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DEVELOPMENT SERVICES

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First Name & Surname: Nadeem Baraz **Ph:** 0401134644

Property Address: HNo: 47 **Street:** Woodville Rd.

Suburb: Chester Hill **Postcode:** 2163

DA No: 1144/2014 **CC No:**

Subdivision No: **BC No:**

Officer paperwork to be referred to: Monica Samaan

Please tick appropriate boxes:

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☐ Structural	☐ Certificates	☐ Correspondence
☐ Stormwater	☐ Surveys	☐ Linen Plans (do not fold)
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Comments: 2 x Contamination Report.

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BARAZ CONSTRUCTION PTY LTD

DETAILED SITE INVESTIGATION
47 WOODVILLE ROAD, CHESTER HILL NSW

Report E22827 AA_Rev0
12 January 2016

Environmental Investigations Australia
Contamination | Remediation | Geotechnical

REPORT DISTRIBUTION

Detailed Site Investigation
47 Woodville Road, Chester Hill NSW

EI Report No.: E22827 AA_Rev0
Date: 12 January 2016

Copies		Recipient
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Revision	Details	Date	Amended By
0	Original	12 January 2016	-

EXECUTIVE SUMMARY

Background

Baraz Construction Pty Ltd engaged Environmental Investigations Australia Pty Ltd (EI) to conduct a Detailed Site Investigation (DSI) for site characterisation purposes for the property located at 47 Woodville Road, Chester Hill NSW (the site). This environmental assessment was completed to form part of a Development Application (DA) to Bankstown City Council for redevelopment of the site.

It is understood that the site is located on the eastern side of Woodville Road, covering an area of approximately 2,248 m^2, currently occupied by AUS Mate Car Sales and Rentals Pty Ltd.

Objectives

The main objectives of the assessment were to:

- Evaluate the potential for site contamination on the basis of historical, anecdotal and documentary evidence;
- To investigate the degree of potential contamination by limited intrusive sampling and laboratory analysis; and
- Where site contamination is confirmed, make recommendations for the appropriate management.

Findings

The property identified as 47 Woodville Road, Chester Hill NSW, was the subject of a Detailed Site Investigation in order to assess for on-site contamination associated with the identified current and former land uses. Based on the findings of this assessment it was summarised that:

- At the time of the site walkover the site was in use and occupied by AUS Mate a car sales and rentals depot and car wash facility;
- Total site area was approximately 2,284 m^2. Land use on surrounding lands was predominantly commercial and residential;
- Review of land title records and historical aerial photographs suggested that use of the site was primarily agricultural until the early 1950's when it was redeveloped for commercial uses. An Internet search for the business name "Leafvale Holdings Pty Ltd' owner of the site from 1985 to 2015 identified the proprietor as a motor vehicle dealership.
- A search of WorkCover NSW Authority records relating to the site was requested by EI. Correspondence dated 11 and 16 December 2015 (*Ref: D15/203188*) indicated a search of the Stored Chemical Information Database and the microfiche records held by WorkCover NSW did not locate any records relating to the site. Copies of the correspondences are provided in **Appendix E.**
- A search through the record of notices for contaminated land indicated that the site and lands in its vicinity (< 100 m) were free of statutory notices issued by the NSW EPA/OEH, and were not identified on the List of NSW contaminated sites notified to the EPA, or the POEO public register.
- Site walkover inspection did not identify the presence of underground petroleum storage systems (UPSS).

- Soil investigation was conducted at eight borehole locations (BH101M – BH108) across accessible areas of the site to a maximum depth of 5.5 mBGL, with soil samples for environmental assessment purposes collected down to approximately 2.4 mBGL. A groundwater monitoring well was installed at one location upon completion of drilling, denoted as BH101M;
- The general site geology encountered during the soil investigation is described as a layer of anthropogenic filling overlying clayey soils and shale.
- Laboratory analytical results of tested soil samples were assessed against the health-based investigation level for residential sites with minimal access to soil (HIL-B) and recreational soil (HIL-C). The analytical results suggested the following:
  - Concentration of Lead (Pb) at the threshold of the adopted HIL criteria was reported in sample BH108_0.13-0.23 (1,200 mg/kg). On review of the development plans for the proposed development this sampling location lies within the proposed extent of the basement and can be managed during the bulk excavation of the area. Results of tested natural material underlying Lead impacted fill soil were reported well within the adopted criterion indicating that the impacted lead soils had not leached to the natural material.
  - Free fibres and fragmented asbestos-containing material (ACM) was not identified in examined soils during field investigation.
- Due to the installation of only one (1) groundwater monitoring well during the investigation, determination of groundwater flow direction and background groundwater quality could not be established. Elevated concentrations in excess of the adopted GILs were not reported in groundwater sample 101M.
- The following data gaps identified in this DSI will require closure by further investigations:
  - Potential presence of hazardous materials present within site structures.

Based on the findings of the DSI and with consideration of the Statement of Limitations (**Section 13**), EI concludes that widespread contamination was not identified and the site is considered suitable for the proposed residential development provided the following recommendations are implemented.

Recommendations

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

- Prior to site demolition, carry out a Hazardous Materials Survey on existing site structures to identify potentially hazardous building products that may be released to the environment during demolition;
- Any material being removed from site (including virgin excavated natural materials (VENM)) should be classified for off-site disposal in accordance the EPA (2014) *Waste Classification Guidelines*; and
- Any material being imported to the site should be assessed for potential contamination in accordance with NSW EPA guidelines as being suitable for the intended use or be classified as VENM.

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1. INTRODUCTION

1.1 BACKGROUND AND PURPOSE

Mr Nadeem Baraz of Baraz Construction Pty Ltd (the Client) engaged Environmental Investigations Australia Pty Ltd (EI) to conduct a Detailed Site Investigation (DSI) for site characterisation purposes of the property located at 47 Woodville Road, Chester Hill NSW (the site).

As shown in **Figure 1**, the site is located approximately 20 km east of the Sydney central business district. The site is cadastrally identified as Lot 101 DP 733399, and covers a total area of approximately 2,248 m^2.

This assessment was conducted to form part of a Development Application (DA) to Bankstown City Council for redevelopment of the site involving the demolition of existing buildings and erection of a 3 storey residential development with basement parking. It is understood that the site is located on the western side of Bridges Road and is currently occupied by AUS Mate a company specialised in car sales and rentals. The site layout is presented in **Figure 2**.

1.2 PROPOSED DEVELOPMENT

At the time of report preparation, EI was provided with the following drawings prepared by Ghazi Al Ali Pty Ltd:

- "Site Plan", Drawing No. A 1010
- "North Elevation", Drawing No. A1500
- "South Elevation", Drawing No. A1501
- "East Elevation", Drawing No. A1502
- "West Elevation", Drawing No. A1503

Based on the above drawings, EI understand that the proposed development comprises demolition of existing site structures and a construction of a 3 storey residential development with associated basement car parking facilities and communal open space. Proposed development plans are presented in **Appendix A**.

1.3 REGULATORY FRAMEWORK

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

- ANZECC & ARMCANZ (2000) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*;
- DEC (2007) *Guidelines for the Assessment and Management of Groundwater Contamination*;
- DEC (2006) *Guidelines for the NSW Site Auditor Scheme (2nd Edition)*;
- EPA (1995) *Sampling Design Guidelines*;
- NEPM (2013) *Schedule B(1) Guideline on Investigation Levels for Soil and Groundwater*;
- NEPM (2013) *Schedule B(2) Guideline on Site Characterisation*;

- *Contaminated Land Management Act (1997)*; and
- OEH (2011) *Guidelines for Consultants Reporting on Contaminated Sites.*

1.4 PROJECT OBJECTIVES

The primary objectives of this investigation were to:

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

1.5 SCOPE OF WORKS

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

1.5.1 Desktop Study

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

1.5.2 Field Work & Laboratory Analysis

- A detailed site walkover inspection;
- Drilling boreholes at eight locations across targeted and accessible areas of the site. (refer to **Section 6.1**);

- Installation of one groundwater monitoring wells to a maximum depth of 5.5 m, constructed to standard environmental protocols to investigate potential groundwater contamination. (refer to **Section 6.1**);
- Multiple level soil sampling within fill and natural soils and one round of groundwater sampling from the newly constructed groundwater monitoring wells; and
- Laboratory analysis of selected soil and groundwater samples for relevant analytical parameters as determined from the site history survey and field observations during the investigation programme.

1.5.3 Data Analysis and Reporting

A DSI report would be prepared to document desk study findings, the conceptual site model, data quality objectives, investigation methodologies and results. The report would provide a record of observations made during the detailed site walkover inspection, borehole and monitoring well construction logs and a discussion of laboratory analytical results in regards to potential risks to human health, the environment and the aesthetic uses of the land.

2. SITE DESCRIPTION

2.1 PROPERTY IDENTIFICATION, LOCATION AND PHYSICAL SETTING

The site identification details and associated information are presented in **Table 2-1**, while the site locality is shown in **Figure 1**.

Table 2-1 Site Identification, Location and Zoning

Attribute	Description
Street Address	47 Woodville Road, Chester Hill NSW
Location Description	Approx.20km east of Sydney CBD, located on the eastern side of Woodville Road. The site is bounded by a Commercial Building (north), a vacant lot (south), residential properties east and Woodville Road west. North-eastern corner of site: GDA94-MGA56 Easting: 313979.381, Northing: 6250771.415 (Source: http://maps.six.nsw.gov.au)
Site Area	2,284 m²
Lot and Deposited Plan (DP)	Lot 101 DP 733399
State Survey Marks	Two State Survey Marks were identified in proximity to the site. PM 15278 situated on the eastern boundary of the site, and PM640 on the eastern side of the site across Woodville Road. (Source: http://maps.six.nsw.gov.au)
Local Government Authority	Bankstown City Council
Parish	Liberty Plains
County	Cumberland
Current Zoning	B1 – Neighbourhood Centre (Land Zoning Map Sheet LZN_001, Bankstown Local Environment Plan 2015)
Current Land Uses	Commercial

At the time of this assessment the site was occupied by AUS Mate, a company specialised in car sales and rentals. The assessment area is illustrated in **Figure 2**.

2.2 SURROUNDING LAND USE

The site was situated within an area of predominantly commercial / residential land use. Current uses of surrounding lands are described in **Table 2-2**.

Table 2-2 Surrounding Land Uses

Direction Relative to Site	Land Use Description
North	Commercial, then residential properties
South	Vacant lot then residential properties
East	Residential properties
West	Woodville Road then residential properties

Sensitive land uses, included Old Guildford Public High School located across Woodville Road south-east of the site.

2.3 REGIONAL SETTING

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

Table 2-3 Regional Setting Information

Attribute	Description
Topography	The regional topography consists gently undulating rises on Wianamatta Shale with local relief 10-30m, sloped <10%. The local topography was gently undulating with a 10% downward slope to the west.
Site Drainage	Based on observations on-site, stormwater is anticipated to be diverted by pit and pipe drainage to the municipal stormwater system.
Regional Geology	With reference to the Department of Mineral Resources, Geological Series Sheet 9130, Penrith the site comprises shale, caebonaceous claystone, laminate, fine to medium grained lithic sandstone rare coal and tuff.
Soil Landscapes	The Soil Conservation Service of NSW Soil Landscapes of the Penrith 1:100,000 Sheet (Bannerman, S.M. and Hazelton, P.A., 1990) indicates that the site likely overlies the Blacktown (bt) Landscape, which typically comprises friable brownish black loam, hardsetting brown clay loam, strongly pedal, mottled brown light clay and light grey plastic mottled clay.
Acid Sulfate Soil Risk	In accordance with the *Bankstown Local Environmental Plan* (Acid Sulfate Soil Map Sheet ASS_01, Bankstown City Council, 2015 does not lie under any class of acid sulfate soils. The need for Acid Sulphate soil management was therefore considered unwarranted and the risks associated with Acid Sulphate soils were considered negligible.
Groundwater Flow Direction	Based on observations on-site, groundwater is anticipated to flow on a westerly direction be diverted by gutter drains and downpipes to municipal stormwater system or as subsurface infiltration or overland flow, ultimately draining to Prospect Creek.
Nearest Surface Water Feature	Prospect Creek 2.5 km west of the site and Duck River 2.3 km east of the site. It is anticipated that water from Prospect Creek would ultimately discharge to Georges River, approximately 5 km south-east of the site while water from Ducks River to Parramatta River north-east of the site.

2.4 GROUNDWATER BORE RECORDS AND LOCAL GROUNDWATER USE

An online search of registered groundwater bores was conducted by EI on 22 December 2015 through the NSW Office of Natural Resources (Ref. http://allwaterdata.water.nsw.gov.au/water.stm). There were no registered bores

within 1 km of the site of the site. The nearest identified bores and their direction and distance from the site are listed in **Table 2-4**.

Table 2-4 Summary of Selected Registered Groundwater Bores

Bore No.	Direction and approx. Distance (m)	Date Drilled	Drilled Depth (m)	SWL	Bore Purpose
GW112616	W – 1.4 KM	2010	6	-	Monitoring
GW112617	W – 1.4 KM	2010	6	-	Monitoring
GW112618	W – 1.4 KM	2010	6	-	Monitoring

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

Three registered bores were identified in proximity of the site, being recorded as monitoring bores. Given the available reticulated water supply in the region, the likelihood of groundwater being used for drinking purposes in the local area was considered to be low. A map showing the locations of the identified bores is provided in **Appendix B**.

2.5 SITE WALKOVER INSPECTION

EI staff made a number of observations during a detailed site inspection on 10 December 2015. The recorded observations are summarised below with photographic log provided in **Appendix C**.

2.5.1 General Site Observations

- The site is occupied by a commercial structure and associated garages and sheds and a car park capped with concrete pavement which fronts onto Woodville Road extending to Alpha Street;
- Surrounding land use noted during the inspection included a Caltex petrol station down gradient to the north, a grassland covered vacant lot followed by residential dwellings to the south, residential dwellings to the east and Woodville Road followed by a Caltex petrol station to the west;
- At the time of the site walkover the site was in use and occupied by AUS Mate a car sales and rentals depot and car wash facility;
- At the time of the site walkover a car park covered by concrete pavement occupied most of the site. Various cars for sale and rental purposes were noted on the carpark. Minor, localised cracking and occasional minor oil staining and varying patches was noted on the concrete pavement;
- A concrete and tiled roof one storey building in used for administrative purposes was situated on the north eastern side of the site. The existing building appeared to be in good condition.
- Four garages constructed in brick and aluminium roofing were situated east of the office building. Scrap materials such as tires, wood, metal sheeting, old chairs, carpets and bicycles were noted on the storage areas;
- A shipping container constructed in aluminium of unknown content was situated at the eastern side of the yard;

- A shed constructed in aluminium was situated on the south eastern corner of the site, caustic degreaser, Suds N Wax concentrate exterior shampoo with synthetic polymer wax, Omikron car deodorizer, and a 25 L container of Shell X55 solvent were noted to be stored inside the shed.
- Water drainage systems were noted at different locations adjacent to the sheds on the northern and southern side of the site;
- Open car parking areas sloped slightly towards the west; indicating possible site grading works in the past; and
- Evidence of underground petroleum storage systems (UPSS) was not observed during the inspection.

2.5.2 Observations of Hazardous Building Materials

- Site observations indicate the potential presence of asbestos containing materials (ACM) on the interior of the building structures; and
- Site observations indicated that lead based paints may have been used on site structures.

3. PREVIOUS INVESTIGATIONS

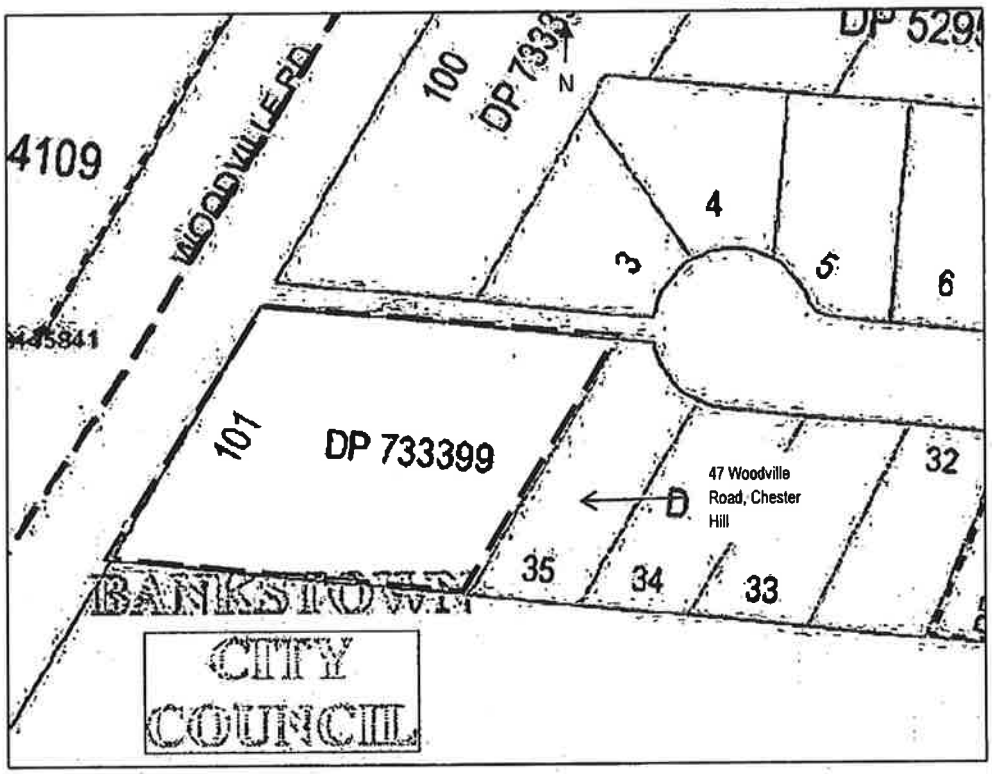
EI was not made aware of any previous environmental investigations conducted at the site.

4. SUMMARY OF SITE HISTORY AND SEARCHES

4.1 SITE LAND TITLES INFORMATION / HISTORIC AERIAL REVIEW

Historical land titles search for the site was conducted through Legal Liaison Services Pty Ltd. Copies of relevant documents, including detailed land title transfer records resulting from this search are presented in **Appendix D**. The land title search found 47 Woodville Road, Chester Hill comprised one allotments. The approximate outline of the allotment is shown in **Figure 4-1**.

Figure 4-1 Title Division within 47 Woodville Road, Chester Hill



A summary of all the previous and current registered proprietors along with information obtained from the available historical aerial photographs, in relation to past potential land uses are presented in **Table 4-1**.

The historical aerial photographs reviewed as part of this DSI included:

- 1930: 10 February 1930, Map 3429, Run 27, B/W;
- 1943: Sydney 1943 Imagery (source : http://maps.six.nsw.gov.au/);
- 1955: August 1955, Run 21, B/W, NSW 224-5024 – Lands Photo;
- 1961: 1961, Run 34, B/W, NSW 1050-5114 – Lands Photo;
- 1982: 9 August 1982, Run 22, B/W, NSW 3241/152 – Lands Photo;
- 1994: 4 October 1994, Run 10, NSW 4244 – Department of Lands;

- 2005: 10 December 2005, Run 10, NSW 4937 (M2510) – Department of Lands; and
- 2015: 2015 Aerometrex Imagery (accessed on Google Earth)

Table 4-1 Summary of Owners and Historical Aerial Photography

Period	List of Owners in the Period (Refer to Appendix D for further details)	Site description based on historical aerial photographs	Potential Land Uses
1917 to 1929	Harry Bertram Gazzard (Carpenter) Albert Ernest Gazzard (Hotel Manager)	**1930:** The site appears to be agricultural land, a building structure is noted on the north eastern side of the site, and second small structure presumed to be a dwelling on the north western corner of the site.	Agricultural
1929	Gertrude Caroline Andrews (Widow) Albert Ernest Gazzard (Hotel Manager) (Transmission Application not investigated)		Agricultural
1929 to 1951	Albert Ernest Gazzard (Hotel Manager, now Poultry Farmer)	**1945:** No major changes noted in the property from the1930 aerial.	Agricultural
1951 to 1975	Evelyn Marie Weeks (Married Woman)	**1955:** Previously noted structures appear to remain on site. **1961:** Previously noted structures on the north eastern side of the site appear to have been demolished. A structure is on the north western corner of the site and a few additional small sheds are noted on site.	Commercial
1975 to 1985	Vinbee Trading Pty Limited	**1994:** A paved car park is noted to the north of the property.	Commercial
1985 to 2015	Leafvale Holdings Pty Ltd	**2015:** No major changes noted in the property from the 1994 aerial. **1982:** The site seems to be occupied by commercial structures to the north. What appears to be a concrete paved open car park occupies the larger section of the site. **2005**: No major changes noted in the property from the 1982 aerial.	
2015 to date	# Baraz Construction Pty Limited	**2015:** A commercial building structure is noted to the north western corner of the site. Associated garages are noted adjacent to the structure to the east. A concrete paver open carpark is noted occupying the larger section of the site.	Commercial

Leases:

- 09.03.1971 to Vinbee Trading Pty Limited – expired 20.04.1976

Easements: - NIL

Land title records and historical aerial photographs suggested that use of the site was primarily agricultural until the early 1950's when it was redeveloped for commercial uses. An Internet search for the business name "Leafvale Holdings Pty Ltd' owner of the site from 1985 to 2015 identified the proprietor as a motor vehicle dealership.

4.2 SURROUNDING LANDS HISTORICAL AERIAL PHOTOGRAPHY REVIEW

As part of the Historical 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 4-2**.

Table 4-2 Summary of Aerial Photograph Review

Aerial Photograph	Surrounding land uses based on historical aerial photographs
1930: 10 February 1930, Map 3429, Run 27, B/W	Surrounding land use was predominately agricultural, a residential development is noted further to the north east of the site.
1943: Sydney 1943 Imagery (source : http://maps.six.nsw.gov.au/)	No major changes noted the dominant uses on surrounding lands remained as agricultural and residential further to the north east.
1955: August 1955, Run 21, B/W, NSW 224-5024 – Lands Photo	Areas north and south of the site were occupied by agricultural land followed by likely residential properties, area east of the site was dominated by agricultural properties. New residential dwellings are situated west of the site.
1961: 1961, Run 34, B/W, NSW 1050-5114 – Lands Photo	A few commercial structures are noted north of the site, a vacant lot is situates south of the site followed by residential dwellings, properties to the east and west are predominately occupied by new residential developments.
1982: 9 August 1982, Run 22, B/W, NSW 3241/152 – Lands Photo	Properties to the north are occupied by what appear to be a few commercial structures, to the south by a vacant lot and to the east by residential dwellings. Land uses to the south west appear to be commercial and to the north west predominately residential.
1994: 4 October 1994, Run 10, NSW 4244 – Department of Lands	The dominant uses on surrounding lands remained commercial then residential to the north, vacant lot then residential to the south, high density residential to the east and commercial to the south west and residential to the north west.
2005: 10 December 2005, Run 10, NSW 4937 (M2510) – Department of Lands	No major changes noted in the property from the 1994 aerial.
2015: 2015 Aerometrex Imagery (accessed on Google Earth)	A petrol station is noted to the north of the site, a vacant lot remains on the southern side, the eastern side is predominately occupied by residential dwellings, a petrol station is situated on the north western side across Woodville Road, Old Guildford Public school followed by residential properties is situated to the south east of the site.

4.3 COUNCIL INFORMATION

A search of historical records held by Bankstown City Council pertaining to the site was requested by EI. Correspondences dated 17 December 2015 from Bankstown City Council indicated one file related to 47 Woodville Road, Chester Hill was identified in Council records. A summary of the file is presented in **Table 4-3**.

Table 4-3 Record Archived at Bankstown City Council

Period / Year	Address	Document Reference	Description
2014	47 Henderson St	DA/300-2013	Demolition of existing structures and the construction of a residential use development containing 6 shops, 20 residential units, first floor open space and associated on – site car parking and landscaping. Decision: Refusal of consent, January 2014.

4.4 WorkCover NSW Authority Search

A search of WorkCover NSW Authority records relating to the site was requested by EI. Correspondences dated 11 and 16 December 2015 from the Dangerous Goods Licensing Section indicated a search of the Stored Chemical Information Database and the microfiche records held by WorkCover NSW did not locate any records relating to the site. Copies of the correspondences are provided in **Appendix E**.

4.5 Hazardous Chemicals and Regulatory Compliance

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

On 22 December 2015, 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. 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. This search confirmed that the NSW OEH has no regulatory involvement under Section 58 of the *Contaminated Land Management Act* 1997 in relation to the property identified as 47 Woodville Road, Chester Hill NSW.

4.5.2 List of NSW Contaminated Sites Notified to EPA

A search through the *List of NSW Contaminated Sites notified to the EPA* under Section 60 of the *CLM Act* 1997 was conducted by EI on 22 December 2015. This list is maintained by NSW EPA and includes properties on which contamination has been identified. Not all notified land is deemed to be impacted significantly enough to warrant regulation by the EPA. Review of the database indicated the site had not been notified as contaminated to the EPA.

4.5.3 POEO Public Register

A search of the *Protection of the Environment Operations (POEO) Act Public Register* on 13 October 2015, did not identify environmental protection licences, applications, notices, audits, pollution studies, and reduction programmes records pertaining to the site or properties within 1.0 km of the site.

5. PRELIMINARY CONCEPTUAL SITE MODEL

In accordance with NEPM (2013) *Schedule B2 – Guideline on Site Characterisation* and to aid in the assessment of data collection for the site, a preliminary conceptual site model (CSM) was developed to assess plausible linkages between potential contamination sources, migration pathways and receptors. The preliminary CSM was derived based on desktop study findings and provided a framework to review the reliability and useability of collected data and to identify data gaps in site characterisation works.

5.1 CHEMICAL HAZARDS AND CONTAMINATION SOURCES

On the basis of site inspection findings, site history, and search findings (described in **Section 4**), EI considered the potential chemical hazards and onsite contamination sources to be as follows:

- Impacts from importation of fill materials of unknown origin and quality;
- Impacts from long-term historical commercial use of the site including, spills and leaks from site storage areas and vehicle parking;
- Impacts from potential contamination form leaks / spills chemical storages of degreasers and solvents, hoist areas, and waste oil storage;
- Potential residues from pesticides use;
- Deeper, natural soils containing residual impacts, representing potential secondary sources of contamination;
- Potential groundwater contamination from on-site and unknown off-site sources;
- Impacts from unknown offsite sources of contamination;
- Weathering of building structures (i.e. painted surfaces, metallic structures, etc.);and
- Hazardous building products present in existing structures.

5.2 CHEMICALS OF CONCERN

Based on the findings of the site history review the potential chemicals of concern at the site were considered to be:

- Soil – heavy metals (HMs), total recoverable hydrocarbons (TRH), polycyclic aromatic hydrocarbons (PAH), the monocyclic aromatic hydrocarbon (MAH) compounds benzene, toluene, ethylbenzene and xylenes (BTEX), organochlorine and organophosphorus pesticides (OCP/OPP), polychlorinated biphenyls (PCB), phenolic compounds, volatile organic compounds (VOC), and asbestos; and
- Groundwater – HMs, TRH, BTEX, PAH, VOCs.

5.3 POTENTIAL SOURCES, EXPOSURE PATHWAYS AND RECEPTORS

Potential contamination sources, exposure pathways and human and environmental receptors that were considered relevant for this assessment are summarised in **Figure 5-1**.

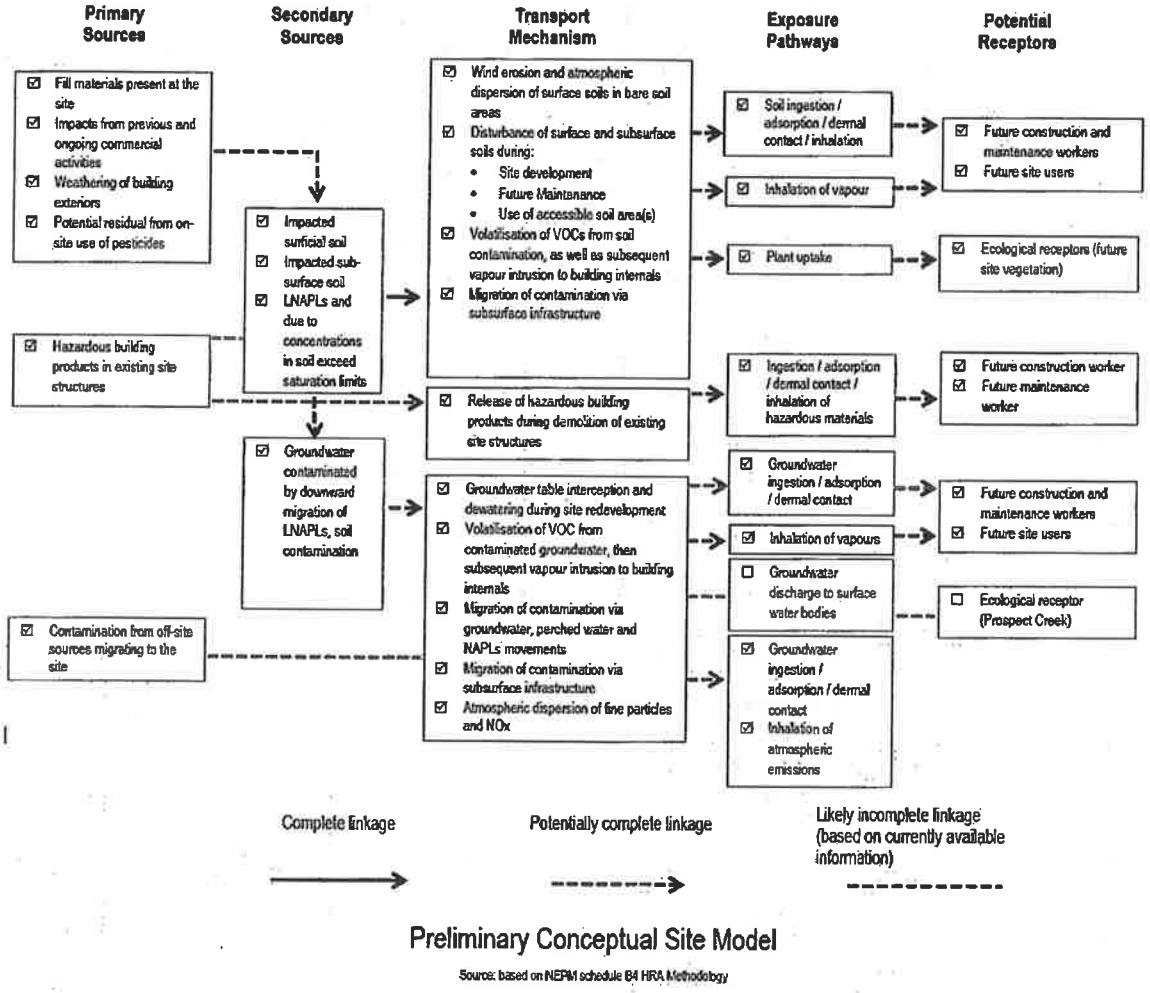


Figure 5-1 Preliminary Conceptual Site Model

5.4 DATA GAPS

Based on the preliminary conceptual site model derived for the site, the following data gaps were identified:

- The presence of onsite contamination from identified sources (listed in **Section 5.1**) requires confirmation;
- The degree and extent of onsite contamination, if any; and
- Potential presence of any contamination from other unknown onsite and offsite sources.

6. SAMPLING, ANALYTICAL AND QUALITY PLAN (SAQP)

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

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

6.1 DATA QUALITY OBJECTIVES (DQO)

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

Table 6-1 Summary of Project Data Quality Objectives

DQO Steps (NSW DEC, 2006)	Details	Comments
1. State the Problem Summarise the contamination problem that will require new environmental data, and identify the resources available to resolve the problem; develop a conceptual site model	• The site structures are to be demolished and the site is to be redeveloped into a residential development with associated on site car parking facilities and a landscaping. • Historical information and site inspection identified the potential for contamination of soils and/or groundwater, contributed by various potential contamination sources listed in **Section 4**: Based on the site history information collected, a preliminary conceptual site model of the site has been developed, and is presented in **Section 5**. • The investigation sampling must provide supportive information on the environmental conditions of the site to determine the site's suitability for the proposed development.	To enable DSI assessment, EI has adopted the approach that the proposed development will meet the definition of HIL B type development Residential with minimal opportunities for soil access (NEPM, 2013). In addition, it was assumed that areas beyond the proposed basement excavation extent would be deep soil zones to be used for landscaping. HIL C – *Recreational / Open Space* soil criteria are considered in this report to assess the suitability of site soils to be retained on-site for landscaping or gardening purposes in communal site areas.
2. Identify the Goal of the Study (Identify the decisions) Identify the decisions that need to be made on the contamination problem and the new environmental data required to make them	Based on the objectives outlined in **Section 1.4**, the decisions that need to be made are: • Has the nature, extent and source of any soil, vapour and/or groundwater impacts onsite been defined? • What impact do the site specific, geologic and hydrogeological conditions have on the fate and transport of any impacts that may be identified? • Does the level of impact coupled with the fate and transport of identified contaminants represent an unacceptable risk to identified human and/or environmental receptors on or offsite? • Does the collected data provide sufficient information to allow the selection and design of an appropriate remedial strategy, if necessary?	-

DQO Steps (NSW DEC, 2006)	Details	Comments
3. Identify Information Inputs (Identify inputs to decision) Identify the information needed to support any decision and specify which inputs require new environmental measurements	The main inputs to the environmental investigation works include: • Identification of historic potential contamination on site (**Section 4**) and preliminary site inspection (**Section 2.5**); • National and NSW EPA guidelines under the NSW Contaminated Land Management Act 1997. • Investigation sampling to verify the presence of onsite contamination and to evaluate the potential risks to sensitive receptors; and • At the end of the assessment, a decision must be made regarding whether the soils and groundwater are suitable for the proposed development, or if additional investigation or remedial works are required to make the site suitable.	- The assessment is required to accompany a DA to Council to characterise the condition of site soils and groundwater with respect to the proposed redevelopment of the property; which comprises of a multi-storey residential building, with associated on site car parking, and landscaping area (as discussed in **Section 1.2.**); - Historical information indicates the potential for site contamination from various potential sources, as detailed in **Section 4.1**
4. Define the Boundaries of the Study Specify the spatial and temporal aspects of the environmental media that the data must represent to support decision	• Lateral – the investigation will be conducted within the site boundaries; which defines the extent of the investigation; • Vertical – From existing ground surface, underlying fill and natural soil horizons, to the underlying groundwater aquifer; and • Temporal – Results are valid on the day of data and sample collection and remain valid as long as no changes occur on site or contamination (if present) does not migrate on site or on to the site from off-site sources.	Lateral – the extent of the study onsite was limited to accessible areas of the site due to existing building structures, site infrastructure, and areas of site operations, as detailed in **Section 7.2**.
5. Develop the Analytic Approach (Develop a decision rule) To define the parameter of interest, specify the action level, and integrate previous DQO outputs into a single statement that describes a logical basis for choosing from alternative actions	The decision rules for the investigation were: • If the concentrations of contaminants in the soil and/or groundwater data exceed the land use criteria; then assess the need to further investigate the extent of impacts on site; and • Decision criteria for QA/QC measures are defined by the Data Quality Indicators (DQI) in **Table 6-2**.	

