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Report on
Preliminary Site (Contamination) Investigation

Grammar Edgecliff Sports Area
11 Alma Street, Paddington

Prepared for
Sydney Grammar School

Project 99538.01
March 2020

Douglas Partners
Geotechnics / Environment / Groundwater

Document History

Document details

Project No.	99538.01	Document No.	R.001.Rev0
Document title	Report on Preliminary Site (Contamination) Investigation Grammar Edgecliff Sports Area		
Site address	11 Alma Street, Paddington		
Report prepared for	Sydney Grammar School		
File name	99538.01.R.001.Rev0 PSI		

Document status and review

Status	Prepared by	Reviewed by	Date issued
Revision 0	Joel James-Hall	Glyn Eade	4 March 2020

Distribution of copies

Status	Electronic	Paper	Issued to
Revision 0	1	0	Tina Tang, Jattca Property Solutions
Revision 0	1	0	Richard Green, Richard Green Consulting

The undersigned, on behalf of Douglas Partners Pty Ltd, confirm that this document and all attached drawings, logs and test results have been checked and reviewed for errors, omissions and inaccuracies.

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Reviewer	pp	4 March 2020

bsi. ISO 9001 Quality Management
FS 604853

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Table of Contents

Page

1. Introduction 1
2. Scope of Works 1
3. Site Description 3
   - 3.1 Site Identification 3
   - 3.2 Site Walkover 3
4. Environmental Setting 4
   - 4.1 Soil Landscape 4
   - 4.2 Geology 4
   - 4.3 Topography, Hydrology and Hydrogeology 4
   - 4.4 Acid Sulfate Potential 5
5. Site History Information 5
   - 5.1 Historical Aerial Photographs 5
   - 5.2 Historical Title Deeds 7
   - 5.3 EPA Public Registers 8
   - 5.4 Historical Businesses and Potentially Contaminating Activities 9
   - 5.5 Woollahra Council Historical Information 10
     - 5.5.1 Weigall Sportsground 10
     - 5.5.2 White City Gasworks 10
   - 5.6 Section 10.7 Planning Certificate 11
   - 5.7 Summary 11
6. Conceptual Site Model 12
   - 6.1 Potential Contamination Sources and Contaminants of Potential Concern 12
   - 6.2 Potential Receptors 13
     - 6.2.1 Human Health Receptors 13
     - 6.2.2 Environmental Receptors 13
     - 6.2.3 Potential Pathways 13
   - 6.3 Summary of Preliminary CSM 13
7. Field Work 14
   - 7.1 Sample Location and Rationale 14
   - 7.2 Soil Sampling Procedure 15
     - 7.2.1 General Sampling Procedure 15
   - 7.3 Analytical Rationale 15
   - 7.4 Quality Assurance and Quality Control (QA / QC) 16

7.5 Data Quality Indicators....16
8. Site Assessment Criteria....16
9. Field Work Results....17
10. Laboratory Results....18
10.1 On-site Suitability of Soils....18
10.2 Acid Sulfate Soil Assessment....20
10.2.1 Field Screening Indicators....21
10.2.2 Action Criteria....21
10.2.3 Results....21
10.3 Preliminary Waste Classification....22
11. Conclusion....24
12. Recommendations....25
13. References....25
14. Limitations....26

Appendix A: About This Report and Site Drawings
Appendix B: Site Photographs
Appendix C: Site History Documentation
Appendix D: Data Quality Assurance & Quality Control
Appendix E: Laboratory Documentation
Appendix F: Site Assessment Criteria
Appendix G: Borehole Logs
Appendix H: Summary Results

Report on Preliminary Site (Contamination) Investigation
Grammar Edgecliff Sports Area
11 Alma Street, Paddington

1. Introduction

This report presents the results of a Preliminary Site (Contamination) Investigation (PSI) undertaken for a proposed sports complex site within Sydney Grammar School, adjacent to Nield and Vialoux Avenues, Paddington (as shown in Drawing 1, Appendix A). The investigation was commissioned by Brad Campbell of Sydney Grammar School and was undertaken in general accordance with Douglas Partners Pty Ltd (DP) proposal SYD191243.P.002.Rev0 dated 27 November 2019.

The purpose of the current investigation is to review readily available site information and conduct a limited intrusive investigation to provide an indication of the risk and nature of potential contamination at the site, identify any significant data gaps, and to provide recommendations for further works, if deemed necessary. This report also includes a preliminary assessment of potential acid sulfate soils and a preliminary waste classification assessment.

It is understood that the proposed development covers an area of approximately 5,700 m^2 and involves demolition of the existing tennis courts and construction of a three to four story sporting facility comprising of a multi-purpose hall, rifle range, swimming pools, fencing and taekwondo areas as well as car parking and amenities. Part of the proposed development under consideration comprises a two-level basement extending to depths of approximately 6 - 7 m below existing ground level. It is noted that the development design has yet to be finalised.

A geotechnical investigation was also completed by DP and this has been documented under separate cover (report reference 99538.00.R.001.DftA dated February 2020 (DP, 2020)).

This report must be read in conjunction with the notes entitled *'About this Report'* in Appendix A and other explanatory notes, and the report should be kept in its entirety without separation of individual pages or sections.

2. Scope of Works

DP carried out the following scope of works:

- Review of published geological, soil landscape and acid sulphate soil (ASS) mapping;
- Review of pertinent site history information comprising:
  - Historical aerial photographs to assess likely past uses of the site;
  - Recent aerial imagery obtained through Nearmap;
  - Current and historical land titles;

  - NSW EPA public registers for notices and licences issued under the *Contaminated Land Management Act 1997* (CLM Act) *and the Protection of the Environment Operations Act 1997* (POEO Act).
  - Council's Section 10.7 Planning Certificates;
  - Historical council records provided to DP; and
  - Department of Primary Industry groundwater bore records for registered groundwater bores in the vicinity of the site.
- Review of relevant previous investigations undertaken by DP at, and in the vicinity of, the site;
- A site walkover to observe current and recent land uses and activities and assess the potential for contaminating activities;
- Collection of soil samples from the seven geotechnical boreholes drilled for DP (2020) using track and bobcat mounted drilling rigs. Soil samples were collected at regular depth intervals at all test locations based on field observations, changes in strata and upon any signs of obvious contamination, such as odours or staining;
- Survey boreholes using a differential GPS (dGPS);
- Submission of 26 selected soil samples for analysis of a combination of the following common contaminants of potential concern (CoPC) and parameters at a National Association of Testing Authorities (NATA) accredited laboratory:
  - Eight metals / metalloids (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc);
  - Total recoverable hydrocarbons (TRH);
  - Monocyclic aromatic hydrocarbons (benzene, toluene, ethylbenzene and xylene - BTEX);
  - Polycyclic aromatic hydrocarbons (PAH);
  - Organochlorine pesticides (OCP);
  - Organophosphorus pesticides (OPP);
  - Polychlorinated biphenyls (PCB);
  - Total phenols;
  - Asbestos (presence / absence screening);
  - Acid sulfate soil (ASS) field pH screening tests;
  - Chromium reducible sulfur (SC_r) ASS suite;
  - Toxicity characteristic leaching procedure (TCLP);
  - pH; and
  - Cation exchange capacity (CEC).
- Field sampling and laboratory analysis in accordance with a quality assurance / quality control (QA / QC) plan consisting of 10% replicate sampling, trip spikes, trip blanks, chain-of-custody procedures and in-house laboratory QA/QC testing; and
- Preparation of this report describing the findings of the assessment and a discussion of the potential risk of contamination at the site as well as recommendations for further works, if deemed necessary.

3. Site Description

3.1 Site Identification

The site identification information is summarised as follows:

Table 1: Site Identification Details

Item	Details
Site Owner	Sydney Grammar School
Site Address	11 Alma Street, Paddington
Current land use	School / Recreational
Lots and Deposited Plans	Part Lot 2 Deposited Plan 547260 Lot 1 Deposited Plan 633259 Lot 219 Deposited Plan 752011
Council	Woollahra Municipal Council
Approximate Site Area	0.57 ha
Proposed future land-use	School / Recreational

The current site (shown as the red boundary in Drawing 1, Appendix A) comprises part of the larger 3.5 ha school oval area.

3.2 Site Walkover

A site walkover was conducted by DP on 19 December 2019. At the time, the site included a sealed car park on Neild Avenue, 2 large fenced tennis court areas (4 and 2 courts respectively), a concrete paved area with umbrellas to the south of the courts, a garden area and large trees to the west, a two-level grandstand building (with store room / chemical store and bathrooms below), and an embankment to a grassed playing field. The elevation of the playing field is approximately 2 m lower than the courts and the grandstand is cut into the side of the embankment. To the west of the courts and at the level of the grassed oval were three soil bins. At the time of the inspection these were observed to contain a stockpile of soil (reportedly from Elite Sand and Soil) and cricket screens of steel construction. The grandstand appeared to be constructed of brick and wooden balustrades and wooden panel ceiling (inside) with the roof (exterior) clad in another material (possibly aluminium).

At the time of the inspection, the re-surfacing of the courts was underway, and a large volume of resurfacing paint was being stored on the site. Adjacent to the site to the north were various high-rise residential unit blocks. All were of brick construction with either terracotta roof tiles or aluminium roof materials. Window frames appeared to be constructed of wood or aluminium. Garden beds were present along many of the front areas of the buildings and fences were constructed of aluminium and brick.

Photographs taken during DP's walkover are provided in the photoplates presented in Appendix B.

4. Environmental Setting

4.1 Soil Landscape

Reference to the Sydney 1:100 000 Series Soil Landscape Sheet indicates that the site is located within the boundary of an area of disturbed terrain, however, the site is also close to the erosional Gymea landscape and residual Hawkesbury soil landscape.

The disturbed soil landscape is described as an area of level plain to hummocky terrain, extensively disturbed by human activity, including complete disturbance, removal or burial of soil. The Gymea landscape group is described as an erosional profile of shallow to moderately deep sandy loams and clayey sands or sandy clays. The Hawkesbury group is a colluvial landscape derived from Hawkesbury Sandstone and generally consisting of earthy sands, clayey sands and sandy clays.

4.2 Geology

Reference to the Sydney 1:100 00 Series Geology Sheet indicates that the site, within the area disturbed terrain, is likely underlain by Hawkesbury Sandstone at depth. Hawkesbury sandstone typically comprises medium to coarse grained, quartz sandstone with some shale bands or lenses

4.3 Topography, Hydrology and Hydrogeology

Local topography slopes downwards to the north from approximately 12 m relative to Australian Height Datum (AHD) to the south, near Lawson Street, to 4 m AHD to the north for the oval area. Regional topology slopes further to the north to Rushcutters Bay.

Surface water and groundwater is anticipated to follow the general local and regional topology, flowing to the north into Rushcutters Creek and towards Rushcutters Bay.

A search of the Department of Primary Industry groundwater bore records for registered groundwater bores (as shown in Map 5a, Land Insight & Resource Report, Appendix C) indicates that there is one groundwater monitoring bore (GW106911) in the north east of the site (at the northern edge of the north-eastern tennis court area). Bore GW106911 is listed for recreational usage, and as confirmed by the Property Manager of the Grammar School and is used to top up underground irrigation tanks in the Weigall 4 car park. As per the information provided by Sydney Grammar School the bore is 12 m deep, with a standing water level of 7 and a nominal pump out rate of 0.5 L/s. An approximate mark-up showing the relative position of the bore by the Grammar School is attached in Appendix C.

A further nine bores, listed for monitoring purposes are located within 200 m to the north of the site across Neild Avenue. Additionally, it is noted that the site and surrounding area is located within an Underground Petroleum Storage Systems (UPSS) Environmentally Sensitive Zone. UPSS Environmentally Sensitive Zones are defined as per the EPA as regions immediately surrounding sensitive receptors such as rives, regions on or near vulnerable groundwater or regions of recognised environmental significant. The location of a site inside a UPSS Environmentally Sensitive Zones may be a factor when considering an UPSS exemption application.

4.4 Acid Sulfate Potential

A review of the CSIRO Australian Soil Resource Information System (ASRIS) ASS risk mapping indicates the site is located within an area of low probability of occurrence, however, this is noted to have a very low degree of confidence. Additionally, given that the site is within an area of disturbed terrain there is further uncertainty to any ASS risk mapping and an ASS investigation is therefore required to assess ASS on the site.

5. Site History Information

5.1 Historical Aerial Photographs

Historical aerial photographs 1930 to 2019 were obtained from a Land Insight & Resources report (provided in Appendix C). These were reviewed to identify past land uses and the potential for contaminating activities to have impacted the site. A summary of the aerial photography for the site and surrounding area is given below.

1930 - The site appears to be an open grassed area as part of what appears to be a sportsground / oval (Weigall Sportsground). Directly to the south appears to be several small residential structures. The surrounding area is predominately residential, with the open grassed area continuing to the north adjacent along Neild Avenue. Further to the east is another open grassed area with what appears to be tennis courts, likely associated with the White City Tennis Club. Across Neild Avenue to the west and north-west is a possible commercial/industrial area.

A small circular structure is visible to the north of the Weigall Sportsground, north of Rushcutters Creek, likely to be the AGL gasometer (refer to Section 5.5 for further discussion). The gasometer is located adjacent to an octagonal structure (referred to as a 'The Stadium' in attached Infotrack Pty Ltd cadastral reports, Appendix C), historically known as Sydney Stadium.

1943 - The site appears relatively unchanged with the exception of what may be a small fence bisecting the site from east to west, with small trees / vegetation visible along the part of the fence line. Some structures immediately to the south of the site appear to have been removed. Potential construction activity / new structures are visible in the south eastern corner of Weigall Sportsground. A small road/path dividing Weigall Sportsground and White City is visible.

The former AGL gasometer to the north appears to have been removed with the circular footprint of the tank visible. Construction of residential buildings and roadworks appears to have been completed further to the south near Dillion Street Reserve. Additional development to the area across Neild Avenue to the west is visible. The tennis stadium at White City appears to have been constructed.

1951 - The site and immediate surrounds appears relatively unchanged since 1943.

1955 - Three small structures are visible in the southern part of the site. Evidence of landscaping activities at the sportsground, including part of the site is visible. A new structure is visible immediately to the south of the site. The remainder of the immediate surroundings appear relatively unchanged since 1951.

1961 - The three small structures on the site appear to have been removed including the fence bisecting the site. A sporting structure, possibly a tennis court is visible in the eastern portion of the site and evidence of landscaping the ground surface for a possible cricket pitch is visible. Further development is visible in the commercial/industrial area to the west and north-west. The remainder of the immediate surroundings appear relatively unchanged since 1955.

1965 - The site appears relatively unchanged since 1961. A car park appears to have been built adjacent to the octagonal Sydney Stadium on the footprint of the former gasometer. The immediate surroundings of the site appear relatively unchanged since 1961.

1970 - The site appears relatively unchanged since 1965 except for what appears to be a fence around the tennis courts. The immediate surrounding area appears relatively unchanged since 1965. Construction and demolition works are visible to the north and north-west along New South Head Road.

1975 - The site appears relatively unchanged since 1970. Extensive demolition and construction is visible along New South Head Road including the demolition of Sydney Stadium and the construction of an elevated rail bridge and road tunnel to the west.

1986 - Small structures are visible at the western and northern edge of the site. Infrastructure (train line) works further to the north along New South Head Road seem to have been completed. A car park appears to have been built at the south eastern corner of Weigall Sportsground, adjacent to White City. Additional tennis courts are visible over the former footprint of the gasometer.

1994 - An additional four tennis court surface appear to have been constructed at the site in addition to what appears to be a small carpark and two small structures. The immediate surrounding areas appear to be relatively unchanged since 1986 except for some minor development to the commercial / industrial area to the west.

1998 - A small building is visible at the northern edge of the tennis courts in addition to two round structures located at the southern edge of the site. The small structures present in the 1986 and 1994 photographs are no longer present. Significant construction activities are visible further to the south at the Royal Hospital for Women Park. The remainder of the immediate surrounding area appears relatively unchanged.

2004 - The site appears relatively unchanged since 1998. Construction works to the south at the Royal Hospital for Women Park appear to have been completed. The remaining immediate surrounding areas appear relatively unchanged since 1998.

2009 - The site appears relatively unchanged since 2004 except for an unknown object/structure at the western boundary of the carpark. The immediate surrounding areas appear relatively unchanged since 2004.

2013 - The site appears relatively unchanged since 2009, the unidentified object visible in 2009 has been removed. The immediate surrounding areas appears relatively unchanged since 2009 except for the northern tennis courts part of the White City complex being removed/converted into open grassed areas and a cricket ground.

2016 - The site appears relatively unchanged since 2013. Construction and demolition works are visible further to the south near Dillon Street Reserve. Renovations / alterations are visible on the buildings immediately to the south of the site.

2019 - The site appears relatively unchanged since 2019. The immediate surroundings of the site appear relatively unchanged since 2016. Construction further to the south near Dillon Street Reserve appears to have been completed.

5.2 Historical Title Deeds

A historical title deeds search was conducted on the site by Infotrack Pty Ltd (Infotrack) to obtain information regarding previous land ownership and occupancy details. This information provides an indication of previous land uses and gives an insight into potential sources of contamination at the site. It should, however, be noted that title deeds alone are not conclusive of land use and need to be used in conjunction with other site history information (e.g. aerial photographs) to gain a better understanding of the likely land use.

Table 2 and
Table 3 below summarise the results of the historical title deed search for the site and inferred land usages based upon the titles and historical aerial photography. A complete copy of the Infotrack report including the relative location of the lots and previous subdivisions is attached in Appendix C.

Table 2. Summary of Title Deeds and Inferred Land Usage, Lot 1 Deposited Plan 633259

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Inferred Land Use
As regards the part numbered (1) on the attached Cadastral Records Enquiry Report		
14.08.1929 (1929 to 1928)	Frederick William Allen (Merchant)	Residential / Commercial / Vacant
18.07.1938 (1938 to 1947)	York Motors Proprietary Limited	Commercial / Vacant
31.10.1947 (1947 to 1984)	Housing Commission of New South Wales	Vacant / Residential / Recreational
As regards the part numbered (2) on the attached Cadastral Records Enquiry Report		
26.08.1927 (1927 to 1931)	Holden's Motor Body Builders Limited	Commercial
30.11.1931 (1931 to 1938)	General Motors – Holdens Limited	Commercial
20.07.1938 (1938 to 1947)	York Motors Proprietary Limited	Commercial
31.10.1947 (1947 to 1984)	Housing Commission of New South Wales	Vacant / Residential / Recreational
As regards the part within the blue edged area on the attached Cadastral Records Enquiry Report		
10.11.1941 (1941 to 1947)	York Motors Proprietary Limited	Commercial
31.10.1947 (1947 to 1984)	Housing Commission of New South Wales	Residential
Continued as regards the whole of Lot 1 Deposited Plan 633259		
11.01.1984 (1984 to date)	# The Trustees of the Sydney Grammar School	School / Recreational

Table 3. Summary Title Deeds and Inferred Land Usage, Lot 2 Deposited Plan

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Inferred Land Use
17.07.1915 (1915 to date)	# The Trustees of the Sydney Grammar School	Vacant / School / Recreational

5.3 EPA Public Registers

The EPA maintains a public database of contaminated sites under Section 58 of the CLM Act. The notices relate to investigation and/or remediation of site contamination considered to be significantly contaminated under the definition in the CLM Act.

A site will appear on the Contaminated Land: Record of Notices if its site has been issued a regulatory notice by the EPA. Sites appearing in the List of NSW Contaminated Sites Notified to the EPA indicate that the site is considered to be contaminated by the notifier and warrant reporting to the EPA. However, the contamination may or may not be significant enough to warrant regulation and is subject

to further review by the EPA. The NSW EPA also issues environmental protection licenses under Section 308 of the POEO Act.

Based on the Land Insight and Resources report, the following is indicated:

- No notices or orders made under the CLM Act have been issued for the site;
- The site has not been included in the list of NSW contaminated sites notified to EPA;
- No licences under Schedule 1 of the POEO Act have been issued for the site; and
- No records were found relating to sites that are part of the EPA PFAS investigation within 1 km of the site.

However, two current notices under the CLM act have been made for a service station located 800 m to the south west of the current site. Additionally, five sites notified as contaminated to the NSW EPA were identified within a 1 km radius of the site. Three of the sites, including a potential former landfill located 20 m to the west, are listed as no longer requiring regulation under the CLM act. The remaining two sites include the service station located 800 m to the south west and a marina located 750 m to the north east, both of which are currently regulated under the CLM act. Both of the regulated sites are not considered to pose a significant contamination risk to the current site due to their relative distance.

With respect to the potential landfill to the west at 18-28 Neild Avenue, it appears this site (based on the aerial photographs) was developed in the 1990's and then redeveloped again between 2017 and 2019 for the current multistorey residential building (which also appears to include a basement).

5.4 Historical Businesses and Potentially Contaminating Activities

The attached Land Insight and Resources report (attached in Appendix C) includes a list of potentially contaminating historical businesses and activities within relative proximity to the site,

Several automotive dealers and associated repair facilities are identified 160-170 m to the north west of the site in operation from 1932 to date. However, based upon the topography, hydrology and hydrogeology these businesses are not considered to present a significant contamination risk as they are relatively distant from and downgradient of the site.

Additional potentially contaminating businesses and activities identified include:

- A taxi company from 1950, 145 m to the south west;
- A hardware wholesale company 200 m to the south west;
- A general engineering business 147 m to the south east; and
- A motor service station 120 m to the south, listed in 1970.

Except for the motor service station, the remaining nearby historical businesses are not considered to present a potential historical contamination risk, mostly due to the relative distance and the type of the business. With reference to the historical imagery (attached in Appendix C) no service station is obviously visible at the listed address of 68 Goodhope Street at the listed time (or prior / afterwards), it is also noted that other businesses are registered at the same address including sign manufacturing,

advertising and printing works. It is considered possible that the business listing is related to commercial offices or a repair shop rather than the operation of an actual service station.

Additionally, it is noted that the EPA has identified a former gasworks site at White City, Paddington located nearby to the east of the site (see Map 6 in the attached Land Insight & Resources report, Appendix C). Further discussion regarding the history, location, operation and contamination risk of the gasworks in the area is provided in Section 5.5.

5.5 Woollahra Council Historical Information

5.5.1 Weigall Sportsground

A search of the Woollahra Council website listing historical information compiled by the Local History Centre and the Woollahra History and Heritage Society indicates that the land comprising Weigall Sportsground (Playing Fields) and the current site was purchased in 1907 (as part of the Booth Estate) by the Sydney Grammar School in order to establish a sportsground. Prior to the purchase, the land had been in use as part of the local Chinese market gardens.

5.5.2 White City Gasworks

Due to both the EPA website and the Land Insight & Resources report identifying a former gasworks located nearby to the east at White City, Paddington, additional information was sought from Woollahra Council as no listed notifications regarding the gasworks are provided on the EPA website.

A general inquiry to Woollahra Council was forwarded to the Local History staff at Woollahra Library, with a brief summary of readily available historical documentation provided in an email dated 19 February 2020 which is summarised below:

"According to the file notes and other information, the AGL site was associated with the White City complex rather than the Weigall Playing Fields - unless the land has been transferred to Sydney Grammar in a more recent period of its history than is covered by the file. (These files represent a collection of historical material rather than necessarily current detail.)

The gasometer functioned only as a collection and storage place for gas, the nearest gasworks being in the Darling Harbour area (identified in a 1903 newspaper article as Kent Street - see reference to SMH 5.6.1903 below). The Rushcutters Bay land had been acquired by AGL in 1903 from the Booth estate (Lot 8) - land grated to William Thomas and later acquired on behalf of Sarah Booth, wife of John Booth and a great-niece of pioneer emancipist Daniel Cooper.

From a separate source - a time-line in Rosemary Annable's history of the White City site, prepared as part of Conybeare Morrison's Conservation Management Plan for White City, Vol 1 (p. 32) - comes information that the AGL land was purchased and annexed into the White City site in 1946, the gasometer dismantled, and the former caretaker's cottage associated with the installation then renovated for club purposes. This is supported by details in a history of the White City tennis complex concerning the tennis club's acquisition of the AGL land: The White City Club Story/Jim Russell Syd., Parker Pattinson, 2001 pp. 27-31."

A photograph of the gasometer and a cadastral map showing the location of the AGL site is provided in Appendix C. The relative position to the current site inferred from historical aerial photography and the supplied historical records by Woollahra Council is shown in the attached Drawing 2, Appendix A.

Based upon the provided information the listed former gasworks site was actually a gasometer (associated with the storage and regulation of local gas supply) located in the north western corner of the White City land, near the far north eastern corner of the current Weigall Sportsground. Whilst the site was not an actual gasworks, there still exists a historic contamination risk from the storage tank (gasometer) whereby impurities in the stored gas may have accumulated in the water seal at the base of the tank and potentially migrated into soils and groundwater Additionally, there exists the risk that during decommissioning of the tank large volumes of waste (including waste associated with the gasometer) may have been buried in the previous foundations the tank.

Based on the inferred location of the gasometer the historical contamination risk posed by its previous operation and potential impacts on local soil and groundwater is considered to be low relative to the current site, due to the distance and its position downgradient of the site.

5.6 Section 10.7 Planning Certificate

A review of the Section 10.7 Planning Certificates (see Appendix C), provided by Sydney Grammar School, for the lots listed in Table 1 and dated 3 January 2020 indicates that:

- The site is not declared to be significantly contaminated within the meaning of the CLM Act;
- The site is not subject to a management order or an on-going maintenance order within the meaning of the CLM Act;
- The site is not the subject of an approved voluntary management proposal within the meaning of the CLM Act; and
- The site is not the subject of a site audit statement within the meaning of the CLM Act.

5.7 Summary

Based upon the available site history information it appears that the site previously was used for market gardens, prior to its purchase by the Sydney Grammar School in 1907 for private recreational purposes as a part of the school.

The site appears to have been an open grassed area prior to undergoing small scale development with the construction of tennis courts, carpark and grandstand with several small structures present for periods of time since 1955. The immediate surroundings of the site have largely remained similar in terms of land use.

Whilst a former gasworks is listed by the EPA at White City, Paddington, a review of the available historical information indicates the gasworks comprised only a gasometer located further to the north near New South Head Road, with the gasometer decommissioned by 1943. Given the relative distance and position downgradient relative to the site the former gasometer is not considered to pose a significant historical contamination risk for the current site.

6. Conceptual Site Model

A Conceptual Site Model (CSM) is a representation of site-related information regarding contamination sources, receptors and exposure pathways between those sources and receptors. The CSM provides the framework for identifying how the site became contaminated and how potential receptors may be exposed to contamination either in the present of in the future i.e., it enables an assessment of the potential source - pathway - receptor linkages (complete pathways).

6.1 Potential Contamination Sources and Contaminants of Potential Concern

Based on the previous investigations, the following potential sources of contamination and associated contaminants of potential concern have been identified.

Table 4: Potential Contamination Sources and Contaminants of Potential Concern (CoPC)

Potential Source	Description of Potential Contaminating Activity	Contaminants of Potential Concern
S1- Uncontrolled filling.	Used historically to backfill the site and / or for general levelling purposes.	Metals / metalloids, TRH, BTEX, PAH, OCP, OPP, PCB, phenols and asbestos.
S2- Existing and historical buildings / structures on site.	Demolition / refurbishment and maintenance of the existing buildings impacting fill and surficial soils.	Asbestos, lead, PCB, SMF, OCP and OPP.
S3 – Historical and current activities.	Historical market gardens and landscaping / maintenance of sporting fields and tennis facilities.	Metals, OCP and OPP.

Notes : TRH - total recoverable hydrocarbons
BTEX - benzene, toluene, ethylbenzene, xylene
PAH - polycyclic aromatic hydrocarbons
PCB - polychlorinated biphenyls
OCP - organochlorine pesticides
OPP - organophosphorus pesticides
VOC - volatile organic compounds
SMF - synthetic mineral fibres

6.2 Potential Receptors

6.2.1 Human Health Receptors

R1 End users (recreational);

R2 Construction and maintenance (e.g., utility) workers; and

R3 Adjacent site users (recreational, residential and commercial).

6.2.2 Environmental Receptors

R4 Groundwater (including the on-site irrigation bore);

R5 Terrestrial ecology; and

R6 Surface Water (Rushcutters Creek).

6.2.3 Potential Pathways

Potential pathways for the identified contamination to impact on the receptors include the following:

P1 Ingestion and dermal contact;

P2 Inhalation of dust and / or vapour;

P3 Leaching of contaminants and vertical migration into groundwater; and

P4 Contact with terrestrial ecology.

6.3 Summary of Preliminary CSM

A ‘source - pathway - receptor’ approach has been used to assess the potential risks of harm being caused to human, water or environmental receptors from contamination sources on or in the vicinity of the site, via exposure pathways. The possible pathways between the above sources (S1 and S3) and receptors (R1 to R6) are provided in Table 5 below.

Table 5: Summary of Potential Complete Pathways

Potential Source and Contaminants of Concern	Pathway	Receptor	Action Recommended
S1 - Uncontrolled Filling CcPC: Metals / metalloids, TRH, BTEX, PAH, OCP, OPP, PCB, phenols and asbestos	P1 - Ingestion and dermal contact P2 - Inhalation of dust and/or vapours	R1 - End users R2 - Construction and maintenance workers	An intrusive site investigation is required to assess the potential for soil and groundwater contamination, including the suitability for the continued use of the on-site irrigation bore. Undertake a hazardous building materials survey across the site
	P2 - Inhalation of dust and/or vapours	R3 - Adjacent site users	
S2 - Existing and historical buildings / structures on site. CoPC: Asbestos, lead in paint, PCB, SMF, OCP and OPP. **S3 - Historical and current activities** CoPC: Metals, OCP and OPP	P3 - Leaching and vertical migration into groundwater and surface water	R1 - End users R2 - Construction and maintenance workers R4 - Groundwater R6 - Surface water	
	P4 - Contact with terrestrial ecology	R5 - Terrestrial ecology	

7. Field Work

7.1 Sample Location and Rationale

The site covers an area of approximately 0.57 ha. According to the NSW EPA publication, *Sampling Design Guidelines* (1995), a minimum of 15 systematic sampling points are recommended to characterise a site of this size based on a grid sampling pattern with no known contamination sources. For the investigation a total of five sampling locations, drilled primarily for geotechnical purposes, were conducted on the site. This equated to a total sampling density of 33% of the recommended number of sampling locations. The reduced sampling density is considered appropriate given the preliminary nature of the investigation.

Furthermore, two geotechnical boreholes, BH3 and BH5, were drilled off-site near the western site boundary to provide information on the subsurface profile. These locations were also sampled to provide an indication of soil contamination in the area, including the eastern section of the site.

Boreholes for the current investigation were extended into natural soils and continued to depths of up to 14.56 m for the purposes of the geotechnical investigation.

It is noted that ASS samples were collected from locations BH1, BH2, BH6 and BH7 to provide broad site coverage to include areas at higher and lower site levels.

Prior to commencing sampling, all test locations were cleared for underground services by a services locator.

Current test locations are shown on Drawing 1, Appendix A.

7.2 Soil Sampling Procedure

7.2.1 General Sampling Procedure

Environmental sampling was performed with reference to current industry standards. All sampling data was recorded on DP chain of custody sheets. The general sampling and sample management procedures comprised:

- Collection of samples into laboratory-prepared glass jars with Teflon-lined lids, capping immediately to minimise headspace within the sample jar. Preliminary screening for asbestos was achieved by sub-sampling of the submitted jars by the laboratory;
- Collection of ASS samples in zip-lock bags for ASS screening;
- New disposable nitrile gloves were worn by the field engineer for each sample collected thereby reducing the potential for cross-contamination;
- Collection of 10% replicate samples for quality control (QC) purposes;
- Labelling of sample containers with individual and unique identification details, including project number, sample location and sample depth (where applicable); and
- Placement of the sample jars into a cooled, insulated and sealed container for transport to the laboratory.

7.3 Analytical Rationale

The analytical scheme for soil samples was designed to obtain an indication of the potential presence and possible distribution of identified CoPC identified by the CSM, namely metals / metalloids, TRH, BTEX, PAH, OCP, OPP, PCB, phenols and asbestos. The results of the analytical testing were compared with the adopted site assessment criteria (SAC) discussed in Section 8.

In addition, analysis of selected soil samples was also undertaken for ASS to inform this assessment.

7.4 Quality Assurance and Quality Control (QA / QC)

This DSI has been devised in general accordance with the seven-step data quality objective (DQO) process which is provided in Appendix B, Schedule B2 of NEPC (2013). The DQO process is outlined as follows:

- State the problem;
- Identify the decision;
- Identify inputs into the decision;
- Define the boundary of the assessment;
- Develop a decision rule;
- Specify acceptable limits on decision errors; and
- Optimise the design for obtaining data.

The DQOs adopted for this investigation are provided in Appendix D.

7.5 Data Quality Indicators

The performance of the assessment in achieving the DQO was assessed through the application of data quality indicators (DQI) as defined by:

Precision:	A quantitative measure of the variability (reproducibility) of data;
Accuracy:	A quantitative measure of the closeness of reported data to the "true" value;
Representativeness:	The confidence (expressed qualitatively) that data are representative of each media present on the site;
Completeness:	A measure of the useable data from a data collection activity; and
Comparability:	The confidence (expressed qualitatively) that data can be considered equivalent for each sampling and analytical event.

Further comments on the DQIs are presented in Appendix D.

8. Site Assessment Criteria

The SAC are the criteria which were used to assess the suitability of the site for the proposed land use. The SAC applied in the current investigation are informed by the CSM (Section 6), which identified human and environmental receptors to potential contamination on the site, as well as consideration of the proposed development.

The laboratory soil analytical results have been assessed against the investigation and screening levels in presented in Schedule B1 of the National Environment Protection Council (NEPC) guidelines (NEPC 2013). The NEPC guidelines are endorsed by the EPA under the CLM Act 1997. Schedule B1 (NEPC 2013) provides investigation and screening levels for commonly encountered contaminants which are applicable to generic land uses, and where relevant, also include consideration of soil type and the depth of contamination. It should be highlighted that the investigation and screening levels are not intended to be used as clean up levels, and any contaminants which have concentrations that exceed the investigation / screening levels should be further assessed using a Tier 2 risk assessment. Health screening levels for direct contact with contaminants are adopted from the Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC CARE) Technical Report no.10 (Friebel and Nadebaum 2011), in accordance with the NEPC (2013).

Appendix F outlines the relevant investigation and screening levels as documented in NEPC (2013). All site specific and / or theoretical assumptions relevant to the selection of the investigation and screening levels have been outlined in each sub-section in Appendix F as required.

9. Field Work Results

At the time of sampling the site was observed to be occupied by a sporting complex comprising of six tennis courts, landscaped areas, paths, sealed concrete areas, a grandstand structure to the north and further to the north, the open grassed Weigall playing fields.

The subsurface conditions encountered in the boreholes are presented in the borehole logs presented in Appendix G, which are accompanied by notes for the related descriptive terms and classification methods. The test locations are shown on Drawing 1, Appendix A.

The materials encountered in the boreholes (and CPTs as reported in DP (2020) can be described as follows:

Unit 1	**FILL**	Generally sandy fill to a depth of between 2.0 m and 3.5 m, with inclusions of brick, concrete and sandstone gravel; and minor charcoal, ash, clinker and organic matter. Clayey sand with trace ash, charcoal and clinker encountered from 2.5 to 6.0 m;
Unit 2	**SAND**	Generally very loose to loose, pale grey to grey, medium grained sand to a depth of 3.5 m and 8.0 m;
Unit 3	**SAND**	Typically medium dense to dense, fine to medium grained grey to pale grey sand to a depth of between 6.3 m and 11.7 m below ground level (bgl);
Unit 4	**INTERBEDDED SANDS AND CLAYS**	Typically medium dense to dense sands with stiff clay bands to borehole termination and CPT refusal depths of between 12.0 m and 20.5 m bgl. The clay bands were typically 0.3 m thick; and
Unit 5	**SANDSTONE**	Medium to high strength sandstone encountered at depths of between 3.5 m to 8.5 m bgl within BH3 and BH5-7.

In addition, a weak to distinct hydrocarbon odour was observed in BH5 at 0.6 m. No other obvious signs of gross contamination were observed. It is noted that building materials (e.g., brick, concrete) can be an indicator for the potential presence of hazardous building materials such as asbestos.

It is also noted that due the drilling method and predominate soil type being moist to wet sands there exists a degree of uncertainty as to the depths of fill and distinguishing the boundary between fill and underlying natural soils.

Groundwater seepage was observed during auger drilling between 2.4 m and 4.0 m bgl whilst groundwater was observed between 2.0 m and 4.2 m bgl within the hole created after withdrawal of the CPT test rods (refer to DP, 2020). In addition, groundwater monitoring well installed for the geotechnical investigation at BH1 recorded groundwater depths post installation on 15 and 24 January 2020 of 4.0 m bgl and 4.2 m bgl respectively.

10. Laboratory Results

10.1 On-site Suitability of Soils

The analytical results for the soil samples are summarised in Table H1, Appendix H together with the adopted SAC. Laboratory documentation including chain of custodies and certificates of analysis are provided in Appendix E.

For all analysed samples all results were either below the practical quantification limit and / or below the adopted SAC for BTEX, phenols, OCP, OPP and PCB. Asbestos was not detected in any of the analysed samples or observed during fieldwork.

Health based criteria exceedances were detected in multiple samples for benzo(a)pyrene TEQ and for lead in one sample. Multiple exceedances of adopted environmental criteria were detected for benzo(a)pyrene, metals and TRH (C_{16}-C_{34}). The measured exceedances are summarised below in Table 6 below.

Table 6: Summary Soil Exceedances

Sample ID	HIL / HSL Exceedance(s) (measured mg/kg | SAC mg/kg)	EIL / ESL Exceedance(s) (measured mg/kg | SAC mg/kg)
On-Site Sample Locations		
BH1/0.4-0.5	-	**copper (2,700 | 230)** benzo(a)pyrene (0.74 | 0.7)
BH1/1.9-2.0	benzo(a)pyrene TEQ (7.0 | 3.0)	**benzo(a)pyrene (4.8 | 0.7)**
BH1/3.0-3.1	benzo(a)pyrene TEQ (5.3 | 3.0)	***benzo(a)pyrene (3.7 | 0.7)***
BH1/3.9-4.0	benzo(a)pyrene TEQ (7.1 | 3.0)	***benzo(a)pyrene (4.9 | 0.7)***
BH2/1.9-2.0	benzo(a)pyrene TEQ (6.8 | 3.0)	**benzo(a)pyrene (4.6 | 0.7)**
BD2/19222019 *	benzo(a)pyrene TEQ (6.5 | 3.0)	**benzo(a)pyrene (4.4 | 0.7)**
BH3/0.9-1.0	-	benzo(a)pyrene (1.3 | 0.7)
BH4/0.4-0.5	benzo(a)pyrene TEQ (7.3 | 3.0)	C_{16}-C_{34} (320 | 300) **benzo(a)pyrene (4.9 | 0.7)**
BD1/18122019 *	benzo(a)pyrene TEQ (4.9 | 3.0)	C_{16}-C_{34} (310 | 300) **benzo(a)pyrene (3.2 | 0.7)**
BH4/1.9-2.0	**benzo(a)pyrene TEQ (8.0 | 3.0)**	total chromium (32 | 15) C_{16}-C_{34} (360 | 300) **benzo(a)pyrene (5.5 | 0.7)**
BH4/5.5-5.6	-	*benzo(a)pyrene (0.79 | 0.7)*
BH6/0.4-0.5	-	benzo(a)pyrene (1 | 0.7)
BH6/2.4-2.5	**benzo(a)pyrene TEQ (12.0 | 3.0)**	*C_{16}-C_{34} (380 | 300)* ***benzo(a)pyrene (7.7 | 0.7)***
BH6/3.9-4.0	-	benzo(a)pyrene (0.78 | 0.7)
BH7/0-0.1	-	benzo(a)pyrene (1.3 | 0.7)
BH7/2.9-3.0	-	**benzo(a)pyrene (1.8 | 0.7)**
Off-Site Sample Locations		
BH3/0.9-1.0	-	benzo(a)pyrene (1.3 | 0.7)
BH5/1.4-1.5	-	*benzo(a)pyrene (1.5 | 0.7)*
BH5/1.9-2.0	**lead (2,300 | 600)** benzo(a)pyrene TEQ (6.1 | 3.0)	copper (250 | 230) lead (2300 | 1100) **benzo(a)pyrene (4.1 | 0.7)**
BH5/1.4-1.5 [Lab triplicate]	-	**copper (3100 | 230)**
BH5/2.4-2.5	**benzo(a)pyrene TEQ (8.6 | 3.0)**	**benzo(a)pyrene (5.9 | 0.7)**

Note – shaded cells indicate a hotspot (analyte(s) in bold), with a detected exceedance greater than 2.5 times the SAC. Results in italics correspond to samples > 2 m in depth.
* Sample is a replicate of sample directly listed above

As indicated earlier, BH3 and BH5 are located outside the current site boundary, however, the results from these boreholes are considered to provide indicative information on the potential for contamination of nearby soils within the current site boundary for the purposes of this preliminary assessment.

Many of the ESL exceedances are attributed to benzo(a)pyrene exceeding the NEPC (2013) low reliability ESL. When considered against the CRC CARE (2017) derived ecological guidelines which provide a high reliability, for 85% protection level of species, urban residential and public open space of 33 mg/kg (95% confidence limits of 21-135 mg/kg) there are no detected hotspots or exceedances,

even when considering the lower 95% confidence limit of 21 mg/kg. Furthermore, the EIL/ESL do not strictly apply to depths greater than 2 m (exceedances shown in italics in Table 6 above), however, exceedances for depths of greater than 2 m have been left on Table 6 dependent upon the final landform and design.

However, there still exists ecological exceedances for TRH C_{16}-C_{34} in four samples (BH4 and BH6), lead in one sample (BH5) and copper in three samples (BH1 and BH5). Statistical analysis was undertaken on these ecological exceedances with the exception of samples BH1/0.4-0.5 (2,700 mg/kg) and BH5/1.4-1.5 (3,100 mg/kg), which recorded concentrations more than 2.5 times the EIL (230 mg/kg) and hence were considered hotspots.

Exceedances of benzo(a)pyrene TEQ above the SAC was detected at 11 locations, three of which exceed 2.5 times the HSL. Lead was detected above the SAC at one location (BH5 located off-site) at over 2.5 times the HIL. With the exception of BH4/0.4-0.5 the health-based exceedances were limited to deeper fill (> 1.9 m).

Results for C_{16-34}, lead and benzo(a)pyrene TEQ were analysed using ProUCL statistical software in order to calculate 95% confidence limits for the selected analytes. This resulted in 95% upper confidence limits (UCL) of 223.8 mg/kg for C_{16-34} (EIL 300 mg/kg), 460.5 mg/kg for lead (EIL 2,300 mg/kg) and 5.74 (HIL 3 mg/kg) for benzo(a)pyrene TEQ (refer to attached output in Appendix H). Therefore, it is considered that the EIL/ESL exceedances of C_{16-34} and lead are not statistically significant as the 95% UCL is within the EIL/ESL. However, the exceedances of benzo(a)pyrene TEQ of the HIL are statistically significant with the 95% UCL exceeding the HIL.

It is noted that some of natural soil samples also recorded the presence of contaminants, in particular PAH, above typical background levels. This would suggest a potential for the overlying fill to have impacted the natural soils. There is also the potential, given the nature of drilling in sands below the groundwater table, that some cross-contamination of the collected natural soils may have occurred during sample recovery. Additionally, given the location of the site, in an area of disturbed terrain, the potential impact of contaminants on the natural soils should be investigated as part of any further investigation.

10.2 Acid Sulfate Soil Assessment

As a part of the assessment select soil samples were submitted to a NATA accredited laboratory first for field and peroxide pH screening for any actual or potential ASS, with samples exhibiting indicators for ASS and from different strata types selected for additional SC_r analysis, to confirm or otherwise, the presence of ASS.

Table H2, Appendix H presents the results of preliminary screening tests and SC_r testing. Laboratory documentation including chain of custodies and certificates of analysis are provided in Appendix E. Field screening indicators and action criteria are summarised in Table H2 and below in Sections 10.2.1 and 10.2.2.

10.2.1 Field Screening Indicators

The ASS manual (Stone, Ahern and Blunden, 1998) provides indicators for the presence of actual or potential ASS based upon field pH and peroxide testing. General indicators are summarised below in Table 7.

Table 7: Field pH Test Indicators

Field Test	Indicators of Actual ASS	Indicators of Potential ASS
Field pH (pHf)	pHf ≤ 4	4 < pHf < 5.5
Field peroxide pH (pHfox)	pHfox < 3	3 < pHfox < 4 4 < pHfox < 5 (less indicative)
	pHf – pHfox > 1 Reaction intensity (e.g., effervescence) Sulfurous odours Colour change (e.g., grey to brown tones)	

It is noted that the field-testing results are indicative only and should be considered in conjunction with other observations and / or additional analysis such as chromium reducible sulfur testing.

10.2.2 Action Criteria

As a preliminary assessment the ASS manual (Stone, Ahern and Blunden, 1998) provides action criteria which if exceeded may necessitate the development of a management plan. Based upon the field work results, summarised in the attached logs (Appendix G), the soils across the site are predominately coarse grained with varying amounts of clay and/or silt. Action criteria have been selected from the ASS manual (Stone, Ahern and Blunden, 1998) for a conservative coarse texture only case, corresponding to any quantity of soils to be disturbed, summarised below in Table 8.

Table 8: Adopted ASS Action Criteria

Texture and Quantity	Sulfur Trail (% S oxidisable)	Acid Trai (mol H^+/tonne)
Coarse (1-1000 tonnes or > 1000 tonnes)	0.03	18

10.2.3 Results

All but one of the submitted samples for preliminary pH field screening resulted in a pH change of > 1 after oxidisation. However, only three samples recorded an oxidised pH (pH_{fox}) < 3 indicating the likely presence for potential ASS and one sample with a pH_{fox} of 4 indicating the possible presence of actual ASS. None of the samples recorded a pH_f < 4, or between 4 and 5.5.

Based upon the field screening results eight samples were analysed for SC_r based upon the field screening results where larger changes in pH, reaction rate and low pH_{fox} were detected whilst also providing coverage of a range of depths and soil types to assist informing the possible horizontal and lateral extent of ASS.

Of the eight selected samples, two samples had no detectable net acidity or sulfur trail. With the exception of BH2/2.5-2.95 and BH1/7-7.45, the remainder had no detectable sulfur trail above the management criteria of 0.03 % w/w S although some of these samples recorded a net acidity value in excess of the action criteria. BH1/7-7.45 whilst at the action criteria of 0.03 % w/w S had a measured net acidity of 17 mol H^+/tonne below the action criteria of 18 mol H^+/tonne indicating the possible presence of ASS at low concentrations. BH2/2.5-2.95 had a measured net acidity of 130 mol H^+/tonne and a measured SC_r content of 0.21% w/w, indicating the presence of ASS.

With reference to the attached borehole logs (Appendix G) the sample BH2/2.5-2.95 corresponds to a band of wet, dark grey clayey sand fill containing organic matter from 2.5 - 3.5 m. Similar strata were noted in boreholes BH1 (3.5 - 6.0 m) and BH3 (2.1 - 3.6 m) observed in the northern portion of the site.

Based upon the borehole logs, local topography and the results discussed above, the lower lying soils towards the northern half of the site corresponding to a similar soil description (wet, dark grey clayey sands containing organic matter) should be treated as ASS. Given the limited testing, soils beneath this layer should be considered to present an elevated risk of ASS.

Soils in the southern portion of the site at higher height elevations are less likely to contain any actual ASS, however, based upon the preliminary field-testing results there is the potential for ASS to be present. Furthermore, it is also noted that given the site lies in an area of disturbed terrain there exists the additional possibility for ASS to have been used as backfill at the site.

Based upon the provided concept plan (see Drawing 3, Appendix A), soils to be excavated is predominately limited to areas where the potential presence of ASS appears to be lower. However, further testing target areas within the middle of the site (i.e., below the existing tennis courts) to further inform the likely lateral and vertical extent of any ASS present.

Based on the current design which will comprise bulk excavation in the order of 6-7 m (and construction of foundations to depth) an ASS management plan is anticipated to be required. Based on the initial results an indicative liming rate of 10 kg $CaCO_3$ per tonne of soil may be considered for initial planning purposes.

10.3 Preliminary Waste Classification

A six-step procedure for determining the type of waste and the waste classification is provided in the NSW EPA *Waste Classification Guidelines* (EPA 2014a). Part of the procedure, for materials not classified as special waste or pre-classified waste, is a comparison of analytical data initially against contaminant threshold (CT) values specific to a waste category. Alternatively, the data can be assessed against specific contaminant concentration (SCC) thresholds when used in conjunction with toxicity characteristic leaching procedure (TCLP) thresholds.

The CT, SCC, and TCLP values relevant to this waste classification are shown in Table H3 (Appendix H).

The following Table 9 presents the results of the six-step procedure outlined in EPA (2014a) for determining the type of waste and the waste classification. This process applies to the fill at the site.

Table 9: Six-Step Classification

Step	Comments	Rationale
1. Is it special waste?	No	No asbestos-containing materials (ACM), or coal tar, clinical or related waste, or waste tyres were observed in the boreholes. Asbestos was not detected by the analytical laboratory.
2. Is it liquid waste?	No	Materials composed of a soil matrix.
3. Is the waste "pre-classified"?	No	Fill did not fall into one of the pre-classified categories.
4. Does the Waste have hazardous waste characteristics	No	Waste not observed to / or considered at risk to contain explosives, gases, flammable solids, oxidising agents, organic peroxides, toxic substances or corrosive substances, substances liable to spontaneous combustion.
5. Chemical Assessment	Conducted	Refer to Table H3 in Appendix H.
6. Is the Waste Putrescible?	No	All observed components of filling composed of materials pre-classified as non-putrescible [a] (i.e., soil).

Note: a wastes that are generally not classified as putrescible include soils, timber, garden trimmings, agricultural, forest and crop materials, and natural fibrous organic and vegetative materials (EPA, 2014).

As shown in Table H3 (Appendix H) all contaminant concentrations for the analysed fill samples were within the contaminant thresholds (CT1s) for General Solid Waste (GSW) with the exception of lead and benzo(a)pyrene across the majority of the samples. Additional TCLP testing was conducted on the highest exceedances, and to characterise the lateral and horizontal extent of leachability of the soils for both lead and benzo(a)pyrene. All samples were found to have combined SCC and TCLP concentrations within SCC1 and TCLP1 with the exception of lead in BH5/1.9-2.0 which exceeded the GSW criteria for both total and leachable concentrations. It is noted that samples BH5/2.4-2.5 and BH1/0.4-0.5 have TCLP concentrations marginally within SCC1 (4.4 and 4.3 respectively). Moreover, whilst BH5 is outside the current site boundary it may be indicative of the potential for elevated concentrations of lead and benzo(a)pyrene to be present in untested parts of the site.

Benzo(a)pyrene concentrations are likely the result of the ash and charcoal observed in the fill, predominately in the shallower fill. It is also considered likely that the observed organic matter in deeper soils including such as in BH6 where a burnt odour was noted in conjunction to decomposing organic matter, may correspond to decomposing charcoal in the soil.

Additionally, the test results from BH5 (and to a lesser extent sample BH1/0.4-0.5) indicate that there exists the potential for pockets of restricted solid waste (RSW) to be present in untested parts of the site. Furthermore, the presence of building materials, including brick and concrete fragments, may be indicative of the possible presence of hazardous building materials (e.g. asbestos) within fill across the site.

Based on the field observations and analytical data, the soils, as described in the attached logs (Appendix G) and Section 9, are preliminary classified *in situ* as **GSW (non-putrescible) with some soils also considered ASS and the potential for pockets of RSW.**

In this regard, consideration should also be given to the preliminary ASS assessment presented within this report (refer to Section 10.2) in order to inform any waste disposal planning.

It is noted that due to the detections of PAH above background limits in some natural samples and the detected presence of ASS, based on the current data it is likely to preclude the classification of the natural soils as virgin excavated natural material (VENM). This should be further investigated as part of any additional investigation.

Note: The information provided in this section does not constitute a formal waste classification for off-site disposal purposes. Additional investigation and a formal waste classification assessment, utilising the information in this report, must be undertaken and reported prior to off-site disposal.

11. Conclusion

From a review of the available site history information the site appears to have been in use for recreational purposes as a part of the Sydney Grammar School, prior to being used for market gardening.

Generally, the encountered soils comprised sandy fill to a depth of between 2.0 m and 6.0 m bgl, with inclusions of brick, concrete and sandstone gravel; and minor charcoal, ash and organic matter. This was underlain by natural sands and clays with bedrock encountered between 12 and 20 m bgl. The ash and charcoal observed is considered to likely be the cause of the elevated PAH concentrations detected in the laboratory analysis. A weak to distinct hydrocarbon odour was also observed in the fill in the off-site borehole (BH5), indicating a potentially localised contamination source. It is noted that building materials (e.g., brick and concrete) can be an indicator for the potential presence of hazardous building materials such as asbestos.

Limited intrusive soil testing indicates that a number of locations exceed the health-based SAC for the proposed land-use predominately as a result of elevated benzo(a)pyrene TEQ concentrations. Four locations were found to exceed 2.5 times the adopted health-based SAC due to elevated benzo(a)pyrene TEQ and lead concentrations, indicating the presence of potential ‘hot-spots’ of contamination.

Additionally, due to the elevated PAH concentrations in addition to elevated detection of metals and TRH, a number of locations exceed the adopted environmental based SAC. However, when considering the higher reliability CRC CARE (2017) ESL for benzo(a)pyrene the detected benzo(a)pyrene concentrations not considered to pose a significant ecological risk. Despite this, two locations still exceed 2.5 times the adopted environmental based SAC for copper and five other locations exceed the environmental SAC for copper, lead, chromium and TRH.

Limited ASS testing indicates that the northern portion of the site is potentially underlain by ASS, in particular the wet, dark grey clayey sand fill containing organic matter from depths of 2.5 m bgl.

Preliminary waste classification indicates that soils beneath the site contain elevated levels of both lead and benzo(a)pyrene. However, TCLP testing indicates that the contaminants are relatively immobile and may potentially be classified as GSW (non-putrescible) with some soils also considered ASS and the potential for pockets of RSW.

12. Recommendations

Given the results presented within this limited assessment, it is recommended that additional intrusive testing is conducted as a part of a detailed site investigation in order to meet the recommended EPA (1995) sampling densities and to further characterise the nature and extent of contamination across the site, particularly for the identified contaminants of concern; PAH, metals and TRH. Considering the access restraints for test locations conducted as a part of the current investigation, it is recommended that any additional sampling target soils within previously inaccessible areas including the central portion of the site, which currently consists of the sealed tennis court surfaces. Additional ASS testing and waste classification assessment is recommended as a part of any additional testing. Furthermore, as a part of the detailed site investigation a groundwater assessment is to be conducted to ascertain if the soil contamination identified herein is impacting the groundwater quality and potentially migrating off-site.

The results of further testing will inform the content of a resulting remediation action plan and further inform the design and planning process for the proposed development, including confirmation of provided preliminary waste classifications. It would also inform the content of an ASS management plan, which it is anticipated will also be required. Further details provided as a part of a detailed design for the proposed development would also inform any further recommendations.

Based upon the results presented within this report it is considered that the site may be rendered compatible with the proposed development conditional upon implementation of the above recommendations and subsequent completion of any required remediation.

13. References

Contaminated Land Management (CLM) Act 1997 No. 140 CRC CARE (2017), *Risk-based management and remediation guidance for benzo(a)pyrene*, CRC CARE Technical Report no. 39, CRC for Contamination Assessment and Remediation of the Environment, Newcastle, Australia.

EPA (2014), *NSW EPA Waste Classification Guidelines. Part 1: Classifying Waste.*

Friebel, E and Nadebaum, P (2011), *Health screening levels for petroleum hydrocarbons in soil and groundwater. Part 1: Technical development document,* CRC CARE Technical Report no. 10, CRC for Contamination Assessment and Remediation of the Environment, Adelaide, Australia.

NEPC (2013) National Environment Protection (Assessment of Site Contamination) Measure 1999 amended 2013.

NSW EPA (1995) *Sampling Design Guidelines.*

NSW EPA Web Site.

Protection of the Environment Operations Act (POEO) *1997*No. 156.

Stone, Y, Ahern C R, and Blunden B (1998). Acid Sulfate Soils Manual 1998. Acid Sulfate Soil Management Advisory Committee (ASSMAC), Wollongbar, NSW, Australia.

14. Limitations

Douglas Partners (DP) has prepared this report for this project at The Sydney Grammar School - Edgecliff in accordance with DP's proposal SYD191243.P.001.Rev1 dated 25 November 2019 and acceptance received from Brad Campbell dated 5 December 2019. The work was carried out under DP's Conditions of Engagement. This report is provided for the exclusive use of Sydney Grammar School for this project only and for the purposes as described in the report. It should not be used by or relied upon for other projects or purposes on the same or other site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of DP, does so entirely at its own risk and without recourse to DP for any loss or damage. In preparing this report DP has necessarily relied upon information provided by the client and/or their agents.

The results provided in the report are indicative of the sub-surface conditions on the site only at the specific sampling and/or testing locations, and then only to the depths investigated and at the time the work was carried out. Sub-surface conditions can change abruptly due to variable geological processes and also as a result of human influences. Such changes may occur after DP's field testing has been completed.

DP's advice is based upon the conditions encountered during this investigation. The accuracy of the advice provided by DP in this report may be affected by undetected variations in ground conditions across the site between and beyond the sampling and/or testing locations. The advice may also be limited by budget constraints imposed by others or by site accessibility.

This report must be read in conjunction with all of the attached and should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion stated in this report.

This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by DP. This is because this report has been written as advice and opinion rather than instructions for construction.

Asbestos has not been detected by observation or by laboratory analysis, either on the surface of the site, or in filling materials at the test locations sampled and analysed. Building demolition materials, such as concrete and brick, were, however, located in previous below-ground filling, and these are considered as indicative of the possible presence of hazardous building materials (HBM), including asbestos.

Although the sampling plan adopted for this preliminary investigation is considered appropriate to achieve the stated project objectives, there are necessarily parts of the site that have not been sampled and analysed. This is either due to undetected variations in ground conditions or to budget constraints (as discussed above), or to parts of the site being inaccessible and not available for inspection/sampling, or to vegetation preventing visual inspection and reasonable. It is therefore considered possible that HBM, including asbestos, may be present in unobserved or untested parts of the site, between and beyond sampling locations, and hence no warranty can be given that asbestos is not present.

The contents of this report do not constitute formal design components such as are required, by the Health and Safety Legislation and Regulations, to be included in a Safety Report specifying the hazards likely to be encountered during construction and the controls required to mitigate risk. This design process requires risk assessment to be undertaken, with such assessment being dependent upon factors relating to likelihood of occurrence and consequences of damage to property and to life. This, in turn, requires project data and analysis presently beyond the knowledge and project role respectively of DP. DP may be able, however, to assist the client in carrying out a risk assessment of potential hazards contained in the Comments section of this report, as an extension to the current scope of works, if so requested, and provided that suitable additional information is made available to DP. Any such risk assessment would, however, be necessarily restricted to the environmental components set out in this report and to their application by the project designers to project design, construction, maintenance and demolition.

Douglas Partners Pty Ltd

Appendix A

About This Report

Site Drawings

About this Report

Douglas Partners

Introduction

These notes have been provided to amplify DP's report in regard to classification methods, field procedures and the comments section. Not all are necessarily relevant to all reports.

DP's reports are based on information gained from limited subsurface excavations and sampling, supplemented by knowledge of local geology and experience. For this reason, they must be regarded as interpretive rather than factual documents, limited to some extent by the scope of information on which they rely.

Copyright

This report is the property of Douglas Partners Pty Ltd. The report may only be used for the purpose for which it was commissioned and in accordance with the Conditions of Engagement for the commission supplied at the time of proposal. Unauthorised use of this report in any form whatsoever is prohibited.

Borehole and Test Pit Logs

The borehole and test pit logs presented in this report are an engineering and/or geological interpretation of the subsurface conditions, and their reliability will depend to some extent on frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, but this is not always practicable or possible to justify on economic grounds. In any case the boreholes and test pits represent only a very small sample of the total subsurface profile.

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes or pits, the frequency of sampling, and the possibility of other than 'straight line' variations between the test locations.

Groundwater

Where groundwater levels are measured in boreholes there are several potential problems, namely:

- In low permeability soils groundwater may enter the hole very slowly or perhaps not at all during the time the hole is left open;
- A localised, perched water table may lead to an erroneous indication of the true water table;
- Water table levels will vary from time to time with seasons or recent weather changes. They may not be the same at the time of construction as are indicated in the report; and
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must first be washed out of the hole if water measurements are to be made.

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from a perched water table.

Reports

The report has been prepared by qualified personnel, is based on the information obtained from field and laboratory testing, and has been undertaken to current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal, the information and interpretation may not be relevant if the design proposal is changed. If this happens, DP will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface conditions, discussion of geotechnical and environmental aspects, and recommendations or suggestions for design and construction. However, DP cannot always anticipate or assume responsibility for:

- Unexpected variations in ground conditions. The potential for this will depend partly on borehole or pit spacing and sampling frequency;
- Changes in policy or interpretations of policy by statutory authorities; or
- The actions of contractors responding to commercial pressures.

If these occur, DP will be pleased to assist with investigations or advice to resolve the matter.

About this Report

Site Anomalies

In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, DP requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later stage, well after the event.

