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SUTHERLAND & ASSOCIATES PLANNING

Detailed Site Investigation (Revised Report)

143 Stoney Creek Road, Beverly Hills NSW

E23967.E02_Rev3
6 July 2022

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Revision	Details	Date	Authored By	Reviewed By
0	Original	5 November 2018	**Nicholas Grbich** Environmental Scientist	**Nathan Foster** Senior Environmental Scientist
1	Updated development plans	7 February 2020	**Nicholas Grbich** Environmental Scientist	**Nathan Foster** Senior Environmental Scientist
2	Updated development plans	8 May 2020	**Nicholas Grbich** Environmental Scientist	**Nathan Foster** Senior Environmental Scientist
3	Revised report to reflect new planning proposal involving residential land use	6 July 2022	**Sara Maddison** Environmental Engineer	**Warwick Hayes** Environmental Scientist EIANZ CEnvP No. 1401 LAA001080

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Background

In 2018, Mr Aaron Sutherland of Sutherland & Associates Planning engaged EI Australia (EI) to conduct a Detailed Site Investigation (DSI) of 143 Stoney Creek Rd, Beverly Hills NSW ('the site').

The DSI was conducted as part of an environmental due diligence process, with the corresponding report provided in support of a planning (re-zoning) proposal to Georges River Council and the NSW Department of Planning, Industry and the Environment (DPIE). The report is hereby submitted in a revised version, in support of a new proposal drafted by Sutherland & Associates Planning. It was understood that the current planning proposal involved a change to the zoning of the land encompassed by the site, from *SP2 (Government Administration)* and *R2 (Low Density Residential)*, to *R4 (High Density Residential)*, thereby allowing mixed commercial (office), residential and childcare centre use.

Objectives

The primary objectives of the investigation were to:

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

Findings

The key findings of this DSI were:

- The site was used for residential purposes up until at least 1982, at which time all structures were demolished and the site was redeveloped into a government motor vehicle service centre and registry.
- The site was free of statutory notices and licensing agreements issued under the *Contaminated Land Management Act 1997* and *Protection of the Environment Operations Act 1997*. It was not included on the *List of NSW Contaminated Sites Notified to the EPA*.
- There was no evidence that an underground storage tank had been installed on any part of the site. No aboveground storage tank was present.
- The sub-surface layers were comprised of anthropogenic fill materials (to 1.6m below ground level (BGL)), underlain by natural clays and shale bedrock. Groundwater was encountered at depths ranging from 1.15-2.25m BGL. It was deemed to be (slightly acidic and brackish to moderately saline.
- All examined soil samples were evaluated on a qualitative basis for odour and visual signs of contamination and no such signs were encountered.
- All concentrations of the contaminants of potential concern in the representative soil samples were found to comply with the adopted investigation levels applicable for residential settings (low density) and childcare centres, where accessible soils occur.
- Elevated concentrations of cadmium, copper, lead, mercury, nickel and zinc, exceeding the adopted investigation levels, were identified in the representative groundwater samples. The metal levels did not pose an immediate threat to human health or the environment, however, being representative of urban background groundwater conditions.

Based on the findings of this DSI, and with consideration of EI's *Statement of Limitations* (**Section 13**), it was concluded that widespread contamination did not occur on the site (i.e. the potential for contamination to exist on the land was very low). The site was deemed suitable for mixed commercial (office), residential and childcare centre use, as per the current (new) re-zoning proposal drafted by Sutherland & Associates Planning, subject to implementation of the recommendations proposed in **Section 12**.

1. INTRODUCTION

1.1 Background and Purpose

In 2018, Mr Aaron Sutherland of Sutherland & Associates Planning engaged EI Australia (EI) to conduct a Detailed Site Investigation (DSI) of 143 Stoney Creek Rd, Beverly Hills NSW ('the site').

The DSI was conducted as part of an environmental due diligence process, with the corresponding report provided in support of a planning (re-zoning) proposal to Georges River Council and the NSW Department of Planning, Industry and the Environment (DPIE). The report is hereby submitted in a revised version, in support of a new proposal drafted by Sutherland & Associates Planning. It ensures the applicant continues to meet its obligations under the *Contaminated Land Management Act 1997*.

Note: It was understood that use of the site had not changed since the release of EI's previous version of the DSI report, entitled *Detailed Site Investigation; 143 Stoney Creek Road, Beverly Hills NSW* (EI Reference E23967.E02_Rev2, dated 8 May 2020).

1.2 Proposed Development

It was understood that the current planning proposal involved a change to the zoning of the land encompassed by the site, from *SP2 (Government Administration)* and *R2 (Low Density Residential)*, to *R4 (High Density Residential)*, thereby allowing mixed commercial (office), residential and childcare centre use (**Appendix K**).

1.3 Regulatory Framework

The following regulatory framework and guidelines were considered during the DSI:

- ANZG (2018) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*;
- DEC (2007) *Guidelines for the Assessment and Management of Groundwater Contamination*;
- EPA (2017) *Guidelines for the NSW Site Auditor Scheme*;
- EPA (1995) *Sampling Design Guidelines*;
- EPA (2020) *Guidelines for Consultants Reporting on Contaminated Sites;*
- NEPC (2013) *Schedule B(1) Guideline on Investigation Levels for Soil and Groundwater*;
- NEPC (2013) *Schedule B(2) Guideline on Site Characterisation*; and
- *State Environmental Planning Policy (Resilience and Hazards) 2021*.

1.4 Project Objectives

The primary objectives of the investigation were to:

- Evaluate the potential for site contamination on the basis of historical land uses, including anecdotal and documentary evidence of possible pollutant sources;
- Investigate the degree of any potential contamination, by means of intrusive sampling and laboratory analysis, for the relevant contaminants of perceived concern; 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 included:

Desktop Study

- A review of relevant topographical, (hydro)geological and soil landscape maps for the project area;
- A review of site history, based on land titles records, aerial photographs (dating back to 1930) and property files archived by Georges River Council;
- Searches of NSW EPA land information databases maintained under the *Contaminated Land Management Act 1997* and *Protection of the Environment Operations Act 1997*;
- Search of SafeWork NSW records for information relating to possible underground storage tank approvals and locations, and/or oather dangerous goods stores; and
- A review of existing underground services on site.

Field Work and Laboratory Analysis

- A site walkover inspection;
- Drilling of boreholes at eight (8) locations, placed in accessible areas across the site, complying with the minimum sampling density recommended under EPA (1995) *Sampling Design Guidelines* for the investigation of an area of 2460m^2;
- Multiple level sampling within fill and natural soils at each of the test bores;
- Installation of three groundwater monitoring wells, constructed according to standard environmental protocols;
- Completion of a groundwater monitoring event (GME) utilising the 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.

Data Analysis and Reporting

The DSI report included:

- Documenting the desk study findings, the conceptual site model, data quality objectives and sampling methods;
- Records of observations made during the site walkover inspection, the borehole and monitoring well construction logs; and
- A discussion of laboratory analytical results against the adopted investigation (acceptance) criteria; thereby enabling
- Assessment of the potential risks to human health, the environment and the aesthetic uses of the land.

This revised report concludes with statements concerning the potential for contamination to exist on the land and the site's suitability for mixed commercial (office), residential and childcare centre use, as per the current (new) re-zoning proposal drafted by Sutherland & Associates Planning (**Appendix K**).

2. SITE DESCRIPTION

2.1 Property Identification, Location and Physical Setting

The site is located approximately 12km south west of the Sydney central business district (**Figure A.1**), within the local government area of Georges River Council. It comprises Lots 2 and 3 in Deposited Plan (DP) 1205598, covering a total area of approximately 2,460m^2 (**Figure A.2**).

At the time of the DSI, the site was occupied by a single storey, concrete building with flat metal roofing, and car parking areas. It was understood that use of the property (Public Administration Building) had not changed since the release of EI's previous version of the DSI report, entitled *Detailed Site Investigation; 143 Stoney Creek Road, Beverly Hills NSW* (EI Reference E23967.E02_Rev2, dated 8 May 2020).

Further identification details and associated information are presented in **Table 2-1**.

Table 2-1 Site Identification, Location and Zoning

Attribute	Description
Street Address	143 Stoney Creek Rd, Beverly Hills NSW
Location Description	Approximately 12km south west of the Sydney central business district. Bound by Stoney Creek Road (north west), Cambridge Street (north east) and residential properties (south-east and south-west).
Geographical Coordinates	North-eastern corner of site (datum GDA94-MGA56): Easting: 322775.358 Northing: 6241351.455 (Source: http://maps.six.nsw.gov.au).
Area	Approximately 2,460m^2 (http://maps.six.nsw.gov.au)
Lots and DP	Lots 2 and 3 in DP 1205598
State Survey Marks	Two state survey marks are situated in close proximity to the site: • SS108354, on the corner of Stoney Creek Road and Melvin Street (west of the site) • SS58682, on Cambridge Street (east of the site). (Source: http://maps.six.nsw.gov.au).
Local Government Authority	Georges River Council
Parish	St George
County	Cumberland
Current Zoning	SP2 Infrastructure (corresponding to the Public Administration Building) R2 Low Density Residential (*Hurstville Local Environment Plan 2012*)
Current Land Uses	Single storey, concrete building with associated open car parking areas (previously used as a *NSW Roads and Traffic Authority* (RTA) service centre and registry). The building was vacant at the time of the DSI (and had not been re-occupied by the time of revising the report).

2.2 Surrounding Land Use

The site is situated within an area of residential land use (**Table 2-2**). Sensitive land uses within the vicinity of the site include the Beverly Hills Public School (250m to the east) and Greglea Retirement Community (200m to the south-west).

Table 2-2 Surrounding Land Uses

Direction Relative to Site	Land Use Description
North east	Stoney Creek Road, followed by individual residential dwellings.
North west	Cambridge Street, followed by individual residential dwellings
South east	Individual residential dwellings
South west	Individual residential dwellings

2.3 Regional Setting

Regional topography, (hydro)geology and soil landscape information is summarised in **Table 2-3**.

Table 2-3 Regional Setting Information

Attribute	Description
Ground Topography	The site is generally flat with a slight incline towards the west.
Site Drainage	Site drainage is likely to be consistent with the general slope of the site to the west as well as through two stormwater pits located on the western portion of site. Stormwater is expected to drain to Wolli Creek to the north of site through municipal stormwater systems.
Regional Geology	With reference to the 1:100,000 scale Geological Series Sheet 9130 (Sydney), the site underlain by Wianamatta Group Shale, carbonaceous claystone, laminite, fine to medium grained lithic sandstone and rare coal.
Soil Landscapes	The Soil Conservation Service of NSW Soil Landscapes of the Sydney 1:100,000 Sheet (Chapman and Murphy, 2002) indicates that the site overlies the boundary of the Birrong (bg) and Blacktown (bt) landscapes. The Birrong landscape consists of level to gently undulating alluvial floodplain draining Wianamatta Group shales. Local relief to 5 m, slopes <3%. Broad valley flats. Extensively cleared tall open-forest and woodland. Soils are deep (>250 cm) Yellow Podzolic Soils (Dy2.42, Dy3.12) and Yellow Solodic Soils (Dy3.42) on older alluvial terraces; deep (>250 cm) Solodic Soils (Dy3.42) and Yellow Solonetz (Dy3.43) on current floodplain. The Blacktown landscape consist of gently undulating rises on Wianamatta Group shales and Hawkesbury shale. Local relief to 30 m, slopes are usually <5%. Broad rounded crests and ridges with gently inclined slopes. Cleared eucalypt woodland and tall open-forest (wet sclerophyll forests). Soils are shallow to moderately deep (<100cm) Red and Brown Podzolic Soils (Dr3.21, Dr3.11, Db2.11) on crests, upper slopes and well-drained areas; deep (150-300 cm) Yellow Podzolic Soils and Soloths (Dy2.11, Dy3.11) on lower slopes and in areas of poor drainage.
Acid Sulfate Soil Risk	The Hurstville LEP 2012 Acid Sulfate Soils Map does not give the site a class in relation to acid sulfate soils risk. With reference to the *Botany Bay Acid Sulfate Soil Risk Map* (1:25,000 scale; Murphy, 1997), the site is located within an area of *No Known Occurrence*.
Nearest Surface Water Feature	Wolli Creek, located 1.2km north of the site.
Inferred Groundwater Flow Direction	Groundwater flow has been inferred through gauging of installed groundwater wells as discussed in **Section 9.2**. Groundwater was inferred to flow towards the north-west.

2.4 Groundwater Bore Records and Groundwater Use

An online search of registered groundwater bores was conducted by EI through the NSW Office of Water (Ref. http://allwaterdata.water.nsw.gov.au/water.stm). There were no registered bores within 500m radius of the site.

2.5 Site Walkover Inspection

EI staff made a number of observations during an inspection on 13 August 2018. The recorded observations are summarised in **Table 2-4.**

Table 2-4 Summary of Buildings and Infrastructure

Allotment	Buildings	USTs/ASTs	Observations
143 Stoney Creek Road, Beverly Hills NSW	Single storey, commercial building. Concrete walls with flat metal roof.	No evidence of a UST/AST observed.	The site was occupied by a former RTA building. The site included an associated open car park. A large stormwater easement ran through the eastern portion of the site, in a north-south orientation. The easement could be identified by the construction of the concrete hardstand.

3. SITE HISTORY AND SEARCHES

3.1 Land Titles Information and Historic Aerial Photograph Review

A historical land titles search was conducted through Info Track Pty Ltd. Copies of relevant documents resulting from this search are presented in **Appendix I**. A summary of all the previous and current registered proprietors along with information obtained from the available historical aerial photographs, in relation to past potential land uses are presented in **Table 3-1**. The historical aerial photographs reviewed as part of this DSI included:

- 1930: Run 20, map 3427, 28 February;
- 1943: maps.six.nsw.gov.au
- 1951:, Run 18, print 466-18, May;
- 1982: Run 26, print 156, NSW 3527, 9 August;
- 1994: Print 105, October;
- 2016: maps.six.nsw.gov.au.

Table 3-1 Summary of Owners and Historical Aerial Photography

Term of Acquisition	Registered Proprietor(s) and Occupations (where documented)	Site Description	Associated Business
As regards Lot 2 DP 1205598 As regards the part tinted green on the attached Cadastre (Appendix I)			
02.05.1888 (1888 to 1901)	The Penshurst Park Estate Company	No aerial photographs available.	
28.03.1901 (1901 to 1907)	Allen Cumming Degner (Baker)	No aerial photographs available.	
27.09.1907 (1907 to 1907)	Katherine Degner (Widow)	No aerial photographs available.	
As regards the part tinted pink on the attached Cadastre (Appendix I)			
02.05.1888 (1888 to 1907)	The Penshurst Park Estate Company	No aerial photographs available.	
25.09.1907 (1907 to 1907)	Katherine Degner (Widow)	No aerial photographs available.	
Continued as regards the whole of Lot 2 DP 1205598			
27.09.1907 (1907 to 1916)	Henry Alfred Clyde (Gentleman)	No aerial photographs available.	
27.01.1916 (1916 to 1918)	Elizabeth Share (Married Woman)	No aerial photographs available.	

Term of Acquisition	Registered Proprietor(s) and Occupations (where documented)	Site Description	Associated Business
21.01.1918 (1918 to 1962)	William Hare (Telegraph Linesman) Edith Mary Matilda Hare (Married Woman)	**1930:** Site is occupied by individual residential dwelling with associated front/back yard. **1943:** Site unchanged from 1930 aerial photograph. **1951:** Site unchanged from 1942 aerial photograph.	Residential
09.03.1962 (1962 to 2015)	The Commissioner for Motor Transport	**1982:** Northern portion of lot is occupied by a flat roofed commercial building. Southern portion of lot is an open aired carpark. Site resembles its state as at the time of writing. **1994:** Site unchanged from 1982 aerial photograph.	Government building
07.02.2015 (2015 to Date)	# Government Property NSW	**2016:** Site unchanged from 1994 aerial photograph.	Government building
Easements • 29.11.1940 (C966557)- Easement 11 feet wide • 31.03.1965 (J982243) – Easement for Stormwater Drainage variable width			
As regards Lot 3 DP 1205598 **As regards the part tinted blue on the attached Cadastre (Appendix I)**			
02.05.1888 (1888 to 1901)	The Penshurst Park Estate Company	No aerial photographs available.	
28.03.1901 (1901 to 1907)	Allen Cumming Degner (Baker)	No aerial photographs available.	
27.09.1907 (1907 to 1907)	Katherine Degner (Widow)	No aerial photographs available.	
As regards the part tinted purple on the attached Cadastre (Appendix I)			
02.05.1888 (1888 to 1907)	The Penshurst Park Estate Company	No aerial photographs available.	
25.09.1907 (1907 to 1907)	Katherine Degner (Widow)	No aerial photographs available.	
Continued as regards the whole of Lot 3 DP 1205598			
27.09.1907 (1907 to 1916)	Henry Alfred Clyde (Gentleman)	No aerial photographs available.	
27.01.1916 (1916 to 1918)	Elizabeth Share (Married Woman)	No aerial photographs available.	

Term of Acquisition	Registered Proprietor(s) and Occupations (where documented)	Site Description	Associated Business
21.01.1918 (1918 to 1975)	William Hare (Telegraph Linesman) Edith Mary Matilda Hare (Married Woman)	**1930:** Site is occupied by individual residential dwelling with associated front/back yard. **1943:** Site unchanged from 1930 aerial photograph. **1951:** Site unchanged from 1942 aerial photograph.	Residential
10.02.1975 (1975 to 1977)	William Hare (Widower Telegraph Linesman)	No aerial photographs available.	
13.07.1977 (1977 to 2015)	The Commissioner for Motor Transport	**1982:** site is covered by open aired carpark. Site resembles its state as at the time of writing. **1994:** Site unchanged from 1982 aerial photograph.	Government building
07.02.2015 (2015 to Date)	# Government Property NSW	**2016:** Site unchanged from 1994 aerial photograph.	Government building

Note:
# Denotes current registered proprietor

In summary, review of land titles records and historic aerial photography showed that the site was primarily residential up until at least 1982, where previous structures were demolished and the site was redeveloped into a government (RTA) motor vehicle service centre and registry.

3.2 Uses of Surrounding Lands

An assessment of surrounding land uses using the historical aerial photographs was carried out. A summary of the pertinent information is presented in **Table 3-2**.

Table 3-2 Summary of Surrounding Land Uses Based on Aerial Photographs

Aerial Photograph	Surrounding land uses based on historical aerial photographs
1930	Surrounding site area is primarily individual residential dwellings.
1943	Area land use unchanged from previous aerial photograph.
1951	Area land use unchanged from previous aerial photograph.
1982	Area land use unchanged from previous aerial photograph.
1994	Area land use unchanged from previous aerial photograph.
2017	Area land use unchanged from previous aerial photograph.

3.3 Council Information

A request to search property files archived by Georges River Council was requested on 17 August 2018. The search did not reveal any documents indicating potential contaminating activities or environmental-related issues occurring on the site.

3.4 SafeWork NSW Dangerous Goods Register

A search of SafeWork NSW records relating to the site was requested by EI on 17 August 2018. The search returned no information pertaining to the site. A copy of the correspondence from SafeWork NSW is included in **Appendix J**.

3.5 EPA Online Records

On 19 September 2018, an on-line search of the contaminated land public record of NSW Environment Protection Authority (EPA) Notices was conducted. This search confirmed that the EPA had no regulatory involvement in relation to the area of investigation, or properties in proximity (<500m) to the site. The contaminated land public record is a searchable database of:

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

A search through the *List of NSW Contaminated Sites Notified to the EPA* under Section 60 of the CLM Act 1997 was also conducted on 19 September 2018. This list is maintained by EPA and includes properties on which contamination has been identified. Not all notified land is deemed to be impacted significantly enough to warrant regulation by the EPA. The site, or properties in proximity (<500m) to the site, have not been notified as contaminated to the EPA.

A search of the *Protection of the Environment Operations Act 1997* public register, regarding environmental protection licences, applications, notices, audits, pollution studies, and reduction programmes, did not identify any record for the site. A licence for Railway Systems activities was issued King Georges Road between Kingsgrove and Revesby. The licence (No. 12908) was issued to Leighton Contractors Pty Limited and allows for railways systems activities at any annual capacity.

4. PREVIOUS INVESTIGATIONS

4.1 Available Documents

EI was not aware of, or provided with any reports, concerning previous investigations carried out on the site (i.e. by parties other than EI).

5. CONCEPTUAL SITE MODEL

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

5.1 Contamination Sources

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

Table 5-1 Contaminant Sources

Contaminant Source	Potential Impacts
Surface filling	A wide range of potential inorganic and organic chemicals and asbestos
Demolition of former buildings	Potential paint and fibrous cement sheeting fragments potentially containing asbestos
Degradation of building surfaces (including fences)	Priority metals particularly Cu, Pb & Zn, paint fragments and asbestos fines.
Pesticide use in building footprints	Potential pesticide contamination of surface soils
Contamination form off-site sources	Potential groundwater contamination from off-site industrial sources
Potential contamination in areas not accessible during investigations	Potential impact from future demolition due to structure materials

5.2 Contaminants of Potential Concern

Based on the findings of the site contamination appraisal, the contaminants of potential concern (COPC) at the site, and the potential medium impacts, are listed in **Table 5-2**.

Table 5-2 Contaminants of Potential Concern

Contaminant	Soil Impacts[1]	Air Quality Impacts[1]	Groundwater Impacts[1]
Priority (heavy) metals As, Cd, Cr, Cu, Hg, Ni, Pb, and Zn	M	L	M
Other metals Be, Co, Cr^{VI}, Mn, Se	L	L	L
Total recoverable hydrocarbons (TRH)	L	L	L
Monocyclic aromatic hydrocarbon compounds benzene, toluene, ethyl benzene and xylenes (BTEX)	L	L	L
Polycyclic aromatic hydrocarbons (PAH)	M	L	L
Volatile organic compounds (VOCs) including chlorinated volatile organic compounds (cVOCs)	L	L	L
Organochlorine and Organophosphate pesticides (OCP / OPP)	M	L	L
Polychlorinated biphenyls (PCB)	M	L	L
Asbestos	M	L	N/A
LNAPL or DNAPL	L	N/A	L

Note:
L – low risk; M – medium/moderate risk; H – high risk; N/A – not applicable

5.3 Other Contaminants of Concern

Per and Poly-Fluoroalkyl Substances (PFAS)

The EPA (2017) auditor guidelines require that PFAS are considered in assessing contamination. EI use the following decision tree (**Table 5-3**), based on EnRisk (2016), for determining the potential for PFAS to be present on site and whether PFAS sampling of soil and water was required.

Table 5-3 PFAS Decision Tree

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

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

Emerging Chemicals

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

Table 5-4 Emerging or Controlled Chemicals

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

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

5.4 Potential Sources, Exposure Pathways and Receptors

The CSM, with potential contamination sources, exposure pathways and human and environmental receptors, is summarised in **Table 5-5**.

5.5 Data Gaps

Based on the compiled CSM, EI considered a programme of intrusive investigation was warranted, including sampling of soils (fill and natural) and groundwater. A systematic sampling plan was to be adopted.

Table 5-5 Summary of the Conceptual Site Model

Potential Source	Impacted Medium	COPC	Transport Mechanism	Exposure Pathway	Potential Receptor
Fill soils of unknown origin, Impacts from historical residential and commercial activities, Impacts from uncontrolled demolition of historic site structures, Historic pesticide use, Weathering of building structures, Spills from parked vehicles and Migration of contamination onto site from nearby properties and unknown contamination sources.	Soil	HM, TRH, PAH, OCP/OPP, PCB, BTEXN, asbestos	Disturbance of surface and subsurface soils during site redevelopment, future site maintenance and future use of the site post redevelopment	Ingestion Dermal contact Inhalation of dust particulates	Construction and maintenance workers End users of the site post redevelopment
			Atmospheric dispersion from soil to outdoor and indoor air spaces	Inhalation dust particulates	
		F1 and F2 TRH, BTEXN	Volatilisation of contamination from soil and diffusion to indoor air spaces	Inhalation of vapours from impacted soil	
		HM, TRH, PAH, OCP, BTEXN	Plant uptake of contamination present in root zone	Plant uptake	Future ecological receptors (e.g. site vegetation in landscaped areas post redevelopment)
	Groundwater	HMs, TRH, BTEXN	Volatilisation of contamination from groundwater to indoor or outdoor air spaces (onsite and offsite)	Inhalation of vapours	End users of the site post-development Construction and maintenance workers Basements users
			Migration of dissolved phase impacts in groundwater	Biota uptake Ingestion Dermal contact	Aquatic ecosystems Recreational water users
			Potential seepage into basement intercepting water table (onsite and offsite)	Dermal contact Ingestion	Basements users
Building fabrics containing hazardous materials	-	Lead, PCB and asbestos	Release of hazardous materials during uncontrolled demolition of building fabrics	Ingestion Dermal contact Inhalation of airborne contaminants	Construction and maintenance workers

6. SAMPLING, ANALYTICAL AND QUALITY PLAN

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 included 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

In accordance with the US EPA (2006) *Data Quality Assessment* and the EPA (2017) *Contaminated Land Management: Guidelines for the NSW Site Auditor Scheme*, Data Quality Objectives (DQO) were developed 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 DSI is documented in **Table 6-1**.

Table 6-1 Summary of Project Data Quality Objectives

DQO Step	Details
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	A planning proposal has be submitted to Georges River Council and DPIE to change the zoning of the site from SP2 and R2 to R4 to allow redevelopment of the site for mixed use including commercial, residential and childcare centre use. The most conservative land use, HIL-A for residential settings with childcare centres was adopted for this DSI. Historical information and site inspection identified the potential for contamination to be present in site soil and/or groundwater, contributed by various potential sources listed in **Section 5.1**. In light of the information derived from the available site history information and site observations, a conceptual site model has also been developed (**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 rezoning of the site.
2. Identify the Goal of the Study (Identify the decisions) Identify the decisions that need to be made on the contamination problem and the new environmental data required to make them	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 COPCs 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?
3. Identify Information Inputs (Identify inputs to decision) Identify the information needed to support any decision and specify which inputs require new environmental measurements	Inputs to the decision making process include: ▪ Proposed development plans and future land use; ▪ Available historical site information and site information; ▪ Areas of concern identified during the site inspection prior to intrusive investigations; ▪ National and NSW EPA guidelines endorsed under the NSW *Contaminated Land Management Act 1997*; ▪ Investigation sampling (soils and groundwater) and laboratory analysis for COPCs 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 for proposed use).
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 boundaries of the study are defined as the sites cadastral boundaries. Vertical – From the existing ground level, fill and natural soils. 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.

DQO Step	Details
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: ▪ What are the characteristics of soil at the site? *Soil boreholes will be advanced to natural, sampled and logged to characterise underlying conditions.* ▪ What are the characteristics of groundwater at the site? *Groundwater monitoring wells will be installed to determine physical characteristics, chemical composition and flow direction of groundwater underlying the site.* ▪ Is the site contaminated by historic land use? *Soil and groundwater samples will be analysed for contaminants of potential concern and compared to relevant screening criteria.* ▪ Is the site suitable for the proposed land use? *If the concentrations of contaminants in the soil data are below the relevant health-based and ecological criteria for the intended land use; then the site will be deemed suitable for the proposed use* ▪ Is additional information required to determine the suitability of the site for its proposed use? *Should additional information be required as determined by the conceptual site model (CSM), then appropriate recommendations will be provided.* ▪ Decision criteria for analytical data are defined by the Data Quality Indicators (DQI) in **Table 6-2**.
6. Specify Performance or Acceptance Criteria (Specify limits on decision errors) Specify the decision-maker's acceptable limits on decision errors, which are used to establish performance goals for limiting uncertainties in the data	Specific limits for this project are to be in accordance with NEPM, appropriate data quality indicators (DQIs) for assessing the useability of the data, and EI standard procedures for field sampling and handling. To assess the useability of the data, pre-determined DQIs for completeness, comparability, representativeness, precision and accuracy, as presented below in **Table 6-2**. If any of the DQIs are not met, further assessment will be necessary to determine whether the non-conformance will significantly affect the useability of the data. Corrective actions may include requesting further information from samplers and/or analytical laboratories, downgrading of the quality of the data or alternatively, re-collection of samples.
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	Site history indicates the potential for contamination to exist. To achieve the decision rules, the intrusive investigation included: • Sampling of locations in a grid-based pattern across the site, targeting potential source areas identified from site history, site walkover and observations at the site made by EI. • Installation and sampling of groundwater wells in a triangular formation of the site to determine flow direction; • An upper soil profile sample will be collected at each borehole location and tested for contaminants of potential concern, to assess the conditions of the fill layer, and impacts from commercial and industrial activities at ground level. Further sampling would also be carried out at deeper soil layers. Samples will be selected based on field observations (including visual and olfactory evidence, as well as soil vapour screening in headspace samples) with consideration of subsurface stratigraphy. • Representative groundwater samples will be collected and analysed for groundwater characterisation; and Review of the results will be undertaken to determine if further intrusive investigation and additional sampling is warranted.

6.2 Data Quality Indicators

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

Table 6-2 Data Quality Indicators

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

7. SAMPLING METHODOLOGY

7.1 Sampling Rationale

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

- Sampling fill and natural soils from eight test bore locations, located systematically across the site using a grid-based sampling pattern;
- Completion of a single GME, utilising the three monitoring wells, located near the up- down-gradient site boundaries, to assess for potential groundwater impacts; and
- Laboratory analysis of representative soil and groundwater samples for the identified COPC.

7.2 Investigation Constraints

While the number of test bores drilled and monitoring wells installed achieved the planned scope, due to access constraints, soils beneath the site building could not be examined / sampled.

7.3 Assessment Criteria

The assessment (acceptance) criteria adopted for this project are outlined in **Table 7-1**. These were selected from available published guidelines that are endorsed by national or state regulatory authorities, with due consideration of the exposure scenario that is expected for the site (mixed commercial (office), residential and childcare centre use) under the current (new) re-zoning proposal.

Table 7-1 Adopted Investigation Levels for Soil and Groundwater

Medium	Adopted Guidelines	Rationale
Soil	NEPC (2013) HILs, EILs, HSLs, ESLs and Management Limits for TRHs	**Soil Health-based Investigation Levels (HILs)** Sample results were assessed against the NEPC (2013) HIL-A thresholds for residential settings and childcare centres, in line with the current planning proposal, for R4 (High Density Residential) mixed use including commercial, residential and childcare centres. **Ecological Investigation Levels (EILs)** NEPC (2013) residential EILs / ESLs were considered in the absence of development plans as a conservative approach. EILs / ESLs apply to the top 2m (root zone). The derived EIL criteria presented by EI are based on the addition of site specific Added Contaminant Limit (ACL) criteria and the Ambient Background Concentration (ACL) for an old high traffic residential suburb. The adopted ESL criteria presented by EI are based on conservative coarse grained criteria. EIL for benzo(a)pyrene was taken from CRC Care (2017) *Risk-based management and remediation guidance for benzo(a)pyrene* **Soil Health-based Screening Levels (HSLs)** The NEPC (2013) HSL-A&B thresholds for residential sites for vapour intrusion were applied to assess for potential human health impacts from residual vapours resulting from petroleum, BTEX and naphthalene. **Management Limits for Petroleum Hydrocarbons** Where the ESLs and HSLs were exceeded for petroleum hydrocarbons, soil sample results were assessed against the NEPC (2013) *Management Limits* for the TRH fractions F1-F4 to assess propensity for phase-separated hydrocarbons, fire and explosive hazards and adverse effects on buried infrastructure.
Groundwater	NEPC (2013) GILs for Marine Waters	**Groundwater Investigation Levels (GILs) for Marine Water** NEPC (2013) provides GILs for typical, slightly-moderately disturbed aquatic ecosystems, which are based on the ANZG (2018) Trigger Values for the 95% level of protection of aquatic ecosystems; however, the 99% values were applied for the bio-accumulative metals cadmium and mercury. Marine criteria were considered relevant as Wolli Creek leads into the Cooks River and ultimately Botany Bay.
	NEPC (2013) Groundwater HSLs for Vapour Intrusion	**Health-based Screening Levels (HSLs)** The NEPC (2013) groundwater HSLs for vapour intrusion were used to assess for potential human health impacts from residual vapours resulting from petroleum, BTEX and naphthalene impacts. The *HSL A&B* thresholds for residential sites were applied, due to the basement use case scenario not being confirmed.
	NEPC (2013) GILs for Drinking Purposes	**Drinking Water GILs** The NEPC (2013) GILs for drinking water quality were applied for the secondary contact exposure pathway scenario, where contact with groundwater may occur in basements. These are based on the Australian Drinking Water Guidelines (NHMRC, 2011).

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

7.4 Soil Sampling

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

Table 7-2 Summary of Soil Sampling Methodology

Activity/Item	Details
Fieldwork	Conducted on 14 August 2018. All test bores were completed to target depth or refusal.
Drilling Method	Test bores BH1M-BH8 were drilled using a solid flight auger drilling rig.
Soil Logging	Drilled soils were classified in the field with respect to lithological characteristics and evaluated on a qualitative basis for odour and visual signs of contamination. Soil classifications and descriptions were based on Unified Soil Classification System (USCS) and Australian Standard (AS) 4482.1-2005. Bore logs are presented in **Appendix C**.
Field Observations (including visual and olfactory signs of potential contamination)	No visual signs of contamination were observed and no suspicious odours were detected during any stage of the field investigation programme; fibre cement sheet fragments were not observed in any drilling cuttings; and No ash or slag was noted during the intrusive investigation.
Soil Sampling	Soil samples were collected by dry grab method (the sampler wearing unused, dedicated nitrile gloves). Soil was placed into laboratory-supplied, acid-washed, solvent-rinsed glass jars. Blind field duplicates was separated from the primary samples and placed into glass jars. A small amount of duplicate was collected from each soil samples and placed into zip-lock bag for VOC screening using a photo-ionisation detector (PID). A small amount of duplicate was separated from all fill samples and placed into a zip-lock bag for asbestos analysis.
Decontamination Procedures	*Drilling Equipment* - The drilling rods were decontaminated between sampling locations with potable water until the augers were free of all residual materials. *Sampling Equipment* – Dedicated gloves were used for each sample, and any trowel or shovel used was decontaminated between uses.
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.
Quality Control and Laboratory Analysis	The soil samples were submitted to SGS Laboratories (SGS) for analysis of the COPC (**Appendix F**). 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. QA/QC testing comprised intra-laboratory duplicates tested blind by SGS and an inter-laboratory field duplicate tested by Envirolab Services (Envirolab).

7.5 Groundwater Sampling

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

Table 7-3 Summary of Groundwater Sampling Methodology

Activity/Item	Details
Fieldwork	Groundwater monitoring wells were installed and developed on 14 August 2018. Water level gauging, well purging, field testing and groundwater sampling were conducted on 20 August 2018.
Well Construction	Test bores were converted to groundwater monitoring wells as follows: ▪ One, 3.9m deep, on-site well identified as BH1M; ▪ One, 4.2 m deep, on-site well identified as BH5M; ▪ One, 4.0 m deep, on-site well identified as BH6M; Boreholes for monitoring well installation were drilled using a mechanical, solid-flight auger rig. Well construction details are tabulated in **Table 9-2** and documented in the bore logs presented in **Appendix C**. Well construction was in general accordance with the standards described in NUDLC, 2012 and involved the following: ▪ 50 mm, Class 18 uPVC, threaded, machine-slotted screen and casing, with slotted intervals in shallow wells set to screen to at least 500 mm above the standing water level to allow sampling of phase-separated hydrocarbon product, if present; ▪ Base and top of each well was sealed with a uPVC cap; ▪ Annular, graded sand filter was used to approximately 300 mm above top of screen interval; ▪ Granular bentonite was applied above annular filter to seal the screened interval; ▪ Drill cuttings were used to backfill the bore annulus to just below ground level; and Surface completion comprised a steel road box cover set in neat cement and finished flush with the concrete slab level.
Well Development	Well development was conducted for each well directly following installation. This involved agitation within the full length of the water column using a dedicated, HDPE, disposable bailer, followed by removal of water and accumulated sediment using a 12V, HDPE submersible bore pump (Proactive Environmental, model Super Twister). Pumping was continued until no further reduction in suspended sediment was observed (i.e. after removal of several well volumes).
Well Survey (elevation and location)	Well elevations at ground level were extrapolated from the spot elevations marked on the survey plan provided by the client. Well elevations at ground level were extrapolated in metres relative to Australian Height Datum (mAHD).
Well Gauging and Groundwater Flow Direction	Monitoring wells were gauged for standing water level (SWL, depth to groundwater) prior to well purging at the commencement of the GME on 20 August 2018. All measured SWLs are shown in **Table 9-2**. A transparent HDPE bailer was used to visually assess for the presence PSH prior to the commencement of well purging. PSH was not detected in either well. Based on the reduced water levels (RWLs, i.e. SWLs corrected to AHD) calculated at each monitoring well (**Table 9-3**). The direction of groundwater flow in the aquifer was inferred to be in a southeast direction.
Well Purging and Field Testing	No volatile organic odours were detected during any stage of well purging. Measurement of water quality parameters was conducted repeatedly during well purging and were recorded onto field data sheets (**Appendix D**) once water quality parameters stabilised. . Field measurements for Dissolved Oxygen (DO), Electrical Conductivity (EC) and pH of the purged water were also recorded during well purging. Purged water volumes removed from each well and field test results are summarised in **Table 9-3.**

Activity/Item	Details
Groundwater Sampling	Groundwater was sampled using a micro-purge system. Water was continuously measured for four parameters (Temperature, EC, Redox, DO, pH). Once three consecutive field measurements were recorded for the purged waters to within ± 10% for DO, ± 3% for EC , ± 0.2 for pH, ± 0.2° for temperature and ± 20 for redox, this was considered to indicate that representative groundwater quality had been achieved and final physico-chemical measurements were recorded. Groundwater samples were then collected from the micro-purge sampling pump discharge point.
Decontamination Procedure	The micro-purge pump is decontaminated in a solution of potable water and Decon 90 and then rinsed with potable water between measurements/wells between uses. The micro-purge system employs a disposable bladder and tubing system to further minimise potential contaminates. All sample containers were supplied by the laboratory for the particular project and only opened once immediately prior to sampling. Ice packs were used to keep the samples cool when kept in an insulated chest. The water level probe and water quality kit probes were washed in a solution of potable water and Decon 90 and then rinsed with potable water between measurements/wells.
Sample Preservation	Sample containers were supplied by the laboratory with the following preservatives: ▪ One, 1 litre amber glass, acid-washed and solvent-rinsed bottle; ▪ Two, 40ml glass vials, pre-preserved with dilute hydrochloric acid, Teflon-sealed; and ▪ One, 250mL, HDPE bottle, pre-preserved with dilute nitric acid (1 mL). Samples for metals analysis were field-filtered using 0.45 µm pore-size filters. All containers were filled with sample to the brim then capped and stored in ice-filled chests, until completion of the fieldwork and during sample transit to the laboratory.
Sample Transport	After sampling, refrigerated sample chests were transported to SGS using strict COC procedures. Inter-laboratory duplicates were forwarded to Envirolab. Sample receipt advice (SRA) was provided by each laboratory to document sample condition upon receipt. Copies of SRA and COC certificates are presented in **Appendix E**.
Quality Control and Laboratory Analysis	All groundwater samples were analysed for the COPC (**Appendix F**). QA/QC testing comprised intra-laboratory duplicates tested blind by SGS and an inter-laboratory field duplicate tested by Envirolab.

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 (USEPA 2006). Data quality assessment includes an evaluation of the compliance of the field sampling and laboratory analytical procedures and an assessment of the accuracy and precision of these data from the laboratory quality control measurements obtained.

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

- suitable records of fieldwork observations including borehole logs;
- relevant and appropriate sampling plan (density, type, and location);
- use of approved and appropriate sampling methods;
- preservation and storage of samples upon collection and during transport to the laboratory;
- complete field and analytical laboratory sample COC procedures and documentation;
- sample holding times within acceptable limits;
- use of appropriate analytical procedures and NATA-accredited laboratories; and
- appropriate limits of reporting (LOR), to allow comparison with the adopted criterion;
- frequency of conducting quality control measurements;
- laboratory blanks;
- field duplicates;
- laboratory duplicates;
- matrix spike/matrix spike duplicates,
- surrogates;
- 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 are discussed in detail in **Appendix H**. QA/QC policies and DQOs are presented in **Appendix G**.

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

9. RESULTS

9.1 Soil Results

9.1.1 Subsurface Conditions

Based on the logs for the test boreholes, the sub-surface of the site was generalised as a layer of anthropogenic filling, overlying natural clays, with shale at depth (**Table 9-1**).

Table 9-1 Generalised Subsurface Profile

Layer	Description	Depth to top and bottom of layer (m BGL)
Hardstand	Concrete	0 – 0.10
Fill	Gravelly SAND; fine to medium grained, red / grey / orange mottled, with sub-angular to angular, medium to coarse gravels, no odour. Gravelly CLAY; low to medium plasticity, brown / grey, with sub-angular to angular, medium to coarse gravels, no odour	0.10 – 1.2 (max depth 1.6)
Natural	Silty CLAY; yellow / grey mottled, medium to high plasticity, no odour.	1.2 – 6.0
Bedrock	Shale	6.0 – 8.0 +

Note: + denotes termination depth of borehole

9.1.2 Field Observations and PID Results

Soil samples were obtained from the test bores at various depths ranging between 0.3m to 2.6m BGL. All examined soil samples were evaluated on a qualitative basis for odour and visual signs of contamination (e.g. hydrocarbon odours, oil staining, petrochemical filming, asbestos fragments, ash, charcoal) and the following observations were noted:

- Visual or olfactory evidence of hydrocarbon impacts were not noted at any of the borehole locations, or in any of the examined soils;
- Ash, slag or potential asbestos-cement fragments were not observed in boreholes; and
- Elevated VOC concentrations were not observed in samples field-screened using a portable PID fitted with a 10.9 eV lamp. The PID results are shown in the borehole logs (**Appendix C**).

9.2 Groundwater Results

9.2.1 Monitoring Well Construction

A total of three (3) groundwater monitoring wells were installed across the site. Well construction details are summarised in **Table 9-2**.

Table 9-2 Monitoring Well Construction Details

Well	Bore Depth (m BGL)	Screen Interval (m BGL)	Lithology Screened
BH1M	8.0	0.5 – 0.8	Silty Clay / Weathered Shale
BH5M	8.0	0.5 – 0.8	Silty Clay / Weathered Shale
BH6M	8.0	0.5 – 0.8	Silty Clay / Weathered Shale

9.2.2 Field Observations and Water Test Results

A single GME was conducted on all wells on 20 August 2018. On this date, standing water levels (SWLs) were measured within each well prior to well purging, the results of which were recorded with well purge volumes and field-based water test results. A summary of the recorded field data is presented in **Table 9-3** and copies of the completed field data sheets are included in **Appendix D**.

Table 9-3 Groundwater Field Data

Well	SWL (mBGL)	Purge Volume (L)	DO (mg/L)	pH	EC (µS/cm)	T (°C)	Redox (mV)	Odour / Turbidity
BH1M	1.15	2.5	0.20	6.25	5840	21.3	222.3	No odour / high turbidity
BH5M	1.47	2.0	0.56	6.18	10920	20.94	243.2	No odour / high turbidity
BH6M	2.25	2.0	1.61	5.47	10330	20.25	338	No odour / high turbidity

Notes:
L – litres (referring to volume of water purged from the well prior to groundwater sample collection).
EC – groundwater electrical conductivity as measured onsite using portable EC meter.
µS/cm – micro Siemens per centimetre (EC units).
DO – Dissolved Oxygen in units of milligrams per litre (mg/L)
Redox - adjusted to Standard Hydrogen Electrode (SHE) by adding field electrode potential (205mV).
All groundwater parameters (pH, EC, redox and DO) were tested on site.

With reference to **Table 9-3**, the field pH data indicated that the groundwater was (slightly) acidic (pH: 5.47 to 6.25). Electrical Conductivity measurements were in the range 5,840 to 11,920 µS/cm indicating that the groundwater was brackish to saline.

9.3 Laboratory Analytical Results

9.3.1 Soil Analytical Results

A summary of laboratory results, showing test sample quantities, minimum/maximum analyte concentrations and samples found to exceed the SILs, is presented in **Table 9-4**. More detailed tabulation of results, showing the tested concentrations for individual samples alongside the adopted soil criteria, is presented in **Table B.1** at the end of this report.

All COPC concentrations were found to comply with the corresponding SILs applicable for residential settings (low density) and childcare centres, where accessible soils occur.

9.3.2 Groundwater Analytical Results

A summary of laboratory results for the groundwater samples, showing test sample quantities, minimum/maximum analyte concentrations and samples found to exceed the GILs, is presented in **Table 9-5**. More detailed tabulation of results, showing the tested concentrations for individual samples alongside the adopted groundwater criteria, is presented in **Table B.2** at the end of this report.

Elevated concentrations of cadmium, copper, lead, mercury, nickel and zinc, exceeding the adopted GILs, were identified by the GME. Heavy metals in groundwater are common in urban areas such as Beverly Hills. It was assumed that these metal levels do not pose an immediate threat to human health or the environment, being representative of urban background groundwater conditions.

Traces of some VOCs were detected, with the highest concentrations being for chloroform, which was detected in all samples. Chloroform is commonly used in municipal water treatment systems and the identified levels were not considered a cause for environmental concern.

Table 9-4 Summary of Soil Analytical Results

Number of primary samples	Analyte	Minimum Concentration (mg/kg)	Maximum Concentration (mg/kg)	Samples Exceeding SIL
Hydrocarbons				
12	F1	<25	<25	None
12	F2	<25	<25	None
12	F3	<90	130	None
12	F4	<120	<120	None
12	Benzene	<0.1	<0.1	None
12	Toluene	<0.1	<0.1	None
12	Ethyl benzene	<0.1	<0.1	None
12	Total xylenes	<0.3	<0.3	None
PAHs				
12	Carcinogenic PAHs	<0.2	0.5	None
12	Total PAH	<0.8	3.5	None
12	Benzo(a)pyrene	<0.1	0.3	None
12	Naphthalene	<0.1	0.2	None
OCPs				
8	Aldrin and Dieldrin	Non-detect	Non-detect	None
8	Chlordane	Non-detect	Non-detect	None
8	DDT+DDD+DDE	Non-detect	Non-detect	None
8	Heptachlor	Non-detect	Non-detect	None
OPPs				
8	Total OPPs	Non-detect	Non-detect	None
PCBs				
8	Total PCBs	<1.0	<1.0	None
Heavy Metal				
12	Arsenic	2	8	None
12	Cadmium	<0.3	<0.3	None
12	Chromium (Total)	7.1	28	None
12	Copper	9	43	None
12	Lead	9	35	None
12	Mercury	<0.05	<0.05	None
12	Nickel	1.7	33	None
12	Zinc	9	82	None
Asbestos				
8	Asbestos	Not detected	Not detected	None

Table 9-5 Summary of Groundwater Analytical Results

Number of primary samples	Analyte	Minimum Concentration (µg/L)	Maximum Concentration (µg/L)	Samples Exceeding GILs
Hydrocarbons				
3	F1	Non-detect	Non-detect	None
3	F2	Non-detect	Non-detect	None
3	F3	Non-detect	Non-detect	None
3	F4	Non-detect	Non-detect	None
3	Benzene	Non-detect	Non-detect	None
3	Toluene	Non-detect	Non-detect	None
3	Ethyl benzene	Non-detect	Non-detect	None
3	Total xylenes	Non-detect	Non-detect	None
PAHs				
3	Other PAHs	<0.8	3.5	None
3	Naphthalene	Non-detect	Non-detect	None
Total VOCs				
3	Total VOCs	Non-detect	Traces	None
Heavy Metal				
3	Arsenic	<1	1	None
3	Cadmium	<0.1	2	Adopted GIL (2 µg/L): BH6M (2 µg/L)
3	Chromium (Total)	<1	1	None
3	Copper	21	81	Adopted GIL (1.3 µg/L): BH1M (56 µg/L) BH5M (21 µg/L) BH6M (2 µg/L)
3	Lead	1	6	Adopted GIL (4.4 µg/L): BH6M (6 µg/L)
3	Mercury	0.3	0.3	Adopted GIL (0.1 µg/L): BH1M (0.3 µg/L) BH5M (0.3 µg/L) BH6M (0.3 µg/L)
3	Nickel	43	110	Adopted GIL (7 µg/L): BH1M (43 µg/L) BH5M (78 µg/L) BH6M (110 µg/L)
3	Zinc	95	370	Adopted GIL (15 µg/L): BH1M (130 µg/L) BH5M (95 µg/L) BH6M (370µg/L)

10. SITE CHARACTERISATION

10.1 Soil

The investigation assessed the site soil analytical results s against the most conservative land use criteria, being the NEPC (2013) HIL-A, HSL-A&B and EIL/ESLs for low-density residential land-use settings, including childcare centres. All reported concentrations were below these adopted criteria.

10.2 Groundwater

Elevated concentrations of cadmium, copper, lead, mercury, nickel and zinc, exceeding the adopted GILs, were identified by the GME. Heavy metals in groundwater are common in urban areas such as Beverly Hills. It was assumed that these metal levels did not pose an immediate threat to human health or the environment, being representative of urban background groundwater conditions.

10.3 Review of Conceptual Site Model

The CSM discussed in **Section 5** was considered to appropriately identify contamination sources, migration mechanisms and exposure pathways, as well as potential on-site and off-site receptors. This model remained valid for the currently proposed (new rezoning) planning proposal.

11. Conclusion

The property located at 143 Stoney Creek Rd, Beverly Hills NSW was the subject of a Detailed Site Investigations (DSI), conducted in order to assess the nature and degree of on-site contamination associated with current and former uses of the property. The key findings of this DSI were:

- The site was used for residential purposes up until at least 1982, at which time all structures were demolished and the site was redeveloped into a government (RTA) motor vehicle service centre and registry.
- The site was free of statutory notices and licensing agreements issued under the *Contaminated Land Management Act 1997* and *Protection of the Environment Operations Act 1997*. It was not included on the *List of NSW Contaminated Sites Notified to the EPA*.
- There was no evidence that a UST had been installed on any part of the site. No AST was present.
- The sub-surface layers were comprised of anthropogenic fill materials (to 1.6m BGL), underlain by natural clays and shale bedrock. Groundwater was encountered at depths ranging from 1.15-2.25m BGL. It was deemed to be (slightly acidic and brackish to moderately saline.
- All examined soil samples were evaluated on a qualitative basis for odour and visual signs of contamination and no such signs were encountered.
- All COPC concentrations in the representative soil samples were found to comply with the corresponding SILs applicable for residential settings (low density) and childcare centres, where accessible soils occur.
- Elevated concentrations of cadmium, copper, lead, mercury, nickel and zinc, exceeding the adopted GILs, were identified by the GME. The metal levels did not pose an immediate threat to human health or the environment, being representative of urban background groundwater conditions.

Based on the findings of this DSI, and with consideration of EI's *Statement of Limitations* (**Section 13**), it was concluded that widespread contamination did not occur on the site (i.e. the potential for contamination to exist on the land was very low). The site was deemed suitable for mixed commercial (office), residential and childcare centre use, as per the current (new) re-zoning proposal drafted by Sutherland & Associates Planning, subject to implementation of the recommendations proposed in **Section 12**.

12. RECOMMENDATIONS

EI hereby makes the following comments and recommendations in relation to any future development of the site:

- Before commencement of any demolition works, a Hazardous Materials Survey (HMS) should be completed by a suitably qualified consultant, to confirm the presence / location of any hazardous materials within the existing building fabrics.
    - All identified hazardous materials must be appropriately managed during future demolition works, to maintain worker health and safety and prevent the spread of hazardous substances onto the site surface.
- Following building / pavement demolition and removal of associated wastes, an inspection of the exposed surface should be performed by a suitably qualified environmental consultant. The current building footprint and stormwater easement are to be targeted during this inspection, to ascertain whether further (fill) soil investigation is warranted.
- Any excavated soils to be removed from the site must be classified in accordance with EPA (2014) *Waste Classification Guidelines*, prior to disposal.
- Any soil material to be imported to the site (i.e. for backfilling and/or landscaping purposes) must be confirmed by documentary evidence as suitable for the proposed land use, in accordance with EPA guidelines.

EI emphasise that these recommendations can be managed through the development (application) process.