DQO Steps (NSW DEC, 2006)	Details	Comments
6. Specify Performance or Acceptance Criteria (Specify limits on decision errors) Specify the decision-maker's acceptable limits on decision errors, which are used to establish performance goals for limiting uncertainties in the data	Based on the qualitative data gathered via site history review and site walkover observations, a non-statistical judgemental sampling design was selected for performing a programme of limited sampling for the PSI. As the site investigation area is predominantly involves areas subject to modification or development have been identified as areas of environmental concern (AEC) based identified contamination sources, known contaminants of concern, and professional judgement. Where there is uncertainty regarding the quality of the data obtained via the adoption of the judgemental sampling design, further investigation by systematic sampling will be required. Qualitative assessment of the data set acquired will comprise hypothesis testing by statistical analysis.	Due to the existing site structures a systematic sampling pattern was not achieved in this DSI. As a result, this DSI primarily adopted a targeted sampling pattern, focusing on identified areas of environmental concern. As such, individual soil data points were assessed solely against adopted criteria.
7. Develop the Detailed Plan for Obtaining Data (Optimise the design for obtaining data) Identify the most resource-effective sampling and analysis design for general data that are expected to satisfy the DQOs	• Eight (8) soil sampling locations were set using a targeted sampling pattern across the accessible areas of the site to evaluated areas of environmental concern. • An upper soil profile sample (soil extracted immediately beneath the concrete hardstand / pavement will be collected at each borehole location and tested for chemicals of concern, to assess the conditions of fill layer, and impacts from activities above ground. Further sampling would also be carried out at deeper soil layers. These samples would be selected for testing based on field observations (including visual and olfactory evidence, as well as soil vapour screening in headspace samples) whilst giving consideration to characterise the subsurface soil stratigraphy. • One groundwater monitoring well was proposed to characterise groundwater quality within the site. • Written instructions will be issued to guide field personnel in the required fieldwork activities.	

6.2 DATA QUALITY INDICATORS

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

Table 6-2 Data Quality Indicators

QA/QC Measures	Data Quality Indicators
Precision – A quantitative measure of the variability (or reproducibility) of data	Data precision would be assessed by reviewing the performance of blind field duplicate sample sets, through calculation of relative percentage differences (RPD). Data precision would be deemed acceptable if RPDs are found to be less than 30%. RPDs that exceed this range may be considered acceptable where: • Results are less than 10 times the limits of reporting (LOR); • Results are less than 20 times the LOR and the RPD is less than 50%; or • Heterogeneous materials or volatile compounds are encountered.
Accuracy – A quantitative measure of the closeness of reported data to the "true" value	Data accuracy would be assessed through the analysis of: • Method blanks, which are analysed for the analytes targeted in the primary samples; • Matrix spike and matrix spike duplicate sample sets; • Laboratory control samples; and • Calibration of instruments against known standards.
Representativeness – The confidence (expressed qualitatively) that data are representative of each medium present onsite	To ensure the data produced by the laboratory is representative of conditions encountered in the field, the laboratory would carry out the following: • Blank samples will be run in parallel with field samples to confirm there are no unacceptable instances of laboratory artefacts; • Review of relative percentage differences (RPD) values for field and laboratory duplicates to provide an indication that the samples are generally homogeneous, with no unacceptable instances of significant sample matrix heterogeneities; and • The appropriateness of collection methodologies, handling, storage and preservation techniques will be assessed to ensure/confirm there was minimal opportunity for sample interference or degradation (i.e. volatile loss during transport due to incorrect preservation / transport methods).
Completeness – A measure of the amount of useable data from a data collection activity	Analytical data sets acquired during the assessment will be evaluated as complete, upon confirmation that: • Standard operating procedures for sampling protocols were adhered to; and • Copies of all COC documentation are presented, reviewed and found to be properly completed. It can therefore be considered whether the proportion of "useable data" generated in the data collection activities is sufficient for the purposes of the land use assessment.
Comparability – The confidence (expressed qualitatively) that data may be considered to be equivalent for each sampling and analytical event	Given that a reported data set can comprise several data sets from separate sampling episodes, issues of comparability between data sets are reduced through adherence to standard operation procedure and regulator-endorsed or published guidelines and standards on each data gathering activity. In addition the data will be collected by experienced samplers and NATA-accredited laboratory methodologies will be employed in all laboratory testing programs.

7. ASSESSMENT METHODOLOGY

7.1 SAMPLING RATIONALE

With reference to the preliminary CSM described in **Section 5** and the DQO discussed in **Section 6,** the proposed soil and groundwater investigation works were planned in accordance with the following rationale:

- Sampling fill and natural soils from eight borehole locations across accessible areas of the site using a targeted sampling approach to characterise *in-situ* soils;
- Sampling groundwater during a single groundwater monitoring event (GME) at one newly installed groundwater monitoring wells on-site to assess potential groundwater contamination; and
- Laboratory analysis of representative soil and groundwater samples for the identified chemicals of concern.

7.2 INVESTIGATION CONSTRAINTS

With regard to the scope of works proposed for performing intrusive site investigations, the following investigation constraints were encountered:

- A borehole (BH101M) could not reach target depth (6 mBGL) due to auger refusal in the residual soil strata; and
- Access to internal building areas of the site was unavailable at the site at the time of the investigation due inability to access internal areas due to limited drilling rig head clearance, limited space within the buildings, and current operations being performed with the sites buildings. As such, targeted test borehole locations were limited to external areas of the site.

7.3 ASSESSMENT CRITERIA

The assessment criteria proposed for this project are outlined in **Table 7-1**. These assessment criteria were selected from available published guidelines that are endorsed by national or state regulatory authorities, with due consideration of the exposure scenario that has been considered for the proposed development (residential with minimal access to soils and recreational), and the likely exposure pathways and identified potential receptors.

Table 7-1 Adopted Investigation Levels for Soil and Groundwater

Environmental Media	Adopted Guidelines	Rationale
Soil	NEPM, 2013 Soil HILs, EILs, HSLs, ESLs & Management Limits for TRHs	**Soil Health-based Investigation Levels (HILs)** Based on the proposed development plans. EI assumed the land use at onsite after redevelopment would meet the definition of HIL-B land use. Samples at BH104 to BH108 therefore are assessed against the NEPM 2013 HIL-B thresholds for residential sites with minimal opportunities for soil access. BH101M to BH103 soil samples would meet the definition of HIL-C thresholds for deep soil areas that may be retained on site for landscaping or gardening use. **Ecological Investigation Levels (EILs)** Soil samples from BH101M to BH103 are also assessed against the NEPM 2013 EILs for arsenic, copper, chromium (III), nickel, lead, zinc, DDT and naphthalene which have been derived for protection of terrestrial ecosystems. **Table 7-2** provides a summary of adopted Added Contaminant Levels (ACL) and Ambient Background Concentrations for the derivation of copper, chromium (III), nickel, lead, and zinc EILs. Generic EILs were adopted for ecological assessment in relation to arsenic, DDT and naphthalene. **Soil Health-based Screening Levels (HSLs)** The NEPM 2013 Soil HSL A&B thresholds for low-high density residential sites and HSL C for recreational sites for vapour intrusion would be applied to assess for potential human health impacts from residual vapours resulting from petroleum, BTEX & naphthalene. Soils asbestos results are to be assessed against the NEPM 2013 Soil HSL thresholds for "all forms of asbestos". **Ecological Screening Levels (ESLs)** Soil samples from BH101M, BH102 and BH103 are also assessed against the NEPM 2013 ESLs for selected petroleum hydrocarbons fractions, BTEX and benzo(a)pyrene for protection of terrestrial ecosystems.
Groundwater	NEPM, 2013 GILs for Fresh Waters and Marine Waters ANZECC 2000 Trigger Values NEPM, 2013 Groundwater HSLs for Vapour Intrusion	**Groundwater Investigation Levels (GILs) for Marine Waters** NEPM 2013 provides GILs for typical, slightly-moderately disturbed aquatic ecosystems, which are based on the ANZECC & ARMCANZ 2000 Trigger Values (TVs) for the 95% level of protection of aquatic ecosystems; however, the 99% TVs were applied for the bio-accumulative metals *cadmium* and *mercury*. The nearest potential surface water receptor in relation to the site was identified as Prospect Creek which ultimately discharges to Georges River and Botany Bay, which is identified as a Marine Waters system, GILs for Marine Waters are adopted in this limited investigation to assess groundwater quality. Due to the ANZECC (2000) criteria for TRH being below the laboratory limit of reporting, the PQL for each TRH fraction was adopted as the GIL for aquatic ecosystems, in accordance with the procedure described in DEC (2007) *Guidelines for the Assessment and Management of Groundwater*

Environmental Media	Adopted Guidelines	Rationale
		Contamination. **Health-based Screening Levels (HSLs)** The NEPM 2013 groundwater HSLs for vapour intrusion are used to assess potential human health impacts from residual vapours resulting from petroleum, BTEX and naphthalene contamination. *HSL A & B* thresholds for residential sites and *HSL C* are applied.

Table 7-2 Adopted ACL and ABC Values for EIL Derivation

Metal	Assumed Values [1]	EIL (mg/kg) [2]
Arsenic	Generic EIL	100
Chromium (III)	ABC - 15 mg/kg (assumes an old NSW high traffic suburb) ACL - 400 mg/kg (assumes clay content ≥ 10 %)	415
Copper	ABC - 30 mg/kg (assumes an old NSW high traffic suburb) ACL - 65 mg/kg (assumes pH 6.0)	95
DDT	Generic EIL	180
Lead	ABC - 160 mg/kg (assumes an old NSW high traffic suburb) ACL – 1,100 mg/kg	1,260
Naphthalene	Generic EIL	170
Nickel	ABC - 5 mg/kg (assumes an old NSW high traffic suburb) ACL - 30 mg/kg (assumes CEC 5)	35
Zinc	ABC - 120 mg/kg (assumes an old NSW high traffic suburb) ACL - 230 mg/kg (assumes pH 6.0 & CEC 5)	350

Note:
ACL - added contaminant limit; ACLs for urban residential and public open space were used for this project
ABC - ambient background concentration
The most stringent ACL values were adopted for Chromium (III), Copper, Lead, Nickel and Zinc, as site soil physiochemical properties (i.e. pH, CEC and clay content) were not tested (Ref. NEPM 2013 Schedule B1, Tables 1B(1), 1B(2), 1B(3) and 1B(4) *Soil-specific added contaminant limits*)
[1] Assumed values are based on NEPM 2013 Schedule B5(c) *Guideline on Ecological Investigation Levels for Arsenic, Chromium (III), Copper, DDT, Lead, Naphthalene, Nickel & Zinc*
[2] EIL = ABC + ACL, unless Generic EIL is applicable

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

7.4 SOIL INVESTIGATIONS

The soil investigations conducted at the site are described in **Table 7-3**. Borehole locations are presented in **Figure 2**.

Table 7-3 Summary of Soil Investigation Methodology

Activity/Item	Details
Fieldwork	The soil investigation was conducted on 10 December 2015 by an EI environmental engineer. A total of eight boreholes (BH101 – BH108) were drilled and sampled. Upon completion of the drilling, one groundwater monitoring well was installed at BH101(herein referred to as BH101M).
Drilling Method & Investigation Depth	BH101 – BH108 were drilled with 4WD-mounted hydraulic drilling rig, fitted with 100 mm solid flight augers. Final bore depths ranged between 1.0 mBGL and 5.5 mBGL.
Soil Logging	Soils were classified in the field with respect to lithological characteristics and evaluated on a qualitative basis for odour, visual signs of contamination, and anthropogenic inclusions. Soil classifications and descriptions were based on the Unified Soil Classification System (USCS) and Australian Standard (AS) 4482.1-2005. Borehole logs are presented in **Appendix F**.
Field Observations (including visual and olfactory signs of potential contamination)	Field observations made during the soil investigation are recorded on the borehole logs. A summary of the observations is provided in **Section 9.1.2**.
Soil Sampling	Soil samples were collected using a dry grab method with disposable nitrile gloves and placed into laboratory-supplied, acid-washed, solvent-rinsed glass jars. Gloves were replaced between sampling locations. Blind field duplicates were separated from the primary samples without mixing and placed into glass jars. A small amount of material was collected from each soil sample and placed into a zip-lock bag as soil headspace samples for Photo-ionisation Detector (PID) screening. A small amount of material was separated from all fill samples and placed into a zip-lock bag for asbestos analysis.
Decontamination Procedures	*Drilling Equipment* – Spoils remained on drilling rods were removed by hand, followed by rinsing with potable water until the rods were free of all residual materials between borehole locations. The hand auger was decontaminated with a diluted solution of Decon 90 and potable water, followed by rinsing with potable water until the auger was free of all residual materials. *Sampling Equipment* – Decontamination was not required as the sampling gloves were replaced between sampling locations.
Sample Preservation	Samples were stored in a refrigerated (ice-filled) chest, whilst on-site and in transit to the laboratory. All samples were submitted and analysed within the required holding period, as documented in laboratory reports discussed in a later section.
Management of Soil Cuttings	Soil cuttings were used as backfill for completed boreholes. Excess soil cuttings were retained on-site in sealed heavy duty plastic bags.
Quality Control & Laboratory Analysis	A number of soil samples were submitted for analysis of previously identified chemicals of concern by SGS Laboratories (SGS). QA/QC testing comprised intra-laboratory duplicates ('field duplicates') tested blind by SGS and inter-laboratory field duplicates tested blind by Envirolab Services (Envirolab). All samples were transported under strict Chain-of-Custody (COC) conditions and COC certificates and laboratory sample receipt documentation were provided to EI for confirmation purposes, as discussed in **Section 8**.
Soil Vapour Screening	Field screening for potential VOCs collected in soil headspace samples was conducted using a PID fitted with a 10.6 eV lamp.

7.5 GROUNDWATER INVESTIGATIONS

The groundwater investigations conducted at the site are described in **Table 7-4**. The location of the monitoring wells is illustrated in **Figure 2**.

Table 7-4 Summary of Groundwater Investigation Methodology

Activity/Item	Details
Fieldwork	The groundwater monitoring well (BH101M) was installed and developed on 10 December 2015. Water level gauging, well purging, field testing and groundwater sampling were conducted on 15 December 2015 by an EI environmental scientist.
Well Construction	The groundwater monitoring well was installed at approximately 5.5 mBGL. Well construction details are tabulated in **Table 9-2** and documented in the bore logs presented in **Appendix F**. BH101M well was installed to screen the clay profile. Well construction was in general accordance with the standards described in NUDLC (2012) and comprised the following: • 50 mm (internal diameter), Class 18 uPVC, threaded, machine-slotted screen and solid casing; • Base and top of each well was sealed with a uPVC cap; • Annular, graded sand filter was used to backfill the well annulus from the bottom to minimum 500 mm above the top of screen interval; • Minimum 500 mm thick granular bentonite was applied above annular filter in order to seal the screened interval; • Drill cuttings were used to backfill the bore annulus to just below ground level; and • Surface completion comprised a steel road box cover finished flush with the concrete slab level.
Well Development	Well development was conducted after well installation. This involved agitation within the full length of the water column using a HDPE, disposable bailer, followed by removal of groundwater by the same bailer. Bailers were replaced between groundwater wells. Groundwater removal was continued until the monitoring wells were purged dry, or until further decrease in groundwater turbidity was not observed.
Well Gauging	All monitoring wells were gauged for standing water level (SWL, depth from ground level to groundwater) prior to well purging at the commencement of the GME on 15 December 2015. The gauging was conducted with an oil-water interface probe to assess for potential presence of phase-separated hydrocarbon (PSH). The measured SWLs are shown in **Table 9-3**.
Well Purging, Field Testing and Groundwater Sampling	The groundwater monitoring well was purged and sampled using low-flow/minimal drawdown sampling method with a MicroPurge kit (MP15) and a portable MicroPurge pump following well gauging. The MicroPurge system incorporates a low density poly-ethylene (LDPE) pump bladder, and a Teflon-lined LDPE sample delivery tube. The system used for this investigation employed pressurised carbon dioxide gas to regulate groundwater flow. Pump pressure and pumping cycles were adjusted accordingly to regulate extraction flow rate, and to avoid causing excessive drawdown of water level during the sampling process. Field measurement of water quality parameters was conducted continuously on purged groundwater with a water quality meter (Hanna Multi Parameter 9829) positioned within an open flow-through cell. Groundwater parameters tested in the field were Dissolved Oxygen (DO), Electrical Conductivity (EC), Redox, Temperature and pH. The measured parameters were recorded onto a field data sheet (Appendix G), along with the purged water volume at the time of measurement. Groundwater sampling was performed when three consecutive readings of groundwater

Activity/Item	Details
	parameter indicated stabilisation; as per the specified ranges detailed below: • Electrical Conductivity: ± 3% of the read value; • Redox: ± 20 mV; • DO: ± 20% of the read value; and • pH: ± 0.2 pH unit. Total water volume purged and stabilised groundwater parameters at each groundwater monitoring well are summarised in **Table 9-3.**
Sample Preservation	The following sample containers supplied by the laboratory were used to store groundwater samples: • One, amber glass, acid-washed and solvent-rinsed bottle; • Two, 40 ml amber glass vials, pre-preserved with dilute hydrochloric acid, Teflon-sealed; and • One, 250 mL, HDPE bottle, pre-preserved with dilute nitric acid (1 mL). Samples collected for heavy metal analysis were field-filtered using 0.45 µm pore-size filters. All containers were filled with sample to the brim then capped and stored in ice-filled chests, until completion of the fieldwork and during sample transit to the laboratory.
Quality Control & Laboratory Analysis	All groundwater samples were submitted for analysis of previously-identified chemicals of concern by SGS Laboratories (SGS). QA/QC testing comprised testing of rinsate blank and trip blank samples. All samples were transported under strict Chain-of-Custody (COC) conditions. COC certificates and laboratory sample receipt documentation were provided to EI for confirmation purposes.
Sample Transport	After sampling, refrigerated sample chests were transported to SGS Australia Pty Ltd using strict Chain-of-Custody (COC) procedures. A Sample Receipt Advice (SRA) was provided by the laboratory to document sample condition upon receipt. Copies of SRA and COC certificates are presented in **Appendix H**.

8. DATA QUALITY ASSESSMENT

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

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

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

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

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

9. RESULTS

9.1 SOIL INVESTIGATION RESULTS

9.1.1 Site Geology and Subsurface Conditions

The general site geology encountered during the soil investigation is described as a layer of anthropogenic filling overlying residual clayey soils and shale. The geological information obtained during the investigation is summarised in **Table 9-1** with borehole logs presented in **Appendix F**.

Table 9-1 Generalised Subsurface Profile

Layer	Description	Depth to Top & Bottom of Layer (mBGL)	
		Top	Bottom
Fill	Fill material generally comprised clay medium to high plasticity dark brown, dark grey with occasional inclusions of gravel.	0.1 m	0.3 – 0.5
Natural clay	CLAY, medium to high plasticity, generally brown and orange and grey.	0.3 – 0.5	0.8 – 2.3
Shale	Shale Extremely weathered, light brown.	0.8 – 2.3	1.5 – 5.5

Notes:
+ Termination depth of borehole. Detailed descriptions of materials encountered at each borehole are provided in the borehole logs included as **Appendix F**.

9.1.2 Field Observations and PID Results

Soil samples were obtained from the drilled boreholes at various depths ranging between 0.1 m to 1.5 mBGL. Examined soil samples were evaluated on a qualitative basis for odour and visual signs of contamination (e.g. hydrocarbon odours, oil staining, petrochemical filming, asbestos fragments, ash, charcoal, etc.) and the following observations were noted:

- Olfactory evidence of hydrocarbon contamination was not noted during drilling or in samples collected;
- Foreign objects of anthropogenic origin were not observed;
- Fibrous cement sheeting was not observed in any of the sampling locations ; and
- Soil headspace samples were field-screened using a portable PID, with concentrations recorded onto bore logs. The PID headspace readings of samples ranged between 3.0 ppm and 7.1 ppm. Recorded PID readings are reported on borehole logs, presented in **Appendix C**.

9.2 GROUNDWATER INVESTIGATION RESULTS

9.2.1 Monitoring Well Construction

One groundwater monitoring well was installed at BH101M upon completion of drilling. The well installation depth and screen interval are summarised in **Table 9-2**. Further construction details are discussed in **Table 7-4**, whilst graphical representation of the monitoring well is shown in the borehole log included as **Appendix F**.

Table 9-2 Monitoring Well Construction Details

Well ID	Well Depth (mBGL)	Screen Interval (mBGL)	Lithology Screened
BH101M	5.5	2.3 – 5.3	Shale

Notes:
mBGL – Metres below ground level.

9.2.2 Field Observations and Water Test Results

A GME was conducted on 15 December 2015. Standing water levels (SWL) were measured within the groundwater monitoring well prior to well purging. SWL, well purge volumes prior to sample collection, and field test results of groundwater quality parameters at the monitoring well location were recorded onto the field data sheet. A summary of the recorded field data is presented in **Table 9-3** with copies of completed field data sheets included in **Appendix G**.

Table 9-3 Groundwater Field Data

Well ID	SWL (mBTOC)	Stickup (m)	WL† (mBGL)	Purge Volume (L)	DO* (ppm)	Field pH	Field EC (µS/cm)	Temp (°C)	Redox (mV)	Odours / Turbidity
BH101M	3.75	-0.10	3.85	0.5	0.86	7.20	9256	23.3	190.9	Light brown / yellow, moderate turbidity, no sheen no odour.

Notes:
SWL – Standing Water Levels as measured from TOC (top of well casing) prior to groundwater sampling.
mBTOC – Metres below top of well casing.
Stickup – Measured distance between ground level to TOC. Negative number indicated TOC is lower than ground level.
† WL – Groundwater level reduced to metres above the Australian Height Datum. WLs were calculated as WL = Reduce Ground Level – (SWL + Stickup).
L – litres (referring to the volume of water purged from the well prior to groundwater sample collection).
DO – Dissolved Oxygen in units of parts per million.
EC – Groundwater electrical conductivity as measured onsite using portable EC meter.
µS/cm – Micro Siemens per centimetre (EC units).
Redox – Oxidation and reduction potential. Redox reported in Table 9-3 has been adjusted relative to standard hydrogen electrode (by adding 205 mV to field reading, as advised by the test equipment manufacturer). Refer to **Appendix G** for field redox readings pre-adjustment.
mV – Millivolts.
All groundwater parameters (pH, Redox, EC and DO) were tested on site.

The field pH data indicated that the groundwater pH was neutral. Electrical conductivity (EC) measurements was reported at 9256 µS/cm, suggesting groundwater was marginally fresh to slightly brackish in terms of water salinity. Redox measurement was reported at 190.9 mV, suggesting groundwater encountered in the GME was oxidising.

9.3 LABORATORY ANALYTICAL RESULTS

9.3.1 Soil Analytical Results

A summary of laboratory results showing test sample quantities and samples found to exceed the SILs, is presented in **Table 9-4**. Detailed tabulations of results, comparing the concentrations of individual samples with adopted soil criteria, are presented in **Table T1** and **T3** at the end of this report. Elevated concentrations, along with the respective sampling locations are also indicated on **Figure 3**. Completed documentation used to track soil sample movements and laboratory receipt (i.e. COC and SRA forms) are copied in **Appendix H**, with laboratory analytical reports for tested soil samples are presented in **Appendix I**.

Table 9-4 Summary of Soil Analytical Results

No. of Primary samples	Analyte	Sample and Concentration exceeding SIL
Heavy Metal		
12	Arsenic	None
12	Cadmium	None
12	Chromium (Total)	None
12	Copper	None
12	Lead	Sample at threshold for HSL B
12	Mercury	None
12	Nickel	None
12	Zinc	None
Hydrocarbons		
12	TRH F1 (C_6-C_{10} minus BTEX)	None
12	TRH F2 (>C_{10}-C_{16} minus naphthalene)	None
12	TRH F3 (>C_{16}-C_{34})	None
12	TRH F4 (>C_{34}-C_{40})	None
12	Benzene	None
12	Toluene	None
12	Ethyl benzene	None
12	Total xylenes	None
PAHs		
12	Carcinogenic PAHs (as B(α)P TEQ)	None
12	Benzo(a)pyrene	None
12	Total PAHs	None
12	Naphthalene	None
OCPs		
8	OCP compounds	None
OPPs		
8	OPP compounds	None
PCBs		
8	Total PCBs	None
Asbestos		
12	Asbestos	None

9.3.2 Groundwater Analytical Results

A summary of laboratory results showing test sample quantities and samples found to exceed the GILs, is presented in **Table 9-5**. Laboratory analytical results for groundwater samples are summarised in **Tables T4**, which also include the adopted GILs. Completed documentation used to track groundwater sample movements and laboratory receipt

(COC and SRA forms) are copied in **Appendix H**. Copies of the laboratory analytical reports are attached in **Appendix I**.

Table 9-5 Summary of Groundwater Analytical Results

No. of primary samples	Analyte	Exceedances of GIL and reported concentration
Heavy Metal		
1	Arsenic	None
1	Cadmium	None
1	Chromium (Total)	None
1	Copper	None
1	Lead	None
1	Mercury	None
1	Nickel	None
1	Zinc	None
Hydrocarbons		
1	F1 TRH (C_6-C_{10} minus BTEX)	None
1	F2 TRH (>C_{10}-C_{16} minus naphthalene)	None
1	F3 TRH (>C_{16}-C_{34})	None
1	F4 TRH (>$_{34}$-C_{40})	None
1	Benzene	None
1	Toluene	None
1	Ethyl benzene	None
1	Xylenes	None
1	Naphthalene	None
VOCs		
1	VOCs	None
PAHs		
1	Total PAHs	None

10. SITE CHARACTERISATION DISCUSSION

10.1 HEAVY METALS IN SOILS

Concentration of Lead (Pb) at the threshold of the adopted HIL criteria was reported in sample BH108_0.13-0.23 (1,200 mg/kg). On review of the development plans for the proposed development this sampling location lies within the area of the proposed extent of the basement and can be managed during the bulk excavation of the basement. Results of tested natural material underlying Lead impacted fill soil were reported well within the adopted criterion indicating that the impacted lead soils had not leached to the natural material.

10.2 ASBESTOS RISKS

Given the limitations associated with identification of asbestos via an intrusive investigation utilising boreholes, a visual inspection should be performed after demolition of site structures and removal of the existing surface cover.

A Hazardous Materials Survey (HMS) should also be undertaken prior to site demolition by a suitably qualified person. This should be performed to identify ACM and other potentially hazardous building products, and to enable the development and implementation of appropriate management procedures during demolition (if necessary).

10.3 GROUNDWATER CHARACTERISATION

Due to the installation of only one (1) groundwater monitoring well during the investigation, determination of groundwater flow direction and background groundwater quality could not be established. Elevated concentrations in excess of the adopted GILs were not reported in groundwater sample 101M.

10.4 REVISED CONCEPTUAL SITE MODEL – POST-FIELD INVESTIGATION

The preliminary CSM discussed in **Section 5** was considered appropriate to identify contamination sources, migration mechanisms and exposure pathways, as well as potential onsite and offsite receptors, on the basis of the findings from this investigation. Several previously known data gaps, as outlined in **Section 5**, have been addressed, however, the following remaining data gap needs to be addressed in subsequent investigation works:

- Potential presence of hazardous materials present within the existing structures.

10.4.1 Data Gaps

The following remaining data gaps need to be assessed in subsequent investigation works:

- Potential presence of hazardous materials present within site structures.

11. CONCLUSIONS

The property identified as 47 Woodville Road, Chester Hill NSW, was the subject of a Detailed Site Investigation in order to assess for on-site contamination associated with the identified current and former land uses. Based on the findings of this assessment it was summarised that:

- At the time of the site walkover the site was in use and occupied by AUS Mate a car sales and rentals depot and car wash facility;
- Total site area was approximately 2,284 m^2. Land use on surrounding lands was predominantly commercial and residential;
- Review of land title records and historical aerial photographs suggested that use of the site was primarily agricultural until the early 1950's when it was redeveloped for commercial uses. An Internet search for the business name "Leafvale Holdings Pty Ltd' owner of the site from 1985 to 2015 identified the proprietor as a motor vehicle dealership.
- A search of WorkCover NSW Authority records relating to the site was requested by EI. Correspondence dated 11 and 16 December 2015 (*Ref: D15/203188*) indicate indicated a search of the Stored Chemical Information Database and the microfiche records held by WorkCover NSW did not locate any records relating to the site. Copies of the correspondences are provided in **Appendix E.**
- A search through the record of notices for contaminated land indicated that the site and lands in its vicinity (< 100 m) were free of statutory notices issued by the NSW EPA/OEH, and were not identified on the List of NSW contaminated sites notified to the EPA, or the POEO public register.
- Site walkover inspection did not identify the presence of underground petroleum storage systems (UPSS).
- Soil investigation was conducted at eight borehole locations (BH101M – BH108) across accessible areas of the site to a maximum depth of 5.5 mBGL, with soil samples for environmental assessment purposes collected down to approximately 2.4 mBGL. A groundwater monitoring well was installed at one location upon completion of drilling, denoted as BH101M;
- The general site geology encountered during the soil investigation is described as a layer of anthropogenic filling overlying clayey soils and shale.
- Laboratory analytical results of tested soil samples were assessed against the health-based investigation level for residential sites with minimal access to soil (HIL-B) and recreational soil (HIL-C). The analytical results suggested the following:
  - Concentration of Lead (Pb) at the threshold of the adopted HIL criteria was reported in sample BH108_0.13-0.23 (1,200 mg/kg). On review of the development plans for the proposed development this sampling location lies within the area of the proposed extent of the basement and can be managed during the bulk excavation. Results of tested natural material underlying Lead impacted fill soil were reported well within the adopted criterion indicating that the impacted lead soils had not leached to the natural material.

  - Free fibres and fragmented asbestos-containing material (ACM) was not identified in examined soils during field investigation.

- Due to the installation of only one (1) groundwater monitoring well during the investigation, determination of groundwater flow direction and background groundwater quality could not be established. Elevated concentrations in excess of the adopted GILs were not reported in groundwater sample 101M.
- The following data gaps identified in this DSI will require closure by further investigations:
  - Potential presence of hazardous materials present within site structures.

Based on the findings of the DSI and with consideration of the Statement of Limitations (**Section 13**), EI concludes that widespread contamination was not identified and the site is considered suitable for the proposed residential development provided the following recommendations, outlined in **Section 12**, are implemented.

12. RECOMMENDATIONS

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

- Prior to site demolition, carry out a Hazardous Materials Survey on existing site structures to identify potentially hazardous building products that may be released to the environment during demolition;
- Any material being removed from site (including virgin excavated natural materials (VENM)) should be classified for off-site disposal in accordance the EPA (2014) *Waste Classification Guidelines*; and
- Any material being imported to the site should be assessed for potential contamination in accordance with NSW EPA guidelines as being suitable for the intended use or be classified as VENM.

13. STATEMENT OF LIMITATIONS

This report has been prepared for the exclusive use of Baraz Construction Pty Ltd who is the only intended beneficiary of EI's work. The scope of the investigations carried out for the purpose of this report is limited to those agreed with Baraz Construction Pty Ltd on 4 December 2015.

No other party should rely on the document without the prior written consent of EI, and EI undertakes no duty, or accepts any responsibility or liability, to any third party who purports to rely upon this document without EI's approval.

EI has used a degree of care and skill ordinarily exercised in similar investigations by reputable members of the environmental industry in Australia as at the date of this document. No other warranty, expressed or implied, is made or intended. Each section of this report must be read in conjunction with the whole of this report, including its appendices and attachments.

The conclusions presented in this report are based on a limited investigation of conditions, with specific sampling locations chosen to be as representative as possible under the given circumstances.

EI's professional opinions are reasonable and based on its professional judgment, experience, training and results from analytical data. EI may also have relied upon information provided by the Client and other third parties to prepare this document, some of which may not have been verified by EI.

EI's professional opinions contained in this document are subject to modification if additional information is obtained through further investigation, observations, or validation testing and analysis during remedial activities. In some cases, further testing and analysis may be required, which may result in a further report with different conclusions.