Information for Contractual Purposes

Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. DP would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

Site Inspection

The company will always be pleased to provide engineering inspection services for geotechnical and environmental aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.

LOCALITY MAP

Notes:
1. Basemap from nearmap.com (dated 21/01/2020)

Legend

- Site Boundary
- Borehole Locations

0 10 20 30 m

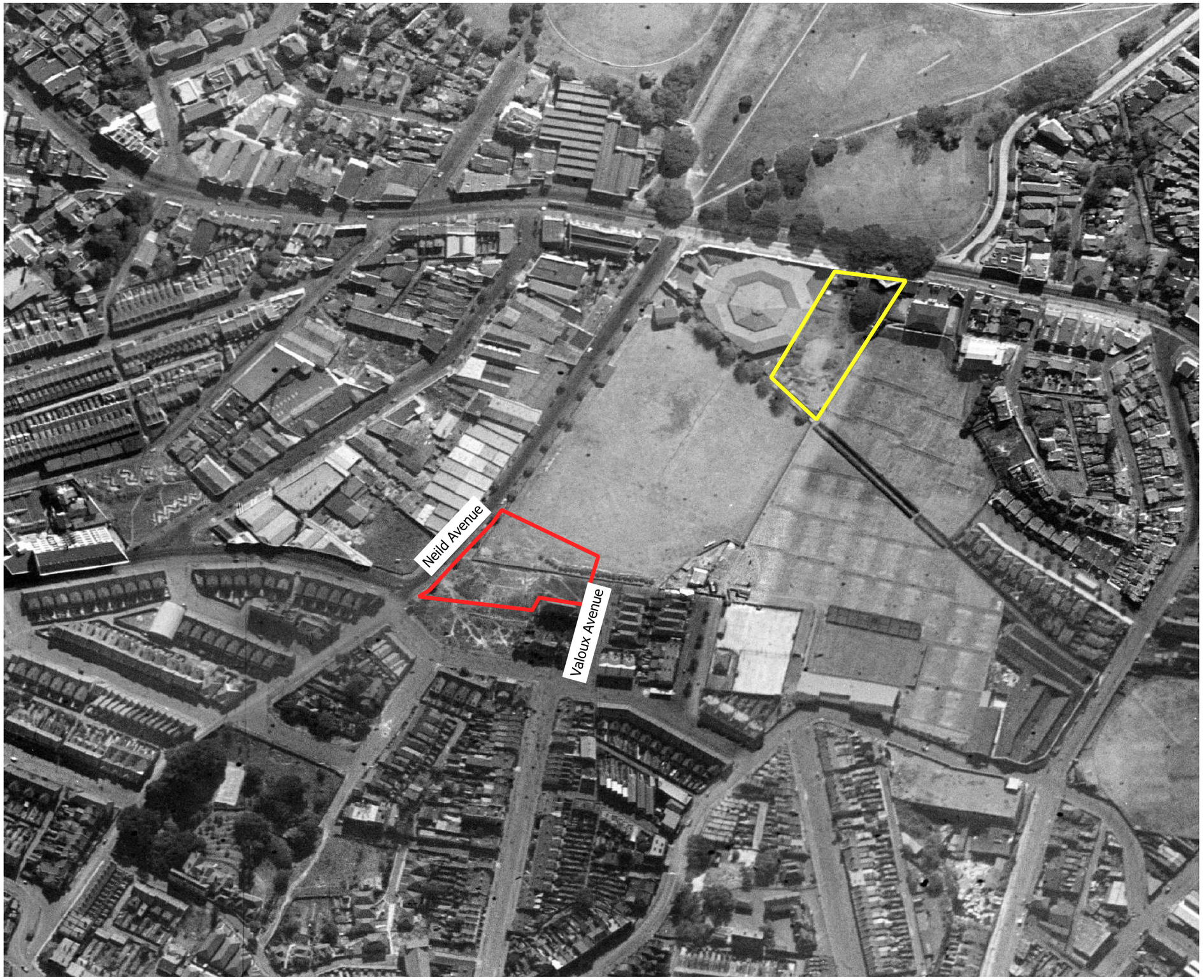
Douglas Partners
Geotechnics / Environment / Groundwater

CLIENT:	Sydney Grammar School		
OFFICE:	Sydney	DRAWN BY:	JJH
SCALE:	1:500	DATE:	18.02.2020

TITLE: **Test Location Plan**
Sydney Grammar Edgecliff Sports Area
11 Alma Street, Paddington

N

PROJECT No:	99538.01
DRAWING No:	1
REVISION:	0



LOCALITY MAP

Notes:
1. Basemap from 1943 Historical Aerial Photography

Legend

- Site Boundary
- Approximate Location of Gasometer (Lot 8 APP 12330)

0 50 100 150 m

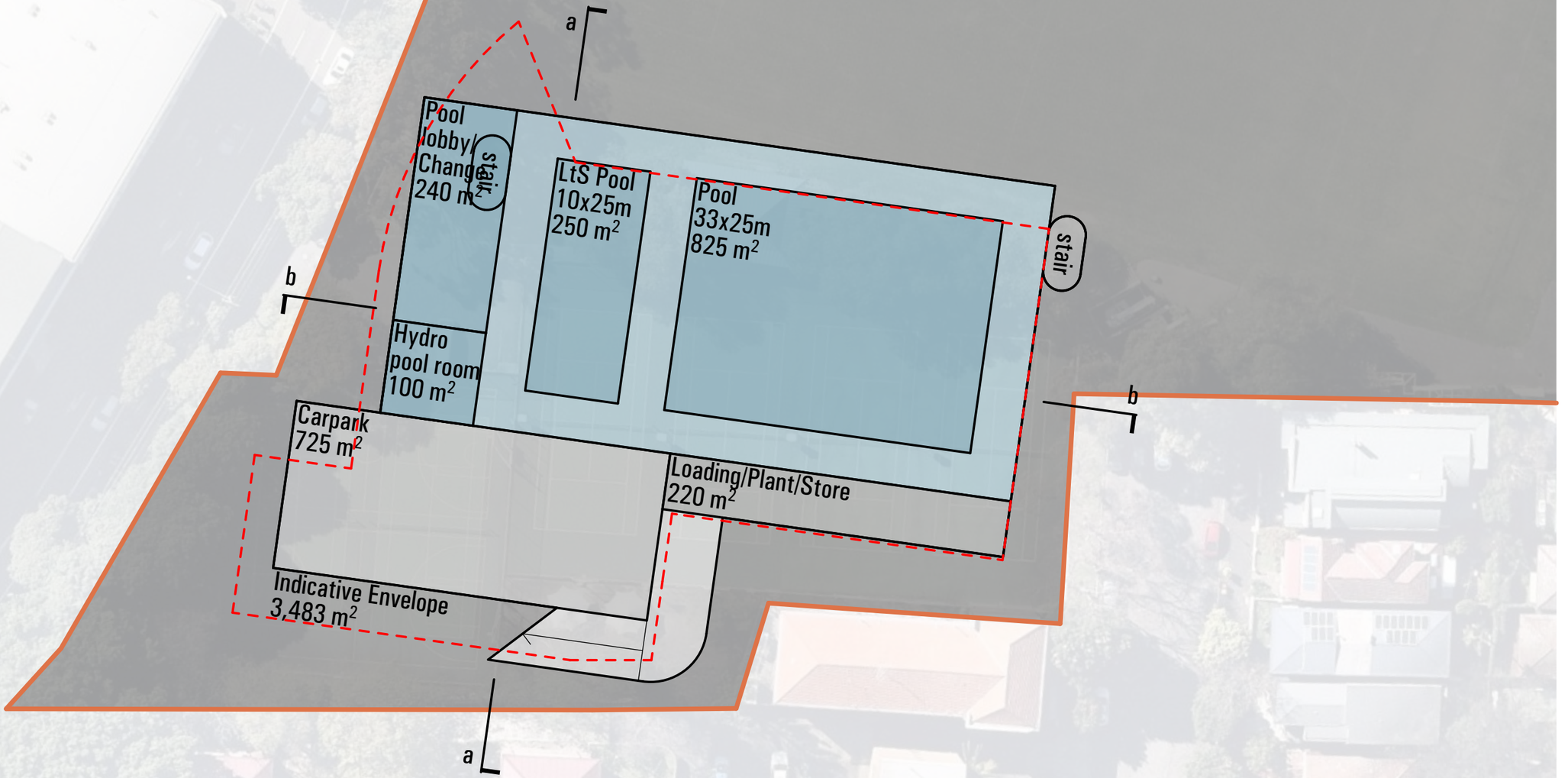
Douglas Partners
Geotechnics / Environment / Groundwater

CLIENT:	Sydney Grammar School		
OFFICE:	Sydney	DRAWN BY:	JJH
SCALE:	1:2000	DATE:	27.02.2020

TITLE: **Historical Gasometer Locality**
Sydney Grammar Edgecliff Sports Area
11 Alma Street, Paddington

N

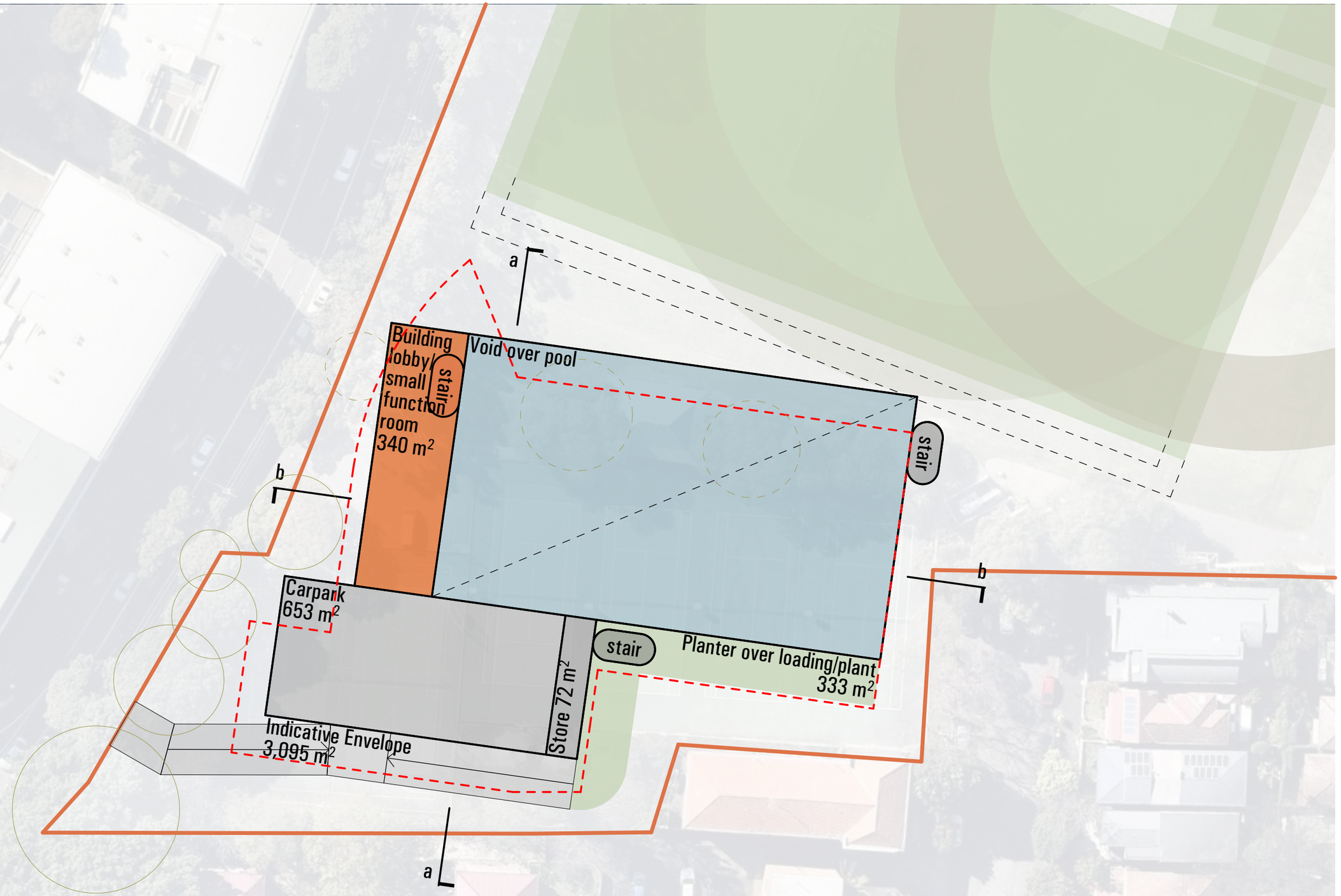
PROJECT No:	99538.01
DRAWING No:	2
REVISION:	0



Option 00b Level 1 rl:2.65 [below grade]

AJ+C Allen Jack+Cottier

1/11/2019 1:500@A3



Option 00b Ground/Level 2 rl:6.20

AJ+C Allen Jack+Cottier

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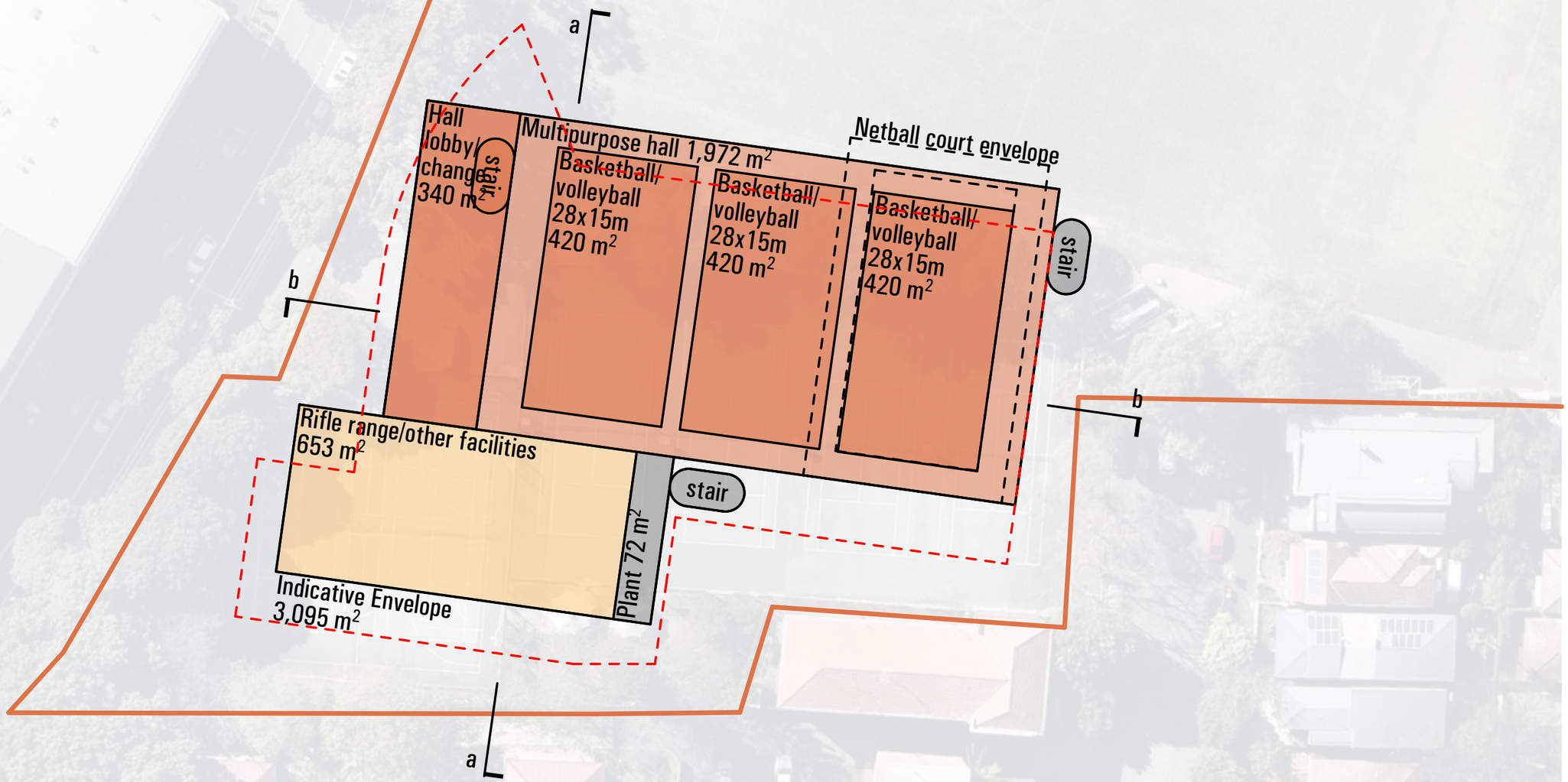

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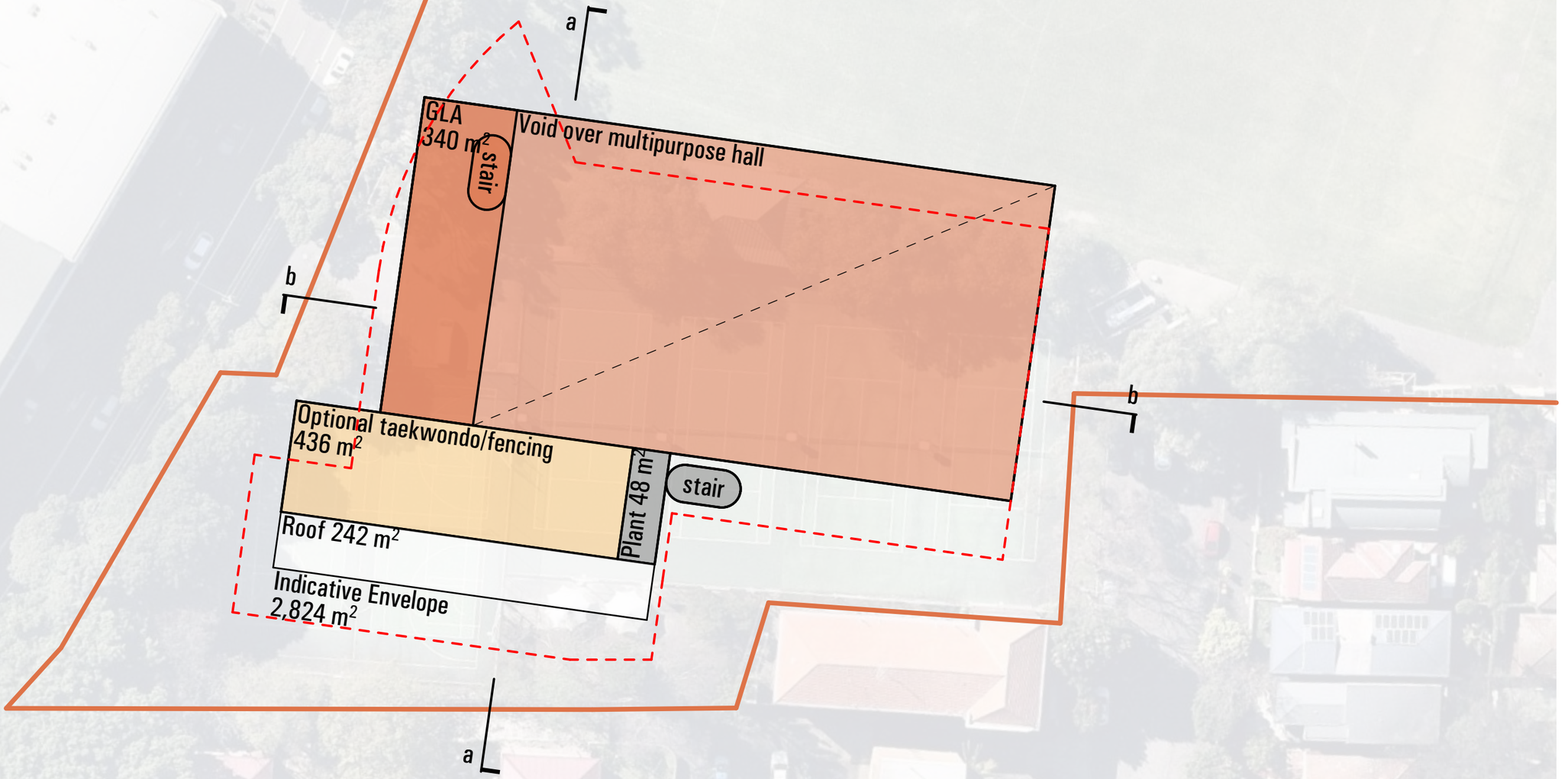
AJ+C Allen Jack+Cottier 1/11/2019 1:500@A3



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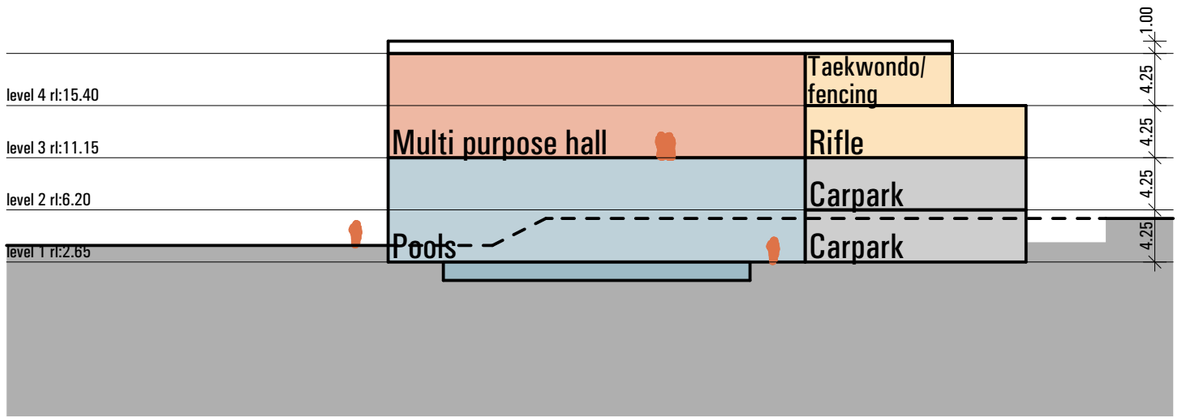
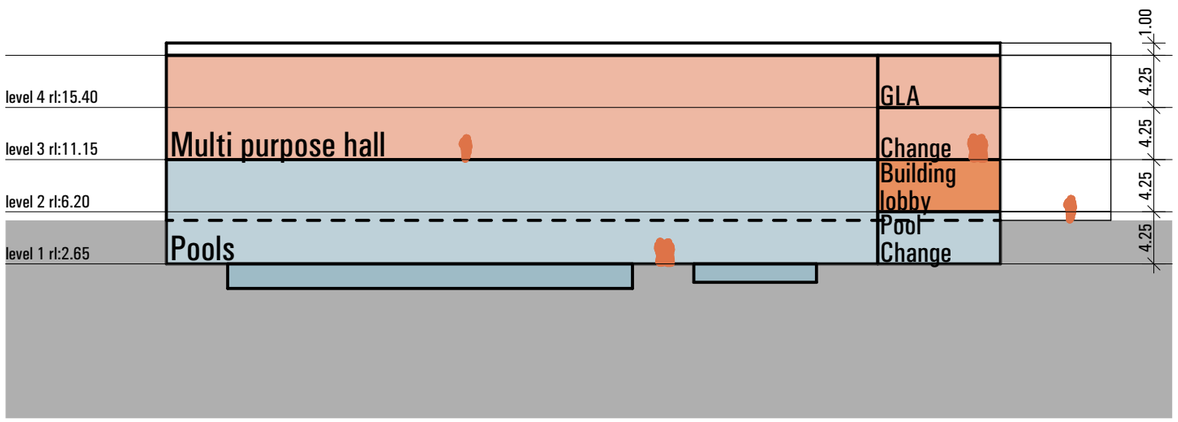


section a



section b

Option 00b Sections

AJ+C Allen Jack+Cottier

1/11/2019 1:500@A3

Appendix B

Site Photographs

Photo 1: courts from Vialoux Ave towards Neild Ave

Photo 2: footpath next to courts on Vialoux Ave

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs**	PROJECT:	99538.01
	Preliminary Site Investigation	PLATE No:	1
	11 Alma Street, Paddington	REV:	1
	CLIENT Sydney Grammar School	DATE	19/12/2019

Photo 3: high rise residential dwelling next to courts

Photo 4: 8 Vialoux Ave - 12 unit brick structure and terracotta roof tiles

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs**	PROJECT:	99538.01
	Preliminary Site Investigation	PLATE No:	2
	11 Alma Street, Paddington	REV:	1
	CLIENT Sydney Grammar School	DATE	19/12/2019

Photo 5: side of 8 Vialoux Ave

Photo 6: crack in concrete near driveway to ‘Morley Place’ on Vialoux Ave

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs**	PROJECT:	99538.01
	Preliminary Site Investigation	PLATE No:	3
	11 Alma Street, Paddington	REV:	1
	CLIENT Sydney Grammar School	DATE	19/12/2019

Photo 7: corner building ‘Morey Place’ brick with aluminium frame high rise residential development

Photo 8: footpath next to courts on Vialoux Ave

Photo 9: Front planter on ‘Morley Place’ on Vialoux Ave

Photo 10: Front entrance to ‘Morley Place’ on Vialoux Ave

Photo 11: low density residential dwellings opposite site on Vialoux Ave

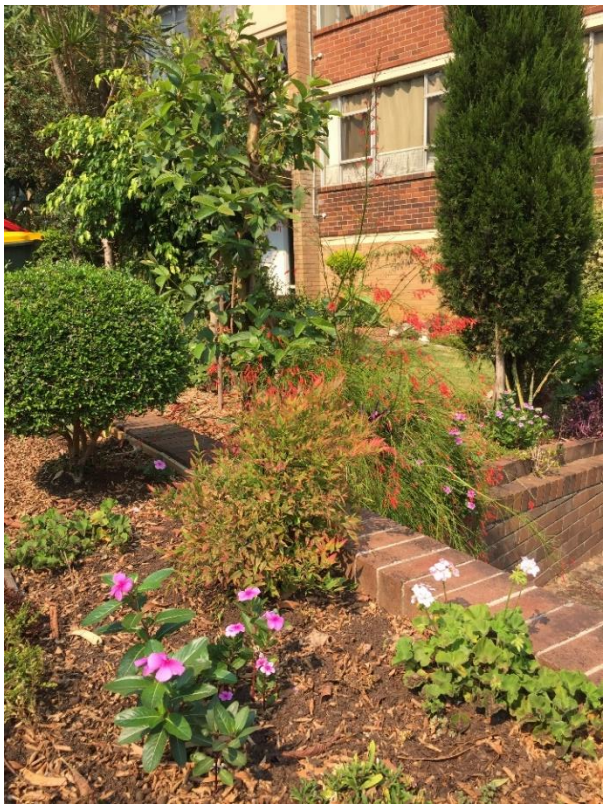


Photo 12: garden outside corner block on Vialoux Ave

Photo 13: steep gradient up from Vialoux Ave to Lawson Street

Photo 14: drive on ‘Morley Place’

Photo 15: Fire hydrants on Lawson Street

Photo 16: park and driveway to ‘Morley Place’

Photo 17: Old established tree on corner of Vialoux Ave and Lawson Street

Photo 18: Stirling Place high rise residential 29-31 Lawson St

Photo 19: Stirling showing sub ground level first floor

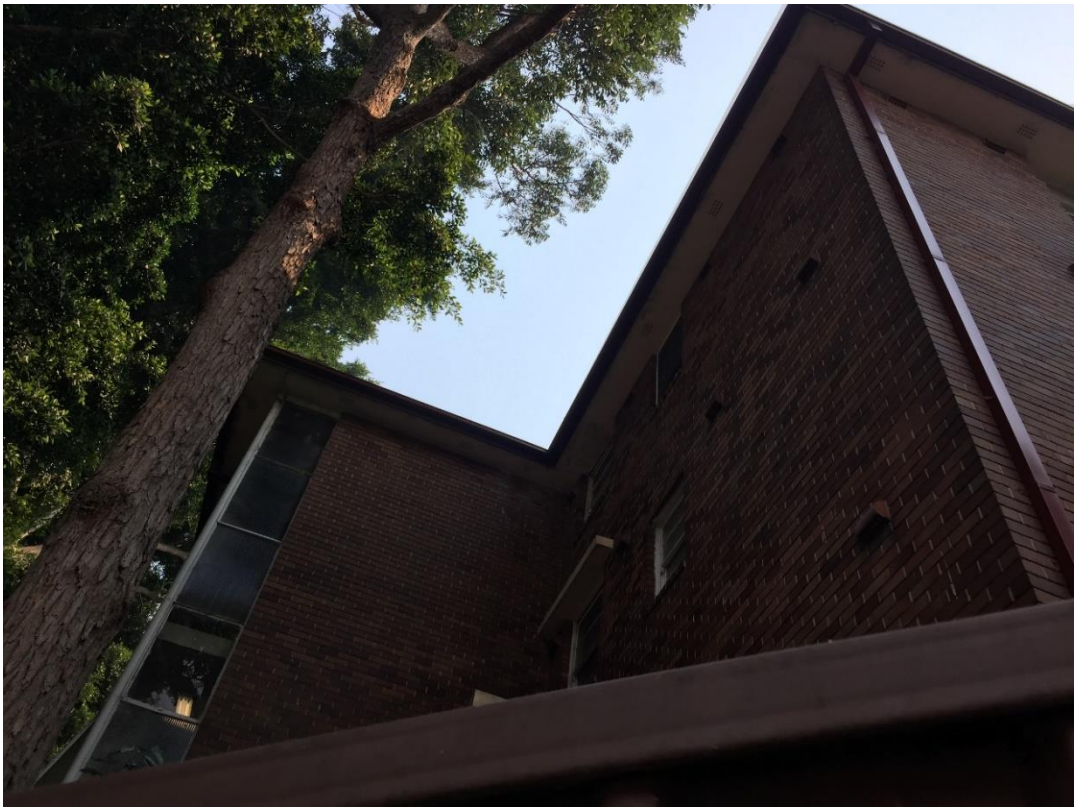


Photo 20: Stirling - aluminium gutters - possibly ACM under awning

Photo 21: Front entrance Stirling Place Apartments on Lawson Street

Photo 22: access to garden clothes line Morley Place

Photo 23: Entrance to Morley Place Apartments

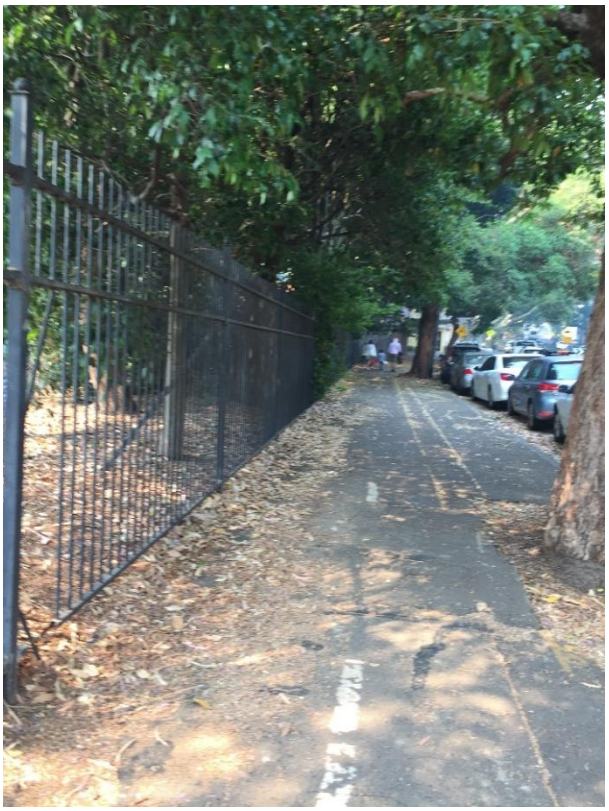


Photo 24: Neild Ave - carpark to site

Photo 25: Neild Ave

Photo 26: side of Morley Place apartments

Photo 27: front of Neild Ave

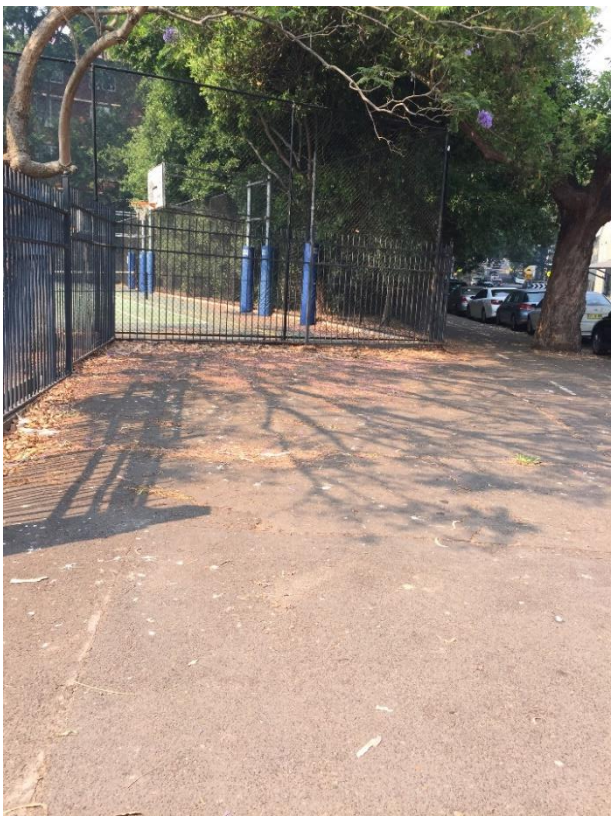


Photo 28: Neild Ave - carpark

Photo 29: Neild Ave carpark bins

Photo 30: Neild Ave carpark

Photo 31: garden area in corner adjacent to carpark

Photo 32: drillers in Neild Ave carpark

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs**	PROJECT:	99538.01
	Preliminary Site Investigation	PLATE No:	16
	11 Alma Street, Paddington	REV:	1
	CLIENT Sydney Grammar School	DATE	19/12/2019

Photo 33: rear of courts 1

Photo 34: rear of courts

Photo 35: tennis courts - resurfacing underway

Photo 36: resurfacing underway

Photo 37: grandstand

Photo 38: grandstand

Photo 39: roof of grandstand - appears to be wooden with steel cladding

Photo 40: BBQ next to grand stand

Photo 41: slope to course from oval

Photo 42: cricket screens in storage (soil bins)

Photo 43: sand from elite sand and soil

Photo 44: patchy grass next to Neild Ave carpark

Photo 45: View of courts from the oval

Photo 46: view of field facing New South Head Rd

Photo 47: view of field facing New South Head Rd

Photo 48: view of field facing White City from Neild Ave

Photo 49: view of oval facing New South Head Rd

Photo 50: chemicals for resurfacing of courts

Photo 51: chemicals for resurfacing of courts

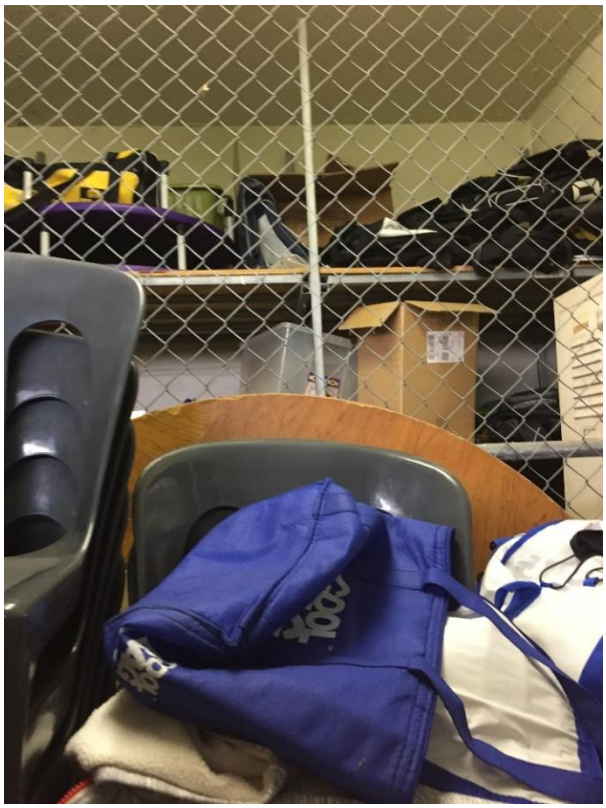


Photo 52: storage room under grandstand

Photo 53: storage room

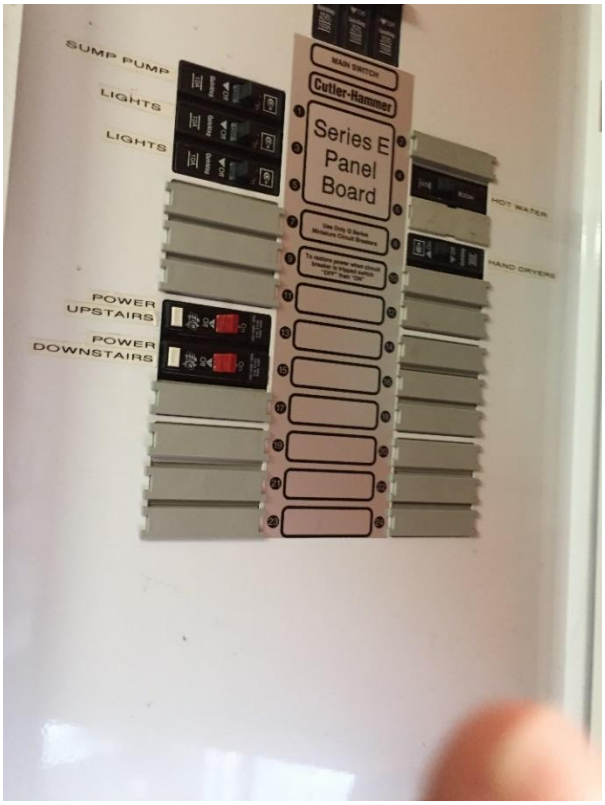


Photo 54: storage room

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs**	PROJECT:	99538.01
	Preliminary Site Investigation	PLATE No:	27
	11 Alma Street, Paddington	REV:	1
	CLIENT: Sydney Grammar School	DATE	19/12/2019

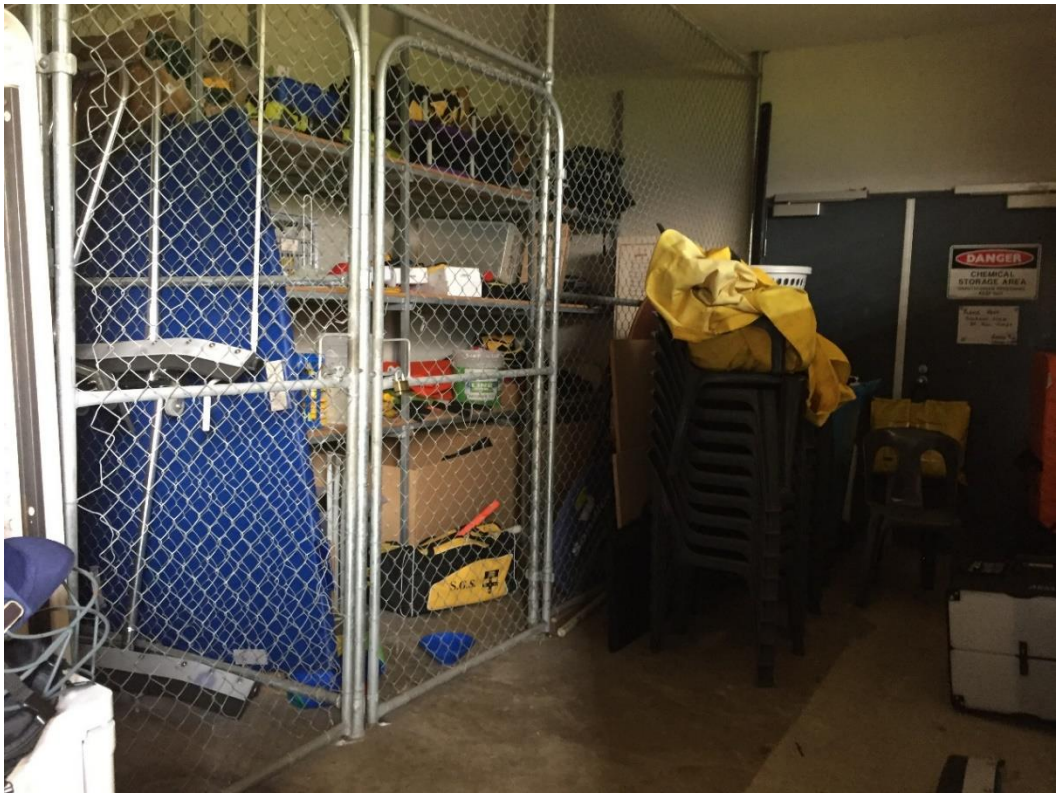


Photo 55: storage room

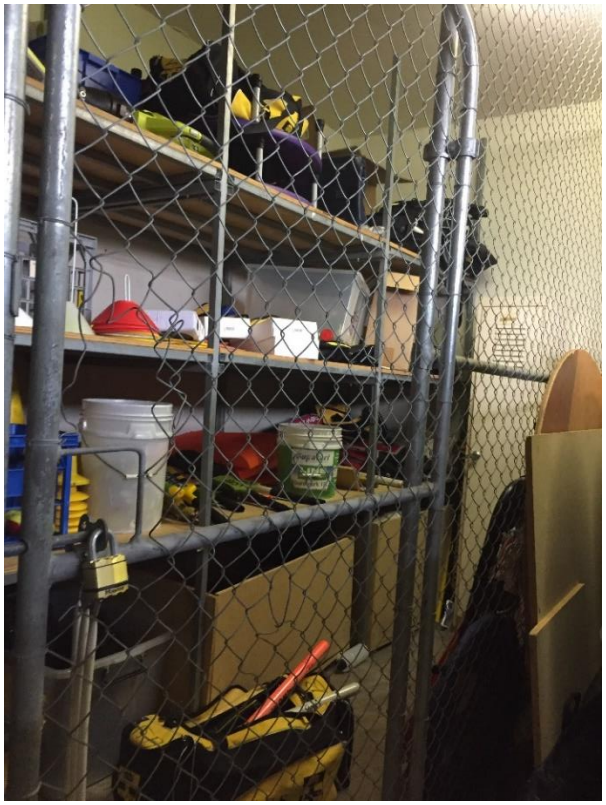


Photo 56: storage room

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs**	PROJECT:	99538.01
	Preliminary Site Investigation	PLATE No:	28
	11 Alma Street, Paddington	REV:	1
	CLIENT Sydney Grammar School	DATE	19/12/2019

Photo 57: chemical store

Photo 58: chemical store

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs**	PROJECT:	99538.01
	Preliminary Site Investigation	PLATE No:	29
	11 Alma Street, Paddington	REV:	1
	CLIENT Sydney Grammar School	DATE	19/12/2019

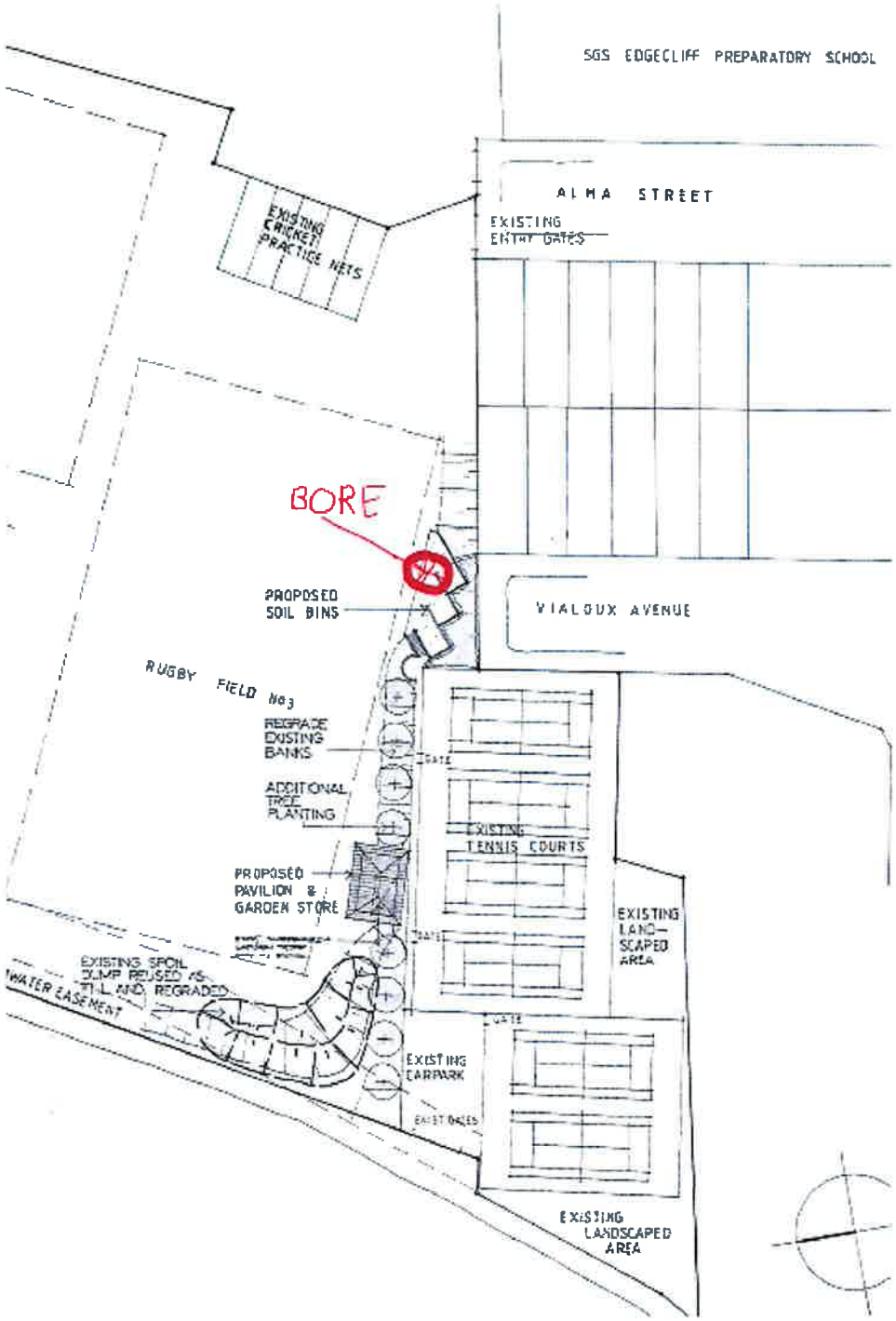
Photo 59: chemical store

Photo 60: chemical store

Appendix C

Site History Documentation

WHITE CITY TENNIS COMPLEX/CARPARK



Wargall Bore.
Drilled to 12 m
Water at 7m.
Pump rate 0.5 Lt/Sec.

Used for irrigation + pumped to underground tanks in Carpark.

ENVIRO-SCREEN

Property Details

Lot 1 DP633259, Lot 219 DP275011 & Part Lot 2 DP547260

Nield Avenue, Paddington NSW

Search Date: 08 January 2019

Understanding your Report

Your Report has been produced by Land Insight and Resources (LI Resources).

Your Report is based on information available from public databases and sources at the date of reporting. The information gathered relates to land that is within a 200 to 2000 m radius (buffer zone) from the boundaries of the Property. A smaller or larger radius may be applied for certain records (as listed under records and as shown in report maps).

While every effort is made to ensure the details in your Report are correct, LI Resources cannot guarantee the accuracy or completeness of the information or data provided.

The report provided by LI Resources includes data listed on page 3 (table of contents). All sources of data and definitions are provided on the report maps and as listed in the Product Guide (Attached). For a full list of references, metadata, publications or additional information not provided in this report, please contact LI Resources at info@liresources.com.au.

The report does not include title searches; dangerous good searches or; property certificates (unless requested); or information derived from a physical inspection, such as hazardous building materials, areas of infilling or dumping/spilling of potentially contaminated materials. It is important to note that these documents and an inspection can contain information relevant to contamination that may not be identified by this Report.

This Report, and your use of it, is regulated by LI Resources Terms and Conditions (See LIR Product Guide).

Land Insight and Resources

ABN 70 167 080 837

phone: + 61 2 9979 1720

e-mail: info@liresources.com.au

https://liresources.com.au/

INDEX

Section 1 - Property Setting 4

1.1 SITE LOCATION MAP AND SENSITIVE RECEPTORS Map 1 (500m Buffer) 4
1.2 PLANNING CONTROLS Map 2 (onsite) 4
Environmental Planning Instruments 4

1.3 SOIL LANDSCAPE Map 3a (onsite) 4
1.4 ACID SULFATE SOIL Map 3a (onsite) 5
1.5 ATLAS OF AUSTRALIAN ACID SULFATE SOIL AND SALINITY Map 3b (onsite) 5
1.6 GEOLOGY AND TOPOGRAPHY Map 4 (onsite) 6
Geology 6
Topography 6

1.7 HYDROGEOLOGY AND GROUNDWATER BORES Map 5a (500m - 2000m Buffer) 7
1.8 HYDROGEOLOGY AND OTHER BOREHOLES Map 5b (2000m Buffer) 11
Groundwater Dependent Ecosystems 11

Section 2 Environmental Records Summary – Contamination and Potentially Contaminating Activities 12

2.1 PFAS SITE INVESTIGATIONS Map 5b (2000m Buffer) 12
2.2 CONTAMINATED LAND RECORD OF NOTICES ISSUED UNDER THE CLM ACT 1997 Map 6 (1000m Buffer) 12
2.3 SITES NOTIFIED AS CONTAMINATED TO THE NSW EPA Map 6 (1000m Buffer) 12
2.4 OTHER CONTAMINATION ISSUES Map 6 (1000m Buffer) 13
Defence Sites (current and former) 13
James Hardie Asbestos Waste Contamination Legacy 13
Former Uranium Processing Site at Hunters Hill 14
Former Gasworks Sites 14
Pasminco Smelter Lead Abatement Area 14

2.5 POTENTIALLY CONTAMINATING ACTIVITIES Map 7a (500m Buffer) 14
Aviation Fuel Depots/Terminals 14
Aviation Rescue Fire Fighting Facilities (ARFF) 14
Cattle Dip Sites 14
Derelict Mines and Quarries 14
Dry Cleaners 15
Landfills (Legacy) 15
Liquid Fuel Depots/Terminals 15
Power Stations 15
Service Stations 15
Substation / Switching Stations 15
Telephone Exchanges 15
Waste Management Facilities 16
Wastewater Treatment Facilities 16
Unexploded Ordnance (UXO) Sites - Department of Defence (DoD) 16

2.6 OTHER CURRENT POTENTIALLY CONTAMINATING ACTIVITIES Map 7b (200m Buffer) 16
Current Commercial and Trade Data 16
Underground Storage Tank (UST) 16

2.7 NPI INDUSTRIAL FACILITIES Map 8 (500m Buffer) 17

2.8 LICENSING UNDER THE POEO ACT 1997 Map 8 (500m Buffer) 17
Licences 17
Delicensed Premises still Regulated by EPA, Licences Surrendered, Clean Up and Penalty Notices 17

2.9 PUBLIC REGISTER OF PROPERTIES AFFECTED BY LOOSE-FILL ASBESTOS INSULATION Map 8 (onsite) 17

HISTORICAL COMMERCIAL & TRADE DIRECTORY DATA 18
1932 HISTORICAL COMMERCIAL & TRADE DIRECTORY DATA (200m Buffer) 18
1940 HISTORICAL COMMERCIAL & TRADE DIRECTORY DATA (200m Buffer) 18
1950 HISTORICAL COMMERCIAL & TRADE DIRECTORY DATA (200m Buffer) 20
1965 HISTORICAL COMMERCIAL & TRADE DIRECTORY DATA (200m Buffer) 23
1970 HISTORICAL COMMERCIAL & TRADE DIRECTORY DATA (200m Buffer) 25
1971 HISTORICAL COMMERCIAL & TRADE DIRECTORY DATA (200m Buffer) 29
1974 HISTORICAL COMMERCIAL & TRADE DIRECTORY DATA (200m Buffer) 29
1980 HISTORICAL COMMERCIAL & TRADE DIRECTORY DATA (200m Buffer) 31
1981 HISTORICAL COMMERCIAL & TRADE DIRECTORY DATA (200m Buffer) 33
1990 HISTORICAL COMMERCIAL & TRADE DIRECTORY DATA (200m Buffer) 33
1991 HISTORICAL COMMERCIAL & TRADE DIRECTORY DATA (200m Buffer) 35

Section 3 - Other Environmental Constraints **37**

3.1 FEDERAL, STATE AND LOCAL HERITAGE Map 9 (200m Buffer) *37*
Local Environment Plan (LEP) Heritage 37
National Heritage List (NHL) 37
Register of the National Estate (RNE) 37
Non-Aboriginal heritage item (Local) 37
Non-Aboriginal heritage item (SHR)* 37
Commonwealth Heritage List (CHL) 37
World Heritage Area (WHA) 38

3.2 NATURAL HAZARDS & COASTAL MANAGEMENT Map 10 (500m Buffer) *38*

Bush Fire Prone Land (BPL) *38*
Fire History (Wildfires and Prescribed Burns) *38*
Flood Hazard Area *38*

3.3 STATE ENVIRONMENTAL PLANNING POLICY (COASTAL MANAGEMENT) Map 10 (500m Buffer) *38*

ATTACHMENTS
Attachment A - Report Maps
Attachment B - Historical Imagery
LIR Product Guide and Terms and Conditions

Section 1 - Property Setting

1.1 SITE LOCATION MAP AND SENSITIVE RECEPTORS

Map 1 (500m Buffer)

Sensitive receptor	Category	Distance (m)*	Direction
Basketball Courts	Sports Court	0	onsite
Tennis Courts	Sports Court	0	onsite
Weigall Sportsground	Sports Field	86	north-east
Sydney Grammar School Edgecliff Preparatory School	Primary School	104	south-east
Dillon Street Reserve	Park	137	south-west
Nsw Lawn Tennis Association Tennis Courts	Sports Court	172	north-east
White City Tennis Courts	Sports Court	191	south-east
White City Tennis Club	Community Facility	193	east

*Distance from the sensitive receptor point feature to the site boundary centroid.

1.2 PLANNING CONTROLS

Map 2 (onsite)

Zoning	RE2 R3	Private Recreation Medium Density Residential

Environmental Planning Instruments

Type	Local Environmental Plan	Classification
Not identified	-	-

1.3 SOIL LANDSCAPE

Map 3a (onsite)

Soil Landscape	DTxx	DISTURBED TERRAIN	**Soil Group**	DISTURBED TERRAIN
Description	**Landscape-** level plain to hummocky terrain, extensively disturbed by human activity, including complete disturbance, removal or burial of soil. Local relief <10 m, slopes <30%. Landfill includes soil, rock, building and waste materials. Original vegetation completely cleared, replaced with turf or grassland. **Soil-** turfed fill areas commonly capped with up to 40 cm of sandy loam or up to 60 cm of compacted clay over fill or waste materials. **Limitations-** dependent on nature of fill material. Mass movement hazard, unconsolidated low wet strength materials, impermeable soil, poor drainage, localised very low fertility and toxic materials.			
Soil Landscape	ERgy	GYMEA	**Soil Group**	EROSIONAL
Description	**Landscape-** undulating to rolling rises and low hills on Hawkesbury Sandstone. Local relief 20-80 m, slopes 10-25%. Rock outcrop <25%. Broad convex crests, moderately inclined sideslopes with wide benches, localised rock outcrop on low broken scarps. Extensively cleared open-forest (dry sclerophyll forest) and eucalypt woodland. **Soils-** shallow to moderately deep (30-100 cm) Yellow Earths (Gn2.24) and Earthy Sands (Uc5.11, Uc5.23) on crests and inside of benches; shallow (<20 cm) Siliceous Sands (Uc1.21) on leading edges of benches; localised Gleyed Podzolic Soils (Dg4.21) and Yellow Podzolic Soils (Dy4.11, Dy5.11, Dy5.41) on shale lenses; shallow to moderately deep (<100 cm) Siliceous Sands (Uc1.21) and Leached Sands (Uc2.21) along drainage lines. **Limitations-** localised steep slopes, high soil erosion hazard, rock outcrop, shallow highly permeable soil, very low soil fertility.			

1.4 ACID SULFATE SOIL

Map 3a (onsite)

	On the Property?	Within Record Search Buffer?
Acid Sulfate Soil Risk Maps (ASS) *(Table 1.5.1)*	Class 3 / Class 5	Class 2 / Class 3 / Class 5

1.5 ATLAS OF AUSTRALIAN ACID SULFATE SOIL AND SALINITY

Map 3b (onsite)

ASRIS Atlas of Australian Sulfate Soils *(Table 1.5.2)*	Bx(p-)	Disturbed ASS	**Probability of Occurrence**	Low Probability of occurrence
	Bn(p4)	ASS in inland lakes, waterways, wetlands and riparian zones		Low Probability of occurrence
Hydrologic Soil Group *(Table 1.5.3)*	A - high			
Salinity Hazard	Not identified			

Table 1.5.1. Classification scheme in the ASS Planning Maps

Class of Land as shown on ASS Planning Maps	
1	Any works
2	Works below natural ground surface Works by which the watertable is likely to be lowered
3	Works beyond 1m below natural ground surface Works by which the watertable is likely to be lowered beyond 1m below natural ground surface
4	Works beyond 2m below natural ground surface Works by which the watertable is likely to be lowered beyond 2m below natural ground surface
5	Works within 500m of adjacent Class 1, 2, 3, or 4 land which are likely to lower the watertable below 1m AHD on adjacent Class 1, 2, 3 or 4 land.

For each class of land, the maps identify the type of works likely to present an environmental risk if undertaken in the particular class of land. If these types of works are proposed, further investigation is required to determine if ASS are actually present and whether they are present in such concentrations as to pose a risk to the environment.

Table 1.5.2. Australian Atlas of Acid Sulfate Soils[1] (ASS) map (CSIRO/NatCASS)

Code	Distinguishing soil/sediment properties, vegetation, landforms, or other characteristics
Probability of Occurrence of ASS[1]	
A	**High Probability of occurrence -** (>70% chance of occurrence in mapping unit)
B	**Low Probability of occurrence** - (6-70% chance of occurrence in mapping unit)
C	**Extremely low probability of occurrence** - (1-5% chance of occurrence in mapping unit)
D	**No probability of occurrence** - (<1% chance of occurrence in mapping unit)
x	**Disturbed ASS[1] terrain -** (ASS[1] material present below urban development).
u	**Unclassified** - (Insufficient information to classify map unit)
Zones	
a	Potential acid sulfate soil material and/or Monosulfidic Black Ooze (MBO).
b, c	Potential acid sulfate soil generally within upper 1 m.
c, d, e	ASS[1] generally within upper 1 m.
f	ASS[1] generally below 1 m from the surface
g	ASS[1], generally below 3 m from the surface.
h	ASS[1] generally within 1 m of the surface.

Code	Distinguishing soil/sediment properties, vegetation, landforms, or other characteristics
Probability of Occurrence of ASS[1]	
i, j	ASS[1] generally below 1 m of the surface.
k	ASS[1] material and/or Monosulfidic Black Ooze (MBO).
l, m, n, o, p, q	ASS[1] generally within upper 1 m in wet / riparian areas.
Subscripts to codes	
(a)	Actual acid sulfate soil (AASS) = sulfuric material.
(p)	Potential acid sulfate soil (PASS) = sulfidic material.
(q)	Monosulfidic Black Ooze (MBO) is organic ooze enriched by iron monosulfides.
Confidence levels	
(1)	All necessary analytical and morphological data are available
(2)	Analytical data are incomplete but are sufficient to classify the soil with a reasonable degree of confidence
(3)	No necessary analytical data are available, but confidence is fair, based on a knowledge of similar soils in similar environments
(4)	No necessary analytical data are available, and classifier has little knowledge or experience with ASS, hence classification is provisional

[1]Acid Sulfate Soils (ASS) are all those soils in which sulfuric acid may be produced, is being produced, or has been produced in amounts that have a lasting effect on main soil characteristics (Pons 1973). Acid sulfate soil (ASS) may include PASS or AASS + PASS. Potential acid sulfate soil (PASS) = sulfidic material. Actual acid sulfate soil (AASS) = sulfuric material.

Table 1.5.3. Hydrologic Soil Group

Code	Soil Group Characteristics
A	Soils having high infiltration rates, even when thoroughly wetted and consisting chiefly of deep, well to excessively-drained sands or gravels. These soils have a high rate of water transmission.
B	Soils having moderate infiltration rates when thoroughly wetted and consisting chiefly of moderately deep to deep, moderately fine to moderately coarse textures. These soils have a moderate rate of water transmission.
C	Soils having slow infiltration rates when thoroughly wetted and consisting chiefly of soils with a layer that impedes downward movement of water, or soils with moderately fine to fine texture. These soils have a slow rate of water transmission.
D	Soils having very slow infiltration rates when thoroughly wetted and consisting chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a claypan or clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a very slow rate of water transmission.

