposed development plans include removal of all fill soils within the Stage A site for the construction of a basement car park, the ecological criteria will not be applicable for the proposed land uses.

TPHs and BTEX

TPH F3 (>C16 – C34), as well as trace ethyl-benzene concentrations have been identified within soil investigation boreholes BH701 and BH708, and may be indicative of the presence of USTs remaining close to these boreholes.

10.2 Groundwater Investigation

10.2.1 Groundwater Field Quality Parameters

Field observations are documented within the borehole logs in **Appendix D**, and the field data sheets produced during well purging are attached as **Appendix H**. No odours or sheens were observed in any of the groundwater monitoring wells sampled during groundwater sampling. Phase-separated hydrocarbons (PSH) were not detected within any of the wells. The wells were all noted to be *slightly turbid* to *turbid* during sampling.

Field parameters including pH, electrical conductivity (EC) and dissolved oxygen (DO) were measured during groundwater sampling and are summarised in **Table 10-7** below.

Table 10-7 Groundwater Field Parameters

Sample ID	Sampling Date	Depth to Water (m BTOC)	Temp (°C)	pH	EC (µs/cm)	Total Dissolved Solids (ppm)	Dissolved Oxygen (mg/L)	Redox (mV)
GW112	26.12.14	7.093	24.4	5.6	240	120	2.3	120
GW113	26.12.14	Well tampered – Sample not taken						

The groundwater present within groundwater monitoring well MW112 was found to be slightly acidic, and fresh, which was considered to be within excepted ranges for groundwater present within Hawkesbury Sandstone. As previously stated, sampling of groundwater monitoring well MW113 was excluded from this groundwater monitoring event due to the apparent tampering of this sampling location.

10.2.2 Site Hydrogeology and Groundwater Flow

Groundwater is expected to occur in the underlying sandstone fractures and bedding planes and flow in a southerly direction, toward Parramatta River.

In addition to the hydrogeological data provided in **Section 3.3**, onsite groundwater depth and flow direction confirmed the southerly direction of groundwater flow, which were consistent with the findings as described within the EI Groundwater Investigation (EI E2009 AC, January 2014).

10.2.3 Groundwater Analytical Results

Laboratory analytical results for all groundwater sample collected are summarised in **Table 10-8**, which also includes the GILs that were adopted for the assessment. Copies of Laboratory Analytical Reports are also attached in **Appendix G**.

In summary, all reported concentrations of the tested contaminants were found to be below the adopted criteria all wells present at the site, with the exception of the following:

- Copper concentrations exceeded marine GILs in groundwater monitoring well GW112;
- Zinc concentrations exceeded marine GILs in groundwater monitoring well GW112; and
- Acetone was identified within the groundwater present at monitoring well GW112. As no criteria for this contaminant was identified, and the concentrations reported are considered as a low risk.

10.2.4 Discussion of Groundwater Results

Metal concentrations (i.e. copper and zinc) were found to exceed the GILs adopted for this assessment. The identified elevated groundwater concentrations are considered to be within background fluctuations of naturally occurring levels for these metals in the Sydney metropolitan groundwater catchment area, and it can be inferred that the detected groundwater levels of these heavy metals do not pose an immediate threat to human health or the environment. Further groundwater investigation for dissolved metals was therefore considered unwarranted.

Acetone was identified within all groundwater monitoring wells present at the site, however the concentrations identified were considered to be low, with the maximum concentration reported being 43 µg/L in groundwater sampled at well GW 112, considered to be the upstream well for the site. As the maximum concentration of acetone is present within the upstream well of the site, the source of this contaminant unknown but may be from an off-site source; furthermore, due to the low concentration, the identified acetone was not considered to be of concern to site workers and / or end users of the site. This finding is based on a USEPA toxicological review of Acetone (Ref: *USEPA Toxicological Review of Acetone, May 2003*), which concluded that *"Inhalation studies in humans have been conducted on both volunteers and occupationally-exposed individuals (Dick et al., 1988, 1989; Kiesswetter et al., 1994; Stewart et al., 1975). These studies have examined, almost exclusively, either the toxicokinetics or neurological effects of acetone. In most studies the subjects report discomfort, irritation of the eyes and respiratory passages, mood swings, and nausea following exposure to acetone vapour at concentrations of 500 ppm or higher."* Therefore it was considered that the concentrations identified within groundwater at these locations shall not pose a vapour risk to the end users of the site.

Table 10-8 Groundwater Analytical Results

Sample ID	Heavy Metals								PAHs			BTEX			TRHs				VOC's			Total Phenolics	
	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	Total VOCs (less acetone)		Acetone
GWB-3#	<1	<0.1	<1	7	<1	<0.0001	4	31	<1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<1	<50	<60	<500	<500	ND	43	<0.01
GIL *	NR	0.7	27 ² (Cr III) 4.4 ² (Cr VI)	1.3 ¹	4.4 ¹	0.1 ³	7 ¹	15 ²	NR	NR	50	500	NR ⁴	300 ⁵	350	200	1000 ⁴	1000 ⁴	NR	NR	NR	NR	400

Notes:

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

NR = No current publish criterion

= Due to laboratory error, the duplicate sample GWB-3 was analysed rather than the primary sample GW112. As these samples were collected from the same sample location (i.e. well GW112), groundwater sample GWB-3 was utilised for this assessment.

F1 = concentration of TPH C₆-C₁₀ fraction less the sum of BTEX

F2 = concentration of TPH >C₁₀-C₁₆ fraction less Naphthalene

F3 = concentration of TPH >C₁₆-C₃₄ fraction

F4 = concentration of TPH >C₃₄-C₄₀ fraction

¹ = Values have been calculated using a hardness of 30mg/L CaCO₃ refer to ANZECC & ARMCANZ (2000) for further guidance on recalculating for site-specific hardness

² = Figure may not protect key species from chronic toxicity, refer to ANZECC & ARMCANZ (2000) for further guidance

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

⁴ = NEPM (2013) Table 1A(4) Groundwater HSLs for vapour intrusion at the contaminant source depth ranges in sands 2m to <4m, considered most representative of Hawkesbury Sandstone.

⁵ = NEPM (2013) Groundwater Investigation Levels for drinking water quality, based on Australian Drinking Water Guidelines (NHMRC 2011).

⁶ = NEPM (1999) Groundwater Investigation Levels for the protection of freshwater aquatic ecosystems (NEPM 1999, Schedule B1).

Highlighted Bold indicate analyte concentration value exceeding the adopted criteria.

11. CONCLUSIONS

The property located at 155 - 157 Church Street, Ryde NSW was the subject of an ESA in order to assess the potential for on-site contamination associated with the identified current and former land uses. Based on the findings of this assessment, it was concluded that:

- Site observations during the assessment revealed the site to be comprised of a square shaped block, covering a total area of approximately 0.04 hectares. The site was bound by Well Street to the north, beyond which were high density residential buildings and other residential land on Church Street, residential and recreational land uses to the east, The Loop Road followed by Parramatta River to the south and The Loop road followed by high density residential to the west.
- The site was free of statutory notices issued by the NSW EPA.
- A WorkCover search revealed the presence of two underground storage tanks at 157 Church Street, Ryde (the former Stuart Bros Pty Ltd yard), with evidence of a single UST and associated infrastructure (i.e. vents, fuel lines and filling points) that was previously abandoned by concrete filling. Evidence collected during the site walkover inspection suggested the second tank remains present at the site and may have been used historically for the storage of kerosene, used for heating of the commercial building. As tanks remain on the site, it is assumed no soil excavation or environmental validation has taken place.
- Soil sampling and analysis was conducted at nine, targeted, mechanical push tube drilled test bore locations (BH701 - BH709) down to a maximum depth of 1.5m BGL. The sampling regime was considered to be appropriate for preliminary investigation purposes, which employed a herringbone sampling pattern, with allowance for structural obstacles (e.g. building walls, underground and overhanging services and other physical obstructions in use by existing operating businesses).
- The sub-surface layers comprised fill materials of various constituents, described as dark brown to brown, silts and silty clays, underlain by Hawkesbury Sandstone bedrock.
- Groundwater was encountered at approximately 7m below ground level, with groundwater flow direction inferred to flow in a southerly direction, towards Parramatta River.
- Results of soil samples collected from soil test boreholes BH701 - BH709 reported concentrations of the screened metals to be below the adopted human health-based SILs.
- Results of soil sample BH702-1 was found to exceed the ecological criteria for Zinc (2,700 mg/kg), collected from within a residual clay material present at the north western corner of the site, within the car parking area. As the proposed development plans include removal of all fill soils within the Stage A site for the construction of a basement car park, the ecological criteria will not be applicable for the proposed land uses.
- Soils present at the site do not pose a soil salinity risk.
- Metal concentrations (i.e. copper and zinc) were found to exceed the GILs adopted for this assessment, within the majority of the groundwater wells present at the site. The identified elevated groundwater concentrations are considered to be within background fluctuations of naturally occurring levels for these metals in the Sydney metropolitan groundwater catchment area, and it can be inferred that the detected groundwater levels of these heavy metals do not pose an immediate threat to human health or the environment.
- Acetone was identified within all groundwater monitoring wells present at the site, however the concentrations identified were considered to be minor, and were present within the up-

gradient well for the site. As the maximum concentration of acetone is present within the up-gradient well, this contaminant is therefore considered to be originating from an off-site source.

- On review of the Preliminary Conceptual Site Model developed as part of this assessment, it was concluded that the model remains valid for the proposed development; however, due to the absence of the majority of contaminants highlighted within the CSM, the potential risk of complete exposure pathways to exist as highlighted within the CSM, is considered to be low.

Overall, widespread contamination was not identified from the findings of this ESA, however the removal of USTs and subsequent validation assessment is suggested in order to make site soils suitable for the proposed residential land uses.

Therefore, it is concluded that the site can be made suitable for residential purposes, as outlined in the Stage A development plan, following demolition of the buildings, removal of the in situ USTs and associated soil validation, with possible further groundwater investigation works.

12. RECOMMENDATIONS

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

- 1 Preparation and implementation of a Remediation Action Plan (RAP) to provide methodologies for:
 - (a) the removal of the USTs in accordance with the NSW POEO (UPSS) Regulation 2008; and
 - (b) the appropriate management of contaminated soils in vicinity of the UST areas and any other identified impacted locations;
- 2 A contingency plan and unexpected finds protocol should be provided in the RAP to outline the subsequent investigation and remediation actions that may be warranted should additional impacts, whether expected or unexpected, be identified during tank removal and/or site excavation works;
- 3 Any material being removed from site (including virgin excavated natural materials or VENM) to be classified for off-site disposal in accordance the NSW EPA (2014) *Waste Classification Guidelines*;
- 4 Any material being imported to the site to be assessed for potential contamination as being suitable for the intended use or be classified as VENM, in accordance with relevant NSW EPA guidelines; and
- 5 The final Site Validation Assessment report is to be prepared by a suitably qualified and experienced environmental consultant, following the guidance provided in the NSW OEH (2011) *Guidelines for Consultants Reporting on Contaminated Sites* and the DECCW (2010) *UPSS Technical Note: Site Validation Reporting*. The validation report should be adequate to conclude that the site has been effectively remediated to allow the proposed development for residential and commercial purposes.

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, etc.), statements from sources outside of EI, or developments resulting from situations outside the scope of works of this project.

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

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

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

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

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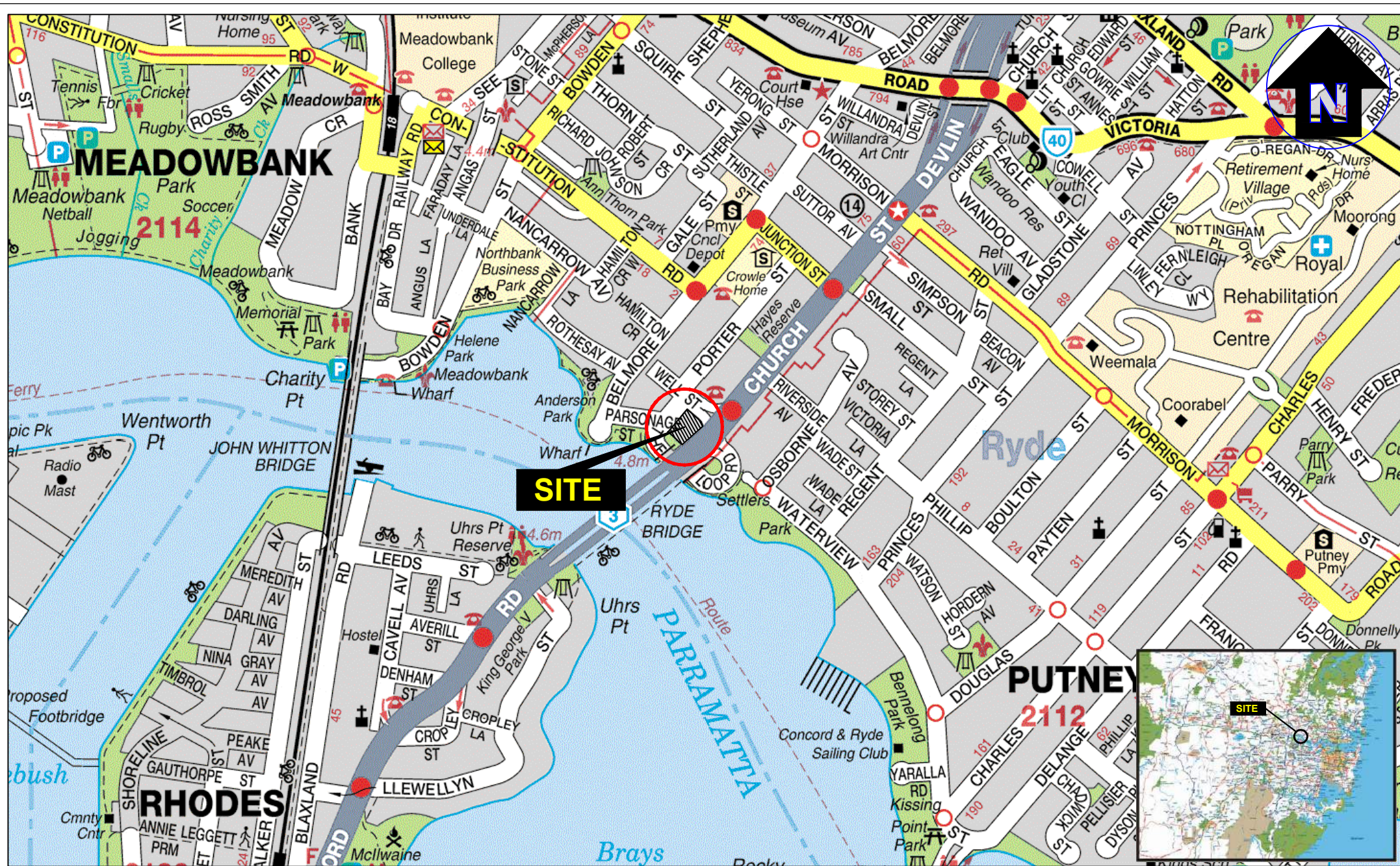
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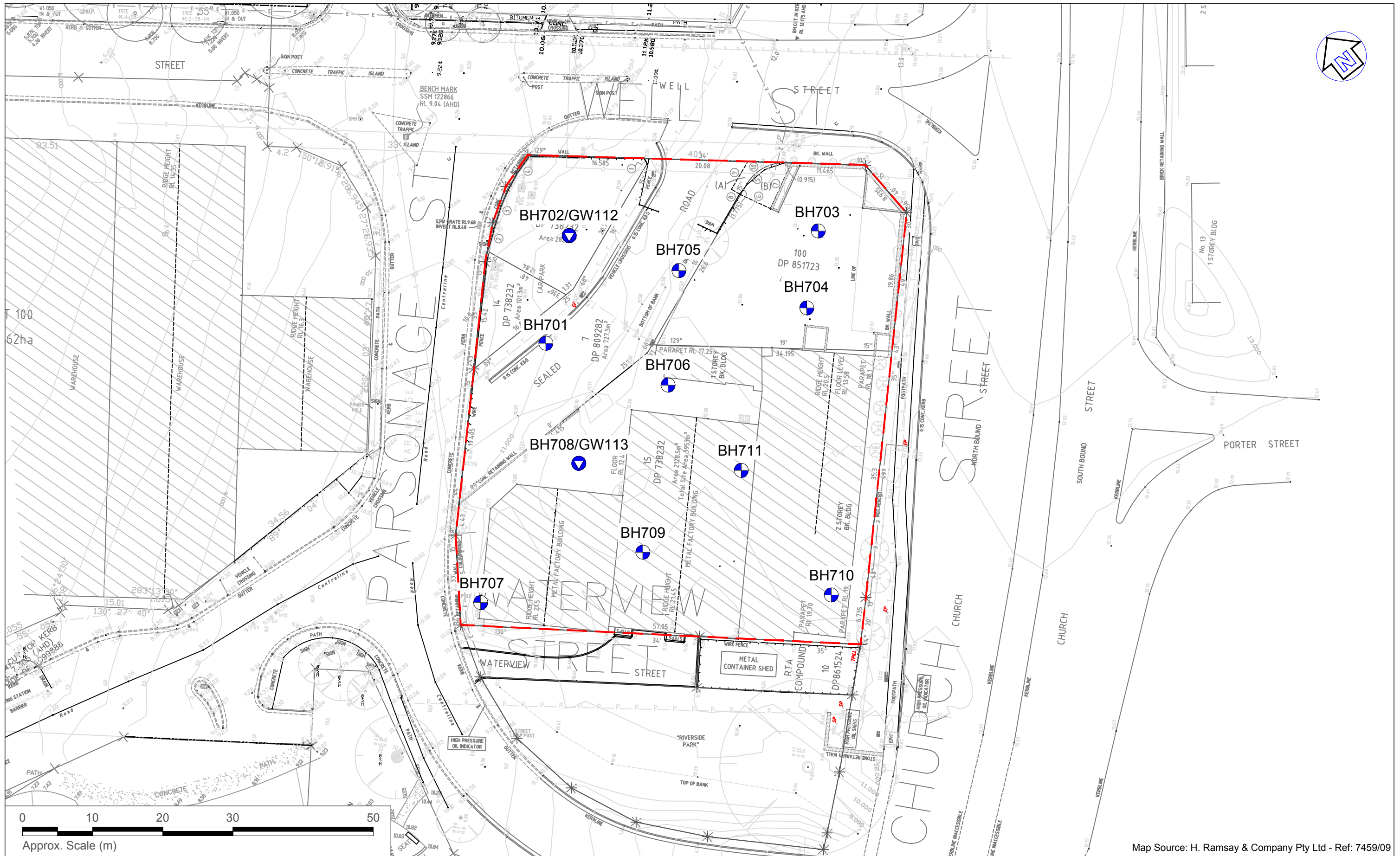
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ABBREVIATIONS

AHD	Australian Height Datum
AST	Aboveground Storage Tank
ANZECC	Australian and New Zealand Environment Conservation Council
B(a)P	Benzo(a)Pyrene
BGL	Below Ground Level
BH	Borehole
BTEX	Benzene, Toluene, Ethyl benzene, Xylene
COC	Chemical of Concern
DEC	Department of Environment and Conservation, NSW
DECC	Department of Environment and Climate Change, NSW (formerly DEC)
DECCW	Department of Environment, Climate Change and Water, NSW (formerly DECC)
DP	Deposited Plan
DQO	Data Quality Objective
EI	Environmental Investigations
EIL	Ecological Investigation Level
EPA NSW	Environment Protection Authority, New South Wales
ESA	Environmental Site Assessment
HIL	Health Based Investigation Level
NATA	National Association of Testing Authorities, Australia
NEPC	National Environmental Protection Council
NHMRC	National Health and Medical Research Council
OCPs	Organochlorine Pesticides
OEH	Office of Environment and Heritage, NSW (formerly DECCW)
PAHs	Polycyclic Aromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls
PID	Photo-ionisation Detector
PQL	Practical Quantitation Limit
QC	Quality Control
RAP	Remediation Action Plan
RPD	Relative Percentage Difference
SILs	Soil Investigation Levels
SWL	Standing Water Test
TP	Test Pit
TPHs	Total Petroleum Hydrocarbons
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VOC	Volatile Organic Compound
UCL	Upper Confidence Limit

FIGURES





Map Source: H. Ramsay & Company Pty Ltd - Ref: 7459/09

LEGEND

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



Suite 6.01, 55 Miller Street, PYRMONT 2009
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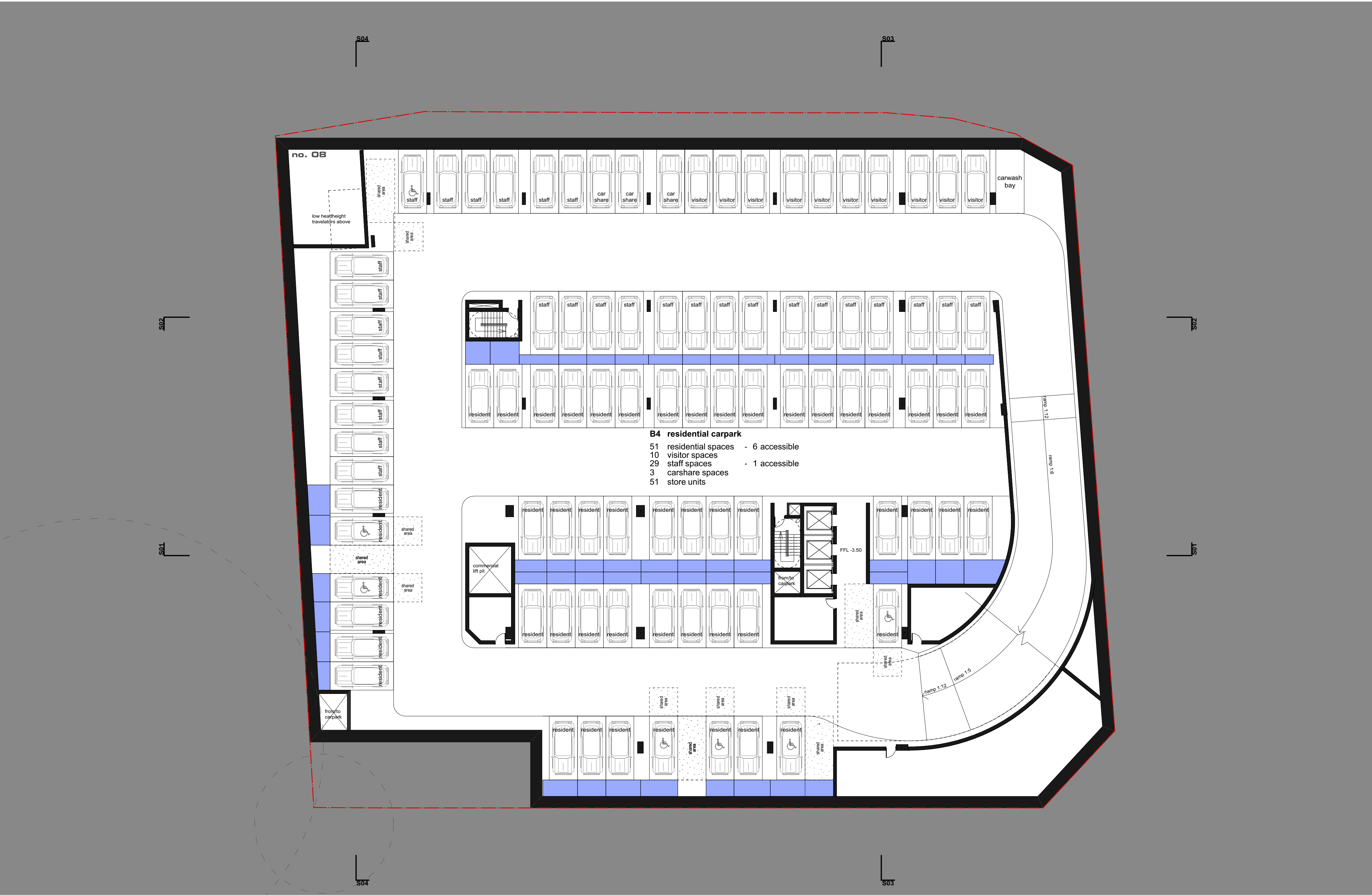
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Approved:	NK
Date:	06-11-17

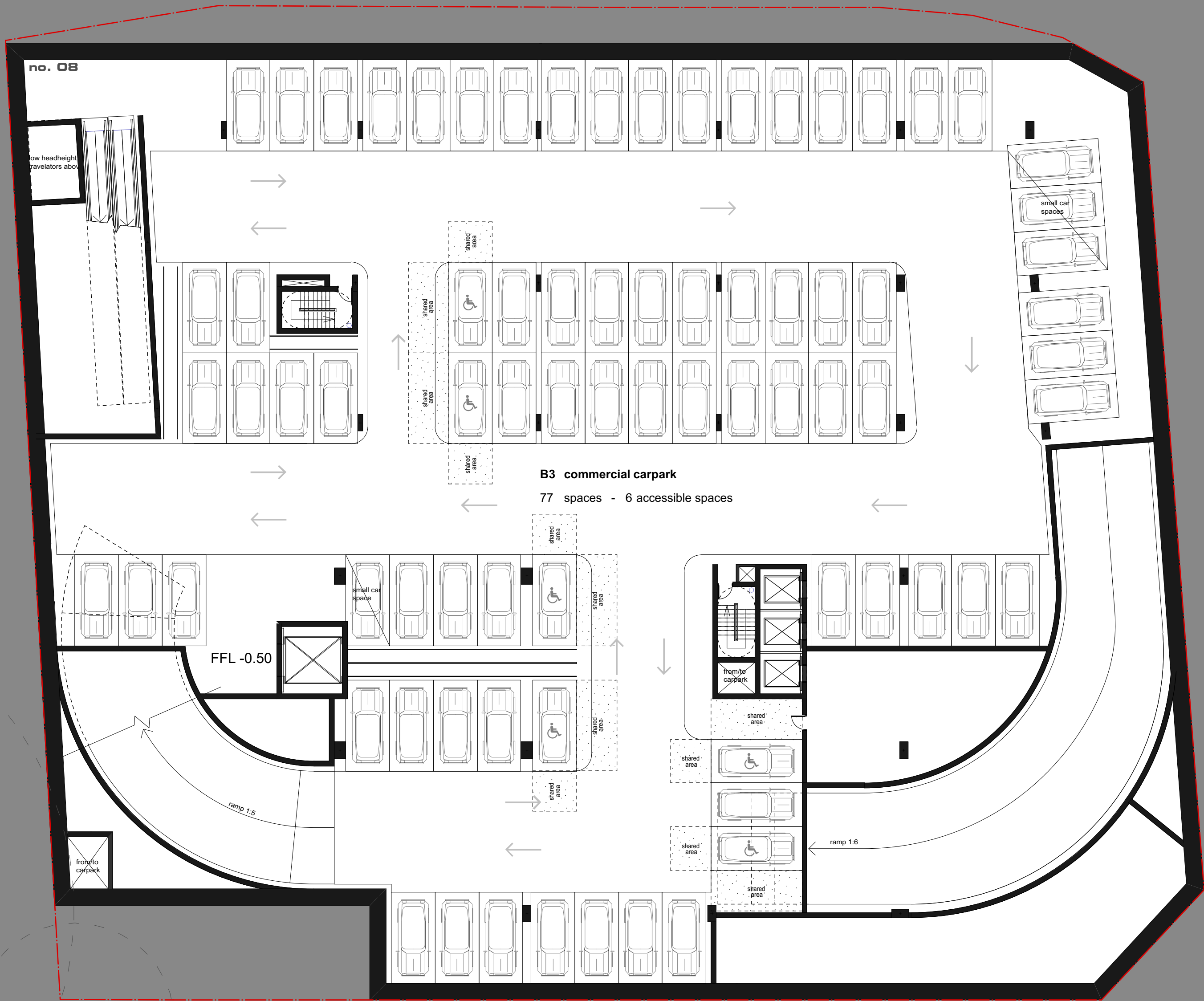
Holdmark Pty Ltd
Environmental Site Assessment
Stage A - Shepherds Bay Urban Renewal,
Meadowbank NSW
Sampling Locations

Figure:
2
Project: E2009.E02.Rev1

APPENDIX A

REVISED DEVELOPMENT CONCEPT PLANS







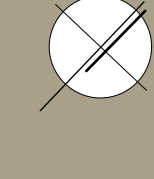
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mixed use development @
8 parsonage street RYDE

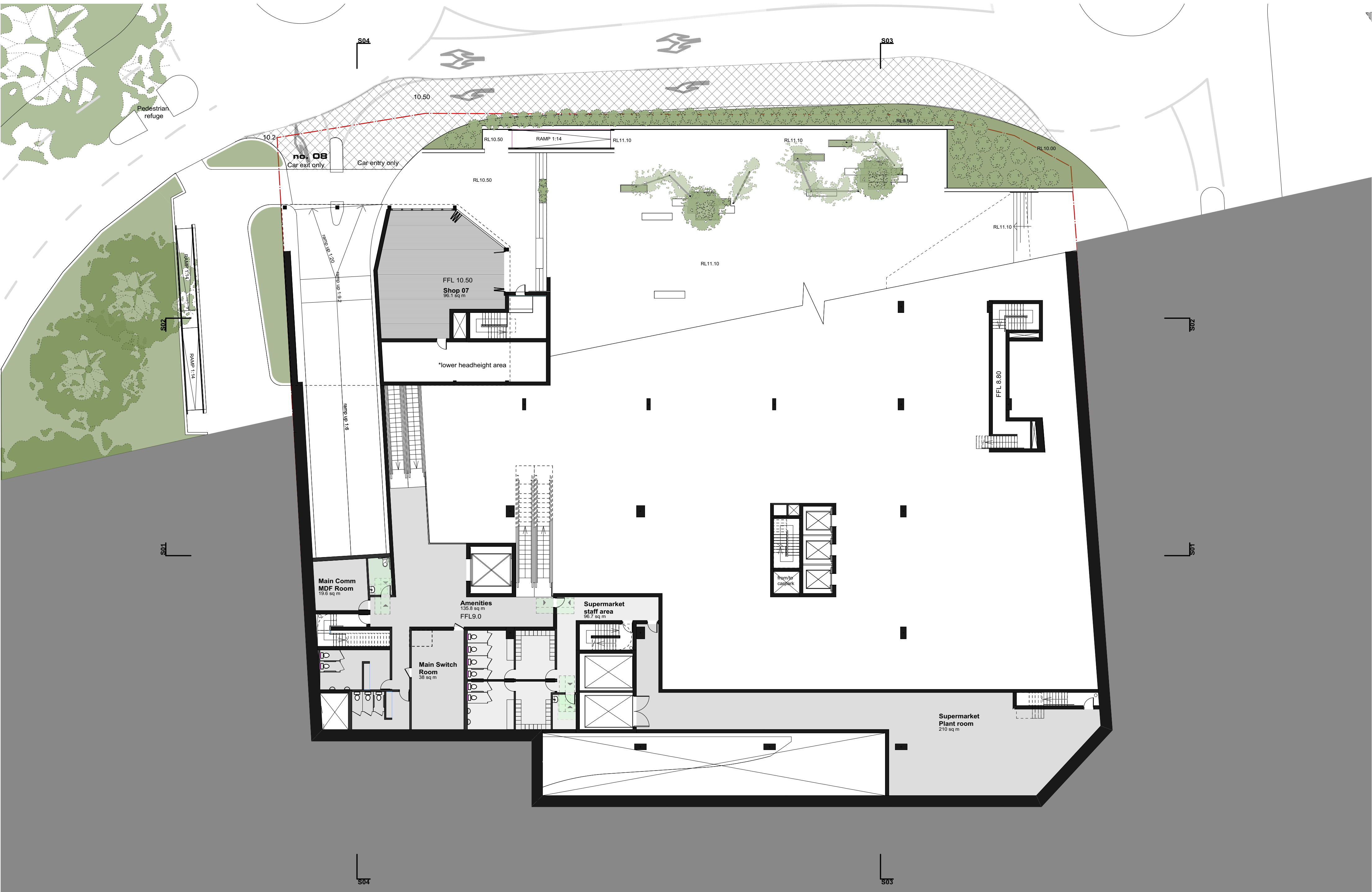
HOLDMARK
Holdmark Property Group
Suite 2/2-4 Giffnock Ave, Macquarie Park NSW 2113
p + 61 2 9889 5540 f + 61 2 9888 5829

COX
COX richardson architects
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p + 61 2 9267 9599 f + 61 2 9264 5844
kennedy associates architects
level 3 / 1 booth street annandale 2038
p + 61 2 9557 6466 f + 61 2 9557 6477

NOTES:
Internal layouts shown are indicative only for information purposes and are subject to further design development and change
Window mullions, if shown, are indicative only
Louvre panels, if shown, are indicative only
All dimensions and levels shown are approximate
Any finishes nominated are indicative only and subject to change
Articulations shown on the façade are indicative only and are subject to further design development and change
Storage allocations and areas are not necessarily shown on the drawings and are subject to change

0 2 4 10m
1.200 @ A2
DA 11 C
C 24/10/17 issue for review





lower ground level

mixed use development @

8 parsonage street RYDE

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p + 61 2 9267 9599 f + 61 2 9264 5844

kennedy associates architects
level 3 / 1 booth street annandale 2038
p + 61 2 9557 6466 f + 61 2 9557 6477

NOTES:
Internal layouts shown are indicative only for information purposes and are subject to further design development and change
Window mullions, if shown, are indicative only
Louvre panels, if shown, are indicative only
All dimensions and levels shown are approximate
Any finishes nominated are indicative only and subject to change
Articulations shown on the façade are indicative only and are subject to further design development and change
Storage allocations and areas are not necessarily shown on the drawings and are subject to change

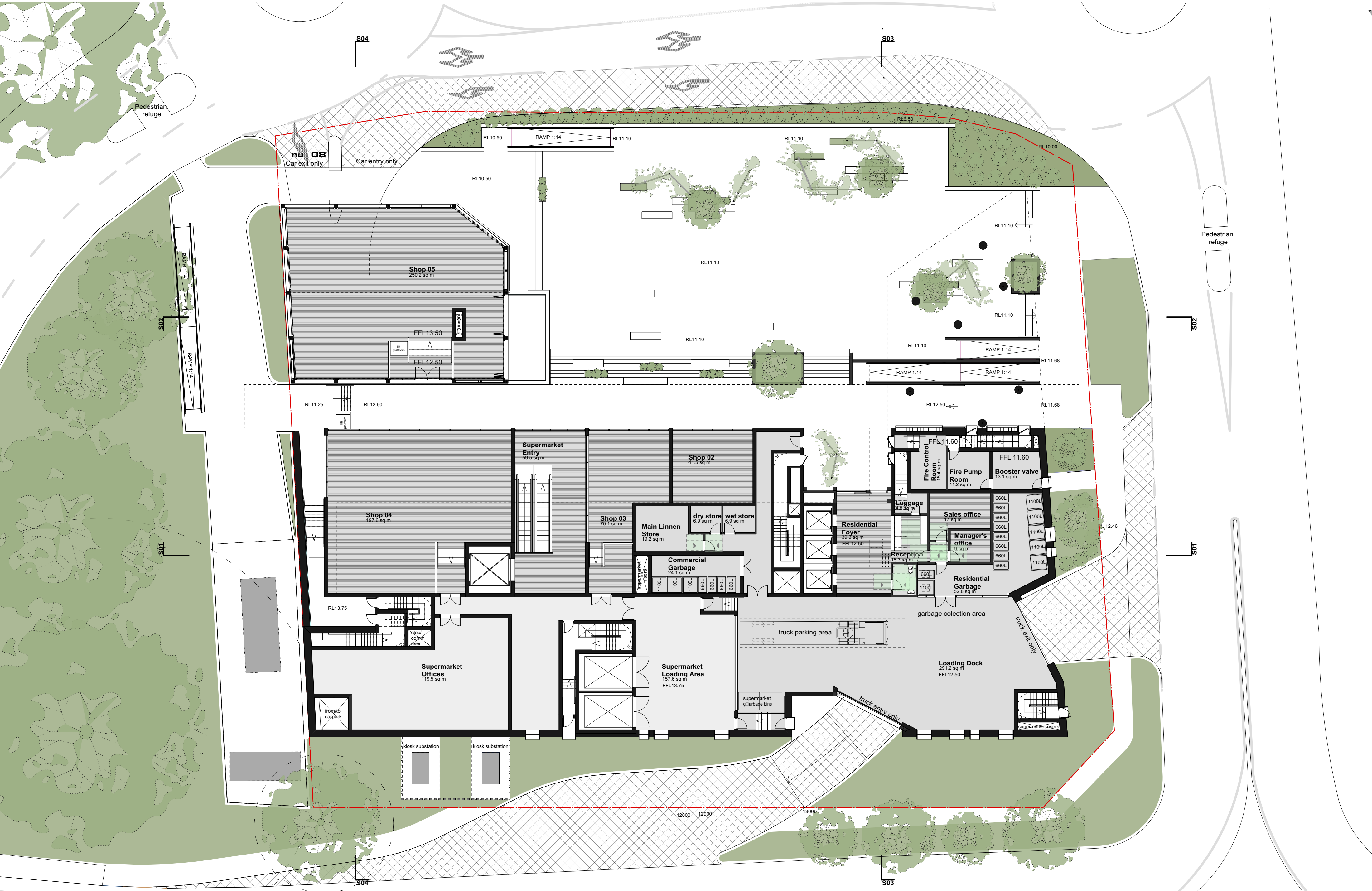
0 2 4 10m

1.200 @ A2

DA 12 C

C 24/10/17 issue for review

1531 - working master.vwx





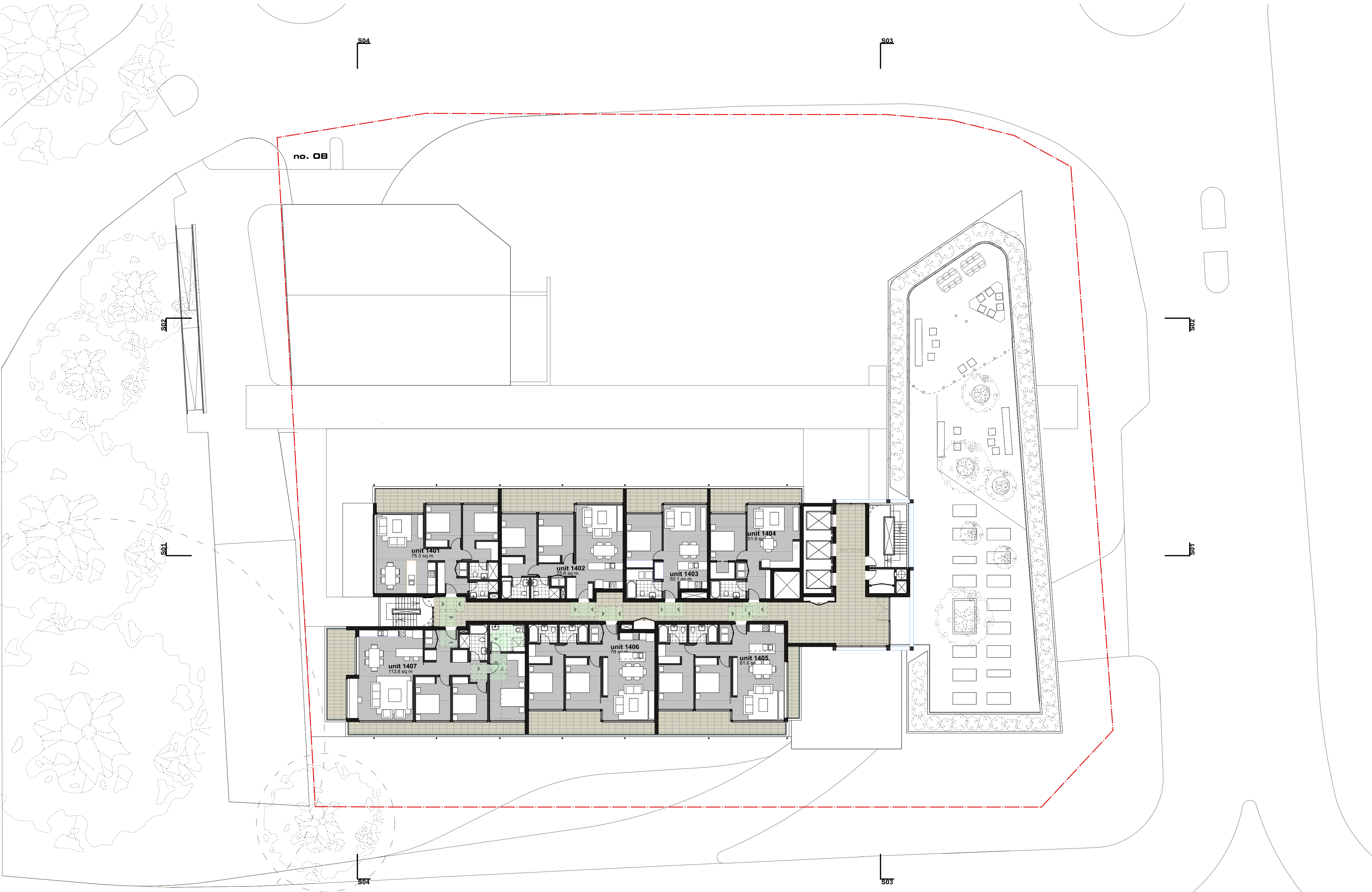
level 01
mixed use development @
8 parsonage street RYDE

HOLDMARK
Holdmark Property Group
Suite 2/2-4 Giffnock Ave, Macquarie Park NSW 2113
p + 61 2 9889 5540 f + 61 2 9888 5829

COX
COX richardson architects
level 6 / 155 clarence street sydney 2038
p + 61 2 9267 9599 f + 61 2 9264 5844
kennedy associates architects
level 3 / 1 booth street annandale 2038
p + 61 2 9557 6466 f + 61 2 9557 6477

NOTES:
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Storage allocations and areas are not necessarily shown on the drawings and are subject to change

0 2 4 10m
1.200 @ A2
DA 14 C
C 24/10/17 issue for review 1531 - working master.vwx



levels 14
mixed use development @
8 parsonage street RYDE

HOLDMARK
Holdmark Property Group
Suite 2/2-4 Giffnock Ave, Macquarie Park NSW 2113
p + 61 2 9889 5540 f + 61 2 9888 5829

COX
COX richardson architects
level 6 / 155 clarence street sydney 2038
p + 61 2 9267 9599 f + 61 2 9264 5844
KENNEDY ASSOCIATES
kennedy associates architects
level 3 / 1 booth street annandale 2038
p + 61 2 9557 6466 f + 61 2 9557 6477

NOTES:
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All dimensions and levels shown are approximate
Any finishes nominated are indicative only and subject to change
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Storage allocations and areas are not necessarily shown on the drawings and are subject to change

0 2 4 10m
1.200 @ A2
DA 23 C
C 24/10/17 issue for review

1531 - working master.vwx



long section_plaza

mixed use development @

8 parsonage street RYDE



Holdmark Property Group
Suite 2/2-4 Giffnock Ave, Macquarie Park NSW 2113
p + 61 2 9889 5540 f + 61 2 9888 5829



COX richardson architects
level 6 / 155 clarence street sydney 2038
p + 61 2 9267 9599 f + 61 2 9264 5844



kennedy associates architects
level 3 / 1 booth street annandale 2038
p + 61 2 9557 6466 f + 61 2 9557 6477

NOTES:
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Window mullions, if shown, are indicative only
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All dimensions and levels shown are approximate
Any finishes nominated are indicative only and are subject to change
Articulations shown on the façade are indicative only and are subject to further design development and change
Storage allocations and areas are not necessarily shown on the drawings and are subject to change

DA 30 C

C 24/10/17 issue for review

1531 - DA sections v2016.vwx



cross section
mixed use development @
8 parsonage street RYDE

HOLDMARK
Holdmark Property Group
Suite 2/2-4 Giffnock Ave, Macquarie Park NSW 2113
p + 61 2 9889 5540 f + 61 2 9888 5829

COX
COX richardson architects
level 6 / 155 clarence street sydney 2038
p + 61 2 9267 9599 f + 61 2 9264 5844
kennedy associates architects
level 3 / 1 booth street annandale 2038
p + 61 2 9557 6466 f + 61 2 9557 6477

NOTES:
Internal layouts shown are indicative only for information purposes and are subject to further design development and change
Window mullions, if shown, are indicative only
Louvre panels, if shown, are indicative only
All dimensions and levels shown are approximate
Any finishes nominated are indicative only and are subject to further design development and change
Articulations shown on the façade are indicative only and are subject to further design development and change
Storage allocations and areas are not necessarily shown on the drawings and are subject to change

APPENDIX B

HISTORICAL LAND TITLES SEARCH

Cadastral Records Enquiry Report

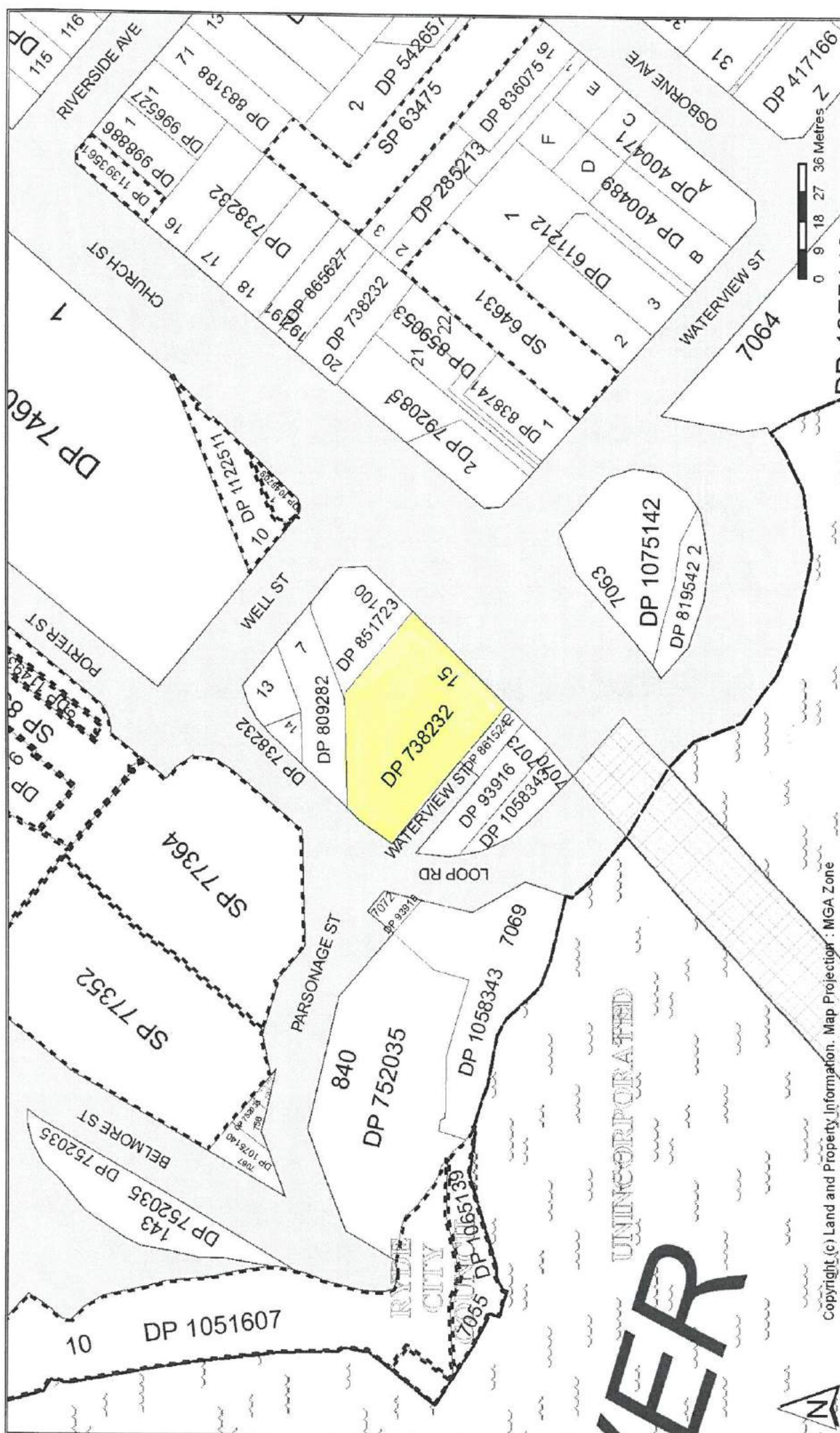
Requested Parcel : Lot 15 DP 738232

Identified Parcel : Lot 15 DP 738232

Locality : RYDE
LGA : RYDE

Parish : HUNTERS HILL

County : CUMBERLAND



Copyright (c) Land and Property Information. Map Projection: MGA Zone

Report Generated 10:04:09 AM, 22 January, 2014

Copyright © Land and Property Information ABN: 84 104 377 806

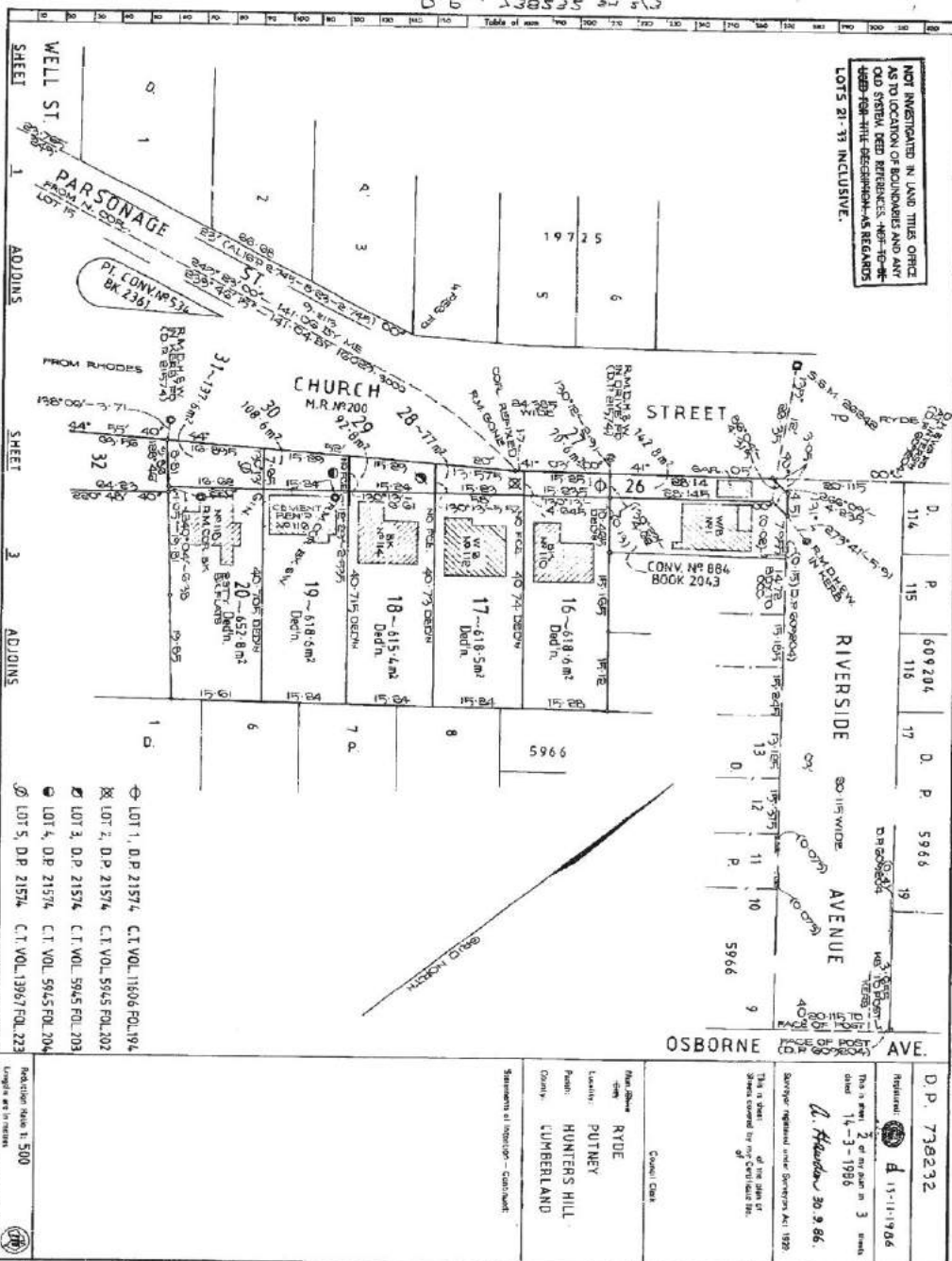
This information is provided as a searching aid only. While every endeavour is made to ensure the current cadastral pattern is accurately reflected, the Registrar General cannot guarantee the information provided.