13. STATEMENT OF LIMITATIONS

This revised report has been prepared for the exclusive use of Sutherland & Associates Planning, whom is the only intended beneficiary of EI's work. The scope of the original investigation carried out for the purpose of this reporting was limited to that agreed with Sutherland & Associates Planning.

No other party should rely on this 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.

The conclusions presented in this report are based on a limited assessment of historical and current uses of the site. Due to the preliminary nature of this investigation, findings are not based on actual samples collected or testing conducted. EI has relied upon information provided by the Client and other third parties to prepare this document, some of which could not be verified by EI due to the anecdotal or historical nature of the information.

EI's professional opinions are reasonable and based on its professional judgment, experience and training.

EI's professional opinions contained in this document are subject to modification if additional information is obtained through the data searches that have been initiated with government authorities.

Technical opinions may also be amended in the light of 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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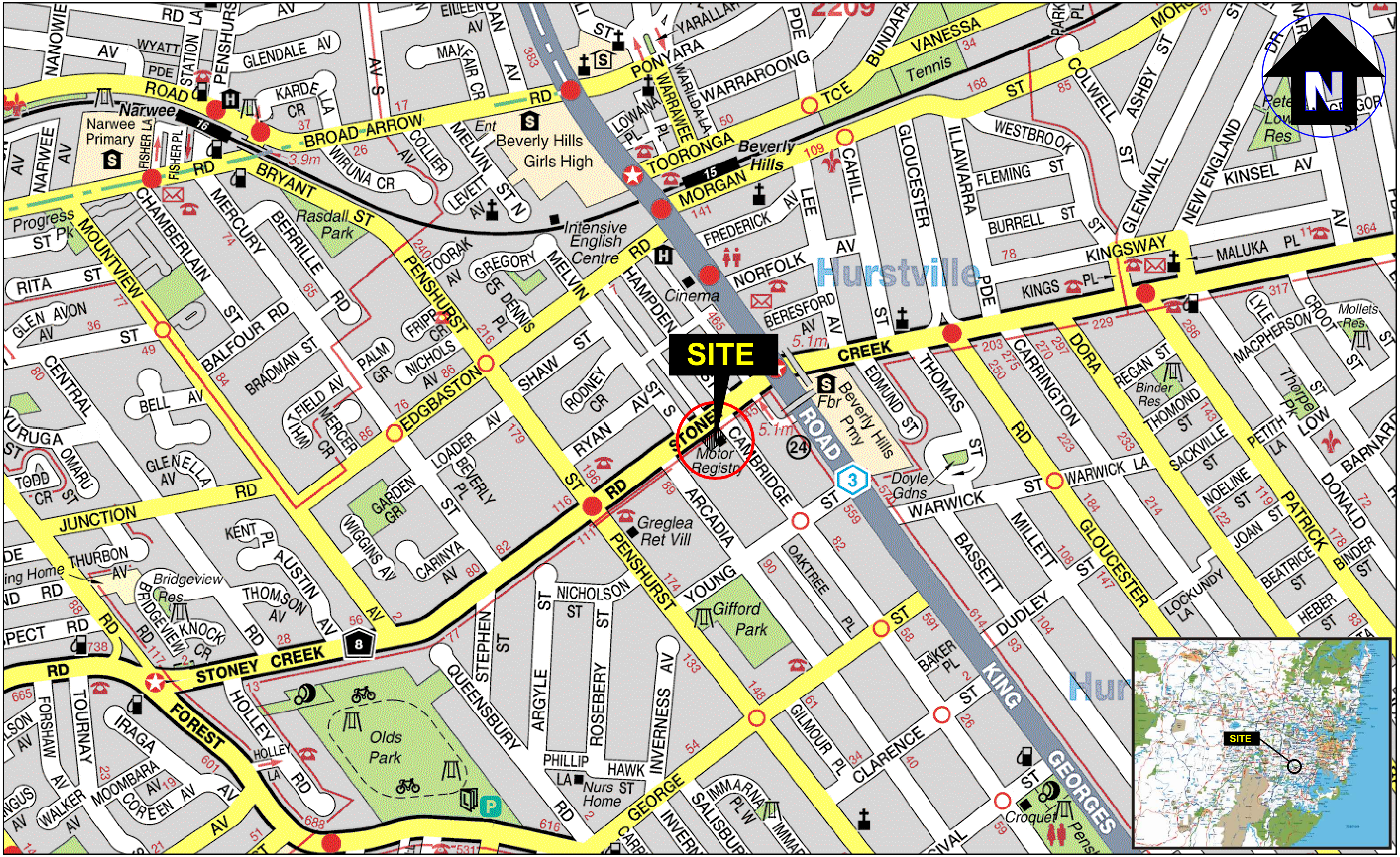
ABBREVIATIONS

ASS	Acid sulfate soils
B(a)P	Benzo(a)Pyrene (a PAH compound), - B(a)P TEQ Toxicity Equivalent Quotient
BH	Borehole
BTEX	Benzene, Toluene, Ethylbenzene, Xylene
COC	Chain of Custody
cVOC	Chlorinated Volatile Organic Compounds (a sub-set of the VOC analysis suite)
DA	Development Application
DO	Dissolved Oxygen
DP	Deposited Plan
EC	Electrical Conductivity
Eh	Redox potential
EPA	Environment Protection Authority
F1	TRH $C_6 – C_{10}$ less the sum of BTEX concentrations (Ref. NEPM 2013, Schedule B1)
F2	TRH $>C_{10} – C_{16}$ less the concentration of naphthalene (Ref. NEPM 2013, Schedule B1)
GIL	Groundwater Investigation Level
GME	Groundwater Monitoring Event
HIL	Health-based Investigation Level
HSL	Health-based Screening Level
km	Kilometres
LNAPL	Light, non-aqueous phase liquid (also referred to as PSH)
DNAPL	Dense, non-aqueous phase liquid
EIL	Ecological Investigation Level
ESL	Ecological Screening Level
m	Metres
mAHD	Metres Australian Height Datum
mBGL	Metres Below Ground Level
mg/L	Milligrams per litre
µg/L	Micrograms per litre
mV	Millivolts
MW	Monitoring well
NATA	National Association of Testing Authorities, Australia
NEPC	National Environmental Protection Council
NSW	New South Wales
OEH	Office of Environment and Heritage, NSW (formerly DEC, DECC, DECCW)
PAHs	Polycyclic Aromatic Hydrocarbons
pH	Measure of the acidity or basicity of an aqueous solution
PSH	Phase-separated hydrocarbons (also referred to as LNAPL)
PQL	Practical Quantitation Limit (limit of detection for respective laboratory instruments)
QA/QC	Quality Assurance / Quality Control
RAP	Remediation Action Plan
SRA	Sample receipt advice (document confirming laboratory receipt of samples)
SWL	Standing Water Level
TDS	Total dissolved solids (a measure of water salinity)
TCLP	Toxicity Characteristics Leaching Procedure
TPH	Total Petroleum Hydrocarbons (superseded term equivalent to TRH)
TRH	Total Recoverable Hydrocarbons (non-specific analysis of organic compounds)
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)

Appendix A- Figures



Drawn:	C.Z.	**Sutherland & Associates Planning Pty Ltd**	Figure:
Approved:	N.G.	Detailed Site Investigation	1
Date:	28.08.18	143A Stoney Creek Road, Beverly Hills NSW	
Scale:	Not To Scale	Site Locality Plan	Project: E23967.E02_Rev0

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LEGEND

- Approximate site boundary
- Approximate borehole/monitoring well location
- Approximate borehole location
- Approximate location of storm water easement

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Drawn:	N.G.
Approved:	N.F.
Date:	28.08.18

Sutherland & Associates Planning Pty Ltd
Detailed Site Investigation
143A Stoney Creek Road, Beverly Hills NSW

Sampling Location Plan

Figure: 2

Project: E23967.E02_Rev0

Appendix B- Tables

Table B.1 - Summary of Soil Analytical results

E23967 - Beverly Hills

Sample ID	Material	Date	Heavy Metals								PAHs				BTEX				TRH						Pesticides		PCBs	Asbestos
			As	Cd	Cr	Cu	Pb	Hg	Ni	Zn	Carcinogenic PAHs (as B(a)P TEQ)	Benzo(a)pyrene	Total PAHs	Naphthalene	Benzene	Toluene	Ethylbenzene	Total Xylenes	F1	F2	F3	F4	C^6-C^9	C^{10}-C^{36}	OCPs (total)	OPPs	Total	Presence / absence
BH1M_0.3-0.4	Fill	14/8/2018	2	<0.3	7.1	10	9	<0.05	21.0	24	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<20	<110	N.D.	N.D.	<1	No
BH1M_2.4-2.5	Natural		2	<0.3	14	9.9	15	<0.05	3.8	14.0	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<20	<110	N.A.	N.A.	N.A.	N.A.
BH2_0.9-1.0	Fill		2	<0.3	14.0	13.0	17	<0.05	3.6	16	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<20	<110	N.D.	N.D.	<1	No
BH3_0.3-0.4	Fill		5	<0.3	12.0	19	35	<0.05	6.1	43	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<20	<110	N.D.	N.D.	<1	No
BH3_2.5-2.6	Natural		2	<0.3	15.0	10	14	<0.05	1.7	9	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<20	<110	N.A.	N.A.	N.A.	N.A.
BH4_0.3-0.4	Fill		8	<0.3	27.0	43	13	<0.05	31.0	82	<0.3	<0.1	1.2	0.2	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<20	<110	N.D.	N.D.	<1	No
BH5M_0.3-0.4	Fill		3	<0.3	12.0	23	16	<0.05	10.0	47	0.4	0.2	3	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<20	<110	N.D.	N.D.	<1	No
BH5M_2.0-2.1	Natural		3	<0.3	17.0	9	19	<0.05	2.7	12	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<20	<110	N.A.	N.A.	N.A.	N.A.
BH6M_0.3-0.4	Fill		3	<0.3	12.0	22	19	<0.05	12.0	46	0.5	0.3	3.5	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	130	<120	<20	160	N.D.	N.D.	<1	No
BH7_0.3-0.4	Fill		5	<0.3	11.0	33	32	<0.05	13.0	80	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<20	<110	N.D.	N.D.	<1	No
BH7_1.5-1.6	Natural		4	<0.3	18.0	9	16	<0.05	2.5	10	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<20	<110	N.A.	N.A.	N.A.	N.A.
BH8_0.3-0.4	Fill		7	<0.3	28.0	38	10	<0.05	33.0	72	<0.3	<0.1	1	0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<20	<110	N.D.	N.D.	<1	No
Statistical Analysis																												
Maximum Concentration			8	<0.3	28	43	35	0.00	33	82	0.5	0.3	4	0.2	<0.1	<0.1	<0.1	<0.3	<25	<25	130	<120	<20	160	N.D.	N.D.	<1	No
SILs																												
HIL A - *Residential with access to soils/Childcare Centres*			100	20	100 Cr(VI)	6,000	300	40	400	7,400	3		300												240		1	
HSL-A&B - *Low - high density residential* Soil texture classification –Sand [1]			Source depths (0 m to <1 m. BGL)											3	0.5	160	55	40	45	110								
			Source depths (1 m to <2 m. BGL)											NL	0.5	220	NL	60	70	240								
			Source depths (2m to <4 m. BGL)											NL	0.5	310	NL	95	110	440								
			Source depths (4 m+)											NL	0.5	540	NL	170	200	NL								
EILs / ESLs *			100		335	125	1260		35	350		33		170	50	85	70	105	180	120	300	2,800			180			
Management Limits – *Residential, parkland and public open space* Coarse grained soil texture[1]																			700	1,000	3,500	10,000						

Notes:

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

Highlighted values indicates concentration exceeds Human Health Based Soil Criteria□

Highlighted values indicates concentration exceeds NEPM 2013 ecological criteria (EIL / ESL)□

Highlighted indicates NEPM 2013 criteria exceeded

HIL A NEPC 1999 Amendment 2013 'HIL B' Health Based Investigation Levels applicable for residential exposure settings with access to soils and child care centres

HSL A&B NEPC 1999 Amendment 2013 'HSL A&B' Health Based Screening Levels based on vapour intrusion values applicable for Low - High density residential settings.

* Site specific EIL criteria / Conservative ESL criteria (See **Section 6.3**)

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

NC 'Not Calculated'

ND 'Not detected' i.e. all concentrations of the compounds within the analyte group were found to be below the laboratory limits of detection.

NL 'Not Limiting' - The soil vapour limit exceeds the soil concentration at which the pore water phase cannot dissolve any more of the individual chemical.

NR No current published criterion.

1 Coarse Grained soil values were applied, being the most conservative of the material types.

2 Combined total of which all Chlordane speciations are assessed against.

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

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

F3 (>C16-C34)

F4 (>C34-C40)

Table B.2 – Summary of Groundwater Investigation Results

Sample ID	Heavy Metals								BTEX				TRHs				PAH		Total VOCs
	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	Benzene	Toluene	Ethylbenzene	Total Xylene	F1*	F2**	F3 (>C_{16}-C_{34})	F4 (>C_{34}-C_{40})	Naphthalene	Other PAHs	
BH1M	<1	<0.1	1	56	3	0.3	43	130	<0.5	<0.5	<0.5	<1.5	<50	<60	<500	<500	<0.1	<1	<10
BH5M	1	0.3	<1	21	1	0.3	78	95	<0.5	<0.5	<0.5	<1.5	<50	<60	<500	<500	<0.1	<1	<10
BH6M	2	2	1	81	6	0.3	110	370	<0.5	<0.5	<0.5	<1.5	<50	<60	<500	<500	<0.1	<1	<10
GIL																			
GIL (MarineWaters)	NR	0.7[3]	27 (Cr (III)) / 4.4 (Cr (VI))	1.3	4.4	0.1[3]	7	15[1]	500[1]	NR	NR	NR	NR	NR	NR	NR	50	NR	NR
Drinking Waters	10	2	50	2000	10	1	20	NR	1	800	300	600	NR	NR	NR	NR	0.01	NR	
HSL A&B [2]	NR	NR	NR	NR	NR	NR	NR	NR	800	NL	NL	NL	1000	1000			NL		

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

Highlighted concentration value indicates exceedance of adopted GILs.

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

HSL Health-based Screening Level.

NL 'Not Limiting' If the derived soil vapour limit exceeds the soil concentration at which the pore water phase cannot dissolve any more of the individual chemical, i.e. where the soil vapour is at equilibrium with the pore water, then the soil vapour source cannot exceed a level that would result in the

NR No recommended soil assessment criteria are currently available for the indicated parameter(s).

N.D. Concentrations of all tested analytes in this group was under laboratory's practical quantifation limit.

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

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

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

2 NEPC (2013) Table 1A(4) Groundwater HSL D for vapour intrusion at the contaminant source depth ranges in sands 2m to <4m, which is consistent with the groundwater sampling depth.

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

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Table B.3 Summary of QA/QC Results for Soil Validation Samples
Site: 143A Stoney Creek Rd, Beverly Hills NSW
Job No: E23967.E02

Date	Sample Identification	Description	TRH				BTEX				Heavy Metals							
			F1	F2	F3	F4	Benzene	Toluene	Ethylbenzene	Xylene (total)	Arsenic	Cadmium	Chromium (Total)	Copper	Lead	Mercury	Nickel	Zinc
Intra-laboratory Duplicate																		
13/08/2018	BH1M_0.3-0.4	Primary Soil Sample	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	2	<0.3	7.1	10	9	<0.05	21.0	24
13/08/2018	QD1	Intra-laboratory duplicate of BH1M_0.3-0.4	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	3	<0.3	4.1	5	6	<0.05	13.0	12
		RPD	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*40.00*	*0.00*	53.57	65.73	*40.00*	*0.00*	*47.06*	66.67
Inter-laboratory Duplicate																		
13/08/2018	BH1M_0.3-0.4	Primary Soil Sample	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	2	<0.3	7.1	9.5	9	<0.05	21	24
13/08/2018	QT1	Inter-laboratory duplicate of BH1M_0.3-0.4	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	<0.1	<1	3	<1	<0.05	36	47
		RPD	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	160.53	104.00	168.42	*0.00*	52.63	64.79
Trip Blanks																		
13/08/2018	Trip Blank	Soil	-	-	-	-	<0.1	<0.1	<0.1	<0.3	-	-	-	-	-	-	-	-
Trip Spikes																		
13/08/2018	Trip Spike	Soil	-	-	-	-	[113%]	[107%]	[107%]	[104%]	-	-	-	-	-	-	-	-
Rinsate Blanks																		
13/08/2018	QR1	De-ionised water	<50	<60	<500	<500	<0.5	<0.5	<0.5	<1.5	<1	<0.1	<1	<1	<1	<0.1	<1	5

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)

NOTE: All soil results are reported in mg/kg . All water results are reported in µg/L.

F1 = TRH C6-C10 less the sum of BTEX
F2 = TRH >C10-C16 less naphthalene
F3 = TRH >C16-C34
F4 = TRH >C34-C40

Table B.3 Summary of QA/QC Results for Groundwater Samples
Site: 143A Stoney Creek Rd, Beverly Hills NSW
Job No: E23967.E02

Date	Sample Identification	Description	TRH				BTEX				Heavy Metals							
			F1	F2	F3	F4	Benzene	Toluene	Ethylbenzene	Xylene (total)	Arsenic	Cadmium	Chromium (Total)	Copper	Lead	Mercury	Nickel	Zinc
Intra-laboratory Duplicate																		
20/08/2018	BH1M	Primary Water Sample	<50	<60	<500	<500	<0.5	<0.5	<0.5	<1.5	<1	<0.1	1	56	3	0.2	43	130
20/08/2018	GWQD1	Intra-laboratory duplicate of BH1M-1	<50	<60	<500	<500	<0.5	<0.5	<0.5	<1.5	<1	<0.1	<1	4	<1	0.2	36	47
		RPD	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	173.33	114.29	*0.00*	*17.72*	93.79
Trip Blanks																		
20/08/2018	Trip Blank	Water	-	-	-	-	<0.5	<0.5	<0.5	<1.5	-	-	-	-	-	-	-	-
Trip Spikes																		
20/08/2018	Trip Spike	Water	-	-	-	-	96%	94%	99%	92%	-	-	-	-	-	-	-	-
Rinsate Blanks																		
20/08/2018	GWQR1	De-ionised water	<50	<60	<500	<500	<0.5	<0.5	<0.5	<1.5	<1	<0.1	<1	<1	<1	0.2	<1	<5
20/08/2018	GWQRB1	De-ionised water	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-

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)

F1 = TRH C6-C10 less the sum of BTEX
F2 = TRH >C10-C16 less naphthalene
F3 = TRH >C16-C34
F2 = TRH >C34-C40

Appendix C– Borehole Logs

BOREHOLE: BH1M

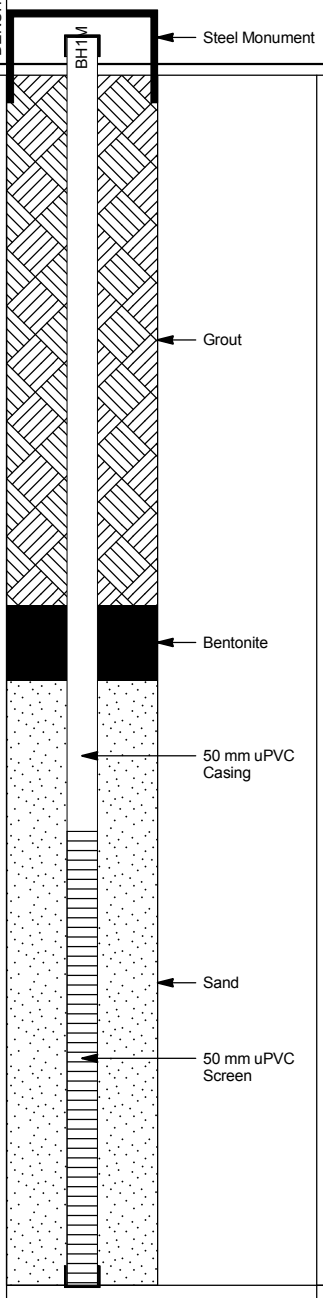
eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation		
Location	143A Stoney Creek Road, Beverly Hills NSW		
Position	Refer to Figure 2		
Job No.	E23967.E02		
Client	SUTHERLAND & ASSOCIATES PLANNING	Drill Rig	Drill Rig
		Inclination	-90°

Sheet	1 OF 1
Date Started	12/8/18
Date Completed	12/8/18
Logged NG/NS	Date:
Checked	Date:

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS
			0	0.10				-	Concrete			ID Static Water Level BH1M
					BH1M_0.3-0.4 ES PID=1.7 ppm			-	FILL - Gravelly SAND; fine to medium grainded, red / grey / orange mottled, with sub-angular to angular, medium to coarse gravels, no odour.	M		
				0.60				-	FILL - Gravelly CLAY; low to medium plasticity, brown / grey, with sub-angular to angular, medium to coarse gravels, no odour.	M		
			1		BH1M_0.9-1.0 ES PID=2.1 ppm							
				1.50				C	NATURAL - Silty CLAY; yellow / grey mottled, medium to high plasticity, no odour.			
			2		BH1M_2.0-2.1 ES PID=2.7 ppm							
			3									
				3.50				C	Red / orange.			
			4							M		
				5.00				C	Brown.			
				5.50				C	Weathered shale, light grey / brown.			
			6									
				7.00				C	Brown			
		Seepage encourted	7									
				8.00					Hole Terminated at 8.00 mBGL; Refusal on Shale			
			8									
			9									
			10									

PIEZOMETER DETAILS
ID Static Water Level
BH1M



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

BOREHOLE: BH2

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation		
Location	143A Stoney Creek Road, Beverly Hills NSW		
Position	Refer to Figure 2		
Job No.	E23967.E02	Contractor	
Client	SUTHERLAND & ASSOCIATES PLANNING	Drill Rig	Drill Rig
		Inclination	-90°

Sheet	1 OF 1
Date Started	12/8/18
Date Completed	12/8/18
Logged NG/NS	Date:
Checked	Date:

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
			0	0.15					Concrete			
AD/T	--	GWNE			BH2_0.3-0.4 ES 0.30-0.40 m PID = 1.8 ppm			-	FILL- Silty CLAY; grey / brown, high plasticity, no odour.	M		FILL
			1	1.00	BH2_0.9-1.0 ES 0.90-1.00 m PID = 2.0 ppm			C	NATURAL: Silty CLAY; grey / brown, high plasticity, no odour.	M		NATURAL
			2	2.10	BH2_2.0-2.1 ES 2.00-2.10 m PID = 2.1 ppm			C	Colour change: orange / red			
				2.50					Hole Terminated at 2.50 m Target Depth Reach			
			3									
			4									
			5									
			6									
			7									
			8									
			9									
			10									

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

BOREHOLE: BH3

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation		
Location	143A Stoney Creek Road, Beverly Hills NSW		
Position	Refer to Figure 2		
Job No.	E23967.E02	Contractor	
Client	SUTHERLAND & ASSOCIATES PLANNING	Drill Rig	Drill Rig
		Inclination	-90°

Sheet	1 OF 1
Date Started	12/8/18
Date Completed	12/8/18
Logged NG/NS	Date:
Checked	Date:

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
AD/T		GWNE	0	0.13					Concrete			
					BH3_0.3-0.4 0.30-0.40 m PID = 1.7 pmm			-	FILL- Gravally SAND; dark brown / orange, fine to medium grained, with angular to subangular gravel, no odour.	M		FILL
				0.60				-	FILL - Silty CLAY; dark brown, high plasticity, no odour.			
			1		BH3_0.9-1.0 0.90-1.00 m PID = 1.9 pmm					M		
				1.60				C	NATURAL - Silty CLAY; light brown / brown, high plasticity, no odour.			NATURAL
			2		BH3_1.9-2 1.90-2.00 m PID = 1.5 pmm							
					BH4_2.5-2.6 2.50-2.60 m PID = 1.3 pmm					M		
			3	3.50								
									Hole Terminated at 3.50 m Target Depth Reach			
			4									
			5									
			6									
			7									
			8									
			9									
			10									

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

BOREHOLE: BH4

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation		
Location	143A Stoney Creek Road, Beverly Hills NSW		
Position	Refer to Figure 2		
Job No.	E23967.E02	Contractor	
Client	SUTHERLAND & ASSOCIATES PLANNING	Drill Rig	Drill Rig
		Inclination	-90°

Sheet	1 OF 1
Date Started	12/8/18
Date Completed	12/8/18
Logged NG/NS	Date:
Checked	Date:

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
AD/T		GWNE	0	0.16					Concrete			
					BH4_0.3-0.4 0.30-0.40 m PID = 1.6 ppm			-	FILL - Gravelly CLAY; grey / brown, low to medium plasicity, with medium to coarse, angular to sub-angular gravels, no odour.	M		FILL
			1	1.20				C	NATURAL - Silty CLAY; brown / red, medium to high plasicity, no odour.	M		NATURAL
					BH4_1.9-2.0 1.90-2.00 m PID = 2.2 ppm							
			2	2.30					Hole Terminated at 2.30 m Target Depth Reach			
			3									
			4									
			5									
			6									
			7									
			8									
			9									
			10									

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

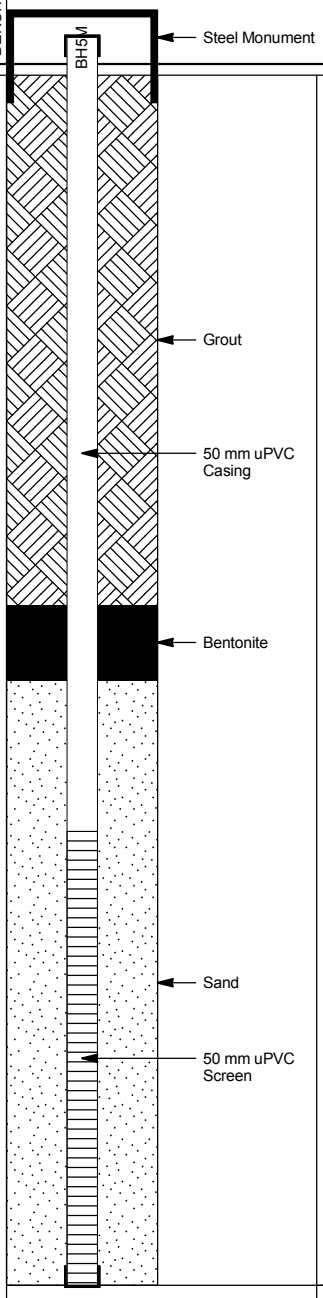
BOREHOLE: BH5M

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation		
Location	143A Stoney Creek Road, Beverly Hills NSW		
Position	Refer to Figure 2		
Job No.	E23967.E02	Contractor	
Client	SUTHERLAND & ASSOCIATES PLANNING	Drill Rig	Drill Rig
		Inclination	-90°

Sheet	1 OF 1
Date Started	12/8/18
Date Completed	12/8/18
Logged NG/NS	Date:
Checked	Date:

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS
AD/T		Seepage encourted	0	0.16					Concrete			ID BH5M Static Water Level
					BH5M_0.3-0.4 0.30-0.40 m PID = 4.6 ppm				FILL - Gravelly SAND; fine to medium grained, light brown / grey, with medium, angular to sub-angular gravels, no odour.	M		
				0.80								
			1		BH5M_0.9-1.0 0.90-1.00 m PID = 4.0 ppm				FILL - Gravelly CLAY; low to medium plasticity, brown, with angular to sub-angular, medium to coarse gravels; no odour.			
				1.20					NATURAL - Silty CLAY; brown / red, medium to high plasicity, no odour.			
			2		BH5M_2.0-2.1 2.00-2.10 m PID = 3.4 ppm							
				2.50					Becoming red	M		
			3									
			4									
			5									
			6	6.00					Weathered shale			
			7									
			8	8.00					Hole Terminated at 8.00 m Target Depth Reach			
			9									
			10									



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

BOREHOLE: BH6M

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation		
Location	143A Stoney Creek Road, Beverly Hills NSW		
Position	Refer to Figure 2		
Job No.	E23967.E02	Contractor	
Client	SUTHERLAND & ASSOCIATES PLANNING	Drill Rig	Drill Rig
		Inclination	-90°

Sheet	1 OF 1
Date Started	12/8/18
Date Completed	12/8/18
Logged NG/NS	Date:
Checked	Date:

Drilling					Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS ID / Static Water Level	
AD/T		Seepage encountered	0	0.15					Concrete			BH6M	Steel Monument
				0.50	BH6M_0.3-0.4 0.30-0.40 m PID = 2.6 ppm BH6M_0.6-0.7 0.60-0.70 m PID = 2.6 ppm			-	FILL - Gravelly SAND; fine to medium grained, light brown / grey, with medium, angular to sub-angulargravels, no odour.	M			
			1					C	NATURAL - Silty CLAY; brown / red, medium to high plasicity, no odour.				Grout
			2										50 mm uPVC Casing
			3	3.00				C	Colour chage to gery / red.				Bentonite
			4							M			
			5	5.00				C	Weathered shale.				Sand
			6										
			7										50 mm uPVC Screen
			8	8.00					Hole Terminated at 8.00 m Target Depth Reach				
			9										
			10										

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

BOREHOLE: BH7

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation		
Location	143A Stoney Creek Road, Beverly Hills NSW		
Position	Refer to Figure 2		
Job No.	E23967.E02	Contractor	
Client	SUTHERLAND & ASSOCIATES PLANNING	Drill Rig	Drill Rig
		Inclination	-90°

Sheet	1 OF 1
Date Started	12/8/18
Date Completed	12/8/18
Logged NG/NS	Date:
Checked	Date:

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
AD/T		GWNE	0	0.16					Concrete			
					BH7_0.3-0.4 0.30-0.40 m PID = 2.1 ppm			-	FILL - Clayey SAND; light brown to brown, low to medium plasicity, with subangular to angular gravels, no odour.	M		FILL
				0.60				C	NATURAL - Silty CLAY; brown / red, medium to high plasicity, no odour.	M		NATURAL
			1		BH7_1.5-1.6 1.50-1.60 m PID = 1.9 ppm							
				1.80					Hole Terminated at 1.80 m Target Depth Reach			
			2									
			3									
			4									
			5									
			6									
			7									
			8									
			9									
			10									

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

BOREHOLE: BH8

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation		
Location	143A Stoney Creek Road, Beverly Hills NSW		
Position	Refer to Figure 2		
Job No.	E23967.E02	Contractor	
Client	SUTHERLAND & ASSOCIATES PLANNING	Drill Rig	Drill Rig
		Inclination	-90°

Sheet	1 OF 1
Date Started	12/8/18
Date Completed	12/8/18
Logged NG/NS	Date:
Checked	Date:

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
AD/T		GWNE	0	0.14					Concrete			
					BH8_0.3-0.4 0.30-0.40 m PID = 2.5 ppm				FILL - Gravelly SAND; fine to medium grained, light brown / grey, with medium, angular to sub-angular gravels, no odour.	M		FILL
			1	1.00	BH8_1.0-1.1 1.00-1.10 m PID = 1.6 ppm				FILL - Gravelly CLAL; low to medium plasticity, brown, with angular to sub-angular, medium to coarse gravels; no odour.			
				1.60					NATURAL - Silty CLAY; brown / red, medium to high plasicity, no odour.	M		NATURAL
			2	2.20					Hole Terminated at 2.20 m Target Depth Reach			
			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 D– Field Data Sheets

WATER SAMPLING FIELD SHEET

eiaustralia

Site Address: 143a Stony Creek Rd, Berala NSW	Job Number: E23967
Client:	Date: 20-8-18
Field Staff: N.G / L.B	Sampling Location ID RHIM
Well Location:	Round No: 1

MEDIUM ☒Groundwater ☐Surface Water ☐Stormwater ☐Other:

SAMPLING POINT INFO

Well Installation Date:	Stick up / down (m): -0.11 (+ above ground - below ground)
Initial Well Depth (mBTOC):	Screen Interval (mBTOC):
Previous Sampling Date:	Previous SWL (mBTOC):

PID READINGS

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

PRE PURGE

Total Well Depth (mBTOC): 8.12	Well Head Condition: good
SWL (mBTOC): 1.04	Water Column (m): 7.08

PHASE SEPARATED HYDROCARBONS (PSH)

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

PURGE AND SAMPLE

Sampling Method ☒Bladder ☐Peristaltic ☐Submersible ☐Other:

Depth of Pump Inlet (mBTOC): 6.5	Fill Timer: 10
Pump Pressure Regulator (psi): 20	Discharge Timer: 5
Weather Conditions: Fine	Cycle: CPM4
Pump on time: 12:09	Pump off time: 12:30

WATER QUALITY PARAMETERS

Probe Make and Model:	Bump Test Date and Time:

Time	Volume (L)	SWL (mbtoc)	Temp (°C)	EC (µS/cm)	Redox (mV)	DO (mg/L)	pH (units)	Comments (colour, turbidity, odour, sheen etc.)
12:17	0.5	1.07	21.36	7976	34.9	1.64	6.33	brown, High, NO, NO
12:19	1	1.11	21.41	7044	24.3	0.69	6.30	↓
12:21	1.5	1.11	21.41	6733	20.9	0.38	6.27	
12:23	2	1.11	21.41	6363	18.4	0.24	6.25	
12:25	2.5	1.11	21.3	5840	17.3	0.20	6.25	
Stabilisation range: 3 consecutive readings			±0.2°C	±3%	±20mV	±10%	±0.2	

OTHER COMMENTS/OBSERVATIONS:

GWQD1 + QWQT1 taken

SIGNATURE:

WATER SAMPLING FIELD SHEET

eiaustralia

Site Address: 1434 Stoney Creek Rd, Beverly Hills	Job Number: E23967
Client:	Date: 20-8-18
Field Staff: N.G / L.B	Sampling Location ID BH5M
Well Location:	Round No: 1

MEDIUM ☒Groundwater ☐Surface Water ☐Stormwater ☐Other:

SAMPLING POINT INFO

Well Installation Date:	Stick up / (down) (m): -0.06 (+ above ground - below ground)
Initial Well Depth (mBTOC):	Screen Interval (mBTOC):
Previous Sampling Date:	Previous SWL (mBTOC):

PID READINGS

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

PRE PURGE

Total Well Depth (mBTOC): 8.15	Well Head Condition: good
SWL (mBTOC): 1.41	Water Column (m): 6.74

PHASE SEPARATED HYDROCARBONS (PSH)

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

PURGE AND SAMPLE

Sampling Method ☒Bladder ☐Peristaltic ☐Submersible ☐Other:

Depth of Pump Inlet (mBTOC): 6.5	Fill Timer: 40
Pump Pressure Regulator (psi): 20	Discharge Timer: 5
Weather Conditions: fine	Cycle: CPM 4
Pump on time: 1:15	Pump off time: 1.35

WATER QUALITY PARAMETERS

Probe Make and Model:	Bump Test Date and Time:

Time	Volume (L)	SWL (mbtoc)	Temp (°C)	EC (µS/cm)	Redox (mV)	DO (mg/L)	pH (units)	Comments (colour, turbidity, odour, sheen etc.)
1:17	0.5	1.50	20.09	10900	87.5	2.82	6.45	grey/brown / high, no, no
1:19	1	1.73	20.89	10870	90.4	0.85	6.27	
1:21	1.5	1.84	21.02	10880	91.4	0.56	6.20	
1:23	2	1.98	20.94	10920	88.2	0.56	6.18	
Stabilisation range: 3 consecutive readings			±0.2°C	±3%	±20mV	±10%	±0.2	

OTHER COMMENTS/OBSERVATIONS:

SIGNATURE:

WATER SAMPLING FIELD SHEET

eiaustralia

Site Address: 143a Stoney	Job Number: E23967
Client:	Date: 20-8-18
Field Staff:	Sampling Location ID RH6M
Well Location:	Round No:

MEDIUM ☒Groundwater ☐Surface Water ☐Stormwater ☐Other:

SAMPLING POINT INFO

Well Installation Date:	Stick up / down (m): -0.11 (+ above ground - below ground)
Initial Well Depth (mBTOC):	Screen Interval (mBTOC):
Previous Sampling Date:	Previous SWL (mBTOC):

PID READINGS

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

PRE PURGE

Total Well Depth (mBTOC): 8.05	Well Head Condition: good
SWL (mBTOC): 2.14	Water Column (m): 5.91

PHASE SEPARATED HYDROCARBONS (PSH)

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

PURGE AND SAMPLE

Sampling Method ☒Bladder ☐Peristaltic ☐Submersible ☐Other:

Depth of Pump Inlet (mBTOC):	Fill Timer: 10
Pump Pressure Regulator (psi): 20	Discharge Timer: 5
Weather Conditions: Fine	Cycle: GPM 4
Pump on time:	Pump off time:

WATER QUALITY PARAMETERS

Probe Make and Model:	Bump Test Date and Time:

Time	Volume (L)	SWL (mbtoc)	Temp (°C)	EC (µS/cm)	Redox (mV)	DO (mg/L)	pH (units)	Comments (colour, turbidity, odour, sheen etc.)
1:58	0.5	2.19	20.24	10330	117.6	2.93	6.17	Brown/grey, light, no, no
1:59	1	2.30	20.25	10400	139.2	2.41	5.66	↓
2:02	1.5	2.35	20.34	10380	148.1	1.75	5.51	
2:04	2	2.43	20.25	10330	153.0	1.61	5.47	
Stabilisation range: 3 consecutive readings			±0.2°C	±3%	±20mV	±10%	±0.2	

OTHER COMMENTS/OBSERVATIONS:

SIGNATURE:

Appendix E– Chain of Custody and Sample Receipt Forms

Sheet 1 of 2

Site: 1431 Stoney Creek Rd, Beverly Hills

Project No: E23967

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

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	Sample Matrix: WATER	SOIL	OTHERS (i.e. Fibro, Paint, etc.)	Analysis: HM [A] /TRH/BTEX/PAHs OCP/OP/PCB/Asbestos	HM [A] /TRH/BTEX/PAHs	HM [A] /TRH/BTEX	BTEX	VOCs	Asbestos	Asbestos Quantification	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	Dewatering Suite	sPOCAS	PFAS				TCLP HM [B] / PAH
BHM_0.3_0.4	1	J, ZLB	13-8-18	AM/PM		x		x														
BHM_1.0-1.1		J, ZLB																				
BHM_2.4-2.5	2	J							x													
BH2_0.3-0.4		J, ZLB																				
BH2_0.9-1.0	3	J, ZLB						x														
BH2_2.0-2.1		J																				
BH3_0.3-0.4	4	J, ZLB						x														
BH3_0.8-0.9		J, ZLB																				
BH3_1.9-2.0		J																				
BH3_2.5-2.6	5	J							x													
BH4_0.3-0.4	6	J, ZLB						x														
BH4_1.9-2.0		J	↓	↓		↓																

SGS EHS Alexandria Laboratory

SE182633 COC
Received: 14 – Aug – 2018

Comments

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

HM [B]
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

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

LABORATORY TURNAROUND

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

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

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

Report with EI Waste Classification Table ☐

Sampler's Name (EI):	Received by (SGS):
Print: Nicholas Grbich	Print: Nesa
Signature:	Signature:
Date: 14-8-18	Date: 14/8/18 12:00

Sampler's Comments:

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

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

Sheet 2 of 2

Site: 143A Stoney Creek Rd, Beverly Hills

Project No: E23967

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: BTEX	Analysis: VOCs	Analysis: Asbestos	Analysis: Asbestos Quantification	Analysis: pH / CEC (cation exchange)	Analysis: pH / EC (electrical conductivity)	Analysis: Dewatering Suite	Analysis: sPOCAS	Analysis: PFAS	Analysis:	Analysis:	Analysis:	Analysis: TCLP HM [B] / PAH
BH5M_0.3-0.4	7	J, ZLB	13-8-18	AM/PM		x		x															
BH5M_2.0-2.1	8	J							x														
BH6M_0.3-0.4	9	J, ZLB						x															
BH6M_1.6-1.7		J																					
BH7_0.3-0.4	10	J, ZLB						x															
BH7_1.5-1.6	11	J							x														
BH8_0.3-0.4	12	J, ZLB						x															
BH8_1.0-1.1		J, ZLB																					
QD1	13	J				↓				x													
QR1	14	2xVL,S,P			x					x													
QRB1		2xVL,S,P		↓	x																		
TS1	15	VL	LAB			x					x												
TB1	16	VL				x					x												

Comments

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

HM [B]
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

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

LABORATORY TURNAROUND

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

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

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

Report with EI Waste Classification Table ☐

Sampler's Name (EI):	Received by (SGS):
Print: Nicholas Cubich	Print: Nessa
Signature:	Signature:
Date: 14-8-18	Date: 14/8/18 12:00

Sampler's Comments:

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

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

SAMPLE RECEIPT ADVICE

SE182633

CLIENT DETAILS

Contact	Nicholas Grbich
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	nicholas.grbich@eiaustralia.com.au
Project	**E23967 143A Stoney Creek Rd Beverly Hill**
Order Number	**E23967**
Samples	16

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Tue 14/8/2018
Report Due	Tue 21/8/2018
SGS Reference	**SE182633**

SUBMISSION DETAILS

This is to confirm that 16 samples were received on Tuesday 14/8/2018. Results are expected to be ready by COB Tuesday 21/8/2018. Please quote SGS reference SE182633 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	15 Soil, 1 Water
Date documentation received	14/8/2018	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	6.7ºC	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

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

COMMENTS

SAMPLE RECEIPT ADVICE

SE182633

CLIENT DETAILS

Client EI AUSTRALIA

Project E23967 143A Stoney Creek Rd Beverly 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 Elements in Soil/Waste	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
001	BH1M_0.3-0.4	29	14	26	11	7	10	12	8
002	BH1M_2.4-2.5	-	-	26	-	7	10	12	8
003	BH2_0.9-1.0	29	14	26	11	7	10	12	8
004	BH3_0.3-0.4	29	14	26	11	7	10	12	8
005	BH3_2.5-2.6	-	-	26	-	7	10	12	8
006	BH4_0.3-0.4	29	14	26	11	7	10	12	8
007	BH5M_0.3-0.4	29	14	26	11	7	10	12	8
008	BH5M_2.0-2.1	-	-	26	-	7	10	12	8
009	BH6M_0.3-0.4	29	14	26	11	7	10	12	8
010	BH7_0.3-0.4	29	14	26	11	7	10	12	8
011	BH7_1.5-1.6	-	-	26	-	7	10	12	8
012	BH8_0.3-0.4	29	14	26	11	7	10	12	8
013	QD1	-	-	-	-	7	10	12	8
015	TS1	-	-	-	-	-	-	12	-
016	TB1	-	-	-	-	-	-	12	-

CONTINUED OVERLEAF

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

SAMPLE RECEIPT ADVICE

SE182633

CLIENT DETAILS

Client EI AUSTRALIA

Project E23967 143A Stoney Creek Rd Beverly Hill

SUMMARY OF ANALYSIS

No.	Sample ID	Fibre Identification in soil	Mercury in Soil	Moisture Content	VOCs in Water
001	BH1M_0.3-0.4	2	1	1	-
002	BH1M_2.4-2.5	-	1	1	-
003	BH2_0.9-1.0	2	1	1	-
004	BH3_0.3-0.4	2	1	1	-
005	BH3_2.5-2.6	-	1	1	-
006	BH4_0.3-0.4	2	1	1	-
007	BH5M_0.3-0.4	2	1	1	-
008	BH5M_2.0-2.1	-	1	1	-
009	BH6M_0.3-0.4	2	1	1	-
010	BH7_0.3-0.4	2	1	1	-
011	BH7_1.5-1.6	-	1	1	-
012	BH8_0.3-0.4	2	1	1	-
013	QD1	-	1	1	-
014	QR1	-	-	-	12
016	TB1	-	-	1	-

CONTINUED OVERLEAF

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

SAMPLE RECEIPT ADVICE

SE182633

CLIENT DETAILS

Client EI AUSTRALIA

Project E23967 143A Stoney Creek Rd Beverly Hill

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury (dissolved) in Water	Trace Metals (Dissolved) in Water by ICPMS	TRH (Total Recoverable Hydrocarbons) in Water	Volatile Petroleum Hydrocarbons in Water
014	QR1	1	7	10	8

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

Sheet 1 of 1

Site: 143a Stoney Creek Rd Beverly Hills

Project No: E23967

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

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	Sample Matrix: WATER	SOIL	OTHERS (i.e. Fibro, Paint, etc.)	Analysis: HM [A] /TRH/BTEX/PAHs OCP/OP/PCB/Asbestos	HM [A] /TRH/BTEX/PAHs	HM [A] /TRH/BTEX	BTEX	VOCs	Asbestos	Asbestos Quantification	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	Dewatering Suite	sPOCAS	PFAS	1 Phenols	Hold		TCLP HM [B] / PAH
BH1M	1	2xVC,SP	20-8-18	AM/PM	x				x			x							x			
BH5M	2	↓	↓	↓	↓				x			x							x			
BH6M	3								x			x							x			
GWQD1	4									x												
GWQR1	5									x												
GWQRB1																				x		
GWTB1	6	VC	LAB								x											
GWTS1	7	VC			↓						x											

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

Comments

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

HM [B]
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

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

LABORATORY TURNAROUND

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

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

Report with EI Waste Classification Table ☐

Sampler's Name (EI):	Received by (SGS):
Print: Nicholas Carbich	Print: Nessa
Signature:	Signature:
Date: 20-8-18	Date: 20/8/18 3:50

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

Sam

SGS EHS Alexandria Laboratory

SE182834 COC
Received: 20 – Aug – 2018

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

SAMPLE RECEIPT ADVICE

SE182834

CLIENT DETAILS

Contact	Nicholas Grbich
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	nicholas.grbich@eiaustralia.com.au
Project	**E23967 143a Stoney Creek Rd Beverly Hill**
Order Number	**E23967**
Samples	7

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Mon 20/8/2018
Report Due	Wed 22/8/2018
SGS Reference	**SE182834**

SUBMISSION DETAILS

This is to confirm that 7 samples were received on Monday 20/8/2018. Results are expected to be ready by COB Wednesday 22/8/2018. Please quote SGS reference SE182834 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	7 Water
Date documentation received	20/8/2018	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	4.2°C	Sufficient sample for analysis	Yes
Turnaround time requested	Two Days		

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

COMMENTS

1 Water Sample on hold

SAMPLE RECEIPT ADVICE

SE182834

CLIENT DETAILS

Client EI AUSTRALIA

Project E23967 143a Stoney Creek Rd Beverly 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	BH1M	1	22	1	7	10	79	8
002	BH5M	1	22	1	7	10	79	8
003	BH6M	1	22	1	7	10	79	8
004	GWQD1	1	-	-	7	10	12	8
005	GWQR1	1	-	-	7	10	12	8
006	GWTB1	-	-	-	-	-	12	-
007	GWTS1	-	-	-	-	-	12	-

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

Appendix F– Laboratory Analytical Reports

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Nicholas Grbich
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	nicholas.grbich@eiaustralia.com.au
Project	**E23967 143A Stoney Creek Rd Beverly Hill**
Order Number	**E23967**
Samples	16

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	**SE182633 R0**
Date Received	14/8/2018
Date Reported	20/8/2018

COMMENTS

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

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

Asbestos analysed by Approved Identifier Yusuf Kuthpudin .