1.6 GEOLOGY AND TOPOGRAPHY

Map 4 (onsite)

Geology

Map Sheet	Symbol	Formation	Group	Era	Period	Description
1:100 000 Geological Map	Rh	Hawkesbury Sandstone	-	Mesozoic	Triassic	Sandstone quartz with some shale

Topography

Topography	4-6mAHD

1.7 HYDROGEOLOGY AND GROUNDWATER BORES

Map 5a (500m - 2000m Buffer)

	On the Property?	Within Record Search Buffer?
Aquifer Type	Porous, extensive highly productive aquifers	Porous, extensive highly productive aquifers
Drinking Water Catchments	Not identified	Not identified
Protected Riparian Corridor	Not identified	Not identified
UPSS Environmentally sensitive zone	Southern NSW area UPSS	Southern NSW area UPSS
Wetlands	Not identified	Port Jackson
Groundwater Bores	Yes, see 1.7.1 and 1.7.2	Yes, see 1.7.1 and 1.7.2

Table 1.7.1. Groundwater Bore Details

Groundwater Bore ID	Authorised Purpose	Completion Date	Drilled Depth (m)	Final Depth (m)	SWL[1] (m)	Salinity[1]	Yield[1] (L/s)	Distance (m)	Direction
GW106911	Recreation	11-Nov-04	42.6	42.6	10.5	360.00 mg/L	1.3	0.00	onsite
GW103063	Monitoring	21-Aug-00	5	0	-	-	-	42.76	north-west
GW103065	Monitoring	23-Sep-99	6	5.2	-	-	-	43.17	north-west
GW103066	Monitoring	23-Sep-99	6	4.7	-	-	-	43.17	north-west
GW103058	Monitoring	23-Sep-99	6.2	6.2	-	-	-	43.20	north-west
GW103059	Monitoring	23-Sep-99	6	5.5	-	-	-	43.23	north-west
GW103064	Monitoring	21-Aug-00	5	0	-	-	-	43.34	north-west
GW103067	Monitoring	24-Sep-99	5	5	-	-	-	43.36	north-west
GW103068	Monitoring	24-Sep-99	5	5	-	-	-	43.40	north-west
GW103062	Monitoring	21-Aug-00	6.2	0	-	-	-	43.77	north-west
GW100467	Irrigation	15-Mar-96	15.5	14.5	2.35	-	5	340.64	north-east
GW109375	Irrigation	29-Sep-08	0	13.5	-	-	-	375.31	south-east
GW026439	Irrigation	01-Jul-66	7.9	7.9	1	Potable	3.28	399.97	north-east
GW107418	Household	21-Oct-05	11.5	11.5	3.5	Good	1	461.63	north-west

Groundwater Bore ID	Authorised Purpose	Completion Date	Drilled Depth (m)	Final Depth (m)	SWL[1] (m)	Salinity[1]	Yield[1] (L/s)	Distance (m)	Direction
GW105473	Monitoring	12-Jun-03	2.4	2.4	-	-	-	528.48	south-west
GW107358	Household	26-Aug-05	180.5	180.5	41.8	166.00 mg/L	0.13	774.57	south-east
GW114496	Monitoring	20-Dec-10	5.5	5.5	-	-	-	816.24	north-west
GW114495	Monitoring	20-Dec-10	6.15	6.15	-	-	-	822.12	north-west
GW114497	Monitoring	20-Dec-10	10	5.5	-	-	-	832.05	north-west
GW106265	Household	15-Jul-04	198.5	198.5	59.2	210.00 mg/L	0.1	975.51	south-east
GW112177	Monitoring	01-Mar-99	30	30	-	-	-	985.47	north-west
GW112176	Monitoring	01-Mar-99	30	30	-	-	-	985.82	north-west
GW112175	Monitoring	01-Mar-99	30	30	-	-	-	987.34	north-west

Table 1.7.2. Groundwater Bore Driller Lithology Details

Groundwater Bore ID	From Depth (m)	To Depth (m)	Lithology	Description	Distance (m)	Direction
GW106911	0	0.4	SAND	Black sand ,clay	0.00	onsite
GW106911	0.4	0.8	SHLE	Dark grey shale	0.00	onsite
GW106911	0.8	2.4	SAND	Dark grey sand	0.00	onsite
GW106911	2.4	3.3	SDCY	Dark grey sandy clay	0.00	onsite
GW106911	3.3	6.6	SDSN	Grey sandstone	0.00	onsite
GW106911	6.6	8.1	SDSN	Brown sandstone	0.00	onsite
GW106911	8.1	9.4	SDSN	Grey sandstone	0.00	onsite
GW106911	9.4	9.6	SHLE	Grey shale	0.00	onsite
GW106911	9.6	16.5	SDSN	Grey sandstone	0.00	onsite
GW106911	16.5	17.1	SDSN	Grey sandstone fractured	0.00	onsite
GW106911	17.1	27.4	SDSN	Lt grey sandstone	0.00	onsite
GW106911	27.4	27.5	CLAY	Grey clay	0.00	onsite
GW106911	27.5	33.5	SDSN	Lt grey sandstone	0.00	onsite
GW106911	33.5	34.1	SHLE	Dark grey shale	0.00	onsite
GW106911	34.1	42.6	SDSN	Grey sandstone	0.00	onsite
GW103063	0	3.5	FILL	Fill	42.76	north-west
GW103063	3.5	5	SAND	Sand	42.76	north-west
GW103065	0	4	FILL	Fill	43.17	north-west
GW103065	4	6	SAND	Sand	43.17	north-west
GW103066	0	4.7	FILL	Fill	43.17	north-west
GW103066	4.7	6	SDSN	Sandstone	43.17	north-west
GW103058	0	5	FILL	Fill	43.20	north-west
GW103058	5	6.2	SAND	Sand	43.20	north-west
GW103059	0	5	FILL	Fill	43.23	north-west

GW103059	5	6	SAND	Sand	43.23	north-west
GW103064	0	3.6	FILL	Fill	43.34	north-west
GW103064	3.6	5	SAND	Sand	43.34	north-west
GW103067	0	4	FILL	Fill	43.36	north-west
GW103067	4	4.8	SAND	Sand	43.36	north-west
GW103067	4.8	5	SDSN	Sandstone	43.36	north-west
GW103068	0	3.9	FILL	Fill	43.40	north-west
GW103068	3.9	5	SDSN	Sandstone	43.40	north-west
GW103062	0	4.1	FILL	Fill	43.77	north-west
GW103062	4.1	6.2	SAND	Sand	43.77	north-west
GW100467	0	0.2	<Null>	Brown sandy soil	340.64	north-east
GW100467	0.2	1.3	<Null>	Fill sand, bricks, bottles	340.64	north-east
GW100467	1.3	6.5	<Null>	Brown sand	340.64	north-east
GW100467	6.5	12	<Null>	Yellow sand	340.64	north-east
GW100467	12	13	<Null>	Brown sand	340.64	north-east
GW100467	13	14.5	<Null>	Very silty brown sand	340.64	north-east
GW100467	14.5	15.5	<Null>	Grey clay	340.64	north-east
GW109375	0	1	<Null>	Brown soil	375.31	south-east
GW109375	1	3.5	<Null>	Brown sand	375.31	south-east
GW109375	3.5	3.8	<Null>	Black peaty sand	375.31	south-east
GW109375	3.8	5	<Null>	Sandy brown clay	375.31	south-east
GW109375	5	6	<Null>	Black peaty sand	375.31	south-east
GW109375	6	13.5	<Null>	Brown silty sand	375.31	south-east
GW026439	0	1.79	CLAY	Clay rubble	399.97	north-east
GW026439	1.79	2.13	CLAY	Clay	399.97	north-east
GW026439	2.13	5.18	SAND	Sand white fossils:carbonised wood water supply	399.97	north-east
GW026439	5.18	7.92	SAND	Sand white clean water supply	399.97	north-east
GW107418	0	0.1	FILL	Bitumen	461.63	north-west
GW107418	0.1	1.5	FILL	Fill, round bands	461.63	north-west
GW107418	1.5	7	SAND	Sand, grey silty	461.63	north-west
GW107418	7	11.5	SAND	Sand, yellow silty	461.63	north-west
GW105473	0	2	SAND	Sand,grey/brown,medium grained	528.48	south-west
GW105473	2	2.4	SDSN	Sandstone,bedrock	528.48	south-west
GW107358	0	0.2	FILL	Fill	774.57	south-east
GW107358	0.2	0.5	SAND	Sand, light brown	774.57	south-east
GW107358	0.5	1.4	CLAY	Clay, dark brown sandy	774.57	south-east
GW107358	1.4	2	SAND	Sand, golden	774.57	south-east
GW107358	2	3.5	SDSN	Sandstone, brown weathered	774.57	south-east
GW107358	3.5	7.6	SDSN	Sandstone, light grey	774.57	south-east
GW107358	7.6	8.1	SHLE	Shale, grey	774.57	south-east
GW107358	8.1	22.5	SDSN	Sandstone, light grey	774.57	south-east
GW107358	22.5	22.7	SHLE	Shale, black, mineralised, water bearing	774.57	south-east
GW107358	22.7	24.1	SDSN	Sandstone, light grey	774.57	south-east
GW107358	24.1	24.3	SHLE	Shale, black, mineralised, water bearing	774.57	south-east
GW107358	24.3	60.6	SDSN	Sandstone, light grey	774.57	south-east
GW107358	60.6	61	SLSN	Siltstone, dark grey/grey sandstone & quartz, water bearing	774.57	south-east
GW107358	61	78.4	SDSN	Sandstone, light grey	774.57	south-east

GW107358	78.4	129.8	SDSN	Sandstone, ligh grey & some quartz bands	774.57	south-east
GW107358	129.8	180.5	SDSN	Sandstone, light grey with siltstone bands	774.57	south-east
GW114496	0	0.2	Fill	CONCRETE	816.24	north-west
GW114496	0.2	0.3	Fill	ROADBASE	816.24	north-west
GW114496	0.3	5.5	Sandstone	SANDSTONE HIGH STRENGTH	816.24	north-west
GW114495	0	0.2	Fill	CONCRETE	822.12	north-west
GW114495	0.2	0.3	Fill	ROADBASE	822.12	north-west
GW114495	0.3	2.9	Sandstone	SANDSTONE,GREY MED TO HIGH STRENGTH	822.12	north-west
GW114495	2.9	3.1	Sandstone	SANDSTONE GREY LOW STRENGTH	822.12	north-west
GW114495	3.1	6.15	Sandstone	SANDSTONE GREY MED TO HIGH STRENGTH	822.12	north-west
GW114497	0	0.2	Fill	CONCRETE	832.05	north-west
GW114497	0.2	0.3	Fill	ROADBASE	832.05	north-west
GW114497	0.3	6.9	Sandstone	SANDSTONE,BROWN MED. TO HIGH STRENGTH	832.05	north-west
GW114497	6.9	7.2	Siltstone	SILTSTONE	832.05	north-west
GW114497	7.2	10	Sandstone	SANDSTONE GREY	832.05	north-west
GW106265	0	1.3	FILL	Fill	975.51	south-east
GW106265	1.3	3	SAND	Sand, yellow	975.51	south-east
GW106265	3	28.8	SDSN	Sandstone, light grey, brown	975.51	south-east
GW106265	28.8	29.2	SLSN	Siltstone, dark grey	975.51	south-east
GW106265	29.2	47	SDSN	Sandstone, light grey	975.51	south-east
GW106265	47	47.3	SHLE	Shale, grey	975.51	south-east
GW106265	47.3	47.6	SLSN	Siltstone, light brown	975.51	south-east
GW106265	47.6	80.7	SDSN	Sandstone, light grey	975.51	south-east
GW106265	80.7	80.9	SHLE	Shale, grey	975.51	south-east
GW106265	80.9	81.5	SDSN	Sandstone, grey	975.51	south-east
GW106265	81.5	84	SLSN	Siltstone, grey	975.51	south-east
GW106265	84	90.3	SDSN	Sandstone, grey	975.51	south-east
GW106265	90.3	90.9	SHLE	Shale, grey	975.51	south-east
GW106265	90.9	101.5	SDSN	Sandstone, light gey	975.51	south-east
GW106265	101.5	102	SLSN	Siltstone	975.51	south-east
GW106265	102	131	SDSN	Sandstone, light grey & quartz	975.51	south-east
GW106265	131	133	SDSN	Sandstone, grey and quartz	975.51	south-east
GW106265	133	152.3	SDSN	Sandstone, light grey and quartz	975.51	south-east
GW106265	152.3	152.7	SLSN	Siltstone, black	975.51	south-east
GW106265	152.7	180.5	SDSN	Sandstone, light grey som quartz	975.51	south-east
GW106265	180.5	180.7	SHLE	Shale, dark grey	975.51	south-east
GW106265	180.7	191.5	SDSN	Sandstone, grey	975.51	south-east
GW106265	191.5	193.5	SLSN	Siltstone, dark grey	975.51	south-east
GW106265	193.5	194.5	SDSN	Sandstone, light grey and quartz	975.51	south-east
GW106265	194.5	196.5	SLSN	Siltstone, dark grey	975.51	south-east
GW106265	196.5	198.5	SDSN	Sandstone, dark grey	975.51	south-east

1.8 HYDROGEOLOGY AND OTHER BOREHOLES

Map 5b (2000m Buffer)

	On the Property?	Within Record Search Buffer?
Groundwater Vulnerability	Not identified	Not identified
Groundwater Exclusion Zones[1,2]	Not identified	Botany Groundwater Management Zone 2
Hydrogeologic Unit	Late Permian/Triassic sediments (porous media - consolidated)	Late Permian/Triassic sediments (porous media - consolidated)
Other known borehole investigations (500m buffer)	Not identified	Not identified

1 - Botany Groundwater Management Zones (BGMZ): Zone 1 – the use of groundwater remains banned; Zones 2 to 4 – domestic groundwater use is banned, especially for drinking water, watering gardens, washing windows and cars, bathing, or to fill swimming pools.
2 – Williamtown Groundwater Management Zones (WGMZ): Primary Management Zone – this area has significantly higher levels of PFAS detected and therefore, the strongest advice applies. Secondary Management Zone – this area has some detected levels of PFAS; Broader Management Zone – the topography and hydrology of the area means PFAS detections could occur now and into the future

Groundwater Dependent Ecosystems

Name	On the Property?	Within Record Search Buffer?
Ecosystems that rely on the Surface expression of Groundwater	Not identified	Not identified
Ecosystems that rely on Subsurface presence of Groundwater	Not identified	High / Moderate / Low potential for GW interaction

Table 1.8.1. Other known borehole investigations (Coal Seam Gas (CSG), Petroleum Wells and Other Boreholes) (500m buffer)

Borehole ID	Purpose	Project	Client/License	Date Drilled	Depth (m)	Distance (m)	Direction
Not identified	-	-	-	-	-	-	-

Section 2 Environmental Records Summary – Contamination and Potentially Contaminating Activities

2.1 PFAS SITE INVESTIGATIONS

Map 5b (2000m Buffer)

Site	Description	Distance (m)	Direction
Not identified	-	-	-

2.2 CONTAMINATED LAND RECORD OF NOTICES ISSUED UNDER THE CLM ACT 1997

Map 6 (1000m Buffer)

Site Name[2]	Site ID	Address[1]	Notices	Distance (m)	Direction
7-Eleven Service Station	3308	59 Oxford STREET PADDINGTON NSW	2 current	801	South-west

1. Some addresses do not contain specific street numbers. Records identified as being in the surrounding area have been added for information.
2. Former NSW EPA sites. These sites have been removed from the Record of Notices and/or the Sites Notified lists and are kept here for information purposes only.

2.3 SITES NOTIFIED AS CONTAMINATED TO THE NSW EPA

Map 6 (1000m Buffer)

Site Name[2]	Address[1]	Activity that caused Contamination	EPA Site Management Class[3]	Distance (m)	Direction
18-28 Neild Avenue, Darlinghurst	18-28 Neild AVENUE DARLINGHURST	Landfill	Regulation under CLM Act not required	22	west
BP-branded (former Coles Express) Service Station	73-85A New South Head ROAD EDGECLIFF	Service Station	Regulation under CLM Act not required	278	North-east
Former Workshop	52 Hopewell STREET PADDINGTON	Other Industry	Regulation under CLM Act not required	604	South-west
d'Albora Marinas	1b New Beach ROAD RUSHCUTTERS BAY	Other Industry	Contamination currently regulated under POEO Act	750	North-east
7-Eleven Service Station	59 Oxford STREET PADDINGTON	Service Station	Contamination currently regulated under CLM Act	801	South-west

1. Some addresses do not contain specific street numbers. Records identified as being in the surrounding area have been added for information.
2. Former NSW EPA sites. These sites have been removed from the Record of Notices and/or the Sites Notified lists and are kept here for information purposes only.
3. The EPA maintains a record of sites that have been notified to the EPA by owners or occupiers as contaminated land. The sites notified to the EPA and recorded on the register are at various stages of the assessment and/or remediation process. Table 5 outlines the possible management status that can be attributed to a registered contaminated site.

Table 2.3.1. EPA Site Management Class Explanation

EPA Site Management Class	
Under Assessment	The contamination is being assessed by the EPA to determine whether regulation is required. The EPA may require further information to complete the assessment. For example, the completion of management actions regulated under the planning process or Protection of the Environment Operations Act 1997. Alternatively, the EPA may require information via a notice issued under s77 of the Contaminated Land Management Act 1997 or issue a Preliminary Investigation Order.
Regulation under the CLM Act not required	The EPA has completed an assessment of the contamination and decided that regulation under the Contaminated Land Management Act 1997 is not required.
Regulation being finalised	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation under the Contaminated Land Management Act 1997. A regulatory approach is being finalised.

EPA Site Management Class	
Contamination currently regulated under the CLM Act	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation under the Contaminated Land Management Act 1997 (CLM Act). Management of the contamination is regulated by the EPA under the CLM Act. Regulatory notices are available on the EPA's Contaminated Land Public Record.
Contamination currently regulated under the POEO Act	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation. Management of the contamination is regulated under the Protection of the Environment Operations Act 1997 (POEO Act). The EPA's regulatory actions under the POEO Act are available on the POEO public register.
Contamination being managed via the planning process (EP&A Act)	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation. The contamination of this site is managed by the consent authority under the Environmental Planning and Assessment Act 1979 (EP&A Act) planning approval process, with EPA involvement as necessary to ensure significant contamination is adequately addressed. The consent authority is typically a local council or the Department of Planning and Environment.
Contamination formerly regulated under the CLM Act	The EPA has determined that the contamination is no longer significant enough to warrant regulation under the Contaminated Land Management Act 1997 (CLM Act). The contamination was addressed under the CLM Act.
Contamination formerly regulated under the POEO Act	The EPA has determined that the contamination is no longer significant enough to warrant regulation. The contamination was addressed by the appropriate consent authority via the planning process under the Environmental Planning and Assessment Act 1979 (EP&A Act).
Contamination was addressed via the planning process (EP&A Act)	The EPA has determined that the contamination is no longer significant enough to warrant regulation. The contamination was addressed by the appropriate consent authority via the planning process under the Environmental Planning and Assessment Act 1979 (EP&A Act).
Ongoing maintenance required to manage residual contamination (CLM Act)	The EPA has determined that ongoing maintenance, under the Contaminated Land Management Act 1997 (CLM Act), is required to manage the residual contamination. Regulatory notices under the CLM Act are available on the EPA's Contaminated Land Public Record.

2.4 OTHER CONTAMINATION ISSUES

Map 6 (1000m Buffer)

Defence Sites (current and former)

Site name	Defence code	Description	RCIP*	Distance (m)	Direction
Paddington; "Victoria barracks" land headquarters	AAER2-53	Elevated concentrations of lead related compounds exist in the area of the former rifle range.	0402	697	South-west
Elizabeth Bay; TRESCO (Official Residence)	RANER2-4	Tresco has National significance for its role as the principal residence of the Captain-in-Charge of HMA Naval Establishments in Sydney from 1903 and as the residence of the Flag Officer-in-Charge of the Royal Australian Navy since 1913.	-	819	North-east

*RCIP (Regional Contamination Investigation Program)

James Hardie Asbestos Waste Contamination Legacy

Site	Location	Type	Distance (m)	Direction
Not identified	-	-	-	-

Former Uranium Processing Site at Hunters Hill

Site	Location	Distance (m)	Direction
Not identified	-	-	-

Former Gasworks Sites

Site	Location	Distance (m)	Direction
Former Gaswork	White City, Paddington	77	east

Pasminco Smelter Lead Abatement Area

Site	Location	Distance (m)	Direction
Not identified	-	-	-

2.5 POTENTIALLY CONTAMINATING ACTIVITIES

Map 7a (500m Buffer)

Aviation Fuel Depots/Terminals

Site name	Description	Status	Distance (m)	Direction
Not identified	-	-	-	-

Aviation Rescue Fire Fighting Facilities (ARFF)

Site name	Class	Status	Distance (m)	Direction
Not identified	-	-	-	-

Cattle Dip Sites

Site name	Location	Status	Distance (m)	Direction	Direction
Not identified	-	-	-	-	-

Derelict Mines and Quarries

Deposit Name	Method	Description	Status	Distance (m)	Direction
Darlinghurst "Barcom Glen"	quarry	Operated in 1850's	ceased	228	West
Paddington	quarry	Visible air photographs	ceased	253	South-west
Yellow Block / Paddington:Cascade St	quarry	Closed 1969; Pit 74 in GS1974/432	ceased	367	South-east

Yellow Block / Paddington:Trumper Park	quarry	Worked underground	ceased	450	South-east

Dry Cleaners

Site name	Location	Status	Distance (m)	Direction
Not identified	-	-	-	-

Landfills (Legacy)

Site name	Description	Distance (m)	Direction
18-28 Neild AVENUE	EPA site notified - Landfill	22	west

Note: This is not an exhaustive list of all legacy landfills.

Liquid Fuel Depots/Terminals

Site name	Owner	Location	Status	Distance (m)	Direction
Not identified	-	-	-	-	-

Power Stations

Site name	Owner	Primary Fuel Type	Status	Distance (m)	Direction

Service Stations

Site name	Owner	Location	Status	Distance (m)	Direction
BP Edgecliff	BP	67 New South Head Road Edgecliff	Operational	-	-

Substation / Switching Stations

Site name	Owner	Location	Status	Distance (m)	Direction
Not identified	-	-	-	-	-

Telephone Exchanges

Site name	Location	Status	Distance (m)	Direction
Not identified	-	-	-	-

Waste Management Facilities

Site name	Owner	Class	Status	Distance (m)	Direction
Not identified	-	-	-	-	-

Wastewater Treatment Facilities

Site name	Operator	Class	Status	Distance (m)	Direction
Not identified	-	-	-	-	-

Unexploded Ordnance (UXO) Sites - Department of Defence (DoD)

Site name	Site ID	Category	Description	Distance (m)	Direction
Not identified	-		-	-	-

2.6 OTHER CURRENT POTENTIALLY CONTAMINATING ACTIVITIES

Map 7b (200m Buffer)

Current Commercial and Trade Data

Site name	Category	Location	Status*	Distance (m)	Direction
Eagle Auto's Action Suzuki Thomson Daihatsu Thoms	Automotive Dealer	34-36 McLachlan Ave Darlinghurst NSW 2010	Current	70	north-west
Sandersons Rushcutters Bay	Automotive Dealer	82 McLachlan Ave, Rushcutters Bay NSW 2011	Current	161	north-west
Sandersons Eastern S	Repair Facility	49 McLachlan Ave, Rushcutters Bay NSW 2011	Current	162	north-west
Prestige Paint And Panel	Repair Facility	65A McLachlan Ave, Rushcutters Bay NSW 2011	Current	171	north-west
N.V. Motors	Car Repair Shop	67-71 McLachlan Ave, Darlinghurst NSW 2010	Current	171	north-west
Motor Mechanical Repairs Pty Ltd	Car Repair Shop	67-71 McLachlan Ave, Rushcutters Bay NSW 2011	Current	171	north-west
BMW Sydney	Automotive Dealer	65 Craigend St, Rushcutters Bay NSW 2010	Current	173	north-west

*Data is current as when this report was created. However due to the turnover of business locations, some addresses may be former.

Underground Storage Tank (UST)

Premises	Tank type	Status*	Distance (m)	Direction
Not identified	-	-	-	-

Note: This is not an exhaustive list of all UST's.

2.7 NPI INDUSTRIAL FACILITIES

Map 8 (500m Buffer)

Facility name	Address	Primary ANZSIC Class	Latest report	Distance (m)	Direction
Not identified	-	-	-	-	-

2.8 LICENSING UNDER THE POEO ACT 1997

Map 8 (500m Buffer)

Licences

Licence holder	EPL Number	Location Name	Premise Address[1]	Fee Based Activity	Distance (m)	Direction
Not identified		-	-	-	-	-

1. Some sites do not contain specific addresses. Records identified as being in the surrounding area have been added for information.

Delicensed Premises still Regulated by EPA, Licences Surrendered, Clean Up and Penalty Notices

Licence holder	Nº	Name	Premise Address[1]	Fee Based Activity	Status	Distance (m)	Direction
QUALITY FUELS PTY LTD	15479 91	BP Edgecliff	73 New South Head Road EDGECLIFF	Operate/Cause fuel burning equipment/industrial plant not fitted with control equipment-Corporation	Penalty Notice	261	north-east
ST LUKE'S HOSPITAL COMPLEX	6521	ST LUKE'S HOSPITAL COMPLEX	18 ROSLYN ST, POTTS POINT	Hazcardous, Industrial or Group A Waste Generation or Storage	Delicens ed	482	North-west

1. Some sites do not contain specific addresses. Records identified as being in the surrounding area have been added for information.

2.9 PUBLIC REGISTER OF PROPERTIES AFFECTED BY LOOSE-FILL ASBESTOS INSULATION

Map 8 (onsite)

Address	Match Found
Not identified	-

HISTORICAL COMMERCIAL & TRADE DIRECTORY DATA

1932 HISTORICAL COMMERCIAL & TRADE DIRECTORY DATA (200m Buffer)

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Motor Car and Coach Painters	Blows Bros.	16 McLachlan Avenue Sydney NSW Australia	address	127.5	north
Motor Cars, Lorries & Garages	C & S Garage	16 McLachlan Avenue Sydney NSW Australia	address	127.5	north
Motor Engineers and Repairers	Letson Motor Repair Co	6 McLachlan Avenue Sydney NSW Australia	address	147.5	north
Motor Engineers and Repairers	Reardon J	12 McLachlan Avenue Sydney NSW Australia	address	147.5	north
Motor Car and Coach Painters	Kennedy & Dwyer	300 Glenmore Road Paddington NSW Australia	address	151.6	south-east
Motor Tyres	Taylor Russell Ltd	25 McLachlan Avenue Sydney NSW Australia	address	164.9	north-west
Motor Cars, Lorries & Garages	Halstead Thomas	8-10 Barcom Avenue Sydney NSW Australia	address	196	north-west
Motor Cars, Lorries & Garages	Messenger W	22 Barcom Avenue Sydney NSW Australia	address	196	north-west
Motor Service Stations	Saville CT	6 Barcom Avenue Sydney NSW Australia	address	196	north-west
Motor Cars, Lorries & Garages	Arcadia	Goodhope Street Paddington NSW Australia	street		
Motor Engineers and Repairers	Clements HJ	McLachlan Ave Sydney NSW Australia	street		
Motor Cars, Lorries & Garages	Comfort Coach Co. Ltd	McLachlan Avenue Sydney NSW Australia	street		
Motor Cars, Lorries & Garages	Drive Yourself Lesseys Ltd	Nield Avenue (near Stadium) Rushcutters Bay NSW Australia	street		
Motor Cars, Lorries & Garages	Lessey's Drive Yourself Service Limited	Nield Avenue Rushcutters Bay NSW Australia	street		
Motor Service Stations	Masse Battery Sales Co	Neild Avenue Paddington NSW Australia	street		
Motor Car Body Builders	Scrivener & Simes	McLachlan Avenue Sydney NSW Australia	street		
Motor Spare Parts	Service Motor Parts Co	Neild Avenue Paddington NSW Australia	street		

1940 HISTORICAL COMMERCIAL & TRADE DIRECTORY DATA (200m Buffer)

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Stores - General	Clifford C V	2 Boundary Street Paddington NSW Australia	address	37.7	south-west
Grocers - Retail	Kiely T&J	124 Lawson Street Paddington NSW Australia	address	47.9	south-west
Preserves	Crane Condiment Co	8 Neild Avenue Rushcutter's Bay NSW Australia	address	61.8	north
Grocers - Retail	Cannon C	3 Neild Avenue Paddington NSW Australia	address	80.3	south-west
Taxis	Green Cab Taxi Ranks	5 Boundary Street Rushcutter's Bay NSW Australia	address	84.6	north-west
Motor Garages	Tyson W	9 Boundary Street Rushcutter's Bay NSW Australia	address	89.7	north-west

Motor Engineers & Repairers	TYSON WILLIAM	9-11 Boundary Street Rushcutter's Bay NSW Australia	address	89.7	north-west
Oils - Essential	Bedwell A J	64 McLachlan Avenue Rushcutter's Bay NSW Australia	address	91.5	north-west
Eucalyptus Oil Distillers	BEDWELL ARTHUR J	64 McLachlan Avenue Rushcutter's Bay NSW Australia	address	91.5	north-west
Builders & Contractors	Speers Alex&SonsLtd	62 McLachlan Avenue Rushcutter's Bay NSW Australia	address	91.5	north-west
Motor Accessories - Mfrs &/or Wholesalers	Auto Cars Ltd	28 McLachlan Avenue Rushcutter's Bay NSW Australia	address	98.7	north
Paper Mfrs	Kookaburra Cigarette Paper Tubes Mfg Co	28 McLachlan Avenue Rushcutter's Bay NSW Australia	address	98.7	north
Glass Bevellers & or Cutters	Glass Products Pty Ltd	76 McLachlan Avenue Rushcutter's Bay NSW Australia	address	99.2	north-west
Glass Mfrs &/or Merchants	GLASS PRODUCTS PTY LTD	76 McLachlan Avenue Rushcutter's Bay NSW Australia	address	99.2	north-west
Motor Garages	Larke Neave&Carter Pty Ltd	76 McLachlan Avenue Rushcutter's Bay NSW Australia	address	99.2	north-west
Hosiery Mfrs	Browns Hosiery Mills	54 McLauchlin Avenue Rushcutter's Bay NSW Australia	address	103.7	north-west
Motor Body Builders & Repairers	Simes&Co	58 McLachlan Avenue Rushcutter's Bay NSW Australia	address	105	north-west
Ice Cream Mfrs	Snow Cream Pty Ltd	47 McLachlan Avenue Rushcutter's Bay NSW Australia	address	127.5	north-west
Leather Goods - Wholesale	Thompson J C	45 McLachlan Avenue Rushcutter's Bay NSW Australia	address	127.5	north-west
Plumbers & Gasfitters	Magnus H A	14 Lawson Street Paddington NSW Australia	address	131.2	south-east
Motor Body Builders & Repairers	Baker A J	22 McLachlan Avenue Rushcutter's Bay NSW Australia	address	136.5	north
Furniture - Wholesale & Mfrs	De Groot F E	24 McLachlan Avenue Rushcutter's Bay NSW Australia	address	136.5	north
Motor Cars & Trucks - Used	Morrow W	4 Nield Avenue Rushcutter's Bay NSW Australia	address	143.3	north-east
Leather Goods - Wholesale	Supreme Leather Goods Manufacturers	4 Neild Avenue Rushcutter's Bay NSW Australia	address	143.3	north-east
Motor Body Builders & Repairers	Cresswell E W	10 McLachlan Avenue Rushcutter's Bay NSW Australia	address	147.5	north
Chemical Mfrs &/or Druggists - Wholesale	Craig C E	84 McLachlan Avenue Rushcutter's Bay NSW Australia	address	152.6	north-west
Theatrical Supplies	Precision Engineering Co Pty Ltd	2 Nield Avenue Rushcutter's Bay NSW Australia	address	152.8	north-east
Dye Works	Amalgamated Dyers of Australia Pty Ltd	49 McLachlan Avenue Rushcutter's Bay NSW Australia	address	156.8	north-west
Grocers - Retail	Barden J B	302 Glenmore Road Paddington NSW Australia	address	157.7	south-east
Grocers' Sundries	Muir A	296 Glenmore Road Paddington NSW Australia	address	164	south-east
Engineers - General	Alexander Clark Pty Ltd	25 McLachlan Avenue Darlinghurst NSW Australia	address	164.9	north-west
Metal Stampers	ALEXANDER CLARK PTY LTD	25 McLachlan Avenue Darlinghurst NSW Australia	address	164.9	north-west
Machine Knives	FEARNEHOUGH W LTD	25 McLachlan Avenue Rushcutter's Bay NSW Australia	address	164.9	north-west
Motor Engineers & Repairers	Messenger Wally	67 McLachlan Avenue Rushcutter's Bay NSW Australia	address	168.5	north-west
Chemical Mfrs &/or Druggists - Wholesale	Omega Trading Co	71 McLachlan Avenue Rushcutter's Bay NSW Australia	address	171.2	north-west

Medical Electricians	Clements H I	79 McLachlan Avenue Rushcutter's Bay NSW Australia	address	180.7	north-west
Medical Supplies	Clements H I	79 McLachlan Avenue Rushcutter's Bay NSW Australia	address	180.7	north-west
Surgical Supplies	CLEMENTS H I	79 McLachlan Avenue Rushcutter's Bay NSW Australia	address	180.7	north-west
Veterinary Supplies & Instruments	Biological Institute of Australasia Pty Ltd	2 Barcom Avenue Rushcutter's Bay NSW Australia	address	196	north-west
Engineers - General	Burne A W	14 Barcom Avenue Rushcutter's Bay NSW Australia	address	196	north-west
Motor Engineers & Repairers	Burt F L	6 Barcom Avenue Darlinghurst NSW Australia	address	196	north-west
Motor Engineers & Repairers	Burton J L	14 Barcom Street Rushcutter's Bay NSW Australia	address	196	north-west
Sheet Metal Workers	Gibbons J	14 Barcom Avenue Darlinghurst NSW Australia	address	196	north-west
Motor Hire Services	Halstead T	10 Barcom Avenue Darlinghurst NSW Australia	address	196	north-west
Printing Ink	Inks&Products Ltd	12 Barcom Avenue Rushcutter's Bay NSW Australia	address	196	north-west
Slot Machines	PIONEER VENDORS	14 Barcom Avenue Darlinghurst NSW Australia	address	196	north-west
Veterinary Surgeons & Hospitals	Stewart John&Son	2 Barcom Avenue Rushcutter's Bay NSW Australia	address	196	north-west
Advertising - Display	Wilken&Jones Pty Ltd	28 Barcom Avenue Darlinghurst NSW Australia	address	196	north-west
Chemical Mfrs &/or Druggists - Wholesale	Luber Cecil A	36 Gosbell Paddington NSW Australia	address	197.8	south-west
Rubber Goods Mfrs	ADVANX	Neild AND McLachlan Avenues Rushcutter's Bay NSW Australia	street		
Motor Tyre Retreading Mould Mfrs	Advanx Tyre&Rubber Co Pty Ltd	Neild Avenue Rushcutter's Bay NSW Australia	street		
Motor Tyres	Advanx Tyre&Rubber Co Pty Ltd	Neild AND McLachlan Avenues Rushcutter's Bay NSW Australia	street		
Chemical Mfrs &/or Druggists - Wholesale	Delta Manufacturing Co	McLachlan Place Paddington NSW Australia	street		
Motor Cars & Trucks - New	McGrath John Ltd	Glenmore Road Paddington NSW Australia	street		

1950 HISTORICAL COMMERCIAL & TRADE DIRECTORY DATA

(200m Buffer)

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Motor Body Builders & Repairers	Reo Motors Ltd	46 Nield Avenue Rushcutters Bay NSW Australia	address	45.9	north-west
Carriers-Light	Kelly R	110 Lawson Sydney NSW Australia	address	49.5	south-west
Painters, Decorators & Glaziers	Richardson J	38 Lawson Street Paddington NSW Australia	address	82.9	south-east
Taxis	Green Cab Taxi Ranks	5 Boundary Rushcutters Bay NSW Australia	address	84.6	north-west
Chemical Mfrs &/or Druggists-W'sale	Craig C E	11a Boundary Rushcutters Bay NSW Australia	address	89.4	north-west
Oil - Essential	Bedwell A J Pty Ltd	64 MacLachlan Avenue Rushcutter's Bay NSW Australia	address	91.5	north-west
Eucalyptus Oil Distillers	Bedwell A J Pty Ltd	64 McLachlan Avenue Rushcutter's Bay NSW Australia	address	91.5	north-west
Button & Buckle Mfrs. &/or W'salers	Carpenter W R&Co Ltd	62 McLachlan Avenue Rushcutter's Bay NSW Australia	address	91.5	north-west

Builders & Contrators	Speers Alex&Sons Ltd	62 McLachlan Av Rushcutters Bay NSW Australia	address	91.5	north-west
Glass Mfrs. &/or Merchants	Glass Products Pty Ltd	76 Mclachlan Avenue Rushcutter's Bay NSW Australia	address	99.2	north-west
Artificial Flowers	Greenwoods Artificial Flower Mfg Co	54 McLachlan Avenue Rushcutter's Bay NSW Australia	address	103.7	north-west
Motor Body Builders & Repairers	Simes & Co	58 McLachlan Avenue Rushcutters Bay NSW Australia	address	105	north-west
Jewellery-Artificial - Mfrs &/or W'salers	Vanity Distributing Co	2 Neild Avenue Paddington NSW Australia	address	106.2	south-west
Motor Cars & Trucks-New	Larke Neave & Carter Ltd	78 McLachlan Avenue Rushcutters Bay NSW Australia	address	118.3	north-west
Motor Service Stations	Larke Neave & Carter Ltd	78-82 McLachlan Avenue Rushcutter's Bay NSW Australia	address	118.3	north-west
Motor Engineers & Repairers	Larke Neave & Carter Ltd	78-82 McLachlan Street Rushcutters Bay NSW Australia	address	118.3	north-west
Lighting Specialists	Scientific Lighting Pty. Ltd.	66 McLachlan Avenue Rushcutter's Bay NSW Australia	address	118.7	north-west
Chemical Mfrs &/or Druggists-W'sale	Autopark Pty Ltd	47 McLachlan Avenue Rushcutters Bay NSW Australia	address	127.5	north-west
Toilet Preparations	Herford Smith Pty Ltd	47a McLachlan Avenue Rushcutter's Bay NSW Australia	address	127.5	north-west
Engineers - Chemical	Philp Stuart B Pty Ltd	47 McLachlan Avenue Rushcutter's Bay NSW Australia	address	127.5	north-west
Leather Goods - Mfrs &/or wsalers	Thompson J C	45 McLachlan Avenue Rushcutter's Bay NSW Australia	address	127.5	north-west
Engineers - Motion Picture Equipment	Precision Engineering Co Pty Ltd	6 Neild Avenue Rushcutter's Bay NSW Australia	address	127.6	north-east
Plastics	Milton Bros Pty Ltd	24 McLachlan Avenue Rushcutters Bay NSW Australia	address	136.5	north
Celluloid & Cellulose Products	Milton Bros Pty Ltd	24 McLachlan Avenue Rushcutter's Bay NSW Australia	address	136.5	north
Toy Mfrs. &/ or W'salers	Milton Bros Pty Ltd	24 McLachlan Avnue Rushcutter's Bay NSW Australia	address	136.5	north
Taxis	Tadich N J	18 Gosbell Paddington NSW Australia	address	145.5	south-west
Motor Body Builders & Repairers	Cresswell & Son	10 McLachlan Avenue Rushcutters Bay NSW Australia	address	147.5	north
Motor Body Painters & Sprayers	Cresswell & Son	10 McLachlan Avenue Rushcutters Bay NSW Australia	address	147.5	north
Engineers - Electrical	Electronic Development Co Pty Ltd The	6 McLachlan Avenue Rushcutter's Bay NSW Australia	address	147.5	north
Cosmetic Mfrs & or Distributors	Herco Pty Ltd	84 McLachlan Avenue Rushcutters Bay NSW Australia	address	152.6	north-west
Engineers - General	Precision Engineering Co Pty Ltd	2-6 Nield Avenue Rushcutter's Bay NSW Australia	address	152.8	north-east
Dye Works	Amalgamated Dyers of Australia Pty Ltd	49 McLachlan Avenue Rushcutters Bay NSW Australia	address	156.8	north-west
Stores - General	Campbell I V A	296 Gienmore Road Paddington NSW Australia	address	164	south-east
Public Address System	Australian Tele-Call Service	25 McLachlan Avenue Rushcutter's Bay NSW Australia	address	164.9	north-west
Machine Knives	Fearnehough WLtd	25 McLachlan Avenue Rushcutter's Bay NSW Australia	address	164.9	north-west
Engineers - Electrical	Maxell Communications (Incorp William Blogg)	25 McLachlan Avenue Rushcutter's Bay NSW Australia	address	164.9	north-west
Public Address System	Maxwell Communications Incorp Wm Blogg	25 McLachlan Avenue Rushcutter's Bay NSW Australia	address	164.9	north-west

Plastics	Monalco Industries	25 McLachlan Avenue Rushcutters Bay NSW Australia	address	164.9	north-west
Chalk, Crayon & Pastel Mfrs.	Little Boy Blue Products	65a McLachlan Avenue Rushcutters Bay NSW Australia	address	168.5	north-west
Grocers'Sundries	Little Boy Blue Products	65a McLachlan Avenue Rushcutter's Bay NSW Australia	address	168.5	north-west
Chemical Mfrs &/or Druggists-W'sale	Omega Trading Co	71 McLachlan Avenue Rushcutters Bay NSW Australia	address	171.2	north-west
Disinfectants	Omega Trading Co	71 McLachlan Avenue Rushcutters Bay NSW Australia	address	171.2	north-west
Cosmetic Mfrs & or Distributors	Cosmetics & Chemicals Pty Ltd	73-75 McLachlan Avenue Rushcutters Bay NSW Australia	address	175.6	north-west
Toilet Supplies	Cosmetics &Chemicals Pty Ltd	73 McLachlan Avenue Rushcutter's Bay NSW Australia	address	175.6	north-west
Dairy Produce - W'Sale	Denzil Macarthur Onslow Pty Ltd	73-75 MacLachlan Avenue Rushcutter's Bay NSW Australia	address	175.6	north-west
Food Products	Denzil Macarthur Onslow Pty Ltd	73-75 Maclachlan Avenue Rushcutter's Bay NSW Australia	address	175.6	north-west
Sugar	Denzil Macarthur Onslow Pty Ltd	73-75 McLachlan Avenue Rushcutter's Bay NSW Australia	address	175.6	north-west
Ribbon & Tape Mfrs.	Cowdroy Roy G Pty Ltd	77 McLachlan Avenue Rushcutters Bay NSW Australia	address	180.7	north-west
Ribbon & Tape Mfrs.	Crown Ribbon Pty Ltd	77 McLachlan Avenue Rushcutters Bay NSW Australia	address	180.7	north-west
Motor Engineers & Repairers	Wilson E E	79 McLachlan Avenue Rushcutters Bay NSW Australia	address	180.7	north-west
Motor Garages	Wilson E E	79 McLachlan Avenue Rushcutters Bay NSW Australia	address	180.7	north-west
Furniture - Mfrs. &/or W'salers	Brem E	5a McLachlan Avenue Paddington NSW Australia	address	192.1	north-west
Motor Hire Services	Astra Hire Cars Pty Ltd	10 Barcom Avenue Darlinghurst NSW Australia	address	196	north-west
Builders & Contrators	Baker CA	14 Barcom Avenue Rushcutters Bay NSW Australia	address	196	north-west
Veterinary Supplies &/or Instruments	Biological Institute of Australasia Pty Ltd	2 Barcom Avenue Rushcutter's Bay NSW Australia	address	196	north-west
Sheet Metal Workers	Gibbons J	14 Barcom Avenue Darlinghurst NSW Australia	address	196	north-west
Printing Ink	Inks & Products Ltd	12 Barcom Avenue Rushcutters Bay NSW Australia	address	196	north-west
Veterinary Surgeons & Hospitals	Stewart John & Son	2 Barcom Avenue Rushcutter's Bay NSW Australia	address	196	north-west
Electroplating Business	Wallace H L & Co	14 Barcom Avenue Rushcutters Bay NSW Australia	address	196	north-west
Display Models & Fixtures	Wilken & Jones Pty Ltd	28 Barcom Avenue Darlinghurst NSW Australia	address	196	north-west
Hardware - W'sale	David Lynn Pty Ltd	36 Gosbell Street Paddington NSW Australia	address	197.8	south-west
Chemical Mfrs &/or Druggists-W'sale	Luber Cecil A	36 Gosbell Paddington NSW Australia	address	197.8	south-west
Hardware - W'sale	Lynn David Pty Ltd	36 Gosbell Street Paddington NSW Australia	address	197.8	south-west
Adhesives	Advanx Tyre & Rubber Co Pty Ltd	Neild AND McLachlan Avenues Rushcutters Bay NSW Australia	street		
Motor Tyre Retreading Mould Mfrs.	Advanx Tyre & Rubber Co Pty Ltd	Neild AND McLachlan Avenues Rushcutters Bay NSW Australia	street		
Motor Tyre Retreads & Repairs	Advanx Tyre & Rubber Co Pty Ltd	Neild AND McLachlan Avenues Rushcutters Bay NSW Australia	street		

Rubber Goods Mfrs.	Advanx Tyre & Rubber Co Pty Ltd	Neild AND McLachlan Avenues Rushcutters Bay NSW Australia	street		
Motor Tyre	Advanx Tyre & Rubber Co Pty Ltd	Neild AND McLachlan Avenues Rushcutter's Bay NSW Australia	street		

1965 HISTORICAL COMMERCIAL & TRADE DIRECTORY DATA (200m Buffer)

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Carriers—Heavy	Brown W B	91 Lawson Paddington NSW Australia	address	31.2	south-west
Electrical Contractors	PRECISION ELECTRICAL INDUSTRIES PTY LTD	43502 NeildAv Paddington NSW Australia	address	35.6	north
Engineers—Electrical	Precision Electrical Industries Pty Ltd	43502 NeildAv Paddington NSW Australia	address	35.6	north
Engineers—General	PRECISION ENGINEERING CO PTY LTD	43502 NeildAv Paddington NSW Australia	address	35.6	north
Butchers	Carney J W	5 NieldAv Paddington NSW Australia	address	81	south-west
Butchers	O'Sullivan Bros	5 NeildAv Rushcutters Bay NSW Australia	address	81	south-west
Taxis	Green Cab Service Pty Ltd	5 Boundary Rushcutters Bay NSW Australia	address	84.6	north-west
Motor Service Stations	Wallawa Service Station	5 Boundary Rushcutters Bay NSW Australia	address	84.6	north-west
Film Procucers &/or Laboratories	Koffel David	64 McLachlanAv Rushcutters Bay NSW Australia	address	91.5	north-west
Transformers	Rryman Equipment Pty Ltd	6 Stephen Sydney NSW Australia	address	91.9	south-west
Jewellery—Artificial—Mfrs. &/or W'salers	Vanity Distributing Co	2 NieldAv Paddington NSW Australia	address	106.2	south-west
Upholsterers	McLeod J J	65 Goodhope Paddington NSW Australia	address	107.2	south-east
Safes & Strong Room Door Mfrs	AJAX SAFE CO PTY LTD	58-60 AlmaSt Darlington NSW Australia	address	110.1	north-east
Advertising—Displays	C.G.I. DISPLAY PTY LTD	66-74 McLachlanAv Rushcutters Bay NSW Australia	address	118.7	north-west
Photo Lithographers	C.G.I. LITHO COLOUR PTY LTD	66-74 McLachlanAv Rushcutters Bay NSW Australia	address	118.7	north-west
Photo Engravers	C.G.I. PHOTO ENGRAVING PTY	66-74 McLachlanAv Rushcutters Bay NSW Australia	address	118.7	north-west
Printers—Letterpress	C.G.I. PRINTING PTY LTD	66-74 McLachlanAv Rushcutters Bay NSW Australia	address	118.7	north-west
Stereotypers & Electrotypers	C.G.I. STEREO PTY LTD	68-74 McLachlanAv Rushcutters Bay NSW Australia	address	118.7	north-west
Photographers—General	COWLEY-COOPER R & CO	68 Goodhope Paddington NSW Australia	address	119.8	south
Photographic Copies &\or Copying Equipment	COWLEY-COOPER R & CO	68 Goodhope Paddington NSW Australia	address	119.8	south
Agents—Mercantile	Cowley-Cooper R&Co	68 Goodhope Paddington NSW Australia	address	119.8	south
Printers—Small Offset	ADVANCE OFFSET PRINTING	47 McLachlanAv Rushcutters Bay NSW Australia	address	127.5	north-west
Motor Cars & Trucks—New	GILBERT JOHN A PTY LTD	16-22 McLachlanAv NSW Rushcutters Bay Australia	address	127.5	north
Motor Service Stations	GILBERT JOHN A PTY LTD	16-22 McLachlanAv NSW Rushcutters Bay Australia	address	127.5	north

Motor Replacement Parts	HOLDEN REPLACEMENT PARTS	45-59 McLachlanAv Rushcutters Bay NSW Australia	address	127.5	north-west
Clothing—Mfrs. &/or Wsalers	Horn B&A	47 McLachlanAv Rushcutters Bay NSW Australia	address	127.5	north-west
Clothing—Frock Mfrs	Salmaggi Fashions	47 McLachlanAv Rushcutters Bay NSW Australia	address	127.5	north-west
Leather Goods—Mfrs. &/or W'salers	Silverman Frank	45 McLachlanAv Rushcutters Bay NSW Australia	address	127.5	north-west
Leather Goods—Mfrs. &/or W'salers	Thompson J C	47 McLachlanAv Rushcutters Bay NSW Australia	address	127.5	north-west
Leather Goods—Mfrs. &/or W'salers	Weiss M	47 McLachlanAv Rushcutters Bay NSW Australia	address	127.5	north-west
Engineers—Motion Picture Equipment	Precision Engineering Co Pty Ltd	6 NeildAv Paddington NSW Australia	address	127.6	north-east
Jewellery—Artificial—Mfrs. &/or W'salers	Vanity Accessories Manufacturing Pty Ltd	6 NieldAv Paddington NSW Australia	address	127.6	north-east
Motor Replacement Parts	GILBERT JOHN A PTY LTD	22 McLachlanAv Rushcutters Bay NSW Australia	address	136.5	north
Motor Body Builders & Repairers	GILBERT JOHN APTY LTD	22 McLachlanAv Rushcutters Bay NSW Australia	address	136.5	north
Electrical Contractors	Maurency E	10 Lawson NSW Paddington Australia	address	139.3	south-east
Motor Panel Beaters	CRESSWELL & SON PTY LTD	10 McLachlanAv NSW Rushcutters Bay Australia	address	147.5	north
Motor Body Builders & Repairers	Cresswell&Son Pty Ltd	10 McLachlanAv NSW Rushcutters Bay Australia	address	147.5	north
Furniture—Mfrs. &/or W'salers	DERIC DEANE PTY LTD	6 McLachlanAv Rushcutters Bay NSW Australia	address	147.5	north
Engineers—General	Powell Dennis A	6 Lawson Paddington NSW Australia	address	147.5	south-east
Printers—Letterpress	SAUNDERS J & SONS PTY LTD	6 McLachlanAv Rushcutters Bay NSW Australia	address	147.5	north
Fireplaces &/or Accessories	WINCEL CO	8a McLachlanAv Rushcutters Bay NSW Australia	address	147.5	north
Chemical Mfrs. &/or Druggists—W'sale	Salmond&Spraggon (Mfrg) Pty Ltd	84 McLachlanAv Rushcutters Bay NSW Australia	address	152.6	north-west
Motor Body Builders & Repairers	Lober W H&Co Pty Ltd	49 McLachlanAv Rushcutters Bay NSW Australia	address	156.8	north-west
Shock Absorbers	LOBER SHOCK ABSORBERS PTY LTD	49-59 McLachlanAv Rushcutters Bay NSW Australia	address	162.4	north-west
Motor Radiators	LOBER W H & CO PTY LTD	49-59 McLachlanAv Rushcutters Bay NSW Australia	address	162.4	north-west
Machine Knives	FEARNEHOUGHW(AUST)PTY LTD	25 McLachlan Rushcutters Bay NSW Australia	address	164.9	north-west
Exporters	HOPKINSON M L	29 McLachlan Rushcutters Bay NSW Australia	address	164.9	north-west
Motor Steam Cleaners &/or Undercoaters	PROTECTACAR	41 McLachlanAv Rushcutters Bay NSW Australia	address	164.9	north-west
Blankets—Electric	WONDERWARM ELECTRIC BLANKETS (Manufactured By E A HOPKINSON PTY LTD)	29 McLachlan Rushcutters Bay NSW Australia	address	164.9	north-west
Chemical Mfrs. &/or Druggists—W'sale	OSTA CHEMICALS (NSW) PTY LTD	65 McLachlanAv Rushcutters Bay NSW Australia	address	165.6	north-west
Chemical Suppliers	OSTA CHEMICALS (NSW) PTY LTD	65 McLachlanAv Rushcutters Bay NSW Australia	address	165.6	north-west
Lighting	SCIENTIFIC LIGHTING PTY LTD	67 McLachlanAv Rushcutters Bay NSW Australia	address	168.5	north-west

Signs—Advertising	SCIENTIFIC LIGHTING PTY LTD	67 McLachlanAv Rushcutters Bay NSW Australia	address	168.5	north-west
Signs—Neon	SCIENTIFIC LIGHTING PTY LTD	67 McLachlanAv Rushcutters Bay NSW Australia	address	168.5	north-west
Butchers	McCahon L W&J P	294 GlenmoreRd Paddington NSW Australia	address	169.2	south-east
Smallgoods Mfrs. &/or Distributors	HANDLERS (RUSHCUTTERS) PTY LTD	73 McLachlanAv Rushcutters Bay NSW Australia	address	175.6	north-west
Motor Schools	Kubicek V T Driving School	11 Dillon NSW Paddington Australia	address	178.4	south-west
Upholstering Supplies	REDELMAN I & SON PTY LTD	43500 GlenmoreRd Paddington NSW Australia	address	179.8	south-east
Polishes Stains & White Cleaners	Sunik Pty Ltd	319 GlenmoreRd Paddington NSW Australia	address	183	south-east
Duplicating Machines	CESTETNER PTY LTD	32 BarcomAv Rushcutters Bay NSW Australia	address	196	north-west
Jewellers—Mfrg. &/or W'sale	Dixon M J	2 BarcomAv Rushcutters Bay NSW Australia	address	196	north-west
Dogs' Boarding Kennels	Eastern Suburbs Dog&Cat Hospitals&Boarding Kennels	2 BarcomAv Rushcutters Bay NSW Australia	address	196	north-west
Carriers—Light	WARATAH TAXI TRUCKS PTY LTD	8 BarcomAv Rushcutters Bay NSW Australia	address	196	north-west
Taxi Truck Services	WARATAH TAXI TRUCKS PTY LTD	8 BarcomAv Rushcutters Bay NSW Australia	address	196	north-west
Transport Services	Waratah Taxi Trucks Pty Ltd	8 BarcomAv Rushcutters Bay NSW Australia	address	196	north-west
Advertising—Displays	WILKEN & JONES PTY LTD	28 BarcomAv Rushcutters Bay NSW Australia	address	196	north-west
Display Models & Fixtures	WILKEN & JONES PTY LTD	28 BarcomAv Rushcutters Bay NSW Australia	address	196	north-west
Motor Tyre Retreading Mould Mfrs	ADVANX TYRE & RUBBER CO PTY LTD	Neild AND MclachlanAvs NSW Rushcutters Bay Australia	street		
Motor Tyre Retreads & Repairs	ADVANX TYRE & RUBBER CO PTY LTD	Neild AND McLachlanAvs NSW Rushcutters Bay Australia	street		
Motor Tyres	ADVANX TYRE & RUBBER CO PTY LTD	Neild AND McLachlanAvs NSW Rushcutters Bay Australia	street		
Rubber Products	ADVANX TYRE & RUBBER CO PTY LTD	Neild AND McLachlanAvs NSW Rushcutters Bay Australia	street		
Printers' Supplies	ADVANX TYRE & RUBBER CO PTY LTD	Nield AND McLachlanAvs NSW Rushcutters Bay Australia	street		
Adhesives	Advanx Tyre&Rubber Co Pty Ltd	Neild AND McLachlanAvs NSW Rushcutters Bay Australia	street		
Hospitals—Public	Royal Hospital for Women	GlenmoreRd NSW Paddington Australia	street		
Tailors—Manufacturing	Wilcox T	LawsonSt NSW Paddington Australia	street		

1970 HISTORICAL COMMERCIAL & TRADE DIRECTORY DATA

(200m Buffer)

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
MIXED BUSINESSES	Boundary-Neild Corner,	2 Boundary St, Paddington NSW Australia	address	37.7	south-west
MIXED BUSINESSES	Ford, R. & M.,	2 Boundary St, Paddington NSW Australia	address	37.7	south-west
RUBBER GOODS MANUFACTURERS—MECHANICAL	ADVANX TYRE & RUBBER CO. PTY. LTD.	22-40 Neild Avenue, Rushcutter's Bay NSW Australia	address	45.9	north-west

RUBBER GOODS MANUFACTURERS &/OR DISTRIBUTORS	Advanx Tyre & Rubber Co. Pty. Ltd.,	22 Neild St, Rushcutter's Bay NSW Australia	address	45.9	north-west
TYRE DEALERS, RETREADERS & VULCANIZERS	Advanx Tyre & Rubber Co. Pty. Ltd.,	22-40 Neild Ave,, Rushcutters Bay, 2011 NSW Australia	address	45.9	north-west
BATTERY DISTRIBUTORS	Advanx Tyre & Rubber Co. Pty. Ltd.,	22-40 Neild Ave., Rushcutters Bay, 2011 NSW Australia	address	45.9	north-west
BATTERY SALES & SERVICE	Advanx Tyre & Rubber Co. Pty. Ltd.,	22-40 Neild Ave., Rushcutters Bay, 2011 NSW Australia	address	45.9	north-west
BEACH EQUIPMENT MFRS.	Advanx Tyre & Rubber Co. Pty. Ltd.,	22-40 Neild Ave., Rushcutters Bay, 2011 NSW Australia	address	45.9	north-west
FOOTWEAR MFRS., REPAIRERS &/OR SUPPLIERS	Advanx Tyre & Rubber Co. Pty. Ltd.,	22-40 Neild Ave., Rushcutters Bay, 2011 NSW Australia	address	45.9	north-west
PRINTERS' ROLLERS MFRS.	Advanx Tyre & Rubber Co. Pty. Ltd.,	22-40 Neild Ave., Rushcutters Bay, 2011 NSW Australia	address	45.9	north-west
ROPE GOODS MFRS.	Advanx Tyre & Rubber Co. Pty. Ltd.,	22-40 Neild Ave., Rushcutters Bay, 2011 NSW Australia	address	45.9	north-west
RUBBER GOODS MFRS.—INDUSTRIAL	Advanx Tyre & Rubber Co. Pty. Ltd.,	22-40 Neild Ave., Rushcutters Bay, 2011 NSW Australia	address	45.9	north-west
RUBBER MOULDED PRODUCTS—SYNTHETIC—MFRS.	Advanx Tyre & Rubber Co. Pty. Ltd.,	22-40 Neild Ave., Rushcutters Bay, 2011 NSW Australia	address	45.9	north-west
RUBBER ROLLERS—GENERAL-MANUFACTURERS	Advanx Tyre & Rubber Co. Pty. Ltd.,	22-40 Neild Ave., Rushcutters Bay, 2011 NSW Australia	address	45.9	north-west
RUBBER SOLE/HEEL MFRS.	Advanx Tyre & Rubber Co. Pty. Ltd.,	22-40 Neild Ave., Rushcutters Bay, 2011 NSW Australia	address	45.9	north-west
RUBBER TUBING MFRS.	Advanx Tyre & Rubber Co. Pty. Ltd.,	22-40 Neild Ave., Rushcutters Bay, 2011 NSW Australia	address	45.9	north-west
RUBBERISED CLOTH MFRS.	Advanx Tyre & Rubber Co. Pty. Ltd.,	22-40 Neild Ave., Rushcutters Bay, 2011 NSW Australia	address	45.9	north-west
SURFING EQUIPMENT MFRS.	Advanx Tyre & Rubber Co. Pty. Ltd.,	22-40 Neild Ave., Rushcutters Bay, 2011 NSW Australia	address	45.9	north-west
TYRE/TUBE DEALERS	Advanx Tyre & Rubber Co. Pty. Ltd.,	22-40 Neild Ave., Rushcutters Bay, 2011 NSW Australia	address	45.9	north-west
TYRE & TUBE MANUFACTURERS &/OR DISTRIBUTORS	Advanx Tyre & Rubber Co. Pty. Ltd.,	22-40 Neild Ave., Rushcutters Bay, 2011 NSW Australia	address	45.9	north-west
TYRE RETREAD/VULCANIZING EQUIP. MFRS. &/OR DISTS.	Advanx Tyre & Rubber Co. Pty. Ltd.,	22-40 Neild Ave., Rushcutters Bay, 2011 NSW Australia	address	45.9	north-west
BOAT, LAUNCH & YACHT ACCESSORIES MFRS. &/OR DISTS.	Advanx Tyre & Rubber Co. Pty. Ltd.,	22-40 Neild Ave., Rushcutter's Bay, 2011 NSW Australia	address	45.9	north-west
GASKET MANUFACTURERS	Advanx Tyre 4 Rubber Co. Pty. Ltd.,	22-40 Neild Ave., Rusbcutters Bay, 2011 NSW Australia	address	45.9	north-west
ACID TANK MANUFACTURERS	Advanx Tyre A Rubber Co. Pty. Ltd,	22-40 Neild Ave, Rushcutter's Bav, 2011 NSW Australia	address	45.9	north-west
ADHESIVE MFRS. &/OR DISTS.	Advanx Tyre&Rubber Co. Pty. Ltd.,	22-40 Neild Ave., Rushcutter's Bay, 2011 NSW Australia	address	45.9	north-west
MIXED BUSINESSES	Marshall, Kathleen,	3 Neild Ave, Paddington NSW Australia	address	80.3	south-west
TAXIS	Green Cab Service Pty. Ltd.,	5 Boundary St, Rushcutters Bay NSW Australia	address	84.6	north-west