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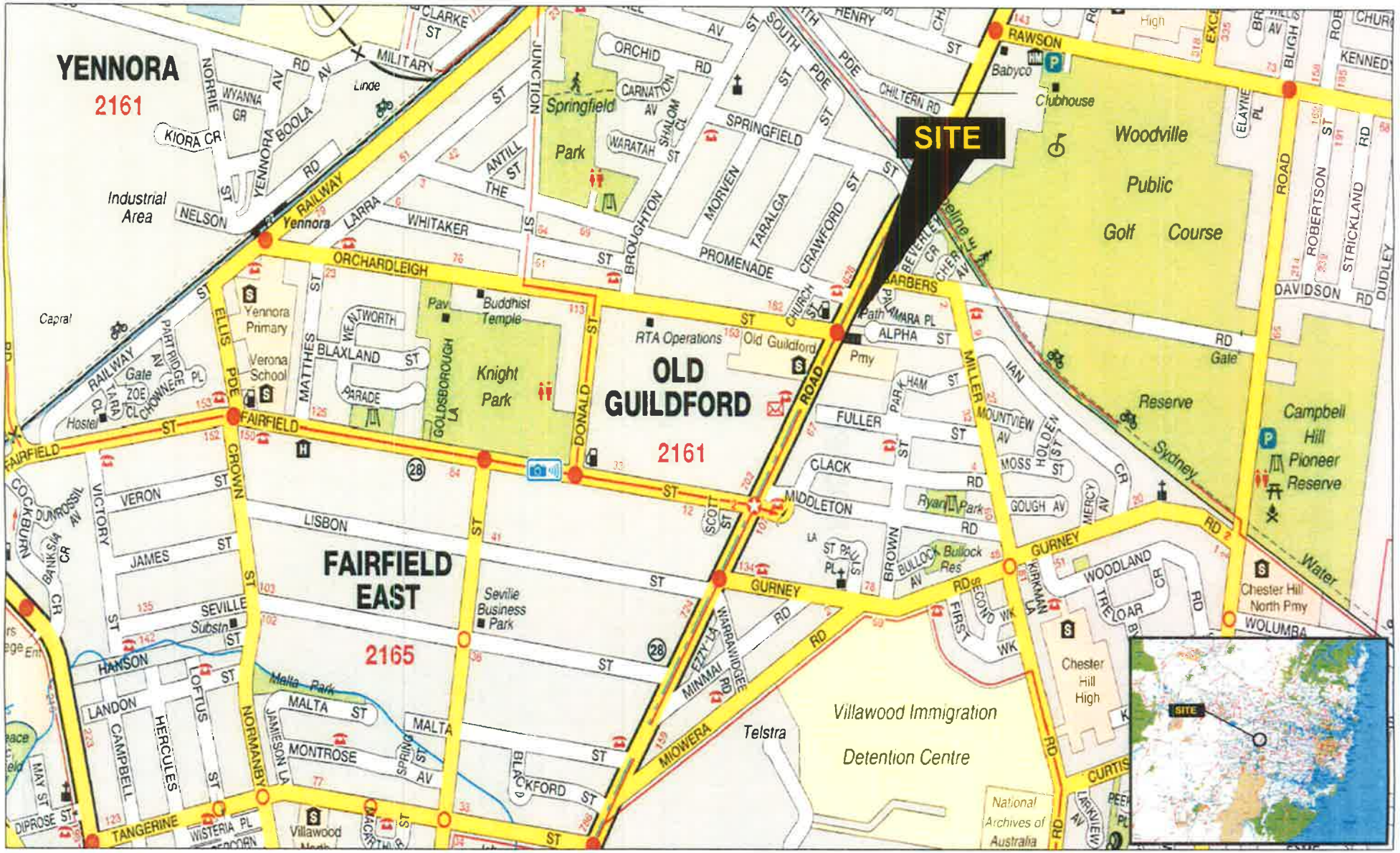
ABBREVIATIONS

ACM	Asbestos-containing materials
ASS	Acid sulfate soils
ANZECC	Australian and New Zealand Environment Conservation Council
ARMCANZ	Agriculture and Resource Management Council of Australia and New Zealand
B(a)P	Benzo(a)Pyrene
BH	Borehole
BTEX	Benzene, Toluene, Ethyl benzene, Xylene
COC	Chain of Custody
DEC	Department of Environment and Conservation, NSW (see OEH)
DECC	Department of Environment and Climate Change, NSW (see OEH)
DECCW	Department of Environment, Climate Change and Water, NSW (see OEH)
DA	Development Application
DO	Dissolved Oxygen
DP	Deposited Plan
EC	Electrical Conductivity
Eh	Redox potential
EI	Environmental Investigations Australia Pty Ltd trading as Environmental Investigations
EIL	Ecological Investigation Level
EPA	Environment Protection Authority
ESL	Ecological Screening Level
F1	TRH $C_6 - C_{10}$ less the sum of BTEX concentrations (Ref. NEPM 2013, Schedule B1)
F2	TRH $>C_{10} - C_{16}$ less the concentration of naphthalene (Ref. NEPM 2013, Schedule B1)
GIL	Groundwater Investigation Level
HIL	Health-based Investigation Level
HSL	Health-based Screening Level
km	Kilometres
LNAPL	Light, non-aqueous phase liquid (also referred to as PSH)
DNAPL	Dense, non-aqueous phase liquid
m	Metres
mAHD	Metres Australian Height Datum
mBGL	Metres Below Ground Level
mg/m^3	Milligrams per cubic metre
mg/L	Milligrams per litre
µg/L	Micrograms per litre
mV	Millivolts
MW	Monitoring well
NATA	National Association of Testing Authorities, Australia
NEPC	National Environmental Protection Council
NSW	New South Wales
OEH	Office of Environment and Heritage, NSW (formerly DEC, DECC, DECCW)
PAHs	Polycyclic Aromatic Hydrocarbons

pH	Measure of the acidity or basicity of an aqueous solution
PSH	Phase-separated hydrocarbons (also referred to as LNAPL)
PQL	Practical Quantitation Limit (limit of detection for respective laboratory instruments)
QA/QC	Quality Assurance / Quality Control
RAP	Remedial Action Plan
SRA	Sample receipt advice (document confirming laboratory receipt of samples)
SWL	Standing Water Level
TCLP	Toxicity Characteristics Leaching Procedure
TPH	Total Petroleum Hydrocarbons (superseded term equivalent to TRH)
TRH	Total Recoverable Hydrocarbons (non-specific analysis of organic compounds)
UCL	Upper Confidence Limit of the mean
USEPA	United States Environmental Protection Agency
UPSS	Underground Petroleum Storage System
UST	Underground Storage Tank
VOCs	Volatile Organic Compounds (specific organic compounds which are volatile)
VOCCs	Volatile Organic Chlorinated Compounds (a sub-set of the VOC analysis suite)

FIGURES



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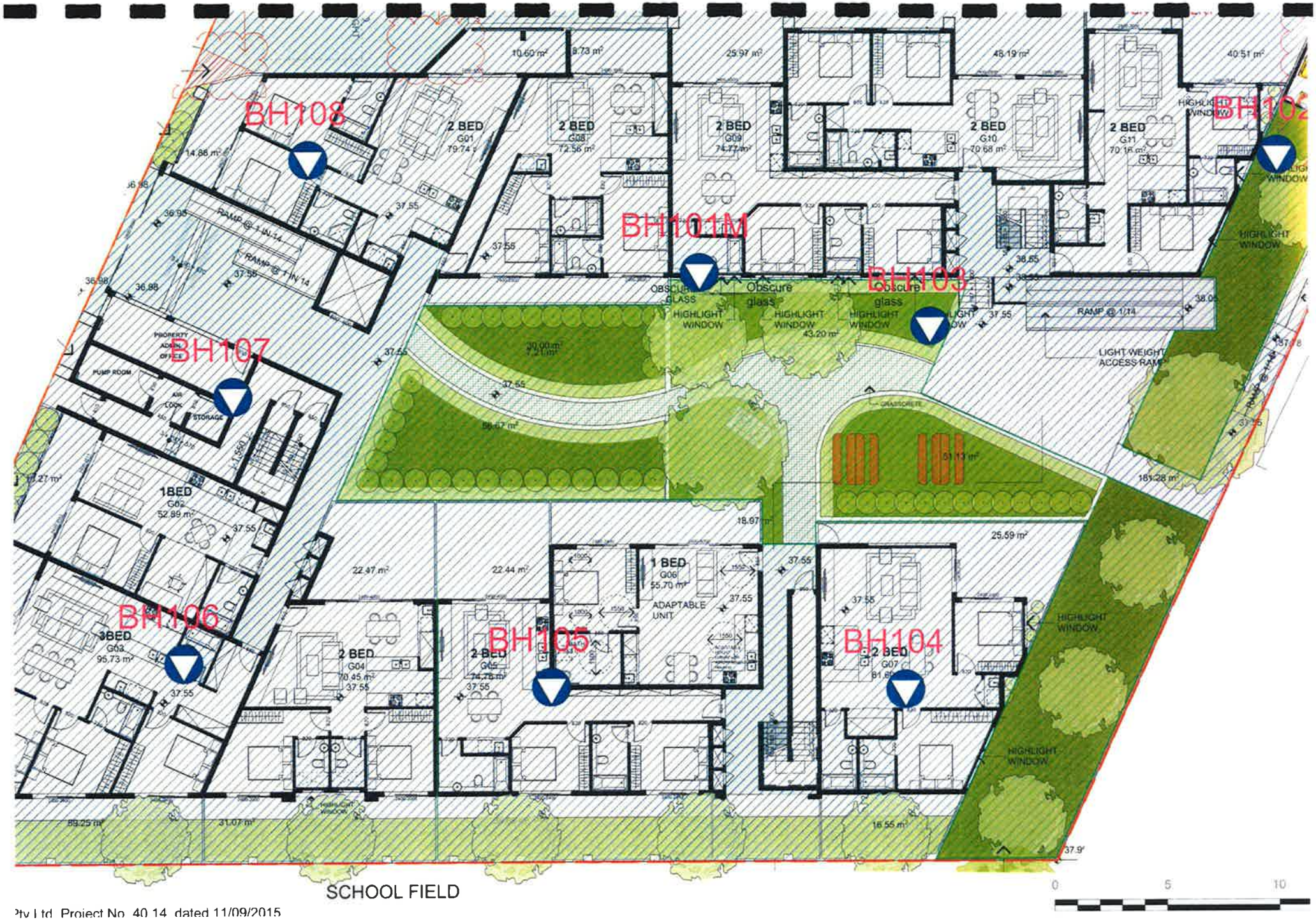
Baraz Construction Pty Ltd
Detailed Site Investigation
47 Woodville Road, Chester Hill NSW
Site Location Plan

Figure: 1

Project: E22827AA



Pty Ltd Project No. 40.14 dated 11/09/2015

TABLES

Table T1 – Summary of Soil Investigation Results for Heavy Metals

Sample ID	Sampling Depth (mBGL)	Sampling Date	Soil Material Description	Arsenic	Cadmium	Chromium (VI)	Copper	Lead	Mercury	Nickel	Zinc
BH101_0.14-0.24	0.14	4/12/2015	Fill - Clay	4	0.6	17	29	83	0.04	12	320
BH102_0.15-0.25	0.15	4/12/2015	Fill - Clay	6	0.6	19	20	39	0.17	13	68
BH102_0.6-0.7	0.6	4/12/2015	Fill - Clay	6	0.4	19	26	19	0.03	9.1	41
BH103_0.15-0.25	0.15	4/12/2015	Fill - Gravelly Clay	13	1.7	19	65	170	0.06	29	310
BH104_0.17-0.27	0.17	4/12/2015	Fill- Clay	6	0.4	16	21	22	0.03	14	41
BH104_0.5-0.6	0.5	4/12/2015	Clay	8	0.4	19	30	18	0.01	12	56
BH105_0.1-0.2	0.1	4/12/2015	Clay	6	0.4	17	22	24	0.02	11	40
BH106_0.12-0.22	0.12	4/12/2015	Clay	3	0.3	13	30	26	0.02	15	42
BH106_0.6-0.7	0.6	4/12/2015	Clay	9	0.5	16	26	21	0.02	9.2	55
BH107_0.1-0.2	0.1	4/12/2015	Clay	<3	0.6	15	34	45	0.03	13	79
BH108_0.13-0.23	0.13	4/12/2015	Clay	4	0.5	13	28	1200	0.08	13	280
BH108_1.23-1.33	1.23	4/12/2015	Clay	<3	<0.3	5.4	17	25	0.09	8.6	84
SILs											
HIL B[1]	*Residential with minimal opportunities for soil access*			500[2]	150	500	30,000	1,200[3]	120	1,200	60,000
HIL C[1]	*Recreational*			300	90	300	17,000	600	80	1,200	30,000
EILs[5]	*Urban residential and Public Open Space*			100	NR	335[6]	95[7]	1,260	NR	35[8]	350[9]

Notes: All results are reported in mg/kg unless stated otherwise

Indicates concentration reported exceeds HIL B / HSL A & B.

SIL Soil investigation Levels

HIL Health-based investigation levels (mg/kg) as per NEPM 1999 Schedule B1 2013 Amendment.

EIL Ecological Investigation Levels (mg/kg) as per NEPM. As physiochemical properties were not analysed, the most conservative value applicable to the site was applied.

N.R No Recommended soil assessment criteria are currently available for the indicated parameter(s).

N.A Not analysed

1 HIL B - Residential with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments. HIL C- Recreational soils

2 Arsenic - HIL assumes 70% oral bioavailability. Site-specific bioavailability may be important and should be considered where appropriate (refer to NEPM 1999 Schedule B7 2013 Amendment)

3 Lead - HIL is based on blood lead models (IEUBK for HILs A, B and C and adult lead model for HIL D where 50% oral bioavailability has been considered. Site-specific bioavailability may be important and should be considered where appropriate.

4 Value shown is representative of inorganic mercury as provided in Table 1A(1) (refer to NEPM 1999 Schedule B1 2013 Amendment).

5 EIL values are for urban residential and public open space. Assumes an old NSW low traffic suburb.

6 Assumes clay content >10%

7 Assumesassumes pH 6.0

8 Aassumes CEC 5

9 Assumes pH 6.0 & CEC 5

Table T2 – Summary of Soil Investigation Results for TPH, BTEX, PAH, Naphthalene, VOC, OCPs, OPPs and PCBs

Sample ID	Sampling Depth (mBGL)	Sampling Date	PID Reading (PPM)	Soil Material Description	Total Petroleum Hydrocarbons (mg/kg)				Benzene (mg/kg)	Toluene (mg/kg)	Ethyl benzene (mg/kg)	Total Xylenes (mg/kg)	Naphthalene* (mg/kg)	Carcinogenic PAHs (as BaP TEQ)**	Total PAHs	Benzo(a)pyrene	OCPs	OPPs	PCBs
					F1[1]	F2[2]	F3[3]	F4[4]											
BH101_0.14-0.24	0.14	4/12/2015	3.1	Clay	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	<0.1	<0.2	<0.8	<0.1	ND	ND	ND
BH102_0.15-0.25	0.15	4/12/2015	5.1	Clay	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	<0.1	<0.2	<0.8	<0.1	ND	ND	ND
BH102_0.6-0.7	0.6	4/12/2015	1	Clay	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	<0.1	<0.2	<0.8	<0.1	NA	NA	NA
BH103_0.15-0.25	0.15	4/12/2015	N T	Gravelly Clay	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	<0.1	<0.2	<0.8	<0.1	ND	ND	ND
BH104_0.17-0.27	0.17	4/12/2015	0.2	Clay	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	<0.1	<0.2	<0.8	<0.1	ND	ND	ND
BH104_0.5-0.6	0.5	4/12/2015	0.5	Clay	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	<0.1	<0.2	<0.8	<0.1	N.A.	N.A.	N.A.
BH105_0.1-0.2	0.1	4/12/2015	0	Clay	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	<0.1	<0.2	<0.8	<0.1	ND	ND	ND
BH106_0.12-0.22	0.12	4/12/2015	0	Clay	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	<0.1	<0.2	<0.8	<0.1	ND	ND	ND
BH106_0.6-0.7	0.6	4/12/2015	0	Clay	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	<0.1	<0.2	<0.8	<0.1	N.A.	N.A.	N.A.
BH107_0.1-0.2	0.1	4/12/2015	0.1	Clay	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	<0.1	<0.2	<0.8	<0.1	ND	ND	ND
BH108_0.13-0.23	0.13	4/12/2015	0.1	Clay	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	<0.1	<0.2	<0.8	<0.1	ND	ND	ND
BH108_1.23-1.33	1.23	4/12/2015	0.3	Clay	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	<0.1	<0.2	<0.8	<0.1	N.A.	N.A.	N.A.
SILs																			
HSL A & B (Clay)	0 m to <1 m				50	280	NL	NL	0.7	480	NL	110	5	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.
	1 m to <2 m				90	NL	NL	NL	1	NL	NL	310	NL	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.
	2 m to <4 m				150	NL	NL	NL	2	NL	NL	NL	NL	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.
	4 m +				290	NL	NL	NL	3	NL	NL	NL	NL	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.
HIL B	Residential with minimal opportunities for soil access				N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	4	400	N.R.	N.R.	N.R.	1
HIL C	Recreational													3	300	N.R.	N.R.	N.R.	1
ESLs[5]	Fine grained				180*	120*	1,300	5,600	65	105	125	45	N.R.	N.R.	N.R.	0.7	N.R.	N.R.	N.R.
EIL	Generic EIL Urban Residential and public open space												170						

Notes:

All results are reported in mg/kg unless stated otherwise

All soil assessment criteria 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)

SIL Soil investigation Level

HSL Health screening levels (w/w) based on Low-high density residential (clay)

ESL Ecological screening level for urban residential / public open sapce sites, as per Table 1B(6) of NEPM 2013 Schedule B1

N R No Recommended soil assessment criteria are currently available for the indicated parameter(s)

NL Not Limiting* i e the derived soil HSL exceeds the maximum the soil saturation concentration

N A Not analysed

N D Not detected

* Results reported are volatile Naphthalene

** Carcinogenic PAHs (as BaP TEQ)-assume results <LOR=LOR

1 F1 = TRH C6-C10 less BTEX

2 F2 = TRH > C10 - C16 less Naphthalene

3 F3 = TRH > C16 - C34

4 F4 = TRH > C34 - C40

5 ESLs are of low reliability except where indicated by * which indicates that the ESL is of moderate reliability. (Ref: Table 1B(6) NEPM 2013)

Table T3 – Summary of Soil Investigation Results for Asbestos

Sample ID	Asbestos (% w/w)
BH101_0 14-0 24	<0.01
BH102_0 15-0 25	<0.01
BH102_0 6-0 7	<0.01
BH103_0 15-0 25	<0.01
BH104_0 17-0 27	<0.01
BH104_0 5-0 6	<0.01
BH105_0 1-0 2	<0.01
BH106_0 12-0 22	<0.01
BH106_0 6-0 7	<0.01
BH107_0 1-0 2	<0.01
BH108_0 13-0 23	<0.01
BH108_1 23-1 33	<0.01
HSL	
Residential A [1]	0.01%
Residential C [1]	<0.05%

Notes

All soil assessment criteria 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).

HSL B	Health-based screening level for residential sites with minimal accessible soils, as per Table 7 of NEPM 2013 Schedule B1
HSL C	Health-based screening level for recreational land use, as per Table 7 of NEPM 2013 Schedule B1
1	Residential A: Residential with garden/ accessible soil

Table T4 – Summary of Groundwater Investigation Results - Heavy Metals, BTEXN, TRH and PAH

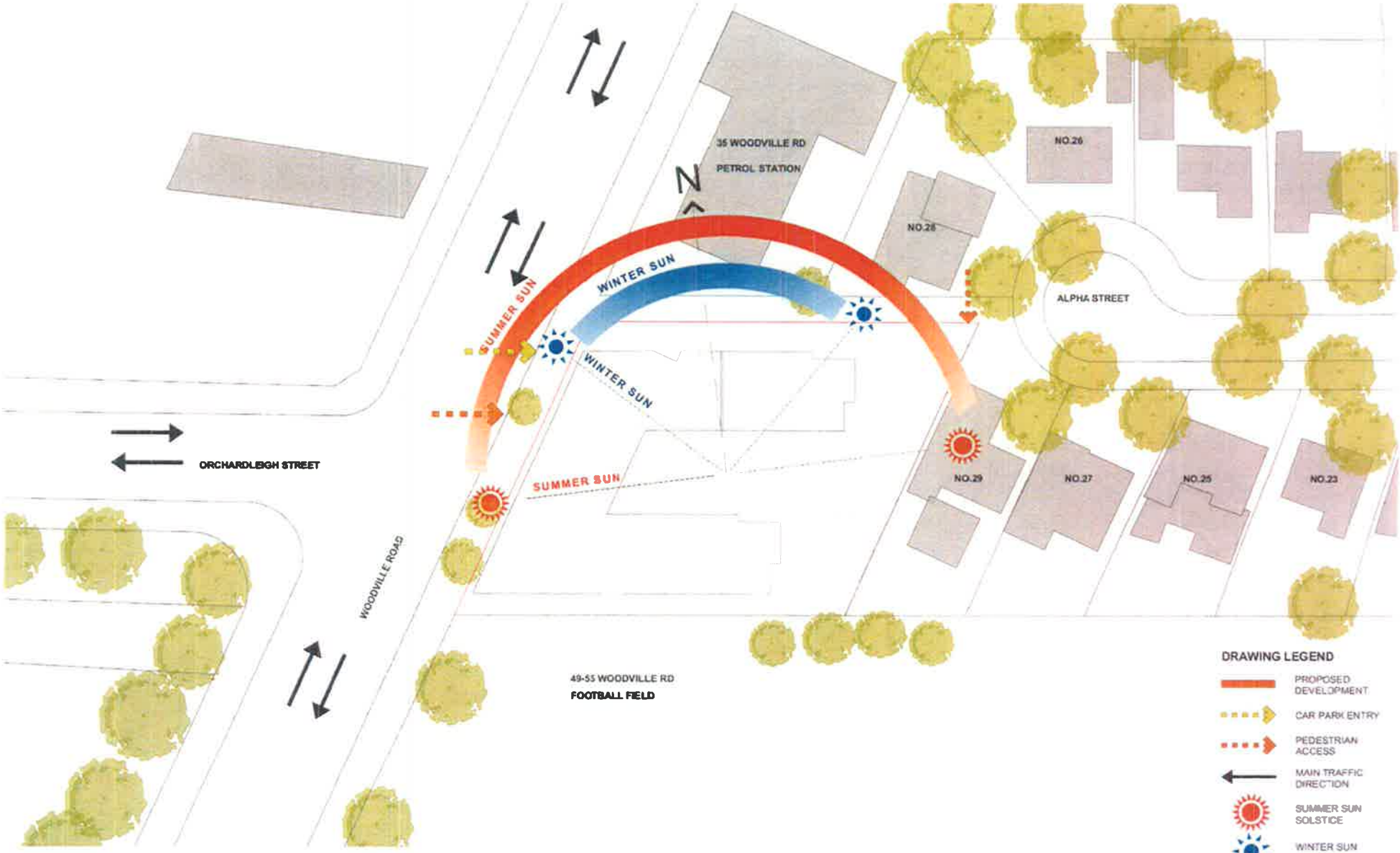
Report No.: E22827 AA

Sample ID		Heavy Metals								BTEXN					TRH				PAHs	
		Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	Benzene	Toluene	Ethylbenzene	Total Xylene	Naphthalene	F1*	F2**	F3***	F4****	Total PAHs	Benzo(a)pyrene
BH101M		<1	<0.1	10	2	<1	<0.0001	1	6	<0.5	<0.5	<0.5	<1.5	<0.5	<50	<60	<500	<500	<1	<0.1
GIL																				
GIL (Marine Waters)		2.3 (As III) / 4.5 (As V)	0.7[2]	27 (Cr III) / 4.4 (Cr VI)	1.3	4.4	0.1[2]	7[2]	15[3]	500[3]	180[4]	5[4]	75[4]	50	50[1]	60[1]	500[1]	500[1]	NR	NR
HSL A & B	2 m to < 4 m	NR								5,000	NL	NL	NL	NL	NL	NL	NR		NR	
	4 m to < 8 m									5,000	NL	NL	NL	NL	NL	NL				
HSL C	2 m to < 4 m	NR								NL	NL	NL	NL	NL	NL	NL	NR		NR	
	4 m to < 8 m									NL	NL	NL	NL	NL	NL	NL				

Notes:	All results and criteria are in µg/L, unless otherwise noted
	Highlighted values indicate concentrations exceed the adopted GIL
GIL (Marine Waters)	NEPM 2013 Schedule B1 . Groundwater investigation level for marine waters ecosystem
HSL A & B	Health screening level for residential sites, as per Table 1A(4) of NEPM 2013 Schedule B1. As soils encountered during field investigation comprised primarily clayey materials, HSL for clay was adopted. HSL are applied based on the estimated source depth of groundwater at each monitoring well.
NL	Not Limited (Ref. NEPM 2013, Schedule B1, Table 1(A)4)
NR	No recommended assessment criteria are currently available for the indicated parameter(s)
PQL	(Laboratory's) Practical Quantitation Limit
*	F1 = TRH C6-C10 less BTEX
**	F2 = TRH > C10-C16 less Naphthalene
***	F3 = TRH > C16-C34
****	F4 = TRH > C34 - C40
1	ANZECC (2000) provides 7 µg/L as an assessment guideline for total petroleum hydrocarbons. Since the laboratory practical quantitation limits (PQL) is higher than the ANZECC guideline, the PQL has been adopted as the interim GIL, as prescribed in DEC (2007)
2	The 99% Trigger Values were adopted for this assessment. Ref. ANZECC & ARMCANZ (2000).
3	Indicated threshold value may not protect key species from chronic toxicity. Ref. ANZECC & ARMCANZ (2000).
4	Low reliability 95% trigger values were adopted. Ref. Section 8.3.7, ANZECC & ARMCANZ (2000).

APPENDIX A

CONCEPTUAL DEVELOPMENT DRAWINGS AND SURVEY PLAN



SCALE 1:500

0 5 10M 20M

UNIT MIX :
TOTAL UNIT : 37

STUDIO : 6 ONE BED: 4 TWO BED: 20 THREE BED: 1

FOR DA PURPOSES ONLY
NOT FOR CONSTRUCTION
DA

A3

GHAZI AL ALI

47 WOODVILLE RD

BARAZ CONSTRUCTIONS P/L

SITE PLAN

DA A1010 B

40 14

NORTH ELEVATION 1:200

External Walls: Cavity Brick (uninsul) + air gap: plasterboard - medium colour.

Internal Walls:
Within each unit: single skin brick: wet plaster both sides
Party wall between units and corridors: 2 layers of AAC 70mm with R1.0 between.
Plasterboard lines both sides
Windows:
Aluminium standard double-glazed: clear/12 Argon gap/low-e: U = 3.62: SHGC = 0.65
Weather stripping to all windows as per Standard AS2047

Roof: Concrete slab 150mm - Drained Tile walking surface - no insulation - Susp. Ceiling under (medium colour). SEE TABLE FOR EXCEPTIONS
Ceiling: Plasterboard + no Insulation.
Floor: Concrete slab (no insul.) - SEE TABLE FOR EXCEPTIONS
Floor Covering: Ceramic tiles in wet areas and timber elsewhere

Units	Additional Insulation		
G01	R1.0 insulation in floor	201	R2.0 insulation in roof
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G07	R1.0 insulation in floor	207	R2.0 insulation in roof
G08	R1.0 insulation in floor	208	R2.0 insulation in roof
G09	R1.0 insulation in floor	209	R2.0 insulation in roof
G10	R1.0 insulation in floor	210	R2.0 insulation in roof
G11	R1.0 insulation in floor	211	R2.0 insulation in roof
103	R1.0 insulation in floor	212	R2.0 insulation in roof
110	R2.0 insulation in roof		
114	R2.0 insulation in roof		

SCALE 1:200

0 1 2 5 10M

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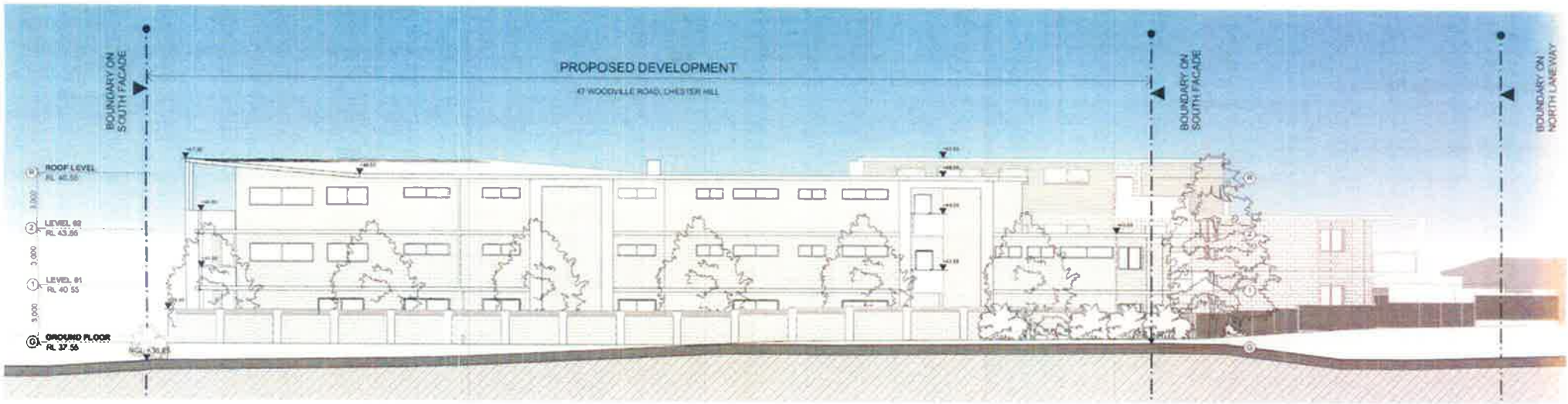
47 WOODVILLE RD

BARAZ CONSTRUCTIONS P/L

NORTH ELEVATION

DA A1500

B 40 14



SOUTH ELEVATION 1:200

External Walls: Cavity Brick (uninsul) + air gap: plasterboard - medium colour.

Internal Walls:
Within each unit: single skin brick: wet plaster both sides
Party wall between units and corridors: 2 layers of AAC 70mm with R1.0 between.
Plasterboard lines both sides
Windows:
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G05	R1.0 insulation in floor	205	R2.0 insulation in roof
G06	R1.0 insulation in floor	206	R2.0 insulation in roof
G07	R1.0 insulation in floor	207	R2.0 insulation in roof
G08	R1.0 insulation in floor	208	R2.0 insulation in roof
G09	R1.0 insulation in floor	209	R2.0 insulation in roof
G10	R1.0 insulation in floor	210	R2.0 insulation in roof
G11	R1.0 insulation in floor	211	R2.0 insulation in roof
103	R1.0 insulation in floor	212	R2.0 insulation in roof
110	R2.0 insulation in roof		
114	R2.0 insulation in roof		

SCALE 1:200

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GHAZI AL ALI

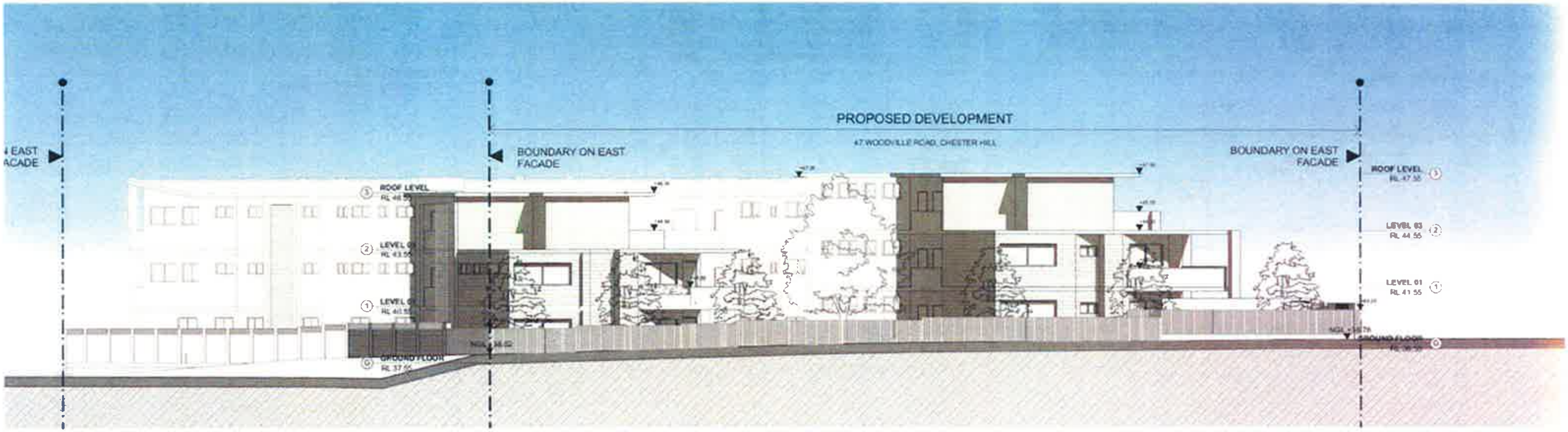
47 WOODVILLE RD

BARAZ CONSTRUCTIONS P/L

SOUTH ELEVATION

DA A1501 B

8 of 40 14



EAST ELEVATION 1:200

External Walls: Cavity Brick (uninsul) + air gap: plasterboard - medium colour.

Internal Walls:
- Within each unit: single skin brick: wet plaster both sides
- Party wall between units and corridors: 2 layers of AAC 70mm with R1.0 between.

Plasterboard lines both sides

Windows:
- Aluminium standard double-glazed: clear/12 Argon gap/low-e: U = 3.62: SHGC = 0.65
- Weather stripping to all windows as per Standard AS2047

Roof: Concrete slab 150mm - Drained Tile walking surface - no insulation - Susp. Ceiling under (medium colour). SEE TABLE FOR EXCEPTIONS

Ceiling: Plasterboard + no Insulation.

Floor: Concrete slab (no insul.) - SEE TABLE FOR EXCEPTIONS

Floor Covering: Ceramic tiles in wet areas and timber elsewhere

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G02	R1.0 insulation in floor
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G05	R1.0 insulation in floor
G06	R1.0 insulation in floor
G07	R1.0 insulation in floor
G08	R1.0 insulation in floor
G09	R1.0 insulation in floor
G10	R1.0 insulation in floor
G11	R1.0 insulation in floor
103	R1.0 insulation in floor
110	R2.0 insulation in roof
114	R2.0 insulation in roof
201	R2.0 insulation in roof
202	R2.0 insulation in roof
203	R2.0 insulation in roof
204	R2.0 insulation in roof
205	R2.0 insulation in roof
206	R2.0 insulation in roof
207	R2.0 insulation in roof
208	R2.0 insulation in roof
209	R2.0 insulation in roof
210	R2.0 insulation in roof
211	R2.0 insulation in roof
212	R2.0 insulation in roof

SCALE 1:200

0 1 2 5 10M

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NOT FOR CONSTRUCTION
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© COPYRIGHT
DO NOT SCALE DWGS. USE DIMENSIONS ONLY. REFER ANY DISCREPANCIES TO ARCHITECT PRIOR TO CONSTRUCTION.
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47 WOODVILLE RD

BARAZ CONSTRUCTIONS P/L

EAST ELEVATION

DA A1502

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WEST ELEVATION 1:200

External Walls: Cavity Brick (uninsul) + air gap: plasterboard - medium colour.

Internal Walls:
- Within each unit: single skin brick: wet plaster both sides
- Party wall between units and corridors: 2 layers of AAC 70mm with R1.0 between.