For all ACTIVITY PRIOR to SEPT 2002 you must refer to the RGs Charting and Reference Maps.

PLAN FORM 3a To be used in conjunction with Plan Form 2

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

NOT INVESTIGATED IN LAND TITLES OFFICE
AS TO LOCATION OF BOUNDARIES AND ANY
OLD SYSTEM DEED REFERENCES - NOT TO BE
USED FOR THE DETERMINATION OF RECORDS
LOTS 21-31 INCLUSIVE.



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

This negative is a photograph made as a permanent
record of a document in the custody of the
Registrar General this day,
24th March, 1986



D.P. 738232

Registered 15-11-1986

This is plan 2 of 3 in plan 3

dated 14-3-1986

A. HENDERSON 20.9.86

Surveyor registered under Surveyors Act 1920

This is plan 2 of 3 in plan 3

dated 14-3-1986

A. HENDERSON 20.9.86

Surveyor registered under Surveyors Act 1920

This is plan 2 of 3 in plan 3

dated 14-3-1986

A. HENDERSON 20.9.86

Surveyor registered under Surveyors Act 1920

This is plan 2 of 3 in plan 3

dated 14-3-1986

A. HENDERSON 20.9.86

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dated 14-3-1986

A. HENDERSON 20.9.86

Surveyor registered under Surveyors Act 1920

This is plan 2 of 3 in plan 3

dated 14-3-1986

A. HENDERSON 20.9.86

Surveyor registered under Surveyors Act 1920

This is plan 2 of 3 in plan 3

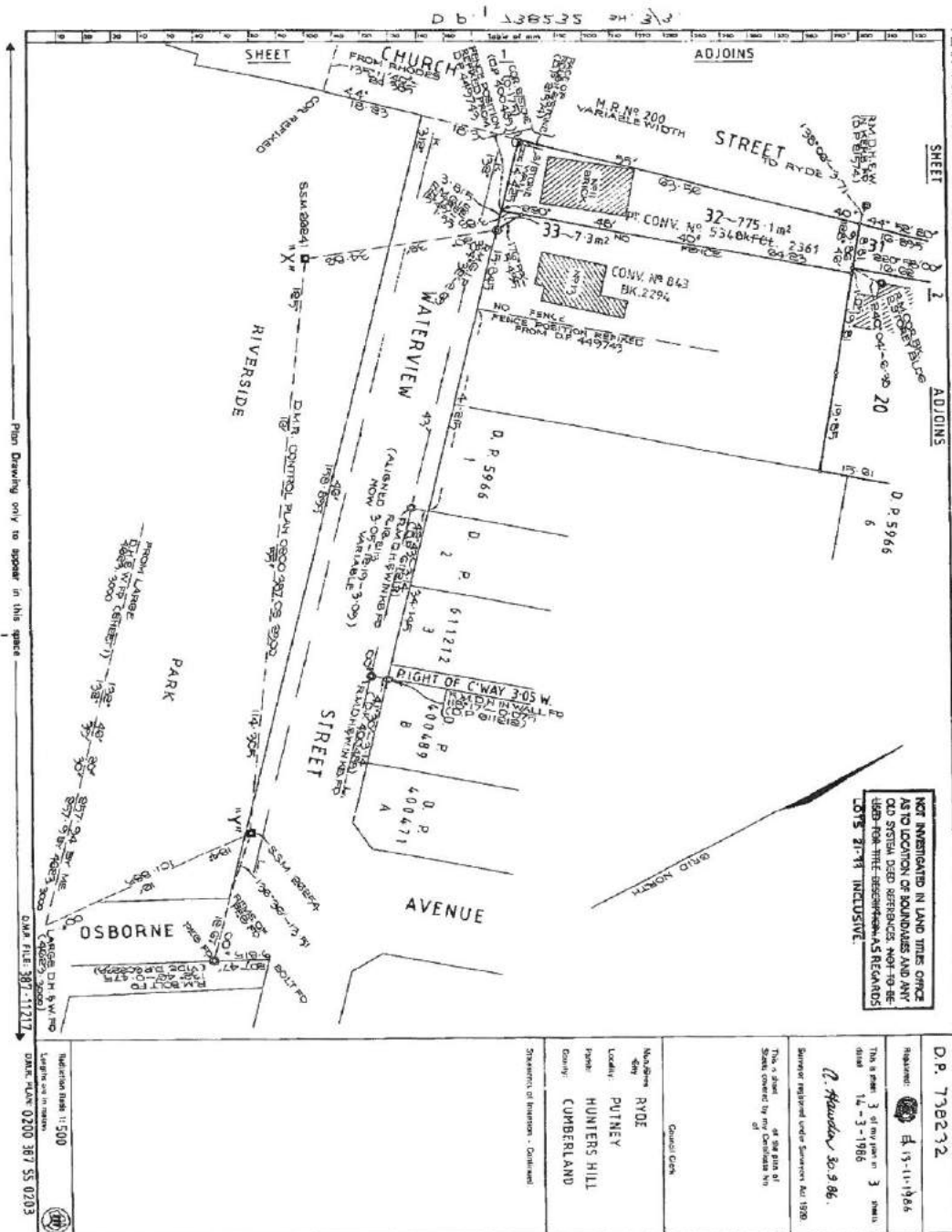
dated 14-3-1986

A. HENDERSON 20.9.86

Surveyor registered under Surveyors Act 1920

PLAN FORM 3a To be used in conjunction with Plan Form 2

WARNING: CHEATING OR FOLDING WILL LEAD TO REJECTION



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

This negative is a photograph made as a permanent
 record of a document in the custody of the
 Registrar General this day
 24th March, 1986

10 20 30 40 50 60 70 80 90 100 110 120 130 140

NOT INVESTIGATED IN LAND TITLES OFFICE
 AS TO LOCATION OF BOUNDARIES AND ANY
 OLD SYSTEM DEED REFERENCES, NOT TO BE
 USED FOR THE DETERMINATION OF RECORDS
 DATES 21-7-81 INCLUSIVE.

D.P. 738232

Registered: 13-11-1986

This is plan 3 of my plan in 3 sheets
 dated 14-3-1986

G. Hurdley 30.9.86.

Surveyor registered under Surveyors Act 1970

This is plan 3 of my plan in 3 sheets
 dated 14-3-1986

This is plan 3 of my plan in 3 sheets
 dated 14-3-1986

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 dated 14-3-1986

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 dated 14-3-1986

This is plan 3 of my plan in 3 sheets
 dated 14-3-1986

This is plan 3 of my plan in 3 sheets
 dated 14-3-1986

NEW SOUTH WALES

C **STATE OF TITLE**
PROPERTY ACT, 1900



14676090

Crown Grants Vol. 18 Fols. 10 & 11

Prior Title Vol. 5004 Fol. 178

Vol. **14676** Fol. **90**

EDITION ISSUED

26 2 1982



I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

CANCELLED

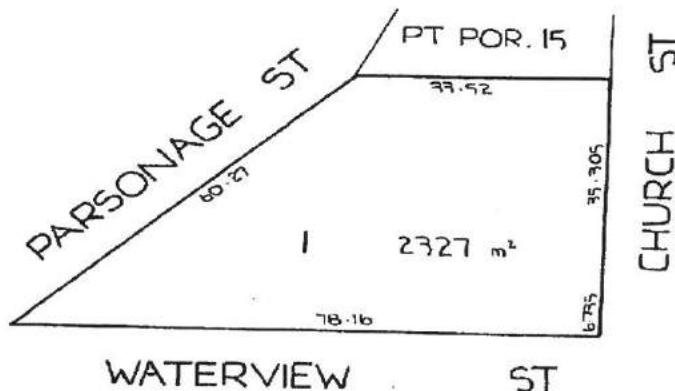
[Signature]

Registrar General,
NEW SOUTH WALES



PLAN SHOWING LOCATION OF LAND

LENGTHS ARE IN METRES



5708393 Mx

ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 1 in Deposited Plan 114999 at Ryde in the Municipality of Ryde Parish of Hunters Hill County of Cumberland.

FIRST SCHEDULE

457 CHURCH STREET PTY. LIMITED.

SECOND SCHEDULE

1. Reservations and conditions, if any, contained in the Crown grants above referred to.
2. ~~S634612 Mortgage to Halmax Nominees Pty. Limited. T912225~~
3. ~~S708393 Lease to Sign Systems Australia Pty. Limited of premises being the factory premises known as 457 Church Street, Ryde (together with option of renewal). Expires 18-1-1986.~~
Surrendered V329129

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON (Page 1) Vol. 14676 Fol. 90

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR

Registrar General

Stuart Bros. Pty. Limited. Registered 23-1-1984

CANCELLED

SEE AUTO FOLIO

SECOND SCHEDULE (continued)

PARTICULARS

Registrar General CANCELLATION

T912227 Mortgage to National Commercial Banking Corporation of Australia Limited.
Registered 23-1-1984

NOTATIONS AND UNREGISTERED DEALINGS

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE

22/1/2014 10:10AM

FOLIO: 1/114999

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

Prior Title(s): VOL 14676 FOL 90

Recorded	Number	Type of Instrument	C.T. Issue
21/8/1988		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
7/12/1988		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
16/5/1989	Y343608	DISCHARGE OF MORTGAGE	
16/5/1989	Y343609	TRANSFER <i>Road</i>	FOLIO CANCELLED
1/2/2000	6524647	DEPARTMENTAL DEALING	

*** END OF SEARCH ***

OFFICE USE ONLY



Y343609



STAMP DUTY

TRANSFER
 REAL PROPERTY ACT, 1900

T 3202 X 2/2
 \$ 40

DESCRIPTION
 OF LAND
 Note (a)

Terms Title Reference	If Part Only, Detail Whole and Give Details	Location
Volume 14676 Folio 90 <i>d. New B. W. G. 1/114999</i>	<u>WOLF</u> Part being Lot 25 in Deposited Plan 738232	Ryde

TRANSFEROR
 Note (b)

STUART BROS PTY LTD

D

ESTATE
 Note (c)

(the abovenamed TRANSFEROR) hereby acknowledges receipt of the consideration of \$ 50,000.00
 and transfers an estate in fee simple
 in the land above described to the TRANSFEREE

TRANSFEREE
 Note (d)

THE COMMISSIONER FOR MAIN ROADS, 309 Castlereagh Street, Sydney
 now known as ROADS AND TRAFFIC AUTHORITY OF NEW SOUTH WALES
 as joint tenants/tenants in common

OFFICE USE ONLY

OVER

TENANCY
 Note (e)

PRIOR
 ENCUMBRANCES
 Note (f)

subject to the following PRIOR ENCUMBRANCES 1.
 2. 3.

DATE 10 April 1999

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

EXECUTION
 Note (g)

Signed in my presence by the transferor who is personally known to me
 THE COMMON SEAL OF STUART BROS. PTY. LIMITED
 was hereunto affixed by authority of the

Board of Directors in the presence of:

.....

.....

Secretary

SIGNED BY: *[Signature]*
 Signed in my presence by the transferor who is personally known to me

HELEN ELIZABETH GRIFFIN, Ld Officer
 Department of Main Roads in the
 presence of:

.....

.....

[Signature]
BRENDEN DAVID PEACOCK
 CLERK
 309 CASTLEREAGH STREET, SYDNEY



.....
 Director

Note (g)

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

OFFICE USE ONLY

LODGED BY		DEPARTMENT OF MAIN ROADS 309 Castlereagh Street SYDNEY NSW 2000 DX 13 SYDNEY Papers: FL 387.11609 ER:FCM Phone: 218 6694		LOCATION OF DOCUMENTS	
Delivery Box Number 556X		CT	OTHER	How with	
				In L.T.O. with	
				Produced by	
Checked <i>EAP</i>	Passed <i>EFB</i>	REGISTERED -19 16 MAY 1999		Secondary Directions	
Signed	Extra Fee			Delivery Directions	

INSTRUCTIONS FOR COMPLETION

This dealing should be marked by the Commissioner of Stamp Duties before lodgment by hand at the Land Titles Office.

Typewriting and handwriting should be clear, legible and in permanent dense black or dark blue non-copying ink.

Alterations are not to be made by erasure; the words rejected are to be ruled through and initialed by the parties to the dealing in the left-hand margin.

If the space provided is insufficient, additional sheets of the same size and quality of paper and having the same margins as this form should be used. Each additional sheet must be identified as an annexure and signed by the parties and the attesting witnesses.

If it is intended to create easements, covenants, &c., use forms RP13A, RP13B, RP13C as appropriate.

Rule up all blanks.

The following instructions relate to the SIDE NOTES on the form.

(e) Description of land:

- (i) **TORRENS TITLE REFERENCE** — For a manual reference insert the Volume and Folio (e.g., Vol. 8514 Fol. 126) — For a computer folio insert the folio identifier (e.g., 12701924).
- (ii) **PART/WHOLE** — If part only of the land in the folio of the Register is being transferred, delete the word "WHOLE" and insert the lot and plan number, portion, &c. See also sections 327 and 327AA of the Local Government Act, 1919.
- (iii) **LOCATION** — Insert the locality shown on the Certificate of Title/Churn Grant, e.g., at Chullora. If the locality is not shown, insert the Parish and County, e.g., Ph. Lismore Co. Roux.

(b) Show the full name of the transferor(s).

(c) If the estate being transferred is a lesser estate than an estate in fee simple, delete "fee simple" and insert appropriate estate.

(d) Show the full name, address and occupation or description of the transferee(s).

(e) Delete if only one transferee. If more than one transferee, delete either "joint tenants" or "tenants in common", and, if the transferees hold as tenants in common, state the shares in which they hold.

(f) In the memorandum of prior encumbrances, state only the registered number of any mortgage, lease, charge or writ to which this dealing is subject.

(g) Execution:

- GENERALLY** (i) Should there be insufficient space for the execution of this dealing, use an annexure sheet.
- (ii) The certificate of correctness under the Real Property Act, 1900, must be signed by all parties to the transfer, each party to execute the dealing in the presence of an adult witness not being a party to the dealing, to whom no/who is personally known.
- (iii) The solicitor for the transferee may sign the certificate on behalf of the transferee, the solicitor's name (not that of his/her firm), to be typewritten or printed adjacent to the signature. Any person falsely or negligently certifying is liable to the penalties provided by section 111 of the Real Property Act, 1900.
- ATTORNEY** (iv) If the transfer is executed by an attorney for the transferor/transferees pursuant to a registered power of attorney, the form of attestation must set out the full name of the attorney, and the form of execution must indicate the source of his/her authority, e.g., "All by his attorney for receiver of delegate, as the case may be" XY pursuant to power of attorney registered Book No.
- AUTHORITY** (v) If the transfer is executed pursuant to an authority (other than specified in (iii)) the form of execution must indicate the statutory, judicial or other authority pursuant to which the transfer has been executed.
- CORPORATION** (vi) If the transfer is executed by a corporation under seal, the form of execution should include a statement that the seal has been properly affixed, e.g., in accordance with the Articles of Association of the corporation. Each person attesting the affixing of the seal must state his/her position (e.g., director, secretary) in the corporation.

(h) Insert the name, postal address, Document Exchange reference, telephone number and delivery box number of the lodging party.

(i) The lodging party is to complete the LOCATION OF DOCUMENTS panel. Place a tick in the appropriate box to indicate the whereabouts of the Certificate of Title. List, in an abbreviated form, other documents lodged, e.g., stat. dec. for statutory declaration, p/bt for probate, L/A, for letters of administration, &c.

OFFICE USE ONLY

FIRST SCHEDULE DIRECTIONS

(A) FOLIO IDENTIFIER	(B) DIRECTION	(C) NAME
1/1140900	129	Road and Traffic Agency of New South Wales P.O. Box 24 at M738232 and Stuart Hill, N.S.W. Limited as Receiver of the Estate of the late M738232

SECOND SCHEDULE AND OTHER DIRECTIONS

(D) FOLIO IDENTIFIER	(E) DIRECTION	(F) NOTFN TYPE	(G) DEALING NUMBER	(H) DETAILS
1/1140900	129	11		Part of the Land Title Registrar's Office to be in M738232 is Suburban Co. Land Register
1/1140900	129	11B		
1/1140900	129	72		New Federal House Building for sale 15 and 16 M738232

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE

22/1/2014 10:10AM

FOLIO: 15/738232

First Title(s): VOL 18 FOL 10

Prior Title(s): 1/114999

Recorded	Number	Type of Instrument	C.T. Issue
17/11/1986	DP738232	DEPOSITED PLAN	LOT RECORDED FOLIO NOT CREATED
16/5/1989	Y343609	TRANSFER <i>Read</i>	FOLIO CREATED EDITION 1
24/7/1990	Z122359	DISCHARGE OF MORTGAGE	
24/7/1990	Z133898	CHANGE OF NAME	
24/7/1990	Z122360	MORTGAGE	EDITION 2
5/7/1995	O358170	CAVEAT	
24/10/1995	O620629	DISCHARGE OF MORTGAGE	
24/10/1995	O620632	TRANSFER	
24/10/1995	O620633	MORTGAGE	EDITION 3
3/8/1998	5172017	DISCHARGE OF MORTGAGE	
3/8/1998	5172018	CHANGE OF NAME	
3/8/1998	5172019	MORTGAGE	EDITION 4
17/9/2002	8960864	MORTGAGE	EDITION 5
13/3/2003	9445403	TRANSFER OF MORTGAGE	EDITION 6
11/4/2003	9528995	DISCHARGE OF MORTGAGE	
11/4/2003	9528996	DISCHARGE OF MORTGAGE	
11/4/2003	9528997	TRANSFER	EDITION 7
28/2/2005	AB314484	MORTGAGE	EDITION 8
14/7/2009	AE831084	DISCHARGE OF MORTGAGE	EDITION 9
9/12/2009	AF180572	MORTGAGE	EDITION 10
10/2/2011	AG57081	DISCHARGE OF MORTGAGE	
10/2/2011	AG57082	TRANSFER	EDITION 11
17/6/2011	AG305322	MORTGAGE	EDITION 12
1/8/2012	AH146349	LEASE	EDITION 13

END OF PAGE 1 - CONTINUED OVER

mg

PRINTED ON 22/1/2014

SEARCH DATE

22/1/2014 10:10AM

FOLIO: 15/738232

PAGE 2

Recorded	Number	Type of Instrument	C.T. Issue
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*** END OF SEARCH ***

mg

PRINTED ON 22/1/2014

97-01T

Licence Number
10V/0096/95

TRANSFER

Real Property Act 1900



0
620632 A

Office of State Revenue use only

B

00*014

10/08ST10T0Z 40 SZIT S66080

LAND TRANSFER DUTY

D

(A) LAND TRANSFERRED

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

Folio Identifiers 13/738232 and 100/851723
14/738232
15/738232
7/809282

(B) LODGED BY

L.T.O. Box 404x	Name: OWEN HODGE & SON SOLICITORS 12 ORMONDE PDE, HURSTVILLE DX 11844 HURSTVILLE Ph. 570-7844 REFERENCE (max. 15 characters):
------------------------	--

(C) TRANSFEROR

STUART BROS (HOLDINGS) PTY LIMITED (In Liquidation)
(Receiver and Manager Appointed) ACN 001 717 442

(D) acknowledges receipt of the consideration of \$1,500,000.00
and as regards the land specified above transfers to the Transferee an estate in fee simple

(E) subject to the following **ENCUMBRANCES** 1. Lease bk. 3184 No. 807 2. 3.
(as to F/I 100/851723)

(F) TRANSFEE

T TS (s713 LGA) TW (Sheriff)	INDUSTRIAL PROPERTY MANAGEMENT SERVICES PTY LTD ACN 063 649 356 TENANCY:	OFFICE USE S
--	--	-----------------

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

DATE 12.10.95

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

[Signature]
Signature of Witness
CHRISTOPHER MACHONNEL
Name of Witness (BLOCK LETTERS)
LEVEL 17, 2 MARKET STREET
Address of Witness

Signed by **BRIAN RAYMOND SILVIA** as Receiver
and Manager of the Transferor pursuant to
Deed of Appointment dated 19 December 1994
registered book 4082 no. 131.

[Signature]
Signature of Transferor

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

Signature of Witness

Name of Witness (BLOCK LETTERS)

Address of Witness

D K COOPER
31 MARKET STREET
SYDNEY
SOLICITOR

[Signature]
Signature of Transferee
0016

0295LTO

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

CHECKED BY (office use only)

RECEIVED	
15 SEP 1995	
M:	ATION
1	OF DEBT
	ATIONS
	OK
	OLD SYSTEM
	STONE

Form: 01T
Release: 2
www.lpi.nsw.gov.au

TRANSF

New South Wales
Real Property Act 1900

9528997V

PRIVACY NOTE: this information is legally required and will become part of the public record

STAMP DUTY

Office of State Revenue use only

27-03-2003

0001338354-001

SECTION 18(2)

DUTY

\$ *****2.00

(A) TORRENS TITLE

100/851723, 13/738232, 14/738232, 15/738232, 7/809282

(B) LODGED BY

Delivery
Box

451N

Name, Address or DX and Telephone

M KANAAN & CO.

P.O. BOX 190.

MEZZYLANDS 2160.

Reference: KAVLYN PTY LTD.

9682.3757.

CODES

T

TW

(Sheriff)

(C) TRANSFEROR

ICA INVESTMENTS PTY LIMITED ACN 063 493 356

(D) CONSIDERATION

The transferor acknowledges receipt of the consideration of \$5,300,000.00

and as regards

(E) ESTATE

the land specified above transfers to the transferee an estate in fee simple

(F) SHARE

TRANSFERRED

(G)

Encumbrances (if applicable):

(H) TRANSFEE

KAVLYN PTY LTD ACN 097 519 367

(I)

TENANCY:

(J)

DATE 27/3/2003

Certified correct for the purposes of the Real Property Act 1900, and executed on behalf of the corporation below by the corporation named below the common seal of which by the authorised persons whose signatures appear was affixed pursuant to the authority specified and in the presence of the authorised person(s) whose signature(s) appear(s) below.

Corporation: ICA INVESTMENTS PTY LIMITED ACN 063 493 356
Authority: Section 127 of the Corporation Act

Signature of authorised person:

Name of authorised person:

Office held:

SHAWN HANNAH
DIRECTOR

Signature of authorised person:

Name of authorised person:

Office held:

PAUL NOTARAS
DIRECTOR

Certified for the purposes of the Real Property Act 1900 by the person whose signature appears below.

Signature:

M. Kanaan

Signatory's name:

MONICA KANAAN

Signatory's capacity:

SOLICITOR FOR TRANSFEE



Title Search

InfoTrack
An Approved LPI NSW
Information Broker

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 15/738232

SEARCH DATE	TIME	EDITION NO	DATE
-----	----	-----	----
22/1/2014	10:09 AM	13	1/8/2012

LAND

LOT 15 IN DEPOSITED PLAN 738232
AT RYDE
LOCAL GOVERNMENT AREA RYDE
PARISH OF HUNTERS HILL COUNTY OF CUMBERLAND
TITLE DIAGRAM DP738232

FIRST SCHEDULE

CHURCH STREET PROPERTY INVESTMENTS PTY LTD (T AG57082)

SECOND SCHEDULE (3 NOTIFICATIONS)

- 1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
- 2 AG305322 MORTGAGE TO ING BANK (AUSTRALIA) LIMITED
- 3 AH146349 LEASE TO GOLF CART WORLD PTY LTD OF 157 CHURCH STREET, MEADOWBANK. EXPIRES: 10/5/2017. OPTION OF RENEWAL: 5 YEARS.

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

mg

PRINTED ON 22/1/2014

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

22/01/2014

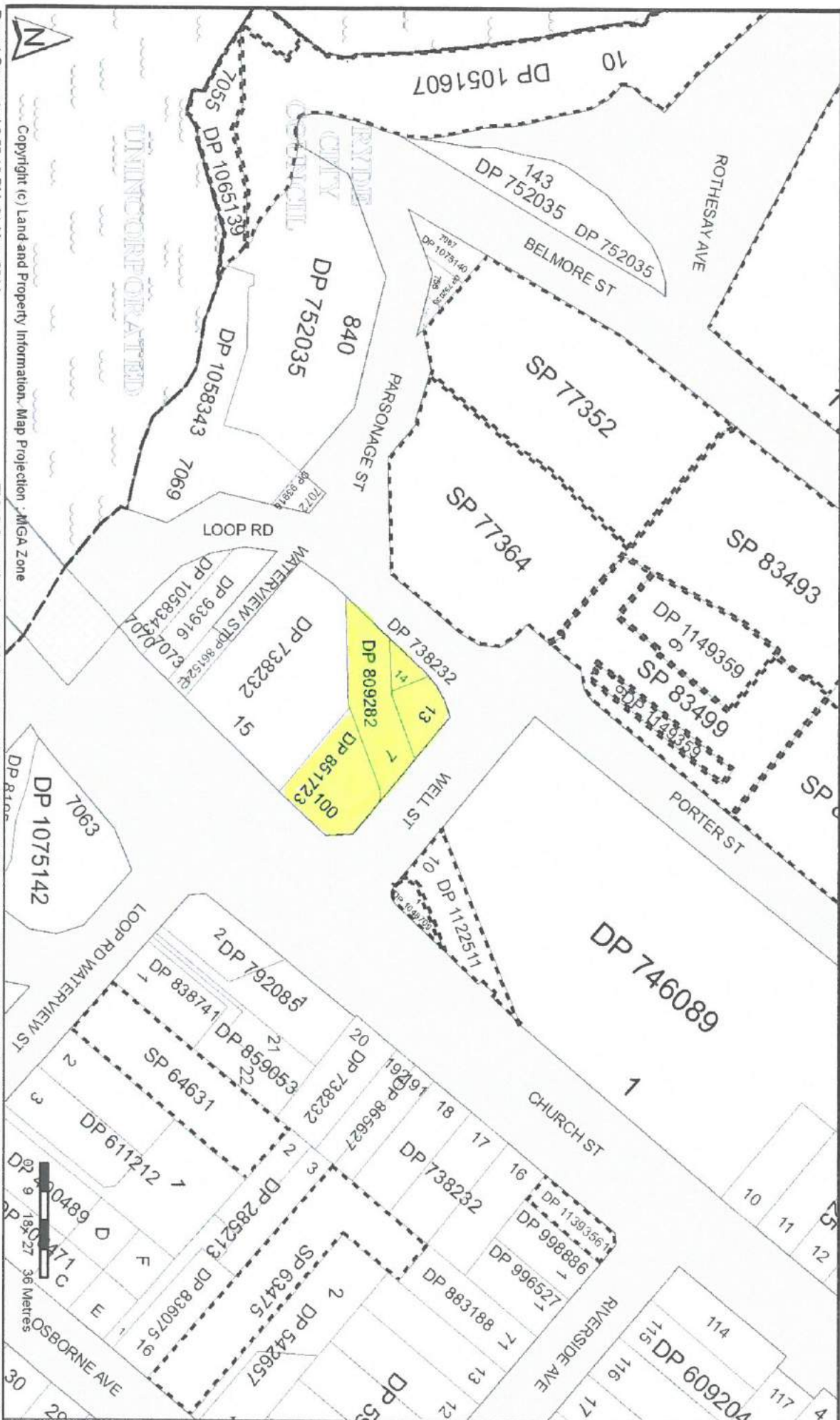
Requested Parcel : Lot 13 DP 738232

Identified Parcel : Lot 13 DP 738232

LGA: RYDE

Parish : HUNTERS HILL

County : CUMBERLAND



Land & Property Information

Search By:

Keyword

Attribute

Lot

Plan Lodgement Book

Keyword: hunters Hill

[Get results](#)

Search For:

- ☒ All Collections
- ☒ Charting Maps
- ☒ Plan Lodgement Book
- ☒ Historical Parish Maps
- ☒ Old System Records

Search results: (20 documents found)

Image name: Parish of Hunters Hill Res: 1:0.24

H. P. D.

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

This negative is a photograph made as a permanent record of a document in the custody of the Registrar General this day.

DMR. FILE: 387-11217

D.M.N. PLAN: 0200 387 55 0202

PLAN FORM 3a To be used in conjunction with Plan Form 2

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

NOT INVESTIGATED IN LAND TITLES OFFICE
AS TO LOCATION OF BOUNDARIES AND ANY
OLD SYSTEM DEED REFERENCES - 1897-1904-
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4047-4048-4049-4050-4051-4052-4053-
4054-4055-4056-4057-4058-4059-4060-
4061-4062-4063-4064-4065-4066-4067-
4068-4069-4070-4071-4072-4073-4074-
4075-4076-4077-4078-4079-4080-4081-
4082-4083-4084-4085-4086-4087-4088-
4089-4090-4091-4092-4093-4094-4095-
4096-4097-4098-4099-4100-4101-4102-
4103-4104-4105-4106-4107-4108-4109-
4110-4111-4112-4113-4114-4115-4116-
4117-4118-4119-4120-4121-4122-4123-
4124-4125-4126-4127-4128-4129-4130-
4131-4132

PLAN FORM 3a To be used in conjunction with Plan Form 2

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

SHEET

ADJOINS

D.P. 738232

Registered: 15-11-1986

This is sheet 3 of my plan in 3 parts dated 14-3-1986

A. Mowbray 30.9.86

Surveyor registered under Statutory Act 1920.

This is a plan of the land of Street owned by my Certificate No. 1520.

Original Date

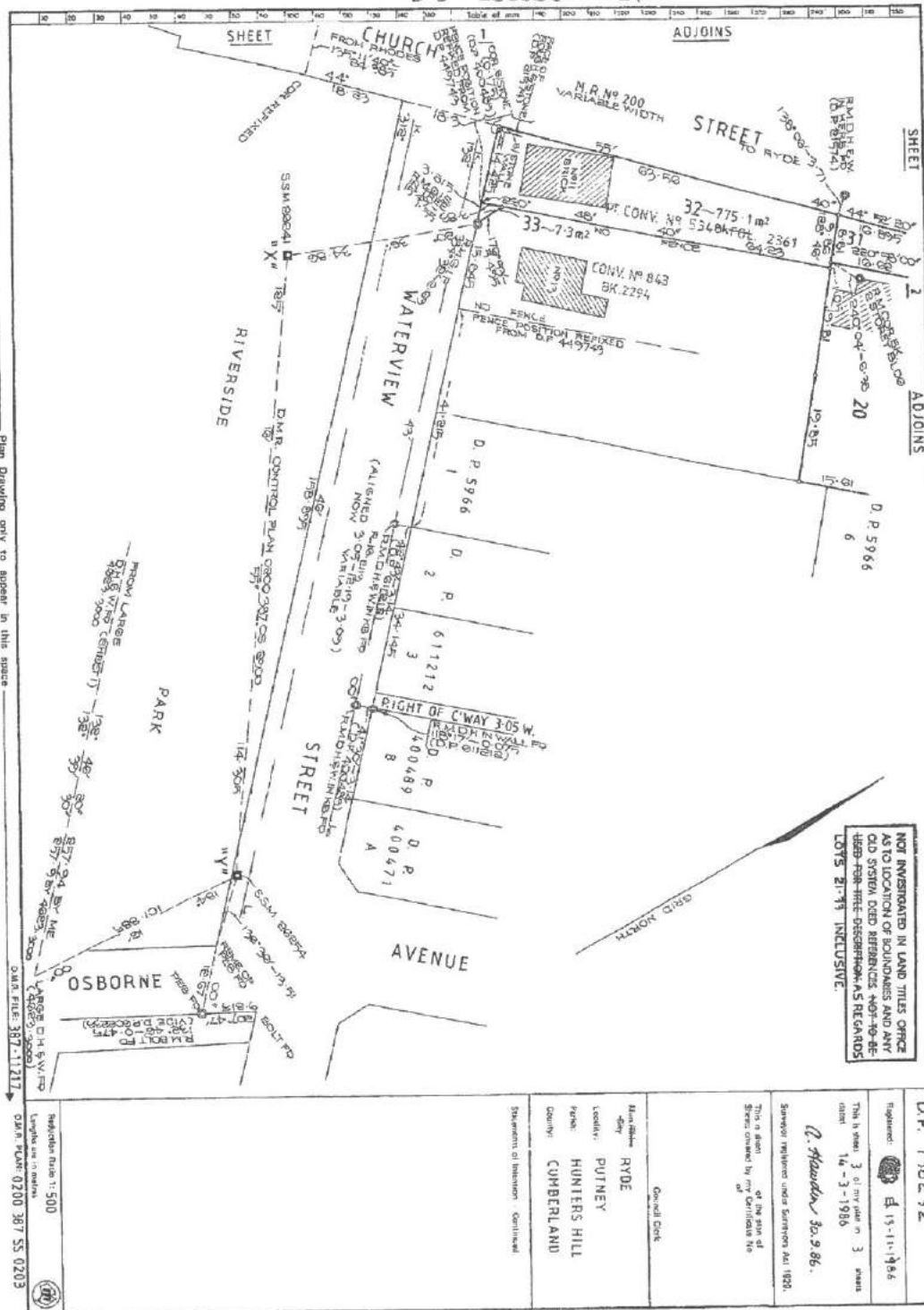
RYDE

PUTNEY

HUNTERS HILL

CUMBERLAND

Statement of intention: Certified



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

This negative is a photograph made as a permanent record of a document in the custody of the Registrar General this day 24th March, 1988

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

Plan Drawing only to appear in this space

Replicas Rule 1:500
 Lengths are in meters
 Date: 14-3-1986 0200 307 55 0203

ABSTRACT OF TITLE

NEW SOUTH WALES

PROPERTY ACT, 1900

Appln. No. 1349

Prior Title Vol. 3388 Fol. 9

Vol. **12945** Fol. **1**

EDITION ISSUED

3 12 1975



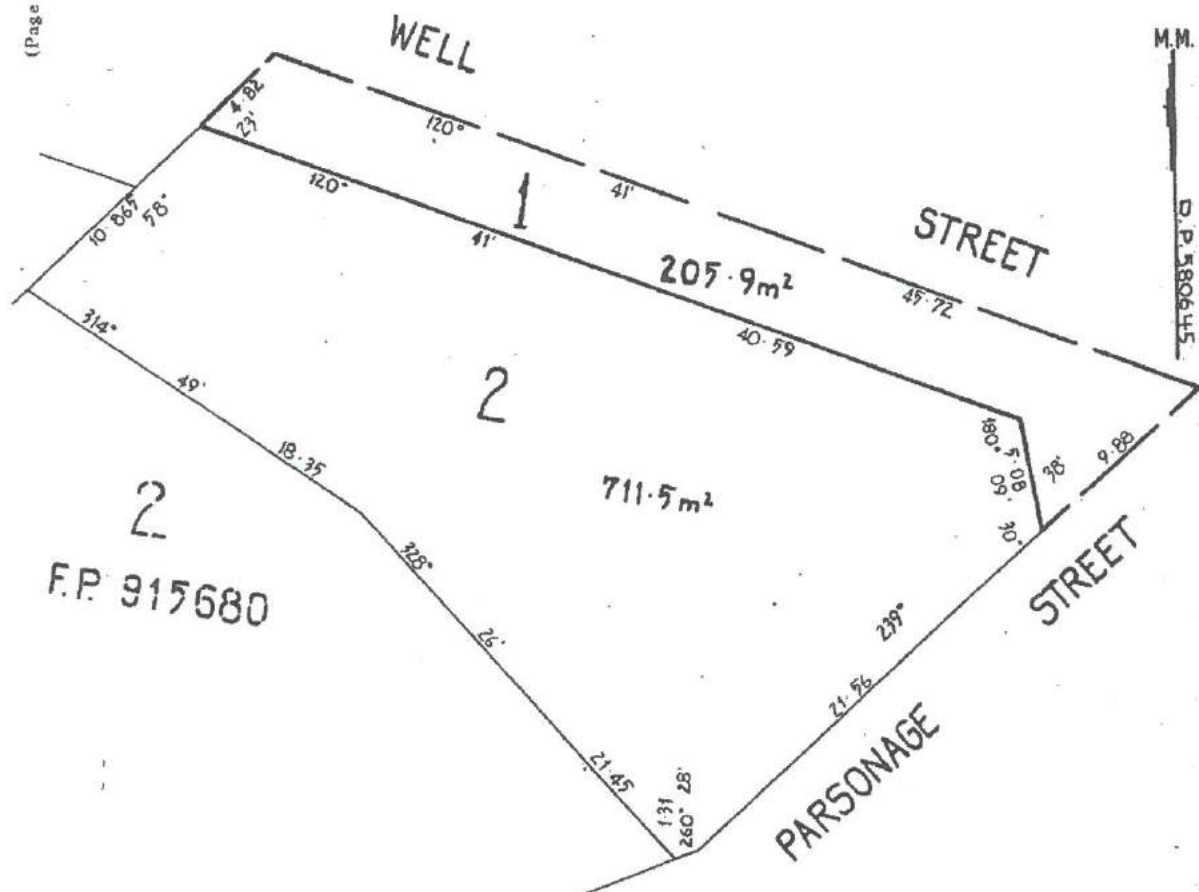
I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

Registrar General.



LENGTHS ARE IN METRES

DEPT. OF THE ARMY



F.P. 915680

ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 2 in Deposited Plan 580645 at Ryde in the Municipality of Ryde, Parish of Hunters Hill and County of Cumberland being part of Portion 15 granted to Richard Cheers on 29-9-1792.

FIRST SCHEDULE

~~EDWARD COLLINS of Gladesville, Pa., Beater.~~

SECOND SCHEDULE

- ~~2. Mortgage No. H512057 to The Commercial Union of Australia Limited. Registered 23-6-1960.~~

Discharged T282693.
T691520.

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

WARNING: THIS DOCUMENT MUST NOT BE REMOVED FROM THE LAND TITLES OFFICE

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED.

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE

31/5/2014 6:58PM

FOLIO: 13/738232

First Title(s): OLD SYSTEM

Prior Title(s): VOL 12945 FOL 1

Recorded	Number	Type of Instrument	C.T. Issue
17/11/1986	DP738232	DEPOSITED PLAN	LOT RECORDED FOLIO NOT CREATED
19/4/1988	X454488	RESUMPTION APPLICATION	FOLIO CREATED CT NOT ISSUED
30/7/1991	Z650320	REQUEST	EDITION 1
4/2/1993	I94891	TRANSFER	EDITION 2
16/6/1994	U355692	REQUEST	EDITION 3
16/11/1994	U750510	MORTGAGE	EDITION 4
5/7/1995	O358170	CAVEAT	
24/10/1995	O620630	DISCHARGE OF MORTGAGE	
24/10/1995	O620632	TRANSFER	
24/10/1995	O620633	MORTGAGE	EDITION 5
3/8/1998	5172017	DISCHARGE OF MORTGAGE	
3/8/1998	5172018	CHANGE OF NAME	
3/8/1998	5172019	MORTGAGE	EDITION 6
17/9/2002	8960864	MORTGAGE	EDITION 7
13/3/2003	9445403	TRANSFER OF MORTGAGE	EDITION 8
11/4/2003	9528995	DISCHARGE OF MORTGAGE	
11/4/2003	9528996	DISCHARGE OF MORTGAGE	
11/4/2003	9528997	TRANSFER	EDITION 9
28/2/2005	AB314484	MORTGAGE	EDITION 10
14/7/2009	AE831084	DISCHARGE OF MORTGAGE	EDITION 11
9/12/2009	AF180572	MORTGAGE	EDITION 12
10/2/2011	AG57079	DISCHARGE OF MORTGAGE	
10/2/2011	AG57082	TRANSFER	EDITION 13

END OF PAGE 1 - CONTINUED OVER

SEARCH DATE

31/5/2014 6:58PM

FOLIO: 13/738232

PAGE 2

Recorded	Number	Type of Instrument	C.T. Issue
17/6/2011	AG305322	MORTGAGE	EDITION 14
1/8/2012	AH146349	LEASE	EDITION 15
28/4/2014	AI532859	DISCHARGE OF MORTGAGE	
28/4/2014	AI532860	MORTGAGE	EDITION 16

*** END OF SEARCH ***

mg

PRINTED ON 31/5/2014



24 JUL 11.15



RELODGED

11 JUL 91

11-01.

650321

REQUEST

REAL PROPERTY ACT, 1900

R

A 1 of 1
\$ 47 1/1DESCRIPTION
OF LAND
Note (a)

Torrens Title Reference	If part only, delete WHOLE and give details	Location
VOL 12945 Fol 1 now being FOLIO IDENTIFIERS: 12,13,44/738232	WHOLE	PUTNEY

REGISTERED
DEALING
Note (b)

Type of Dealing	Registered Number	Torrens Title Reference

REGISTERED
PROPRIETOR
Note (c)H.K. ROBERTS, State Crown Solicitor, 8-12 Chifley Square, Sydney, Solicitor for the
Resuming Authority(The abovenamed applicant) being the registered proprietor of the ~~land above described~~ ~~abovementioned registered dealing~~ hereby requests the Registrar General toendorse on parchment of Certificate of Title Vol 12945 Fol 1 Notice of
Resumption No. X454488 or as the case may require.

Note (d)

OFFICE USE ONLY

OVER.

EXECUTION
Note (e)

DATE 9th MAY 1991

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

Signed in my presence by the applicant who is personally known to me.
Signed in my presence by HUGH KING ROBERTS, State Crown
Solicitor, by CHARLES MURRAY DIMOND, State Crown
Solicitor's Office who is personally known to me:

Signature of Witness

R.C. JONES

Name of Witness (BLOCK LETTERS)

Sydney Solicitor

Address and occupation of Witness

H. K. ROBERTS
State Crown Solicitor

D.M.

Signature of Applicant

88/1499 C5/RCJ

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

166

OFFICE USE ONLY

LODGED BY STATE CROWN SOLICITORS OFFICE GOODSELL BUILDING 8-12 CHIFLEY SQUARE, SYDNEY. 2000. DX 19		LOCATION OF DOCUMENTS	
Delivery Box Number 813E		CT	OTHER
		<input checked="" type="checkbox"/>	Herewith <i>OK</i>
		<input type="checkbox"/>	In R.G.O. with
		<input type="checkbox"/>	Produced by
Checked <i>AMS</i>	Passed	Secondary Directions	
Signed	Extra Fee	Delivery Directions	<i>n/s</i>
REGISTERED - - 19			
30 JUL 1991			
Registrar General			

RTA's REF

CPY 357-11607

INSTRUCTIONS FOR COMPLETION

This form is to be used only if no other approved form is appropriate for the purpose and should be lodged by hand at the Registrar General's Office.

Typewriting and handwriting should be clear, legible and in permanent non-copying ink.

Alterations are not to be made by erasure; the words rejected are to be ruled through and initialled by the applicant.

If the space provided is insufficient, additional sheets of the same size and quality of paper and having the same margins as this form should be used. Each additional sheet must be identified as an annexure and signed by the applicant and the attesting witness.

Use up all blanks.

The following instructions relate to the side notes on the form.

(a) Description of land. (If the request is only in respect of a registered dealing, rule through this panel.)

(i) **TORRENS TITLE REFERENCE.**—For a Manual Reference insert the Volume and Folio, (e.g., Vol. 2514 Fol. 128). For a Computer Folio insert the Folio Identifier, (e.g., 12/701924). Title References should be listed in numerical sequence.

(ii) **PART/WHOLE.**—If part only of the land in the folio of the Register is the subject of the request, delete the word "WHOLE" and insert the lot and plan number, portion, &c.

(iii) **LOCATION.**—Insert the locality shown on the Certificate of Title/Crown Grant, e.g., at Chullara. If the locality is not shown, insert the Parish and County, e.g., 7th Lismore Co. Ross.

(b) Registered dealing. (If the request is only in respect of a folio of the Register, rule through this panel.) Show the registered number of the dealing and the title reference affected thereby, e.g., Lease—Q123456—Vol. 3456 Fol. 124.

(c) Show the full name, address and occupation or description of the applicant.

(d) Set out the terms of the request.

(e) Execution.

GENERALLY

(i) Should there be insufficient space for the execution of this request use an annexure sheet.

(ii) The certificate of correctness under the Real Property Act, 1900, must be signed by the applicant who should execute the request in the presence of an adult witness, not being a party to the request, to whom he/she is personally known. The solicitor for the applicant may sign the certificate on behalf of the applicant, the solicitor's name (not that of his/her firm) is to be typewritten or printed adjacent to his/her signature. Any person falsely or negligently certifying is liable to the penalties provided by section 117 of the Real Property Act, 1900.

ATTORNEY

(iii) If the request is executed by an attorney for the applicant pursuant to a registered power of attorney, the form of attestation must set out the full name of the attorney, and the form of execution must indicate the source of his/her authority, e.g., "AB by his/her attorney (or receiver or delegate, in the case may be) XY pursuant to power of attorney registered Book No.

AUTHORITY

(iv) If the request is executed pursuant to an authority (other than specified in (iii)) the form of attestation must indicate the statutory, judicial or other authority pursuant to which the application has been executed.

CORPORATION

(v) If the request is executed by a corporation under seal, the form of execution should include a statement that the seal has been properly affixed, e.g., in accordance with the Articles of Association of the corporation. Each person attesting the affixing of the seal must state his/her position (e.g., director, secretary) in the corporation.

(f) Insert the name, postal address, Document Exchange reference, telephone number and delivery box number of the lodging party.

(g) The lodging party is to complete the **LOCATION OF DOCUMENTS** panel. Place a tick in the appropriate box to indicate the whereabouts of the Certificate of Title or duplicate registered dealing. List, in an abbreviated form, other documents lodged, e.g., stat. dec. for statutory declaration.

OFFICE USE ONLY

FIRST SCHEDULE DIRECTIONS

FOLIO IDENTIFIER	(B) DIRECTION	(C) NAME
		5 Roads and Traffic Authority of New South Wales

SECOND SCHEDULE & OTHER DIRECTIONS

FOLIO IDENTIFIER	(B) DIRECTION	(F) NOTFN TYPE	(G) DEALING NUMBER	(H) DETAILS
	SET	OGC(1)		
	CT			213E



Office of State Revenue use only

00123

10/21/78+100 40 9087 8620+0

(A) **LAND TRANSFERRED**

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

FOLIO IDENTIFIERS

7/809282
13/738232
14/738232

(B) **LODGED BY**

L.T.O. Box

7950

Name, Address or DX and Telephone

SLY AND WEIGALL
LAWYERS
GOLDFIELDS HOUSE
CIRCULAR QUAY
TEL 330 8000 SYDNEY

Reference (max. 15 characters): **ATM**

(C) **TRANSFEROR**

ROADS AND TRAFFIC AUTHORITY OF NEW SOUTH WALES
(FORMERLY THE COMMISSIONER FOR MAIN ROADS)

(D) acknowledges receipt of the consideration of ... **\$180,000.00**

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

(E) subject to the following **ENCUMBRANCES** 1. **E636841**

2.

3.

(F) **TRANSFeree**

T

STUART BROS PTY LIMITED
157 Church Street
RYDE NSW 2112

as joint tenants/tenants in common

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

DATE OF EXECUTION 2nd February 19

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

R. A. de Salis

Signature of Witness

RICHARD ALBERT DE SALIS

Name of Witness (BLOCK LETTERS)

2 JIND STREET, MILSONS POINT 2061

Address of Witness

[Signature]

EXECUTED PURSUANT TO DELEGATION
BOOK 3799 No. 278

Signature of Transferor

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

Signature of Witness

Name of Witness (BLOCK LETTERS)

Address of Witness

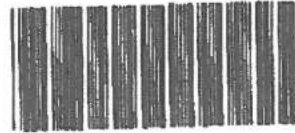
Albert James de Montfort
ALBERT JAMES DEMONTFORT
SOLICITOR for Transferee

RP65



REQUEST

Real Property Act 1900



U
355692 G

(A) **LAND**

Show no more than 20 References to Title.