MOTOR GARAGES/ENGINEERS RUSHCUTTER'S BAY	Wallawa Service Station,	5-11 Boundary St. NSW Australia	address	84.6	north-west
PRINTERS—LITHOGRAPHIC (OFFSET)	Saunders, J. & Sons Pty. Ltd.,	62 Mclachlan Ave, Rushcutter's Bay NSW Australia	address	91.5	north-west
PRINTERS—LETTERPRESS	Saunders, J. & Sons Pty. Ltd.,	62-64 Mclachlan Ave., Rushcutters Bay NSW Australia	address	91.5	north-west
STATIONERS—COMMERCIAL	Saunders, J. & Sons Pty. Ltd.,	62-64 Mclauchlan Ave., Rushcutters Bay, 2011 NSW Australia	address	91.5	north-west
CHEMISTS—ANALYTICAL	Geochemical&Mineralogical Laboratories,	76 McLachlan Ave, Rushcutter's Bay NSW Australia	address	99.2	north-west
GLASS MERCHANTS	Glass Products Pty. Ltd.	76 Mclachlan Ave, Rushcutters By NSW Australia	address	99.2	north-west
MOTOR GARAGES/ENGINEERS RUSHCUTTER'S BAY	Grenville Motors Ltd.,	78-82 Mclachlan Ave. NSW Australia	address	118.3	north-west
SIGN MANUFACTURERS	C.G.I. Display Pty. Ltd.	66-74 Mclachlan Ave., Rushcutters Bay NSW Australia	address	118.7	north-west
DISPLAY FITTINGS—MFRS. &/OR SUPPLIERS	C.G.I. Display Pty. Ltd.,	66-74 Mclachlan Ave., Rushcutters Bay NSW Australia	address	118.7	north-west
SCREEN PROCESS PRINTERS	C.G.I. Display Pty. Ltd.,	66-74 Mclachlan Ave., Rushcutters Bay NSW Australia	address	118.7	north-west
PROCESS ART ENGRAVERS (SEE ALSO PHOTO ENGRAVERS)	C.G.I. Photo Engraving Pty. Ltd.,	66 Mclachlan Ave, Rushcutters Bay NSW Australia	address	118.7	north-west
PHOTO ENGRAVERS	C.G.I. Photo Engraving Pty. Ltd.,	66 Mclachlan Ave, Rushcutter's Bay NSW Australia	address	118.7	north-west
PRINTERS—LETTERPRESS	C.G.I. Printing Pty. Ltd.,	66 Mclachlan Ave, Rushcutters Bay NSW Australia	address	118.7	north-west
PUBLISHERS	C.G.I. Printing Pty. Ltd.,	66 Mclachlan Ave, Rushcutters Bay NSW Australia	address	118.7	north-west
MOTOR SERVICE STATIONS—PETROL, OIL, Etc. PADDINGTON	Arcadia Garage & Service Station,	68 Goodhope St NSW Australia	address	119.8	south
SHOWCARD/POSTER ARTISTS	Display Productions Pty. Ltd.	68 Goodhope St, Paddington NSW Australia	address	119.8	south
SIGN MANUFACTURERS	Display Productions Pty. Ltd.	68 Goodhope St, Paddington NSW Australia	address	119.8	south
ADVERTISING DISPLAY SPEC.	Display Productions Pty. Ltd.,	68 Goodhope St, Paddington NSW Australia	address	119.8	south
SCREEN PROCESS PRINTERS	Display Productions Pty. Ltd.,	68 Goodhope St, Paddington NSW Australia	address	119.8	south
TRANSFER MANUFACTURERS	Display Productions Pty. Ltd.,	68 Goodhope St, Paddington NSW Australia	address	119.8	south
PRINTERS—LITHOGRAPHIC (OFFSET)	Advance Offset Printing,	47 Mclachlan Ave, Rushcutters Bay NSW Australia	address	127.5	north-west
LEATHER GOODS MFRS. &/OR WHOLESALERS	Amalco Leathergoods Pty. Ltd.,	45 Mclaughlin St, Rushcutter'S Bay NSW Australia	address	127.5	north-west
LEATHER GOODS MFRS. &/OR WHOLESALERS	Diplomat Leather Goods,	47 Mclachlan Ave, Rushcutters Bay NSW Australia	address	127.5	north-west

ENGINEERS—GENERAL &/OR MFRG. &/OR MECHANICAL	Ogis Engineering Pty. Ltd.,	47 Mclachlan Ave, Rushcutters Bay, 2011 NSW Australia	address	127.5	north-west
MOTOR SERVICE STATIONS—PETROL, OIL, Etc. RUSHCUTTERS BAY	Gilbert, J. A. Pty. Ltd.,	12 Mclachlan Ave NSW Australia	address	147.5	north
HIRE CAR SERVICES	Royal Hire Service,	1 Maclachlan Ave, Rushcutters Bay NSW Australia	address	147.5	north
TAXIS	Royal Hire Service,	1 Mclachlan Ave, Rushcutter's Bay NSW Australia	address	147.5	north
ENGINEERS—GENERAL &/OR MFRG. &/OR MECHANICAL	Precision Engineering Co. Pty. Ltd.,	2 Neild Ave, Rushcutters Bay NSW Australia	address	152.8	north-east
MOTOR PANEL BEATERS	Lober, W. H. & Co. Pty. Ltd,	49 Mclachlan St, Rushcutters Bay NSW Australia	address	156.8	north-west
MOTOR SPARE PARTS MFRS. &/OR WHOLESALERS	lober, W. H. & Co. Pty. Ltd.,	49 Mclachlan Ave Rushcutters Bay NSW Australia	address	156.8	north-west
MOTOR BODY REPAIRS/CONVERTERS	Lober, W. H.&Co. Pty. Ltd.,	49 Mclachlan Ave, Rushcutters Bay NSW Australia	address	156.8	north-west
MIXED BUSINESSES	McCrae & McKee,	302 Glenmore Road, Paddington NSW Australia	address	157.7	south-east
MIXED BUSINESSES	Bland's Food Store,	296 Glenmore Road, Paddington NSW Australia	address	164	south-east
MIXED BUSINESSES	Kenny, J. J. & S. W.,	296 Glenmore Road, Paddington NSW Australia	address	164	south-east
MIXED BUSINESSES	McCrae & McKee,	296 Glenmore Road, Paddington NSW Australia	address	164	south-east
GUILLOTINE BLADE/SHEAR MFRS.	Fcarnehough, W. (Aust.) Pty, Ltd.,	25 Mclachlan Ave, Rushcutters Bay NSW Australia	address	164.9	north-west
KNIFE MFRS.—TRADESMEN'S	Fearnehough, W. (Aust.) Pty. Ltd.,	25 Mclachlan Ave, Rushcutters Bay NSW Australia	address	164.9	north-west
MACHINE KNIFE MFRS.	Fearnehough, W. (Aust.) Pty. Ltd.,	25 Mclachlan Ave, Rushcutters Bay NSW Australia	address	164.9	north-west
TOOL MAKERS	Fearnehough, W. (Aust.) Pty. Ltd.,	25 Mclachlan Ave, Rushcutters Bay NSW Australia	address	164.9	north-west
GRINDERS—PRECISION	Fearnehough. W. (Aust.) Pty. Ltd.,	25 Mclachlan Ave, Rushcutters Bay NSW Australia	address	164.9	north-west
MOTOR CAR STEAM CLEANERS (M556)	Protectacar,	41 Mclachlan Ave, Rushcutters Bay NSW Australia	address	164.9	north-west
MOTOR RUSTPROOFING SPEC.	Protectacar,	41 Mclachlan Ave, Rushcutters Bay NSW Australia	address	164.9	north-west
SMALLGOODS MANUFACTURERS &/OR WHOLESALERS	Hall-Kalman Pty. Ltd.,	73 Mclachlan Ave, Rushcutters Bay NSW Australia	address	175.6	north-west
DUPLICATING INK MFRS.	Gestetner Pty. Ltd.,	87 Mclachlan Ave, Rushcutters Bay NSW Australia	address	194.7	north-west
DUPLICATING MACHINE MFRS. &/OR DEALERS	Gestetner Pty. Ltd.,	87 Mclachlan Ave, Rushcutters Bay NSW Australia	address	194.7	north-west
DUPLICATOR STENCIL MFRS.	Gestetner Pty. Ltd.,	87 Mclachlan Ave, Rushcutters Bay NSW Australia	address	194.7	north-west
ELECTROPLATERS	A. B.C. Plating Co. Pty. Ltd.,	16 Barcom Ave, Rushcutters Bay NSW Australia	address	196	north-west
MOTOR PANEL BEATERS	Gibbons, J,	14 Barcom Ave, Rushcutters Bay NSW Australia	address	196	north-west
MOTOR PAINTERS	Gibbons, J.,	14 Barcom Ave, Rushcutters Bay NSW Australia	address	196	north-west

BOOKBINDERS	R. M. Printing Pty. Ltd.,	16 Barcom Ave, Rushcutter's Bay NSW Australia	address	196	north-west
PRINTERS—LITHOGRAPHIC (OFFSET)	R.M. Printing Pty. Ltd.,	16 Barcom Ave, Rushcutters Bay NSW Australia	address	196	north-west
PRINTERS' LITHOGRAPHIC PLATE-MAKERS	R.M. Printing Pty. Ltd.,	16 Barcom Ave, Rushcutters Bay NSW Australia	address	196	north-west
TRANSFORMER MFRS.	Reader Mail Pty. Ltd.,	18 Barcom Ave, Rushcutters Bay, 2011 NSW Australia	address	196	north-west
DISPLAY MODEL MANUFACTURERS &/OR SUPPLIERS	Wilken & Jones Pt. Ltd.,	28 Barcom Ave, Rushcutters Bay NSW Australia	address	196	north-west
CLOTHING MFRS. MACHINERY & ACCESSORIES—MANUFACTURERS &/OR DISTRIBUTORS	Wilken&Jones Pty. Ltd.,	28 Barcom Ave, Rushcutters Bay NSW Australia	address	196	north-west
WASHER MANUFACTURERS	Advanx Tyre & Rubber Co. Pty. Ltd.,	Neild AND Mclachlan Aves, Rushcutters Bay NSW Australia	street		

1971 HISTORICAL COMMERCIAL & TRADE DIRECTORY DATA

(200m Buffer)

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Transmissions - Automotive	C.B. Automatics	84 McLachlan Avenue Rushcutters Bay AUSTRALIA	address	145.4	north-west
Transmissions -- Automotive	Central Brake Service Pty. Ltd.	84 McLachlan Avenue Rushcutters Bay Sydney NSW AUSTRALIA	address	145.4	north-west
Brake &/or Clutch Linings	Central Brake Service Pty. Ltd.	84 McLachlan Avenue Rushcutters Bay, Sydney NSW AUSTRALIA	address	145.4	north-west
Machine Knives	Fearnehough W (Aust) Pty. Ltd.	25 McLachlan Avenue Rushcutters Bay, Sydney NSW AUSTRALIA	address	168.8	north-west
Display & Exhibition Equipment & Supplies	Wilken & Jones Pty Ltd	28 Barcom Avenue Rushcutters Bay NSW AUSTRALIA	address	191.3	north-west

1974 HISTORICAL COMMERCIAL & TRADE DIRECTORY DATA

(200m Buffer)

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Carriers Heavy	Brown WB	91 Lawson Paddington NSW Australia	address	31.2	south-west
Fruit Agents-Country Orders	Yum 5	53 Neild Avenue Rodd Point NSW Australia	address	49.7	south-west
Motor Service Stations	Wallawa Service Station	11 Boundary Street Rushcutters Bay NSW Australia	address	89.4	north-west
Printers - Letterpress	Business Card Printers Inc Pty Ltd	62 McLachlan Avenue Rushcutters Bay NSW Australia	address	91.5	north-west
Printers - Small Offset	Business Card Printers Inc Pty Ltd	62 McLachlan Avenue Rushcutters Bay NSW Australia	address	91.5	north-west
Printers - Small Offset	Saunders J& Sons Pty Ltd	62 McLaughlin Avenue Rushcutters Bay NSW Australia	address	91.5	north-west
Printers - Letterpress	Saunders Relief Printing	62 McLachlan Avenue Rushcutters Bay NSW Australia	address	91.5	north-west

Printers - Letterpress	Vogue Thermographers Pty Ltd	62 McLachlan Avenue Rushcutters Bay NSW Australia	address	91.5	north-west
Printers - Small Offset	Vogue Thermographers Pty Ltd	62 McLaughlan Avenue Rushcutters Bay NSW Australia	address	91.5	north-west
Analysts	Geochemical & Mineralogical Laboratories Pty Ltd	76 McLachlan Avenue Rushcutters Bay NSW Australia	address	99.2	north-west
Research Laboratories	Geochemical & Mineralogical Laboratories Pty Ltd	76 McLachlan Avenue Rushcutters Bay NSW Australia	address	99.2	north-west
Motor Cars - New	Grenville Motors Pty Ltd	78 McLachlan Avenue Rushcutters Bay NSW Australia	address	118.3	north-west
Litho Plates	C G I Platemaking Pty Ltd	66 McLachlan Avenue Rushcutters Bay NSW Australia	address	118.7	north-west
Photo Engravers	C G I Platemaking Pty Ltd	66 McLachlan Avenue Rushcutters Bay NSW Australia	address	118.7	north-west
Display & Exhibition Equipment & Supplies	C.G.I. Display Pty Ltd	C.G.I. HOuse, 66 McLachlan Avenue Rushcutters Bay NSW Australia	address	118.7	north-west
Printers - Screen	CGI Display Pty Ltd	66 McLachlan Avenue Rushcutters Bay NSW Australia	address	118.7	north-west
Printers - Screen	Display Productions Pty Ltd	68 Goodhope Street Paddington NSW Australia	address	119.8	south
Printers - Small Offset	Advance Offset Printing	47 McLachlan Avenue Rushcutters Bay NSW Australia	address	127.5	north-west
Clothing-Dress Mfrs. &/or W'salers	Salmaggi Fashions	47 McLachlan Avenue Rushcutters Bay NSW Australia	address	127.5	north-west
Leather Goods-Mfrs. &/or Wholesalers	Weiss M	47 McLachlan Avenue Rushcutters Bay NSW Australia	address	127.5	north-west
Engineers-General	Precision Engineering Co Pty Ltd	6 Neild Avenue Rushcutters Bay NSW Australia	address	127.6	north-east
Motor Garages	Harvard Garage	1 McLachlan Avenue Rushcutters Bay NSW Australia	address	147.5	north
Butchers-W'sale	Glenmore Meat Co Pty ltd	300 Glenmore Road Paddington NSW Australia	address	151.6	south-east
Brake &/or Clutch Service	Central Brake Service Pty Ltd	84 McLachlan Avenue Rushcutters Bay NSW Australia	address	152.6	north-west
Motor Engineers & Repairers	Lober W H & Co Pty Ltd	49 McLachlan Avenue Rushcutters Bay NSW Australia	address	156.8	north-west
Motor Cars - New	Lober WH & Co Pty Ltd	49 McLachlan Avenue Rushcutters Bay NSW Australia	address	156.8	north-west
Rustproofing Processes & Materials	Protectacar Undersealers	41 McLachlan Avenue Rushcutters Bay NSW Australia	address	164.9	north-west
Chemical Mfrs - Industrial	D&A Industries Pty Ltd	65 McLachlan Avenue Rushcutters Bay NSW Australia	address	165.6	north-west
Plastics - Foam Processors	D&A Industries Pty Ltd	65 McLachlan Avenue Rushcutters Bay NSW Australia	address	165.6	north-west
Wax	D&A Industries Pty Ltd	65 McLachlan Avenue Rushcutters Bay NSW Australia	address	165.6	north-west
Motor Electrical Service - Automotive	Waterfront Auto Electrical	67 McLachlan Avenue Rushcutters Bay NSW Australia	address	168.5	north-west
Ham & Bacon Curers	Hall Kalman Pty Ltd	73 McLachlan Avenue Rushcutters Bay NSW Australia	address	175.6	north-west
Smallgoods Mfrs. &/or Wholesalers	Hall-Kalman Pty Ltd	73 McLachlan Avenue Rushcutters Bay NSW Australia	address	175.6	north-west
Artists-Commercial	Gibb-Cumming S	5 Stevens Street Paddington NSW Australia	address	176.3	south
Furniture Mfrs. &/or W'salers	Brem E	5a McLachlan Avenue Paddington NSW Australia	address	192.1	north-west

Duplicating Machines &/or Supplies	Gestetner Pty Ltd	87 McLachlan Avenue Rushcutters Bay NSW Australia	address	194.7	north-west
Litho Plates	G.P. Offset Plates	18 Barcom Avenue Rushcutters Bay NSW Australia	address	196	north-west
Motor Panel Beaters	Gibbons J	14 Barcom Avenue Rushcutters Bay NSW Australia	address	196	north-west
Motor Panel Beaters	Morris JH	22 Barcom Avenue Rushcutters Bay NSW Australia	address	196	north-west
Display & Exhibition Equipment & Supplies	Wilken & Jone Pty Ltd	28 Barcom Avenue Rushcutters Bay NSW Australia	address	196	north-west
Film Producers &/or Laboratories	Ross Wood Productions Pty Ltd	36 Gosbell Street Paddington NSW Australia	address	197.8	south-west
Film Producers &/or Laboratories	Wood Ross Productions Pty Ltd	36 Gosbell Street Paddington NSW Australia	address	197.8	south-west
Rubber Products - Mfrs. &/or W'salers	Advanx Tyre & Rubber Co Pty Ltd	Neild Avenue Rushcutters Bay NSW Australia	street		
Tailors-Manufacturing	Wilcox T	Lawson Street Paddington NSW Australia	street		

1980 HISTORICAL COMMERCIAL & TRADE DIRECTORY DATA

(200m Buffer)

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Motor Engineers & Repairers	Maag & Stucki Automotive	40 Nield Avenue Rushcutters Bay NSW Australia	address	45.9	north-west
General Stores	Tourvas C	124 Lawson St Paddington NSW Australia	address	47.9	south-west
Builders & Contractors	Fischer Manfred Constructions Pty Ltd	3 Stephen St Paddington NSW Australia	address	72.6	south-west
Builders & Contractors	Manyung Pty Ltd	3 Stephen St Paddington NSW Australia	address	72.6	south-west
Builders & Contractors---Alterations & Repairs	Manyung Pty Ltd	3 Stephen St Paddington NSW Australia	address	72.6	south-west
Adhesive Tapes	W.J & Co Distributors	18 Boundary St Darlinghurst NSW Australia	address	79.9	south-west
Air Conditioning - Automotive	Breezair Pty Ltd	5 Boundary St Rushcutters Bay NSW Australia	address	84.6	north-west
Printers - General	Business Card Printers Inc Pty Ltd	62 McLachlan Avenue Rushcutters Bay NSW Australia	address	91.5	north-west
Printers - General	Saunders Raised Printing	62 McLachlan Avenue Rushcutters Bay NSW Australia	address	91.5	north-west
Printers - General	Vogue Thermographers Pty Ltd	62 McLaughlin Avenue Rushcutters Bay NSW Australia	address	91.5	north-west
Motor Replacement Parts	Stack Parts	30 McLachlan Avenue Rushcutters Bay NSW Australia	address	94.1	north
Research Laboratories	Geochemical & Mineralogical Laboratories Pty Ltd	76 McLachlan Avenue Rushcutters Bay NSW Australia	address	99.2	north-west
Analysts	Geochemical & Mineralogical Laboratories Pty Ltd	76 McLachlan Avenue Rushcutters Bay NSW Australia	address	99.2	north-west
Panel Beaters &/or Painters	Rushcutters Bay Smash Repairs	60 McLachlan Avenue Rushcutters Bay NSW Australia	address	105.7	north-west
Printers - Screen	Combined Graphics	66 McLachlan Avenue Rushcutters Bay NSW Australia	address	118.7	north-west
Display & Exhibition Equipment & Supplies	Combined Graphics	66 McLachlan Avenue Rushcutters Bay NSW Australia	address	118.7	north-west
Litho Plates	Combined Graphics	66 McLachlan Avenue Rushcutters Bay NSW Australia	address	118.7	north-west

Panel Beaters &/or Painters	Prestige Panel Beating & Spraying Services	68 McLachlan Avenue Rushcutters Bay NSW Australia	address	118.7	north-west
Printers - Screen	Display Productions Pty Ltd	68 Goodhope St Paddington NSW Australia	address	119.8	south
Printers - Lithographic	G B Printing Co	68 Goodhope St Paddington NSW Australia	address	119.8	south
Printers - General	Garofani E H	68 Goodhope St Paddington NSW Australia	address	119.8	south
Film Productions &/or Laboratories	Summer Films Pty Ltd	66 Goodhope St Paddington NSW Australia	address	121.1	south
Motor Cars - New	Eurocars (City) Pty Ltd	16 McLachlan Avenue Rushcutters Bay NSW Australia	address	127.5	north
Motor Replacement Parts	Mazdaland	16 McLachlan Avenue Rushcutters Bay NSW Australia	address	127.5	north
Motor Replacement Parts	Volvo (Monaco Motors Pty Ltd)	16 McLachlan Avenue Rushcutters Bay NSW Australia	address	127.5	north
Sail Makers	Fraser Sails	6 Neild Avenue Rushcutters Bay NSW Australia	address	127.6	north-east
Boat Equipment	Fraser Sails	6 Neild Avenue Rushcutters Bay NSW Australia	address	127.6	north-east
Panel Beaters &/or Painters	Scandia Body Repairs Pty Ltd	6 Neild Avenue Rushcutters Bay NSW Australia	address	127.6	north-east
Motor Service Stations & Garages	Harvard Garage	1 McLachlan Avenue Rushcutters Bay NSW Australia	address	147.5	north
Butchers - W'sale	Glenmore Meat Co Pty Ltd	300 Glenmore Road Paddington NSW Australia	address	151.6	south-east
Transmissions - Automotive - Car	C B Automatics	84 McLachlan Avenue Rushcutters Bay NSW Australia	address	152.6	north-west
Brake &/or Clutch Service	Central Brake Service (Sydney) Pty Ltd	84 McLachlan Avenue Rushcutters Bay NSW Australia	address	152.6	north-west
Bus Services - Country & Interstate	Greyhound Aust Pty Ltd	49 McLachlan Avenue Kings Cross NSW Australia	address	156.8	north-west
Bus Services - Country & Interstate	Kirkland Bros Bus Services	49 McLachlan Avenue Rushcutters Bay NSW Australia	address	156.8	north-west
Motor Cars - Used	Lober W H & Co Pty Ltd	49 MacLachlan Avenue Rushcutters Bay NSW Australia	address	156.8	north-west
Knitwear Mfrs. &/or W'salers	Percival & Associates	296 Glenmore Road Paddington NSW Australia	address	164	south-east
Racks & Stands	Ogis Engineering Pty Ltd	61 McLachlan Avenue Rushcutters Bay NSW Australia	address	166.4	north-west
Display & Exhibition Equipment & Supplies	Ogis Engineering Pty Ltd	61 McLachlan Avenue Rushcutters Bay NSW Australia	address	166.4	north-west
Furniture Metal - Mfrs &/or W'salers	Ogis Engineering Pty Ltd	61 McLachlan Avenue Rushcutters Bay NSW Australia	address	166.4	north-west
Panel Beaters &/or Painters	G V N Panel & Paint	65a McLachlan Avenue Rushcutters Bay NSW Australia	address	168.5	north-west
Motor Electrical Service - Automotive	Waterfront Auto Electrical	67 McLachlan Avenue Rushcutters Bay NSW Australia	address	168.5	north-west
Photo Copies &/or Copying Equipment	N T T Supplies Pty Ltd	73 McLachlan Avenue Rushcutters Bay NSW Australia	address	175.6	north-west
Office Requisites	NTT Supplies Pty Ltd	73 McLachlan Avenue Rushcutters Bay NSW Australia	address	175.6	north-west
Furniture Mfrs. &/or W'salers	Brem E	5a McLachlan Avenue Paddington NSW Australia	address	192.1	north-west
Photo Copies &/or Copying Equipment	Gestetner Pty Ltd	87 McLachlan Avenue Rushcutters Bay NSW Australia	address	194.7	north-west
Duplicating Machines &/or Supplies	Gestetner Pty Ltd	87 McLachlan Avenue Rushcutters Bay NSW Australia	address	194.7	north-west

Film Productions &/or Laboratories	Ross Wood Productions Pty Ltd	36 Gosbell St Paddington NSW Australia	address	197.8	south-west
Rubber Products - Mfrs &/or W'salers	Advanx Tyre & Rubber Co Pty Ltd	Neild Avenue Rushcutters Bay NSW Australia	street		
Tyres - Recapping, Retreading & Repairing	Advanx Tyre & Rubber Co Pty Ltd	Neild Avenue Rushcutters Bay NSW Australia	street		
Tyre's Retail	Advanx Tyre & Rubber Co Pty Ltd	Neild Avenue Rushcutters Bay NSW Australia	street		

1981 HISTORICAL COMMERCIAL & TRADE DIRECTORY DATA

(200m Buffer)

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Not identified	-	-	-	-	-

1990 HISTORICAL COMMERCIAL & TRADE DIRECTORY DATA

(200m Buffer)

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Glass Merchants &/Or Glaziers	Eastern Suburbs Glass Repair & Replacement Service	36 Neild Avenue Rushcutters Bay NSW AUSTRALIA	address	45.9	north-west
Glass Merchants &/Or Glaziers	Eastern Suburbs Glass Service	36 Neild Avenue Rushcutters Bay NSW AUSTRALIA	address	45.9	north-west
Motor Accessories - Mfrs &/Or W'salers	Hollandla Sunroof Distribution	38 Neild Avenue Rushcutters Bay NSW AUSTRALIA	address	45.9	north-west
Motor Engineers & Repairers	Maag & Stucki Automotive Pty Ltd	40 Nield Avenue Rushcutters Bay NSW AUSTRALIA	address	45.9	north-west
Motor Accessories - Retail	Trad Sunroofs Pty Ltd	36 Neild Avenue Rushcutters Bay NSW AUSTRALIA	address	45.9	north-west
Importers &/Or Imported Products	Order Imports	11 Boundary Street Rushcutters Bay NSW AUSTRALIA	address	89.4	north-west
Courier Services	Travel Express Courier Systems	9 Stephen Street Paddington NSW AUSTRALIA	address	91.2	south-west
Motor Replacement Parts	Suttons Motors Pty Ltd	30 McLachlan Avenue Rushcutters Bay NSW AUSTRALIA	address	94.1	north
Motor Replacement Parts	Suttons Parts Rushcutters Bay	30 McLachlan Avenue Rushcutters Bay NSW AUSTRALIA	address	94.1	north
Motor Replacement Parts	Larke Hoskins Pty Ltd	54 McLachlan Avenue Rushcutters Bay NSW AUSTRALIA	address	103.7	north-west
Panel Beaters &/or Painters	Fleetwood Motor Body Repair Co	60 McLachlan Avenue Rushcutters Bay NSW AUSTRALIA	address	105.7	north-west
Panel Beaters &/or Painters	Prestige Panel Beating & Spraying Services	60 McLachlan Avenue Rushcutters Bay NSW AUSTRALIA	address	105.7	north-west
Panel Beaters &/or Painters	Rushcutters Bay Smash Repairs Pty Limited	60 McLachlan Avenue Rushcutters Bay NSW AUSTRALIA	address	105.7	north-west
Screen Printers	Display Productions Pty Ltd	68 Goodhope Paddington NSW AUSTRALIA	address	119.8	south
Printers - General	Garofani E E	68 Goodhope Paddington NSW AUSTRALIA	address	119.8	south

Printers - General	Paddington Print	68 Goodhope Paddington NSW AUSTRALIA	address	119.8	south
Picture Frames &/Or Picture Restorations	Artworld Graphics	16 McLachlan Avenue Rushcutters Bay NSW AUSTRALIA	address	127.5	north
Motor Replacement Parts	Eurocars Pty Ltd	16 McLachlan Avenue Rushcutters Bay NSW AUSTRALIA	address	127.5	north
Boat Charter Services	Queensland Yacht Charters Pty Ltd	16 McLachlan Avenue Rushcutters Bay NSW AUSTRALIA	address	127.5	north
Boat Hire - Drive Yourself	Queensland Yacht Charters Pty Ltd	16 McLachlan Avenue Rushcutters Bay NSW AUSTRALIA	address	127.5	north
Boat Charter Services	Whitsunday Boating Holidays	16 McLachlan Avenue Rushcutters Bay NSW AUSTRALIA	address	127.5	north
Boat Hire - Drive Yourself	Whitsunday Boating Holidays	16 McLachlan Avenue Rushcutters Bay NSW AUSTRALIA	address	127.5	north
Sail Makers	Fraser Sails Pty Ltd	6 Neild Avenue Rushcutters Bay NSW AUSTRALIA	address	127.6	north-east
Boat & Yacht Equipment	Fraser Sails Pty Ltd	6 Neild Avenue Rushcutters Bay NSW AUSTRALIA	address	127.6	north-east
Panel Beaters &/or Painters	Scandia Body Repairs Pty Ltd	6 Neils Avenue Rushcutters Bay NSW AUSTRALIA	address	127.6	north-east
Car Hire Services - Chauffeur Driven	Grand Old Limousine Hire	1 McLachlan Avenue Rushcutters Bay NSW AUSTRALIA	address	147.5	north
Panel Beaters &/or Painters	Harvard Smash Repairs	1 McLachlan Avenue Rushcutters Bay NSW AUSTRALIA	address	147.5	north
Butchers - W'Sale	K & D Meats	300 Glenmore Road Paddington NSW AUSTRALIA	address	151.6	south-east
Ice Cream Mfrs &/Or W'Salers	Serendipity Ice Cream	300 Glenmore Road Paddington NSW AUSTRALIA	address	151.6	south-east
Brake &/or Clutch Service	All Brake & Clutch Services Pty Ltd	84 McLachlan Avenue Rushcutters Bay NSW AUSTRALIA	address	152.6	north-west
Roof Repairers &/OR Cleaners	Byrne Tony G	52 Goodhope Street Paddington NSW AUSTRALIA	address	154.1	south
Motor Replacement Parts	City Automobiles	49 McLachlan Avenue Rushcutters Bay NSW AUSTRALIA	address	156.8	north-west
Motor Replacement Parts	City Automobiles	49 McLachlan Avenue Rushcutters Bay NSW AUSTRALIA	address	156.8	north-west
Motor Replacement Parts	City Automobiles	49 McLachlan Avenue Rushcutters Bay NSW AUSTRALIA	address	156.8	north-west
Motor Replacement Parts	City Automobiles	49 McLachlan Avenue Rushcutters Bay NSW AUSTRALIA	address	156.8	north-west
Motor Replacement Parts	City Automobiles	49 McLachlan Avenue Rushcutters Bay NSW AUSTRALIA	address	156.8	north-west
Motor Replacement Parts	Monaco Motors	49 McLachlan Avenue Rushcutters Bay NSW AUSTRALIA	address	156.8	north-west

Motor Replacement Parts	Monaco Motors	49 McLachlan Avenue Rushcutters Bay NSW AUSTRALIA	address	156.8	north-west
Motor Replacement Parts	Monaco Motors	49 McLachlan Avenue Rushcutters Bay NSW AUSTRALIA	address	156.8	north-west
Racks & Stands	Ogis Engineering Pty Ltd	61 McLachlan Avenue Rushcutters Bay NSW AUSTRALIA	address	166.4	north-west
Display & Exhibition Equipment & Supplies	Ogis Engineering Pty Ltd	61 McLachlan Avenue Rushcutters Bay NSW AUSTRALIA	address	166.4	north-west
Panel Beaters &/or Painters	Leonard Smash Repairs	65a McLachlan Avenue Rushcutters Bay NSW AUSTRALIA	address	168.5	north-west
Motor Engineers & Repairers	N.V. Motor Repairs Pty Ltd (Europen & Japanese Specialists, All Mechanical, Fuel Injection, Brake & Clutch Repairs)	67 McLachlan Avenue Rushcutters Bay NSW AUSTRALIA	address	168.5	north-west
Auto Electrical Services	NV Auto Electrical	67 McLachlan Avenue Rushcutters Bay NSW AUSTRALIA	address	168.5	north-west
Importers &/Or Imported Products	Delta Marine Imports	35 Goodhope Street Paddington NSW AUSTRALIA	address	170.7	south
Motor Replacement Parts	City Brakes	75 McLachlan Avenue Rushcutters Bay NSW AUSTRALIA	address	173.4	north-west
Brake &/or Clutch Service	City Brakes	75 McLachlan Avenue Rushcutters Bay NSW AUSTRALIA	address	173.4	north-west
Butchers - W'Sale	Handlers Butchery	77 McLachlan Avenue Rushcutters Bay NSW AUSTRALIA	address	180.7	north-west
Film Productions &/Or Laboratories	Ross Wood Productions Pty Ltd	36 Gosbell Street Paddington NSW AUSTRALIA	address	197.8	south-west
Rubber Products - Mfrs &/or W'salers (p2399)	Advanx Tyre & Rubber Co Pty Ltd	Neild Avenue Rushcutters Bay NSW AUSTRALIA	street		

1991 HISTORICAL COMMERCIAL & TRADE DIRECTORY DATA (200m Buffer)

Activity	Name	Address	Positional accuracy	Distance (m)	Direction
Boat Charter Services	Whitsunday Boating Holidays	16 McLachlan Avenue Rushcutters Bay	address	127.1	north-east
Advertising Agencies	Mediatel Austalasia Pty. Ltd.	80 McLachlan Ave Rushcutters Bay	address	134.7	north-west

Land Insight and Resources use a number of different address georeferencing methods and characterised them according to the following criteria: completeness (match rates) and positional accuracy. When address do not contain specific street numbers or a match is not found, records identified as being in the surrounding areas are included for reference.

Historical data positional accuracy and georeferencing results explanation

Positional accuracy	Georeferenced	Description
Address	Located to the address level	*When street address and names fully match.*

Positional accuracy	Georeferenced	Description
Street	Located to the street centroid	*When street names match but no exact address was found. Location is approximate.*
Place	Located to the structure, building or complex	*When building, residential complex or structure name match but no exact address was found. Location is approximate.*
Suburb	Located to the suburb area	*When suburb name match but no exact address was found. Location is approximate.*
Not georeferenced	Not found	*When it was not georeferenced, and address could not be found.*

Section 3 - Other Environmental Constraints

3.1 FEDERAL, STATE AND LOCAL HERITAGE

Map 9 (200m Buffer)

Local Environment Plan (LEP) Heritage

Site ID	Site Name	Significance	Type	Distance (m)*	Direction
C8	Paddington Heritage Conservation Area	Local	Conservation Area - General	0	onsite
243	7 Canary Island Date Palms	Local	Item - General	71	east
I371	Warehouse group 'Advanx Hall' & 'Advanx Block'	Local	Item - General	79	North-west
245	Scottish Hospital - main hospital building and interiors, grounds, gardens, terracing, trees	Local	Item - General	151	South-west

National Heritage List (NHL)

Site ID	Site Name	Class	Status	Distance (m)	Direction
Not identified	-	-	-	-	-

Register of the National Estate (RNE)

Site ID	Site Name	Class	Status	Distance (m)	Direction
2008	Paddington Conservation Area	Historic	Registered	0	onsite
101983	White City	Historic	Registered	74	east
102102	Scottish Hospital	Historic	Registered	156	South-west

Non-Aboriginal heritage item (Local)

Site ID	Site Name	Class	Status	Distance (m)	Direction
Not identified	-	-	-	-	-

Non-Aboriginal heritage item (SHR)*

Site ID	Site Name	Listing nº	Plan nº	Distance (m)	Direction
5053861	BOOS (Bondi Ocean Outfall Sewer)	01623	2040	134	south

*State Heritage Register

Commonwealth Heritage List (CHL)

Site ID	Site Name	Class	Status	Distance (m)	Direction
Not identified	-	-	-	-	-

World Heritage Area (WHA)

Site ID	Site Name	IUCN	Status	Distance (m)	Direction
Not identified	-	-	-	-	-

3.2 NATURAL HAZARDS & COASTAL MANAGEMENT

Map 10 (500m Buffer)

Bush Fire Prone Land (BPL)

Category	On the Property?	Within Record Search Buffer?
Not identified	-	-

Fire History (Wildfires and Prescribed Burns)

Category	On the Property?	Within Record Search Buffer?
Not identified	-	-

Flood Hazard Area

Name	On the Property?	Within Record Search Buffer?
Woollahra Local Environmental Plan 2014	Yes	Yes

3.3 STATE ENVIRONMENTAL PLANNING POLICY (COASTAL MANAGEMENT)

Map 10 (500m Buffer)

Type	On the Property?	Within Record Search Buffer?
Coastal Wetlands Proximity Area	Not identified	Not identified
Coastal Wetlands	Not identified	Not identified
Coastal Environment Area Map	Not identified	Yes
Coastal Use Area Map	Not identified	Yes

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T 02 9979 1720
E info@liresources.com.au
W www.liresources.com.au

ATTACHMENT A

Report Maps

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SUBJECT AREA AND SENSITIVE RECEPTORS

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MAP 1

Enviro-Screen

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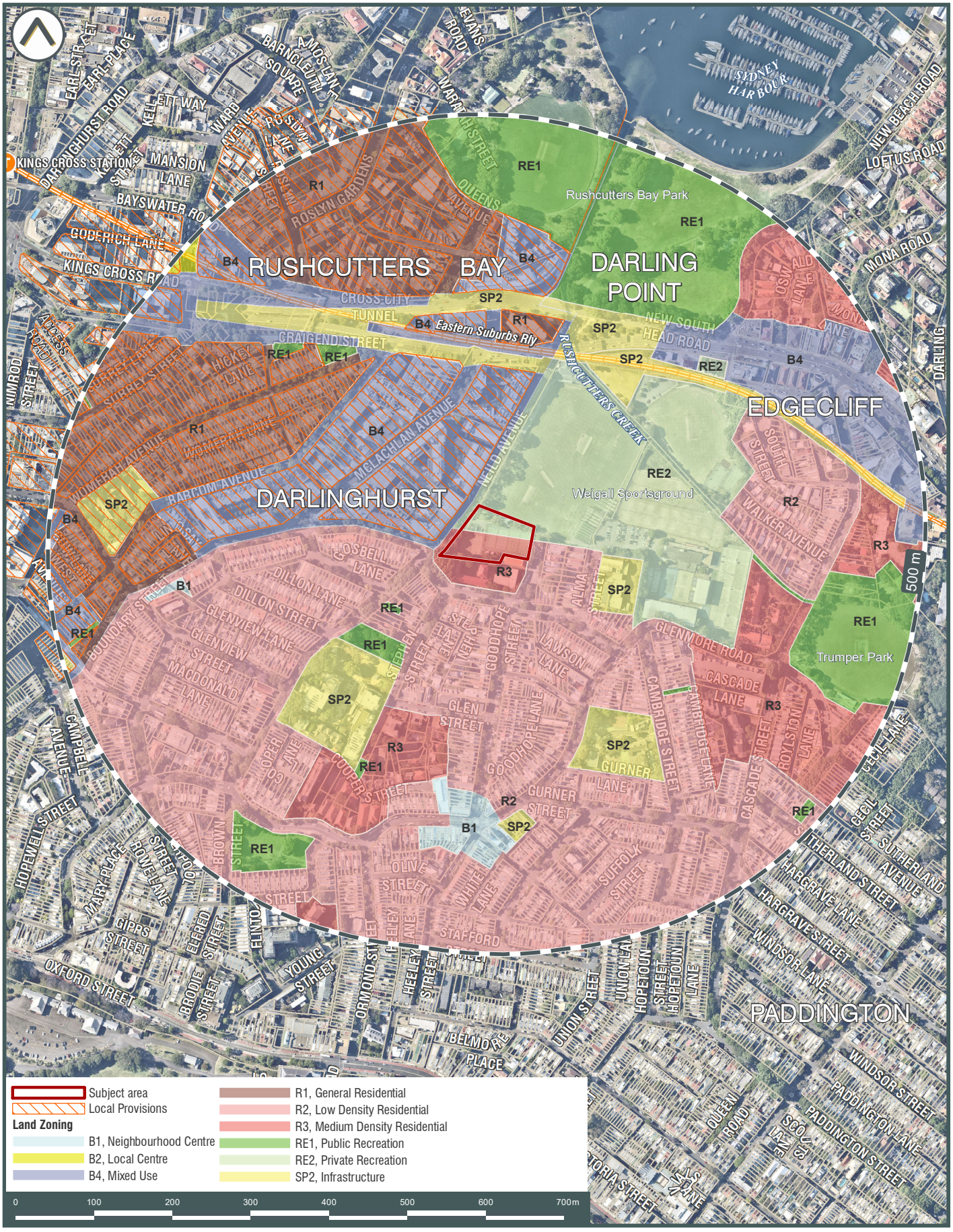

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PLANNING CONTROLS

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MAP 2

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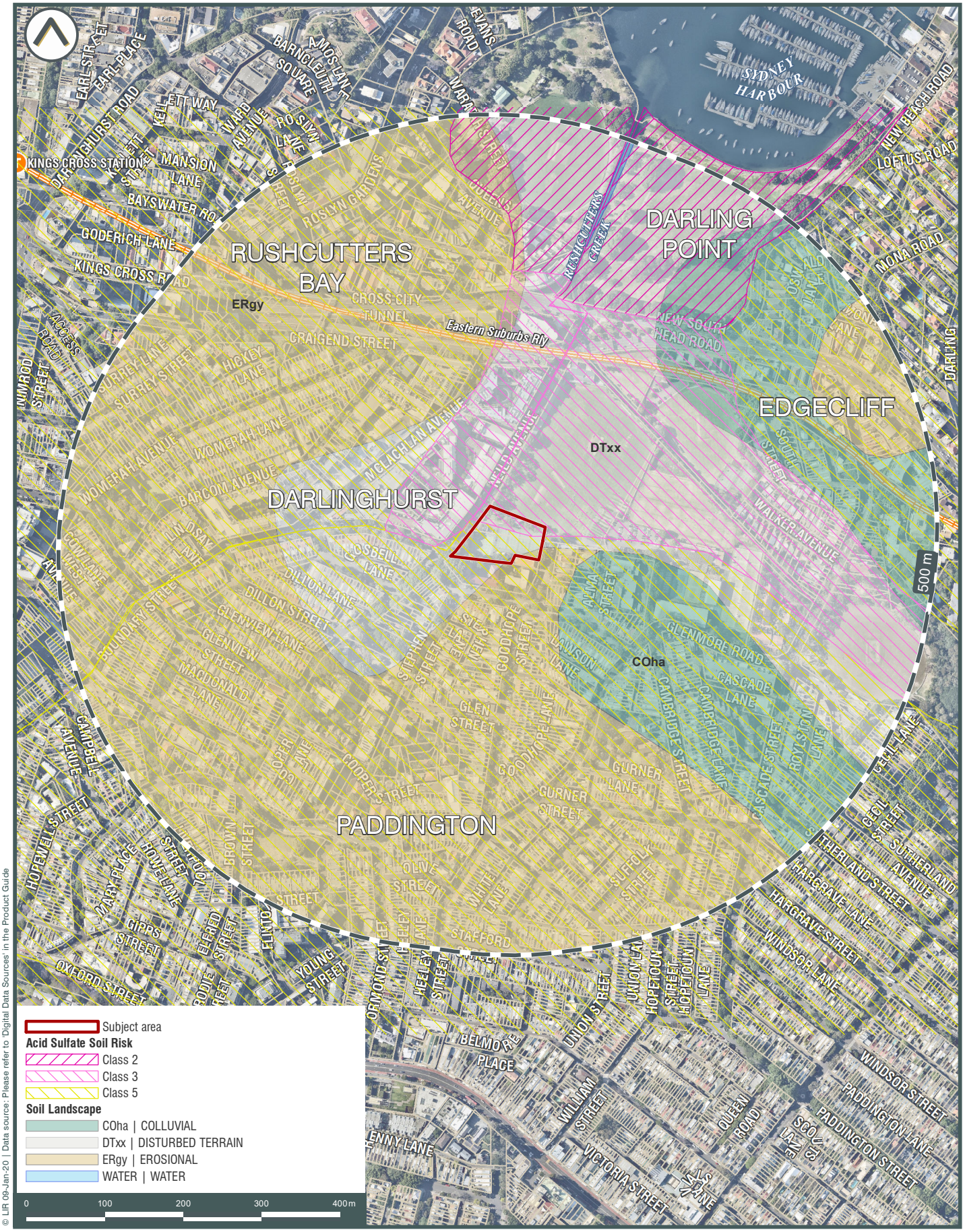

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SOIL LANDSCAPES AND ACID SULFATE SOIL RISK

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MAP 3a

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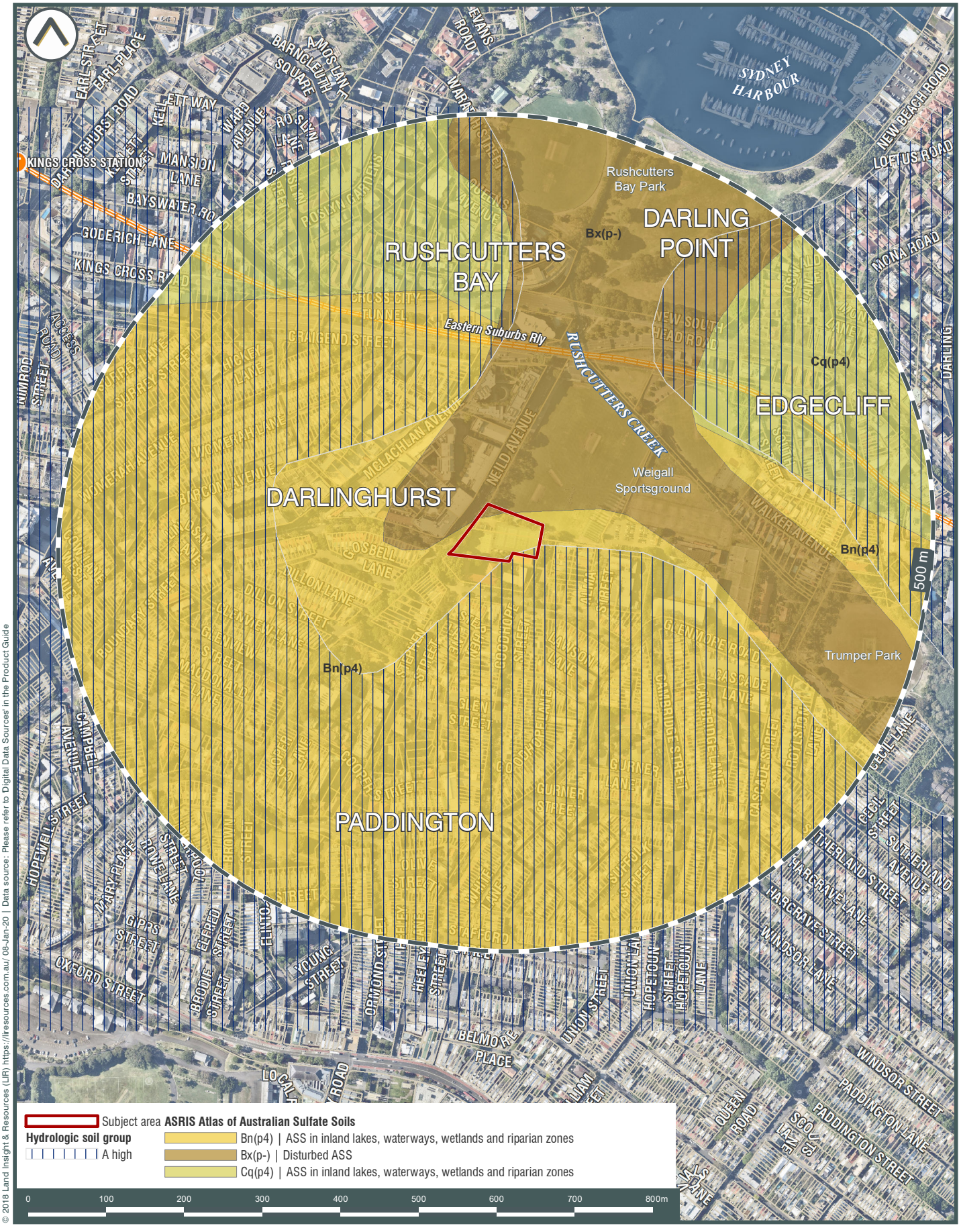

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ATLAS OF AUSTRALIAN ACID SULFATE SOILS AND SALINITY

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MAP 3b

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GEOLOGY AND TOPOGRAPHY

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MAP 4

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HYDROGEOLOGY AND GROUNDWATER BORES

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MAP 5a

Enviro-Screen

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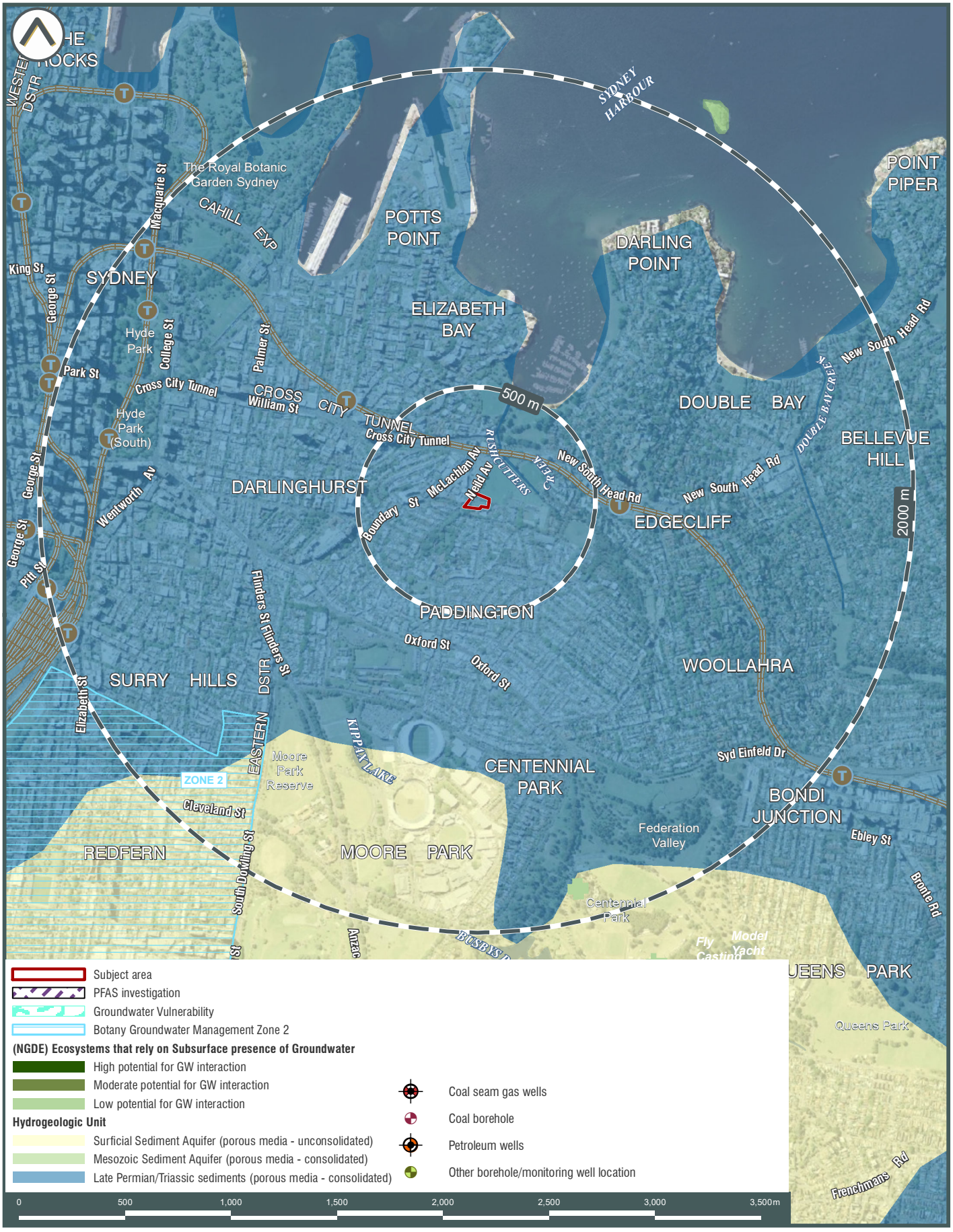

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HYDROGEOLOGY AND OTHER BOREHOLES

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MAP 5b Enviro-Screen

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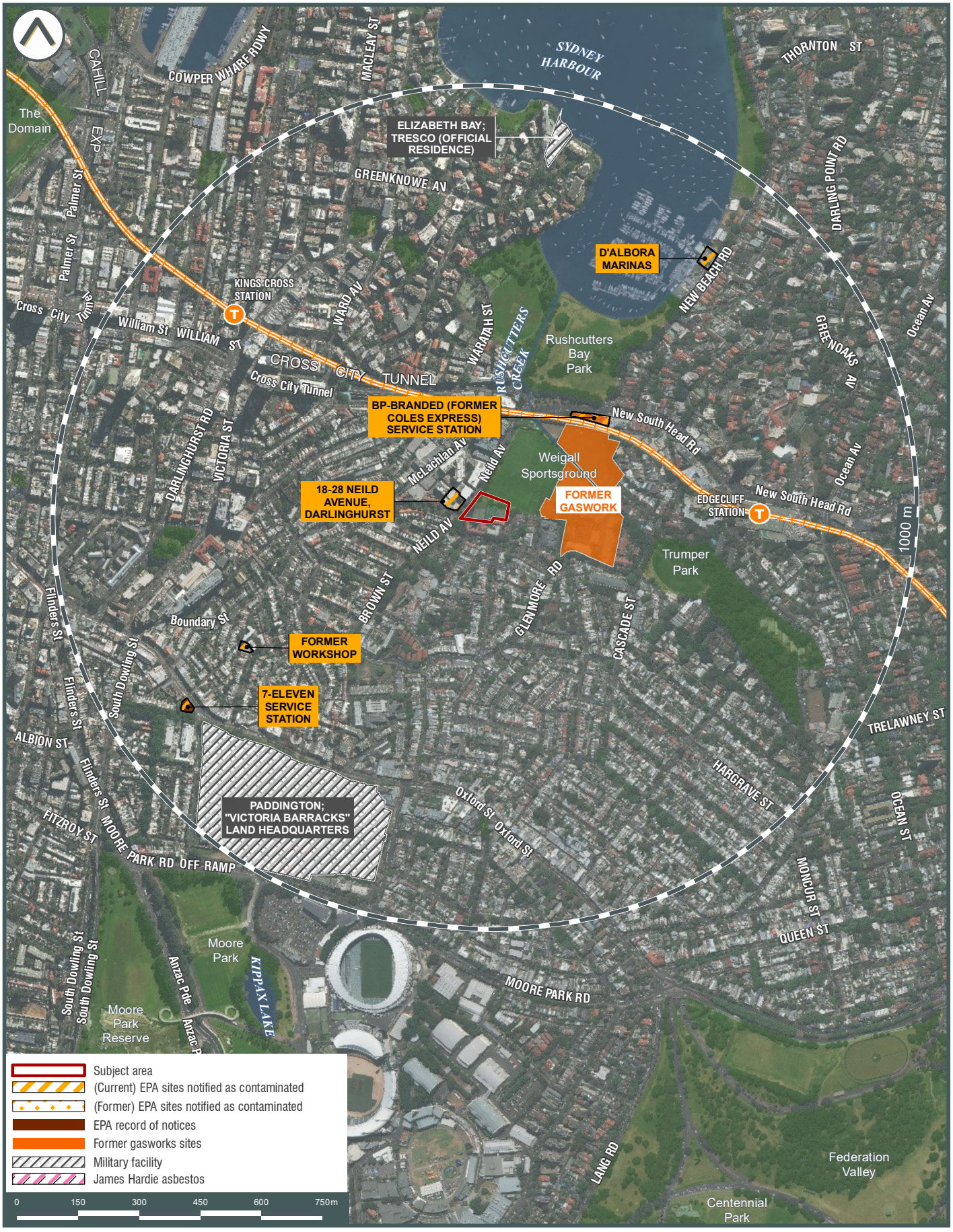

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EPA RECORDS AND OTHER REGULATORY CONTAMINATION ISSUES

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MAP 6

Enviro-Screen

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Subject area
Derelict Mines and Quarries
Historical (Legacy) Landfills
Operational Service stations
Former Service stations
Operational Dry Cleaners
Former Dry Cleaners
Aviation fuel depots
Aviation rescue and fire fighting facilities
Cattle dip
Derelict mine/quarry
Liquid fuel depots
Liquid fuel terminals
Power stations
Substation locations
Telephone exchanges
Waste management facilities
Wastewater Treatment Facility

0 200 400 600 800 1,000 m

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POTENTIALLY CONTAMINATING ACTIVITIES

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MAP 7a

Enviro-Screen

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CURRENT COMMERCIAL AND TRADE DATA

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MAP 7

Enviro-Screen

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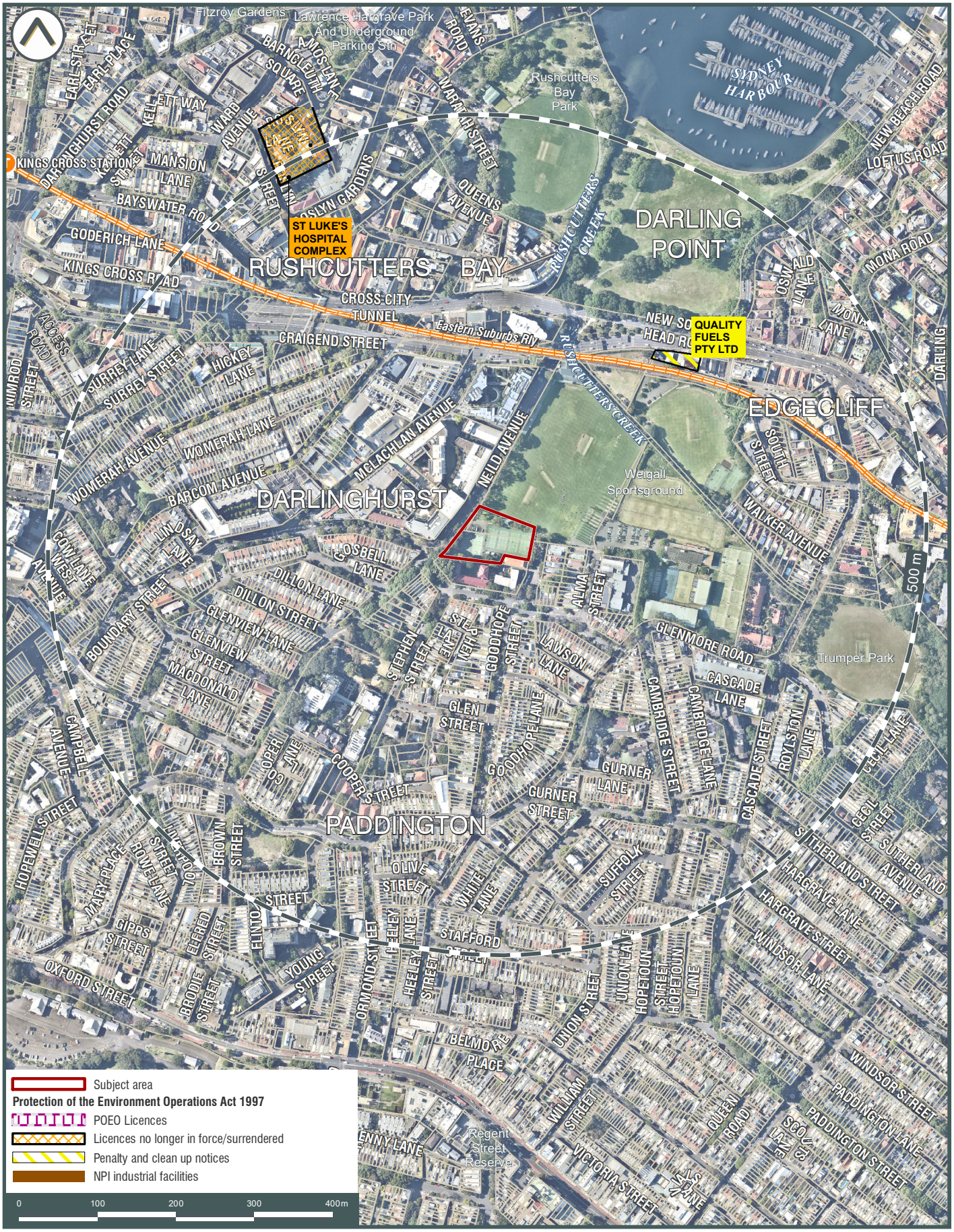