Plasterboard lines both sides

Windows:
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G05	R1.0 insulation in floor	205	R2.0 insulation in roof
G06	R1.0 insulation in floor	206	R2.0 insulation in roof
G07	R1.0 insulation in floor	207	R2.0 insulation in roof
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G10	R1.0 insulation in floor	210	R2.0 insulation in roof
G11	R1.0 insulation in floor	211	R2.0 insulation in roof
103	R1.0 insulation in floor	212	R2.0 insulation in roof
110	R2.0 insulation in roof		
114	R2.0 insulation in roof		

SCALE 1:200

0 1 2 3 10M

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47 WOODVILLE RD

BARAZ CONSTRUCTIONS P/L

WEST ELEVATION

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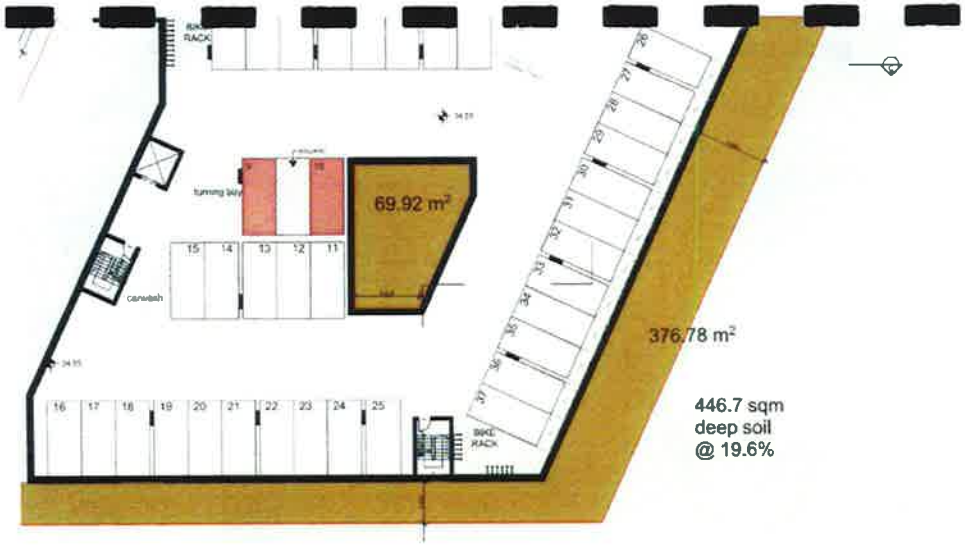
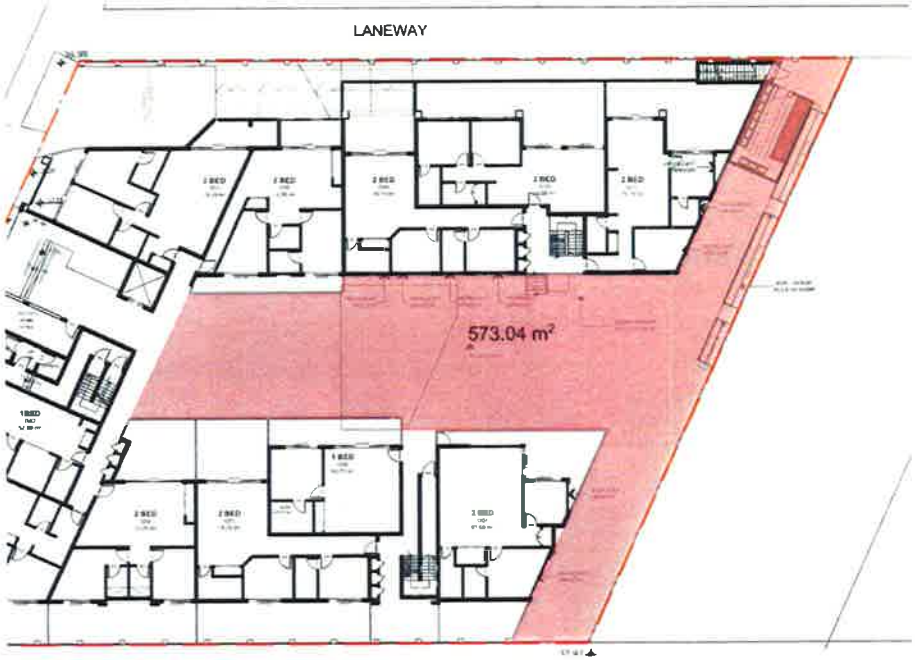
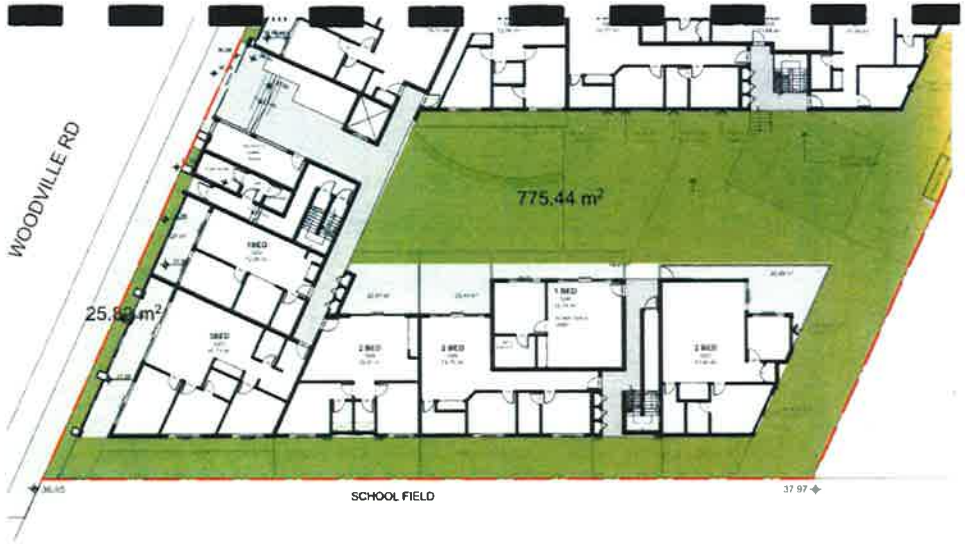


BASEMENT LEVEL @ 1:500



GROUJD FLOOR @ 1:500



GROUND

LANDSCAPE CALCULATION

LANDSCAPE & DEEP SOIL AREA HAVE BEEN AMENDED AS PER COMMENTS

DEEP SOIL AREA :
446.7 SQM (@19.6% of total site area)

LANDSCAPING AREA :
775.44 SQM (@33.9% of total site area)

COMMON OPEN SPACE CALCULATION

COMMON OPEN SPACE HAS BEEN PROVIDED AS PER COMMENTS

PROPOSED COMMON OPOEN AREA :
573.04 SQM (@25% of total site area)

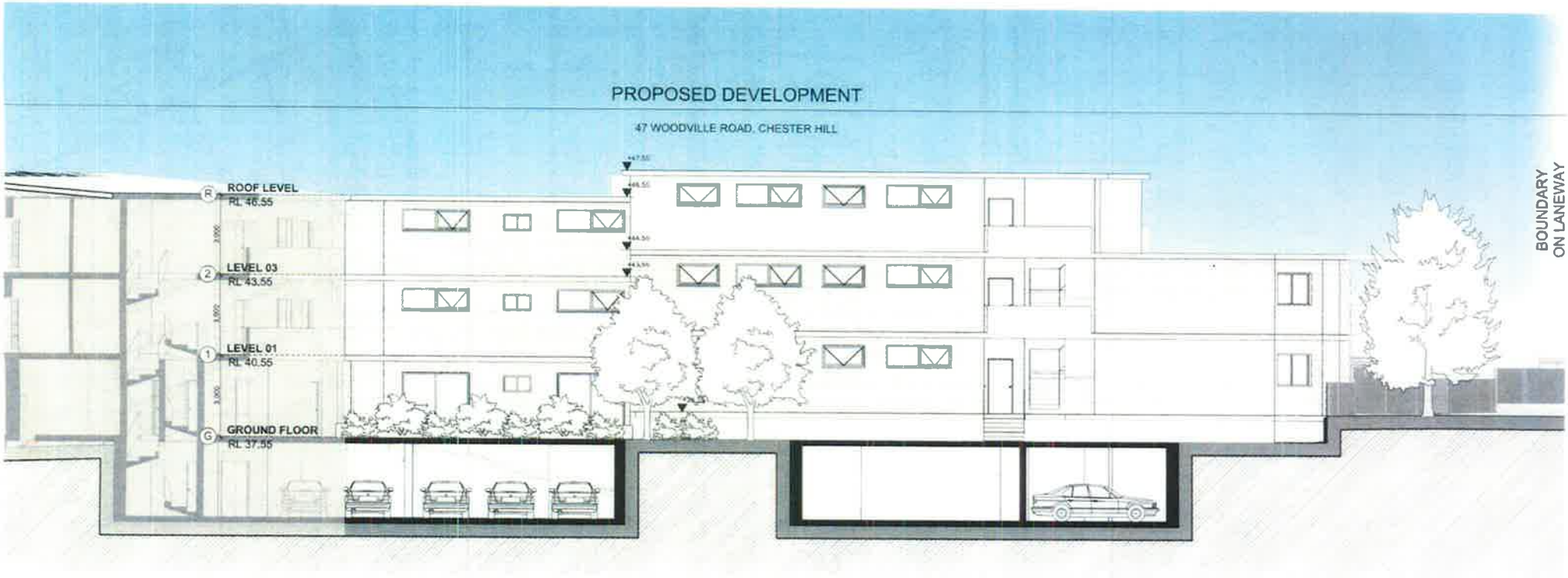
BASEMENT @ 1:500

GROUND FLOOR @ 1:500

LEVEL 1 @ 1:500

LEVEL 2 @ 1:500


E TABLE FOR EXCEPTIONS
t areas and timber elsewhere
BALCONY WALL AMENDED AS PER COMMENT
TO PROVIDE SIGHT TRIANGLE
BIN ROOM HAS BEEN AMENDED
TO THE REAR OF THE SITE
AS PER COMMENT
AS 2890.1 SIGHT LINES
1.8m HEIGHT
PRIVACY LANDSCAPE
SSIBLE
RANCE
BOOSTER
2 BED
G01
79.74 m²
2 BED
G08
72.56 m²
2 BED
G09
74.77 m²
2 BED
G10
70.68 m²
2 BED
G11
70.16 m²
HIGHLIGHT
WINDOW
RAMP @ 1 IN 14
RAMP @ 1 IN 14
RAMP @ 1/14
OBSCURE
GLASS
Obscure
glass
HIGHLIGHT
WINDOW
LIGHT WEIGHT
ACCESS RAMP
PROPERTY
ADMIN
OFFICE
PUMP ROOM
AIR
LOCK
STORAGE
1BED
G02
52.89 m²
3BED
G03
85.73 m²
2 BED
G04
70.45 m²
2 BED
G05
74.76 m²
1 BED
G06
55.70 m²
ADAPTABLE
UNIT
2 BED
G07
81.60 m²
HIGHLIGHT
WINDOW
UNIT MIX :
TOTAL UNIT : 37
STUDIO : 8 ONE I



INTERNA

l) + air gap: plasterboard - medium colour.

kin brick: wet plaster both sides
and corridors: 2 layers of AAC 70mm with R1.0 between.

ɔle-glazed: clear/12 Argon gap/low-e: U = 3.62: SHGC = 0.65
vindows as per Standard AS2047

ed Tile walking surface - no insulation - Susp. Ceiling under
R EXCEPTIONS
n.
:E TABLE FOR EXCEPTIONS
t areas and timber elsewhere

Units	Additional Insulation		
G01	R1.0 insulation in floor	201	R2.0 insulation in roof
G02	R1.0 insulation in floor	202	R2.0 insulation in roof
G03	R1.0 insulation in floor	203	R2.0 insulation in roof
G04	R1.0 insulation in floor	204	R2.0 insulation in roof
G05	R1.0 insulation in floor	205	R2.0 insulation in roof
G06	R1.0 insulation in floor	206	R2.0 insulation in roof
G07	R1.0 insulation in floor	207	R2.0 insulation in roof
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G09	R1.0 insulation in floor	209	R2.0 insulation in roof
G10	R1.0 insulation in floor	210	R2.0 insulation in roof
G11	R1.0 insulation in floor	211	R2.0 insulation in roof
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G07	R1.0 insulation in floor
G08	R1.0 insulation in floor
G09	R1.0 insulation in floor
G10	R1.0 insulation in floor
G11	R1.0 insulation in floor
103	R1.0 insulation in floor
110	R2.0 insulation in roof
114	R2.0 insulation in roof
201	R2.0 insulation in roof
202	R2.0 insulation in roof
203	R2.0 insulation in roof
204	R2.0 insulation in roof
205	R2.0 insulation in roof
206	R2.0 insulation in roof
207	R2.0 insulation in roof
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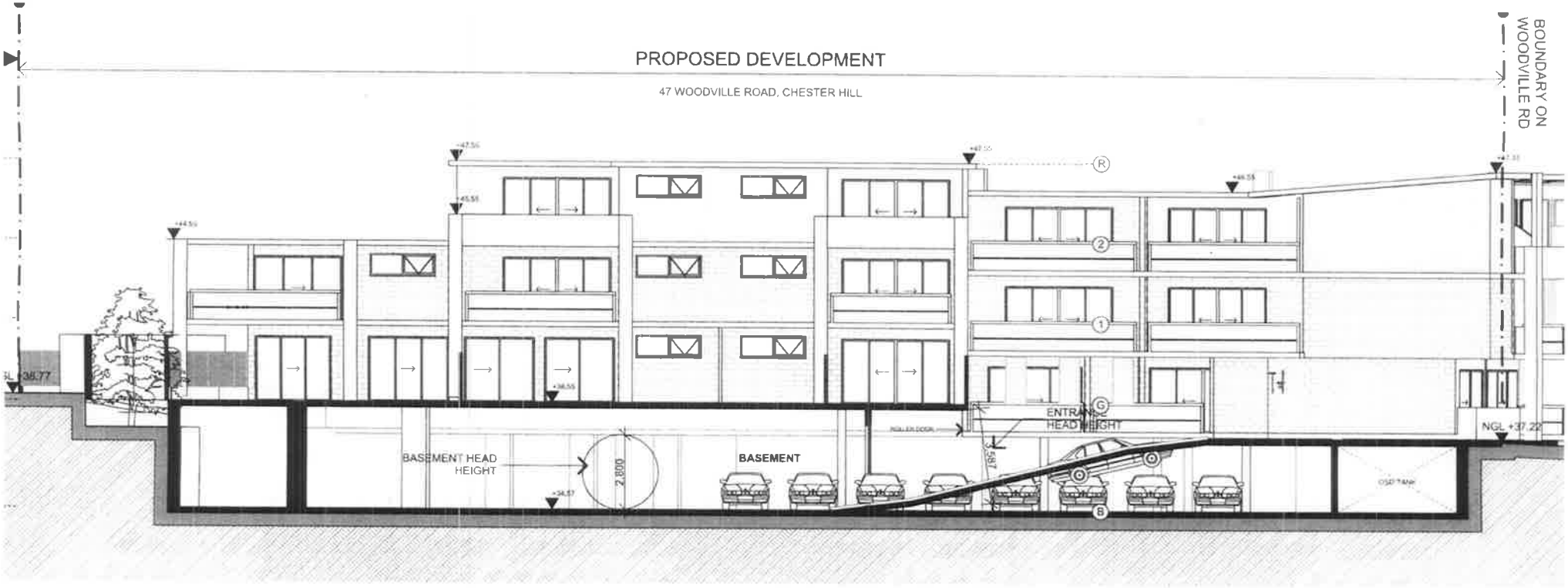
209	R2.0 insulation in roof
210	R2.0 insulation in roof
211	R2.0 insulation in roof
212	R2.0 insulation in roof



SEC

l) + air gap: plasterboard - medium colour.

kin brick: wet plaster both sides
and corridors: 2 layers of AAC 70mm with R1.0 between.

ble-glazed: clear/12 Argon gap/low-e: U = 3.62: SHGC = 0.65
vindows as per Standard AS2047

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R EXCEPTIONS
n.
E TABLE FOR EXCEPTIONS
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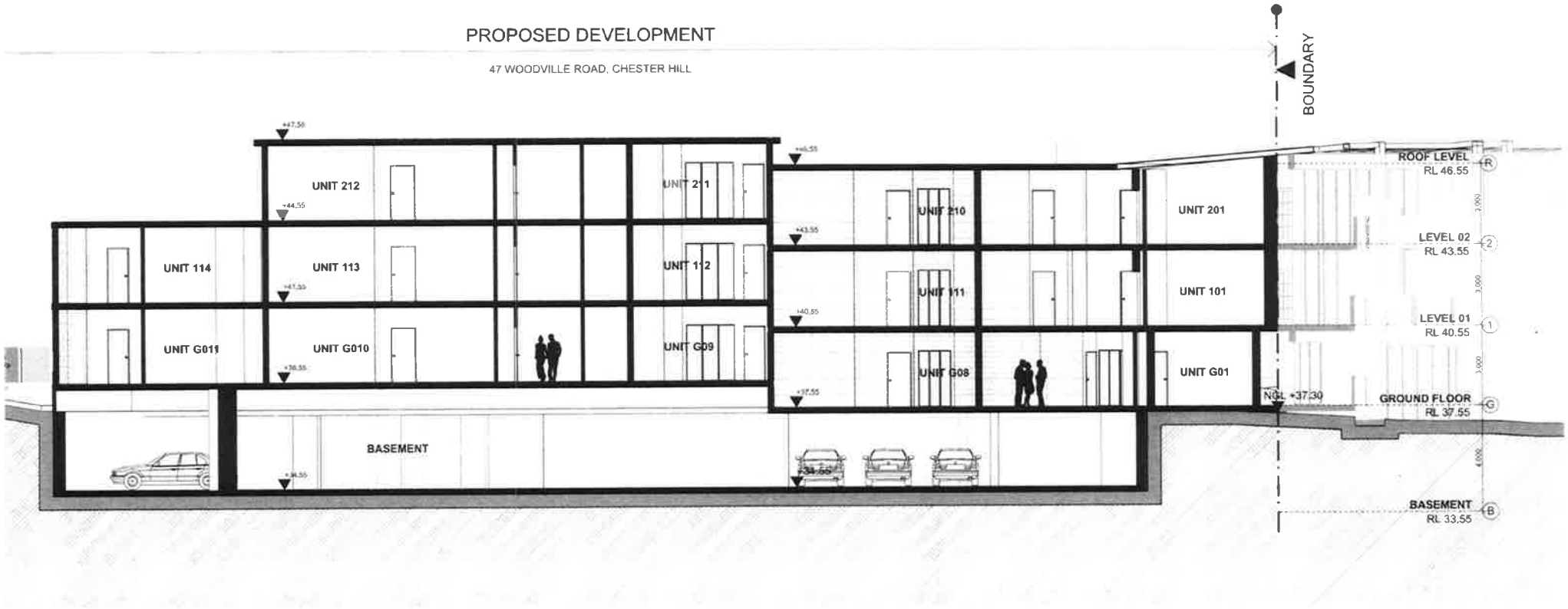
G11	R1.0 insulation in floor	211	R2.0 insulation in roof
103	R1.0 insulation in floor	212	R2.0 insulation in roof
110	R2.0 insulation in roof		
114	R2.0 insulation in roof		

PROPOSED DEVELOPMENT

47 WOODVILLE ROAD, CHESTER HILL



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G09	R1.0 insulation in floor
G10	R1.0 insulation in floor
G11	R1.0 insulation in floor
103	R1.0 insulation in floor
110	R2.0 insulation in roof
114	R2.0 insulation in roof
201	R2.0 insulation in roof
202	R2.0 insulation in roof
203	R2.0 insulation in roof
204	R2.0 insulation in roof
205	R2.0 insulation in roof
206	R2.0 insulation in roof
207	R2.0 insulation in roof
208	R2.0 insulation in roof
209	R2.0 insulation in roof
210	R2.0 insulation in roof
211	R2.0 insulation in roof
212	R2.0 insulation in roof

APPENDIX B

REGISTERED GROUNDWATER BORES SEARCH

Figure B13-1 Identified Registered Bores in proximity of the Site

APPENDIX C
Site Photographs

Photo 1: Concrete paved carpark occupying the greater section of the site at 47 Woodville Road, Chester Hill.

Photo 2: North eastern boundary of site adjacent to Woodville Road at 47 Woodville Road, Chester Hill.

APPENDIX D
Historical Property Titles Search

Ref : MARK

Cadastral Records Enquiry Report

Land & Property Information

Locality : CHESTER HILL

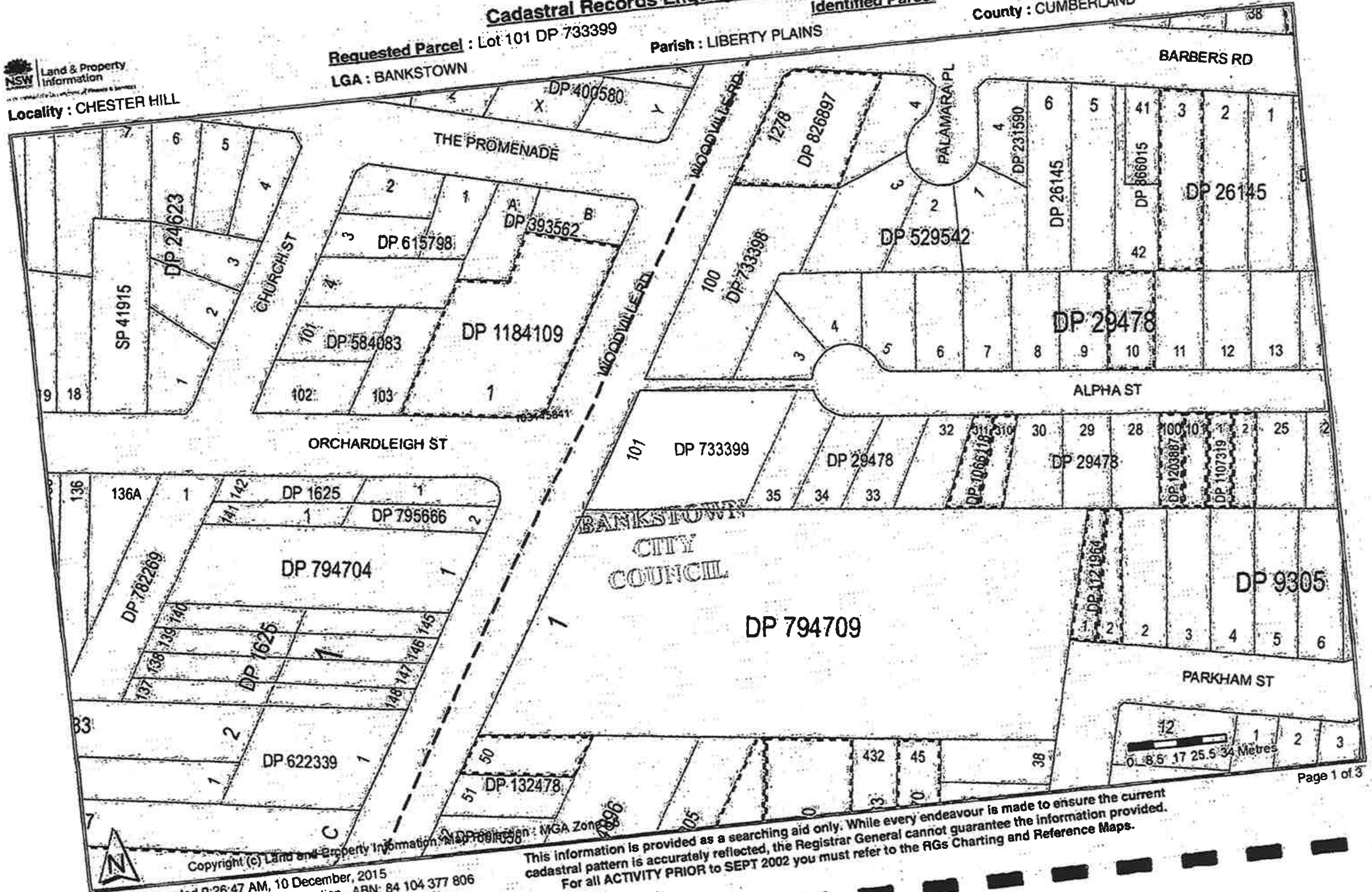
Requested Parcel : Lot 101 DP 733399

LGA : BANKSTOWN

Parish : LIBERTY PLAINS

Identified Parcel : Lot 101 DP 733399

County : CUMBERLAND



Copyright (c) Land and Property Information. Map Projection: MGA Zone 56

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.

Report Generated 9:26:47 AM, 10 December, 2015

PLAN FORM 1

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

*OFFICE USE ONLY

Council Clerk's Certificate

I hereby certify that –

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

*(b) the requirements of section 34E of the Metropolitan Water, Sewerage, and Drainage Act, 1924, as amended, (Hunter District Water, Sewerage, and Drainage Act, 1938, as amended)

have been complied with by the applicant in relation to the proposed CONSOLIDATED LOT (Insert "new road", "subdivision" or "consolidated lot") set out herein

Subdivision No. 62/85

Date 1.10.85

(Signature) [signature]

DEPUTY Council Clerk

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

†Delete if inapplicable.

Surveyor's Certificate

I, ANTHONY JOHN CAMPTON of 14 MAIN STREET, BLACKTOWN a Surveyor registered under the Surveyors Act, 1929, as amended, hereby certify that the survey represented in this plan COMPILED FROM D.P. 379778

Signature [signature]

Surveyor registered under Surveyors Act, 1929, as amended.

*Strike out either (1) or (2). 17/6/85

PLAN PART LOTS A, B, & C IN D.P. 379778

Mun./Shire City : BANKSTOWN

Locality: GUILDFORD

Parish: LIBERTY PLAINS

County: CUMBERLAND

Reduction Ratio 1: 400

Lengths are in metres

DP 733399

Registered: 19.5.1986

C.A.: № 7722 OF 2-10-1985

Title System: TORRENS

Purpose: CONSOLIDATION

Ref. Map: U 9145-34

Last Plan: DP 379778, DP 108327

N O O I K I B

Signatures, seals and statements of intention to dedicate public roads or to create public reserves, drainage reserves, easements or restrictions as to user.

As Mortgagee under Mortgage No's V 576552 and V 550651 Westpac Banking Corporation hereby consents to the within Plan of Consolidation.

Dated at Sydney this 15th day of November, 1985.

Signed Sealed and Delivered for and on behalf of WESTPAC BANKING CORPORATION by DAVID ROBERT BARRY HULTON its duly constituted Attorney who is personally known to me

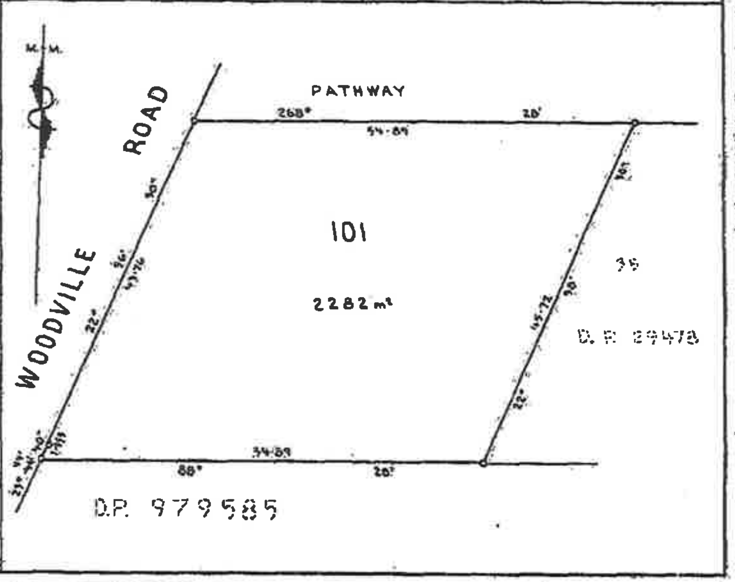
WESTPAC BANKING CORPORATION by its Attorney who hereby states at the time of his executing this instrument he has no notice of the revocation of the Power of Attorney registered in the office of the Registrar General No. 735 Book 1918 under the authority of which he has executed this instrument.

[signature]

Manager Legal, New South Wales Division

THE COMMON SEAL OF LEAFVALE HOLDINGS PTY. LIMITED was hereunto affixed in the presence of:

Secretary Director



Plan Drawing only to appear in this space

SURVEYOR'S REFERENCE 4068(6)

This negative is a photograph made as a permanent record of a document in the custody of the Registrar General this day, 20th May, 1986

[redacted]ICATE OF TITLE

PROPERTY ACT, 1900

NEW SOUTH WALES

First Title Old System

Prior Title Vol. 6678 Fol. 248

Vol 15328 Fol 181

EDITION ISSUED 6 S 1985

CANCELLED

I certify that the person named in the First Schedule is the registered proprietor of an estate in fee simple (or such other estate or interest as is set out below) in the land described subject to the recordings appearing in the Second Schedule and to the provisions of the Real Property Act, 1900.

Registrar General.

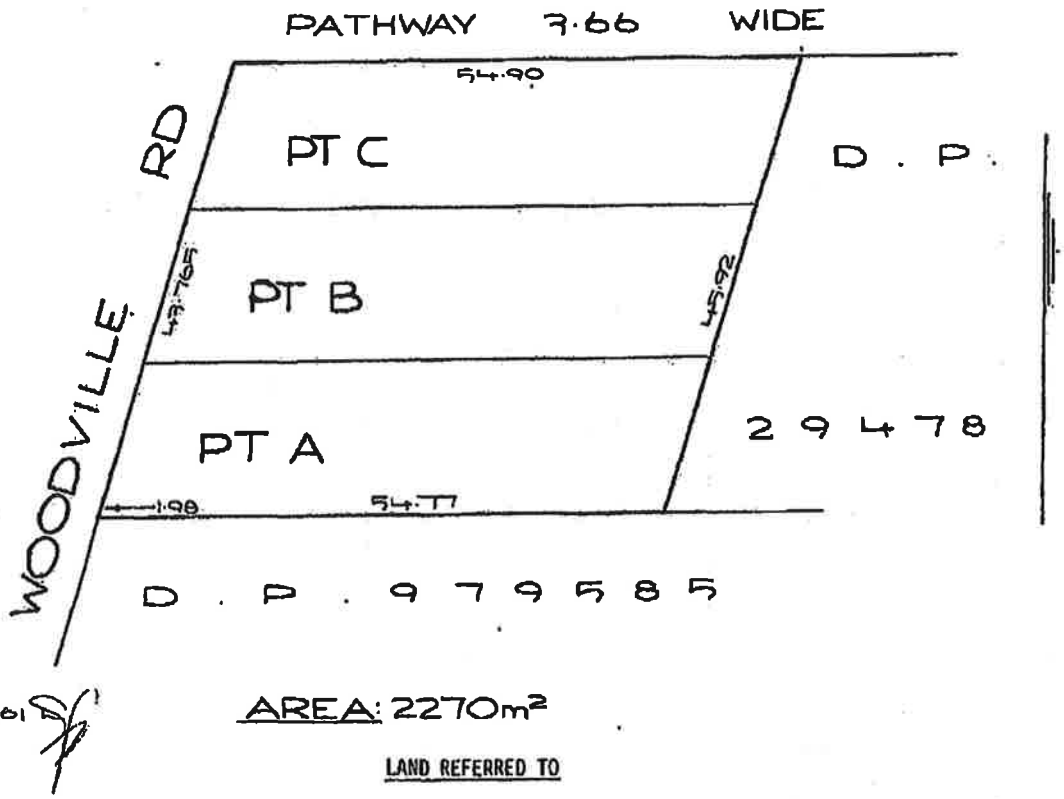
Vol 15328 Fol 181

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

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

PLAN SHOWING LOCATION OF LAND

LENGTHS ARE IN METRES



V5790661

AREA: 2270m²

LAND REFERRED TO

Part Lots A,B,C in Deposited Plan 379778 shown in the plan hereon in the City of Bankstown Parish of Liberty Plains County of Cumberland.

FIRST SCHEDULE

LEAFVALE HOLDINGS PTY. LTD.

SECOND SCHEDULE

1. Reservations and conditions in the Crown Grant.

RG 2/64

Vol 15328 Fol 181

40828—4038

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR | Registrar General

DP 733399 Registered 19-5-1986
Title folio is cancelled as to whole/part upon creation of computer folios for lots 101, 102 on the abovementioned plan.

SECOND SCHEDULE (continued)

PARTICULARS | Registrar General | CANCELLATION

V530663. Mortgage to Westpac Banking Corporation. Registered 14-5-1985.

NOTATIONS AND UNREGISTERED DEALINGS

V530663M
DP 733399R

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

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
9/12/2015 7:50PM

FOLIO: 101/733399

First Title(s): OLD SYSTEM
Prior Title(s): VOL 15328 FOL 181

Recorded	Number	Type of Instrument	C.T. Issue
22/5/1986	DP733399	DEPOSITED PLAN	FOLIO CREATED EDITION 1
8/3/1989	Y175981	MORTGAGE	EDITION 2
7/12/1995	0750264	MORTGAGE	EDITION 3
14/8/1996	2379971	TRANSFER OF MORTGAGE	
16/2/1998	3799851	DISCHARGE OF MORTGAGE	EDITION 4
7/6/2001	7671890	DISCHARGE OF MORTGAGE	
7/6/2001	7671891	DISCHARGE OF MORTGAGE	
7/6/2001	7671892	MORTGAGE	EDITION 5
12/8/2002	8856812	MORTGAGE	EDITION 6
11/2/2004	AA406963	DISCHARGE OF MORTGAGE	
11/2/2004	AA406964	DISCHARGE OF MORTGAGE	
11/2/2004	AA406965	MORTGAGE	EDITION 7
15/8/2005	AB694720	TRANSFER OF MORTGAGE	EDITION 8
9/5/2011	AG220833	DISCHARGE OF MORTGAGE	
9/5/2011	AG220834	MORTGAGE	EDITION 9
29/5/2013	AH765153	DISCHARGE OF MORTGAGE	
29/5/2013	AH765154	MORTGAGE	EDITION 10
20/5/2015	AJ500829	DISCHARGE OF MORTGAGE	
20/5/2015	AJ500830	TRANSFER	EDITION 11

*** END OF SEARCH ***

chester hill PRINTED ON 9/12/2015

**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.*

Legal Liaison Services

Legal Liaison Services 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.

Information provided through Tri-Search an approved LPI*NSW* Information Broker

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 101/733399

SEARCH DATE	TIME	EDITION NO	DATE
10/12/2015	9:36 AM	11	20/5/2015

LAND

LOT 101 IN DEPOSITED PLAN 733399
AT GUILDFORD
LOCAL GOVERNMENT AREA BANKSTOWN
PARISH OF LIBERTY PLAINS COUNTY OF CUMBERLAND
TITLE DIAGRAM DP733399

FIRST SCHEDULE

BARAZ CONSTRUCTION PTY LIMITED (T AJ500830)

SECOND SCHEDULE (1 NOTIFICATION)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

chester hill PRINTED ON 10/12/2015

**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.*

APPENDIX E

NSW WorkCover Dangerous Goods Search

NSW GOVERNMENT | SafeWork NSW

SafeWork NSW
92-100 Donnison Street, Gosford, NSW, 2250
Locked Bag 2906, Lisarow, NSW, 2252 |
Customer Service Centre 13 10 50
licensing@safework.nsw.gov.au | www.safework.nsw.gov.au

Our Ref: D15/203188
Your Ref: David Rizkalla

16 December 2015

Attention: David Rizkalla
Environmental Investigations Australia Pty Ltd
Suite 6.01
55 Miller St
Pyrmont NSW 2009

Dear Mr Rizkalla,

RE SITE: 47 Woodville Rd Chester Hill NSW

I refer to your site search request received by SafeWork NSW on 9 December 2015 requesting information on Storage of Hazardous Chemicals for the above site.

A search of the records held by SafeWork NSW has not located any records pertaining to the above mentioned premises.