FOLIO IDENTIFIER 7/809282
FOLIO IDENTIFIER 13/738232
FOLIO IDENTIFIER 14/738232

(B) **REGISTERED DEALING**

If applicable.

(C) **LODGED BY**

L.T.O. Box 795D	Name, Address or DX and Telephone SLY & WEIGALL DX 368 SYDNEY REFERENCE (max 15 characters): AJM 121451/1	R
---------------------------	---	----------

(D) **APPLICANT**

STUART BROS (HOLDINGS) PTY LIMITED ACN 001 717 442
157 Church Street
RYDE NSW 2112

(E) I, the Applicant, in regard to the above ~~Land/Registered Dealing~~, request the Registrar General to

amend the above Folios of the Register for the purpose of correcting the error in the name of the Registered Proprietor in proof of which there is lodged herewith:

1. Statutory Declaration by
2. Statutory Declaration by Albert James de Montfort, Solicitor of Sydney.

(F) Certified correct for the purposes of the Real Property Act 1900.

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

THE COMMON SEAL of STUART BROS (HOLDINGS) PTY LIMITED ACN 001 717 442 was hereunto affixed by authority of the Board of Directors and in the presence of:

~~Signature of Witness~~

~~Name of Director/Secretary~~

~~Signature of Director/Secretary~~

Director/Secretary

DATE 1. June 1994



Signature of Applicant

Director

CHECKED BY (office use only)

Handwritten initials

STATUTORY DECLARATION

Oaths Act, 1900

I, ALEXANDER STUMTZ of 55 COPE ST. LANE COVE 2066,
DO SOLEMNLY AND SINCERELY DECLARE that:

1. I am a Director/the Secretary of Stuart Bros (Holdings) Pty Limited ACN 001 717 442.
2. The Company was incorporated on 3 May 1979 as Stuart Bros Pty Limited and changed its name to Stuart Bros (Holdings) Pty Limited on the 13th day of September 1988.
3. Annexed hereto and marked with the letter "A" is a photocopy of certificate of incorporation on change of name issued by the Corporate Affairs Commission of New South Wales on the 13th of September 1988.
4. Stuart Bros (Holdings) Pty Limited is the same company as Stuart Bros Pty Limited shown as the registered proprietor of land in certificates of title Folio Identifiers 7/809282, 13/738232 and 14/738232.

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

SUBSCRIBED AND DECLARED)
at LYDE on 17th MAY 94)

Before me:)

B. M. Smith J.P.
Justice of the Peace

"A"

NATIONAL COMPANIES AND SECURITIES COMMISSION

Companies (New South Wales) Code

(Sub-section 72(9))

Registered No.:

224628-06

CERTIFICATE OF INCORPORATION ON CHANGE OF NAME OF COMPANY

This is to certify that

STUART BROS PTY LTD

which was on the third day of May, 1979, incorporated

under the Companies Act, 1961 as a proprietary company,

on the thirteenth day of September, 1988 changed its name to
STUART BROS. (HOLDINGS) PTY LIMITED

and that the company is a proprietary company, and is a company limited
by shares.

Given under the seal of the National Companies and Securities Commission at
Sydney on this thirteenth day of September, 19 88.



Chittamand

This page and the following pages constitute the Annexure/Exhibit
marked "A" referred to in the Statutory Declaration

of *Alexander Stuart*

sworn/made/signed the 17th day of May 1984

Before me:

B. A. Smith J.P.

A person authorised by the
Corporate Affairs Commission of New South Wales
Delegate of the National Companies
and Securities Commission. *A*



STATUTORY DECLARATION

Oaths Act, 1900

I, ALBERT JAMES de MONTFORT of 1 Alfred Street, Sydney, Solicitor **DO SOLEMNLY AND SINCERELY DECLARE** that:

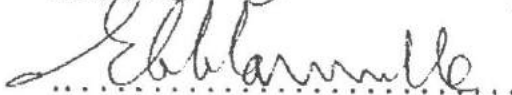
1. I am the Solicitor who acted for Stuart Bros (Holdings) Pty Limited formerly Stuart Bros Pty Limited on the purchase of vacant land and an unnecessary road from the Commissioner of Main Roads.
2. The Contract for the purchase was entered into on 21 July 1988 and there is annexed hereto and marked with the letter "A" a photocopy of the first page of the Agreement for Sale of the Land bearing that date.
3. Substantial delays were experienced in the effective closing of the road (part of Parsonage Street, Ryde) and the formal purchase of the land was not completed until 2 February 1993.
4. On completion a Transfer was made into the name Stuart Bros Pty Limited the name of the Company at the time of the Contract being entered into and it was not appreciated that in the period between the date of execution of the Contract 21 July 1988 and the date of completion of the purchase 2 February 1993 that the Company had formally changed its name to Stuart Bros (Holdings) Pty Limited.

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

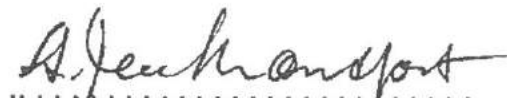
SUBSCRIBED AND DECLARED

at Sydney on 15 June 1994

Before me:



Justice of the Peace


A J de Montfort

JP

© 1986 COPYRIGHT of the Law Society of New South Wales and the Real Estate Institute of New South Wales, by whom this form as printed to clause 23 has been approved. WARNING: Unauthorised reproduction in whole or in part is an infringement of Copyright.

IMPORTANT NOTICE TO VENDORS AND PURCHASERS: The Conveyancing Act 1919 (Section 52A) and the Conveyancing (Vendor Disclosure and Warranty) Regulation 1986 create significant rights and obligations affecting this contract. You should refer to these provisions in conjunction with the preparation and signature of this contract.

Agreement for Sale of Land - 1986 Edition

(Comprising the Particulars and Conditions of Sale)

THE PARTICULARS

A. VENDOR'S AGENT:

B. VENDOR:
(Full name, address
& occupation)

THE COMMISSIONER FOR MAIN ROADS

309 Castlereagh Street, Sydney NSW 2000

C. PURCHASER:
(Full name, address
& occupation)

STUART BROS PTY LIMITED

and, if more than one, as * ~~JOINT TENANTS~~ or
* ~~TENANTS IN COMMON (in equal shares unless otherwise indicated in C)~~

D. VENDOR'S SOLICITOR: Legal Branch, Department of Main Roads Phone No. 218 6694
Address and DX 309 Castlereagh Street, Sydney 2000 Ref. FL 387.11609
DX 13 SYDNEY

E. PURCHASER'S SOLICITOR: Messrs Sly & Russell
Address and DX Westpac Plaza, 60 Margaret Street

Mr Rhodes:FCM
Phone No. 20535
Ref. Mr de Montfort

F. THE PROPERTY described as SYDNEY 2000 DX 368 SYDNEY

(a) The following land:

(i) Address (number, name, street and locality):

(ii) Nature of improvements (vacant land, cottage, flats, home unit and ~~other improvements~~ vacant land and unnecessary

(iii) ~~Lot/Portion~~ 13 & 14 Section: Deposited Plan Plan 738232 and land road
shown coloured blue on copy of Deposited Plan 738232 annexed hereto

(iv) Title reference(s): Folio Identifier 13/738232, C.T. Volume 11799 Folio 4,

(v) Approximate dimensions and area: C.T. to be obtained for unnecessary road

(vi) Nature of estate, holding or interest in land, if other than fee simple:
See copy of Deposited Plan 738232 annexed

(b) And as ancillary to the land above described, the following furnishings and chattels as inspected by the Purchaser: NIL

G. PRICE (in words) ONE HUNDRED AND EIGHTY THOUSAND DOLLARS (\$180,000.00)

(a) PRICE \$ 180,000.00

(b) DEPOSIT \$ 18,000.00

(c) BALANCE \$ 162,000.00

This page and the following ~~pages~~ constitutes the Annexure/Exhibit
marked "A" referred to in the Affidavit/Statutory Declaration

(CL2) H. THE DEPOSIT is payable to: *Vendor's Agent first named

of Albert James de Montfort

(CL13) I. ADJUSTMENTS TO BE MADE as at the date of: *completion

sworn/made/signed the 15 day of June 1988

(CL13) J. LAND TAX AMOUNT to be adjusted: *\$NIL

(CL17) K. BENEFIT OF POSSESSION to be given as at the date of: *completion

Before me:

*with vacant possession

*subject to existing tenancies or occupancies under the Vendor as particularised in the Third Schedule

(CL5) L. TITLE SYSTEM of land:

*The Real Property Act, 1900

*and being *Strata Title (Strata Titles Act, 1973)

*Qualified Title (Part IVA and Old System)

*Limited Title (Part IVB)

*Old System

*Crown Lands Consolidation Act, 1913

*Other, namely:

M. DATE OF MAKING THIS AGREEMENT:

21st day of July 1988

(* Delete, complete or amend as appropriate)

97-01T

Licence Number
10V/0096/95

TRANSFER

Real Property Act 1900



0
620632 A

Office of State Revenue use only

B

000016

10/08ST10102 40 5211 566080

LAND STAMP - M.S.N

D

(A) **LAND TRANSFERRED**

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

Folio Identifiers 13/738232 and 100/851723
14/738232
15/738232
7/809282

(B) **LODGED BY**

L.T.O. Box	Name: OWEN HODGE & SON SOLICITORS 12 ORMONDE PDE, HURSTVILLE DX 11344 HURSTVILLE Ph. 570-7844
404x	REFERENCE (max. 15 characters):

(C) **TRANSFEROR**

STUART BROS (HOLDINGS) PTY LIMITED (In Liquidation)
(Receiver and Manager Appointed) ACN 001 717 442

(D) acknowledges receipt of the consideration of \$1,500,000.00

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

(E) subject to the following **ENCUMBRANCES** 1. Lease bk. 3184 No. 807 2. 3.
(as to F/I 100/851723)

(F) **TRANSFEE**

T TS (s713 LGA) TW (Sheriff)	INDUSTRIAL PROPERTY MANAGEMENT SERVICES PTY LTD ACN 063 649 356	OFFICE USE S
(G)	TENANCY:	

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

DATE 12.10.98

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

Signature of Witness

CHRISTOPHER MACDONNELL
Name of Witness (BLOCK LETTERS)

LEVEL 17, 2 MARKET STREET
Address of Witness

Signed by **BRIAN RAYMOND SILVIA** as Receiver
and Manager of the Transferor pursuant to
Deed of Appointment dated 19 December 1994
registered book 4082 no. 131.

Signature of Transferor

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

Signature of Witness

Name of Witness (BLOCK LETTERS)

Address of Witness

D K COOPER
31 MARKET STREET
SYDNEY
SOLICITOR

Signature of Transferee

Signature of Transferee

CHECKED BY (office use only)

0295LTO

Ref:mg /Src:M

RECEIVED
15 SEP 1995

M...
ATION
UP OF DEBT
ATIONS
BOOK

OLD SYSTEM
STONE

E

Form: 01T
Release: 2
www.lpi.nsw.gov.au

TRANSF

New South Wales
Real Property Act 1900

9528997V

mal

PRIVACY NOTE: this information is legally required and will become part of the public record

STAMP DUTY

Office of State Revenue use only

27-03-2003

0001338554-001

SECTION 18(2)

DUTY

\$ *****2.00

(A) TORRENS TITLE

100/851723, 13/738232, 14/738232, 15/738232, 7/809282

(B) LODGED BY

Delivery
Box

451N

Name, Address or DX and Telephone

M KANAAN & CO.

P.O. BOX 190.

MERZYLANDS 2160.

Reference: KAVLYN PTY LTD.

9682.3757.

CODES

T

TW

(Sheriff)

(C) TRANSFEROR

ICA INVESTMENTS PTY LIMITED ACN 063 413 356

(D) CONSIDERATION The transferor acknowledges receipt of the consideration of \$5,300,000.00

and as regards

(E) ESTATE the land specified above transfers to the transferee an estate in fee simple

**(F) SHARE
TRANSFERRED**

(G) Encumbrances (if applicable):

(H) TRANSFEE

KAVLYN PTY LTD ACN 097 519 367

(I) TENANCY:

(J) DATE 27/3/2003

Certified correct for the purposes of the Real Property Act 1900, and executed on behalf of the corporation below by the corporation named below the common seal of which by the authorised persons whose signatures appear below was affixed pursuant to the authority specified and in the presence of the authorised person(s) whose signature(s) appear(s) below.

Corporation: ICA INVESTMENTS PTY LIMITED ACN 063 493 356

Authority: Section 127 of the Corporations Act

Signature of authorised person:

Name of authorised person:

Office held:

SHAWN HANNAH.
DIRECTOR

Signature of authorised person:

Name of authorised person:

Office held:

PAUL NOTARAS
DIRECTOR.

Certified for the purposes of the Real Property Act 1900 by the person whose signature appears below.

Signature:

M. Kanaan

Signatory's name:

MONICA KANAAN

Signatory's capacity:

SOLICITOR FOR TRANSFEE

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 13/738232

SEARCH DATE	TIME	EDITION NO	DATE
31/5/2014	6:55 PM	16	28/4/2014

LAND

LOT 13 IN DEPOSITED PLAN 738232
AT PUTNEY
LOCAL GOVERNMENT AREA RYDE
PARISH OF HUNTERS HILL COUNTY OF CUMBERLAND
TITLE DIAGRAM DP738232

FIRST SCHEDULE

CHURCH STREET PROPERTY INVESTMENTS PTY LTD (T AG57082)

SECOND SCHEDULE (3 NOTIFICATIONS)

- 1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
- 2 AH146349 LEASE TO GOLF CART WORLD PTY LTD OF 157 CHURCH STREET, MEADOWBANK. EXPIRES: 10/5/2017. OPTION OF RENEWAL: 5 YEARS.
- 3 AI532860 MORTGAGE TO AUSTRALIA AND NEW ZEALAND BANKING GROUP LIMITED

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

mg

PRINTED ON 31/5/2014

NEW SOUTH WALES

CERTIFICATE OF TITLE

PROPERTY ACT, 1900



11799

Appln. No.1349 (part)

Prior Title Vol.1154 Fol.176

Vol. **11799** Fol. **4**

Edition issued 14-3-1972

M589724



I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

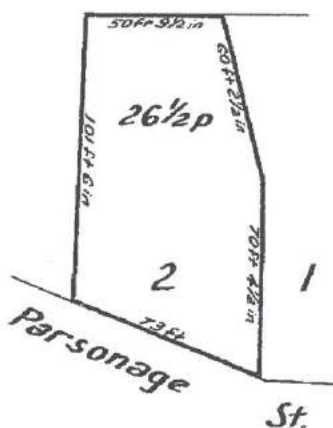
Jawatson
Registrar General.



PLAN SHOWING LOCATION OF LAND

CANCELLED

SEE AUTO FOLIO



M589724 R.S.

Scale: 50 feet to one inch

ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 2 in plan lodged with Transfer No.235068 (filed as P.P.915680) in the Municipality of Ryde Parish of Hunters Hill and County of Cumberland being part of 30 acres granted to Richard Cheers on 29-9-1792 and part of 1 acre 38 perches granted by Crown Grant Volume 18 Folio 11.

FIRST SCHEDULE

~~FLOORING DISTRIBUTORS PTY. LIMITED.~~

SECOND SCHEDULE

1. Reservations and conditions, if any, contained in the Crown Grants above referred to.
2. ~~Lease No. L439551 to Felt and Textiles of Australia Limited. Entered 19-8-1968. Determined 22/2/69.~~

Jawatson
Registrar General

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE

31/5/2014 6:58PM

FOLIO: 2/915680

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

Prior Title(s): VOL 11799 FOL 4

Recorded	Number	Type of Instrument	C.T. Issue
-----	-----	-----	-----
21/8/1988		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
3/11/1988		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
29/5/1990	Y915236	DISCHARGE OF MORTGAGE	
29/5/1990	Y915237	MORTGAGE	EDITION 1
9/7/1990	Z114660	DEPARTMENTAL DEALING	FOLIO CANCELLED
15/9/1999	6198651	DEPARTMENTAL DEALING	
7/11/2013	AI146844	DEPARTMENTAL DEALING	

*** END OF SEARCH ***

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE

31/5/2014 6:58PM

FOLIO: 14/738232

First Title(s): OLD SYSTEM

VOL 18 FOL 11

Prior Title(s): 2/915680

Recorded	Number	Type of Instrument	C.T. Issue
17/11/1986	DP738232	DEPOSITED PLAN	LOT RECORDED FOLIO NOT CREATED
9/7/1990	Y915237	MORTGAGE	FOLIO CREATED CT NOT ISSUED
12/11/1991	E55258	DEPARTMENTAL DEALING	EDITION 1
3/12/1991	Z741564	REQUEST	
4/2/1993	I94891	TRANSFER	EDITION 2
16/6/1994	U355692	REQUEST	EDITION 3
16/11/1994	U750510	MORTGAGE	EDITION 4
5/7/1995	O358170	CAVEAT	
24/10/1995	O620630	DISCHARGE OF MORTGAGE	
24/10/1995	O620632	TRANSFER	
24/10/1995	O620633	MORTGAGE	EDITION 5
3/8/1998	5172017	DISCHARGE OF MORTGAGE	
3/8/1998	5172018	CHANGE OF NAME	
3/8/1998	5172019	MORTGAGE	EDITION 6
17/9/2002	8960864	MORTGAGE	EDITION 7
13/3/2003	9445403	TRANSFER OF MORTGAGE	EDITION 8
11/4/2003	9528995	DISCHARGE OF MORTGAGE	
11/4/2003	9528996	DISCHARGE OF MORTGAGE	
11/4/2003	9528997	TRANSFER	EDITION 9
28/2/2005	AB314484	MORTGAGE	EDITION 10
14/7/2009	AE831084	DISCHARGE OF MORTGAGE	EDITION 11
9/12/2009	AF180572	MORTGAGE	EDITION 12

END OF PAGE 1 - CONTINUED OVER

SEARCH DATE

31/5/2014 6:58PM

FOLIO: 14/738232

PAGE 2

Recorded	Number	Type of Instrument	C.T. Issue
10/2/2011	AG57080	DISCHARGE OF MORTGAGE	
10/2/2011	AG57082	TRANSFER	EDITION 13
17/6/2011	AG305322	MORTGAGE	EDITION 14
1/8/2012	AH146349	LEASE	EDITION 15
28/4/2014	AI532859	DISCHARGE OF MORTGAGE	
28/4/2014	AI532860	MORTGAGE	EDITION 16

*** END OF SEARCH ***

mg

PRINTED ON 31/5/2014

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 14/738232

SEARCH DATE	TIME	EDITION NO	DATE
31/5/2014	6:55 PM	16	28/4/2014

LAND

LOT 14 IN DEPOSITED PLAN 738232
LOCAL GOVERNMENT AREA RYDE
PARISH OF HUNTERS HILL COUNTY OF CUMBERLAND
TITLE DIAGRAM DP738232

FIRST SCHEDULE

CHURCH STREET PROPERTY INVESTMENTS PTY LTD (T AG57082)

SECOND SCHEDULE (2 NOTIFICATIONS)

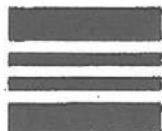
- 1 AH146349 LEASE TO GOLF CART WORLD PTY LTD OF 157 CHURCH STREET, MEADOWBANK. EXPIRES: 10/5/2017. OPTION OF RENEWAL: 5 YEARS.
- 2 AI532860 MORTGAGE TO AUSTRALIA AND NEW ZEALAND BANKING GROUP LIMITED

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

RP 36



PA
062659 M



RESUMPTION APPLICATION

Section 31A (2) Real Property Act, 1900

RA

	of	
\$	80	-

DESCRIPTION OF LAND
Note (a)

Lot No.	Plan No.	Location
PART LOT 7	DP 809282	PARISH: HUNTERS HILL COUNTY: CUMBERLAND

DESCRIPTION OF EASEMENT
Note (b)

Torrens Title Reference	If Part Only, Delete Whole and Give Details	Location
	WHOLE	

APPLICANT
Note (c)

ROADS AND TRAFFIC AUTHORITY OF NEW SOUTH WALES
--

GAZETAL
Note (d)

(the abovenamed Applicant) in consequence of the resumption notified in Government Gazette dated 14 June 1991, folio 4624 a true copy whereof is attached hereto, hereby applies to the Registrar General

EASEMENT
Note (e)

Creation of a Folio on the Register

(i) for the issue of a certificate of title in favour of the applicant

(ii) for the recording of easements for

so resumed on the folio(s) of the Register, described in the above schedule.

Note (f)

And I HUGH KING ROBERTS, STATE CROWN SOLICITOR hereby certify that

Note (c)

(1) I am authorised to make the within application;

(2) the said land has not been divested from the applicant ROADS AND TRAFFIC AUTHORITY OF NEW SOUTH WALES and no estate or interest therein has been created in favour of any other person.

(3) the said land is not under the provisions of the Real Property Act, 1900, and no sale, lease or other transaction affecting it is intended to be completed prior to the issue of the folio of the Register; and

(4) this application is correct for the purposes of the Real Property Act, 1900.

(Copy of Gazette notification.)

(See Annexure)

AND IT IS ALSO REQUESTED that a folio be created in respect of the whole of Lot 7 in Deposited Plan 809282 BUT THAT NO CERTIFICATE OF TITLE ISSUE pursuant to this request and for that purpose the land in Certificate of Title Volume 27 Folio 23 was also resumed by the said notification and comprised within Lot 7 Deposited Plan 809282.

Dated Wednesday this 26th day of June, 1991.

Signed in my presence for HUGH KING ROBERTS, State Crown Solicitor,
Solicitor for the applicant by CHARLES MURRAY DIMOND,
by the said State Crown Solicitor's Office, who is personally known to me.

EXECUTION
Note (g)

Janice Harrison
Signature of Witness

JANICE HARRISON

Name of Witness (BLOCK LETTERS)

C45:JH

Signature

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

Passed	LODGED BY STATE CROWN SOLICITORS OFFICE GOODSELL BUILDING 8-12 CHIFLEY SQUARE, SYDNEY. 2000 DX19 Delivery Box Number 0132	LOCATION OF DOCUMENTS	DELIVERY DIRECTIONS
		CT OTHER	
		Herewith	
Checked		In R.G.O. with	
		Produced by	

PA 62659

ANNEXURE TO RESUMPTION DATED
by the State Crown Solicitor

26th June 1991

**STATE ROADS ACT 1986
PUBLIC WORKS ACT 1912**

**NOTIFICATION OF ACQUISITION OF LAND
AT PUTNEY IN THE MUNICIPALITY OF RYDE**

IT is hereby notified and declared by His Excellency the Governor, acting with the advice of the Executive Council, that in pursuance of the State Roads Act 1986 the land described in the Schedule hereunder in respect of so much of the said land as is Crown Land is hereby appropriated and in respect of so much of the said land as is private property is hereby resumed under the Public Works Act 1912 for the purposes of the State Roads Act 1986 and that all the said land is hereby vested in the Roads and Traffic Authority of New South Wales.

Dated at Sydney this 6th day of June 1991

P R SINCLAIR
Governor

By His Excellency's Command,

WAL MURRAY
Deputy Premier and
Minister for Roads

SCHEDULE

ALL that piece or parcel of land situate in the Municipality of Ryde, Parish of Hunters Hill, and County of Cumberland, being unnecessary Public Road partly comprised within Certificate of Title Volume 27 Folio 23 and shown as Lot 7 Deposited Plan 809282.

The land is said to be in the possession of the Crown and the Council of the Municipality of Ryde.

(RTA Papers 387.11609)

H. S. ROBERTS
State Crown Solicitor

Authorised Officer

Witness James Harrison

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE

31/5/2014 6:58PM

FOLIO: 7/809282

First Title(s): VOL 18 FOL 10 OLD SYSTEM

Prior Title(s): VOL 27 FOL 23 PA62659

Recorded	Number	Type of Instrument	C.T. Issue
31/5/1991	DP809282	DEPOSITED PLAN	LOT RECORDED FOLIO NOT CREATED
28/8/1991	PA62659	PRIMARY APPLICATION	FOLIO CREATED EDITION 1
1/10/1991	Z956391	DEPARTMENTAL DEALING	
12/11/1991	E55087	DEPARTMENTAL DEALING	EDITION 2
3/12/1991	Z741563	REQUEST	
6/8/1992	E636841	TRANSFER GRANTING EASEMENT	EDITION 3
4/2/1993	I94891	TRANSFER	EDITION 4
16/6/1994	U355692	REQUEST	EDITION 5
16/11/1994	U750510	MORTGAGE	EDITION 6
5/7/1995	O358170	CAVEAT	
24/10/1995	O620630	DISCHARGE OF MORTGAGE	
24/10/1995	O620632	TRANSFER	
24/10/1995	O620633	MORTGAGE	EDITION 7
3/8/1998	5172017	DISCHARGE OF MORTGAGE	
3/8/1998	5172018	CHANGE OF NAME	
3/8/1998	5172019	MORTGAGE	EDITION 8
17/9/2002	8960864	MORTGAGE	EDITION 9
13/3/2003	9445403	TRANSFER OF MORTGAGE	EDITION 10
11/4/2003	9528995	DISCHARGE OF MORTGAGE	
11/4/2003	9528996	DISCHARGE OF MORTGAGE	
11/4/2003	9528997	TRANSFER	EDITION 11
28/2/2005	AB314484	MORTGAGE	EDITION 12

END OF PAGE 1 - CONTINUED OVER

SEARCH DATE

31/5/2014 6:58PM

FOLIO: 7/809282

PAGE 2

Recorded	Number	Type of Instrument	C.T. Issue
14/7/2009	AE831084	DISCHARGE OF MORTGAGE	EDITION 13
9/12/2009	AF180572	MORTGAGE	EDITION 14
10/2/2011	AG57077	DISCHARGE OF MORTGAGE	
10/2/2011	AG57082	TRANSFER	EDITION 15
17/6/2011	AG305322	MORTGAGE	EDITION 16
1/8/2012	AH146349	LEASE	EDITION 17
28/4/2014	AI532859	DISCHARGE OF MORTGAGE	
28/4/2014	AI532860	MORTGAGE	EDITION 18

*** END OF SEARCH ***

mg

PRINTED ON 31/5/2014

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 7/809282

SEARCH DATE	TIME	EDITION NO	DATE
31/5/2014	6:55 PM	18	28/4/2014

LAND

LOT 7 IN DEPOSITED PLAN 809282
AT PUTNEY
LOCAL GOVERNMENT AREA RYDE
PARISH OF HUNTERS HILL COUNTY OF CUMBERLAND
TITLE DIAGRAM DP809282

FIRST SCHEDULE

CHURCH STREET PROPERTY INVESTMENTS PTY LTD (T AG57082)

SECOND SCHEDULE (4 NOTIFICATIONS)

- 1 T447400 LAND EXCLUDES MINERALS AS TO THE PART SHOWN SO INDICATED ON THE TITLE DIAGRAM
- 2 E636841 EASEMENT FOR S.C.C. CABLES AFFECTING THE PART OF THE LAND ABOVE DESCRIBED DESIGNATED (A) IN THE TITLE DIAGRAM
- 3 AH146349 LEASE TO GOLF CART WORLD PTY LTD OF 157 CHURCH STREET, MEADOWBANK. EXPIRES: 10/5/2017. OPTION OF RENEWAL: 5 YEARS.
- 4 AI532860 MORTGAGE TO AUSTRALIA AND NEW ZEALAND BANKING GROUP LIMITED

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

mgj

PRINTED ON 31/5/2014

20-0620

PRIMARY APPLICATION

Section 14 Real Property Act 1900



PA
064498 Y

only
uter]

CAUTION
Severe penalties are provided for
procuring a certificate of title through
fraud.

00*01\$

10/113333100 21 6091 568010

N.S.W. STAMP DUTY

\$10

(A) **LODGED BY**

L.T.O. Box 907U	Name, Address or DX and Telephone WHITEHEAD GREEN & COOPER DX 269 SYDNEY Phone: 264-3000 907U	Lodging Party's Reference (15 characters maximum) J - 20916
--------------------	---	---

(B) **APPLICANT** ...STUART BROS. (HOLDINGS) PTY. LIMITED. (IN LIQUIDATION). (RECEIVER AND MANAGER APPOINTED) (ACN 001 717 442) by Brian Raymond Silvia its Receiver and Manager

applies to have the land described below brought under the provisions of the Real Property Act 1900:

(C) All that piece of land situated at ...RYDE... County: ...CUMBERLAND... Parish: ...HUNTERS HILL... being ...the land described in Conveyance Book 3573 No. 519 for an estate in fee simple...

(D) and requests that the folio of the Register issue in the name of:

STUART BROS (HOLDINGS) PTY LIMITED (IN LIQUIDATION) (RECEIVER AND MANAGER APPOINTED)

(E) **TENANCY:**

(F) **STATUTORY DECLARATION**

In support of this Application I BRIAN RAYMOND SILVIA of 2 Market Street, Sydney Receiver and Manager of Stuart Bros (Holdings) Pty Ltd (in Liquidation) Receiver and Manager Appointed solemnly and sincerely declare that:

- The Applicant is seized of (a) an estate in fee simple in the above described land.
~~(b) possession of the above described land.~~
~~(c) a life estate in the above described land.~~
- There is no person in possession or occupation of the said land or any part thereof adversely to the estate or interest therein of the Applicant.
- The said land is now ~~unoccupied~~ / occupied by the persons specified in Schedule One.
- There does not exist any lease or agreement for lease of the said land for any term exceeding a tenancy for one year, or from year to year, except as set out in Schedule One.
- There does not exist any right of way, right of drainage or other easement or any restrictive covenant affecting the said land, except as disclosed in Schedule One.
- There does not exist any mortgage, lien, writ of execution, order, charge, encumbrance, will, settlement, deed, writing, contract, or dealing giving any right, claim or interest in the said land, or any part thereof, to any person other than the Applicant except as set out in Schedule One; nor, to the best of my knowledge and belief is there any action, proceeding or suit pending which affects or could affect the said land, or any person other than the Applicant who has or claims any estate, right, title or interest therein, except as disclosed in Schedule One.
- There is no resumption or instrument whereby minerals or substrata have been excepted or reserved to any person, except as disclosed in Schedule One.
- Schedule Two contains a full and correct list of all settlements, deeds, documents, instruments, maps, plans and papers relating to the said land so far as I have any means of ascertaining them. All such documents as are in my possession or under my control are lodged herewith; the whereabouts of all other documents listed, so far as is known to me, is stated in such list.
- The Applicant ~~has not become bankrupt nor assigned his/her estate for the benefit of creditors. If the Applicant is a corporation, the corporation has not appointed a liquidator.~~ is in liquidation and a Receiver and Manager has been appointed for the same.

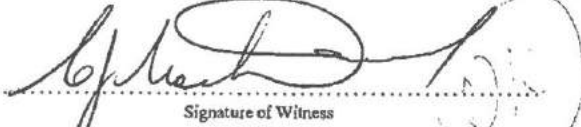
Continued overleaf

10. The information shown in the schedules hereto is to be taken as part of this declaration.

11. Searches and inquiries for those documents shown as whereabouts unknown, and referred to in Schedule Two as Numbers' have been made at the premises of the applicant, previous and present lending institutions, solicitors and agents so far as I am aware and have not been lodged with any person as security for a loan or for any purpose whatsoever.

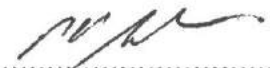
I, BRIAN RAYMOND SILVIA (BK 4082 No 151)
make this solemn declaration conscientiously believing the same to be true and by virtue of the Oaths Act 1900 and certify this Application to be correct for the purposes of the Real Property Act 1900, and I hereby undertake to notify the Registrar General promptly of any further interest in the said land created after the making of this my declaration and before issue of the Certificate of Title.

Made and subscribed at SYDNEY on 24TH JULY 19 95 in the presence of


Signature of Witness

CHRISTOPHER MACDONNELL
Name of Witness (BLOCK LETTERS)

17/2 MARKET STREET SYDNEY
Address and Qualification of Witness
CHARTERED ACCOUNTANT


Signature of Applicant/Authorised Agent of Applicant

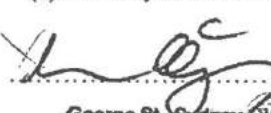
(G) **CONSENT OF MORTGAGEE**

NATIONAL AUSTRALIA BANK LIMITED (ACN 004 044 937) , being the mortgagee under mortgage
Registered Book .3573.. Number .520... hereby joins in and consents to this Application subject to :

(i) entry on the folio of the register to be created and on the Certificate of Title to issue of a notification relating to such mortgage,
AND

(ii) delivery to me of the ~~Certificate of Title~~ Signed in my presence
by LYNETTE IRENE DARBY
the Attorney of National Australia
Bank Limited pursuant to Power of
Attorney registered No. 549
Book 3834 who is personally
known to me.

Signed for and on behalf of
National Australia Bank Limited
by its said Attorney.


George St, Sydney
Sean McGarry
Bank Officer


Mortgagee
RETAIL DOCUMENTATION MANAGER

(H) **SCHEDULE ONE**

Particulars of Subsisting Interests

Full name and address (of Occupier, Lessee, Mortgagee, etc.)	Nature of entitlement ("Occupier, "Lessee", "Mortgagee", etc.)	Particulars of Instrument (if any) by which entitlement created
SEE ANNEXURE "A"		

(I)

SCHEDULE TWO

PA 64498

Location of Documents referred to below

[To be completed by the declarant]

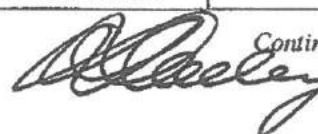
Document numbers 10 LODGED HEREWITH
 Document numbers 1-9 (incl) WHEREABOUTS UNKNOWN See clause 11 of declaration
 Document numbers _____ PERMANENTLY LODGED - Receipt Numbers: _____
 Document numbers 11 TO BE LODGED BY: Applicant for
...inspection... (if called for)

(I)

Schedule of Documents

[List each chain of title separately. The Schedule should commence from a good root of title]

No.	Date	Nature of Document	Parties	Book	Number
1	18/11/57	Conveyance	The Commissioner for Main Roads to Coca Cola Bottlers (Sydney) Pty Limited	2428	552
2	24/6/65	Conveyance	Coca Cola Bottlers (Sydney) Pty Limited to Expandite (Aust) Pty Limited (Expandite (Aust) Pty Limited became Expandite-Rawplug (Aust) Pty Limited)	2749	842
3	21/8/74	Lease	Expandite-Rawplug (Aust) Pty Limited to The Sydney County Council	3184	807
4	19/1/81	Conveyance	Expandite-Rawplug (Aust) Pty Limited to Ajab Pty Limited (Ajab Pty Limited became 157 Church Street Pty Limited)	3474	925
5	19/1/81	Lease	157 Church Street Pty Limited to Sign Systems Australia Pty Limited	3479	650
6	21/7/81	Mortgage	157 Church Street Pty Limited to Hatmax Nominees Pty Limited	3474	924
7	10/11/83	Surrender of Lease	Sign Systems Australia Pty Limited to 157 Church Street Pty Limited	3575	693
8	10/11/83	Conveyance	157 Church Street Pty Limited to Stuart Bros Pty Limited	3573	3573 519
9	11/11/83	Discharge of Mortgage	Hatmax Pty Limited to 157 Church Street Pty Limited	3573	518
10	11/11/83	Mortgage	Stuart Bros Pty Limited to National Commercial Banking Corporation of Australia Limited (Stuart Bros Pty Limited became Stuart Bros (Holdings) Pty Limited) (National Commercial Banking Corporation of Australia Limited became National Australia Bank Limited)	3573	520

Continued overleaf


SCHEDULE TWO (Continued)

[List each chain of title separately. The Schedule should commence from a good root of title]

No.	Date	Nature of Document	Parties	Book	Number
11	19/12/94	Deed of Appointment	Appointment of Brian Raymond Silvia as Receiver and Manager of Stuart Bros (Holdings) Pty Limited (in liquidation)	4082	131



"A"

PA 64498

SCHEDULE ONE

Particulars of Subsisting Interests

Full name and address (of Occupier, Lessee, Mortgagee, etc)	Nature of entitlement ("Occupier", "Lessee", "Mortgagee", etc)	Particulars of Instrument (if any) by which entitlement created
---	--	--

- | | | |
|---|--|---|
| ✓ (a) Sydney County Council
(now known as Sydney
Electricity) | Lessee of part
(sub-station site) | Lease dated 21/8/74
Registered No 807
Book 3184 |
| (b) Industrial Property
Management Services
Pty Limited
(ACN 063 649 356) | Equitable interest
in fee simple as
purchaser and occupier
of the property
(subject to above
lease) as licensee
for six months from
12/4/1995 | Contract of sale
dated 12/4/1995
between Stuart Bros
(Holdings) Pty Ltd
(in liquidation)
(Receiver & Manager
Appointed) and
Industrial Property
Management Services
Pty Limited. Deed
of License of same
date between the
same parties. |
| (c) A J Lucas Pty Limited
(ACN 002 313 368) | Sub-Licensee from
Industrial Property
Management Services
Pty Limited of part
for six months from
12/6/1995 (subject to
earlier termination) | Deed of Sub-Lease
dated |
| ✓ (d) The Commissioner
for Main Roads
(now Road & Traffic
Authority) | Party benefited by
restrictive covenant | Deed of Conveyance
dated 18/11/1957
from Commissioner
for Main Roads to
Coca Cola Bottlers
(Sydney) Pty Ltd
registered No 552
Book 2428. |
| ✓ (e) National Australia
Bank Ltd (formerly
National Commercial
Banking Corporation
of Australia Ltd) | Mortgagee | Mortgage dated
11/11/1983 from
Stuart Bros Pty Ltd
(now Stuart Bros
(Holdings) Pty Ltd)
to National
Commercial Banking
Corporation of
Australia Limited
registered No 520
Book 3573 |
| ✓ (f) Brian Raymond Silvia | Receiver & Manager
Appointed by National
Australia Limited | Deed of Appointment
dated 19/12/1994
registered No 131
Book 4082 |

[Signature]

PA 64498

S T A T U T O R Y D E C L A R A T I O N

I, BRIAN RAYMOND SILVIA of 2 Market Street, Sydney in the State of New South Wales, do solemnly and sincerely declare as follows:

1. By Deed of Appointment dated 19th December 1994 between National Australia Bank Limited and myself registered No 131 Book 4082, I was appointed Receiver and Manager of Stuart Bros (Holdings) Pty Limited (hereafter referred to as "the Company").
2. The Company is now in liquidation. On 10th February 1995 Martin John Green was appointed liquidator by the Federal Court.
3. As Receiver and Manager of the Company I entered into a contract with Industrial Property Management Services Pty Limited dated 12th April 1994 for the sale to it of the property 157 Church Street, Ryde which is an asset of the Company.
4. The said property comprises five parcels of land, four of which have titles under the Real Property Act and one of which is Old System land. The latter parcel (hereinafter referred to as "the Old System Land") is the whole of the land conveyed by 157 Church Street Pty Limited to Stuart Bros Pty Limited by Conveyance dated 10th November 1983 registered No 519 Book 3573.
5. Annexed hereto marked with the letter "A" is a list of Title documents related to the Old System Land commencing with a Conveyance of the same dated 18th November 1957 from the Commissioner for Main Roads to Coca Cola Bottlers (Sydney) Pty Limited registered No 552 Book 2428. The only documents of those listed in Annexure "A" which I hold or which are in my control are mortgage dated 11th November 1983 from the Company to National Commercial Banking Corporation of Australia Limited registered No 520 Book 3573 and Deed of Appointment dated 19th December 1994 Registered No 131 Book 4082. After a diligent search of my records, I have been unable to find any of the other documents listed in Annexure "A" and I have been unable to ascertain their whereabouts.
6. In my efforts to locate the missing documents, I have made enquiries of -
 - (a) Mr Alexander Stuart, a former Director of Stuart Bros (Holdings) Pty Limited.
 - (b) Martin John Green, the Liquidator of the Company.
 - (c) National Australia Bank Limited (formerly National Commercial Banking Corporation of Australia Limited), the mortgagee of the Old System land.
7. I have been informed by Mr Alexander Stuart that he was a Director of the Company ^{since} ~~from~~ 3 May 1979 ~~until~~ ¹⁹ and that, apart from the aforesaid mortgage to National Commercial Banking Corporation of Australia Limited, he is not aware of any other mortgage or charge given by the

4 B.

PA 64498

-2-

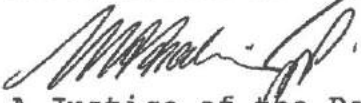
Company over the Old System land to any party and that he is not aware of any party other than National Australia Bank Limited holding title Deeds for the Old System land as security for any charge or mortgage.

8. I am not aware of any party other than National Australia Bank Limited having a mortgage or charge over the Old System land.
9. On 13th September 1988 the name of the Company was changed from Stuart Bros Pty Limited to Stuart Bros (Holdings) Pty Limited.

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

TAKEN AND DECLARED at SYDNEY)
this 25TH day of JULY)
1995, before me:)


.....


A Justice of the Peace

7277f/11-12

MARK ANDREW FRANKLIN
JUSTICE OF THE PEACE
LEVEL 17, 2 MARKET ST.
SYDNEY NSW 2000

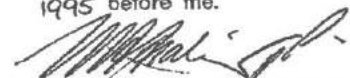
PA 64498

ANNEXURE "A"

	DATE	DEALING	PARTIES	REGISTRATION DETAILS
1.	18/11/57	Conveyance	The Commissioner for Main Roads to Coca Cola Bottlers (Sydney) Pty Limited	No. 552 Book 2428
2.	24/06/65	Conveyance	Coca Cola Bottlers (Sydney) Pty Limited to Expandite (Aust) Pty Limited Expandite (Aust) Pty Limited became Expandite-Rawplug (Aust) Pty Limited	No. 842 Book 2749
3.	21/08/74	Lease	Expandite-Rawplug (Aust) Pty Limited to The Sydney County Council	No. 807 Book 3184
4.	19/01/81	Conveyance	Expandite-Rawplug (Aust) Pty Limited to Ajab Pty Limited Ajab Pty Limited became 157 Church Street Pty Limited	No. 925 Book 3474
5.	19/01/81	Lease	157 Church Street Pty Limited to Sign Systems Australia Pty Limited	No. 650 Book 3479
6.	21/07/81	Mortgage	157 Church Street Pty Limited to Hatmax Nominees Pty Limited	No. 924 Book 3474
7.	10/11/83	Surrender of Lease	Sign Systems Australia Pty Limited to 157 Church Street Pty Limited	No. 693 Book 3575
8.	10/11/83	Conveyance	157 Church Street Pty Limited to Stuart Bros Pty Limited	No. 519 Book 3573
9.	11/11/83	Discharge of Mortgage	Hatmax Pty Limited to 157 Church Street Pty Limited	No. 518 Book 3573
10.	11/11/83	Mortgage	Stuart Bros Pty Limited to National Commercial Banking Corporation of Australia Limited Stuart Bros Pty Limited became Stuart Bros (Holdings) Pty Limited National Commercial Banking Corporation of Australia Limited became National Australia Bank Limited	No. 520 Book 3573
11.	19/12/94	Deed of Appointment	Appointment of Receiver & Manager over Mortgage Debenture to Brian Raymond Silvia	No. 131 Book 4082

j:\agpw\mc.264

This is the annexure marked " A " referred to in the annexed Declaration of BRIAN RAYMOND SILVIA made on the 25TH day of JULY 1995 before me.



PA 64498

S T A T U T O R Y D E C L A R A T I O N

I, ALEXANDER STUART of 59 Cope Street, Lane Cove in the State of New South Wales, do solemnly and sincerely declare as follows:

1. ~~From~~ ^{Since} 3 May 1979 ~~until~~ ^{have been} I was a Director of Stuart Bros (Holdings) Pty Limited (ACN 001 717 442) ("the Company").
2. Prior to 13th September 1988 the name of the Company was Stuart Bros Pty Limited.
3. On 19th December 1994 Brian Raymond Silvia was appointed Receiver and Manager of the Company.
4. The Company is now in liquidation. On 10th February 1995 Martin John Green was appointed liquidator by the Federal Court.
5. By Conveyance dated 10th November 1983 registered No 519 Book 3573 a parcel of land with Common Law Title located at the corner of Church Street and Well Street, Ryde and described by metes and bounds in the Schedule to the said Conveyance ("the Land") was conveyed to the Company by 157 Church Street Pty Limited.
6. The Company mortgaged the Land to National Australia Bank Limited by mortgage dated 11 November 1983 registered No 520 Book 3573. Apart from that mortgage I am not aware of any other mortgage or charge given by the Company over the Land to any party and I do not know of any party other National Australia Bank Limited holding the title deeds for the Land as security for any charge or mortgage.
7. I have been informed that National Australia Bank Limited hold the aforesaid mortgage document but that it has not been able to locate any other title documents relating to the Land. I do not know the whereabouts of any such documents apart from the aforesaid mortgage.


PA 64498

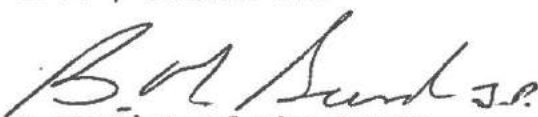
-2-

8. Neither I nor, so far as I am aware, any of the former directors of the Company now have possession or control of any documents of the Company relating to the title to Land or other real estate of the Company. Following the liquidation of the Company any such documents, if they had been held by the Company, would have been made available to the Liquidator of the Company. I am not aware of any documents relating to the title to the Land having been given to the Liquidator or to the aforesaid Receiver and Manager of the Company.

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

TAKEN AND DECLARED at GREENWICH)
this 25th day of July)
1995, before me:)


.....


A Justice of the Peace

7035f/1-2

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE

31/5/2014 6:58PM

FOLIO: 100/851723

First Title(s): OLD SYSTEM

Prior Title(s): PA64498

Recorded	Number	Type of Instrument	C.T. Issue
22/8/1995	PA64498	PRIMARY APPLICATION	FOLIO CREATED EDITION 1
28/8/1995	O490193	CAVEAT	
24/10/1995	O620631	DISCHARGE OF MORTGAGE	
24/10/1995	O620632	TRANSFER	
24/10/1995	O620633	MORTGAGE	EDITION 2
3/8/1998	5172017	DISCHARGE OF MORTGAGE	
3/8/1998	5172018	CHANGE OF NAME	
3/8/1998	5172019	MORTGAGE	EDITION 3
17/9/2002	8960864	MORTGAGE	EDITION 4
13/3/2003	9445403	TRANSFER OF MORTGAGE	EDITION 5
11/4/2003	9528995	DISCHARGE OF MORTGAGE	
11/4/2003	9528996	DISCHARGE OF MORTGAGE	
11/4/2003	9528997	TRANSFER	EDITION 6
28/2/2005	AB314484	MORTGAGE	EDITION 7
14/7/2009	AE831084	DISCHARGE OF MORTGAGE	EDITION 8
9/12/2009	AF180572	MORTGAGE	EDITION 9
10/2/2011	AG57078	DISCHARGE OF MORTGAGE	
10/2/2011	AG57082	TRANSFER	EDITION 10
17/6/2011	AG305322	MORTGAGE	EDITION 11
1/8/2012	AH146349	LEASE	EDITION 12
28/4/2014	AI532859	DISCHARGE OF MORTGAGE	
28/4/2014	AI532860	MORTGAGE	EDITION 13

*** END OF SEARCH ***

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 100/851723

SEARCH DATE	TIME	EDITION NO	DATE
31/5/2014	6:57 PM	13	28/4/2014

LAND

LOT 100 IN DEPOSITED PLAN 851723
AT PUTNEY
LOCAL GOVERNMENT AREA RYDE
PARISH OF HUNTERS HILL COUNTY OF CUMBERLAND
TITLE DIAGRAM DP851723

FIRST SCHEDULE

CHURCH STREET PROPERTY INVESTMENTS PTY LTD (T AG57082)

SECOND SCHEDULE (5 NOTIFICATIONS)

- 1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
- 2 BK 2428 NO 552 COVENANT
- 3 BK 3184 NO 807 LEASE TO SYDNEY COUNTY COUNCIL OF SUBSTATION PREMISES
NO 3719 SHOWN ON PLAN WITH LEASE BK 3184 NO 807 TERM
50 YEARS EXPIRES 31-12-2023
- 4 AH146349 LEASE TO GOLF CART WORLD PTY LTD OF 157 CHURCH
STREET, MEADOWBANK. EXPIRES: 10/5/2017. OPTION OF
RENEWAL: 5 YEARS.
- 5 AI532860 MORTGAGE TO AUSTRALIA AND NEW ZEALAND BANKING GROUP
LIMITED

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

mg

PRINTED ON 31/5/2014

APPENDIX C
NSW WORKCOVER SEARCH
STORED CHEMICALS



WorkCover

WorkCover NSW
92-100 Donnison Street, Gosford, NSW 2250
Locked Bag 2906, Lisarow, NSW 2252
T 02 4321 5000 F 02 4325 4145
WorkCover Assistance Service 13 10 50
DX 731 Sydney workcover.nsw.gov.au

Our Ref: D14/015853
Your Ref: Sari Eru

6 February 2014

Attention: Sari Eru
Environmental Investigations Australia
Suite 6.01,
55 Miller St
Pyrmont NSW 2009

Dear Ms Eru,

RE SITE: 155-157 Church St Ryde NSW

I refer to your site search request received by WorkCover NSW on 30 January 2014 requesting information on licences to keep dangerous goods for the above site.

Enclosed are copies of the documents that WorkCover NSW holds on Dangerous Goods Licence 35/001919 relating to the storage of dangerous goods at the above-mentioned premises, as listed on the Stored Chemical Information Database (SCID).

If you have any further queries please contact the Dangerous Goods Licensing Team on (02) 4321 5500.