SIGNATORIES

Akheeqar Beniameen
Chemist

Bennet Lo
Senior Organic Chemist/Metals Chemist

Kamrul Ahsan
Senior Chemist

Ravee Sivasubramaniam
Hygiene Team Leader

Shane McDermott
Inorganic/Metals Chemist

Teresa Nguyen
Organic Chemist

VOC's in Soil [AN433] Tested: 17/8/2018

PARAMETER	UOM	LOR	BH1M_0.3-0.4 SOIL - 14/8/2018 SE182633.001	BH1M_2.4-2.5 SOIL - 14/8/2018 SE182633.002	BH2_0.9-1.0 SOIL - 14/8/2018 SE182633.003	BH3_0.3-0.4 SOIL - 14/8/2018 SE182633.004	BH3_2.5-2.6 SOIL - 14/8/2018 SE182633.005
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	BH4_0.3-0.4 SOIL - 14/8/2018 SE182633.006	BH5M_0.3-0.4 SOIL - 14/8/2018 SE182633.007	BH5M_2.0-2.1 SOIL - 14/8/2018 SE182633.008	BH6M_0.3-0.4 SOIL - 14/8/2018 SE182633.009	BH7_0.3-0.4 SOIL - 14/8/2018 SE182633.010
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

PARAMETER	UOM	LOR	BH7_1.5-1.6 SOIL - 14/8/2018 SE182633.011	BH8_0.3-0.4 SOIL - 14/8/2018 SE182633.012	QD1 SOIL - 14/8/2018 SE182633.013	TS1 SOIL - 14/8/2018 SE182633.015	TB1 SOIL - 14/8/2018 SE182633.016
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	[113%]	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	[107%]	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	[107%]	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	[105%]	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	[104%]	<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] Tested: 17/8/2018

PARAMETER	UOM	LOR	BH1M_0.3-0.4 SOIL - 14/8/2018 SE182633.001	BH1M_2.4-2.5 SOIL - 14/8/2018 SE182633.002	BH2_0.9-1.0 SOIL - 14/8/2018 SE182633.003	BH3_0.3-0.4 SOIL - 14/8/2018 SE182633.004	BH3_2.5-2.6 SOIL - 14/8/2018 SE182633.005
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	BH4_0.3-0.4 SOIL - 14/8/2018 SE182633.006	BH5M_0.3-0.4 SOIL - 14/8/2018 SE182633.007	BH5M_2.0-2.1 SOIL - 14/8/2018 SE182633.008	BH6M_0.3-0.4 SOIL - 14/8/2018 SE182633.009	BH7_0.3-0.4 SOIL - 14/8/2018 SE182633.010
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	BH7_1.5-1.6 SOIL - 14/8/2018 SE182633.011	BH8_0.3-0.4 SOIL - 14/8/2018 SE182633.012	QD1 SOIL - 14/8/2018 SE182633.013
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: 17/8/2018

PARAMETER	UOM	LOR	BH1M_0.3-0.4 SOIL - 14/8/2018 SE182633.001	BH1M_2.4-2.5 SOIL - 14/8/2018 SE182633.002	BH2_0.9-1.0 SOIL - 14/8/2018 SE182633.003	BH3_0.3-0.4 SOIL - 14/8/2018 SE182633.004	BH3_2.5-2.6 SOIL - 14/8/2018 SE182633.005
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110
TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	BH4_0.3-0.4 SOIL - 14/8/2018 SE182633.006	BH5M_0.3-0.4 SOIL - 14/8/2018 SE182633.007	BH5M_2.0-2.1 SOIL - 14/8/2018 SE182633.008	BH6M_0.3-0.4 SOIL - 14/8/2018 SE182633.009	BH7_0.3-0.4 SOIL - 14/8/2018 SE182633.010
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	**82**	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	**75**	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	**130**	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	**160**	<110
TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	BH7_1.5-1.6 SOIL - 14/8/2018 SE182633.011	BH8_0.3-0.4 SOIL - 14/8/2018 SE182633.012	QD1 SOIL - 14/8/2018 SE182633.013
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	mg/kg	25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	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 (F bands)	mg/kg	210	<210	<210	<210

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 17/8/2018

PARAMETER	UOM	LOR	BH1M_0.3-0.4 SOIL - 14/8/2018 SE182633.001	BH1M_2.4-2.5 SOIL - 14/8/2018 SE182633.002	BH2_0.9-1.0 SOIL - 14/8/2018 SE182633.003	BH3_0.3-0.4 SOIL - 14/8/2018 SE182633.004	BH3_2.5-2.6 SOIL - 14/8/2018 SE182633.005
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(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8

PARAMETER	UOM	LOR	BH4_0.3-0.4 SOIL - 14/8/2018 SE182633.006	BH5M_0.3-0.4 SOIL - 14/8/2018 SE182633.007	BH5M_2.0-2.1 SOIL - 14/8/2018 SE182633.008	BH6M_0.3-0.4 SOIL - 14/8/2018 SE182633.009	BH7_0.3-0.4 SOIL - 14/8/2018 SE182633.010
Naphthalene	mg/kg	0.1	**0.2**	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	**0.4**	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	**0.4**	<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	**0.3**	**0.4**	<0.1	**0.3**	<0.1
Anthracene	mg/kg	0.1	<0.1	**0.1**	<0.1	**0.1**	<0.1
Fluoranthene	mg/kg	0.1	<0.1	**0.7**	<0.1	**0.8**	<0.1
Pyrene	mg/kg	0.1	<0.1	**0.7**	<0.1	**0.8**	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	**0.3**	<0.1	**0.3**	<0.1
Chrysene	mg/kg	0.1	<0.1	**0.2**	<0.1	**0.3**	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	**0.3**	<0.1	**0.3**	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	**0.1**	<0.1	**0.2**	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	**0.2**	<0.1	**0.3**	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	**0.1**	<0.1	**0.1**	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	**0.1**	<0.1	**0.1**	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	**0.3**	<0.2	**0.4**	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	**0.4**	<0.3	**0.5**	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	**0.4**	<0.2	**0.4**	<0.2
Total PAH (18)	mg/kg	0.8	**1.2**	**3.2**	<0.8	**3.5**	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	**3.2**	<0.8	**3.5**	<0.8

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 17/8/2018 (continued)

PARAMETER	UOM	LOR	BH7_1.5-1.6 SOIL - 14/8/2018 SE182633.011	BH8_0.3-0.4 SOIL - 14/8/2018 SE182633.012
Naphthalene	mg/kg	0.1	<0.1	**0.1**
2-methylnaphthalene	mg/kg	0.1	<0.1	**0.3**
1-methylnaphthalene	mg/kg	0.1	<0.1	**0.3**
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	**0.2**
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(ah)anthracene	mg/kg	0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<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**
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8

OC Pesticides in Soil [AN420] Tested: 17/8/2018

PARAMETER	UOM	LOR	BH1M_0.3-0.4 SOIL - 14/8/2018 SE182633.001	BH2_0.9-1.0 SOIL - 14/8/2018 SE182633.003	BH3_0.3-0.4 SOIL - 14/8/2018 SE182633.004	BH4_0.3-0.4 SOIL - 14/8/2018 SE182633.006	BH5M_0.3-0.4 SOIL - 14/8/2018 SE182633.007
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
Total CLP OC Pesticides	mg/kg	1	<1	<1	<1	<1	<1

OC Pesticides in Soil [AN420] Tested: 17/8/2018 (continued)

PARAMETER	UOM	LOR	BH6M_0.3-0.4 SOIL - 14/8/2018 SE182633.009	BH7_0.3-0.4 SOIL - 14/8/2018 SE182633.010	BH8_0.3-0.4 SOIL - 14/8/2018 SE182633.012
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
Total CLP OC Pesticides	mg/kg	1	<1	<1	<1

OP Pesticides in Soil [AN420] Tested: 17/8/2018

PARAMETER	UOM	LOR	BH1M_0.3-0.4 SOIL - 14/8/2018 SE182633.001	BH2_0.9-1.0 SOIL - 14/8/2018 SE182633.003	BH3_0.3-0.4 SOIL - 14/8/2018 SE182633.004	BH4_0.3-0.4 SOIL - 14/8/2018 SE182633.006	BH5M_0.3-0.4 SOIL - 14/8/2018 SE182633.007
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
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	<1.7	<1.7	<1.7

PARAMETER	UOM	LOR	BH6M_0.3-0.4 SOIL - 14/8/2018 SE182633.009	BH7_0.3-0.4 SOIL - 14/8/2018 SE182633.010	BH8_0.3-0.4 SOIL - 14/8/2018 SE182633.012
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
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	<1.7

PCBs in Soil [AN420] Tested: 17/8/2018

PARAMETER	UOM	LOR	BH1M_0.3-0.4 SOIL - 14/8/2018 SE182633.001	BH2_0.9-1.0 SOIL - 14/8/2018 SE182633.003	BH3_0.3-0.4 SOIL - 14/8/2018 SE182633.004	BH4_0.3-0.4 SOIL - 14/8/2018 SE182633.006	BH5M_0.3-0.4 SOIL - 14/8/2018 SE182633.007
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	BH6M_0.3-0.4 SOIL - 14/8/2018 SE182633.009	BH7_0.3-0.4 SOIL - 14/8/2018 SE182633.010	BH8_0.3-0.4 SOIL - 14/8/2018 SE182633.012
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 Elements in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 17/8/2018

PARAMETER	UOM	LOR	BH1M_0.3-0.4 SOIL - 14/8/2018 SE182633.001	BH1M_2.4-2.5 SOIL - 14/8/2018 SE182633.002	BH2_0.9-1.0 SOIL - 14/8/2018 SE182633.003	BH3_0.3-0.4 SOIL - 14/8/2018 SE182633.004	BH3_2.5-2.6 SOIL - 14/8/2018 SE182633.005
Arsenic, As	mg/kg	1	2	2	2	5	2
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.3	7.1	14	14	12	15
Copper, Cu	mg/kg	0.5	9.5	9.9	13	19	10
Lead, Pb	mg/kg	1	9	15	17	35	14
Nickel, Ni	mg/kg	0.5	21	3.8	3.6	6.1	1.7
Zinc, Zn	mg/kg	2	24	14	16	43	8.5

PARAMETER	UOM	LOR	BH4_0.3-0.4 SOIL - 14/8/2018 SE182633.006	BH5M_0.3-0.4 SOIL - 14/8/2018 SE182633.007	BH5M_2.0-2.1 SOIL - 14/8/2018 SE182633.008	BH6M_0.3-0.4 SOIL - 14/8/2018 SE182633.009	BH7_0.3-0.4 SOIL - 14/8/2018 SE182633.010
Arsenic, As	mg/kg	1	8	3	3	3	5
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.3	27	12	17	12	11
Copper, Cu	mg/kg	0.5	43	23	8.5	22	33
Lead, Pb	mg/kg	1	13	16	19	19	32
Nickel, Ni	mg/kg	0.5	31	10	2.7	12	13
Zinc, Zn	mg/kg	2	82	47	12	46	80

PARAMETER	UOM	LOR	BH7_1.5-1.6 SOIL - 14/8/2018 SE182633.011	BH8_0.3-0.4 SOIL - 14/8/2018 SE182633.012	QD1 SOIL - 14/8/2018 SE182633.013
Arsenic, As	mg/kg	1	4	7	3
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.3	18	28	4.1
Copper, Cu	mg/kg	0.5	8.5	38	4.8
Lead, Pb	mg/kg	1	16	10	6
Nickel, Ni	mg/kg	0.5	2.5	33	13
Zinc, Zn	mg/kg	2	10	72	12

Mercury in Soil [AN312] Tested: 17/8/2018

PARAMETER	UOM	LOR	BH1M_0.3-0.4 SOIL - 14/8/2018 SE182633.001	BH1M_2.4-2.5 SOIL - 14/8/2018 SE182633.002	BH2_0.9-1.0 SOIL - 14/8/2018 SE182633.003	BH3_0.3-0.4 SOIL - 14/8/2018 SE182633.004	BH3_2.5-2.6 SOIL - 14/8/2018 SE182633.005
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	BH4_0.3-0.4 SOIL - 14/8/2018 SE182633.006	BH5M_0.3-0.4 SOIL - 14/8/2018 SE182633.007	BH5M_2.0-2.1 SOIL - 14/8/2018 SE182633.008	BH6M_0.3-0.4 SOIL - 14/8/2018 SE182633.009	BH7_0.3-0.4 SOIL - 14/8/2018 SE182633.010
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	BH7_1.5-1.6 SOIL - 14/8/2018 SE182633.011	BH8_0.3-0.4 SOIL - 14/8/2018 SE182633.012	QD1 SOIL - 14/8/2018 SE182633.013
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05

Moisture Content [AN002] Tested: 17/8/2018

PARAMETER	UOM	LOR	BH1M_0.3-0.4 SOIL - 14/8/2018 SE182633.001	BH1M_2.4-2.5 SOIL - 14/8/2018 SE182633.002	BH2_0.9-1.0 SOIL - 14/8/2018 SE182633.003	BH3_0.3-0.4 SOIL - 14/8/2018 SE182633.004	BH3_2.5-2.6 SOIL - 14/8/2018 SE182633.005
% Moisture	%w/w	0.5	20	20	12	17	22

PARAMETER	UOM	LOR	BH4_0.3-0.4 SOIL - 14/8/2018 SE182633.006	BH5M_0.3-0.4 SOIL - 14/8/2018 SE182633.007	BH5M_2.0-2.1 SOIL - 14/8/2018 SE182633.008	BH6M_0.3-0.4 SOIL - 14/8/2018 SE182633.009	BH7_0.3-0.4 SOIL - 14/8/2018 SE182633.010
% Moisture	%w/w	0.5	9.5	8.4	20	6.8	18

PARAMETER	UOM	LOR	BH7_1.5-1.6 SOIL - 14/8/2018 SE182633.011	BH8_0.3-0.4 SOIL - 14/8/2018 SE182633.012	QD1 SOIL - 14/8/2018 SE182633.013	TB1 SOIL - 14/8/2018 SE182633.016
% Moisture	%w/w	0.5	22	8.0	12	<0.5

Fibre Identification in soil [AN602] Tested: 17/8/2018

PARAMETER	UOM	LOR	BH1M_0.3-0.4 SOIL - 14/8/2018 SE182633.001	BH2_0.9-1.0 SOIL - 14/8/2018 SE182633.003	BH3_0.3-0.4 SOIL - 14/8/2018 SE182633.004	BH4_0.3-0.4 SOIL - 14/8/2018 SE182633.006	BH5M_0.3-0.4 SOIL - 14/8/2018 SE182633.007
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	BH6M_0.3-0.4 SOIL - 14/8/2018 SE182633.009	BH7_0.3-0.4 SOIL - 14/8/2018 SE182633.010	BH8_0.3-0.4 SOIL - 14/8/2018 SE182633.012
Asbestos Detected	No unit	-	No	No	No
Estimated Fibres*	%w/w	0.01	<0.01	<0.01	<0.01

VOCs in Water [AN433] Tested: 15/8/2018

PARAMETER	UOM	LOR	QR1 WATER - 14/8/2018 SE182633.014
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] Tested: 15/8/2018

PARAMETER	UOM	LOR	QR1 WATER - 14/8/2018 SE182633.014
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: 15/8/2018

PARAMETER	UOM	LOR	QR1 WATER - 14/8/2018 SE182633.014
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	µg/L	60	<60
TRH >C16-C34 (F3)	µg/L	500	<500
TRH >C34-C40 (F4)	µg/L	500	<500
TRH C10-C36	µg/L	450	<450
TRH C10-C40	µg/L	650	<650
TRH >C10-C16 - Naphthalene (F2)	µg/L	60	<60

Trace Metals (Dissolved) in Water by ICPMS [AN318] Tested: 15/8/2018

PARAMETER	UOM	LOR	QR1 WATER - 14/8/2018 SE182633.014
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	<1
Lead, Pb	µg/L	1	<1
Nickel, Ni	µg/L	1	<1
Zinc, Zn	µg/L	5	**5**

Mercury (dissolved) in Water [AN311(Perth)/AN312] Tested: 15/8/2018

PARAMETER	UOM	LOR	QR1 WATER - 14/8/2018 SE182633.014
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(Perth)/AN312	Mercury by Cold Vapour AAS in Waters: Mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500.
AN312	Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid , mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser . Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500
AN318	Determination of elements at trace level in waters by ICP-MS technique, in accordance with USEPA 6020A.
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is reported directly and also corrected by subtracting Naphthalene (from VOC method AN433) where available.
AN403	Additionally, the volatile C6-C9 fraction may be determined by a purge and trap technique and GC /MS because of the potential for volatiles loss. Total Petroleum Hydrocarbons (TPH) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents .
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup /fractionation techniques. Reference USEPA 3510B, 8015B.
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN420	SVOC Compounds: Semi-Volatile Organic Compounds (SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols in soils, sediments and waters are determined by GCMS /ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN433	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.
AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602	Fibres/material that cannot be unequivocably identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf) The fibres detected may or may not be asbestos fibres.
AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples, Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection limit of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."

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

FOOTNOTES

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

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

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

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

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

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

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

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

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

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

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Client	EI AUSTRALIA
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Telephone	61 2 95160722
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Email	nicholas.grbich@eiaustralia.com.au
Project	**E23967 143A Stoney Creek Rd Beverly Hill**
Order Number	**E23967**
Samples	8

LABORATORY DETAILS

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SGS Reference	**SE182633 R0**
Date Received	14 Aug 2018
Date Reported	20 Aug 2018

COMMENTS

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

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

Asbestos analysed by Approved Identifier Yusuf Kuthpudin .

SIGNATORIES

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Chemist

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Senior Organic Chemist/Metals Chemis

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Shane McDermott
Inorganic/Metals Chemist

Teresa Nguyen
Organic Chemist

RESULTS

Fibre Identification in soil — Method AN602

Laboratory Reference	Client Reference	Matrix	Sample Description	Date Sampled	Fibre Identification	Est.%w/w*
SE182633.001	BH1M_0.3-0.4	Soil	156g Clay,Sand,Rocks	14 Aug 2018	No Asbestos Found	<0.01
SE182633.003	BH2_0.9-1.0	Soil	178g Clay,Rocks	14 Aug 2018	No Asbestos Found	<0.01
SE182633.004	BH3_0.3-0.4	Soil	144g Clay,Sand,Soil,Rocks	14 Aug 2018	No Asbestos Found	<0.01
SE182633.006	BH4_0.3-0.4	Soil	160g Clay,Soil,Rocks	14 Aug 2018	No Asbestos Found	<0.01
SE182633.007	BH5M_0.3-0.4	Soil	151g Sand,Rocks,Cement Mixture	14 Aug 2018	No Asbestos Found Organic Fibres Detected	<0.01
SE182633.009	BH6M_0.3-0.4	Soil	159g Clay,Soil,Rocks,Cement Mixture	14 Aug 2018	No Asbestos Found Organic Fibres Detected	<0.01
SE182633.010	BH7_0.3-0.4	Soil	182g Clay,Sand,Soil,Rocks	14 Aug 2018	No Asbestos Found	<0.01
SE182633.012	BH8_0.3-0.4	Soil	173g Sand,Soil,Rocks	14 Aug 2018	No Asbestos Found	<0.01

METHOD SUMMARY

SE182633 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) The fibres detected may or may not be asbestos fibres.
AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples , Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection limit of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."
AN602	The sample can be reported “no asbestos found at the reporting limit of 0.1 g/kg” (<0.01%w/w) where AN602 section 4.5 of this method has been followed, and if- (a) no trace asbestos fibres have been detected (i.e. no ‘respirable’ fibres): (b) the estimated weight of non-respirable asbestos fibre bundles and/or the estimated weight of asbestos in asbestos-containing materials are found to be less than 0.1g/kg: and (c) these non-respirable asbestos fibre bundles and/or the asbestos containing materials are only visible under stereo-microscope viewing conditions.

FOOTNOTES

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

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

Sampled by the client.

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

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

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

ANALYTICAL REPORT

Accreditation No. 2562

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SGS Reference	**SE182834 R0**
Date Received	20/8/2018
Date Reported	22/8/2018

COMMENTS

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

SIGNATORIES

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VOCs in Water [AN433] Tested: 21/8/2018

PARAMETER	UOM	LOR	BH1M WATER - 20/8/2018 SE182834.001	BH5M WATER - 20/8/2018 SE182834.002	BH6M WATER - 20/8/2018 SE182834.003	GWQD1 WATER - 20/8/2018 SE182834.004	GWQR1 WATER - 20/8/2018 SE182834.005
Benzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
m/p-xylene	µg/L	1	<1	<1	<1	<1	<1
o-xylene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Xylenes	µg/L	1.5	<1.5	<1.5	<1.5	<1.5	<1.5
Total BTEX	µg/L	3	<3	<3	<3	<3	<3
Naphthalene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane (CFC-12)	µg/L	5	<5	<5	<5	-	-
Chloromethane	µg/L	5	<5	<5	<5	-	-
Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3	<0.3	<0.3	-	-
Bromomethane	µg/L	10	<10	<10	<10	-	-
Chloroethane	µg/L	5	<5	<5	<5	-	-
Trichlorofluoromethane	µg/L	1	<1	<1	<1	-	-
Acetone (2-propanone)	µg/L	10	<10	<10	<10	-	-
Iodomethane	µg/L	5	<5	<5	<5	-	-
1,1-dichloroethene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Acrylonitrile	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Dichloromethane (Methylene chloride)	µg/L	5	<5	<5	<5	-	-
Allyl chloride	µg/L	2	<2	<2	<2	-	-
Carbon disulfide	µg/L	2	<2	<2	<2	-	-
trans-1,2-dichloroethene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
MtBE (Methyl-tert-butyl ether)	µg/L	2	<2	<2	<2	-	-
1,1-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Vinyl acetate	µg/L	10	<10	<10	<10	-	-
MEK (2-butanone)	µg/L	10	<10	<10	<10	-	-
cis-1,2-dichloroethene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Bromochloromethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Chloroform (THM)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
2,2-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,1,1-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,1-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Carbon tetrachloride	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Dibromomethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
2-nitropropane	µg/L	100	<100	<100	<100	-	-
Bromodichloromethane (THM)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
MIBK (4-methyl-2-pentanone)	µg/L	5	<5	<5	<5	-	-
cis-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
trans-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,1,2-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,3-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Dibromochloromethane (THM)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
2-hexanone (MBK)	µg/L	5	<5	<5	<5	-	-
1,2-dibromoethane (EDB)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Chlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Bromoform (THM)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
cis-1,4-dichloro-2-butene	µg/L	1	<1	<1	<1	-	-
Styrene (Vinyl benzene)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2,3-trichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
trans-1,4-dichloro-2-butene	µg/L	1	<1	<1	<1	-	-

VOCs in Water [AN433] Tested: 21/8/2018 (continued)

PARAMETER	UOM	LOR	BH1M WATER - 20/8/2018 SE182834.001	BH5M WATER - 20/8/2018 SE182834.002	BH6M WATER - 20/8/2018 SE182834.003	GWQD1 WATER - 20/8/2018 SE182834.004	GWQR1 WATER - 20/8/2018 SE182834.005
Isopropylbenzene (Cumene)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Bromobenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
n-propylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
2-chlorotoluene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
4-chlorotoluene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,3,5-trimethylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
tert-butylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2,4-trimethylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
sec-butylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,3-dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,4-dichlorobenzene	µg/L	0.3	<0.3	<0.3	<0.3	-	-
p-isopropyltoluene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2-dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
n-butylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2,4-trichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Hexachlorobutadiene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2,3-trichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Total VOC	µg/L	10	<10	<10	<10	-	-

VOCs in Water [AN433] Tested: 21/8/2018 (continued)

PARAMETER	UOM	LOR	GWTB1 WATER - 20/8/2018 SE182834.006	GWTS1 WATER - 20/8/2018 SE182834.007
Benzene	µg/L	0.5	<0.5	[96%]
Toluene	µg/L	0.5	<0.5	[94%]
Ethylbenzene	µg/L	0.5	<0.5	[99%]
m/p-xylene	µg/L	1	<1	[98%]
o-xylene	µg/L	0.5	<0.5	[92%]
Total Xylenes	µg/L	1.5	<1.5	-
Total BTEX	µg/L	3	<3	-
Naphthalene	µg/L	0.5	<0.5	-
Dichlorodifluoromethane (CFC-12)	µg/L	5	-	-
Chloromethane	µg/L	5	-	-
Vinyl chloride (Chloroethene)	µg/L	0.3	-	-
Bromomethane	µg/L	10	-	-
Chloroethane	µg/L	5	-	-
Trichlorofluoromethane	µg/L	1	-	-
Acetone (2-propanone)	µg/L	10	-	-
Iodomethane	µg/L	5	-	-
1,1-dichloroethene	µg/L	0.5	-	-
Acrylonitrile	µg/L	0.5	-	-
Dichloromethane (Methylene chloride)	µg/L	5	-	-
Allyl chloride	µg/L	2	-	-
Carbon disulfide	µg/L	2	-	-
trans-1,2-dichloroethene	µg/L	0.5	-	-
MtBE (Methyl-tert-butyl ether)	µg/L	2	-	-
1,1-dichloroethane	µg/L	0.5	-	-
Vinyl acetate	µg/L	10	-	-
MEK (2-butanone)	µg/L	10	-	-
cis-1,2-dichloroethene	µg/L	0.5	-	-
Bromochloromethane	µg/L	0.5	-	-
Chloroform (THM)	µg/L	0.5	-	-
2,2-dichloropropane	µg/L	0.5	-	-
1,2-dichloroethane	µg/L	0.5	-	-
1,1,1-trichloroethane	µg/L	0.5	-	-
1,1-dichloropropene	µg/L	0.5	-	-
Carbon tetrachloride	µg/L	0.5	-	-
Dibromomethane	µg/L	0.5	-	-
1,2-dichloropropane	µg/L	0.5	-	-
Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	-	-
2-nitropropane	µg/L	100	-	-
Bromodichloromethane (THM)	µg/L	0.5	-	-
MIBK (4-methyl-2-pentanone)	µg/L	5	-	-
cis-1,3-dichloropropene	µg/L	0.5	-	-
trans-1,3-dichloropropene	µg/L	0.5	-	-
1,1,2-trichloroethane	µg/L	0.5	-	-
1,3-dichloropropane	µg/L	0.5	-	-
Dibromochloromethane (THM)	µg/L	0.5	-	-
2-hexanone (MBK)	µg/L	5	-	-
1,2-dibromoethane (EDB)	µg/L	0.5	-	-
Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	-	-
1,1,1,2-tetrachloroethane	µg/L	0.5	-	-
Chlorobenzene	µg/L	0.5	-	-
Bromoform (THM)	µg/L	0.5	-	-
cis-1,4-dichloro-2-butene	µg/L	1	-	-
Styrene (Vinyl benzene)	µg/L	0.5	-	-
1,1,2,2-tetrachloroethane	µg/L	0.5	-	-
1,2,3-trichloropropane	µg/L	0.5	-	-
trans-1,4-dichloro-2-butene	µg/L	1	-	-

VOCs in Water [AN433] Tested: 21/8/2018 (continued)

PARAMETER	UOM	LOR	GWTB1 WATER - 20/8/2018 SE182834.006	GWTS1 WATER - 20/8/2018 SE182834.007
Isopropylbenzene (Cumene)	µg/L	0.5	-	-
Bromobenzene	µg/L	0.5	-	-
n-propylbenzene	µg/L	0.5	-	-
2-chlorotoluene	µg/L	0.5	-	-
4-chlorotoluene	µg/L	0.5	-	-
1,3,5-trimethylbenzene	µg/L	0.5	-	-
tert-butylbenzene	µg/L	0.5	-	-
1,2,4-trimethylbenzene	µg/L	0.5	-	-
sec-butylbenzene	µg/L	0.5	-	-
1,3-dichlorobenzene	µg/L	0.5	-	-
1,4-dichlorobenzene	µg/L	0.3	-	-
p-isopropyltoluene	µg/L	0.5	-	-
1,2-dichlorobenzene	µg/L	0.5	-	-
n-butylbenzene	µg/L	0.5	-	-
1,2-dibromo-3-chloropropane	µg/L	0.5	-	-
1,2,4-trichlorobenzene	µg/L	0.5	-	-
Hexachlorobutadiene	µg/L	0.5	-	-
1,2,3-trichlorobenzene	µg/L	0.5	-	-
Total VOC	µg/L	10	-	-

Volatile Petroleum Hydrocarbons in Water [AN433] Tested: 21/8/2018

PARAMETER	UOM	LOR	BH1M WATER - 20/8/2018 SE182834.001	BH5M WATER - 20/8/2018 SE182834.002	BH6M WATER - 20/8/2018 SE182834.003	GWQD1 WATER - 20/8/2018 SE182834.004	GWQR1 WATER - 20/8/2018 SE182834.005
TRH C6-C9	µg/L	40	<40	<40	<40	<40	<40
Benzene (F0)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TRH C6-C10	µg/L	50	<50	<50	<50	<50	<50
TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	<50	<50	<50	<50

TRH (Total Recoverable Hydrocarbons) in Water [AN403] Tested: 21/8/2018

PARAMETER	UOM	LOR	BH1M WATER - 20/8/2018 SE182834.001	BH5M WATER - 20/8/2018 SE182834.002	BH6M WATER - 20/8/2018 SE182834.003	GWQD1 WATER - 20/8/2018 SE182834.004	GWQR1 WATER - 20/8/2018 SE182834.005
TRH C10-C14	µg/L	50	<50	<50	<50	<50	<50
TRH C15-C28	µg/L	200	<200	<200	<200	<200	<200
TRH C29-C36	µg/L	200	<200	<200	<200	<200	<200
TRH C37-C40	µg/L	200	<200	<200	<200	<200	<200
TRH >C10-C16	µg/L	60	<60	<60	<60	<60	<60
TRH >C16-C34 (F3)	µg/L	500	<500	<500	<500	<500	<500
TRH >C34-C40 (F4)	µg/L	500	<500	<500	<500	<500	<500
TRH C10-C36	µg/L	450	<450	<450	<450	<450	<450
TRH C10-C40	µg/L	650	<650	<650	<650	<650	<650
TRH >C10-C16 - Naphthalene (F2)	µg/L	60	<60	<60	<60	<60	<60

PAH (Polynuclear Aromatic Hydrocarbons) in Water [AN420] Tested: 21/8/2018

PARAMETER	UOM	LOR	BH1M WATER - 20/8/2018 SE182834.001	BH5M WATER - 20/8/2018 SE182834.002	BH6M WATER - 20/8/2018 SE182834.003
Naphthalene	µg/L	0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	µg/L	0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	µg/L	0.1	<0.1	<0.1	<0.1
Acenaphthylene	µg/L	0.1	<0.1	<0.1	<0.1
Acenaphthene	µg/L	0.1	<0.1	<0.1	<0.1
Fluorene	µg/L	0.1	<0.1	<0.1	<0.1
Phenanthrene	µg/L	0.1	<0.1	<0.1	<0.1
Anthracene	µg/L	0.1	<0.1	<0.1	<0.1
Fluoranthene	µg/L	0.1	<0.1	<0.1	<0.1
Pyrene	µg/L	0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	0.1	<0.1	<0.1	<0.1
Chrysene	µg/L	0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	µg/L	0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	µg/L	0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	µg/L	0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	µg/L	0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	µg/L	0.1	<0.1	<0.1	<0.1
Total PAH (18)	µg/L	1	<1	<1	<1

Total Phenolics in Water [AN289] Tested: 22/8/2018

PARAMETER	UOM	LOR	BH1M WATER - 20/8/2018 SE182834.001	BH5M WATER - 20/8/2018 SE182834.002	BH6M WATER - 20/8/2018 SE182834.003
Total Phenols	mg/L	0.05	<0.05	<0.05	<0.05

Trace Metals (Dissolved) in Water by ICPMS [AN318] Tested: 22/8/2018

PARAMETER	UOM	LOR	BH1M WATER - 20/8/2018 SE182834.001	BH5M WATER - 20/8/2018 SE182834.002	BH6M WATER - 20/8/2018 SE182834.003	GWQD1 WATER - 20/8/2018 SE182834.004	GWQR1 WATER - 20/8/2018 SE182834.005
Arsenic, As	µg/L	1	<1	1	2	<1	<1
Cadmium, Cd	µg/L	0.1	<0.1	0.3	1.6	<0.1	<0.1
Chromium, Cr	µg/L	1	1	<1	1	<1	<1
Copper, Cu	µg/L	1	56	21	81	4	<1
Lead, Pb	µg/L	1	3	1	6	<1	<1
Nickel, Ni	µg/L	1	43	78	110	36	<1
Zinc, Zn	µg/L	5	130	95	370	47	<5

Mercury (dissolved) in Water [AN311(Perth)/AN312] Tested: 22/8/2018

PARAMETER	UOM	LOR	BH1M WATER - 20/8/2018 SE182834.001	BH5M WATER - 20/8/2018 SE182834.002	BH6M WATER - 20/8/2018 SE182834.003	GWQD1 WATER - 20/8/2018 SE182834.004	GWQR1 WATER - 20/8/2018 SE182834.005
Mercury	mg/L	0.0001	0.0003	0.0003	0.0003	0.0002	0.0002

METHOD	METHODOLOGY SUMMARY
AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
AN289	Analysis of Total Phenols in Soil Sediment and Water: Steam distillable phenols react with 4-aminoantipyrine at pH 7.9±0.1 in the presence of potassium ferricyanide to form a coloured antipyrine dye analysed by Discrete Analyser. Reference APHA 5530 B/D.
AN311(Perth)/AN312	Mercury by Cold Vapour AAS in Waters: Mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500.
AN318	Determination of elements at trace level in waters by ICP-MS technique, in accordance with USEPA 6020A.
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). Where F2 is corrected for Naphthalene, the VOC data for Naphthalene is used.
AN403	Additionally, the volatile C6-C9/C6-C10 fractions may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Recoveerable Hydrocarbons - Silica (TRH-Silica) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents.
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN433	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.

FOOTNOTES

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

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

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

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

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

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

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

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

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

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Appendix G– Laboratory QA/QC Policies and DQOs

STATEMENT OF QA/QC PERFORMANCE

SE182834 R0

CLIENT DETAILS

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Project	**E23967 143a Stoney Creek Rd Beverly Hill**
Order Number	**E23967**
Samples	7

LABORATORY DETAILS

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Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE182834 R0**
Date Received	20 Aug 2018
Date Reported	22 Aug 2018

COMMENTS

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

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

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

Matrix Spike	Trace Metals (Dissolved) in Water by ICPMS	2 items

SAMPLE SUMMARY

HOLDING TIME SUMMARY

SE182834 R0

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

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

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

Mercury (dissolved) in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M	SE182834.001	LB154657	20 Aug 2018	20 Aug 2018	17 Sep 2018	22 Aug 2018	17 Sep 2018	22 Aug 2018
BH5M	SE182834.002	LB154657	20 Aug 2018	20 Aug 2018	17 Sep 2018	22 Aug 2018	17 Sep 2018	22 Aug 2018
BH6M	SE182834.003	LB154657	20 Aug 2018	20 Aug 2018	17 Sep 2018	22 Aug 2018	17 Sep 2018	22 Aug 2018
GWQD1	SE182834.004	LB154657	20 Aug 2018	20 Aug 2018	17 Sep 2018	22 Aug 2018	17 Sep 2018	22 Aug 2018
GWQR1	SE182834.005	LB154657	20 Aug 2018	20 Aug 2018	17 Sep 2018	22 Aug 2018	17 Sep 2018	22 Aug 2018

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M	SE182834.001	LB154604	20 Aug 2018	20 Aug 2018	27 Aug 2018	21 Aug 2018	30 Sep 2018	22 Aug 2018
BH5M	SE182834.002	LB154604	20 Aug 2018	20 Aug 2018	27 Aug 2018	21 Aug 2018	30 Sep 2018	22 Aug 2018
BH6M	SE182834.003	LB154604	20 Aug 2018	20 Aug 2018	27 Aug 2018	21 Aug 2018	30 Sep 2018	22 Aug 2018
GWQD1	SE182834.004	LB154604	20 Aug 2018	20 Aug 2018	27 Aug 2018	21 Aug 2018	30 Sep 2018	22 Aug 2018
GWQR1	SE182834.005	LB154604	20 Aug 2018	20 Aug 2018	27 Aug 2018	21 Aug 2018	30 Sep 2018	22 Aug 2018

Total Phenolics in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M	SE182834.001	LB154662	20 Aug 2018	20 Aug 2018	17 Sep 2018	22 Aug 2018	17 Sep 2018	22 Aug 2018
BH5M	SE182834.002	LB154662	20 Aug 2018	20 Aug 2018	17 Sep 2018	22 Aug 2018	17 Sep 2018	22 Aug 2018
BH6M	SE182834.003	LB154662	20 Aug 2018	20 Aug 2018	17 Sep 2018	22 Aug 2018	17 Sep 2018	22 Aug 2018

Trace Metals (Dissolved) in Water by ICPMS

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M	SE182834.001	LB154671	20 Aug 2018	20 Aug 2018	16 Feb 2019	22 Aug 2018	16 Feb 2019	22 Aug 2018
BH5M	SE182834.002	LB154671	20 Aug 2018	20 Aug 2018	16 Feb 2019	22 Aug 2018	16 Feb 2019	22 Aug 2018
BH6M	SE182834.003	LB154671	20 Aug 2018	20 Aug 2018	16 Feb 2019	22 Aug 2018	16 Feb 2019	22 Aug 2018
GWQD1	SE182834.004	LB154671	20 Aug 2018	20 Aug 2018	16 Feb 2019	22 Aug 2018	16 Feb 2019	22 Aug 2018
GWQR1	SE182834.005	LB154671	20 Aug 2018	20 Aug 2018	16 Feb 2019	22 Aug 2018	16 Feb 2019	22 Aug 2018

TRH (Total Recoverable Hydrocarbons) in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M	SE182834.001	LB154604	20 Aug 2018	20 Aug 2018	27 Aug 2018	21 Aug 2018	30 Sep 2018	22 Aug 2018
BH5M	SE182834.002	LB154604	20 Aug 2018	20 Aug 2018	27 Aug 2018	21 Aug 2018	30 Sep 2018	22 Aug 2018
BH6M	SE182834.003	LB154604	20 Aug 2018	20 Aug 2018	27 Aug 2018	21 Aug 2018	30 Sep 2018	22 Aug 2018
GWQD1	SE182834.004	LB154604	20 Aug 2018	20 Aug 2018	27 Aug 2018	21 Aug 2018	30 Sep 2018	22 Aug 2018
GWQR1	SE182834.005	LB154604	20 Aug 2018	20 Aug 2018	27 Aug 2018	21 Aug 2018	30 Sep 2018	22 Aug 2018

VOCs in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M	SE182834.001	LB154619	20 Aug 2018	20 Aug 2018	27 Aug 2018	21 Aug 2018	30 Sep 2018	22 Aug 2018
BH5M	SE182834.002	LB154619	20 Aug 2018	20 Aug 2018	27 Aug 2018	21 Aug 2018	30 Sep 2018	22 Aug 2018
BH6M	SE182834.003	LB154619	20 Aug 2018	20 Aug 2018	27 Aug 2018	21 Aug 2018	30 Sep 2018	22 Aug 2018
GWQD1	SE182834.004	LB154619	20 Aug 2018	20 Aug 2018	27 Aug 2018	21 Aug 2018	30 Sep 2018	22 Aug 2018
GWQR1	SE182834.005	LB154619	20 Aug 2018	20 Aug 2018	27 Aug 2018	21 Aug 2018	30 Sep 2018	22 Aug 2018
GWTB1	SE182834.006	LB154619	20 Aug 2018	20 Aug 2018	27 Aug 2018	21 Aug 2018	30 Sep 2018	22 Aug 2018
GWTS1	SE182834.007	LB154619	20 Aug 2018	20 Aug 2018	27 Aug 2018	21 Aug 2018	30 Sep 2018	22 Aug 2018

Volatile Petroleum Hydrocarbons in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M	SE182834.001	LB154619	20 Aug 2018	20 Aug 2018	27 Aug 2018	21 Aug 2018	30 Sep 2018	22 Aug 2018
BH5M	SE182834.002	LB154619	20 Aug 2018	20 Aug 2018	27 Aug 2018	21 Aug 2018	30 Sep 2018	22 Aug 2018
BH6M	SE182834.003	LB154619	20 Aug 2018	20 Aug 2018	27 Aug 2018	21 Aug 2018	30 Sep 2018	22 Aug 2018
GWQD1	SE182834.004	LB154619	20 Aug 2018	20 Aug 2018	27 Aug 2018	21 Aug 2018	30 Sep 2018	22 Aug 2018
GWQR1	SE182834.005	LB154619	20 Aug 2018	20 Aug 2018	27 Aug 2018	21 Aug 2018	30 Sep 2018	22 Aug 2018
GWTB1	SE182834.006	LB154619	20 Aug 2018	20 Aug 2018	27 Aug 2018	21 Aug 2018	30 Sep 2018	22 Aug 2018
GWTS1	SE182834.007	LB154619	20 Aug 2018	20 Aug 2018	27 Aug 2018	21 Aug 2018	30 Sep 2018	22 Aug 2018

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH1M	SE182834.001	%	40 - 130%	50
	BH5M	SE182834.002	%	40 - 130%	50
	BH6M	SE182834.003	%	40 - 130%	48
d14-p-terphenyl (Surrogate)	BH1M	SE182834.001	%	40 - 130%	68
	BH5M	SE182834.002	%	40 - 130%	66
	BH6M	SE182834.003	%	40 - 130%	66
d5-nitrobenzene (Surrogate)	BH1M	SE182834.001	%	40 - 130%	44
	BH5M	SE182834.002	%	40 - 130%	42
	BH6M	SE182834.003	%	40 - 130%	46

VOCs in Water

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH1M	SE182834.001	%	40 - 130%	103
	BH5M	SE182834.002	%	40 - 130%	110
	BH6M	SE182834.003	%	40 - 130%	114
	GWQD1	SE182834.004	%	40 - 130%	88
	GWQR1	SE182834.005	%	40 - 130%	89
	GWTB1	SE182834.006	%	40 - 130%	91
	GWTS1	SE182834.007	%	40 - 130%	101
d4-1,2-dichloroethane (Surrogate)	BH1M	SE182834.001	%	40 - 130%	95
	BH5M	SE182834.002	%	40 - 130%	99
	BH6M	SE182834.003	%	40 - 130%	96
	GWQD1	SE182834.004	%	40 - 130%	119
	GWQR1	SE182834.005	%	40 - 130%	103
	GWTB1	SE182834.006	%	40 - 130%	122
	GWTS1	SE182834.007	%	40 - 130%	81
d8-toluene (Surrogate)	BH1M	SE182834.001	%	40 - 130%	104
	BH5M	SE182834.002	%	40 - 130%	96
	BH6M	SE182834.003	%	40 - 130%	102
	GWQD1	SE182834.004	%	40 - 130%	101
	GWQR1	SE182834.005	%	40 - 130%	106
	GWTB1	SE182834.006	%	40 - 130%	115
	GWTS1	SE182834.007	%	40 - 130%	88
Dibromofluoromethane (Surrogate)	BH1M	SE182834.001	%	40 - 130%	95
	BH5M	SE182834.002	%	40 - 130%	99
	BH6M	SE182834.003	%	40 - 130%	96
	GWQD1	SE182834.004	%	40 - 130%	115
	GWQR1	SE182834.005	%	40 - 130%	102
	GWTB1	SE182834.006	%	40 - 130%	115
	GWTS1	SE182834.007	%	40 - 130%	83

Volatile Petroleum Hydrocarbons in Water

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH1M	SE182834.001	%	40 - 130%	86
	BH5M	SE182834.002	%	40 - 130%	94
	BH6M	SE182834.003	%	40 - 130%	93
	GWQD1	SE182834.004	%	40 - 130%	88
	GWQR1	SE182834.005	%	40 - 130%	89
d4-1,2-dichloroethane (Surrogate)	BH1M	SE182834.001	%	60 - 130%	109
	BH5M	SE182834.002	%	60 - 130%	114
	BH6M	SE182834.003	%	60 - 130%	112
	GWQD1	SE182834.004	%	60 - 130%	119
	GWQR1	SE182834.005	%	60 - 130%	103
d8-toluene (Surrogate)	BH1M	SE182834.001	%	40 - 130%	120
	BH5M	SE182834.002	%	40 - 130%	104
	BH6M	SE182834.003	%	40 - 130%	102
	GWQD1	SE182834.004	%	40 - 130%	101
	GWQR1	SE182834.005	%	40 - 130%	106
Dibromofluoromethane (Surrogate)	BH1M	SE182834.001	%	40 - 130%	110
	BH5M	SE182834.002	%	40 - 130%	110
	BH6M	SE182834.003	%	40 - 130%	121
	GWQD1	SE182834.004	%	40 - 130%	115

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

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

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Dibromofluoromethane (Surrogate)	GWQR1	SE182834.005	%	40 - 130%	102

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

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

Mercury (dissolved) in Water

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

Sample Number	Parameter	Units	LOR	Result
LB154657.001	Mercury	mg/L	0.0001	<0.0001

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Sample Number		Parameter	Units	LOR	Result
LB154604.001		Naphthalene	µg/L	0.1	<0.1
		2-methylnaphthalene	µg/L	0.1	<0.1
		1-methylnaphthalene	µg/L	0.1	<0.1
		Acenaphthylene	µg/L	0.1	<0.1
		Acenaphthene	µg/L	0.1	<0.1
		Fluorene	µg/L	0.1	<0.1
		Phenanthrene	µg/L	0.1	<0.1
		Anthracene	µg/L	0.1	<0.1
		Fluoranthene	µg/L	0.1	<0.1
		Pyrene	µg/L	0.1	<0.1
		Benzo(a)anthracene	µg/L	0.1	<0.1
		Chrysene	µg/L	0.1	<0.1
		Benzo(a)pyrene	µg/L	0.1	<0.1
		Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1
		Dibenzo(ah)anthracene	µg/L	0.1	<0.1
		Benzo(ghi)perylene	µg/L	0.1	<0.1
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	74
		2-fluorobiphenyl (Surrogate)	%	-	74
		d14-p-terphenyl (Surrogate)	%	-	82

Total Phenolics in Water

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

Sample Number	Parameter	Units	LOR	Result
LB154662.001	Total Phenols	mg/L	0.05	<0.05

Trace Metals (Dissolved) in Water by ICPMS

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

Sample Number	Parameter	Units	LOR	Result
LB154671.001	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
LB154604.001	TRH C10-C14	µg/L	50	<50
	TRH C15-C28	µg/L	200	<200
	TRH C29-C36	µg/L	200	<200
	TRH C37-C40	µg/L	200	<200

VOCs in Water

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

Sample Number		Parameter	Units	LOR	Result
LB154619.001	Fumigants	2,2-dichloropropane	µg/L	0.5	<0.5
		1,2-dichloropropane	µg/L	0.5	<0.5
		cis-1,3-dichloropropene	µg/L	0.5	<0.5
		trans-1,3-dichloropropene	µg/L	0.5	<0.5
		1,2-dibromoethane (EDB)	µg/L	0.5	<0.5
	Halogenated Aliphatics	Dichlorodifluoromethane (CFC-12)	µg/L	5	<5
		Chloromethane	µg/L	5	<5
		Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3
		Bromomethane	µg/L	10	<10
		Chloroethane	µg/L	5	<5
		Trichlorofluoromethane	µg/L	1	<1
		Iodomethane	µg/L	5	<5

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

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

VOCs in Water (continued)

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

Sample Number		Parameter	Units	LOR	Result
LB154619.001	Halogenated Aliphatics	1,1-dichloroethene	µg/L	0.5	<0.5
		Dichloromethane (Methylene chloride)	µg/L	5	<5
		Allyl chloride	µg/L	2	<2
		trans-1,2-dichloroethene	µg/L	0.5	<0.5
		1,1-dichloroethane	µg/L	0.5	<0.5
		cis-1,2-dichloroethene	µg/L	0.5	<0.5
		Bromochloromethane	µg/L	0.5	<0.5
		1,2-dichloroethane	µg/L	0.5	<0.5
		1,1,1-trichloroethane	µg/L	0.5	<0.5
		1,1-dichloropropene	µg/L	0.5	<0.5
		Carbon tetrachloride	µg/L	0.5	<0.5
		Dibromomethane	µg/L	0.5	<0.5
		Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	<0.5
		1,1,2-trichloroethane	µg/L	0.5	<0.5
		1,3-dichloropropane	µg/L	0.5	<0.5
		Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	<0.5
		1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5
		cis-1,4-dichloro-2-butene	µg/L	1	<1
		1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5
		1,2,3-trichloropropane	µg/L	0.5	<0.5
		trans-1,4-dichloro-2-butene	µg/L	1	<1
		1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5
		Hexachlorobutadiene	µg/L	0.5	<0.5
	Halogenated Aromatics	Chlorobenzene	µg/L	0.5	<0.5
		Bromobenzene	µg/L	0.5	<0.5
		2-chlorotoluene	µg/L	0.5	<0.5
		4-chlorotoluene	µg/L	0.5	<0.5
		1,3-dichlorobenzene	µg/L	0.5	<0.5
		1,4-dichlorobenzene	µg/L	0.3	<0.3
		1,2-dichlorobenzene	µg/L	0.5	<0.5
		1,2,4-trichlorobenzene	µg/L	0.5	<0.5
		1,2,3-trichlorobenzene	µg/L	0.5	<0.5
	Monocyclic Aromatic Hydrocarbons	Benzene	µg/L	0.5	<0.5
		Toluene	µg/L	0.5	<0.5
		Ethylbenzene	µg/L	0.5	<0.5
		m/p-xylene	µg/L	1	<1
		o-xylene	µg/L	0.5	<0.5
		Styrene (Vinyl benzene)	µg/L	0.5	<0.5
		Isopropylbenzene (Cumene)	µg/L	0.5	<0.5
		n-propylbenzene	µg/L	0.5	<0.5
		1,3,5-trimethylbenzene	µg/L	0.5	<0.5
		tert-butylbenzene	µg/L	0.5	<0.5
		1,2,4-trimethylbenzene	µg/L	0.5	<0.5
		sec-butylbenzene	µg/L	0.5	<0.5
		p-isopropyltoluene	µg/L	0.5	<0.5
		n-butylbenzene	µg/L	0.5	<0.5
	Nitrogenous Compounds	Acrylonitrile	µg/L	0.5	<0.5
	Oxygenated Compounds	Acetone (2-propanone)	µg/L	10	<10
		MtBE (Methyl-tert-butyl ether)	µg/L	2	<2
		Vinyl acetate	µg/L	10	<10
		MEK (2-butanone)	µg/L	10	<10
		MIBK (4-methyl-2-pentanone)	µg/L	5	<5
		2-hexanone (MBK)	µg/L	5	<5
	Polycyclic VOCs	Naphthalene	µg/L	0.5	<0.5
	Sulphonated	Carbon disulfide	µg/L	2	<2
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	75
		d4-1,2-dichloroethane (Surrogate)	%	-	74
		d8-toluene (Surrogate)	%	-	99
		Bromofluorobenzene (Surrogate)	%	-	106
	Trihalomethanes	Chloroform (THM)	µg/L	0.5	<0.5
		Bromodichloromethane (THM)	µg/L	0.5	<0.5

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

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

VOCs in Water (continued)

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

Sample Number		Parameter	Units	LOR	Result
LB154619.001	Trihalomethanes	Dibromochloromethane (THM)	µg/L	0.5	<0.5
		Bromoform (THM)	µg/L	0.5	<0.5

Volatile Petroleum Hydrocarbons in Water

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

Sample Number		Parameter	Units	LOR	Result
LB154619.001		TRH C6-C9	µg/L	40	<40
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	83
		d4-1,2-dichloroethane (Surrogate)	%	-	86
		d8-toluene (Surrogate)	%	-	91
		Bromofluorobenzene (Surrogate)	%	-	98

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

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

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

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

Mercury (dissolved) in Water

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182834.005	LB154657.010	Mercury	µg/L	0.0001	0.0002	0.0002	39	8

Total Phenolics in Water

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182738.001	LB154662.004	Total Phenols	mg/L	0.05	0.01643	0.01383	200	0

Trace Metals (Dissolved) in Water by ICPMS

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182834.005	LB154671.009	Arsenic, As	µg/L	1	<1	<1	200	0
		Cadmium, Cd	µg/L	0.1	<0.1	<0.1	200	0
		Chromium, Cr	µg/L	1	<1	<1	200	0
		Copper, Cu	µg/L	1	<1	<1	200	0
		Lead, Pb	µg/L	1	<1	<1	200	0
		Nickel, Ni	µg/L	1	<1	<1	200	0
		Zinc, Zn	µg/L	5	<5	<5	200	0

VOCs in Water

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182834.001	LB154619.011	Fumigants	2,2-dichloropropane	µg/L	0.5	<0.5	0	200	0
			1,2-dichloropropane	µg/L	0.5	<0.5	0	200	0
			cis-1,3-dichloropropene	µg/L	0.5	<0.5	0	200	0
			trans-1,3-dichloropropene	µg/L	0.5	<0.5	0	200	0
			1,2-dibromoethane (EDB)	µg/L	0.5	<0.5	0	200	0
		Halogenated	Dichlorodifluoromethane (CFC-12)	µg/L	5	<5	0	200	0
		Aliphatics	Chloromethane	µg/L	5	<5	0	200	0
			Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3	0	200	0
			Bromomethane	µg/L	10	<10	0	200	0
			Chloroethane	µg/L	5	<5	0	200	0
			Trichlorofluoromethane	µg/L	1	<1	0	200	0
			Iodomethane	µg/L	5	<5	0	200	0
			1,1-dichloroethene	µg/L	0.5	<0.5	0	200	0
			Dichloromethane (Methylene chloride)	µg/L	5	<5	0	200	0
			Allyl chloride	µg/L	2	<2	0	200	0
			trans-1,2-dichloroethene	µg/L	0.5	<0.5	0	200	0
			1,1-dichloroethane	µg/L	0.5	<0.5	0	200	0
			cis-1,2-dichloroethene	µg/L	0.5	<0.5	0	200	0
			Bromochloromethane	µg/L	0.5	<0.5	0	200	0
			1,2-dichloroethane	µg/L	0.5	<0.5	0	200	0
			1,1,1-trichloroethane	µg/L	0.5	<0.5	0	200	0
			1,1-dichloropropene	µg/L	0.5	<0.5	0	200	0
			Carbon tetrachloride	µg/L	0.5	<0.5	0	200	0
			Dibromomethane	µg/L	0.5	<0.5	0	200	0
			Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	<0.5	0	200	0
			1,1,2-trichloroethane	µg/L	0.5	<0.5	0	200	0
			1,3-dichloropropane	µg/L	0.5	<0.5	0	200	0
			Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	<0.5	0	200	0
			1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5	0	200	0
			cis-1,4-dichloro-2-butene	µg/L	1	<1	0	200	0
			1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5	0	200	0
			1,2,3-trichloropropane	µg/L	0.5	<0.5	0	200	0
			trans-1,4-dichloro-2-butene	µg/L	1	<1	0	200	0
			1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5	0	200	0
			Hexachlorobutadiene	µg/L	0.5	<0.5	0	200	0
		Halogenated	Chlorobenzene	µg/L	0.5	<0.5	0	200	0
		Aromatics	Bromobenzene	µg/L	0.5	<0.5	0	200	0
			2-chlorotoluene	µg/L	0.5	<0.5	0	200	0
			4-chlorotoluene	µg/L	0.5	<0.5	0	200	0

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

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

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

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

VOCs in Water (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182834.001	LB154619.011	Halogenated	1,3-dichlorobenzene	µg/L	0.5	<0.5	0	200	0
		Aromatics	1,4-dichlorobenzene	µg/L	0.3	<0.3	0	200	0
			1,2-dichlorobenzene	µg/L	0.5	<0.5	0	200	0
			1,2,4-trichlorobenzene	µg/L	0.5	<0.5	0	200	0
			1,2,3-trichlorobenzene	µg/L	0.5	<0.5	0	200	0
		Monocyclic	Benzene	µg/L	0.5	<0.5	0.03	200	0
		Aromatic	Toluene	µg/L	0.5	<0.5	0.01	200	0
			Ethylbenzene	µg/L	0.5	<0.5	0.01	200	0
			m/p-xylene	µg/L	1	<1	0.01	200	0
			o-xylene	µg/L	0.5	<0.5	0.01	200	0
			Styrene (Vinyl benzene)	µg/L	0.5	<0.5	0	200	0
			Isopropylbenzene (Cumene)	µg/L	0.5	<0.5	0	200	0
			n-propylbenzene	µg/L	0.5	<0.5	0	200	0
			1,3,5-trimethylbenzene	µg/L	0.5	<0.5	0	200	0
			tert-butylbenzene	µg/L	0.5	<0.5	0	200	0
			1,2,4-trimethylbenzene	µg/L	0.5	<0.5	0	200	0
			sec-butylbenzene	µg/L	0.5	<0.5	0	200	0
			p-isopropyltoluene	µg/L	0.5	<0.5	0	200	0
			n-butylbenzene	µg/L	0.5	<0.5	0	200	0
		Nitrogenous	Acrylonitrile	µg/L	0.5	<0.5	0	200	0
		Oxygenated	Acetone (2-propanone)	µg/L	10	<10	0	200	0
		Compounds	MtBE (Methyl-tert-butyl ether)	µg/L	2	<2	0	200	0
			Vinyl acetate	µg/L	10	<10	0	200	0
			MEK (2-butanone)	µg/L	10	<10	0	200	0
			MIBK (4-methyl-2-pentanone)	µg/L	5	<5	0	200	0
			2-hexanone (MBK)	µg/L	5	<5	0	200	0
		Polycyclic	Naphthalene	µg/L	0.5	<0.5	0	200	0
		Sulphonated	Carbon disulfide	µg/L	2	<2	0	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.7	4.6	30	3
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.8	4.8	30	1
			d8-toluene (Surrogate)	µg/L	-	5.2	5.27	30	2
			Bromofluorobenzene (Surrogate)	µg/L	-	5.1	6.19	30	19
		Trihalomethan	Chloroform (THM)	µg/L	0.5	<0.5	0	200	0
		es	Bromodichloromethane (THM)	µg/L	0.5	<0.5	0	200	0
			Dibromochloromethane (THM)	µg/L	0.5	<0.5	0	200	0
			Bromoform (THM)	µg/L	0.5	<0.5	0	200	0

Volatile Petroleum Hydrocarbons in Water

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182834.001	LB154619.011		TRH C6-C10	µg/L	50	<50	0	200	0
			TRH C6-C9	µg/L	40	<40	0	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	5.5	4.94	30	11
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.5	5.28	30	3
			d8-toluene (Surrogate)	µg/L	-	6.0	6.36	30	5
			Bromofluorobenzene (Surrogate)	µg/L	-	4.3	4.34	30	1
		VPH F Bands	Benzene (F0)	µg/L	0.5	<0.5	0.03	200	0
			TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	-0.07	200	0

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Water

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB154604.002		Naphthalene	µg/L	0.1	35	40	60 - 140	87
		Acenaphthylene	µg/L	0.1	37	40	60 - 140	92
		Acenaphthene	µg/L	0.1	36	40	60 - 140	90
		Phenanthrene	µg/L	0.1	42	40	60 - 140	106
		Anthracene	µg/L	0.1	38	40	60 - 140	96
		Fluoranthene	µg/L	0.1	43	40	60 - 140	107
		Pyrene	µg/L	0.1	41	40	60 - 140	104
		Benzo(a)pyrene	µg/L	0.1	40	40	60 - 140	101
	Surrogates	d5-nitrobenzene (Surrogate)	µg/L	-	0.4	0.5	40 - 130	76
		2-fluorobiphenyl (Surrogate)	µg/L	-	0.4	0.5	40 - 130	74
		d14-p-terphenyl (Surrogate)	µg/L	-	0.4	0.5	40 - 130	82

Total Phenolics in Water

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB154662.002	Total Phenols	mg/L	0.05	0.25	0.25	80 - 120	101

Trace Metals (Dissolved) in Water by ICPMS

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB154671.002		Arsenic, As	µg/L	1	20	20	80 - 120	99
		Cadmium, Cd	µg/L	0.1	19	20	80 - 120	95
		Chromium, Cr	µg/L	1	19	20	80 - 120	95
		Copper, Cu	µg/L	1	19	20	80 - 120	97
		Lead, Pb	µg/L	1	21	20	80 - 120	103
		Nickel, Ni	µg/L	1	19	20	80 - 120	95
		Zinc, Zn	µg/L	5	21	20	80 - 120	103

TRH (Total Recoverable Hydrocarbons) in Water

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB154604.002		TRH C10-C14	µg/L	50	1100	1200	60 - 140	95
		TRH C15-C28	µg/L	200	1400	1200	60 - 140	113
		TRH C29-C36	µg/L	200	1100	1200	60 - 140	91
	TRH F Bands	TRH >C10-C16	µg/L	60	1200	1200	60 - 140	101
		TRH >C16-C34 (F3)	µg/L	500	1300	1200	60 - 140	110
		TRH >C34-C40 (F4)	µg/L	500	530	600	60 - 140	88

VOCs in Water

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB154619.002	Halogenated	1,1-dichloroethene	µg/L	0.5	50	45.45	60 - 140	109
	Aliphatics	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	Chlorobenzene	µg/L	0.5	50	45.45	60 - 140	109
	Monocyclic	Benzene	µg/L	0.5	50	45.45	60 - 140	110
	Aromatic	Toluene	µg/L	0.5	50	45.45	60 - 140	110
		Ethylbenzene	µg/L	0.5	50	45.45	60 - 140	110
		m/p-xylene	µg/L	1	100	90.9	60 - 140	110
		o-xylene	µg/L	0.5	50	45.45	60 - 140	109
	Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	3.9	5	60 - 140	77
		d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.2	5	60 - 140	83
		d8-toluene (Surrogate)	µg/L	-	4.7	5	60 - 140	93
		Bromofluorobenzene (Surrogate)	µg/L	-	5.2	5	60 - 140	104
	Trihalomethan	Chloroform (THM)	µg/L	0.5	49	45.45	60 - 140	108

Volatile Petroleum Hydrocarbons in Water

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB154619.002		TRH C6-C10	µg/L	50	960	946.63	60 - 140	101
		TRH C6-C9	µg/L	40	780	818.71	60 - 140	95
	Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.0	5	60 - 140	80
		d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.1	5	60 - 140	82
		d8-toluene (Surrogate)	µg/L	-	4.6	5	60 - 140	93
		Bromofluorobenzene (Surrogate)	µg/L	-	5.0	5	60 - 140	101
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	650	639.67	60 - 140	101

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

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

Mercury (dissolved) in Water

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE182771.011	LB154657.004	Mercury	mg/L	0.0001	0.0083	0.2278	0.008	101

Total Phenolics in Water

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

QC Sample	Sample Number	Parameter	Units	LOR	Original	Spike	Recovery%
SE182750.001	LB154662.010	Total Phenols	mg/L	0.05	-0.00051	0.25	97

Trace Metals (Dissolved) in Water by ICPMS

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE182834.001	LB154671.004	Arsenic, As	µg/L	1	23	<1	20	111
		Cadmium, Cd	µg/L	0.1	19	<0.1	20	94
		Chromium, Cr	µg/L	1	19	1	20	87
		Copper, Cu	µg/L	1	69	56	20	66 ④
		Lead, Pb	µg/L	1	21	3	20	88
		Nickel, Ni	µg/L	1	57	43	20	71
		Zinc, Zn	µg/L	5	140	130	20	60 ④

MATRIX SPIKE DUPLICATES

SE182834 R0

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

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

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

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

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

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

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

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

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

STATEMENT OF QA/QC PERFORMANCE

SE182834A R0

CLIENT DETAILS

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Project	**E23967 143a Stoney Creek Rd Beverly Hill**
Order Number	**E23967**
Samples	8

LABORATORY DETAILS

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Laboratory	SGS Alexandria Environmental
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SGS Reference	**SE182834A R0**
Date Received	23 Aug 2018
Date Reported	24 Aug 2018

COMMENTS

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

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

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

SAMPLE SUMMARY

HOLDING TIME SUMMARY

SE182834A R0

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

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

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

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
GWQRB1	SE182834A.008	LB154888	20 Aug 2018	23 Aug 2018	17 Sep 2018	24 Aug 2018	17 Sep 2018	24 Aug 2018

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

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

No surrogates were required for this job.