For further information or if you have any questions, please call our Customer Service Centre on 13 10 50 or email licensing@safework.nsw.gov.au

Yours sincerely,

Brent Jones
Customer Service Officer
Customer Service Centre - Operations
SafeWork NSW

APPENDIX F
Borehole Logs

Environmental Investigations Australia
Contamination | Remediation | Geotechnical

TEST: BH101M

Project				Sheet	1 OF 1
Location	Woodville Road, Chester Hill	East	313941.3 m	Date Started	10/12/15
Position	Refer to Figure 2	North	6250756.8 m MGA94 Zone 56	Date Completed	10/12/15
Job No.	E22827	Contractor	BG Drilling	Logged	CW Date: 24/12/15
Client	Baraz Construction Pty Ltd	Drill Rig	4WD	Checked	NF Date: 24/12/15
		Inclination	-90°		

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS ID / Static Water Level
AD/T		GWNE	0	0.14	BH101M_0.14-0.24 ES 0.14-0.24 m			-	CONCRETE, 140 mm thick.	-	-	BH101M: Gatic Cover; Concrete
				0.30				CH	FILL: CLAY; medium plasticity, dark brown, with trace of gravel, no odour.	-	-	
					BH101M_0.5-0.6 ES 0.50-0.60 m				CLAY; high plasticity, orange, no odour.	M	-	1 x 50mm uPVC casing; Cuttings
			1	1.20	BH101M_0.9-1.0 ES 0.90-1.00 m			-	SHALE; extremely weathered, light brown, no odour.	M	-	Bentonite
					BH101M_1.4-1.5 ES 1.40-1.50 m							
			2	2.00					From 2.0m, grey.			
				2.80					From 2.8m, becoming hard.	M	-	2 x 50mm uPVC screen; Sand
			3									
			4									
			5	5.30					Hole Terminated at 5.30 m			
			6									
			7									
			8									
			9									
			10									

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

Environmental Investigations Australia
Contamination | Remediation | Geotechnical

BOREHOLE: BH102

Project				Sheet	1 OF 1
Location	Woodville Road, Chester Hill	East	313966.6 m	Date Started	10/12/15
Position	Refer to Figure 2	North	6250758.1 m MGA94 Zone 56	Date Completed	10/12/15
Job No.	E22827	Contractor	BG Drilling	Logged	CW Date: 24/12/15
Client	Baraz Construction Pty Ltd	Drill Rig	4WD	Checked	NF Date: 24/12/15
		Inclination	-90°		

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
			0	0.15				-	CONCRETE, 150mm thick.	-	-	CONCRETE HARDSTAND
AD/T		GWNE			BH102_0.15-0.25 ES 0.15-0.25 m			-	FILL: CLAY; medium plasticity, dark brown, with trace of gravel, no odour.	M	-	FILL
				0.60	BH102_0.6-0.7 ES 0.60-0.70 m				From 0.6m, brown-grey,			
			1	0.80	BH102_1.1-1.2 ES 1.10-1.20 m			CI	CLAY; medium plasticity, orange, no odour.	M	-	RESIDUAL SOIL
				1.50					Hole Terminated at 1.50 m			
			2									
			3									
			4									
			5									
			6									
			7									
			8									
			9									
			10									

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

Environmental Investigations Australia
Contamination | Remediation | Geotechnical

BOREHOLE: BH103

Project		East	313955.5 m	Sheet	1 OF 1
Location	Woodville Road, Chester Hill	North	6250753.2 m MGA94 Zone 56	Date Started	10/12/15
Position	Refer to Figure 2	Contractor	BG Drilling	Date Completed	10/12/15
Job No.	E22827	Drill Rig	4WD	Logged CW	Date: 24/12/15
Client	Baraz Construction Pty Ltd	Inclination	-90°	Checked NF	Date: 24/12/15

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
AD/T		GWNE	0	0.15				-	CONCRETE, 150mm thick.	-	-	CONCRETE HARDSTAND
				0.50	BH103_0.15-0.25 ES 0.15-0.25 m			CI-CH	Gravelly CLAY; medium to high plasticity, dark grey, no odour, gravel is angular-subangular.	M	-	RESIDUAL SOIL
			1	1.00	BH103_0.6-0.7 ES 0.60-0.70 m			CH	CLAY; high plasticity, brown-orange, no odour.	M	-	
									Hole Terminated at 1.00 m			

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

Environmental Investigations Australia
Contamination | Remediation | Geotechnical

BOREHOLE: BH104

Project				Sheet	1 OF 1
Location	Woodville Road, Chester Hill	East	313948.7 m	Date Started	10/12/15
Position	Refer to Figure 2	North	6250741.6 m MGA94 Zone 56	Date Completed	10/12/15
Job No.	E22827	Contractor	BG Drilling	Logged	CW Date: 24/12/15
Client	Baraz Construction Pty Ltd	Drill Rig	4WD	Checked	NF Date: 24/12/15
		Inclination	-90°		

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
			0	0.17				-	CONCRETE, 170mm thick.	-	-	CONCRETE HARDSTAND
				0.40	BH104_0.17-0.27 ES 0.17-0.27 m			-	FILL: CLAY; medium plasticity, dark brown, with trace of gravel, no odour.	M	-	FILL
AD/T		GWNE	1		BH104_0.5-0.6 ES 0.50-0.60 m			CI	CLAY; medium plasticity, orange, no odour.	M	-	RESIDUAL SOIL
				1.10				-	SHALE; extremely weathered, light brown, no odour.	M	-	WEATHERED ROCK
				1.60	BH104_1.5-1.6 ES 1.50-1.60 m				Hole Terminated at 1.60 m			
			2									
			3									
			4									
			5									
			6									
			7									
			8									
			9									
			10									

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

Environmental Investigations Australia
Contamination | Remediation | Geotechnical

BOREHOLE: BH105

Project				Sheet	1 OF 1
Location	Woodville Road, Chester Hill	East	313934.2 m	Date Started	10/12/15
Position	Refer to Figure 2	North	6250744.1 m MGA94 Zone 56	Date Completed	10/12/15
Job No.	E22827	Contractor	BG Drilling	Logged	CW Date: 24/12/15
Client	Baraz Construction Pty Ltd	Drill Rig	4WD	Checked	NF Date: 24/12/15
		Inclination	-90°		

Drilling					Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
AD/T		GWNE	0	0.10				-	CONCRETE, 100mm thick.	-	-	CONCRETE HARDSTAND
				0.30	BH105_0.1-0.2 ES 0.10-0.20 m			-	FILL: CLAY; medium plasticity, dark brown, with trace of gravel, no odour.	M	-	FILL
					BH105_0.5-0.6 ES 0.50-0.60 m			CI	CLAY; medium plasticity, orange, no odour.	M	-	RESIDUAL SOIL
			1		BH105_1.0-1.1 ES 1.00-1.10 m							
				1.30				-	SHALE; extremely weathered, brown, no odour.	M	-	WEATHERED ROCK
					BH105_1.5-1.6 ES 1.50-1.60 m							
			2	2.00					Hole Terminated at 2.00 m			
			3									
			4									
			5									
			6									
			7									
			8									
			9									
			10									

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

Environmental Investigations Australia
Contamination | Remediation | Geotechnical

BOREHOLE: BH106

Project				Sheet	1 OF 1
Location	Woodville Road, Chester Hill	East	313917.7 m	Date Started	10/12/15
Position	Refer to Figure 2	North	6250745.5 m MGA94 Zone 56	Date Completed	10/12/15
Job No.	E22827	Contractor	BG Drilling	Logged CW	Date: 24/12/15
Client	Baraz Construction Pty Ltd	Drill Rig	4WD	Checked NF	Date: 24/12/15
		Inclination	-90°		

Drilling					Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
			0	0.12				-	CONCRETE; 120mm thick.	-	-	CONCRETE HARDSTAND
AD/T		GWNE			BH106_0.12-0.22 ES 0.12-0.22 m			-	FILL: CLAY; medium plasticity, dark brown, with trace of gravel, no odour.	M	-	FILL
				0.40				CI	CLAY; medium plasticity, orange, no odour.			RESIDUAL SOIL
					BH106_0.6-0.7 ES 0.60-0.70 m					M	-	
			1									
					BH106_1.6-1.7 ES 1.60-1.70 m							
				2.00					Hole Terminated at 2.00 m			
			2									
			3									
			4									
			5									
			6									
			7									
			8									
			9									
			10									

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

Environmental Investigations Australia
Contamination | Remediation | Geotechnical

BOREHOLE: BH107

Project				Sheet	1 OF 1
Location	Woodville Road, Chester Hill	East	313925.8 m	Date Started	10/12/15
Position	Refer to Figure 2	North	6250756.8 m MGA94 Zone 56	Date Completed	10/12/15
Job No.	E22827	Contractor	BG Drilling	Logged	CW Date: 24/12/15
Client	Baraz Construction Pty Ltd	Drill Rig	4WD	Checked	NF Date: 24/12/15
		Inclination	-90°		

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
			0	0.10				-	CONCRETE; 100mm thick.	-	-	CONCRETE HARDSTAND
				0.30	BH107_0.1-0.2 ES 0.10-0.20 m			-	FILL: CLAY; medium plasticity, dark brown, with trace of gravel, no odour.	M	-	FILL
AD/T		GWNE	1		BH107_0.5-0.6 ES 0.50-0.60 m			CI	CLAY; medium plasticity, orange, no odour.	M	-	RESIDUAL SOIL
					BH107_1.5-1.6 ES 1.50-1.60 m							
			2	2.00					Hole Terminated at 2.00 m			
			3									
			4									
			5									
			6									
			7									
			8									
			9									
			10									

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

Environmental Investigations Australia
Contamination | Remediation | Geotechnical

BOREHOLE: BH108

Project				Sheet	1 OF 1
Location	Woodville Road, Chester Hill	East	313928.0 m	Date Started	10/12/15
Position	Refer to Figure 2	North	6250769.1 m MGA94 Zone 56	Date Completed	10/12/15
Job No.	E22827	Contractor	BG Drilling	Logged	CW Date: 24/12/15
Client	Baraz Construction Pty Ltd	Drill Rig	4WD	Checked	NF Date: 24/12/15
		Inclination	-90°		

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
			0	0.13				-	CONCRETE; 130mm thick.	-	-	CONCRETE HARDSTAND
					BH108_0.13-0.23 ES 0.13-0.23 m			-	FILL: CLAY; medium plasticity, dark brown, with trace of gravel, no odour.	M	-	FILL
				0.50				CI	CLAY; medium plasticity, red-grey, with subangular gravel, no odour.			RESIDUAL SOIL
AD/T		GWNE			BH108_0.63-0.73 ES 0.63-0.73 m							
			1	1.20								
					BH108_1.23-1.33 ES 1.23-1.33 m				From 1.2m, grey.	M	-	
			2	2.20								
				2.40	BH108_2.3-2.4 ES 2.30-2.40 m			-	SHALE; extremely weathered, light brown, no odour.	M	-	WEATHERED ROCK
									Hole Terminated at 2.40 m			
			3									
			4									
			5									
			6									
			7									
			8									
			9									
			10									

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

APPENDIX G
Field Data Sheets

WATER SAMPLING FIELD SHEET

Environmental Investigations Australia
Contamination | Remediation | Geotechnical

Site Address: 47 Woodville Rd Chester Hill	Job Number: E22827
Client: Baraz Constructions	Date: 15/12/15
Field Staff: CW	Sampling Location ID BH10/M
Well Location: BH10/M	Round No: 1
MEDIUM ☐Groundwater ☐Surface Water	☐Stormwater ☐Other:
SAMPLING POINT INFO	
Well Installation Date: 10/12/15	Stickup (m): −0.10 (+ above ground - below ground)
Initial Well Depth (mbgl): 5.3	Screen Interval: 2.3 – 5.3 mBGL
Previous Sampling Date: N/A	Previous SWL (mBTOC): N/A
PID READINGS	
PID Headspace (ppm): 0	PID Background (ppm): 0
PID Breathing Space (ppm): 0	
PRE PURGE	
Total Well Depth (mbgl): 5.25 m btoc	Well Head Condition: Good
SWL (mbtoc): 3.56 – 3.75 mbtoc	Water Column (m): 1.5
PHASE SEPARATED HYDROCARBONS (PSH)	
Depth to PSH (mbtoc): none	PSH Visually Confirmed (Bailer): none
PSH Thickness (mm): none	
PURGE AND SAMPLE	
Sampling Method ☑Bladder ☐Peristaltic	☐Submersible ☐Other:
Depth of Pump Inlet: 4.5	Fill Timer: 26
Pump Pressure Regulator (psi): 15-20	Discharge Timer: CPM2
Weather Conditions: Sunny	Cycle: 4
Pump on time: 10:30 am	Pump off time: 11am
WATER QUALITY PARAMETERS	
Probe Make and Model:	Bump Test Date and Time:

Time	Volume (L)	SWL (mbtoc)	Temp (°C)	EC (µS/cm)	Redox (mV) pot	DO (mg/L)	pH (units)	Comments (colour, turbidity, odour etc.)
10:30	0.5	3.75	22.89	7895	-22.5	1.51	7.51	Light brown / Yellow,
↓	0.5	↓	22.95	8534	-20.9	1.23	7.41	moderate turbidity, no
	0.5		23.00	9002	-19.8	0.91	7.39	sheen, no odour ↓
↓	0.5		23.1	9158	-15.9	0.86	7.29	
11am	0.5	↓	23.3	9256	-14.1	0.86	7.20	
Stabilisation range: 3 consecutive readings			±0.2°C	±3%	±20mV	±10%	±0.2	

OTHER COMMENTS/OBSERVATIONS:

QA Taken (GWQD1)

SIGNATURE:

APPENDIX H

Chain of Custody and Sample Receipt Forms

Sheet 1 of 3

Site: 47 Woodville Rd, Chester Hill

Project No: E22827

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

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	WATER	SOIL	OTHERS (i.e. Fibro, Paint, etc.)	HM [A] /TRH/BTEX/PAHs OCP/OP/PCB/Asbestos	HM [A] /TRH/BTEX/PAHs	HM [A] /TRH/BTEX	TRH/BTEX/Lead	TRH/BTEX	PAHs	VOCs	Asbestos	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	sPOCAS			TCLP PAHs	TCLP HM [A]	TCLP HM [B]
BH101_0.14-0.24		J, ZLB	10/12/15	1		✓		✓															
_0.5-0.6																							
_0.9-1.0																							
_1.4-1.6																							
BH102_0.15-0.25				2				✓															
_0.6-0.7				3					✓														
_1.1-1.2																							
BH103_0.15-0.25				4				✓															
_0.6-0.7																							
BH104_0.17-0.27				5				✓															
_0.5-0.6				6					✓														
_1.5-1.6		↓	↓			↓																	

Comments

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

HM [B]
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

SGS Alexandria Environmental

SE147114 COC
Received: 11 – Dec – 2015

LABORATORY TURNAROUND

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

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

Sampler's Comments:

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

Sampler's Name (EI): Chris Wolders
Print: Emmanuel Wolders
Signature: E Wolders
Date: 10/12/2015

Received by (SGS):
Print: Suba
Signature:
Date: 11/12/15 @ 4:~

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

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

Sheet 2 of 3

Site: 47 Woodville Rd, Chester Hill

Project No: E22827

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

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	Sample Matrix: WATER	SOIL	OTHERS (i.e. Fibro, Paint, etc.)	Analysis: HM [A] /TRH/BTEX/PAHs OCP/OP/PCB/Asbestos	HM [A] /TRH/BTEX/PAHs	HM [A] /TRH/BTEX	TRH/BTEX/Lead	TRH/BTEX	PAHs	VOCs	Asbestos	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	sPOCAS				TCLP PAHs	TCLP HM [A]	TCLP HM [B]
BH105_0.1-0.2		S,ZLB	10/12/15	7		✓		✓																
_0.5-0.6																								
_1.0-1.1																								
_1.5-1.6																								
BH106_0.12-0.22				8				✓																
_0.6-0.7				9					✓															
_1.6-1.7																								
BH107_0.1-0.2				10				✓	-															
_0.5-0.6																								
_1.5-1.6																								
BH108_0.13-0.23				11				✓																
_0.63-0.73		↓	↓			↓																		

Comments

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

HM [B]
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

LABORATORY TURNAROUND

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

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

Sampler's Comments:

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

Sampler's Name (EI): Chris Woelders

Print: Emmanuel Woelders

Signature: EWoelder

Date: 10/12/15

Received by (SGS):

Print: Suba

Signature:

Date: 11/12/15 @ 4.~

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

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

Sheet 3 of 3

Site: 47 Woodville Rd, Chester Hill

Project No: E22827

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

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	Sample Matrix: WATER	Sample Matrix: SOIL	Sample Matrix: OTHERS (i.e. Fibro, Paint, etc.)	Analysis: HM [A] /TRH/BTEX/PAHs OCP/OP/PCB/Asbestos	Analysis: HM [A] /TRH/BTEX/PAHs	Analysis: HM [A] /TRH/BTEX	Analysis: TRH/BTEX/Lead	Analysis: TRH/BTEX	Analysis: PAHs	Analysis: VOCs	Analysis: Asbestos	Analysis: pH / CEC (cation exchange)	Analysis: pH / EC (electrical conductivity)	Analysis: sPOCAS	Analysis: BTEX	Analysis: TCLP PAHs	Analysis: TCLP HM [A]	Analysis: TCLP HM [B]
BH103_1.23-1.33		J, ZLB	10/12/15	12		✓			✓													
BH103_2.3-2.4		↓	↓			✓																
QD1		J		13		✓				✓												
QA1		S, P, VC		14	✓					✓												
QTB1		J	↓	15		✓												✓				

Comments

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

HM [B]
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

LABORATORY TURNAROUND

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

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

Sampler's Comments:

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

Sampler's Name (EI): Chris Woelers

Print: Emmanuel Woelders

Signature:

Date: 10/12/15

Received by (SGS):

Print: Suba

Signature:

Date: 4/12/15 @ 4.—

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

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

SAMPLE RECEIPT ADVICE

SE147114

CLIENT DETAILS

Contact	Emmanuel Woelders
Client	Environmental Investigations
Address	Suite 6.01, 55 Miller Street NSW 2009
Telephone	02 9516 0722
Facsimile	02 9516 0741
Email	Emmanuel.Woelders@eiaustralia.com.au
Project	**E22827 47 Woodville Rd, Chester Hill**
Order Number	**E22827**
Samples	15

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 11/12/2015
Report Due	Fri 18/12/2015
SGS Reference	**SE147114**

SUBMISSION DETAILS

This is to confirm that 15 samples were received on Friday 11/12/2015. Results are expected to be ready by Friday 18/12/2015. Please quote SGS reference SE147114 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Sample counts by matrix	14 Soils, 1 Water	Type of documentation received	COC
Date documentation received	11/12/2015	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	7.8°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

14 soil samples unmarked for analyses on the COC have been placed on hold.

SAMPLE RECEIPT ADVICE

SE147114

CLIENT DETAILS

Client Environmental Investigations

Project E22827 47 Woodville Rd, Chester Hill

SUMMARY OF ANALYSIS

No.	Sample ID	OC Pesticides in Soil	OP Pesticides in Soil	PAH (Polynuclear Aromatic Hydrocarbons) in Soil	PCBs in Soil	Total Recoverable Metals in Soil by ICPOES	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
001	BH101_0.14-0.24	28	13	25	11	7	10	12	8
002	BH102_0.15-0.25	28	13	25	11	7	10	12	8
003	BH102_0.6-0.7	-	-	25	-	7	10	12	8
004	BH103_0.15-0.25	28	13	25	11	7	10	12	8
005	BH104_0.17-0.27	28	13	25	11	7	10	12	8
006	BH104_0.5-0.6	-	-	25	-	7	10	12	8
007	BH105_0.1-0.2	28	13	25	11	7	10	12	8
008	BH106_0.12-0.22	28	13	25	11	7	10	12	8
009	BH106_0.6-0.7	-	-	25	-	7	10	12	8
010	BH107_0.1-0.2	28	13	25	11	7	10	12	8
011	BH108_0.13-0.23	28	13	25	11	7	10	12	8
012	BH108_1.23-1.33	-	-	25	-	7	10	12	8
013	QD1	-	-	-	-	7	10	12	8
015	QTB1	-	-	-	-	-	-	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 .

SAMPLE RECEIPT ADVICE

SE147114

CLIENT DETAILS

Client Environmental Investigations

Project E22827 47 Woodville Rd, Chester Hill

SUMMARY OF ANALYSIS

No.	Sample ID	Fibre Identification in soil	Mercury in Soil	Moisture Content	TRH (Total Recoverable Hydrocarbons) in Water	VOCs in Water	Volatile Petroleum Hydrocarbons in Water
001	BH101_0.14-0.24	2	1	1	-	-	-
002	BH102_0.15-0.25	2	1	1	-	-	-
003	BH102_0.6-0.7	-	1	1	-	-	-
004	BH103_0.15-0.25	2	1	1	-	-	-
005	BH104_0.17-0.27	2	1	1	-	-	-
006	BH104_0.5-0.6	-	1	1	-	-	-
007	BH105_0.1-0.2	2	1	1	-	-	-
008	BH106_0.12-0.22	2	1	1	-	-	-
009	BH106_0.6-0.7	-	1	1	-	-	-
010	BH107_0.1-0.2	2	1	1	-	-	-
011	BH108_0.13-0.23	2	1	1	-	-	-
012	BH108_1.23-1.33	-	1	1	-	-	-
013	QD1	-	1	1	-	-	-
014	QR1	-	-	-	9	12	8
015	QTB1	-	-	1	-	-	-

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

SE147114

CLIENT DETAILS

Client Environmental Investigations

Project E22827 47 Woodville Rd, Chester Hill

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury (dissolved) in Water	Trace Metals (Dissolved) in Water by ICPMS
014	QR1	1	7

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 .

Sheet 1 of 1

Site: 47 Woodville Rd, Chester Hill

Project No: E22827

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

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	WATER	SOIL	OTHERS (i.e. Fibro, Paint, etc.)	HM [A] /TRH/BTEX/PAHs OCP/OP/PCB/Asbestos	HM [A] /TRH/BTEX/PAHs	HM [A] /TRH/BTEX	TRH/BTEX/Lead	TRH/BTEX	PAHs	VOCs	Asbestos	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	sPOCAS					TCLP PAHs	TCLP HM [B]
QT1	(1)	J	10/12/15			✓				✓														

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

Job No: 139016
Date Received: 11/12/15
Time Received: 14.45
Received by: PR
Temp: Cool/Ambient 12.8
Cooling: Ice/Icepack
Security: Intact/Broken/None

Comments

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

HM [B]
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

LABORATORY TURNAROUND

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

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

Sampler's Comments:

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

Sampler's Name (EI):	Received by (Envirolab):
	P. Raj
Print	Print
Signature	Signature
Date	Date 11/12/15 14.45

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

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

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

SAMPLE RECEIPT ADVICE

Client Details	
Client	Environmental Investigations
Attention	Jessie Sixsmith

Sample Login Details	
Your Reference	E22827, Chester Hill
Envirolab Reference	**139016**
Date Sample Received	11/12/2015
Date Instructions Received	11/12/2015
Date Results Expected to be Reported	**18/12/2015**

Sample Condition	
Samples received in appropriate condition for analysis	YES
No. of Samples Provided	1 Soil
Turnaround Time Requested	Standard
Temperature on receipt (°C)	12.6
Cooling Method	Ice Pack
Sampling Date Provided	YES

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

Please direct any queries to:

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

Sample and Testing Details on following page

ENVIROLAB SERVICES

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

Sample Id	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	Acid Extractable metals in soil
QT-1	✓	✓	✓

Sheet 1 of 1

Site: 47 Woodville Rd, Chester Hill

Project No: E12527

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

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	Sample Matrix: WATER	SOIL	OTHERS (i.e. Fibro, Paint, etc.)	Analysis: HM[A] /TRH/BTEX/PAHs OCP/OP/PCB/Asbestos	HM[A] /TRH/BTEX/PAHs	HM[A] /TRH/BTEX	TRH/BTEX/Lead	TRH/BTEX	PAHs	VOCs	Asbestos	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	sPOCAS	Phenols	15TEX		TCLP PAHs	TCLP HM[A]	TCLP HM[B]
BH101M	1	S,P,VC	15/12/15	AM	✓				✓					✓					✓					
GWQ01	2	V	↓	↓	↓					✓														
GWQ151	3	VC																	✓					
GWQTB1	4	VC	↓	↓	↓														✓					

Comments

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

HM[B]
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

SGS Alexandria Environmental

SE147247 COC

Received: 16 – Dec – 2015

LABORATORY TURNAROUND

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

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

Sampler's Comments:

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

Sampler's Name (EI): Chris Woolders

Print: Emmanuel Woolders

Signature: EWoolders

Date: 16/12/15

Received by (SGS):

Print: Suba

Signature:

Date: 16/12/15 @ 4:40

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

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

SAMPLE RECEIPT ADVICE

SE147247

CLIENT DETAILS

Contact	Emmanuel Woelders
Client	Environmental Investigations
Address	Suite 6.01, 55 Miller Street NSW 2009
Telephone	02 9516 0722
Facsimile	02 9516 0741
Email	emmanuel.woelders@eiaustralia.com.au
Project	**E22827 - 47 Woodville Rd Chester Hill**
Order Number	**E22827**
Samples	4

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 16/12/2015
Report Due	Wed 23/12/2015
SGS Reference	**SE147247**

SUBMISSION DETAILS

This is to confirm that 4 samples were received on Wednesday 16/12/2015. Results are expected to be ready by Wednesday 23/12/2015. Please quote SGS reference SE147247 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Sample counts by matrix	4 Waters	Type of documentation received	COC
Date documentation received	16/12/2015	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	8.7°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

SAMPLE RECEIPT ADVICE

SE147247

CLIENT DETAILS

Client Environmental Investigations

Project E22827 - 47 Woodville Rd Chester Hill

SUMMARY OF ANALYSIS

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

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 .

APPENDIX I
Laboratory Analytical Reports

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Emmanuel Woelders
Client	Environmental Investigations
Address	Suite 6.01, 55 Miller Street NSW 2009
Telephone	02 9516 0722
Facsimile	02 9516 0741
Email	Emmanuel.Woelders@eiaustralia.com.au
Project	**E22827 47 Woodville Rd, Chester Hill**
Order Number	**E22827**
Samples	15

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE147114 R0**
Date Received	11/12/2015
Date Reported	18/12/2015

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 Identifier Yusuf Kuthpudin.

SIGNATORIES

Andy Sutton
Senior Organic Chemist

Dong Liang
Metals/Inorganics Team Leader

Kamrul Ahsan
Senior Chemist

Ly Kim Ha
Organic Section Head

Ravee Sivasubramaniam
Asbestos Analyst/Hygiene Team Leader

VOC's In Soil [AN433/AN434] Tested: 14/12/2015

PARAMETER	UOM	LOR	BH101_0.14-0.24 SOIL - 10/12/2015 SE147114.001	BH102_0.15-0.25 SOIL - 10/12/2015 SE147114.002	BH102_0.6-0.7 SOIL - 10/12/2015 SE147114.003	BH103_0.15-0.25 SOIL - 10/12/2015 SE147114.004	BH104_0.17-0.27 SOIL - 10/12/2015 SE147114.005
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes*	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX*	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

PARAMETER	UOM	LOR	BH104_0.5-0.6 SOIL - 10/12/2015 SE147114.006	BH105_0.1-0.2 SOIL - 10/12/2015 SE147114.007	BH106_0.12-0.22 SOIL - 10/12/2015 SE147114.008	BH106_0.6-0.7 SOIL - 10/12/2015 SE147114.009	BH107_0.1-0.2 SOIL - 10/12/2015 SE147114.010
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes*	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX*	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

PARAMETER	UOM	LOR	BH108_0.13-0.23 SOIL - 10/12/2015 SE147114.011	BH108_1.23-1.33 SOIL - 10/12/2015 SE147114.012	QD1 SOIL - 10/12/2015 SE147114.013	QTB1 SOIL - 10/12/2015 SE147114.015
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes*	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX*	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1

Volatile Petroleum Hydrocarbons in Soil [AN433/AN434/AN410] Tested: 14/12/2015

PARAMETER	UOM	LOR	BH101_0.14-0.24 SOIL 10/12/2015 SE147114.001	BH102_0.15-0.25 SOIL 10/12/2015 SE147114.002	BH102_0.6-0.7 SOIL 10/12/2015 SE147114.003	BH103_0.15-0.25 SOIL 10/12/2015 SE147114.004	BH104_0.17-0.27 SOIL 10/12/2015 SE147114.005
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	BH104_0.5-0.6 SOIL 10/12/2015 SE147114.006	BH105_0.1-0.2 SOIL 10/12/2015 SE147114.007	BH106_0.12-0.22 SOIL 10/12/2015 SE147114.008	BH106_0.6-0.7 SOIL 10/12/2015 SE147114.009	BH107_0.1-0.2 SOIL 10/12/2015 SE147114.010
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	BH108_0.13-0.23 SOIL 10/12/2015 SE147114.011	BH108_1.23-1.33 SOIL 10/12/2015 SE147114.012	QD1 SOIL 10/12/2015 SE147114.013
TRH C6-C9	mg/kg	20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25

TRH (Total Recoverable Hydrocarbons) in Soil [AN403] Tested: 15/12/2015

PARAMETER	UOM	LOR	BH101_0.14-0.24 SOIL - 10/12/2015 SE147114.001	BH102_0.15-0.25 SOIL - 10/12/2015 SE147114.002	BH102_0.6-0.7 SOIL - 10/12/2015 SE147114.003	BH103_0.15-0.25 SOIL - 10/12/2015 SE147114.004	BH104_0.17-0.27 SOIL - 10/12/2015 SE147114.005
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16 (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 (F2) - Naphthalene	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110
TRH C10-C40 Total	mg/kg	210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	BH104_0.5-0.6 SOIL - 10/12/2015 SE147114.006	BH105_0.1-0.2 SOIL - 10/12/2015 SE147114.007	BH106_0.12-0.22 SOIL - 10/12/2015 SE147114.008	BH106_0.6-0.7 SOIL - 10/12/2015 SE147114.009	BH107_0.1-0.2 SOIL - 10/12/2015 SE147114.010
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16 (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 (F2) - Naphthalene	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110
TRH C10-C40 Total	mg/kg	210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	BH108_0.13-0.23 SOIL - 10/12/2015 SE147114.011	BH108_1.23-1.33 SOIL - 10/12/2015 SE147114.012	QD1 SOIL - 10/12/2015 SE147114.013
TRH C10-C14	mg/kg	20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100
TRH >C10-C16 (F2)	mg/kg	25	<25	<25	<25
TRH >C10-C16 (F2) - Naphthalene	mg/kg	25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110
TRH C10-C40 Total	mg/kg	210	<210	<210	<210

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 15/12/2015

PARAMETER	UOM	LOR	BH101_0.14-0.24 SOIL - 10/12/2015 SE147114.001	BH102_0.15-0.25 SOIL - 10/12/2015 SE147114.002	BH102_0.6-0.7 SOIL - 10/12/2015 SE147114.003	BH103_0.15-0.25 SOIL - 10/12/2015 SE147114.004	BH104_0.17-0.27 SOIL - 10/12/2015 SE147114.005
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0*	TEQ	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR*	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2*	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8

PARAMETER	UOM	LOR	BH104_0.5-0.6 SOIL - 10/12/2015 SE147114.006	BH105_0.1-0.2 SOIL - 10/12/2015 SE147114.007	BH106_0.12-0.22 SOIL - 10/12/2015 SE147114.008	BH106_0.6-0.7 SOIL - 10/12/2015 SE147114.009	BH107_0.1-0.2 SOIL - 10/12/2015 SE147114.010
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	0.2
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0*	TEQ	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR*	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2*	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 15/12/2015 (continued)

PARAMETER	UOM	LOR	BH108_0.13-0.23 SOIL - 10/12/2015 SE147114.011	BH108_1.23-1.33 SOIL - 10/12/2015 SE147114.012
Naphthalene	mg/kg	0.1	<0.1	<0.1
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
Acenaphthene	mg/kg	0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1
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
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
Carcinogenic PAHs, BaP TEQ <LOR=0*	TEQ	0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR*	TEQ (mg/kg)	0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2*	TEQ (mg/kg)	0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8

OC Pesticides in Soil [AN400/AN420] Tested: 15/12/2015

PARAMETER	UOM	LOR	BH101_0.14-0.24 SOIL - 10/12/2015 SE147114.001	BH102_0.15-0.25 SOIL - 10/12/2015 SE147114.002	BH103_0.15-0.25 SOIL - 10/12/2015 SE147114.004	BH104_0.17-0.27 SOIL - 10/12/2015 SE147114.005	BH105_0.1-0.2 SOIL - 10/12/2015 SE147114.007
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

OC Pesticides in Soil [AN400/AN420] Tested: 15/12/2015 (continued)

PARAMETER	UOM	LOR	BH106_0.12-0.22 SOIL - 10/12/2015 SE147114.008	BH107_0.1-0.2 SOIL - 10/12/2015 SE147114.010	BH108_0.13-0.23 SOIL - 10/12/2015 SE147114.011
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1

OP Pesticides in Soil [AN400/AN420] Tested: 15/12/2015

PARAMETER	UOM	LOR	BH101_0.14-0.24 SOIL - 10/12/2015 SE147114.001	BH102_0.15-0.25 SOIL - 10/12/2015 SE147114.002	BH103_0.15-0.25 SOIL - 10/12/2015 SE147114.004	BH104_0.17-0.27 SOIL - 10/12/2015 SE147114.005	BH105_0.1-0.2 SOIL - 10/12/2015 SE147114.007
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2

PARAMETER	UOM	LOR	BH106_0.12-0.22 SOIL - 10/12/2015 SE147114.008	BH107_0.1-0.2 SOIL - 10/12/2015 SE147114.010	BH108_0.13-0.23 SOIL - 10/12/2015 SE147114.011
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2

PCBs in Soil [AN400/AN420] **Tested: 15/12/2015**

PARAMETER	UOM	LOR	BH101_0.14-0.24 SOIL 10/12/2015 SE147114.001	BH102_0.15-0.25 SOIL 10/12/2015 SE147114.002	BH103_0.15-0.25 SOIL 10/12/2015 SE147114.004	BH104_0.17-0.27 SOIL 10/12/2015 SE147114.005	BH105_0.1-0.2 SOIL 10/12/2015 SE147114.007
Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1	<1	<1

PARAMETER	UOM	LOR	BH106_0.12-0.22 SOIL 10/12/2015 SE147114.008	BH107_0.1-0.2 SOIL 10/12/2015 SE147114.010	BH108_0.13-0.23 SOIL 10/12/2015 SE147114.011
Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1

Total Recoverable Metals in Soil by ICPOES [AN040/AN320] Tested: 15/12/2015

PARAMETER	UOM	LOR	BH101_0.14-0.24 SOIL - 10/12/2015 SE147114.001	BH102_0.15-0.25 SOIL - 10/12/2015 SE147114.002	BH102_0.6-0.7 SOIL - 10/12/2015 SE147114.003	BH103_0.15-0.25 SOIL - 10/12/2015 SE147114.004	BH104_0.17-0.27 SOIL - 10/12/2015 SE147114.005
Arsenic, As	mg/kg	3	4	6	6	13	6
Cadmium, Cd	mg/kg	0.3	0.6	0.6	0.4	1.7	0.4
Chromium, Cr	mg/kg	0.3	17	19	19	19	18
Copper, Cu	mg/kg	0.5	29	20	26	85	21
Lead, Pb	mg/kg	1	83	39	19	170	22
Nickel, Ni	mg/kg	0.5	12	13	9.1	29	14
Zinc, Zn	mg/kg	0.5	320	68	41	310	41

PARAMETER	UOM	LOR	BH104_0.5-0.6 SOIL - 10/12/2015 SE147114.006	BH105_0.1-0.2 SOIL - 10/12/2015 SE147114.007	BH106_0.12-0.22 SOIL - 10/12/2015 SE147114.008	BH106_0.6-0.7 SOIL - 10/12/2015 SE147114.009	BH107_0.1-0.2 SOIL - 10/12/2015 SE147114.010
Arsenic, As	mg/kg	3	8	6	3	9	<3
Cadmium, Cd	mg/kg	0.3	0.4	0.4	0.3	0.5	0.6
Chromium, Cr	mg/kg	0.3	19	17	13	16	15
Copper, Cu	mg/kg	0.5	30	22	30	26	34
Lead, Pb	mg/kg	1	18	24	26	21	45
Nickel, Ni	mg/kg	0.5	12	11	15	9.2	13
Zinc, Zn	mg/kg	0.5	56	40	42	55	79