Yours Sincerely

Brent Jones
Senior Licensing Officer
Dangerous Goods Notification Team

PHONE: (02) 829 2399
FAX: (02) 829 3231

No DG storage

UNIT 6/7,
26 YORK ROAD,
INGLEBURN 2565
P.O. BOX 1312
CAMPBELLTOWN 2560

Emcal Engineering Pty. Ltd.

A.C.N. 004 000 131

FUEL DEPOT & SERVICE STATION INSTALLATIONS

16th October, 1995

WORKCOVER AUTHORITY
LOCKED BAG NO 10
CLARENCE STREET
SYDNEY NSW 2000

ATTENTION: THE CHIEF INSPECTOR OF DANGEROUS GOODS

Dear Sir,

We wish to advise that one disused 5,000 litre underground super storage tank has been abandoned by the concrete filling method on the 14th October, 1995, at the premises of Industrial Constructions Pty Ltd, 157 Church Street, Ryde NSW.

The vent, suction and fill lines were removed and concrete filled.

Yours faithfully
EMCAL ENGINEERING PTY LTD



CARL MINETT

ink.

CONCRETE PAVED
YARD.

24" Wire Gate.

NOTE. Bunded Area.

Manufacture..... 9,300 g

Storage..... 13,100 ga

Donnerstag
19.5.65

SECTION "C" - MASTIC STORAGE.

EXPANDITE (AUST) PTY. L

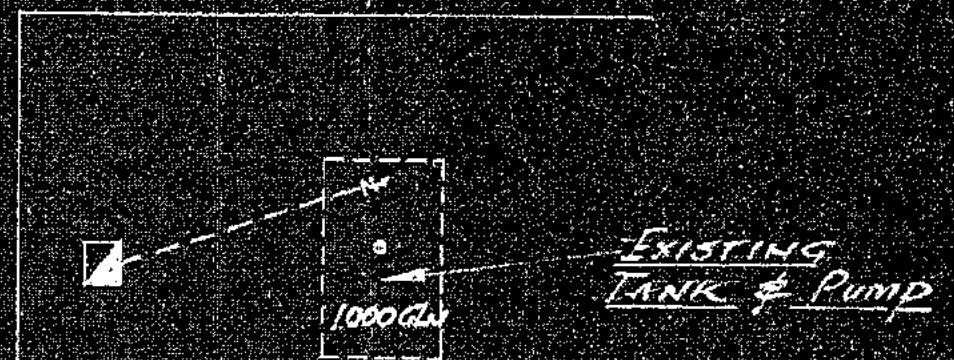
RYDE FACTORY.

SECTION "D" INFLAMMABLE.

Drawn. *B.S.* 11.5.65 Checked.

Scale: 1/4 in. = 1 ft.

11 /



CALTEX OIL (AUSTRALIA) PTY. LTD.
DISTRICT: SOUTH, N.S.W. LOCATION: RYDE

PROPOSED PUMP & TANK
INSTALLATION FOR
COCA-COLA CO. RYDE

DRAWN: K.A. MOORE DATE: 30-5-55
TRACED: _____ SCALE: 1/31 = 1/50"

CHK'D: _____

APP'D: G.P. DE

APP'D: In public S.O.

S 223

SYMBOL	DATE	BY	DESCRIPTION	APPD
REVISION				

MANUFACTURE

New 6" coner

Fall 1' in 30'

STORAGE.

2,000 gallon
Underground

Cartons & Pail Storage

Rack for Galvafrid Tins

Rack for Micanox Tins.

Bund Wall & 6" cladding.

Sliding Door.

4 Truss.

4 Truss.

4 Truss.

solvent Racks.

44 gall. drums

Fireproof Door.

New 6" Concrete block wall to gutter - 16'-0" high.

62'-6"

SECTION "C" - MASTIC MANUFACTURE.

ency
door.

MANUFACTURE.

New 6" concrete block wall 9'0" high.

Fall 1' in 30'

Drum
Storage.

STORAGE.

Cartons & Pail Storage

Rack for Galvafroid Tins

Rack for Micronox Tins.

nd Wall & Roller Shutter (above)

2,000
Unders

Bund Wall & Cladding.

APPENDIX D

BOREHOLE LOGS

Project: Shephards Bay Urban Renewal
Location: Stage 6 & 7
Position: Stage A
Job No.: E2009
Client: Holdmark Pty Ltd

Contractor: Terratest Pty Ltd
Drill Rig: Geoprobe Push Tube
Inclination: -90°

Sheet: 1 OF 1
Date Started: 4/2/14
Date Completed: 4/2/14
Logged: ES
Checked: Date:

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	STRUCTURE AND ADDITIONAL OBSERVATIONS
PT	GWNO		0		BH701-1 ES 0.00-0.10 m 0.00 m PID = 0 ppm			-	FILL: Silty SAND: medium to coarse grained, poorly graded, brown grey with gravel and clay, no odour.		FILL
			0.50								
			1	1.20	BH701-2 ES 0.60-0.80 m 0.60 m PID = 0 ppm			CI	Sandy CLAY: medium plasticity, red/brown and orange/brown, inferred soft, no odour.	D	RESIDUAL SOIL
									Hole Terminated at 1.20 m Target Depth Reached.		
			2								
			3								
			4								
			5								
			6								
			7								
			8								
			9								
			10								
			11								

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

Project: Shephards Bay Urban Renewal
Location: Stage 6 & 7
Position: Stage A
Job No.: E2009
Client: Holdmark Pty Ltd

Contractor: Terratest Pty Ltd
Drill Rig: Geoprobe Push Tube
Inclination: -90°

Sheet: 1 OF 1
Date Started: 4/2/14
Date Completed: 4/2/14
Logged: ES
Checked: Date:



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
PT		GWNO	0		BH702-1 ES 0.00-0.10 m 0.00 m PID = 0 ppm	<div></div>	<div></div>	-	FILL: Silty SAND: medium to coarse grained, poorly graded, brown grey with gravel and clay, no odour	D		FILL
			0.70									
			1		BH702-2 ES 0.70-0.80 m 0.70 m PID = 0 ppm	<div></div>	CI	Sandy CLAY: medium plasticity, red/brown and orange/brown, inferred soft, no odour.	RESIDUAL SOIL			
			1.20				-	SANDSTONE: medium to coarse grained, pale brown, inferred extremely weathered, no odour	WEATHERED ROCK			
			1.60						Hole Terminated at 1.60 m Target Depth Reached.			
			2									
			3									
			4									
			5									
			6									
			7									
			8									
			9									
			10									
			11									

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

Project: Shephards Bay Urban Renewal
Location: Stage 6 & 7
Position: Stage A
Job No.: E2009
Client: Holdmark Pty Ltd

Contractor: Terratest Pty Ltd
Drill Rig: Geoprobe Push Tube
Inclination: -90°

Sheet: 1 OF 1
Date Started: 4/2/14
Date Completed: 4/2/14
Logged: ES
Checked: Date:

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	
PT		GWNO	0		BH703-1 ES 0.10-0.20 m 0.10 m PID = 0 ppm			-	FILL: GRAVEL, coarse grained, grey (Roadbase), no odour		D			FILL	
				SANDSTONE: medium to coarse grained, orange/brown and orange/red, inferred extremely weathered, no odour				WEATHERED ROCK							
			0.60	BH703-2 ES 0.60-0.70 m 0.60 m PID = 0 ppm					BEDROCK						
			0.80												
			1						Hole Terminated at 0.80 m Target Depth Reached.						
			2												
			3												
			4												
			5												
			6												
			7												
			8												
			9												
			10												
			11												

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

Project: Shephards Bay Urban Renewal
Location: Stage 6 & 7
Position: Stage A
Job No.: E2009
Client: Holdmark Pty Ltd

Contractor: Terratest Pty Ltd
Drill Rig: Geoprobe Push Tube
Inclination: -90°

Sheet: 1 OF 1
Date Started: 4/2/14
Date Completed: 4/2/14
Logged: ES
Checked: Date:

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	
PT		GWNO	0		BH704-1 ES 0.05-0.15 m 0.05 m PID = 0 ppm			-	FILL: Asphalt 50mm thick.	D				FILL	
			0.40	BH704-2 ES 0.20-0.30 m 0.20 m PID = 0 ppm			ML	FILL: Silty SAND: medium to coarse grained, poorly graded, brown grey with gravel and clay, no odour.	TOPSOIL						
			1	BH704-3 ES 0.50-0.60 m 0.50 m PID = 0 ppm			CI	SILT: low plasticity, light brown with some clay, inferred soft, no odour.	RESIDUAL SOIL						
			1.50	PID = 0 ppm				Sandy CLAY: medium plasticity, orange/brown and light grey, inferred soft, no odour.							
									Hole Terminated at 1.50 m Target Depth Reached.						
			2												
			3												
			4												
			5												
			6												
			7												
			8												
			9												
			10												
			11												

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

Project: Shephards Bay Urban Renewal
Location: Stage 6 & 7
Position: Stage A
Job No.: E2009
Client: Holdmark Pty Ltd

Contractor: Terratest Pty Ltd
Drill Rig: Geoprobe Push Tube
Inclination: -90°

Sheet: 1 OF 1
Date Started: 4/2/14
Date Completed: 4/2/14
Logged: ES
Checked: ES
Date:

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	STRUCTURE AND ADDITIONAL OBSERVATIONS
PT	GWNO		0		BH705-1 ES 0.00-0.10 m 0.00 m PID = 0 ppm	x	x	ML	SILT: low plasticity, light brown with some clay, inferred soft, no odour (Lawn).		TOPSOIL
			0.40		BH705-2 ES 0.40-0.50 m 0.40 m PID = 0 ppm	x	x	CI	Sandy CLAY: medium plasticity, orange/brown and light grey, inferred soft, no odour.	D	RESIDUAL SOIL
			1	1.20					Hole Terminated at 1.20 m Target Depth Reached.		
			2								
			3								
			4								
			5								
			6								
			7								
			8								
			9								
			10								
			11								

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

Project: Shephards Bay Urban Renewal
Location: Stage 6 & 7
Position: Stage A
Job No.: E2009
Client: Holdmark Pty Ltd

Contractor: Terratest Pty Ltd
Drill Rig: Geoprobe Push Tube
Inclination: -90°

Sheet: 1 OF 1
Date Started: 4/2/14
Date Completed: 4/2/14
Logged: ES
Checked: ES
Date:
Date:

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	
PT		GWNO	0	0.20	BH706-1 ES 0.20-0.30 m 0.20 m PID = 0 ppm	<div><div></div></div>	<div><div></div></div>	-	FILL: Concrete 200 mm thick.	D				FILL	
			-	Sandy CLAY: medium plasticity, orange/red/grey, inferred soft, no odour.				RESIDUAL SOIL							
			0.80	BH706-2 ES 0.80-0.90 m 0.80 m PID = 0 ppm	<div><div></div></div>	<div><div></div></div>	-	At 0.8 m change of colour to red and grey mottled.							
			1				1.50	Hole Terminated at 1.50 m Target Depth Reached.							
			2												
			3												
			4												
			5												
			6												
			7												
			8												
			9												
			10												
			11												

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

Project: Shephards Bay Urban Renewal
Location: Stage 6 & 7
Position: Stage A
Job No.: E2009
Client: Holdmark Pty Ltd

Contractor: Terratest Pty Ltd
Drill Rig: Geoprobe Push Tube
Inclination: -90°

Sheet: 1 OF 1
Date Started: 4/2/14
Date Completed: 4/2/14
Logged: ES
Checked: Date:

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	
PT		GWNO	0												FILL	
			0.20				-	FILL: Concrete 200 mm thick	D							
			0.50	BH707-1 ES 0.20-0.30 m 0.20 m PID = 0 ppm BH707-2 ES 0.60-0.70 m 0.60 m PID = 0 ppm			-	FILL: Gravelly CLAY: low plasticity, orange/grey/red with dark grey/black discolouration, inferred medium dense , slight hydrocarbon odour. no discolouration from 0.5m								
			1.20			CI	Sandy CLAY: medium plasticity, orange/red/grey, inferred soft, no odour.	RESIDUAL SOIL								
			1.50		BH707-3 ES 1.40-1.50 m 1.40 m PID = 0 ppm				Hole Terminated at 1.50 m Target Depth Reached.							
			2													
			3													
			4													
			5													
			6													
			7													
			8													
			9													
			10													
			11													

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

Project: Shephards Bay Urban Renewal
Location: Stage 6 & 7
Position: Stage A
Job No.: E2009
Client: Holdmark Pty Ltd

Contractor: Terratest Pty Ltd
Drill Rig: Geoprobe Push Tube
Inclination: -90°

Sheet: 1 OF 1
Date Started: 4/2/14
Date Completed: 4/2/14
Logged: ES
Checked: Date:





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
PT		GWNO	0	0.20	BH708-1 ES 0.20-0.30 m 0.20 m PID = 0 ppm			-	FILL: Concrete 200 mm thick.	D			
						-	FILL: Gravelly CLAY: low plasticity, orange/grey/red, inferred compacted, no odour.						
			1	1.00	BH708-2 ES 0.80-0.90 m 0.80 m PID = 0 ppm		CI	Sandy CLAY: medium plasticity, light brown orange, inferred soft, no odour.					
			1.30	BH708-3 ES 1.10-1.20 m 1.10 m PID = 0 ppm		-	SANDSTONE: medium to coarse grained, light grey and orange brown, inferred extremely weathered, no odour						
			1.50	BH708-4 ES 1.40-1.50 m 1.40 m PID = 0 ppm					Hole Terminated at 1.50 m Target Depth Reached.				
			2										
			3										
			4										
			5										
			6										
			7										
			8										
			9										
			10										
			11										

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

Project: Shephards Bay Urban Renewal
Location: Stage 6 & 7
Position: Stage A
Job No.: E2009
Client: Holdmark Pty Ltd

Contractor: Terratest Pty Ltd
Drill Rig: Geoprobe Push Tube
Inclination: -90°

Sheet: 1 OF 1
Date Started: 4/2/14
Date Completed: 4/2/14
Logged: ES
Checked: Date:

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
PT		GWNO	0	0.20	BH709-1 ES 0.20-0.30 m 0.20 m PID = 0 ppm			-	FILL: Concrete 200 mm thick	D			FILL
			-	FILL: Gravelly CLAY: low plasticity, orange/grey/red, inferred compacted, no odour.									
			1	0.80	BH709-2 ES 0.80-0.90 m 0.80 m PID = 0 ppm			CI	Sandy CLAY: medium plasticity, orange brown, inferred soft, no odour.				RESIDUAL SOIL
			1.40										
			2						Hole Terminated at 1.40 m Target Depth Reached.				
			3										
			4										
			5										
			6										
			7										
			8										
			9										
			10										
			11										

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

APPENDIX E
SAMPLE RECEIPT ADVICE FORMS
&
CHAIN-OF-CUSTODY CERTIFICATES

Sheet 1 of 3

Sample Matrix

Analysis

Site: Sheepcote Bay
Stage A
Meadowbank NSWProject ID:
E2009
ACLaboratory: **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		WATER	SOIL	COMPOSITE	OTHER	Heavy Metals ^A	Heavy Metals ^B	TRH / BTEX	TRH + Silica Gel Cleanup	PAHs	OCs / PCBs / OPPs	TRH (C ₁₀ - C ₃₆) only	Asbestos	VOCs / Phenols	SPOCAs	pH (1:5)	EC (1:5)	C/E
			Date:	Time:																	
BH701-1	1	J	4.2.14	Am/PM		/			/		/		/	/							
-2						/			/		/		/	/							
BH702-1	2					/			/		/		/	/							
-2						/			/		/		/	/							
BH703-1	3					/			/		/		/	/							
-2						/			/		/		/	/							
BH704-1	4					/			/		/		/	/							
-2	5					/			/		/		/	/							
-3	6					/			/		/		/	/							
BH705-1	7					/			/		/		/	/							
-2						/			/		/		/	/							
BH706-1	8					/			/		/		/	/							
-2						/			/		/		/	/							

Environmental Investigations

 Contamination | Remediation | Geotechnical

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

Comments:

^A Arsenic
 Cadmium
 Chromium
 Copper
 Lead
 Mercury
 Nickel
 Zinc

^B Antimony
 Barium
 Beryllium
 Cobalt
 Manganese
 Tin
 Vanadium

^C Arsenic
 Cadmium
 Chromium
 Lead
 Mercury
 Nickel

Laboratory Turnaround:

☐ Same Day ☐ 24 Hours
☐ 48 Hours ☐ 72 Hours
☒ Standard
☐ Other _____

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

Sampler Name:

E. Short
 Print

E. Short
 Signature
Date: 7.2.14

Sampler's Comments:

 Received by:
 (print & Signature)

Emily Yoo

Date:

2/2/14

Time:

5:10

Container Type:

 J= solvent washed, acid rinsed, Teflon sealed, glass jar; S= solvent washed, acid rinsed glass bottle;
 P= natural HDPE plastic bottle; VC= glass vial, Teflon Septum; ZLB = Zip-Lock Bag
IMPORTANT:
 PLEASE E-MAIL LABORATORY RESULTS TO:
 service@eiaustralia.com.au

Sheet 2 of 3

Sample Matrix

Analysis

Site: Shepards Bay
Stage A
Meadowbank NSWProject ID:
E2009
ACLaboratory: **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		WATER	SOIL	COMPOSITE	OTHER	Heavy Metals ^A	Heavy Metals ^B	TRH / BTEX	TRH + Silica Gel Cleanup	PAHs	OCPs / PCBs / OPPs	TRH (C ₁₀ - C ₃₆) only	Asbestos	VOCs / Phenols	SPOCAs	pH (1:5)	EC (1:5)	BTEX
			Date:	Time:																	
BH707-1	9	5	4.2.14	Am/PM		/			/		/		/	/			/				
-2	10					/			/		/		/	/			/				
-3	11					/			/		/		/	/			/				
BH708-1	12					/			/		/		/	/			/				
-2	13					/			/		/		/	/			/				
-3	14					/			/		/		/	/			/				
-4	15					/			/		/		/	/			/				
BH709-1	16					/			/		/		/	/			/				
-2	17					/			/		/		/	/			/				
B700	18					/			/		/		/	/			/				
RB700	19					/			/		/		/	/			/				
TB4	20	✓	Lab			/			/		/		/	/			/			/	
TS4		1V				/			/		/		/	/			/			/	

Environmental Investigations

 Contamination | Remediation | Geotechnical

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

Comments:

^A Arsenic
Cadmium
Chromium
Copper
Lead
Mercury
Nickel
Zinc

^B Antimony
Barium
Beryllium
Cobalt
Manganese
Tin
Vanadium

^C Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

Laboratory Turnaround:

☐ Same Day ☐ 24 Hours
☐ 48 Hours ☐ 72 Hours
☒ Standard
☐ Other _____

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

Sampler Name:

E. Short
 Print

E. Short
 Signature

 Date: 7.2.14

Sampler's Comments:

 Received by:
 (print & Signature)

Samir

 Date: 7/2/14 Time: 5.00
IMPORTANT:
 PLEASE E-MAIL LABORATORY RESULTS TO:
 service@eiaustralia.com.au

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

Sheet 3 of 3

Sample Matrix

Analysis

Site: Shepards Bay
Stage A
Meadowbank NSWProject ID:
E2009
ACLaboratory: **SGS Australia**
Unit 16, 33 Maddox Street,
ALEXANDRIA NSW 2015
P: 02 8594 0400 F: 02 8594 0499


Contamination | Remediation | Geotechnical

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

Sample ID	Laboratory ID	Container Type	Sampling		WATER	SOIL	COMPOSITE	OTHER	Heavy Metals ^A	Heavy Metals ^B	TRH / BTEX	TRH + Silica Gel Cleanup	PAHs	OCs / PCBs / OPPs	TRH (C ₁₀ - C ₃₆) only	Asbestos	VOCs	sPOCAs	pH (1:5)	EC (1:5)
			Date:	Time:																
BH701-1	21	ZLB	4.2.14	Am/pm		/										/				
BH702-1	22					/										/				
BH703-1	23					/										/				
BH704-1	24					/										/				
BH705-1	25					/										/				
BH706-1	26					/										/				
BH707-1	27					/										/				
BH708-1	28					/										/				
BH709-1	29	↓	↓	↓		/										/				

Comments:

^A Arsenic
Cadmium
Chromium
Copper
Lead
Mercury
Nickel
Zinc

^B Antimony
Barium
Beryllium
Cobalt
Manganese
Tin
Vanadium

^C Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

Laboratory Turnaround:

☐ Same Day ☐ 24 Hours
☐ 48 Hours ☐ 72 Hours
☒ Standard
☐ Other _____

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

Sampler Name:

E. Short
Print

E. Short
Signature

Date: 7.2.14

Sampler's Comments:

Received by:
(print & Signature)

Emily Ho

Date:
7/2/14

Time:
5:19

Container Type:

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

IMPORTANT:

PLEASE E-MAIL LABORATORY RESULTS TO:

service@eiaustralia.com.au

Job: SE124604

1-18

19

20

21-29

Matrix

250 JAR

125 JAR

BAG

1L UP P

500 UP P

250 ZnAcetate P

250 / 500 NaOH BP

125 / 250 UP P

125 / 250 Metal Total*

125 / 250 Metal Filtered*

125 HCl P

1L UP AG

500 / 1L H₂SO₄ AG125 / 250 H₂SO₄ P

100 / 200 UP AG

40 NaThio GV

250 UP OPAQUE P

500 NaThio STERILE P

200 NaThio STERILE P

Storage
LocationBottles
Supplied By

Comment

Cooling Method

CP

Temp

4°C

Good Order

(Y) N

Clearly Labelled

(Y) N

Correct Pres.

(Y) N

No Head-space

(Y) N / NA

Sufficient Vol

(Y) N

Doc Date

7/2

Doc Type

COC

Complete Docs

(Y) N

Requested TAT

5

6 SAMPLES ON HOLD



SAMPLE RECEIPT ADVICE

SE124604

CLIENT DETAILS

Contact Administration Manager
Client Environmental Investigations
Address Suite 6.01, 55 Miller Street
NSW 2009

Telephone 02 9516 0722
Facsimile 02 9516 0741
Email service@eiaustralia.com.au

Project **E2009AC Sheperds Bay Stage A Meadowbank**
Order Number (Not specified)
Samples 29

LABORATORY DETAILS

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

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

Samples Received Fri 7/2/2014
Report Due Mon 17/2/2014
SGS Reference **SE124604**

SUBMISSION DETAILS

This is to confirm that 29 samples were received on Friday 7/2/2014. Results are expected to be ready by Monday 17/2/2014. Please quote SGS reference SE124604 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Sample counts by matrix	28 Soil, 1 Water	Type of documentation received	COC
Date documentation received	7/2/2014	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	4°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		

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

COMMENTS

6x samples have been placed on hold as no tests have been assigned for them by the client. These samples will not be processed. Filtration/Acidification of water for Dissolved Metals analysis conducted at SGS laboratory. Field Filtered container not supplied by client. Samples received at SGS on 7/2/14@5:50pm. Samples were not registered until the next working day.

Volatile results may be compromised for TPH(C6-C9) as no appropriate preserved vials were received. A sub sample will be taken from the 1L amber bottle which was received.

To the extent not inconsistent with the other provisions of this document and unless specifically agreed otherwise in writing by SGS, all SGS services are rendered in accordance with the applicable SGS General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions/General-Conditions-of-Services-English.aspx> as at the date of this document. Attention is drawn to the limitations of liability and to the clauses of indemnification.



SAMPLE RECEIPT ADVICE

SE124604

CLIENT DETAILS

Client Environmental Investigations

Project E2009AC Sheperds Bay Stage A Meadowbank

SUMMARY OF ANALYSIS

No.	Sample ID	OC Pesticides in Soil	OP Pesticides in Soil	PAH (Polynuclear Aromatic Hydrocarbons) in	PCBs in Soil	Total Phenolics in Soil	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
001	BH701-1	28	13	23	11	-	9	12	8
002	BH702-1	28	13	23	11	-	9	12	8
003	BH703-1	28	13	23	11	-	9	12	8
004	BH704-1	28	13	23	11	1	9	79	8
005	BH704-2	-	-	23	-	1	9	79	8
006	BH704-3	-	-	23	-	1	9	79	8
007	BH705-1	28	13	23	11	-	9	12	8
008	BH706-1	28	13	23	11	-	9	12	8
009	BH707-1	28	13	23	11	1	9	79	8
010	BH707-2	-	-	23	-	1	9	79	8
011	BH707-3	-	-	23	-	1	9	79	8
012	BH708-1	28	13	23	11	1	9	79	8
013	BH708-2	-	-	23	-	1	9	79	8
014	BH708-3	-	-	23	-	1	9	79	8
015	BH708-4	-	-	23	-	1	9	79	8
016	BH709-1	28	13	23	11	1	9	79	8
017	BH709-2	-	-	23	-	-	9	12	8
018	B700	-	-	-	-	-	9	12	8
020	TB4	-	-	-	-	-	-	12	-

CONTINUED OVERLEAF

The above table represents SGS Environmental Services' interpretation of the client-supplied Chain Of Custody document.

The numbers shown in the table indicate the number of results requested in each package.

Please indicate as soon as possible should your request differ from these details.

Testing as per this table shall commence immediately unless the client intervenes with a correction.

CLIENT DETAILS

Client Environmental Investigations

Project E2009AC Sheperds Bay Stage A Meadowbank

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	Fibre Identification in soil	Mercury in Soil	Moisture Content	pH in soil (1:5)	Total Recoverable Metals in Soil by ICPOES from	VOCs in Water	Volatile Petroleum Hydrocarbons in Water
001	BH701-1	-	-	1	1	-	7	-	-
002	BH702-1	-	-	1	1	-	7	-	-
003	BH703-1	-	-	1	1	-	7	-	-
004	BH704-1	-	-	1	1	-	7	-	-
005	BH704-2	-	-	1	1	-	7	-	-
006	BH704-3	-	-	1	1	-	7	-	-
007	BH705-1	13	-	1	1	1	7	-	-
008	BH706-1	-	-	1	1	-	7	-	-
009	BH707-1	-	-	1	1	-	7	-	-
010	BH707-2	-	-	1	1	-	7	-	-
011	BH707-3	-	-	1	1	-	7	-	-
012	BH708-1	-	-	1	1	-	7	-	-
013	BH708-2	-	-	1	1	-	7	-	-
014	BH708-3	-	-	1	1	-	7	-	-
015	BH708-4	-	-	1	1	-	7	-	-
016	BH709-1	-	-	1	1	-	7	-	-
017	BH709-2	-	-	1	1	-	7	-	-
018	B700	-	-	1	1	-	7	-	-
019	RB700	-	-	-	-	-	-	12	8
020	TB4	-	-	-	1	-	-	-	-
021	BH701-1_ZLB	-	2	-	-	-	-	-	-
022	BH702-1_ZLB	-	2	-	-	-	-	-	-
023	BH703-1_ZLB	-	2	-	-	-	-	-	-
024	BH704-1_ZLB	-	2	-	-	-	-	-	-

CONTINUED OVERLEAF

The above table represents SGS Environmental Services' 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

SE124604

CLIENT DETAILS

Client Environmental Investigations

Project E2009AC Sheperds Bay Stage A Meadowbank

SUMMARY OF ANALYSIS

No.	Sample ID	Fibre Identification in soil
025	BH705-1_ZLB	2
026	BH706-1_ZLB	2
027	BH707-1_ZLB	2
028	BH708-1_ZLB	2
029	BH709-1_ZLB	2

CONTINUED OVERLEAF

The above table represents SGS Environmental Services' 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

SE124604

CLIENT DETAILS

Client Environmental Investigations

Project E2009AC Sheperds Bay Stage A Meadowbank

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury (dissolved) in Water	Trace Metals (Dissolved) in Water by ICPMS	TRH (Total Recoverable Hydrocarbons) in Water
019	RB700	1	7	9

The above table represents SGS Environmental Services' 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

SE124604

CLIENT DETAILS

Contact Earin Short
Client Environmental Investigations
Address Suite 6.01, 55 Miller Street
NSW 2009

Telephone 02 9516 0722
Facsimile 02 9516 0741
Email earin.short@eiaustralia.com.au

Project **E2009AC Sheperds Bay Stage A Meadowbank**
Order Number (Not specified)
Samples 29

LABORATORY DETAILS

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

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

Samples Received Fri 7/2/2014
Report Due Mon 17/2/2014
SGS Reference **SE124604**

SUBMISSION DETAILS

This is to confirm that 29 samples were received on Friday 7/2/2014. Results are expected to be ready by Monday 17/2/2014. Please quote SGS reference SE124604 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Sample counts by matrix	28 Soil, 1 Water	Type of documentation received	COC
Date documentation received	7/2/2014	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	4°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		

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

COMMENTS

6x samples have been placed on hold as no tests have been assigned for them by the client. These samples will not be processed. Filtration/Acidification of water for Dissolved Metals analysis conducted at SGS laboratory. Field Filtered container not supplied by client. Samples received at SGS on 7/2/14@5:50pm. Samples were not registered until the next working day.

Volatile results may be compromised for TPH(C6-C9) as no appropriate preserved vials were received. A sub sample will be taken from the 1L amber bottle which was received.

To the extent not inconsistent with the other provisions of this document and unless specifically agreed otherwise in writing by SGS, all SGS services are rendered in accordance with the applicable SGS General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions/General-Conditions-of-Services-English.aspx> as at the date of this document. Attention is drawn to the limitations of liability and to the clauses of indemnification.

CLIENT DETAILS

Client Environmental Investigations

Project E2009AC Sheperds Bay Stage A Meadowbank

SUMMARY OF ANALYSIS

No.	Sample ID	OC Pesticides in Soil	OP Pesticides in Soil	PAH (Polynuclear Aromatic Hydrocarbons) in	PCBs in Soil	Total Phenolics in Soil	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
001	BH701-1	28	13	23	11	-	9	12	8
002	BH702-1	28	13	23	11	-	9	12	8
003	BH703-1	28	13	23	11	-	9	12	8
004	BH704-1	28	13	23	11	1	9	79	8
005	BH704-2	-	-	23	-	1	9	79	8
006	BH704-3	-	-	23	-	1	9	79	8
007	BH705-1	28	13	23	11	-	9	12	8
008	BH706-1	28	13	23	11	-	9	12	8
009	BH707-1	28	13	23	11	1	9	79	8
010	BH707-2	-	-	23	-	1	9	79	8
011	BH707-3	-	-	23	-	1	9	79	8
012	BH708-1	28	13	23	11	1	9	79	8
013	BH708-2	-	-	23	-	1	9	79	8
014	BH708-3	-	-	23	-	1	9	79	8
015	BH708-4	-	-	23	-	1	9	79	8
016	BH709-1	28	13	23	11	1	9	79	8
017	BH709-2	-	-	23	-	-	9	12	8
018	B700	-	-	-	-	-	9	12	8
020	TB4	-	-	-	-	-	-	12	-

CONTINUED OVERLEAF

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

CLIENT DETAILS

Client Environmental Investigations

Project E2009AC Sheperds Bay Stage A Meadowbank

SUMMARY OF ANALYSIS

No.	Sample ID	Exchangeable Cations and Cation Exchange Capacity	Fibre Identification in soil	Mercury in Soil	Moisture Content	pH in soil (1:5)	Total Recoverable Metals in Soil by ICPOES from	VOCs in Water	Volatile Petroleum Hydrocarbons in Water
001	BH701-1	-	-	1	1	-	7	-	-
002	BH702-1	-	-	1	1	-	7	-	-
003	BH703-1	-	-	1	1	-	7	-	-
004	BH704-1	-	-	1	1	-	7	-	-
005	BH704-2	-	-	1	1	-	7	-	-
006	BH704-3	-	-	1	1	-	7	-	-
007	BH705-1	13	-	1	1	1	7	-	-
008	BH706-1	-	-	1	1	-	7	-	-
009	BH707-1	-	-	1	1	-	7	-	-
010	BH707-2	-	-	1	1	-	7	-	-
011	BH707-3	-	-	1	1	-	7	-	-
012	BH708-1	-	-	1	1	-	7	-	-
013	BH708-2	-	-	1	1	-	7	-	-
014	BH708-3	-	-	1	1	-	7	-	-
015	BH708-4	-	-	1	1	-	7	-	-
016	BH709-1	-	-	1	1	-	7	-	-
017	BH709-2	-	-	1	1	-	7	-	-
018	B700	-	-	1	1	-	7	-	-
019	RB700	-	-	-	-	-	-	12	8
020	TB4	-	-	-	1	-	-	-	-
021	BH701-1_ZLB	-	2	-	-	-	-	-	-
022	BH702-1_ZLB	-	2	-	-	-	-	-	-
023	BH703-1_ZLB	-	2	-	-	-	-	-	-
024	BH704-1_ZLB	-	2	-	-	-	-	-	-

CONTINUED OVERLEAF

The above table represents SGS Environmental Services' 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

SE124604

CLIENT DETAILS

Client Environmental Investigations

Project E2009AC Sheperds Bay Stage A Meadowbank

SUMMARY OF ANALYSIS

No.	Sample ID	Fibre Identification in soil
025	BH705-1_ZLB	2
026	BH706-1_ZLB	2
027	BH707-1_ZLB	2
028	BH708-1_ZLB	2
029	BH709-1_ZLB	2

CONTINUED OVERLEAF

The above table represents SGS Environmental Services' interpretation of the client-supplied Chain Of Custody document.

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SAMPLE RECEIPT ADVICE

SE124604

CLIENT DETAILS

Client Environmental Investigations

Project E2009AC Sheperds Bay Stage A Meadowbank

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury (dissolved) in Water	Trace Metals (Dissolved) in Water by ICPMS	TRH (Total Recoverable Hydrocarbons) in Water
019	RB700	1	7	9

The above table represents SGS Environmental Services' 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.

[illegible]

SAMPLE RECEIPT ADVICE

Client:

Environmental Investigations
17/1A Coulson St
Erskineville NSW 2043

ph: 9516 0722

Fax: 9516 0741

Attention: Earin Short

Sample log in details:

Your reference:

E2009AC, Meadowbank

Envirolab Reference:

104655

Date received:

06/02/14

Date results expected to be reported:

13/02/14

Samples received in appropriate condition for analysis:

YES

No. of samples provided

1 Soil

Turnaround time requested:

Standard

Temperature on receipt (°C)

14.2

Cooling Method:

Ice Pack

Sampling Date Provided:

YES

Comments:

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

Contact details:

Please direct any queries to Aileen Hie or Jacinta Hurst

ph: 02 9910 6200 fax: 02 9910 6201

email: ahie@envirolabservices.com.au or jhurst@envirolabservices.com.au

Site: Shepards Bay
Stage A
Meadowbank NSW

Project ID:

E2009
AC

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

[illegible]

Environmental Investigations 
 **Australia**
 Contamination | Remediation | Geotechnical

**Suite 6.01, 55 Miller Street
Pymont NSW 2009
Ph: 9516 0722
service@eiaustralia.com.au**

Comments:

- Arsenic
- Cadmium
- Chromium
- Copper
- Lead
- Mercury
- Nickel
- Zinc

B Antimony
Barium
Beryllium
Cobalt
Manganese
Tin
Vanadium

- C Arsenic
- Cadmium
- Chromium
- Lead
- Mercury
- Nickel

Laboratory Turnaround:

☐ Same Day ☐ 24 Hours
☐ 48 Hours ☐ 72 Hours
☒ Standard
☐ Other _____

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

Sampler Name:

Print

E. Short

Signature _____

Date:

Date: 7.2.14

Sampler's Comments:

Received by:

(print & Signature)

$P_0 \cos$

Date:

26/7

Time:

4.00

Container Type:

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

IMPORTANT:

PLEASE E-MAIL LABORATORY RESULTS TO:

service@eiaustralia.com.au

SGS

Job: **SF125276**
1-2

Matrix	250 JAR	125 JAR	BAG	1L UP P	500 UP P	250 ZnAcetate P	250 / 500 NaOH BP	125 / 250 UP P	125 / 250 Metal Total*	125 / 250 Metal Filtered*	125 HCl P	1L UP AG	500 / 1L H ₂ SO ₄ AG	125 / 250 H ₂ SO ₄ P	100 / 200 UP AG	40 NaThio GV	250 UP OPAQUE P	500 NaThio STERILE P	200 NaThio STERILE P	Storage Location	Bottles Supplied By	Comment	Cooling Method	
water										1		1				2					W139	SGS	Full	cooler
																								Temp
																								4.0
																								Good Order
																								Y / N
																								Clearly Labelled
																								Y / N
																								Correct Pres.
																								Y / N
																								No Head-space
																								Y / N / NA
																								Sufficient Vol
																								Y / N
																								Doc Date
																								26/7
																								Doc Type
																								WC
																								Complete Docs
																								Y / N
																								Requested TAT



SAMPLE RECEIPT ADVICE

SE125276

CLIENT DETAILS

Contact Administration Manager
Client Environmental Investigations
Address Suite 6.01, 55 Miller Street
NSW 2009

Telephone 02 9516 0722
Facsimile 02 9516 0741
Email service@eiaustralia.com.au

Project **E2009AC - Stage A Shephards Bay - Meadowb**
Order Number (Not specified)
Samples 2

LABORATORY DETAILS

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

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

Samples Received Wed 26/2/2014
Report Due Wed 5/3/2014
SGS Reference **SE125276**

SUBMISSION DETAILS

This is to confirm that 2 samples were received on Wednesday 26/2/2014. Results are expected to be ready by Wednesday 5/3/2014. Please quote SGS reference SE125276 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Sample counts by matrix	2 Waters	Type of documentation received	COC
Date documentation received	26/2/2014	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	4°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		

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

COMMENTS

This SRA cancels and supersedes the previous SRA sent due to wrong sample id assigned to laboratory id. SE125276.001 should be GWB-3 and SE125276.002 should be GW112.

To the extent not inconsistent with the other provisions of this document and unless specifically agreed otherwise in writing by SGS, all SGS services are rendered in accordance with the applicable SGS General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions/General-Conditions-of-Services-English.aspx> as at the date of this document. Attention is drawn to the limitations of liability and to the clauses of indemnification.



SAMPLE RECEIPT ADVICE

SE125276

CLIENT DETAILS

Client Environmental Investigations

Project E2009AC - Stage A Shephards Bay - Medowb

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury (dissolved) in Water	PAH (Polynuclear Aromatic Hydrocarbons) in	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	GWB-3	1	22	1	7	9	78	8
002	GW112	1	-	-	7	9	12	8

The above table represents SGS Environmental Services' 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.

PLEASE E-MAIL LABORATORY RESULTS TO:
service@eiaustralia.com.au

SAMPLE RECEIPT ADVICE

Client:

Environmental Investigations
17/1A Coulson St
Erskineville NSW 2043

ph: 9516 0722

Fax: 9516 0741

Attention: E Short

Sample log in details:

Your reference:

E2009,AC, Meadowbank

Envirolab Reference:

105754

Date received:

27/02/14

Date results expected to be reported:

6/03/14

Samples received in appropriate condition for analysis:

YES

No. of samples provided

1 Water

Turnaround time requested:

Standard

Temperature on receipt (°C)

20.3

Cooling Method:

Ice Pack

Sampling Date Provided:

YES

Comments:

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

Contact details:

Please direct any queries to Aileen Hie or Jacinta Hurst

ph: 02 9910 6200 fax: 02 9910 6201

email: ahie@envirolabservices.com.au or jhurst@envirolabservices.com.au

APPENDIX F

QUALITY ASSURANCE / QUALITY CONTROL

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

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

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

Quality Assurance Programs are listed below:

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

Data Acceptance Criteria

Unless otherwise specified in the method or method manual the following general criteria apply to all organic tests.

All recoveries are to be reported to 3 significant figures.

Organics

- Volatile & extractable Reagent & Method Blanks must contain levels less than or equal to LOR.
- The Calibration Check Standards or Continuous Calibration Verification (CCV) must be within $\pm 25\%$. Some analytes may have specific criteria.
- Control Standards (LCS/CMS) and Certified Reference Materials (CRM) recoveries are to be within established control limits or as a default 60-140% unless compound specific limits apply.
- Retention times are to vary by no more than 0.2 min.
- **At least two of three** routine level soil sample Surrogate Spike (SS) recoveries are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as acceptance criterion. Any recoveries outside these limits will have comment.
- Water sample Surrogates Spike (SS) recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion. Any recoveries outside these limits will have comment.
- Lab Duplicates (D) must have a RPD $< 30\%^*$.
- Sample Matrix Spike Duplicate (MS^d/MSD) recovery RPD to be $< 30\%$. In the event that the matrix spike has been applied to samples whose matrix or contamination is problematic to the method then these acceptance criteria apply to the Control Matrix Spike (CMS/D).

*Only if results are at least 10 times the LOR otherwise no acceptance criteria for RPD's apply.

Application of more stringent criteria shall be applied for clean water sample from water boards and any other nominated client contracts. Nominal 10xLOR criteria are dropped to 5xLOR where specified.

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

Batch Structure Summary

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

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

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

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

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

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

Notes:

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

Table QC4 - Analytical Parameters, PQLs and Methods - Groundwater

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

Table QC5 - QC Sample Data Acceptance Criteria		
QC Sample Type	Method of Assessment	Acceptable Range
Field QC		
Blind Duplicates and Split Samples	<p>The assessment of split duplicate is undertaken by calculating the Relative Percent Difference (RPD) of the duplicate concentration compared with the primary sample concentration. The RPD is defined as:</p> $RPD = 100 \times \frac{ X_1 - X_2 }{\text{mean}(X_1, X_2)}$ <p>Where: X_1 and X_2 are the concentrations of the primary and duplicate samples.</p>	<p>The acceptable range depends upon the levels detected:</p> <ul style="list-style-type: none"> - 0-150% RPD (when the average concentration is <5 times the LOR/PQL) - 0-75% RPD (when the average concentration is 5 to 10 times the LOR/PQL) - 0-50% RPD (when the average concentration is >10 times the LOR/PQL)
Rinsate & Trip Blanks	Each blank is analysed as per the original samples.	Analytical Result <LOR/PQL
Laboratory prepared Trip Spike	The Trip Spike is analysed after returning from the field and the % recovery of the known spike is calculated.	70 - 130%
Laboratory QC		
Laboratory Duplicates	Assessment of Lab Duplicate RPD as per Blind Duplicates and Split Samples.	Lab Duplicate RPD < 15% (Inorganics) Lab Duplicate RPD < 30% (Organics) for sample results > 10 LOR
Surrogates Matrix Spikes Laboratory Control Samples	<p>Assessment is undertaken by determining the percent recovery of the known surrogate spike (SS) or addition to the sample.</p> $\% \text{ Recovery} = 100 \times \frac{C - A}{B}$ <p>Where: A = Concentration of analyte determined in the original sample; B = Added Concentration; and C = Calculated Concentration.</p>	<p>at least 2 SS recoveries to be within 70-130% subject to matrix effects (Organics)</p> <p>80-120% (Inorganics / Metals) 60-140% (Organics) 10-140% (SVOC and Speciated Phenols)</p> <p>If the result is outside the above ranges, the result must be <3x Standard Deviation of the Historical Mean (calculated over the past 12 months).</p>
Sample Matrix Spike Duplicates	Recovery RPD	<30% (Inorganics & Organics)
Calibration Check Standards	Continuous Calibration Verification (CCV)	CCV must be within $\pm 15\%$ (inorganics) CCV must be within $\pm 25\%$ (inorganics)
Reagent, Method & Calibration Check Blanks	Each blank is analysed as per the original samples.	Analytical Result <LOR/PQL
<p>Note: PQL - Laboratory Practical Quantitation Limit (PQL) or the minimum detection limit for a particular analyte. LOR = Limit of Reporting</p>		

APPENDIX G

LABORATORY ANALYTICAL REPORTS

CLIENT DETAILS

Contact Earin Short
 Client Environmental Investigations
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 NSW 2009

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 Email earin.short@eiaustralia.com.au

Project **E2009AC Sheperds Bay Stage A Meadowbank**
 Order Number (Not specified)
 Samples 29
 Date Received 7/2/2014

LABORATORY DETAILS

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

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

SGS Reference **SE124604 R0**
 Report Number 0000075951
 Date Reported 19/2/2014

COMMENTS

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

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

Asbestos analysed by Approved Identifiers Yusuf Kuthpudin and Ravee Sivasubramaniam.