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

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

Mercury (dissolved) in Water

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

Sample Number	Parameter	Units	LOR	Result
LB154888.001	Mercury	mg/L	0.0001	<0.0001

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

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

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

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

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182996.024	LB154888.010	Mercury	µg/L	0.0001	-0.0298	-0.0134	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.

Sample Number	Parameter	Units	LOR

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

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

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE182834A.00	LB154888.004	Mercury	mg/L	0.0001	0.0070	<0.0001	0.008	88

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

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

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

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

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

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

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

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

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

STATEMENT OF QA/QC PERFORMANCE

SE182633 R0

CLIENT DETAILS

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Project	**E23967 143A Stoney Creek Rd Beverly Hill**
Order Number	**E23967**
Samples	16

LABORATORY DETAILS

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SGS Reference	**SE182633 R0**
Date Received	14 Aug 2018
Date Reported	21 Aug 2018

COMMENTS

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

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

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

Duplicate	Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES	5 items
Matrix Spike	Mercury in Soil	1 item
	TRH (Total Recoverable Hydrocarbons) in Water	4 items

SAMPLE SUMMARY

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	15 Soil, 1 Water
Date documentation received	14/8/2018	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	6.7°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

HOLDING TIME SUMMARY

SE182633 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
BH1M_0.3-0.4	SE182633.001	LB154448	14 Aug 2018	14 Aug 2018	14 Aug 2019	17 Aug 2018	14 Aug 2019	20 Aug 2018
BH2_0.9-1.0	SE182633.003	LB154448	14 Aug 2018	14 Aug 2018	14 Aug 2019	17 Aug 2018	14 Aug 2019	20 Aug 2018
BH3_0.3-0.4	SE182633.004	LB154448	14 Aug 2018	14 Aug 2018	14 Aug 2019	17 Aug 2018	14 Aug 2019	20 Aug 2018
BH4_0.3-0.4	SE182633.006	LB154448	14 Aug 2018	14 Aug 2018	14 Aug 2019	17 Aug 2018	14 Aug 2019	20 Aug 2018
BH5M_0.3-0.4	SE182633.007	LB154448	14 Aug 2018	14 Aug 2018	14 Aug 2019	17 Aug 2018	14 Aug 2019	20 Aug 2018
BH6M_0.3-0.4	SE182633.009	LB154448	14 Aug 2018	14 Aug 2018	14 Aug 2019	17 Aug 2018	14 Aug 2019	20 Aug 2018
BH7_0.3-0.4	SE182633.010	LB154448	14 Aug 2018	14 Aug 2018	14 Aug 2019	17 Aug 2018	14 Aug 2019	20 Aug 2018
BH8_0.3-0.4	SE182633.012	LB154448	14 Aug 2018	14 Aug 2018	14 Aug 2019	17 Aug 2018	14 Aug 2019	20 Aug 2018

Mercury (dissolved) in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QR1	SE182633.014	LB154136	14 Aug 2018	14 Aug 2018	11 Sep 2018	15 Aug 2018	11 Sep 2018	15 Aug 2018

Mercury in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M_0.3-0.4	SE182633.001	LB154418	14 Aug 2018	14 Aug 2018	11 Sep 2018	17 Aug 2018	11 Sep 2018	20 Aug 2018
BH1M_2.4-2.5	SE182633.002	LB154418	14 Aug 2018	14 Aug 2018	11 Sep 2018	17 Aug 2018	11 Sep 2018	20 Aug 2018
BH2_0.9-1.0	SE182633.003	LB154418	14 Aug 2018	14 Aug 2018	11 Sep 2018	17 Aug 2018	11 Sep 2018	20 Aug 2018
BH3_0.3-0.4	SE182633.004	LB154418	14 Aug 2018	14 Aug 2018	11 Sep 2018	17 Aug 2018	11 Sep 2018	20 Aug 2018
BH3_2.5-2.6	SE182633.005	LB154418	14 Aug 2018	14 Aug 2018	11 Sep 2018	17 Aug 2018	11 Sep 2018	20 Aug 2018
BH4_0.3-0.4	SE182633.006	LB154418	14 Aug 2018	14 Aug 2018	11 Sep 2018	17 Aug 2018	11 Sep 2018	20 Aug 2018
BH5M_0.3-0.4	SE182633.007	LB154418	14 Aug 2018	14 Aug 2018	11 Sep 2018	17 Aug 2018	11 Sep 2018	20 Aug 2018
BH5M_2.0-2.1	SE182633.008	LB154418	14 Aug 2018	14 Aug 2018	11 Sep 2018	17 Aug 2018	11 Sep 2018	20 Aug 2018
BH6M_0.3-0.4	SE182633.009	LB154418	14 Aug 2018	14 Aug 2018	11 Sep 2018	17 Aug 2018	11 Sep 2018	20 Aug 2018
BH7_0.3-0.4	SE182633.010	LB154418	14 Aug 2018	14 Aug 2018	11 Sep 2018	17 Aug 2018	11 Sep 2018	20 Aug 2018
BH7_1.5-1.6	SE182633.011	LB154418	14 Aug 2018	14 Aug 2018	11 Sep 2018	17 Aug 2018	11 Sep 2018	20 Aug 2018
BH8_0.3-0.4	SE182633.012	LB154418	14 Aug 2018	14 Aug 2018	11 Sep 2018	17 Aug 2018	11 Sep 2018	20 Aug 2018
QD1	SE182633.013	LB154418	14 Aug 2018	14 Aug 2018	11 Sep 2018	17 Aug 2018	11 Sep 2018	20 Aug 2018

Moisture Content

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M_0.3-0.4	SE182633.001	LB154452	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	22 Aug 2018	20 Aug 2018
BH1M_2.4-2.5	SE182633.002	LB154452	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	22 Aug 2018	20 Aug 2018
BH2_0.9-1.0	SE182633.003	LB154452	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	22 Aug 2018	20 Aug 2018
BH3_0.3-0.4	SE182633.004	LB154452	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	22 Aug 2018	20 Aug 2018
BH3_2.5-2.6	SE182633.005	LB154452	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	22 Aug 2018	20 Aug 2018
BH4_0.3-0.4	SE182633.006	LB154452	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	22 Aug 2018	20 Aug 2018
BH5M_0.3-0.4	SE182633.007	LB154452	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	22 Aug 2018	20 Aug 2018
BH5M_2.0-2.1	SE182633.008	LB154452	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	22 Aug 2018	20 Aug 2018
BH6M_0.3-0.4	SE182633.009	LB154452	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	22 Aug 2018	20 Aug 2018
BH7_0.3-0.4	SE182633.010	LB154452	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	22 Aug 2018	20 Aug 2018
BH7_1.5-1.6	SE182633.011	LB154452	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	22 Aug 2018	20 Aug 2018
BH8_0.3-0.4	SE182633.012	LB154452	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	22 Aug 2018	20 Aug 2018
QD1	SE182633.013	LB154452	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	22 Aug 2018	20 Aug 2018
TB1	SE182633.016	LB154452	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	22 Aug 2018	20 Aug 2018

OC Pesticides in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M_0.3-0.4	SE182633.001	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH1M_2.4-2.5	SE182633.002	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH2_0.9-1.0	SE182633.003	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH3_0.3-0.4	SE182633.004	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH3_2.5-2.6	SE182633.005	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH4_0.3-0.4	SE182633.006	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH5M_0.3-0.4	SE182633.007	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH5M_2.0-2.1	SE182633.008	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH6M_0.3-0.4	SE182633.009	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH7_0.3-0.4	SE182633.010	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH7_1.5-1.6	SE182633.011	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH8_0.3-0.4	SE182633.012	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
QD1	SE182633.013	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018

HOLDING TIME SUMMARY

SE182633 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.

OP Pesticides in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M_0.3-0.4	SE182633.001	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH1M_2.4-2.5	SE182633.002	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH2_0.9-1.0	SE182633.003	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH3_0.3-0.4	SE182633.004	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH3_2.5-2.6	SE182633.005	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH4_0.3-0.4	SE182633.006	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH5M_0.3-0.4	SE182633.007	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH5M_2.0-2.1	SE182633.008	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH6M_0.3-0.4	SE182633.009	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH7_0.3-0.4	SE182633.010	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH7_1.5-1.6	SE182633.011	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH8_0.3-0.4	SE182633.012	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
QD1	SE182633.013	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M_0.3-0.4	SE182633.001	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH1M_2.4-2.5	SE182633.002	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH2_0.9-1.0	SE182633.003	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH3_0.3-0.4	SE182633.004	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH3_2.5-2.6	SE182633.005	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH4_0.3-0.4	SE182633.006	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH5M_0.3-0.4	SE182633.007	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH5M_2.0-2.1	SE182633.008	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH6M_0.3-0.4	SE182633.009	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH7_0.3-0.4	SE182633.010	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH7_1.5-1.6	SE182633.011	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH8_0.3-0.4	SE182633.012	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
QD1	SE182633.013	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018

PCBs in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M_0.3-0.4	SE182633.001	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH1M_2.4-2.5	SE182633.002	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH2_0.9-1.0	SE182633.003	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH3_0.3-0.4	SE182633.004	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH3_2.5-2.6	SE182633.005	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH4_0.3-0.4	SE182633.006	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH5M_0.3-0.4	SE182633.007	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH5M_2.0-2.1	SE182633.008	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH6M_0.3-0.4	SE182633.009	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH7_0.3-0.4	SE182633.010	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH7_1.5-1.6	SE182633.011	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH8_0.3-0.4	SE182633.012	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
QD1	SE182633.013	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018

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

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M_0.3-0.4	SE182633.001	LB154416	14 Aug 2018	14 Aug 2018	10 Feb 2019	17 Aug 2018	10 Feb 2019	20 Aug 2018
BH1M_2.4-2.5	SE182633.002	LB154416	14 Aug 2018	14 Aug 2018	10 Feb 2019	17 Aug 2018	10 Feb 2019	20 Aug 2018
BH2_0.9-1.0	SE182633.003	LB154416	14 Aug 2018	14 Aug 2018	10 Feb 2019	17 Aug 2018	10 Feb 2019	20 Aug 2018
BH3_0.3-0.4	SE182633.004	LB154416	14 Aug 2018	14 Aug 2018	10 Feb 2019	17 Aug 2018	10 Feb 2019	20 Aug 2018
BH3_2.5-2.6	SE182633.005	LB154416	14 Aug 2018	14 Aug 2018	10 Feb 2019	17 Aug 2018	10 Feb 2019	20 Aug 2018
BH4_0.3-0.4	SE182633.006	LB154416	14 Aug 2018	14 Aug 2018	10 Feb 2019	17 Aug 2018	10 Feb 2019	20 Aug 2018
BH5M_0.3-0.4	SE182633.007	LB154416	14 Aug 2018	14 Aug 2018	10 Feb 2019	17 Aug 2018	10 Feb 2019	20 Aug 2018
BH5M_2.0-2.1	SE182633.008	LB154416	14 Aug 2018	14 Aug 2018	10 Feb 2019	17 Aug 2018	10 Feb 2019	20 Aug 2018
BH6M_0.3-0.4	SE182633.009	LB154416	14 Aug 2018	14 Aug 2018	10 Feb 2019	17 Aug 2018	10 Feb 2019	20 Aug 2018
BH7_0.3-0.4	SE182633.010	LB154416	14 Aug 2018	14 Aug 2018	10 Feb 2019	17 Aug 2018	10 Feb 2019	20 Aug 2018
BH7_1.5-1.6	SE182633.011	LB154416	14 Aug 2018	14 Aug 2018	10 Feb 2019	17 Aug 2018	10 Feb 2019	20 Aug 2018
BH8_0.3-0.4	SE182633.012	LB154416	14 Aug 2018	14 Aug 2018	10 Feb 2019	17 Aug 2018	10 Feb 2019	20 Aug 2018
QD1	SE182633.013	LB154416	14 Aug 2018	14 Aug 2018	10 Feb 2019	17 Aug 2018	10 Feb 2019	20 Aug 2018

HOLDING TIME SUMMARY

SE182633 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	SE182633.014	LB154212	14 Aug 2018	14 Aug 2018	10 Feb 2019	15 Aug 2018	10 Feb 2019	16 Aug 2018

TRH (Total Recoverable Hydrocarbons) in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M_0.3-0.4	SE182633.001	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH1M_2.4-2.5	SE182633.002	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH2_0.9-1.0	SE182633.003	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH3_0.3-0.4	SE182633.004	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH3_2.5-2.6	SE182633.005	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH4_0.3-0.4	SE182633.006	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH5M_0.3-0.4	SE182633.007	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH5M_2.0-2.1	SE182633.008	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH6M_0.3-0.4	SE182633.009	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH7_0.3-0.4	SE182633.010	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH7_1.5-1.6	SE182633.011	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH8_0.3-0.4	SE182633.012	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
QD1	SE182633.013	LB154432	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018

TRH (Total Recoverable Hydrocarbons) in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QR1	SE182633.014	LB154204	14 Aug 2018	14 Aug 2018	21 Aug 2018	15 Aug 2018	24 Sep 2018	20 Aug 2018

VOC's in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M_0.3-0.4	SE182633.001	LB154419	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH1M_2.4-2.5	SE182633.002	LB154419	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH2_0.9-1.0	SE182633.003	LB154419	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH3_0.3-0.4	SE182633.004	LB154419	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH3_2.5-2.6	SE182633.005	LB154419	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH4_0.3-0.4	SE182633.006	LB154419	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH5M_0.3-0.4	SE182633.007	LB154419	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH5M_2.0-2.1	SE182633.008	LB154419	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH6M_0.3-0.4	SE182633.009	LB154419	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH7_0.3-0.4	SE182633.010	LB154419	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH7_1.5-1.6	SE182633.011	LB154419	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH8_0.3-0.4	SE182633.012	LB154419	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
QD1	SE182633.013	LB154419	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
TS1	SE182633.015	LB154419	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
TB1	SE182633.016	LB154419	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018

VOCs in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QR1	SE182633.014	LB154228	14 Aug 2018	14 Aug 2018	21 Aug 2018	15 Aug 2018	24 Sep 2018	15 Aug 2018

Volatile Petroleum Hydrocarbons in Soil

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1M_0.3-0.4	SE182633.001	LB154419	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH1M_2.4-2.5	SE182633.002	LB154419	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH2_0.9-1.0	SE182633.003	LB154419	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH3_0.3-0.4	SE182633.004	LB154419	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH3_2.5-2.6	SE182633.005	LB154419	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH4_0.3-0.4	SE182633.006	LB154419	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH5M_0.3-0.4	SE182633.007	LB154419	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH5M_2.0-2.1	SE182633.008	LB154419	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH6M_0.3-0.4	SE182633.009	LB154419	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH7_0.3-0.4	SE182633.010	LB154419	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH7_1.5-1.6	SE182633.011	LB154419	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
BH8_0.3-0.4	SE182633.012	LB154419	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
QD1	SE182633.013	LB154419	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018

HOLDING TIME SUMMARY

SE182633 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 Soil (continued)

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
TS1	SE182633.015	LB154419	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018
TB1	SE182633.016	LB154419	14 Aug 2018	14 Aug 2018	28 Aug 2018	17 Aug 2018	26 Sep 2018	20 Aug 2018

Volatile Petroleum Hydrocarbons in Water

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

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QR1	SE182633.014	LB154228	14 Aug 2018	14 Aug 2018	21 Aug 2018	15 Aug 2018	24 Sep 2018	15 Aug 2018

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

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

OC Pesticides in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH1M_0.3-0.4	SE182633.001	%	60 - 130%	101
	BH2_0.9-1.0	SE182633.003	%	60 - 130%	102
	BH3_0.3-0.4	SE182633.004	%	60 - 130%	97
	BH4_0.3-0.4	SE182633.006	%	60 - 130%	105
	BH5M_0.3-0.4	SE182633.007	%	60 - 130%	107
	BH6M_0.3-0.4	SE182633.009	%	60 - 130%	109
	BH7_0.3-0.4	SE182633.010	%	60 - 130%	109
	BH8_0.3-0.4	SE182633.012	%	60 - 130%	113

OP Pesticides in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH1M_0.3-0.4	SE182633.001	%	60 - 130%	92
	BH2_0.9-1.0	SE182633.003	%	60 - 130%	86
	BH3_0.3-0.4	SE182633.004	%	60 - 130%	88
	BH4_0.3-0.4	SE182633.006	%	60 - 130%	88
	BH5M_0.3-0.4	SE182633.007	%	60 - 130%	88
	BH6M_0.3-0.4	SE182633.009	%	60 - 130%	90
	BH7_0.3-0.4	SE182633.010	%	60 - 130%	86
	BH8_0.3-0.4	SE182633.012	%	60 - 130%	94
d14-p-terphenyl (Surrogate)	BH1M_0.3-0.4	SE182633.001	%	60 - 130%	92
	BH2_0.9-1.0	SE182633.003	%	60 - 130%	86
	BH3_0.3-0.4	SE182633.004	%	60 - 130%	88
	BH4_0.3-0.4	SE182633.006	%	60 - 130%	88
	BH5M_0.3-0.4	SE182633.007	%	60 - 130%	86
	BH6M_0.3-0.4	SE182633.009	%	60 - 130%	86
	BH7_0.3-0.4	SE182633.010	%	60 - 130%	88
	BH8_0.3-0.4	SE182633.012	%	60 - 130%	94

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH1M_0.3-0.4	SE182633.001	%	70 - 130%	92
	BH1M_2.4-2.5	SE182633.002	%	70 - 130%	92
	BH2_0.9-1.0	SE182633.003	%	70 - 130%	86
	BH3_0.3-0.4	SE182633.004	%	70 - 130%	88
	BH3_2.5-2.6	SE182633.005	%	70 - 130%	84
	BH4_0.3-0.4	SE182633.006	%	70 - 130%	88
	BH5M_0.3-0.4	SE182633.007	%	70 - 130%	88
	BH5M_2.0-2.1	SE182633.008	%	70 - 130%	90
	BH6M_0.3-0.4	SE182633.009	%	70 - 130%	90
	BH7_0.3-0.4	SE182633.010	%	70 - 130%	86
	BH7_1.5-1.6	SE182633.011	%	70 - 130%	88
	BH8_0.3-0.4	SE182633.012	%	70 - 130%	94
d14-p-terphenyl (Surrogate)	BH1M_0.3-0.4	SE182633.001	%	70 - 130%	92
	BH1M_2.4-2.5	SE182633.002	%	70 - 130%	94
	BH2_0.9-1.0	SE182633.003	%	70 - 130%	86
	BH3_0.3-0.4	SE182633.004	%	70 - 130%	88
	BH3_2.5-2.6	SE182633.005	%	70 - 130%	88
	BH4_0.3-0.4	SE182633.006	%	70 - 130%	88
	BH5M_0.3-0.4	SE182633.007	%	70 - 130%	86
	BH5M_2.0-2.1	SE182633.008	%	70 - 130%	94
	BH6M_0.3-0.4	SE182633.009	%	70 - 130%	86
	BH7_0.3-0.4	SE182633.010	%	70 - 130%	88
	BH7_1.5-1.6	SE182633.011	%	70 - 130%	90
	BH8_0.3-0.4	SE182633.012	%	70 - 130%	94
d5-nitrobenzene (Surrogate)	BH1M_0.3-0.4	SE182633.001	%	70 - 130%	90
	BH1M_2.4-2.5	SE182633.002	%	70 - 130%	88
	BH2_0.9-1.0	SE182633.003	%	70 - 130%	80
	BH3_0.3-0.4	SE182633.004	%	70 - 130%	82
	BH3_2.5-2.6	SE182633.005	%	70 - 130%	78
	BH4_0.3-0.4	SE182633.006	%	70 - 130%	82
	BH5M_0.3-0.4	SE182633.007	%	70 - 130%	80
	BH5M_2.0-2.1	SE182633.008	%	70 - 130%	84

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

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

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d5-nitrobenzene (Surrogate)	BH6M_0.3-0.4	SE182633.009	%	70 - 130%	82
	BH7_0.3-0.4	SE182633.010	%	70 - 130%	82
	BH7_1.5-1.6	SE182633.011	%	70 - 130%	80
	BH8_0.3-0.4	SE182633.012	%	70 - 130%	84

PCBs in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH1M_0.3-0.4	SE182633.001	%	60 - 130%	101
	BH2_0.9-1.0	SE182633.003	%	60 - 130%	102
	BH3_0.3-0.4	SE182633.004	%	60 - 130%	97
	BH4_0.3-0.4	SE182633.006	%	60 - 130%	105
	BH5M_0.3-0.4	SE182633.007	%	60 - 130%	107
	BH6M_0.3-0.4	SE182633.009	%	60 - 130%	109
	BH7_0.3-0.4	SE182633.010	%	60 - 130%	109
	BH8_0.3-0.4	SE182633.012	%	60 - 130%	113

VOC's in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH1M_0.3-0.4	SE182633.001	%	60 - 130%	71
	BH1M_2.4-2.5	SE182633.002	%	60 - 130%	76
	BH2_0.9-1.0	SE182633.003	%	60 - 130%	74
	BH3_0.3-0.4	SE182633.004	%	60 - 130%	70
	BH3_2.5-2.6	SE182633.005	%	60 - 130%	81
	BH4_0.3-0.4	SE182633.006	%	60 - 130%	76
	BH5M_0.3-0.4	SE182633.007	%	60 - 130%	83
	BH5M_2.0-2.1	SE182633.008	%	60 - 130%	76
	BH6M_0.3-0.4	SE182633.009	%	60 - 130%	78
	BH7_0.3-0.4	SE182633.010	%	60 - 130%	76
	BH7_1.5-1.6	SE182633.011	%	60 - 130%	81
	BH8_0.3-0.4	SE182633.012	%	60 - 130%	72
	QD1	SE182633.013	%	60 - 130%	73
	TS1	SE182633.015	%	60 - 130%	84
	TB1	SE182633.016	%	60 - 130%	86
d4-1,2-dichloroethane (Surrogate)	BH1M_0.3-0.4	SE182633.001	%	60 - 130%	72
	BH1M_2.4-2.5	SE182633.002	%	60 - 130%	82
	BH2_0.9-1.0	SE182633.003	%	60 - 130%	78
	BH3_0.3-0.4	SE182633.004	%	60 - 130%	82
	BH3_2.5-2.6	SE182633.005	%	60 - 130%	84
	BH4_0.3-0.4	SE182633.006	%	60 - 130%	81
	BH5M_0.3-0.4	SE182633.007	%	60 - 130%	88
	BH5M_2.0-2.1	SE182633.008	%	60 - 130%	82
	BH6M_0.3-0.4	SE182633.009	%	60 - 130%	78
	BH7_0.3-0.4	SE182633.010	%	60 - 130%	78
	BH7_1.5-1.6	SE182633.011	%	60 - 130%	80
	BH8_0.3-0.4	SE182633.012	%	60 - 130%	80
	QD1	SE182633.013	%	60 - 130%	75
	TS1	SE182633.015	%	60 - 130%	80
	TB1	SE182633.016	%	60 - 130%	90
d8-toluene (Surrogate)	BH1M_0.3-0.4	SE182633.001	%	60 - 130%	86
	BH1M_2.4-2.5	SE182633.002	%	60 - 130%	92
	BH2_0.9-1.0	SE182633.003	%	60 - 130%	94
	BH3_0.3-0.4	SE182633.004	%	60 - 130%	85
	BH3_2.5-2.6	SE182633.005	%	60 - 130%	92
	BH4_0.3-0.4	SE182633.006	%	60 - 130%	100
	BH5M_0.3-0.4	SE182633.007	%	60 - 130%	100
	BH5M_2.0-2.1	SE182633.008	%	60 - 130%	83
	BH6M_0.3-0.4	SE182633.009	%	60 - 130%	100
	BH7_0.3-0.4	SE182633.010	%	60 - 130%	90
	BH7_1.5-1.6	SE182633.011	%	60 - 130%	93
	BH8_0.3-0.4	SE182633.012	%	60 - 130%	91
	QD1	SE182633.013	%	60 - 130%	90
	TS1	SE182633.015	%	60 - 130%	84

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

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

VOC's in Soil (continued)

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d8-toluene (Surrogate)	TB1	SE182633.016	%	60 - 130%	100
Dibromofluoromethane (Surrogate)	BH1M_0.3-0.4	SE182633.001	%	60 - 130%	73
	BH1M_2.4-2.5	SE182633.002	%	60 - 130%	76
	BH2_0.9-1.0	SE182633.003	%	60 - 130%	72
	BH3_0.3-0.4	SE182633.004	%	60 - 130%	74
	BH3_2.5-2.6	SE182633.005	%	60 - 130%	86
	BH4_0.3-0.4	SE182633.006	%	60 - 130%	103
	BH5M_0.3-0.4	SE182633.007	%	60 - 130%	80
	BH5M_2.0-2.1	SE182633.008	%	60 - 130%	92
	BH6M_0.3-0.4	SE182633.009	%	60 - 130%	87
	BH7_0.3-0.4	SE182633.010	%	60 - 130%	71
	BH7_1.5-1.6	SE182633.011	%	60 - 130%	78
	BH8_0.3-0.4	SE182633.012	%	60 - 130%	76
	QD1	SE182633.013	%	60 - 130%	74
	TS1	SE182633.015	%	60 - 130%	72
	TB1	SE182633.016	%	60 - 130%	88

VOCs in Water

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	QR1	SE182633.014	%	40 - 130%	89
d4-1,2-dichloroethane (Surrogate)	QR1	SE182633.014	%	40 - 130%	122
d8-toluene (Surrogate)	QR1	SE182633.014	%	40 - 130%	96
Dibromofluoromethane (Surrogate)	QR1	SE182633.014	%	40 - 130%	126

Volatile Petroleum Hydrocarbons in Soil

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH1M_0.3-0.4	SE182633.001	%	60 - 130%	71
	BH1M_2.4-2.5	SE182633.002	%	60 - 130%	76
	BH2_0.9-1.0	SE182633.003	%	60 - 130%	74
	BH3_0.3-0.4	SE182633.004	%	60 - 130%	70
	BH3_2.5-2.6	SE182633.005	%	60 - 130%	81
	BH4_0.3-0.4	SE182633.006	%	60 - 130%	76
	BH5M_0.3-0.4	SE182633.007	%	60 - 130%	83
	BH5M_2.0-2.1	SE182633.008	%	60 - 130%	76
	BH6M_0.3-0.4	SE182633.009	%	60 - 130%	78
	BH7_0.3-0.4	SE182633.010	%	60 - 130%	76
	BH7_1.5-1.6	SE182633.011	%	60 - 130%	81
	BH8_0.3-0.4	SE182633.012	%	60 - 130%	72
	QD1	SE182633.013	%	60 - 130%	73
d4-1,2-dichloroethane (Surrogate)	BH1M_0.3-0.4	SE182633.001	%	60 - 130%	72
	BH1M_2.4-2.5	SE182633.002	%	60 - 130%	82
	BH2_0.9-1.0	SE182633.003	%	60 - 130%	78
	BH3_0.3-0.4	SE182633.004	%	60 - 130%	82
	BH3_2.5-2.6	SE182633.005	%	60 - 130%	84
	BH4_0.3-0.4	SE182633.006	%	60 - 130%	81
	BH5M_0.3-0.4	SE182633.007	%	60 - 130%	88
	BH5M_2.0-2.1	SE182633.008	%	60 - 130%	82
	BH6M_0.3-0.4	SE182633.009	%	60 - 130%	78
	BH7_0.3-0.4	SE182633.010	%	60 - 130%	78
	BH7_1.5-1.6	SE182633.011	%	60 - 130%	80
	BH8_0.3-0.4	SE182633.012	%	60 - 130%	80
	QD1	SE182633.013	%	60 - 130%	75
d8-toluene (Surrogate)	BH1M_0.3-0.4	SE182633.001	%	60 - 130%	86
	BH1M_2.4-2.5	SE182633.002	%	60 - 130%	92
	BH2_0.9-1.0	SE182633.003	%	60 - 130%	94
	BH3_0.3-0.4	SE182633.004	%	60 - 130%	85
	BH3_2.5-2.6	SE182633.005	%	60 - 130%	92
	BH4_0.3-0.4	SE182633.006	%	60 - 130%	100
	BH5M_0.3-0.4	SE182633.007	%	60 - 130%	100
	BH5M_2.0-2.1	SE182633.008	%	60 - 130%	83
	BH6M_0.3-0.4	SE182633.009	%	60 - 130%	100
	BH7_0.3-0.4	SE182633.010	%	60 - 130%	90

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

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

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d8-toluene (Surrogate)	BH7_1.5-1.6	SE182633.011	%	60 - 130%	93
	BH8_0.3-0.4	SE182633.012	%	60 - 130%	91
	QD1	SE182633.013	%	60 - 130%	90
Dibromofluoromethane (Surrogate)	BH1M_0.3-0.4	SE182633.001	%	60 - 130%	73
	BH1M_2.4-2.5	SE182633.002	%	60 - 130%	76
	BH2_0.9-1.0	SE182633.003	%	60 - 130%	72
	BH3_0.3-0.4	SE182633.004	%	60 - 130%	74
	BH3_2.5-2.6	SE182633.005	%	60 - 130%	86
	BH4_0.3-0.4	SE182633.006	%	60 - 130%	103
	BH5M_0.3-0.4	SE182633.007	%	60 - 130%	80
	BH5M_2.0-2.1	SE182633.008	%	60 - 130%	92
	BH6M_0.3-0.4	SE182633.009	%	60 - 130%	87
	BH7_0.3-0.4	SE182633.010	%	60 - 130%	71
	BH7_1.5-1.6	SE182633.011	%	60 - 130%	78
	BH8_0.3-0.4	SE182633.012	%	60 - 130%	76
	QD1	SE182633.013	%	60 - 130%	74

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

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	QR1	SE182633.014	%	40 - 130%	89
d4-1,2-dichloroethane (Surrogate)	QR1	SE182633.014	%	60 - 130%	122
d8-toluene (Surrogate)	QR1	SE182633.014	%	40 - 130%	96
Dibromofluoromethane (Surrogate)	QR1	SE182633.014	%	40 - 130%	126

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

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

Mercury (dissolved) in Water

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

Sample Number	Parameter	Units	LOR	Result
LB154136.001	Mercury	mg/L	0.0001	<0.0001

Mercury in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB154418.001	Mercury	mg/kg	0.05	<0.05

OC Pesticides in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB154432.001		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)	%	-	84

OP Pesticides in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB154432.001		Dichlorvos	mg/kg	0.5	<0.5
		Dimethoate	mg/kg	0.5	<0.5
		Diazinon (Dimpylate)	mg/kg	0.5	<0.5
		Fenitrothion	mg/kg	0.2	<0.2
		Malathion	mg/kg	0.2	<0.2
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2
		Bromophos Ethyl	mg/kg	0.2	<0.2
		Methidathion	mg/kg	0.5	<0.5
		Ethion	mg/kg	0.2	<0.2
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2
	Surrogates	2-fluorobiphenyl (Surrogate)	%	-	96
		d14-p-terphenyl (Surrogate)	%	-	102

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Number	Parameter	Units	LOR	Result
LB154432.001	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
LB154432.001		Fluoranthene	mg/kg	0.1	<0.1
		Pyrene	mg/kg	0.1	<0.1
		Benzo(a)anthracene	mg/kg	0.1	<0.1
		Chrysene	mg/kg	0.1	<0.1
		Benzo(a)pyrene	mg/kg	0.1	<0.1
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1
		Dibenzo(ah)anthracene	mg/kg	0.1	<0.1
		Benzo(ghi)perylene	mg/kg	0.1	<0.1
		Total PAH (18)	mg/kg	0.8	<0.8
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	88
		2-fluorobiphenyl (Surrogate)	%	-	96
		d14-p-terphenyl (Surrogate)	%	-	102

PCBs in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB154432.001		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)	%	-	84

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

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

Sample Number	Parameter	Units	LOR	Result
LB154416.001	Arsenic, As	mg/kg	1	<1
	Cadmium, Cd	mg/kg	0.3	<0.3
	Chromium, Cr	mg/kg	0.3	<0.3
	Copper, Cu	mg/kg	0.5	<0.5
	Nickel, Ni	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Zinc, Zn	mg/kg	2	<2.0

Trace Metals (Dissolved) in Water by ICPMS

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

Sample Number	Parameter	Units	LOR	Result
LB154212.001	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
LB154432.001	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
LB154204.001	TRH C10-C14	µg/L	50	<50
	TRH C15-C28	µg/L	200	<200
	TRH C29-C36	µg/L	200	<200
	TRH C37-C40	µg/L	200	<200

VOC's in Soil

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

Sample Number	Parameter	Units	LOR

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

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

VOC's in Soil (continued)

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

Sample Number		Parameter	Units	LOR	Result
LB154419.001	Monocyclic Aromatic	Benzene	mg/kg	0.1	<0.1
	Hydrocarbons	Toluene	mg/kg	0.1	<0.1
		Ethylbenzene	mg/kg	0.1	<0.1
		m/p-xylene	mg/kg	0.2	<0.2
		o-xylene	mg/kg	0.1	<0.1
	Polycyclic VOCs	Naphthalene	mg/kg	0.1	<0.1
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	70
		d4-1,2-dichloroethane (Surrogate)	%	-	76
		d8-toluene (Surrogate)	%	-	90
		Bromofluorobenzene (Surrogate)	%	-	70
	Totals	Total BTEX	mg/kg	0.6	<0.6

VOCs in Water

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

Sample Number		Parameter	Units	LOR	Result
LB154228.001	Monocyclic Aromatic	Benzene	µg/L	0.5	<0.5
	Hydrocarbons	Toluene	µg/L	0.5	<0.5
		Ethylbenzene	µg/L	0.5	<0.5
		m/p-xylene	µg/L	1	<1
		o-xylene	µg/L	0.5	<0.5
	Polycyclic VOCs	Naphthalene	µg/L	0.5	<0.5
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	91
		d4-1,2-dichloroethane (Surrogate)	%	-	98
		d8-toluene (Surrogate)	%	-	97
		Bromofluorobenzene (Surrogate)	%	-	110

Volatile Petroleum Hydrocarbons in Soil

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

Sample Number		Parameter	Units	LOR	Result
LB154419.001		TRH C6-C9	mg/kg	20	<20
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	70
		d4-1,2-dichloroethane (Surrogate)	%	-	76
		d8-toluene (Surrogate)	%	-	90

Volatile Petroleum Hydrocarbons in Water

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

Sample Number		Parameter	Units	LOR	Result
LB154228.001		TRH C6-C9	µg/L	40	<40
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	91
		d4-1,2-dichloroethane (Surrogate)	%	-	100
		d8-toluene (Surrogate)	%	-	91
		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(Perth)/AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182601.004	LB154136.009	Mercury	µg/L	0.0001	<0.0001	<0.0001	139	0

Mercury in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182633.010	LB154418.014	Mercury	mg/kg	0.05	<0.05	<0.05	193	0
SE182637.005	LB154418.024	Mercury	mg/kg	0.05	0.036274034	1 0.0313074294	178	0

Moisture Content

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182752.009	LB154452.010	% Moisture	%w/w	0.5	11	10.8190091001	39	4

OC Pesticides in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182633.012	LB154432.027		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Lindane	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor	mg/kg	0.1	<0.1	<0.1	200	0
			Aldrin	mg/kg	0.1	<0.1	<0.1	200	0
			Beta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Delta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Dieldrin	mg/kg	0.2	<0.2	<0.2	200	0
			Endrin	mg/kg	0.2	<0.2	<0.2	200	0
			o,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	200	0
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Ketone	mg/kg	0.1	<0.1	<0.1	200	0
			Isodrin	mg/kg	0.1	<0.1	<0.1	200	0
			Mirex	mg/kg	0.1	<0.1	<0.1	200	0
			Total CLP OC Pesticides	mg/kg	1	<1	<1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.17	0.16	30	8

OP Pesticides in Soil

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182633.009	LB154432.026	Dichlorvos	mg/kg	0.5	<0.5	<0.5	200	0
		Dimethoate	mg/kg	0.5	<0.5	<0.5	200	0
		Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	200	0
		Fenitrothion	mg/kg	0.2	<0.2	<0.2	200	0
		Malathion	mg/kg	0.2	<0.2	<0.2	200	0
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	200	0
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	200	0
		Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	200	0
		Methidathion	mg/kg	0.5	<0.5	<0.5	200	0
		Ethion	mg/kg	0.2	<0.2	<0.2	200	0
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	200	0
		Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	200	0

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

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

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

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

OP Pesticides in Soil (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182633.009	LB154432.026	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.4	30	2
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	2

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182614.005	LB154432.024		Naphthalene	mg/kg	0.1	<0.1	0.03	200	0
			2-methylnaphthalene	mg/kg	0.1	<0.1	0.01	200	0
			1-methylnaphthalene	mg/kg	0.1	<0.1	0.01	200	0
			Acenaphthylene	mg/kg	0.1	<0.1	0.05	200	0
			Acenaphthene	mg/kg	0.1	<0.1	0.03	200	0
			Fluorene	mg/kg	0.1	<0.1	0.05	200	0
			Phenanthrene	mg/kg	0.1	0.6	0.78	45	29
			Anthracene	mg/kg	0.1	0.1	0.18	95	32
			Fluoranthene	mg/kg	0.1	2.1	2.66	34	24
			Pyrene	mg/kg	0.1	2.1	2.61	34	20
			Benzo(a)anthracene	mg/kg	0.1	1.1	1.08	39	2
			Chrysene	mg/kg	0.1	1.2	1.16	39	2
			Benzo(b&j)fluoranthene	mg/kg	0.1	2.0	1.81	35	8
			Benzo(k)fluoranthene	mg/kg	0.1	0.8	0.75	43	0
			Benzo(a)pyrene	mg/kg	0.1	1.6	1.72	36	5
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	0.9	0.95	41	10
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	0.08	155	0
			Benzo(ghi)perylene	mg/kg	0.1	0.9	0.97	41	10
			Carcinogenic PAHs, BaP TEQ <LOR=0	mg/kg	0.2	2.1	2.2013	19	3
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	mg/kg	0.3	2.2	2.3013	23	3
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	mg/kg	0.2	2.2	2.2513	19	3
			Total PAH (18)	mg/kg	0.8	13	14.68	36	10
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.39	30	3
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.43	30	0
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.41	30	2
SE182633.009	LB154432.026		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	0.3	0.3	62	3
			Anthracene	mg/kg	0.1	0.1	0.1	121	0
			Fluoranthene	mg/kg	0.1	0.8	0.8	43	0
			Pyrene	mg/kg	0.1	0.8	0.8	43	1
			Benzo(a)anthracene	mg/kg	0.1	0.3	0.3	63	0
			Chrysene	mg/kg	0.1	0.3	0.3	65	4
			Benzo(b&j)fluoranthene	mg/kg	0.1	0.3	0.3	64	3
			Benzo(k)fluoranthene	mg/kg	0.1	0.2	0.1	99	7
			Benzo(a)pyrene	mg/kg	0.1	0.3	0.3	68	4
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	0.1	0.1	113	17
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(ghi)perylene	mg/kg	0.1	0.1	0.1	113	0
			Carcinogenic PAHs, BaP TEQ <LOR=0	mg/kg	0.2	0.4	0.4	66	2
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	mg/kg	0.3	0.5	0.5	76	2
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	mg/kg	0.2	0.4	0.4	59	2
			Total PAH (18)	mg/kg	0.8	3.5	3.5	53	0
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.4	30	2
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.4	30	2
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	2

PCBs in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182633.012	LB154432.024		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

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

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

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

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

PCBs in Soil (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182633.012	LB154432.024		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	8

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

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182633.010	LB154416.014	Arsenic, As	mg/kg	1	5	3	54	58 ②
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.3	11	13	34	18
		Copper, Cu	mg/kg	0.5	33	25	32	27
		Nickel, Ni	mg/kg	0.5	13	3.8	36	113 ②
		Lead, Pb	mg/kg	1	32	28	33	12
		Zinc, Zn	mg/kg	2	80	54	33	39 †
SE182637.005	LB154416.024	Arsenic, As	mg/kg	1	5.37320483744	.5825714285	50	16
		Cadmium, Cd	mg/kg	0.3	0.29308390020	.1953809523	153	0
		Chromium, Cr	mg/kg	0.3	10.706443688	2.557666666	34	16
		Copper, Cu	mg/kg	0.5	15.551209372	2.269035714	34	24
		Nickel, Ni	mg/kg	0.5	4.90249433104	.2228928571	41	15
		Lead, Pb	mg/kg	1	31.592025699	13.223595238	32	35 ②
		Zinc, Zn	mg/kg	2	70.073696145	106.74904761	32	41 ②

Trace Metals (Dissolved) in Water by ICPMS

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

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182633.014	LB154212.014	Arsenic, As	µg/L	1	<1	<1	200	0
		Cadmium, Cd	µg/L	0.1	<0.1	<0.1	200	0
		Chromium, Cr	µg/L	1	<1	<1	200	0
		Copper, Cu	µg/L	1	<1	<1	200	0
		Lead, Pb	µg/L	1	<1	<1	200	0
		Nickel, Ni	µg/L	1	<1	<1	200	0
		Zinc, Zn	µg/L	5	5	5	110	2

TRH (Total Recoverable Hydrocarbons) in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182614.005	LB154432.026		TRH C10-C14	mg/kg	20	<20	0	200	0
			TRH C15-C28	mg/kg	45	100	149	66	38
			TRH C29-C36	mg/kg	45	130	193	58	38
			TRH C37-C40	mg/kg	100	<100	0	200	0
			TRH C10-C36 Total	mg/kg	110	230	342	68	38
			TRH C10-C40 Total (F bands)	mg/kg	210	<210	278	121	28
		TRH F Bands	TRH >C10-C16	mg/kg	25	<25	0	200	0
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	0	200	0
			TRH >C16-C34 (F3)	mg/kg	90	190	278	69	40
			TRH >C34-C40 (F4)	mg/kg	120	<120	0	200	0
SE182633.009	LB154432.025		TRH C10-C14	mg/kg	20	<20	<20	200	0
			TRH C15-C28	mg/kg	45	82	99	80	19
			TRH C29-C36	mg/kg	45	75	110	80	33
			TRH C37-C40	mg/kg	100	<100	<100	200	0
			TRH C10-C36 Total	mg/kg	110	160	200	91	26
			TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	176	0
		TRH F Bands	TRH >C10-C16	mg/kg	25	<25	<25	200	0
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	130	160	93	20
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0

TRH (Total Recoverable Hydrocarbons) in Water

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

Original	Duplicate	Parameter	Units	LOR

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

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

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

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

TRH (Total Recoverable Hydrocarbons) in Water (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182608.001	LB154204.022		TRH C10-C14	µg/L	50	2200	2100	32	5
			TRH C15-C28	µg/L	200	1100	1100	48	3
			TRH C29-C36	µg/L	200	<200	<200	138	0
			TRH C37-C40	µg/L	200	<200	<200	200	0
			TRH C10-C36	µg/L	450	3500	3400	43	5
			TRH C10-C40	µg/L	650	3500	3400	49	5
		TRH F Bands	TRH >C10-C16	µg/L	60	1700	1700	34	3
			TRH >C16-C34 (F3)	µg/L	500	1000	990	79	5
			TRH >C34-C40 (F4)	µg/L	500	<500	<500	200	0
SE182615.001	LB154204.021		TRH C10-C14	µg/L	50	<50	<50	200	0
			TRH C15-C28	µg/L	200	<200	<200	200	0
			TRH C29-C36	µg/L	200	<200	<200	200	0
			TRH C37-C40	µg/L	200	<200	<200	200	0
			TRH C10-C36	µg/L	450	<450	<450	200	0
			TRH C10-C40	µg/L	650	<650	<650	200	0
		TRH F Bands	TRH >C10-C16	µg/L	60	<60	<60	200	0
			TRH >C10-C16 - Naphthalene (F2)	µg/L	60	<60	<60	200	0
			TRH >C16-C34 (F3)	µg/L	500	<500	<500	200	0
			TRH >C34-C40 (F4)	µg/L	500	<500	<500	200	0
SE182631.001	LB154204.024		TRH C10-C14	µg/L	50	<50	<50	200	0
			TRH C15-C28	µg/L	200	<200	<200	200	0
			TRH C29-C36	µg/L	200	<200	<200	200	0
			TRH C37-C40	µg/L	200	<200	<200	200	0
			TRH C10-C36	µg/L	450	<450	<450	200	0
			TRH C10-C40	µg/L	650	<650	<650	200	0
		TRH F Bands	TRH >C10-C16	µg/L	60	<60	<60	200	0
			TRH >C16-C34 (F3)	µg/L	500	<500	<500	200	0
			TRH >C34-C40 (F4)	µg/L	500	<500	<500	200	0

VOC's in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182633.010	LB154419.015	Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
		Aromatic	Toluene	mg/kg	0.1	<0.1	<0.1	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	3.5	4.1	50	15
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	3.9	4.2	50	7
			d8-toluene (Surrogate)	mg/kg	-	4.5	4.1	50	10
			Bromofluorobenzene (Surrogate)	mg/kg	-	3.8	4.5	50	16
		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
SE182637.006	LB154419.031	Monocyclic	Benzene	mg/kg	0.1	0	0	200	0
		Aromatic	Toluene	mg/kg	0.1	0.01	0.01	200	0
			Ethylbenzene	mg/kg	0.1	0	0	200	0
			m/p-xylene	mg/kg	0.2	0.01	0.01	200	0
			o-xylene	mg/kg	0.1	0.01	0.01	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	0	0	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.71	3.97	50	17
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.32	5.07	50	5
			d8-toluene (Surrogate)	mg/kg	-	4.12	4.41	50	7
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.1	3.96	50	3
		Totals	Total Xylenes	mg/kg	0.3	0.02	0.02	200	0
			Total BTEX	mg/kg	0.6	0.03	0.03	200	0

VOCs in Water

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182574.001	LB154228.021	Monocyclic	Benzene	µg/L	0.5	1.3	1.5	65	14
		Aromatic	Toluene	µg/L	0.5	1.9	2.0	55	7
			Ethylbenzene	µg/L	0.5	<0.5	<0.5	200	0
			m/p-xylene	µg/L	1	<1	<1	193	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.