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LICENSING UNDER THE POEO ACT 1997 AND NPI FACILITIES

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MAP 8

Enviro-Screen

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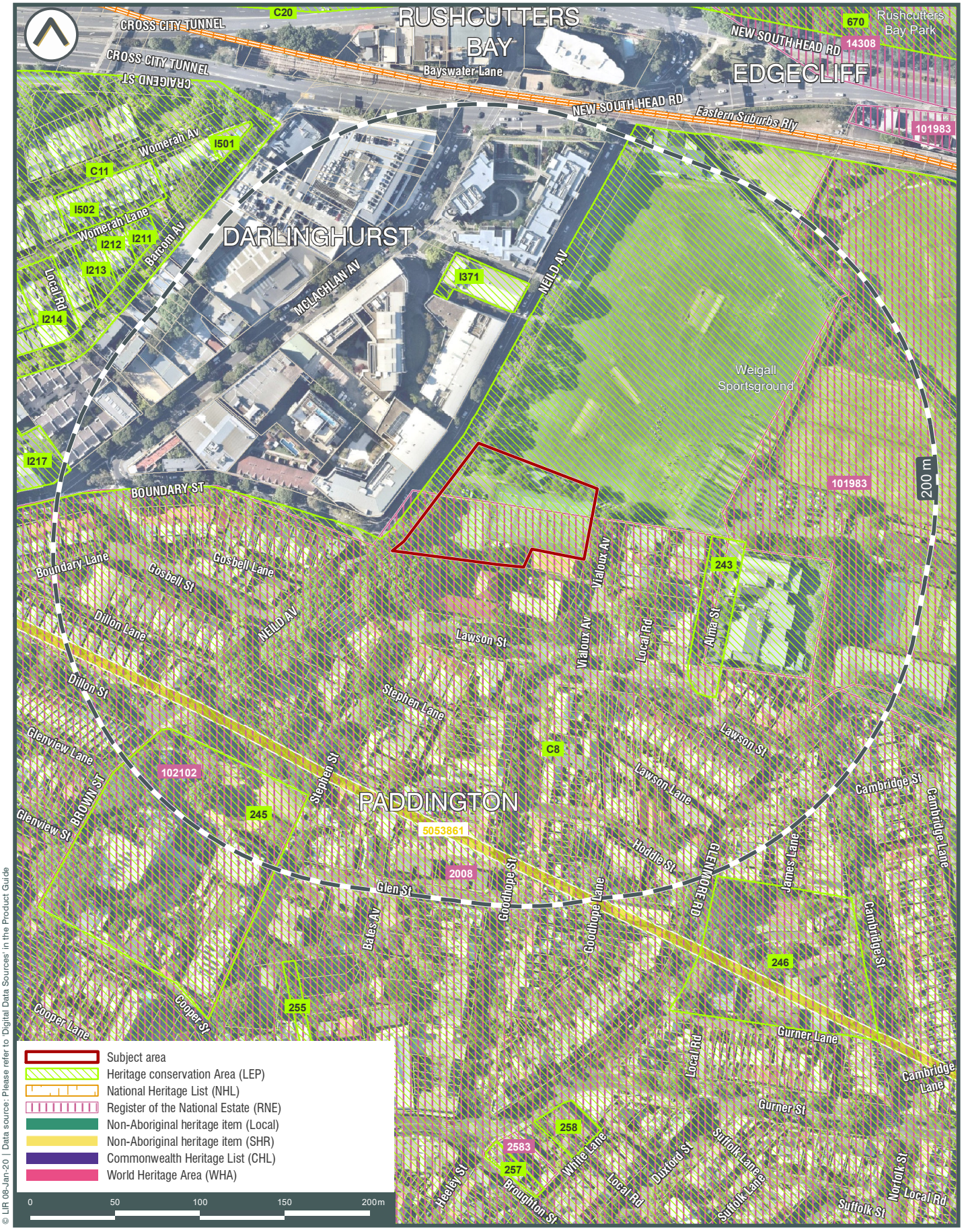

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HERITAGE

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MAP 9

Enviro-Screen

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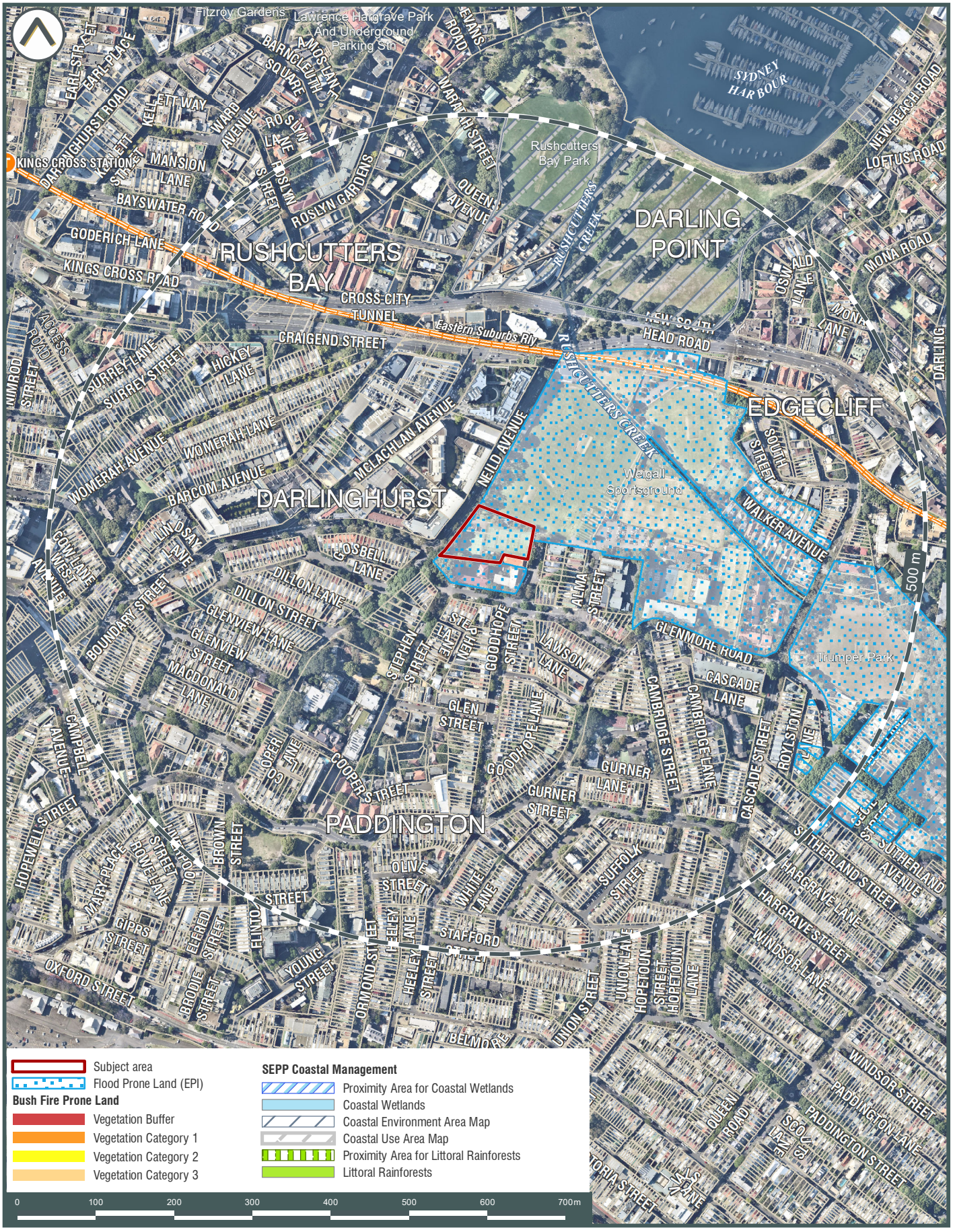

Subject area
Flood Prone Land (EPI)

Bush Fire Prone Land
Vegetation Buffer
Vegetation Category 1
Vegetation Category 2
Vegetation Category 3

SEPP Coastal Management
Proximity Area for Coastal Wetlands
Coastal Wetlands
Coastal Environment Area Map
Coastal Use Area Map
Proximity Area for Littoral Rainforests
Littoral Rainforests

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NATURAL HAZARD AND COASTAL MANAGEMENT

LAND INSIGHT & RESOURCES

MAP 10

Enviro-Screen

ATTACHMENT B

Historical Imagery

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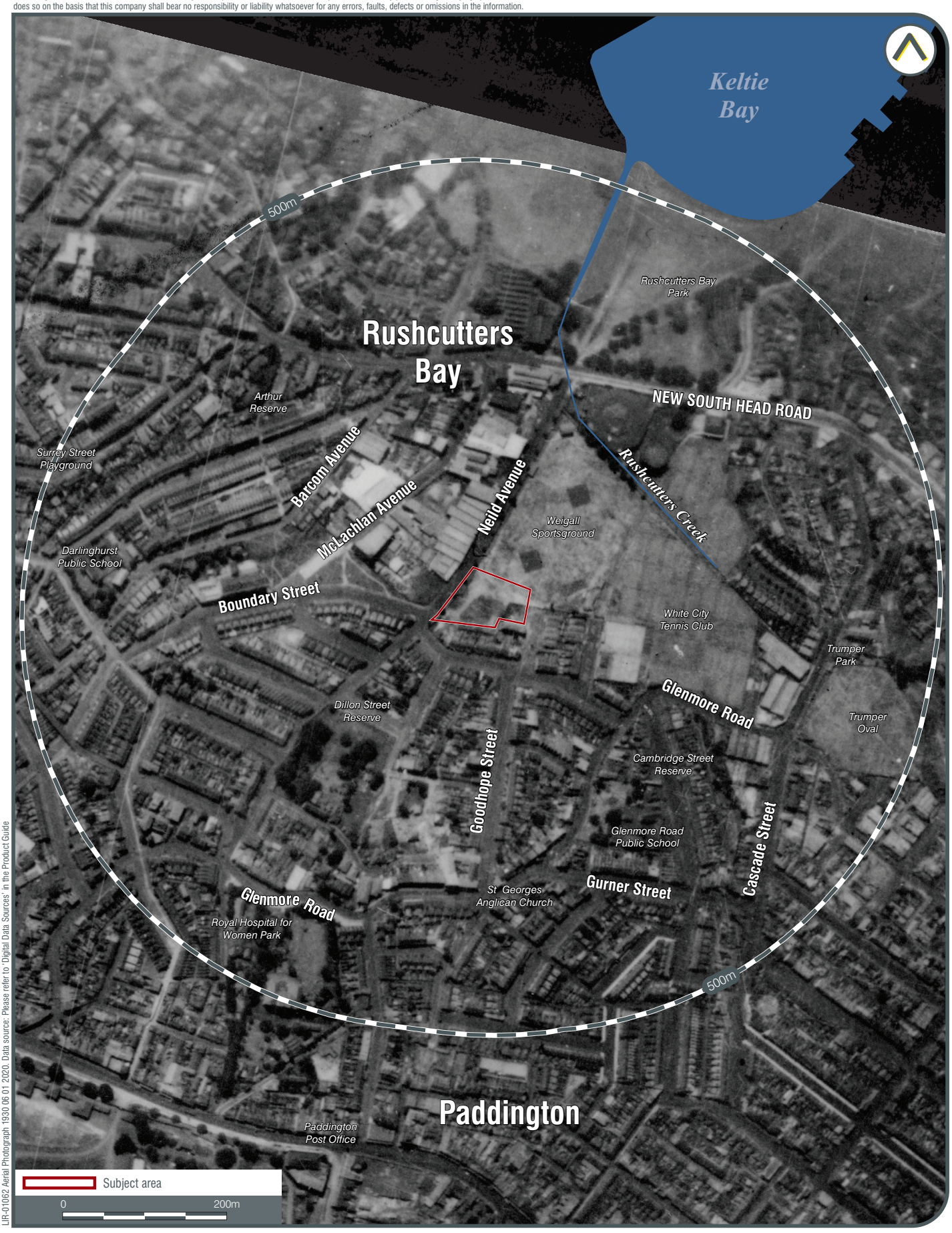

LIR-01062 Aerial Photograph 1930 06 01 2020. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 1930

LAND INSIGHT & RESOURCES

MAP 11

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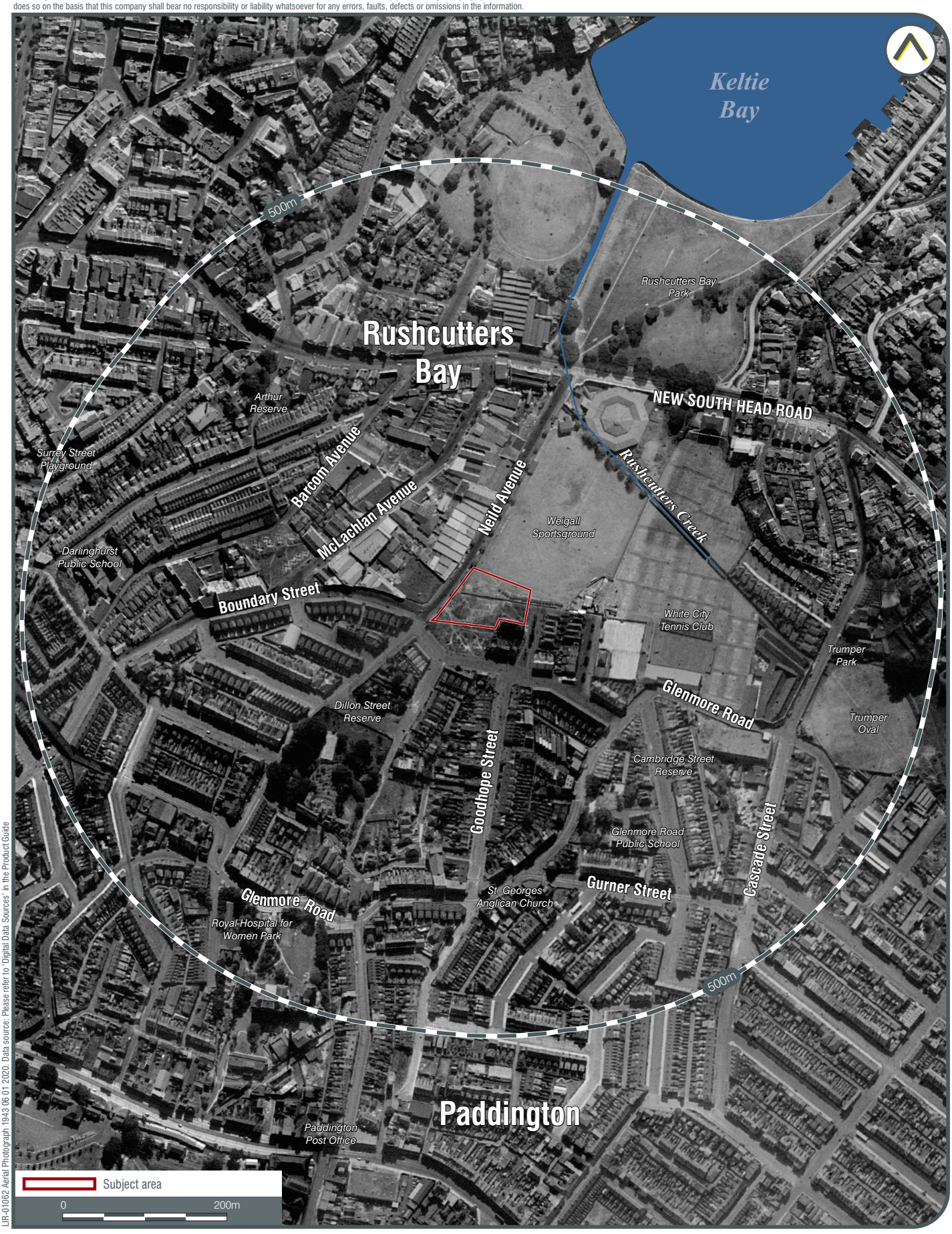

LIR-01062 Aerial Photograph 1943 06 01 2020. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 1943

LAND INSIGHT & RESOURCES

MAP 12

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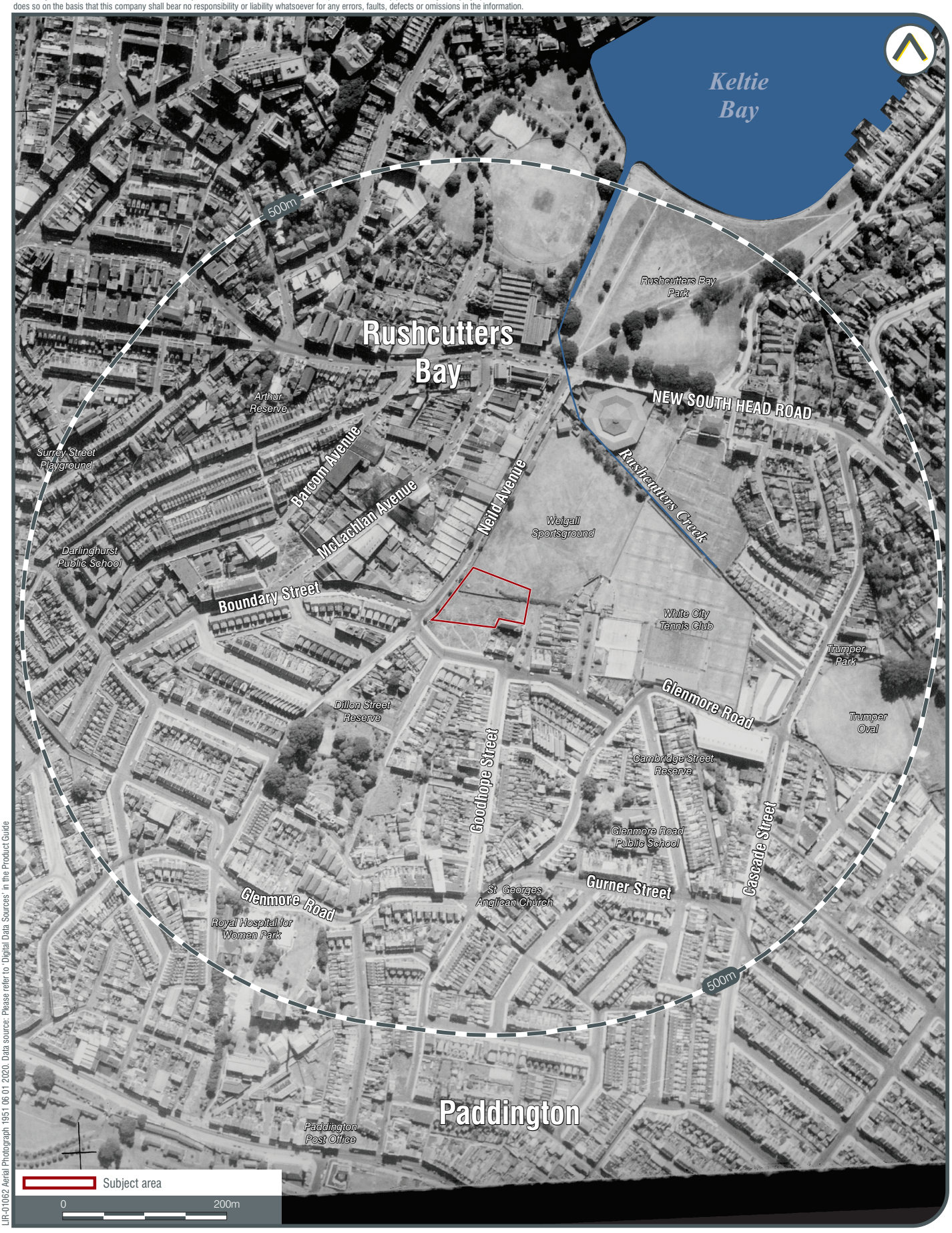

LIR-01062 Aerial Photograph 1951 06 01 2020. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 1951

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MAP 13

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HISTORIC AERIAL PHOTOGRAPH - 1955

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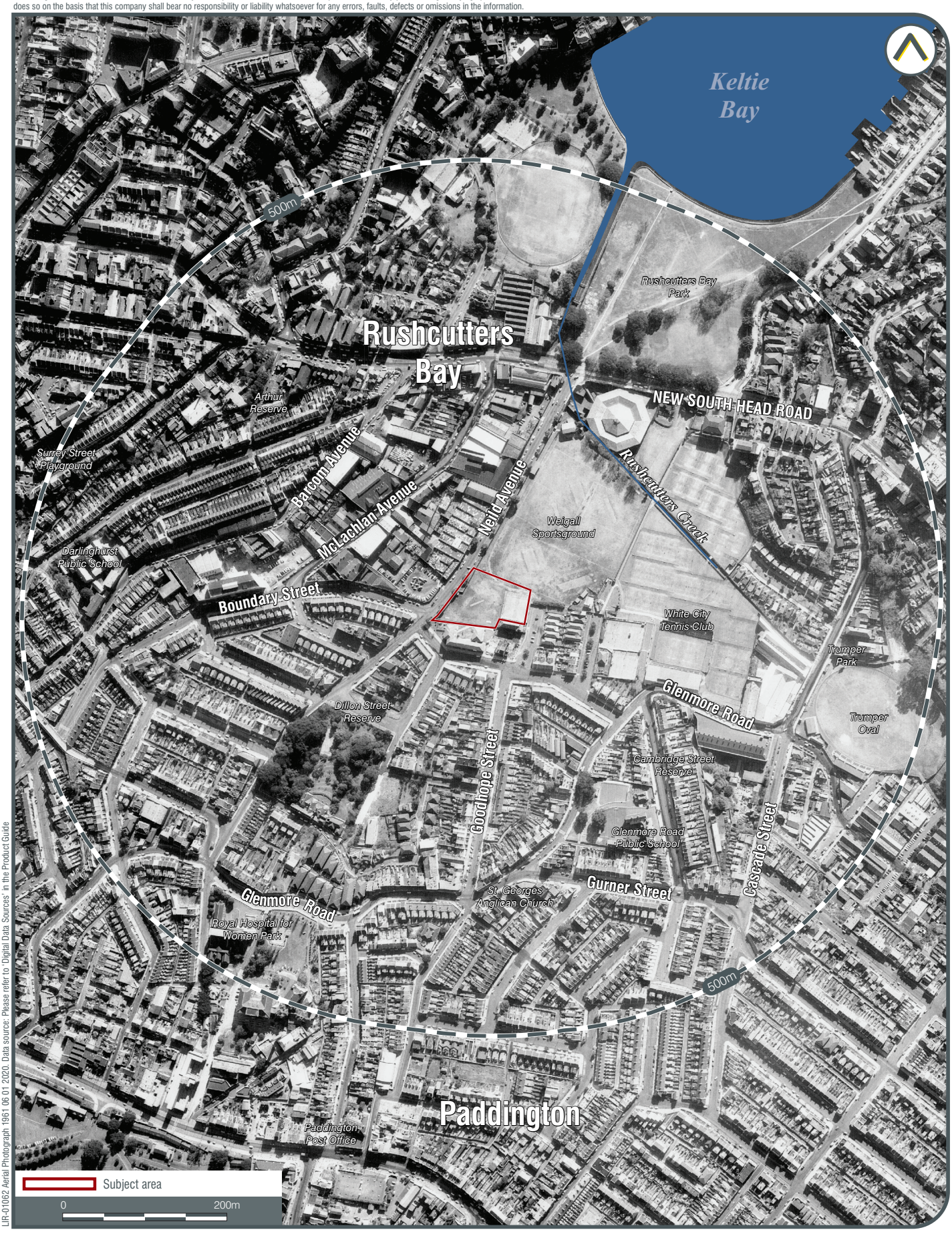

LIR-01062 Aerial Photograph 1961 06 01 2020. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 1961

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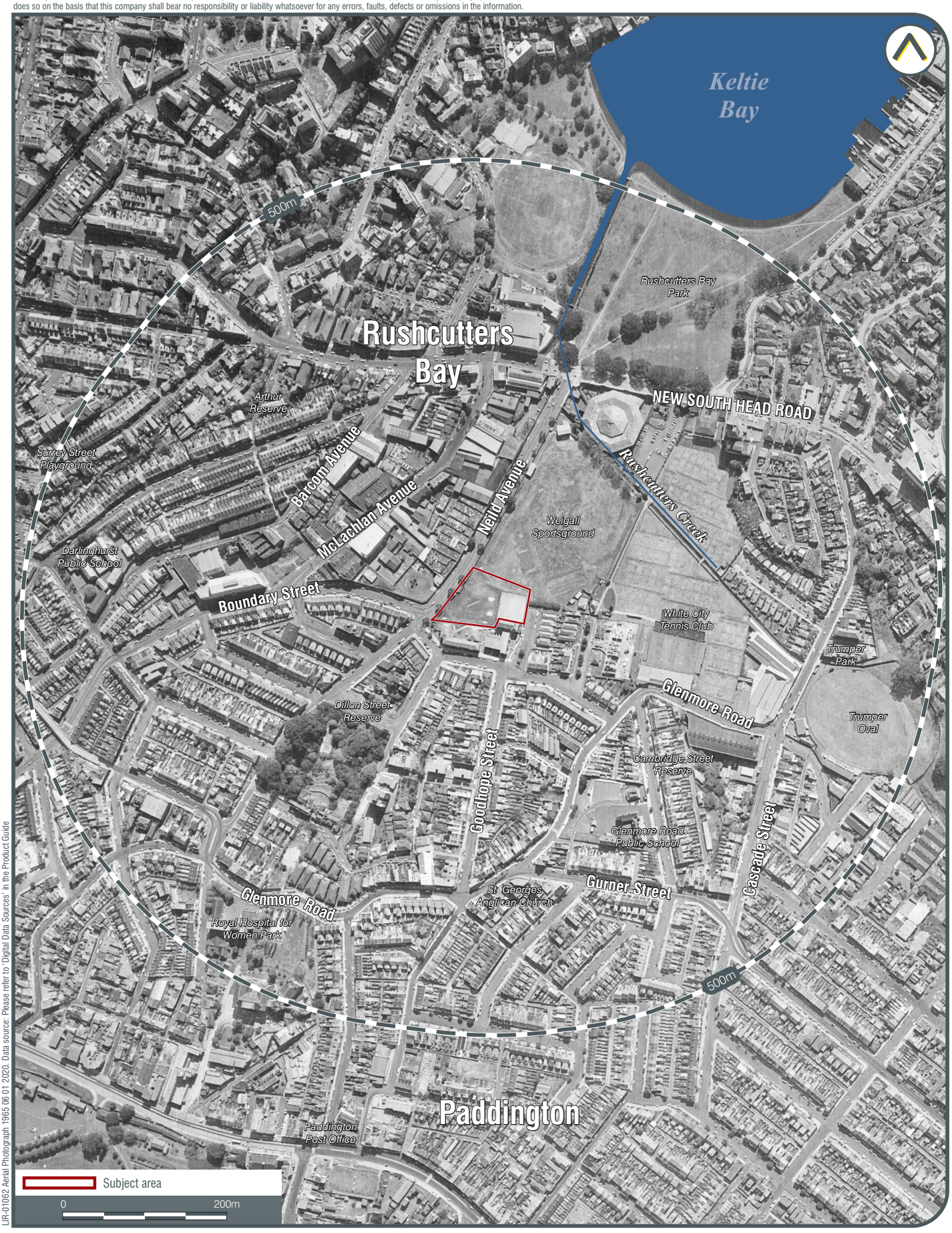

LIR-01062 Aerial Photograph 1965 06 01 2020. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 1965

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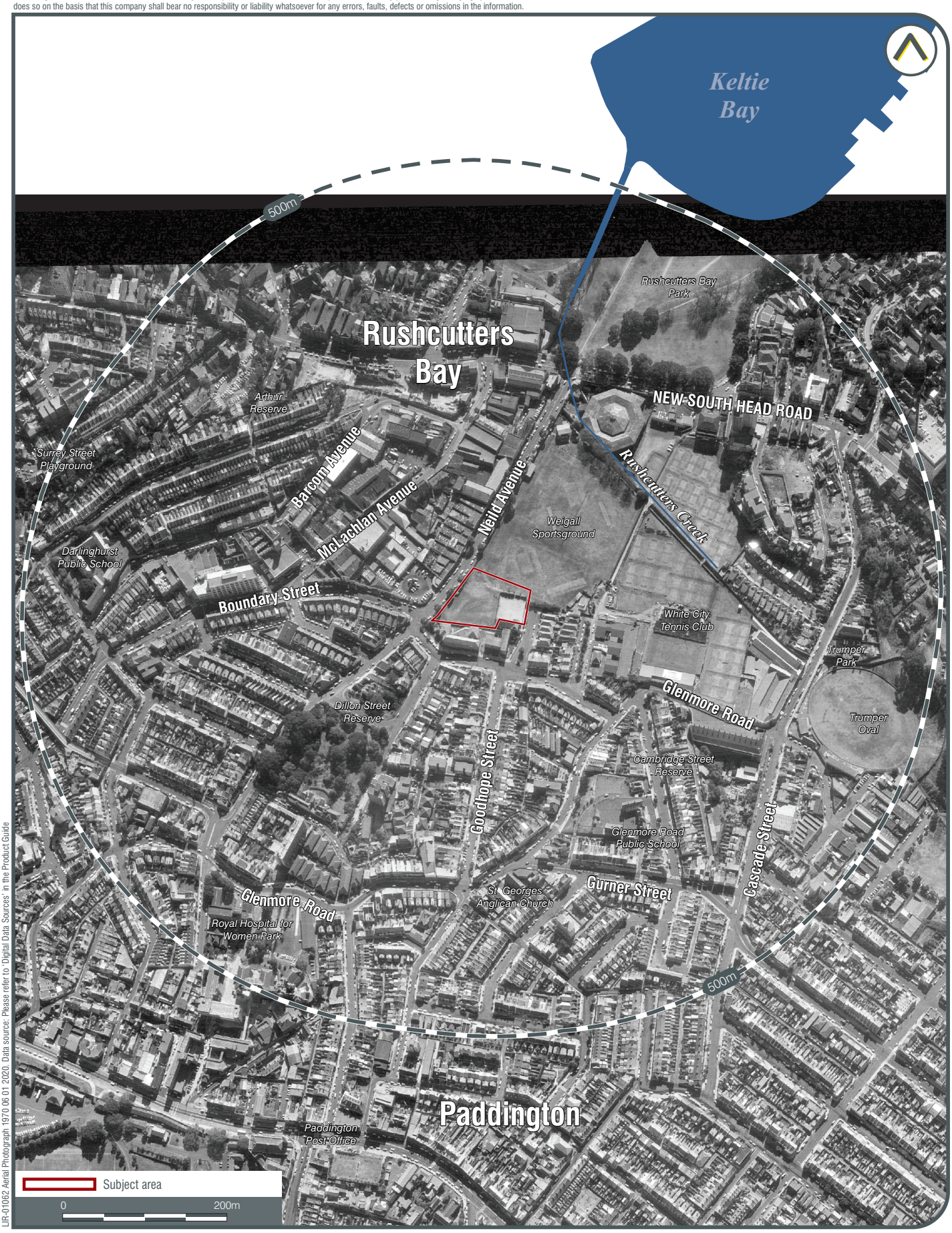

LIR-01062 Aerial Photograph 1970 06 01 2020. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 1970

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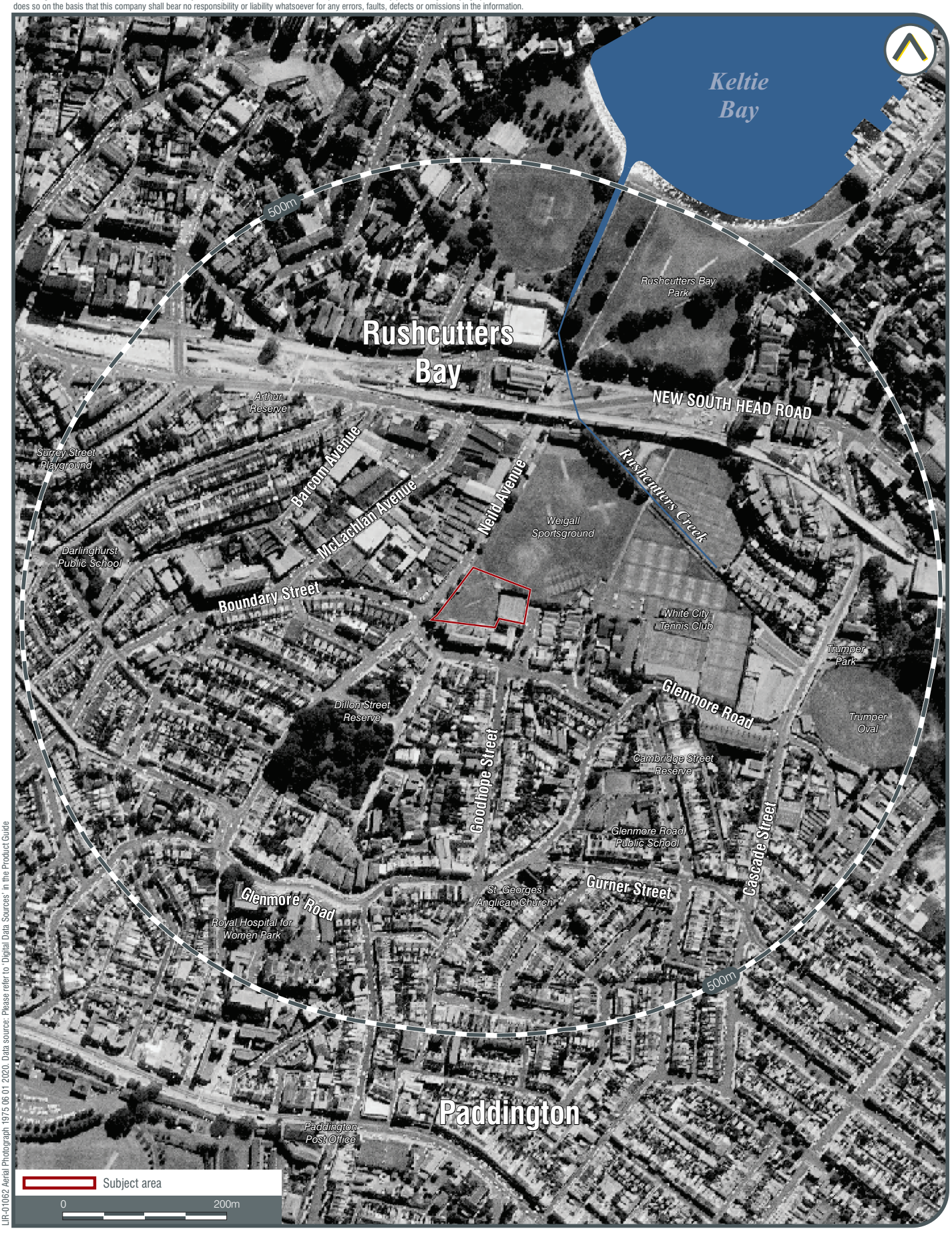

LIR-01062 Aerial Photograph 1975 06 01 2020. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 1975

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HISTORIC AERIAL PHOTOGRAPH - 1986

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HISTORIC AERIAL PHOTOGRAPH - 1994

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HISTORIC AERIAL PHOTOGRAPH - 1998

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HISTORIC AERIAL PHOTOGRAPH - 2004

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HISTORIC AERIAL PHOTOGRAPH - 2009

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HISTORIC AERIAL PHOTOGRAPH - 2013

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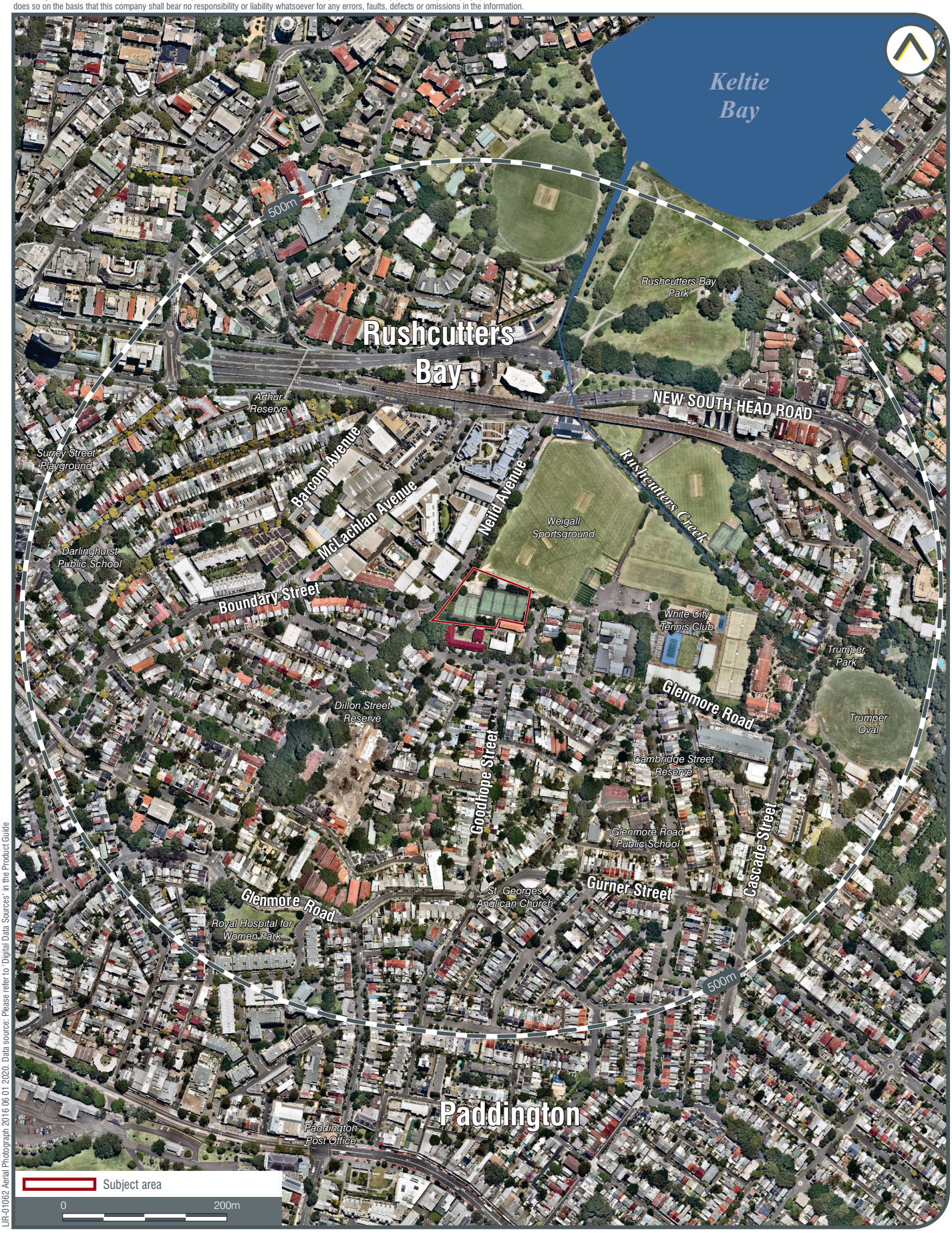

LIR-01062 Aerial Photograph 2016 06 01 2020. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC AERIAL PHOTOGRAPH - 2016

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HISTORIC AERIAL PHOTOGRAPH - 2019

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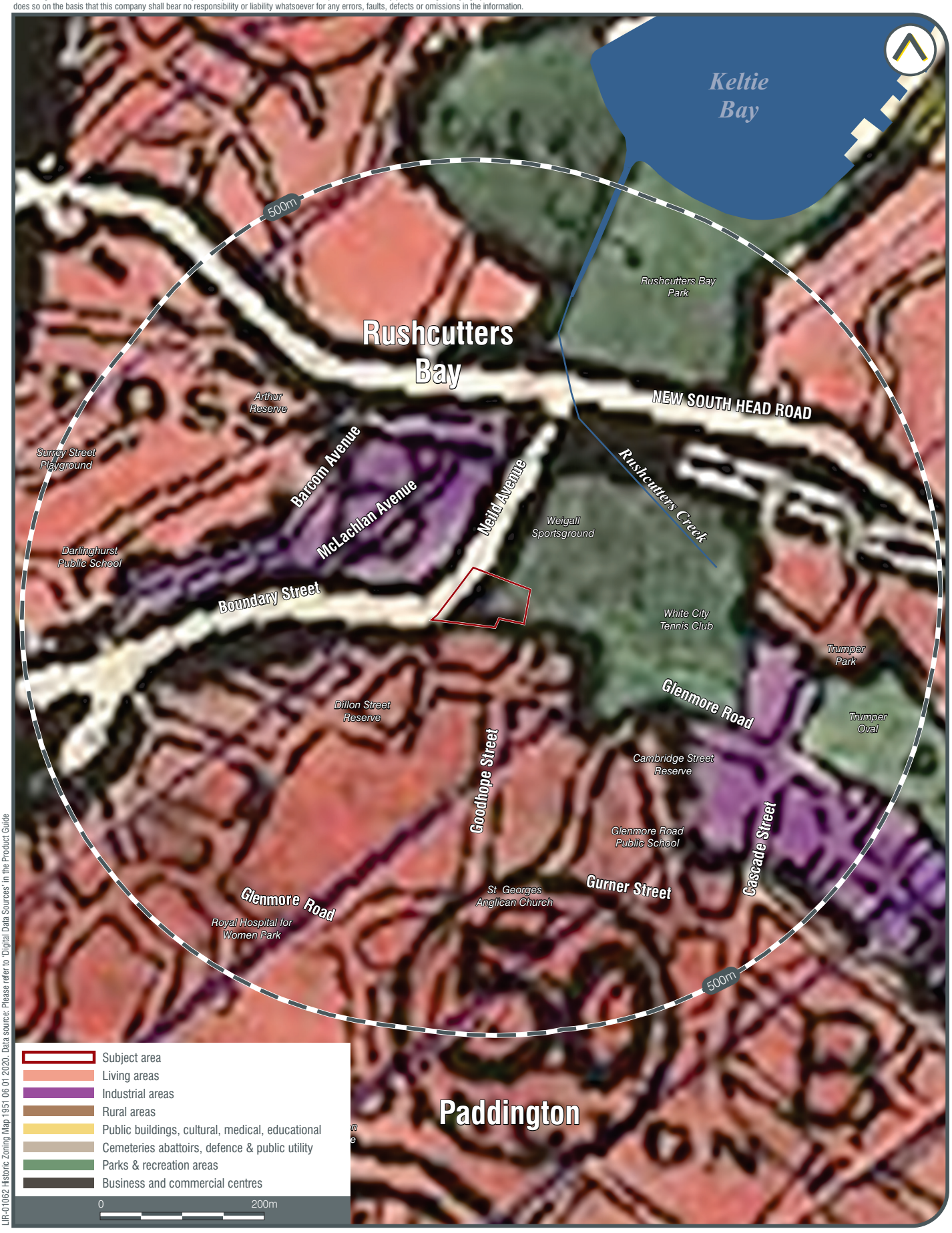

LIR-01062 Historic Zoning Map 1951 06 01 2020. Data source: Please refer to 'Digital Data Sources' in the Product Guide

HISTORIC ZONING MAP - 1951

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MAP 27

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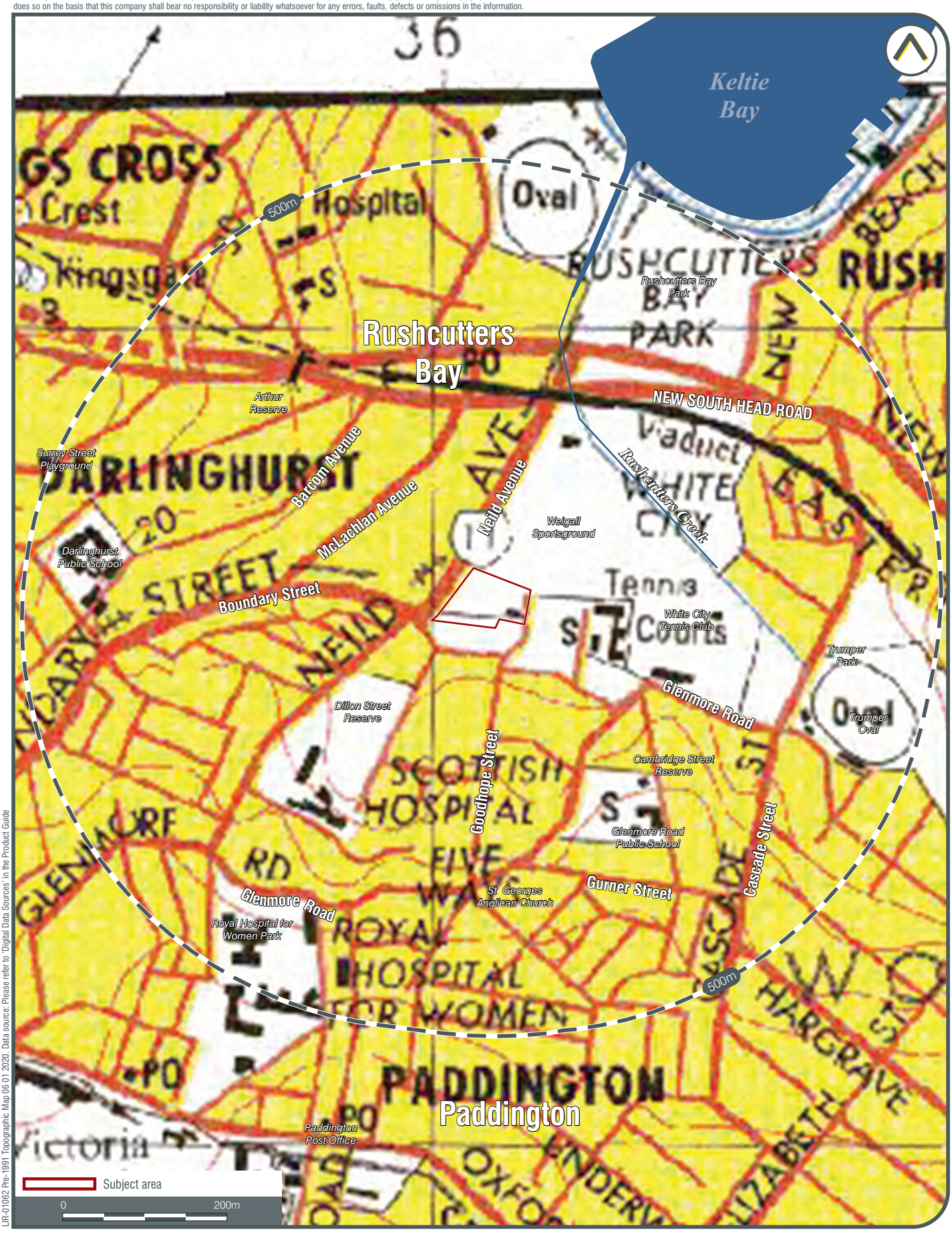

LIR-01062 Pre-1991 Topographic Map 06 01 2020. Data source: Please refer to 'Digital Data Sources' in the Product Guide

1969-1991 TOPOGRAPHIC MAP SERIES (BOTANY BAY 9130-3S)

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MAP 28

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PRODUCT GUIDE

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Contaminated Land Record of Notices, Sites Notified as Contaminated to the NSW EPA, Former Gasworks and PFAS investigation program - © State of NSW Environment Protection Authority

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The information relating to a specific parcel of land should not be relied upon without additional checks and/or verification from the relevant state, territory or local government. Further information as to Defence's UXO categorisation criteria; along with Defence's recommendations to state and local authorities, is available on the Defence internet.

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Other Data – if applicable

Cattle Dip Site Locator Northern Rivers Region - © State of New South Wales through NSW Department of Industry

Legacy Landfills – LI Resources proprietary dataset. Dataset is derived from verified Council Records, Aerial Photography Interpretation, Historic Zoning Maps, Historic Topographic Maps, Historic Parish Maps and Derelict Mines and Quarries Information - © State of New South Wales through NSW Department of Industry, 2019

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Historical Commercial & Trade Directory Data –

Sydney

1932-1933 John Sands Sydney Trades Directory – Copyright Expired

1940 & 1950 Commonwealth of Australia Telephone Directory Sydney – Copyright Expired

1960-1961 Telecom Australia Pink Pages Sydney – Permission for use Sensis 2017

1970-1971 United Business Directories Sydney – Licenced under Hardie Grant 2017.

1974-1975 NSW Post Office Yellow Pages Sydney Buying Guide and Commercial/Industrial Directories – Permission for use Sensis 2017

1980-1981 & 1990-1991 Telecom Australia Yellow Pages Sydney – Permission for use Sensis 2017

Regional NSW

1971, 1981 & 1991 Telecom Australia Yellow Pages Country NSW Directories – Permission for use Sensis 2017

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For more detailed information regarding data source and update frequency, please contact LI Resources at info@liresources.com.au

Glossary

AVIATION RESCUE FIRE FIGHTING FACILITIES (ARFF); LIQUID FUEL & AVIATION FUEL DEPOTS/TERMINALS; POWER STATIONS; TELEPHONE EXCHANGES & WASTEWATER TREATMENT FACILITIES

These facilities may be associated with the use, storage, treatment and disposal of a range of chemicals and products such as PFAS (Per- and poly-fluoroalkyl substances), solvents, petroleum products, asbestos, PCBs (polychlorinated biphenyls) and others.

BUSHFIRE PRONE LAND

This data may assist environmental consultants, developers and others understand whether any bushfire risk is present in the area that may require specific management and/or restrict site investigations and development works.

COAL SEAM GAS, PETROLEUM WELLS AND BOREHOLES

This data may assist environmental consultants during investigations as to previous resource exploration with an area, resources present (i.e. coal, gas and petroleum), lithological data and potential for environmental contamination.

DEPARTMENT OF DEFENCE UNEXPLODED ORDNANCE (UXO) SITES

UXO is any sort of military ammunition or explosive ordnance which has failed to function as intended. It includes a range of ammunition used by the Navy, Army and Air Force; and many other types of ammunition and explosives including training munitions. UXO contamination has arisen mainly as a result of military training activities, since European settlement. In the past large numbers of ranges and training areas were approved for use in many areas of Australia. As a result, there are now a number of sites around Australia which are affected by UXO. For more information see www.defence.gov.au/UXO

DERELICT MINES AND QUARRIES

Outstanding legacy issues surrounding derelict mines and quarries have the potential to cause safety and environmental impacts and may also be an indicator of the presence of unregulated landfill.

DRY CLEANERS (CURRENT)

Dry cleaners often use or have used hazardous and flammable chemicals in their operations. Incorrect storage and disposal of these chemicals may result in fire/explosion risks or contamination of soil and groundwater or result in human health risks.

GROUNDWATER EXCLUSION ZONES

Groundwater exclusion zones are present in certain areas where aquifers are known to be contaminated or where past activities may have affected groundwater quality. Restrictions on the use of groundwater in those areas are in place and differ between the various management/exclusion zones.

HERITAGE – FEDERAL, STATE AND LOCAL

This data may assist environmental consultants, developers and others understand whether any heritage items are present on the site that may require specific management and/or restrict site investigations and development works.

HISTORICAL COMMERCIAL & TRADE DIRECTORY DATABASE (1932, 1940, 1950, 1960, 1970; 1974, 1980 and 1990)

An LI Resources proprietary database of historical potentially contaminating activities previously listed as having been undertaken on the property or surrounding area. Activities have been catalogued based on 'low to high risk activities' either known to cause potential contamination risk (based on Managing Land Contamination Planning Guidelines, SEPP 55 remediation of land, 1998) or to assist in guidance for sampling and remediation programs by environmental consultants.

HISTORICAL (LEGACY) LANDFILLS

An LI Resources proprietary dataset containing the location of former legacy landfills. Legacy landfills are widely present across the country, with many locations unknown. Most of these landfills were created prior to current environmental guidelines (i.e. remain unlined and uncapped) resulting in the potential for leaching of hazardous substances into waterways, production of odours, migration of landfill gas and stability issues.

HYDROGEOLOGY

This data includes information for environmental consultants on aquifer properties, the presence of wetlands and groundwater monitoring bores. This information can assist in the understanding of contaminant pathways and receptors.

Groundwater monitoring bores are primarily needed to assess changes to water table levels, groundwater quality and to assess groundwater flow direction. Impacts on groundwater result from contaminated water movement, leaching of surface pollutants caused by rainfall or irrigation water percolation, leakage of stored matter or the disposal of wastes. The presence of a monitoring bore may indicate that a site has been or is being investigated.

LICENSING UNDER THE POEO ACT 1997

The POEO public register includes a range of specified information on environment protection licences issued under the POEO Act to regulate air, noise, water and waste pollution and impacts. The licences and notices provide information on the type of industrial activities undertaken in an area and if any clean-up and preventative action notices have been issued under that licence.

MILITARY FACILITIES

Military practices at certain facilities may cause potential contamination through the use of chemicals ranging from cleaning solvents and paints to ammunition, explosives and firefighting foam. These chemicals can cause human and ecological health risks.

NATURALLY OCCURRING ASBESTOS

Asbestos is found as a naturally occurring mineral in many areas of regional NSW and may occur in veins within rock formations. Naturally occurring asbestos is generally found when building roads, working on construction sites and undertaking excavation activities. This data provides information on the areas identified with a low to high probability of naturally occurring.

NPI INDUSTRIAL FACILITIES

Industrial facilities that trigger a defined threshold(s) for the emission of pollutants identified in the National Pollution Inventory (NPI), must estimate and report their emissions. The pollutants identified under the NPI are those that are known to have possible effects on human health and the environment.

NSW EPA CONTAMINATED LAND RECORD OF NOTICES ISSUED UNDER THE CLM Act 1997

The EPA is required by law to maintain a record of notices relating to contaminated land, including notices declaring land to be 'Significantly Contaminated Land' under the Contaminated Land Management Act 1997. The EPA record of notices provides information on all sites that have been declared significantly contaminated.

NSW EPA FORMER GASWORKS SITES

Former gasworks often leave a legacy of soil and groundwater contamination. The major contaminants in these instances include tars, oils, hydrocarbon sludges, spent oxide wastes, ash and ammoniacal recovery wastes. Some of these contaminants are carcinogenic to humans and toxic to aquatic ecosystems and therefore may pose a risk to human health and the environment.

NSW EPA FORMER URANIUM PROCESSING SITE AT HUNTERS HILL

In 2008 a Parliamentary Inquiry held into the former uranium processing site at Hunters Hill, Sydney, found radiation levels were too low to require site remediation. During the investigation it became evident that there were two separate causes of gamma radiation in the vicinity of Nelson Parade (7-9 Nelson Parade – former uranium processing plant and Kelly's Bush – former tin smelter). The investigations found that levels of radiation on properties surrounding 7-9 Nelson Parade, at Kelly's Bush and in nearby areas of Hunters Hill were below relevant national and international guidelines for the protection of health and therefore remediation was not warranted. Further information can be found at www.epa.nsw.gov.au

NSW EPA JAMES HARDIE ASBESTOS WASTE CONTAMINATION LEGACY

During the 1960s and 70s, bulk asbestos waste associated with manufacturing and waste disposal by the former James Hardie Industries was delivered as fill to areas targeted because of their low-lying geography. Between December 2007 and February 2008, the Department of Environment Climate Change and Water conducted site inspections of those disposal sites. None of the inspected sites were found to be a significant risk to human health or the environment, provided the sites remained sealed or undisturbed. Further information can be found at www.epa.nsw.gov.au

NSW EPA SITES NOTIFIED AS CONTAMINATED TO THE NSW EPA

The EPA maintains a record of all sites notified to it by owners or occupiers of sites believed to be significantly contaminated.

NSW EPA PFAS INVESTIGATION PROGRAM

The NSW EPA is investigating particular sites to better understand the extent of PFAS use and contamination in NSW. PFAS are a group of chemicals that include perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA).

They have many specialty applications and are widely used in a range of products in Australia and internationally. PFAS are an emerging contaminant, which means that their ecological and/or human health effects are unclear. Further information can be found at www.epa.nsw.gov.au

OTHER POTENTIALLY CONTAMINATED SITES

An LI Resources proprietary database of recent potentially contaminating activities previously listed as having been undertaken on the property or surrounding area. Activities have been catalogued based on 'moderate to high risk activities' either known to cause potential contamination risk or to assist in guidance for sampling and remediation programs by environmental consultants. Please note this database is not exhaustive and may not list all activities in the area.

PARRAMATTA RIVER CATCHMENT LAND USE AREAS

An LI Resources proprietary dataset containing land use changes around the Parramatta River catchment area. Details include land reclamation areas, loss of foreshore and major land use changes (i.e. industrial to residential land). These changes may indicate presence of unregulated landfill and potential contamination associated with former industrial land use.

PUBLIC REGISTER OF PROPERTIES AFFECTED BY LOOSE-FILL ASBESTOS INSULATION

The NSW Government is required to maintain a register of residential properties that contain loose-fill asbestos insulation. This assists members of the wider community to be informed about any risks associated with a specific property and to take any appropriate safety measures. For more information see www.fairtrading.nsw.gov.au

SENSITIVE RECEPTORS

This data may assist environmental consultants during investigations as to the location and proximity of any sensitive receptors in the area, such as aged care, child care, community and religious facilities; sports grounds; national and state parks etc.

STATE ENVIRONMENTAL PLANNING POLICY 14, 26 AND 71

SEPP 14 (COASTAL WETLANDS), 26 (LITTORAL RAINFORESTS) AND 71 (COASTAL PROTECTION)

The proximity of SEPP 14, 26 and 71 protection zones may limit certain development and remediation works.

SOIL LANDSCAPE AND GEOLOGY

This data may assist environmental consultants during investigations as to the physical site properties that could govern potential contaminant retention or migration.

SERVICE STATIONS (CURRENT)

Service stations may contain leaking tanks which can result in petroleum products migrating into, and contaminating, the soil or groundwater or other pathways to human and biological contact.

UNDERGROUND PETROLEUM STORAGE SYSTEMS (UPSS) ENVIRONMENTALLY SENSITIVE ZONES

UPSS environmentally sensitive zones represent a conservative assessment of areas likely to be vulnerable to contamination from leaking UPSS. This information can assist environmental consultants on the risk a UPSS site poses to a recognised environmentally sensitive receptor.

WASTE MANAGEMENT FACILITIES

A waste facility is a premises used for the storage, treatment, processing, sorting or disposal of waste. These include landfills, waste transfer stations and waste reprocessing facilities. Waste facilities emit regulated substances to air and water, such as methane gas, and can produce odours, dust and noise.

Terms and Conditions

1. Land Insight and Resources (LI Resources) will perform the Services in accordance with these terms and conditions

2. By submitting the Application Form, the User acknowledges that it has read and understood these terms and conditions and agrees to be bound by them.

3. LI Resources reserves the right to change these terms and conditions. Any change shall be effective upon notice, which may be given by LI Resources posting such change on the Website, or by direct communication with the User.

Services

4. LI Resources agrees to undertake the Services using due skill, care and diligence.

5. The User assumes the sole risk of making use of, and/or relying on, the Report and the Services. LI Resources makes no representations about the suitability, completeness, timeliness, reliability, legality, or accuracy of the Services.

6. Unless LI Resources agrees expressly otherwise:

   (A) The Services are solely for the use and benefit of the User; and

   (B) LI Resources does not accept any liability, whether directly or indirectly, for any liability or loss suffered or incurred by any third party placing any reliance on the performance of the Services or any Documents or material arising from or in connection with the Services.

7. The User warrants to LI Resources that it will not use the Services for any purpose that is unlawful or is otherwise inconsistent with these terms and conditions.

8. The User will not alter in any way or provide a copy of the Report or any Document prepared by LI Resources to any other person without LI Resources's prior written consent.

Payment Terms

9. The Fee will be payable at the time of submitting the Application Form unless invoicing payment terms have been negotiated prior to purchase with LI Resources.

10. The User and LI Resources may agree in writing to vary the Services. The fee for each variation shall be agreed between LI Resources and the User.

11. The User agrees to pay LI Resources the Fee, including the fee for any variation requested in accordance with clause 12.

12. If the User's rights are terminated and the User has made an advance payment, LI Resources will refund the User a reasonable proportion of the balance as determined by LI Resources in relation to the value of Services already provided.

13. GST at the prevailing rate is payable in addition to the Fee. The User agrees to pay any other applicable taxes, duties or government imposed fees related to the User's use of the Services.

Intellectual Property

14. LI Resources owns all intellectual property in the Report and arising from or in connection with the Services.

15. LI Resources grants the User a royalty free licence to use LI Resources's intellectual property for that User's personal assessment of its Property(s) only.

Privacy Policy

16. Upon submitting the Application Form the User consents to LI Resources's use of the personal data provided by the User for the purposes of providing the Services.

17. The Reliance on the Report, the use of the Services and the use of LI Resources's Website is at the User's own risk. The User accepts that LI Resources does not guarantee the confidentiality of any communication or information transmitted through the use of the Website.

18. LI Resources will not provide to any third party any personal data provided by a User without the User's permission.

19. The User acknowledges that any feedback provided to LI Resources over the Website is not confidential and that LI Resources has the right to publish, reproduce, disseminate, transmit, distribute and copy (in whole or in part) any such feedback without the approval of the User.

20. LI Resources assumes no responsibility or liability for any content, communications or feedback submitted by a User over the Website. If a User has submitted objectionable content, communications or Feedback, LI Resources may, in its sole discretion, terminate that User's account, take legal action, or notify the appropriate authorities or parties, without prior notice.

Third Party Services

21. The User accepts that, although the Website may contain or provide information regarding applications, products and/or services provided or offered by third parties, LI Resources does not recommend or endorse any such third party applications, products and/or services.

22. The report contains content provided to LI Resources by other parties (Third Party Content). LI Resources is not responsible for, does not endorse and makes no representations either expressly or impliedly concerning the accuracy or completeness of any Third Party Content. You rely on the Third Party Content completely at your own risk.

Limit and Extent of Liability

23. LI Resources's liability is limited to the amount of the Fee. Liability arising in the provision of the Services is reduced to the extent that it arises out of or in connection with any negligent act or omission by the User.

24. Neither party is liable to the other for loss of actual or anticipated revenue or profits, increased capital or financing costs, increased operational or borrowing costs, pure economic loss, exemplary or punitive damages or indirect or consequential damages or loss.