PARAMETER	UOM	LOR	BH108_0.13-0.23 SOIL - 10/12/2015 SE147114.011	BH108_1.23-1.33 SOIL - 10/12/2015 SE147114.012	QD1 SOIL - 10/12/2015 SE147114.013
Arsenic, As	mg/kg	3	4	<3	5
Cadmium, Cd	mg/kg	0.3	0.5	<0.3	0.4
Chromium, Cr	mg/kg	0.3	13	5.4	22
Copper, Cu	mg/kg	0.5	28	17	28
Lead, Pb	mg/kg	1	1200	25	28
Nickel, Ni	mg/kg	0.5	13	8.6	15
Zinc, Zn	mg/kg	0.5	280	84	50

Mercury In Soil [AN312] Tested: 16/12/2015

PARAMETER	UOM	LOR	BH101_0.14-0.24 SOIL - 10/12/2015 SE147114.001	BH102_0.15-0.25 SOIL - 10/12/2015 SE147114.002	BH102_0.6-0.7 SOIL - 10/12/2015 SE147114.003	BH103_0.15-0.25 SOIL - 10/12/2015 SE147114.004	BH104_0.17-0.27 SOIL - 10/12/2015 SE147114.005
Mercury	mg/kg	0.01	0.04	0.17	0.03	0.06	0.03

PARAMETER	UOM	LOR	BH104_0.5-0.6 SOIL - 10/12/2015 SE147114.006	BH105_0.1-0.2 SOIL - 10/12/2015 SE147114.007	BH106_0.12-0.22 SOIL - 10/12/2015 SE147114.008	BH106_0.6-0.7 SOIL - 10/12/2015 SE147114.009	BH107_0.1-0.2 SOIL - 10/12/2015 SE147114.010
Mercury	mg/kg	0.01	0.01	0.02	0.02	0.02	0.03

PARAMETER	UOM	LOR	BH108_0.13-0.23 SOIL - 10/12/2015 SE147114.011	BH108_1.23-1.33 SOIL - 10/12/2015 SE147114.012	QD1 SOIL - 10/12/2015 SE147114.013
Mercury	mg/kg	0.01	0.08	0.09	0.03

Moisture Content [AN002] Tested: 14/12/2015

PARAMETER	UOM	LOR	BH101_0.14-0.24 SOIL - 10/12/2015 SE147114.001	BH102_0.15-0.25 SOIL - 10/12/2015 SE147114.002	BH102_0.6-0.7 SOIL - 10/12/2015 SE147114.003	BH103_0.15-0.25 SOIL - 10/12/2015 SE147114.004	BH104_0.17-0.27 SOIL - 10/12/2015 SE147114.005
% Moisture	%w/w	0.5	20	19	22	21	22

PARAMETER	UOM	LOR	BH104_0.5-0.6 SOIL - 10/12/2015 SE147114.006	BH105_0.1-0.2 SOIL - 10/12/2015 SE147114.007	BH106_0.12-0.22 SOIL - 10/12/2015 SE147114.008	BH106_0.6-0.7 SOIL - 10/12/2015 SE147114.009	BH107_0.1-0.2 SOIL - 10/12/2015 SE147114.010
% Moisture	%w/w	0.5	23	20	17	22	18

PARAMETER	UOM	LOR	BH108_0.13-0.23 SOIL - 10/12/2015 SE147114.011	BH108_1.23-1.33 SOIL - 10/12/2015 SE147114.012	QD1 SOIL - 10/12/2015 SE147114.013	QTB1 SOIL - 10/12/2015 SE147114.015
% Moisture	%w/w	0.5	20	18	21	<0.5

Fibre Identification in soil [AN602] Tested: 17/12/2015

PARAMETER	UOM	LOR	BH101_0.14-0.24 SOIL - 10/12/2015 SE147114.001	BH102_0.15-0.25 SOIL - 10/12/2015 SE147114.002	BH103_0.15-0.25 SOIL - 10/12/2015 SE147114.004	BH104_0.17-0.27 SOIL - 10/12/2015 SE147114.005	BH105_0.1-0.2 SOIL - 10/12/2015 SE147114.007
Asbestos Detected	No unit	-	No	No	No	No	No
Estimated Fibres*	%w/w	0.01	<0.01	<0.01	<0.01	<0.01	<0.01

PARAMETER	UOM	LOR	BH106_0.12-0.22 SOIL - 10/12/2015 SE147114.008	BH107_0.1-0.2 SOIL - 10/12/2015 SE147114.010	BH108_0.13-0.23 SOIL - 10/12/2015 SE147114.011
Asbestos Detected	No unit	-	No	No	No
Estimated Fibres*	%w/w	0.01	<0.01	<0.01	<0.01

VOCs in Water [AN433/AN434] Tested: 16/12/2015

PARAMETER	UOM	LOR	QR1 WATER - 10/12/2015 SE147114.014
Benzene	µg/L	0.5	<0.5
Toluene	µg/L	0.5	<0.5
Ethylbenzene	µg/L	0.5	<0.5
m/p-xylene	µg/L	1	<1
o-xylene	µg/L	0.5	<0.5
Total Xylenes	µg/L	1.5	<1.5
Total BTEX	µg/L	3	<3
Naphthalene	µg/L	0.5	<0.5

Volatile Petroleum Hydrocarbons in Water [AN433/AN434/AN410] Tested: 16/12/2015

			QR1
			WATER
			-
			10/12/2015
PARAMETER	UOM	LOR	SE147114.014
TRH C6-C9	µg/L	40	<40
Benzene (F0)	µg/L	0.5	<0.5
TRH C6-C10	µg/L	50	<50
TRH C6-C10 minus BTEX (F1)	µg/L	50	<50

TRH (Total Recoverable Hydrocarbons) in Water [AN403] Tested: 15/12/2015

			QR1
			WATER
			10/12/2015
PARAMETER	UOM	LOR	SE147114.014
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

Trace Metals (Dissolved) in Water by ICPMS [AN318] Tested: 14/12/2015

			QR1
			WATER
			10/12/2015
PARAMETER	UOM	LOR	SE147114.014
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	2
Lead, Pb	µg/L	1	<1
Nickel, Ni	µg/L	1	<1
Zinc, Zn	µg/L	5	<5

Mercury (dissolved) in Water [AN311/AN312] Tested: 17/12/2015

			QR1
			WATER
			-
			10/12/2015
PARAMETER	UOM	LOR	SE147114.014
Mercury	mg/L	0.0001	<0.0001

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
AN040/AN320	A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analysis by ASS or ICP as per USEPA Method 200.8.
AN311/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 NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is reported directly and also corrected by subtracting Naphthalene (from VOC method AN433) where available.
AN403	Additionally, the volatile C6-C9 fraction may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Petroleum Hydrocarbons (TPH) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents.
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN420	SVOC Compounds: Semi-Volatile Organic Compounds (SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN433/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.
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.
AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602	Fibres/material that cannot be unequivocably identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf).

AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples, Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection limit of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."
AN602	The sample can be reported "no asbestos found at the reporting limit of 0.1 g/kg" (<0.01%w/w) where AN602 section 4.5 of this method has been followed, and if- (a) no trace asbestos fibres have been detected (i.e. no 'respirable' fibres): (b) the estimated weight of non-respirable asbestos fibre bundles and/or the estimated weight of asbestos in asbestos-containing materials are found to be less than 0.1g/kg: and (c) these non-respirable asbestos fibre bundles and/or the asbestos containing materials are only visible under stereo-microscope viewing conditions.

FOOTNOTES

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

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

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

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

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

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS		LABORATORY DETAILS	
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Project	**E22827 47 Woodville Rd, Chester Hill**	SGS Reference	**SE147114 R0**
Order Number	**E22827**	Date Received	11 Dec 2015
Samples	8	Date Reported	18 Dec 2015

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 Identifier Yusuf Kuthpudin.

SIGNATORIES

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SGS

ANALYTICAL REPORT

SE147114 R0

RESULTS

Fibre Identification in soil — Method AN602

Laboratory Reference	Client Reference	Matrix	Sample Description	Date Sampled	Fibre Identification	Est.%w/w*
SE147114.001	BH101_0.14-0.24	Soil	109g Sand, Soil, Rocks	10 Dec 2015	No Asbestos Found	<0.01
SE147114.002	BH102_0.15-0.25	Soil	146g Sand, Soil, Rocks	10 Dec 2015	No Asbestos Found	<0.01
SE147114.004	BH103_0.15-0.25	Soil	148g Sand, Soil, Rocks	10 Dec 2015	No Asbestos Found	<0.01
SE147114.005	BH104_0.17-0.27	Soil	177g Sand, Soil, Rocks	10 Dec 2015	No Asbestos Found	<0.01
SE147114.007	BH105_0.1-0.2	Soil	105g Sand, Soil, Rocks	10 Dec 2015	No Asbestos Found	<0.01
SE147114.008	BH106_0.12-0.22	Soil	194g Sand, Soil, Rocks	10 Dec 2015	No Asbestos Found Organic Fibres Detected	<0.01
SE147114.010	BH107_0.1-0.2	Soil	200g Sand, Soil, Rocks	10 Dec 2015	No Asbestos Found	<0.01
SE147114.011	BH108_0.13-0.23	Soil	173g Sand, Soil, Rocks	10 Dec 2015	No Asbestos Found	<0.01

SGS

METHOD SUMMARY

SE147114 R0

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

FOOTNOTES

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

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

Sampled by the client.

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

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

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

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Envirolab Services Pty Ltd - Sydney | ABN 37 112 535 645

CERTIFICATE OF ANALYSIS 139016

Client:
Environmental Investigations
Suite 6.01, 55 Miller Street
Pyrmont
NSW 2009

Attention: Jessie Sixsmith

Sample log in details:

Your Reference:	**E22827, Chester Hill**
No. of samples:	1 Soil
Date samples received / completed instructions received	11/12/15 / 11/12/15

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:	18/12/15 / 18/12/15
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	139016-1
Your Reference	----------	QT-1
Date Sampled	----------	10/12/2015
Type of sample		Soil
Date extracted	-	14/12/2015
Date analysed	-	17/12/2015
$TRHC_6$ - 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	%	88

svTRH (C10-C40) in Soil		
Our Reference:	UNITS	139016-1
Your Reference	----------	QT-1
Date Sampled	----------	10/12/2015
Type of sample		Soil
Date extracted	-	14/12/2015
Date analysed	-	15/12/2015
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	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100
Surrogate o-Terphenyl	%	85

Acid Extractable metals in soil		
Our Reference:	UNITS	139016-1
Your Reference	----------	QT-1
Date Sampled	----------	10/12/2015
Type of sample		Soil
Date prepared	-	14/12/2015
Date analysed	-	14/12/2015
Arsenic	mg/kg	5
Cadmium	mg/kg	<0.4
Chromium	mg/kg	17
Copper	mg/kg	44
Lead	mg/kg	28
Mercury	mg/kg	<0.1
Nickel	mg/kg	13
Zinc	mg/kg	56

Moisture		
Our Reference:	UNITS	139016-1
Your Reference	----------	QT-1
Date Sampled	----------	10/12/2015
Type of sample		Soil
Date prepared	-	14/12/2015
Date analysed	-	15/12/2015
Moisture	%	23

Method ID	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 (HSLs Tables 1A (3, 4)). 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.

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			14/12/2015	[NT]	[NT]	LCS-4	14/12/2015
Date analysed	-			17/12/2015	[NT]	[NT]	LCS-4	17/12/2015
$TRHC_6 - C_9$	mg/kg	25	Org-016	<25	[NT]	[NT]	LCS-4	94%
$TRHC_6 - C_{10}$	mg/kg	25	Org-016	<25	[NT]	[NT]	LCS-4	94%
Benzene	mg/kg	0.2	Org-016	<0.2	[NT]	[NT]	LCS-4	86%
Toluene	mg/kg	0.5	Org-016	<0.5	[NT]	[NT]	LCS-4	92%
Ethylbenzene	mg/kg	1	Org-016	<1	[NT]	[NT]	LCS-4	96%
m+p-xylene	mg/kg	2	Org-016	<2	[NT]	[NT]	LCS-4	98%
o-Xylene	mg/kg	1	Org-016	<1	[NT]	[NT]	LCS-4	98%
naphthalene	mg/kg	1	Org-014	<1	[NT]	[NT]	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		Org-016	95	[NT]	[NT]	LCS-4	90%
QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			14/12/2015	[NT]	[NT]	LCS-4	14/12/2015
Date analysed	-			14/12/2015	[NT]	[NT]	LCS-4	14/12/2015
$TRHC_{10} - C_{14}$	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS-4	121%
$TRHC_{15} - C_{28}$	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-4	99%
$TRHC_{29} - C_{36}$	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-4	80%
$TRH{>}C_{10}-C_{16}$	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS-4	121%
$TRH{>}C_{16}-C_{34}$	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-4	99%
$TRH{>}C_{34}-C_{40}$	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-4	80%
Surrogate o-Terphenyl	%		Org-003	89	[NT]	[NT]	LCS-4	83%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			14/12/2015	[NT]	[NT]	LCS-7	14/12/2015
Date analysed	-			14/12/2015	[NT]	[NT]	LCS-7	14/12/2015
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	[NT]	[NT]	LCS-7	114%
Cadmium	mg/kg	0.4	Metals-020 ICP-AES	<0.4	[NT]	[NT]	LCS-7	108%
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-7	111%
Copper	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-7	118%
Lead	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-7	106%
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	[NT]	[NT]	LCS-7	97%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-7	104%
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-7	107%

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
NR: Test not required
<: Less than

PQL: Practical Quantitation Limit
RPD: Relative Percent Difference
>: Greater than

NT: Not tested
NA: Test not required
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 (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

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Project	**E22827 - 47 Woodville Rd Chester Hill**
Order Number	**E22827**
Samples	4

LABORATORY DETAILS

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SGS Reference	**SE147247 R0**
Date Received	16/12/2015
Date Reported	23/12/2015

COMMENTS

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

SIGNATORIES

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VOCs in Water [AN433/AN434] Tested: 18/12/2015

PARAMETER	UOM	LOR	BH101M WATER - 15/12/2015 SE147247.001	GWQD1 WATER - 15/12/2015 SE147247.002	GWQTS1 WATER - 15/12/2015 SE147247.003	GWQTB1 WATER - 15/12/2015 SE147247.004
Benzene	µg/L	0.5	<0.5	<0.5	[89%]	<0.5
Toluene	µg/L	0.5	<0.5	<0.5	[89%]	<0.5
Ethylbenzene	µg/L	0.5	<0.5	<0.5	[85%]	<0.5
m/p-xylene	µg/L	1	<1	<1	[85%]	<1
o-xylene	µg/L	0.5	<0.5	<0.5	[87%]	<0.5
Total Xylenes	µg/L	1.5	<1.5	<1.5	-	<1.5
Total BTEX	µg/L	3	<3	<3	-	<3
Naphthalene	µg/L	0.5	<0.5	<0.5	-	<0.5
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	-	-	-
Acetone (2-propanone)	µg/L	10	<10	-	-	-
Iodomethane	µg/L	5	<5	-	-	-
1,1-dichloroethene	µg/L	0.5	<0.5	-	-	-
Acrylonitrile	µg/L	0.5	<0.5	-	-	-
Dichloromethane (Methylene chloride)	µg/L	5	<5	-	-	-
Allyl chloride	µg/L	2	<2	-	-	-
Carbon disulfide	µg/L	2	<2	-	-	-
trans-1,2-dichloroethene	µg/L	0.5	<0.5	-	-	-
MtBE (Methyl-tert-butyl ether)	µg/L	2	<2	-	-	-
1,1-dichloroethane	µg/L	0.5	<0.5	-	-	-
Vinyl acetate	µg/L	10	<10	-	-	-
MEK (2-butanone)	µg/L	10	<10	-	-	-
cis-1,2-dichloroethene	µg/L	0.5	<0.5	-	-	-
Bromochloromethane	µg/L	0.5	<0.5	-	-	-
Chloroform (THM)	µg/L	0.5	<0.5	-	-	-
2,2-dichloropropane	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	-	-	-
1,2-dichloropropane	µg/L	0.5	<0.5	-	-	-
Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	<0.5	-	-	-
2-nitropropane	µg/L	100	<100	-	-	-
Bromodichloromethane (THM)	µg/L	0.5	<0.5	-	-	-
MIBK (4-methyl-2-pentanone)	µg/L	5	<5	-	-	-
cis-1,3-dichloropropene	µg/L	0.5	<0.5	-	-	-
trans-1,3-dichloropropene	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	-	-	-
Dibromochloromethane (THM)	µg/L	0.5	<0.5	-	-	-
2-hexanone (MBK)	µg/L	5	<5	-	-	-
1,2-dibromoethane (EDB)	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	-	-	-
Chlorobenzene	µg/L	0.5	<0.5	-	-	-
Bromoform (THM)	µg/L	0.5	<0.5	-	-	-
cis-1,4-dichloro-2-butene	µg/L	1	<1	-	-	-
Styrene (Vinyl benzene)	µg/L	0.5	<0.5	-	-	-
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	-	-	-

VOCs in Water [AN433/AN434] Tested: 18/12/2015 (continued)

PARAMETER	UOM	LOR	BH101M WATER - 15/12/2015 SE147247.001	GWQD1 WATER - 15/12/2015 SE147247.002	GWQTS1 WATER - 15/12/2015 SE147247.003	GWQTB1 WATER - 15/12/2015 SE147247.004
Isopropylbenzene (Cumene)	µg/L	0.5	<0.5	-	-	-
Bromobenzene	µg/L	0.5	<0.5	-	-	-
n-propylbenzene	µg/L	0.5	<0.5	-	-	-
2-chlorotoluene	µg/L	0.5	<0.5	-	-	-
4-chlorotoluene	µg/L	0.5	<0.5	-	-	-
1,3,5-trimethylbenzene	µg/L	0.5	<0.5	-	-	-
tert-butylbenzene	µg/L	0.5	<0.5	-	-	-
1,2,4-trimethylbenzene	µg/L	0.5	<0.5	-	-	-
sec-butylbenzene	µg/L	0.5	<0.5	-	-	-
1,3-dichlorobenzene	µg/L	0.5	<0.5	-	-	-
1,4-dichlorobenzene	µg/L	0.3	<0.3	-	-	-
p-isopropyltoluene	µg/L	0.5	<0.5	-	-	-
1,2-dichlorobenzene	µg/L	0.5	<0.5	-	-	-
n-butylbenzene	µg/L	0.5	<0.5	-	-	-
1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5	-	-	-
1,2,4-trichlorobenzene	µg/L	0.5	<0.5	-	-	-
Hexachlorobutadiene	µg/L	0.5	<0.5	-	-	-
1,2,3-trichlorobenzene	µg/L	0.5	<0.5	-	-	-
Total VOC	µg/L	10	-	-	-	-

Volatile Petroleum Hydrocarbons in Water [AN433/AN434/AN410] Tested: 18/12/2015

PARAMETER	UOM	LOR	BH101M WATER 15/12/2015 SE147247.001	GWQD1 WATER 15/12/2015 SE147247.002
TRH C6-C9	µg/L	40	<40	<40
Benzene (F0)	µg/L	0.5	<0.5	<0.5
TRH C6-C10	µg/L	50	<50	<50
TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	<50

TRH (Total Recoverable Hydrocarbons) In Water [AN403] Tested: 17/12/2015

PARAMETER	UOM	LOR	BH101M WATER - 15/12/2015 SE147247.001	GWQD1 WATER - 15/12/2015 SE147247.002
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] Tested: 17/12/2015

			BH101M
			WATER
			15/12/2015
PARAMETER	UOM	LOR	SE147247.001
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(b&j)fluoranthene	µg/L	0.1	<0.1
Benzo(k)fluoranthene	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
Total PAH (16)	µg/L	1	<1

Total Phenolics in Water [AN289] Tested: 18/12/2015

PARAMETER	UOM	LOR	BH101M WATER - 15/12/2015 SE147247.001
Total Phenols	mg/L	0.01	0.02

Trace Metals (Dissolved) in Water by ICPMS [AN318] Tested: 18/12/2015

			BH101M	GWQD1
			WATER	WATER
			15/12/2015	15/12/2015
PARAMETER	UOM	LOR	SE147247.001	SE147247.002
Arsenic, As	µg/L	1	<1	<1
Cadmium, Cd	µg/L	0.1	<0.1	<0.1
Chromium, Cr	µg/L	1	10	10
Copper, Cu	µg/L	1	2	3
Lead, Pb	µg/L	1	<1	<1
Nickel, Ni	µg/L	1	1	2
Zinc, Zn	µg/L	5	6	12

Mercury (dissolved) in Water [AN311/AN312] Tested: 22/12/2015

PARAMETER	UOM	LOR	BH101M WATER - 15/12/2015 SE147247.001	GWQD1 WATER - 15/12/2015 SE147247.002
Mercury	mg/L	0.0001	<0.0001	<0.0001

METHOD	METHODOLOGY SUMMARY
AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
AN289	Analysis of Total Phenols in Soil Sediment and Water: Steam distillable phenols react with 4-aminoantipyrine at pH 7.9±0.1 in the presence of potassium ferricyanide to form a coloured antipyrine dye analysed by Discrete Analyser. Reference APHA 5530 B/D.
AN311/AN312	Mercury by Cold Vapour AAS in Waters: Mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500.
AN318	Determination of elements at trace level in waters by ICP-MS technique, in accordance with USEPA 6020A.
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is not corrected for Naphthalene.
AN403	Additionally, the volatile C6-C9/C6-C10 fractions may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Petroleum Hydrocarbons (TPH) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents .
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
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.
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.

FOOTNOTES

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

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

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

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

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

APPENDIX J
QA/QC Assessment

J1 QUALITY CONTROL PROGRAM

J1.1 INTRODUCTION

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

Table J-13-1 Sampling Data Quality Indicators

Data Quality Objective	Data Quality Indicator	Acceptable Range
Accuracy	Field – Trip blank	< laboratory limit of reporting (LOR)
	Field – Rinsate blank	< laboratory limit of reporting (LOR)
	Laboratory – Laboratory control spike and matrix spike	Prescribed by the laboratories
Precision	Field – Blind replicate and spilt duplicate	< 30 % relative percentage difference (RPD [%])
	Laboratory – Laboratory duplicate and matrix spike duplicate	Prescribed by the laboratories
Representativeness	Field – Trip blank	< laboratory limit of reporting (LOR)
	Field – Trip spike	70% - 130% recovery
	Field – Rinsate blank	< laboratory limit of reporting (LOR)
	Laboratory – Method blank	Prescribed by the laboratories
Completeness	Completion (%)	-

J1.2 CALCULATION OF RELATIVE PERCENTAGE DIFFERENCE (RPD)

The RPD values were calculated using the following equation:

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

C_O = Concentration obtained from the primary sample.

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

J2 FIELD QA/QC DATA EVALUATION

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

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

The results of the QA/QC samples collected during the soil investigation and groundwater investigation, including the calculated RPD values between primary and duplicate samples, are presented in **Table J-2** and **Table J-3**, respectively.

J2.1 SOIL INVESTIGATION

J2.1.1 Blind Field Duplicate (BFD)

One blind field duplicate sample (QD1) was collected from the primary sample BH105_0.1-0.2 during the soil investigation. The preparation of the duplicate samples involved the collection of a bulk quantity of soil from the same sampling point without mixing, before dividing the material into identical sampling vessels. The duplicate sample was then presented blind to the primary laboratory (SGS) to avoid any potential analytical bias. The BFD was analysed for TRH, BTEX and selected heavy metals. The RPD values calculated were found to be within the Data Acceptance Criteria (**Appendix K, Table QC5**).

J2.1.2 Inter Laboratory Duplicate (ILD)

One inter-laboratory duplicate samples (QT1), collected from the primary sample BH105_0.1-0.2 was assigned for laboratory analyses. The preparation of the ILD sample was identical to the BFD sample as described above and analysed for TRH, BTEX and selected heavy metals. The RPD values calculated for the ILD sample was found to be within the Data Acceptance Criteria.

J2.1.3 Trip Blank

One trip blank (TB1) sample, prepared by the primary laboratory, was analysed for BTEX by the primary laboratory. The soil TB sample results were reported below the laboratory LOR, confirming the Data Acceptance Criteria.

J2.1.4 Rinsate Blank

One rinsate blank (QR1) was submitted to the primary laboratory for TRH, BTEX and selected heavy metals analyses. The QR1 sample results were reported below the laboratory LOR.

J2.2 GROUNDWATER INVESTIGATION

J2.2.1 Blind Field Duplicate (BFD)

One blind field duplicate sample (QWQD1) was collected from the primary sample BH101M. The preparation of the duplicate sample involved the decanting of the groundwater collected from the respective groundwater monitoring well into

two separate groups of appropriately labelled sampling containers. Volumes were split equally between the groups of sampling bottles such that the sample contained in each individual bottle, contained a similar proportion of each water volume. It should be noted that the sample was not mixed prior to decanting, in order to preserve the concentrations of volatiles potentially present within the sample. The duplicate sample was then presented blind to the primary laboratory (SGS) to avoid any potential analytical bias. The sample was analysed for TRH, BTEX and selected heavy metals. The RPD values calculated for the analytes tested were found to be within the Data Acceptance Criteria (DAC) with the exception of Nickel and Zinc. The elevated RPDs were considered a result of presence of sediments in groundwater samples, as reflected in the medium groundwater turbidity observed during purging and sampling.

J2.2.2 Trip Blank

One trip blank sample (GWQTB1), prepared with de-ionised water supplied by the primary laboratory, was analysed for BTEX by the primary laboratory. The GWQTB1 sample results were reported below the laboratory LOR, suggesting the sample transportation and storage procedure was satisfactory.

J2.2.3 Trip Spike

One trip spike (GWQTS1) sample, prepared by the primary laboratory, was analysed for BTEX by the primary laboratory. The soil TS sample results were reported between the Data Acceptance Criteria.

J2.3 Assessment of Field QA/QC Data

All soil samples were classified in the field with respect to soil/fill characteristics and any observable signs of contamination based on visual and odour assessment. Furthermore, soil samples were placed immediately into jars following sampling to reduce the loss of volatiles from samples. Results of soil sampling indicated that the samples collected were representative of the soils present at respective sampling locations; therefore, EI conclude that the samples collected are representative of the soils present at the respective sampling locations.

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

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

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

J3 LABORATORY QA/QC

J3.1 LABORATORY ACCREDITATION

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

In relation to contingencies, should the pre-determined DQOs not be achieved, in accordance with each laboratory's QC policy, respective tests are accordingly repeated. Should the results again fall outside the DQOs, then sample heterogeneity may be assumed and written comment will be provided to this effect on the final laboratory certificate.

J3.2 SAMPLE HOLDING TIMES

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

J3.3 TEST METHODS AND PRACTICAL QUANTITATION LIMITS (PQLS)

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

J3.4 METHOD BLANKS

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

J3.5 LABORATORY DUPLICATE SAMPLES

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

J3.6 LABORATORY CONTROL SAMPLES

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

J3.7 MATRIX SPIKES

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

Table J-2 Summary of QA/QC results for soil investigation.

Report No.: E22827AA

Sample identification	Description	TRH				BTEX				Heavy Metals							
		F1*	F2**	F3 (>C_{16} - C_{34})	F4 (>C_{34} - C_{40})	Benzene	Toluene	Ethylbenzene	Xylene (total)	Arsenic	Cadmium	Chromium (Total)	Copper	Lead	Mercury	Nickel	Zinc
Intra-laboratory Duplicate																	
BH105_0.1-0.2	Fill Materials	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	6	0	17	22	24	0.02	11	40
QD1	Duplicate of BH105_0.1-0.2	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	5	0.4	22	28	26	0.03	15.0	50
	RPD	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	***18.18***	***0.00***	***25.64***	***24.00***	***8.00***	***40.00***	***30.77***	***22.22***
Inter-laboratory Duplicate																	
BH105_0.1-0.2	Fill Materials	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	6	0	17	22	24	0.02	11	40
QT1	Duplicate of BH105_0.1-0.2	<25	<25	<100	<100	<0.2	<0.5	<1	<1	5	<0.4	17	44	28	<0.1	13.0	56
	RPD	***0.00***	***0.00***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***18.18***	***0.00***	***0.00***	66.67	***15.38***	***228.57***	***16.67***	***33.33***
Trip Blank																	
QTB1	Soil Sample Prepared by SGS	-	-	-	-	<0.1	<0.1	<0.1	<0.3	-	-	-	-	-	-	-	-
Rinsate Blank																	
QR1	De-ionised Water	-	-	-	-	<0.5	<0.5	<0.5	<1.5	<1	<0.1	<1	2	<1	<0.0001	<1	<5

Indicates values where a single result is found to be less than detection, with the duplicate sample found to be over the detection limit.

RPD exceeds 30-50% range referenced from AS4482.1 (2005)

Notes:

All soil results are reported in mg/kg.

* F1 was obtained by subtracting the sum of BTEX concentrations from the C6-C10 fraction.

** F2 was obtained by subtracting naphthalene from the > C10-C16 fraction.

Table J-3 Summary of QA/QC results for groundwater investigation

Report No.: E22827AA

Sample identification	Description	TRH				BTEX				Heavy Metals							
		F1*	F2**	F3 (>C_{16} - C_{34})	F4 (>C_{34} - C_{40})	Benzene	Toluene	Ethylbenzene	Xylene (total)	Arsenic	Cadmium	Chromium (Total)	Copper	Lead	Mercury	Nickel	Zinc
Intra-laboratory Duplicate																	
BH101M	Groundwater	<50	<60	<500	<500	<0.5	<0.5	<0.5	<1.5	<1	<0.1	10	2	<1	<0.0001	1	6
GWQD1	Duplicate of BH101M	<50	<60	<500	<500	<0.5	<0.5	<0.5	<1.5	<1	<0.1	10	3	<1	<0.0001	2	12
	RPD	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*40.00*	*0.00*	*0.00*	66.67	66.67
Trip Blank																	
GWQTB1	De-ionised water	-	-	-	-	<0.5	<0.5	<0.5	<1.5	-	-	-	-	-	-	-	-
Trip Spike																	
GWQTS1	Prepared by SGS					89%	89%	85%	87%								

52.17	Indicates values where a single result is found to be less than detection, with the duplicate sample found to be over the detection limit.
82.35	RPD exceeds 30-50% range referenced from AS4482.1 (2005)

Notes:

All water results are reported in µg/L.

* F1 was obtained by subtracting the sum of BTEX concentrations from the C6-C10 fraction.

** F2 was obtained by subtracting naphthalene from the > C10-C16 fraction.

\- Not analysed

APPENDIX K
Laboratory QA/AC Policies and DQOs

STATEMENT OF QA/QC PERFORMANCE

SE147114 R0

CLIENT DETAILS		LABORATORY DETAILS	
Contact	Emmanuel Woelders	Manager	Huong Crawford
Client	Environmental Investigations	Laboratory	SGS Alexandria Environmental
Address	Suite 6.01, 55 Miller Street NSW 2009	Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	02 9516 0722	Telephone	+61 2 8594 0400
Facsimile	02 9516 0741	Facsimile	+61 2 8594 0499
Email	Emmanuel.Woelders@eiaustralia.com.au	Email	au.environmental.sydney@sgs.com
Project	**E22827 47 Woodville Rd, Chester Hill**	SGS Reference	**SE147114 R0**
Order Number	**E22827**	Date Received	11 Dec 2015
Samples	15	Date Reported	18 Dec 2015

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 (within the SGS Alexandria Environmental laboratory).

SAMPLE SUMMARY

Sample counts by matrix	14 Soils, 1 Water	Type of documentation received	COC
Date documentation received	11/12/2015	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	7.8°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

SE147114 R0

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

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

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

Fibre Identification in soil — Method: ME-(AU)-[ENV]AN602

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101_0.14-0.24	SE147114.001	LB092021	10 Dec 2015	11 Dec 2015	09 Dec 2016	17 Dec 2015	09 Dec 2016	18 Dec 2015
BH102_0.15-0.25	SE147114.002	LB092021	10 Dec 2015	11 Dec 2015	09 Dec 2016	17 Dec 2015	09 Dec 2016	18 Dec 2015
BH103_0.15-0.25	SE147114.004	LB092021	10 Dec 2015	11 Dec 2015	09 Dec 2016	17 Dec 2015	09 Dec 2016	18 Dec 2015
BH104_0.17-0.27	SE147114.005	LB092021	10 Dec 2015	11 Dec 2015	09 Dec 2016	17 Dec 2015	09 Dec 2016	18 Dec 2015
BH105_0.1-0.2	SE147114.007	LB092021	10 Dec 2015	11 Dec 2015	09 Dec 2016	17 Dec 2015	09 Dec 2016	18 Dec 2015
BH106_0.12-0.22	SE147114.008	LB092021	10 Dec 2015	11 Dec 2015	09 Dec 2016	17 Dec 2015	09 Dec 2016	18 Dec 2015
BH107_0.1-0.2	SE147114.010	LB092021	10 Dec 2015	11 Dec 2015	09 Dec 2016	17 Dec 2015	09 Dec 2016	18 Dec 2015
BH108_0.13-0.23	SE147114.011	LB092021	10 Dec 2015	11 Dec 2015	09 Dec 2016	17 Dec 2015	09 Dec 2016	18 Dec 2015

Mercury (dissolved) in Water — Method: ME-(AU)-[ENV]AN311/AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QR1	SE147114.014	LB091971	10 Dec 2015	11 Dec 2015	07 Jan 2016	17 Dec 2015	07 Jan 2016	17 Dec 2015

Mercury in Soil — Method: ME-(AU)-[ENV]AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101_0.14-0.24	SE147114.001	LB091902	10 Dec 2015	11 Dec 2015	07 Jan 2016	16 Dec 2015	07 Jan 2016	18 Dec 2015
BH102_0.15-0.25	SE147114.002	LB091902	10 Dec 2015	11 Dec 2015	07 Jan 2016	16 Dec 2015	07 Jan 2016	18 Dec 2015
BH102_0.6-0.7	SE147114.003	LB091902	10 Dec 2015	11 Dec 2015	07 Jan 2016	16 Dec 2015	07 Jan 2016	18 Dec 2015
BH103_0.15-0.25	SE147114.004	LB091902	10 Dec 2015	11 Dec 2015	07 Jan 2016	16 Dec 2015	07 Jan 2016	18 Dec 2015
BH104_0.17-0.27	SE147114.005	LB091902	10 Dec 2015	11 Dec 2015	07 Jan 2016	16 Dec 2015	07 Jan 2016	18 Dec 2015
BH104_0.5-0.6	SE147114.006	LB091902	10 Dec 2015	11 Dec 2015	07 Jan 2016	16 Dec 2015	07 Jan 2016	18 Dec 2015
BH105_0.1-0.2	SE147114.007	LB091902	10 Dec 2015	11 Dec 2015	07 Jan 2016	16 Dec 2015	07 Jan 2016	18 Dec 2015
BH106_0.12-0.22	SE147114.008	LB091902	10 Dec 2015	11 Dec 2015	07 Jan 2016	16 Dec 2015	07 Jan 2016	18 Dec 2015
BH106_0.6-0.7	SE147114.009	LB091902	10 Dec 2015	11 Dec 2015	07 Jan 2016	16 Dec 2015	07 Jan 2016	18 Dec 2015
BH107_0.1-0.2	SE147114.010	LB091902	10 Dec 2015	11 Dec 2015	07 Jan 2016	16 Dec 2015	07 Jan 2016	18 Dec 2015
BH108_0.13-0.23	SE147114.011	LB091902	10 Dec 2015	11 Dec 2015	07 Jan 2016	16 Dec 2015	07 Jan 2016	18 Dec 2015
BH108_1.23-1.33	SE147114.012	LB091902	10 Dec 2015	11 Dec 2015	07 Jan 2016	16 Dec 2015	07 Jan 2016	18 Dec 2015
QD1	SE147114.013	LB091903	10 Dec 2015	11 Dec 2015	07 Jan 2016	16 Dec 2015	07 Jan 2016	18 Dec 2015

Moisture Content — Method: ME-(AU)-[ENV]AN002

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101_0.14-0.24	SE147114.001	LB091765	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	19 Dec 2015	17 Dec 2015
BH102_0.15-0.25	SE147114.002	LB091765	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	19 Dec 2015	17 Dec 2015
BH102_0.6-0.7	SE147114.003	LB091765	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	19 Dec 2015	17 Dec 2015
BH103_0.15-0.25	SE147114.004	LB091765	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	19 Dec 2015	17 Dec 2015
BH104_0.17-0.27	SE147114.005	LB091765	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	19 Dec 2015	17 Dec 2015
BH104_0.5-0.6	SE147114.006	LB091765	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	19 Dec 2015	17 Dec 2015
BH105_0.1-0.2	SE147114.007	LB091765	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	19 Dec 2015	17 Dec 2015
BH106_0.12-0.22	SE147114.008	LB091765	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	19 Dec 2015	17 Dec 2015
BH106_0.6-0.7	SE147114.009	LB091765	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	19 Dec 2015	17 Dec 2015
BH107_0.1-0.2	SE147114.010	LB091765	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	19 Dec 2015	17 Dec 2015
BH108_0.13-0.23	SE147114.011	LB091765	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	19 Dec 2015	17 Dec 2015
BH108_1.23-1.33	SE147114.012	LB091765	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	19 Dec 2015	17 Dec 2015
QD1	SE147114.013	LB091765	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	19 Dec 2015	17 Dec 2015
QTB1	SE147114.015	LB091765	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	19 Dec 2015	17 Dec 2015

OC Pesticides in Soil — Method: ME-(AU)-[ENV]AN400/AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101_0.14-0.24	SE147114.001	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH102_0.15-0.25	SE147114.002	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH102_0.6-0.7	SE147114.003	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH103_0.15-0.25	SE147114.004	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH104_0.17-0.27	SE147114.005	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH104_0.5-0.6	SE147114.006	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH105_0.1-0.2	SE147114.007	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH106_0.12-0.22	SE147114.008	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH106_0.6-0.7	SE147114.009	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH107_0.1-0.2	SE147114.010	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH108_0.13-0.23	SE147114.011	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH108_1.23-1.33	SE147114.012	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
QD1	SE147114.013	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015

HOLDING TIME SUMMARY

SE147114 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 fall by default.