SIGNATORIES



Andy Sutton
Senior Organic Chemist



Dong Liang
Metals/Inorganics Team Leader



Huong Crawford
Production Manager



Kamrul Ahsan
Senior Chemist



Ly Kim Ha
Organic Section Head



Ravee Sivasubramaniam
Asbestos Analyst



ANALYTICAL RESULTS

SE124604 R0

VOC's in Soil [AN433/AN434]

VOC's in Soil [AN433/AN434] (continued)

PARAMETER	UOM	LOR	BH701-1	BH702-1	BH703-1	BH704-1	BH704-2	BH704-3
			SOIL 4/2/2014 SE124604.001	SOIL 4/2/2014 SE124604.002	SOIL 4/2/2014 SE124604.003	SOIL 4/2/2014 SE124604.004	SOIL 4/2/2014 SE124604.005	SOIL 4/2/2014 SE124604.006
Benzene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Naphthalene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes*	mg/kg	0.30	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX*	mg/kg	0.60	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Dichlorodifluoromethane (CFC-12)	mg/kg	1.0	-	-	-	<1	<1	<1
Chloromethane	mg/kg	1.0	-	-	-	<1	<1	<1
Vinyl chloride (Chloroethene)	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
Bromomethane	mg/kg	1.0	-	-	-	<1	<1	<1
Chloroethane	mg/kg	1.0	-	-	-	<1	<1	<1
Trichlorofluoromethane	mg/kg	1.0	-	-	-	<1	<1	<1
Acetone (2-propanone)	mg/kg	10	-	-	-	<10	<10	<10
Iodomethane	mg/kg	5.0	-	-	-	<5	<5	<5
1,1-dichloroethene	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
Acrylonitrile	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
Dichloromethane (Methylene chloride)	mg/kg	0.50	-	-	-	<0.5	<0.5	<0.5
Allyl chloride	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
Carbon disulfide	mg/kg	0.50	-	-	-	<0.5	<0.5	<0.5
trans-1,2-dichloroethene	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
MtBE (Methyl-tert-butyl ether)	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
1,1-dichloroethane	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
Vinyl acetate	mg/kg	10	-	-	-	<10	<10	<10
MEK (2-butanone)	mg/kg	10	-	-	-	<10	<10	<10
cis-1,2-dichloroethene	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
Bromochloromethane	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
Chloroform	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
2,2-dichloropropane	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
1,2-dichloroethane	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
1,1,1-trichloroethane	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
1,1-dichloropropene	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
Carbon tetrachloride	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
Dibromomethane	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
1,2-dichloropropane	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
Trichloroethene (Trichloroethylene)	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
2-nitropropane	mg/kg	10	-	-	-	<10	<10	<10
Bromodichloromethane	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
MIBK (4-methyl-2-pentanone)	mg/kg	1.0	-	-	-	<1	<1	<1
cis-1,3-dichloropropene	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
trans-1,3-dichloropropene	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
1,1,2-trichloroethane	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
1,3-dichloropropane	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
Chlorodibromomethane	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
2-hexanone (MBK)	mg/kg	5.0	-	-	-	<5	<5	<5
1,2-dibromoethane (EDB)	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
Tetrachloroethene	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
1,1,1,2-tetrachloroethane	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
Chlorobenzene	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
Bromoform	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
cis-1,4-dichloro-2-butene	mg/kg	1.0	-	-	-	<1	<1	<1
Styrene (Vinyl benzene)	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
1,1,2,2-tetrachloroethane	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
1,2,3-trichloropropane	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
trans-1,4-dichloro-2-butene	mg/kg	1.0	-	-	-	<1	<1	<1
Isopropylbenzene (Cumene)	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
Bromobenzene	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
n-propylbenzene	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1

VOC's in Soil [AN433/AN434] (continued)

PARAMETER	UOM	LOR	BH701-1	BH702-1	BH703-1	BH704-1	BH704-2	BH704-3
			SOIL 4/2/2014 SE124604.001	SOIL 4/2/2014 SE124604.002	SOIL 4/2/2014 SE124604.003	SOIL 4/2/2014 SE124604.004	SOIL 4/2/2014 SE124604.005	SOIL 4/2/2014 SE124604.006
2-chlorotoluene	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
4-chlorotoluene	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
1,3,5-trimethylbenzene	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
tert-butylbenzene	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
1,2,4-trimethylbenzene	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
sec-butylbenzene	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
1,3-dichlorobenzene	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
1,4-dichlorobenzene	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
p-isopropyltoluene	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
1,2-dichlorobenzene	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
n-butylbenzene	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
1,2-dibromo-3-chloropropane	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
1,2,4-trichlorobenzene	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
Hexachlorobutadiene	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
1,2,3-trichlorobenzene	mg/kg	0.10	-	-	-	<0.1	<0.1	<0.1
Total VOC*	mg/kg	24.0	-	-	-	-	-	-

VOC's in Soil [AN433/AN434] (continued)

PARAMETER	UOM	LOR	BH705-1	BH706-1	BH707-1	BH707-2	BH707-3	BH708-1
			SOIL 4/2/2014 SE124604.007	SOIL 4/2/2014 SE124604.008	SOIL 4/2/2014 SE124604.009	SOIL 4/2/2014 SE124604.010	SOIL 4/2/2014 SE124604.011	SOIL 4/2/2014 SE124604.012
Benzene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.10	<0.1	<0.1	<0.1	0.5	<0.1	<0.1
m/p-xylene	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Naphthalene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes*	mg/kg	0.30	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX*	mg/kg	0.60	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Dichlorodifluoromethane (CFC-12)	mg/kg	1.0	-	-	<1	<1	<1	<1
Chloromethane	mg/kg	1.0	-	-	<1	<1	<1	<1
Vinyl chloride (Chloroethene)	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
Bromomethane	mg/kg	1.0	-	-	<1	<1	<1	<1
Chloroethane	mg/kg	1.0	-	-	<1	<1	<1	<1
Trichlorofluoromethane	mg/kg	1.0	-	-	<1	<1	<1	<1
Acetone (2-propanone)	mg/kg	10	-	-	<10	<10	<10	<10
Iodomethane	mg/kg	5.0	-	-	<5	<5	<5	<5
1,1-dichloroethene	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
Acrylonitrile	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
Dichloromethane (Methylene chloride)	mg/kg	0.50	-	-	<0.5	<0.5	<0.5	<0.5
Allyl chloride	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
Carbon disulfide	mg/kg	0.50	-	-	<0.5	<0.5	<0.5	<0.5
trans-1,2-dichloroethene	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
MtBE (Methyl-tert-butyl ether)	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
1,1-dichloroethane	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
Vinyl acetate	mg/kg	10	-	-	<10	<10	<10	<10
MEK (2-butanone)	mg/kg	10	-	-	<10	<10	<10	<10
cis-1,2-dichloroethene	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
Bromochloromethane	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
Chloroform	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
2,2-dichloropropane	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
1,2-dichloroethane	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
1,1,1-trichloroethane	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
1,1-dichloropropene	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
Carbon tetrachloride	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
Dibromomethane	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
1,2-dichloropropane	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
Trichloroethene (Trichloroethylene)	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
2-nitropropane	mg/kg	10	-	-	<10	<10	<10	<10
Bromodichloromethane	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
MIBK (4-methyl-2-pentanone)	mg/kg	1.0	-	-	<1	<1	<1	<1
cis-1,3-dichloropropene	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
trans-1,3-dichloropropene	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
1,1,2-trichloroethane	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
1,3-dichloropropane	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
Chlorodibromomethane	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
2-hexanone (MBK)	mg/kg	5.0	-	-	<5	<5	<5	<5
1,2-dibromoethane (EDB)	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
Tetrachloroethene	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
1,1,1,2-tetrachloroethane	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
Chlorobenzene	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
Bromoform	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
cis-1,4-dichloro-2-butene	mg/kg	1.0	-	-	<1	<1	<1	<1
Styrene (Vinyl benzene)	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
1,1,2,2-tetrachloroethane	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
1,2,3-trichloropropane	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
trans-1,4-dichloro-2-butene	mg/kg	1.0	-	-	<1	<1	<1	<1
Isopropylbenzene (Cumene)	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
Bromobenzene	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
n-propylbenzene	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1



ANALYTICAL RESULTS

SE124604 R0

VOC's in Soil [AN433/AN434] (continued)

PARAMETER	UOM	LOR	BH705-1	BH706-1	BH707-1	BH707-2	BH707-3	BH708-1
			SOIL 4/2/2014 SE124604.007	SOIL 4/2/2014 SE124604.008	SOIL 4/2/2014 SE124604.009	SOIL 4/2/2014 SE124604.010	SOIL 4/2/2014 SE124604.011	SOIL 4/2/2014 SE124604.012
2-chlorotoluene	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
4-chlorotoluene	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
1,3,5-trimethylbenzene	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
tert-butylbenzene	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
1,2,4-trimethylbenzene	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
sec-butylbenzene	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
1,3-dichlorobenzene	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
1,4-dichlorobenzene	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
p-isopropyltoluene	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
1,2-dichlorobenzene	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
n-butylbenzene	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
1,2-dibromo-3-chloropropane	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
1,2,4-trichlorobenzene	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
Hexachlorobutadiene	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
1,2,3-trichlorobenzene	mg/kg	0.10	-	-	<0.1	<0.1	<0.1	<0.1
Total VOC*	mg/kg	24.0	-	-	-	-	-	-

VOC's in Soil [AN433/AN434] (continued)

PARAMETER	UOM	LOR	BH708-2	BH708-3	BH708-4	BH709-1	BH709-2	B700
			SOIL 4/2/2014 SE124604.013	SOIL 4/2/2014 SE124604.014	SOIL 4/2/2014 SE124604.015	SOIL 4/2/2014 SE124604.016	SOIL 4/2/2014 SE124604.017	SOIL 4/2/2014 SE124604.018
Benzene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.10	0.3	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.20	0.4	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Naphthalene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes*	mg/kg	0.30	0.4	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX*	mg/kg	0.60	0.7	<0.6	<0.6	<0.6	<0.6	<0.6
Dichlorodifluoromethane (CFC-12)	mg/kg	1.0	<1	<1	<1	<1	-	-
Chloromethane	mg/kg	1.0	<1	<1	<1	<1	-	-
Vinyl chloride (Chloroethene)	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
Bromomethane	mg/kg	1.0	<1	<1	<1	<1	-	-
Chloroethane	mg/kg	1.0	<1	<1	<1	<1	-	-
Trichlorofluoromethane	mg/kg	1.0	<1	<1	<1	<1	-	-
Acetone (2-propanone)	mg/kg	10	<10	<10	<10	<10	-	-
Iodomethane	mg/kg	5.0	<5	<5	<5	<5	-	-
1,1-dichloroethene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
Acrylonitrile	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
Dichloromethane (Methylene chloride)	mg/kg	0.50	<0.5	<0.5	<0.5	<0.5	-	-
Allyl chloride	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
Carbon disulfide	mg/kg	0.50	<0.5	<0.5	<0.5	<0.5	-	-
trans-1,2-dichloroethene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
MtBE (Methyl-tert-butyl ether)	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
1,1-dichloroethane	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
Vinyl acetate	mg/kg	10	<10	<10	<10	<10	-	-
MEK (2-butanone)	mg/kg	10	<10	<10	<10	<10	-	-
cis-1,2-dichloroethene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
Bromochloromethane	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
Chloroform	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
2,2-dichloropropane	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
1,2-dichloroethane	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
1,1,1-trichloroethane	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
1,1-dichloropropene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
Carbon tetrachloride	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
Dibromomethane	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
1,2-dichloropropane	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
Trichloroethene (Trichloroethylene)	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
2-nitropropane	mg/kg	10	<10	<10	<10	<10	-	-
Bromodichloromethane	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
MIBK (4-methyl-2-pentanone)	mg/kg	1.0	<1	<1	<1	<1	-	-
cis-1,3-dichloropropene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
trans-1,3-dichloropropene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
1,1,2-trichloroethane	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
1,3-dichloropropane	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
Chlorodibromomethane	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
2-hexanone (MBK)	mg/kg	5.0	<5	<5	<5	<5	-	-
1,2-dibromoethane (EDB)	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
Tetrachloroethene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
1,1,1,2-tetrachloroethane	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
Chlorobenzene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
Bromoform	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
cis-1,4-dichloro-2-butene	mg/kg	1.0	<1	<1	<1	<1	-	-
Styrene (Vinyl benzene)	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
1,1,2,2-tetrachloroethane	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
1,2,3-trichloropropane	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
trans-1,4-dichloro-2-butene	mg/kg	1.0	<1	<1	<1	<1	-	-
Isopropylbenzene (Cumene)	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
Bromobenzene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
n-propylbenzene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-

VOC's in Soil [AN433/AN434] (continued)

PARAMETER	UOM	LOR	BH708-2	BH708-3	BH708-4	BH709-1	BH709-2	B700
			SOIL 4/2/2014 SE124604.013	SOIL 4/2/2014 SE124604.014	SOIL 4/2/2014 SE124604.015	SOIL 4/2/2014 SE124604.016	SOIL 4/2/2014 SE124604.017	SOIL 4/2/2014 SE124604.018
2-chlorotoluene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
4-chlorotoluene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
1,3,5-trimethylbenzene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
tert-butylbenzene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
1,2,4-trimethylbenzene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
sec-butylbenzene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
1,3-dichlorobenzene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
1,4-dichlorobenzene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
p-isopropyltoluene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
1,2-dichlorobenzene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
n-butylbenzene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
1,2-dibromo-3-chloropropane	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
1,2,4-trichlorobenzene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
Hexachlorobutadiene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
1,2,3-trichlorobenzene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	-	-
Total VOC*	mg/kg	24.0	-	-	-	-	-	-

VOC's in Soil [AN433/AN434] (continued)

			TB4
PARAMETER	UOM	LOR	SOIL 4/2/2014 SE124604.020
Benzene	mg/kg	0.10	<0.1
Toluene	mg/kg	0.10	<0.1
Ethylbenzene	mg/kg	0.10	<0.1
m/p-xylene	mg/kg	0.20	<0.2
o-xylene	mg/kg	0.10	<0.1
Naphthalene	mg/kg	0.10	<0.1
Total Xylenes*	mg/kg	0.30	<0.3
Total BTEX*	mg/kg	0.60	<0.6
Dichlorodifluoromethane (CFC-12)	mg/kg	1.0	-
Chloromethane	mg/kg	1.0	-
Vinyl chloride (Chloroethene)	mg/kg	0.10	-
Bromomethane	mg/kg	1.0	-
Chloroethane	mg/kg	1.0	-
Trichlorofluoromethane	mg/kg	1.0	-
Acetone (2-propanone)	mg/kg	10	-
Iodomethane	mg/kg	5.0	-
1,1-dichloroethene	mg/kg	0.10	-
Acrylonitrile	mg/kg	0.10	-
Dichloromethane (Methylene chloride)	mg/kg	0.50	-
Allyl chloride	mg/kg	0.10	-
Carbon disulfide	mg/kg	0.50	-
trans-1,2-dichloroethene	mg/kg	0.10	-
MtBE (Methyl-tert-butyl ether)	mg/kg	0.10	-
1,1-dichloroethane	mg/kg	0.10	-
Vinyl acetate	mg/kg	10	-
MEK (2-butanone)	mg/kg	10	-
cis-1,2-dichloroethene	mg/kg	0.10	-
Bromochloromethane	mg/kg	0.10	-
Chloroform	mg/kg	0.10	-
2,2-dichloropropane	mg/kg	0.10	-
1,2-dichloroethane	mg/kg	0.10	-
1,1,1-trichloroethane	mg/kg	0.10	-
1,1-dichloropropene	mg/kg	0.10	-
Carbon tetrachloride	mg/kg	0.10	-
Dibromomethane	mg/kg	0.10	-
1,2-dichloropropane	mg/kg	0.10	-
Trichloroethene (Trichloroethylene)	mg/kg	0.10	-
2-nitropropane	mg/kg	10	-
Bromodichloromethane	mg/kg	0.10	-
MIBK (4-methyl-2-pentanone)	mg/kg	1.0	-
cis-1,3-dichloropropene	mg/kg	0.10	-
trans-1,3-dichloropropene	mg/kg	0.10	-
1,1,2-trichloroethane	mg/kg	0.10	-
1,3-dichloropropane	mg/kg	0.10	-
Chlorodibromomethane	mg/kg	0.10	-
2-hexanone (MBK)	mg/kg	5.0	-
1,2-dibromoethane (EDB)	mg/kg	0.10	-
Tetrachloroethene	mg/kg	0.10	-
1,1,1,2-tetrachloroethane	mg/kg	0.10	-
Chlorobenzene	mg/kg	0.10	-
Bromoform	mg/kg	0.10	-
cis-1,4-dichloro-2-butene	mg/kg	1.0	-
Styrene (Vinyl benzene)	mg/kg	0.10	-
1,1,2,2-tetrachloroethane	mg/kg	0.10	-
1,2,3-trichloropropane	mg/kg	0.10	-
trans-1,4-dichloro-2-butene	mg/kg	1.0	-
Isopropylbenzene (Cumene)	mg/kg	0.10	-
Bromobenzene	mg/kg	0.10	-
n-propylbenzene	mg/kg	0.10	-

VOC's in Soil [AN433/AN434] (continued)

			TB4
			SOIL
			4/2/2014
			SE124604.020
PARAMETER	UOM	LOR	
2-chlorotoluene	mg/kg	0.10	-
4-chlorotoluene	mg/kg	0.10	-
1,3,5-trimethylbenzene	mg/kg	0.10	-
tert-butylbenzene	mg/kg	0.10	-
1,2,4-trimethylbenzene	mg/kg	0.10	-
sec-butylbenzene	mg/kg	0.10	-
1,3-dichlorobenzene	mg/kg	0.10	-
1,4-dichlorobenzene	mg/kg	0.10	-
p-isopropyltoluene	mg/kg	0.10	-
1,2-dichlorobenzene	mg/kg	0.10	-
n-butylbenzene	mg/kg	0.10	-
1,2-dibromo-3-chloropropane	mg/kg	0.10	-
1,2,4-trichlorobenzene	mg/kg	0.10	-
Hexachlorobutadiene	mg/kg	0.10	-
1,2,3-trichlorobenzene	mg/kg	0.10	-
Total VOC*	mg/kg	24.0	-



ANALYTICAL RESULTS

SE124604 R0

Volatile Petroleum Hydrocarbons in Soil [AN433/AN434/AN410]

PARAMETER	UOM	LOR	BH701-1	BH702-1	BH703-1	BH704-1	BH704-2	BH704-3
			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			4/2/2014 SE124604.001	4/2/2014 SE124604.002	4/2/2014 SE124604.003	4/2/2014 SE124604.004	4/2/2014 SE124604.005	4/2/2014 SE124604.006
Benzene (F0)	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20	<20
TRH C6-C10	mg/kg	25.0	<25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25.0	<25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	BH705-1	BH706-1	BH707-1	BH707-2	BH707-3	BH708-1
			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			4/2/2014 SE124604.007	4/2/2014 SE124604.008	4/2/2014 SE124604.009	4/2/2014 SE124604.010	4/2/2014 SE124604.011	4/2/2014 SE124604.012
Benzene (F0)	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20	<20
TRH C6-C10	mg/kg	25.0	<25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25.0	<25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	BH708-2	BH708-3	BH708-4	BH709-1	BH709-2	B700
			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			4/2/2014 SE124604.013	4/2/2014 SE124604.014	4/2/2014 SE124604.015	4/2/2014 SE124604.016	4/2/2014 SE124604.017	4/2/2014 SE124604.018
Benzene (F0)	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20	<20
TRH C6-C10	mg/kg	25.0	<25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25.0	<25	<25	<25	<25	<25	<25

TRH (Total Recoverable Hydrocarbons) in Soil [AN403]

PARAMETER	UOM	LOR	BH701-1	BH702-1	BH703-1	BH704-1	BH704-2	BH704-3
			SOIL 4/2/2014 SE124604.001	SOIL 4/2/2014 SE124604.002	SOIL 4/2/2014 SE124604.003	SOIL 4/2/2014 SE124604.004	SOIL 4/2/2014 SE124604.005	SOIL 4/2/2014 SE124604.006
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45.0	<45	<45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45.0	<45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100	<100
TRH >C10-C16 (F2)	mg/kg	25.0	<25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110	<110
TRH C10-C40 Total	mg/kg	210	<210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	BH705-1	BH706-1	BH707-1	BH707-2	BH707-3	BH708-1
			SOIL 4/2/2014 SE124604.007	SOIL 4/2/2014 SE124604.008	SOIL 4/2/2014 SE124604.009	SOIL 4/2/2014 SE124604.010	SOIL 4/2/2014 SE124604.011	SOIL 4/2/2014 SE124604.012
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45.0	<45	<45	47	<45	<45	59
TRH C29-C36	mg/kg	45.0	<45	<45	94	<45	<45	83
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100	<100
TRH >C10-C16 (F2)	mg/kg	25.0	<25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	130	<90	<90	140
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	140	<110	<110	140
TRH C10-C40 Total	mg/kg	210	<210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	BH708-2	BH708-3	BH708-4	BH709-1	BH709-2	B700
			SOIL 4/2/2014 SE124604.013	SOIL 4/2/2014 SE124604.014	SOIL 4/2/2014 SE124604.015	SOIL 4/2/2014 SE124604.016	SOIL 4/2/2014 SE124604.017	SOIL 4/2/2014 SE124604.018
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45.0	60	<45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45.0	120	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100	<100
TRH >C10-C16 (F2)	mg/kg	25.0	<25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	150	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	180	<110	<110	<110	<110	<110
TRH C10-C40 Total	mg/kg	210	<210	<210	<210	<210	<210	<210

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420]

PARAMETER	UOM	LOR	BH701-1	BH702-1	BH703-1	BH704-1	BH704-2	BH704-3
			SOIL 4/2/2014 SE124604.001	SOIL 4/2/2014 SE124604.002	SOIL 4/2/2014 SE124604.003	SOIL 4/2/2014 SE124604.004	SOIL 4/2/2014 SE124604.005	SOIL 4/2/2014 SE124604.006
Naphthalene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.10	0.5	0.3	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.10	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.10	1.0	0.9	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.10	0.8	0.8	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.10	0.5	0.5	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.10	0.4	0.3	<0.1	<0.1	<0.1	<0.1
Benzo(b&i)fluoranthene	mg/kg	0.10	0.6	0.4	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.10	0.1	0.2	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.10	0.5	0.6	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.10	0.5	0.8	<0.1	<0.1	<0.1	<0.1
Dibenzo(a&h)anthracene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.10	0.2	0.3	<0.1	<0.1	<0.1	<0.1
Total PAH	mg/kg	0.80	5.2	5.2	<0.8	<0.8	<0.8	<0.8
Carcinogenic PAHs (as BaP TEQ)*	TEQ	0.20	0.7	0.8	<0.2	<0.2	<0.2	<0.2

PARAMETER	UOM	LOR	BH705-1	BH706-1	BH707-1	BH707-2	BH707-3	BH708-1
			SOIL 4/2/2014 SE124604.007	SOIL 4/2/2014 SE124604.008	SOIL 4/2/2014 SE124604.009	SOIL 4/2/2014 SE124604.010	SOIL 4/2/2014 SE124604.011	SOIL 4/2/2014 SE124604.012
Naphthalene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.10	<0.1	<0.1	0.3	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.10	<0.1	<0.1	0.3	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.10	<0.1	<0.1	<0.1	0.2	<0.1	<0.1
Anthracene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.10	<0.1	<0.1	<0.1	0.4	<0.1	0.2
Pyrene	mg/kg	0.10	<0.1	<0.1	<0.1	0.3	<0.1	0.1
Benzo(a)anthracene	mg/kg	0.10	<0.1	<0.1	<0.1	0.3	<0.1	0.1
Chrysene	mg/kg	0.10	<0.1	<0.1	<0.1	0.2	<0.1	<0.1
Benzo(b&i)fluoranthene	mg/kg	0.10	<0.1	<0.1	<0.1	0.3	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.10	<0.1	<0.1	<0.1	0.4	<0.1	0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.10	<0.1	<0.1	<0.1	0.4	<0.1	0.1
Dibenzo(a&h)anthracene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.10	<0.1	<0.1	<0.1	0.2	<0.1	<0.1
Total PAH	mg/kg	0.80	<0.8	<0.8	<0.8	2.9	<0.8	1.1
Carcinogenic PAHs (as BaP TEQ)*	TEQ	0.20	<0.2	<0.2	<0.2	0.5	<0.2	<0.2

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] (continued)

PARAMETER	UOM	LOR	BH708-2	BH708-3	BH708-4	BH709-1	BH709-2
			SOIL 4/2/2014 SE124604.013	SOIL 4/2/2014 SE124604.014	SOIL 4/2/2014 SE124604.015	SOIL 4/2/2014 SE124604.016	SOIL 4/2/2014 SE124604.017
Naphthalene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.10	0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.10	0.3	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.10	0.2	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.10	0.2	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.10	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.10	0.2	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.10	0.2	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.10	0.3	<0.1	<0.1	<0.1	<0.1
Dibenzo(a&h)anthracene	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.10	0.1	<0.1	<0.1	<0.1	<0.1
Total PAH	mg/kg	0.80	2.1	<0.8	<0.8	<0.8	<0.8
Carcinogenic PAHs (as BaP TEQ)*	TEQ	0.20	0.3	<0.2	<0.2	<0.2	<0.2

OP Pesticides in Soil [AN400/AN420]

PARAMETER	UOM	LOR	BH701-1	BH702-1	BH703-1	BH704-1	BH705-1	BH706-1
			SOIL 4/2/2014 SE124604.001	SOIL 4/2/2014 SE124604.002	SOIL 4/2/2014 SE124604.003	SOIL 4/2/2014 SE124604.004	SOIL 4/2/2014 SE124604.007	SOIL 4/2/2014 SE124604.008
Dichlorvos	mg/kg	0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

PARAMETER	UOM	LOR	BH707-1	BH708-1	BH709-1
			SOIL 4/2/2014 SE124604.009	SOIL 4/2/2014 SE124604.012	SOIL 4/2/2014 SE124604.016
Dichlorvos	mg/kg	0.50	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.50	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.50	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.20	<0.2	<0.2	<0.2
Malathion	mg/kg	0.20	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.20	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.20	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.20	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.50	<0.5	<0.5	<0.5
Ethion	mg/kg	0.20	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.20	<0.2	<0.2	<0.2

OC Pesticides in Soil [AN400/AN420]

PARAMETER	UOM	LOR	BH701-1	BH702-1	BH703-1	BH704-1	BH705-1	BH706-1
			SOIL 4/2/2014 SE124604.001	SOIL 4/2/2014 SE124604.002	SOIL 4/2/2014 SE124604.003	SOIL 4/2/2014 SE124604.004	SOIL 4/2/2014 SE124604.007	SOIL 4/2/2014 SE124604.008
Hexachlorobenzene (HCB)	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

OC Pesticides in Soil [AN400/AN420] (continued)

PARAMETER	UOM	LOR	BH707-1	BH708-1	BH709-1
			SOIL 4/2/2014 SE124604.009	SOIL 4/2/2014 SE124604.012	SOIL 4/2/2014 SE124604.016
Hexachlorobenzene (HCB)	mg/kg	0.10	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.10	<0.1	<0.1	<0.1
Lindane	mg/kg	0.10	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.10	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.10	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.10	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.10	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.10	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.10	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.20	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.10	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.10	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.10	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.10	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.20	<0.2	<0.2	<0.2
Endrin	mg/kg	0.20	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.10	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.10	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.20	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.10	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.10	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.10	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.10	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.10	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.10	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.10	<0.1	<0.1	<0.1
Mirex	mg/kg	0.10	<0.1	<0.1	<0.1

PCBs in Soil [AN400/AN420]

PARAMETER	UOM	LOR	BH701-1	BH702-1	BH703-1	BH704-1	BH705-1	BH706-1
			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			4/2/2014 SE124604.001	4/2/2014 SE124604.002	4/2/2014 SE124604.003	4/2/2014 SE124604.004	4/2/2014 SE124604.007	4/2/2014 SE124604.008
Arochlor 1016	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1.0	<1	<1	<1	<1	<1	<1

PARAMETER	UOM	LOR	BH707-1	BH708-1	BH709-1
			SOIL	SOIL	SOIL
			4/2/2014 SE124604.009	4/2/2014 SE124604.012	4/2/2014 SE124604.016
Arochlor 1016	mg/kg	0.20	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.20	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.20	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.20	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.20	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.20	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.20	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.20	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.20	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1.0	<1	<1	<1



ANALYTICAL RESULTS

SE124604 R0

Total Phenolics in Soil [AN289]

PARAMETER	UOM	LOR	BH704-1	BH704-2	BH704-3	BH707-1	BH707-2	BH707-3
			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			4/2/2014 SE124604.004	4/2/2014 SE124604.005	4/2/2014 SE124604.006	4/2/2014 SE124604.009	4/2/2014 SE124604.010	4/2/2014 SE124604.011
Total Phenols	mg/kg	0.10	0.3	<0.1	<0.1	<0.1	0.3	<0.1

PARAMETER	UOM	LOR	BH708-1	BH708-2	BH708-3	BH708-4	BH709-1
			SOIL	SOIL	SOIL	SOIL	SOIL
			4/2/2014 SE124604.012	4/2/2014 SE124604.013	4/2/2014 SE124604.014	4/2/2014 SE124604.015	4/2/2014 SE124604.016
Total Phenols	mg/kg	0.10	0.2	0.3	<0.1	0.1	0.2



ANALYTICAL RESULTS

SE124604 R0

pH in soil (1:5) [AN101]

			BH705-1
			SOIL
			4/2/2014
			SE124604.007
PARAMETER	UOM	LOR	
pH	pH Units	-	7.5

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest [AN040/AN320]

PARAMETER	UOM	LOR	BH701-1	BH702-1	BH703-1	BH704-1	BH704-2	BH704-3
			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			4/2/2014 SE124604.001	4/2/2014 SE124604.002	4/2/2014 SE124604.003	4/2/2014 SE124604.004	4/2/2014 SE124604.005	4/2/2014 SE124604.006
Arsenic, As	mg/kg	3.0	<3	14	5	4	<3	<3
Cadmium, Cd	mg/kg	0.30	<0.3	0.6	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.30	9.6	7.3	23	20	11	8.8
Copper, Cu	mg/kg	0.50	32	99	<0.5	1.4	<0.5	<0.5
Lead, Pb	mg/kg	1.0	26	95	10	7	7	15
Nickel, Ni	mg/kg	0.50	33	13	1.2	3.1	0.6	<0.5
Zinc, Zn	mg/kg	0.50	56	2700	3.6	49	1.7	0.8

PARAMETER	UOM	LOR	BH705-1	BH706-1	BH707-1	BH707-2	BH707-3	BH708-1
			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			4/2/2014 SE124604.007	4/2/2014 SE124604.008	4/2/2014 SE124604.009	4/2/2014 SE124604.010	4/2/2014 SE124604.011	4/2/2014 SE124604.012
Arsenic, As	mg/kg	3.0	4	<3	3	6	5	6
Cadmium, Cd	mg/kg	0.30	<0.3	<0.3	<0.3	<0.3	<0.3	0.4
Chromium, Cr	mg/kg	0.30	15	9.4	5.7	13	26	15
Copper, Cu	mg/kg	0.50	4.4	0.5	0.5	17	0.5	12
Lead, Pb	mg/kg	1.0	10	8	23	160	15	66
Nickel, Ni	mg/kg	0.50	1.9	<0.5	<0.5	2.6	1.6	2.3
Zinc, Zn	mg/kg	0.50	53	1.5	4.2	93	3.3	28

PARAMETER	UOM	LOR	BH708-2	BH708-3	BH708-4	BH709-1	BH709-2	B700
			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			4/2/2014 SE124604.013	4/2/2014 SE124604.014	4/2/2014 SE124604.015	4/2/2014 SE124604.016	4/2/2014 SE124604.017	4/2/2014 SE124604.018
Arsenic, As	mg/kg	3.0	4	5	<3	5	4	<3
Cadmium, Cd	mg/kg	0.30	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.30	14	25	8.7	13	24	11
Copper, Cu	mg/kg	0.50	15	0.5	<0.5	11	<0.5	28
Lead, Pb	mg/kg	1.0	110	21	4	34	14	27
Nickel, Ni	mg/kg	0.50	2.5	1.1	<0.5	2.4	0.7	23
Zinc, Zn	mg/kg	0.50	61	2.6	1.4	22	2.9	45



ANALYTICAL RESULTS

SE124604 R0

Mercury in Soil [AN312]

PARAMETER	UOM	LOR	BH701-1	BH702-1	BH703-1	BH704-1	BH704-2	BH704-3
			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			4/2/2014 SE124604.001	4/2/2014 SE124604.002	4/2/2014 SE124604.003	4/2/2014 SE124604.004	4/2/2014 SE124604.005	4/2/2014 SE124604.006
Mercury	mg/kg	0.010	0.25	0.04	0.01	0.03	0.01	0.02

PARAMETER	UOM	LOR	BH705-1	BH706-1	BH707-1	BH707-2	BH707-3	BH708-1
			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			4/2/2014 SE124604.007	4/2/2014 SE124604.008	4/2/2014 SE124604.009	4/2/2014 SE124604.010	4/2/2014 SE124604.011	4/2/2014 SE124604.012
Mercury	mg/kg	0.010	0.04	<0.01	0.10	0.72	0.02	0.03

PARAMETER	UOM	LOR	BH708-2	BH708-3	BH708-4	BH709-1	BH709-2	B700
			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			4/2/2014 SE124604.013	4/2/2014 SE124604.014	4/2/2014 SE124604.015	4/2/2014 SE124604.016	4/2/2014 SE124604.017	4/2/2014 SE124604.018
Mercury	mg/kg	0.010	0.17	0.01	<0.01	0.03	<0.01	0.28



ANALYTICAL RESULTS

SE124604 R0

Fibre Identification in soil [AN602]

PARAMETER	UOM	LOR	BH701-1_ZLB	BH702-1_ZLB	BH703-1_ZLB	BH704-1_ZLB	BH705-1_ZLB	BH706-1_ZLB
			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			4/2/2014 SE124604.021	4/2/2014 SE124604.022	4/2/2014 SE124604.023	4/2/2014 SE124604.024	4/2/2014 SE124604.025	4/2/2014 SE124604.026
Asbestos Detected	No unit	-	No	No	No	No	No	No
Estimated Fibres	%w/w	0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

PARAMETER	UOM	LOR	BH707-1_ZLB	BH708-1_ZLB	BH709-1_ZLB
			SOIL	SOIL	SOIL
			4/2/2014 SE124604.027	4/2/2014 SE124604.028	4/2/2014 SE124604.029
Asbestos Detected	No unit	-	No	No	No
Estimated Fibres	%w/w	0.010	<0.01	<0.01	<0.01

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) [AN122]

			BH705-1
			SOIL
			4/2/2014
			SE124604.007
PARAMETER	UOM	LOR	
Exchangeable Sodium, Na	mg/kg	2.0	50
Exchangeable Sodium, Na	meq/100g	0.010	0.22
Exchangeable Sodium Percentage*	%	0.10	1.9
Exchangeable Potassium, K	mg/kg	2.0	59
Exchangeable Potassium, K	meq/100g	0.010	0.15
Exchangeable Potassium	%	0.10	1.3
Exchangeable Calcium, Ca	mg/kg	2.0	2100
Exchangeable Calcium, Ca	meq/100g	0.010	11
Exchangeable Calcium Percentage*	%	0.10	91.1
Exchangeable Magnesium, Mg	mg/kg	2.0	82
Exchangeable Magnesium, Mg	meq/100g	0.020	0.67
Exchangeable Magnesium	%	0.10	5.7
Cation Exchange Capacity	meq/100g	0.020	12



ANALYTICAL RESULTS

SE124604 R0

Moisture Content [AN002]

PARAMETER	UOM	LOR	BH701-1	BH702-1	BH703-1	BH704-1	BH704-2	BH704-3
			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			4/2/2014 SE124604.001	4/2/2014 SE124604.002	4/2/2014 SE124604.003	4/2/2014 SE124604.004	4/2/2014 SE124604.005	4/2/2014 SE124604.006
% Moisture	%	0.50	5.2	5.7	15	14	16	14

PARAMETER	UOM	LOR	BH705-1	BH706-1	BH707-1	BH707-2	BH707-3	BH708-1
			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			4/2/2014 SE124604.007	4/2/2014 SE124604.008	4/2/2014 SE124604.009	4/2/2014 SE124604.010	4/2/2014 SE124604.011	4/2/2014 SE124604.012
% Moisture	%	0.50	17	14	16	23	17	21

PARAMETER	UOM	LOR	BH708-2	BH708-3	BH708-4	BH709-1	BH709-2	B700
			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			4/2/2014 SE124604.013	4/2/2014 SE124604.014	4/2/2014 SE124604.015	4/2/2014 SE124604.016	4/2/2014 SE124604.017	4/2/2014 SE124604.018
% Moisture	%	0.50	17	18	11	21	16	6.3

PARAMETER	UOM	LOR	TB4
			SOIL
			4/2/2014 SE124604.020
% Moisture	%	0.50	<0.5



ANALYTICAL RESULTS

SE124604 R0

VOCs in Water [AN433/AN434]

			RB700
			WATER
			4/2/2014
PARAMETER	UOM	LOR	SE124604.019
Benzene	µg/L	0.50	<0.5
Toluene	µg/L	0.50	<0.5
Ethylbenzene	µg/L	0.50	<0.5
m/p-xylene	µg/L	1.0	<1
o-xylene	µg/L	0.50	<0.5
Total Xylenes	µg/L	1.50	<1.5
Total BTEX	µg/L	3.0	<3
Naphthalene	µg/L	0.50	<0.5



ANALYTICAL RESULTS

SE124604 R0

Volatile Petroleum Hydrocarbons in Water [AN433/AN434/AN410]

			RB700
			WATER
			4/2/2014
PARAMETER	UOM	LOR	SE124604.019
TRH C6-C9	µg/L	40	<40
Benzene (F0)	µg/L	0.50	<0.5
TRH C6-C10	µg/L	50	<50
TRH C6-C10 minus BTEX (F1)	µg/L	50	<50



ANALYTICAL RESULTS

SE124604 R0

TRH (Total Recoverable Hydrocarbons) in Water [AN403]

			RB700
			WATER
			4/2/2014
PARAMETER	UOM	LOR	SE124604.019
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 (F2)	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



ANALYTICAL RESULTS

SE124604 R0

Trace Metals (Dissolved) in Water by ICPMS [AN318]

			RB700
			WATER
			4/2/2014
			SE124604.019
PARAMETER	UOM	LOR	
Arsenic, As	µg/L	1.0	<1
Cadmium, Cd	µg/L	0.10	<0.1
Chromium, Cr	µg/L	1.0	<1
Copper, Cu	µg/L	1.0	41
Lead, Pb	µg/L	1.0	<1
Nickel, Ni	µg/L	1.0	3
Zinc, Zn	µg/L	5.0	110



ANALYTICAL RESULTS

SE124604 R0

Mercury (dissolved) in Water [AN311/AN312]

			RB700
			WATER
			4/2/2014
			SE124604.019
PARAMETER	UOM	LOR	
Mercury	mg/L	0.00010	<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	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.
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.
AN083	Separatory funnels are used for aqueous samples and extracted by transferring an appropriate volume (mass) of liquid into a separatory funnel and adding 3 serial aliquots of dichloromethane. Samples receive a single extraction at pH 7 to recover base / neutral analytes and two extractions at pH < 2 to recover acidic analytes. QC samples are prepared by spiking organic free water with target analytes and extracting as per samples.
AN088	Orbital rolling for Organic pollutants are extracted from soil/sediment by transferring an appropriate mass of sample to a clear soil jar and extracting with 1:1 Dichloromethane/Acetone. Orbital Rolling method is intended for the extraction of semi-volatile organic compounds from soil/sediment samples, and is based somewhat on USEPA method 3570 (Micro Organic extraction and sample preparation). Method 3700.
AN101	pH in Soil Sludge Sediment and Water: pH is measured electrometrically using a combination electrode (glass plus reference electrode) and is calibrated against 3 buffers purchased commercially. For soils, an extract with water (or 0.01M CaCl ₂) is made at a ratio of 1:5 and the pH determined and reported on the extract. Reference APHA 4500-H ⁺ .
AN122	Exchangeable Cations, CEC and ESP: Soil sample is extracted in 1M Ammonium Acetate at pH=7 (or 1M Ammonium Chloride at pH=7) with cations (Na, K, Ca & Mg) then determined by ICP OES/ICP MS and reported as Exchangeable Cations. For saline soils, these results can be corrected for water soluble cations and reported as Exchangeable cations in meq/100g or soil can be pretreated (aqueous ethanol/aqueous glycerol) prior to extraction. Cation Exchange Capacity (CEC) is the sum of the exchangeable cations in meq/100g.
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/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.
AN400	OC and OP Pesticides by GC-ECD: The determination of organochlorine (OC) and organophosphorus (OP) pesticides and polychlorinated biphenyls (PCBs) in soils, sludges and groundwater. (Based on USEPA methods 3510, 3550, 8140 and 8080.)
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 Draft NEPM 2011, >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is not corrected for Naphthalene.
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/AN434	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.
AN433/AN434/AN410	VOCs and C6-C9/C6-C10 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.

FOOTNOTES

*	Analysis not covered by the scope of accreditation.	-	Not analysed.	UOM	Unit of Measure.
**	Indicative data, theoretical holding time exceeded.	NVL	Not validated.	LOR	Limit of Reporting.
		IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
^	Performed by outside laboratory.	LNR	Sample listed, but not received.		

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

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

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/pv.sgsv3/~media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf>

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Project **E2009AC Sheperds Bay Stage A Meadowbank**
Order Number (Not specified)
Samples 29

LABORATORY DETAILS

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SGS Reference SE124604 R0
Report Number 0000075953
Date Reported 19 Feb 2014
Date Received 07 Feb 2014

COMMENTS

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

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

Asbestos analysed by Approved Identifiers Yusuf Kuthpudin and Ravee Sivasubramaniam.

SIGNATORIES



Andy Sutton
Senior Organic Chemist



Dong Liang
Metals/Inorganics Team Leader




Huong Crawford
Production Manager



Kamrul Ahsan
Senior Chemist



Ly Kim Ha
Organic Section Head



Ravee Sivasubramaniam
Asbestos Analyst

RESULTS

Fibre Identification in soil

Method AN602

Laboratory Reference	Client Reference	Matrix	Sample Description	Date Sampled	Fibre Identification	Est.%w/w
SE124604.021	BH701-1_ZLB	Soil	26g Soil,rocks	04 Feb 2014	No Asbestos Found Organic Fibres Detected	<0.01
SE124604.022	BH702-1_ZLB	Soil	80g Soil,rocks	04 Feb 2014	No Asbestos Found	<0.01
SE124604.023	BH703-1_ZLB	Soil	33g Soil,rocks	04 Feb 2014	No Asbestos Found Organic Fibres Detected	<0.01
SE124604.024	BH704-1_ZLB	Soil	52g Clay,soil	04 Feb 2014	No Asbestos Found Organic Fibres Detected	<0.01
SE124604.025	BH705-1_ZLB	Soil	56g Clay,soil	04 Feb 2014	No Asbestos Found	<0.01
SE124604.026	BH706-1_ZLB	Soil	70g Clay,soil,rocks	04 Feb 2014	No Asbestos Found Organic Fibres Detected	<0.01
SE124604.027	BH707-1_ZLB	Soil	34g Clay,soil	04 Feb 2014	No Asbestos Found	<0.01
SE124604.028	BH708-1_ZLB	Soil	50g Clay,soil,rocks	04 Feb 2014	No Asbestos Found	<0.01
SE124604.029	BH709-1_ZLB	Soil	50g Clay,soil	04 Feb 2014	No Asbestos Found	<0.01

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 unequivocally identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf).
AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples, Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection limit of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."

FOOTNOTES

Amosite	-	Brown Asbestos	NA	-	Not Analysed
Chrysotile	-	White Asbestos	LNR	-	Listed, Not Required
Crocidolite	-	Blue Asbestos	*	-	Not Accredited
Amphiboles	-	Amosite and/or Crocidolite	**	-	Indicative data, theoretical holding time exceeded.

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 polarized light microscopy, including dispersion staining.

Where reported: 'No Asbestos Found': No Asbestos Found by polarized light microscopy, including dispersion staining.

Where reported: 'UMF Detected': Mineral fibres of unknown type detected by polarized 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/pv.sgsv3/~media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf>

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STATEMENT OF QA/QC PERFORMANCE

SE124604 R0

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Project **E2009AC Sheperds Bay Stage A Meadowbank**
Order Number (Not specified)
Samples 29

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SGS Reference SE124604 R0
Report Number 0000075952
Date Reported 19 Feb 2014

COMMENTS

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

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

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

Extraction Date	pH in soil (1:5)	1 item
Duplicate	Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest	1 item

SAMPLE SUMMARY

Sample counts by matrix	28 Soil, 1 Water	Type of documentation received	COC
Date documentation received	7/2/2014	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	4°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		



HOLDING TIME SUMMARY

SE124604 R0

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

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

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

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

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH705-1	SE124604.007	LB052419	04 Feb 2014	07 Feb 2014	04 Mar 2014	14 Feb 2014	04 Mar 2014	17 Feb 2014

Fibre Identification in soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH701-1_ZLB	SE124604.021	LB052597	04 Feb 2014	07 Feb 2014	04 Feb 2015	17 Feb 2014	04 Feb 2015	18 Feb 2014
BH702-1_ZLB	SE124604.022	LB052597	04 Feb 2014	07 Feb 2014	04 Feb 2015	17 Feb 2014	04 Feb 2015	18 Feb 2014
BH703-1_ZLB	SE124604.023	LB052597	04 Feb 2014	07 Feb 2014	04 Feb 2015	17 Feb 2014	04 Feb 2015	18 Feb 2014
BH704-1_ZLB	SE124604.024	LB052597	04 Feb 2014	07 Feb 2014	04 Feb 2015	17 Feb 2014	04 Feb 2015	18 Feb 2014
BH705-1_ZLB	SE124604.025	LB052597	04 Feb 2014	07 Feb 2014	04 Feb 2015	17 Feb 2014	04 Feb 2015	18 Feb 2014
BH706-1_ZLB	SE124604.026	LB052597	04 Feb 2014	07 Feb 2014	04 Feb 2015	17 Feb 2014	04 Feb 2015	18 Feb 2014
BH707-1_ZLB	SE124604.027	LB052597	04 Feb 2014	07 Feb 2014	04 Feb 2015	17 Feb 2014	04 Feb 2015	18 Feb 2014
BH708-1_ZLB	SE124604.028	LB052597	04 Feb 2014	07 Feb 2014	04 Feb 2015	17 Feb 2014	04 Feb 2015	18 Feb 2014
BH709-1_ZLB	SE124604.029	LB052597	04 Feb 2014	07 Feb 2014	04 Feb 2015	17 Feb 2014	04 Feb 2015	18 Feb 2014

Mercury (dissolved) in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
RB700	SE124604.019	LB052579	04 Feb 2014	07 Feb 2014	04 Mar 2014	17 Feb 2014	04 Mar 2014	17 Feb 2014

Mercury in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH701-1	SE124604.001	LB052527	04 Feb 2014	07 Feb 2014	04 Mar 2014	15 Feb 2014	04 Mar 2014	18 Feb 2014
BH702-1	SE124604.002	LB052527	04 Feb 2014	07 Feb 2014	04 Mar 2014	15 Feb 2014	04 Mar 2014	18 Feb 2014
BH703-1	SE124604.003	LB052527	04 Feb 2014	07 Feb 2014	04 Mar 2014	15 Feb 2014	04 Mar 2014	18 Feb 2014
BH704-1	SE124604.004	LB052527	04 Feb 2014	07 Feb 2014	04 Mar 2014	15 Feb 2014	04 Mar 2014	18 Feb 2014
BH704-2	SE124604.005	LB052527	04 Feb 2014	07 Feb 2014	04 Mar 2014	15 Feb 2014	04 Mar 2014	18 Feb 2014
BH704-3	SE124604.006	LB052527	04 Feb 2014	07 Feb 2014	04 Mar 2014	15 Feb 2014	04 Mar 2014	18 Feb 2014
BH705-1	SE124604.007	LB052527	04 Feb 2014	07 Feb 2014	04 Mar 2014	15 Feb 2014	04 Mar 2014	18 Feb 2014
BH706-1	SE124604.008	LB052527	04 Feb 2014	07 Feb 2014	04 Mar 2014	15 Feb 2014	04 Mar 2014	18 Feb 2014
BH707-1	SE124604.009	LB052527	04 Feb 2014	07 Feb 2014	04 Mar 2014	15 Feb 2014	04 Mar 2014	18 Feb 2014
BH707-2	SE124604.010	LB052527	04 Feb 2014	07 Feb 2014	04 Mar 2014	15 Feb 2014	04 Mar 2014	18 Feb 2014
BH707-3	SE124604.011	LB052527	04 Feb 2014	07 Feb 2014	04 Mar 2014	15 Feb 2014	04 Mar 2014	18 Feb 2014
BH708-1	SE124604.012	LB052527	04 Feb 2014	07 Feb 2014	04 Mar 2014	15 Feb 2014	04 Mar 2014	18 Feb 2014
BH708-2	SE124604.013	LB052527	04 Feb 2014	07 Feb 2014	04 Mar 2014	15 Feb 2014	04 Mar 2014	18 Feb 2014
BH708-3	SE124604.014	LB052528	04 Feb 2014	07 Feb 2014	04 Mar 2014	15 Feb 2014	04 Mar 2014	18 Feb 2014
BH708-4	SE124604.015	LB052528	04 Feb 2014	07 Feb 2014	04 Mar 2014	15 Feb 2014	04 Mar 2014	18 Feb 2014
BH709-1	SE124604.016	LB052528	04 Feb 2014	07 Feb 2014	04 Mar 2014	15 Feb 2014	04 Mar 2014	18 Feb 2014
BH709-2	SE124604.017	LB052528	04 Feb 2014	07 Feb 2014	04 Mar 2014	15 Feb 2014	04 Mar 2014	18 Feb 2014
B700	SE124604.018	LB052528	04 Feb 2014	07 Feb 2014	04 Mar 2014	15 Feb 2014	04 Mar 2014	18 Feb 2014

Moisture Content

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH701-1	SE124604.001	LB052434	04 Feb 2014	07 Feb 2014	18 Feb 2014	14 Feb 2014	19 Feb 2014	17 Feb 2014
BH702-1	SE124604.002	LB052434	04 Feb 2014	07 Feb 2014	18 Feb 2014	14 Feb 2014	19 Feb 2014	17 Feb 2014
BH703-1	SE124604.003	LB052434	04 Feb 2014	07 Feb 2014	18 Feb 2014	14 Feb 2014	19 Feb 2014	17 Feb 2014
BH704-1	SE124604.004	LB052434	04 Feb 2014	07 Feb 2014	18 Feb 2014	14 Feb 2014	19 Feb 2014	17 Feb 2014
BH704-2	SE124604.005	LB052434	04 Feb 2014	07 Feb 2014	18 Feb 2014	14 Feb 2014	19 Feb 2014	17 Feb 2014
BH704-3	SE124604.006	LB052434	04 Feb 2014	07 Feb 2014	18 Feb 2014	14 Feb 2014	19 Feb 2014	17 Feb 2014
BH705-1	SE124604.007	LB052434	04 Feb 2014	07 Feb 2014	18 Feb 2014	14 Feb 2014	19 Feb 2014	17 Feb 2014
BH706-1	SE124604.008	LB052434	04 Feb 2014	07 Feb 2014	18 Feb 2014	14 Feb 2014	19 Feb 2014	17 Feb 2014
BH707-1	SE124604.009	LB052434	04 Feb 2014	07 Feb 2014	18 Feb 2014	14 Feb 2014	19 Feb 2014	17 Feb 2014
BH707-2	SE124604.010	LB052434	04 Feb 2014	07 Feb 2014	18 Feb 2014	14 Feb 2014	19 Feb 2014	17 Feb 2014
BH707-3	SE124604.011	LB052434	04 Feb 2014	07 Feb 2014	18 Feb 2014	14 Feb 2014	19 Feb 2014	17 Feb 2014
BH708-1	SE124604.012	LB052434	04 Feb 2014	07 Feb 2014	18 Feb 2014	14 Feb 2014	19 Feb 2014	17 Feb 2014
BH708-2	SE124604.013	LB052434	04 Feb 2014	07 Feb 2014	18 Feb 2014	14 Feb 2014	19 Feb 2014	17 Feb 2014
BH708-3	SE124604.014	LB052434	04 Feb 2014	07 Feb 2014	18 Feb 2014	14 Feb 2014	19 Feb 2014	17 Feb 2014
BH708-4	SE124604.015	LB052434	04 Feb 2014	07 Feb 2014	18 Feb 2014	14 Feb 2014	19 Feb 2014	17 Feb 2014
BH709-1	SE124604.016	LB052434	04 Feb 2014	07 Feb 2014	18 Feb 2014	14 Feb 2014	19 Feb 2014	17 Feb 2014
BH709-2	SE124604.017	LB052434	04 Feb 2014	07 Feb 2014	18 Feb 2014	14 Feb 2014	19 Feb 2014	17 Feb 2014
B700	SE124604.018	LB052434	04 Feb 2014	07 Feb 2014	18 Feb 2014	14 Feb 2014	19 Feb 2014	17 Feb 2014
TB4	SE124604.020	LB052434	04 Feb 2014	07 Feb 2014	18 Feb 2014	14 Feb 2014	19 Feb 2014	17 Feb 2014



HOLDING TIME SUMMARY

SE124604 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.

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH701-1	SE124604.001	LB052283	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH702-1	SE124604.002	LB052283	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	14 Feb 2014
BH703-1	SE124604.003	LB052283	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	14 Feb 2014
BH704-1	SE124604.004	LB052283	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	14 Feb 2014
BH704-2	SE124604.005	LB052283	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH704-3	SE124604.006	LB052283	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH705-1	SE124604.007	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH706-1	SE124604.008	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH707-1	SE124604.009	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH707-2	SE124604.010	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH707-3	SE124604.011	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH708-1	SE124604.012	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH708-2	SE124604.013	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH708-3	SE124604.014	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH708-4	SE124604.015	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH709-1	SE124604.016	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH709-2	SE124604.017	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
B700	SE124604.018	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH701-1	SE124604.001	LB052283	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH702-1	SE124604.002	LB052283	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH703-1	SE124604.003	LB052283	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH704-1	SE124604.004	LB052283	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH704-2	SE124604.005	LB052283	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	19 Feb 2014
BH704-3	SE124604.006	LB052283	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	19 Feb 2014
BH705-1	SE124604.007	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH706-1	SE124604.008	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH707-1	SE124604.009	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH707-2	SE124604.010	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	19 Feb 2014
BH707-3	SE124604.011	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	19 Feb 2014
BH708-1	SE124604.012	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH708-2	SE124604.013	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	19 Feb 2014
BH708-3	SE124604.014	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	19 Feb 2014
BH708-4	SE124604.015	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	19 Feb 2014
BH709-1	SE124604.016	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH709-2	SE124604.017	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	19 Feb 2014
B700	SE124604.018	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	19 Feb 2014

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
BH701-1	SE124604.001	LB052283	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH702-1	SE124604.002	LB052283	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH703-1	SE124604.003	LB052283	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH704-1	SE124604.004	LB052283	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH704-2	SE124604.005	LB052283	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH704-3	SE124604.006	LB052283	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	14 Feb 2014
BH705-1	SE124604.007	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH706-1	SE124604.008	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH707-1	SE124604.009	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH707-2	SE124604.010	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH707-3	SE124604.011	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH708-1	SE124604.012	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH708-2	SE124604.013	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH708-3	SE124604.014	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH708-4	SE124604.015	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH709-1	SE124604.016	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH709-2	SE124604.017	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
B700	SE124604.018	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	19 Feb 2014

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.