VOCs in Water (continued)

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182574.001	LB154228.021	Monocyclic	o-xylene	µg/L	0.5	<0.5	<0.5	200	0
		Polycyclic	Naphthalene	µg/L	0.5	<0.5	<0.5	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	6.3	5.8	30	7
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	6.2	6.1	30	1
			d8-toluene (Surrogate)	µg/L	-	5.2	5.4	30	5
			Bromofluorobenzene (Surrogate)	µg/L	-	4.6	4.6	30	0
SE182615.001	LB154228.020	Monocyclic	Benzene	µg/L	0.5	<0.5	<0.5	167	0
		Aromatic	Toluene	µg/L	0.5	<0.5	<0.5	200	0
			Ethylbenzene	µg/L	0.5	<0.5	<0.5	200	0
			m/p-xylene	µg/L	1	<1	<1	200	0
			o-xylene	µg/L	0.5	<0.5	<0.5	200	0
		Polycyclic	Naphthalene	µg/L	0.5	<0.5	<0.5	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.9	6.1	30	23
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.2	6.3	30	18
			d8-toluene (Surrogate)	µg/L	-	5.2	5.1	30	1
			Bromofluorobenzene (Surrogate)	µg/L	-	5.7	5.3	30	6

Volatile Petroleum Hydrocarbons in Soil

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182633.010	LB154419.015		TRH C6-C10	mg/kg	25	<25	<25	200	0
			TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	3.5	4.1	30	15
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	3.9	4.2	30	7
			d8-toluene (Surrogate)	mg/kg	-	4.5	4.1	30	10
			Bromofluorobenzene (Surrogate)	mg/kg	-	3.8	4.5	30	16
		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
SE182637.006	LB154419.031		TRH C6-C10	mg/kg	25	0.8	0.89	200	0
			TRH C6-C9	mg/kg	20	0.47	0.43	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.71	3.97	30	17
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	5.32	5.07	30	5
			d8-toluene (Surrogate)	mg/kg	-	4.12	4.41	30	7
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.1	3.96	30	3
		VPH F Bands	Benzene (F0)	mg/kg	0.1	0	0	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	0.77	0.86	200	0

Volatile Petroleum Hydrocarbons in Water

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

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182574.001	LB154228.021		TRH C6-C10	µg/L	50	<50	<50	200	0
			TRH C6-C9	µg/L	40	<40	<40	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	6.3	5.8	30	7
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	6.2	6.1	30	1
			d8-toluene (Surrogate)	µg/L	-	5.2	5.4	30	5
			Bromofluorobenzene (Surrogate)	µg/L	-	4.6	4.6	30	0
		VPH F Bands	Benzene (F0)	µg/L	0.5	1.3	1.5	65	14
			TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	<50	200	0
SE182615.001	LB154228.020		TRH C6-C10	µg/L	50	<50	<50	200	0
			TRH C6-C9	µg/L	40	<40	<40	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.9	6.2	30	22
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.3	6.4	30	17
			d8-toluene (Surrogate)	µg/L	-	4.7	5.8	30	21
			Bromofluorobenzene (Surrogate)	µg/L	-	4.7	5.4	30	15
		VPH F Bands	Benzene (F0)	µg/L	0.5	<0.5	<0.5	167	0
			TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	<50	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 %
LB154418.002	Mercury	mg/kg	0.05	0.25	0.2	70 - 130	125

OC Pesticides in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB154432.002		Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	100
		Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	96
		Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	94
		Dieldrin	mg/kg	0.2	<0.2	0.2	60 - 140	95
		Endrin	mg/kg	0.2	<0.2	0.2	60 - 140	95
		p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	89
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.14	0.15	40 - 130	90

OP Pesticides in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB154432.002		Dichlorvos	mg/kg	0.5	1.6	2	60 - 140	80
		Diazinon (Dimpylate)	mg/kg	0.5	1.7	2	60 - 140	86
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	1.8	2	60 - 140	88
		Ethion	mg/kg	0.2	1.5	2	60 - 140	76
	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	88
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	90

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB154432.002		Naphthalene	mg/kg	0.1	4.7	4	60 - 140	117
		Acenaphthylene	mg/kg	0.1	4.9	4	60 - 140	122
		Acenaphthene	mg/kg	0.1	4.7	4	60 - 140	117
		Phenanthrene	mg/kg	0.1	4.6	4	60 - 140	116
		Anthracene	mg/kg	0.1	4.8	4	60 - 140	121
		Fluoranthene	mg/kg	0.1	4.0	4	60 - 140	99
		Pyrene	mg/kg	0.1	4.3	4	60 - 140	108
		Benzo(a)pyrene	mg/kg	0.1	4.1	4	60 - 140	102
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	84
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	88
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	90

PCBs in Soil

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB154432.002	Arochlor 1260	mg/kg	0.2	0.4	0.4	60 - 140	97

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

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB154416.002	Arsenic, As	mg/kg	1	330	336.32	79 - 120	98
	Cadmium, Cd	mg/kg	0.3	410	416.6	69 - 131	99
	Chromium, Cr	mg/kg	0.3	31	35.2	80 - 120	88
	Copper, Cu	mg/kg	0.5	350	370.46	80 - 120	94
	Nickel, Ni	mg/kg	0.5	180	210.88	79 - 120	85
	Lead, Pb	mg/kg	1	97	107.87	79 - 120	90
	Zinc, Zn	mg/kg	2	280	301.27	80 - 121	94

Trace Metals (Dissolved) in Water by ICPMS

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

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB154212.002	Arsenic, As	µg/L	1	19	20	80 - 120	96
	Cadmium, Cd	µg/L	0.1	19	20	80 - 120	94
	Chromium, Cr	µg/L	1	18	20	80 - 120	91
	Copper, Cu	µg/L	1	19	20	80 - 120	94
	Lead, Pb	µg/L	1	21	20	80 - 120	104
	Nickel, Ni	µg/L	1	18	20	80 - 120	92
	Zinc, Zn	µg/L	5	21	20	80 - 120	103

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

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

TRH (Total Recoverable Hydrocarbons) in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB154432.002		TRH C10-C14	mg/kg	20	34	40	60 - 140	85
		TRH C15-C28	mg/kg	45	<45	40	60 - 140	88
		TRH C29-C36	mg/kg	45	<45	40	60 - 140	85
	TRH F Bands	TRH >C10-C16	mg/kg	25	34	40	60 - 140	85
		TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	85
		TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	90

TRH (Total Recoverable Hydrocarbons) in Water

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB154204.002		TRH C10-C14	µg/L	50	1000	1200	60 - 140	87
		TRH C15-C28	µg/L	200	1300	1200	60 - 140	104
		TRH C29-C36	µg/L	200	1000	1200	60 - 140	84
	TRH F Bands	TRH >C10-C16	µg/L	60	1100	1200	60 - 140	93
		TRH >C16-C34 (F3)	µg/L	500	1200	1200	60 - 140	103
		TRH >C34-C40 (F4)	µg/L	500	<500	600	60 - 140	81

VOC's in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB154419.002	Monocyclic	Benzene	mg/kg	0.1	2.0	2.9	60 - 140	69
	Aromatic	Toluene	mg/kg	0.1	2.0	2.9	60 - 140	70
		Ethylbenzene	mg/kg	0.1	1.9	2.9	60 - 140	66
		m/p-xylene	mg/kg	0.2	4.2	5.8	60 - 140	73
		o-xylene	mg/kg	0.1	2.0	2.9	60 - 140	68
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	3.6	5	60 - 140	73
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.1	5	60 - 140	83
		d8-toluene (Surrogate)	mg/kg	-	4.7	5	60 - 140	95
		Bromofluorobenzene (Surrogate)	mg/kg	-	4.1	5	60 - 140	81

VOCs in Water

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB154228.002	Monocyclic	Benzene	µg/L	0.5	50	45.45	60 - 140	111
	Aromatic	Toluene	µg/L	0.5	50	45.45	60 - 140	110
		Ethylbenzene	µg/L	0.5	50	45.45	60 - 140	110
		m/p-xylene	µg/L	1	100	90.9	60 - 140	110
		o-xylene	µg/L	0.5	50	45.45	60 - 140	110
	Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.1	5	60 - 140	83
		d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.2	5	60 - 140	85
		d8-toluene (Surrogate)	µg/L	-	4.6	5	60 - 140	92
		Bromofluorobenzene (Surrogate)	µg/L	-	5.1	5	60 - 140	101

Volatile Petroleum Hydrocarbons in Soil

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB154419.002		TRH C6-C10	mg/kg	25	<25	24.65	60 - 140	87
		TRH C6-C9	mg/kg	20	<20	23.2	60 - 140	79
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	3.6	5	60 - 140	73
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.1	5	60 - 140	83
		d8-toluene (Surrogate)	mg/kg	-	4.7	5	60 - 140	95
		Bromofluorobenzene (Surrogate)	mg/kg	-	4.1	5	60 - 140	81
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	7.25	60 - 140	128

Volatile Petroleum Hydrocarbons in Water

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

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB154228.002		TRH C6-C10	µg/L	50	960	946.63	60 - 140	102
		TRH C6-C9	µg/L	40	790	818.71	60 - 140	96
	Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.2	5	60 - 140	84
		d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.2	5	60 - 140	84
		d8-toluene (Surrogate)	µg/L	-	4.9	5	60 - 140	97
		Bromofluorobenzene (Surrogate)	µg/L	-	4.9	5	60 - 140	97
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	650	639.67	60 - 140	102

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

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

Mercury (dissolved) in Water

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE182583.072	LB154136.004	Mercury	mg/L	0.0001	0.0061	<0.0001	0.008	77

Mercury in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE182633.001	LB154418.004	Mercury	mg/kg	0.05	0.27	<0.05	0.2	131 ⊕

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE182633.002	LB154432.025		Naphthalene	mg/kg	0.1	4.7	<0.1	4	118
			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	4.7	<0.1	4	118
			Acenaphthene	mg/kg	0.1	4.7	<0.1	4	118
			Fluorene	mg/kg	0.1	<0.1	<0.1	-	-
			Phenanthrene	mg/kg	0.1	4.7	<0.1	4	118
			Anthracene	mg/kg	0.1	4.5	<0.1	4	114
			Fluoranthene	mg/kg	0.1	4.6	<0.1	4	115
			Pyrene	mg/kg	0.1	4.6	<0.1	4	114
			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	4.8	<0.1	4	119
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	-	-
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	4.8	<0.2	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	4.9	<0.3	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	4.8	<0.2	-	-
			Total PAH (18)	mg/kg	0.8	37	<0.8	-	-
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.4	-	80
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	-	86
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	-	84

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

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE182633.001	LB154416.004	Arsenic, As	mg/kg	1	52	2	50	99
		Cadmium, Cd	mg/kg	0.3	52	<0.3	50	104
		Chromium, Cr	mg/kg	0.3	58	7.1	50	103
		Copper, Cu	mg/kg	0.5	62	9.5	50	105
		Nickel, Ni	mg/kg	0.5	66	21	50	89
		Lead, Pb	mg/kg	1	59	9	50	99
		Zinc, Zn	mg/kg	2	73	24	50	98

Trace Metals (Dissolved) in Water by ICPMS

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

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE182590.008	LB154212.004	Arsenic, As	µg/L	1	19	<1	20	96
		Cadmium, Cd	µg/L	0.1	19	<0.1	20	93
		Chromium, Cr	µg/L	1	18	<1	20	90
		Copper, Cu	µg/L	1	19	<1	20	93
		Lead, Pb	µg/L	1	20	<1	20	102
		Nickel, Ni	µg/L	1	18	<1	20	92
		Zinc, Zn	µg/L	5	20	<5	20	101

TRH (Total Recoverable Hydrocarbons) in Soil

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

QC Sample	Sample Number	Parameter	Units	LOR

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

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

TRH (Total Recoverable Hydrocarbons) in Soil (continued)

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE182633.002	LB154432.024		TRH C10-C14	mg/kg	20	46	<20	40	115
			TRH C15-C28	mg/kg	45	<45	<45	40	98
			TRH C29-C36	mg/kg	45	<45	<45	40	75
			TRH C37-C40	mg/kg	100	<100	<100	-	-
			TRH C10-C36 Total	mg/kg	110	<110	<110	-	-
			TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	-	-
		TRH F Bands	TRH >C10-C16	mg/kg	25	40	<25	40	100
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	40	<25	-	-
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	40	90
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	-	-

TRH (Total Recoverable Hydrocarbons) in Water

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE182608.002	LB154204.023		TRH C10-C14	µg/L	50	2000	650	1200	115
			TRH C15-C28	µg/L	200	9900	7500	1200	207 ⑨
			TRH C29-C36	µg/L	200	2400	680	1200	142 ⑨
			TRH C37-C40	µg/L	200	<200	<200	-	-
			TRH C10-C36	µg/L	450	14000	8800	-	-
			TRH C10-C40	µg/L	650	14000	8800	-	-
		TRH F Bands	TRH >C10-C16	µg/L	60	3200	1600	1200	138
			TRH >C16-C34 (F3)	µg/L	500	9600	7100	1200	205 ⑨
			TRH >C34-C40 (F4)	µg/L	500	970	<500	600	146 ⑨

VOC's in Soil

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE182633.001	LB154419.004	Monocyclic	Benzene	mg/kg	0.1	2.3	<0.1	2.9	79
		Aromatic	Toluene	mg/kg	0.1	2.6	<0.1	2.9	89
			Ethylbenzene	mg/kg	0.1	2.3	<0.1	2.9	78
			m/p-xylene	mg/kg	0.2	4.9	<0.2	5.8	85
			o-xylene	mg/kg	0.1	2.3	<0.1	2.9	80
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.1	3.6	-	81
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	3.9	3.6	-	79
			d8-toluene (Surrogate)	mg/kg	-	4.6	4.3	-	91
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.2	3.5	-	85
		Totals	Total Xylenes	mg/kg	0.3	7.3	<0.3	-	-
			Total BTEX	mg/kg	0.6	14	<0.6	-	-

VOCs in Water

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE182615.002	LB154228.019	Monocyclic	Benzene	µg/L	0.5	55	<0.5	45.45	121
		Aromatic	Toluene	µg/L	0.5	54	<0.5	45.45	119
			Ethylbenzene	µg/L	0.5	52	<0.5	45.45	114
			m/p-xylene	µg/L	1	110	<1	90.9	118
			o-xylene	µg/L	0.5	54	<0.5	45.45	120
		Polycyclic	Naphthalene	µg/L	0.5	63	<0.5	-	-
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.8	5.2	-	96
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.3	5.7	-	106
			d8-toluene (Surrogate)	µg/L	-	5.3	5.0	-	107
			Bromofluorobenzene (Surrogate)	µg/L	-	5.5	5.6	-	110

Volatile Petroleum Hydrocarbons in Water

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

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE182615.002	LB154228.019		TRH C6-C10	µg/L	50	940	<50	946.63	99
			TRH C6-C9	µg/L	40	770	<40	818.71	94
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.8	5.1	-	96
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.3	5.6	-	106
			d8-toluene (Surrogate)	µg/L	-	5.3	4.8	-	107
			Bromofluorobenzene (Surrogate)	µg/L	-	5.5	4.7	-	110
		VPH F	Benzene (F0)	µg/L	0.5	55	<0.5	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	610	<50	639.67	96

MATRIX SPIKE DUPLICATES

SE182633 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.

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

QC Sample	Sample Number		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE182633.001	LB154419.004		TRH C6-C10	mg/kg	25	-	<25	-	-
			TRH C6-C9	mg/kg	20	-	<20	-	-
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	-	4.1	-	-
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	-	3.9	-	-
			d8-toluene (Surrogate)	mg/kg	-	-	4.6	-	-
			Bromofluorobenzene (Surrogate)	mg/kg	-	-	4.2	-	-
		VPH F Bands	Benzene (F0)	mg/kg	0.1	3.4	2.3	34	-
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	#VALUE!	<25	-	-

Samples analysed as received.

Solid samples expressed on a dry weight basis.

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

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

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

Appendix H- QA/QC Assessment

H1QUALITY CONTROL PROGRAM

H1.1PROJECT QA/QC PROTOCOLS

The overall quality assurance comprises an assessment of the reliability of the field procedures and the laboratory results against standard industry practices, documented sampling and analysis plans or remediation action plans. A summary of the project QA/QC protocols to be followed during the investigation works is presented in **Table H-1.**

Table H-1QA/QC Protocols

Task	Description	Project
Field QA/QC		
General	Work was be undertaken following standard field procedures which are based on industry accepted standard practice.	Soil samples were generally collected directly off the drilling rods or hand auger. Soil samples were placed in 250 gram glass jars, which were filled to minimise headspace, and sealed using Teflon-coated lids.
	All fieldwork was supervised by a suitably qualified and experienced scientist or engineer.	Yes
Soil screening with PID	The PID was serviced and calibrated as per the manufacturer requirements. PID calibrated at the beginning and end of each day of fieldwork.	Yes
Equipment decontamination / Rinsate Samples	Sampling equipment to be decontaminated after the collection of each sample by washing with phosphate-free detergent (such as Decon 90) and potable water, followed by a final distilled water rinse. One rinsate blank would be collected per sampling event and analysed for the primary contaminants. All results should be non-detect.	Yes
Transport	Samples were stored in ice-brick cooled cooler box and transported to the primary and secondary laboratories. To ensure the integrity of the samples from collection to receipt by the analytical laboratory, samples were sent by courier to the laboratories under ‘chain of custody’ describing sample preservation, and transport duration.	Yes
Trip Blanks	Trip blank samples were prepared and analysed by the primary laboratory for BTEX and naphthalene. Analytical results for trip blank samples below the laboratory PQLs, indicate that ideal sample transport and handling conditions are achieved.	Yes

Task	Description	Project
Trip Spikes	Trip spike samples were prepared and analysed by the primary laboratory for BTEX. Acceptance criteria of BTEX spike recoveries are between 70% - 130%.	Yes Volatile contamination was not identified in any of soil samples or detected through field soil vapour screening with PID or unusual odour. Samples were stored under chilled / refrigerated conditions on site and in the laboratory and thus potential volatile losses were minimised. The absence of trip spike result does not affect the overall reliability of the data. Recoveries of the trip spike for Solis and GMEs was within the acceptance criteria.
QA samples	Field and laboratory QA samples will be analysed as follows: intra-laboratory and inter-laboratory duplicate samples will be collected at a rate of 1 pair per 20 primary samples	Part See **Table H-2** Calculated RPD (**table B.3)** values between most primary and field duplicate samples are within the acceptance criteria (**Section H1.2**), with the exception of: • Between soil sample BH1M_0.3-0.4 and QD1: o Chromium (53.57%) o Copper (65.73%) o Zinc (66.67%) • Between soil sample BH1M_0.3-0.4 and QT1: o Chromium (160.53%) o Copper (104.00%) o Lead (168.42%) o Nickel (52.63%) o Zinc (64.79%) • Between water sample BH1M and GWQD1: o Copper (173.33%) o Lead (114.29%) o Zinc (93.79%) The exceedances were considered a result of sample heterogeneity. RPD exceedances in question do not affect the overall conclusion drawn in regards to soil and groundwater conditions at the site.
Laboratory QA/QC		
Laboratory analysis	The laboratories selected are NATA accredited for the analytes selected and perform their own internal QA/QC programs	Yes SGS - primary laboratory Envirolab - secondary laboratory The laboratory QA/QC reports are included in **Appendix F.**

Task	Description	Project
	Appropriate detection limits were used for the analyses to be undertaken.	Practical Quantitation Limits for all tested parameters during the assessment of soils and groundwater are presented in summary tables **Table B.1 – B.2**
	Methods followed are generally in accordance with the requirements of NEPM (2013).	Yes
Holding Times	Holding times are the maximum permissible elapsed time in days from the collection of the sample to its extraction and/or analysis. All extraction and analyses should be completed within standard guidelines.	Yes
Laboratory Duplicates	Laboratory duplicates are field samples that are split in the laboratory and subsequently analysed a number of times in the same batch. These sub-samples are selected by the laboratory to assess the accuracy and precision of the analytical method. The selected laboratories should undertake QA/QC procedures such as calibration standards, laboratory control samples, surrogates, reference materials, sample duplicates and matrix spikes. Intra-laboratory duplicates should be performed at a frequency of 1 per 10 samples.	The Laboratory duplicate samples for the analysis batches showed most calculated RPDs that were within acceptable ranges and conformed to the DAC. Exceptions are noted to be: • SE182633.010: o Arsenic (58%) o Nickel (113%) o Zinc (39%) • SE182637.005: o Lead (35%) o Zinc (41%) Exceedances of the acceptable ranges were attributed to sample heterogeneity.
Laboratory Control Standard	A laboratory control standard is a standard reference material used in preparing primary standards. The concentration should be equivalent to a mid-range standard to confirm the primary calibration. Laboratory control samples should be performed on a frequency of 1 per 20 samples or at least one per analytical run.	The Laboratory Control Samples for the analysis batches were within acceptable ranges.

Task	Description	Project
Matrix Spikes / Matrix Spike Duplicates (MS/MSD)	MS/MSDs are field samples to which a predetermined stock solution of known concentration has been added. The samples are then analysed for recovery of the known addition. Recoveries should be within the stated laboratory control limits of 70 to 130% and duplicates should have RPDs of less than 50%.	Most MS / MSD for the analysis batches were within acceptable ranges with the exception of: • SE182608.002: o TRH C15-C28 (207%) o TRH C29-C36 (142% o TRH F3 (205%) o TRH F4 (146%) • SE182834.001: o Lead (66%) o Zinc (60%) Recovery failure was attributed to sample matrix interference.
Surrogate Spikes	Surrogate spikes provide a means of checking, for every analysis that no gross errors have occurred at any stage of the procedure leading to significant analyte loss. Recoveries should be within the stated laboratory control limits of 70 to 130%.	Surrogate spikes for the analysis batches were within acceptable ranges.
QA/QC Conclusion	The QA/QC indicators should either all comply with the required standards or showed no variations that would have no significant effect on the quality of the data.	EI considers that although a small number of discrepancies were identified, which in most cases could be attributed to the heterogeneous nature of the submitted samples, the data generally confirms that the analytical results for the various phases of laboratory testing were valid and useable for interpretation purposes.

H1.2CALCULATION OF RELATIVE PERCENTAGE DIFFERENCE (RPD)

The RPD values were calculated using the following equation:

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

Where:

C_O = Concentration obtained for the primary sample; and

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

Data precision would be deemed acceptable if RPDs are found to be less than 30%. RPDs that exceed this range may be considered acceptable where:

- Results are less than 10 times the limits of reporting (LOR);
- Results are less than 20 times the LOR and the RPD is less than 50%; or
- Heterogeneous materials or volatile compounds are encountered.

In cases where RPD value was considered unacceptable, the analytical results of primary and duplicate samples were both reviewed against the adopted assessment criteria. If the review

indicates the variations in data between the primary and duplicate samples would result in a different conclusion (e.g. the higher concentration is failing the assessment criteria), the need for re-sampling / validation would be considered.

H2FIELD QA/QC DATA PROGRAM

H2.1FIELD QA SAMPLING PROGRAM

The field quality assurance/quality control (QA/QC) samples collected during the investigation works are summarised on **Table H-2.** Inter-lab duplicates were analysed by the secondary laboratory, Envirolab. Analytical results of the Field QA samples are tabulated in **Table H-3**, alongside calculated RPDs between the primary and field duplicate samples.

Table H-2Field QA Sampling Program

Activity	Matrix	No. Primary Samples	Primary Sample ID	Intra-Lab Duplicate ID	Inter-Lab Duplicate ID	No. of Duplicates	Duplicate Ratio
Field QA Samples - Duplicates							
Soil Investigation	Soil	9	BH1M_0.3-0.4	QD1	QT1	1	1:12
GME	Water	3	BH1M	GWQD1	-	1	1:3
Other Field QA Samples							
Soil Investigation	Soil	TB1 – trip blank TS1 – trip spike					
	Water	QR1 – rinsate					
GME	Water	GWQR - Rinsate GWTB – Trip blank GWTS – Trip spike					

H2.2Field Data Quality Indicators

A discussion of the field data quality indicators is presented below.

Table H-4Field Data Quality Indicators

QA/QC Measures	Field Data Quality Indicators	Conformance / Comments
Precision – A quantitative measure of the variability (or reproducibility) of data	Standard operation procedures appropriate and complied with	Yes
Completeness – A measure of the amount of useable	Each critical location sampled	Yes
	Samples collected at targeted locations and depth	Yes

QA/QC Measures	Field Data Quality Indicators	Conformance / Comments
data from a data collection activity	SAQP appropriate and complied with	Yes
	Experienced sampler	Yes
	Field documentation correct	Yes
Comparability – The confidence (expressed qualitatively) that data may be considered to be equivalent for each sampling and analytical event	Same sampling method used on each occasion/location	Yes
	Experienced sampler	Yes
	Climatic conditions (temperature, rainfall, wind)	Climate conditions were recorded to be fine. These climatic conditions unlikely had significant influence on the results of the investigation.
	Same type of samples collected (filtered, size, fractions)	Yes
Representativeness – The confidence (expressed qualitatively) that data are representative of each medium present onsite	Appropriate media sampled according to SAQP	Yes
	Each media identified in SAQP sampled	Yes
	Appropriate sample collection methodologies, handling, storage and preservation techniques used	Yes
	Consistency between field observations and laboratory results.	Yes
Accuracy – A quantitative measure of the closeness of reported data to the "true" value	Standard operation procedures appropriate and complied with	Yes
	Calibration of instruments against known standards	Yes

H2.3 CONCLUSION FOR THE FIELD QA/QC

Based on the above review of the field QA/QC data EI considered the field QA/QC programme carried out during the investigations to be appropriate and the results to be acceptable.

H3LABORATORY QA/QC

H3.1LABORATORY ACCREDITATION

Primary and intra-laboratory duplicate samples were analysed by SGS Alexandria Environmental, NSW; inter-laboratory triplicate samples were analysed by Envirolab, Chatswood NSW; all laboratories are accredited by NATA for the analyses undertaken.

A discussion of the laboratory DQIs is presented below.

Table H-5Lab Data Quality Indicators

QA/QC Measures	Laboratory Data Quality Indicators	Conformance/Comments
Completeness – A measure of the amount of useable data from a data collection activity	All critical samples analysed according to SAQP and proposal	Yes
	All analytes analysed according to SAQP in proposal	Yes
	Appropriate methods and PQLs	Yes
	Sample documentation complete	Yes
	Sample holding times complied with	Yes
Comparability – The confidence (expressed qualitatively) that data may be considered to be equivalent for each sampling and analytical event	Same sample analytical methods used (including clean-up)	Yes
	Same Sample PQLs	Yes
	Same laboratories (NATA-accredited)	Yes
	Same units	Yes
Representativeness – The confidence (expressed qualitatively) that data are representative of each medium present onsite	All key samples analysed according to SAQP in the proposal.	Yes
	Analysis of laboratory-prepared volatile trip spikes and trip blanks	Yes
Precision – A quantitative measure of the variability (or reproducibility) of data	Analysis of laboratory and inter-laboratory duplicates	Yes
	Analysis of field duplicates	Yes
Accuracy – A quantitative measure of the closeness of reported data to the	Analysis of rinsate blanks	Yes
	Analysis of reagent blanks	Not applicable
	Analysis of method blanks	Yes

QA/QC Measures	Laboratory Data Quality Indicators	Conformance/Comments
"true" value	Analysis of matrix spikes (MS)	Yes
	Analysis of matrix spike duplicates (MSD)	Yes
	Analysis of surrogate spikes	Yes
	Analysis of reference materials	Not applicable
	Analysis of laboratory control samples	Yes
	Analysis of laboratory-prepared spikes	Yes

Overall, it is considered that the laboratory data quality objectives for this project have been attained.

H3.2Conclusions on Lab QA/QC

Based on the laboratory QA/QC results EI considers that although a small number of discrepancies were identified, which in most cases could be attributed to the non-homogenous nature of the submitted samples, the data generally confirms that the analytical results for the various phases of laboratory testing were valid and useable for interpretation purposes.

H4Summary of Project QA/QC

The sampling methods (including sample preservation, transport and decontamination procedures) and laboratory methods followed during this investigation works were mostly consistent with EI protocols and meeting the DQOs for this project. Some discrepancies from the DQOs were reported however they were considered to not be detrimental to the validity of collected data. It is therefore considered that the data is sufficiently precise and accurate and that the results can be relied upon for interpretation.

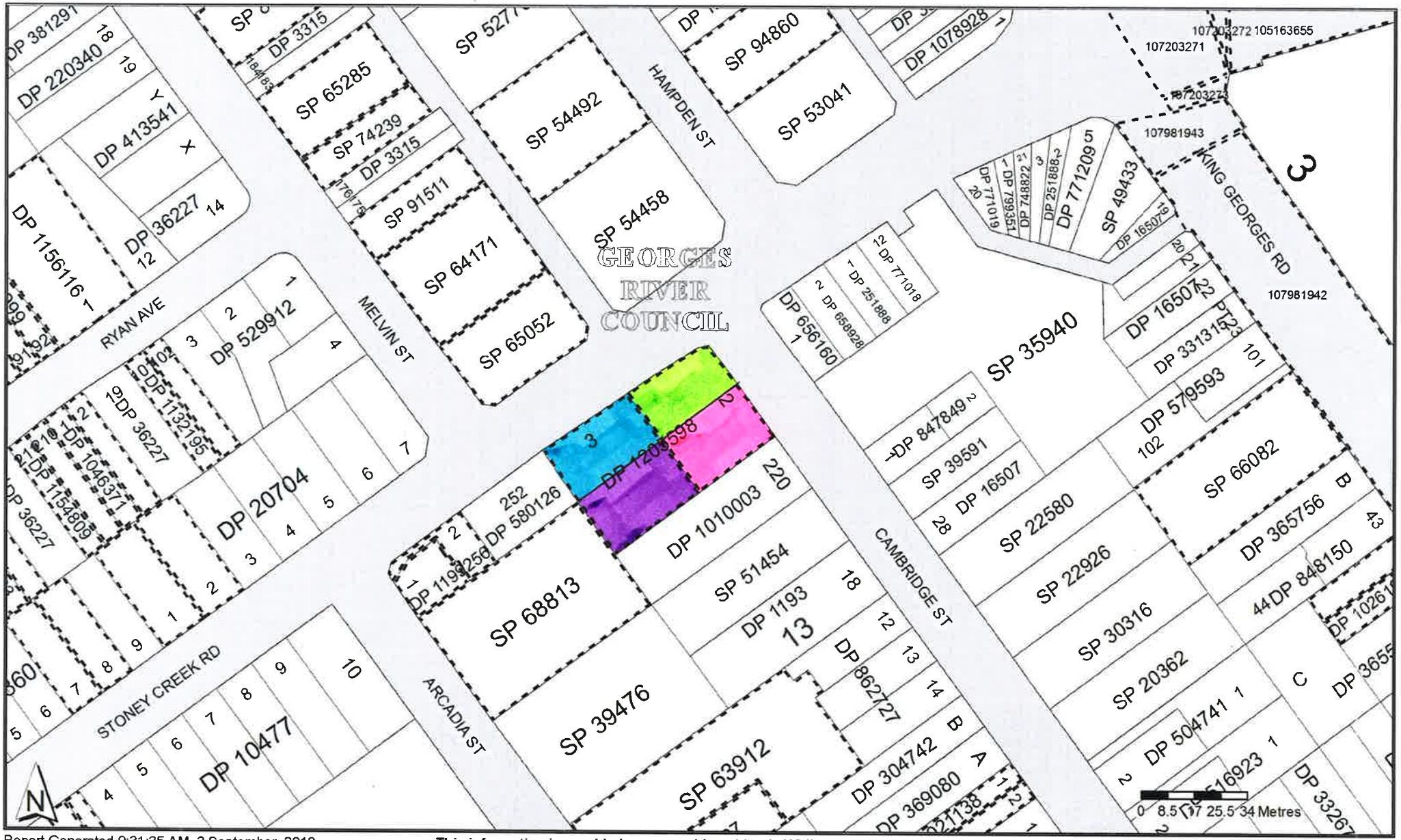
Appendix I– Land Titles

LAND REGISTRY SERVICES

Cadastral Records Enquiry Report : Lot 2 DP 1205598

Ref : NOUSER

Locality : BEVERLY HILLS
Parish : ST GEORGE
LGA : GEORGES RIVER
County : CUMBERLAND



Report Generated 9:31:35 AM, 3 September, 2018

LAND REGISTRY SERVICES

Cadastral Records Enquiry Report : Lot 2 DP 1205598

Ref : NOUSER

Locality : BEVERLY HILLS
Parish : ST GEORGE
LGA : GEORGES RIVER
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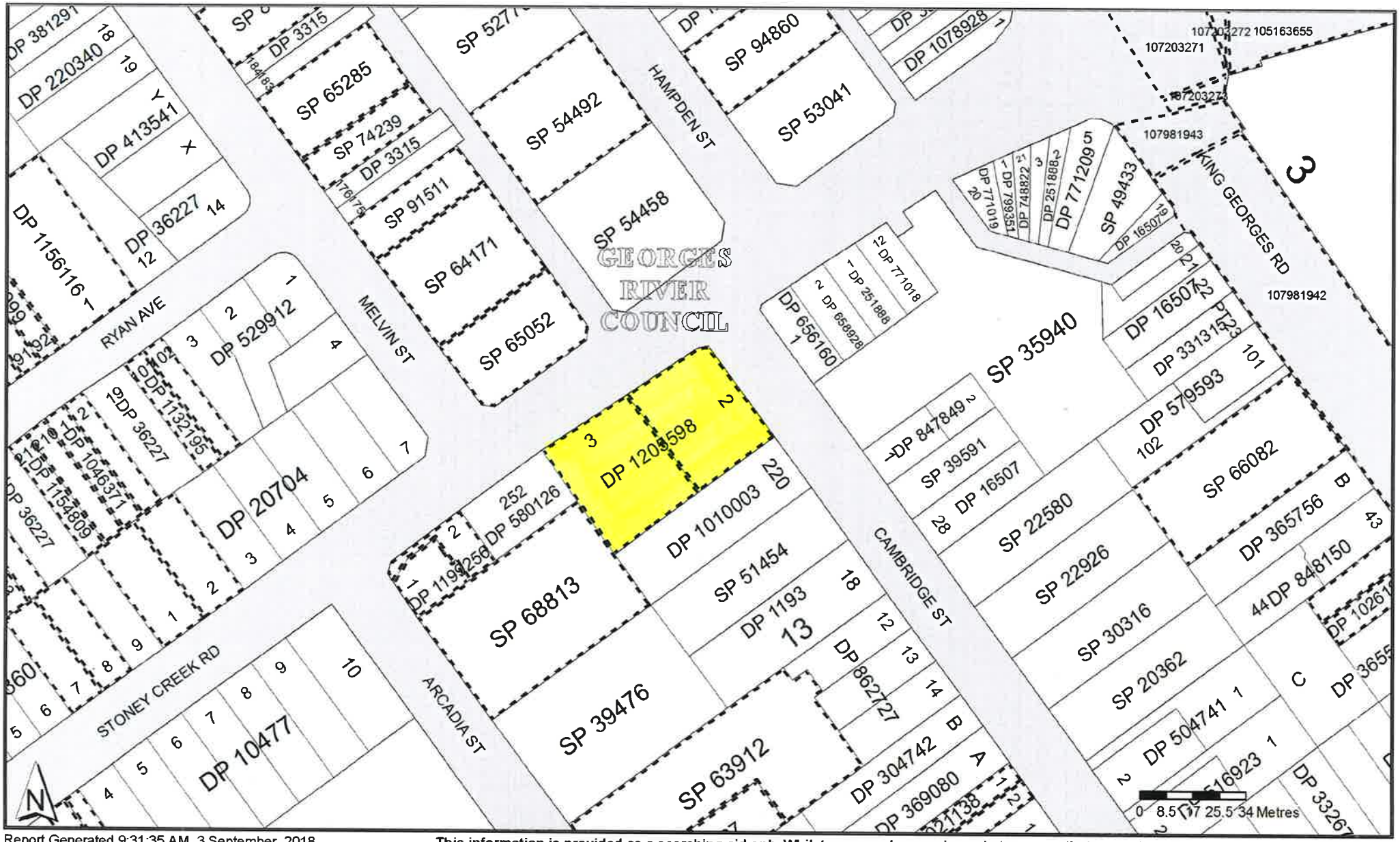


Report Generated 9:31:35 AM, 3 September, 2018

e-departmental

DP 1205598

Registered : 05.02.2015

Title System : TORRENS

Purpose : DEPARTMENTAL

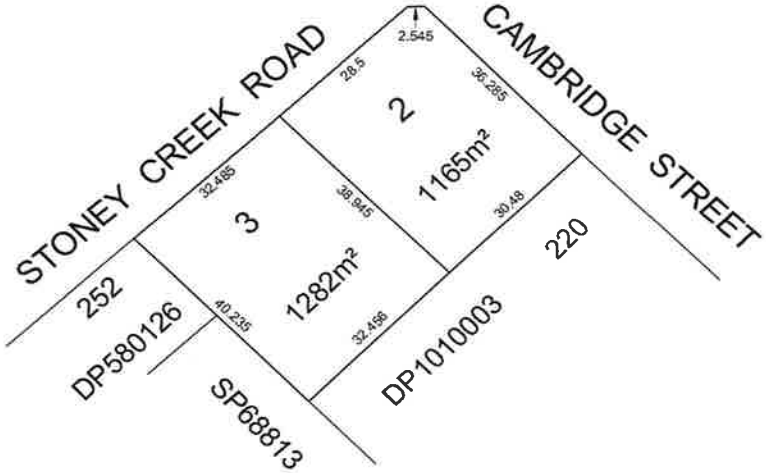
Ref. Map : U0037-61

Last Plan : DP210233

PLAN OF PART LOTS 1 AND 2 IN DP210233 AFTER ROAD ACTION VIDE W86409

Lengths are in metres. Reduction Ratio - NTS
LPI Ref. : SCP2

Sheet 1 of 1 sheets



L.G.A. : HURSTVILLE

LOCALITY: BEVERLY HILLS

PARISH: ST GEORGE

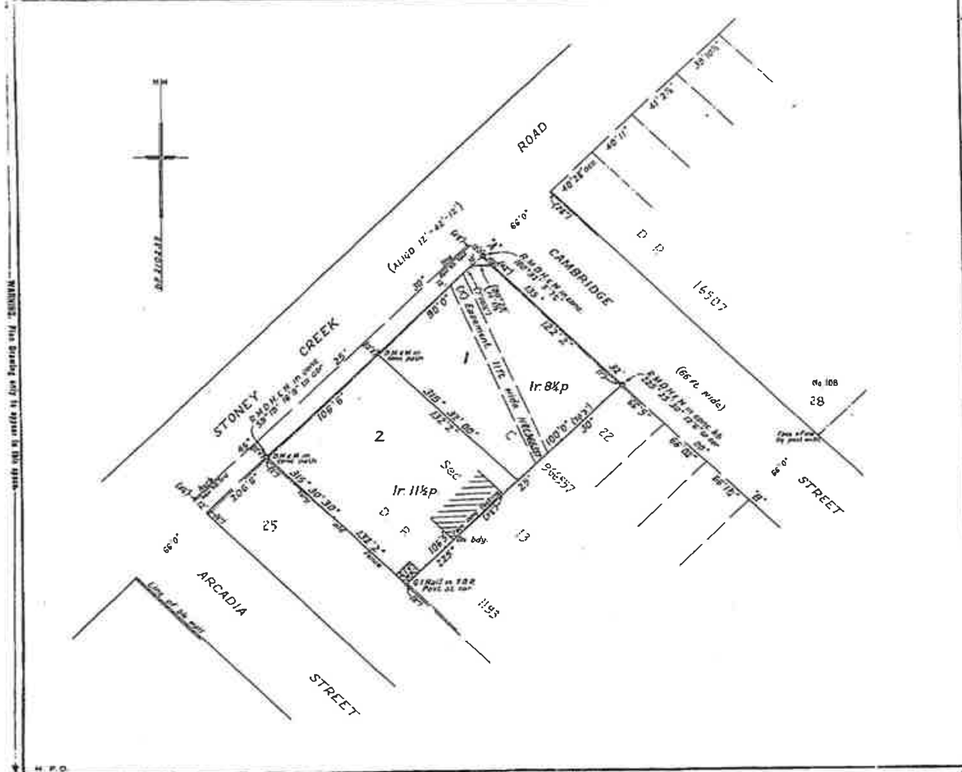
COUNTY: CUMBERLAND

LOT	PRIOR IDENTITY
2	PART LOT 1 IN DP 210233
3	PART LOT 2 IN DP 210233

THIS PLAN HAS BEEN PREPARED TO PROVIDE AN UNIQUE IDENTITY FOR THE LAND IN THE CERTIFICATE OF TITLE REFERRED TO ABOVE.

IT IS NOT A CURRENT PLAN IN THE TERMS OF 7A OF THE CONVEYANCING ACT, 1919.

3. - TO BE USED WHERE DEDICATIONS, DRAINAGE RESERVES AND PUBLIC GARDEN AND RECREATION SPACES ARE PROVIDED.



WARNING: Plan Drawing only to appear in this space.

DP210233

Registered: 7.4.62
C.A.: 3039 of 26.9.61
Title System: Torrens
Purpose: Subdivision
Ref. Map: Hurstville Sh.3
Last Plan: C966557 D.P. 1193

PLAN OF

Subdivision of Lots 24 & 26, Sec 13 D.P. 1193

Scale: 40 Feet to an Inch

Mun. Shire City: Hurstville
Locality: Beverly Hills
Parish: St. George
County: Cumberland

I, Terrence Charles Meehan of P.W. Rygate & West, Sydney

Statement of Dedications, Easements. (Signatures and Seals to appear in panel provided.)

It is intended to dedicate the splayed corner of Lot 1 to the public.

OFFICE USE ONLY.

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION.

SIGNATURES AND SEALS ONLY.

William Hare

Subdivision No. 3039/60 ... September 1961

Approved by Council.

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

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

DP 210233

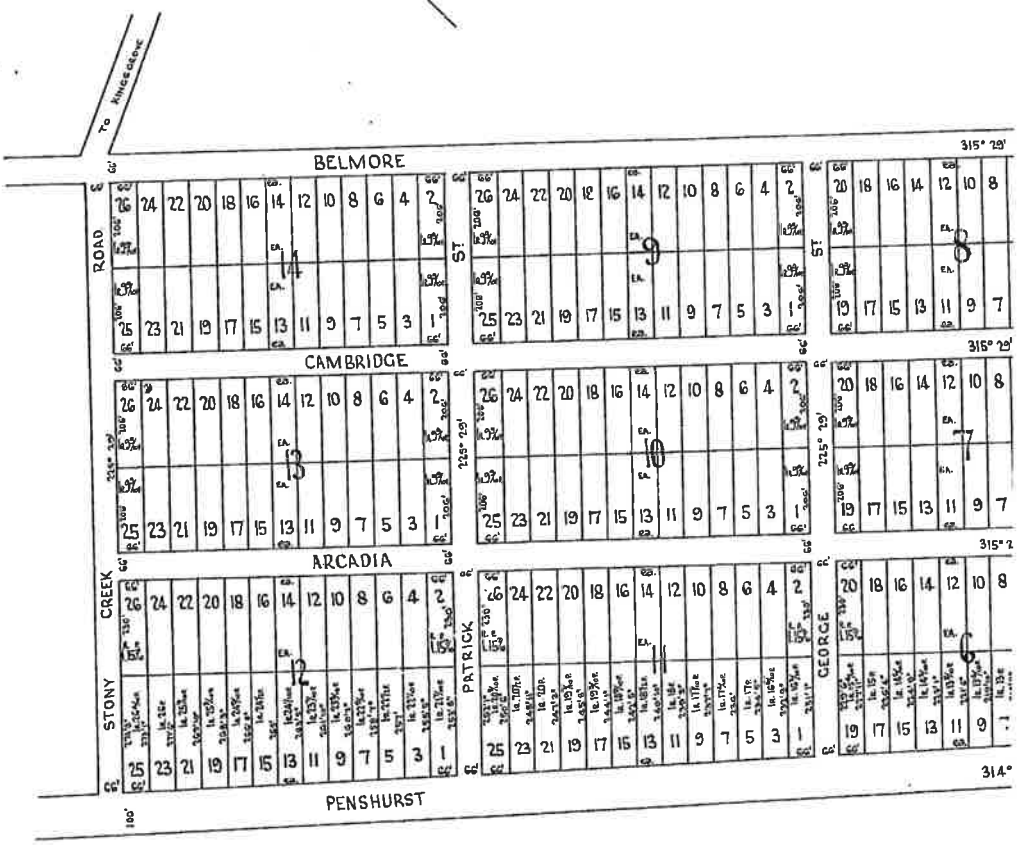
FEET	INCHES	METRES
-	1	0.025
-	2	0.051
-	2 1/4	0.057
-	3 1/4	0.083
-	3 1/2	0.089
-	4 1/4	0.108
-	4 1/2	0.114
-	5	0.127
-	8	0.203
-	10	0.254
-	11	0.279
1	2 3/8	0.365
5	7 1/2	1.715
5	7 3/4	1.721
7	10 1/2	2.400
10	-	3.048
11	-	3.353
12	-	3.658
12	2	3.708
12	2 1/2	3.721
12	4	3.759
12	6	3.810
14	1 1/2	4.305
16	8	5.080
39	10 1/2	12.154
40	2 1/4	12.249
40	11	12.471
41	2 1/2	12.560
42	-	12.802
66	-	20.117
66	0 1/4	20.123
66	1 3/4	20.161
66	5	20.244
70	5	21.463
90	-	27.432
100	-	30.480
106	5	32.436
106	6	32.461
122	2	37.236
132	2	40.234
206	6	62.941

AC	RD	P	SQ M
-	1	8 1/4	1222
-	1	11 1/2	1303

1

D.P. 1193

Pens...
Resub... of part of D...
—— HURS...
Parish of St George ...
Scale:- 200 ft...



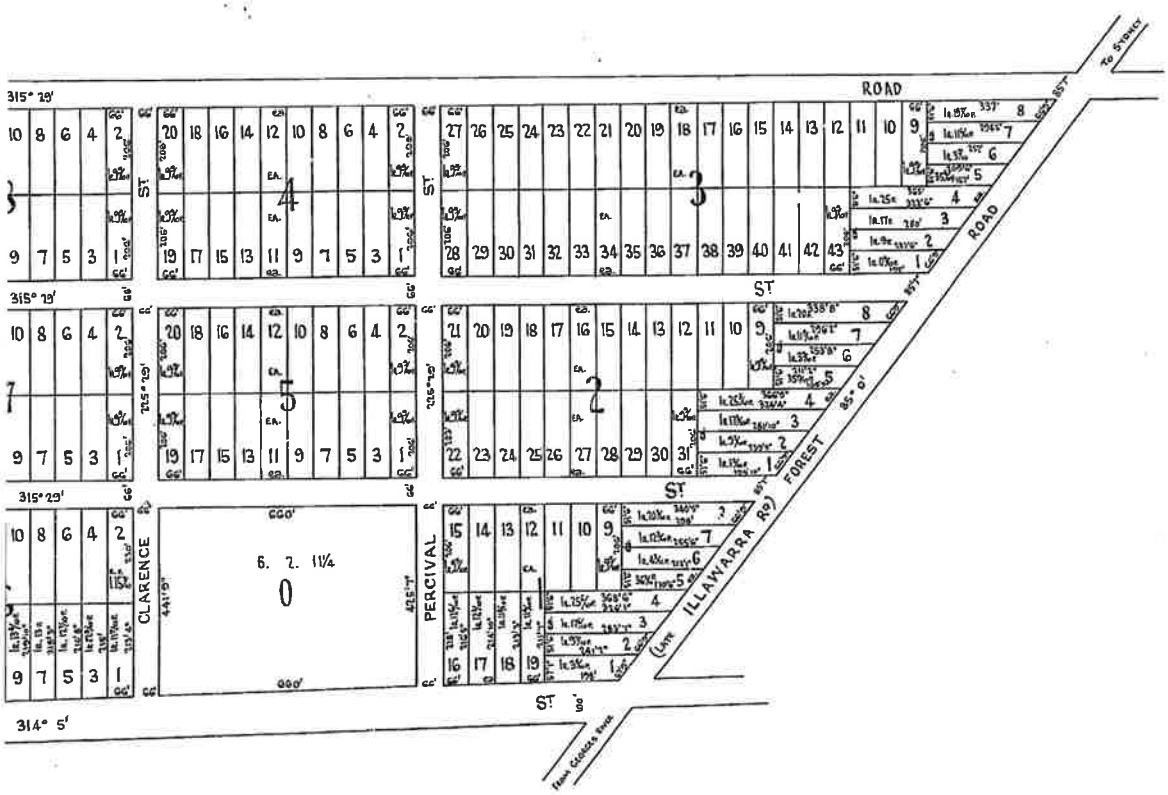
D.A.R. 19.C.'54

I, Bruce Richard Davies, Registrar General for New South Wales, certify that this negative is a photograph made as a permanent record of a document in my custody this 21st day of June, 1979

Req:R193692 /Doc:DP 0001193 P /Rev:22-Jul-1992 /Sts:OK.OK /Pgs:ALL /Prt:03-Sep-2018 10:01 /Seq:1 of 5
Ref:Beverley Hills /Src:M

Copy of D.P. 1193

shurst Park
t of Deposited Plan 53
HURSTVILLE
ɔrge – County of Cumberland
:- 200 ft. to one inch.



(Sgd.) C. B. DAWSON.
LICENSED SURVEYOR.

I, Bruce Richard Davies, Registrar General for New South Wales, certify that this negative is a photograph made as a permanent record of a document in my custody this 21st day of June, 1979

PENSHURST PAR

— PART OF CONNELL'S BL

PARISH OF ST. GEO

Scale 200 feet to 1 inch.

Part of 1605 ac Grant to Robert Townson 1st Ja

to Kingsgrove

Dep. Plan 2684 Dep. Plan 3111 Dep.

BELMORE STREET

CAMBRIDGE STREET

ARCADIA STREET

PENSHURST STREET

KINGSGROVE ROAD

PATRICK STREET

GEORGE STREET

CLARENCE STR

315·29

225·29

319·5

for subdivision here see Depd Plan 1910

D.P. 1193

I, Bruce Richard Davies, Registrar General for New South Wales, certify that this negative is a photograph made as a permanent record of a document in my custody this 21st day of June, 1979

DP 1193

RST PARK ESTATE

RTOFCONNELL'S BUSH —

ISH OF ST GEORGE

1193

Scale 200 feet to 1 inch.