25. In no event shall LI Resources or any directors, officers, employees or agents be liable for any indirect, punitive, incidental, special, or consequential damages arising out of or in any way connected with the use of the Website, any delay or inability to use the Website, any information available on the Website, or otherwise arising out of the utilisation of the Website, whether based in contract, tort, strict liability, or otherwise, even if LI Resources has been advised of the possibility of such damages. The negation of damages set forth herein is a fundamental element of the basis of the bargain between LI Resources and the User. The Services would not be provided without such limitations.

Property Verification

26. The User accepts that the Services provided do not take into account any information relating to the actual state or condition of the Property.

27. The User acknowledges that the Services are not to be interpreted as commenting on the physical characteristics or condition of the Property, any particular purpose or use of that Property or the saleability or value of the Property.

Termination and Modification

28. LI Resources reserves the right in its sole discretion to terminate, block or restrict the User's use of the Services or any portion thereof, for any reason, and without notice. In addition, LI Resources reserves the right in its sole discretion to terminate or modify any part of the Website without notice, for any reason.

Anti-Hacking

29. The User agrees not to directly or indirectly, attempt to or disrupt, impair, interfere with, alter or modify the Website or any of its content.

30. The User agrees not to allow, aid or abet third parties to directly or indirectly, attempt to or disrupt, impair, interfere with, alter or modify the Website or any of its content, or obtain access to any information regarding any User or any other Report issued to a User.

Complaints

31. Any complaints in relation to the Services should, in the first instance, be in writing and addressed to LI Resources Customer Service at: info@liresources.com.au. LI Resources will respond to any such complaints in writing as soon as practicably possible.

General Matters

32. These terms and conditions are governed by and will be construed and enforced in accordance with the laws of the State of New South Wales, Australia. If any dispute, controversy or claim arises out of or relating to these terms and conditions, whether sounding in contract, tort or otherwise, it shall be resolved by use of an alternative dispute resolution procedure acceptable to both parties with the assistance of a mediator. If the dispute has not been resolved to the satisfaction of either party within 60 days of initiation of the procedure or if either party fails or refuses to participate in or withdraws from participating in the procedure, then either party may refer the dispute to the court.

33. These terms and conditions apply to all Services provided by LI Resources.

34. If there is any inconsistency between these terms and conditions and any other document or agreement between the parties, these terms and conditions will prevail.

35. These terms and conditions represent the entire agreement between the parties.

36. The User authorises LI Resources to destroy Documents which LI Resources has prepared or holds in connection with the Services 7 years after the last date on which the Services were provided.

37. If any of the terms of the Application Form or the terms and conditions are invalid, unenforceable or void, the relevant term must be read down to the maximum extent possible or severed from the rest of the Application Form or these terms and conditions.

38. These terms and conditions can only be amended or varied by a written document signed by both parties.

39. Neither party may assign or transfer any rights or obligations arising in the provision of the Services or these terms and conditions without the other party's written consent.

Defined Terms

Application Form Means the form and accompanying information provided on the Website, completed and submitted by the User to request the Services.

Document Includes a report, and any other written or electronic document.

Fee Means the amount set out in the Application Form or confirmed via an invoice.

Property Means the property to which the Services and the Report relate.

Report Means the Document prepared by LI Resources and provided to the User which contains the environmental and development data which is relevant to the Property.

Services Means the review of data and information on which the Report is based, and the preparation and provision to the User of the Report.

Website Means LI Resources's online site, that is: www.liresources.com.au

User Means the person(s) set out in the Application Form including that person's permitted successors.

LAND INSIGHT & RESOURCES

A 4307/4 Daydream Street, Warriewood NSW 2102
T 02 9979 1720
E info@liresources.com.au
W www.liresources.com.au

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

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

Summary of Owners Report

Address: - Neild Avenue, Paddington

Description: - Lot 1 D.P. 633259, Part Lot 2 D.P. 547260 & part Lot 219 D.P. 752011

As regards Lot 1 D.P. 633259

As regards the part numbered (1) on the attached Cadastral Records Enquiry Report

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
14.08.1929 (1929 to 1928)	Frederick William Allen (Merchant)	Vol 4312 Fol 56
18.07.1938 (1938 to 1947)	York Motors Proprietary Limited	Vol 4312 Fol 56
31.10.1947 (1947 to 1984)	Housing Commission of New South Wales	Vol 4312 Fol 56 Now Vol 15089 Fol 18

As regards the part numbered (2) on the attached Cadastral Records Enquiry Report

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
26.08.1927 (1927 to 1931)	Holden's Motor Body Builders Limited	Vol 1920 Fol 106
30.11.1931 (1931 to 1938)	General Motors – Holdens Limited	Vol 1920 Fol 106
20.07.1938 (1938 to 1947)	York Motors Proprietary Limited	Vol 1920 Fol 106
31.10.1947 (1947 to 1984)	Housing Commission of New South Wales	Vol 1920 Fol 106 Now Vol 15089 Fol 18

As regards the part within the blue edged area on the attached Cadastral Records Enquiry Report

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
10.11.1941 (1941 t6o 1947)	York Motors Proprietary Limited	Vol 5278 Fol 126
31.10.1947 (1947 to 1984)	Housing Commission of New South Wales	Vol 5278 Fol 126 Now Vol 15089 Fol 18

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

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

Continued as regards the whole of Lot 1 D.P. 633259

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
11.01.1984 (1984 to date)	# The Trustees of the Sydney Grammar School	Vol 15089 Fol 18 Now 1/633259

 # Denotes current registered proprietor

Leases: -

- 25.01.1956 to The Trustees of the Sydney Grammar School – surrendered 23.07.1964

Easements: -

- 05.09.1957 (G 606150) Easement for Drainage
- 11.01.1984 (T 851396) Easement for Drainage over existing line of pipes

---

As regards part Lot 2 D.P. 547260

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
17.07.1915 (1915 to date)	# The Trustees of the Sydney Grammar School	Vol 2590 Fol 37

 # Denotes current registered proprietor

Leases: - NIL

Easements: - NIL affecting subject part

As regards part Lot 219 D.P. 752011

This parcel of land would seem to form part of an area of 1 acre 0 roods 26 ½ perches parcel of land that was resumed and vested in the Minister for Public Works by Deed Book 219 No. 497 dated 8th April 1881 in connection with the Sewerage of the City of Sydney. (Confirmed in Deed Book 314 No. 837)

The title of the Minister for Public Works and also Metropolitan Water Sewerage and Drainage Board would need to be investigated to determine the title derivation from 1914 – See copy D.P. 69715 and also plan labelled Search Sketch 34558.

No Real Property Act Title has been created for this parcel.

This part may possibly be owned by The Trustees of the Sydney Grammar School by way of Adverse Possession. (Fenced within their lands for 12 years or more)

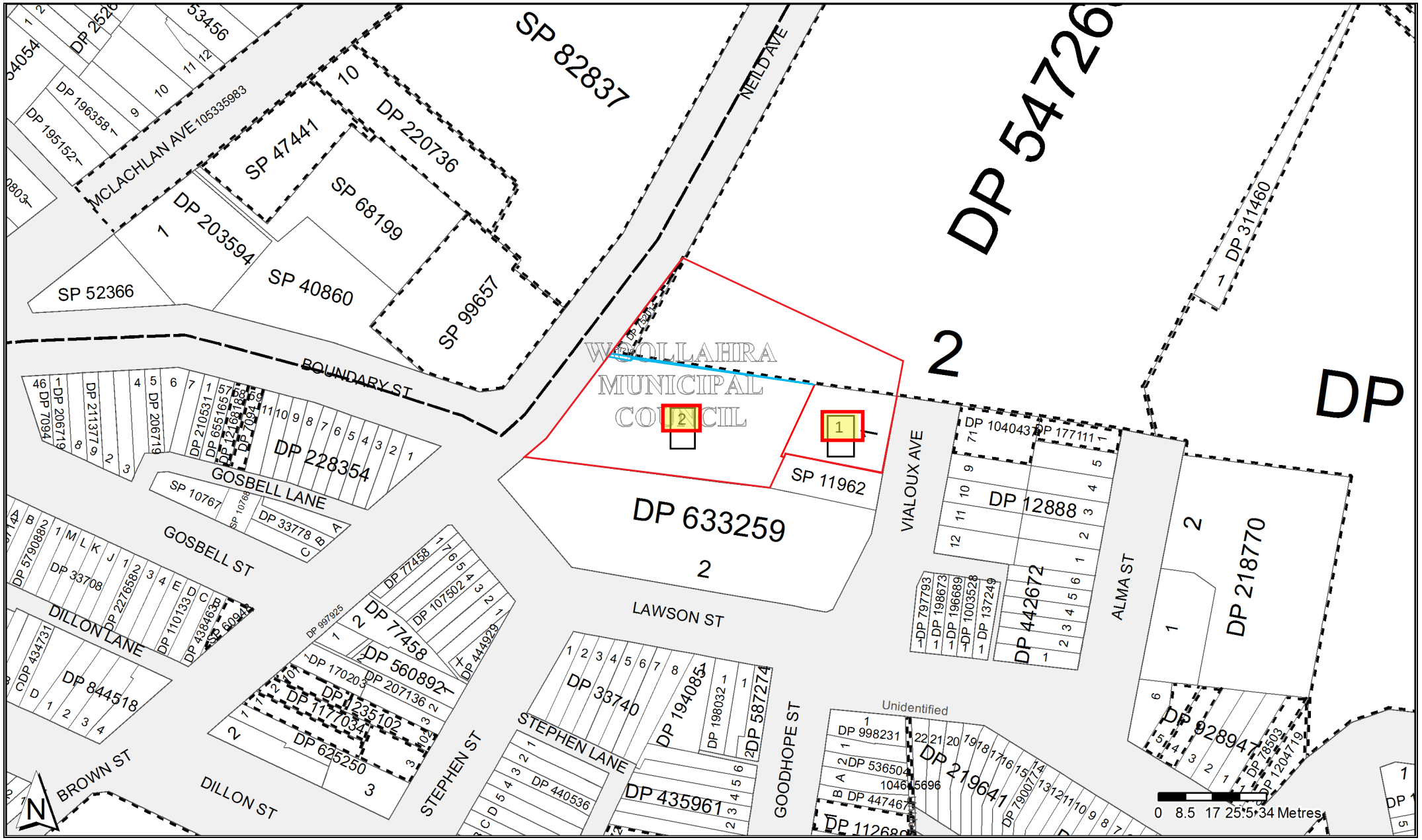
No further searches have been conducted at this stage.

Yours Sincerely
Mark Groll
15 January 2020

Cadastral Records Enquiry Report : Lot 1 DP 633259

Ref : paddington neild ave

Locality : PADDINGTON
Parish : ALEXANDRIA
LGA : WOOLLAHRA
County : CUMBERLAND



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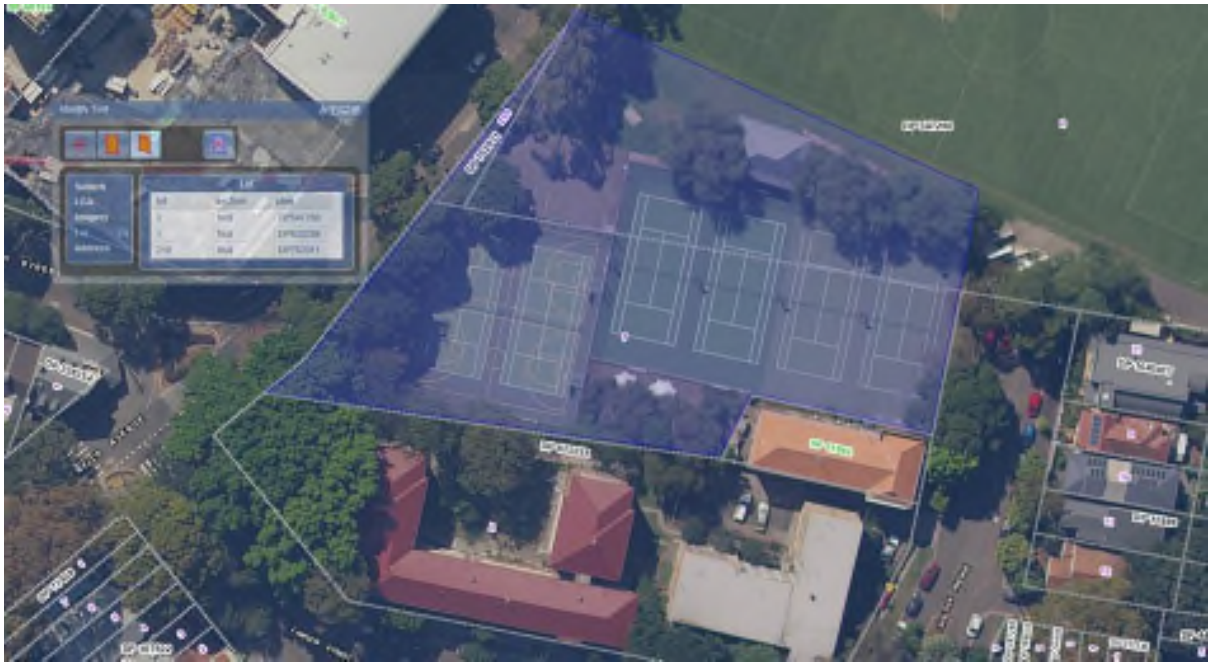
This information is provided as a searching aid only.Whilst every endeavour is made to ensure that current map, plan and titling information is accurately reflected, the Registrar General cannot guarantee the information provided. For ALL ACTIVITY PRIOR TO SEPTEMBER 2002 you must refer to the RGs Charting and Reference Maps



InfoTrack
Req:R480675 /Doc:DP 0633259 P /Rev:11-Dec-1992 /NSW LRS /Pgs:ALL /Prt:15-Jan-2020 09:51 /Seq:1 of 1
© Office of the Registrar-General /Src:INFOTRACK /Ref:paddington neild ave

PLAN FORM 2

Plan Drawing only to appear in this space

* OFFICE USE ONLY

D.P. 633259

Registered: 6.7.1983.

C.A.:

Title System: TORRENS

Purpose: SUBDIVISION

Ref. Map: WOOLLAHRA SH 28* / ROLL PLAN 539*

DPs 923839 (DP.12888*) 923098

Last Plan: 177747, 178922, 178086, 814598, 781228, 814560, 814759

PLAN OF SUBDIVISION OF THE LAND IN C/Ss T. VOL.1458 FOL.8, VOL.1980 FOL.106, VOL.3797, FOL.141, VOL.3810 FOL.187, VOL.3817 FOL.86, VOL.4318 FOL.58, VOL.5878 FOL.186, VOL.5884 FOL.200 AND VOL. 5913 FOL.179.

Reduction Ratio 1: 500
Lengths are in metres.

Mun./Shire: WOOLLAHRA

Locality: RUSHCUTTERS BAY

Parish: ALEXANDRIA

County: CUMBERLAND

This is sheet 1 of my plan in sheets.
(Delete if inapplicable)

I, RONALD PETER WILDE,
of 275 ELIZABETH ST. SYDNEY
a surveyor registered under the Surveyors Act, 1929, as amended, hereby certify that the survey represented in this plan
is accurate and has been made *(1) under my immediate supervision in accordance with the Survey Practice Regulations, 1933, and was completed on *(1)
31 - 5 - 1983
Signature
Surveyor registered under Surveyors Act, 1929, as amended.
Datum Line of Azimuth: 'A' - 'B'
*Strike out either (1) or (2). †Insert date of survey.

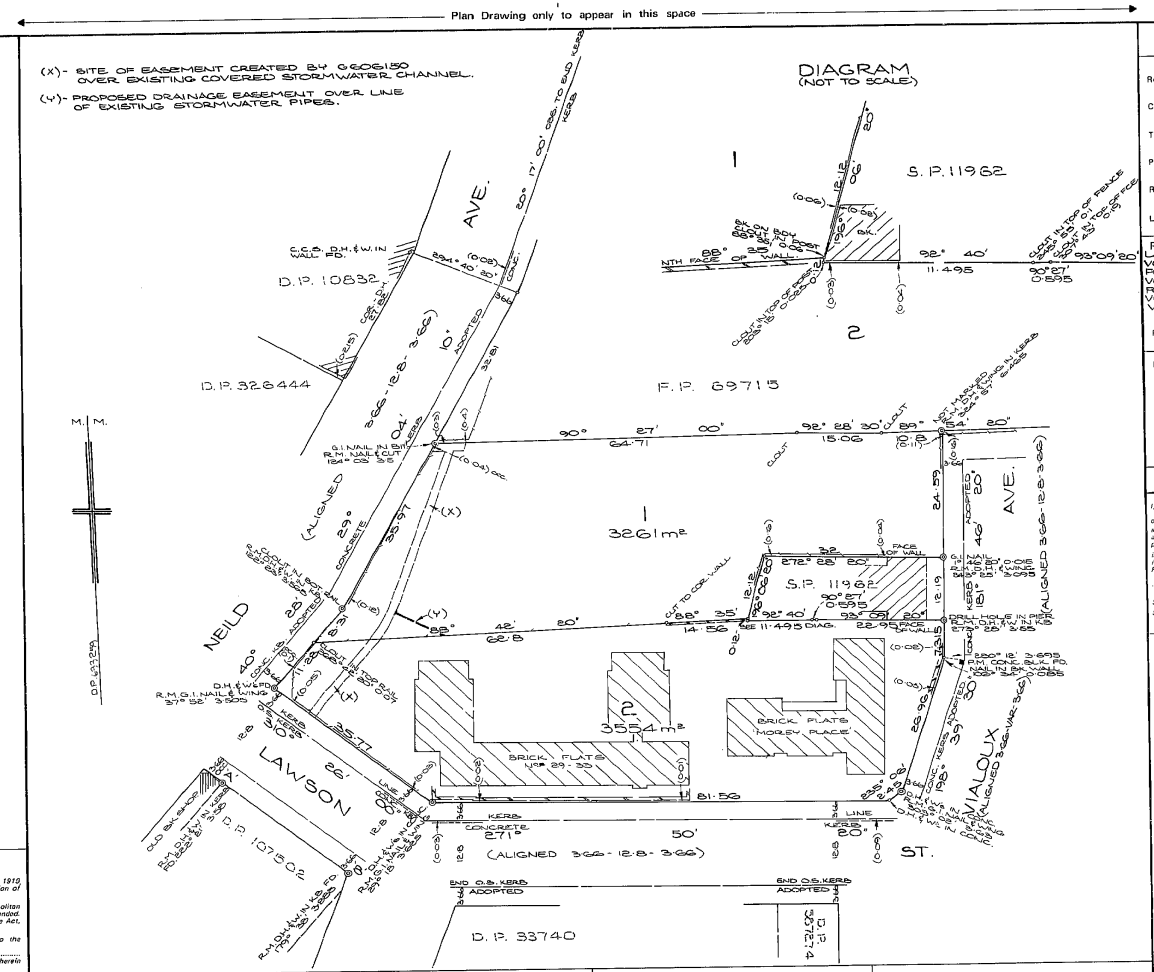
Panel for use only for statements of intention to dedicate public roads or to create public reserves, drainage reserves, easements or restrictions as to user.

Signatures and seals only.

(X)- SITE OF EASEMENT CREATED BY G606150 OVER EXISTING COVERED STORMWATER CHANNEL.

(Y)- PROPOSED DRAINAGE EASEMENT OVER LINE OF EXISTING STORMWATER PIPES.

DIAGRAM
(NOT TO SCALE)



Council Clerk's Certificate

I hereby certify that —

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

*(b) the requirements of section 346 of the †Metropolitan Water, Sewerage and Drainage Act, 1924, as amended. †Hunter District Water, Sewerage, and Drainage Act, 1938, as amended

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

Subdivision No.

Date

(Signature) Council Clerk

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

S. 1369 I. 20858

M.P.D.

REF. 4-779

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

SURVEYOR'S REFERENCE: 2042 - B

I, Bruce Richard Davies, Under Secretary for Lands and Registrar General for New South Wales, certify that this negative is a photograph made as a permanent record of a document in my custody this day.

11th July, 1983

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Req:R480679 /Doc:DP 1040437 P /Rev:22-Apr-2002 /NSW LRS /Pgs:ALL /Prt:15-Jan-2020 09:52 /Seq:1 of 1
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PLAN FORM 2

Plan Drawing only to appear in this space

SIGNATURE AND SEALS ONLY

The Common Seal of the Trustees of THE SYDNEY GRAMMAR SCHOOL was hereunto affixed in the presence of

Trustee

Secretary

Crown Land Office Approval

PLAN APPROVED .....

Authorised Officer

Land District .....

Paper No .....

Field Book ..... pages .....

Subdivision Certificate

I certify that the provisions of s.109J of the Environmental Planning and Assessment Act 1979 have been satisfied in relation to the proposed ..... set out herein

(insert 'subdivision' or 'new road')

.....

* Authorised Person/General Manager/Accredited Certifier

Consent Authority .....

Date of endorsement .....

Accreditation no. .....

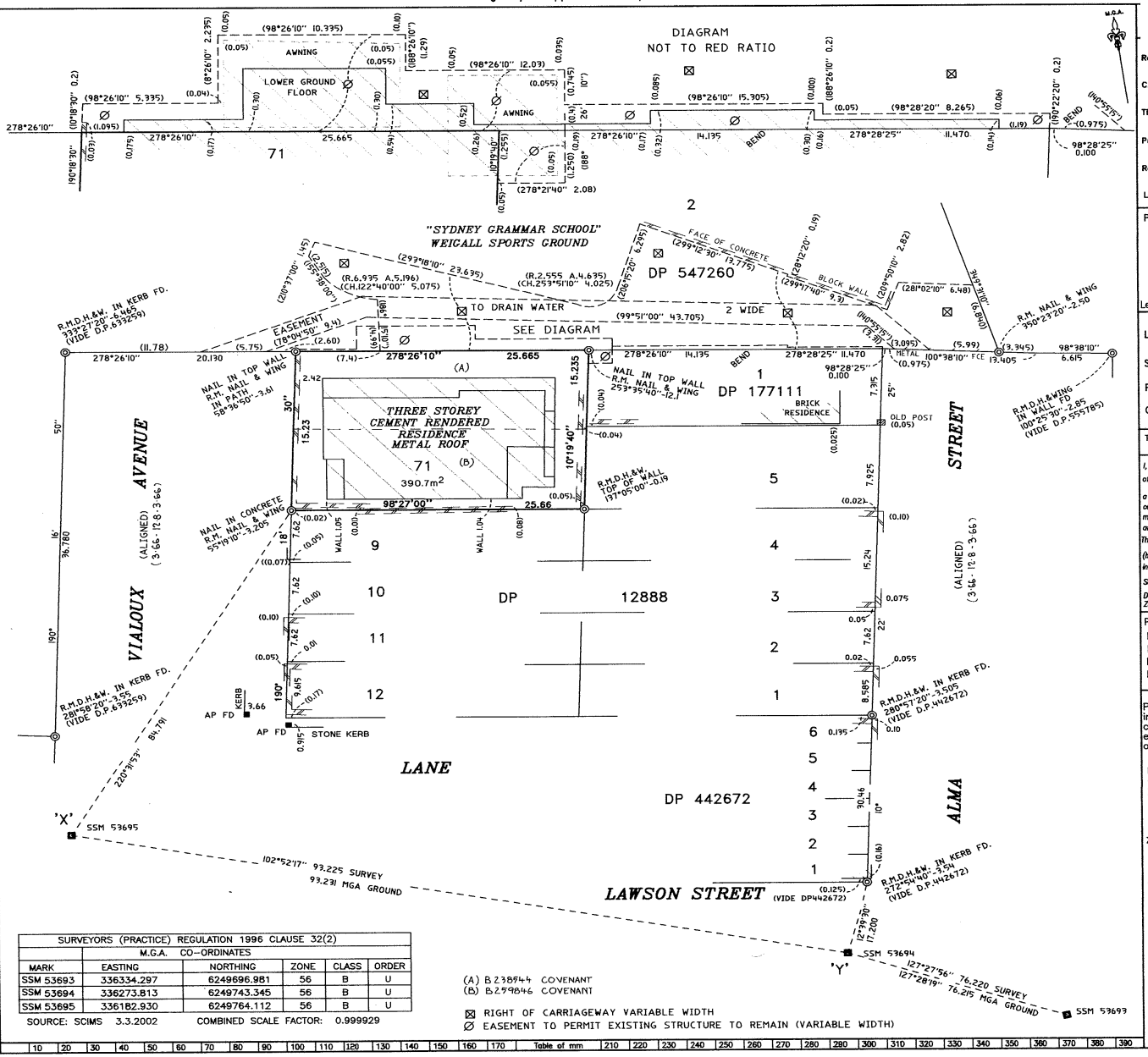
Subdivision Certificate no. .....

File no. .....

Where the plan is to be lodged electronically in the Land Titles Office it should include a signature in an electronic or digital format approved by the Registrar General.

* Delete whichever is inapplicable

SURVEYOR'S REFERENCE: 29271-10 EXEMPTION: 2001M7100(73)



SURVEYORS (PRACTICE) REGULATION 1996 CLAUSE 32(2)					
M.G.A. CO-ORDINATES					
MARK	EASTING	NORTHING	ZONE	CLASS	ORDER
SSM 53693	336334.297	6249696.981	56	B	U
SSM 53694	336273.813	6249743.345	56	B	U
SSM 53695	336182.930	6249764.112	56	B	U

SOURCE: SCIMS 3.3.2002 COMBINED SCALE FACTOR: 0.999929

(A) B238944 COVENANT
(B) B259846 COVENANT

☒ RIGHT OF CARRIAGEWAY VARIABLE WIDTH
Ø EASEMENT TO PERMIT EXISTING STRUCTURE TO REMAIN (VARIABLE WIDTH)

10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 Table of mm 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360 370 380 390

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

DP1040437

Registered: 19.4.2002

C.A: _____

Title System: TORRENS

Purpose CONSOLIDATION

Ref. Map: U1845-511

Last Plan: DP12888

PLAN OF CONSOLIDATION OF LOTS 7 AND 8 DP 12888 AND EASEMENTS WITHIN LOT2 DP 547260 & LOT 1 IN DP 177111

Lengths are in metres. Reduction Ratio 1:250

L G A WOOLLAHRA

Suburb/Locality: RUSHCUTTERS BAY & PADDINGTON

Parish: ALEXANDRIA

County: CUMBERLAND

This is sheet 1 of my plan in 1 sheets (Delete if inapplicable)

I, ANDREW P. MASON
of FRANK M. MASON & CO. PTY LTD
DX 3511 MILSON'S POINT
a surveyor registered under the Surveyors Act, 1929, hereby certify that the survey represented in this plan is accurate, has been made in accordance with the Surveyors (Practice) Regulation 1996 and was completed on 2.04.2002

The survey relates to .....

(here specify the land actually surveyed, or specify any land shown in the plan that is not the subject of the survey)

Signature .....

Datum Line: X Y
Zone: Suburban/Country

Surveyor registered under the Surveyors Act 1929

Plans used in preparation of survey/compilation.

DP 12888 DP 547260
DP 69715 DP 555785
DP 177111 DP 633259
DP 442672

PANEL FOR USE ONLY for statements of intention to dedicate public roads or to create public reserves, drainage reserves, easements, restrictions on the use of land or positive covenants.

PURSUANT TO SECTION 88B OF THE CONVEYANCING ACT 1919 IT IS INTENDED TO CREATE:

1. RIGHT OF CARRIAGEWAY VARIABLE WIDTH
2. EASEMENT TO PERMIT EXISTING STRUCTURE TO REMAIN VARIABLE WIDTH
3. EASEMENT TO DRAIN WATER 2 WIDE

Req:R480829 /Doc:CT 15089-018 CT /Rev:18-Jan-2011 /NSW LRS /Pgs:ALL /Prt:15-Jan-2020 10:08 /Seq:1 of 2
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[redacted]FICATE OF TITLE

15089018

NEW SOUTH WALES [redacted]AL PROPERTY ACT, 1900

First Title : Old System

Prior Titles: Vol.1920 Fol.106
Vol.4312 Fol. 56
Vol.5278 Fol.126

Vol. 15089 Fol. 18

EDITION ISSUED 22 . 7 1983

15089 Fol. 18

(Page 1) Vol.

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

Registrar General.

CANCELLED

PLAN SHOWING LOCATION OF LAND

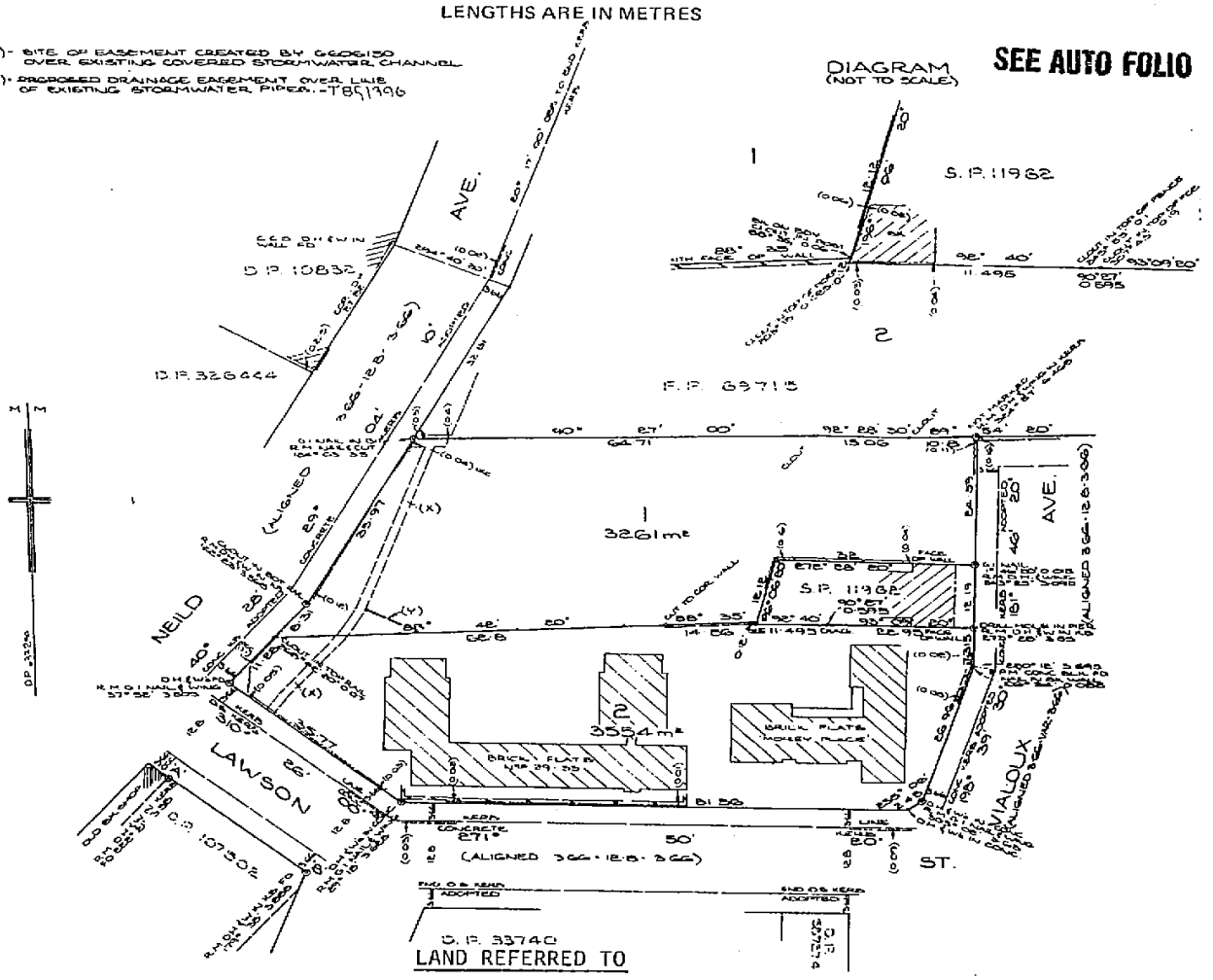
LENGTHS ARE IN METRES

(X)- SITE OF EASEMENT CREATED BY G606150 OVER EXISTING COVERED STORMWATER CHANNEL

(Y)- PROPOSED DRAINAGE EASEMENT OVER LINE OF EXISTING STORMWATER PIPES - T861996

DIAGRAM (NOT TO SCALE)

SEE AUTO FOLIO



Lot 1 in Deposited Plan 633259 at Rushcutters Bay in the Municipality of Woollahra Parish of Alexandria and County of Cumberland.

FIRST SCHEDULE

~~THE HOUSING COMMISSION OF NEW SOUTH WALES.~~

SECOND SCHEDULE

1. Reservations and conditions, if any, contained in the Crown Grant.
2. G606150 Easement for drainage affecting the part of the land above described shown so burdened in Deposited Plan 633259.

CRY
ED(SB)

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

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

RG 2/64

L.O. 1066 D. West, Government Printer

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR | Registrar General

The Trustees of the Sydney Grammar School by Transfer T851396. Registered 11-1-1984.

SECOND SCHEDULE (continued)

PARTICULARS | Registrar General | CANCELLATION

T851396 Transfer. Easement for drainage affecting the existing line of pipes shown so burdened in the plan hereon. Registered 11-1-1984.

CANCELLED

SEE AUTO FOLIO

NOTATIONS AND UNREGISTERED DEALINGS

T851396

NOTE: ENTRIES RULED THROUGH AND AU

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Title Search

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 1/633259

SEARCH DATE	TIME	EDITION NO	DATE
15/1/2020	9:49 AM	-	-

VOL 15089 FOL 18 IS THE CURRENT CERTIFICATE OF TITLE

LAND

LOT 1 IN DEPOSITED PLAN 633259
AT RUSHCUTTERS BAY
LOCAL GOVERNMENT AREA WOOLLAHRA
PARISH OF ALEXANDRIA COUNTY OF CUMBERLAND
TITLE DIAGRAM DP633259

FIRST SCHEDULE

THE TRUSTEES OF THE SYDNEY GRAMMAR SCHOOL (T T851396)

SECOND SCHEDULE (3 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 G606150 EASEMENT FOR DRAINAGE AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM
3 T851396 EASEMENT FOR DRAINAGE AFFECTING THE EXISTING LINE OF PIPES SHOWN SO BURDENED IN THE TITLE DIAGRAM

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

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

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Received: 15/01/2020 09:49:16

Historical Title

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
15/1/2020 2:47PM

FOLIO: 2/547260

First Title(s): OLD SYSTEM
Prior Title(s): VOL 2590 FOL 37

Recorded	Number	Type of Instrument	C.T. Issue
28/3/1988		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
13/5/1988	DP547260	DEPOSITED PLAN	FOLIO CREATED CT NOT ISSUED
19/4/2002	8524030	DISCHARGE OF MORTGAGE	
19/4/2002	DP1040437	DEPOSITED PLAN	EDITION 1
19/4/2002	8529798	DEPARTMENTAL DEALING	EDITION 2

*** END OF SEARCH ***

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Received: 15/01/2020 14:47:31

Title Search

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 2/547260

SEARCH DATE	TIME	EDITION NO	DATE
15/1/2020	9:49 AM	2	19/4/2002

LAND

LOT 2 IN DEPOSITED PLAN 547260
AT RUSHCUTTERS BAY
LOCAL GOVERNMENT AREA WOOLLAHRA
PARISH OF ALEXANDRIA COUNTY OF CUMBERLAND
TITLE DIAGRAM DP547260

FIRST SCHEDULE

THE TRUSTEES OF THE SYDNEY GRAMMAR SCHOOL

SECOND SCHEDULE (4 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 DP1040437 RIGHT OF CARRIAGEWAY VARIABLE WIDTH AFFECTING THE PART(S) SHOWN SO BURDENED IN DP1040437
3 DP1040437 EASEMENT TO PERMIT ENCROACHING STRUCTURE TO REMAIN VARIABLE WIDTH AFFECTING THE PART(S) SHOWN SO BURDENED IN DP1040437
4 DP1040437 EASEMENT TO DRAIN WATER 2 METRE(S) WIDE AFFECTING THE PART(S) SHOWN SO BURDENED IN DP1040437

NOTATIONS

NOTE: THE CERTIFICATE OF TITLE FOR THIS FOLIO OF THE REGISTER DOES NOT INCLUDE SECURITY FEATURES INCLUDED ON COMPUTERISED CERTIFICATES OF TITLE ISSUED FROM 4TH JANUARY, 2004. IT IS RECOMMENDED THAT STRINGENT PROCESSES ARE ADOPTED IN VERIFYING THE IDENTITY OF THE PERSON(S) CLAIMING A RIGHT TO DEAL WITH THE LAND COMPRISED IN THIS FOLIO.
NOTE: DP575708 PLAN OF PROPOSED EASEMENT

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

paddington neild ave PRINTED ON 15/1/2020

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Received: 15/01/2020 09:49:16

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InfoTrack Your Searching Partner.

DP 69715

R.P.A. 19715.

A.B 343+

PLAN OF 7A 2R 17¼P

forming part of

Wm Thomas' 40 AC Por. 219 PH

MUNICIPALITY OF PADDINGTON

Parish of Alexandria.

COUNTY OF CUMBERLAND

Scale 60 Feet to an Inch

0 10 20 30 40 50 60 120 180 240

NEW SOUTH HEAD ROAD

THE STADIUM

OPEN CONCRETE STORMWATER CHANNEL

308' 5' 30' 506'

NEILD AVENUE

[Alig.d 66 Ft. wide]

850' 200' 200' 470'

Por. 219 PH

7A 2R 17¼P

THE WHITE CITY

Trust (owners & occupiers)

City Rd.

White

ALMA ST.

[Alig.d 66 Ft. Wide]

LAWSON ST.

Mrs Hennessy (owner & occupier)

LOT 9

LOT 8

LOT 5

17374

Mrs Mary Wilkes (owner)
111 Lawson St Paddington
Crown Grant Vol. 364 fol. 104

Miss Green (owner)

A. Edgar (Dec'd) Arden St Collegee

Por 250 PH

REEMAN
Cert. of Title
Vol. 266 fol. 181

Vol. 266 fol. 182

Por 257 PH

STREET

0A 3R 1P

DECLARATION

I Adelbert Schleicher of 28 Elizabeth St Sydney Licensed Surveyor, specially Licensed under the Real Property Act, do hereby solemnly and sincerely declare; that the boundaries and measurements shewn on this Plan are correct for the purposes of the said Act, and that the said Plan and the survey of the land to which the same relates, have been prepared and made under my immediate supervision and I make this solemn declaration, conscientiously believing the same to be true, and by virtue of the provisions of the Oaths Act 1900.

Subscribed and declared before me at Sydney this 9th day of July 1914

Geo. L. Brierley J.P.

Adelbert Schleicher

Licensed Surveyor R. P. Act.

Date of Survey May 1914.

Azimuth taken from Line A-B.

Dep. 69715

W.R.O.

NSW LRS HLRV/PASS 34558/2018-09-17 11:08:06/Wed Jan 15 2020 15:25:29 GMT+1100 (Australian Eastern Daylight Time)/Seq.No:1/1

Book. No. Inst.

APP^N NO. 34558

GL 2 p 131 Gt William Thomas 40ac. 1·10·17

E T Appn 11830

2 ✓ 1406 222 C M R Wilkes Rd. 1¼p. Black

WHOLE

X 1475 44 Ch S Holden's M B B Ltd

5 ✓ 1484 768 C do Rd. ¾p. Rd. 1⅛p. Black

6 ✓ 1834 709 C Gen'l Motors Holden's Ltd do do do

7 ✓ 1821 241 C York Motors (N.S.W.) Ltd do do do

8 ✓ Doc (B) Unreg PA do do do

RESUMPTION

X 218 457 N R Rd 1a 0r. 26¾ blue

X 233 510 N R do.

X 214 536 C do.

X 214 537 Gen'l do

3 ✓ 1407 325 C J Wilkes Rd. ⅜p. black resg rights

4 ✓ 1407 326 C M R Wilkes do

Appn 19715

Nellos Ave.

1A 0R. 26¾P. See Diagm

Vo. 1460 Fo. 203

— Diagm —
— Not to Scale —

New South Head Rd.

Appn. 35480

Boundary

1A 0R. 26¾P

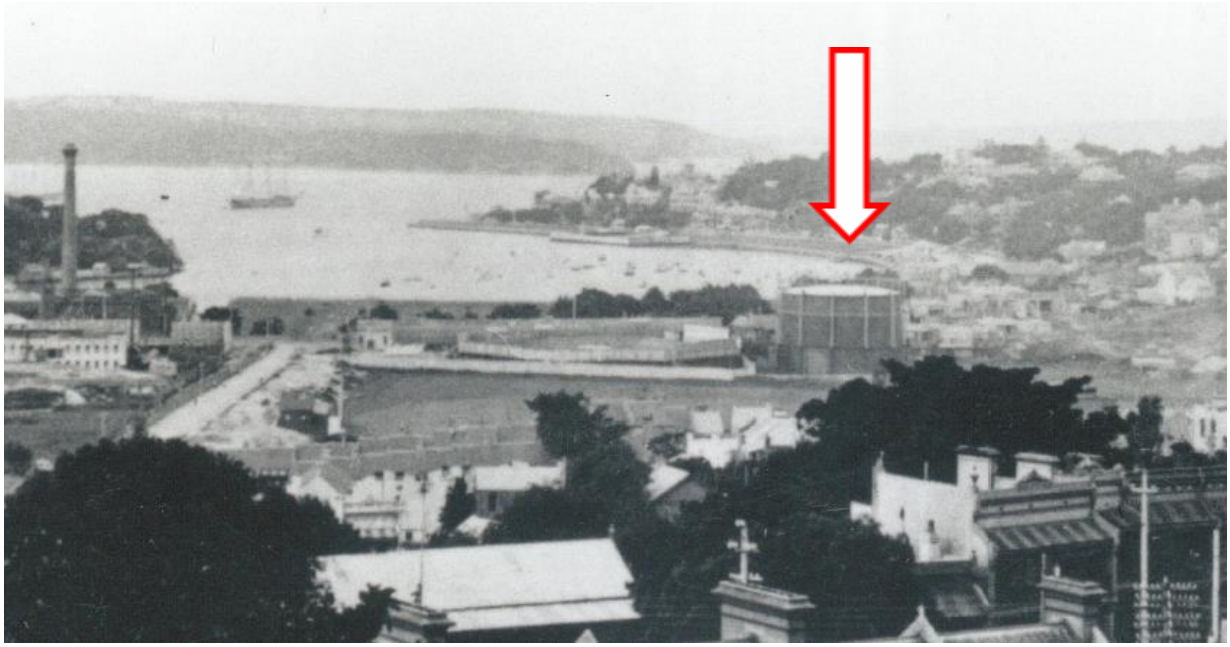

Photo 1 – View of the gasometer adjacent to Sydney Stadium. Photo facing east towards Rushcutters Bay. Weigall sportsground can be seen in the middle of the photo, with Neild Avenue to its left (source: Woollahra Library). Refer to Drawing 2, Appendix A for position relative to current site.

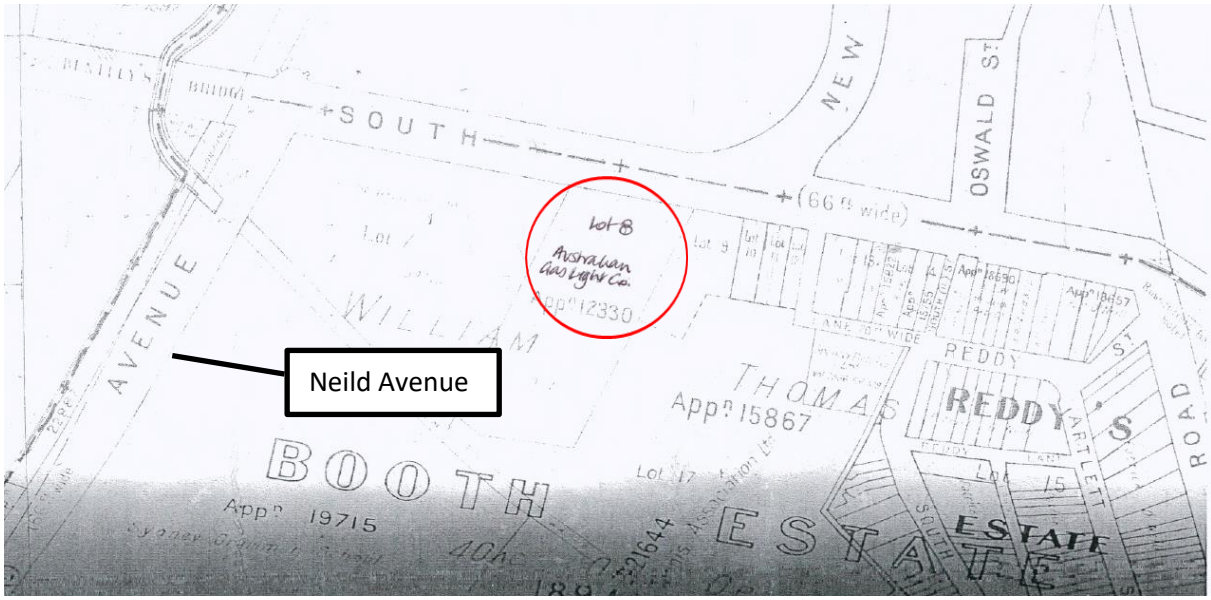

Photo 2 – Copy of a historical cadastral map showing the lot in use by AGL to operate the gasometer. (source: Woollahra Library)

Douglas Partners Geotechnics / Environment / Groundwater	**Historical imagery and map**	PROJECT:	99538.01
	Preliminary Site Investigation	PLATE No:	A
	11 Alma Street Paddington	REV:	0
	CLIENT: Sydney Grammar School	DATE	21/02/2020

PLANNING CERTIFICATE UNDER SECTION 10.7 (2) and (5)
ENVIRONMENTAL PLANNING & ASSESSMENT ACT

Robinson Urban Planning Pty Ltd
83 Fletcher Street
TAMARAMA 2026

Applicant's reference:
19049

Woollahra Municipal Council

ABN 32 218 483 245

Redleaf Council Chambers
536 New South Head Road
Double Bay NSW 2028
Correspondence to
General Manager
PO Box 61
Double Bay NSW 1360
DX 3607 Double Bay
records@woollahra.nsw.gov.au
www.woollahra.nsw.gov.au
Telephone: (02) 9391 7000
Facsimile: (02) 9391 7044

Certificate number: 13
Certificate issue date: 03/01/2020
Transaction ID: 506891
Certificate fee: $133.00 (standard)

DESCRIPTION OF PROPERTY

Address: Neild Avenue PADDINGTON NSW 2021
Title: LOT: 2 DP: 547260
Parish: Alexandria
County: Cumberland

This planning certificate should be read in conjunction with the *Woollahra Local Environmental Plan 2014* and/or the *Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005*. These are available on the NSW legislation website at www.legislation.nsw.gov.au

The land to which this certificate relates, being the lot or one of the lots described in the corresponding application, is shown in the Council's records as being situated at the street address described on page 1 of this certificate.

It is the applicant's responsibility to confirm that the legal description of the lot to which the application relates is accurate and current. Council does not check the accuracy or currency of the information; nor does Council have the copyright to this information.

The legal description of land is obtained from NSW Land and Property Information. Applicants must verify all property and lot information with NSW Land and Property Information. The information contained in this certificate relates only to the lot described on the certificate.

Where the street address comprises more than one lot in one or more deposited plans or strata plans, separate planning certificates can be obtained upon application for the other lots. Those certificates may contain different information than is contained in this certificate.

SECTION 10.7(2) DETAILS

In accordance with section 10.7(2) of the *Environmental Planning and Assessment Act 1979* , at the date of this certificate the following information is provided in respect of the prescribed matters to be included in a planning certificate.

1. NAMES OF RELEVANT ENVIRONMENTAL PLANNING INSTRUMENTS

(a) The following environmental planning instrument applies to the land:

Woollahra Local Environmental Plan 2014 (commenced 23 May 2015)

(b) Zone:

RE2 Private Recreation

(c) Development that may be carried out within the zone without development consent:

Nil

(d) Development that may be carried out within the zone with development consent:

Centre-based child care facilities; Community facilities; Environmental facilities; Environmental protection works; Information and education facilities; Kiosks; Recreation areas; Recreation facilities (indoor); Recreation facilities (outdoor); Registered clubs; Respite day care centres; Roads

Also refer to Schedule 1 of the LEP "Additional permitted uses" to see if this schedule applies to your land.

(e) Development that is prohibited within the zone:

Any development not specified in item (c) or (d) above.

(f) Do any development standards apply to the land that set minimum land dimensions for the erection of a dwelling house on the land? If yes, what are the minimum dimensions?

No

(g) Does the land include or comprise 'critical habitat' under the provisions of the local environmental plan applying to the land?

No

(h) Is the land located in a heritage conservation area under the provisions of the local environmental plan applying to the land?

Yes: Paddington Heritage Conservation Area

(i) Is there an item of environmental heritage situated on the land under the provisions of the local environmental plan applying to the land?

No

2. NAMES OF RELEVANT EXHIBITED PROPOSED ENVIRONMENTAL PLANNING INSTRUMENTS

The following proposed environmental planning instruments, including a planning proposal for a LEP or a draft environmental planning instrument have been the subject of community consultation or on public exhibition under the *Environmental Planning and Assessment Act 1979* (unless the Director-General has notified Council that the making of the proposed instrument has been deferred indefinitely or has not been approved.)

Properties affected: Rose Bay Uniting Church and Wesley Hall at 518a Old South Head Road, Rose Bay
Details: A planning proposal has been prepared to amend the *Woollahra Local Environmental Plan 2014* to list as a heritage item the *Rose Bay Uniting Church and Wesley Hall Group – church and interiors (including moveable heritage, vestry and 1924 additions)* .

Re-exhibition period: Wednesday 12 June to Friday 12 July 2019.

Properties affected: The Four in Hand Hotel at 105 Sutherland Street, Paddington
Details: A planning proposal has been prepared to amend the *Woollahra Local Environmental Plan 2014* to list as a heritage item *The Four in Hand Hotel* at 105 Sutherland Street, Paddington .

Exhibition period: Wednesday 29 May to Friday 28 June 2019.

3. NAMES OF RELEVANT DEVELOPMENT CONTROL PLANS

The following table contains a list of development control plans that have been prepared by Council under Division 6 of Part 3 of the *Environmental Planning and Assessment Act 1979* (including any made by the Council under section 72 of the Act before repeal of that section). Please check the table to see the relevancy of the plans to the land that is the subject of this certificate.

(a) The following development control plan applies to the land:

Woollahra Development Control Plan 2015 (commenced 23 May 2015)

4. NAMES OF RELEVANT DEVELOPMENT CONTROL PLANS PREPARED BY THE DIRECTOR GENERAL

The following development control plans have been prepared by the Director-General under Division 6 of Part 3 of the *Environmental Planning and Assessment Act 1979* (including any made by the Director-General under section 51A, before the repeal of that section).

Sydney Harbour Foreshores and Waterways Area Development Control Plan 2005

This DCP applies to certain land within the Woollahra Municipality being land within the Foreshores and Waterways area identified on the Sydney Regional Environmental Plan (Sydney Harbour Catchment) Foreshores and Waterways Area Map.

5. NAMES OF RELEVANT STATE ENVIRONMENTAL PLANNING POLICIES

Below is a list of all State environmental planning policies that apply to the Woollahra Municipality.

Depending on circumstances set down in each SEPP, the policy may be specifically applicable to the land that is the subject of this certificate. You are advised to peruse the policy for the necessary details. Refer to NSW Department of Planning and Environment.

- State Environmental Planning Policy No. 1 – Development Standards
- State Environmental Planning Policy No. 19 – Bushland in Urban Areas
- State Environmental Planning Policy No. 21 – Caravan Parks
- State Environmental Planning Policy No. 33 – Hazardous and Offensive Development
- State Environmental Planning Policy No. 50 – Canal Estate Development
- State Environmental Planning Policy No. 55 – Remediation of Land
- State Environmental Planning Policy No. 64 – Advertising and Signage
- State Environmental Planning Policy No. 65 – Design Quality of Residential Apartment Development
- State Environmental Planning Policy No. 70 – Affordable Housing (Revised Schemes)
- State Environmental Planning Policy (Affordable Rental Housing) 2009
- State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004
- State Environmental Planning Policy (Coastal Management) 2018
- State Environmental Planning Policy (Concurrence) 2018
- State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017
- State Environmental Planning Policy (Exempt and Complying Development Codes) 2008
- State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004
- State Environmental Planning Policy (Infrastructure) 2007
- State Environmental Planning Policy (Major Development) 2005
- State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007
- State Environmental Planning Policy (Miscellaneous Consent Provisions) 2007
- State Environmental Planning Policy (State and Regional Development) 2011
- State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017

Deemed SEPPs:

- Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005
  This REP applies to all land within the Woollahra Municipality except for land at Christison Park, Vaucluse as shown on the Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005 Sydney Harbour Catchment Map

5.A STATE ENVIRONMENTAL PLANNING POLICY (COASTAL MANAGEMENT) 2018

Is the land subject to the coastal zone under *State Environmental Planning Policy (Coastal Management) 2018*?

No

Disclaimer: This statement is based on information supplied by a third party public authority. The accuracy of this information has not been verified by Woollahra Council and if the information is vital for the proposed end use, then it should be verified by the applicant.

6. NAMES OF PROPOSED STATE ENVIRONMENTAL PLANNING POLICIES

The following proposed State Environmental Planning Policies have been the subject of community consultation or on public exhibition under the *Environmental Planning and Assessment Act 1979* (unless the Director-General has notified Council that the making of the proposed instrument has been deferred indefinitely or has not been approved.)

There are currently no proposed State Environmental Planning Policies applying to the land.

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7. COMPLYING DEVELOPMENT

Is the land, land on which complying development may be carried out under the *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008* ?

Housing Code
Complying development under the Housing Code may not be carried out on the land (unless the development is a detached outbuilding, detached development(other than a detached studio) or a swimming pool) because the land is within a heritage conservation area or a draft heritage conservation area.

Refer to the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 for full details.

Rural Housing Code
Rural Housing Code is not applicable to Woollahra Local Government Area.

Low Rise Medium Density Housing Code
Low Rise Medium Density Housing Code is not applicable to Woollahra Local Government Area.

Greenfield Housing Code
Greenfield Housing Code is not applicable to Woollahra Local Government Area.

Inland Code
Inland Code is not applicable to Woollahra Local Government Area.

Housing Alterations Code
Complying development under the Housing Alterations Code may be carried out on the land. Development standards apply.

Refer to the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 for full details.

General Development Code
Complying development under the General Development Code may be carried out on the land. Development standards apply.

Refer to the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 for full details.

Commercial and Industrial Alterations Code
Complying development under the Commercial and Industrial Alterations Code may be carried out on the land. Development standards apply.

Refer to the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 for full details.

Commercial and Industrial (New Buildings and Additions) Code
Complying development under the Commercial and Industrial (New Buildings and Additions) Code may not be carried out on the land (unless the development is a detached outbuilding or swimming pool) because the land is within a heritage conservation area or a draft heritage conservation area.

Refer to the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 for full details.

Container Recycling Facilities Code
Complying development under the Container Recycling Facilities Code may be carried out on the land. Development standards apply.

Refer to the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 for full details.

Subdivisions Code
Complying development under the Subdivisions Code may be carried out on the land. Development standards apply.

Refer to the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 for full details.

Demolition Code
Complying development under the Demolition Code may be carried out on the land. Development standards apply.

Refer to the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 for full details.

Fire Safety Code
Complying development under the Fire Safety Code may be carried out on the land. Development standards apply.

Refer to the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 for full details.

8. ANNUAL CHARGES UNDER LOCAL GOVERNMENT ACT 1993 FOR COASTAL PROTECTION SERVICES THAT RELATE TO EXISTING COASTAL PROTECTION WORKS

Has the owner (or any previous owner) of the land consented in writing to the land being subject to annual charges under section 496B of the *Local Government Act 1993* for coastal protection services that relate to existing coastal protection works (within the meaning of section 553B of that Act)?

No

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9. MINE SUBSIDENCE

Is the land proclaimed to be a mine subsidence district within the meaning of section 15 of the *Mine Subsidence Compensation Act 1961* ?

No

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10. ROAD WIDENING OR ROAD REALIGNMENT

Is the land affected by any road widening or road realignment under:

(a) Division 2 of Part 3 of the Roads Act 1993; or

(b) any environmental planning instrument; or

(c) any resolution of the Council?

No

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11. COUNCIL AND OTHER PUBLIC AUTHORITY POLICIES ON HAZARD RISK RESTRICTIONS

Is the land affected by a policy:

(a) adopted by the Council that restricts the development of the land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, acid sulfate soils or any other risk (other than flooding)?

Yes

Woollahra LEP 2014, clause 6.1 (Acid sulfate soils) may require an assessment of acid sulfate soils for certain types of development located on certain land identified on the Acid Sulfate Soils Map of the LEP.

Woollahra DCP 2015 includes a policy on contaminated land which may restrict the development of the land. This policy is implemented when zoning or land use changes are proposed on lands which have previously been used for certain purposes. Applicants must consider Council's DCP as well as State legislation including the State Environmental Planning Policy No. 55 – Remediation of Land.

(b) adopted by any other public authority and notified to the Council for the express purpose of its adoption by that authority being referred to in planning certificates issued by the Council, that restricts the development of the land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, acid sulfate soils or any other risk (other than flooding)?

No

12. FLOOD RELATED DEVELOPMENT CONTROLS INFORMATION

(a) Is development on the land or part of the land for the purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group homes or seniors housing) subject to flood related development controls?

Yes.

Part or all of the subject land may be subject to flood related development controls, applicants are advised to inspect relevant flood reports and consult with Council's Technical Services Department. Further flood investigations may be required to accurately determine the nature of flooding on the site.

(b) Is development on the land or part of the land for any other purpose subject to flood related development controls?

Yes.

Part or all of the subject land may be subject to flood related development controls, applicants are advised to inspect relevant flood reports and consult with Council's Technical Services Department. Further flood investigations may be required to accurately determine the nature of flooding on the site.

Note: Words and expressions used in this item have the same meanings as in the instrument set out in the Schedule to the *Standard Instrument (Local Environmental Plans) Order 2006*.

13. LAND RESERVED FOR ACQUISITION

Does an environmental planning instrument or proposed environmental planning instrument applying to the land make provision in relation to the acquisition of the land by a public authority, as referred to in section 27 of the *Environmental Planning and Assessment Act 1979* ?

No

14. CONTRIBUTIONS PLAN

The following contributions plan may apply to the land:
- Woollahra Section 94A Development Contributions Plan 2011 (31 August 2011)
- Woollahra Section 94 Contributions Plan (31 March 2003).

15. BIODIVERSITY CERTIFIED LAND

Is the land biodiversity certified land under Part 8 of the *Biodiversity Conservation Act 2016*?

No

16. BIODIVERSITY STEWARDSHIP SITES

Is the land a biodiversity stewardship site under a biodiversity stewardship agreement under Part 5 of the *Biodiversity Conservation Act 2016*?

No

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17. NATIVE VEGETATION CLEARING SET ASIDES

Does the land contain a set aside area under section 60ZC of the *Local Land Services Act 2013*?

No

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18. BUSH FIRE PRONE LAND

Is the land to which this certificate relates bush fire prone land?

No

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19. PROPERTY VEGETATION PLANS

Is the land the subject of a property vegetation plan approved under Part 4 of the *Native Vegetation Act 2003* (and that continues in force) ?

No

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20. ORDERS UNDER TREES (DISPUTES BETWEEN NEIGHBOURS) ACT 2006

Has an order been made under the *Trees (Disputes Between Neighbours) Act 2006* to carry out work in relation to a tree on the land (but only if Council has been notified of the order).

No

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21. DIRECTIONS UNDER PART 3A

Is there a direction by the Minister in force under section 75P (2) (c1) of the Act that a provision of an environmental planning instrument prohibiting or restricting the carrying out of a project or a stage of a project on the land under Part 4 of the Act does not have effect?

No

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22. SITE COMPATIBILITY CERTIFICATES AND CONDITIONS FOR SENIORS

Is there a current site compatibility certificate (seniors housing), of which the Council is aware *?*

No

Are there any terms of a kind referred to in clause 18(2) of *State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004* that have been imposed as a condition of consent to a development application granted after 11 October 2007?

No

Disclaimer: This statement is based on information supplied by a third party public authority. The accuracy of this information has not been verified by Woollahra Council and if the information is vital for the proposed end use, then it should be verified by the applicant.

23. SITE COMPATIBILITY CERTIFICATES FOR INFRASTRUCTURE, SCHOOLS OR TAFE ESTABLISHMENTS

Is there a valid site compatibility certificate (infrastructure) or site compatibility certificate (schools or TAFE establishments), of which the Council is aware *?*

No

Disclaimer: This statement is based on information supplied by a third party public authority. The accuracy of this information has not been verified by Woollahra Council and if the information is vital for the proposed end use, then it should be verified by the applicant.

24. SITE COMPATIBILITY CERTIFICATES AND CONDITIONS FOR AFFORDABLE HOUSING

Is there a current site compatibility certificate (affordable rental housing), of which the Council is aware *?*

No

Are there any terms of a kind referred to in clause 17(1) or 37(1) of *State Environmental Planning Policy (Affordable Rental Housing) 2009* that have been imposed as a condition of consent to a development application in respect of the land?

No

Disclaimer: This statement is based on information supplied by a third party public authority. The accuracy of this information has not been verified by Woollahra Council and if the information is vital for the proposed end use, then it should be verified by the applicant.

25. PAPER SUBDIVISION INFORMATION

Is there a development plan adopted by a relevant authority that applies to the land or that is proposed to be subject to a consent ballot?

No

26. SITE VERIFICATION CERTIFICATE

Is there a current site verification certificate of which this council is aware?