PCBs in Soil Method: ME-(AU)-[ENV]AN400/AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH701-1	SE124604.001	LB052283	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	14 Feb 2014
BH702-1	SE124604.002	LB052283	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	14 Feb 2014
BH703-1	SE124604.003	LB052283	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	14 Feb 2014
BH704-1	SE124604.004	LB052283	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	14 Feb 2014
BH704-2	SE124604.005	LB052283	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH704-3	SE124604.006	LB052283	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH705-1	SE124604.007	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH706-1	SE124604.008	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH707-1	SE124604.009	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH707-2	SE124604.010	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH707-3	SE124604.011	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH708-1	SE124604.012	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH708-2	SE124604.013	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH708-3	SE124604.014	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH708-4	SE124604.015	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH709-1	SE124604.016	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH709-2	SE124604.017	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
B700	SE124604.018	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014

pH in soil (1:5) Method: ME-(AU)-[ENV]AN101

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH705-1	SE124604.007	LB052522	04 Feb 2014	07 Feb 2014	11 Feb 2014	15 Feb 2014†	16 Feb 2014	15 Feb 2014

Total Phenolics in Soil Method: ME-(AU)-[ENV]AN289

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH704-1	SE124604.004	LB052558	04 Feb 2014	07 Feb 2014	18 Feb 2014	17 Feb 2014	18 Feb 2014	18 Feb 2014
BH704-2	SE124604.005	LB052558	04 Feb 2014	07 Feb 2014	18 Feb 2014	17 Feb 2014	18 Feb 2014	18 Feb 2014
BH704-3	SE124604.006	LB052559	04 Feb 2014	07 Feb 2014	18 Feb 2014	17 Feb 2014	18 Feb 2014	18 Feb 2014
BH707-1	SE124604.009	LB052559	04 Feb 2014	07 Feb 2014	18 Feb 2014	17 Feb 2014	18 Feb 2014	18 Feb 2014
BH707-2	SE124604.010	LB052559	04 Feb 2014	07 Feb 2014	18 Feb 2014	17 Feb 2014	18 Feb 2014	18 Feb 2014
BH707-3	SE124604.011	LB052559	04 Feb 2014	07 Feb 2014	18 Feb 2014	17 Feb 2014	18 Feb 2014	18 Feb 2014
BH708-1	SE124604.012	LB052559	04 Feb 2014	07 Feb 2014	18 Feb 2014	17 Feb 2014	18 Feb 2014	18 Feb 2014
BH708-2	SE124604.013	LB052559	04 Feb 2014	07 Feb 2014	18 Feb 2014	17 Feb 2014	18 Feb 2014	18 Feb 2014
BH708-3	SE124604.014	LB052559	04 Feb 2014	07 Feb 2014	18 Feb 2014	17 Feb 2014	18 Feb 2014	18 Feb 2014
BH708-4	SE124604.015	LB052559	04 Feb 2014	07 Feb 2014	18 Feb 2014	17 Feb 2014	18 Feb 2014	18 Feb 2014
BH709-1	SE124604.016	LB052559	04 Feb 2014	07 Feb 2014	18 Feb 2014	17 Feb 2014	18 Feb 2014	18 Feb 2014

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest Method: ME-(AU)-[ENV]AN040/AN320

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH701-1	SE124604.001	LB052510	04 Feb 2014	07 Feb 2014	03 Aug 2014	15 Feb 2014	03 Aug 2014	18 Feb 2014
BH702-1	SE124604.002	LB052510	04 Feb 2014	07 Feb 2014	03 Aug 2014	15 Feb 2014	03 Aug 2014	18 Feb 2014
BH703-1	SE124604.003	LB052510	04 Feb 2014	07 Feb 2014	03 Aug 2014	15 Feb 2014	03 Aug 2014	18 Feb 2014
BH704-1	SE124604.004	LB052510	04 Feb 2014	07 Feb 2014	03 Aug 2014	15 Feb 2014	03 Aug 2014	18 Feb 2014
BH704-2	SE124604.005	LB052510	04 Feb 2014	07 Feb 2014	03 Aug 2014	15 Feb 2014	03 Aug 2014	18 Feb 2014
BH704-3	SE124604.006	LB052510	04 Feb 2014	07 Feb 2014	03 Aug 2014	15 Feb 2014	03 Aug 2014	18 Feb 2014
BH705-1	SE124604.007	LB052510	04 Feb 2014	07 Feb 2014	03 Aug 2014	15 Feb 2014	03 Aug 2014	18 Feb 2014
BH706-1	SE124604.008	LB052510	04 Feb 2014	07 Feb 2014	03 Aug 2014	15 Feb 2014	03 Aug 2014	18 Feb 2014
BH707-1	SE124604.009	LB052510	04 Feb 2014	07 Feb 2014	03 Aug 2014	15 Feb 2014	03 Aug 2014	18 Feb 2014
BH707-2	SE124604.010	LB052510	04 Feb 2014	07 Feb 2014	03 Aug 2014	15 Feb 2014	03 Aug 2014	18 Feb 2014
BH707-3	SE124604.011	LB052510	04 Feb 2014	07 Feb 2014	03 Aug 2014	15 Feb 2014	03 Aug 2014	18 Feb 2014
BH708-1	SE124604.012	LB052510	04 Feb 2014	07 Feb 2014	03 Aug 2014	15 Feb 2014	03 Aug 2014	18 Feb 2014
BH708-2	SE124604.013	LB052510	04 Feb 2014	07 Feb 2014	03 Aug 2014	15 Feb 2014	03 Aug 2014	18 Feb 2014
BH708-3	SE124604.014	LB052511	04 Feb 2014	07 Feb 2014	03 Aug 2014	15 Feb 2014	03 Aug 2014	18 Feb 2014
BH708-4	SE124604.015	LB052511	04 Feb 2014	07 Feb 2014	03 Aug 2014	15 Feb 2014	03 Aug 2014	18 Feb 2014
BH709-1	SE124604.016	LB052511	04 Feb 2014	07 Feb 2014	03 Aug 2014	15 Feb 2014	03 Aug 2014	18 Feb 2014
BH709-2	SE124604.017	LB052511	04 Feb 2014	07 Feb 2014	03 Aug 2014	15 Feb 2014	03 Aug 2014	18 Feb 2014
B700	SE124604.018	LB052511	04 Feb 2014	07 Feb 2014	03 Aug 2014	15 Feb 2014	03 Aug 2014	18 Feb 2014

Trace Metals (Dissolved) in Water by ICPMS Method: ME-(AU)-[ENV]AN318

Sample Name	Sample No.	QC Ref
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SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

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

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

Trace Metals (Dissolved) in Water by ICPMS (continued)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
RB700	SE124604.019	LB052300	04 Feb 2014	07 Feb 2014	03 Aug 2014	12 Feb 2014	03 Aug 2014	14 Feb 2014

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
BH701-1	SE124604.001	LB052283	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH702-1	SE124604.002	LB052283	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH703-1	SE124604.003	LB052283	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH704-1	SE124604.004	LB052283	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH704-2	SE124604.005	LB052283	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH704-3	SE124604.006	LB052283	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH705-1	SE124604.007	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH706-1	SE124604.008	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH707-1	SE124604.009	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH707-2	SE124604.010	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH707-3	SE124604.011	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH708-1	SE124604.012	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH708-2	SE124604.013	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH708-3	SE124604.014	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH708-4	SE124604.015	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH709-1	SE124604.016	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH709-2	SE124604.017	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
B700	SE124604.018	LB052285	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014

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
RB700	SE124604.019	LB052077	04 Feb 2014	07 Feb 2014	11 Feb 2014	10 Feb 2014	22 Mar 2014	14 Feb 2014

VOC's in Soil

Method: ME-(AU)-[ENV]AN433/AN434

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH701-1	SE124604.001	LB052288	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH702-1	SE124604.002	LB052288	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH703-1	SE124604.003	LB052288	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH704-1	SE124604.004	LB052288	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH704-2	SE124604.005	LB052288	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH704-3	SE124604.006	LB052288	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH705-1	SE124604.007	LB052288	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH706-1	SE124604.008	LB052288	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH707-1	SE124604.009	LB052288	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH707-2	SE124604.010	LB052288	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH707-3	SE124604.011	LB052288	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH708-1	SE124604.012	LB052288	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH708-2	SE124604.013	LB052288	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH708-3	SE124604.014	LB052288	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH708-4	SE124604.015	LB052288	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH709-1	SE124604.016	LB052288	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
BH709-2	SE124604.017	LB052288	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
B700	SE124604.018	LB052288	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014
TB4	SE124604.020	LB052288	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	18 Feb 2014

VOCs in Water

Method: ME-(AU)-[ENV]AN433/AN434

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
RB700	SE124604.019	LB052073	04 Feb 2014	07 Feb 2014	11 Feb 2014	10 Feb 2014	22 Mar 2014	18 Feb 2014

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH701-1	SE124604.001	LB052288	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	19 Feb 2014
BH702-1	SE124604.002	LB052288	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	19 Feb 2014
BH703-1	SE124604.003	LB052288	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	19 Feb 2014
BH704-1	SE124604.004	LB052288	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	19 Feb 2014

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

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

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

Volatile Petroleum Hydrocarbons in Soil (continued)

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH704-2	SE124604.005	LB052288	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	19 Feb 2014
BH704-3	SE124604.006	LB052288	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	19 Feb 2014
BH705-1	SE124604.007	LB052288	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	19 Feb 2014
BH706-1	SE124604.008	LB052288	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	19 Feb 2014
BH707-1	SE124604.009	LB052288	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	19 Feb 2014
BH707-2	SE124604.010	LB052288	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	19 Feb 2014
BH707-3	SE124604.011	LB052288	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	19 Feb 2014
BH708-1	SE124604.012	LB052288	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	19 Feb 2014
BH708-2	SE124604.013	LB052288	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	19 Feb 2014
BH708-3	SE124604.014	LB052288	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	19 Feb 2014
BH708-4	SE124604.015	LB052288	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	19 Feb 2014
BH709-1	SE124604.016	LB052288	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	19 Feb 2014
BH709-2	SE124604.017	LB052288	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	19 Feb 2014
B700	SE124604.018	LB052288	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	19 Feb 2014
TB4	SE124604.020	LB052288	04 Feb 2014	07 Feb 2014	18 Feb 2014	12 Feb 2014	24 Mar 2014	19 Feb 2014

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
RB700	SE124604.019	LB052073	04 Feb 2014	07 Feb 2014	11 Feb 2014	10 Feb 2014	22 Mar 2014	18 Feb 2014

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

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

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH701-1	SE124604.001	%	60 - 130%	116
	BH702-1	SE124604.002	%	60 - 130%	120
	BH703-1	SE124604.003	%	60 - 130%	116
	BH704-1	SE124604.004	%	60 - 130%	116
	BH705-1	SE124604.007	%	60 - 130%	117
	BH706-1	SE124604.008	%	60 - 130%	117
	BH707-1	SE124604.009	%	60 - 130%	128
	BH708-1	SE124604.012	%	60 - 130%	107
	BH709-1	SE124604.016	%	60 - 130%	75

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH701-1	SE124604.001	%	60 - 130%	92
	BH702-1	SE124604.002	%	60 - 130%	96
	BH703-1	SE124604.003	%	60 - 130%	88
	BH704-1	SE124604.004	%	60 - 130%	94
	BH705-1	SE124604.007	%	60 - 130%	90
	BH706-1	SE124604.008	%	60 - 130%	90
	BH707-1	SE124604.009	%	60 - 130%	86
	BH708-1	SE124604.012	%	60 - 130%	88
	BH709-1	SE124604.016	%	60 - 130%	96
d14-p-terphenyl (Surrogate)	BH701-1	SE124604.001	%	60 - 130%	108
	BH702-1	SE124604.002	%	60 - 130%	112
	BH703-1	SE124604.003	%	60 - 130%	104
	BH704-1	SE124604.004	%	60 - 130%	90
	BH705-1	SE124604.007	%	60 - 130%	96
	BH706-1	SE124604.008	%	60 - 130%	88
	BH707-1	SE124604.009	%	60 - 130%	80
	BH708-1	SE124604.012	%	60 - 130%	84
	BH709-1	SE124604.016	%	60 - 130%	96

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH701-1	SE124604.001	%	60 - 130%	92
	BH702-1	SE124604.002	%	60 - 130%	96
	BH703-1	SE124604.003	%	60 - 130%	88
	BH704-1	SE124604.004	%	60 - 130%	94
	BH704-2	SE124604.005	%	60 - 130%	92
	BH704-3	SE124604.006	%	60 - 130%	88
	BH705-1	SE124604.007	%	60 - 130%	90
	BH706-1	SE124604.008	%	60 - 130%	90
	BH707-1	SE124604.009	%	60 - 130%	86
	BH707-2	SE124604.010	%	60 - 130%	88
	BH707-3	SE124604.011	%	60 - 130%	84
	BH708-1	SE124604.012	%	60 - 130%	88
	BH708-2	SE124604.013	%	60 - 130%	84
	BH708-3	SE124604.014	%	60 - 130%	90
	BH708-4	SE124604.015	%	60 - 130%	90
	BH709-1	SE124604.016	%	60 - 130%	96
	BH709-2	SE124604.017	%	60 - 130%	88
d14-p-terphenyl (Surrogate)	BH701-1	SE124604.001	%	60 - 130%	108
	BH702-1	SE124604.002	%	60 - 130%	112
	BH703-1	SE124604.003	%	60 - 130%	104
	BH704-1	SE124604.004	%	60 - 130%	90
	BH704-2	SE124604.005	%	60 - 130%	102
	BH704-3	SE124604.006	%	60 - 130%	94
	BH705-1	SE124604.007	%	60 - 130%	96
	BH706-1	SE124604.008	%	60 - 130%	88
	BH707-1	SE124604.009	%	60 - 130%	80
	BH707-2	SE124604.010	%	60 - 130%	100
	BH707-3	SE124604.011	%	60 - 130%	100
	BH708-1	SE124604.012	%	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 identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d14-p-terphenyl (Surrogate)	BH708-2	SE124604.013	%	60 - 130%	90
	BH708-3	SE124604.014	%	60 - 130%	90
	BH708-4	SE124604.015	%	60 - 130%	102
	BH709-1	SE124604.016	%	60 - 130%	96
	BH709-2	SE124604.017	%	60 - 130%	106
d5-nitrobenzene (Surrogate)	BH701-1	SE124604.001	%	60 - 130%	94
	BH702-1	SE124604.002	%	60 - 130%	96
	BH703-1	SE124604.003	%	60 - 130%	98
	BH704-1	SE124604.004	%	60 - 130%	92
	BH704-2	SE124604.005	%	60 - 130%	90
	BH704-3	SE124604.006	%	60 - 130%	98
	BH705-1	SE124604.007	%	60 - 130%	92
	BH706-1	SE124604.008	%	60 - 130%	94
	BH707-1	SE124604.009	%	60 - 130%	88
	BH707-2	SE124604.010	%	60 - 130%	114
	BH707-3	SE124604.011	%	60 - 130%	102
	BH708-1	SE124604.012	%	60 - 130%	100
	BH708-2	SE124604.013	%	60 - 130%	112
	BH708-3	SE124604.014	%	60 - 130%	118
	BH708-4	SE124604.015	%	60 - 130%	112
	BH709-1	SE124604.016	%	60 - 130%	118
	BH709-2	SE124604.017	%	60 - 130%	110

PCBs in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH701-1	SE124604.001	%	60 - 130%	116
	BH702-1	SE124604.002	%	60 - 130%	120
	BH703-1	SE124604.003	%	60 - 130%	116
	BH704-1	SE124604.004	%	60 - 130%	116
	BH705-1	SE124604.007	%	60 - 130%	117
	BH706-1	SE124604.008	%	60 - 130%	117
	BH707-1	SE124604.009	%	60 - 130%	128
	BH708-1	SE124604.012	%	60 - 130%	107
	BH709-1	SE124604.016	%	60 - 130%	75

VOC's in Soil

Method: ME-(AU)-[ENV]AN433/AN434

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH701-1	SE124604.001	%	60 - 130%	89
	BH702-1	SE124604.002	%	60 - 130%	99
	BH703-1	SE124604.003	%	60 - 130%	89
	BH704-1	SE124604.004	%	60 - 130%	101
	BH704-2	SE124604.005	%	60 - 130%	82
	BH704-3	SE124604.006	%	60 - 130%	106
	BH705-1	SE124604.007	%	60 - 130%	98
	BH706-1	SE124604.008	%	60 - 130%	98
	BH707-1	SE124604.009	%	60 - 130%	108
	BH707-2	SE124604.010	%	60 - 130%	111
	BH707-3	SE124604.011	%	60 - 130%	94
	BH708-1	SE124604.012	%	60 - 130%	86
	BH708-2	SE124604.013	%	60 - 130%	114
	BH708-3	SE124604.014	%	60 - 130%	118
	BH708-4	SE124604.015	%	60 - 130%	102
	BH709-1	SE124604.016	%	60 - 130%	100
	BH709-2	SE124604.017	%	60 - 130%	90
	B700	SE124604.018	%	60 - 130%	95
	TB4	SE124604.020	%	60 - 130%	119
d4-1,2-dichloroethane (Surrogate)	BH701-1	SE124604.001	%	60 - 130%	99
	BH702-1	SE124604.002	%	60 - 130%	112
	BH703-1	SE124604.003	%	60 - 130%	98
	BH704-1	SE124604.004	%	60 - 130%	92
	BH704-2	SE124604.005	%	60 - 130%	95
	BH704-3	SE124604.006	%	60 - 130%	119

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

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

VOC's in Soil (continued)

Method: ME-(AU)-[ENV]AN433/AN434

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d4-1,2-dichloroethane (Surrogate)	BH705-1	SE124604.007	%	60 - 130%	109
	BH706-1	SE124604.008	%	60 - 130%	111
	BH707-1	SE124604.009	%	60 - 130%	121
	BH707-2	SE124604.010	%	60 - 130%	122
	BH707-3	SE124604.011	%	60 - 130%	102
	BH708-1	SE124604.012	%	60 - 130%	95
	BH708-2	SE124604.013	%	60 - 130%	118
	BH708-3	SE124604.014	%	60 - 130%	119
	BH708-4	SE124604.015	%	60 - 130%	114
	BH709-1	SE124604.016	%	60 - 130%	114
	BH709-2	SE124604.017	%	60 - 130%	105
	B700	SE124604.018	%	60 - 130%	115
	TB4	SE124604.020	%	60 - 130%	121
d8-toluene (Surrogate)	BH701-1	SE124604.001	%	60 - 130%	92
	BH702-1	SE124604.002	%	60 - 130%	103
	BH703-1	SE124604.003	%	60 - 130%	92
	BH704-1	SE124604.004	%	60 - 130%	101
	BH704-2	SE124604.005	%	60 - 130%	88
	BH704-3	SE124604.006	%	60 - 130%	109
	BH705-1	SE124604.007	%	60 - 130%	95
	BH706-1	SE124604.008	%	60 - 130%	98
	BH707-1	SE124604.009	%	60 - 130%	109
	BH707-2	SE124604.010	%	60 - 130%	112
	BH707-3	SE124604.011	%	60 - 130%	93
	BH708-1	SE124604.012	%	60 - 130%	84
	BH708-2	SE124604.013	%	60 - 130%	110
	BH708-3	SE124604.014	%	60 - 130%	107
	BH708-4	SE124604.015	%	60 - 130%	96
	BH709-1	SE124604.016	%	60 - 130%	99
	BH709-2	SE124604.017	%	60 - 130%	89
	B700	SE124604.018	%	60 - 130%	98
	TB4	SE124604.020	%	60 - 130%	126
Dibromofluoromethane (Surrogate)	BH701-1	SE124604.001	%	60 - 130%	90
	BH702-1	SE124604.002	%	60 - 130%	96
	BH703-1	SE124604.003	%	60 - 130%	88
	BH704-1	SE124604.004	%	60 - 130%	99
	BH704-2	SE124604.005	%	60 - 130%	86
	BH704-3	SE124604.006	%	60 - 130%	107
	BH705-1	SE124604.007	%	60 - 130%	101
	BH706-1	SE124604.008	%	60 - 130%	100
	BH707-1	SE124604.009	%	60 - 130%	105
	BH707-2	SE124604.010	%	60 - 130%	105
	BH707-3	SE124604.011	%	60 - 130%	93
	BH708-1	SE124604.012	%	60 - 130%	86
	BH708-2	SE124604.013	%	60 - 130%	110
	BH708-3	SE124604.014	%	60 - 130%	116
	BH708-4	SE124604.015	%	60 - 130%	104
	BH709-1	SE124604.016	%	60 - 130%	104
	BH709-2	SE124604.017	%	60 - 130%	95
	B700	SE124604.018	%	60 - 130%	103
	TB4	SE124604.020	%	60 - 130%	112

VOCs in Water

Method: ME-(AU)-[ENV]AN433/AN434

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	RB700	SE124604.019	%	40 - 130%	125
d4-1,2-dichloroethane (Surrogate)	RB700	SE124604.019	%	40 - 130%	115
d8-toluene (Surrogate)	RB700	SE124604.019	%	40 - 130%	88
Dibromofluoromethane (Surrogate)	RB700	SE124604.019	%	40 - 130%	116

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433/AN434/AN410

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

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

Volatile Petroleum Hydrocarbons In Soil (continued)

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH701-1	SE124604.001	%	60 - 130%	89
	BH702-1	SE124604.002	%	60 - 130%	99
	BH703-1	SE124604.003	%	60 - 130%	89
	BH704-1	SE124604.004	%	60 - 130%	91
	BH704-2	SE124604.005	%	60 - 130%	76
	BH704-3	SE124604.006	%	60 - 130%	95
	BH705-1	SE124604.007	%	60 - 130%	98
	BH706-1	SE124604.008	%	60 - 130%	98
	BH707-1	SE124604.009	%	60 - 130%	108
	BH707-2	SE124604.010	%	60 - 130%	114
	BH707-3	SE124604.011	%	60 - 130%	97
	BH708-1	SE124604.012	%	60 - 130%	77
	BH708-2	SE124604.013	%	60 - 130%	105
	BH708-3	SE124604.014	%	60 - 130%	113
	BH708-4	SE124604.015	%	60 - 130%	91
	BH709-1	SE124604.016	%	60 - 130%	88
	BH709-2	SE124604.017	%	60 - 130%	90
	B700	SE124604.018	%	60 - 130%	95
d4-1,2-dichloroethane (Surrogate)	BH701-1	SE124604.001	%	60 - 130%	99
	BH702-1	SE124604.002	%	60 - 130%	112
	BH703-1	SE124604.003	%	60 - 130%	98
	BH704-1	SE124604.004	%	60 - 130%	104
	BH704-2	SE124604.005	%	60 - 130%	89
	BH704-3	SE124604.006	%	60 - 130%	111
	BH705-1	SE124604.007	%	60 - 130%	109
	BH706-1	SE124604.008	%	60 - 130%	111
	BH707-1	SE124604.009	%	60 - 130%	113
	BH707-2	SE124604.010	%	60 - 130%	114
	BH707-3	SE124604.011	%	60 - 130%	127
	BH708-1	SE124604.012	%	60 - 130%	89
	BH708-2	SE124604.013	%	60 - 130%	112
	BH708-3	SE124604.014	%	60 - 130%	127
	BH708-4	SE124604.015	%	60 - 130%	107
	BH709-1	SE124604.016	%	60 - 130%	106
	BH709-2	SE124604.017	%	60 - 130%	105
	B700	SE124604.018	%	60 - 130%	115
d8-toluene (Surrogate)	BH701-1	SE124604.001	%	60 - 130%	92
	BH702-1	SE124604.002	%	60 - 130%	103
	BH703-1	SE124604.003	%	60 - 130%	92
	BH704-1	SE124604.004	%	60 - 130%	94
	BH704-2	SE124604.005	%	60 - 130%	82
	BH704-3	SE124604.006	%	60 - 130%	100
	BH705-1	SE124604.007	%	60 - 130%	95
	BH706-1	SE124604.008	%	60 - 130%	98
	BH707-1	SE124604.009	%	60 - 130%	100
	BH707-2	SE124604.010	%	60 - 130%	103
	BH707-3	SE124604.011	%	60 - 130%	100
	BH708-1	SE124604.012	%	60 - 130%	76
	BH708-2	SE124604.013	%	60 - 130%	100
	BH708-3	SE124604.014	%	60 - 130%	115
	BH708-4	SE124604.015	%	60 - 130%	89
	BH709-1	SE124604.016	%	60 - 130%	91
	BH709-2	SE124604.017	%	60 - 130%	89
	B700	SE124604.018	%	60 - 130%	98
Dibromofluoromethane (Surrogate)	BH701-1	SE124604.001	%	60 - 130%	90
	BH702-1	SE124604.002	%	60 - 130%	96
	BH703-1	SE124604.003	%	60 - 130%	88
	BH704-1	SE124604.004	%	60 - 130%	93
	BH704-2	SE124604.005	%	60 - 130%	80
	BH704-3	SE124604.006	%	60 - 130%	100
	BH705-1	SE124604.007	%	60 - 130%	101

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

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

Volatile Petroleum Hydrocarbons in Soil (continued)

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Dibromofluoromethane (Surrogate)	BH706-1	SE124604.008	%	60 - 130%	100
	BH707-1	SE124604.009	%	60 - 130%	99
	BH707-2	SE124604.010	%	60 - 130%	99
	BH707-3	SE124604.011	%	60 - 130%	74
	BH708-1	SE124604.012	%	60 - 130%	81
	BH708-2	SE124604.013	%	60 - 130%	103
	BH708-3	SE124604.014	%	60 - 130%	122
	BH708-4	SE124604.015	%	60 - 130%	98
	BH709-1	SE124604.016	%	60 - 130%	99
	BH709-2	SE124604.017	%	60 - 130%	95
	B700	SE124604.018	%	60 - 130%	103

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	RB700	SE124604.019	%	60 - 130%	125
d4-1,2-dichloroethane (Surrogate)	RB700	SE124604.019	%	60 - 130%	115
d8-toluene (Surrogate)	RB700	SE124604.019	%	60 - 130%	89
Dibromofluoromethane (Surrogate)	RB700	SE124604.019	%	60 - 130%	116

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

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

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

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

Sample Number	Parameter	Units	LOR
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Mercury (dissolved) in Water

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

Sample Number	Parameter	Units	LOR	Result
LB052579.001	Mercury	mg/L	0.0001	<0.0001

Mercury in Soil

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

Sample Number	Parameter	Units	LOR
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OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number	Parameter	Units	LOR	Result	
LB052283.001	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)	%	-	110	
LB052285.001	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	110

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number		Parameter	Units	LOR	Result
LB052283.001		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)	%	-	96
		d14-p-terphenyl (Surrogate)	%	-	92
LB052285.001	Surrogates	2-fluorobiphenyl (Surrogate)	%	-	94
		d14-p-terphenyl (Surrogate)	%	-	100

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

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

Sample Number	Parameter	Units	LOR	Result
LB052283.001	Naphthalene	mg/kg	0.1	<0.1
	2-methylnaphthalene	mg/kg	0.1	<0.1
	1-methylnaphthalene	mg/kg	0.1	<0.1
	Acenaphthylene	mg/kg	0.1	<0.1
	Acenaphthene	mg/kg	0.1	<0.1
	Fluorene	mg/kg	0.1	<0.1
	Phenanthrene	mg/kg	0.1	<0.1
	Anthracene	mg/kg	0.1	<0.1
	Fluoranthene	mg/kg	0.1	<0.1
	Pyrene	mg/kg	0.1	<0.1
	Benzo(a)anthracene	mg/kg	0.1	<0.1
	Chrysene	mg/kg	0.1	<0.1
	Benzo(a)pyrene	mg/kg	0.1	<0.1
	Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1
	Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1
	Benzo(ghi)perylene	mg/kg	0.1	<0.1
	Total PAH	mg/kg	0.8	<0.8
	Surrogates			
	d5-nitrobenzene (Surrogate)	%	-	122
	2-fluorobiphenyl (Surrogate)	%	-	96
LB052285.001	d14-p-terphenyl (Surrogate)	%	-	92
	d5-nitrobenzene (Surrogate)	%	-	84
	2-fluorobiphenyl (Surrogate)	%	-	90
	d14-p-terphenyl (Surrogate)	%	-	84

PCBs in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number	Parameter	Units	LOR	Result
LB052283.001	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)	%	-	110
LB052285.001	Surrogates			
	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	97

Total Phenolics in Soil

Method: ME-(AU)-[ENV]AN280

Sample Number	Parameter	Units	LOR
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Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

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

Sample Number	Parameter	Units	LOR
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Trace Metals (Dissolved) in Water by ICPMS

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

Sample Number	Parameter	Units	LOR	Result
LB052300.001	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
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Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

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

TRH (Total Recoverable Hydrocarbons) in Soil (continued)

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

Sample Number	Parameter	Units	LOR	Result
LB052283.001	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
LB052077.001	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/AN434

Sample Number	Parameter	Units	LOR	Result
LB052288.001	Surrogates			
	Dibromofluoromethane (Surrogate)	%	-	94
	d4-1,2-dichloroethane (Surrogate)	%	-	119
	d8-toluene (Surrogate)	%	-	118
	Bromofluorobenzene (Surrogate)	%	-	105

VOCs in Water

Method: ME-(AU)-[ENV]AN433/AN434

Sample Number		Parameter	Units	LOR	Result
LB052073.001	Monocyclic Aromatic Hydrocarbons	Benzene	µg/L	0.5	0
		Toluene	µg/L	0.5	0
		Ethylbenzene	µg/L	0.5	0
		m/p-xylene	µg/L	1	0
		o-xylene	µg/L	0.5	0
	Polycyclic VOCs	Naphthalene	µg/L	0.5	0
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	100
		d4-1,2-dichloroethane (Surrogate)	%	-	105
		d8-toluene (Surrogate)	%	-	92
		Bromofluorobenzene (Surrogate)	%	-	84

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Number	Parameter	Units	LOR	Result
LB052288.001	Surrogates			
	Dibromofluoromethane (Surrogate)	%	-	103
	d4-1,2-dichloroethane (Surrogate)	%	-	109
	d8-toluene (Surrogate)	%	-	113

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Number	Parameter	Units	LOR	Result
LB052073.001	Surrogates			
	TRH C6-C9	µg/L	40	<40
	Dibromofluoromethane (Surrogate)	%	-	100
	d4-1,2-dichloroethane (Surrogate)	%	-	105
	d8-toluene (Surrogate)	%	-	92
	Bromofluorobenzene (Surrogate)	%	-	84

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

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

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

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

Mercury in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE124604.004	LB052527.014	Mercury	mg/kg	0.01	0.03	0.0258310660	66	15
SE124604.013	LB052527.024	Mercury	mg/kg	0.01	0.17	0.1789718550	36	5
SE124624.005	LB052528.014	Mercury	mg/kg	0.01	0.04607713780	0.0509433869	51	10
SE124624.014	LB052528.024	Mercury	mg/kg	0.01	0.2101847307	0.2287160770	35	8

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE124604.003	LB052283.017	Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	0	200	0
		Alpha BHC	mg/kg	0.1	<0.1	0	200	0
		Lindane	mg/kg	0.1	<0.1	0	200	0
		Heptachlor	mg/kg	0.1	<0.1	0	200	0
		Aldrin	mg/kg	0.1	<0.1	0	200	0
		Beta BHC	mg/kg	0.1	<0.1	0	200	0
		Delta BHC	mg/kg	0.1	<0.1	0	200	0
		Heptachlor epoxide	mg/kg	0.1	<0.1	0	200	0
		o,p'-DDE	mg/kg	0.1	<0.1	0	200	0
		Alpha Endosulfan	mg/kg	0.2	<0.2	0	200	0
		Gamma Chlordane	mg/kg	0.1	<0.1	0	200	0
		Alpha Chlordane	mg/kg	0.1	<0.1	0	200	0
		trans-Nonachlor	mg/kg	0.1	<0.1	0	200	0
		p,p'-DDE	mg/kg	0.1	<0.1	0	200	0
		Dieldrin	mg/kg	0.2	<0.2	0	200	0
		Endrin	mg/kg	0.2	<0.2	0	200	0
		o,p'-DDD	mg/kg	0.1	<0.1	0	200	0
		o,p'-DDT	mg/kg	0.1	<0.1	0	200	0
		Beta Endosulfan	mg/kg	0.2	<0.2	0	200	0
		p,p'-DDD	mg/kg	0.1	<0.1	0	200	0
		p,p'-DDT	mg/kg	0.1	<0.1	0	200	0
		Endosulfan sulphate	mg/kg	0.1	<0.1	0	200	0
		Endrin Aldehyde	mg/kg	0.1	<0.1	0	200	0
		Methoxychlor	mg/kg	0.1	<0.1	0	200	0
		Endrin Ketone	mg/kg	0.1	<0.1	0	200	0
		Isodrin	mg/kg	0.1	<0.1	0	200	0
		Mirex	mg/kg	0.1	<0.1	0	200	0
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0.119	30	3
SE124604.016	LB052285.014	Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	0	200	0
		Alpha BHC	mg/kg	0.1	<0.1	0	200	0
		Lindane	mg/kg	0.1	<0.1	0	200	0
		Heptachlor	mg/kg	0.1	<0.1	0	200	0
		Aldrin	mg/kg	0.1	<0.1	0	200	0
		Beta BHC	mg/kg	0.1	<0.1	0	200	0
		Delta BHC	mg/kg	0.1	<0.1	0	200	0
		Heptachlor epoxide	mg/kg	0.1	<0.1	0	200	0
		o,p'-DDE	mg/kg	0.1	<0.1	0	200	0
		Alpha Endosulfan	mg/kg	0.2	<0.2	0	200	0
		Gamma Chlordane	mg/kg	0.1	<0.1	0	200	0
		Alpha Chlordane	mg/kg	0.1	<0.1	0	200	0
		trans-Nonachlor	mg/kg	0.1	<0.1	0	200	0
		p,p'-DDE	mg/kg	0.1	<0.1	0	200	0
		Dieldrin	mg/kg	0.2	<0.2	0	200	0
		Endrin	mg/kg	0.2	<0.2	0	200	0
		o,p'-DDD	mg/kg	0.1	<0.1	0	200	0
		o,p'-DDT	mg/kg	0.1	<0.1	0	200	0
		Beta Endosulfan	mg/kg	0.2	<0.2	0	200	0
		p,p'-DDD	mg/kg	0.1	<0.1	0	200	0
		p,p'-DDT	mg/kg	0.1	<0.1	0	200	0
		Endosulfan sulphate	mg/kg	0.1	<0.1	0	200	0
		Endrin Aldehyde	mg/kg	0.1	<0.1	0	200	0
		Methoxychlor	mg/kg	0.1	<0.1	0	200	0
		Endrin Ketone	mg/kg	0.1	<0.1	0	200	0
		Isodrin	mg/kg	0.1	<0.1	0	200	0

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

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

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

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

OC Pesticides in Soil (continued)

Method: ME-(AU)-[ENV]AN400/AN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE124604.016	LB052285.014	Mirex	mg/kg	0.1	<0.1	0	200	0
		Surrogates						
		Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0.078	30	4
SE124676.006	LB052283.027	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
		Surrogates						
		Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	30	4

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE124604.004	LB052283.018	Dichlorvos	mg/kg	0.5	<0.5	0	200	0
		Dimethoate	mg/kg	0.5	<0.5	0	200	0
		Diazinon (Dimpylate)	mg/kg	0.5	<0.5	0	200	0
		Fenitrothion	mg/kg	0.2	<0.2	0	200	0
		Malathion	mg/kg	0.2	<0.2	0	200	0
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	0	200	0
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	0	200	0
		Bromophos Ethyl	mg/kg	0.2	<0.2	0	200	0
		Methidathion	mg/kg	0.5	<0.5	0	200	0
		Ethion	mg/kg	0.2	<0.2	0	200	0
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	0	200	0
		Surrogates						
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.44	30	7
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	11
SE124604.016	LB052285.016	Dichlorvos	mg/kg	0.5	<0.5	0.01	200	0
		Dimethoate	mg/kg	0.5	<0.5	0	200	0
		Diazinon (Dimpylate)	mg/kg	0.5	<0.5	0	200	0
		Fenitrothion	mg/kg	0.2	<0.2	0.02	200	0
		Malathion	mg/kg	0.2	<0.2	0.02	200	0
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	0.01	200	0
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	0	200	0
		Bromophos Ethyl	mg/kg	0.2	<0.2	0.01	200	0
		Methidathion	mg/kg	0.5	<0.5	0.01	200	0
		Ethion	mg/kg	0.2	<0.2	0.01	200	0
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	0.02	200	0
		Surrogates						
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.46	30	4
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.54	30	12
SE124676.006	LB052283.027	Dichlorvos	mg/kg	0.5	<0.5	<0.5	200	0
		Dimethoate	mg/kg	0.5	<0.5	<0.5	200	0

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

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

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

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

OP Pesticides in Soil (continued)

Method: ME-(AU)-[ENV]AN400/AN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE124676.006	LB052283.027	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
		Methodathion	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
		Surrogates						
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	0
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	6

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE124604.004	LB052283.018	Naphthalene	mg/kg	0.1	<0.1	0	200	0
		2-methylnaphthalene	mg/kg	0.1	<0.1	0	200	0
		1-methylnaphthalene	mg/kg	0.1	<0.1	0	200	0
		Acenaphthylene	mg/kg	0.1	<0.1	0	200	0
		Acenaphthene	mg/kg	0.1	<0.1	0	200	0
		Fluorene	mg/kg	0.1	<0.1	0	200	0
		Phenanthrene	mg/kg	0.1	<0.1	0	200	0
		Anthracene	mg/kg	0.1	<0.1	0	200	0
		Fluoranthene	mg/kg	0.1	<0.1	0	200	0
		Pyrene	mg/kg	0.1	<0.1	0	200	0
		Benzo(a)anthracene	mg/kg	0.1	<0.1	0	200	0
		Chrysene	mg/kg	0.1	<0.1	0	200	0
		Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	0	200	0
		Benzo(k)fluoranthene	mg/kg	0.1	<0.1	0	200	0
		Benzo(a)pyrene	mg/kg	0.1	<0.1	0	200	0
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	0	200	0
		Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	0	200	0
		Benzo(ghi)perylene	mg/kg	0.1	<0.1	0	200	0
		Total PAH	mg/kg	0.8	<0.8	0	200	0
		Carcinogenic PAHs (as BaP TEQ)*	TEQ (mg/kg)	0.2	<0.2	0	200	0
		Surrogates						
		d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.48	30	4
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.44	30	7
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	11
SE124604.016	LB052285.016	Naphthalene	mg/kg	0.1	<0.1	0	200	0
		2-methylnaphthalene	mg/kg	0.1	<0.1	0	200	0
		1-methylnaphthalene	mg/kg	0.1	<0.1	0	200	0
		Acenaphthylene	mg/kg	0.1	<0.1	0	200	0
		Acenaphthene	mg/kg	0.1	<0.1	0	200	0
		Fluorene	mg/kg	0.1	<0.1	0	200	0
		Phenanthrene	mg/kg	0.1	<0.1	0	200	0
		Anthracene	mg/kg	0.1	<0.1	0	200	0
		Fluoranthene	mg/kg	0.1	<0.1	0	200	0
		Pyrene	mg/kg	0.1	<0.1	0	200	0
		Benzo(a)anthracene	mg/kg	0.1	<0.1	0	200	0
		Chrysene	mg/kg	0.1	<0.1	0	200	0
		Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	0	200	0
		Benzo(k)fluoranthene	mg/kg	0.1	<0.1	0	200	0
		Benzo(a)pyrene	mg/kg	0.1	<0.1	0	200	0
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	0	200	0
		Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	0	200	0
		Benzo(ghi)perylene	mg/kg	0.1	<0.1	0	200	0
		Total PAH	mg/kg	0.8	<0.8	0	200	0
		Carcinogenic PAHs (as BaP TEQ)*	TEQ	0.2	<0.2	0	200	0
		Surrogates						
		d5-nitrobenzene (Surrogate)	mg/kg	-	0.6	0.54	30	9
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.46	30	4
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.54	30	12
SE124676.006	LB052283.027	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0

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

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

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE124676.006	LB052283.027	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	163	0
		Anthracene	mg/kg	0.1	<0.1	<0.1	200	0
		Fluoranthene	mg/kg	0.1	0.2	0.1	97	13
		Pyrene	mg/kg	0.1	0.2	0.2	95	6
		Benzo(a)anthracene	mg/kg	0.1	0.1	0.1	113	17
		Chrysene	mg/kg	0.1	0.1	<0.1	135	0
		Benzo(b&j)fluoranthene	mg/kg	0.1	0.2	0.2	95	6
		Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
		Benzo(a)pyrene	mg/kg	0.1	0.1	0.1	117	9
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	141	0
		Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
		Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	155	0
		Total PAH	mg/kg	0.8	1.2	1.1	102	8
		Carcinogenic PAHs (as BaP TEQ)*	TEQ (mg/kg)	0.2	<0.2	<0.2	137	0
		Surrogates						
		d5-nitrobenzene (Surrogate)	mg/kg	-	0.6	0.6	30	10
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	0
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	6

PCBs in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE124604.003	LB052283.017	Arochlor 1016	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1221	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1232	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1242	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1248	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1254	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1260	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1262	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1268	mg/kg	0.2	<0.2	0	200	0
		Total PCBs (Arochlors)	mg/kg	1	<1	0	200	0
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0.119	30	3
SE124604.016	LB052285.014	Arochlor 1016	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1221	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1232	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1242	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1248	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1254	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1260	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1262	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1268	mg/kg	0.2	<0.2	0	200	0
		Total PCBs (Arochlors)	mg/kg	1	<1	0	200	0
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0.078	30	4
SE124639.004	LB052285.023	Arochlor 1016	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1221	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1232	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1242	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1248	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1254	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1260	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1262	mg/kg	0.2	<0.2	0	200	0
		Arochlor 1268	mg/kg	0.2	<0.2	0	200	0
		Total PCBs (Arochlors)	mg/kg	1	<1	0	200	0
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0.118	30	3
SE124676.006	LB052283.027	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

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

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

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

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

PCBs in Soil (continued)

Method: ME-(AU)-[ENV]AN400/AN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE124676.006	LB052283.027	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	30	4

pH in soil (1:5)

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE124666.041	LB052522.012	pH	pH Units	-	7.294	7.316	31	0
SE124718.022	LB052522.023	pH	pH Units	-	4.051	4.065	32	0
SE124718.029	LB052522.028	pH	pH Units	-	5.567	5.559	32	0

Total Phenolics in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE124596.033	LB052558.019	Total Phenols	mg/kg	0.1	0.1700473251	0.2417201646	64	35
SE124604.011	LB052559.008	Total Phenols	mg/kg	0.1	<0.1	0	200	0

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE124604.004	LB052510.014	Arsenic, As	mg/kg	3	4	4.4109890922	102	10
		Cadmium, Cd	mg/kg	0.3	<0.3	0.1569435764	200	0
		Chromium, Cr	mg/kg	0.3	20	17.9014254033	33	10
		Copper, Cu	mg/kg	0.5	1.4	1.3351312891	67	1
		Lead, Pb	mg/kg	1	7	7.1280343298	44	2
		Nickel, Ni	mg/kg	0.5	3.1	2.1834071441	49	36
		Zinc, Zn	mg/kg	0.5	49	50.3386970035	34	3
SE124604.013	LB052510.024	Arsenic, As	mg/kg	3	4	4.7239148719	96	7
		Cadmium, Cd	mg/kg	0.3	<0.3	0.2063355862	167	0
		Chromium, Cr	mg/kg	0.3	14	27.5806731003	32	62 @
		Copper, Cu	mg/kg	0.5	15	13.8648942855	34	6
		Lead, Pb	mg/kg	1	110	04.007034535	31	4
		Nickel, Ni	mg/kg	0.5	2.5	2.3379208267	51	7
		Zinc, Zn	mg/kg	0.5	61	59.7306579236	33	2
SE124624.005	LB052511.014	Arsenic, As	mg/kg	3	2.3497914312	1.9122987991	171	21
		Cadmium, Cd	mg/kg	0.3	0.1558113958	0.1672025211	200	0
		Chromium, Cr	mg/kg	0.3	10.1117880352	10.65055966	35	0
		Copper, Cu	mg/kg	0.5	15.1645739513	5.393336231	33	2
		Lead, Pb	mg/kg	1	46.2992403829	4.1793284066	32	5
		Nickel, Ni	mg/kg	0.5	5.6864651162	5.8561434470	39	3
		Zinc, Zn	mg/kg	0.5	32.3325086937	0.9417333188	33	2
SE124624.014	LB052511.024	Arsenic, As	mg/kg	3	3.2943796535	3.8158968076	114	15
		Cadmium, Cd	mg/kg	0.3	0.5531159890	0.6510346946	80	16
		Chromium, Cr	mg/kg	0.3	13.0693146628	3.0771316997	34	0
		Copper, Cu	mg/kg	0.5	49.0681693677	8.927955904	30	18
		Lead, Pb	mg/kg	1	12.0707621203	4.794786461	31	18
		Nickel, Ni	mg/kg	0.5	33.0218541128	3.551284433	32	2
		Zinc, Zn	mg/kg	0.5	41.5744035025	0.605754857	30	2

TRH (Total Recoverable Hydrocarbons) in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE124604.004	LB052283.018	TRH C10-C14	mg/kg	20	<20	0	200	0
		TRH C15-C28	mg/kg	45	<45	0	200	0
		TRH C29-C36	mg/kg	45	<45	0	200	0
		TRH C37-C40	mg/kg	100	<100	0	200	0
		TRH C10-C36 Total	mg/kg	110	<110	0	200	0
		TRH C10-C40 Total	mg/kg	210	<210	0	200	0
	TRH F Bands	TRH >C10-C16 (F2)	mg/kg	25	<25	0	200	0
		TRH >C16-C34 (F3)	mg/kg	90	<90	0	200	0

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

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

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

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

TRH (Total Recoverable Hydrocarbons) in Soil (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE124604.004	LB052283.018	TRH F Bands	TRH >C34-C40 (F4)	mg/kg	120	<120	0	200	0
SE124604.016	LB052285.015		TRH C10-C14	mg/kg	20	<20	0	200	0
			TRH C15-C28	mg/kg	45	<45	0	200	0
			TRH C29-C36	mg/kg	45	<45	0	200	0
			TRH C37-C40	mg/kg	100	<100	0	200	0
			TRH C10-C36 Total	mg/kg	110	<110	0	200	0
			TRH C10-C40 Total	mg/kg	210	<210	0	200	0
		TRH F Bands	TRH >C10-C16 (F2)	mg/kg	25	<25	0	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	0	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	0	200	0
SE124676.006	LB052283.027		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	mg/kg	210	<210	<210	200	0
		TRH F Bands	TRH >C10-C16 (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

VOC's in Soil

Method: ME-(AU)-[ENV]AN433/AN434

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %	
SE124604.010	LB052288.014	Fumigants	2,2-dichloropropane	mg/kg	0.1	<0.1	0	200	0	
			1,2-dichloropropane	mg/kg	0.1	<0.1	0	200	0	
			cis-1,3-dichloropropene	mg/kg	0.1	<0.1	0	200	0	
			trans-1,3-dichloropropene	mg/kg	0.1	<0.1	0	200	0	
			1,2-dibromoethane (EDB)	mg/kg	0.1	<0.1	0	200	0	
		Halogenated	Dichlorodifluoromethane (CFC-12)	mg/kg	1	<1	0	200	0	
			Aliphatics	Chloromethane	mg/kg	1	<1	0	200	0
		Vinyl chloride (Chloroethene)		mg/kg	0.1	<0.1	0	200	0	
		Bromomethane		mg/kg	1	<1	0	200	0	
		Chloroethane		mg/kg	1	<1	0	200	0	
		Trichlorofluoromethane		mg/kg	1	<1	0	200	0	
		Iodomethane		mg/kg	5	<5	0	200	0	
		1,1-dichloroethene		mg/kg	0.1	<0.1	0	200	0	
		Dichloromethane (Methylene chloride)		mg/kg	0.5	<0.5	0	200	0	
		Allyl chloride		mg/kg	0.1	<0.1	0	200	0	
		trans-1,2-dichloroethene		mg/kg	0.1	<0.1	0	200	0	
		1,1-dichloroethane		mg/kg	0.1	<0.1	0	200	0	
		cis-1,2-dichloroethene		mg/kg	0.1	<0.1	0	200	0	
		Bromochloromethane		mg/kg	0.1	<0.1	0	200	0	
		1,2-dichloroethane		mg/kg	0.1	<0.1	0	200	0	
		1,1,1-trichloroethane		mg/kg	0.1	<0.1	0	200	0	
		1,1-dichloropropene		mg/kg	0.1	<0.1	0	200	0	
		Carbon tetrachloride		mg/kg	0.1	<0.1	0	200	0	
		Dibromomethane		mg/kg	0.1	<0.1	0	200	0	
		Trichloroethene (Trichloroethylene -TCE)		mg/kg	0.1	<0.1	0	200	0	
		1,1,2-trichloroethane		mg/kg	0.1	<0.1	0	200	0	
		1,3-dichloropropane		mg/kg	0.1	<0.1	0	200	0	
		Tetrachloroethene (Perchloroethylene,PCE)		mg/kg	0.1	<0.1	0	200	0	
		1,1,1,2-tetrachloroethane		mg/kg	0.1	<0.1	0	200	0	
		cis-1,4-dichloro-2-butene		mg/kg	1	<1	0	200	0	
		1,1,2,2-tetrachloroethane		mg/kg	0.1	<0.1	0	200	0	
		1,2,3-trichloropropane		mg/kg	0.1	<0.1	0	200	0	
		trans-1,4-dichloro-2-butene		mg/kg	1	<1	0	200	0	
		1,2-dibromo-3-chloropropane	mg/kg	0.1	<0.1	0	200	0		
		Hexachlorobutadiene	mg/kg	0.1	<0.1	0	200	0		
		Halogenated	Chlorobenzene	mg/kg	0.1	<0.1	0	200	0	
			Aromatics	Bromobenzene	mg/kg	0.1	<0.1	0	200	0
				2-chlorotoluene	mg/kg	0.1	<0.1	0	200	0
				4-chlorotoluene	mg/kg	0.1	<0.1	0	200	0