1605 ac Grant to Robert Townson 1st Jany 1810

COPY MADE M.J.M. 24.11.95
EXAMINED [illegible] 10.5.95

3111 Dep. Plan 1769 Dep. Plan 1426

ROAD

STREET

CLARENCE STREET

PERCIVAL STREET

ILLAWARRA ROAD

New Forest Road

to Sydney

from Georges River

Dep^d Plan 1910

L.B. Dawson
Licensed Surveyor

I, Bruce Richard Davies, Registrar General for New South Wales, certify that this negative is a photograph made as a permanent record of a document in my custody this 21st day of June, 1979

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

DP 1193X

FEET	INCHES	METRES
51	6	15.695
57	1	17.4
66	-	20.115
66	8	20.32
66	9	20.345
67	9	20.65
85	7	26.085
100	-	30.48
167	-	50.9
168	9	51.44
170	6	51.97
195	-	59.44
196	10	59.99
198	-	60.35
206	-	62.79
209	6	63.86
211	2	64.36
211	7	64.49
213	1	64.95
213	3	65
213	4	65.02
214	10	65.48
215	-	65.53
216	5	65.96
216	6	65.99
216	8	66.04
218	-	66.45
218	3	66.52
219	10	67.01
221	6	67.51
223	1	68
224	8	68.48
226	4	68.99
227	11	69.47
229	6	69.95
230	-	70.1
231	1	70.43
232	9	70.94
234	5	71.45
236	-	71.93
237	6	72.39
237	7	72.42
239	3	72.92
239	5	72.97
240	10	73.41
241	2	73.51
242	5	73.89
244	1	74.4
245	8	74.88
247	3	75.36
248	11	75.87
250	6	76.35
252	-	76.81
252	1	76.84
253	8	77.32
255	5	77.85
255	6	77.88
257	-	78.33
258	7	78.82
260	2	79.3
261	10	79.81
263	5	80.29
265	-	80.77
265	5	80.9
266	8	81.28
268	3	81.76
269	10	82.25
271	6	82.75
273	1	83.24
274	8	83.72
280	-	85.34
281	10	85.9
283	7	86.44
294	6	89.76
296	2	90.27
298	-	90.83
322	6	98.3

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

DP 1193 CONTINUED

FEET	INCHES	METRES
324	4	98.86
326	1	99.39
337	-	102.72
338	8	103.23
340	5	103.76
365	-	111.25
366	9	111.79
368	6	112.32
425	7	129.72
441	9	134.65
660	-	201.17
725	7	221.16

AC	RD	P	SQ M
-	-	15.7	397.1
-	-	35.6	900.4
-	-	35.9	908
-	-	36.2	915.6
-	-	36.3	918.1
-	1	.9	1034
-	1	1.2	1042
-	1	3.7	1105
-	1	3.8	1108
-	1	3.9	1110
-	1	4.3	1120
-	1	9	1239
-	1	9.2	1244
-	1	9.7	1257
-	1	9.9	1262
-	1	11.4	1300
-	1	11.6	1305
-	1	11.8	1310
-	1	11.9	1313
-	1	12.2	1320
-	1	12.3	1323
-	1	12.6	1330
-	1	12.7	1333
-	1	13	1341
-	1	13.4	1351
-	1	13.8	1361
-	1	14.2	1371
-	1	14.6	1381
-	1	15	1391
-	1	15.4	1401
-	1	15.7	1409
-	1	16.2	1421
-	1	16.6	1432
-	1	17	1442
-	1	17.3	1449
-	1	17.4	1452
-	1	17.6	1457
-	1	17.7	1459
-	1	18	1467
-	1	18 1/2	1480
-	1	18.9	1493
-	1	19.3	1500
-	1	19.7	1510
-	1	20	1518
-	1	20.3	1525
-	1	20 1/2	1530
-	1	20.9	1540
-	1	21.7	1561
-	1	22.1	1571
-	1	22 1/2	1581
-	1	22.9	1591
-	1	23.3	1601
-	1	23.7	1611
-	1	24.1	1621
-	1	24 1/2	1631
-	1	24.9	1642
-	1	25	1644
-	1	25.3	1652
-	1	25.6	1659
-	1	25.7	1662
-	1	26	1669
-	1	26.4	1679

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

DP 1193 CONTINUED

AC	RD	P	HA
6	2	11 1/4	2.659

I, Bruce Richard Davies, Registrar General for New South Wales, certify that this negative is a photograph made as a permanent record of a document in my custody this 21st day of June, 1979

M

NEW SOUTH WALES
(For Grant and title reference prior to first edition see Deposited Plan.)

TIFICATE OF TITLE
PERTY ACT, 1900, as amended.

Vol. 9163 Fol. 12

1st Edition issued 16-4-1962

CANCELLED

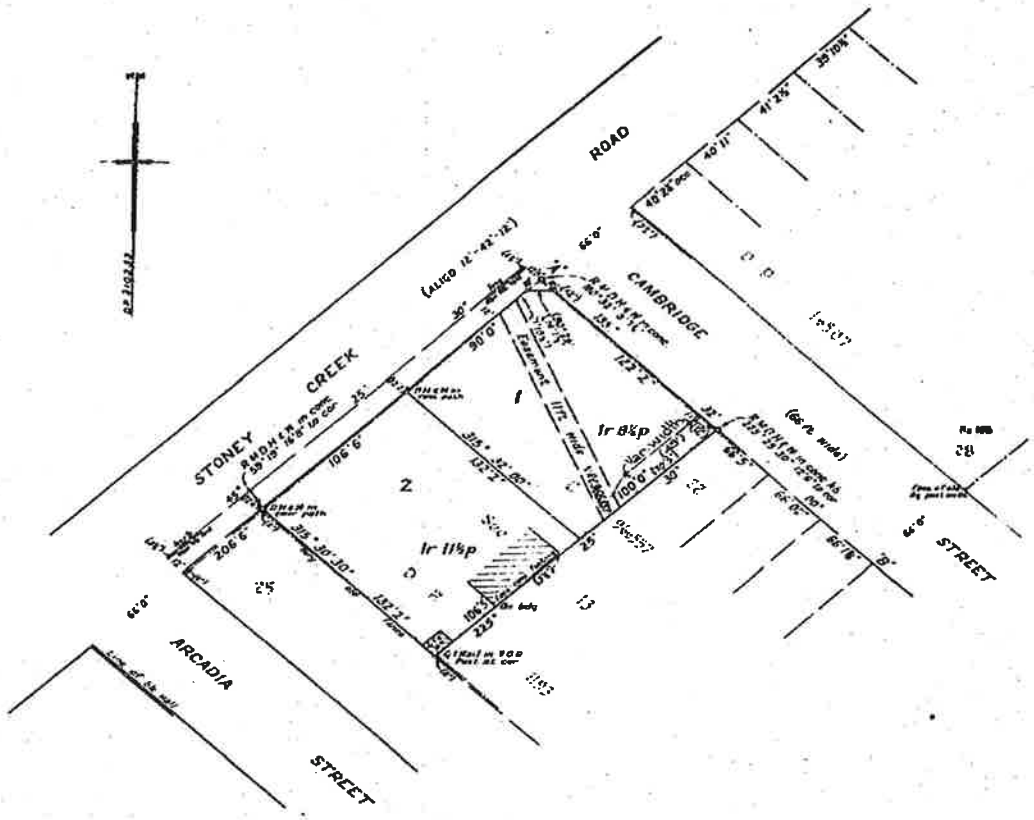
Fol. 12 Vol. 9163 (Page 1)

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

Witness

Registrar-General. SEE AUTO. FOL.

PLAN SHOWING LOCATION OF LAND



S

ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 1 in Deposited Plan 210233 at Beverly Hills in the Municipality of Hurstville Parish of St. George and County of Cumberland.

FIRST SCHEDULE (Continued overleaf)

~~WILLIAM HARE, of Penshurst, Telegraph Linesman and EDITH MARY MATILDA HARE, his wife, as Joint Tenants~~

Registrar General

SECOND SCHEDULE (Continued overleaf)

GRY

1. Reservations and conditions, if any, contained in the Crown Grant(s) referred to in the said Deposited Plan.

Registrar General

EA

2. Easement created by Resumption No. C966557 affecting the part of the land above described shown as Easement 11 feet wide in the plan hereon.

Registrar General

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

25031 11.60 St 1609 V. C. N. Blight, Government Printer

Vol. 9163 Fol. 12

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	ENTERED	Signature of Registrar-General
The Commissioner for Motor Transport	Transfer	J20243	9-3-1962	7-5-1962	

J20243
DP251888
J982243
DP251888
W864094
Resumed & Declared Public Road. Gaz 1611 84 Fol. 60

SECOND SCHEDULE (continued)

	INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	PARTICULARS	ENTERED	Signature of Registrar-General	CANCELLATION
EK	Transfer	J982243P	31-3-1965	Easement for Stormwater Drainage (as more fully set out in the said instrument) affecting the piece of land shown as var. width in the plan hereon	7-6-1965		CANCELLED
AA	W86409 Resumption - The part of the land within described being Lot 4 in DP251888 is now Public Road. Registered 29-1-1986						SEE AUTO FOLIO

(Page 2 of 2 pages)

FORM No. 184 NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR-GENERAL ARE CANCELLED

LAND REGISTRY SERVICES

Historical Title

InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
15/8/2018 1:03PM

FOLIO: 1/210233

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 9163 FOL 12

Recorded	Number	Type of Instrument	C.T. Issue
4/6/1987		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
6/6/1988		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
24/9/2012	AH257603	DEPARTMENTAL DEALING	
5/2/2015	DP1205598	DEPOSITED PLAN	FOLIO CANCELLED RESIDUE REMAINS

*** END OF SEARCH ***

Beverley Hills PRINTED ON 15/8/2018

LAND REGISTRY SERVICES

Historical Title

InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
15/8/2018 1:02PM

FOLIO: 2/1205598

First Title(s): OLD SYSTEM
Prior Title(s): 1/210233

Recorded	Number	Type of Instrument	C.T. Issue
5/2/2015	DP1205598	DEPOSITED PLAN	FOLIO CREATED CT NOT ISSUED
7/2/2015	AJ145896	APPLICATION TO RECORD A NEW REGISTERED PROPRIETOR	EDITION 1

*** END OF SEARCH ***

Beverley Hills PRINTED ON 15/8/2018

LAND REGISTRY SERVICES Title Search

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 2/1205598

SEARCH DATE	TIME	EDITION NO	DATE
3/9/2018	10:01 AM	1	7/2/2015

LAND

LOT 2 IN DEPOSITED PLAN 1205598
AT BEVERLY HILLS
LOCAL GOVERNMENT AREA GEORGES RIVER
PARISH OF ST GEORGE COUNTY OF CUMBERLAND
TITLE DIAGRAM DP1205598

FIRST SCHEDULE

GOVERNMENT PROPERTY NSW (RP AJ145896)

SECOND SCHEDULE (3 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 C966557 EASEMENT AFFECTING THE PART OF THE LAND ABOVE DESCRIBED SHOWN AS EASEMENT 11 FEET WIDE IN DP210233
3 J982243 EASEMENT FOR STORMWATER DRAINAGE AFFECTING THE PIECE OF LAND SHOWN AS VAR WIDTH IN DP210233

NOTATIONS

CERTIFICATE OF TITLE NOT ISSUED. LODGED DEALINGS MUST BE ACCOMPANIED BY PRIOR CERTIFICATE OF TITLE VOL.9163 FOL.12

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

M
NEW SOUTH WALES
(For Grant and title reference prior to first edition see Deposited Plan.)

[redacted]TIFICATE OF TITLE
[redacted]PERTY ACT, 1900, as amended.

09163013

Vol. 9163 Fol. 13

1st Edition issued 16-4-1962

(Page 1) Vol. 9163 Fol. 13

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

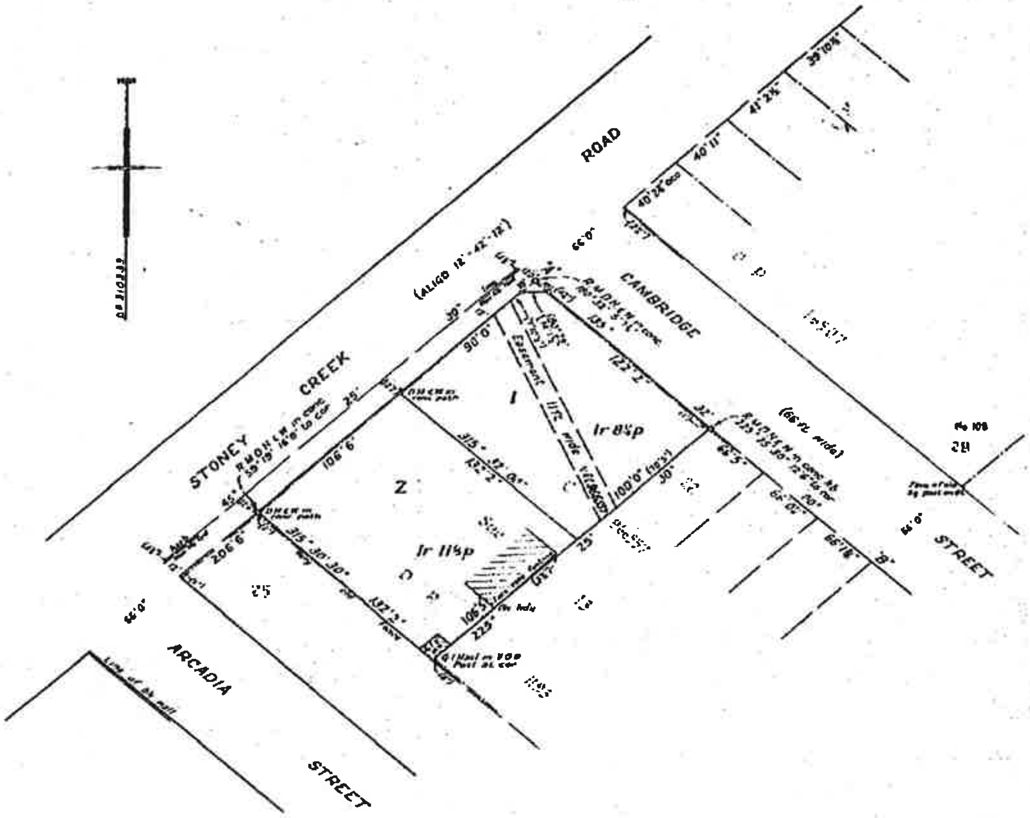
CANCELLED

Witness A. Tenney

Registrar-General

FOLIO

PLAN SHOWING LOCATION OF LAND



S

ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 2 in Deposited Plan 210233 at Beverly Hills in the Municipality of Hurstville Parish of St. George and County of Cumberland.

FIRST SCHEDULE (Continued overleaf)

~~WILLIAM HARE, of Penshurst, Telegraph Linesman and EDITH MARY MATILDA HARE, his wife, as Joint Tenants.~~

Registrar General

SECOND SCHEDULE (Continued overleaf)

GRY 1. Reservations and conditions, if any, contained in the Crown Grant(s) referred to in the said Deposited Plan.

Registrar General

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

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

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

25031 11.60 St 1609 V. C. N. Blight, Government Printer

Vol. 9163 Fol. 13

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	ENTERED	Signature of Registrar-General
~~William Hare of Beverly Hills, Widower Telegraph Linesman.~~	~~Notice of Death~~	~~P166756~~	~~10-2-1975~~	~~25-2-1975~~	
The Commissioner for Motor Transport	Transfer	Q258345	------	13-7-1977	

P166756, DP 25188, Lot 22 DP 251888, W86409

Resumed & Reclaimed Public Road Gaz. 15-1-86 Fol. 6

SECOND SCHEDULE (continued)

INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	PARTICULARS	ENTERED	Signature of Registrar-General	CANCELLATION
AA	W86409		Resumption - The part of the land within described being Lot 22 in DP251888 is now Public Road. Registered 29-1-1986			

CANCELLED

SEE AUTO FOLIO

(Page 2 of 2 pages)

FORM No. 184

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

Historical Title

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
15/8/2018 1:03PM

FOLIO: 2/210233

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 9163 FOL 13

Recorded	Number	Type of Instrument	C.T. Issue
4/6/1987		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
6/6/1988		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
24/9/2012	AH257681	DEPARTMENTAL DEALING	
5/2/2015	DP1205598	DEPOSITED PLAN	FOLIO CANCELLED RESIDUE REMAINS

*** END OF SEARCH ***

Beverley Hills PRINTED ON 15/8/2018

LAND REGISTRY SERVICES

Historical Title

InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
15/8/2018 1:02PM

FOLIO: 3/1205598

First Title(s): OLD SYSTEM
Prior Title(s): 2/210233

Recorded	Number	Type of Instrument	C.T. Issue
5/2/2015	DP1205598	DEPOSITED PLAN	FOLIO CREATED CT NOT ISSUED
7/2/2015	AJ145896	APPLICATION TO RECORD A NEW REGISTERED PROPRIETOR	EDITION 1

*** END OF SEARCH ***

Beverley Hills PRINTED ON 15/8/2018

LAND REGISTRY SERVICES **Title Search** InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 3/1205598

SEARCH DATE	TIME	EDITION NO	DATE
3/9/2018	10:01 AM	1	7/2/2015

LAND

LOT 3 IN DEPOSITED PLAN 1205598
AT BEVERLY HILLS
LOCAL GOVERNMENT AREA GEORGES RIVER
PARISH OF ST GEORGE COUNTY OF CUMBERLAND
TITLE DIAGRAM DP1205598

FIRST SCHEDULE

GOVERNMENT PROPERTY NSW (RP AJ145896)

SECOND SCHEDULE (1 NOTIFICATION)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)

NOTATIONS

CERTIFICATE OF TITLE NOT ISSUED. LODGED DEALINGS MUST BE ACCOMPANIED BY PRIOR CERTIFICATE OF TITLE VOL.9163 FOL.13

UNREGISTERED DEALINGS: NIL

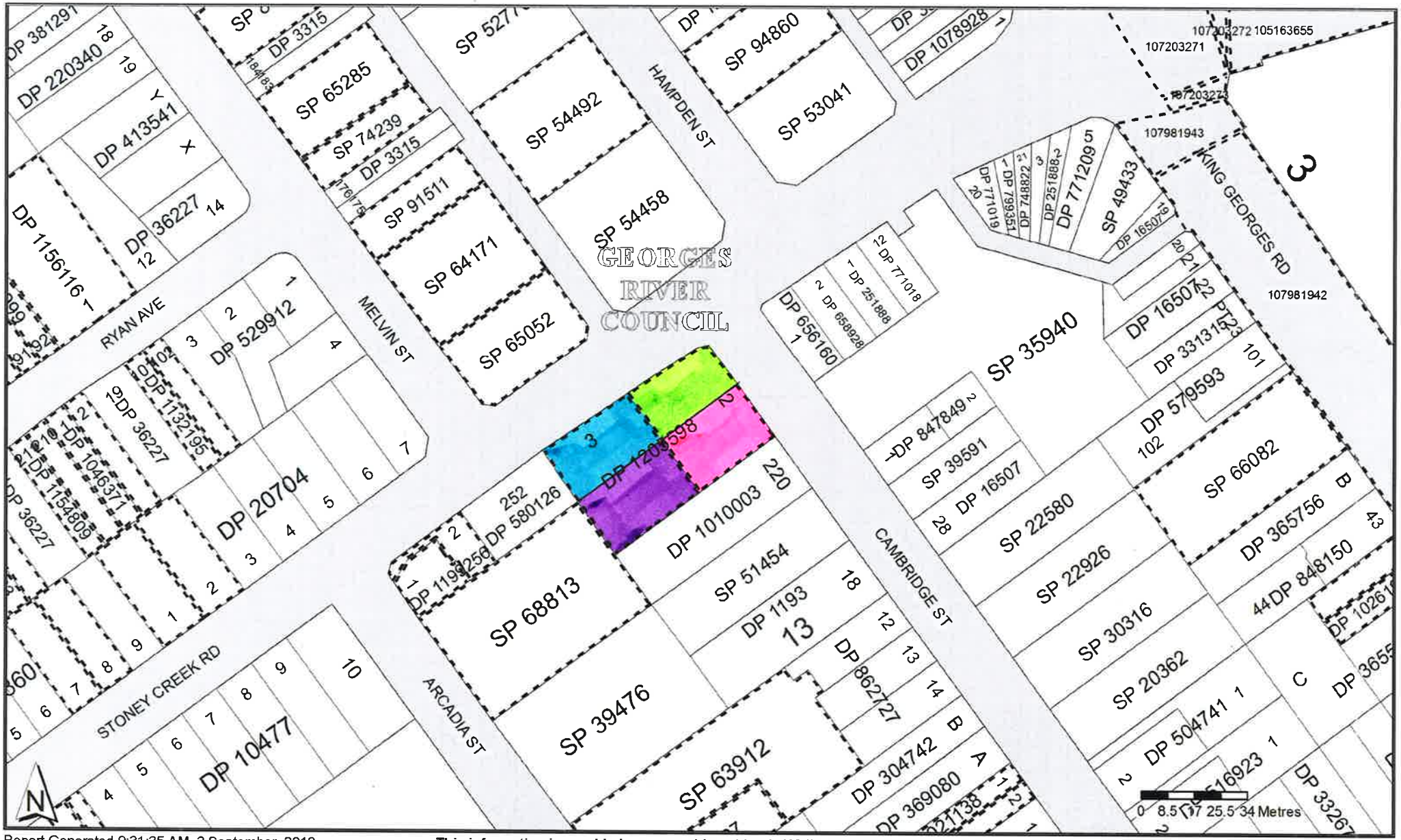
*** END OF SEARCH ***

LAND REGISTRY SERVICES

Cadastral Records Enquiry Report : Lot 2 DP 1205598

Ref : NOUSER

Locality : BEVERLY HILLS
Parish : ST GEORGE
LGA : GEORGES RIVER
County : CUMBERLAND



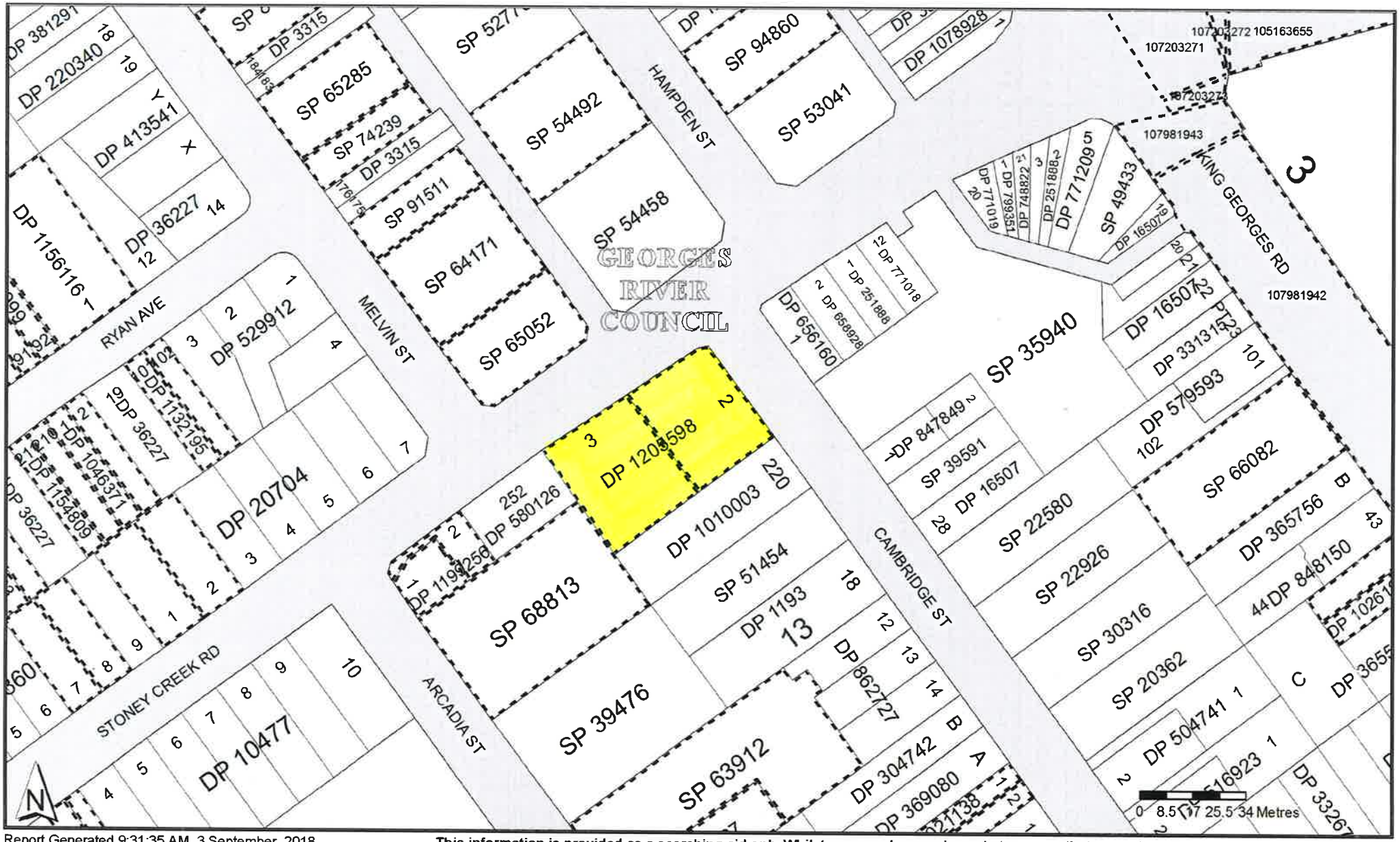
Report Generated 9:31:35 AM, 3 September, 2018

LAND REGISTRY SERVICES

Cadastral Records Enquiry Report : Lot 2 DP 1205598

Ref : NOUSER

Locality : BEVERLY HILLS
Parish : ST GEORGE
LGA : GEORGES RIVER
County : CUMBERLAND



Report Generated 9:31:35 AM, 3 September, 2018

e-departmental

DP 1205598

Registered : 05.02.2015

Title System : TORRENS

Purpose : DEPARTMENTAL

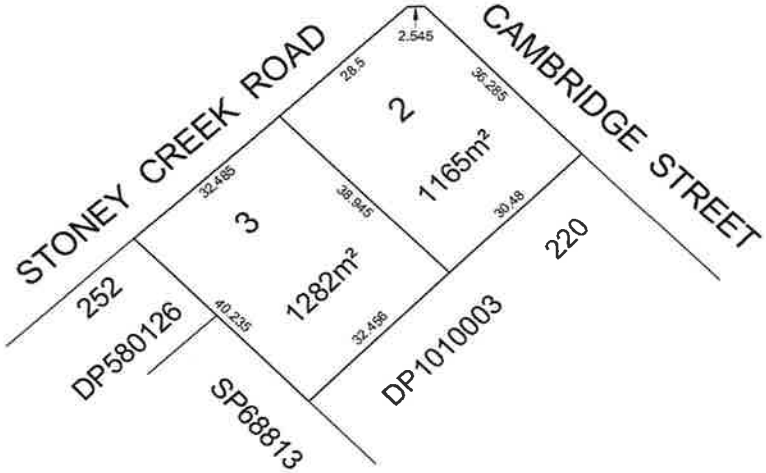
Ref. Map : U0037-61

Last Plan : DP210233

PLAN OF PART LOTS 1 AND 2 IN DP210233 AFTER ROAD ACTION VIDE W86409

Lengths are in metres. Reduction Ratio - NTS
LPI Ref. : SCP2

Sheet 1 of 1 sheets



L.G.A. : HURSTVILLE

LOCALITY: BEVERLY HILLS

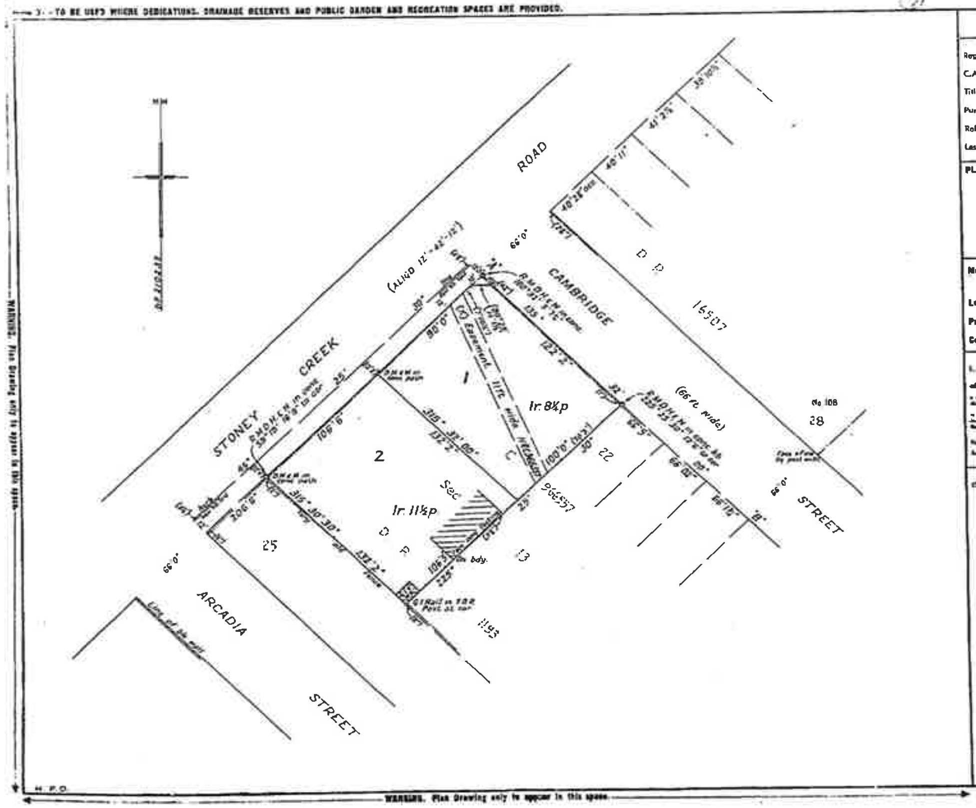
PARISH: ST GEORGE

COUNTY: CUMBERLAND

LOT	PRIOR IDENTITY
2	PART LOT 1 IN DP 210233
3	PART LOT 2 IN DP 210233

THIS PLAN HAS BEEN PREPARED TO PROVIDE AN UNIQUE IDENTITY FOR THE LAND IN THE CERTIFICATE OF TITLE REFERRED TO ABOVE.

IT IS NOT A CURRENT PLAN IN THE TERMS OF 7A OF THE CONVEYANCING ACT, 1919.



DP210233	
Registered:	7.4.62
C.A.:	3039 of 26:9:61
Title System:	Torrens
Purpose:	Subdivision
Ref. Map:	Hurstville Sh.3
Last Plan:	C966557 D.P.1193

PLAN OF

Subdivision of Lots 24 & 26, Sec 13 D.P. 1193

Scale: 40 Feet to an Inch

Mun. Shire City:	Hurstville
Locality:	Beverly Hills
Parish:	St. George
County:	Cumberland

I, Terrence Charles Meehan of P.W. Rygate & West, Sydney

Statement of Dedications, Easements. (Signatures and Seals to appear in panel provided.)

It is intended to dedicate the splayed corner of Lot 1 to the public.

OFFICE USE ONLY.

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION.

WARNING. Plan Drawing only to appear in this space.

SIGNATURES AND SEALS ONLY.

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

1

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

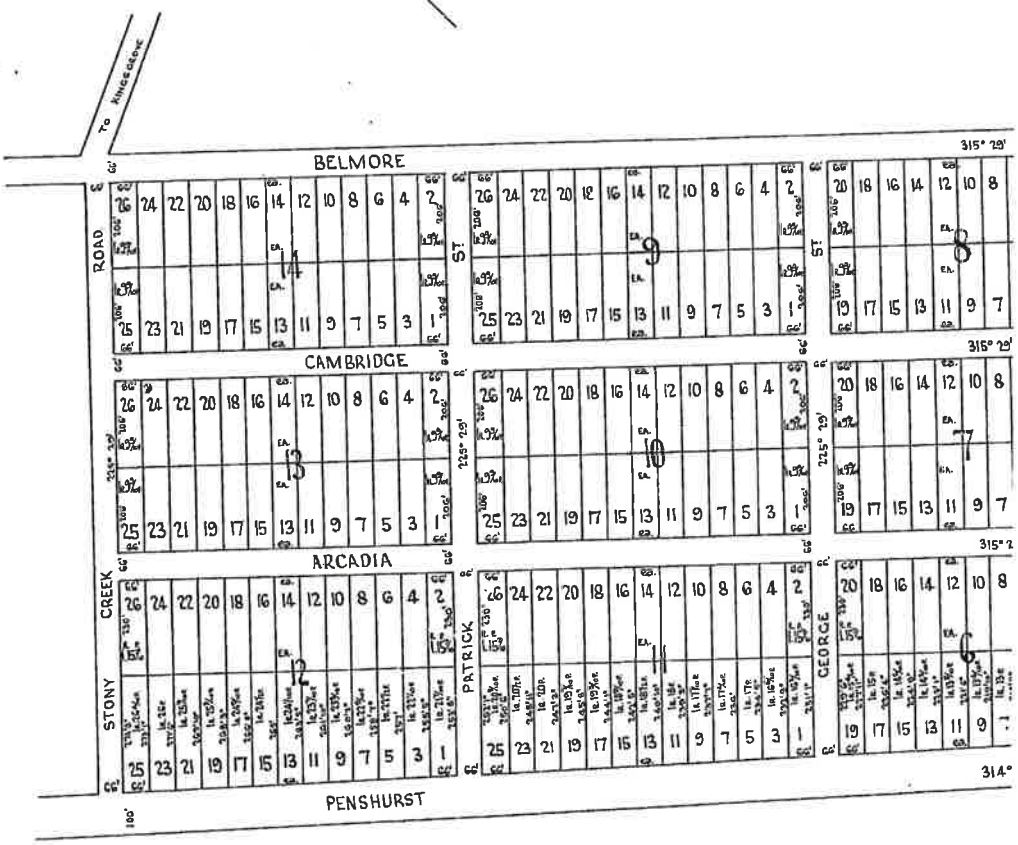
DP 210233

FEET	INCHES	METRES
-	1	0.025
-	2	0.051
-	2 1/4	0.057
-	3 1/4	0.083
-	3 1/2	0.089
-	4 1/4	0.108
-	4 1/2	0.114
-	5	0.127
-	8	0.203
-	10	0.254
-	11	0.279
1	2 3/8	0.365
5	7 1/2	1.715
5	7 3/4	1.721
7	10 1/2	2.400
10	-	3.048
11	-	3.353
12	-	3.658
12	2	3.708
12	2 1/2	3.721
12	4	3.759
12	6	3.810
14	1 1/2	4.305
16	8	5.080
39	10 1/2	12.154
40	2 1/4	12.249
40	11	12.471
41	2 1/2	12.560
42	-	12.802
66	-	20.117
66	0 1/4	20.123
66	1 3/4	20.161
66	5	20.244
70	5	21.463
90	-	27.432
100	-	30.480
106	5	32.436
106	6	32.461
122	2	37.236
132	2	40.234
206	6	62.941

AC RD P	SQ M
- 1 8 1/4	1222
- 1 11 1/2	1303

D.P. 1193

Pens...
Resub... of part of D...
—— HURS...
Parish of St George ...
Scale:- 200 ft...



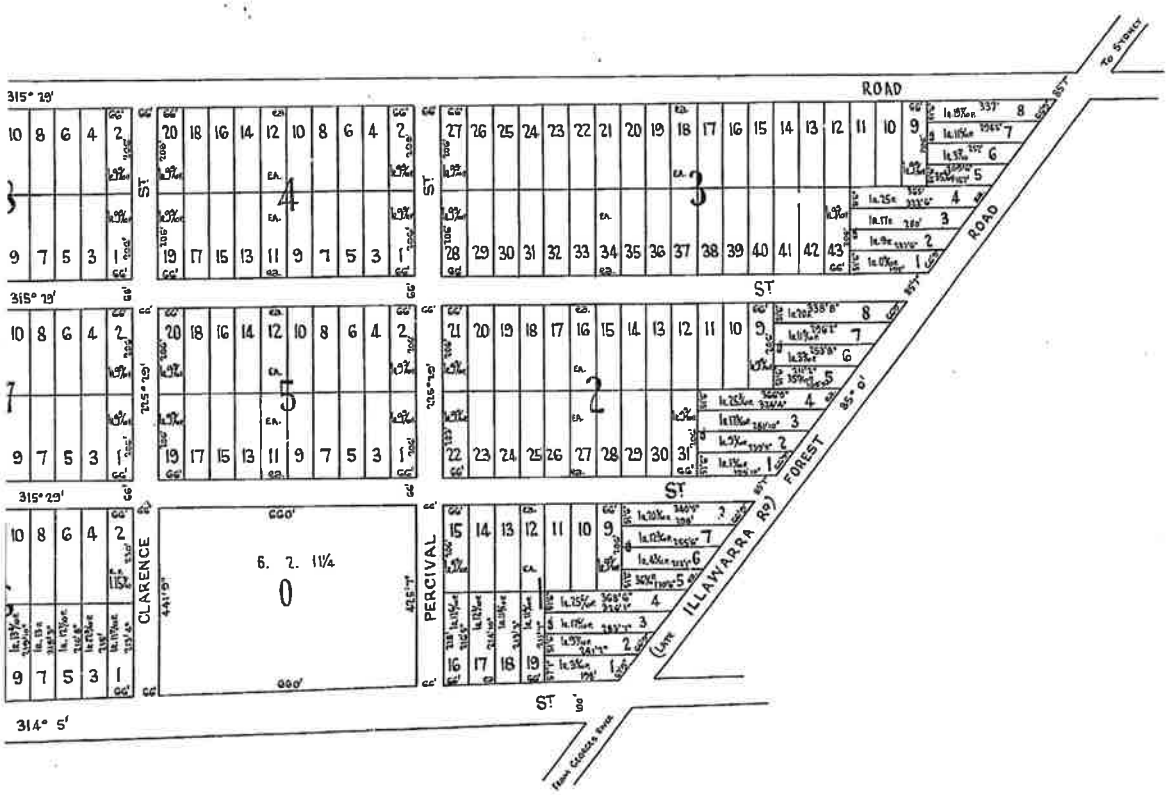
D.A.R. 19.C.'54

I, Bruce Richard Davies, Registrar General for New South Wales, certify that this negative is a photograph made as a permanent record of a document in my custody this 21st day of June, 1979

Req:R193692 /Doc:DP 0001193 P /Rev:22-Jul-1992 /Sts:OK.OK /Pgs:ALL /Prt:03-Sep-2018 10:01 /Seq:1 of 5
Ref:Beverley Hills /Src:M

Copy of D.P. 1193

shurst Park
t of Deposited Plan 53
HURSTVILLE
ɔrge – County of Cumberland
:- 200 ft. to one inch.



(Sgd.) C. B. DAWSON.
LICENSED SURVEYOR.

I, Bruce Richard Davies, Registrar General for New South Wales, certify that this negative is a photograph made as a permanent record of a document in my custody this 21st day of June, 1979

PENSHURST PAR

— PART OF CONNELL'S BL

PARISH OF ST. GEO

Scale 200 feet to 1 inch.

Part of 1605 ac Grant to Robert Townson 1st Ja

to Kingsgrove

Dep. Plan 2684 Dep. Plan 3111 Dep.

BELMORE STREET

CAMBRIDGE STREET

ARCADIA STREET

PENSHURST STREET

KINGSGROVE ROAD

PATRICK STREET

GEORGE STREET

CLARENCE STR

315·29

225·29

319·5

for subdivision here see Depd Plan 1910

D.P. 1193

I, Bruce Richard Davies, Registrar General for New South Wales, certify that this negative is a photograph made as a permanent record of a document in my custody this 21st day of June, 1979

DP 1193

RST PARK ESTATE

RTOFCONNELL'S BUSH —

ISH OF ST GEORGE

1193

Scale 200 feet to 1 inch.

1605 ac Grant to Robert Townson 1st Jany 1810

COPY MADE M.J.M. 24.11.95
EXAMINED [illegible] 10.5.95

3111 Dep. Plan 1769 Dep. Plan 1426

ROAD

STREET

CLARENCE STREET

PERCIVAL STREET

ILLAWARRA ROAD

New Forest Road

to Sydney

from Georges River

Dep^d Plan 1910

L.B. Dawson
Licensed Surveyor

I, Bruce Richard Davies, Registrar General for New South Wales, certify that this negative is a photograph made as a permanent record of a document in my custody this 21st day of June, 1979

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

DP 1193X

FEET	INCHES	METRES
51	6	15.695
57	1	17.4
66	-	20.115
66	8	20.32
66	9	20.345
67	9	20.65
85	7	26.085
100	-	30.48
167	-	50.9
168	9	51.44
170	6	51.97
195	-	59.44
196	10	59.99
198	-	60.35
206	-	62.79
209	6	63.86
211	2	64.36
211	7	64.49
213	1	64.95
213	3	65
213	4	65.02
214	10	65.48
215	-	65.53
216	5	65.96
216	6	65.99
216	8	66.04
218	-	66.45
218	3	66.52
219	10	67.01
221	6	67.51
223	1	68
224	8	68.48
226	4	68.99
227	11	69.47
229	6	69.95
230	-	70.1
231	1	70.43
232	9	70.94
234	5	71.45
236	-	71.93
237	6	72.39
237	7	72.42
239	3	72.92
239	5	72.97
240	10	73.41
241	2	73.51
242	5	73.89
244	1	74.4
245	8	74.88
247	3	75.36
248	11	75.87
250	6	76.35
252	-	76.81
252	1	76.84
253	8	77.32
255	5	77.85
255	6	77.88
257	-	78.33
258	7	78.82
260	2	79.3
261	10	79.81
263	5	80.29
265	-	80.77
265	5	80.9
266	8	81.28
268	3	81.76
269	10	82.25
271	6	82.75
273	1	83.24
274	8	83.72
280	-	85.34
281	10	85.9
283	7	86.44
294	6	89.76
296	2	90.27
298	-	90.83
322	6	98.3

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

DP 1193 CONTINUED

FEET	INCHES	METRES
324	4	98.86
326	1	99.39
337	-	102.72
338	8	103.23
340	5	103.76
365	-	111.25
366	9	111.79
368	6	112.32
425	7	129.72
441	9	134.65
660	-	201.17
725	7	221.16

AC	RD	P	SQ M
-	-	15.7	397.1
-	-	35.6	900.4
-	-	35.9	908
-	-	36.2	915.6
-	-	36.3	918.1
-	1	.9	1034
-	1	1.2	1042
-	1	3.7	1105
-	1	3.8	1108
-	1	3.9	1110
-	1	4.3	1120
-	1	9	1239
-	1	9.2	1244
-	1	9.7	1257
-	1	9.9	1262
-	1	11.4	1300
-	1	11.6	1305
-	1	11.8	1310
-	1	11.9	1313
-	1	12.2	1320
-	1	12.3	1323
-	1	12.6	1330
-	1	12.7	1333
-	1	13	1341
-	1	13.4	1351
-	1	13.8	1361
-	1	14.2	1371
-	1	14.6	1381
-	1	15	1391
-	1	15.4	1401
-	1	15.7	1409
-	1	16.2	1421
-	1	16.6	1432
-	1	17	1442
-	1	17.3	1449
-	1	17.4	1452
-	1	17.6	1457
-	1	17.7	1459
-	1	18	1467
-	1	18 1/2	1480
-	1	18.9	1493
-	1	19.3	1500
-	1	19.7	1510
-	1	20	1518
-	1	20.3	1525
-	1	20 1/2	1530
-	1	20.9	1540
-	1	21.7	1561
-	1	22.1	1571
-	1	22 1/2	1581
-	1	22.9	1591
-	1	23.3	1601
-	1	23.7	1611
-	1	24.1	1621
-	1	24 1/2	1631
-	1	24.9	1642
-	1	25	1644
-	1	25.3	1652
-	1	25.6	1659
-	1	25.7	1662
-	1	26	1669
-	1	26.4	1679

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

DP 1193 CONTINUED

AC	RD	P	HA
6	2	11 1/4	2.659

I, Bruce Richard Davies, Registrar General for New South Wales, certify that this negative is a photograph made as a permanent record of a document in my custody this 21st day of June, 1979

M

NEW SOUTH WALES
(For Grant and title reference prior to first edition see Deposited Plan.)

TIFICATE OF TITLE
PERTY ACT, 1900, as amended.

Vol. 9163 Fol. 12

1st Edition issued 16-4-1962

CANCELLED

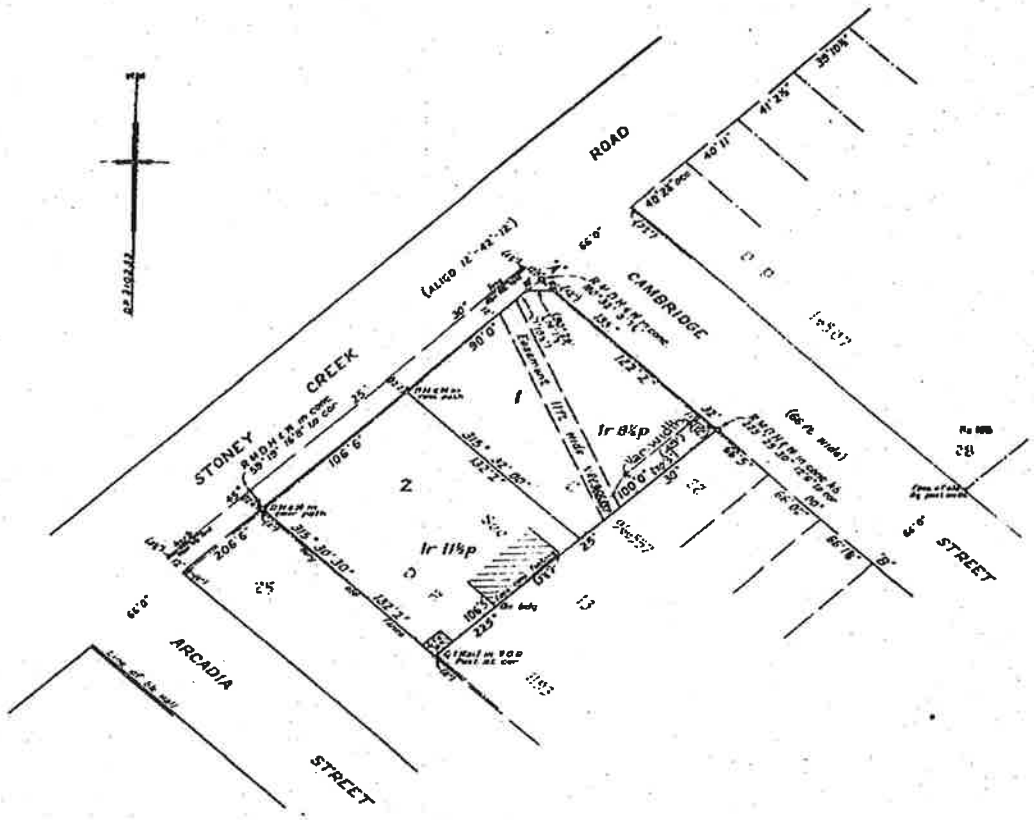
Fol. 12 Vol. 9163 (Page 1)

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

Witness

Registrar-General. SEE AUTO. FOL.

PLAN SHOWING LOCATION OF LAND



S

ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 1 in Deposited Plan 210233 at Beverly Hills in the Municipality of Hurstville Parish of St. George and County of Cumberland.

FIRST SCHEDULE (Continued overleaf)

~~WILLIAM HARE, of Penshurst, Telegraph Linesman and EDITH MARY MATILDA HARE, his wife, as Joint Tenants~~

Registrar General

SECOND SCHEDULE (Continued overleaf)

GRY

1. Reservations and conditions, if any, contained in the Crown Grant(s) referred to in the said Deposited Plan.

Registrar General

EA

2. Easement created by Resumption No. C966557 affecting the part of the land above described shown as Easement 11 feet wide in the plan hereon.

Registrar General

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

25031 11.60 St 1609 V. C. N. Blight, Government Printer

Vol. 9163 Fol. 12

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	ENTERED	Signature of Registrar-General
The Commissioner for Motor Transport	Transfer	J20243	9-3-1962	7-5-1962	

J20243
DP251888
J982243
DP251888
W864094
Resumed & Declared Public Road. Gaz 1611 84 Fol. 60

SECOND SCHEDULE (continued)

	INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	PARTICULARS	ENTERED	Signature of Registrar-General	CANCELLATION
EK	Transfer	J982243P	31-3-1965	Easement for Stormwater Drainage (as more fully set out in the said instrument) affecting the piece of land shown as var. width in the plan hereon	7-6-1965		CANCELLED
AA	W86409 Resumption - The part of the land within described being Lot 4 in DP251888 is now Public Road. Registered 29-1-1986						SEE AUTO FOLIO

(Page 2 of 2 pages)

FORM No. 184 NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR-GENERAL ARE CANCELLED

LAND REGISTRY SERVICES

Historical Title

InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
15/8/2018 1:03PM

FOLIO: 1/210233

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 9163 FOL 12

Recorded	Number	Type of Instrument	C.T. Issue
4/6/1987		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
6/6/1988		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
24/9/2012	AH257603	DEPARTMENTAL DEALING	
5/2/2015	DP1205598	DEPOSITED PLAN	FOLIO CANCELLED RESIDUE REMAINS

*** END OF SEARCH ***

Beverley Hills PRINTED ON 15/8/2018

LAND REGISTRY SERVICES

Historical Title

InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
15/8/2018 1:02PM

FOLIO: 2/1205598

First Title(s): OLD SYSTEM
Prior Title(s): 1/210233

Recorded	Number	Type of Instrument	C.T. Issue
5/2/2015	DP1205598	DEPOSITED PLAN	FOLIO CREATED CT NOT ISSUED
7/2/2015	AJ145896	APPLICATION TO RECORD A NEW REGISTERED PROPRIETOR	EDITION 1

*** END OF SEARCH ***

Beverley Hills PRINTED ON 15/8/2018

LAND REGISTRY SERVICES Title Search

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 2/1205598

SEARCH DATE	TIME	EDITION NO	DATE
3/9/2018	10:01 AM	1	7/2/2015

LAND

LOT 2 IN DEPOSITED PLAN 1205598
AT BEVERLY HILLS
LOCAL GOVERNMENT AREA GEORGES RIVER
PARISH OF ST GEORGE COUNTY OF CUMBERLAND
TITLE DIAGRAM DP1205598

FIRST SCHEDULE

GOVERNMENT PROPERTY NSW (RP AJ145896)

SECOND SCHEDULE (3 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 C966557 EASEMENT AFFECTING THE PART OF THE LAND ABOVE DESCRIBED SHOWN AS EASEMENT 11 FEET WIDE IN DP210233
3 J982243 EASEMENT FOR STORMWATER DRAINAGE AFFECTING THE PIECE OF LAND SHOWN AS VAR WIDTH IN DP210233

NOTATIONS

CERTIFICATE OF TITLE NOT ISSUED. LODGED DEALINGS MUST BE ACCOMPANIED BY PRIOR CERTIFICATE OF TITLE VOL.9163 FOL.12

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

[redacted]

M
NEW SOUTH WALES
(For Grant and title reference prior to first edition see Deposited Plan.)

TIFICATE OF TITLE
PERTY ACT, 1900, as amended.

09163013

Vol. 9163 Fol. 13

1st Edition issued 16-4-1962

(Page 1) Vol. 9163 Fol. 13

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

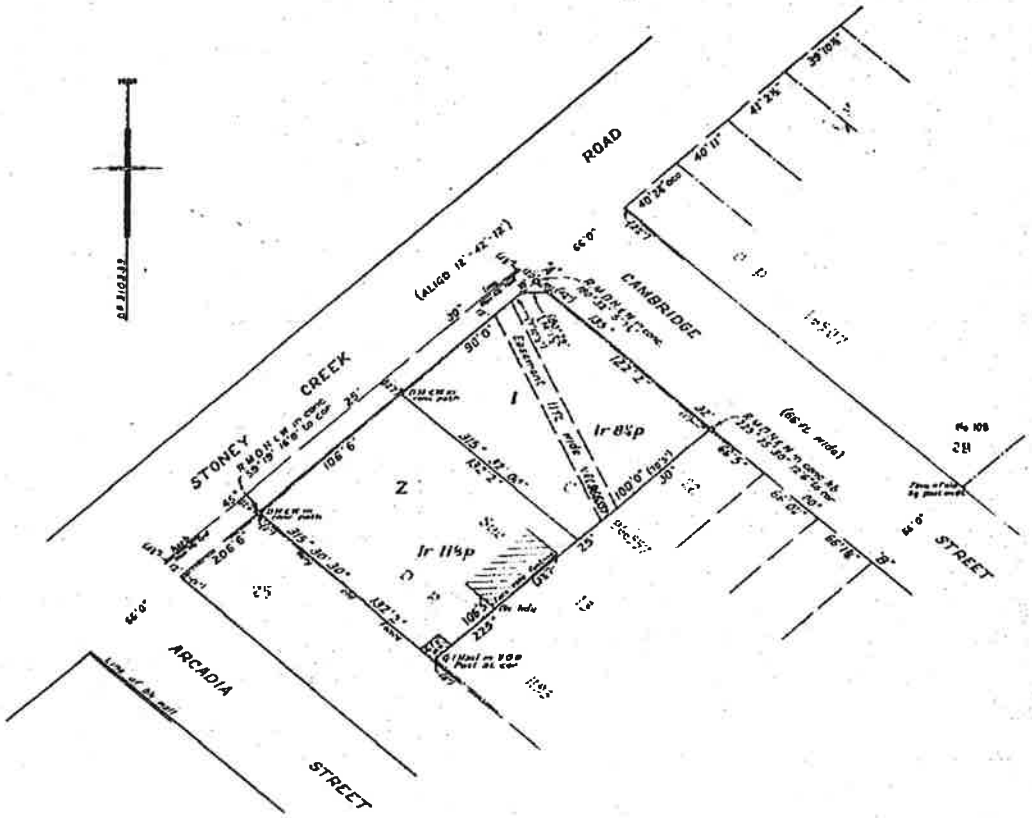
CANCELLED

Witness A Tenney

Registrar-General

FOLIO

PLAN SHOWING LOCATION OF LAND



S

ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 2 in Deposited Plan 210233 at Beverly Hills in the Municipality of Hurstville Parish of St. George and County of Cumberland.