No

Note: A site verification certificate sets out the Director-General's opinion as to whether the land concerned is or is not biophysical strategic agricultural land or critical industry cluster land – see Division 3 of Part 4AA of *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007*

27. MATTERS ARISING UNDER THE CONTAMINATED LAND MANAGEMENT ACT 1997

(a) Is the land (or part of the land) to which this certificate relates significantly contaminated land?

No

(b) Is the land to which this certificate relates subject to a management order?

No

(c) Is the land to which this certificate relates the subject of an approved voluntary management proposal?

No

(d) Is the land to which this certificate relates subject to an ongoing maintenance order?

No

(e) Is the land to which this certificate relates the subject of a site audit statement?

No

Note: These matters are prescribed by section 59 (2) of the *Contaminated Land Management Act 1997* as additional matters to be specified in a planning certificate. Section 53B requires site auditors to furnish local authorities with copies of audit statements relating to site audits for the purposes of statutory requirements.

Disclaimer: This statement is based on information supplied by a third party public authority. The accuracy of this information has not been verified by Woollahra Council and if the information is vital for the proposed end use, then it should be verified by the applicant.

28. LOOSE-FILL ASBESTOS INSULATION

Does the land include any residential premises (within the meaning of Division 1A of Part 8 of the *Home Building Act 1989*) listed on the register that is required to be maintained under that Division.

No

Disclaimer: This statement is based on information supplied by a third party public authority. The accuracy of this information has not been verified by Woollahra Council and if the information is vital for the proposed end use, then it should be verified by the applicant.

29. AFFECTED BUILDING NOTICES AND BUILDING PRODUCT RECTIFICATION ORDERS

(a) Is there any affected building notice in force in respect of the land?

No

(b) Is there any building product rectification order in force in respect of the land that has not been fully complied with?

No

(c) Is there any outstanding notice of intention to make a building product rectification order?

No

Note: ***affected building notice*** has the same meaning as in Part 4 of the *Building Products (Safety) Act 2017.*

building product rectification order has the same meaning as in the *Building Products (Safety) Act 2017.*

Disclaimer: This statement is based on information supplied by a third party public authority. The accuracy of this information has not been verified by Woollahra Council and if the information is vital for the proposed end use, then it should be verified by the applicant.

SECTION 10.7(5) DETAILS

This certificate is directed to the following relevant matters affecting the land.

Note : When information pursuant to section 10.7(5) is requested the Council is under no obligation to furnish any of the information supplied herein pursuant to that section.

Council draws your attention to section 10.7(6), which states that a Council shall not incur any liability in respect of any advice provided in good faith pursuant to sub-section (5). The absence of any reference to any matter affecting the land shall not imply that the land is not affected by any matter not referred to in this planning certificate.

1. OTHER CONTROLS FROM WOOLLAHRA LOCAL ENVIRONMENTAL PLAN 2014

a) What is the maximum size of any lot resulting from a subdivision of land (as shown on the Lot Size Map)? Refer to clause 4.1 Minimum subdvision lot size.

No minimum lot size applies

b) Is the land affected by a foreshore building line (as shown on the Foreshore Building Line Map)? Refer to clause 6.4 Limited development on foreshore areas.

No

2. STATE HERITAGE REGISTER ITEMS

Is the land identified under the provisions of the *Heritage Act 1977*?

No

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3. COMMONWEALTH HERITAGE LIST

Is the land identified as a Commonwealth Heritage Place under the provisions of the *Environment Protection and Biodiversity Conservation Act 1999?*

No

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4. RESOLUTION OF COUNCIL TO PREPARE A PLANNING PROPOSAL FOR A LOCAL ENVIRONMENTAL PLAN

A list of Council decisions to prepare a planning proposal for a local environmental plan is provided below. These planning proposals have not been exhibited under section 57 of the *Environmental Planning and Assessment Act 1979* .

Property affected: Double Bay Centre
Date of decision: 20 August 2018
Relevant terms of the resolution:

Item No: 9.1 (R1)

A. THAT Council resolve to prepare a planning proposal to amend Woollahra Local Environmental Plan 2014 by introducing new provisions which protect the provision of commercial floor space in the Double Bay Centre.

Property affected: See terms of the resolution
Date of decision: on 25 March 2019
Relevant terms of the resolution:

Item No: 9.1 (R2)

A. THAT Council prepare a planning proposal to amend clause 4.1A of Woollahra LEP 2014 by inserting minimum lot size standards for manor house and multi dwelling housing (terraces).

Property affected: See terms of the resolution
Date of decision: 29 April 2019
Relevant terms of the resolution:

Item No: 9.1 (R3)

A. THAT Council prepare a planning proposal to amend Woollahra Local Environmental Plan 2014 by introducing:
   1. A maximum FSR of 0.5:1 for low desnsity residential development in the R2 Low Density Residential and R3 Medium Density Residential zones.
   2. A maximum FSR of 0.75:1 for low density residential development in the Wolseley Road, Point Piper, area as shown in *Figure 1* in the report to the Environmental Planning Committee meeting of 4 March 2019.
   3. A range of maximum FSRs as set out in the report to the Environmental Planning Committee meeting on 4 March 2019 for low density residential development on small lots in the R2 Low Density Residential Development And R3 Medium Density Residential zones.
   4. Specific objectives and other associated amendments to facilitate 1, 2 and 3.
   5. The FSRs in A1, 2 and 3 and associated changes referred to in A4 will not apply to the Paddington, Watsons Bay and Woollahra Heritage Conservation Areas.

G. That noting our concern for development in smaller lots (400sqm or less) that Council seeks advice from the Woollahra Local Planning Panel on the best methods to apply FSR to smaller lots outlined in point A. (3).

Property affected: Sewerage Pumping Station, Percival Park, Rose Bay
Date of decision: 9 September 2019
Relevant terms of the resolution:

Item No: 13.1(R1)

A. THAT a planning proposal be prepared to list the sewerage pumping station (SPS 46) and sandstone gate posts and metal gates in Percival Park at 13 Collins Avenue, Rose Bat as a heritage item in Woollahra Local Environmental Plan 2014.

Property affected: See terms of resolution
Date of decision: 11 November 2019
Relevant terms of the resolution:

Item No: 13.1(R2)

A. THAT a planning proposal to amend the Flood Planning Map of Woollahra Local Environmental Plan 2014 based on the adopted Paddington Floodplain Risk Management Study and Plan 2019.

Property affected: 30 Wyuna Road, Point Piper
Date of decision: 11 November 2019
Relevant terms of the resolution:

Item No: 13.3(R3)

A. THAT a planning proposal be prepared to list the property at 30 Wyuna Road, Point Piper as a heritage item in Woollahra Local Environmental Plan 2014.

Property affected: See terms of resolution
Date of decision: 11 November 2019
Relevant terms of the resolution:

Item No: 13.3(R4)

C. THAT a planning proposal be prepared to increase the minimum lost size of attached dual occupancies in the R2 zone to 800m2.

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5. COASTAL HAZARDS

An Estuary Planning Levels Report (August 2014) by Cardno is a supporting document to the Woollahra Development Control Plan 2015.

The Estuary Planning Levels Report identifies:
- foreshore properties which may be subject to current coastal inundation risks caused by local wind and wave setup, and/or wave run-up/overtopping; and
- foreshore properties which may be subject to future coastal inundation risks caused by sea level rise.

The report recommends planning controls to minimise the effects of coastal inundation risks. The Report can be inspected at Council or on Council's website.

6. RESOLUTIONS OF COUNCIL RELATING TO HERITAGE LISTINGS OR CONTRIBUTORY ITEMS IN DEVELOPMENT CONTROL PLANS

Properties affected: 8A Cooper Street, Paddington
Date of decision: 27 November 2006
Relevant terms of resolution:

E. That pending gazettal of the following properties as local heritage items in Woollahra Local Environmental Plan 1995, further investigation be undertaken to determine if a nomination to the State Heritage Register should be prepared:

Cooper Street	*Paddington*	*8A*	*House*

Property affected: 4 Dunara Gardens, Point Piper
Date of decision: 18 December 2006
Relevant terms of the resolution:

D. That pending gazettal of the following property as local heritage item in Woollahra Local Environmental Plan 1995, further investigation be undertaken to determine if a nomination to the State Heritage Register should be prepared:

Dunara Gardens	*Point Piper*	*4*	*House*

Property affected: Cooper Park in the suburbs of Bellevue Hill and Woollahra
Date of decision: 27 November 2017
Relevant terms of the resolution:

THAT Council requests staff to prepare and submit a report including a heritage assessment and draft heritage inventory sheet for Cooper Park to Urban Planning Committee to facilitate Cooper Park (and its elements) being:

1. included in the Woollahra Local Environmental Plan as a heritage item; and
2. listed as a heritage item of state significance on the NSW State Heritage Register.

Property affected: See terms of resolution
Date of decision: 23 April 2018
Relevant terms of the resolution:

Item No: 11.1
That Council requests staff to prepare and submit a report including a heritage assessment and draft heritage inventory sheet for each of:
1. The Sydney Croquet Club building and green (having its address in Woollahra Park, O'Sullivan Road, Rose Bay); and

2. The Woollahra Golf Club clubhouse and George Grimley Pavilion (having its address in Woollahra Park at 50 O'Sullivan Road, Rose Bay)

to the relevant Council Committee to facilitate the Sydney Croquet Club building and greens and the Woollahra Gold Club clubhouse and George Grimley Pavilion (and their elements) being:
1. Included in the Woollahra Local Environmental Plan as a heritage item; and
2. Listed as a heritage item of state significance on the NSW State Heritage Register.

Property affected: See terms of resolution
Date of decision: 18 June 2018
Relevant terms of the resolution:

Item No: 11.1
THAT Council
A. Request staff to undertake an assessment of heritage significance for the Rose Bay Scout Hall (former RAAF Officers' Canteen) located in Vickery Avenue, Rose Bay, and report to the Environmental Planning Committee on whether the property has sufficient heritage significance to be listed as:
   i) a local heritage item in the Woollahra Local Environment Plan 2014 (WLEP), and
   ii) an item of State Heritage under the Heritage Act 1977.

Property affected: 2A Cooper Street, Double Bay
Date of decision: 29 October 2018
Relevant terms of the resolution:

Item No: 9.1 (R1)
D. THAT Council support the nomination to list Gaden House at 2A Cooper Street, Double Bay as a heritage item on the State Heritage Register and submit it to the Office of Environment and Heritage.

Property affected: See terms of resolution
Date of decision: 8 April 2019
Relevant terms of the resolution:

Item No: 11.2
THAT Council requests staff to undertake an assessment of heritage significance for the following properties located in Rose Bay, NSW;
i) St Andrews Scots Presbyterian Church, corner of Dover Rd and Carlisle Street, Rose Bay;
ii) Old School Hall, Rose Bay Public School, Albermarle Ave, Rose Bay; and
iii) McAuley Catholic School and outbuildings (formerly Christian Brothers College Rose Bay),

and report to the Environmental Planning Committee on whether these items have sufficient heritage significance to be listed as:
i) a local heritage item in the Woollahra Local Environmental Plan 2014 (WLEP); and/or
ii) an item on the State Heritage Register under the Heritage Act 1977.

Property affected: See terms of resolution
Date of decision: 8 April 2019
Relevant terms of the resolution:

Item No: 11.3
THAT Council
B. Requests staff to commission a report to investigate potential heritage significance of places of worship in the Woollahra Local Government area in order to identify items of heritage significance at either a local or State level, with a view to having those identified items listed as;
   (a) a local heritage item in the Woollahra Local Environmental Plan 2014 (WLEP); and/or
   (b) an item on the State Heritage Register under the Heritage Act 1977.

Property affected: 3 Trelawney Street, Woollahra
Date of decision: 11 November 2019
Relevant terms of the resolution:

Item No: 16.3
THAT Council proceeds urgently to assess Trelawney Court at number 3 Trelawney Street, Woollahra with a view to a local heritage listing.

Property affected: See terms of resolution
Date of decision: 11 November 2019
Relevant terms of the resolution:

Item No: 16.4
A. Notes the detailed report on Californian Bungalows presented to the Urban Planning Committee on 22 June 2015.
B. Notes the recommendation to Council on 22 June 2015 to prepare a planning proposal to list 16 Bunyula Road, 6 March Street, 165 O'Sullivan Road, 44 Russell Street, 5A Vivian Street, Bellevue Hill and 10 Parsley Bay, Vaucluse as heritage items in Schedule 5 of the Woollahra LEP 2014.
C. Requests the Director of Planning to review the above mentioned recommendation and provide an updated recommendation to Council on the merit of heritage listing the properties mentioned above.
D. Requests staff to prepare a report on arts and crafts buildings, including any examples of outstanding significance recommended for listing in Schedule 5 of the Woollahra LEP.

Property affected: See terms of resolution
Date of decision: 11 November 2019
Relevant terms of the resolution:

Item No: 16.5

THAT Council:
A. Request staff to report to the Environmental Planning Committee on how the detailed controls for Inter-War residential flat buildings found in B3.8.7 of the Woollahra DCP 2015 can be applied to the Paddington, Woollahra and Watsons Bay Heritage Conservations Areas.
B. Notes community concern about the recent demolition of interwar residential flat buildings at 12 and 16 William Street, Double Bay, and 75 and 77 O'Sullivan Road, Bellevue Hill, and requests staff to provide commentary on the most effective means of protecting from

demolition interwar buildings located in all zones across the municipality, including if appropriate the invocation of LEP provisions.

7. DRAFT WATSONS BAY FLOOD RISK MANAGEMENT STUDY AND PLAN (MAY 2016)

The Draft Watsons Bay Flood Risk Management Study and Plan (May 2016) has been prepared in accordance with the NSW Floodplain Development Manual. The Draft Plan aims to provide solutions to existing flooding problems and ensure that new development is compatible with the flood hazard and does not create additional flooding problems.

The Woollahra Local Environmental Plan 2014 maps land that is identified as flood planning area, and is therefore subject to the controls in Cl 6.3 flood planning. The Draft Plan includes additional properties in Watsons Bay that are in the flood planning area.

These properties are: **14-16, 18-25 Cliff Street; 1-2, 43 Cove Street; HMAS Watson (Lot 3 DP 605078); 1-2, 6-7, 11-12, 10-24 Marine Parade; 31, 33 Pacific Street; Robertson Park (22 Military Road); 2 Short Street; Sydney Harbour National Park (Lot 1, 2 DP 605078) and 25 Victoria Street.**

The Draft Plan includes the following properties that are not identified as flood planning area: **1, 3, 5, 7 Victoria Street and 29 Cliff Street.**

The report can be inspected at Council or on Council's website. For further information contact Council's engineer.

8. PADDINGTON FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN (July 2019)

At the meeting of 9 September 2019, Council adopted the *Paddington Floodplain Risk Management Study and Plan* dated July 2019

The Study and Plan was prepared in accordance with the NSW Floodplain Development Manual. The Study and Plan aims to provide solutions to existing flooding problems and ensure that new development is compatible with flood hazard and does not create additional flooding problems.

The *Woollahra Local Environmental Plan 2014* maps land that is identified as flood planning area, and is therefore subject to the controls in Cl 6.3 flood planning. The Study and Plan includes additional properties in the Paddington area that are in the flood planning area.

The *Woollahra Local Environmental Plan 2014* maps will be updated, based on the information contained in the adopted Study and Plan.

Should the applicant require further information about any other matter please contact Council's Planning and Development Division.

Anne White
per:
Gary James
General Manager

PLANNING CERTIFICATE UNDER SECTION 10.7 (2) and (5)
ENVIRONMENTAL PLANNING & ASSESSMENT ACT

Robinson Urban Planning Pty Ltd
83 Fletcher Street
TAMARAMA 2026

Applicant's reference:
19049

Woollahra Municipal Council

ABN 32 218 483 245

Redleaf Council Chambers
536 New South Head Road
Double Bay NSW 2028
Correspondence to
General Manager
PO Box 61
Double Bay NSW 1360
DX 3607 Double Bay
records@woollahra.nsw.gov.au
www.woollahra.nsw.gov.au
Telephone: (02) 9391 7000
Facsimile: (02) 9391 7044

Certificate number: 12
Certificate issue date: 03/01/2020
Transaction ID: 506891
Certificate fee: $133.00 (standard)

DESCRIPTION OF PROPERTY

Address: Neild Avenue PADDINGTON NSW 2021
Title: LOT: 1 DP: 633259
Parish: Alexandria
County: Cumberland

This planning certificate should be read in conjunction with the *Woollahra Local Environmental Plan 2014* and/or the *Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005*. These are available on the NSW legislation website at www.legislation.nsw.gov.au

The land to which this certificate relates, being the lot or one of the lots described in the corresponding application, is shown in the Council's records as being situated at the street address described on page 1 of this certificate.

It is the applicant's responsibility to confirm that the legal description of the lot to which the application relates is accurate and current. Council does not check the accuracy or currency of the information; nor does Council have the copyright to this information.

The legal description of land is obtained from NSW Land and Property Information. Applicants must verify all property and lot information with NSW Land and Property Information. The information contained in this certificate relates only to the lot described on the certificate.

Where the street address comprises more than one lot in one or more deposited plans or strata plans, separate planning certificates can be obtained upon application for the other lots. Those certificates may contain different information than is contained in this certificate.

SECTION 10.7(2) DETAILS

In accordance with section 10.7(2) of the *Environmental Planning and Assessment Act 1979* , at the date of this certificate the following information is provided in respect of the prescribed matters to be included in a planning certificate.

1. NAMES OF RELEVANT ENVIRONMENTAL PLANNING INSTRUMENTS

(a) The following environmental planning instrument applies to the land:

Woollahra Local Environmental Plan 2014 (commenced 23 May 2015)

(b) Zone:

R3 Medium Density Residential

(c) Development that may be carried out within the zone without development consent:

Roads

(d) Development that may be carried out within the zone with development consent:

Attached dwellings; Bed and breakfast accommodation; Boarding houses; Business premises;Centre-based child care facilities; Community facilities; Dual occupancies; Dwelling houses; Environmental protection works; Group homes; Home occupations (sex services); Hostels; Information and education facilities; Multi dwelling housing; Neighbourhood shops; Office premises; Places of public worship; Public administration buildings; Recreation areas; Residential flat buildings; Respite day care centres; Secondary dwellings; Semi-detached dwellings; Seniors housing; Shops

Also refer to Schedule 1 of the LEP "Additional permitted uses" to see if this schedule applies to your land.

Note that:
- business premises
- a community facility
- an information and education facility
- office premises
- a public administration building, or
- a shop

are only permitted in a residential zone, subject to clause 6.6 Use of existing non-residential buildings in residential zones. Refer to clause 6.6 for the requirements.

(e) Development that is prohibited within the zone:

Any development not specified in item (c) or (d) above.

(f) Do any development standards apply to the land that set minimum land dimensions for the erection of a dwelling house on the land? If yes, what are the minimum dimensions?

No

(g) Does the land include or comprise 'critical habitat' under the provisions of the local environmental plan applying to the land?

No

(h) Is the land located in a heritage conservation area under the provisions of the local environmental plan applying to the land?

Yes: Paddington Heritage Conservation Area

(i) Is there an item of environmental heritage situated on the land under the provisions of the local environmental plan applying to the land?

No

2. NAMES OF RELEVANT EXHIBITED PROPOSED ENVIRONMENTAL PLANNING INSTRUMENTS

The following proposed environmental planning instruments, including a planning proposal for a LEP or a draft environmental planning instrument have been the subject of community consultation or on public exhibition under the *Environmental Planning and Assessment Act 1979* (unless the Director-General has notified Council that the making of the proposed instrument has been deferred indefinitely or has not been approved.)

Properties affected: Rose Bay Uniting Church and Wesley Hall at 518a Old South Head Road, Rose Bay
Details: A planning proposal has been prepared to amend the *Woollahra Local Environmental Plan 2014* to list as a heritage item the *Rose Bay Uniting Church and Wesley Hall Group – church and interiors (including moveable heritage, vestry and 1924 additions)* .

Re-exhibition period: Wednesday 12 June to Friday 12 July 2019.

Properties affected: The Four in Hand Hotel at 105 Sutherland Street, Paddington
Details: A planning proposal has been prepared to amend the *Woollahra Local Environmental Plan 2014* to list as a heritage item *The Four in Hand Hotel* at 105 Sutherland Street, Paddington .

Exhibition period: Wednesday 29 May to Friday 28 June 2019.

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3. NAMES OF RELEVANT DEVELOPMENT CONTROL PLANS

The following table contains a list of development control plans that have been prepared by Council under Division 6 of Part 3 of the *Environmental Planning and Assessment Act 1979* (including any made by the Council under section 72 of the Act before repeal of that section). Please check the table to see the relevancy of the plans to the land that is the subject of this certificate.

(a) The following development control plan applies to the land:

Woollahra Development Control Plan 2015 (commenced 23 May 2015)

4. NAMES OF RELEVANT DEVELOPMENT CONTROL PLANS PREPARED BY THE DIRECTOR GENERAL

The following development control plans have been prepared by the Director-General under Division 6 of Part 3 of the *Environmental Planning and Assessment Act 1979* (including any made by the Director-General under section 51A, before the repeal of that section).

Sydney Harbour Foreshores and Waterways Area Development Control Plan 2005

This DCP applies to certain land within the Woollahra Municipality being land within the Foreshores and Waterways area identified on the Sydney Regional Environmental Plan (Sydney Harbour Catchment) Foreshores and Waterways Area Map.

5. NAMES OF RELEVANT STATE ENVIRONMENTAL PLANNING POLICIES

Below is a list of all State environmental planning policies that apply to the Woollahra Municipality.

Depending on circumstances set down in each SEPP, the policy may be specifically applicable to the land that is the subject of this certificate. You are advised to peruse the policy for the necessary details. Refer to NSW Department of Planning and Environment.

- State Environmental Planning Policy No. 1 – Development Standards
- State Environmental Planning Policy No. 19 – Bushland in Urban Areas
- State Environmental Planning Policy No. 21 – Caravan Parks
- State Environmental Planning Policy No. 33 – Hazardous and Offensive Development
- State Environmental Planning Policy No. 50 – Canal Estate Development
- State Environmental Planning Policy No. 55 – Remediation of Land
- State Environmental Planning Policy No. 64 – Advertising and Signage
- State Environmental Planning Policy No. 65 – Design Quality of Residential Apartment Development
- State Environmental Planning Policy No. 70 – Affordable Housing (Revised Schemes)
- State Environmental Planning Policy (Affordable Rental Housing) 2009
- State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004
- State Environmental Planning Policy (Coastal Management) 2018
- State Environmental Planning Policy (Concurrence) 2018
- State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017
- State Environmental Planning Policy (Exempt and Complying Development Codes) 2008
- State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004
- State Environmental Planning Policy (Infrastructure) 2007
- State Environmental Planning Policy (Major Development) 2005
- State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007
- State Environmental Planning Policy (Miscellaneous Consent Provisions) 2007
- State Environmental Planning Policy (State and Regional Development) 2011

– State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017

Deemed SEPPs:

– Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005
This REP applies to all land within the Woollahra Municipality except for land at Christison Park, Vaucluse as shown on the Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005 Sydney Harbour Catchment Map

5.A STATE ENVIRONMENTAL PLANNING POLICY (COASTAL MANAGEMENT) 2018

Is the land subject to the coastal zone under *State Environmental Planning Policy (Coastal Management) 2018*?

No

Disclaimer: This statement is based on information supplied by a third party public authority. The accuracy of this information has not been verified by Woollahra Council and if the information is vital for the proposed end use, then it should be verified by the applicant.

6. NAMES OF PROPOSED STATE ENVIRONMENTAL PLANNING POLICIES

The following proposed State Environmental Planning Policies have been the subject of community consultation or on public exhibition under the *Environmental Planning and Assessment Act 1979* (unless the Director-General has notified Council that the making of the proposed instrument has been deferred indefinitely or has not been approved.)

There are currently no proposed State Environmental Planning Policies applying to the land.

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7. COMPLYING DEVELOPMENT

Is the land, land on which complying development may be carried out under the *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008* ?

Housing Code
Complying development under the Housing Code may not be carried out on the land (unless the development is a detached outbuilding, detached development(other than a detached studio) or a swimming pool) because the land is within a heritage conservation area or a draft heritage conservation area.

Refer to the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 for full details.

Rural Housing Code
Rural Housing Code is not applicable to Woollahra Local Government Area.

Low Rise Medium Density Housing Code
Low Rise Medium Density Housing Code is not applicable to Woollahra Local Government Area.

Greenfield Housing Code
Greenfield Housing Code is not applicable to Woollahra Local Government Area.

Inland Code
Inland Code is not applicable to Woollahra Local Government Area.

Housing Alterations Code
Complying development under the Housing Alterations Code may be carried out on the land. Development standards apply.

Refer to the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 for full details.

General Development Code
Complying development under the General Development Code may be carried out on the land. Development standards apply.

Refer to the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 for full details.

Commercial and Industrial Alterations Code
Complying development under the Commercial and Industrial Alterations Code may be carried out on the land. Development standards apply.

Refer to the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 for full details.

Commercial and Industrial (New Buildings and Additions) Code
Complying development under the Commercial and Industrial (New Buildings and Additions) Code may not be carried out on the land (unless the development is a detached outbuilding or swimming pool) because the land is within a heritage conservation area or a draft heritage conservation area.

Refer to the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 for full details.

Container Recycling Facilities Code
Complying development under the Container Recycling Facilities Code may be carried out on the land. Development standards apply.

Refer to the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 for full details.

Subdivisions Code
Complying development under the Subdivisions Code may be carried out on the land. Development standards apply.

Refer to the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 for full details.

Demolition Code
Complying development under the Demolition Code may be carried out on the land. Development standards apply.

Refer to the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 for full details.

Fire Safety Code
Complying development under the Fire Safety Code may be carried out on the land. Development standards apply.

Refer to the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 for full details.

8. ANNUAL CHARGES UNDER LOCAL GOVERNMENT ACT 1993 FOR COASTAL PROTECTION SERVICES THAT RELATE TO EXISTING COASTAL PROTECTION WORKS

Has the owner (or any previous owner) of the land consented in writing to the land being subject to annual charges under section 496B of the *Local Government Act 1993* for coastal protection services that relate to existing coastal protection works (within the meaning of section 553B of that Act)?

No

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9. MINE SUBSIDENCE

Is the land proclaimed to be a mine subsidence district within the meaning of section 15 of the *Mine Subsidence Compensation Act 1961* ?

No

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10. ROAD WIDENING OR ROAD REALIGNMENT

Is the land affected by any road widening or road realignment under:

(a) Division 2 of Part 3 of the Roads Act 1993; or

(b) any environmental planning instrument; or

(c) any resolution of the Council?

No

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11. COUNCIL AND OTHER PUBLIC AUTHORITY POLICIES ON HAZARD RISK RESTRICTIONS

Is the land affected by a policy:

(a) adopted by the Council that restricts the development of the land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, acid sulfate soils or any other risk (other than flooding)?

Yes

Woollahra LEP 2014, clause 6.1 (Acid sulfate soils) may require an assessment of acid sulfate soils for certain types of development located on certain land identified on the Acid Sulfate Soils Map of the LEP.

Woollahra DCP 2015 includes a policy on contaminated land which may restrict the development of the land. This policy is implemented when zoning or land use changes are proposed on lands which have previously been used for certain purposes. Applicants must consider Council's DCP as well as State legislation including the State Environmental Planning Policy No. 55 – Remediation of Land.

(b) adopted by any other public authority and notified to the Council for the express purpose of its adoption by that authority being referred to in planning certificates issued by the Council, that restricts the development of the land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, acid sulfate soils or any other risk (other than flooding)?

No

12. FLOOD RELATED DEVELOPMENT CONTROLS INFORMATION

(a) Is development on the land or part of the land for the purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group homes or seniors housing) subject to flood related development controls?

Yes.

Part or all of the subject land may be subject to flood related development controls, applicants are advised to inspect relevant flood reports and consult with Council's Technical Services Department. Further flood investigations may be required to accurately determine the nature of flooding on the site.

(b) Is development on the land or part of the land for any other purpose subject to flood related development controls?

Yes.

Part or all of the subject land may be subject to flood related development controls, applicants are advised to inspect relevant flood reports and consult with Council's Technical Services Department. Further flood investigations may be required to accurately determine the nature of flooding on the site.

Note: Words and expressions used in this item have the same meanings as in the instrument set out in the Schedule to the *Standard Instrument (Local Environmental Plans) Order 2006*.

13. LAND RESERVED FOR ACQUISITION

Does an environmental planning instrument or proposed environmental planning instrument applying to the land make provision in relation to the acquisition of the land by a public authority, as referred to in section 27 of the *Environmental Planning and Assessment Act 1979* ?

No

14. CONTRIBUTIONS PLAN

The following contributions plan may apply to the land:
- Woollahra Section 94A Development Contributions Plan 2011 (31 August 2011)
- Woollahra Section 94 Contributions Plan (31 March 2003).

15. BIODIVERSITY CERTIFIED LAND

Is the land biodiversity certified land under Part 8 of the *Biodiversity Conservation Act 2016*?

No

16. BIODIVERSITY STEWARDSHIP SITES

Is the land a biodiversity stewardship site under a biodiversity stewardship agreement under Part 5 of the *Biodiversity Conservation Act 2016*?

No

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17. NATIVE VEGETATION CLEARING SET ASIDES

Does the land contain a set aside area under section 60ZC of the *Local Land Services Act 2013*?

No

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18. BUSH FIRE PRONE LAND

Is the land to which this certificate relates bush fire prone land?

No

Disclaimer: This statement is based on information supplied by a third party public authority. The accuracy of this information has not been verified by Woollahra Council and if the information is vital for the proposed end use, then it should be verified by the applicant.

19. PROPERTY VEGETATION PLANS

Is the land the subject of a property vegetation plan approved under Part 4 of the *Native Vegetation Act 2003* (and that continues in force) ?

No

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20. ORDERS UNDER TREES (DISPUTES BETWEEN NEIGHBOURS) ACT 2006

Has an order been made under the *Trees (Disputes Between Neighbours) Act 2006* to carry out work in relation to a tree on the land (but only if Council has been notified of the order).

No

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21. DIRECTIONS UNDER PART 3A

Is there a direction by the Minister in force under section 75P (2) (c1) of the Act that a provision of an environmental planning instrument prohibiting or restricting the carrying out of a project or a stage of a project on the land under Part 4 of the Act does not have effect?

No

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22. SITE COMPATIBILITY CERTIFICATES AND CONDITIONS FOR SENIORS

Is there a current site compatibility certificate (seniors housing), of which the Council is aware *?*

No

Are there any terms of a kind referred to in clause 18(2) of *State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004* that have been imposed as a condition of consent to a development application granted after 11 October 2007?

No

Disclaimer: This statement is based on information supplied by a third party public authority. The accuracy of this information has not been verified by Woollahra Council and if the information is vital for the proposed end use, then it should be verified by the applicant.

23. SITE COMPATIBILITY CERTIFICATES FOR INFRASTRUCTURE, SCHOOLS OR TAFE ESTABLISHMENTS

Is there a valid site compatibility certificate (infrastructure) or site compatibility certificate (schools or TAFE establishments), of which the Council is aware *?*

No

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24. SITE COMPATIBILITY CERTIFICATES AND CONDITIONS FOR AFFORDABLE HOUSING

Is there a current site compatibility certificate (affordable rental housing), of which the Council is aware *?*

No

Are there any terms of a kind referred to in clause 17(1) or 37(1) of *State Environmental Planning Policy (Affordable Rental Housing) 2009* that have been imposed as a condition of consent to a development application in respect of the land?

No

Disclaimer: This statement is based on information supplied by a third party public authority. The accuracy of this information has not been verified by Woollahra Council and if the information is vital for the proposed end use, then it should be verified by the applicant.

25. PAPER SUBDIVISION INFORMATION

Is there a development plan adopted by a relevant authority that applies to the land or that is proposed to be subject to a consent ballot?

No

26. SITE VERIFICATION CERTIFICATE

Is there a current site verification certificate of which this council is aware?

No

Note: A site verification certificate sets out the Director-General's opinion as to whether the land concerned is or is not biophysical strategic agricultural land or critical industry cluster land – see Division 3 of Part 4AA of *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007*

27. MATTERS ARISING UNDER THE CONTAMINATED LAND MANAGEMENT ACT 1997

(a) Is the land (or part of the land) to which this certificate relates significantly contaminated land?

No

(b) Is the land to which this certificate relates subject to a management order?

No

(c) Is the land to which this certificate relates the subject of an approved voluntary management proposal?

No

(d) Is the land to which this certificate relates subject to an ongoing maintenance order?

No

(e) Is the land to which this certificate relates the subject of a site audit statement?

No

Note: These matters are prescribed by section 59 (2) of the *Contaminated Land Management Act 1997* as additional matters to be specified in a planning certificate. Section 53B requires site auditors to furnish local authorities with copies of audit statements relating to site audits for the purposes of statutory requirements.

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28. LOOSE-FILL ASBESTOS INSULATION

Does the land include any residential premises (within the meaning of Division 1A of Part 8 of the *Home Building Act 1989*) listed on the register that is required to be maintained under that Division.

No

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29. AFFECTED BUILDING NOTICES AND BUILDING PRODUCT RECTIFICATION ORDERS

(a) Is there any affected building notice in force in respect of the land?

No

(b) Is there any building product rectification order in force in respect of the land that has not been fully complied with?

No

(c) Is there any outstanding notice of intention to make a building product rectification order?

No

Note: ***affected building notice*** has the same meaning as in Part 4 of the *Building Products (Safety) Act 2017.*

building product rectification order has the same meaning as in the *Building Products (Safety) Act 2017.*

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SECTION 10.7(5) DETAILS

This certificate is directed to the following relevant matters affecting the land.

Note : When information pursuant to section 10.7(5) is requested the Council is under no obligation to furnish any of the information supplied herein pursuant to that section.

Council draws your attention to section 10.7(6), which states that a Council shall not incur any liability in respect of any advice provided in good faith pursuant to sub-section (5). The absence of any reference to any matter affecting the land shall not imply that the land is not affected by any matter not referred to in this planning certificate.

1. OTHER CONTROLS FROM WOOLLAHRA LOCAL ENVIRONMENTAL PLAN 2014

a) What is the maximum size of any lot resulting from a subdivision of land (as shown on the Lot Size Map)? Refer to clause 4.1 Minimum subdvision lot size.

700 square metres

b) Is the land affected by a foreshore building line (as shown on the Foreshore Building Line Map)? Refer to clause 6.4 Limited development on foreshore areas.

No

2. STATE HERITAGE REGISTER ITEMS

Is the land identified under the provisions of the *Heritage Act 1977*?

No

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3. COMMONWEALTH HERITAGE LIST

Is the land identified as a Commonwealth Heritage Place under the provisions of the *Environment Protection and Biodiversity Conservation Act 1999?*

No

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4. RESOLUTION OF COUNCIL TO PREPARE A PLANNING PROPOSAL FOR A LOCAL ENVIRONMENTAL PLAN

A list of Council decisions to prepare a planning proposal for a local environmental plan is provided below. These planning proposals have not been exhibited under section 57 of the *Environmental Planning and Assessment Act 1979* .

Property affected: Double Bay Centre
Date of decision: 20 August 2018
Relevant terms of the resolution:

Item No: 9.1 (R1)

A. THAT Council resolve to prepare a planning proposal to amend Woollahra Local Environmental Plan 2014 by introducing new provisions which protect the provision of commercial floor space in the Double Bay Centre.

Property affected: See terms of the resolution
Date of decision: on 25 March 2019
Relevant terms of the resolution:

Item No: 9.1 (R2)

A. THAT Council prepare a planning proposal to amend clause 4.1A of Woollahra LEP 2014 by inserting minimum lot size standards for manor house and multi dwelling housing (terraces).

Property affected: See terms of the resolution
Date of decision: 29 April 2019
Relevant terms of the resolution:

Item No: 9.1 (R3)

A. THAT Council prepare a planning proposal to amend Woollahra Local Environmental Plan 2014 by introducing:
   1. A maximum FSR of 0.5:1 for low desnsity residential development in the R2 Low Density Residential and R3 Medium Density Residential zones.
   2. A maximum FSR of 0.75:1 for low density residential development in the Wolseley Road, Point Piper, area as shown in *Figure 1* in the report to the Environmental Planning Committee meeting of 4 March 2019.
   3. A range of maximum FSRs as set out in the report to the Environmental Planning Committee meeting on 4 March 2019 for low density residential development on small lots in the R2 Low Density Residential Development And R3 Medium Density Residential zones.
   4. Specific objectives and other associated amendments to facilitate 1, 2 and 3.
   5. The FSRs in A1, 2 and 3 and associated changes referred to in A4 will not apply to the Paddington, Watsons Bay and Woollahra Heritage Conservation Areas.

G. That noting our concern for development in smaller lots (400sqm or less) that Council seeks advice from the Woollahra Local Planning Panel on the best methods to apply FSR to smaller lots outlined in point A. (3).

Property affected: Sewerage Pumping Station, Percival Park, Rose Bay
Date of decision: 9 September 2019
Relevant terms of the resolution:

Item No: 13.1(R1)

A. THAT a planning proposal be prepared to list the sewerage pumping station (SPS 46) and sandstone gate posts and metal gates in Percival Park at 13 Collins Avenue, Rose Bat as a heritage item in Woollahra Local Environmental Plan 2014.

Property affected: See terms of resolution
Date of decision: 11 November 2019
Relevant terms of the resolution:

Item No: 13.1(R2)

A. THAT a planning proposal to amend the Flood Planning Map of Woollahra Local Environmental Plan 2014 based on the adopted Paddington Floodplain Risk Management Study and Plan 2019.

Property affected: 30 Wyuna Road, Point Piper
Date of decision: 11 November 2019
Relevant terms of the resolution:

Item No: 13.3(R3)

A. THAT a planning proposal be prepared to list the property at 30 Wyuna Road, Point Piper as a heritage item in Woollahra Local Environmental Plan 2014.

Property affected: See terms of resolution
Date of decision: 11 November 2019
Relevant terms of the resolution:

Item No: 13.3(R4)

C. THAT a planning proposal be prepared to increase the minimum lost size of attached dual occupancies in the R2 zone to 800m2.

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5. COASTAL HAZARDS

An Estuary Planning Levels Report (August 2014) by Cardno is a supporting document to the Woollahra Development Control Plan 2015.

The Estuary Planning Levels Report identifies:
- foreshore properties which may be subject to current coastal inundation risks caused by local wind and wave setup, and/or wave run-up/overtopping; and
- foreshore properties which may be subject to future coastal inundation risks caused by sea level rise.

The report recommends planning controls to minimise the effects of coastal inundation risks. The Report can be inspected at Council or on Council's website.

6. RESOLUTIONS OF COUNCIL RELATING TO HERITAGE LISTINGS OR CONTRIBUTORY ITEMS IN DEVELOPMENT CONTROL PLANS

Properties affected: 8A Cooper Street, Paddington
Date of decision: 27 November 2006
Relevant terms of resolution:

E. That pending gazettal of the following properties as local heritage items in Woollahra Local Environmental Plan 1995, further investigation be undertaken to determine if a nomination to the State Heritage Register should be prepared:

Cooper Street	*Paddington*	*8A*	*House*

Property affected: 4 Dunara Gardens, Point Piper
Date of decision: 18 December 2006
Relevant terms of the resolution:

D. That pending gazettal of the following property as local heritage item in Woollahra Local Environmental Plan 1995, further investigation be undertaken to determine if a nomination to the State Heritage Register should be prepared:

Dunara Gardens	*Point Piper*	*4*	*House*

Property affected: Cooper Park in the suburbs of Bellevue Hill and Woollahra
Date of decision: 27 November 2017
Relevant terms of the resolution:

THAT Council requests staff to prepare and submit a report including a heritage assessment and draft heritage inventory sheet for Cooper Park to Urban Planning Committee to facilitate Cooper Park (and its elements) being:

1. included in the Woollahra Local Environmental Plan as a heritage item; and
2. listed as a heritage item of state significance on the NSW State Heritage Register.

Property affected: See terms of resolution
Date of decision: 23 April 2018
Relevant terms of the resolution:

Item No: 11.1
That Council requests staff to prepare and submit a report including a heritage assessment and draft heritage inventory sheet for each of:
1. The Sydney Croquet Club building and green (having its address in Woollahra Park, O'Sullivan Road, Rose Bay); and

2. The Woollahra Golf Club clubhouse and George Grimley Pavilion (having its address in Woollahra Park at 50 O'Sullivan Road, Rose Bay)

to the relevant Council Committee to facilitate the Sydney Croquet Club building and greens and the Woollahra Gold Club clubhouse and George Grimley Pavilion (and their elements) being:
1. Included in the Woollahra Local Environmental Plan as a heritage item; and
2. Listed as a heritage item of state significance on the NSW State Heritage Register.

Property affected: See terms of resolution
Date of decision: 18 June 2018
Relevant terms of the resolution:

Item No: 11.1
THAT Council
A. Request staff to undertake an assessment of heritage significance for the Rose Bay Scout Hall (former RAAF Officers' Canteen) located in Vickery Avenue, Rose Bay, and report to the Environmental Planning Committee on whether the property has sufficient heritage significance to be listed as:
   i) a local heritage item in the Woollahra Local Environment Plan 2014 (WLEP), and
   ii) an item of State Heritage under the Heritage Act 1977.

Property affected: 2A Cooper Street, Double Bay
Date of decision: 29 October 2018
Relevant terms of the resolution:

Item No: 9.1 (R1)
D. THAT Council support the nomination to list Gaden House at 2A Cooper Street, Double Bay as a heritage item on the State Heritage Register and submit it to the Office of Environment and Heritage.

Property affected: See terms of resolution
Date of decision: 8 April 2019
Relevant terms of the resolution:

Item No: 11.2
THAT Council requests staff to undertake an assessment of heritage significance for the following properties located in Rose Bay, NSW;
i) St Andrews Scots Presbyterian Church, corner of Dover Rd and Carlisle Street, Rose Bay;
ii) Old School Hall, Rose Bay Public School, Albermarle Ave, Rose Bay; and
iii) McAuley Catholic School and outbuildings (formerly Christian Brothers College Rose Bay),

and report to the Environmental Planning Committee on whether these items have sufficient heritage significance to be listed as:
i) a local heritage item in the Woollahra Local Environmental Plan 2014 (WLEP); and/or
ii) an item on the State Heritage Register under the Heritage Act 1977.

Property affected: See terms of resolution
Date of decision: 8 April 2019
Relevant terms of the resolution:

Item No: 11.3
THAT Council
B. Requests staff to commission a report to investigate potential heritage significance of places of worship in the Woollahra Local Government area in order to identify items of heritage significance at either a local or State level, with a view to having those identified items listed as;
   (a) a local heritage item in the Woollahra Local Environmental Plan 2014 (WLEP); and/or
   (b) an item on the State Heritage Register under the Heritage Act 1977.

Property affected: 3 Trelawney Street, Woollahra
Date of decision: 11 November 2019
Relevant terms of the resolution:

Item No: 16.3
THAT Council proceeds urgently to assess Trelawney Court at number 3 Trelawney Street, Woollahra with a view to a local heritage listing.

Property affected: See terms of resolution
Date of decision: 11 November 2019
Relevant terms of the resolution:

Item No: 16.4
A. Notes the detailed report on Californian Bungalows presented to the Urban Planning Committee on 22 June 2015.
B. Notes the recommendation to Council on 22 June 2015 to prepare a planning proposal to list 16 Bunyula Road, 6 March Street, 165 O'Sullivan Road, 44 Russell Street, 5A Vivian Street, Bellevue Hill and 10 Parsley Bay, Vaucluse as heritage items in Schedule 5 of the Woollahra LEP 2014.
C. Requests the Director of Planning to review the above mentioned recommendation and provide an updated recommendation to Council on the merit of heritage listing the properties mentioned above.
D. Requests staff to prepare a report on arts and crafts buildings, including any examples of outstanding significance recommended for listing in Schedule 5 of the Woollahra LEP.

Property affected: See terms of resolution
Date of decision: 11 November 2019
Relevant terms of the resolution:

Item No: 16.5

THAT Council:
A. Request staff to report to the Environmental Planning Committee on how the detailed controls for Inter-War residential flat buildings found in B3.8.7 of the Woollahra DCP 2015 can be applied to the Paddington, Woollahra and Watsons Bay Heritage Conservations Areas.
B. Notes community concern about the recent demolition of interwar residential flat buildings at 12 and 16 William Street, Double Bay, and 75 and 77 O'Sullivan Road, Bellevue Hill, and requests staff to provide commentary on the most effective means of protecting from

demolition interwar buildings located in all zones across the municipality, including if appropriate the invocation of LEP provisions.

7. DRAFT WATSONS BAY FLOOD RISK MANAGEMENT STUDY AND PLAN (MAY 2016)

The Draft Watsons Bay Flood Risk Management Study and Plan (May 2016) has been prepared in accordance with the NSW Floodplain Development Manual. The Draft Plan aims to provide solutions to existing flooding problems and ensure that new development is compatible with the flood hazard and does not create additional flooding problems.

The Woollahra Local Environmental Plan 2014 maps land that is identified as flood planning area, and is therefore subject to the controls in Cl 6.3 flood planning. The Draft Plan includes additional properties in Watsons Bay that are in the flood planning area.

These properties are: **14-16, 18-25 Cliff Street; 1-2, 43 Cove Street; HMAS Watson (Lot 3 DP 605078); 1-2, 6-7, 11-12, 10-24 Marine Parade; 31, 33 Pacific Street; Robertson Park (22 Military Road); 2 Short Street; Sydney Harbour National Park (Lot 1, 2 DP 605078) and 25 Victoria Street.**

The Draft Plan includes the following properties that are not identified as flood planning area: **1, 3, 5, 7 Victoria Street and 29 Cliff Street.**

The report can be inspected at Council or on Council's website. For further information contact Council's engineer.

8. PADDINGTON FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN (July 2019)

At the meeting of 9 September 2019, Council adopted the *Paddington Floodplain Risk Management Study and Plan* dated July 2019

The Study and Plan was prepared in accordance with the NSW Floodplain Development Manual. The Study and Plan aims to provide solutions to existing flooding problems and ensure that new development is compatible with flood hazard and does not create additional flooding problems.

The *Woollahra Local Environmental Plan 2014* maps land that is identified as flood planning area, and is therefore subject to the controls in Cl 6.3 flood planning. The Study and Plan includes additional properties in the Paddington area that are in the flood planning area.

The *Woollahra Local Environmental Plan 2014* maps will be updated, based on the information contained in the adopted Study and Plan.

Should the applicant require further information about any other matter please contact Council's Planning and Development Division.

Anne White
per:
Gary James
General Manager

PLANNING CERTIFICATE UNDER SECTION 10.7 (2) and (5)
ENVIRONMENTAL PLANNING & ASSESSMENT ACT

Sandra Robinson
83 Fletcher Street
TAMARAMA
NSW 2026

Applicant's reference:
19049

Woollahra Municipal Council

ABN 32 218 483 245

Redleaf Council Chambers
536 New South Head Road
Double Bay NSW 2028
Correspondence to
General Manager
PO Box 61
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Telephone: (02) 9391 7000
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Certificate number: 53
Certificate issue date: 13/01/2020
Transaction ID: 507899
Certificate fee: $133.00 (standard)

DESCRIPTION OF PROPERTY

Address: Neild Avenue PADDINGTON NSW 2021
Title: LOT: 219 DP: 752011
Parish: Alexandria
County: Cumberland

This planning certificate should be read in conjunction with the *Woollahra Local Environmental Plan 2014* and/or the *Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005*. These are available on the NSW legislation website at www.legislation.nsw.gov.au

The land to which this certificate relates, being the lot or one of the lots described in the corresponding application, is shown in the Council's records as being situated at the street address described on page 1 of this certificate.

It is the applicant's responsibility to confirm that the legal description of the lot to which the application relates is accurate and current. Council does not check the accuracy or currency of the information; nor does Council have the copyright to this information.

The legal description of land is obtained from NSW Land and Property Information. Applicants must verify all property and lot information with NSW Land and Property Information. The information contained in this certificate relates only to the lot described on the certificate.

Where the street address comprises more than one lot in one or more deposited plans or strata plans, separate planning certificates can be obtained upon application for the other lots. Those certificates may contain different information than is contained in this certificate.

SECTION 10.7(2) DETAILS

In accordance with section 10.7(2) of the *Environmental Planning and Assessment Act 1979* , at the date of this certificate the following information is provided in respect of the prescribed matters to be included in a planning certificate.

1. NAMES OF RELEVANT ENVIRONMENTAL PLANNING INSTRUMENTS

(a) The following environmental planning instrument applies to the land:

Woollahra Local Environmental Plan 2014 (commenced 23 May 2015)

(b) Zone:

RE2 Private Recreation

(c) Development that may be carried out within the zone without development consent:

Nil

(d) Development that may be carried out within the zone with development consent:

Centre-based child care facilities; Community facilities; Environmental facilities; Environmental protection works; Information and education facilities; Kiosks; Recreation areas; Recreation facilities (indoor); Recreation facilities (outdoor); Registered clubs; Respite day care centres; Roads

Also refer to Schedule 1 of the LEP "Additional permitted uses" to see if this schedule applies to your land.

(e) Development that is prohibited within the zone:

Any development not specified in item (c) or (d) above.

(f) Do any development standards apply to the land that set minimum land dimensions for the erection of a dwelling house on the land? If yes, what are the minimum dimensions?

No

(g) Does the land include or comprise 'critical habitat' under the provisions of the local environmental plan applying to the land?

No

(h) Is the land located in a heritage conservation area under the provisions of the local environmental plan applying to the land?

Yes: Paddington Heritage Conservation Area

(i) Is there an item of environmental heritage situated on the land under the provisions of the local environmental plan applying to the land?

No

2. NAMES OF RELEVANT EXHIBITED PROPOSED ENVIRONMENTAL PLANNING INSTRUMENTS

The following proposed environmental planning instruments, including a planning proposal for a LEP or a draft environmental planning instrument have been the subject of community consultation or on public exhibition under the *Environmental Planning and Assessment Act 1979* (unless the Director-General has notified Council that the making of the proposed instrument has been deferred indefinitely or has not been approved.)

Properties affected: Rose Bay Uniting Church and Wesley Hall at 518a Old South Head Road, Rose Bay
Details: A planning proposal has been prepared to amend the *Woollahra Local Environmental Plan 2014* to list as a heritage item the *Rose Bay Uniting Church and Wesley Hall Group – church and interiors (including moveable heritage, vestry and 1924 additions)* .

Re-exhibition period: Wednesday 12 June to Friday 12 July 2019.

Properties affected: The Four in Hand Hotel at 105 Sutherland Street, Paddington
Details: A planning proposal has been prepared to amend the *Woollahra Local Environmental Plan 2014* to list as a heritage item *The Four in Hand Hotel* at 105 Sutherland Street, Paddington .

Exhibition period: Wednesday 29 May to Friday 28 June 2019.

3. NAMES OF RELEVANT DEVELOPMENT CONTROL PLANS

The following table contains a list of development control plans that have been prepared by Council under Division 6 of Part 3 of the *Environmental Planning and Assessment Act 1979* (including any made by the Council under section 72 of the Act before repeal of that section). Please check the table to see the relevancy of the plans to the land that is the subject of this certificate.

(a) The following development control plan applies to the land:

Woollahra Development Control Plan 2015 (commenced 23 May 2015)

4. NAMES OF RELEVANT DEVELOPMENT CONTROL PLANS PREPARED BY THE DIRECTOR GENERAL

The following development control plans have been prepared by the Director-General under Division 6 of Part 3 of the *Environmental Planning and Assessment Act 1979* (including any made by the Director-General under section 51A, before the repeal of that section).

Sydney Harbour Foreshores and Waterways Area Development Control Plan 2005

This DCP applies to certain land within the Woollahra Municipality being land within the Foreshores and Waterways area identified on the Sydney Regional Environmental Plan (Sydney Harbour Catchment) Foreshores and Waterways Area Map.

5. NAMES OF RELEVANT STATE ENVIRONMENTAL PLANNING POLICIES

Below is a list of all State environmental planning policies that apply to the Woollahra Municipality.

Depending on circumstances set down in each SEPP, the policy may be specifically applicable to the land that is the subject of this certificate. You are advised to peruse the policy for the necessary details. Refer to NSW Department of Planning and Environment.

- State Environmental Planning Policy No. 1 – Development Standards
- State Environmental Planning Policy No. 19 – Bushland in Urban Areas
- State Environmental Planning Policy No. 21 – Caravan Parks
- State Environmental Planning Policy No. 33 – Hazardous and Offensive Development
- State Environmental Planning Policy No. 50 – Canal Estate Development
- State Environmental Planning Policy No. 55 – Remediation of Land
- State Environmental Planning Policy No. 64 – Advertising and Signage
- State Environmental Planning Policy No. 65 – Design Quality of Residential Apartment Development
- State Environmental Planning Policy No. 70 – Affordable Housing (Revised Schemes)
- State Environmental Planning Policy (Affordable Rental Housing) 2009
- State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004
- State Environmental Planning Policy (Coastal Management) 2018
- State Environmental Planning Policy (Concurrence) 2018
- State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017
- State Environmental Planning Policy (Exempt and Complying Development Codes) 2008
- State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004
- State Environmental Planning Policy (Infrastructure) 2007
- State Environmental Planning Policy (Major Development) 2005
- State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007
- State Environmental Planning Policy (Miscellaneous Consent Provisions) 2007
- State Environmental Planning Policy (State and Regional Development) 2011
- State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017

Deemed SEPPs:

- Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005
  This REP applies to all land within the Woollahra Municipality except for land at Christison Park, Vaucluse as shown on the Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005 Sydney Harbour Catchment Map

5.A STATE ENVIRONMENTAL PLANNING POLICY (COASTAL MANAGEMENT) 2018

Is the land subject to the coastal zone under *State Environmental Planning Policy (Coastal Management) 2018*?

No

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6. NAMES OF PROPOSED STATE ENVIRONMENTAL PLANNING POLICIES

The following proposed State Environmental Planning Policies have been the subject of community consultation or on public exhibition under the *Environmental Planning and Assessment Act 1979* (unless the Director-General has notified Council that the making of the proposed instrument has been deferred indefinitely or has not been approved.)

There are currently no proposed State Environmental Planning Policies applying to the land.

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7. COMPLYING DEVELOPMENT

Is the land, land on which complying development may be carried out under the *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008* ?

Housing Code
Complying development under the Housing Code may not be carried out on the land (unless the development is a detached outbuilding, detached development(other than a detached studio) or a swimming pool) because the land is within a heritage conservation area or a draft heritage conservation area.

Refer to the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 for full details.

Rural Housing Code
Rural Housing Code is not applicable to Woollahra Local Government Area.

Low Rise Medium Density Housing Code
Low Rise Medium Density Housing Code is not applicable to Woollahra Local Government Area.

Greenfield Housing Code
Greenfield Housing Code is not applicable to Woollahra Local Government Area.

Inland Code
Inland Code is not applicable to Woollahra Local Government Area.

Housing Alterations Code
Complying development under the Housing Alterations Code may be carried out on the land. Development standards apply.

Refer to the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 for full details.

General Development Code
Complying development under the General Development Code may be carried out on the land. Development standards apply.

Refer to the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 for full details.

Commercial and Industrial Alterations Code
Complying development under the Commercial and Industrial Alterations Code may be carried out on the land. Development standards apply.

Refer to the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 for full details.

Commercial and Industrial (New Buildings and Additions) Code
Complying development under the Commercial and Industrial (New Buildings and Additions) Code may not be carried out on the land (unless the development is a detached outbuilding or swimming pool) because the land is within a heritage conservation area or a draft heritage conservation area.

Refer to the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 for full details.

Container Recycling Facilities Code
Complying development under the Container Recycling Facilities Code may be carried out on the land. Development standards apply.

Refer to the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 for full details.

Subdivisions Code
Complying development under the Subdivisions Code may be carried out on the land. Development standards apply.

Refer to the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 for full details.

Demolition Code
Complying development under the Demolition Code may be carried out on the land. Development standards apply.

Refer to the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 for full details.

Fire Safety Code
Complying development under the Fire Safety Code may be carried out on the land. Development standards apply.

Refer to the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 for full details.

8. ANNUAL CHARGES UNDER LOCAL GOVERNMENT ACT 1993 FOR COASTAL PROTECTION SERVICES THAT RELATE TO EXISTING COASTAL PROTECTION WORKS

Has the owner (or any previous owner) of the land consented in writing to the land being subject to annual charges under section 496B of the *Local Government Act 1993* for coastal protection services that relate to existing coastal protection works (within the meaning of section 553B of that Act)?

No

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9. MINE SUBSIDENCE

Is the land proclaimed to be a mine subsidence district within the meaning of section 15 of the *Mine Subsidence Compensation Act 1961* ?

No

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10. ROAD WIDENING OR ROAD REALIGNMENT

Is the land affected by any road widening or road realignment under:

(a) Division 2 of Part 3 of the Roads Act 1993; or

(b) any environmental planning instrument; or

(c) any resolution of the Council?

No

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11. COUNCIL AND OTHER PUBLIC AUTHORITY POLICIES ON HAZARD RISK RESTRICTIONS

Is the land affected by a policy:

(a) adopted by the Council that restricts the development of the land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, acid sulfate soils or any other risk (other than flooding)?

Yes

Woollahra LEP 2014, clause 6.1 (Acid sulfate soils) may require an assessment of acid sulfate soils for certain types of development located on certain land identified on the Acid Sulfate Soils Map of the LEP.

Woollahra DCP 2015 includes a policy on contaminated land which may restrict the development of the land. This policy is implemented when zoning or land use changes are proposed on lands which have previously been used for certain purposes. Applicants must consider Council's DCP as well as State legislation including the State Environmental Planning Policy No. 55 – Remediation of Land.

(b) adopted by any other public authority and notified to the Council for the express purpose of its adoption by that authority being referred to in planning certificates issued by the Council, that restricts the development of the land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, acid sulfate soils or any other risk (other than flooding)?

No

12. FLOOD RELATED DEVELOPMENT CONTROLS INFORMATION

(a) Is development on the land or part of the land for the purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group homes or seniors housing) subject to flood related development controls?

Yes.

At the meeting of 9 September 2019, Council adopted the Paddington Floodplain Risk Management Study and Plan, dated July 2019.

Part or all of the subject land may be subject to flood related development controls, applicants are advised to inspect relevant flood reports and consult with Council's Technical Services Department. Further flood investigations may be required to accurately determine the nature of flooding on the site.

(b) Is development on the land or part of the land for any other purpose subject to flood related development controls?

Yes.

At the meeting of 9 September 2019, Council adopted the Paddington Floodplain Risk Management Study and Plan, dated July 2019.

Part or all of the subject land may be subject to flood related development controls, applicants are advised to inspect relevant flood reports and consult with Council's Technical Services Department. Further flood investigations may be required to accurately determine the nature of flooding on the site.

Note: Words and expressions used in this item have the same meanings as in the instrument set out in the Schedule to the *Standard Instrument (Local Environmental Plans) Order 2006*.

13. LAND RESERVED FOR ACQUISITION

Does an environmental planning instrument or proposed environmental planning instrument applying to the land make provision in relation to the acquisition of the land by a public authority, as referred to in section 27 of the *Environmental Planning and Assessment Act 1979* ?

No

14. CONTRIBUTIONS PLAN

The following contributions plan may apply to the land:
- Woollahra Section 94A Development Contributions Plan 2011 (31 August 2011)
- Woollahra Section 94 Contributions Plan (31 March 2003).

15. BIODIVERSITY CERTIFIED LAND

Is the land biodiversity certified land under Part 8 of the *Biodiversity Conservation Act 2016*?

No

16. BIODIVERSITY STEWARDSHIP SITES

Is the land a biodiversity stewardship site under a biodiversity stewardship agreement under Part 5 of the *Biodiversity Conservation Act 2016*?

No

Disclaimer: This statement is based on information supplied by a third party public authority. The accuracy of this information has not been verified by Woollahra Council and if the information is vital for the proposed end use, then it should be verified by the applicant.

17. NATIVE VEGETATION CLEARING SET ASIDES

Does the land contain a set aside area under section 60ZC of the *Local Land Services Act 2013*?

No

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18. BUSH FIRE PRONE LAND

Is the land to which this certificate relates bush fire prone land?

No

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19. PROPERTY VEGETATION PLANS

Is the land the subject of a property vegetation plan approved under Part 4 of the *Native Vegetation Act 2003* (and that continues in force) ?

No

Disclaimer: This statement is based on information supplied by a third party public authority. The accuracy of this information has not been verified by Woollahra Council and if the information is vital for the proposed end use, then it should be verified by the applicant.

20. ORDERS UNDER TREES (DISPUTES BETWEEN NEIGHBOURS) ACT 2006

Has an order been made under the *Trees (Disputes Between Neighbours) Act 2006* to carry out work in relation to a tree on the land (but only if Council has been notified of the order).

No

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21. DIRECTIONS UNDER PART 3A

Is there a direction by the Minister in force under section 75P (2) (c1) of the Act that a provision of an environmental planning instrument prohibiting or restricting the carrying out of a project or a stage of a project on the land under Part 4 of the Act does not have effect?

No

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22. SITE COMPATIBILITY CERTIFICATES AND CONDITIONS FOR SENIORS

Is there a current site compatibility certificate (seniors housing), of which the Council is aware *?*

No

Are there any terms of a kind referred to in clause 18(2) of *State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004* that have been imposed as a condition of consent to a development application granted after 11 October 2007?