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101_0.14-0.24	SE147114.001	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH102_0.15-0.25	SE147114.002	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH102_0.6-0.7	SE147114.003	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH103_0.15-0.25	SE147114.004	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH104_0.17-0.27	SE147114.005	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH104_0.5-0.6	SE147114.006	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH105_0.1-0.2	SE147114.007	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH106_0.12-0.22	SE147114.008	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH106_0.6-0.7	SE147114.009	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH107_0.1-0.2	SE147114.010	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH108_0.13-0.23	SE147114.011	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH108_1.23-1.33	SE147114.012	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
QD1	SE147114.013	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101_0.14-0.24	SE147114.001	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH102_0.15-0.25	SE147114.002	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH102_0.6-0.7	SE147114.003	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH103_0.15-0.25	SE147114.004	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH104_0.17-0.27	SE147114.005	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH104_0.5-0.6	SE147114.006	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH105_0.1-0.2	SE147114.007	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH106_0.12-0.22	SE147114.008	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH106_0.6-0.7	SE147114.009	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH107_0.1-0.2	SE147114.010	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH108_0.13-0.23	SE147114.011	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH108_1.23-1.33	SE147114.012	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
QD1	SE147114.013	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015

PCBs in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101_0.14-0.24	SE147114.001	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH102_0.15-0.25	SE147114.002	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH102_0.6-0.7	SE147114.003	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH103_0.15-0.25	SE147114.004	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH104_0.17-0.27	SE147114.005	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH104_0.5-0.6	SE147114.006	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH105_0.1-0.2	SE147114.007	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH106_0.12-0.22	SE147114.008	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH106_0.6-0.7	SE147114.009	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH107_0.1-0.2	SE147114.010	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH108_0.13-0.23	SE147114.011	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
BH108_1.23-1.33	SE147114.012	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015
QD1	SE147114.013	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	18 Dec 2015

Total Recoverable Metals in Soil by ICPOES

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101_0.14-0.24	SE147114.001	LB091838	10 Dec 2015	11 Dec 2015	07 Jun 2016	15 Dec 2015	07 Jun 2016	17 Dec 2015
BH102_0.15-0.25	SE147114.002	LB091838	10 Dec 2015	11 Dec 2015	07 Jun 2016	15 Dec 2015	07 Jun 2016	17 Dec 2015
BH102_0.6-0.7	SE147114.003	LB091838	10 Dec 2015	11 Dec 2015	07 Jun 2016	15 Dec 2015	07 Jun 2016	17 Dec 2015
BH103_0.15-0.25	SE147114.004	LB091838	10 Dec 2015	11 Dec 2015	07 Jun 2016	15 Dec 2015	07 Jun 2016	17 Dec 2015
BH104_0.17-0.27	SE147114.005	LB091838	10 Dec 2015	11 Dec 2015	07 Jun 2016	15 Dec 2015	07 Jun 2016	17 Dec 2015
BH104_0.5-0.6	SE147114.006	LB091838	10 Dec 2015	11 Dec 2015	07 Jun 2016	15 Dec 2015	07 Jun 2016	17 Dec 2015
BH105_0.1-0.2	SE147114.007	LB091838	10 Dec 2015	11 Dec 2015	07 Jun 2016	15 Dec 2015	07 Jun 2016	17 Dec 2015
BH106_0.12-0.22	SE147114.008	LB091838	10 Dec 2015	11 Dec 2015	07 Jun 2016	15 Dec 2015	07 Jun 2016	17 Dec 2015
BH106_0.6-0.7	SE147114.009	LB091838	10 Dec 2015	11 Dec 2015	07 Jun 2016	15 Dec 2015	07 Jun 2016	17 Dec 2015
BH107_0.1-0.2	SE147114.010	LB091838	10 Dec 2015	11 Dec 2015	07 Jun 2016	15 Dec 2015	07 Jun 2016	17 Dec 2015
BH108_0.13-0.23	SE147114.011	LB091838	10 Dec 2015	11 Dec 2015	07 Jun 2016	15 Dec 2015	07 Jun 2016	17 Dec 2015
BH108_1.23-1.33	SE147114.012	LB091838	10 Dec 2015	11 Dec 2015	07 Jun 2016	15 Dec 2015	07 Jun 2016	17 Dec 2015
QD1	SE147114.013	LB091838	10 Dec 2015	11 Dec 2015	07 Jun 2016	15 Dec 2015	07 Jun 2016	17 Dec 2015

HOLDING TIME SUMMARY

SE147114 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.

Trace Metals (Dissolved) in Water by ICPMS

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QR1	SE147114.014	LB091756	10 Dec 2015	11 Dec 2015	07 Jun 2016	14 Dec 2015	07 Jun 2016	15 Dec 2015

TRH (Total Recoverable Hydrocarbons) in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101_0.14-0.24	SE147114.001	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	17 Dec 2015
BH102_0.15-0.25	SE147114.002	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	17 Dec 2015
BH102_0.6-0.7	SE147114.003	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	17 Dec 2015
BH103_0.15-0.25	SE147114.004	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	17 Dec 2015
BH104_0.17-0.27	SE147114.005	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	17 Dec 2015
BH104_0.5-0.6	SE147114.006	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	17 Dec 2015
BH105_0.1-0.2	SE147114.007	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	17 Dec 2015
BH106_0.12-0.22	SE147114.008	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	17 Dec 2015
BH106_0.6-0.7	SE147114.009	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	17 Dec 2015
BH107_0.1-0.2	SE147114.010	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	17 Dec 2015
BH108_0.13-0.23	SE147114.011	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	17 Dec 2015
BH108_1.23-1.33	SE147114.012	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	17 Dec 2015
QD1	SE147114.013	LB091847	10 Dec 2015	11 Dec 2015	24 Dec 2015	15 Dec 2015	24 Jan 2016	17 Dec 2015

TRH (Total Recoverable Hydrocarbons) in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QR1	SE147114.014	LB091781	10 Dec 2015	11 Dec 2015	17 Dec 2015	15 Dec 2015	24 Jan 2016	16 Dec 2015

VOC's in Soil

Method: ME-(AU)-[ENV]AN433/AN434

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101_0.14-0.24	SE147114.001	LB091764	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	23 Jan 2016	17 Dec 2015
BH102_0.15-0.25	SE147114.002	LB091764	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	23 Jan 2016	17 Dec 2015
BH102_0.6-0.7	SE147114.003	LB091764	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	23 Jan 2016	17 Dec 2015
BH103_0.15-0.25	SE147114.004	LB091764	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	23 Jan 2016	17 Dec 2015
BH104_0.17-0.27	SE147114.005	LB091764	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	23 Jan 2016	17 Dec 2015
BH104_0.5-0.6	SE147114.006	LB091764	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	23 Jan 2016	17 Dec 2015
BH105_0.1-0.2	SE147114.007	LB091764	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	23 Jan 2016	17 Dec 2015
BH106_0.12-0.22	SE147114.008	LB091764	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	23 Jan 2016	17 Dec 2015
BH106_0.6-0.7	SE147114.009	LB091764	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	23 Jan 2016	17 Dec 2015
BH107_0.1-0.2	SE147114.010	LB091764	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	23 Jan 2016	17 Dec 2015
BH108_0.13-0.23	SE147114.011	LB091764	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	23 Jan 2016	17 Dec 2015
BH108_1.23-1.33	SE147114.012	LB091764	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	23 Jan 2016	17 Dec 2015
QD1	SE147114.013	LB091764	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	23 Jan 2016	17 Dec 2015
QTB1	SE147114.015	LB091764	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	23 Jan 2016	17 Dec 2015

VOCs in Water

Method: ME-(AU)-[ENV]AN433/AN434

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QR1	SE147114.014	LB091916	10 Dec 2015	11 Dec 2015	17 Dec 2015	16 Dec 2015	25 Jan 2016	17 Dec 2015

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
BH101_0.14-0.24	SE147114.001	LB091764	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	23 Jan 2016	17 Dec 2015
BH102_0.15-0.25	SE147114.002	LB091764	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	23 Jan 2016	17 Dec 2015
BH102_0.6-0.7	SE147114.003	LB091764	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	23 Jan 2016	17 Dec 2015
BH103_0.15-0.25	SE147114.004	LB091764	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	23 Jan 2016	17 Dec 2015
BH104_0.17-0.27	SE147114.005	LB091764	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	23 Jan 2016	17 Dec 2015
BH104_0.5-0.6	SE147114.006	LB091764	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	23 Jan 2016	17 Dec 2015
BH105_0.1-0.2	SE147114.007	LB091764	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	23 Jan 2016	17 Dec 2015
BH106_0.12-0.22	SE147114.008	LB091764	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	23 Jan 2016	17 Dec 2015
BH106_0.6-0.7	SE147114.009	LB091764	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	23 Jan 2016	17 Dec 2015
BH107_0.1-0.2	SE147114.010	LB091764	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	23 Jan 2016	17 Dec 2015
BH108_0.13-0.23	SE147114.011	LB091764	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	23 Jan 2016	17 Dec 2015
BH108_1.23-1.33	SE147114.012	LB091764	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	23 Jan 2016	17 Dec 2015
QD1	SE147114.013	LB091764	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	23 Jan 2016	17 Dec 2015
QTB1	SE147114.015	LB091764	10 Dec 2015	11 Dec 2015	24 Dec 2015	14 Dec 2015	23 Jan 2016	17 Dec 2015

HOLDING TIME SUMMARY

SE147114 R0

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

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

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

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QR1	SE147114.014	LB091916	10 Dec 2015	11 Dec 2015	17 Dec 2015	16 Dec 2015	25 Jan 2016	17 Dec 2015

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

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

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH101_0.14-0.24	SE147114.001	%	60 - 130%	87
	BH102_0.15-0.25	SE147114.002	%	60 - 130%	103
	BH103_0.15-0.25	SE147114.004	%	60 - 130%	91
	BH104_0.17-0.27	SE147114.005	%	60 - 130%	101
	BH105_0.1-0.2	SE147114.007	%	60 - 130%	97
	BH106_0.12-0.22	SE147114.008	%	60 - 130%	119
	BH107_0.1-0.2	SE147114.010	%	60 - 130%	121
	BH108_0.13-0.23	SE147114.011	%	60 - 130%	125

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH101_0.14-0.24	SE147114.001	%	60 - 130%	98
	BH102_0.15-0.25	SE147114.002	%	60 - 130%	82
	BH103_0.15-0.25	SE147114.004	%	60 - 130%	86
	BH104_0.17-0.27	SE147114.005	%	60 - 130%	82
	BH105_0.1-0.2	SE147114.007	%	60 - 130%	98
	BH106_0.12-0.22	SE147114.008	%	60 - 130%	86
	BH107_0.1-0.2	SE147114.010	%	60 - 130%	86
	BH108_0.13-0.23	SE147114.011	%	60 - 130%	90
d14-p-terphenyl (Surrogate)	BH101_0.14-0.24	SE147114.001	%	60 - 130%	118
	BH102_0.15-0.25	SE147114.002	%	60 - 130%	100
	BH103_0.15-0.25	SE147114.004	%	60 - 130%	110
	BH104_0.17-0.27	SE147114.005	%	60 - 130%	106
	BH105_0.1-0.2	SE147114.007	%	60 - 130%	122
	BH106_0.12-0.22	SE147114.008	%	60 - 130%	104
	BH107_0.1-0.2	SE147114.010	%	60 - 130%	96
	BH108_0.13-0.23	SE147114.011	%	60 - 130%	110

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH101_0.14-0.24	SE147114.001	%	70 - 130%	98
	BH102_0.15-0.25	SE147114.002	%	70 - 130%	82
	BH102_0.6-0.7	SE147114.003	%	70 - 130%	90
	BH103_0.15-0.25	SE147114.004	%	70 - 130%	86
	BH104_0.17-0.27	SE147114.005	%	70 - 130%	82
	BH104_0.5-0.6	SE147114.006	%	70 - 130%	88
	BH105_0.1-0.2	SE147114.007	%	70 - 130%	98
	BH106_0.12-0.22	SE147114.008	%	70 - 130%	86
	BH106_0.6-0.7	SE147114.009	%	70 - 130%	86
	BH107_0.1-0.2	SE147114.010	%	70 - 130%	86
	BH108_0.13-0.23	SE147114.011	%	70 - 130%	90
	BH108_1.23-1.33	SE147114.012	%	70 - 130%	86
d14-p-terphenyl (Surrogate)	BH101_0.14-0.24	SE147114.001	%	70 - 130%	118
	BH102_0.15-0.25	SE147114.002	%	70 - 130%	100
	BH102_0.6-0.7	SE147114.003	%	70 - 130%	116
	BH103_0.15-0.25	SE147114.004	%	70 - 130%	110
	BH104_0.17-0.27	SE147114.005	%	70 - 130%	106
	BH104_0.5-0.6	SE147114.006	%	70 - 130%	110
	BH105_0.1-0.2	SE147114.007	%	70 - 130%	122
	BH106_0.12-0.22	SE147114.008	%	70 - 130%	104
	BH106_0.6-0.7	SE147114.009	%	70 - 130%	110
	BH107_0.1-0.2	SE147114.010	%	70 - 130%	96
	BH108_0.13-0.23	SE147114.011	%	70 - 130%	110
	BH108_1.23-1.33	SE147114.012	%	70 - 130%	106
d5-nitrobenzene (Surrogate)	BH101_0.14-0.24	SE147114.001	%	70 - 130%	110
	BH102_0.15-0.25	SE147114.002	%	70 - 130%	90
	BH102_0.6-0.7	SE147114.003	%	70 - 130%	100
	BH103_0.15-0.25	SE147114.004	%	70 - 130%	98
	BH104_0.17-0.27	SE147114.005	%	70 - 130%	98
	BH104_0.5-0.6	SE147114.006	%	70 - 130%	100
	BH105_0.1-0.2	SE147114.007	%	70 - 130%	112
	BH106_0.12-0.22	SE147114.008	%	70 - 130%	96

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued) — Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d5-nitrobenzene (Surrogate)	BH106_0.6-0.7	SE147114.009	%	70 - 130%	94
	BH107_0.1-0.2	SE147114.010	%	70 - 130%	86
	BH108_0.13-0.23	SE147114.011	%	70 - 130%	102
	BH108_1.23-1.33	SE147114.012	%	70 - 130%	96

PCBs in Soil — Method: ME-(AU)-[ENV]AN400/AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH101_0.14-0.24	SE147114.001	%	60 - 130%	87
	BH102_0.15-0.25	SE147114.002	%	60 - 130%	93
	BH103_0.15-0.25	SE147114.004	%	60 - 130%	91
	BH104_0.17-0.27	SE147114.005	%	60 - 130%	101
	BH105_0.1-0.2	SE147114.007	%	60 - 130%	97
	BH106_0.12-0.22	SE147114.008	%	60 - 130%	119
	BH107_0.1-0.2	SE147114.010	%	60 - 130%	121
	BH108_0.13-0.23	SE147114.011	%	60 - 130%	125

VOC's in Soil — Method: ME-(AU)-[ENV]AN433/AN434

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH101_0.14-0.24	SE147114.001	%	60 - 130%	77
	BH102_0.15-0.25	SE147114.002	%	60 - 130%	81
	BH102_0.6-0.7	SE147114.003	%	60 - 130%	75
	BH103_0.15-0.25	SE147114.004	%	60 - 130%	80
	BH104_0.17-0.27	SE147114.005	%	60 - 130%	76
	BH104_0.5-0.6	SE147114.006	%	60 - 130%	89
	BH105_0.1-0.2	SE147114.007	%	60 - 130%	81
	BH106_0.12-0.22	SE147114.008	%	60 - 130%	77
	BH106_0.6-0.7	SE147114.009	%	60 - 130%	85
	BH107_0.1-0.2	SE147114.010	%	60 - 130%	76
	BH108_0.13-0.23	SE147114.011	%	60 - 130%	83
	BH108_1.23-1.33	SE147114.012	%	60 - 130%	84
	QD1	SE147114.013	%	60 - 130%	79
	QTB1	SE147114.015	%	60 - 130%	91
d4-1,2-dichloroethane (Surrogate)	BH101_0.14-0.24	SE147114.001	%	60 - 130%	100
	BH102_0.15-0.25	SE147114.002	%	60 - 130%	100
	BH102_0.6-0.7	SE147114.003	%	60 - 130%	95
	BH103_0.15-0.25	SE147114.004	%	60 - 130%	94
	BH104_0.17-0.27	SE147114.005	%	60 - 130%	98
	BH104_0.5-0.6	SE147114.006	%	60 - 130%	94
	BH105_0.1-0.2	SE147114.007	%	60 - 130%	97
	BH106_0.12-0.22	SE147114.008	%	60 - 130%	89
	BH106_0.6-0.7	SE147114.009	%	60 - 130%	93
	BH107_0.1-0.2	SE147114.010	%	60 - 130%	97
	BH108_0.13-0.23	SE147114.011	%	60 - 130%	101
	BH108_1.23-1.33	SE147114.012	%	60 - 130%	96
	QD1	SE147114.013	%	60 - 130%	97
	QTB1	SE147114.015	%	60 - 130%	96
d8-toluene (Surrogate)	BH101_0.14-0.24	SE147114.001	%	60 - 130%	123
	BH102_0.15-0.25	SE147114.002	%	60 - 130%	125
	BH102_0.6-0.7	SE147114.003	%	60 - 130%	120
	BH103_0.15-0.25	SE147114.004	%	60 - 130%	117
	BH104_0.17-0.27	SE147114.005	%	60 - 130%	114
	BH104_0.5-0.6	SE147114.006	%	60 - 130%	110
	BH105_0.1-0.2	SE147114.007	%	60 - 130%	118
	BH106_0.12-0.22	SE147114.008	%	60 - 130%	93
	BH106_0.6-0.7	SE147114.009	%	60 - 130%	114
	BH107_0.1-0.2	SE147114.010	%	60 - 130%	115
	BH108_0.13-0.23	SE147114.011	%	60 - 130%	107
	BH108_1.23-1.33	SE147114.012	%	60 - 130%	123
	QD1	SE147114.013	%	60 - 130%	120
	QTB1	SE147114.015	%	60 - 130%	112
Dibromofluoromethane (Surrogate)	BH101_0.14-0.24	SE147114.001	%	60 - 130%	79
	BH102_0.15-0.25	SE147114.002	%	60 - 130%	82

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

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

VOC's in Soil (continued) Method: ME-(AU)-[ENV]AN433/AN434

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Dibromofluoromethane (Surrogate)	BH102_0.6-0.7	SE147114.003	%	60 - 130%	77
	BH103_0.15-0.25	SE147114.004	%	60 - 130%	76
	BH104_0.17-0.27	SE147114.005	%	60 - 130%	79
	BH104_0.5-0.6	SE147114.006	%	60 - 130%	76
	BH105_0.1-0.2	SE147114.007	%	60 - 130%	78
	BH106_0.12-0.22	SE147114.008	%	60 - 130%	70
	BH106_0.6-0.7	SE147114.009	%	60 - 130%	73
	BH107_0.1-0.2	SE147114.010	%	60 - 130%	78
	BH108_0.13-0.23	SE147114.011	%	60 - 130%	82
	BH108_1.23-1.33	SE147114.012	%	60 - 130%	79
	QD1	SE147114.013	%	60 - 130%	79
	QTB1	SE147114.015	%	60 - 130%	77

VOCs in Water Method: ME-(AU)-[ENV]AN433/AN434

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	QR1	SE147114.014	%	40 - 130%	104
d4-1,2-dichloroethane (Surrogate)	QR1	SE147114.014	%	40 - 130%	104
d8-toluene (Surrogate)	QR1	SE147114.014	%	40 - 130%	94
Dibromofluoromethane (Surrogate)	QR1	SE147114.014	%	40 - 130%	115

Volatile Petroleum Hydrocarbons in Soil Method: ME-(AU)-[ENV]AN433/AN434/AN410

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH101_0.14-0.24	SE147114.001	%	60 - 130%	77
	BH102_0.15-0.25	SE147114.002	%	60 - 130%	81
	BH102_0.6-0.7	SE147114.003	%	60 - 130%	75
	BH103_0.15-0.25	SE147114.004	%	60 - 130%	80
	BH104_0.17-0.27	SE147114.005	%	60 - 130%	76
	BH104_0.5-0.6	SE147114.006	%	60 - 130%	89
	BH105_0.1-0.2	SE147114.007	%	60 - 130%	81
	BH106_0.12-0.22	SE147114.008	%	60 - 130%	77
	BH106_0.6-0.7	SE147114.009	%	60 - 130%	85
	BH107_0.1-0.2	SE147114.010	%	60 - 130%	76
	BH108_0.13-0.23	SE147114.011	%	60 - 130%	83
	BH108_1.23-1.33	SE147114.012	%	60 - 130%	84
	QD1	SE147114.013	%	60 - 130%	79
d4-1,2-dichloroethane (Surrogate)	BH101_0.14-0.24	SE147114.001	%	60 - 130%	100
	BH102_0.15-0.25	SE147114.002	%	60 - 130%	100
	BH102_0.6-0.7	SE147114.003	%	60 - 130%	95
	BH103_0.15-0.25	SE147114.004	%	60 - 130%	94
	BH104_0.17-0.27	SE147114.005	%	60 - 130%	98
	BH104_0.5-0.6	SE147114.006	%	60 - 130%	94
	BH105_0.1-0.2	SE147114.007	%	60 - 130%	97
	BH106_0.12-0.22	SE147114.008	%	60 - 130%	89
	BH106_0.6-0.7	SE147114.009	%	60 - 130%	93
	BH107_0.1-0.2	SE147114.010	%	60 - 130%	97
	BH108_0.13-0.23	SE147114.011	%	60 - 130%	101
	BH108_1.23-1.33	SE147114.012	%	60 - 130%	96
	QD1	SE147114.013	%	60 - 130%	97
d8-toluene (Surrogate)	BH101_0.14-0.24	SE147114.001	%	60 - 130%	123
	BH102_0.15-0.25	SE147114.002	%	60 - 130%	125
	BH102_0.6-0.7	SE147114.003	%	60 - 130%	120
	BH103_0.15-0.25	SE147114.004	%	60 - 130%	117
	BH104_0.17-0.27	SE147114.005	%	60 - 130%	114
	BH104_0.5-0.6	SE147114.006	%	60 - 130%	110
	BH105_0.1-0.2	SE147114.007	%	60 - 130%	118
	BH106_0.12-0.22	SE147114.008	%	60 - 130%	93
	BH106_0.6-0.7	SE147114.009	%	60 - 130%	114
	BH107_0.1-0.2	SE147114.010	%	60 - 130%	115
	BH108_0.13-0.23	SE147114.011	%	60 - 130%	107
	BH108_1.23-1.33	SE147114.012	%	60 - 130%	123
	QD1	SE147114.013	%	60 - 130%	120
Dibromofluoromethane (Surrogate)	BH101_0.14-0.24	SE147114.001	%	60 - 130%	79

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

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

Volatile Petroleum Hydrocarbons in Soil (continued) — Method: ME-(AU)-[ENV]AN433/AN434/AN410

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Dibromofluoromethane (Surrogate)	BH102_0.15-0.25	SE147114.002	%	60 - 130%	82
	BH102_0.6-0.7	SE147114.003	%	60 - 130%	77
	BH103_0.15-0.25	SE147114.004	%	60 - 130%	76
	BH104_0.17-0.27	SE147114.005	%	60 - 130%	79
	BH104_0.5-0.6	SE147114.006	%	60 - 130%	76
	BH105_0.1-0.2	SE147114.007	%	60 - 130%	78
	BH106_0.12-0.22	SE147114.008	%	60 - 130%	70
	BH106_0.6-0.7	SE147114.009	%	60 - 130%	73
	BH107_0.1-0.2	SE147114.010	%	60 - 130%	78
	BH108_0.13-0.23	SE147114.011	%	60 - 130%	82
	BH108_1.23-1.33	SE147114.012	%	60 - 130%	79
	QD1	SE147114.013	%	60 - 130%	79

Volatile Petroleum Hydrocarbons in Water — Method: ME-(AU)-[ENV]AN433/AN434/AN410

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	QR1	SE147114.014	%	40 - 130%	104
d4-1,2-dichloroethane (Surrogate)	QR1	SE147114.014	%	60 - 130%	104
d8-toluene (Surrogate)	QR1	SE147114.014	%	40 - 130%	94
Dibromofluoromethane (Surrogate)	QR1	SE147114.014	%	40 - 130%	115

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
LB091971.001	Mercury	mg/L	0.0001	<0.0001

Mercury in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB091902.001	Mercury	mg/kg	0.01	<0.01
LB091903.001	Mercury	mg/kg	0.01	<0.01

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number		Parameter	Units	LOR	Result
LB091847.001		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)	%	-	119

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Sample Number		Parameter	Units	LOR	Result
LB091847.001		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)	%	-	100
		d14-p-terphenyl (Surrogate)	%	-	120

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB091847.001	Naphthalene	mg/kg	0.1	<0.1
	2-methylnaphthalene	mg/kg	0.1	<0.1
	1-methylnaphthalene	mg/kg	0.1	<0.1
	Acenaphthylene	mg/kg	0.1	<0.1
	Acenaphthene	mg/kg	0.1	<0.1
	Fluorene	mg/kg	0.1	<0.1
	Phenanthrene	mg/kg	0.1	<0.1
	Anthracene	mg/kg	0.1	<0.1

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued) — Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB091847.001		Fluoranthene	mg/kg	0.1	<0.1
		Pyrene	mg/kg	0.1	<0.1
		Benzo(a)anthracene	mg/kg	0.1	<0.1
		Chrysene	mg/kg	0.1	<0.1
		Benzo(a)pyrene	mg/kg	0.1	<0.1
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1
		Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1
		Benzo(ghi)perylene	mg/kg	0.1	<0.1
		Total PAH (16)	mg/kg	0.8	<0.8
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	116
		2-fluorobiphenyl (Surrogate)	%	-	100
		d14-p-terphenyl (Surrogate)	%	-	120

PCBs in Soil — Method: ME-(AU)-[ENV]AN400/AN420

Sample Number		Parameter	Units	LOR	Result
LB091847.001		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)	%	-	119

Total Recoverable Metals in Soil by ICPOES — Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result
LB091838.001	Arsenic, As	mg/kg	3	<3
	Cadmium, Cd	mg/kg	0.3	<0.3
	Chromium, Cr	mg/kg	0.3	<0.3
	Copper, Cu	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Nickel, Ni	mg/kg	0.5	<0.5
	Zinc, Zn	mg/kg	0.5	<0.5

Trace Metals (Dissolved) in Water by ICPMS — Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result
LB091756.001	Arsenic, As	µg/L	1	<1
	Cadmium, Cd	µg/L	0.1	<0.1
	Chromium, Cr	µg/L	1	<1
	Copper, Cu	µg/L	1	<1
	Lead, Pb	µg/L	1	<1
	Nickel, Ni	µg/L	1	<1
	Zinc, Zn	µg/L	5	<5

TRH (Total Recoverable Hydrocarbons) in Soil — Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR	Result
LB091847.001	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
LB091781.001	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

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

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

VOC's in Soil (continued)

Method: ME-(AU)-[ENV]AN433/AN434

Sample Number		Parameter	Units	LOR	Result
LB091764.001	Monocyclic Aromatic Hydrocarbons	Benzene	mg/kg	0.1	<0.1
		Toluene	mg/kg	0.1	<0.1
		Ethylbenzene	mg/kg	0.1	<0.1
		m/p-xylene	mg/kg	0.2	<0.2
		o-xylene	mg/kg	0.1	<0.1
	Polycyclic VOCs	Naphthalene	mg/kg	0.1	<0.1
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	91
		d4-1,2-dichloroethane (Surrogate)	%	-	110
		d8-toluene (Surrogate)	%	-	122
		Bromofluorobenzene (Surrogate)	%	-	115
	Totals	Total BTEX*	mg/kg	0.6	<0.6

VOCs in Water

Method: ME-(AU)-[ENV]AN433/AN434

Sample Number		Parameter	Units	LOR	Result
LB091916.001	Monocyclic Aromatic Hydrocarbons	Benzene	µg/L	0.5	<0.5
		Toluene	µg/L	0.5	<0.5
		Ethylbenzene	µg/L	0.5	<0.5
		m/p-xylene	µg/L	1	<1
		o-xylene	µg/L	0.5	<0.5
	Polycyclic VOCs	Naphthalene	µg/L	0.5	<0.5
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	92
		d4-1,2-dichloroethane (Surrogate)	%	-	88
		d8-toluene (Surrogate)	%	-	85
		Bromofluorobenzene (Surrogate)	%	-	123

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Number		Parameter	Units	LOR	Result
LB091764.001		TRH C6-C9	mg/kg	20	<20
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	
		d4-1,2-dichloroethane (Surrogate)	%	-	110
		d8-toluene (Surrogate)	%	-	

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Number		Parameter	Units	LOR	Result
LB091916.001		TRH C6-C9	µg/L	40	<40
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	92
		d4-1,2-dichloroethane (Surrogate)	%	-	88
		d8-toluene (Surrogate)	%	-	85
		Bromofluorobenzene (Surrogate)	%	-	123

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

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

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

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

Mercury in Soil — Method: ME-(AU)-[ENV]AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE147114.003	LB091902.014	Mercury	mg/kg	0.01	0.03	0.02	200	0
SE147114.012	LB091902.024	Mercury	mg/kg	0.01	0.09	0.08	88	12
SE147143.009	LB091903.014	Mercury	mg/kg	0.01	0.04	0.03	175	0
SE147143.017	LB091903.023	Mercury	mg/kg	0.01	0.03	0.03	200	0

Moisture Content — Method: ME-(AU)-[ENV]AN002

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE147114.010	LB091765.011	% Moisture	%w/w	0.5	18	22	35	18
SE147114.015	LB091765.016	% Moisture	%w/w	0.5	<0.5	<0.5	200	0

OC Pesticides in Soil — Method: ME-(AU)-[ENV]AN400/AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE147101.010	LB091847.026		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	0	200	0
			Alpha BHC	mg/kg	0.1	<0.1	0	200	0
			Lindane	mg/kg	0.1	<0.1	0	200	0
			Heptachlor	mg/kg	0.1	<0.1	0	200	0
			Aldrin	mg/kg	0.1	<0.1	0	200	0
			Beta BHC	mg/kg	0.1	<0.1	0	200	0
			Delta BHC	mg/kg	0.1	<0.1	0	200	0
			Heptachlor epoxide	mg/kg	0.1	<0.1	0	200	0
			o,p'-DDE	mg/kg	0.1	<0.1	0	200	0
			Alpha Endosulfan	mg/kg	0.2	<0.2	0	200	0
			Gamma Chlordane	mg/kg	0.1	<0.1	0	200	0
			Alpha Chlordane	mg/kg	0.1	<0.1	0	200	0
			trans-Nonachlor	mg/kg	0.1	<0.1	0	200	0
			p,p'-DDE	mg/kg	0.1	<0.1	0	200	0
			Dieldrin	mg/kg	0.2	<0.2	0	200	0
			Endrin	mg/kg	0.2	<0.2	0	200	0
			o,p'-DDD	mg/kg	0.1	<0.1	0	200	0
			o,p'-DDT	mg/kg	0.1	<0.1	0	200	0
			Beta Endosulfan	mg/kg	0.2	<0.2	0	200	0
			p,p'-DDD	mg/kg	0.1	<0.1	0	200	0
			p,p'-DDT	mg/kg	0.1	<0.1	0	200	0
			Endosulfan sulphate	mg/kg	0.1	<0.1	0	200	0
			Endrin Aldehyde	mg/kg	0.1	<0.1	0	200	0
			Methoxychlor	mg/kg	0.1	<0.1	0	200	0
			Endrin Ketone	mg/kg	0.1	<0.1	0	200	0
			Isodrin	mg/kg	0.1	<0.1	0	200	0
			Mirex	mg/kg	0.1	<0.1	0	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.16	0.151	30	7
SE147114.010	LB091847.014		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Lindane	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor	mg/kg	0.1	<0.1	<0.1	200	0
			Aldrin	mg/kg	0.1	<0.1	<0.1	200	0
			Beta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Delta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Dieldrin	mg/kg	0.2	<0.2	<0.2	200	0
			Endrin	mg/kg	0.2	<0.2	<0.2	200	0
			o,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0

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

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

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

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

OC Pesticides in Soil (continued)