FIRST SCHEDULE (Continued overleaf)

~~WILLIAM HARE, of Penshurst, Telegraph Lineman and EDITH MARY MATILDA HARE, his wife, as Joint Tenants.~~

Registrar General

SECOND SCHEDULE (Continued overleaf)

1. Reservations and conditions, if any, contained in the Crown Grant(s) referred to in the said Deposited Plan.

Registrar General

25031 11.60 St 1609 V. C. N. Blight, Government Printer

Vol. 9163 Fol. 13

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	ENTERED	Signature of Registrar-General
~~William Hare of Beverly Hills, Widower Telegraph Linesman.~~	~~Notice of Death~~	~~P166756~~	~~10-2-1975~~	~~25-2-1975~~	
The Commissioner for Motor Transport	Transfer	Q258345	------	13-7-1977	

P166756, DP 25188, Lot 22 DP 251888, W86409

Resumed & Reclaimed Public Road Gaz. 15-1-86 Fol. 6

SECOND SCHEDULE (continued)

INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	PARTICULARS	ENTERED	Signature of Registrar-General	CANCELLATION
AA	W86409		Resumption - The part of the land within described being Lot 22 in DP251888 is now Public Road. Registered 29-1-1986			

CANCELLED

SEE AUTO FOLIO

(Page 2 of 2 pages)

FORM No. 184

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

Historical Title

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
15/8/2018 1:03PM

FOLIO: 2/210233

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 9163 FOL 13

Recorded	Number	Type of Instrument	C.T. Issue
4/6/1987		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
6/6/1988		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
24/9/2012	AH257681	DEPARTMENTAL DEALING	
5/2/2015	DP1205598	DEPOSITED PLAN	FOLIO CANCELLED RESIDUE REMAINS

*** END OF SEARCH ***

Beverley Hills PRINTED ON 15/8/2018

LAND REGISTRY SERVICES

Historical Title

InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
15/8/2018 1:02PM

FOLIO: 3/1205598

First Title(s): OLD SYSTEM
Prior Title(s): 2/210233

Recorded	Number	Type of Instrument	C.T. Issue
5/2/2015	DP1205598	DEPOSITED PLAN	FOLIO CREATED CT NOT ISSUED
7/2/2015	AJ145896	APPLICATION TO RECORD A NEW REGISTERED PROPRIETOR	EDITION 1

*** END OF SEARCH ***

Beverley Hills PRINTED ON 15/8/2018

LAND REGISTRY SERVICES **Title Search** InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 3/1205598

SEARCH DATE	TIME	EDITION NO	DATE
3/9/2018	10:01 AM	1	7/2/2015

LAND

LOT 3 IN DEPOSITED PLAN 1205598
AT BEVERLY HILLS
LOCAL GOVERNMENT AREA GEORGES RIVER
PARISH OF ST GEORGE COUNTY OF CUMBERLAND
TITLE DIAGRAM DP1205598

FIRST SCHEDULE

GOVERNMENT PROPERTY NSW (RP AJ145896)

SECOND SCHEDULE (1 NOTIFICATION)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)

NOTATIONS

CERTIFICATE OF TITLE NOT ISSUED. LODGED DEALINGS MUST BE ACCOMPANIED BY PRIOR CERTIFICATE OF TITLE VOL.9163 FOL.13

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

ACN 092 724 251
ABN 36 092 724 251

LEVEL 14, 135 KING STREET SYDNEY
GPO Box 4103 SYDNEY NSW 2001
Tel: 02 9099 7400
DX 967 SYDNEY
E-mail: propertysearching@infotrack.com.au

Offices Also in Melbourne, Brisbane, Gold Coast, Perth & Canberra

Your Ref: **Nicholas Grbich / Charles Zhao**

Our Ref: **James McDonnell**

Date 3 September 2018

Re: **143A Stoney Creek Road, Beverly Hills**

Service Charge	$120.00	
Disbursements	$100.00	
GST	$ 22.00	
Total	$242.00	**ID 03001861**

Enclosed

Environmental Search

EI Australia

Suite 6.01
55 Miller Street, Pyrmont
NSW 2009

Appendix J– SafeWork NSW Search

NSW GOVERNMENT | SafeWork NSW

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

Our Ref: D18/178918

28 August 2018

Charles Zhao
EI Australia
Suite 6.01, 55 Miller Street
Pyrmont NSW 2009

Dear Mr Zhao

RE SITE: 143A Stoney Creek Road Beverly Hills NSW 2209

I refer to your site search request received by SafeWork NSW on 17th August 2018 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.

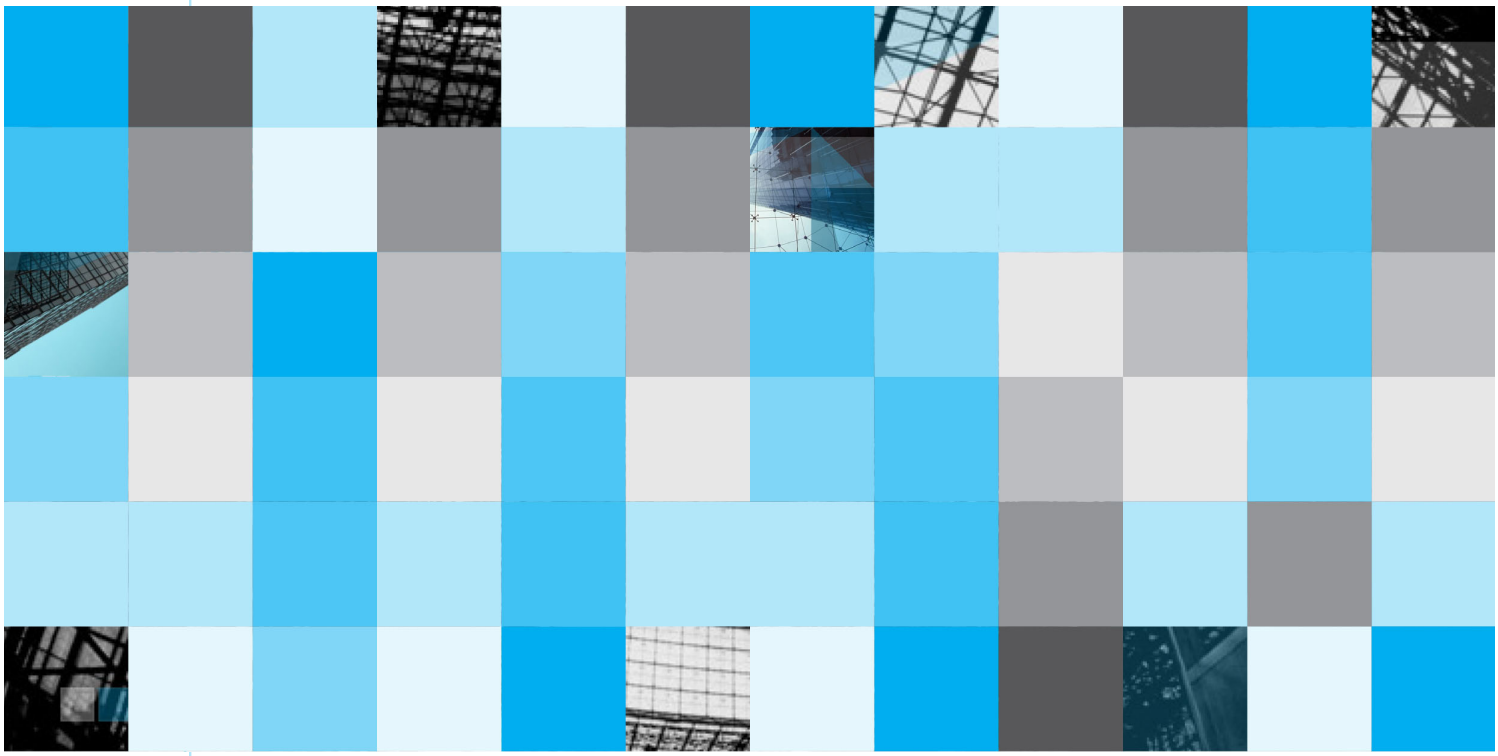
For further information or if you have any questions, please call us on 13 10 50 or email licensing@safework.nsw.gov.au

Yours sincerely

Customer Service Officer
Customer Experience - Operations
SafeWork NSW

Appendix K– Planning Proposal

SUTHERLAND
&ASSOCIATES
PLANNING



143 Stoney Creek Road, Beverly Hills

Planning Proposal

SUTHERLAND & ASSOCIATES PLANNING

ABN 14 118 321 793 ACN 144 979 564

Planning Proposal

143 STONEY CREEK ROAD, BEVERLY HILLS

March 2022

Prepared under instructions from
Cambridge Unit Developments Pty Ltd

by

Aaron Sutherland
B Planning UNSW

aaron@sutherlandplanning.com.au
Tel: 0410 452 371
PO BOX 814 BOWRAL NSW 2576

CONTENTS

1.0 EXECUTIVE SUMMARY

This Planning Proposal has been prepared by Sutherland & Associates Planning Pty Ltd on behalf of Cambridge Unit Developments Pty Ltd in relation to the site known as 143 Stoney Creek Road, Beverly Hills (Lots 2 and 3 in DP 1205598).

The site is predominately zoned SP2 Infrastructure (Public Administration) under the Georges River Local Environmental Plan 2021. The site has been used as a Roads and Traffic Authority administration centre for over 50 years and contains an office building of approximately 480 square metres at the north-eastern corner of the site, with the remainder of the site occupied by a hard stand car park for approximately 40 cars. The site was sold by the NSW State Government in mid-2018.

The site has historically functioned as an important service provider within the Beverly Hills local centre and is approximately 600 metres from the Beverly Hills train station. However, due to the restriction on the permissible uses in the SP2 Infrastructure (Public Administration) zone, the site has been vacant for over 3.5 years. The building has been vandalised and broken into on multiple occasions since it was vacated.

The site also benefits from a recent development consent (DA2020/0227 granted on 21 February 2021) for a circa 3,400 square metres 3 storey medical centre with an FSR of 1.4:1 and a height of 16 metres. The developer is currently progressing a leasing campaign for the building and has had significant enquiry for a range of other predominantly office-based occupants for the building.

Accordingly, the primary objective of the Planning Proposal is to expand the uses which can be accommodated within the existing building on the site and also within the approved medical centre building on the site, which the developer intends to deliver in 2023.

Notwithstanding, it is also appropriate to take the opportunity to update the zoning of the site as the current SP2 Government Administration zoning of the majority of the site is now redundant and the R2 Low Density Residential zoning of the remainder of the site is not appropriate having regard to the flood affectation of the site. The Planning Proposal therefore seeks to rezone the site to R4 High Density Residential as it is the most appropriate zone for the site having regard to the residential context of the site, the currently approved building envelope, and the need for a form of residential development that can be designed to comply with requirements for development on flood prone land.

Residential uses such as residential flat buildings and shop top housing can adopt the same flood chamber across the entire building as per the recently approved medical building on the site (refer to Figure 6 below). This is the only method for accommodating the overland flow through the site without adverse impact to surrounding sites. The range of residential uses permitted in lower density zones are not able to be designed to adequately mitigate the impacts of flooding.

A concept of a residential flat development for the site prepared by Ionic Management accompanies this Planning Proposal at Appendix A which demonstrates a building which is the same height as the approved medical centre and with a smaller floorplate and the same FSR of 1.4:1. The residential flat building is demonstrated to perform highly when considered against the SEPP 65 principles and the Apartment Design Guide.

In summary, the purpose of the Planning Proposal is to:

- change the zoning of the site from SP2 and R2 to the more appropriate zone of R4 High Density Residential. The proposed R4 zone reflects the residential context of the site and the scale and density of the recently approved building and includes residential uses (such as residential flat buildings and shop top housing) that are compatible with the flood affection of the site.

- amend Schedule 1 of Georges River LEP 2021 to include “office premises” and “business premises” as additional permitted uses on the site. This will broaden the range of uses that can occupy the existing building on the site and the approved three storey medical building;
- introduce an FSR of 1.4:1 which reflects the density of the recently approved medical centre building on the site and the concept residential flat building (noting there is currently no FSR restriction on the majority of the site); and
- introduce a building height control of 16 metres which reflects the scale of the recently approved medical centre building on the site (noting there is currently no height restriction on the majority of the site).

The proposed new zone and additional permitted use for the site have strategic merit as they are consistent with Council’s Local Strategic Planning Statement in that they would allow the site to continue to be used for employment generating uses, they would allow a broader range of employment generating uses within the recently approved medical centre building on the site which would contribute to job creation in the George River local government area, as well as providing the potential for the site to make a small contribution to the identified residential target.

The Planning Proposal is supported by the following documentation:

Appendix	Document	Consultant
A	Concept of a Residential Flat Development	Ionic Management
B	Flood and Risk Impact Assessment	Northrop
C	Traffic assessment	ASON Group

The Planning Proposal has been prepared in accordance with section 3.33 of the Environmental Planning & Assessment Act 1979 (EP&A Act). As required by section 3.33 of the EP&A Act this Planning Proposal includes the following:

- a statement of the objectives or intended outcomes of the proposed instrument,
- an explanation of the provisions that are to be included in the proposed instrument,
- the justification for those objectives, outcomes and provision and the process for their implementation,
- if maps are to be adopted by the proposed instrument – a version of the maps containing sufficient detail to indicate the substantive effect of the proposed instrument, and
- details of the community consultation that is to be undertaken before consideration is given to the making of the proposed instrument.

The Planning Proposal has also been prepared having regard to the ‘Local Environmental Plan Making Guideline – December 2021’ developed by the NSW Department of Planning and Environment. The report addresses the Proposal’s consistency with Greater Sydney Region Plan - A Metropolis of Three Cities, the South District Plan, strategic plans and assesses the consistency of the Planning Proposal against relevant State Environmental Planning Policies and Ministerial Directions.

2.0 SITE DESCRIPTION AND LOCATION

2.1 Locality Description

The land to which the proposal relates is located in the suburb of Beverly Hills which is within the northern tip of the Georges River local government area. Beverly Hills is located approximately 3 kilometres from the Hurstville CBD and 15 kilometres southwest from Sydney CBD. Beverly Hills is served by the M5 motorway and Beverly Hills train station which provides convenient access to Sydney CBD, Sydney Airport and Campbelltown, via the T8 Airport & South Line.

The Beverly Hills Town Centre strip along King Georges Road is a well-known entertainment precinct with a high proportion of restaurants and cafes, as well as a Cinema. This strip is only 100 metres from the subject site.

The Beverly Hills Town Centre requires revitalisation through urban renewal. In recognition of this, Council has spent several years developing a Masterplan for the Beverly Hills Town Centre that establishes a new vision for the Town Centre and will guide and stimulate future development. At the time of writing the Masterplan has not been formally adopted by Council.

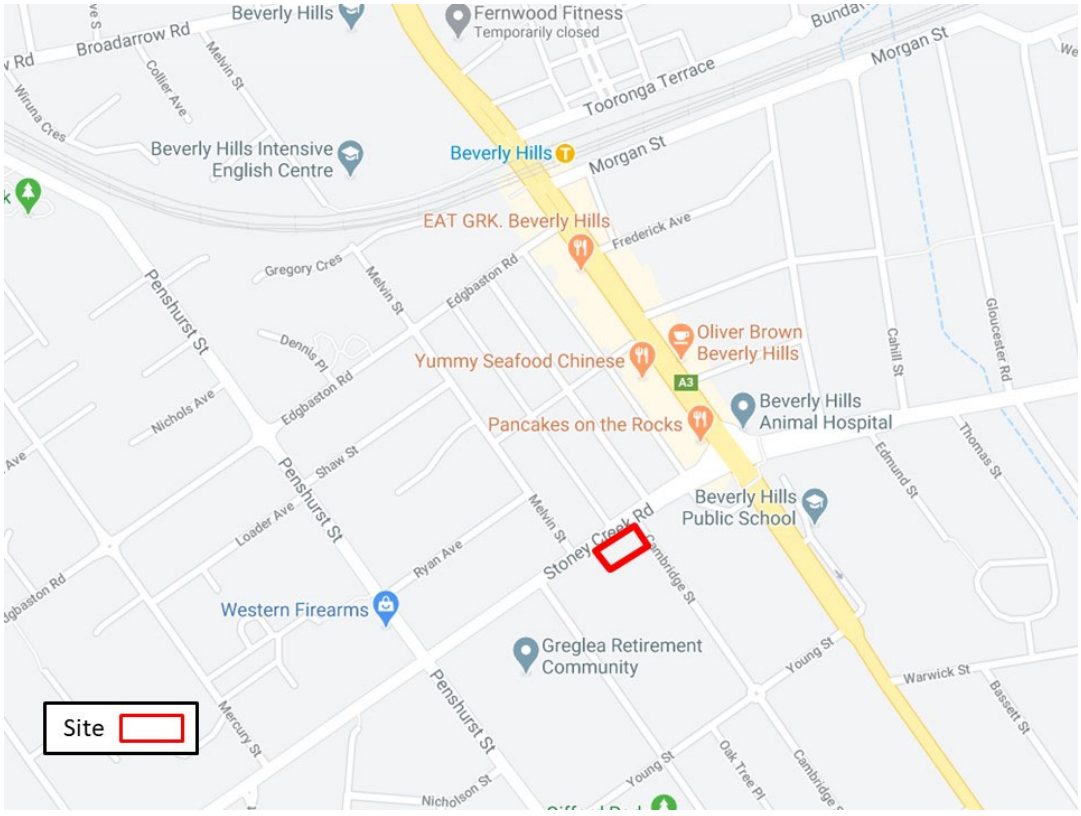


Figure 1:

Site location (Source: Google 2021)

2.2 Site Description

The subject site is known as 143 Stoney Creek Road, Beverly Hills and is legally described as Lots 2 and 3 in DP 1205598. The site has an area of 2,454 square metres with a frontage of approximately 63 metres to Stoney Creek Road and 38 metres to Cambridge Street.

The site has been used as a Roads and Traffic Authority administration centre for over 50 years and contains an office building of approximately 480 square metres at the north-eastern corner of the site, with the remainder of the site occupied by a hard stand car park for approximately 40 cars.

The site was sold by the NSW State Government in mid-2018. The site has historically functioned as an important service provider within the Beverly Hills local centre and is approximately 600 metres walking distance from the Beverly Hills train station.

The building on the site has been vacant for over 3 years due to the restrictive zoning which currently applies to the land which means it can only be used for Government Administration purposes, or a 'health services facility' pursuant to SEPP Infrastructure.

Recently, the site has been temporarily occupied by a COVID-19 testing facility in the car park.

The site is relatively level, however, there is a fall along each footpath adjacent to the site to a low point outside the north-eastern corner of the site. There is a Sydney Water stormwater culvert which currently dissects the site and runs diagonally underneath the existing building on the site from the north-eastern corner.

Figure 2:

Aerial view of the site outlined in red (Source: Six Maps, Department of Lands)

Photograph 1:

Site as viewed from Cambridge Street facing south-west

Photograph 2:

Site as viewed from Cambridge Street facing north-west

Photograph 3:

Hardstand area inside the site and existing office building shown on the left

Photograph 4:

Hardstand area at the western end of the site facing north with a three storey building opposite across Stoney Creek Road

Photograph 5:

Interior of existing building

Photograph 6:

Interior of existing building

3.0 DEVELOPMENT APPROVALS

3.1 Development Consent DA2020/0227

On 21 February 2021, the Sydney South Planning Panel granted consent to Development Application DA2020/0227 for a 3-storey medical centre above 3 basement levels with car parking for 114 vehicles on the subject site.

Whilst a medical centre (being a type of health services facility) is not ordinarily permissible on the site, Clause 57 within Division 10 of State Environmental Planning Policy (Infrastructure) 2007 (now Clause 2.60 in State Environmental Planning Policy (Transport and Infrastructure) 2021) provides the following:

> (1) Development for the purpose of health services facilities may be carried out by any person with consent on land in a prescribed zone.

The prescribed zones are identified in Clause 56 and include R2 Low Density Residential and also SP2 Infrastructure. These are the two zones which apply to the subject site, and therefore a 'health services facility' is permissible on the subject site notwithstanding the provisions of the Georges River Local Environmental Plan 2021.

The approved development was found by Council to be compatible with the context of the site.

The approved development has an FSR of 1.4:1 and a 16-metre height.

The subject site is flood affected and the ground floor level and basement entry have been designed to provide sufficient freeboard with the PMF adopted for the ground floor level and the 1% AEP + 300mm adopted for the basement entry. In addition, the site is subject to overland flow and so the design of the building provides an interstitial level between basement 1 and the ground level which is a flood storage chamber underneath the entire building. The chamber allows overland flood water to flow through the site with minimal disruption and in fact increases the flood storage capacity of the site compared with the current circumstance.

The Council's assessment report for the development noted the following in relation to the development:

> The proposed development will provide temporary employment through the construction of the development. In addition, the proposal will restore and increase employment associated with the use of the site which is consistent with Section 9.3 of Council's Local Strategic Planning Statement (LSPS) which seeks to protect employment land and provide an additional 187,000 square metres of employment floor space by 2036.

Figure 3:

CGI of approved 3 storey medical centre as viewed from Stoney Creek Road

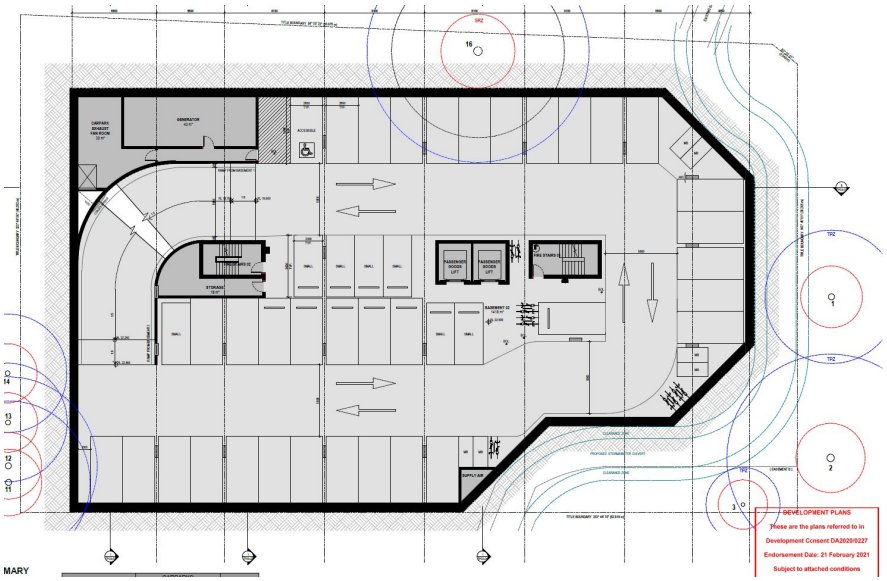


Figure 4:

Approved basement 2 and 3

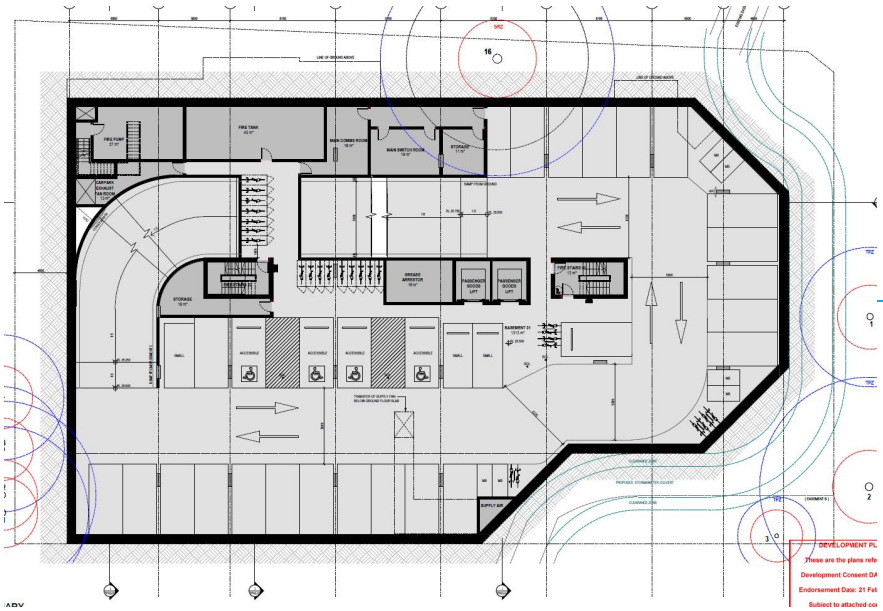


Figure 5:

Approved basement 1

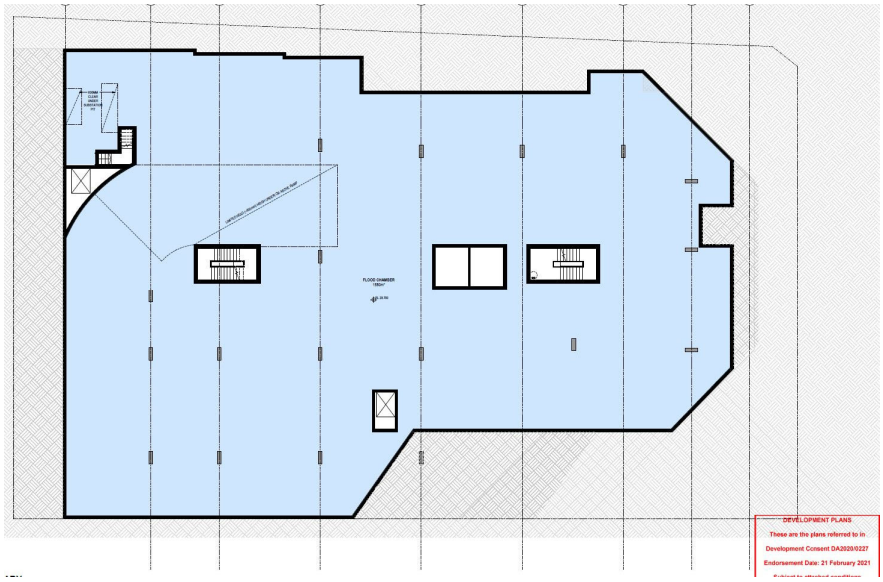


Figure 6:

Approved flood chamber

Figure 7:

Approved ground floor

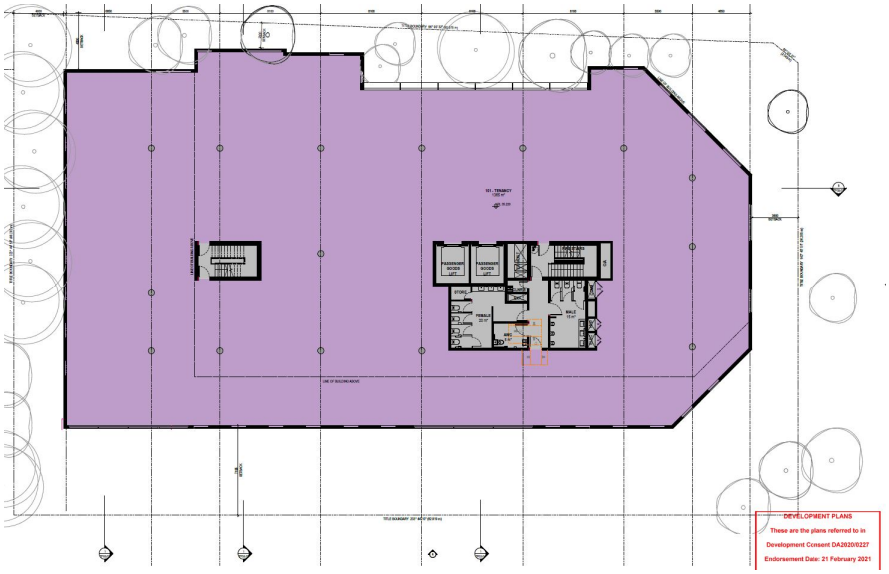


Figure 8:

Approved level 1

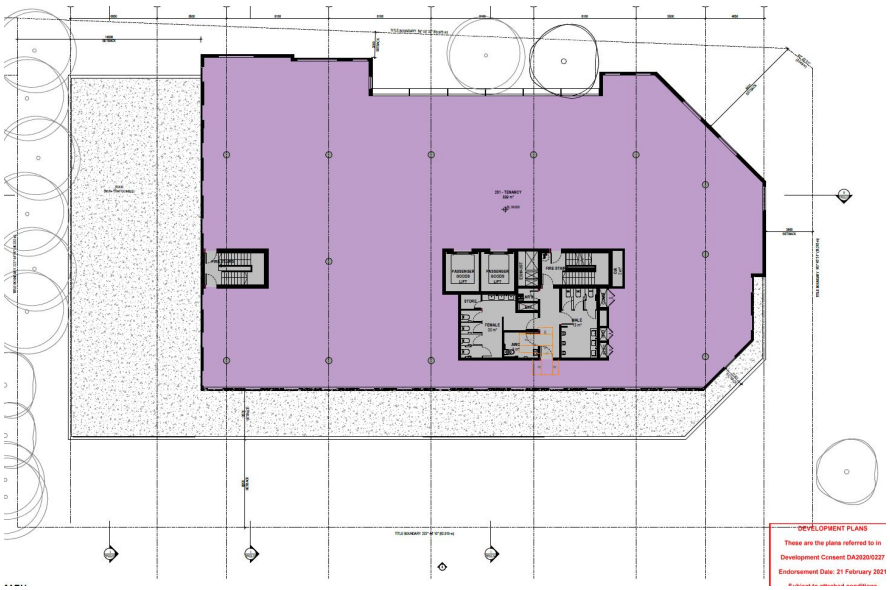


Figure 9:

Approved Level 2

Figure 10:

Approved north elevation (Cambridge Street)

Figure 11:

Approved western elevation (Stoney Creek Road)

Figure12:

Approved section

4.0 BACKGROUND

4.1 Planning Proposal – November 2021

A Planning Proposal for the site was originally lodged with Council in November 2021, seeking to amend Schedule 1 of the Georges River Local Environmental Plan 2021 to introduce the following additional permissible uses for the site:

- Commercial premises;
- Centre-based child care facility;
- Health services facility; and
- Veterinary hospital

The purpose of the Planning Proposal was simply to enable the existing building to be usefully occupied, and also allow the approved three storey medical building to accommodate a broader mix of employment generating uses which can serve the local community.

The November 2021 Planning Proposal did not seek a change in the zone, height or FSR maps as they applied to the site.

However, following lodgement of the November 2021 Planning Proposal, Council provided feedback as follows:

- The parent land use term "commercial premises" is considered too broad and could introduce a wide range of land-uses that may be incompatible for the location and surrounding context, particularly when considering the absence of development standards applying to the majority of this site.
- The retention of the existing land use Zone SP2 Infrastructure (Government Administration) is considered unsuitable as the special purpose land use is no longer operating on the site. It is recommended that the proponent consider an alternative land use zone that is compatible with the surrounding land uses and proposed future land uses.
- In accordance with Council's Policy on Planning Agreements, planning proposals should be accompanied with an offer to enter into a planning agreement with Council.

The Planning Proposal has been amended in response to this feedback to nominate the R4 High Density Residential zone as the most appropriate replacement zone for the site, having regard to the residential context of the site, the currently approved building envelope, and the need for a form of residential development that is compatible with the flood affectation of the site. The Planning Proposal also seeks to include "office premises" and "business premises" as additional permitted uses on the site, predominately to widen the possible uses of the existing and approved buildings on the site.

The primary objectives of the amended Planning Proposal remain, which is to enable the existing building to be usefully occupied, and also allow the approved three storey medical building to accommodate a broader mix of employment generating uses which can serve the local community, which the developer intends to deliver in 2023.

The Planning Proposal is not accompanied by an offer to enter into a planning agreement with Council, noting that the Council's current Planning Agreements Policy is predicated on the concept of "value capture" which is contrary to the Department of Planning & Environment Planning Agreements Practice Note dated February 2021 which provides that planning agreements should not be used explicitly for value capture in connection with the making of planning decisions. Notwithstanding, the Planning Proposal does not seek any "uplift" in FSR and provides an identical FSR to that which is already approved on the site. Any increase in infrastructure demand arising from the Planning Proposal is appropriately addressed via the Council's existing Section 94A Plan,

Section 7.12 – Fixed Development Consent Levies, as is already the case under the recently approved medical centre on the site.

5.1 Georges River Local Environmental Plan 2021

Georges River Local Environmental Plan 2021 (GRLEP) applies to the site. Key provisions applying to the site are identified below:

5.1.1 Zoning and Permissibility

The majority of the site is zoned SP2 Infrastructure (Public Administration), whilst a small portion at the western end of the site is zoned R2 Low Density Residential, pursuant to the Georges River Local Environmental Plan 2021 (GRLEP). An extract of the Land Zoning Map is included as Figure 13.

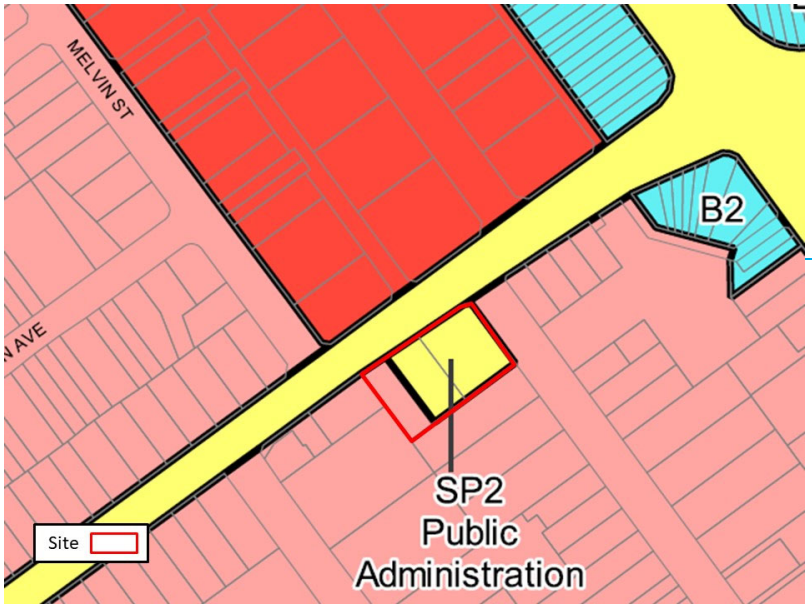


Figure 13:
Extract from GRLEP 2021 Land Zoning Map

The objectives of the SP2 Infrastructure zone are:

- To provide for infrastructure and related uses.
- To prevent development that is not compatible with or that may detract from the provision of infrastructure.

The following uses are permitted with consent in the SP2 Infrastructure zone:

Aquaculture; Car parks; Community facilities; Markets; Public administration buildings; Recreation areas; Respite day care centres; Roads; Signage; The purpose shown on the Land Zoning Map, including any development that is ordinarily incidental or ancillary to development for that purpose

The objectives of the R2 Low Density Residential zone are:

- To provide for the housing needs of the community within a low density residential environment.
- To enable other land uses that provide facilities or services to meet the day to day needs of residents.
- To encourage development of sites for a range of housing types, where such development does not compromise the amenity of the

surrounding area, or the natural or cultural heritage of the area.

- To ensure that a high level of residential amenity is achieved and maintained.
- To encourage greater visual amenity through maintaining and enhancing landscaping as a major element in the residential environment.
- To provide for a range of home business activities where such activities are not likely to adversely affect the surrounding residential amenity

The following uses are permitted with consent in the R2 zone:

Bed and breakfast accommodation; Boarding houses; Boat sheds; Business identification signs; Car parks; Centre-based child care facilities; Community facilities; Dual occupancies; Dwelling houses; Early education and care facilities; Educational establishments; Emergency services facilities; Environmental facilities; Environmental protection works; Group homes; Health services facilities; Home businesses; Home industries; Jetties; Oyster aquaculture; Pond-based aquaculture; Public administration buildings; Recreation areas; Respite day care centres; Roads; Secondary dwellings; Semi-detached dwellings; Seniors housing; Tank-based aquaculture

5.1.2 Height

There is a maximum height shown for the R2 zoned portion of the site of 9 metres, and no height control in the SP2 zoned portion of the site, as shown in Figure 14.

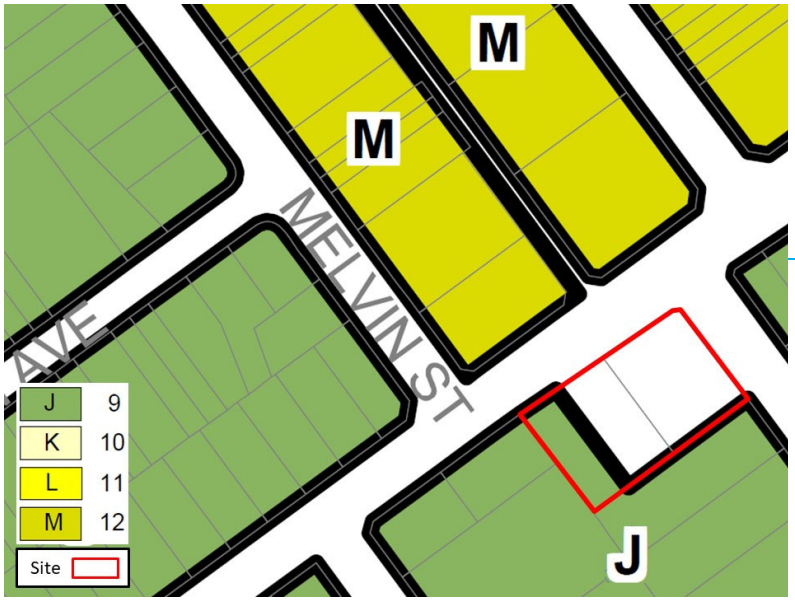


Figure 14:

Extract from the GRLEP 2021 Height of Buildings Map

5.1.3 Floor Space Ratio

The R2 zoned portion of the site is within area 'E' on the Floor Space Ratio Map and accordingly an FSR of 0.55:1 applies to this part of the site, as well a potential for additional FSR subject to Clause 4.4A of the GRLEP, as shown in Figure 15.

There is no FSR control in relation to the SP2 zoned part of the site.

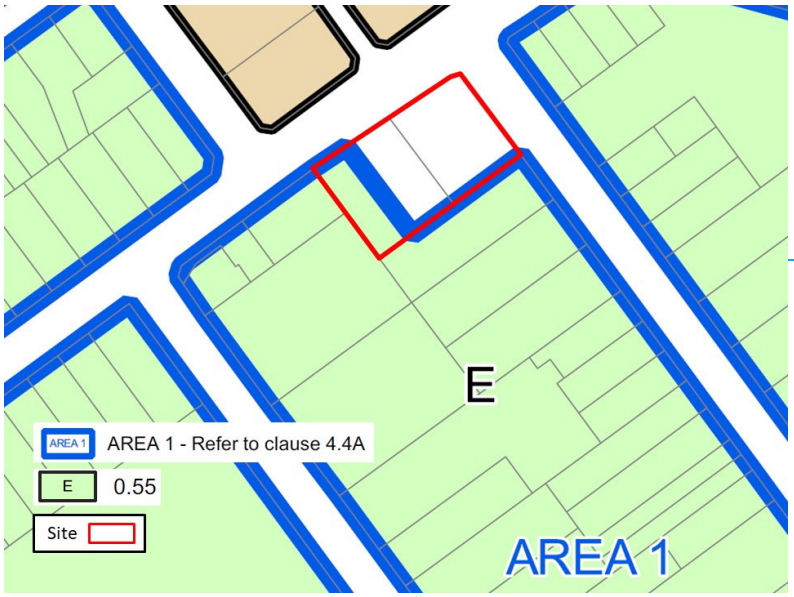


Figure 15:

Extract from GRLEP 2021 FSR Map

6.0 PLANNING PROPOSAL

6.1 Overview

In accordance with section 3.33(2) of the Environmental Planning and Assessment Act 1979 (the EP&A Act) a Planning Proposal is to be comprised of five (5) parts:

- Part 1 – A statement of the objectives and intended outcomes of the proposed instrument.
- Part 2 – An explanation of the provisions that are to be included in the proposed instrument.
- Part 3 – The justification of strategic and site-specific merit.
- Part 4 – Maps, where relevant, to identify the intent of the Planning Proposal and the area to which it applies.
- Part 5 – Details of the community consultation that is to be undertaken on the Planning Proposal.

Section 3.33(3) of the Act allows the Secretary to issue requirements with respect to the preparation of a Planning Proposal. The Secretary's requirements include:

- Specific matters that must be addressed in the justification (Part 3) of the Planning Proposal
- A project timeline to detail the anticipated timeframe for the plan making process for each Planning Proposal.

Section 6 of this report addresses and responds to the matters for consideration detailed within the Local Environmental Plan Making Guideline (NSW Department of Planning and Environment, December 2021).

6.2 Part 1: Objectives or Intended Outcomes

The site was used as a Roads and Traffic Authority administration centre for over 50 years and contains an office building of approximately 480 square metres at the north-eastern corner of the site, with the remainder of the site occupied by a hard stand car park for approximately 40 cars.

Due to this historical use, the site is predominately zoned SP2 Infrastructure (Public Administration). However, the site became surplus to the NSW State Government needs, and the Roads and Traffic Authority administration centre was closed and the site was sold in mid-2018.

As a result of the restriction on the permissible uses due to the SP2 Infrastructure (Public Administration) zone, the existing building has been unable to be occupied for a new use and so has remained vacant and dormant for over 3 years. The building has been vandalised and broken into on multiple occasions since it was vacated.

However, the site now benefits from a recent development consent (DA2020/0227 granted on 21 February 2021) for a circa 3,400 square metres 3 storey medical centre with an FSR of 1.4:1 and a height of 16 metres. The approved development was permissible pursuant to Clause 57 within Division 10 of State Environmental Planning Policy (Infrastructure) 2007, which applied at the time of approval.

The developer is currently progressing a leasing campaign for the building and has had significant enquiry for a range of other predominantly office based occupants for the building. However, the current zoning of the site does not permit these uses.

Having regard to the current zoning restrictions, the *primary* objective of the Planning Proposal is to expand the uses which can be accommodated within the existing building on the site and also within the approved medical centre building on the site, which the developer intends to deliver in 2023.

The site has historically functioned as an important service provider and employment generator within the Beverly Hills local centre and is approximately 600 metres from the Beverly Hills train station and has the capacity to continue to provide employment and goods and services for the local community.

Objectives

- The core objective of the Planning Proposal is to amend the GRLEP as it applies to the site to allow the existing building on the site to be usefully occupied by a commercial use and also to allow the approved 3 storey medical building to be occupied by commercial uses which complement the medical uses within the building.
- The secondary objective for the Planning Proposal is to change the redundant SP2 and R2 zoning of the site to R4 High Density Residential. The R4 zone reflects the residential context of the site and the scale and form of the approved building envelope on the site and is the only residential zone that permits residential uses (such as residential flat buildings and shop top housing) that are compatible with the flood affectation on the site.
- The third objective of the Planning Proposal is to introduce an FSR of 1.4:1 and a building height limit of 16 metres which reflects the density and scale of the recently approved medical centre building on the site (noting there is currently no height or FSR restrictions on the majority of the site).

Intended Outcomes

The intended outcomes for the Planning Proposal are:

- First and foremost, to allow the existing building on the site to be usefully occupied by a commercial use (such as office or cafe), which will provide services to the local community as well as providing for employment generation on the site. Currently the site is effectively sterilised by the historical zoning on the site and the proposed additional uses will allow for the use of the existing building which will contribute positively to the local economy and employment.
- Secondly, to allow the approved 3 storey medical building to be occupied by a range of other commercial uses which complement the medical uses within the building. There has been significant enquiry for other uses such as office, and the approved building has a design which is also suitable for a range of other employment generating uses which will benefit the local community and workforce and achieve a synergy with the medical uses, including café, offices, retail as well as a child care centre (which is already permissible in the R2 zoned portion of the site).

6.3 Part 2: Explanation of Provisions

6.3.1 Proposed Changes to Georges River Local Environmental Plan 2021

The proposed changes to the Georges River Local Environmental Plan 2021 as it relates to the subject site are:

- change the zone from SP2 Government Administration and R2 Low Density Residential to R4 High Density Residential;
- provide additional permitted uses of ‘office’ and ‘business premises’ in Schedule 1 of Georges River LEP 2021;
- introduce an FSR of 1.4:1 for the entire site; and
- introduce a building height control of 16 metres for the entire site.

6.4 Part 3: Justification of strategic and site-specific merit

This Part of the Planning Proposal demonstrates both the strategic merit and site-specific merit for the proposed amendments to the Georges River Local Environmental Plan 2021 as they apply to 143 Stoney Creek Road, Beverly Hills.

The table below contains the matters for consideration in Table 3 of The Local Environmental Plan Making Guideline which demonstrate that there is both strategic merit (Questions 1 to 7) and also site-specific merit (Questions 8 to 12) for the proposal. The table contains a reference to the relevant section of this report where these questions are addressed.

Strategic Merit		
Section A – need for the planning proposal		
Question 1	Is the planning proposal a result of an endorsed LSPS, strategic study or report?	Section 5.4.1
Question 2	Is the planning proposal the best means of achieving the objectives or intended outcomes, or is there a better way?	Section 5.4.2
Section B – relationship to the strategic planning framework		
Question 3	Will the planning proposal give effect to the objectives and actions of the applicable regional or district plan or strategy (including any exhibited draft plans or strategies)?	Section 5.4.3
Question 4	Is the planning proposal consistent with a council LSPS that has been endorsed by the Planning Secretary or GSC, or another endorsed local strategy or strategic plan?	Section 5.4.4
Question 5	Is the planning proposal consistent with any other applicable State and regional studies or strategies?	Section 5.4.5
Question 6	Is the planning proposal consistent with applicable SEPPs?	Section 5.4.6
Question 7	Is the planning proposal consistent with applicable Ministerial Directions (section 9.1 Directions)?	Section 5.4.7
Site-Specific Merit		
Section C – environmental, social and economic		
Question 8	Is there any likelihood that critical habitat or threatened species, populations or ecological communities, or their habitats, will be adversely affected because of the proposal?	Section 5.4.8
Question 9	Are there any other likely environmental effects of the planning proposal and how are they proposed to be managed?	Section 5.4.9
Question 10	Has the planning proposal adequately addressed any social and economic effects?	Section 5.4.10
Section D – Infrastructure (Local, State and Commonwealth)		

Strategic Merit		
Question 11	Is there adequate public infrastructure for the planning proposal?	Section 5.4.11
Section E – State and Commonwealth Interests		
Question 12	What are the views of state and federal public authorities and government agencies consulted in order to inform the Gateway determination?	Section 5.4.12

6.4.1 Question 1 - Is the planning proposal a result of an endorsed LSPS, strategic study or report?

The Planning Proposal is discreet and arises from a need to:

- allow complementary commercial uses to occupy the approved 3 storey medical building approved on the site;
- expand the permissible uses on the site to allow the existing building on the site to be usefully occupied; and
- replace the now redundant zone of SP2 Government Administration and inappropriate R2 zoning of the site with a more appropriate zone that has regard to the residential context of the site and the recently approved building on the site and allows residential uses that that are compatible with the flood affectation on the site.

Accordingly, the Planning Proposal does not arise specifically from a strategic study or report. Notwithstanding this, the Planning Proposal is entirely consistent with the employment and residential targets and objectives of the Georges River Local Strategic Planning Statement (GRLSPS) 2040 as discussed in Section 5.5.4.

6.4.2 Question 2 - Is the Planning Proposal the best means of achieving the objectives or intended outcomes, or is there a better way?

The Planning Proposal is the best means of achieving the objectives and intended outcomes for the site in a manner which will provide for the immediate activation of the site, and also allow for the growth of jobs associated with a future building on the site.

The Planning Proposal seeks to allow the existing building to be usefully occupied rather than remaining dormant, as well as expanding the range of employment generating uses associated with the site in the forthcoming development of the site as approved. The only planning pathway to achieve this outcome is to provide a new zone for the site and/or additional permitted uses under Schedule 1 of the GRLEP.

The Planning Proposal provides an appropriate new residential zone for the site which reflects the predominantly residential uses surrounding the site and also facilitates the development of residential uses that are compatible with the flood affectation on the site.

The consequence of the Planning Proposal not proceeding is that the site remains in its current state being unable to be occupied for a useful purpose. Consequently, the site will not contribute to the local economy, there will be no jobs generated for local residents and there is no community benefit arising

from preventing development occurring on the site. There is also no capacity for an alternative residential development of the site.

6.4.3 Question 3 - Will the planning proposal give effect to the objectives and actions of the applicable regional or district plan or strategy (including any exhibited draft plans or strategies)?

Greater Sydney Region Plan – A Metropolis of Three Cities

In March 2018 the *Greater Sydney Region Plan - A Metropolis of Three Cities* was released. The Plan sets a 40-year vision to 2056 and establishes a 20-year plan to manage growth and change for Greater Sydney. The vision for Greater Sydney as a metropolis of three cities — the Western Parkland City, the Central River City and the Eastern Harbour City where most residents live within 30 minutes of their jobs, education and health facilities, services and great places.

The Plan sets out 10 Directions which set out the aspirations for the region and objectives to support the Directions. The 10 Directions are:

- A City supported by infrastructure
- A collaborative city
- A city for people
- Housing the city
- A city of great places
- A well-connected city
- Jobs and skills for the city
- A city in its landscape
- An efficient city
- A resilient city

The Plan provides 38 objectives concerning, Infrastructure and collaboration, Liveability, Productivity and Sustainability which are aimed at achieving the identified Directions.