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

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

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

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

VOC's in Soil (continued)

Method: ME-(AU)-[ENV]AN433/AN434

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE124604.010	LB052288.014	Halogenated	1,3-dichlorobenzene	mg/kg	0.1	<0.1	0	200	0
		Aromatics	1,4-dichlorobenzene	mg/kg	0.1	<0.1	0	200	0
			1,2-dichlorobenzene	mg/kg	0.1	<0.1	0	200	0
			1,2,4-trichlorobenzene	mg/kg	0.1	<0.1	0	200	0
			1,2,3-trichlorobenzene	mg/kg	0.1	<0.1	0	200	0
		Monocyclic	Benzene	mg/kg	0.1	<0.1	0	200	0
		Aromatic	Toluene	mg/kg	0.1	<0.1	0	200	0
			Ethylbenzene	mg/kg	0.1	0.5	0.52	50	8
			m/p-xylene	mg/kg	0.2	<0.2	0	200	0
			o-xylene	mg/kg	0.1	<0.1	0	200	0
			Styrene (Vinyl benzene)	mg/kg	0.1	<0.1	0	200	0
			Isopropylbenzene (Cumene)	mg/kg	0.1	<0.1	0	200	0
			n-propylbenzene	mg/kg	0.1	<0.1	0	200	0
			1,3,5-trimethylbenzene	mg/kg	0.1	<0.1	0	200	0
			tert-butylbenzene	mg/kg	0.1	<0.1	0	200	0
			1,2,4-trimethylbenzene	mg/kg	0.1	<0.1	0	200	0
			sec-butylbenzene	mg/kg	0.1	<0.1	0	200	0
			p-isopropyltoluene	mg/kg	0.1	<0.1	0	200	0
			n-butylbenzene	mg/kg	0.1	<0.1	0	200	0
		Nitrogenous	Acrylonitrile	mg/kg	0.1	<0.1	0	200	0
		Compounds	2-nitropropane	mg/kg	10	<10	0	200	0
		Oxygenated	Acetone (2-propanone)	mg/kg	10	<10	0	200	0
		Compounds	MtBE (Methyl-tert-butyl ether)	mg/kg	0.1	<0.1	0	200	0
			Vinyl acetate	mg/kg	10	<10	0	200	0
			MEK (2-butanone)	mg/kg	10	<10	0	200	0
			MIBK (4-methyl-2-pentanone)	mg/kg	1	<1	0	200	0
			2-hexanone (MBK)	mg/kg	5	<5	0	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	0	200	0
		Sulphonated	Carbon disulfide	mg/kg	0.5	<0.5	0	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	5.3	4.59	50	14
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	6.1	5.1	50	18
			d8-toluene (Surrogate)	mg/kg	-	5.6	4.82	50	15
			Bromofluorobenzene (Surrogate)	mg/kg	-	5.6	4.75	50	16
		Totals	Total Xylenes*	mg/kg	0.3	<0.3	0	200	0
			Total BTEX*	mg/kg	0.6	<0.6	0.52	150	0
		Trihalomethanes	Chloroform	mg/kg	0.1	<0.1	0	200	0
			Bromodichloromethane	mg/kg	0.1	<0.1	0	200	0
			Chlorodibromomethane	mg/kg	0.1	<0.1	0	200	0
			Bromoform	mg/kg	0.1	<0.1	0	200	0

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %	
SE124604.010	LB052288.014	TRH C6-C10	mg/kg	25	<25	2.85	200	0	
		TRH C6-C9	mg/kg	20	<20	1.15	200	0	
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.9	4.33	30	13
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.7	4.7	30	19
			d8-toluene (Surrogate)	mg/kg	-	5.2	4.49	30	14
			Bromofluorobenzene (Surrogate)	mg/kg	-	5.7	4.78	30	17
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	0	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	2.33	200	0

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

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

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

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB052419.002	Exchangeable Sodium, Na	mg/kg	2	NA	160	80 - 120	105
	Exchangeable Potassium, K	mg/kg	2	NA	330	80 - 120	99
	Exchangeable Calcium, Ca	mg/kg	2	NA	4347	80 - 120	97
	Exchangeable Magnesium, Mg	mg/kg	2	NA	1578	80 - 120	100

Mercury in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB052527.002	Mercury	mg/kg	0.01	NA	0.2	70 - 130	101
LB052528.002	Mercury	mg/kg	0.01	NA	0.2	70 - 130	110

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB052283.002	Heptachlor	mg/kg	0.1	0.3	0.2	60 - 140	130
	Aldrin	mg/kg	0.1	0.3	0.2	60 - 140	135
	Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	120
	Dieldrin	mg/kg	0.2	0.3	0.2	60 - 140	130
	Endrin	mg/kg	0.2	0.3	0.2	60 - 140	135
	p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	120
LB052285.002	Heptachlor	mg/kg	0.1	NA	0.2	60 - 140	135
	Aldrin	mg/kg	0.1	NA	0.2	60 - 140	140
	Delta BHC	mg/kg	0.1	NA	0.2	60 - 140	130
	Dieldrin	mg/kg	0.2	NA	0.2	60 - 140	130
	Endrin	mg/kg	0.2	NA	0.2	60 - 140	140
	p,p'-DDT	mg/kg	0.1	NA	0.2	60 - 140	120

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB052283.003	Dichlorvos	mg/kg	0.5	2.4	2	60 - 140	118
	Diazinon (Dimpylate)	mg/kg	0.5	2.3	2	60 - 140	114
	Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	1.9	2	60 - 140	94
	Ethion	mg/kg	0.2	2.5	2	60 - 140	126
	Surrogates						
LB052285.002	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 140	86
	d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 140	86
	Dichlorvos	mg/kg	0.5	NA	2	60 - 140	89
	Diazinon (Dimpylate)	mg/kg	0.5	NA	2	60 - 140	74
	Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	NA	2	60 - 140	75
	Ethion	mg/kg	0.2	NA	2	60 - 140	85
	Surrogates						
	2-fluorobiphenyl (Surrogate)	mg/kg	-	NA	0.5	40 - 140	92
	d14-p-terphenyl (Surrogate)	mg/kg	-	NA	0.5	40 - 140	100

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB052283.002	Naphthalene	mg/kg	0.1	3.5	4	60 - 140	88
	Acenaphthylene	mg/kg	0.1	4.2	4	60 - 140	106
	Acenaphthene	mg/kg	0.1	3.9	4	60 - 140	97
	Phenanthrene	mg/kg	0.1	3.6	4	60 - 140	91
	Anthracene	mg/kg	0.1	3.9	4	60 - 140	99
	Fluoranthene	mg/kg	0.1	3.8	4	60 - 140	96
	Pyrene	mg/kg	0.1	3.7	4	60 - 140	93
	Benzo(a)pyrene	mg/kg	0.1	4.8	4	60 - 140	121
	Surrogates						
	d5-nitrobenzene (Surrogate)	mg/kg	-	0.6	0.5	60 - 140	122
	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	60 - 140	86
	d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	60 - 140	86
LB052285.002	Naphthalene	mg/kg	0.1	NA	4	60 - 140	83
	Acenaphthylene	mg/kg	0.1	NA	4	60 - 140	81
	Acenaphthene	mg/kg	0.1	NA	4	60 - 140	86
	Phenanthrene	mg/kg	0.1	NA	4	60 - 140	85
	Anthracene	mg/kg	0.1	NA	4	60 - 140	88
	Fluoranthene	mg/kg	0.1	NA	4	60 - 140	91
	Pyrene	mg/kg	0.1	NA	4	60 - 140	93
	Benzo(a)pyrene	mg/kg	0.1	NA	4	60 - 140	100
	Surrogates						
	d5-nitrobenzene (Surrogate)	mg/kg	-	NA	0.5	60 - 140	84

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB052285.002	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	NA	0.5	60 - 140
		d14-p-terphenyl (Surrogate)	mg/kg	-	NA	0.5	60 - 140

PCBs in Soil
Method: ME-(AU)-[ENV]AN400/AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB052283.002	Arochlor 1260	mg/kg	0.2	0.5	0.4	60 - 140	130
LB052285.002	Arochlor 1260	mg/kg	0.2	NA	0.4	60 - 140	135

pH in soil (1:5)
Method: ME-(AU)-[ENV]AN101

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB052522.001	pH	pH Units	-	7.3	7.415	98 - 102	99

Total Phenolics in Soil
Method: ME-(AU)-[ENV]AN289

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB052558.002	Total Phenols	mg/kg	0.1	NA	2.5	70 - 130	84
LB052559.002	Total Phenols	mg/kg	0.1	NA	2.5	70 - 130	93

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest
Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB052510.002	Arsenic, As	mg/kg	3	NA	50	80 - 120	95
	Cadmium, Cd	mg/kg	0.3	NA	50	80 - 120	97
	Chromium, Cr	mg/kg	0.3	NA	50	80 - 120	97
	Copper, Cu	mg/kg	0.5	NA	50	80 - 120	96
	Lead, Pb	mg/kg	1	NA	50	80 - 120	96
	Nickel, Ni	mg/kg	0.5	NA	50	80 - 120	97
	Zinc, Zn	mg/kg	0.5	NA	50	80 - 120	97
LB052511.002	Arsenic, As	mg/kg	3	NA	50	80 - 120	95
	Cadmium, Cd	mg/kg	0.3	NA	50	80 - 120	97
	Chromium, Cr	mg/kg	0.3	NA	50	80 - 120	97
	Copper, Cu	mg/kg	0.5	NA	50	80 - 120	96
	Lead, Pb	mg/kg	1	NA	50	80 - 120	96
	Nickel, Ni	mg/kg	0.5	NA	50	80 - 120	97
	Zinc, Zn	mg/kg	0.5	NA	50	80 - 120	97

Trace Metals (Dissolved) in Water by ICPMS
Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB052300.002	Arsenic, As	µg/L	1	19	20	80 - 120	97
	Cadmium, Cd	µg/L	0.1	20	20	80 - 120	101
	Chromium, Cr	µg/L	1	21	20	80 - 120	103
	Copper, Cu	µg/L	1	20	20	80 - 120	102
	Lead, Pb	µg/L	1	20	20	80 - 120	101
	Nickel, Ni	µg/L	1	21	20	80 - 120	106
	Zinc, Zn	µg/L	5	21	20	80 - 120	104

TRH (Total Recoverable Hydrocarbons) in Soil
Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB052283.002	TRH C10-C14	mg/kg	20	38	40	60 - 140	95
	TRH C15-C28	mg/kg	45	<45	40	60 - 140	95
	TRH C29-C36	mg/kg	45	<45	40	60 - 140	83
	TRH F Bands	mg/kg	25	38	40	60 - 140	95
	TRH >C10-C16 (F2)	mg/kg	25	38	40	60 - 140	95
	TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	93
	TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	85
LB052285.002	TRH C10-C14	mg/kg	20	NA	40	60 - 140	95
	TRH C15-C28	mg/kg	45	NA	40	60 - 140	95
	TRH C29-C36	mg/kg	45	NA	40	60 - 140	88
	TRH F Bands	mg/kg	25	NA	40	60 - 140	95
	TRH >C10-C16 (F2)	mg/kg	25	NA	40	60 - 140	95
	TRH >C16-C34 (F3)	mg/kg	90	NA	40	60 - 140	93
	TRH >C34-C40 (F4)	mg/kg	120	NA	20	60 - 140	85

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB052077.002	TRH C10-C14	µg/L	50	1100	1200	60 - 140	95
	TRH C15-C28	µg/L	200	1100	1200	60 - 140	95
	TRH C29-C36	µg/L	200	1100	1200	60 - 140	95
	TRH F Bands	µg/L	60	1200	1200	60 - 140	96
	TRH >C10-C16 (F2)	µg/L	500	1100	1200	60 - 140	96
	TRH >C34-C40 (F4)	µg/L	500	550	600	60 - 140	92

VOC's in Soil
Method: ME-(AU)-[ENV]AN433/AN434

Sample Number	Parameter		Units	LOR	Result	Expected	Criteria %	Recovery %
LB052288.002	Halogenated	1,1-dichloroethene	mg/kg	0.1	NA	2.56	60 - 140	86
	Aliphatics	1,2-dichloroethane	mg/kg	0.1	NA	2.56	60 - 140	128
		Trichloroethene (Trichloroethylene -TCE)		mg/kg	0.1	NA	2.56	60 - 140
	Halogenated	Chlorobenzene	mg/kg	0.1	NA	2.56	60 - 140	135
	Monocyclic	Benzene	mg/kg	0.1	NA	2.9	60 - 140	68
	Aromatic	Toluene	mg/kg	0.1	NA	2.9	60 - 140	110
		Ethylbenzene	mg/kg	0.1	NA	2.9	60 - 140	118
		m/p-xylene	mg/kg	0.2	NA	5.8	60 - 140	114
		o-xylene	mg/kg	0.1	NA	2.9	60 - 140	130
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	NA	5	60 - 140	108
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	NA	5	60 - 140	94
		d8-toluene (Surrogate)	mg/kg	-	NA	5	60 - 140	101
		Bromofluorobenzene (Surrogate)	mg/kg	-	NA	5	60 - 140	116
	Trihalomethan	Chloroform	mg/kg	0.1	NA	2.56	60 - 140	93

VOCs in Water
Method: ME-(AU)-[ENV]AN433/AN434

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB052073.002	Monocyclic	Benzene	µg/L	0.5	44.48	45.45	60 - 140	98
	Aromatic	Toluene	µg/L	0.5	44.53	45.45	60 - 140	98
		Ethylbenzene	µg/L	0.5	44.25	45.45	60 - 140	97
		m/p-xylene	µg/L	1	89.13	90.9	60 - 140	98
		o-xylene	µg/L	0.5	45.71	45.45	60 - 140	101
	Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.9	5	60 - 140	98
		d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.91	5	60 - 140	98
		d8-toluene (Surrogate)	µg/L	-	4.99	5	60 - 140	100
		Bromofluorobenzene (Surrogate)	µg/L	-	5.1	5	60 - 140	102

Volatile Petroleum Hydrocarbons in Soil
Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %	
LB052288.002	TRH C6-C10	mg/kg	25	NA	24.65	60 - 140	100	
	TRH C6-C9	mg/kg	20	NA	23.2	60 - 140	97	
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	NA	5	60 - 140	101
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	NA	5	60 - 140	116
		d8-toluene (Surrogate)	mg/kg	-	NA	5	60 - 140	103
		Bromofluorobenzene (Surrogate)	mg/kg	-	NA	5	60 - 140	104
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/ka	25	NA	7.25	60 - 140	78

Volatile Petroleum Hydrocarbons in Water
Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %	
LB052073.002	TRH C6-C10	µg/L	50	1100	946.63	60 - 140	114	
	TRH C6-C9	µg/L	40	850	818.71	60 - 140	104	
	Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.9	5	60 - 140	98
		d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.9	5	60 - 140	98
		d8-toluene (Surrogate)	µg/L	-	5.0	5	60 - 140	100
		Bromofluorobenzene (Surrogate)	µg/L	-	5.1	5	60 - 140	102
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	810	639.67	60 - 140	126

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

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

Mercury (dissolved) in Water

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE124599.001	LB052579.004	Mercury	mg/L	0.0001	0.0087	<0.0001	0.008	110

Mercury in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Original	Spike	Recovery%
SE124596.039	LB052527.004	Mercury	mg/kg	0.01	0.00315286291	0.2	94
SE124604.014	LB052528.004	Mercury	mg/kg	0.01	0.01	0.2	106

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE124292.008	LB052283.006	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	0.3	<0.1	0.2	130
		Aldrin	mg/kg	0.1	0.3	<0.1	0.2	130
		Beta BHC	mg/kg	0.1	<0.1	<0.1	-	-
		Delta BHC	mg/kg	0.1	0.2	<0.1	0.2	120
		Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	-	-
		o,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
		Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
		Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
		Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
		trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	-	-
		p,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
		Dieldrin	mg/kg	0.2	0.3	<0.2	0.2	125
		Endrin	mg/kg	0.2	0.3	<0.2	0.2	135
		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	120
		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	-	-
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	-	101

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE124292.008	LB052283.006	Dichlorvos	mg/kg	0.5	2.1	<0.5	2	103
		Dimethoate	mg/kg	0.5	<0.5	<0.5	-	-
		Diazinon (Dimpylate)	mg/kg	0.5	2.0	<0.5	2	100
		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	1.8	<0.2	2	88
		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	2.2	<0.2	2	112
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	-	-
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	0.5	80
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	0.5	88
	Surrogates							

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE124292.008	LB052283.007	Naphthalene	mg/kg	0.1	3.6	<0.1	4	89
		2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE124292.008	LB052283.007	Acenaphthylene	mg/kg	0.1	4.1	<0.1	4	103
		Acenaphthene	mg/kg	0.1	3.3	<0.1	4	84
		Fluorene	mg/kg	0.1	<0.1	<0.1	-	-
		Phenanthrene	mg/kg	0.1	3.4	<0.1	4	85
		Anthracene	mg/kg	0.1	3.5	<0.1	4	88
		Fluoranthene	mg/kg	0.1	3.6	<0.1	4	91
		Pyrene	mg/kg	0.1	3.4	<0.1	4	85
		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	4.5	<0.1	4	112
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	-	-
		Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	-	-
		Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	-	-
		Total PAH	mg/kg	0.8	29	<0.8	-	-
		Carcinogenic PAHs (as BaP TEQ)*	TEQ	0.2	4.5	<0.2	-	-
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.6	-	108
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	-	80
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	-	88
SE124604.011	LB052285.009	Naphthalene	mg/kg	0.1	<0.1	<0.1	4	94
		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	<0.1	<0.1	4	94
		Acenaphthene	mg/kg	0.1	<0.1	<0.1	4	94
		Fluorene	mg/kg	0.1	<0.1	<0.1	-	-
		Phenanthrene	mg/kg	0.1	<0.1	<0.1	4	101
		Anthracene	mg/kg	0.1	<0.1	<0.1	4	104
		Fluoranthene	mg/kg	0.1	<0.1	<0.1	4	113
		Pyrene	mg/kg	0.1	<0.1	<0.1	4	110
		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	<0.1	<0.1	4	101
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	-	-
		Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	-	-
		Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	-	-
		Total PAH	mg/kg	0.8	<0.8	<0.8	-	-
		Carcinogenic PAHs (as BaP TEQ)*	TEQ	0.2	<0.2	<0.2	-	-
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5	-	108
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	-	92
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	-	84

PCBs in Soil

Method: ME-(AU)-[ENV]AN400/AN420

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE124292.013	LB052283.008	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	0.5	<0.2	0.4	133
		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	-	109

Total Phenolics in Soil

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

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

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

Total Phenolics in Soil (continued)

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

QC Sample	Sample Number	Parameter	Units	LOR	Original	Spike	Recovery%
SE124596.030	LB052558.015	Total Phenols	mg/kg	0.1	0.09819143576	2.5	82
SE124624.009	LB052559.021	Total Phenols	mg/kg	0.1	0.00533333333	2.5	89

Total Recoverable Metals in Soil by ICPOES from EPA 200.8 Digest

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

QC Sample	Sample Number	Parameter	Units	LOR	Original	Spike	Recovery%
SE124596.039	LB052510.004	Arsenic, As	mg/kg	3	1.88519197331	50	86
		Cadmium, Cd	mg/kg	0.3	0.07086984536	50	90
		Chromium, Cr	mg/kg	0.3	14.2521642085	50	97
		Copper, Cu	mg/kg	0.5	0.66279811818	50	93
		Lead, Pb	mg/kg	1	4.12385007152	50	88
		Nickel, Ni	mg/kg	0.5	1.93048959823	50	91
		Zinc, Zn	mg/kg	0.5	2.34273834040	50	92
SE124604.014	LB052511.004	Arsenic, As	mg/kg	3	5	50	92
		Cadmium, Cd	mg/kg	0.3	<0.3	50	95
		Chromium, Cr	mg/kg	0.3	25	50	94
		Copper, Cu	mg/kg	0.5	0.5	50	98
		Lead, Pb	mg/kg	1	21	50	94
		Nickel, Ni	mg/kg	0.5	1.1	50	95
		Zinc, Zn	mg/kg	0.5	2.6	50	97

TRH (Total Recoverable Hydrocarbons) in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE124292.001	LB052283.004	TRH C10-C14	mg/kg	20	47	<20	40	118
		TRH C15-C28	mg/kg	45	<45	<45	40	103
		TRH C29-C36	mg/kg	45	<45	<45	40	80
		TRH C37-C40	mg/kg	100	<100	<100	-	-
		TRH C10-C36 Total	mg/kg	110	120	<110	-	-
		TRH C10-C40 Total	mg/kg	210	<210	<210	-	-
		TRH F Bands	mg/kg	25	44	<25	40	110
		TRH >C16-C34 (F3)	mg/kg	90	<90	<90	40	90
		TRH >C34-C40 (F4)	mg/kg	120	<120	<120	-	-

VOC's in Soil

Method: ME-(AU)-[ENV]AN433/AN434

QC Sample	Sample Number		Parameter	Units	LOR	Original	Spike	Recovery%
SE124604.001	LB052288.004	Monocyclic	Benzene	mg/kg	0.1	<0.1	2.9	80
			Aromatic	Toluene	mg/kg	0.1	<0.1	2.9
			Ethylbenzene	mg/kg	0.1	<0.1	2.9	96
			m/p-xylene	mg/kg	0.2	<0.2	5.8	98
			o-xylene	mg/kg	0.1	<0.1	2.9	97
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	-	-
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.5	5	82
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.0	5	88
			d8-toluene (Surrogate)	mg/kg	-	4.6	5	113
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.5	5	111
		Totals	Total Xylenes*	mg/kg	0.3	<0.3	-	-
			Total BTEX*	mg/kg	0.6	<0.6	-	-

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433/AN434/AN410

QC Sample	Sample Number	Parameter	Units	LOR	Original	Spike	Recovery%	
SE124604.001	LB052288.004	TRH C6-C10	mg/kg	25	<25	24.65	99	
		TRH C6-C9	mg/kg	20	<20	23.2	97	
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.5	5	82
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.0	5	88	
		d8-toluene (Surrogate)	mg/kg	-	4.6	5	113	
		Bromofluorobenzene (Surrogate)	mg/kg	-	4.5	5	111	
		VPH F	Benzene (F0)	mg/kg	0.1	<0.1	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	7.25	108

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

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

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

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

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

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

QC Sample	Sample Number	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE124292.008	LB052283.007	Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	-
		Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	-
		Lindane	mg/kg	0.1	<0.1	<0.1	200	-
		Heptachlor	mg/kg	0.1	0.3	0.1	80	60
		Aldrin	mg/kg	0.1	0.3	0.2	79	54
		Beta BHC	mg/kg	0.1	<0.1	<0.1	200	-
		Delta BHC	mg/kg	0.1	0.2	0.1	84	59
		Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	-
		o,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	-
		Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	200	-
		Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	-
		Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	-
		trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	-
		p,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	-
		Dieldrin	mg/kg	0.2	0.3	<0.2	81	56
		Endrin	mg/kg	0.2	0.3	<0.2	78	57
		o,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	-
		o,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	-
		Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	-
		p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	-
		p,p'-DDT	mg/kg	0.1	0.2	0.1	84	59
		Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	-
		Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	200	-
		Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	-
		Endrin Ketone	mg/kg	0.1	<0.1	<0.1	200	-
		Isodrin	mg/kg	0.1	<0.1	<0.1	200	-
		Mirex	mg/kg	0.1	<0.1	<0.1	200	-
Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	30	16	

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

QC Sample	Sample Number	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE124292.008	LB052283.007	Dichlorvos	mg/kg	0.5	2.1	1.9	55	9
		Dimethoate	mg/kg	0.5	<0.5	<0.5	200	-
		Diazinon (Dimpylate)	mg/kg	0.5	2.0	1.9	55	4
		Fenitrothion	mg/kg	0.2	<0.2	<0.2	200	-
		Malathion	mg/kg	0.2	<0.2	<0.2	200	-
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	1.8	1.8	142	3
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	200	-
		Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	200	-
		Methidathion	mg/kg	0.5	<0.5	<0.5	200	-
		Ethion	mg/kg	0.2	2.2	2.1	39	6
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	200	-
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	30
		d14-o-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	30	9

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR
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Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: $RPD = | \text{OriginalResult} - \text{ReplicateResult} | \times 100 / \text{Mean}$

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

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

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

QC Sample	Sample Number	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE124292.008	LB052283.008	Naphthalene	mg/kg	0.1	3.6	3.4	33	5
		2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	-
		1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	-
		Acenaphthylene	mg/kg	0.1	4.1	4.0	32	2
		Acenaphthene	mg/kg	0.1	3.3	3.2	33	3
		Fluorene	mg/kg	0.1	<0.1	<0.1	200	-
		Phenanthrene	mg/kg	0.1	3.4	3.5	33	4
		Anthracene	mg/kg	0.1	3.5	3.8	33	7
		Fluoranthene	mg/kg	0.1	3.6	4.1	33	11
		Pyrene	mg/kg	0.1	3.4	3.8	33	11
		Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	200	-
		Chrysene	mg/kg	0.1	<0.1	<0.1	200	-
		Benzo(b&i)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	-
		Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	-
		Benzo(a)pyrene	mg/kg	0.1	4.5	4.5	32	0
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	200	-
		Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	200	-
		Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	200	-
		Total PAH	mg/kg	0.8	29	30	33	-
		Carcinogenic PAHs (as BaP TEQ)*	TEQ	0.2	4.5	4.5	14	-
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.6	30	7
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	5
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	30	9
SE124604.011	LB052285.010	Naphthalene	mg/kg	0.1	-	-	33	3
		2-methylnaphthalene	mg/kg	0.1	-	-	200	-
		1-methylnaphthalene	mg/kg	0.1	-	-	200	-
		Acenaphthylene	mg/kg	0.1	-	-	33	3
		Acenaphthene	mg/kg	0.1	-	-	33	5
		Fluorene	mg/kg	0.1	-	-	200	-
		Phenanthrene	mg/kg	0.1	-	-	32	16
		Anthracene	mg/kg	0.1	-	-	32	14
		Fluoranthene	mg/kg	0.1	-	-	32	8
		Pyrene	mg/kg	0.1	-	-	32	8
		Benzo(a)anthracene	mg/kg	0.1	-	-	200	-
		Chrysene	mg/kg	0.1	-	-	200	-
		Benzo(b&i)fluoranthene	mg/kg	0.1	-	-	200	-
		Benzo(k)fluoranthene	mg/kg	0.1	-	-	200	-
		Benzo(a)pyrene	mg/kg	0.1	-	-	32	5
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	-	-	200	-
		Dibenzo(a&h)anthracene	mg/kg	0.1	-	-	200	-
		Benzo(ghi)perylene	mg/kg	0.1	-	-	200	-
		Total PAH	mg/kg	0.8	-	-	32	-
		Carcinogenic PAHs (as BaP TEQ)*	TEQ	0.2	-	-	15	-
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	-	-	30	5
		2-fluorobiphenyl (Surrogate)	mg/kg	-	-	-	30	4
		d14-p-terphenyl (Surrogate)	mg/kg	-	-	-	30	21

PCBs in Soil

Method: ME-(AU)-[ENV]AN400/AN420

QC Sample	Sample Number	Parameter	Units	LOR
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Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: $RPD = | \text{OriginalResult} - \text{ReplicateResult} | \times 100 / \text{Mean}$

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

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

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

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

PCBs in Soil (continued)

Method: ME-(AU)-[ENV]AN400/AN420

QC Sample	Sample Number	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE124292.013	LB052283.009	Arochlor 1016	mg/kg	0.2	<0.2	<0.2	200	-
		Arochlor 1221	mg/kg	0.2	<0.2	<0.2	200	-
		Arochlor 1232	mg/kg	0.2	<0.2	<0.2	200	-
		Arochlor 1242	mg/kg	0.2	<0.2	<0.2	200	-
		Arochlor 1248	mg/kg	0.2	<0.2	<0.2	200	-
		Arochlor 1254	mg/kg	0.2	<0.2	<0.2	200	-
		Arochlor 1260	mg/kg	0.2	0.5	0.5	68	4
		Arochlor 1262	mg/kg	0.2	<0.2	<0.2	200	-
		Arochlor 1268	mg/kg	0.2	<0.2	<0.2	200	-
		Total PCBs (Arochlors)	mg/kg	1	<1	<1	200	-
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	30	4

TRH (Total Recoverable Hydrocarbons) in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE124292.001	LB052283.005	TRH C10-C14	mg/kg	20	47	43	74	9
		TRH C15-C28	mg/kg	45	<45	<45	144	8
		TRH C29-C36	mg/kg	45	<45	<45	178	10
		TRH C37-C40	mg/kg	100	<100	<100	200	-
		TRH C10-C36 Total	mg/kg	110	120	110	126	-
		TRH C10-C40 Total	mg/kg	210	<210	<210	200	-
		TRH F Bands	mg/kg	25	44	41	89	7
		TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	9
		TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	-
SE124604.007	LB052285.005	TRH C10-C14	mg/kg	20	-	-	-	-
		TRH C15-C28	mg/kg	45	-	-	-	-
		TRH C29-C36	mg/kg	45	-	-	-	-
		TRH C37-C40	mg/kg	100	-	-	-	-
		TRH C10-C36 Total	mg/kg	110	-	-	-	-
		TRH C10-C40 Total	mg/kg	210	-	-	-	-
		TRH F Bands	mg/kg	25	-	-	-	-
		TRH >C16-C34 (F3)	mg/kg	90	-	-	-	-
		TRH >C34-C40 (F4)	mg/kg	120	-	-	-	-

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.au.sgs.com/sgs-mp-au-env-qu-022-qa-qc-plan-en-11.pdf>

- * Non-accredited analysis.
- Sample not analysed for this analyte.
- ^ Analysis performed by external laboratory.

- 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.
- † Refer to Analytical Report comments for further information.

This document is issued, on the Client's behalf, by the Company under its General Conditions of Service, available on request and accessible at <http://www.sgs.com/en/Terms-and-Conditions/General-Conditions-of-Services-English.aspx>. The Client's attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any other holder of this document is advised that information contained herein reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents.

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CERTIFICATE OF ANALYSIS

104655

Client:

Environmental Investigations

17/1A Coulson St
Erskineville
NSW 2043

Attention: Earin Short

Sample log in details:

Your Reference:

E2009AC, Meadowbank

No. of samples:

1 Soil

Date samples received / completed instructions received

06/02/14 / 06/02/14

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.

Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by: / Issue Date:

13/02/14 / 13/02/14

Date of Preliminary Report:

Not issued

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Accredited for compliance with ISO/IEC 17025.

Tests not covered by NATA are denoted with *.

Results Approved By:



Jacinta Hurst
Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil		
Our Reference:	UNITS	104655-1
Your Reference	-----	I700
Date Sampled	-----	04/02/2014
Type of sample		Soil
Date extracted	-	07/02/2014
Date analysed	-	08/02/2014
TRHC ₆ - C ₉	mg/kg	<25
TRHC ₆ - C ₁₀	mg/kg	<25
vTPHC 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
Surrogate aaa-Trifluorotoluene	%	114

svTRH (C10-C40) in Soil		
Our Reference:	UNITS	104655-1
Your Reference	-----	I700
Date Sampled	-----	04/02/2014
Type of sample		Soil
Date extracted	-	07/02/2014
Date analysed	-	10/02/2014
TRHC ₁₀ - C ₁₄	mg/kg	<50
TRHC ₁₅ - C ₂₈	mg/kg	<100
TRHC 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	130
TRH>C ₃₄ -C ₄₀	mg/kg	<100
Surrogate o-Terphenyl	%	89

Acid Extractable metals in soil		
Our Reference:	UNITS	104655-1
Your Reference	-----	I700
Date Sampled	-----	04/02/2014
Type of sample		Soil
Date digested	-	10/02/2014
Date analysed	-	10/02/2014
Arsenic	mg/kg	<4
Cadmium	mg/kg	<0.4
Chromium	mg/kg	11
Copper	mg/kg	38
Lead	mg/kg	24
Mercury	mg/kg	0.3
Nickel	mg/kg	29
Zinc	mg/kg	61

Moisture		
Our Reference:	UNITS	104655-1
Your Reference	-----	I700
Date Sampled	-----	04/02/2014
Type of sample		Soil
Date prepared	-	7/02/2014
Date analysed	-	10/02/2014
Moisture	%	8.4

MethodID	Methodology Summary
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-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-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. Note Naphthalene is determined from the VOC analysis.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Inorg-008	Moisture content determined by heating at 105+/-5 deg C for a minimum of 12 hours.

Client Reference: E2009AC, Meadowbank

QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
vTRH(C6-C10)/BTEXN in Soil						Base II Duplicate II %RPD		
Date extracted	-			07/02/2014	[NT]	[NT]	LCS-2	07/02/2014
Date analysed	-			08/02/2014	[NT]	[NT]	LCS-2	08/02/2014
TRHC ₆ - C ₉	mg/kg	25	Org-016	<25	[NT]	[NT]	LCS-2	98%
TRHC ₆ - C ₁₀	mg/kg	25	Org-016	<25	[NT]	[NT]	LCS-2	98%
Benzene	mg/kg	0.2	Org-016	<0.2	[NT]	[NT]	LCS-2	108%
Toluene	mg/kg	0.5	Org-016	<0.5	[NT]	[NT]	LCS-2	102%
Ethylbenzene	mg/kg	1	Org-016	<1	[NT]	[NT]	LCS-2	91%
m+p-xylene	mg/kg	2	Org-016	<2	[NT]	[NT]	LCS-2	94%
o-Xylene	mg/kg	1	Org-016	<1	[NT]	[NT]	LCS-2	93%
naphthalene	mg/kg	1	Org-014	<1	[NT]	[NT]	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		Org-016	125	[NT]	[NT]	LCS-2	124%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
svTRH (C10-C40) in Soil						Base II Duplicate II %RPD		
Date extracted	-			07/02/2014	[NT]	[NT]	LCS-2	07/02/2014
Date analysed	-			10/02/2014	[NT]	[NT]	LCS-2	10/02/2014
TRHC ₁₀ - C ₁₄	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS-2	88%
TRHC ₁₅ - C ₂₈	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-2	116%
TRHC ₂₈ - C ₃₆	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-2	114%
TRH>C ₁₀ -C ₁₆	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS-2	88%
TRH>C ₁₆ -C ₃₄	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-2	116%
TRH>C ₃₄ -C ₄₀	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-2	114%
Surrogate o-Terphenyl	%		Org-003	100	[NT]	[NT]	LCS-2	96%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Acid Extractable metals in soil						Base II Duplicate II %RPD		
Date digested	-			10/02/2014	[NT]	[NT]	LCS-6	10/02/2014
Date analysed	-			10/02/2014	[NT]	[NT]	LCS-6	10/02/2014
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	[NT]	[NT]	LCS-6	98%
Cadmium	mg/kg	0.4	Metals-020 ICP-AES	<0.4	[NT]	[NT]	LCS-6	105%
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-6	102%
Copper	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-6	103%
Lead	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-6	99%
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	[NT]	[NT]	LCS-6	118%

Client Reference: E2009AC, Meadowbank

QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Acid Extractable metals in soil						Base II Duplicate II %RPD		
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-6	101%
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-6	101%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank				
Moisture								
Date prepared	-			[NT]				
Date analysed	-			[NT]				
Moisture	%	0.1	Inorg-008	[NT]				

Report Comments:

Asbestos ID was analysed by Approved Identifier: Not applicable for this job
 Asbestos ID was authorised by Approved Signatory: Not applicable for this job

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NA: Test not required	RPD: Relative Percent Difference	NA: Test not required
<: Less than	>: Greater than	LCS: Laboratory Control Sample

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.

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC 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.

CLIENT DETAILS

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Project **E2009AC - Stage A Shephards Bay - Medowb**
Order Number (Not specified)
Samples 2
Date Received 26/2/2014

LABORATORY DETAILS

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SGS Reference **SE125276 R0**
Report Number 0000077181
Date Reported 6/3/2014

COMMENTS

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

SIGNATORIES




Andy Sutton
Senior Organic Chemist



Dong Liang
Metals/Inorganics Team Leader



Huong Crawford
Production Manager



Ly Kim Ha
Organic Section Head



ANALYTICAL RESULTS

SE125276 R0

VOCs in Water [AN433/AN434]

VOCs in Water [AN433/AN434] (continued)

PARAMETER	UOM	LOR	GWB-3	GW112
			WATER 26/2/2014 SE125276.001	WATER 26/2/2014 SE125276.002
Benzene	µg/L	0.50	<0.5	<0.5
Toluene	µg/L	0.50	<0.5	<0.5
Ethylbenzene	µg/L	0.50	<0.5	<0.5
m/p-xylene	µg/L	1.0	<1	<1
o-xylene	µg/L	0.50	<0.5	<0.5
Total Xylenes	µg/L	1.50	<1.5	<1.5
Total BTEX	µg/L	3.0	<3	<3
Naphthalene	µg/L	0.50	<0.5	<0.5
Dichlorodifluoromethane (CFC-12)	µg/L	5.0	<5	-
Chloromethane	µg/L	5.0	<5	-
Vinyl chloride (Chloroethene)	µg/L	0.30	<0.3	-
Bromomethane	µg/L	10	<10	-
Chloroethane	µg/L	5.0	<5	-
Trichlorofluoromethane	µg/L	1.0	<1	-
Acetone (2-propanone)	µg/L	10	43	-
Iodomethane	µg/L	5.0	<5	-
1,1-dichloroethene	µg/L	0.50	<0.5	-
Acrylonitrile	µg/L	0.50	<0.5	-
Dichloromethane (Methylene chloride)	µg/L	5.0	<5	-
Allyl chloride	µg/L	2.0	<2	-
Carbon disulfide	µg/L	2.0	<2	-
trans-1,2-dichloroethene	µg/L	0.50	<0.5	-
MtBE (Methyl-tert-butyl ether)	µg/L	2.0	<2	-
1,1-dichloroethane	µg/L	0.50	<0.5	-
Vinyl acetate	µg/L	10	<10	-
MEK (2-butanone)	µg/L	10	<10	-
cis-1,2-dichloroethene	µg/L	0.50	<0.5	-
Bromochloromethane	µg/L	0.50	<0.5	-
Chloroform (THM)	µg/L	0.50	<0.5	-
2,2-dichloropropane	µg/L	0.50	<0.5	-
1,2-dichloroethane	µg/L	0.50	<0.5	-
1,1,1-trichloroethane	µg/L	0.50	<0.5	-
1,1-dichloropropene	µg/L	0.50	<0.5	-
Carbon tetrachloride	µg/L	0.50	<0.5	-
Dibromomethane	µg/L	0.50	<0.5	-
1,2-dichloropropane	µg/L	0.50	<0.5	-
Trichloroethene	µg/L	0.50	<0.5	-
2-nitropropane	µg/L	100	<100	-
Bromodichloromethane (THM)	µg/L	0.50	<0.5	-
MIBK (4-methyl-2-pentanone)	µg/L	5.0	<5	-
cis-1,3-dichloropropene	µg/L	0.50	<0.5	-
trans-1,3-dichloropropene	µg/L	0.50	<0.5	-
1,1,2-trichloroethane	µg/L	0.50	<0.5	-
1,3-dichloropropane	µg/L	0.50	<0.5	-
Dibromochloromethane (THM)	µg/L	0.50	<0.5	-
2-hexanone (MBK)	µg/L	5.0	<5	-
1,2-dibromoethane (EDB)	µg/L	0.50	<0.5	-
Tetrachloroethene	µg/L	0.50	<0.5	-
1,1,1,2-tetrachloroethane	µg/L	0.50	<0.5	-
Chlorobenzene	µg/L	0.50	<0.5	-
Bromoform (THM)	µg/L	0.50	<0.5	-
cis-1,4-dichloro-2-butene	µg/L	1.0	<1	-
Styrene (Vinyl benzene)	µg/L	0.50	<0.5	-
1,1,2,2-tetrachloroethane	µg/L	0.50	<0.5	-
1,2,3-trichloropropane	µg/L	0.50	<0.5	-
trans-1,4-dichloro-2-butene	µg/L	1.0	<1	-
Isopropylbenzene (Cumene)	µg/L	0.50	<0.5	-
Bromobenzene	µg/L	0.50	<0.5	-
n-propylbenzene	µg/L	0.50	<0.5	-

VOCs in Water [AN433/AN434] (continued)

PARAMETER	UOM	LOR	GWB-3	GW112
			WATER 26/2/2014 SE125276.001	WATER 26/2/2014 SE125276.002
2-chlorotoluene	µg/L	0.50	<0.5	-
4-chlorotoluene	µg/L	0.50	<0.5	-
1,3,5-trimethylbenzene	µg/L	0.50	<0.5	-
tert-butylbenzene	µg/L	0.50	<0.5	-
1,2,4-trimethylbenzene	µg/L	0.50	<0.5	-
sec-butylbenzene	µg/L	0.50	<0.5	-
1,3-dichlorobenzene	µg/L	0.50	<0.5	-
1,4-dichlorobenzene	µg/L	0.30	<0.3	-
p-isopropyltoluene	µg/L	0.50	<0.5	-
1,2-dichlorobenzene	µg/L	0.50	<0.5	-
n-butylbenzene	µg/L	0.50	<0.5	-
1,2-dibromo-3-chloropropane	µg/L	0.50	<0.5	-
1,2,4-trichlorobenzene	µg/L	0.50	<0.5	-
Hexachlorobutadiene	µg/L	0.50	<0.5	-
1,2,3-trichlorobenzene	µg/L	0.50	<0.5	-
Total VOC	µg/L	10	-	-



ANALYTICAL RESULTS

SE125276 R0

Volatile Petroleum Hydrocarbons in Water [AN433/AN434/AN410]

PARAMETER	UOM	LOR	GWB-3	GW112
			WATER 26/2/2014 SE125276.001	WATER 26/2/2014 SE125276.002
TRH C6-C9	µg/L	40	<40	<40
Benzene (F0)	µg/L	0.50	<0.5	<0.5
TRH C6-C10	µg/L	50	<50	<50
TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	<50



ANALYTICAL RESULTS

SE125276 R0

TRH (Total Recoverable Hydrocarbons) in Water [AN403]

PARAMETER	UOM	LOR	GWB-3	GW112
			WATER 26/2/2014 SE125276.001	WATER 26/2/2014 SE125276.002
TRH C10-C14	µg/L	50	<50	<50
TRH C15-C28	µg/L	200	<200	<200
TRH C29-C36	µg/L	200	<200	<200
TRH C37-C40	µg/L	200	<200	<200
TRH >C10-C16 (F2)	µg/L	60	<60	<60
TRH >C16-C34 (F3)	µg/L	500	<500	<500
TRH >C34-C40 (F4)	µg/L	500	<500	<500
TRH C10-C36	µg/L	450	<450	<450
TRH C10-C40	µg/L	650	<650	<650

PAH (Polynuclear Aromatic Hydrocarbons) in Water [AN420]

			GWB-3
			WATER
			26/2/2014
			SE125276.001
PARAMETER	UOM	LOR	
Naphthalene	µg/L	0.10	<0.1
2-methylnaphthalene	µg/L	0.10	<0.1
1-methylnaphthalene	µg/L	0.10	<0.1
Acenaphthylene	µg/L	0.10	<0.1
Acenaphthene	µg/L	0.10	<0.1
Fluorene	µg/L	0.10	<0.1
Phenanthrene	µg/L	0.10	0.1
Anthracene	µg/L	0.10	<0.1
Fluoranthene	µg/L	0.10	0.1
Pyrene	µg/L	0.10	<0.1
Benzo(a)anthracene	µg/L	0.10	<0.1
Chrysene	µg/L	0.10	<0.1
Benzo(b&j)fluoranthene	µg/L	0.10	<0.1
Benzo(k)fluoranthene	µg/L	0.10	<0.1
Benzo(a)pyrene	µg/L	0.10	<0.1
Indeno(1,2,3-cd)pyrene	µg/L	0.10	<0.1
Dibenzo(a&h)anthracene	µg/L	0.10	<0.1
Benzo(ghi)perylene	µg/L	0.10	<0.1
Total PAH (18)	µg/L	1.0	<1



ANALYTICAL RESULTS

SE125276 R0

Total Phenolics in Water [AN289]

			GWB-3
			WATER
			26/2/2014
PARAMETER	UOM	LOR	SE125276.001
Total Phenols	mg/L	0.010	<0.01

Trace Metals (Dissolved) in Water by ICPMS [AN318]

PARAMETER	UOM	LOR	GWB-3	GW112
			WATER 26/2/2014 SE125276.001	WATER 26/2/2014 SE125276.002
Arsenic, As	µg/L	1.0	<1	<1
Cadmium, Cd	µg/L	0.10	<0.1	<0.1
Chromium, Cr	µg/L	1.0	<1	<1
Copper, Cu	µg/L	1.0	7	8
Lead, Pb	µg/L	1.0	<1	<1
Nickel, Ni	µg/L	1.0	4	12
Zinc, Zn	µg/L	5.0	31	33



ANALYTICAL RESULTS

SE125276 R0

Mercury (dissolved) in Water [AN311/AN312]

			GWB-3	GW112
			WATER	WATER
			26/2/2014	26/2/2014
			SE125276.001	SE125276.002
PARAMETER	UOM	LOR		
Mercury	mg/L	0.00010	<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.
AN083	Separatory funnels are used for aqueous samples and extracted by transferring an appropriate volume (mass) of liquid into a separatory funnel and adding 3 serial aliquots of dichloromethane. Samples receive a single extraction at pH 7 to recover base / neutral analytes and two extractions at pH < 2 to recover acidic analytes. QC samples are prepared by spiking organic free water with target analytes and extracting as per samples.
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/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 Draft NEPM 2011, >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is not corrected for Naphthalene.
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/AN434	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.
AN433/AN434/AN410	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

*	Analysis not covered by the scope of accreditation.	-	Not analysed.	UOM	Unit of Measure.
**	Indicative data, theoretical holding time exceeded.	NVL	Not validated.	LOR	Limit of Reporting.
		IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
^	Performed by outside laboratory.	LNR	Sample listed, but not received.		