Method: ME-(AU)-[ENV]AN400/AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE147114.010	LB091847.014		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	-	0.18	0.17	30	5

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE147114.010	LB091847.014		Dichlorvos	mg/kg	0.5	<0.5	<0.5	200	0
			Dimethoate	mg/kg	0.5	<0.5	<0.5	200	0
			Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	200	0
			Fenitrothion	mg/kg	0.2	<0.2	<0.2	200	0
			Malathion	mg/kg	0.2	<0.2	<0.2	200	0
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	200	0
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	200	0
			Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	200	0
			Methidathion	mg/kg	0.5	<0.5	<0.5	200	0
			Ethion	mg/kg	0.2	<0.2	<0.2	200	0
			Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	200	0
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	0
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	4

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE147101.012	LB091847.026		Naphthalene	mg/kg	0.1	<0.1	0.01	200	0
			2-methylnaphthalene	mg/kg	0.1	<0.1	0.04	200	0
			1-methylnaphthalene	mg/kg	0.1	<0.1	0.02	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	0.01	200	0
			Phenanthrene	mg/kg	0.1	<0.1	0.06	184	0
			Anthracene	mg/kg	0.1	<0.1	0.06	184	0
			Fluoranthene	mg/kg	0.1	<0.1	0	200	0
			Pyrene	mg/kg	0.1	<0.1	0.01	200	0
			Benzo(a)anthracene	mg/kg	0.1	<0.1	0.04	200	0
			Chrysene	mg/kg	0.1	<0.1	0.04	200	0
			Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	0.01	200	0
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	0.01	200	0
			Benzo(a)pyrene	mg/kg	0.1	<0.1	0.02	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	0.01	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=0*	TEQ (mg/kg)	0.2	<0.2	0	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR*	TEQ (mg/kg)	0.3	<0.3	0.242	134	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2*	TEQ (mg/kg)	0.2	<0.2	0.121	175	0
			Total PAH (18)	mg/kg	0.8	<0.8	0	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.6	0.45	30	20
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.41	30	22
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.6	0.51	30	18
SE147114.010	LB091847.014		Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthylene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluorene	mg/kg	0.1	<0.1	<0.1	200	0
			Phenanthrene	mg/kg	0.1	<0.1	<0.1	200	0
			Anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluoranthene	mg/kg	0.1	0.2	<0.1	141	40
			Pyrene	mg/kg	0.1	0.1	<0.1	148	33

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

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

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE147114.010	LB091847.014		Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Chrysene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Dibenzo(a&h)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=0*	TEQ (mg/kg)	0.2	<0.2	<0.2	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR*	TEQ (mg/kg)	0.3	<0.3	<0.3	134	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2*	TEQ (mg/kg)	0.2	<0.2	<0.2	175	0
			Total PAH (16)	mg/kg	0.8	<0.8	<0.8	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.5	30	5
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	0
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	4

PCBs in Soil

Method: ME-(AU)-[ENV]AN400/AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE147101.010	LB091847.026		Arochlor 1016	mg/kg	0.2	<0.2	0	200	0
			Arochlor 1221	mg/kg	0.2	<0.2	0	200	0
			Arochlor 1232	mg/kg	0.2	<0.2	0	200	0
			Arochlor 1242	mg/kg	0.2	<0.2	0	200	0
			Arochlor 1248	mg/kg	0.2	<0.2	0	200	0
			Arochlor 1254	mg/kg	0.2	<0.2	0	200	0
			Arochlor 1260	mg/kg	0.2	<0.2	0	200	0
			Arochlor 1262	mg/kg	0.2	<0.2	0	200	0
			Arochlor 1268	mg/kg	0.2	<0.2	0	200	0
			Total PCBs (Arochlors)	mg/kg	1	<1	0	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0.151	30	7
SE147114.010	LB091847.014		Arochlor 1016	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1221	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1232	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1242	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1248	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1254	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1260	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1262	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1268	mg/kg	0.2	<0.2	<0.2	200	0
			Total PCBs (Arochlors)	mg/kg	1	<1	<1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	30	5

Total Recoverable Metals in Soil by ICPOES

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE147114.004	LB091838.014	Arsenic, As	mg/kg	3	13	13	38	0
		Cadmium, Cd	mg/kg	0.3	1.7	1.6	48	3
		Chromium, Cr	mg/kg	0.3	19	20	33	8
		Copper, Cu	mg/kg	0.5	65	73	31	12
		Lead, Pb	mg/kg	1	170	210	31	22
		Nickel, Ni	mg/kg	0.5	29	30	32	5
		Zinc, Zn	mg/kg	0.5	310	370	31	17
SE147114.013	LB091838.024	Arsenic, As	mg/kg	3	5	5	49	10
		Cadmium, Cd	mg/kg	0.3	0.4	0.4	99	4
		Chromium, Cr	mg/kg	0.3	22	21	32	4
		Copper, Cu	mg/kg	0.5	28	27	32	6
		Lead, Pb	mg/kg	1	26	26	34	1
		Nickel, Ni	mg/kg	0.5	15	13	34	12
		Zinc, Zn	mg/kg	0.5	50	49	34	1

Trace Metals (Dissolved) in Water by ICPMS

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

Original	Duplicate	Parameter	Units	LOR

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

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

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

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

Trace Metals (Dissolved) in Water by ICPMS (continued)

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE147121.001	LB091756.012	Arsenic, As	µg/L	1	<1	<1	128	0
		Cadmium, Cd	µg/L	0.1	<0.1	<0.1	200	0
		Chromium, Cr	µg/L	1	<1	<1	200	0
		Copper, Cu	µg/L	1	<1	<1	200	0
		Lead, Pb	µg/L	1	<1	<1	200	0
		Nickel, Ni	µg/L	1	<1	1	113	6
		Zinc, Zn	µg/L	5	<5	<5	200	0

TRH (Total Recoverable Hydrocarbons) in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE147101.012	LB091847.026		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 >C10-C16 (F2) - Naphthalene	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
SE147114.010	LB091847.014		TRH C10-C14	mg/kg	20	<20	<20	200	0
			TRH C15-C28	mg/kg	45	<45	<45	200	0
			TRH C29-C36	mg/kg	45	<45	<45	200	0
			TRH C37-C40	mg/kg	100	<100	<100	200	0
			TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
			TRH C10-C40 Total	mg/kg	210	<210	<210	200	0
		TRH F Bands	TRH >C10-C16 (F2)	mg/kg	25	<25	<25	200	0
			TRH >C10-C16 (F2) - Naphthalene	mg/kg	25	<25	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<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 %
SE147114.005	LB091764.014	Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
		Aromatic	Toluene	mg/kg	0.1	<0.1	<0.1	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	3.9	3.7	50	6
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.9	4.6	50	6
			d8-toluene (Surrogate)	mg/kg	-	5.7	5.8	50	2
			Bromofluorobenzene (Surrogate)	mg/kg	-	3.8	4.0	50	6
		Totals	Total Xylenes*	mg/kg	0.3	<0.3	<0.3	200	0
			Total BTEX*	mg/kg	0.6	<0.6	<0.6	200	0
SE147114.012	LB091764.025	Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
		Aromatic	Toluene	mg/kg	0.1	<0.1	<0.1	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	3.9	3.9	50	1
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.8	4.7	50	1
			d8-toluene (Surrogate)	mg/kg	-	6.1	5.9	50	4
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.2	3.8	50	9
		Totals	Total Xylenes*	mg/kg	0.3	<0.3	<0.3	200	0
			Total BTEX*	mg/kg	0.6	<0.6	<0.6	200	0

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Original	Duplicate	Parameter	Units	LOR

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

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

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

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

Volatile Petroleum Hydrocarbons in Soil (continued) — Method: ME-(AU)-[ENV]AN433/AN434/AN41

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE147114.005	LB091764.014		TRH C6-C10	mg/kg	25	<25	<25	200	0
			TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.9	4.6	30	6
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0
SE147114.012	LB091764.025		TRH C6-C10	mg/kg	25	<25	<25	200	0
			TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.8	4.7	30	1
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0

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

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

Mercury in Soil — Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB091902.002	Mercury	mg/kg	0.01	0.22	0.2	70 - 130	110
LB091903.002	Mercury	mg/kg	0.01	0.22	0.2	70 - 130	108

OC Pesticides in Soil — Method: ME-(AU)-[ENV]AN400/AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB091847.002		Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	104
		Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	106
		Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	97
		Dieldrin	mg/kg	0.2	0.2	0.2	60 - 140	103
		Endrin	mg/kg	0.2	0.2	0.2	60 - 140	111
		p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	99
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.15	0.15	40 - 130	99

OP Pesticides in Soil — Method: ME-(AU)-[ENV]AN400/AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB091847.002		Dichlorvos	mg/kg	0.5	2.0	2	60 - 140	99
		Diazinon (Dimpylate)	mg/kg	0.5	1.8	2	60 - 140	91
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	1.8	2	60 - 140	91
		Ethion	mg/kg	0.2	2.0	2	60 - 140	98
	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	86
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	100

PAH (Polynuclear Aromatic Hydrocarbons) in Soil — Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB091847.002		Naphthalene	mg/kg	0.1	4.2	4	60 - 140	106
		Acenaphthylene	mg/kg	0.1	4.4	4	60 - 140	109
		Acenaphthene	mg/kg	0.1	4.3	4	60 - 140	108
		Phenanthrene	mg/kg	0.1	4.4	4	60 - 140	110
		Anthracene	mg/kg	0.1	4.4	4	60 - 140	111
		Fluoranthene	mg/kg	0.1	4.5	4	60 - 140	112
		Pyrene	mg/kg	0.1	4.3	4	60 - 140	106
		Benzo(a)pyrene	mg/kg	0.1	5.0	4	60 - 140	124
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	92
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	86
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	100

PCBs in Soil — Method: ME-(AU)-[ENV]AN400/AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB091847.002	Arochlor 1260	mg/kg	0.2	0.5	0.4	60 - 140	119

Total Recoverable Metals in Soil by ICPOES — Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB091838.002	Arsenic, As	mg/kg	3	54	50	80 - 120	107
	Cadmium, Cd	mg/kg	0.3	55	50	80 - 120	110
	Chromium, Cr	mg/kg	0.3	53	50	80 - 120	107
	Copper, Cu	mg/kg	0.5	54	50	80 - 120	108
	Lead, Pb	mg/kg	1	54	50	80 - 120	108
	Nickel, Ni	mg/kg	0.5	54	50	80 - 120	108
	Zinc, Zn	mg/kg	0.5	55	50	80 - 120	110

Trace Metals (Dissolved) in Water by ICPMS — Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB091756.002	Arsenic, As	µg/L	1	19	20	80 - 120	96
	Cadmium, Cd	µg/L	0.1	20	20	80 - 120	100
	Chromium, Cr	µg/L	1	20	20	80 - 120	101
	Copper, Cu	µg/L	1	21	20	80 - 120	104
	Lead, Pb	µg/L	1	21	20	80 - 120	105
	Nickel, Ni	µg/L	1	21	20	80 - 120	104
	Zinc, Zn	µg/L	5	20	20	80 - 120	101

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

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

TRH (Total Recoverable Hydrocarbons) in Soil — Method: ME-(AU)-[ENV]AN403

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB091847.002		TRH C10-C14	mg/kg	20	40	40	60 - 140	100
		TRH C15-C28	mg/kg	45	<45	40	60 - 140	95
		TRH C29-C36	mg/kg	45	<45	40	60 - 140	90
	TRH F Bands	TRH >C10-C16 (F2)	mg/kg	25	39	40	60 - 140	98
		TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	95
		TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	85

TRH (Total Recoverable Hydrocarbons) in Water — Method: ME-(AU)-[ENV]AN403

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB091781.002		TRH C10-C14	µg/L	50	1000	1200	60 - 140	86
		TRH C15-C28	µg/L	200	1300	1200	60 - 140	106
		TRH C29-C36	µg/L	200	1500	1200	60 - 140	128
	TRH F Bands	TRH >C10-C16 (F2)	µg/L	60	1200	1200	60 - 140	96
		TRH >C16-C34 (F3)	µg/L	500	1500	1200	60 - 140	122
		TRH >C34-C40 (F4)	µg/L	500	750	600	60 - 140	125

VOC's in Soil — Method: ME-(AU)-[ENV]AN433/AN434

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB091764.002	Monocyclic Aromatic	Benzene	mg/kg	0.1	2.8	2.9	60 - 140	96
		Toluene	mg/kg	0.1	2.6	2.9	60 - 140	88
		Ethylbenzene	mg/kg	0.1	2.3	2.9	60 - 140	80
		m/p-xylene	mg/kg	0.2	4.4	5.8	60 - 140	76
		o-xylene	mg/kg	0.1	2.1	2.9	60 - 140	73
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	3.9	5	60 - 140	78
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.8	5	60 - 140	96
		d8-toluene (Surrogate)	mg/kg	-	5.9	5	60 - 140	117
		Bromofluorobenzene (Surrogate)	mg/kg	-	4.9	5	60 - 140	99

VOCs in Water — Method: ME-(AU)-[ENV]AN433/AN434

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB091916.002	Monocyclic Aromatic	Benzene	µg/L	0.5	52	45.45	60 - 140	114
		Toluene	µg/L	0.5	52	45.45	60 - 140	114
		Ethylbenzene	µg/L	0.5	52	45.45	60 - 140	114
		m/p-xylene	µg/L	1	100	90.9	60 - 140	113
		o-xylene	µg/L	0.5	52	45.45	60 - 140	114
	Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.5	5	60 - 140	90
		d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.9	5	60 - 140	98
		d8-toluene (Surrogate)	µg/L	-	5.0	5	60 - 140	101
		Bromofluorobenzene (Surrogate)	µg/L	-	4.6	5	60 - 140	92

Volatile Petroleum Hydrocarbons in Soil — Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB091764.002		TRH C6-C10	mg/kg	25	<25	24.65	60 - 140	88
		TRH C6-C9	mg/kg	20	<20	23.2	60 - 140	72
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	3.9	5	60 - 140	
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.8	5	60 - 140	96
		d8-toluene (Surrogate)	mg/kg	-	5.9	5	60 - 140	
		Bromofluorobenzene (Surrogate)	mg/kg	-	4.9	5	60 - 140	
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	7.25	60 - 140	103

Volatile Petroleum Hydrocarbons in Water — Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB091916.002		TRH C6-C10	µg/L	50	950	946.63	60 - 140	101
		TRH C6-C9	µg/L	40	780	818.71	60 - 140	95
	Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.5	5	60 - 140	90
		d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.9	5	60 - 140	98
		d8-toluene (Surrogate)	µg/L	-	5.0	5	60 - 140	101
		Bromofluorobenzene (Surrogate)	µg/L	-	4.6	5	60 - 140	92
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	640	639.67	60 - 140	100

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

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

Mercury (dissolved) in Water

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE147094.031	LB091971.004	Mercury	mg/L	0.0001	0.0083	<0.0001	0.008	104

Mercury in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE147101.010	LB091902.004	Mercury	mg/kg	0.01	0.21	<0.01	0.2	100
SE147114.013	LB091903.004	Mercury	mg/kg	0.01	0.22	0.03	0.2	96

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN400/AN420

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE147114.002	LB091847.027	Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	-	-
		Alpha BHC	mg/kg	0.1	<0.1	<0.1	-	-
		Lindane	mg/kg	0.1	<0.1	<0.1	-	-
		Heptachlor	mg/kg	0.1	0.2	<0.1	0.2	95
		Aldrin	mg/kg	0.1	0.2	<0.1	0.2	95
		Beta BHC	mg/kg	0.1	<0.1	<0.1	-	-
		Delta BHC	mg/kg	0.1	0.2	<0.1	0.2	95
		Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	-	-
		o,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
		Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
		Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
		Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
		trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	-	-
		p,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
		Dieldrin	mg/kg	0.2	0.2	<0.2	0.2	100
		Endrin	mg/kg	0.2	0.2	<0.2	0.2	105
		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	90
		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	-	0.14	0.16	-	90

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE147114.003	LB091847.027	Naphthalene	mg/kg	0.1	4.1	<0.1	4	103
		2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		Acenaphthylene	mg/kg	0.1	4.2	<0.1	4	105
		Acenaphthene	mg/kg	0.1	3.7	<0.1	4	92
		Fluorene	mg/kg	0.1	<0.1	<0.1	-	-
		Phenanthrene	mg/kg	0.1	3.6	<0.1	4	90
		Anthracene	mg/kg	0.1	3.7	<0.1	4	93
		Fluoranthene	mg/kg	0.1	4.1	<0.1	4	102
		Pyrene	mg/kg	0.1	3.6	<0.1	4	91
		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	4.0	<0.1	4	99
		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	-	-
		Carcinogenic PAHs, BaP TEQ <LOR=0*	TEQ	0.2	4.0	<0.2	-	-

MATRIX SPIKE DUPLICATES

SE147114 R0

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

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

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

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

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

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

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

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

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

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

STATEMENT OF QA/QC PERFORMANCE

SE147247 R0

CLIENT DETAILS		LABORATORY DETAILS	
Contact	Emmanuel Woelders	Manager	Huong Crawford
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Project	**E22827 - 47 Woodville Rd Chester Hill**	SGS Reference	**SE147247 R0**
Order Number	**E22827**	Date Received	16 Dec 2015
Samples	4	Date Reported	23 Dec 2015

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:

Matrix Spike	Trace Metals (Dissolved) in Water by ICPMS	1 item

SAMPLE SUMMARY

Sample counts by matrix	4 Waters	Type of documentation received	COC
Date documentation received	16/12/2015	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	8.7°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

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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.

Mercury (dissolved) in Water — Method: ME-(AU)-[ENV]AN311/AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101M	SE147247.001	LB092266	15 Dec 2015	16 Dec 2015	12 Jan 2016	22 Dec 2015	12 Jan 2016	22 Dec 2015
GWQD1	SE147247.002	LB092266	15 Dec 2015	16 Dec 2015	12 Jan 2016	22 Dec 2015	12 Jan 2016	22 Dec 2015

PAH (Polynuclear Aromatic Hydrocarbons) in Water — Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101M	SE147247.001	LB092026	15 Dec 2015	16 Dec 2015	22 Dec 2015	17 Dec 2015	26 Jan 2016	23 Dec 2015
GWQD1	SE147247.002	LB092026	15 Dec 2015	16 Dec 2015	22 Dec 2015	17 Dec 2015	26 Jan 2016	23 Dec 2015

Total Phenolics in Water — Method: ME-(AU)-[ENV]AN289

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101M	SE147247.001	LB092088	15 Dec 2015	16 Dec 2015	12 Jan 2016	18 Dec 2015	12 Jan 2016	18 Dec 2015

Trace Metals (Dissolved) in Water by ICPMS — Method: ME-(AU)-[ENV]AN318

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101M	SE147247.001	LB092068	15 Dec 2015	16 Dec 2015	12 Jun 2016	18 Dec 2015	12 Jun 2016	21 Dec 2015
GWQD1	SE147247.002	LB092068	15 Dec 2015	16 Dec 2015	12 Jun 2016	18 Dec 2015	12 Jun 2016	21 Dec 2015

TRH (Total Recoverable Hydrocarbons) in Water — Method: ME-(AU)-[ENV]AN403

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101M	SE147247.001	LB092026	15 Dec 2015	16 Dec 2015	22 Dec 2015	17 Dec 2015	26 Jan 2016	23 Dec 2015
GWQD1	SE147247.002	LB092026	15 Dec 2015	16 Dec 2015	22 Dec 2015	17 Dec 2015	26 Jan 2016	23 Dec 2015

VOCs in Water — Method: ME-(AU)-[ENV]AN433/AN434

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101M	SE147247.001	LB092056	15 Dec 2015	16 Dec 2015	22 Dec 2015	18 Dec 2015	27 Jan 2016	23 Dec 2015
GWQD1	SE147247.002	LB092056	15 Dec 2015	16 Dec 2015	22 Dec 2015	18 Dec 2015	27 Jan 2016	23 Dec 2015
GWQTS1	SE147247.003	LB092056	15 Dec 2015	16 Dec 2015	22 Dec 2015	18 Dec 2015	27 Jan 2016	23 Dec 2015
GWQTB1	SE147247.004	LB092056	15 Dec 2015	16 Dec 2015	22 Dec 2015	18 Dec 2015	27 Jan 2016	23 Dec 2015

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
BH101M	SE147247.001	LB092056	15 Dec 2015	16 Dec 2015	22 Dec 2015	18 Dec 2015	27 Jan 2016	23 Dec 2015
GWQD1	SE147247.002	LB092056	15 Dec 2015	16 Dec 2015	22 Dec 2015	18 Dec 2015	27 Jan 2016	23 Dec 2015
GWQTS1	SE147247.003	LB092056	15 Dec 2015	16 Dec 2015	22 Dec 2015	18 Dec 2015	27 Jan 2016	23 Dec 2015
GWQTB1	SE147247.004	LB092056	15 Dec 2015	16 Dec 2015	22 Dec 2015	18 Dec 2015	27 Jan 2016	23 Dec 2015

SURROGATES

SE147247 R0

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH101M	SE147247.001	%	40 - 130%	60
d14-p-terphenyl (Surrogate)	BH101M	SE147247.001	%	40 - 130%	88
d5-nitrobenzene (Surrogate)	BH101M	SE147247.001	%	40 - 130%	52

VOCs in Water

Method: ME-(AU)-[ENV]AN433/AN434

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH101M	SE147247.001	%	40 - 130%	98
	GWQD1	SE147247.002	%	40 - 130%	101
	GWQTS1	SE147247.003	%	40 - 130%	94
	GWQTB1	SE147247.004	%	40 - 130%	106
d4-1,2-dichloroethane (Surrogate)	BH101M	SE147247.001	%	40 - 130%	114
	GWQD1	SE147247.002	%	40 - 130%	110
	GWQTS1	SE147247.003	%	40 - 130%	99
	GWQTB1	SE147247.004	%	40 - 130%	109
d8-toluene (Surrogate)	BH101M	SE147247.001	%	40 - 130%	96
	GWQD1	SE147247.002	%	40 - 130%	99
	GWQTS1	SE147247.003	%	40 - 130%	101
	GWQTB1	SE147247.004	%	40 - 130%	99
Dibromofluoromethane (Surrogate)	BH101M	SE147247.001	%	40 - 130%	116
	GWQD1	SE147247.002	%	40 - 130%	114
	GWQTS1	SE147247.003	%	40 - 130%	100
	GWQTB1	SE147247.004	%	40 - 130%	115

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433/AN434/AN410

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH101M	SE147247.001	%	40 - 130%	98
	GWQD1	SE147247.002	%	40 - 130%	101
d4-1,2-dichloroethane (Surrogate)	BH101M	SE147247.001	%	60 - 130%	114
	GWQD1	SE147247.002	%	60 - 130%	110
d8-toluene (Surrogate)	BH101M	SE147247.001	%	40 - 130%	96
	GWQD1	SE147247.002	%	40 - 130%	99
Dibromofluoromethane (Surrogate)	BH101M	SE147247.001	%	40 - 130%	116
	GWQD1	SE147247.002	%	40 - 130%	114

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
LB092266.001	Mercury	mg/L	0.0001	<0.0001

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Sample Number		Parameter	Units	LOR	Result
LB092026.001		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)	%	-	98
		d14-p-terphenyl (Surrogate)	%	-	124

Total Phenolics in Water

Method: ME-(AU)-[ENV]AN289

Sample Number	Parameter	Units	LOR	Result
LB092068.001	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
LB092068.001	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
LB092026.001	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
LB092056.001	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/AN43

Sample Number		Parameter	Units	LOR	Result
LB092056.001	Halogenated Aliphatics	1,1-dichloroethene	µg/L	0.5	<0.5
		Dichloromethane (Methylene chloride)	µg/L	5	<5
		Allyl chloride	µg/L	2	<2
		trans-1,2-dichloroethene	µg/L	0.5	<0.5
		1,1-dichloroethane	µg/L	0.5	<0.5
		cis-1,2-dichloroethene	µg/L	0.5	<0.5
		Bromochloromethane	µg/L	0.5	<0.5
		1,2-dichloroethane	µg/L	0.5	<0.5
		1,1,1-trichloroethane	µg/L	0.5	<0.5
		1,1-dichloropropene	µg/L	0.5	<0.5
		Carbon tetrachloride	µg/L	0.5	<0.5
		Dibromomethane	µg/L	0.5	<0.5
		Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	<0.5
		1,1,2-trichloroethane	µg/L	0.5	<0.5
		1,3-dichloropropane	µg/L	0.5	<0.5
		Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	<0.5
		1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5
		cis-1,4-dichloro-2-butene	µg/L	1	<1
		1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5
		1,2,3-trichloropropane	µg/L	0.5	<0.5
		trans-1,4-dichloro-2-butene	µg/L	1	<1
		1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5
		Hexachlorobutadiene	µg/L	0.5	<0.5
	Halogenated Aromatics	Chlorobenzene	µg/L	0.5	<0.5
		Bromobenzene	µg/L	0.5	<0.5
		2-chlorotoluene	µg/L	0.5	<0.5
		4-chlorotoluene	µg/L	0.5	<0.5
		1,3-dichlorobenzene	µg/L	0.5	<0.5
		1,4-dichlorobenzene	µg/L	0.3	<0.3
		1,2-dichlorobenzene	µg/L	0.5	<0.5
		1,2,4-trichlorobenzene	µg/L	0.5	<0.5
		1,2,3-trichlorobenzene	µg/L	0.5	<0.5
	Monocyclic Aromatic Hydrocarbons	Benzene	µg/L	0.5	<0.5
		Toluene	µg/L	0.5	<0.5
		Ethylbenzene	µg/L	0.5	<0.5
		m/p-xylene	µg/L	1	<1
		o-xylene	µg/L	0.5	<0.5
		Styrene (Vinyl benzene)	µg/L	0.5	<0.5
		Isopropylbenzene (Cumene)	µg/L	0.5	<0.5
		n-propylbenzene	µg/L	0.5	<0.5
		1,3,5-trimethylbenzene	µg/L	0.5	<0.5
		tert-butylbenzene	µg/L	0.5	<0.5
		1,2,4-trimethylbenzene	µg/L	0.5	<0.5
		sec-butylbenzene	µg/L	0.5	<0.5
		p-isopropyltoluene	µg/L	0.5	<0.5
		n-butylbenzene	µg/L	0.5	<0.5
	Nitrogenous Compounds	Acrylonitrile	µg/L	0.5	<0.5
	Oxygenated Compounds	Acetone (2-propanone)	µg/L	10	<10
		MtBE (Methyl-tert-butyl ether)	µg/L	2	<1
		Vinyl acetate	µg/L	10	<10
		MEK (2-butanone)	µg/L	10	<10
		MIBK (4-methyl-2-pentanone)	µg/L	5	<5
		2-hexanone (MBK)	µg/L	5	<5
	Polycyclic VOCs	Naphthalene	µg/L	0.5	<0.5
	Sulphonated	Carbon disulfide	µg/L	2	<2
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	118
		d4-1,2-dichloroethane (Surrogate)	%	-	117
		d8-toluene (Surrogate)	%	-	100
		Bromofluorobenzene (Surrogate)	%	-	93
	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
LB092056.001	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
LB092056.001		TRH C6-C9	µg/L	40	<40
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	118
		d4-1,2-dichloroethane (Surrogate)	%	-	117
		d8-toluene (Surrogate)	%	-	100
		Bromofluorobenzene (Surrogate)	%	-	93

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

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

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

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

Mercury (dissolved) in Water — Method: ME-(AU)-[ENV]AN311/AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE147396.005	LB092266.017	Mercury	µg/L	0.0001	-0.0394	<0.0001	149	0

Total Phenolics in Water — Method: ME-(AU)-[ENV]AN289

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE146869.002	LB092088.004	Total Phenols	mg/L	0.01	0.04	0.07	100	39

Trace Metals (Dissolved) in Water by ICPMS — Method: ME-(AU)-[ENV]AN318

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE147251.003	LB092068.014	Arsenic, As	µg/L	1	2.263	1.934	63	16
		Cadmium, Cd	µg/L	0.1	0.029	0.025	200	0
		Chromium, Cr	µg/L	1	0.303	0.366	200	0
		Copper, Cu	µg/L	1	4.128	4.23	39	2
		Lead, Pb	µg/L	1	0.224	0.207	200	0
		Nickel, Ni	µg/L	1	2.773	2.821	51	2
		Zinc, Zn	µg/L	5	24.695	25.299	35	2
SE147298.001	LB092068.024	Arsenic, As	µg/L	1	1.04	1.101	108	6
		Cadmium, Cd	µg/L	0.1	-0.008	-0.003	200	0
		Chromium, Cr	µg/L	1	0.241	0.227	200	0
		Copper, Cu	µg/L	1	3.84	3.79	41	1
		Lead, Pb	µg/L	1	0.061	0.082	200	0
		Nickel, Ni	µg/L	1	3.999	3.921	40	2
		Zinc, Zn	µg/L	5	6.533	11.331	71	54

VOCs in Water — Method: ME-(AU)-[ENV]AN433/AN434

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE147250.004	LB092056.018	Monocyclic	Benzene	µg/L	0.5	<0.5	0.14	200	0
		Aromatic	Toluene	µg/L	0.5	<0.5	0.32	186	0
			Ethylbenzene	µg/L	0.5	<0.5	0.05	200	0
			m/p-xylene	µg/L	1	<1	0.12	200	0
			o-xylene	µg/L	0.5	<0.5	0.05	200	0
		Polycyclic	Naphthalene	µg/L	0.5	<0.5	0	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	5.5	5.61	30	3
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.3	5.56	30	4
			d8-toluene (Surrogate)	µg/L	-	4.9	5.04	30	2
			Bromofluorobenzene (Surrogate)	µg/L	-	5.4	5.04	30	6

Volatile Petroleum Hydrocarbons in Water — Method: ME-(AU)-[ENV]AN433/AN434/AN410

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE147250.004	LB092056.018		TRH C6-C10	µg/L	50	<50	0	200	0
			TRH C8-C9	µg/L	40	<40	0	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	5.5	5.61	30	3
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.3	5.56	30	4
			d8-toluene (Surrogate)	µg/L	-	4.9	5.04	30	2
			Bromofluorobenzene (Surrogate)	µg/L	-	5.4	5.04	30	6
		VPH F Bands	Benzene (F0)	µg/L	0.5	<0.5	0.14	200	0
			TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	-0.68	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 %
LB092026.002		Naphthalene	µg/L	0.1	34	40	60 - 140	85
		Acenaphthylene	µg/L	0.1	36	40	60 - 140	90
		Acenaphthene	µg/L	0.1	39	40	60 - 140	97
		Phenanthrene	µg/L	0.1	47	40	60 - 140	118
		Anthracene	µg/L	0.1	40	40	60 - 140	101
		Fluoranthene	µg/L	0.1	35	40	60 - 140	89
		Pyrene	µg/L	0.1	40	40	60 - 140	99
		Benzo(a)pyrene	µg/L	0.1	38	40	60 - 140	95
	Surrogates	d5-nitrobenzene (Surrogate)	µg/L	-	0.5	0.5	40 - 130	90
		2-fluorobiphenyl (Surrogate)	µg/L	-	0.5	0.5	40 - 130	94
		d14-p-terphenyl (Surrogate)	µg/L	-	0.6	0.5	40 - 130	124

Total Phenolics in Water — Method: ME-(AU)-[ENV]AN289

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB092088.002	Total Phenols	mg/L	0.01	0.25	0.25	80 - 120	100

Trace Metals (Dissolved) in Water by ICPMS — Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB092068.002	Arsenic, As	µg/L	1	19	20	80 - 120	96
	Cadmium, Cd	µg/L	0.1	20	20	80 - 120	101
	Chromium, Cr	µg/L	1	21	20	80 - 120	105
	Copper, Cu	µg/L	1	22	20	80 - 120	108
	Lead, Pb	µg/L	1	21	20	80 - 120	105
	Nickel, Ni	µg/L	1	21	20	80 - 120	107
	Zinc, Zn	µg/L	5	21	20	80 - 120	105

TRH (Total Recoverable Hydrocarbons) in Water — Method: ME-(AU)-[ENV]AN403

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB092026.002		TRH C10-C14	µg/L	50	1100	1200	60 - 140	90
		TRH C15-C28	µg/L	200	1200	1200	60 - 140	101
		TRH C29-C36	µg/L	200	1300	1200	60 - 140	105
	TRH F Bands	TRH >C10-C16 (F2)	µg/L	60	1200	1200	60 - 140	99
		TRH >C16-C34 (F3)	µg/L	500	1200	1200	60 - 140	102
		TRH >C34-C40 (F4)	µg/L	500	640	600	60 - 140	106

VOCs in Water — Method: ME-(AU)-[ENV]AN433/AN434

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB092056.002	Halogenated Aliphatics	1,1-dichloroethene	µg/L	0.5	51	45.45	60 - 140	112
		1,2-dichloroethane	µg/L	0.5	49	45.45	60 - 140	108
		Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	50	45.45	60 - 140	110
	Halogenated Monocyclic Aromatic	Chlorobenzene	µg/L	0.5	50	45.45	60 - 140	110
		Benzene	µg/L	0.5	50	45.45	60 - 140	110
		Toluene	µg/L	0.5	50	45.45	60 - 140	110
		Ethylbenzene	µg/L	0.5	50	45.45	60 - 140	110
		m/p-xylene	µg/L	1	100	90.9	60 - 140	110
		o-xylene	µg/L	0.5	50	45.45	60 - 140	110
	Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.2	5	60 - 140	83
		d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.2	5	60 - 140	83
		d8-toluene (Surrogate)	µg/L	-	4.7	5	60 - 140	95
		Bromofluorobenzene (Surrogate)	µg/L	-	5.9	5	60 - 140	118
	Trihalomethan	Chloroform (THM)	µg/L	0.5	50	45.45	60 - 140	110

Volatile Petroleum Hydrocarbons in Water — Method: ME-(AU)-[ENV]AN433/AN434/AN410

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB092056.002		TRH C6-C10	µg/L	50	950	946.63	60 - 140	101
		TRH C6-C9	µg/L	40	780	818.71	60 - 140	95
	Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.5	5	60 - 140	90
		d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.9	5	60 - 140	98
		d8-toluene (Surrogate)	µg/L	-	5.0	5	60 - 140	101
		Bromofluorobenzene (Surrogate)	µg/L	-	4.6	5	60 - 140	92
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	650	639.67	60 - 140	102

MATRIX SPIKES

SE147247 R0

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

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

Mercury (dissolved) in Water

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE147188.010	LB092266.004	Mercury	mg/L	0.0001	0.0084	<0.0001	0.008	106

Trace Metals (Dissolved) in Water by ICPMS

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE147247.001	LB092068.004	Arsenic, As	µg/L	1	27	<1	20	131 ⓓ
		Cadmium, Cd	µg/L	0.1	20	<0.1	20	100
		Chromium, Cr	µg/L	1	29	10	20	95
		Copper, Cu	µg/L	1	20	2	20	91
		Lead, Pb	µg/L	1	20	<1	20	99
		Nickel, Ni	µg/L	1	19	1	20	89
		Zinc, Zn	µg/L	5	21	6	20	75

MATRIX SPIKE DUPLICATES

SE147247 R0

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

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

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

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

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

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

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

*	NATA accreditation does not cover tthe performance of this service.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.

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