The following table summarises the proposals consistency with relevant objectives of the Plan:

Objective	Comment	Consistent
3. Infrastructure and Collaboration		
Objective 4: Infrastructure use is optimised.	This objective is concerned with ensuring that existing infrastructure is optimised. Given the site's location adjacent to the Beverly Hills local centre and within 600 metres walking distance of Beverly Hills train station, the Planning Proposal positively contributes to this objective by placing additional employment density, and potentially additional housing, in a highly convenient location that will encourage usage of existing transport infrastructure.	Yes
Objective 5: Benefits of growth realised by collaboration of governments, community and business.	The Proposal will assist the government in reaching employment targets ensuring the proposal positively contributes to jobs and economic policy of government.	Yes

Objective	Comment	Consistent
4. Liveability		
Objective 7: Communities are healthy, resilient and socially connected	This objective is concerned with delivering healthy, safe and inclusive places for people of all ages and abilities that support active, resilient and socially connected communities by providing walkable places at a human scale with active street life and prioritising opportunities for people to walk, cycle and use public transport. The site has historically been used to provide an important service for the local community in a highly accessible location. The site is in a location that is within walking distance of multiple transport services, a variety of community and social facilities, nearby housing, open space and recreational facilities. The Planning Proposal will facilitate the activation of a site which has become dormant due to being vacated by the NSW State Government in 2018 and will provide the opportunity for the site to once again provide for local employment and services for the community. In addition, whilst not the primary objective of the Planning Proposal, it will nonetheless provide the potential for an appropriate density of residential development on a site which is in a location that is within walking distance of multiple transport services, a variety of community and social facilities, including schools, childcare centres, community centres, open space and recreational facilities.	Yes
Objective 10: Greater Housing Supply	NSW Government has identified that 725,000 additional homes will be needed by 2036 to meet demand based on current population projections. The Plan notes that in older more established parts of Greater Sydney, urban renewal opportunities may exist around regional transport and centres where links for walking and cycling promote a healthy lifestyle and contribute to liveability. Whilst not the primary objective of the Planning Proposal, it will nonetheless provide the potential for an appropriate density of residential development on a site which is in a location that is within walking distance of multiple transport services, a variety of community and social facilities, including schools, childcare centres, community centres, open space and recreational facilities. The recent DA approval establishes the environmental capacity of the site. The proposal seeks to amend the height and FSR maps to reflect the density and scale of the recently approved building on the site. The	Yes

Objective	Comment	Consistent
	realisation of this floor space would facilitate additional and appropriate housing supply on the subject site.	
5. Productivity		
Objective 14: A Metropolis of Three Cities – integrated land use and transport creates walkable and 30-minute cities	A central component of this objective is to co-locate activities in metropolitan, strategic and local centres and attract housing in and around centres to create walkable, cycle-friendly neighbourhoods. The Planning Proposal will support a significant quantum of new employment floorspace, and potentially additional housing, adjacent to the Beverly Hills local centre which would contribute towards the 30-minute city objective, by providing increased housing and employment in very close proximity to an existing train station.	Yes
Objective 22: Investment and business activity in centres.	The Planning Proposal is consistent with this objective as it will facilitate the activation and revitalisation of a dormant site that has been historically used for an employment generating use that complemented the range of commercial uses in the local centre. The future redevelopment of the site will deliver additional employment floor space, and potentially housing, adjacent to the existing local centre which will stimulate business activity and private sector investment within the centre and thereby support the growth and evolution of the centre.	Yes
Objective 24: Economic sectors are targeted for success	The Planning Proposal will facilitate the current activation and revitalisation of a dormant site and support the future redevelopment of a site. In this regard the Planning Proposal will stimulate substantial commercial activity on the site and contribute to providing more jobs, close to where people live.	Yes
6. Sustainability		
Objective 33: A low-carbon city contributes to net-zero emissions by 2050 and mitigates climate change	The Planning Proposal is consistent with this objective as it will facilitate the current activation and revitalisation of a dormant site as well as future development on the site that will deliver new jobs and potentially housing near public transport therefore reducing the reliance on private car use and associated emissions.	Yes
Objective 34: Energy and water flows are captured, used and re-used	Any future building on the site would be required to be consistent with the principles of ecological sustainable design and a BASIX certificate would need to accompany any future development application.	Yes

Objective	Comment	Consistent
Objective 36: People and places adapt to climate change and future shocks and stresses	Any future building on the site would be required to be designed to minimise the effects of climate change.	Yes
Objective 37: Exposure to natural and urban hazards is reduced	Whilst the site is not affected by any known hazards, any future building on the site would be required to be designed to minimise or mitigate the impact of both natural and urban hazards such as noise pollution.	Yes
Objective 38: Heatwaves and extreme heat are managed	Any future building on the site would be required to reduce vulnerability to extreme heat which could be achieved through the use of a combination of shading devices, selection of building materials and landscaping.	Yes

South District Plan

In March 2018 the Greater Sydney Commission published the South District Plan which outlines how the Government will make decisions on public spaces, community facilities, housing, jobs, transport options, schools and hospitals to meet the needs of communities across Greater Sydney to give effect to *Greater Sydney Region Plan - A Metropolis of Three Cities*.

The South District Plan is a 20-year plan to manage growth in the context of economic, social and environmental matters to achieve the 40-year vision for Greater Sydney.

Of relevance, the Plan notes that local centres are a focal point of neighbourhoods, and centres such as Beverly Hills which contain a train station, are an important part of a 30-minute city. Local centres provide essential access to day to day goods and services close to where people live and local centres account for close to 18% of all Greater Sydney's jobs.

The Planning Proposal is entirely consistent with the identified role for local centres and will allow the site and existing building, as well as a future building on the site, to continue the historical role of this site for provided employment and services for the local community.

The following table summarises the Planning Proposal's consistency with relevant components of the South District Plan:

Chapter	Comment	Consistent
Infrastructure		
S1. Planning for a city supported by infrastructure	Given the site is located adjacent to the Beverly Hills local centre and train station, the introduction of additional commercial uses and potentially housing for the subject site will positively contribute to this objective by placing additional employment density, and potentially housing, in a highly convenient location that will encourage usage of existing transport infrastructure.	Yes
Liveability		
S3. Providing services and social	The Planning Proposal will allow the site to provide services and social infrastructure, including a potential child care centre. These	Yes

Chapter	Comment	Consistent
infrastructure to meet peoples changing needs	are all important elements of social infrastructure which will contribute positively to the resident and worker community.	
S4. Fostering healthy, creative, culturally rich and socially connected communities	The Proposal will facilitate the continued use of the site for an employment generating use, as well supporting additional and broader employment within the recently approved 3 storey building for the site. This is advantageous having regard to the size of the site and its ability to contribute positively to the urban fabric of Beverly Hills. The proposal will improve the viability and liveability of the Beverly Hills local centre through expanded commercial floor space and potentially housing within the centre, consistent with the liveability priorities.	Yes
S5. Providing housing supply, choice and affordability, with access to jobs, services and public transport	Whilst not the primary objective of the Planning Proposal, it will nonetheless facilitate the potential delivery of a modest quantum of residential accommodation on a site that is ideally suited to residential development given its highly accessible location, proximity to the Beverly Hills local centre and location adjacent to an existing R4 High Density zone. The proposal will allow for a transit-oriented development that will assist in achieving housing diversity and affordability on a site that is well located to services and facilities.	Yes
Productivity		
S10. Retaining and managing industrial and urban services land	The site has historically functioned as urban service land. Whilst the site has become surplus to the NSW State Government needs, it nonetheless has the capacity to be occupied by other commercial uses which will provide an ongoing function of providing goods and services to the local community. The Planning Proposal supports this ongoing role for the site. The Plan identifies that as Greater Sydney grows over the next 20 years, there will be a need for the efficient and timely delivery of new office precincts. Stakeholder feedback emphasised the need to grow and diversify local employment opportunities. The Planning Proposal is consistent with this feedback in that it will allow the site to be used for a range of commercial uses.	Yes
S12. Delivering integrated land use and transport planning and a 30-minute city	The Planning Proposal is consistent with the strategic intent to deliver more jobs closer to public transport. The proposal would aid the 30-minute city concept, increasing the diversity of employment within the centre.	Yes
Sustainability		
S5 Reducing carbon emissions and managing energy,	By providing additional employment floor space and potentially housing in an existing centre with excellent public transport connectivity, the proposal maximises the efficiency of existing	Yes

Chapter	Comment	Consistent
water and waste efficiently	infrastructure and reduces pressure on the fringe of Sydney and other sensitive locations. Any future building on the site would be required to be consistent with the principles of ecological sustainable design which can be addressed in any future development application.	

6.4.4 Question 4 - Is the planning proposal consistent with a council LSPS that has been endorsed by the Planning Secretary or GSC, or another endorsed local strategy or strategic plan?

Georges River Local Strategic Planning Statement (GRLSPS) 2040

The Planning Proposal is entirely consistent with the employment and housing targets and objectives of the Georges River Local Strategic Planning Statement (GRLSPS) 2040.

The GRLSPS creates a land use vision for the future of the Georges River Local Government Area. It is structured around 5 themes, being:

- Access and movement in 2040
- Infrastructure and community in 2040
- Housing and neighbourhoods in 2040
- Economy and centres in 2040
- Environment and open space in 2040

Use of Existing and Approved Buildings on the Site

The site currently contains an office building of approximately 480 square metres at the north-eastern corner of the site, with the remainder of the site occupied by a hard stand car park for approximately 40 cars.

The site also benefits from a recent development consent (DA2020/0227 granted on 21 February 2021) for a circa 3,400 square metres 3 storey medical centre with an FSR of 1.4:1 and a height of 16 metres. The developer is currently progressing a leasing campaign for the building and has had significant enquiry for a range of other commercial occupants for the building.

The current building cannot be usefully occupied due to the restrictive existing zoning. Also, the approved medical centre building cannot be occupied by any other complementary or similar uses, despite significant enquiry from potential tenants. Accordingly, the primary objective of the Planning Proposal is to expand the uses which can be accommodated within the existing building and the approved medical centre building on the site.

In relation to Theme 4 Economy and Centres, Beverly Hills is a local centre which is identified for centre expansion investigation under the GRLSPS. In addition, the GRLSPS identifies the following in relation to future commercial activity in the Georges River local government area (emphasis added):

> As part of Greater Sydney's Eastern Harbour City, Georges River LGA is home to almost 56,000 jobs. Community surveys indicated that the number one reason for locating a business in Georges River was 'proximity to home'. Our well educated community works in knowledge-

intensive job sectors with an emerging presence in the health and education job sectors.

The growth, innovation and evolution of commercial centres are central to the economy of the South District and critical to achieving a well connected 30 minute Greater Sydney. Facilitating the growth of our centres is a priority in growing the number of jobs available in Georges River.

It's forecast that between 2016-2036 employment generated within the LGA's centres is to increase by around 13,000 jobs. It is important that our centres accommodate this growth by remaining economically viable and **by providing an additional 25% of employment floor space**. Council will seek to facilitate this additional floor space not only through development controls, but also through the growth of the following commercial centres:

- Allawah
- **Beverly Hills**
- Carlton
- Hurstville
- Kingsgrove
- Kogarah
- Mortdale
- Narwee
- Oatley
- Peakhurst
- Penshurst
- Ramsgate
- Riverwood and
- South Hurstville

The Planning Proposal is entirely consistent and aligned with the need to provide an additional 25% of employment floor space. The existing building on the site is currently dormant due to the existing zoning of the site, but is ideally suited for ongoing employment uses of retail, business or office activity.

In addition, the approved 3 storey medical building is also suitable for accommodating this range of employment generating uses in parallel with medical uses.

Proposed New R4 High Density Residential Zone

Notwithstanding that the primary objective of the Planning Proposal is to expand the uses which can be accommodated within the existing and approved buildings on the site, it is also appropriate to take the opportunity to update the zone as a result of the now redundant SP2 Government Administration zone on the site. Accordingly, the Planning Proposal also includes an amendment to change the mixed SP2 and R2 zoning of the site to a residential zone on the site as this reflects the context immediately surrounding the site, is compatible with the envelope of the approved development and allows for residential uses that can be designed to address the flood affectation of the site.

Residential Target in GRLSPS

The Georges River Local Strategic Planning Statement provides an assessment under Theme 3 Housing and Neighbourhoods in relation to the required additional dwellings from 2016 and also identifies the capacity of the existing planning controls to meet this demand, and the shortfall under the current controls.

There is a need to provide 14,000 additional dwellings and whilst the majority of this demand can be met by the existing planning controls, there remains a 2,000 dwelling shortfall which will need to be addressed by various zoning changes across the Georges River local government area.

The proposed R4 High Density Residential zone for the site, combined with the proposed FSR of 1.4:1 which reflects the current approved development on the site, would facilitate a modest 38 apartments towards this 2,000 dwelling shortfall. This accommodation would be provided in an appropriate location noting that the site is 100 metres from the Beverly Hills town centre and associated amenities, and also approximately 600 metres from the Beverly Hills train station.

Testing of R4 High Density Residential Zone

In considering the most appropriate residential zone, the following factors are relevant considerations:

- The footprint, envelope, form and scale of the recently approved medical centre on the site;
- The flood affectation on the site and a compatible form of residential development;
- The traffic impacts of a residential development of the site in comparison to the approved medical centre building; and
- The capacity for a residential development on the site to contribute to the residential target identified in the GRLSPS.

Residential development compared with approved building and SEPP 65 Analysis

The approved medical building on the site establishes a large single format footprint on the site with a 16-metre-high building envelope. It therefore has a form, density and scale which is most commensurate with a residential flat building.

A residential flat building of the same envelope will result in no greater impacts to the surrounding sites when compared with the approved medical centre building on the site.

A concept of a residential flat development for the site prepared by Ionic Management accompanies this Planning Proposal at Appendix A which demonstrates the following:

- The residential flat building concept is contained within the approved height of the approved medical centre and also has a significantly reduced footprint when compared with the medical centre footprint. The western side setback is increased from the approved 4m to 9m, and the southern setback is increased from the approved 6.95m to a minimum 12.1m.
- The residential flat building concept has the same FSR of 1.4:1 as the approved medical centre.
- The residential flat building concept has a reduced shadow impact compared with the approved medical centre as a result of the increased side boundary setbacks, and therefore less impact to adjacent properties.
- The residential flat building concept has a significantly reduced traffic impact compared with the approved medical centre, with a peak traffic movement of 18 vehicles per hour compared with 110 vehicles per hour for the medical centre.

- The residential flat building concept adopts the PMF level of 30.94m for ground floor (which is higher than 1% AEP + 500m freeboard).

In relation to SEPP 65 and in particular the Apartment Design Guide (ADG), the residential flat building concept performs at a very high level:

- The boundary setbacks either comply with the ADG requirement of 9m (western boundary), or significantly exceed this at 12.1m from the southern boundary.
- 89 of apartments will achieve 2 hours solar access between 9am-3pm on 21 June, well in excess of the minimum 70% requirement. 0% of apartments are 'no-sun' which exceeds the maximum 15% allowable under the ADG.
- 63% of apartments are naturally cross ventilated, which is compliant.
- Only 5 apartments per core, which is less than the 8-12 suggested by the ADG.
- Through apartments are compliant with the maximum 18m depth requirement of the ADG.
- All indicative apartments meet the minimum required internal area.
- Common open space can be provided on the roof top and ground level well in excess of minimum 25% of site area.

The residential flat building concept demonstrates that the proposed FSR of 1.4:1 (which reflects the FSR already approved for the medical centre) is appropriate for a residential flat building on the site.

The residential flat building concept conclusively demonstrates an acceptable outcome for the site having regard to the benchmark established by the approved medical centre, and in fact would result in a smaller building and reduced impacts when compared with the current approved.

Figure 16:

Overlay of typical floor of residential concept with approved development

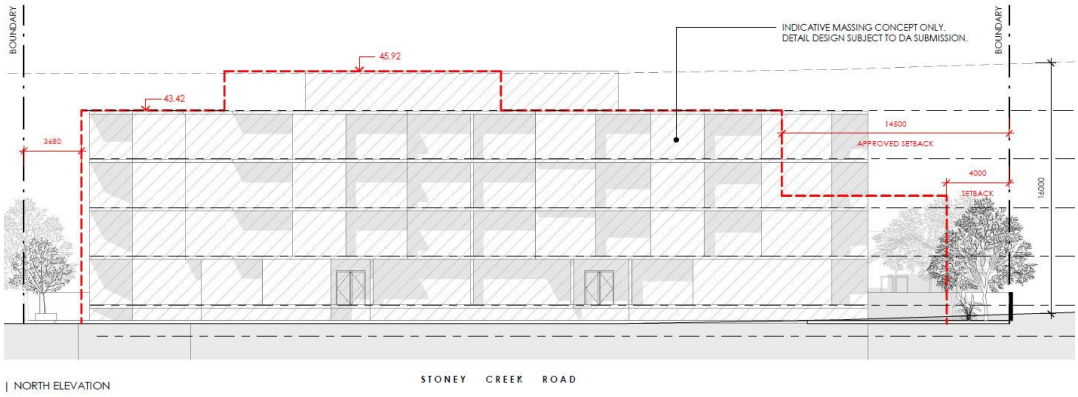


Figure 17:

Overlay of residential concept with approved Stoney Creek Road elevation

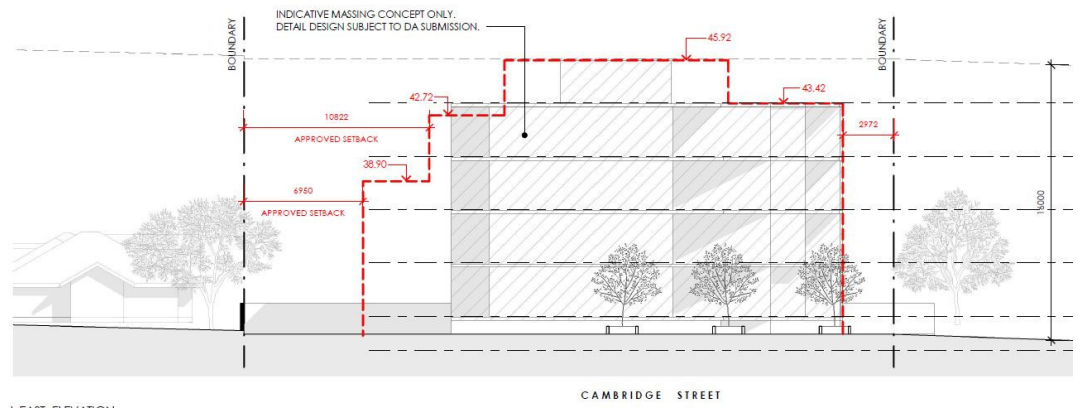


Figure 18:

Overlay of residential concept with approved Cambridge Street elevation

Flood Compatibility

The flood affectation on the site is such that any new residential development on the site would need to adopt the same flood chamber design across a building on the site as that which has recently been approved in the medical centre building on the site. In order to accommodate a large flood chamber across the site, a single consolidated building format is required as per the recently approved medical building on the site (refer to Figure 6) and this is the only building method for accommodating the overland flow through the site without adverse impact to surrounding sites.

The only possible form of residential accommodation which can be accommodate a large flood chamber across the site is residential flat building due to its single format design above basement level car parking.

A Flood And Risk Impact Assessment prepared by Northrop accompanies this Planning Proposal at Appendix B which confirms that:

> ….development of the subject site has been shown to have the capacity to improve the existing conditions and make the subject site suitable for use from a Floodplain Risk Management perspective by:
>
> - Providing a point of refuge above the 1% AEP and PMF design storm events.
> - The residual flood risk on site can be appropriately managed through the preparation of a Flood Emergency Response Plan prior to occupation of the building. A Flood Emergency Response Summary has been provided in the Flood Impact Assessment (Northrop, 2020) which demonstrates the residual flood risk on site can be managed appropriately.
> - The proposed development is not expected to result in any unacceptable impacts in adjacent properties during both the 1% AEP and PMF design storm events

Traffic Impacts

The 1.4:1 FSR would facilitate a residential flat development of approximately 38 apartments. A comparison of the traffic impacts associated with the former RTA use of the site, the approved medical centre building on the site, and a potential 38 apartment development, are as follows:

Use	Peak Trip Generation
Former RTA	130 vehicles
Approved medical centre building	110 vehicles
Potential residential flat building (38 apartments) TfNSW TDT 2013 04 rates of: • 0.27 trips per dwelling per hour in the morning peak hour, and; • 0.31 trips per dwelling per hour in the evening peak hour	18 vehicles (11 trips per hour in the morning peak hour) (12 trips per hour in the evening peak hour)

The traffic impacts associated with a residential flat development on the site would be significantly less than that which resulted from the former RTA facility on the site and also the recently approved medical centre on the site.

Summary

Having regard to the discussion above, the most appropriate form of residential accommodation having regard to the site circumstances, flood affectation, recently approved building, and strategic planning context is a residential flat building.

This form of development is only permissible in the R4 High Density Residential zone and so this is the correct residential zone for the site.

Any other residential zone would be inappropriate as lower density forms of residential development are incompatible with the flood affectation and simply would not represent a feasible form of development on the site.

An R4 High Density Residential zone is aligned with Theme 3 Housing and Neighbourhoods in the LSPS as it would facilitate a modest 38 apartments towards the identified 2,000 dwelling shortfall. This accommodation would be provided in an appropriate location noting that the site is 100 metres from the Beverly Hill town centre and associated amenities, and also approximately 600 metres from the Beverly Hills train station.

Georges River Local Housing Strategy

The Georges River Local Housing Strategy (Strategy) sets out the strategic direction for housing in the Georges River Local Government Area (LGA) over the next 20 years. It identifies the housing demand, gaps and issues, and establishes housing objectives to manage future growth.

The Strategy provides that the population of the LGA is projected to increase from 156,293 in 2017 to approximately 185,000 by 2036, resulting in the need for approximately an additional 14,000 dwellings by 2036. The Strategy further provides that under the existing planning controls, major development applications and planning proposals under assessment, approximately an additional 12,000 dwellings can be provided, which results in a shortfall of approximately 2,000 dwellings that will need to be provided by 2036. To address this shortfall, the Strategy commits to providing the capacity for an additional 2,000 dwellings in the next 20 years.

The Housing Survey which was undertaken in the preparation of the Strategy identifies that the Georges River community values a home that is close to public transport, shops, services and open space.

The subject proposal provides would facilitate the modest delivery of approximately 38 dwellings towards the identified 2,000 dwelling shortfall. This accommodation would be provided in an appropriate location noting that the site is 100 metres from the Beverly Hill town centre and associated amenities, and also approximately 600 metres from the Beverly Hills train station.

6.4.5 Question 5 - Is the Planning Proposal consistent with any other applicable State and regional studies or strategies?

Future Transport 2056

The future transport strategy outlines the State Government's 40-year vision for the State's transport network and system. The strategy aims to place NSW at the forefront of the country with a sophisticated transport system which will harness the rapidly advancing transport technology. The strategy outlines a planned and coordinated set of actions to address challenges faced by the NSW transport system to support the State's economic and social performance over the next 40 years.

The Planning Proposal is consistent with the relevant State-wide outcomes of the Future Transport Strategy 2056 as it:

- provides for the activation of a currently underutilised site which will contribute positively to the ongoing strength and revitalisation of the Beverly Hills town centre (Outcome 1: Successful Places)

- will encourage business investment in the area by providing the opportunity for the existing building on the site to be occupied by business/es and also the approved three storey medical building to be occupied by a broader range of businesses (Outcome 2: Strong Economy)
- provides for increased jobs, services or residential accommodation close within a town centre (Outcome 5: Accessible services)
- encourages the use of public transport by linking residential uses and jobs to a transport node (Outcome 6: Sustainability).

State Infrastructure Strategy 2018-2038

The NSW State Infrastructure Strategy 2018–2038 sets out the Government's priorities for the next 20 years, and combined with the Future Transport Strategy 2056, the Greater Sydney Region Plan and the Regional Development Framework, brings together infrastructure investment and land-use planning for our cities and regions.

The proposal is consistent with the State Infrastructure Strategy 2018-2038 by encouraging the use of public transport by linking residential uses and jobs to a transport node being the Beverly Hills train station.

Sydney's Walking Future

Sydney's Walking Future focuses on getting people walking for transport purposes more often. Customers tell the NSW State Government that they could walk more for the short everyday trips they make, and 73 per cent would do so with the right encouragement and support. The NSW state government aims to provide for customers by:

- Promoting walking for transport;
- Connecting people to places through safe walking networks around centres and public transport interchanges; and
- Engaging with partners across government, with councils, non-government organisations and the private sector to maximise their effectiveness.

The proposal will facilitate the use of the site by a range of businesses and services immediately adjacent to the Beverly Hills town centre and a short walk from Beverly Hills train station, which means that residents and workers will be able to walk to the station which provides connectivity to greater Sydney. In addition, the Planning Proposal will facilitate a development of the site which itself will provide much needed medical and other services which will mean that surrounding residents will be able to walk to such facilities.

Sydney's Bus Future

Sydney's Bus Future is the NSW Government's long-term plan to redesign Sydney's bus network to meet customer needs now and into the future and sets out step-by-step actions to deliver fast and reliable bus services for customers where and when they are needed.

The Planning Proposal is consistent with the vision of Sydney's Bus Future in that it will support the use of the site for jobs and services and potentially residential accommodation in close proximity to existing bus services which maximises the efficiency of those bus services and also ensures a high level of connectivity between the site and the broader region.

6.4.6 Question 6 - Is the planning proposal consistent with applicable SEPPs?

The Planning Proposal is consistent with all relevant State Environmental Planning Policies as summarised in the following table:

SEPP	Comment	Consistent
State Environmental Planning Policy – (Transport and Infrastructure) 2021	The aim of SEPP Transport and Infrastructure is to facilitate the effective delivery of infrastructure across the State. Detailed compliance with SEPP Transport and Infrastructure would need to be demonstrated at the time of making an application for development. Nonetheless, the site is already approved for a medical centre which has a traffic generation of 110 peak hour vehicles and the Planning Proposal will not facilitate an alternative development which would produce any higher traffic generation.	Yes
State Environmental Planning Policy (Resilience and Hazards) 2021	Chapter 4 Remediation of Land under State Environmental Planning Policy (Resilience and Hazards) 2021 is relevant to the Planning Proposal. The recently approved Development Application for a medical centre on the site was accompanied by a Detailed Site Investigation prepared by Environmental Investigations Australia. The investigation included a desktop analysis as well as soil sampling at eight test bore locations and concluded that widespread contamination was not identified at the site and that the site can be made suitable for the development. Any development application related to the residential use of the site will need to demonstrate the suitability of the site for that use, noting that part of the site is already zoned for residential accommodation.	Yes
State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004	The aim of SEPP BASIX is to encourage sustainable residential development. The future redevelopment of the site for a residential flat building would be capable of complying with BASIX. Compliance with SEPP BASIX will be demonstrated at the time of making an application for development.	Yes
State Environmental Planning Policy No. 65 – Design Quality of Residential Apartment Development	SEPP 65 aims to improve the design quality of residential flat developments, provide sustainable housing in social and environmental terms that is a long-term asset to the community and delivers better built form outcomes. The future redevelopment of the site for a residential flat building would be capable of complying with SEPP 65. Detailed compliance with SEPP 65 will be demonstrated at the time of making an application for development.	Yes
State Environmental Planning Policy (Housing) 2021	SEPP Housing aims to enable the development of diverse housing types, including purpose-built rental housing. Many of the forms of development provided under SEPP Housing rely on a residential	Yes

SEPP	Comment	Consistent
	flat building being a permissible form of development, and so the subject Planning Proposal will permit various forms of residential development under SEPP Housing to become possible on the subject site. The appropriateness of various forms of residential development possible under SEPP Housing would be the subject of detailed assessment following lodgement of a Development Application.	
State Environmental Planning Policy (Primary Production) 2021	SEPP Primary Production aims to facilitate the orderly economic use and development of lands for primary production. The site does not currently comprise agricultural land, nor will the subject Planning Proposal make it possible to be used for primary production and so the Planning Proposal is of no consequence in relation to this SEPP.	N/A
State Environmental Planning Policy (Biodiversity and Conservation) 2021	SEPP Biodiversity and Conservation aims to protect the biodiversity values of trees and other vegetation and includes provisions in relation to vegetation clearing and is predominantly aimed at providing controls in relation to vegetation in rural settings. The non-rural controls apply to the subject site irrespective of the subject Planning Proposal, which is of no consequence in relation to this SEPP.	N/A
State Environmental Planning Policy (Industry and Employment) 2021	SEPP Industry and Employment includes provisions in relation to the western Sydney employment area, as well as controls relating to signage. The subject site is not located within the western Sydney employment area and so this component of the SEPP is irrelevant for the purpose of the subject Planning Proposal. Any signage proposed as part of a development application made possible by the Planning Proposal will be assessed at the development application stage.	Yes
State Environmental Planning Policy (Planning Systems) 2021	SEPP Planning Systems comprises provisions which identify state and regional development, development on Aboriginal land, and concurrences required. These provisions are not of direct relevance to the subject Planning Proposal, however, may be relevant to future development applications made possible as a result of the Planning Proposal.	Yes
State Environmental Planning Policy (Exempt and Development Codes) 2008	SEPP Codes provides a range of exempt and complying development. However, despite the proposed new zone for the site, the flood affectation on the site is such that many forms of exempt or complying development under the Codes SEPP will still not be possible for the subject site, and most forms of development on the site will require a development application.	Yes

6.4.7 Question 7 - Is the Planning Proposal consistent with applicable Ministerial Directions (s9.1 directions)?

The following table summarises the Planning Proposal's consistency with applicable Ministerial Directions:

S.9.1 Direction No. and Title	Comment	Consistent
Focus Area 1: Planning Systems		
1.1 Implementation of Regional Plans	This direction applies to land to which a Regional Plan has been released by the Minister for Planning. The Proposal is consistent with the Greater Sydney Region Plan and the South District Plan as detailed in section 6.4.3 of this report.	Yes
1.2 Development of the Aboriginal Land Council	Not Applicable.	N/A
1.3 Approval and Referral Requirements	The objective of this direction is to ensure that LEP provisions encourage the efficient and appropriate assessment of development. In accordance with the direction the Proposal does not include provisions that require the concurrence, consultation or referral of development applications to a Minister or public authority. Further the Proposal does not identify future development on the site as designated development.	Yes
1.4 Site Specific Provisions	The objective of this direction is to discourage unnecessarily restrictive site-specific planning controls. The direction applies when a relevant planning authority prepares a Planning Proposal that will allow a particular development to be carried out. The proposed amendments to the zone, height and FSR maps provide future certainty for the community and the developer and reflect the height and gross floor area as recently approved on the site. In this instance, the Planning Proposal seeks the additional permitted uses of 'office' and "business premises' in Schedule 1 of the GRLEP in order to provide flexibility for the use of the approved medical centre building, noting that office premises and business premises are not a permissible form of development in the R4 High Density Residential zone. This is in fact the primary objective of this Planning Proposal.	Yes
Focus Area 1: Place Based		
1.5 Parramatta Road Corridor Urban Transformation Strategy	Not Applicable	N/A

S.9.1 Direction No. and Title	Comment	Consistent
1.6 Implementation of North West Priority Growth Area Land Use and Infrastructure Implementation Plan	Not Applicable	N/A
1.7 Implementation of Greater Parramatta Priority Growth Area Interim Land Use and Infrastructure Implementation Plan	Not Applicable	N/A
1.8 Implementation of Wilton Priority Growth Area Interim Land Use and Infrastructure Implementation Plan	Not Applicable	N/A
1.9 Implementation of Glenfield to Macarthur Urban Renewal Corridor	Not Applicable	N/A
1.10 Implementation of the Western Sydney Aerotropolis Plan	Not Applicable	N/A
1.11 Implementation of Bayside West Precincts 2036 Plan	Not Applicable	N/A
1.12 Implementation of Planning Principles for the Cooks Cove Precinct	Not Applicable	N/A
1.13 Implementation of St Leonards and Crows Nest 2036 Plan	Not Applicable	N/A
1.14 Implementation of Greater Macarthur 2040	Not Applicable	N/A
1.15 Implementation of the Pyrmont Peninsula Place Strategy	Not Applicable	N/A

S.9.1 Direction No. and Title	Comment	Consistent
1.16 North West Rail Link Corridor Strategy	Not Applicable	N/A
1.17 Implementation of the Bays West Place Strategy	Not Applicable	N/A
Focus Area 3: Biodiversity and Conservation		
3.1 Conservation Zones	Not Applicable	N/A
3.2 Heritage Conservation	The site is not an identified heritage item or within a conservation area. The site is not located within the immediate vicinity of any heritage items.	N/A
3.3 Sydney Drinking Water Catchments	Not Applicable	N/A
3.4 Application of C2 and C3 Zones and Environmental Overlays in Far North Coast LEPs	Not Applicable	N/A
3.5 Recreation Vehicle Areas	Not Applicable	N/A
Focus Area 4: Resilience and Hazards		
4.1 Flooding	This Direction provides that a planning proposal must not rezone land within the flood planning area from Special Purpose to a Residential zone. The site is designated as a Flood Planning Area which is defined as "the area of land at or below the flood planning level" in the Department's document Considering flooding in land use planning guideline 2021. However, this Direction also provides that a planning proposal may be inconsistent with this direction if the planning proposal is supported by a flood and risk impact assessment accepted by the relevant planning authority and is prepared in accordance with the principles of the Floodplain Development Manual 2005 and consistent with the relevant planning authorities' requirements. In the circumstance of the subject site, it is noted that Council has recently supported the approval of a 3 storey medical centre on the site on the basis that the design solution was compatible with the flood hazard on the site. The approved building includes a large flood chamber underneath the building to provide flood storage which actually increases the available flood storage on site from 600 cubic metres to 2,000 cubic metres and as a result,	Yes

S.9.1 Direction No. and Title	Comment	Consistent
	flood levels typically decrease across the subject site and within the adjacent properties. That is, development of the site as per the approved medical centre building with a flood chamber (or another type of building which also includes the same flood chamber design) will actually achieve an improved flood outcome for the locality. The Development Application for the approved medical centre building was accompanied by a detailed Flood Impact Assessment prepared by Northrop which demonstrated that the flood hazard across the subject site in the developed case during the 1% AEP design storm event is generally less than H2 (i.e the second lowest flood hazard) and is safe for large vehicles and pedestrians. This Planning Proposal is accompanied by a Flood and Risk Impact Assessment prepared by Northrop at Appendix B which confirms that: *….development of the subject site has been shown to have the capacity to improve the existing conditions and make the subject site suitable for use from a Floodplain Risk Management perspective by:* • *Providing a point of refuge above the 1% AEP and PMF design storm events.* • *The residual flood risk on site can be appropriately managed through the preparation of a Flood Emergency Response Plan prior to occupation of the building. A Flood Emergency Response Summary has been provided in the Flood Impact Assessment (Northrop, 2020) which demonstrates the residual flood risk on site can be managed appropriately.* • *The proposed development is not expected to result in any unacceptable impacts in adjacent properties during both the 1% AEP and PMF design storm events* Accordingly, it is demonstrated in the subject circumstance that it is acceptable to rezone the site from a special purpose (i.e. SP2 Government Administration) and R2 Low Density Residential to R4 High Density Residential as a flood compatible outcome is demonstrated to be capable of being achieved on the site, and in fact, redevelopment of the site should be encouraged as it will facilitate a net flood improvement for the locality.	
4.2 Coastal Management	Not Applicable	N/A

S.9.1 Direction No. and Title	Comment	Consistent
4.3 Planning for Bushfire Protection	The site is not identified as Bushfire Prone Land nor is it located in close proximity to land mapped as bushfire prone land.	N/A
4.4 Remediation of Land	The objective of this direction is to reduce the risk of harm to human health and the environment by ensuring that contamination and remediation are considered by planning proposal authorities. This direction applies to: (a) land that is within an investigation area within the meaning of the Contaminated Land Management Act 1997, (b) land on which development for a purpose referred to in Table 1 to the contaminated land planning guidelines is being, or is known to have been, carried out, (c) the extent to which it is proposed to carry out development on it for residential, educational, recreational or childcare purposes, or for the purposes of a hospital – land: (i) in relation to which there is no knowledge (or incomplete knowledge) as to whether development for a purpose referred to in Table 1 to the contaminated land planning guidelines has been carried out, and (ii) on which it would have been lawful to carry out such development during any period in respect of which there is no knowledge (or incomplete knowledge). The recently approved Development Application for a medical centre on the site was accompanied by a Detailed Site Investigation prepared by Environmental Investigations Australia. The investigation included a desktop analysis as well as soil sampling at eight test bore locations and concluded that widespread contamination was not identified at the site and that the site can be made suitable for the development. Any development application related to the residential use of the site will need to demonstrate the suitability of the site for that use, noting that part of the site is already zoned for residential accommodation.	Yes
4.5 Acid Sulphate Soils	The site is not identified as Class 1, 2, 3, 4 or 5 land on the Acid Sulfate Soil Map. Accordingly, this Direction is not applicable to the Proposal.	N/A
4.6 Mine Subsidence and Unstable Land	Not Applicable.	N/A
Focus Area 5: Transport and Infrastructure		
5.1 Integrating Land Use and Transport	The objective of this direction is to ensure that urban structures, building forms, land use locations, development designs, subdivision and street layouts achieve the following planning objectives:	

S.9.1 Direction No. and Title	Comment	Consistent
	(a) improving access to housing, jobs and services by walking, cycling and public transport, and (b) increasing the choice of available transport and reducing dependence on cars, and (c) reducing travel demand including the number of trips generated by development and the distances travelled, especially by car, and (d) supporting the efficient and viable operation of public transport services, and (e) providing for the efficient movement of freight. The direction applies when a relevant planning authority prepares a Planning Proposal that will create, alter or remove a zone or a provision relating to urban land, including land zoned for residential, business, industrial, village or tourist purposes. In accordance with this direction a Planning Proposal must be consistent with the aims, objectives and principles of "Improving Transport Choice" and "The Right Place for Business and Services" prepared by Department of Urban Affairs and Planning. The Planning Proposal is consistent with these documents in providing increased opportunity for employment floor space and housing on a site within an identified local centre which is within comfortable walking distance to bus and train services.	
5.2 Reserving Land for Public Purposes	Not Applicable.	N/A
5.3 Development Near Regulated Airports and Defence Airfields	Not Applicable.	N/A
5.4 Shooting Ranges	Not Applicable.	N/A
Focus Area 6: Housing		
6.1 Residential Zones	Whilst a small part of the site is currently zoned R2 Low Density Residential, this is an anomaly noting that the zone does not align with a cadastral and does not reflect the historical use of the site. Moreover, low density housing is not compatible with the flood affectation on the site. The objectives of this direction are: (a) To encourage a variety and choice of housing types to provide for existing and future housing needs, (b) To make efficient use of existing infrastructure and services and ensure that new housing has appropriate access to infrastructure and services, and	Yes

S.9.1 Direction No. and Title	Comment	Consistent
	(c) To minimise the impact of residential development on the environment and resource lands. The site is located within walking distance to bus and train services. By increasing the number of residents in walking distance to these services, the Proposal will maximise the patronage of public transport and assist in reducing commuting times. As the Proposal is in an established suburb, the Proposal makes efficient use of existing infrastructure and services and reduces the consumption of land for housing and associated urban development on the urban fringe.	
6.2 Caravan Parks and Manufactured Home Estates	Not Applicable.	N/A
Focus Area 7: Industry and Employment		
7.1 Business and Industrial Zones	The objectives of this direction are to: (a) encourage employment growth in suitable locations, (b) protect employment land in business and industrial zones, and (c) support the viability of identified strategic Centres. The direction applies when a relevant planning authority prepares a Planning Proposal that will affect land within an existing or proposed business or industrial zone (including the alteration of any existing business or industrial zone boundary. Whilst the subject site is not technically within a business or industrial zone, the principles of the direction are nonetheless considered relevant to the subject application having regard to the historical use of the site for an employment generating purpose and the proposed employment generating uses. The Planning Proposal is consistent with the direction in that it will: • Allow for the ongoing use of a site which is highly suitable for employment purposes in a manner which provides goods and services for the local community. • Provide for additional employment generating uses within the recently approved 3 storey building in a local centre which will promote both business activity and private sector investment within the centre and thereby support the growth and evolution of the centre. • Achieve site activation, improve services for people who live in the centre, and a create a synergy with the nearby non-residential uses. • Be consistent with 'Greater Sydney Region Plan - A Metropolis of Three Cities' and the 'South District Plan' the NSW	Yes

S.9.1 Direction No. and Title	Comment	Consistent
	Government's strategies to guide Sydney's growth and development over a 20 year period.	
7.2 Reduction in non-hosted short-term rental accommodation period	Not Applicable.	N/A
7.3 Commercial and Retail Development along the Pacific Highway, North Coast	Not Applicable.	N/A
Focus Area 8: Resources and Energy		
8.1 Mining, Petroleum Production and Extractive Industries	Not Applicable.	N/A
Focus Area 9: Primary Production		
9.1 Rural Zones	Not Applicable.	N/A
9.2 Rural Lands	Not Applicable.	N/A
9.3 Oyster Aquaculture	Not Applicable.	N/A
9.4 Farmland of State and Regional Significance on the NSW Far North Coast	Not Applicable.	N/A

6.4.8 Question 8 - Is there any likelihood that critical habitat or threatened species, populations or ecological communities, or their habitats, will be adversely affected as a result of the Proposal?

The Planning Proposal will not adversely impact any critical habitat, threatened species, populations or ecological communities, or their habitats.

6.4.9 Question 9 - Are there any other likely environmental effects as a result of the Planning Proposal and how are they proposed to be managed?

There are no environmental effects envisaged as a result of the Planning Proposal.

The site is flood affected and the R4 zone is the only zone which permits forms of residential accommodation (such as residential flat buildings and shop top housing) that can be designed to comply with the requirements for development on flood prone land.

A residential flat building on the subject site will not result in any greater impacts when compared with the recently approved medical centre building on the site, and in fact would have significantly reduced traffic impacts.

There are no hazards that impact the site or environmental effects resulting from the future redevelopment of the site that would preclude consideration of the Planning Proposal.

6.4.10 Question 10 - Has the Planning Proposal adequately addressed any social and economic effects?

The Proposal demonstrates a commitment to providing for ongoing and additional employment floor space which will stimulate business activity and private sector investment within the Beverly Hills local centre thereby supporting the growth and evolution of the centre. The Planning Proposal will directly facilitate additional jobs beyond that which would be achievable on the site under the current planning controls. By providing employment close to transport nodes within an identified centre, workers will benefit from reduced commuting times, achieving the NSW Governments objective for a walkable and 30 minute city.

The Planning Proposal will also facilitate a modest residential development on the site which would improve housing diversity in the locality and provide housing that responds to the needs, lifestyle and values of the local community. By providing housing close to transport nodes within an identified centre, residents will benefit from reduced commuting times, improved access to employment opportunities and a greater range of services achieving the NSW Governments objective for a walkable and 30 minute city.

The Planning Proposal will also facilitate the future redevelopment of the site that will have positive social impacts in terms of urban renewal in an established area that will create a vibrant cosmopolitan culture within the centre through a broader offering of services and opportunities within the centre.

The social benefits associated with the proposal include:

- Improved local amenity including new commercial uses and business opportunities;
- Increased employment opportunities for local residents;
- Access to high quality new housing including a range of 1, 2- and 3-bedroom dwellings.

The amendments sought under the planning proposal will have no unreasonable effects on items or places of European or Aboriginal cultural heritage. The site is not an identified heritage item, is not located within a heritage conservation area and is not known to contain any Aboriginal relics or artefacts.

In terms of economic impacts, the proposal will achieve important economic benefits including an increase in jobs on the site and encouragement of synergistic growth within the Beverly Hills local centre by providing a catalyst to encourage further revitalisation within the centre.

6.4.11 Question 11 - Is there adequate public infrastructure for the Planning Proposal?

Required electricity, telecommunication, gas, water, sewer and drainage services are available to the site.

The site is well served by public transport infrastructure in that the site is within walking distance of the Beverly Hills train station and numerous bus services.

The demand for public infrastructure associated for any future development of the site will be appropriately considered during the assessment of a development application for any such proposal.

6.4.12 Question 12 - What are the views of State and Commonwealth public authorities consulted in accordance with the Gateway determination?

Relevant public authorities will be consulted following the Gateway determination.

6.5 Part 4: Mapping

The Planning Proposal will require the amendment of the following maps referenced in Georges River Local Environmental 2021:

- Land Zoning Map
- Height of Buildings Map
- Floor Space Ratio Map

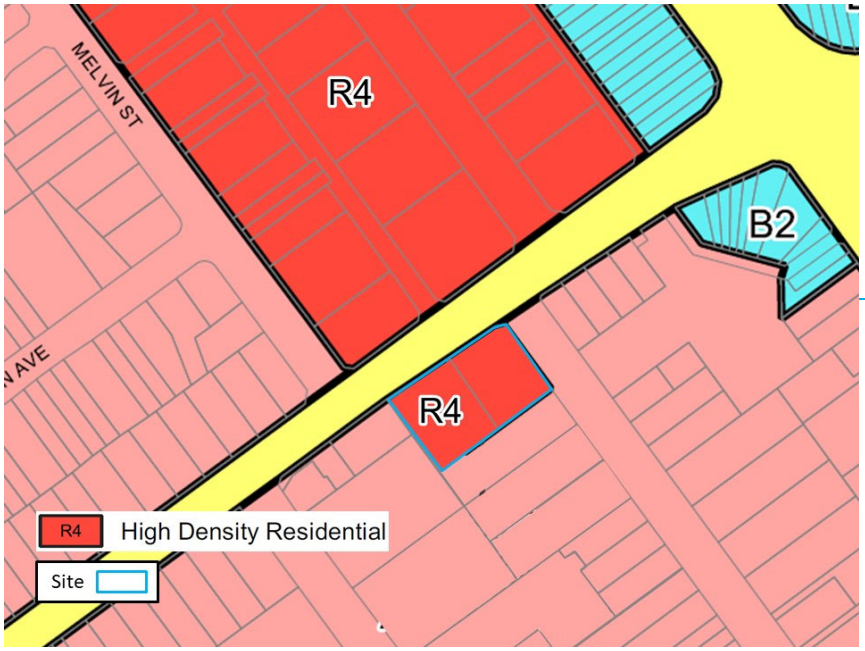


Figure 19: Proposed GRLEP zoning map change

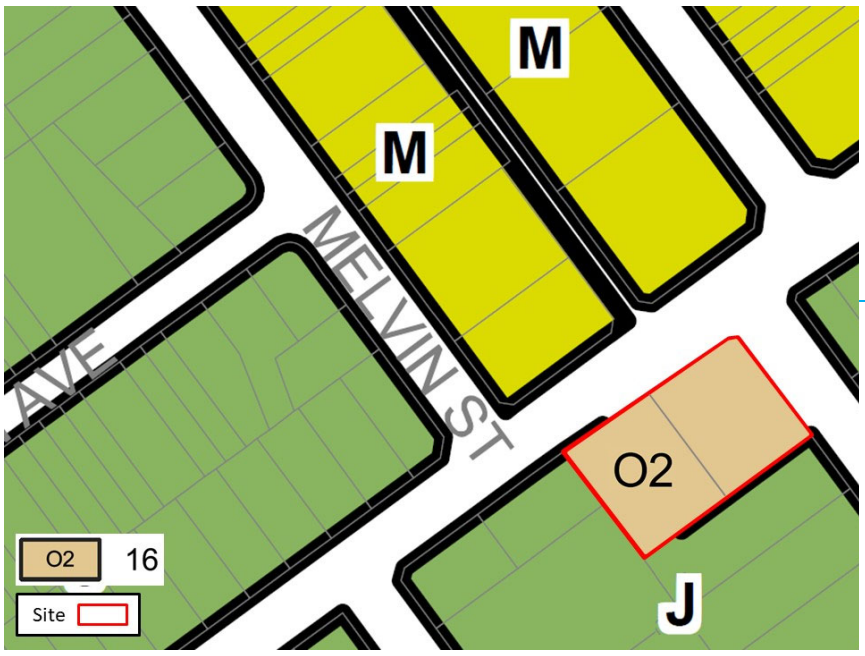


Figure 21:

Proposed GRLEP Building Height map change

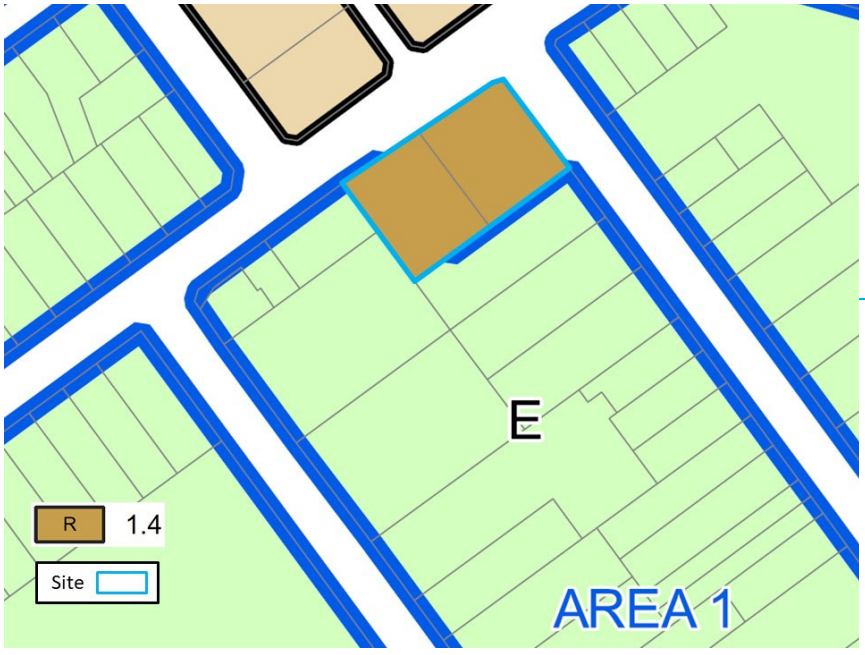


Figure 22:

Proposed GRLEP FSR map change

6.6 Part 5: Community Consultation

Georges River Council have been consulted during the preparation of the subject Planning Proposal.

The Planning Proposal initially sought only some additional permitted uses on the to allow the existing building and the approved medical centre building to be occupied by a broader range of employment generating uses. However, Council have advised that this is an appropriate opportunity to rezone the site as the current zone has become redundant.

The Local Environmental Plan Making Guideline produced by the NSW Department of Planning and Environment sets out the community consultation requirements for Planning Proposals.

The guide indicates that consultation will be tailored to specific Proposals. The exhibition for standard Planning Proposals will generally be 20 working days whilst complex Planning Proposals will be 30 working days.

The proposal is considered to be a standard Planning Proposal as it is consistent with the pattern of surrounding land use zones and/or land uses; is consistent with the strategic planning framework; presents no issues with regard to infrastructure servicing; is not a principal LEP; and does not reclassify public land.

Given that the proposal, and in in particular the height and FSR, reflect the scale and density of the already approved building on the site, it would be appropriate to exhibit the Planning Proposal for 20 days as it is considered to be a standard Planning Proposal.

Community consultation to be commenced by giving notice of the public exhibition of the Planning Proposal in a local newspaper, on the Council website and in writing to adjoining landowners.

The written notice of the Planning Proposal will:

- give a brief description of the objectives or intended outcomes of the Planning Proposal
- indicate the land affected by the Planning Proposal
- state where and when the Planning Proposal can be inspected
- give the name and address of the relevant planning authority (Georges River Council Council) for the receipt of submissions
- indicate the last date for submissions
- confirm whether delegation for making the LEP has been issued to the relevant planning authority.

6.7 Part 6: Project Timeline

The Project timeline will be dependent on Georges River Council and the Department of Planning.

However, the expected timeframes for each stage are summarised in the following table.

Stage	Timeframe
Consideration by Council	March 2021
Council decision	May 2021
Gateway Determination	June 2022
Pre-exhibition	June 2022

Stage	Timeframe
Commencement and completion of public exhibition period	July 2022
Post-exhibition review and additional studies	August 2022
Submission to the Department for finalisation	September 2022
Gazettal of LEP amendment	September 2022

7.0 CONCLUSION

The site has been used as a Roads and Traffic Authority administration centre for over 50 years and contains an office building of approximately 480 square metres at the north-eastern corner of the site, with the remainder of the site occupied by a hard stand car park for approximately 40 cars. However, as a result of the current restriction on the permissible uses due to the SP2 Government Administration zone, the existing building is unable to be occupied for a new use and is currently sterilised for any purpose.

In addition, the site now also benefits from a recent development consent (DA2020/0227 granted on 21 February 2021) for a circa 3,400 square metres 3 storey medical centre with an FSR of 1.4:1 and a height of 16 metres. The developer is currently progressing a leasing campaign for the building and has had significant enquiry for a range of other predominantly office-based occupants for the building.

Having regard to the current zoning restriction, the primary objective of the Planning Proposal is to expand the uses which can be accommodated both within the existing building on the site (which is an immediate need) and also within the approved medical centre building on the site, which the developer intends to deliver in 2023.

Notwithstanding, it is also appropriate to take the opportunity to update the zone as a result of the now redundant SP2 Government Administration zone on the site.

In response to the circumstances, the Planning Proposal seeks to:

- change the zoning of the site from SP2 and R2 to the more appropriate zone of R4 High Density residential which reflects the context of the site and the scale and density of the recently approved building. The R4 zone is also the only zone with residential uses (such as a residential flat building and shop top housing) that can be designed to address the flood affectation on the site;
- provide the additional permitted uses of 'office' and 'business premises' in Schedule 1 of Georges River LEP 2021 to enable the existing building to be usefully occupied, and also allow the approved three storey medical building to accommodate a broader mix of employment generating uses which can serve the local community;
- introduce an FSR of 1.4:1 which reflects the density of the recently approved medical centre building on the site (noting there is currently no FSR restriction on the majority of the site); and
- introduce a building height control of 16 metres which reflects the scale of the recently approved medical centre building on the site (noting there is currently no height restriction on the majority of the site).

The proposal is demonstrated to have both strategic and site merit and is consistent with Council's Local Strategic Planning Statement in that it will allow the site to continue to be used for employment generating uses and would contribute to job create in the Georges River local government area, as well as facilitating a modest provision of residential accommodation in an appropriate location.

The Planning Proposal is consistent with 'A Metropolis of Three Cities', the South District Plan and the Georges River Local Strategic Planning Statement and will facilitate the orderly and economic use of the site.

For the reasons outlined above it is appropriate for Georges River Council, as the relevant planning authority, to support the Planning Proposal.

APPENDIX A

Ionic Management

RESIDENTIAL FLAT BUILDING CONCEPT A

APPENDIX B

Northrop

FLOOD AND RISK IMPACT ASSESSMENT B

APPENDIX C

ASON Group

TRAFFIC ASSESSMENT C