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

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

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/pv.sgs/3/-/media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf>

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STATEMENT OF QA/QC PERFORMANCE

SE125276 R0

CLIENT DETAILS

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Project **E2009AC - Stage A Shephards Bay - Meadowb**
Order Number (Not specified)
Samples 2

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SGS Reference SE125276 R0
Report Number 0000077182
Date Reported 06 Mar 2014

COMMENTS

All the laboratory data for each environmental matrix was compared to SGS Environmental Services' 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	Volatile Petroleum Hydrocarbons in Water	1 item
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SAMPLE SUMMARY

Sample counts by matrix	2 Waters	Type of documentation received	COC
Date documentation received	26/2/2014	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	4°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		

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/AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
GWB-3	SE125276.001	LB053569	26 Feb 2014	26 Feb 2014	26 Mar 2014	05 Mar 2014	26 Mar 2014	05 Mar 2014
GW112	SE125276.002	LB053569	26 Feb 2014	26 Feb 2014	26 Mar 2014	05 Mar 2014	26 Mar 2014	05 Mar 2014

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
GWB-3	SE125276.001	LB053292	26 Feb 2014	26 Feb 2014	05 Mar 2014	28 Feb 2014	09 Apr 2014	06 Mar 2014
GW112	SE125276.002	LB053292	26 Feb 2014	26 Feb 2014	05 Mar 2014	28 Feb 2014	09 Apr 2014	06 Mar 2014

Total Phenolics in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
GWB-3	SE125276.001	LB053441	26 Feb 2014	26 Feb 2014	26 Mar 2014	04 Mar 2014	26 Mar 2014	04 Mar 2014

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
GWB-3	SE125276.001	LB053478	26 Feb 2014	26 Feb 2014	25 Aug 2014	04 Mar 2014	25 Aug 2014	05 Mar 2014
GW112	SE125276.002	LB053478	26 Feb 2014	26 Feb 2014	25 Aug 2014	04 Mar 2014	25 Aug 2014	05 Mar 2014

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
GWB-3	SE125276.001	LB053292	26 Feb 2014	26 Feb 2014	05 Mar 2014	28 Feb 2014	09 Apr 2014	06 Mar 2014
GW112	SE125276.002	LB053292	26 Feb 2014	26 Feb 2014	05 Mar 2014	28 Feb 2014	09 Apr 2014	06 Mar 2014

VOCs in Water

Method: ME-(AU)-[ENV]AN433/AN434

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
GWB-3	SE125276.001	LB053300	26 Feb 2014	26 Feb 2014	05 Mar 2014	28 Feb 2014	09 Apr 2014	06 Mar 2014
GW112	SE125276.002	LB053300	26 Feb 2014	26 Feb 2014	05 Mar 2014	28 Feb 2014	09 Apr 2014	06 Mar 2014

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
GWB-3	SE125276.001	LB053300	26 Feb 2014	26 Feb 2014	05 Mar 2014	28 Feb 2014	09 Apr 2014	05 Mar 2014
GW112	SE125276.002	LB053300	26 Feb 2014	26 Feb 2014	05 Mar 2014	28 Feb 2014	09 Apr 2014	05 Mar 2014

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	GWB-3	SE125276.001	%	40 - 130%	76
d14-p-terphenyl (Surrogate)	GWB-3	SE125276.001	%	40 - 130%	74
d5-nitrobenzene (Surrogate)	GWB-3	SE125276.001	%	40 - 130%	78

VOCs in Water

Method: ME-(AU)-[ENV]AN433/AN434

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	GWB-3	SE125276.001	%	40 - 130%	96
	GW112	SE125276.002	%	40 - 130%	97
d4-1,2-dichloroethane (Surrogate)	GWB-3	SE125276.001	%	40 - 130%	85
	GW112	SE125276.002	%	40 - 130%	79
d8-toluene (Surrogate)	GWB-3	SE125276.001	%	40 - 130%	111
	GW112	SE125276.002	%	40 - 130%	103
Dibromofluoromethane (Surrogate)	GWB-3	SE125276.001	%	40 - 130%	83
	GW112	SE125276.002	%	40 - 130%	92

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	GWB-3	SE125276.001	%	60 - 130%	99
	GW112	SE125276.002	%	60 - 130%	97
d4-1,2-dichloroethane (Surrogate)	GWB-3	SE125276.001	%	60 - 130%	81
	GW112	SE125276.002	%	60 - 130%	79
d8-toluene (Surrogate)	GWB-3	SE125276.001	%	60 - 130%	104
	GW112	SE125276.002	%	60 - 130%	103
Dibromofluoromethane (Surrogate)	GWB-3	SE125276.001	%	60 - 130%	93
	GW112	SE125276.002	%	60 - 130%	92

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/AN312

Sample Number	Parameter	Units	LOR	Result
LB053569.001	Mercury	mg/L	0.0001	<0.0001

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Sample Number	Parameter	Units	LOR	Result
LB053292.001	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(a,h)anthracene	µg/L	0.1	<0.1
	Benzo(ghi)perylene	µg/L	0.1	<0.1
Surrogates	d5-nitrobenzene (Surrogate)	%	-	104
	2-fluorobiphenyl (Surrogate)	%	-	104
	d14-p-terphenyl (Surrogate)	%	-	112

Total Phenolics in Water

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

Sample Number	Parameter	Units	LOR	Result
LB053441.001	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
LB053478.001	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
LB053292.001	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/AN434

Sample Number		Parameter	Units	LOR	Result
LB053300.001	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/AN434

Sample Number	Parameter	Units	LOR	Result
LB053300.001	Halogenated Aliphatics	1,1-dichloroethene	µg/L	<0.5
		Dichloromethane (Methylene chloride)	µg/L	<5
		Allyl chloride	µg/L	<2
		trans-1,2-dichloroethene	µg/L	<0.5
		1,1-dichloroethane	µg/L	<0.5
		cis-1,2-dichloroethene	µg/L	<0.5
		Bromochloromethane	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
		Trichloroethene (Trichloroethylene,TCE)	µg/L	<0.5
		1,1,2-trichloroethane	µg/L	<0.5
		1,3-dichloropropane	µg/L	<0.5
		Tetrachloroethene (Perchloroethylene,PCE)	µg/L	<0.5
		1,1,1,2-tetrachloroethane	µg/L	<0.5
		cis-1,4-dichloro-2-butene	µg/L	<1
		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
		1,2-dibromo-3-chloropropane	µg/L	<0.5
	Halogenated Aromatics	Hexachlorobutadiene	µg/L	<0.5
		Chlorobenzene	µg/L	<0.5
		Bromobenzene	µg/L	<0.5
		2-chlorotoluene	µg/L	<0.5
		4-chlorotoluene	µg/L	<0.5
		1,3-dichlorobenzene	µg/L	<0.5
		1,4-dichlorobenzene	µg/L	<0.3
		1,2-dichlorobenzene	µg/L	<0.5
	Monocyclic Aromatic Hydrocarbons	1,2,4-trichlorobenzene	µg/L	<0.5
		1,2,3-trichlorobenzene	µg/L	<0.5
		Benzene	µg/L	<0.5
		Toluene	µg/L	<0.5
		Ethylbenzene	µg/L	<0.5
		m/p-xylene	µg/L	<1
		o-xylene	µg/L	<0.5
		Styrene (Vinyl benzene)	µg/L	<0.5
		Isopropylbenzene (Cumene)	µg/L	<0.5
		n-propylbenzene	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
	Nitrogenous Compounds	sec-butylbenzene	µg/L	<0.5
		p-isopropyltoluene	µg/L	<0.5
	Oxygenated Compounds	n-butylbenzene	µg/L	<0.5
		Acrylonitrile	µg/L	<0.5
		Acetone (2-propanone)	µg/L	<10
		MtBE (Methyl-tert-butyl ether)	µg/L	<2
		Vinyl acetate	µg/L	<10
		MEK (2-butanone)	µg/L	<10
		MIBK (4-methyl-2-pentanone)	µg/L	<5
	Polycyclic VOCs	2-hexanone (MBK)	µg/L	<5
		Naphthalene	µg/L	<0.5
	Sulphonated	Carbon disulfide	µg/L	<2
	Surrogates	Dibromofluoromethane (Surrogate)	%	112
		d4-1,2-dichloroethane (Surrogate)	%	117
		d8-toluene (Surrogate)	%	95
		Bromofluorobenzene (Surrogate)	%	98
	Trihalomethanes	Chloroform (THM)	µg/L	<0.5
		Bromodichloromethane (THM)	µg/L	<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/AN434

Sample Number	Parameter	Units	LOR	Result
LB053300.001	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/AN434/AN410

Sample Number	Parameter	Units	LOR	Result
LB053300.001	TRH C6-C9	µg/L	40	<40
	Surrogates			
	Dibromofluoromethane (Surrogate)	%	-	115
	d4-1,2-dichloroethane (Surrogate)	%	-	112
	d8-toluene (Surrogate)	%	-	102
	Bromofluorobenzene (Surrogate)	%	-	82

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

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

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

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

Mercury (dissolved) in Water

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE125277.001	LB053569.014	Mercury	µg/L	0.0001	-0.093	-0.0958	121	0
SE125382.003	LB053569.021	Mercury	µg/L	0.0001	<0.0001	<0.0001	147	0

Total Phenolics in Water

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE125219.001	LB053441.004	Total Phenols	mg/L	0.01	0.16	0.14	22	14

Trace Metals (Dissolved) in Water by ICPMS

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE125275.001	LB053478.014	Arsenic, As	µg/L	1	<1	0.499	200	0
		Cadmium, Cd	µg/L	0.1	0.4	0.439	38	2
		Chromium, Cr	µg/L	1	<1	0.448	200	0
		Copper, Cu	µg/L	1	6	5.418	33	3
		Lead, Pb	µg/L	1	64	63.405	17	1
		Nickel, Ni	µg/L	1	24	24.115	19	0
SE125276.002	LB053478.023	Zinc, Zn	µg/L	5	170	170.062	18	1
		Arsenic, As	µg/L	1	<1	0.069	200	0
		Cadmium, Cd	µg/L	0.1	<0.1	0.018	200	0
		Chromium, Cr	µg/L	1	<1	0.187	200	0
		Copper, Cu	µg/L	1	8	8.379	27	1
		Lead, Pb	µg/L	1	<1	0.169	200	0
		Nickel, Ni	µg/L	1	12	11.889	23	0
		Zinc, Zn	µg/L	5	33	32.542	30	0

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %	
SE125275.001	LB053300.010	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	-	4.7	5.89	30	22
		d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.1	5.97	30	36 ↑	
		d8-toluene (Surrogate)	µg/L	-	5.2	5.83	30	12	
		Bromofluorobenzene (Surrogate)	µg/L	-	5.0	5.76	30	15	
		VPH F Bands	Benzene (F0)	µg/L	0.5	<0.5	0	200	0
		TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	0	200	0	

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB053292.002	Naphthalene	µg/L	0.1	39	40	60 - 140	98
	Acenaphthylene	µg/L	0.1	40	40	60 - 140	100
	Acenaphthene	µg/L	0.1	38	40	60 - 140	95
	Phenanthrene	µg/L	0.1	38	40	60 - 140	95
	Anthracene	µg/L	0.1	36	40	60 - 140	90
	Fluoranthene	µg/L	0.1	35	40	60 - 140	88
	Pyrene	µg/L	0.1	38	40	60 - 140	95
	Benzo(a)pyrene	µg/L	0.1	42	40	60 - 140	105
	Surrogates						
	d5-nitrobenzene (Surrogate)	µg/L	-	0.5	0.5	40 - 130	94
	2-fluorobiphenyl (Surrogate)	µg/L	-	0.5	0.5	40 - 130	90
	d14-p-terphenyl (Surrogate)	µg/L	-	0.5	0.5	40 - 130	94

Total Phenolics in Water

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB053441.002	Total Phenols	mg/L	0.01	0.25	0.25	80 - 120	99

Trace Metals (Dissolved) in Water by ICPMS

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB053478.002	Arsenic, As	µg/L	1	19	20	80 - 120	95
	Cadmium, Cd	µg/L	0.1	20	20	80 - 120	100
	Chromium, Cr	µg/L	1	21	20	80 - 120	103
	Copper, Cu	µg/L	1	21	20	80 - 120	106
	Lead, Pb	µg/L	1	20	20	80 - 120	98
	Nickel, Ni	µg/L	1	22	20	80 - 120	108
	Zinc, Zn	µg/L	5	20	20	80 - 120	102

TRH (Total Recoverable Hydrocarbons) in Water

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB053292.002	TRH C10-C14	µg/L	50	1100	1200	60 - 140	89
	TRH C15-C28	µg/L	200	1100	1200	60 - 140	93
	TRH C29-C36	µg/L	200	1100	1200	60 - 140	92
	TRH F Bands						
	TRH >C10-C16 (F2)	µg/L	60	1100	1200	60 - 140	91
	TRH >C16-C34 (F3)	µg/L	500	1100	1200	60 - 140	94
	TRH >C34-C40 (F4)	µg/L	500	560	600	60 - 140	94

VOCs in Water

Method: ME-(AU)-[ENV]AN433/AN434

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB053300.002	Halogenated	1,1-dichloroethene	µg/L	0.5	52	45.45	60 - 140	115
	Aliphatics	1,2-dichloroethane	µg/L	0.5	50	45.45	60 - 140	111
		Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	50	45.45	60 - 140	111
	Halogenated	Chlorobenzene	µg/L	0.5	49	45.45	60 - 140	109
	Monocyclic	Benzene	µg/L	0.5	51	45.45	60 - 140	112
	Aromatic	Toluene	µg/L	0.5	50	45.45	60 - 140	109
		Ethylbenzene	µg/L	0.5	50	45.45	60 - 140	109
		m/p-xylene	µg/L	1	99	90.9	60 - 140	109
		o-xylene	µg/L	0.5	50	45.45	60 - 140	111
	Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.8	5	60 - 140	97
		d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.6	5	60 - 140	93
		d8-toluene (Surrogate)	µg/L	-	4.7	5	60 - 140	94
		Bromofluorobenzene (Surrogate)	µg/L	-	5.1	5	60 - 140	101
	Trihalomethan	Chloroform (THM)	µg/L	0.5	39	45.45	60 - 140	86

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %	
LB053300.002	TRH C6-C10	µg/L	50	1000	946.63	60 - 140	107	
	TRH C6-C9	µg/L	40	830	818.71	60 - 140	102	
	Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.6	5	60 - 140	92
		d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.6	5	60 - 140	93
		d8-toluene (Surrogate)	µg/L	-	5.0	5	60 - 140	99
		Bromofluorobenzene (Surrogate)	µg/L	-	5.2	5	60 - 140	104
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	720	639.67	60 - 140	112

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

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

Mercury (dissolved) in Water

Method: ME-(AU)-(ENV)AN311/AN312

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE125275.001	LB053569.004	Mercury	mg/L	0.0001	0.0082	<0.0001	0.008	104

Total Phenolics in Water

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE125275.006	LB053441.011	Total Phenols	mg/L	0.01	0.26	<0.01	0.25	102

Trace Metals (Dissolved) in Water by ICPMS

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE125205.001	LB053478.004	Arsenic, As	µg/L	1	19	0.194	20	96
		Cadmium, Cd	µg/L	0.1	21	0.083	20	103
		Chromium, Cr	µg/L	1	21	0.29	20	102
		Copper, Cu	µg/L	1	21	0.323	20	105
		Lead, Pb	µg/L	1	19	-0.009	20	97
		Nickel, Ni	µg/L	1	23	2.885	20	98
		Zinc, Zn	µg/L	5	31	10.014	20	103

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

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

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

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

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

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

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

- * Non-accredited analysis.
- Sample not analysed for this analyte.
- ^ Analysis performed by external laboratory.

- 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.
- † Refer to Analytical Report comments for further information.

This document is issued, on the Client's behalf, by the Company under its General Conditions of Service, available on request and accessible at <http://www.sgs.com/en/Terms-and-Conditions/General-Conditions-of-Services-English.aspx>. The Client's attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any other holder of this document is advised that information contained herein reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents.

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CERTIFICATE OF ANALYSIS

105754

Client:

Environmental Investigations

17/1A Coulson St
Erskineville
NSW 2043

Attention: E Short

Sample log in details:

Your Reference:	<u>E2009,AC, Meadowbank</u>
No. of samples:	1 Water
Date samples received / completed instructions received	27/02/14 / 27/02/14

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.

Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by: / Issue Date:	6/03/14 / 5/03/14
Date of Preliminary Report:	Not issued

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

Results Approved By:



Jacinta Hurst
Laboratory Manager

vTRH(C6-C10)/BTEXN in Water		
Our Reference:	UNITS	105754-1
Your Reference	-----	GW1-3
Date Sampled	-----	26/02/2014
Type of sample		Water
Date extracted	-	28/02/2014
Date analysed	-	02/03/2014
TRHC ₆ - C ₉	µg/L	<10
TRHC ₆ - C ₁₀	µg/L	<10
TRHC 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	%	105
Surrogate toluene-d8	%	101
Surrogate 4-BFB	%	83

svTRH (C10-C40) in Water		
Our Reference:	UNITS	105754-1
Your Reference	-----	GW1-3
Date Sampled	-----	26/02/2014
Type of sample		Water
Date extracted	-	28/02/2014
Date analysed	-	03/03/2014
TRHC ₁₀ - C ₁₄	µg/L	<50
TRHC ₁₅ - C ₂₈	µg/L	<100
TRHC ₂₉ - C ₃₆	µg/L	<100
TRH>C ₁₀ - C ₁₆	µg/L	<50
TRH>C ₁₀ - C ₁₆ less Naphthalene (F2)	µg/L	<50
TRH>C ₁₆ - C ₃₄	µg/L	<100
TRH>C ₃₄ - C ₄₀	µg/L	<100
Surrogate o-Terphenyl	%	119

HM in water - dissolved		
Our Reference:	UNITS	105754-1
Your Reference	-----	GW1-3
Date Sampled	-----	26/02/2014
Type of sample		Water
Date prepared	-	28/02/2014
Date analysed	-	28/02/2014
Arsenic-Dissolved	µg/L	<1
Cadmium-Dissolved	µg/L	<0.1
Chromium-Dissolved	µg/L	<1
Copper-Dissolved	µg/L	5
Lead-Dissolved	µg/L	<1
Mercury-Dissolved	µg/L	<0.05
Nickel-Dissolved	µg/L	3
Zinc-Dissolved	µg/L	29

MethodID	Methodology Summary
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-013	Water samples are analysed directly by purge and trap GC-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.
Metals-022 ICP-MS	Determination of various metals by ICP-MS.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.

Client Reference: E2009,AC, Meadowbank

QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
vTRH(C6-C10)/BTEXNin Water						Base II Duplicate II %RPD		
Date extracted	-			28/02/2014	[NT]	[NT]	LCS-W1	28/02/2014
Date analysed	-			02/03/2014	[NT]	[NT]	LCS-W1	02/03/2014
TRHC ₆ - C ₉	µg/L	10	Org-016	<10	[NT]	[NT]	LCS-W1	92%
TRHC ₆ - C ₁₀	µg/L	10	Org-016	<10	[NT]	[NT]	LCS-W1	92%
Benzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	94%
Toluene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	92%
Ethylbenzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	92%
m+p-xylene	µg/L	2	Org-016	<2	[NT]	[NT]	LCS-W1	92%
o-xylene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	91%
Naphthalene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Surrogate Dibromofluoromethane	%		Org-016	100	[NT]	[NT]	LCS-W1	101%
Surrogate toluene-d8	%		Org-016	99	[NT]	[NT]	LCS-W1	97%
Surrogate 4-BFB	%		Org-016	83	[NT]	[NT]	LCS-W1	90%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
svTRH (C10-C40) in Water						Base II Duplicate II %RPD		
Date extracted	-			28/02/2014	[NT]	[NT]	LCS-W4	28/02/2014
Date analysed	-			01/03/2014	[NT]	[NT]	LCS-W4	03/03/2014
TRHC ₁₀ - C ₁₄	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-W4	101%
TRHC ₁₅ - C ₂₈	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W4	110%
TRHC ₂₉ - C ₃₆	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W4	108%
TRH>C ₁₀ - C ₁₆	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-W4	101%
TRH>C ₁₆ - C ₃₄	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W4	110%
TRH>C ₃₄ - C ₄₀	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W4	108%
Surrogate o-Terphenyl	%		Org-003	129	[NT]	[NT]	LCS-W4	101%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
HM in water - dissolved						Base II Duplicate II %RPD		
Date prepared	-			28/02/2014	[NT]	[NT]	LCS-W2	28/02/2014
Date analysed	-			28/02/2014	[NT]	[NT]	LCS-W2	28/02/2014
Arsenic-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W2	99%
Cadmium-Dissolved	µg/L	0.1	Metals-022 ICP-MS	<0.1	[NT]	[NT]	LCS-W2	100%
Chromium-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W2	91%
Copper-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W2	90%
Lead-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W2	98%

Client Reference: E2009,AC, Meadowbank

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
HM in water - dissolved						Base II Duplicate II %RPD		
Mercury-Dissolved	µg/L	0.05	Metals-021 CV-AAS	<0.05	[NT]	[NT]	LCS-W2	96%
Nickel-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W2	96%
Zinc-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W2	96%

Report Comments:

Asbestos ID was analysed by Approved Identifier: Not applicable for this job
 Asbestos ID was authorised by Approved Signatory: Not applicable for this job

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NA: Test not required	RPD: Relative Percent Difference	NA: Test not required
<: Less than	>: Greater than	LCS: Laboratory Control Sample

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.

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC 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.

CLIENT DETAILS

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Project **E2009AC - Stage A Shephards Bay - Medowb**
Order Number (Not specified)
Samples 2
Date Received 26/2/2014

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SGS Reference **SE125276 R0**
Report Number 0000077181
Date Reported 6/3/2014

COMMENTS

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

SIGNATORIES




Andy Sutton
Senior Organic Chemist



Dong Liang
Metals/Inorganics Team Leader



Huong Crawford
Production Manager



Ly Kim Ha
Organic Section Head



ANALYTICAL RESULTS

SE125276 R0

VOCs in Water [AN433/AN434]

VOCs in Water [AN433/AN434] (continued)

PARAMETER	UOM	LOR	GWB-3	GW112
			WATER 26/2/2014 SE125276.001	WATER 26/2/2014 SE125276.002
Benzene	µg/L	0.50	<0.5	<0.5
Toluene	µg/L	0.50	<0.5	<0.5
Ethylbenzene	µg/L	0.50	<0.5	<0.5
m/p-xylene	µg/L	1.0	<1	<1
o-xylene	µg/L	0.50	<0.5	<0.5
Total Xylenes	µg/L	1.50	<1.5	<1.5
Total BTEX	µg/L	3.0	<3	<3
Naphthalene	µg/L	0.50	<0.5	<0.5
Dichlorodifluoromethane (CFC-12)	µg/L	5.0	<5	-
Chloromethane	µg/L	5.0	<5	-
Vinyl chloride (Chloroethene)	µg/L	0.30	<0.3	-
Bromomethane	µg/L	10	<10	-
Chloroethane	µg/L	5.0	<5	-
Trichlorofluoromethane	µg/L	1.0	<1	-
Acetone (2-propanone)	µg/L	10	43	-
Iodomethane	µg/L	5.0	<5	-
1,1-dichloroethene	µg/L	0.50	<0.5	-
Acrylonitrile	µg/L	0.50	<0.5	-
Dichloromethane (Methylene chloride)	µg/L	5.0	<5	-
Allyl chloride	µg/L	2.0	<2	-
Carbon disulfide	µg/L	2.0	<2	-
trans-1,2-dichloroethene	µg/L	0.50	<0.5	-
MtBE (Methyl-tert-butyl ether)	µg/L	2.0	<2	-
1,1-dichloroethane	µg/L	0.50	<0.5	-
Vinyl acetate	µg/L	10	<10	-
MEK (2-butanone)	µg/L	10	<10	-
cis-1,2-dichloroethene	µg/L	0.50	<0.5	-
Bromochloromethane	µg/L	0.50	<0.5	-
Chloroform (THM)	µg/L	0.50	<0.5	-
2,2-dichloropropane	µg/L	0.50	<0.5	-
1,2-dichloroethane	µg/L	0.50	<0.5	-
1,1,1-trichloroethane	µg/L	0.50	<0.5	-
1,1-dichloropropene	µg/L	0.50	<0.5	-
Carbon tetrachloride	µg/L	0.50	<0.5	-
Dibromomethane	µg/L	0.50	<0.5	-
1,2-dichloropropane	µg/L	0.50	<0.5	-
Trichloroethene	µg/L	0.50	<0.5	-
2-nitropropane	µg/L	100	<100	-
Bromodichloromethane (THM)	µg/L	0.50	<0.5	-
MIBK (4-methyl-2-pentanone)	µg/L	5.0	<5	-
cis-1,3-dichloropropene	µg/L	0.50	<0.5	-
trans-1,3-dichloropropene	µg/L	0.50	<0.5	-
1,1,2-trichloroethane	µg/L	0.50	<0.5	-
1,3-dichloropropane	µg/L	0.50	<0.5	-
Dibromochloromethane (THM)	µg/L	0.50	<0.5	-
2-hexanone (MBK)	µg/L	5.0	<5	-
1,2-dibromoethane (EDB)	µg/L	0.50	<0.5	-
Tetrachloroethene	µg/L	0.50	<0.5	-
1,1,1,2-tetrachloroethane	µg/L	0.50	<0.5	-
Chlorobenzene	µg/L	0.50	<0.5	-
Bromoform (THM)	µg/L	0.50	<0.5	-
cis-1,4-dichloro-2-butene	µg/L	1.0	<1	-
Styrene (Vinyl benzene)	µg/L	0.50	<0.5	-
1,1,2,2-tetrachloroethane	µg/L	0.50	<0.5	-
1,2,3-trichloropropane	µg/L	0.50	<0.5	-
trans-1,4-dichloro-2-butene	µg/L	1.0	<1	-
Isopropylbenzene (Cumene)	µg/L	0.50	<0.5	-
Bromobenzene	µg/L	0.50	<0.5	-
n-propylbenzene	µg/L	0.50	<0.5	-

VOCs in Water [AN433/AN434] (continued)

PARAMETER	UOM	LOR	GWB-3	GW112
			WATER 26/2/2014 SE125276.001	WATER 26/2/2014 SE125276.002
2-chlorotoluene	µg/L	0.50	<0.5	-
4-chlorotoluene	µg/L	0.50	<0.5	-
1,3,5-trimethylbenzene	µg/L	0.50	<0.5	-
tert-butylbenzene	µg/L	0.50	<0.5	-
1,2,4-trimethylbenzene	µg/L	0.50	<0.5	-
sec-butylbenzene	µg/L	0.50	<0.5	-
1,3-dichlorobenzene	µg/L	0.50	<0.5	-
1,4-dichlorobenzene	µg/L	0.30	<0.3	-
p-isopropyltoluene	µg/L	0.50	<0.5	-
1,2-dichlorobenzene	µg/L	0.50	<0.5	-
n-butylbenzene	µg/L	0.50	<0.5	-
1,2-dibromo-3-chloropropane	µg/L	0.50	<0.5	-
1,2,4-trichlorobenzene	µg/L	0.50	<0.5	-
Hexachlorobutadiene	µg/L	0.50	<0.5	-
1,2,3-trichlorobenzene	µg/L	0.50	<0.5	-
Total VOC	µg/L	10	-	-



ANALYTICAL RESULTS

SE125276 R0

Volatile Petroleum Hydrocarbons in Water [AN433/AN434/AN410]

PARAMETER	UOM	LOR	GWB-3	GW112
			WATER 26/2/2014 SE125276.001	WATER 26/2/2014 SE125276.002
TRH C6-C9	µg/L	40	<40	<40
Benzene (F0)	µg/L	0.50	<0.5	<0.5
TRH C6-C10	µg/L	50	<50	<50
TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	<50



ANALYTICAL RESULTS

SE125276 R0

TRH (Total Recoverable Hydrocarbons) in Water [AN403]

PARAMETER	UOM	LOR	GWB-3	GW112
			WATER 26/2/2014 SE125276.001	WATER 26/2/2014 SE125276.002
TRH C10-C14	µg/L	50	<50	<50
TRH C15-C28	µg/L	200	<200	<200
TRH C29-C36	µg/L	200	<200	<200
TRH C37-C40	µg/L	200	<200	<200
TRH >C10-C16 (F2)	µg/L	60	<60	<60
TRH >C16-C34 (F3)	µg/L	500	<500	<500
TRH >C34-C40 (F4)	µg/L	500	<500	<500
TRH C10-C36	µg/L	450	<450	<450
TRH C10-C40	µg/L	650	<650	<650

PAH (Polynuclear Aromatic Hydrocarbons) in Water [AN420]

			GWB-3
			WATER
			26/2/2014
			SE125276.001
PARAMETER	UOM	LOR	
Naphthalene	µg/L	0.10	<0.1
2-methylnaphthalene	µg/L	0.10	<0.1
1-methylnaphthalene	µg/L	0.10	<0.1
Acenaphthylene	µg/L	0.10	<0.1
Acenaphthene	µg/L	0.10	<0.1
Fluorene	µg/L	0.10	<0.1
Phenanthrene	µg/L	0.10	0.1
Anthracene	µg/L	0.10	<0.1
Fluoranthene	µg/L	0.10	0.1
Pyrene	µg/L	0.10	<0.1
Benzo(a)anthracene	µg/L	0.10	<0.1
Chrysene	µg/L	0.10	<0.1
Benzo(b&i)fluoranthene	µg/L	0.10	<0.1
Benzo(k)fluoranthene	µg/L	0.10	<0.1
Benzo(a)pyrene	µg/L	0.10	<0.1
Indeno(1,2,3-cd)pyrene	µg/L	0.10	<0.1
Dibenzo(a&h)anthracene	µg/L	0.10	<0.1
Benzo(ghi)perylene	µg/L	0.10	<0.1
Total PAH (18)	µg/L	1.0	<1



ANALYTICAL RESULTS

SE125276 R0

Total Phenolics in Water [AN289]

			GWB-3
			WATER
			26/2/2014
PARAMETER	UOM	LOR	SE125276.001
Total Phenols	mg/L	0.010	<0.01



ANALYTICAL RESULTS

SE125276 R0

Trace Metals (Dissolved) in Water by ICPMS [AN318]

PARAMETER	UOM	LOR	GWB-3	GW112
			WATER 26/2/2014 SE125276.001	WATER 26/2/2014 SE125276.002
Arsenic, As	µg/L	1.0	<1	<1
Cadmium, Cd	µg/L	0.10	<0.1	<0.1
Chromium, Cr	µg/L	1.0	<1	<1
Copper, Cu	µg/L	1.0	7	8
Lead, Pb	µg/L	1.0	<1	<1
Nickel, Ni	µg/L	1.0	4	12
Zinc, Zn	µg/L	5.0	31	33



ANALYTICAL RESULTS

SE125276 R0

Mercury (dissolved) in Water [AN311/AN312]

			GWB-3	GW112
			WATER	WATER
			26/2/2014	26/2/2014
			SE125276.001	SE125276.002
PARAMETER	UOM	LOR		
Mercury	mg/L	0.00010	<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.
AN083	Separatory funnels are used for aqueous samples and extracted by transferring an appropriate volume (mass) of liquid into a separatory funnel and adding 3 serial aliquots of dichloromethane. Samples receive a single extraction at pH 7 to recover base / neutral analytes and two extractions at pH < 2 to recover acidic analytes. QC samples are prepared by spiking organic free water with target analytes and extracting as per samples.
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/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 Draft NEPM 2011, >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is not corrected for Naphthalene.
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/AN434	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.
AN433/AN434/AN410	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

*	Analysis not covered by the scope of accreditation.	-	Not analysed.	UOM	Unit of Measure.
**	Indicative data, theoretical holding time exceeded.	NVL	Not validated.	LOR	Limit of Reporting.
		IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
^	Performed by outside laboratory.	LNR	Sample listed, but not received.		

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

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

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/pv.sgs/3/~media/Local/Australia/Documents/Technical%20Documents/MP-AU-ENV-QU-022%20QA%20QC%20Plan.pdf>

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STATEMENT OF QA/QC PERFORMANCE

SE125276 R0

CLIENT DETAILS

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Project **E2009AC - Stage A Shephards Bay - Meadowb**
Order Number (Not specified)
Samples 2

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SGS Reference SE125276 R0
Report Number 0000077182
Date Reported 06 Mar 2014

COMMENTS

All the laboratory data for each environmental matrix was compared to SGS Environmental Services' 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	Volatile Petroleum Hydrocarbons in Water	1 item
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SAMPLE SUMMARY

Sample counts by matrix	2 Waters	Type of documentation received	COC
Date documentation received	26/2/2014	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	4°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		

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/AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
GWB-3	SE125276.001	LB053569	26 Feb 2014	26 Feb 2014	26 Mar 2014	05 Mar 2014	26 Mar 2014	05 Mar 2014
GW112	SE125276.002	LB053569	26 Feb 2014	26 Feb 2014	26 Mar 2014	05 Mar 2014	26 Mar 2014	05 Mar 2014

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
GWB-3	SE125276.001	LB053292	26 Feb 2014	26 Feb 2014	05 Mar 2014	28 Feb 2014	09 Apr 2014	06 Mar 2014
GW112	SE125276.002	LB053292	26 Feb 2014	26 Feb 2014	05 Mar 2014	28 Feb 2014	09 Apr 2014	06 Mar 2014

Total Phenolics in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
GWB-3	SE125276.001	LB053441	26 Feb 2014	26 Feb 2014	26 Mar 2014	04 Mar 2014	26 Mar 2014	04 Mar 2014

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
GWB-3	SE125276.001	LB053478	26 Feb 2014	26 Feb 2014	25 Aug 2014	04 Mar 2014	25 Aug 2014	05 Mar 2014
GW112	SE125276.002	LB053478	26 Feb 2014	26 Feb 2014	25 Aug 2014	04 Mar 2014	25 Aug 2014	05 Mar 2014

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
GWB-3	SE125276.001	LB053292	26 Feb 2014	26 Feb 2014	05 Mar 2014	28 Feb 2014	09 Apr 2014	06 Mar 2014
GW112	SE125276.002	LB053292	26 Feb 2014	26 Feb 2014	05 Mar 2014	28 Feb 2014	09 Apr 2014	06 Mar 2014

VOCs in Water

Method: ME-(AU)-[ENV]AN433/AN434

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
GWB-3	SE125276.001	LB053300	26 Feb 2014	26 Feb 2014	05 Mar 2014	28 Feb 2014	09 Apr 2014	06 Mar 2014
GW112	SE125276.002	LB053300	26 Feb 2014	26 Feb 2014	05 Mar 2014	28 Feb 2014	09 Apr 2014	06 Mar 2014

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
GWB-3	SE125276.001	LB053300	26 Feb 2014	26 Feb 2014	05 Mar 2014	28 Feb 2014	09 Apr 2014	05 Mar 2014
GW112	SE125276.002	LB053300	26 Feb 2014	26 Feb 2014	05 Mar 2014	28 Feb 2014	09 Apr 2014	05 Mar 2014

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	GWB-3	SE125276.001	%	40 - 130%	76
d14-p-terphenyl (Surrogate)	GWB-3	SE125276.001	%	40 - 130%	74
d5-nitrobenzene (Surrogate)	GWB-3	SE125276.001	%	40 - 130%	78

VOCs in Water

Method: ME-(AU)-[ENV]AN433/AN434

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	GWB-3	SE125276.001	%	40 - 130%	96
	GW112	SE125276.002	%	40 - 130%	97
d4-1,2-dichloroethane (Surrogate)	GWB-3	SE125276.001	%	40 - 130%	85
	GW112	SE125276.002	%	40 - 130%	79
d8-toluene (Surrogate)	GWB-3	SE125276.001	%	40 - 130%	111
	GW112	SE125276.002	%	40 - 130%	103
Dibromofluoromethane (Surrogate)	GWB-3	SE125276.001	%	40 - 130%	83
	GW112	SE125276.002	%	40 - 130%	92

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	GWB-3	SE125276.001	%	60 - 130%	99
	GW112	SE125276.002	%	60 - 130%	97
d4-1,2-dichloroethane (Surrogate)	GWB-3	SE125276.001	%	60 - 130%	81
	GW112	SE125276.002	%	60 - 130%	79
d8-toluene (Surrogate)	GWB-3	SE125276.001	%	60 - 130%	104
	GW112	SE125276.002	%	60 - 130%	103
Dibromofluoromethane (Surrogate)	GWB-3	SE125276.001	%	60 - 130%	93
	GW112	SE125276.002	%	60 - 130%	92

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/AN312

Sample Number	Parameter	Units	LOR	Result
LB053569.001	Mercury	mg/L	0.0001	<0.0001

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Sample Number	Parameter	Units	LOR	Result
LB053292.001	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(a,h)anthracene	µg/L	0.1	<0.1
	Benzo(ghi)perylene	µg/L	0.1	<0.1
Surrogates	d5-nitrobenzene (Surrogate)	%	-	104
	2-fluorobiphenyl (Surrogate)	%	-	104
	d14-p-terphenyl (Surrogate)	%	-	112

Total Phenolics in Water

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

Sample Number	Parameter	Units	LOR	Result
LB053441.001	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
LB053478.001	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
LB053292.001	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/AN434

Sample Number		Parameter	Units	LOR	Result
LB053300.001	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	uo/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/AN434

Sample Number		Parameter	Units	LOR	Result
LB053300.001	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
	Halogenated Aromatics	Hexachlorobutadiene	µg/L	0.5	<0.5
		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
	Monocyclic Aromatic Hydrocarbons	1,2,4-trichlorobenzene	µg/L	0.5	<0.5
		1,2,3-trichlorobenzene	µg/L	0.5	<0.5
		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
	Nitrogenous Compounds	sec-butylbenzene	µg/L	0.5	<0.5
		p-isopropyltoluene	µg/L	0.5	<0.5
	Oxygenated Compounds	n-butylbenzene	µg/L	0.5	<0.5
		Acrylonitrile	µg/L	0.5	<0.5
		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
	Polycyclic VOCs	2-hexanone (MBK)	µg/L	5	<5
		Naphthalene	µg/L	0.5	<0.5
	Sulphonated	Carbon disulfide	µg/L	2	<2
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	112
		d4-1,2-dichloroethane (Surrogate)	%	-	117
		d8-toluene (Surrogate)	%	-	95
		Bromofluorobenzene (Surrogate)	%	-	98
	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/AN434

Sample Number	Parameter	Units	LOR	Result
LB053300.001	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/AN434/AN410

Sample Number	Parameter	Units	LOR	Result
LB053300.001	TRH C6-C9	µg/L	40	<40
	Surrogates			
	Dibromofluoromethane (Surrogate)	%	-	115
	d4-1,2-dichloroethane (Surrogate)	%	-	112
	d8-toluene (Surrogate)	%	-	102
	Bromofluorobenzene (Surrogate)	%	-	82

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

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

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

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

Mercury (dissolved) in Water

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE125277.001	LB053569.014	Mercury	µg/L	0.0001	-0.093	-0.0958	121	0
SE125382.003	LB053569.021	Mercury	µg/L	0.0001	<0.0001	<0.0001	147	0

Total Phenolics in Water

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE125219.001	LB053441.004	Total Phenols	mg/L	0.01	0.16	0.14	22	14

Trace Metals (Dissolved) in Water by ICPMS

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE125275.001	LB053478.014	Arsenic, As	µg/L	1	<1	0.499	200	0
		Cadmium, Cd	µg/L	0.1	0.4	0.439	38	2
		Chromium, Cr	µg/L	1	<1	0.448	200	0
		Copper, Cu	µg/L	1	6	5.418	33	3
		Lead, Pb	µg/L	1	64	63.405	17	1
		Nickel, Ni	µg/L	1	24	24.115	19	0
SE125276.002	LB053478.023	Zinc, Zn	µg/L	5	170	170.062	18	1
		Arsenic, As	µg/L	1	<1	0.069	200	0
		Cadmium, Cd	µg/L	0.1	<0.1	0.018	200	0
		Chromium, Cr	µg/L	1	<1	0.187	200	0
		Copper, Cu	µg/L	1	8	8.379	27	1
		Lead, Pb	µg/L	1	<1	0.169	200	0
		Nickel, Ni	µg/L	1	12	11.889	23	0
		Zinc, Zn	µg/L	5	33	32.542	30	0

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %	
SE125275.001	LB053300.010	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	-	4.7	5.89	30	22
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.1	5.97	30	36 ↑
			d8-toluene (Surrogate)	µg/L	-	5.2	5.83	30	12
			Bromofluorobenzene (Surrogate)	µg/L	-	5.0	5.76	30	15
		VPH F Bands	Benzene (F0)	µg/L	0.5	<0.5	0	200	0
			TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	0	200	0

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB053292.002	Naphthalene	µg/L	0.1	39	40	60 - 140	98
	Acenaphthylene	µg/L	0.1	40	40	60 - 140	100
	Acenaphthene	µg/L	0.1	38	40	60 - 140	95
	Phenanthrene	µg/L	0.1	38	40	60 - 140	95
	Anthracene	µg/L	0.1	36	40	60 - 140	90
	Fluoranthene	µg/L	0.1	35	40	60 - 140	88
	Pyrene	µg/L	0.1	38	40	60 - 140	95
	Benzo(a)pyrene	µg/L	0.1	42	40	60 - 140	105
	Surrogates						
	d5-nitrobenzene (Surrogate)	µg/L	-	0.5	0.5	40 - 130	94
	2-fluorobiphenyl (Surrogate)	µg/L	-	0.5	0.5	40 - 130	90
	d14-p-terphenyl (Surrogate)	µg/L	-	0.5	0.5	40 - 130	94

Total Phenolics in Water

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB053441.002	Total Phenols	mg/L	0.01	0.25	0.25	80 - 120	99

Trace Metals (Dissolved) in Water by ICPMS

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB053478.002	Arsenic, As	µg/L	1	19	20	80 - 120	95
	Cadmium, Cd	µg/L	0.1	20	20	80 - 120	100
	Chromium, Cr	µg/L	1	21	20	80 - 120	103
	Copper, Cu	µg/L	1	21	20	80 - 120	106
	Lead, Pb	µg/L	1	20	20	80 - 120	98
	Nickel, Ni	µg/L	1	22	20	80 - 120	108
	Zinc, Zn	µg/L	5	20	20	80 - 120	102

TRH (Total Recoverable Hydrocarbons) in Water

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB053292.002	TRH C10-C14	µg/L	50	1100	1200	60 - 140	89
	TRH C15-C28	µg/L	200	1100	1200	60 - 140	93
	TRH C29-C36	µg/L	200	1100	1200	60 - 140	92
	TRH F Bands						
	TRH >C10-C16 (F2)	µg/L	60	1100	1200	60 - 140	91
	TRH >C16-C34 (F3)	µg/L	500	1100	1200	60 - 140	94
	TRH >C34-C40 (F4)	µg/L	500	560	600	60 - 140	94

VOCs in Water

Method: ME-(AU)-[ENV]AN433/AN434

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %	
LB053300.002	Halogenated	1,1-dichloroethene	µg/L	0.5	52	45.45	60 - 140	115	
	Aliphatics	1,2-dichloroethane	µg/L	0.5	50	45.45	60 - 140	111	
		Trichloroethene (Trichloroethylene,TCE)		µg/L	0.5	50	45.45	60 - 140	111
	Halogenated	Chlorobenzene	µg/L	0.5	49	45.45	60 - 140	109	
	Monocyclic	Benzene	µg/L	0.5	51	45.45	60 - 140	112	
	Aromatic	Toluene	µg/L	0.5	50	45.45	60 - 140	109	
		Ethylbenzene	µg/L	0.5	50	45.45	60 - 140	109	
		m/p-xylene	µg/L	1	99	90.9	60 - 140	109	
		o-xylene	µg/L	0.5	50	45.45	60 - 140	111	
	Surrogates	Dibromofluoromethane (Surrogate)		µg/L	-	4.8	5	60 - 140	97
		d4-1,2-dichloroethane (Surrogate)		µg/L	-	4.6	5	60 - 140	93
		d8-toluene (Surrogate)		µg/L	-	4.7	5	60 - 140	94
		Bromofluorobenzene (Surrogate)		µg/L	-	5.1	5	60 - 140	101
	Trihalomethan	Chloroform (THM)		µg/L	0.5	39	45.45	60 - 140	86

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB053300.002		TRH C6-C10	µg/L	50	1000	946.63	60 - 140	107
		TRH C6-C9	µg/L	40	830	818.71	60 - 140	102
	Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.6	5	60 - 140	92
		d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.6	5	60 - 140	93
		d8-toluene (Surrogate)	µg/L	-	5.0	5	60 - 140	99
		Bromofluorobenzene (Surrogate)	µg/L	-	5.2	5	60 - 140	104
			TRH C6-C10 minus BTEX (F1)	µg/L	50	720	639.67	60 - 140
	VPH F Bands							

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

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

Mercury (dissolved) in Water

Method: ME-(AU)-(ENV)AN311/AN312

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE125275.001	LB053569.004	Mercury	mg/L	0.0001	0.0082	<0.0001	0.008	104

Total Phenolics in Water

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE125275.006	LB053441.011	Total Phenols	mg/L	0.01	0.26	<0.01	0.25	102

Trace Metals (Dissolved) in Water by ICPMS

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE125205.001	LB053478.004	Arsenic, As	µg/L	1	19	0.194	20	96
		Cadmium, Cd	µg/L	0.1	21	0.083	20	103
		Chromium, Cr	µg/L	1	21	0.29	20	102
		Copper, Cu	µg/L	1	21	0.323	20	105
		Lead, Pb	µg/L	1	19	-0.009	20	97
		Nickel, Ni	µg/L	1	23	2.885	20	98
		Zinc, Zn	µg/L	5	31	10.014	20	103

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

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

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

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

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

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

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

- * Non-accredited analysis.
- Sample not analysed for this analyte.
- ^ Analysis performed by external laboratory.

- 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.
- † Refer to Analytical Report comments for further information.

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CERTIFICATE OF ANALYSIS

105754

Client:

Environmental Investigations

17/1A Coulson St
Erskineville
NSW 2043

Attention: E Short

Sample log in details:

Your Reference:	<u>E2009,AC, Meadowbank</u>
No. of samples:	1 Water
Date samples received / completed instructions received	27/02/14 / 27/02/14

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.

Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by: / Issue Date:	6/03/14 / 5/03/14
Date of Preliminary Report:	Not issued

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Results Approved By:



Jacinta Hurst
Laboratory Manager

vTRH(C6-C10)/BTEXN in Water		
Our Reference:	UNITS	105754-1
Your Reference	-----	GW1-3
Date Sampled	-----	26/02/2014
Type of sample		Water
Date extracted	-	28/02/2014
Date analysed	-	02/03/2014
TRHC ₆ - C ₉	µg/L	<10
TRHC ₆ - C ₁₀	µg/L	<10
TRHC 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	%	105
Surrogate toluene-d8	%	101
Surrogate 4-BFB	%	83

svTRH (C10-C40) in Water		
Our Reference:	UNITS	105754-1
Your Reference	-----	GW1-3
Date Sampled	-----	26/02/2014
Type of sample		Water
Date extracted	-	28/02/2014
Date analysed	-	03/03/2014
TRHC ₁₀ - C ₁₄	µg/L	<50
TRHC ₁₅ - C ₂₈	µg/L	<100
TRHC ₂₉ - C ₃₆	µg/L	<100
TRH>C ₁₀ - C ₁₆	µg/L	<50
TRH>C ₁₀ - C ₁₆ less Naphthalene (F2)	µg/L	<50
TRH>C ₁₆ - C ₃₄	µg/L	<100
TRH>C ₃₄ - C ₄₀	µg/L	<100
Surrogate o-Terphenyl	%	119

HM in water - dissolved		
Our Reference:	UNITS	105754-1
Your Reference	-----	GW1-3
Date Sampled	-----	26/02/2014
Type of sample		Water
Date prepared	-	28/02/2014
Date analysed	-	28/02/2014
Arsenic-Dissolved	µg/L	<1
Cadmium-Dissolved	µg/L	<0.1
Chromium-Dissolved	µg/L	<1
Copper-Dissolved	µg/L	5
Lead-Dissolved	µg/L	<1
Mercury-Dissolved	µg/L	<0.05
Nickel-Dissolved	µg/L	3
Zinc-Dissolved	µg/L	29

MethodID	Methodology Summary
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-013	Water samples are analysed directly by purge and trap GC-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.
Metals-022 ICP-MS	Determination of various metals by ICP-MS.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.

Client Reference: E2009,AC, Meadowbank

QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
vTRH(C6-C10)/BTEXNin Water						Base II Duplicate II %RPD		
Date extracted	-			28/02/2014	[NT]	[NT]	LCS-W1	28/02/2014
Date analysed	-			02/03/2014	[NT]	[NT]	LCS-W1	02/03/2014
TRHC ₆ - C ₉	µg/L	10	Org-016	<10	[NT]	[NT]	LCS-W1	92%
TRHC ₆ - C ₁₀	µg/L	10	Org-016	<10	[NT]	[NT]	LCS-W1	92%
Benzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	94%
Toluene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	92%
Ethylbenzene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	92%
m+p-xylene	µg/L	2	Org-016	<2	[NT]	[NT]	LCS-W1	92%
o-xylene	µg/L	1	Org-016	<1	[NT]	[NT]	LCS-W1	91%
Naphthalene	µg/L	1	Org-013	<1	[NT]	[NT]	[NR]	[NR]
Surrogate Dibromofluoromethane	%		Org-016	100	[NT]	[NT]	LCS-W1	101%
Surrogate toluene-d8	%		Org-016	99	[NT]	[NT]	LCS-W1	97%
Surrogate 4-BFB	%		Org-016	83	[NT]	[NT]	LCS-W1	90%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
svTRH (C10-C40) in Water						Base II Duplicate II %RPD		
Date extracted	-			28/02/2014	[NT]	[NT]	LCS-W4	28/02/2014
Date analysed	-			01/03/2014	[NT]	[NT]	LCS-W4	03/03/2014
TRHC ₁₀ - C ₁₄	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-W4	101%
TRHC ₁₅ - C ₂₈	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W4	110%
TRHC ₂₉ - C ₃₆	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W4	108%
TRH>C ₁₀ - C ₁₆	µg/L	50	Org-003	<50	[NT]	[NT]	LCS-W4	101%
TRH>C ₁₆ - C ₃₄	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W4	110%
TRH>C ₃₄ - C ₄₀	µg/L	100	Org-003	<100	[NT]	[NT]	LCS-W4	108%
Surrogate o-Terphenyl	%		Org-003	129	[NT]	[NT]	LCS-W4	101%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
HM in water - dissolved						Base II Duplicate II %RPD		
Date prepared	-			28/02/2014	[NT]	[NT]	LCS-W2	28/02/2014
Date analysed	-			28/02/2014	[NT]	[NT]	LCS-W2	28/02/2014
Arsenic-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W2	99%
Cadmium-Dissolved	µg/L	0.1	Metals-022 ICP-MS	<0.1	[NT]	[NT]	LCS-W2	100%
Chromium-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W2	91%
Copper-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W2	90%
Lead-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W2	98%

Client Reference: E2009,AC, Meadowbank

QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
HM in water - dissolved						Base II Duplicate II %RPD		
Mercury-Dissolved	µg/L	0.05	Metals-021 CV-AAS	<0.05	[NT]	[NT]	LCS-W2	96%
Nickel-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W2	96%
Zinc-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	LCS-W2	96%

Report Comments:

Asbestos ID was analysed by Approved Identifier: Not applicable for this job
 Asbestos ID was authorised by Approved Signatory: Not applicable for this job

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NA: Test not required	RPD: Relative Percent Difference	NA: Test not required
<: Less than	>: Greater than	LCS: Laboratory Control Sample

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.

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC 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.

APPENDIX H

FIELD DATA SHEETS

FIELD DATA SHEET

Project: E2009 Sheet: 1 of 1
Site Address: Stage A, Mendonbank Urban Renewal Engineer: ES
Client: S&W Enviro/Holdmark Sampling Date: 26.2.14

Monitoring Bore ID: 112 Date Drilled: _____ Date Developed: _____ Drilled Depth: _____ mBGL Hole Size: _____ mm Measured Bore Depth: 9.075 mBTOC
Bore Location Description: _____ TOC Stickup: 0.095 m (Relative to Ground Level)
Date Purged: 25.2.14 Purging Method: Boiler / pump
SWL Before Purging (m BTOC): 7.093 Time of SWL: _____ Sampling Method: low flow Time Sample Taken: 15:30

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
<u>4</u>								<u>L+B-10 turbid</u>
<u>8</u>								
<u>12</u>								<u>Purged dry @ 8L</u>
<u>10.5</u>	<u>24.4</u>	<u>5.6</u>	<u>240</u>	<u>120</u>	<u>23</u>	<u>120</u>	<u>N</u>	<u>L+B-10 S. Turbid.</u>
								<u>Re's: AWB-3, AWI-3</u>

Monitoring Bore ID: 113 Date Drilled: _____ Date Developed: _____ Drilled Depth: _____ mBGL Hole Size: _____ mm Measured Bore Depth: _____ mBTOC
Bore Location Description: Discovered! TOC Stickup: _____ 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
								<u>Found w/ pure fuel (petrol)</u>
								<u>placed between gate &</u>
								<u>ping - purged out</u>

Monitoring Bore ID: _____ Date Drilled: _____ Date Developed: _____ Drilled Depth: _____ mBGL Hole Size: _____ mm Measured Bore Depth: _____ mBTOC
Bore Location Description: _____ TOC Stickup: _____ 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