No

Disclaimer: This statement is based on information supplied by a third party public authority. The accuracy of this information has not been verified by Woollahra Council and if the information is vital for the proposed end use, then it should be verified by the applicant.

23. SITE COMPATIBILITY CERTIFICATES FOR INFRASTRUCTURE, SCHOOLS OR TAFE ESTABLISHMENTS

Is there a valid site compatibility certificate (infrastructure) or site compatibility certificate (schools or TAFE establishments), of which the Council is aware *?*

No

Disclaimer: This statement is based on information supplied by a third party public authority. The accuracy of this information has not been verified by Woollahra Council and if the information is vital for the proposed end use, then it should be verified by the applicant.

24. SITE COMPATIBILITY CERTIFICATES AND CONDITIONS FOR AFFORDABLE HOUSING

Is there a current site compatibility certificate (affordable rental housing), of which the Council is aware *?*

No

Are there any terms of a kind referred to in clause 17(1) or 37(1) of *State Environmental Planning Policy (Affordable Rental Housing) 2009* that have been imposed as a condition of consent to a development application in respect of the land?

No

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25. PAPER SUBDIVISION INFORMATION

Is there a development plan adopted by a relevant authority that applies to the land or that is proposed to be subject to a consent ballot?

No

26. SITE VERIFICATION CERTIFICATE

Is there a current site verification certificate of which this council is aware?

No

Note: A site verification certificate sets out the Director-General's opinion as to whether the land concerned is or is not biophysical strategic agricultural land or critical industry cluster land – see Division 3 of Part 4AA of *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007*

27. MATTERS ARISING UNDER THE CONTAMINATED LAND MANAGEMENT ACT 1997

(a) Is the land (or part of the land) to which this certificate relates significantly contaminated land?

No

(b) Is the land to which this certificate relates subject to a management order?

No

(c) Is the land to which this certificate relates the subject of an approved voluntary management proposal?

No

(d) Is the land to which this certificate relates subject to an ongoing maintenance order?

No

(e) Is the land to which this certificate relates the subject of a site audit statement?

No

Note: These matters are prescribed by section 59 (2) of the *Contaminated Land Management Act 1997* as additional matters to be specified in a planning certificate. Section 53B requires site auditors to furnish local authorities with copies of audit statements relating to site audits for the purposes of statutory requirements.

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28. LOOSE-FILL ASBESTOS INSULATION

Does the land include any residential premises (within the meaning of Division 1A of Part 8 of the *Home Building Act 1989*) listed on the register that is required to be maintained under that Division.

No

Disclaimer: This statement is based on information supplied by a third party public authority. The accuracy of this information has not been verified by Woollahra Council and if the information is vital for the proposed end use, then it should be verified by the applicant.

29. AFFECTED BUILDING NOTICES AND BUILDING PRODUCT RECTIFICATION ORDERS

(a) Is there any affected building notice in force in respect of the land?

No

(b) Is there any building product rectification order in force in respect of the land that has not been fully complied with?

No

(c) Is there any outstanding notice of intention to make a building product rectification order?

No

Note: ***affected building notice*** has the same meaning as in Part 4 of the *Building Products (Safety) Act 2017.*
building product rectification order has the same meaning as in the *Building Products (Safety) Act 2017.*

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SECTION 10.7(5) DETAILS

This certificate is directed to the following relevant matters affecting the land.

Note : When information pursuant to section 10.7(5) is requested the Council is under no obligation to furnish any of the information supplied herein pursuant to that section.

Council draws your attention to section 10.7(6), which states that a Council shall not incur any liability in respect of any advice provided in good faith pursuant to sub-section (5). The absence of any reference to any matter affecting the land shall not imply that the land is not affected by any matter not referred to in this planning certificate.

1. OTHER CONTROLS FROM WOOLLAHRA LOCAL ENVIRONMENTAL PLAN 2014

a) What is the maximum size of any lot resulting from a subdivision of land (as shown on the Lot Size Map)? Refer to clause 4.1 Minimum subdvision lot size.

No minimum lot size applies

b) Is the land affected by a foreshore building line (as shown on the Foreshore Building Line Map)? Refer to clause 6.4 Limited development on foreshore areas.

No

2. STATE HERITAGE REGISTER ITEMS

Is the land identified under the provisions of the *Heritage Act 1977*?

No

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3. COMMONWEALTH HERITAGE LIST

Is the land identified as a Commonwealth Heritage Place under the provisions of the *Environment Protection and Biodiversity Conservation Act 1999?*

No

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4. RESOLUTION OF COUNCIL TO PREPARE A PLANNING PROPOSAL FOR A LOCAL ENVIRONMENTAL PLAN

A list of Council decisions to prepare a planning proposal for a local environmental plan is provided below. These planning proposals have not been exhibited under section 57 of the *Environmental Planning and Assessment Act 1979* .

Property affected: Double Bay Centre
Date of decision: 20 August 2018
Relevant terms of the resolution:

Item No: 9.1 (R1)

A. THAT Council resolve to prepare a planning proposal to amend Woollahra Local Environmental Plan 2014 by introducing new provisions which protect the provision of commercial floor space in the Double Bay Centre.

Property affected: See terms of the resolution
Date of decision: on 25 March 2019
Relevant terms of the resolution:

Item No: 9.1 (R2)

A. THAT Council prepare a planning proposal to amend clause 4.1A of Woollahra LEP 2014 by inserting minimum lot size standards for manor house and multi dwelling housing (terraces).

Property affected: See terms of the resolution
Date of decision: 29 April 2019
Relevant terms of the resolution:

Item No: 9.1 (R3)

A. THAT Council prepare a planning proposal to amend Woollahra Local Environmental Plan 2014 by introducing:
   1. A maximum FSR of 0.5:1 for low desnsity residential development in the R2 Low Density Residential and R3 Medium Density Residential zones.
   2. A maximum FSR of 0.75:1 for low density residential development in the Wolseley Road, Point Piper, area as shown in *Figure 1* in the report to the Environmental Planning Committee meeting of 4 March 2019.
   3. A range of maximum FSRs as set out in the report to the Environmental Planning Committee meeting on 4 March 2019 for low density residential development on small lots in the R2 Low Density Residential Development And R3 Medium Density Residential zones.
   4. Specific objectives and other associated amendments to facilitate 1, 2 and 3.
   5. The FSRs in A1, 2 and 3 and associated changes referred to in A4 will not apply to the Paddington, Watsons Bay and Woollahra Heritage Conservation Areas.

G. That noting our concern for development in smaller lots (400sqm or less) that Council seeks advice from the Woollahra Local Planning Panel on the best methods to apply FSR to smaller lots outlined in point A. (3).

Property affected: Sewerage Pumping Station, Percival Park, Rose Bay
Date of decision: 9 September 2019
Relevant terms of the resolution:

Item No: 13.1(R1)

A. THAT a planning proposal be prepared to list the sewerage pumping station (SPS 46) and sandstone gate posts and metal gates in Percival Park at 13 Collins Avenue, Rose Bat as a heritage item in Woollahra Local Environmental Plan 2014.

Property affected: See terms of resolution
Date of decision: 11 November 2019
Relevant terms of the resolution:

Item No: 13.1(R2)

A. THAT a planning proposal to amend the Flood Planning Map of Woollahra Local Environmental Plan 2014 based on the adopted Paddington Floodplain Risk Management Study and Plan 2019.

Property affected: 30 Wyuna Road, Point Piper
Date of decision: 11 November 2019
Relevant terms of the resolution:

Item No: 13.3(R3)

A. THAT a planning proposal be prepared to list the property at 30 Wyuna Road, Point Piper as a heritage item in Woollahra Local Environmental Plan 2014.

Property affected: See terms of resolution
Date of decision: 11 November 2019
Relevant terms of the resolution:

Item No: 13.3(R4)

C. THAT a planning proposal be prepared to increase the minimum lost size of attached dual occupancies in the R2 zone to 800m2.

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5. COASTAL HAZARDS

An Estuary Planning Levels Report (August 2014) by Cardno is a supporting document to the Woollahra Development Control Plan 2015.

The Estuary Planning Levels Report identifies:
- foreshore properties which may be subject to current coastal inundation risks caused by local wind and wave setup, and/or wave run-up/overtopping; and
- foreshore properties which may be subject to future coastal inundation risks caused by sea level rise.

The report recommends planning controls to minimise the effects of coastal inundation risks. The Report can be inspected at Council or on Council's website.

6. RESOLUTIONS OF COUNCIL RELATING TO HERITAGE LISTINGS OR CONTRIBUTORY ITEMS IN DEVELOPMENT CONTROL PLANS

Properties affected: 8A Cooper Street, Paddington
Date of decision: 27 November 2006
Relevant terms of resolution:

E. That pending gazettal of the following properties as local heritage items in Woollahra Local Environmental Plan 1995, further investigation be undertaken to determine if a nomination to the State Heritage Register should be prepared:

Cooper Street	*Paddington*	*8A*	*House*

Property affected: 4 Dunara Gardens, Point Piper
Date of decision: 18 December 2006
Relevant terms of the resolution:

D. That pending gazettal of the following property as local heritage item in Woollahra Local Environmental Plan 1995, further investigation be undertaken to determine if a nomination to the State Heritage Register should be prepared:

Dunara Gardens	*Point Piper*	*4*	*House*

Property affected: Cooper Park in the suburbs of Bellevue Hill and Woollahra
Date of decision: 27 November 2017
Relevant terms of the resolution:

THAT Council requests staff to prepare and submit a report including a heritage assessment and draft heritage inventory sheet for Cooper Park to Urban Planning Committee to facilitate Cooper Park (and its elements) being:

1. included in the Woollahra Local Environmental Plan as a heritage item; and
2. listed as a heritage item of state significance on the NSW State Heritage Register.

Property affected: See terms of resolution
Date of decision: 23 April 2018
Relevant terms of the resolution:

Item No: 11.1
That Council requests staff to prepare and submit a report including a heritage assessment and draft heritage inventory sheet for each of:
1. The Sydney Croquet Club building and green (having its address in Woollahra Park, O'Sullivan Road, Rose Bay); and

2. The Woollahra Golf Club clubhouse and George Grimley Pavilion (having its address in Woollahra Park at 50 O'Sullivan Road, Rose Bay)

to the relevant Council Committee to facilitate the Sydney Croquet Club building and greens and the Woollahra Gold Club clubhouse and George Grimley Pavilion (and their elements) being:
1. Included in the Woollahra Local Environmental Plan as a heritage item; and
2. Listed as a heritage item of state significance on the NSW State Heritage Register.

Property affected: See terms of resolution
Date of decision: 18 June 2018
Relevant terms of the resolution:

Item No: 11.1
THAT Council
A. Request staff to undertake an assessment of heritage significance for the Rose Bay Scout Hall (former RAAF Officers' Canteen) located in Vickery Avenue, Rose Bay, and report to the Environmental Planning Committee on whether the property has sufficient heritage significance to be listed as:
   i) a local heritage item in the Woollahra Local Environment Plan 2014 (WLEP), and
   ii) an item of State Heritage under the Heritage Act 1977.

Property affected: 2A Cooper Street, Double Bay
Date of decision: 29 October 2018
Relevant terms of the resolution:

Item No: 9.1 (R1)
D. THAT Council support the nomination to list Gaden House at 2A Cooper Street, Double Bay as a heritage item on the State Heritage Register and submit it to the Office of Environment and Heritage.

Property affected: See terms of resolution
Date of decision: 8 April 2019
Relevant terms of the resolution:

Item No: 11.2
THAT Council requests staff to undertake an assessment of heritage significance for the following properties located in Rose Bay, NSW;
i) St Andrews Scots Presbyterian Church, corner of Dover Rd and Carlisle Street, Rose Bay;
ii) Old School Hall, Rose Bay Public School, Albermarle Ave, Rose Bay; and
iii) McAuley Catholic School and outbuildings (formerly Christian Brothers College Rose Bay),

and report to the Environmental Planning Committee on whether these items have sufficient heritage significance to be listed as:
i) a local heritage item in the Woollahra Local Environmental Plan 2014 (WLEP); and/or
ii) an item on the State Heritage Register under the Heritage Act 1977.

Property affected: See terms of resolution
Date of decision: 8 April 2019
Relevant terms of the resolution:

Item No: 11.3
THAT Council
B. Requests staff to commission a report to investigate potential heritage significance of places of worship in the Woollahra Local Government area in order to identify items of heritage significance at either a local or State level, with a view to having those identified items listed as;
   (a) a local heritage item in the Woollahra Local Environmental Plan 2014 (WLEP); and/or
   (b) an item on the State Heritage Register under the Heritage Act 1977.

Property affected: 3 Trelawney Street, Woollahra
Date of decision: 11 November 2019
Relevant terms of the resolution:

Item No: 16.3
THAT Council proceeds urgently to assess Trelawney Court at number 3 Trelawney Street, Woollahra with a view to a local heritage listing.

Property affected: See terms of resolution
Date of decision: 11 November 2019
Relevant terms of the resolution:

Item No: 16.4
A. Notes the detailed report on Californian Bungalows presented to the Urban Planning Committee on 22 June 2015.
B. Notes the recommendation to Council on 22 June 2015 to prepare a planning proposal to list 16 Bunyula Road, 6 March Street, 165 O'Sullivan Road, 44 Russell Street, 5A Vivian Street, Bellevue Hill and 10 Parsley Bay, Vaucluse as heritage items in Schedule 5 of the Woollahra LEP 2014.
C. Requests the Director of Planning to review the above mentioned recommendation and provide an updated recommendation to Council on the merit of heritage listing the properties mentioned above.
D. Requests staff to prepare a report on arts and crafts buildings, including any examples of outstanding significance recommended for listing in Schedule 5 of the Woollahra LEP.

Property affected: See terms of resolution
Date of decision: 11 November 2019
Relevant terms of the resolution:

Item No: 16.5

THAT Council:
A. Request staff to report to the Environmental Planning Committee on how the detailed controls for Inter-War residential flat buildings found in B3.8.7 of the Woollahra DCP 2015 can be applied to the Paddington, Woollahra and Watsons Bay Heritage Conservations Areas.
B. Notes community concern about the recent demolition of interwar residential flat buildings at 12 and 16 William Street, Double Bay, and 75 and 77 O'Sullivan Road, Bellevue Hill, and requests staff to provide commentary on the most effective means of protecting from

demolition interwar buildings located in all zones across the municipality, including if appropriate the invocation of LEP provisions.

7. DRAFT WATSONS BAY FLOOD RISK MANAGEMENT STUDY AND PLAN (MAY 2016)

The Draft Watsons Bay Flood Risk Management Study and Plan (May 2016) has been prepared in accordance with the NSW Floodplain Development Manual. The Draft Plan aims to provide solutions to existing flooding problems and ensure that new development is compatible with the flood hazard and does not create additional flooding problems.

The Woollahra Local Environmental Plan 2014 maps land that is identified as flood planning area, and is therefore subject to the controls in Cl 6.3 flood planning. The Draft Plan includes additional properties in Watsons Bay that are in the flood planning area.

These properties are: **14-16, 18-25 Cliff Street; 1-2, 43 Cove Street; HMAS Watson (Lot 3 DP 605078); 1-2, 6-7, 11-12, 10-24 Marine Parade; 31, 33 Pacific Street; Robertson Park (22 Military Road); 2 Short Street; Sydney Harbour National Park (Lot 1, 2 DP 605078) and 25 Victoria Street.**

The Draft Plan includes the following properties that are not identified as flood planning area: **1, 3, 5, 7 Victoria Street and 29 Cliff Street.**

The report can be inspected at Council or on Council's website. For further information contact Council's engineer.

8. PADDINGTON FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN (July 2019)

At the meeting of 9 September 2019, Council adopted the *Paddington Floodplain Risk Management Study and Plan* dated July 2019

The Study and Plan was prepared in accordance with the NSW Floodplain Development Manual. The Study and Plan aims to provide solutions to existing flooding problems and ensure that new development is compatible with flood hazard and does not create additional flooding problems.

The *Woollahra Local Environmental Plan 2014* maps land that is identified as flood planning area, and is therefore subject to the controls in Cl 6.3 flood planning. The Study and Plan includes additional properties in the Paddington area that are in the flood planning area.

The *Woollahra Local Environmental Plan 2014* maps will be updated, based on the information contained in the adopted Study and Plan.

Should the applicant require further information about any other matter please contact Council's Planning and Development Division.

Anne White
per:
Gary James
General Manager

Appendix D

Data Quality Assurance & Quality Control

QA/QC PROCEDURES AND RESULTS

Q1. Data Quality Objectives

The Validation Assessment was prepared with reference to the seven step data quality objective (DQO) process which is provided in Appendix B, Schedule B2 of the *National Environment Protection (Assessment of Site Contamination) Measure* 1999 as amended 2013 (NEPC, 2013). The DQO process is outlined as follows:

- Stating the Problem;
- Identifying the Decision;
- Identifying Inputs to the Decision;
- Defining the Boundary of the Assessment;
- Developing a Decision Rule;
- Specifying Acceptable Limits on Decision Errors; and
- Optimising the Design for Obtaining Data.

The DQOs have been addressed within the report as shown in Table Q1.

Table Q1: Data Quality Objectives

Data Quality Objective	Report Section where Addressed
State the Problem	S1 Introduction
Identify the Decision	S11 Conclusion
Identify Inputs to the Decision	S1 Introduction S8 Site Assessment Criteria S9 Results of Investigation
Define the Boundary of the Assessment	S1 & S3 Site Identification and Description Site Drawings 1 - Appendix A
Develop a Decision Rule	S8 Site Assessment Criteria
Specify Acceptable Limits on Decision Errors	S7 Fieldwork QA/QC Procedures and Results - Appendix D
Optimise the Design for Obtaining Data	S2 Scope of Works S7.1 Fieldwork Methods and Rationale QA/QC Procedures and Results - Appendix D

Q2. FIELD AND LABORATORY QUALITY CONTROL

The field and laboratory QC procedures and results are summarised in the following Table Q2. Reference should be made to the fieldwork and analysis procedures in Section 6 and the laboratory results certificates in Appendix F for further details.

Table Q2: Field and Laboratory QC

Item	Evaluation / Acceptance Criteria	Achievement
Analytical laboratories used	NATA accreditation	yes
Holding times	Various based on type of analysis	yes
Intra-laboratory replicates	10% of primary samples; <50% RPD (>5 x PQL)	no[1]
Trip Spikes	1 per sampling event; 60-140% recovery	yes
Trip Blanks	1 per sampling event; <PQL	yes
Laboratory / Reagent Blanks	1 per batch; <PQL	yes
Matrix Spikes	1 per lab batch; 70-130% recovery (inorganics); 60-140% recovery (organics)	yes
Surrogate Spikes	All organics analysis; 70-130% recovery (inorganics); 60-140% recovery (organics)	yes
Control Samples	1 per lab batch; 70-130% recovery (inorganics); 60-140% recovery (organics)	yes

1 – refer to qualitative assessment of results overall in section Q2.1

In summary, the QC data is determined to be of sufficient quality to be considered acceptable for the assessment.

Q2.1 Intra-Laboratory Replicates

Intra-laboratory replicates were analysed as an internal check of the reproducibility within the primary laboratory ELS and as a measure of consistency of sampling techniques. The comparative results of analysis between original and intra-laboratory replicate samples are summarised in Table Q3 and Q4.

Note that, where both samples are below LOR/PQL the difference and RPD has been given as zero. Where one sample is reported below LOR/PQL, but a concentration is reported for the other, the LOR/PQL value has been used for calculation of the RPD for the less than LOR/PQL sample.

Table Q3: Field and Laboratory QC. Replicate pair 1.

Analyte Group	Lab	ELS	ELS	Difference	RPD
	Sample ID	BD2/19122019	BH2/1.9-2.0		
	Date Sampled	19/12/2019	19/12/2019		
	Units	mg/kg	mg/kg	mg/kg	%
Metals	Arsenic	<4	<4	0.0	-
	Cadmium	<0.4	<0.4	0.0	-
	Chromium (III+VI)	7	6	1.0	15.4
	Copper	23	34	11.0	**38.6**
	Lead	130	130	0.0	0.0
	Mercury	0.4	0.5	0.1	-
	Nickel	2	3	1.0	-
	Zinc	65	71	6.0	8.8
PAH	Napthalene	<1	<1	0.0	-
	Benzo(a)pyrene	4.4	4.6	0.2	4.4
	Benzo(a)pyrene TEQ	6.5	6.8	0.3	4.5
	Total PAH	50	49	1.0	2.0
TRH	F1 ((C6-C10)-BTEX)	<25	<25	0.0	-
	F2 (>C10-C16 less Naphthalene)	<50	<50	0.0	-
	F3 (>C16-34)	220	250	30.0	-
	F4 (>C34-40)	<100	100	0.0	-
BTEX	Benzene	<0.2	<0.2	0.0	-
	Toluene	<0.5	<0.5	0.0	-
	Ethylbenzene	<1	<1	0.0	-
	Total Xylenes	<1	<1	0.0	-

Table Q4: Field and Laboratory QC. Replicate pair 2.

Analyte Group	Lab	ELS	ELS	Difference	RPD
	Sample ID	BD1/18122019	BH4/0.4-0.5		
	Date Sampled	18/12/2019	18/12/2019		
	Units	mg/kg	mg/kg	mg/kg	%
Metals	Arsenic	4.0	5.0	1.0	-
	Cadmium	<0.4	<0.4	0.0	-
	Chromium (III+VI)	11.0	10.0	1.0	9.5
	Copper	39.0	49.0	10.0	22.7
	Lead	230.0	370.0	140.0	**46.7**
	Mercury	0.6	0.7	0.1	15.4
	Nickel	7.0	5.0	2.0	**33.3**
	Zinc	200.0	210.0	10.0	4.9
PAH	Napthalene	<1	<1	0.0	-
	Benzo(a)pyrene	3.2	4.9	1.7	42.0
	Benzo(a)pyrene TEQ	4.9	7.3	2.4	39.3
	Total PAH	35.0	54.0	19.0	42.7
TRH	F1 ((C6-C10)-BTEX)	<25	<25	0.0	-
	F2 (>C10-C16 less Naphthalene)	<50	<50	0.0	-
	F3 (>C16-34)	310.0	320.0	10.0	-
	F4 (>C34-40)	160.0	140.0	20.0	-
BTEX	Benzene	<0.2	<0.2	0.0	-
	Toluene	<0.5	<0.5	0.0	-
	Ethylbenzene	<1	<1	0.0	-
	Total Xylenes	<1	<1	0.0	-

The calculated RPD values were within the acceptable range of ± 30 for inorganic analytes and ± 50% for organics with the with the exception of those in bold. However, this is not considered to be significant because:

- The number of replicate pairs being collected from fill soils which were heterogeneous in nature;
- Soil replicates, rather than homogenised soil duplicates, were used to minimise the risk of possible volatile loss, hence greater variability can be expected;
- The majority of RPDs within a replicate pair being within the acceptable limits; and
- All other QA/QC parameters met the DQIs.

It is also noted that the stipulated testing frequency for replicate samples was not met, with a final frequency of approximately 6 %. However given the results of the other data quality indicators and the preliminary nature of the assessment the intra-laboratory replicate comparisons indicate that the sampling techniques were generally consistent and repeatable.

Q2.2 Trip Spike

The purpose of a trip spike is to assess the potential for loss of volatile analytes to have occurred between the time of collection and analysis of the sample by the laboratory.

For soils, laboratory preparation of the trip spike involved putting 1mL of BTEX (using a 1500 ppm BTEX trip spike standard) into two jars which were cross referenced and labelled 'trip spike' and 'control'. Both jars were sealed. The trip spike was taken onto site and subject to the same jar storage and transfer as the field samples. The control was stored by the laboratory in the refrigerator. Following receipt of the trip spike, the laboratory analysed both the trip spike and corresponding control with results of the trip spike being expressed as the % difference from the control sample.

For water trip spikes, the laboratory prepared the trip spike by injecting 220 µL of BTEX into the trip spike. The results were then analysed and expressed as % of theoretical value of a 50 ppb standard.

The generally acceptance limit for trip spikes is 60-140% in difference compared to the control or standard.

The results of the laboratory analysis for the trip spikes are shown in Table Q5.

Table Q5: Trip Spike Results – Soils (% Recovery)

Sample ID	Benzene	Toluene	Ethylbenzene	m + p Xylene	o Xylene
Trip spike/20191218	93	94	92	91	91

Results indicate that the percentage loss for BTEX during the trip was minimal and therefore appropriate preservation techniques were employed.

Q2.3 Trip Blank

The purpose of a trip blank is to assess the potential for transfer of contaminants into samples to have occurred between the time of collection and analysis of the sample by the laboratory. Laboratory prepared soil field blanks were taken out to the field unopened, subjected to the same preservation methods as the field samples, then analysed for the purposes of determining whether transfer of contaminants into the blank sample had occurred prior to reaching the laboratory. The results of the laboratory analysis for the field blanks are shown in Table Q6.

Table Q6: Trip Blank Results - Soils (mg/kg)

Sample ID	$C_6 - C_{10}$ less BTEXT (F1)	Benzene	Toluene	Ethylbenzene	m + p Xylene	o Xylene
Trip blank/20191218	<25	<0.2	<0.5	<1	<2	<1

The concentrations of the analytes were all below laboratory detection limits indicating that significant cross contamination had not occurred during the course of the round trip from the site to the laboratory.

Q3. Data Quality Indicators

The reliability of field procedures and analytical results was assessed against the following data quality indicators (DQIs):

- Completeness – A measure of the amount of usable data from a data collection activity;
- Comparability – The confidence (qualitative) that data may be considered to be equivalent for each sampling and analytical event;
- Representativeness – The confidence (qualitative) of data representativeness of media present on-site;
- Precision – A measure of variability or reproducibility of data; and
- Accuracy – A measure of closeness of the data to the 'true' value.

The DQIs were assessed as outlined in the following Table Q7.

Table Q7: Data Quality Indicators

Data Quality Indicator	Method(s) of Achievement
Completeness	Systematic and selected target locations sampled; Preparation of borehole logs, sample location plan and chain of custody records; Laboratory sample receipt information received confirming receipt of samples intact and appropriateness of the chain of custody; Samples analysed for contaminants of potential concern (COPC) identified in the Conceptual Site Model (CSM); Completion of chain of custody (COC) documentation; NATA accredited laboratory results certificates provided by the laboratory; Mostly satisfactory frequency and results for field and laboratory quality control (QC) samples as discussed in Section Q2 (refer below for discussion).
Comparability	Using appropriate techniques for sample recovery, storage and transportation, which were the same for the duration of the project; Experienced sampler(s) used; Use of NATA registered laboratories, with test methods the same or similar between laboratories; Satisfactory results for field and laboratory QC samples.
Representativeness	Target media sampled; Sample numbers recovered and analysed are considered to be representative of the target media and complying with DQOs; Samples were extracted and analysed within holding times; Samples were analysed in accordance with the COC.
Precision	Field staff followed standard operating procedures; Acceptable RPD between original samples and replicates; Satisfactory results for all other field and laboratory QC samples.
Accuracy	Field staff followed standard operating procedures; Satisfactory results for all field and laboratory QC samples.

Based on the above, it is considered that the DQIs have been complied with the exception of not meeting the required rate for field replicate sampling. However, based upon the other available QC samples and laboratory QC results this is not considered to have impacted the quality of the data. As such, it is concluded that the field and laboratory test data obtained are reliable and useable for this assessment.

Appendix E

Laboratory Documentation

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CERTIFICATE OF ANALYSIS 233689

Client Details

Client	Douglas Partners Pty Ltd
Attention	David Holden
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**99538.01, Contamination Investigation**
Number of Samples	32 Soil
Date samples received	20/12/2019
Date completed instructions received	23/12/2019

Analysis Details

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

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

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

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	07/01/2020
Date of Issue	03/01/2020

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vTRH(C6-C10)/BTEXN in Soil						
Our Reference		233689-2	233689-4	233689-5	233689-6	233689-7
Your Reference	UNITS	BH1/0.4-0.5	BH1/1.9-2.0	BH1/3.0-3.1	BH1/3.9-4.0	BH2/0.1-0.2
Date Sampled		19/12/2019	19/12/2019	19/12/2019	19/12/2019	19/12/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/12/2019	23/12/2019	23/12/2019	23/12/2019	23/12/2019
Date analysed	-	24/12/2019	24/12/2019	24/12/2019	24/12/2019	24/12/2019
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	129	128	130	129	121

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		233689-10	233689-13	233689-17	233689-19	233689-21
Your Reference	UNITS	BH2/1.9-2.0	BH3/0.9-1.0	BH4/0.4-0.5	BH4/1.9-2.0	BH4/5.5-5.6
Date Sampled		19/12/2019	20/12/2019	18/12/2019	18/12/2019	18/12/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/12/2019	23/12/2019	23/12/2019	23/12/2019	23/12/2019
Date analysed	-	24/12/2019	24/12/2019	24/12/2019	24/12/2019	24/12/2019
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	126	128	133	128	123

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		233689-25	233689-26	233689-28	233689-29	233689-31
Your Reference	UNITS	BH5/1.4-1.5	BH5/1.9-2.0	BD1/18122019	BD2/19122019	Trip Spike
Date Sampled		18/12/2019	18/12/2019	18/12/2019	19/12/2019	18/12/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/12/2019	23/12/2019	23/12/2019	23/12/2019	23/12/2019
Date analysed	-	24/12/2019	24/12/2019	24/12/2019	24/12/2019	24/12/2019
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	[NA]
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	[NA]
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	[NA]
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	93%
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	94%
Ethylbenzene	mg/kg	<1	<1	<1	<1	92%
m+p-xylene	mg/kg	<2	<2	<2	<2	91%
o-Xylene	mg/kg	<1	<1	<1	<1	91%
naphthalene	mg/kg	<1	<1	<1	<1	[NA]
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	[NA]
Surrogate aaa-Trifluorotoluene	%	124	119	127	120	98

vTRH(C6-C10)/BTEXN in Soil		
Our Reference		233689-32
Your Reference	UNITS	Trip Blank
Date Sampled		18/12/2019
Type of sample		Soil
Date extracted	-	23/12/2019
Date analysed	-	24/12/2019
TRH C_6 - C_9	mg/kg	<25
TRH C_6 - C_{10}	mg/kg	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
naphthalene	mg/kg	<1
Total +ve Xylenes	mg/kg	<3
Surrogate aaa-Trifluorotoluene	%	131

svTRH (C10-C40) in Soil						
Our Reference		233689-2	233689-4	233689-5	233689-6	233689-7
Your Reference	UNITS	BH1/0.4-0.5	BH1/1.9-2.0	BH1/3.0-3.1	BH1/3.9-4.0	BH2/0.1-0.2
Date Sampled		19/12/2019	19/12/2019	19/12/2019	19/12/2019	19/12/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/12/2019	23/12/2019	23/12/2019	23/12/2019	23/12/2019
Date analysed	-	24/12/2019	24/12/2019	24/12/2019	24/12/2019	24/12/2019
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	150	<100	160	<100
TRH C_{29} - C_{36}	mg/kg	<100	110	<100	120	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	230	140	250	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	230	140	250	<50
Surrogate o-Terphenyl	%	73	77	72	77	76

svTRH (C10-C40) in Soil						
Our Reference		233689-10	233689-13	233689-17	233689-19	233689-21
Your Reference	UNITS	BH2/1.9-2.0	BH3/0.9-1.0	BH4/0.4-0.5	BH4/1.9-2.0	BH4/5.5-5.6
Date Sampled		19/12/2019	20/12/2019	18/12/2019	18/12/2019	18/12/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/12/2019	23/12/2019	23/12/2019	23/12/2019	23/12/2019
Date analysed	-	24/12/2019	24/12/2019	24/12/2019	24/12/2019	24/12/2019
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	170	<100	190	240	<100
TRH C_{29} - C_{36}	mg/kg	120	<100	180	180	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	250	110	320	360	100
TRH >C_{34} -C_{40}	mg/kg	100	<100	140	130	<100
Total +ve TRH (>C10-C40)	mg/kg	360	110	450	490	100
Surrogate o-Terphenyl	%	76	75	78	81	74

svTRH (C10-C40) in Soil						
Our Reference		233689-25	233689-26	233689-28	233689-29	233689-34
Your Reference	UNITS	BH5/1.4-1.5	BH5/1.9-2.0	BD1/18122019	BD2/19122019	BH5/1.4-1.5 - [TRIPLICATE]
Date Sampled		18/12/2019	18/12/2019	18/12/2019	19/12/2019	18/12/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/12/2019	23/12/2019	23/12/2019	23/12/2019	30/12/2019
Date analysed	-	24/12/2019	24/12/2019	25/12/2019	25/12/2019	31/12/2019
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	150	180	140	140
TRH C_{29} - C_{36}	mg/kg	<100	110	190	110	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	110	230	310	220	200
TRH >C_{34} -C_{40}	mg/kg	<100	<100	160	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	110	230	470	220	200
Surrogate o-Terphenyl	%	73	75	78	76	66

PAHs in Soil						
Our Reference		233689-2	233689-4	233689-5	233689-6	233689-7
Your Reference	UNITS	BH1/0.4-0.5	BH1/1.9-2.0	BH1/3.0-3.1	BH1/3.9-4.0	BH2/0.1-0.2
Date Sampled		19/12/2019	19/12/2019	19/12/2019	19/12/2019	19/12/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/12/2019	23/12/2019	23/12/2019	23/12/2019	23/12/2019
Date analysed	-	27/12/2019	27/12/2019	27/12/2019	27/12/2019	27/12/2019
Naphthalene	mg/kg	<0.1	0.2	0.3	0.2	<0.1
Acenaphthylene	mg/kg	0.2	<0.1	0.5	0.7	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	0.1	0.1	<0.1
Fluorene	mg/kg	0.1	0.4	0.4	0.3	<0.1
Phenanthrene	mg/kg	1.5	5.0	3.1	5.0	0.4
Anthracene	mg/kg	0.3	1.3	0.8	1.2	0.1
Fluoranthene	mg/kg	1.6	9.2	5.9	9.5	0.6
Pyrene	mg/kg	1.5	8.2	5.6	8.4	0.6
Benzo(a)anthracene	mg/kg	0.8	4.8	3.2	4.8	0.4
Chrysene	mg/kg	0.9	5.1	3.6	5.5	0.4
Benzo(b,j+k)fluoranthene	mg/kg	1	8.3	6.0	8.5	0.7
Benzo(a)pyrene	mg/kg	0.74	4.8	3.7	4.9	0.4
Indeno(1,2,3-c,d)pyrene	mg/kg	0.3	2.1	1.7	2.2	0.2
Dibenzo(a,h)anthracene	mg/kg	0.2	0.7	0.5	0.6	<0.1
Benzo(g,h,i)perylene	mg/kg	0.4	2.4	2.0	2.4	0.3
Total +ve PAH's	mg/kg	9.9	53	37	54	4.0
Benzo(a)pyrene TEQ calc (zero)	mg/kg	1.1	7.0	5.3	7.1	0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	1.1	7.0	5.3	7.1	0.6
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	1.1	7.0	5.3	7.1	0.6
Surrogate p-Terphenyl-d14	%	92	91	85	82	94

PAHs in Soil						
Our Reference		233689-10	233689-13	233689-17	233689-19	233689-21
Your Reference	UNITS	BH2/1.9-2.0	BH3/0.9-1.0	BH4/0.4-0.5	BH4/1.9-2.0	BH4/5.5-5.6
Date Sampled		19/12/2019	20/12/2019	18/12/2019	18/12/2019	18/12/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	23/12/2019	23/12/2019	23/12/2019	23/12/2019	23/12/2019
Date analysed	-	27/12/2019	27/12/2019	27/12/2019	27/12/2019	27/12/2019
Naphthalene	mg/kg	0.2	0.2	0.2	0.6	0.2
Acenaphthylene	mg/kg	0.6	0.2	1.0	0.8	0.2
Acenaphthene	mg/kg	0.2	<0.1	0.1	0.5	0.2
Fluorene	mg/kg	0.5	0.1	0.4	0.6	0.2
Phenanthrene	mg/kg	4.1	1.3	5.3	6.9	1.4
Anthracene	mg/kg	1.2	0.4	1.3	1.8	0.4
Fluoranthene	mg/kg	7.8	2.2	8.7	9.0	1.6
Pyrene	mg/kg	7.4	2.4	8.1	9.0	1.6
Benzo(a)anthracene	mg/kg	4.4	1.2	4.8	5.0	0.8
Chrysene	mg/kg	4.9	1.5	5.2	5.9	0.9
Benzo(b,j+k)fluoranthene	mg/kg	8.0	2.1	8.4	9.2	1
Benzo(a)pyrene	mg/kg	4.6	1.3	4.9	5.5	0.79
Indeno(1,2,3-c,d)pyrene	mg/kg	2.1	0.6	2.4	2.4	0.3
Dibenzo(a,h)anthracene	mg/kg	0.6	0.2	0.7	0.7	0.1
Benzo(g,h,i)perylene	mg/kg	2.5	0.8	2.9	3.0	0.4
Total +ve PAH's	mg/kg	49	14	54	61	11
Benzo(a)pyrene TEQ calc (zero)	mg/kg	6.8	1.9	7.3	8.0	1.2
Benzo(a)pyrene TEQ calc(half)	mg/kg	6.8	1.9	7.3	8.0	1.2
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	6.8	1.9	7.3	8.0	1.2
Surrogate p-Terphenyl-d14	%	85	91	94	93	94

PAHs in Soil					
Our Reference		233689-25	233689-26	233689-28	233689-29
Your Reference	UNITS	BH5/1.4-1.5	BH5/1.9-2.0	BD1/18122019	BD2/19122019
Date Sampled		18/12/2019	18/12/2019	18/12/2019	19/12/2019
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	23/12/2019	23/12/2019	23/12/2019	23/12/2019
Date analysed	-	27/12/2019	27/12/2019	27/12/2019	27/12/2019
Naphthalene	mg/kg	0.7	0.5	0.3	0.1
Acenaphthylene	mg/kg	0.2	0.8	0.6	0.5
Acenaphthene	mg/kg	0.2	0.3	0.1	<0.1
Fluorene	mg/kg	0.2	0.4	0.3	0.4
Phenanthrene	mg/kg	1.5	5.4	3.3	6.0
Anthracene	mg/kg	0.4	1.4	0.8	1.6
Fluoranthene	mg/kg	2.1	7.2	5.3	8.6
Pyrene	mg/kg	2.3	6.9	5.3	7.8
Benzo(a)anthracene	mg/kg	1.3	3.9	3.1	4.2
Chrysene	mg/kg	1.5	4.4	3.4	4.7
Benzo(b,j+k)fluoranthene	mg/kg	2.4	6.9	5.4	7.1
Benzo(a)pyrene	mg/kg	1.5	4.1	3.2	4.4
Indeno(1,2,3-c,d)pyrene	mg/kg	0.7	1.8	1.6	2.0
Dibenzo(a,h)anthracene	mg/kg	0.3	0.7	0.6	0.7
Benzo(g,h,i)perylene	mg/kg	0.8	2.2	1.9	2.2
Total +ve PAH's	mg/kg	16	47	35	50
Benzo(a)pyrene TEQ calc (zero)	mg/kg	2.2	6.1	4.9	6.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	2.2	6.1	4.9	6.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	2.2	6.1	4.9	6.5
Surrogate p-Terphenyl-d14	%	84	85	92	89

Organochlorine Pesticides in soil				
Our Reference	UNITS	233689-2	233689-7	233689-17
Your Reference		BH1/0.4-0.5	BH2/0.1-0.2	BH4/0.4-0.5
Date Sampled		19/12/2019	19/12/2019	18/12/2019
Type of sample		Soil	Soil	Soil
Date extracted	-	23/12/2019	23/12/2019	23/12/2019
Date analysed	-	27/12/2019	27/12/2019	27/12/2019
alpha-BHC	mg/kg	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	100	103	101

Organophosphorus Pesticides in Soil				
Our Reference	UNITS	233689-2	233689-7	233689-17
Your Reference		BH1/0.4-0.5	BH2/0.1-0.2	BH4/0.4-0.5
Date Sampled		19/12/2019	19/12/2019	18/12/2019
Type of sample		Soil	Soil	Soil
Date extracted	-	23/12/2019	23/12/2019	23/12/2019
Date analysed	-	27/12/2019	27/12/2019	27/12/2019
Dichlorvos	mg/kg	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	100	103	101

PCBs in Soil				
Our Reference		233689-2	233689-7	233689-17
Your Reference	UNITS	BH1/0.4-0.5	BH2/0.1-0.2	BH4/0.4-0.5
Date Sampled		19/12/2019	19/12/2019	18/12/2019
Type of sample		Soil	Soil	Soil
Date extracted	-	23/12/2019	23/12/2019	23/12/2019
Date analysed	-	27/12/2019	27/12/2019	27/12/2019
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	100	103	101

Acid Extractable metals in soil						
Our Reference		233689-2	233689-4	233689-5	233689-6	233689-7
Your Reference	UNITS	BH1/0.4-0.5	BH1/1.9-2.0	BH1/3.0-3.1	BH1/3.9-4.0	BH2/0.1-0.2
Date Sampled		19/12/2019	19/12/2019	19/12/2019	19/12/2019	19/12/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	23/12/2019	23/12/2019	23/12/2019	23/12/2019	23/12/2019
Date analysed	-	24/12/2019	24/12/2019	24/12/2019	24/12/2019	24/12/2019
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	0.5	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	3	4	7	6	6
Copper	mg/kg	2,700	11	29	22	9
Lead	mg/kg	270	93	120	120	37
Mercury	mg/kg	0.2	0.1	0.4	0.3	0.1
Nickel	mg/kg	29	2	3	2	3
Zinc	mg/kg	400	71	89	88	37

Acid Extractable metals in soil						
Our Reference		233689-10	233689-13	233689-17	233689-19	233689-21
Your Reference	UNITS	BH2/1.9-2.0	BH3/0.9-1.0	BH4/0.4-0.5	BH4/1.9-2.0	BH4/5.5-5.6
Date Sampled		19/12/2019	20/12/2019	18/12/2019	18/12/2019	18/12/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	23/12/2019	23/12/2019	23/12/2019	23/12/2019	23/12/2019
Date analysed	-	24/12/2019	24/12/2019	24/12/2019	24/12/2019	24/12/2019
Arsenic	mg/kg	<4	14	5	5	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	6	7	10	32	12
Copper	mg/kg	34	60	49	50	5
Lead	mg/kg	130	29	370	290	76
Mercury	mg/kg	0.5	0.2	0.7	0.6	<0.1
Nickel	mg/kg	3	7	5	4	3
Zinc	mg/kg	71	110	210	220	15

Acid Extractable metals in soil						
Our Reference		233689-25	233689-26	233689-28	233689-29	233689-33
Your Reference	UNITS	BH5/1.4-1.5	BH5/1.9-2.0	BD1/18122019	BD2/19122019	BH1/0.4-0.5 - [TRIPLICATE]
Date Sampled		18/12/2019	18/12/2019	18/12/2019	19/12/2019	19/12/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	23/12/2019	23/12/2019	23/12/2019	23/12/2019	23/12/2019
Date analysed	-	24/12/2019	24/12/2019	24/12/2019	24/12/2019	24/12/2019
Arsenic	mg/kg	9	6	4	<4	<4
Cadmium	mg/kg	0.7	0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	7	10	11	7	5
Copper	mg/kg	190	250	39	23	120
Lead	mg/kg	410	2,300	230	130	500
Mercury	mg/kg	0.5	0.5	0.6	0.4	0.2
Nickel	mg/kg	3	3	7	2	21
Zinc	mg/kg	420	310	200	65	390

Acid Extractable metals in soil		
Our Reference		233689-34
Your Reference	UNITS	BH5/1.4-1.5 - [TRIPLICATE]
Date Sampled		18/12/2019
Type of sample		Soil
Date prepared	-	23/12/2019
Date analysed	-	24/12/2019
Arsenic	mg/kg	6
Cadmium	mg/kg	0.6
Chromium	mg/kg	7
Copper	mg/kg	3,100
Lead	mg/kg	340
Mercury	mg/kg	0.7
Nickel	mg/kg	3
Zinc	mg/kg	340

Misc Soil - Inorg				
Our Reference		233689-2	233689-7	233689-17
Your Reference	UNITS	BH1/0.4-0.5	BH2/0.1-0.2	BH4/0.4-0.5
Date Sampled		19/12/2019	19/12/2019	18/12/2019
Type of sample		Soil	Soil	Soil
Date prepared	-	02/01/2020	02/01/2020	02/01/2020
Date analysed	-	02/01/2020	02/01/2020	02/01/2020
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5

Moisture						
Our Reference		233689-2	233689-4	233689-5	233689-6	233689-7
Your Reference	UNITS	BH1/0.4-0.5	BH1/1.9-2.0	BH1/3.0-3.1	BH1/3.9-4.0	BH2/0.1-0.2
Date Sampled		19/12/2019	19/12/2019	19/12/2019	19/12/2019	19/12/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	23/12/2019	23/12/2019	23/12/2019	23/12/2019	23/12/2019
Date analysed	-	24/12/2019	24/12/2019	24/12/2019	24/12/2019	24/12/2019
Moisture	%	5.4	4.9	15	11	4.8

Moisture						
Our Reference		233689-10	233689-13	233689-17	233689-19	233689-21
Your Reference	UNITS	BH2/1.9-2.0	BH3/0.9-1.0	BH4/0.4-0.5	BH4/1.9-2.0	BH4/5.5-5.6
Date Sampled		19/12/2019	20/12/2019	18/12/2019	18/12/2019	18/12/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	23/12/2019	23/12/2019	23/12/2019	23/12/2019	23/12/2019
Date analysed	-	24/12/2019	24/12/2019	24/12/2019	24/12/2019	24/12/2019
Moisture	%	16	7.4	8.0	8.1	35

Moisture					
Our Reference		233689-25	233689-26	233689-28	233689-29
Your Reference	UNITS	BH5/1.4-1.5	BH5/1.9-2.0	BD1/18122019	BD2/19122019
Date Sampled		18/12/2019	18/12/2019	18/12/2019	19/12/2019
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	23/12/2019	23/12/2019	23/12/2019	23/12/2019
Date analysed	-	24/12/2019	24/12/2019	24/12/2019	24/12/2019
Moisture	%	8.8	14	7.7	16

Asbestos ID - soils						
Our Reference		233689-2	233689-4	233689-7	233689-10	233689-13
Your Reference	UNITS	BH1/0.4-0.5	BH1/1.9-2.0	BH2/0.1-0.2	BH2/1.9-2.0	BH3/0.9-1.0
Date Sampled		19/12/2019	19/12/2019	19/12/2019	19/12/2019	20/12/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	24/12/2019	24/12/2019	24/12/2019	24/12/2019	24/12/2019
Sample mass tested	g	Approx. 30g	Approx. 30g	Approx. 40g	Approx. 30g	Approx. 30g
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils				
Our Reference		233689-17	233689-19	233689-25
Your Reference	UNITS	BH4/0.4-0.5	BH4/1.9-2.0	BH5/1.4-1.5
Date Sampled		18/12/2019	18/12/2019	18/12/2019
Type of sample		Soil	Soil	Soil
Date analysed	-	24/12/2019	24/12/2019	24/12/2019
Sample mass tested	g	Approx. 30g	Approx. 30g	Approx. 30g
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected Synthetic mineral fibre detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected

Misc Inorg - Soil				
Our Reference		233689-2	233689-4	233689-19
Your Reference	UNITS	BH1/0.4-0.5	BH1/1.9-2.0	BH4/1.9-2.0
Date Sampled		19/12/2019	19/12/2019	18/12/2019
Type of sample		Soil	Soil	Soil
Date prepared	-	24/12/2019	24/12/2019	24/12/2019
Date analysed	-	24/12/2019	24/12/2019	24/12/2019
pH 1:5 soil:water	pH Units	8.3	9.1	8.8

CEC				
Our Reference		233689-2	233689-4	233689-19
Your Reference	UNITS	BH1/0.4-0.5	BH1/1.9-2.0	BH4/1.9-2.0
Date Sampled		19/12/2019	19/12/2019	18/12/2019
Type of sample		Soil	Soil	Soil
Date prepared	-	30/12/2019	30/12/2019	30/12/2019
Date analysed	-	30/12/2019	30/12/2019	30/12/2019
Exchangeable Ca	meq/100g	8.8	17	28
Exchangeable K	meq/100g	<0.1	<0.1	0.2
Exchangeable Mg	meq/100g	0.35	0.37	0.73
Exchangeable Na	meq/100g	<0.1	<0.1	<0.1
Cation Exchange Capacity	meq/100g	9.2	18	29

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
AT-008	Determination of VOCs sampled onto coconut shell charcoal sorbent tubes, that can be desorbed using carbon disulphide, and analysed by GC-MS.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Inorg-031	Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish). Solids are extracted in a caustic media prior to analysis.
Metals-009	Determination of exchangeable cations and cation exchange capacity in soils using 1M Ammonium Chloride exchange and ICP-AES analytical finish.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-012/017	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS.

Method ID	Methodology Summary
Org-012/017	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS and/or GC-MS/MS. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-012/017	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-15	233689-7
Date extracted	-			23/12/2019	2	23/12/2019	23/12/2019		23/12/2019	23/12/2019
Date analysed	-			24/12/2019	2	24/12/2019	24/12/2019		24/12/2019	24/12/2019
TRH C_6 - C_9	mg/kg	25	Org-016	<25	2	<25	<25	0	112	105
TRH C_6 - C_{10}	mg/kg	25	Org-016	<25	2	<25	<25	0	112	105
Benzene	mg/kg	0.2	Org-016	<0.2	2	<0.2	<0.2	0	104	96
Toluene	mg/kg	0.5	Org-016	<0.5	2	<0.5	<0.5	0	112	107
Ethylbenzene	mg/kg	1	Org-016	<1	2	<1	<1	0	112	104
m+p-xylene	mg/kg	2	Org-016	<2	2	<2	<2	0	115	110
o-Xylene	mg/kg	1	Org-016	<1	2	<1	<1	0	114	109
naphthalene	mg/kg	1	Org-014	<1	2	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	131	2	129	137	6	121	113

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	25	23/12/2019	23/12/2019		[NT]	[NT]
Date analysed	-			[NT]	25	24/12/2019	24/12/2019		[NT]	[NT]
TRH C_6 - C_9	mg/kg	25	Org-016	[NT]	25	<25	<25	0	[NT]	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-016	[NT]	25	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-016	[NT]	25	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-016	[NT]	25	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-016	[NT]	25	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-016	[NT]	25	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-016	[NT]	25	<1	<1	0	[NT]	[NT]
naphthalene	mg/kg	1	Org-014	[NT]	25	<1	1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	[NT]	25	124	121	2	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-15	233689-7
Date extracted	-			23/12/2019	2	23/12/2019	23/12/2019		23/12/2019	23/12/2019
Date analysed	-			24/12/2019	2	24/12/2019	24/12/2019		24/12/2019	24/12/2019
TRH C_{10} - C_{14}	mg/kg	50	Org-003	<50	2	<50	<50	0	104	107
TRH C_{15} - C_{28}	mg/kg	100	Org-003	<100	2	<100	<100	0	90	101
TRH C_{29} - C_{36}	mg/kg	100	Org-003	<100	2	<100	<100	0	106	78
TRH >C_{10} -C_{16}	mg/kg	50	Org-003	<50	2	<50	<50	0	104	107
TRH >C_{16} -C_{34}	mg/kg	100	Org-003	<100	2	<100	<100	0	90	101
TRH >C_{34} -C_{40}	mg/kg	100	Org-003	<100	2	<100	<100	0	106	78
Surrogate o-Terphenyl	%		Org-003	73	2	73	73	0	116	120

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	25	23/12/2019	23/12/2019		[NT]	[NT]
Date analysed	-			[NT]	25	24/12/2019	24/12/2019		[NT]	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-003	[NT]	25	<50	<50	0	[NT]	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-003	[NT]	25	<100	430	125	[NT]	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-003	[NT]	25	<100	250	86	[NT]	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-003	[NT]	25	<50	<50	0	[NT]	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-003	[NT]	25	110	600	138	[NT]	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-003	[NT]	25	<100	160	46	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-003	[NT]	25	73	89	20	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-15	233689-7
Date extracted	-			23/12/2019	2	23/12/2019	23/12/2019		23/12/2019	23/12/2019
Date analysed	-			27/12/2019	2	27/12/2019	27/12/2019		27/12/2019	27/12/2019
Naphthalene	mg/kg	0.1	Org-012/017	<0.1	2	<0.1	<0.1	0	100	92
Acenaphthylene	mg/kg	0.1	Org-012/017	<0.1	2	0.2	<0.1	67	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012/017	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012/017	<0.1	2	0.1	<0.1	0	84	84
Phenanthrene	mg/kg	0.1	Org-012/017	<0.1	2	1.5	0.6	86	90	62
Anthracene	mg/kg	0.1	Org-012/017	<0.1	2	0.3	0.2	40	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012/017	<0.1	2	1.6	1.4	13	88	63
Pyrene	mg/kg	0.1	Org-012/017	<0.1	2	1.5	1.4	7	94	69
Benzo(a)anthracene	mg/kg	0.1	Org-012/017	<0.1	2	0.8	0.9	12	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012/017	<0.1	2	0.9	1	11	92	72
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012/017	<0.2	2	1	2	67	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012/017	<0.05	2	0.74	0.93	23	100	89
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012/017	<0.1	2	0.3	0.5	50	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012/017	<0.1	2	0.2	0.1	67	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012/017	<0.1	2	0.4	0.6	40	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012/017	99	2	92	91	1	91	84

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	25	23/12/2019	23/12/2019		[NT]	[NT]
Date analysed	-			[NT]	25	27/12/2019	27/12/2019		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-012/017	[NT]	25	0.7	1.6	78	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-012/017	[NT]	25	0.2	2.0	164	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012/017	[NT]	25	0.2	1.0	133	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012/017	[NT]	25	0.2	1.4	150	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-012/017	[NT]	25	1.5	18	169	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-012/017	[NT]	25	0.4	4.2	165	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012/017	[NT]	25	2.1	15	151	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-012/017	[NT]	25	2.3	15	147	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-012/017	[NT]	25	1.3	11	158	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012/017	[NT]	25	1.5	12	156	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012/017	[NT]	25	2.4	19	155	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012/017	[NT]	25	1.5	12	156	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012/017	[NT]	25	0.7	5.1	152	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012/017	[NT]	25	0.3	1.8	143	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012/017	[NT]	25	0.8	6.1	154	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012/017	[NT]	25	84	86	2	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-15	233689-7
Date extracted	-			23/12/2019	2	23/12/2019	23/12/2019		23/12/2019	23/12/2019
Date analysed	-			27/12/2019	2	27/12/2019	27/12/2019		27/12/2019	27/12/2019
alpha-BHC	mg/kg	0.1	Org-012/017	<0.1	2	<0.1	<0.1	0	86	90
HCB	mg/kg	0.1	Org-012/017	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-012/017	<0.1	2	<0.1	<0.1	0	86	92
gamma-BHC	mg/kg	0.1	Org-012/017	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-012/017	<0.1	2	<0.1	<0.1	0	60	70
delta-BHC	mg/kg	0.1	Org-012/017	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-012/017	<0.1	2	<0.1	<0.1	0	102	94
Heptachlor Epoxide	mg/kg	0.1	Org-012/017	<0.1	2	<0.1	<0.1	0	86	90
gamma-Chlordane	mg/kg	0.1	Org-012/017	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-012/017	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-012/017	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-012/017	<0.1	2	<0.1	<0.1	0	96	92
Dieldrin	mg/kg	0.1	Org-012/017	<0.1	2	<0.1	<0.1	0	100	98
Endrin	mg/kg	0.1	Org-012/017	<0.1	2	<0.1	<0.1	0	82	86
Endosulfan II	mg/kg	0.1	Org-012/017	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-012/017	<0.1	2	<0.1	<0.1	0	78	78
Endrin Aldehyde	mg/kg	0.1	Org-012/017	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-012/017	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-012/017	<0.1	2	<0.1	<0.1	0	66	67
Methoxychlor	mg/kg	0.1	Org-012/017	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-012/017	101	2	100	92	8	98	96

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-15	233689-7
Date extracted	-			23/12/2019	2	23/12/2019	23/12/2019		23/12/2019	23/12/2019
Date analysed	-			27/12/2019	2	27/12/2019	27/12/2019		27/12/2019	27/12/2019
Dichlorvos	mg/kg	0.1	Org-012/017	<0.1	2	<0.1	<0.1	0	74	86
Dimethoate	mg/kg	0.1	Org-012/017	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-012/017	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-012/017	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-012/017	<0.1	2	<0.1	<0.1	0	84	78
Fenitrothion	mg/kg	0.1	Org-012/017	<0.1	2	<0.1	<0.1	0	74	78
Malathion	mg/kg	0.1	Org-012/017	<0.1	2	<0.1	<0.1	0	109	121
Chlorpyriphos	mg/kg	0.1	Org-012/017	<0.1	2	<0.1	<0.1	0	88	86
Parathion	mg/kg	0.1	Org-012/017	<0.1	2	<0.1	<0.1	0	92	101
Bromophos-ethyl	mg/kg	0.1	AT-008	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-012/017	<0.1	2	<0.1	<0.1	0	86	88
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-012/017	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-012/017	101	2	100	92	8	98	96

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-15	233689-7
Date extracted	-			23/12/2019	2	23/12/2019	23/12/2019		23/12/2019	23/12/2019
Date analysed	-			27/12/2019	2	27/12/2019	27/12/2019		27/12/2019	27/12/2019
Aroclor 1016	mg/kg	0.1	Org-006	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-006	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-006	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-006	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-006	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-006	<0.1	2	<0.1	<0.1	0	74	68
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-006	101	2	100	92	8	98	96

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-15	233689-7
Date prepared	-			23/12/2019	2	23/12/2019	23/12/2019		23/12/2019	23/12/2019
Date analysed	-			24/12/2019	2	24/12/2019	24/12/2019		24/12/2019	24/12/2019
Arsenic	mg/kg	4	Metals-020	<4	2	<4	<4	0	104	97
Cadmium	mg/kg	0.4	Metals-020	<0.4	2	0.5	<0.4	22	103	92
Chromium	mg/kg	1	Metals-020	<1	2	3	3	0	115	96
Copper	mg/kg	1	Metals-020	<1	2	2700	96	186	113	106
Lead	mg/kg	1	Metals-020	<1	2	270	360	29	119	91
Mercury	mg/kg	0.1	Metals-021	<0.1	2	0.2	0.2	0	106	112
Nickel	mg/kg	1	Metals-020	<1	2	29	23	23	107	98
Zinc	mg/kg	1	Metals-020	<1	2	400	380	5	112	90

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	25	23/12/2019	23/12/2019		[NT]	[NT]
Date analysed	-			[NT]	25	24/12/2019	24/12/2019		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	25	9	<4	77	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	25	0.7	<0.4	55	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	25	7	7	0	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	25	190	280	38	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	25	410	390	5	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	25	0.5	0.6	18	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	25	3	3	0	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	25	420	220	62	[NT]	[NT]

QUALITY CONTROL: Misc Soil - Inorg						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-15	233689-7
Date prepared	-			02/01/2020	2	02/01/2020	02/01/2020		02/01/2020	02/01/2020
Date analysed	-			02/01/2020	2	02/01/2020	02/01/2020		02/01/2020	02/01/2020
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	<5	2	<5	<5	0	100	110

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-15	[NT]
Date prepared	-			24/12/2019	19	24/12/2019	24/12/2019		24/12/2019	[NT]
Date analysed	-			24/12/2019	19	24/12/2019	24/12/2019		24/12/2019	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	19	8.8	8.8	0	104	[NT]

QUALITY CONTROL: CEC						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-15	[NT]
Date prepared	-			30/12/2019	[NT]	[NT]	[NT]	[NT]	30/12/2019	[NT]
Date analysed	-			30/12/2019	[NT]	[NT]	[NT]	[NT]	30/12/2019	[NT]
Exchangeable Ca	meq/100g	0.1	Metals-009	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Exchangeable K	meq/100g	0.1	Metals-009	<0.1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Exchangeable Mg	meq/100g	0.1	Metals-009	<0.1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Exchangeable Na	meq/100g	0.1	Metals-009	<0.1	[NT]	[NT]	[NT]	[NT]	107	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Asbestos: A portion of the supplied samples were sub-sampled for asbestos analysis according to Envirolab procedures.
We cannot guarantee that these sub-samples are indicative of the entire sample.
Envirolab recommends supplying 40-50g of sample in its own container.
Note: Samples requested for asbestos testing were sub-sampled from jars provided by the client.

Acid Extractable Metals in Soil:
- The laboratory RPD acceptance criteria has been exceeded for 233689-2 for Cu. Therefore a triplicate result has been issued as laboratory sample number 233689-33.
- The laboratory RPD acceptance criteria has been exceeded for 233689-25 for Zn. Therefore a triplicate result has been issued as laboratory sample number 233689-34.

TRH Soil C10-C40 NEPM - The laboratory RPD acceptance criteria has been exceeded for 233689-25. Therefore a triplicate result has been issued as laboratory sample number 233689-34.

PAHs in Soil - The RPD for duplicate results is accepted due to the non homogenous nature of sample 233689-2 and 25.

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CHAIN OF CUSTODY DESPATCH SHEET

Project No:	99538.01	**Suburb:**	Paddington	**To:**	Envirolab Services
Project Name:	Contamination Investigation	**Order Number**			
Project Manager:	DIH	**Sampler:**	SI	**Attn:**	Aileen Hie
Emails:	david.holden@douglaspartners.com.au			**Phone:**	
Date Required:	Standard			**Email:**	

Prior Storage: Esky Do samples contain 'potential' HBM? Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)

Sample ID	Lab ID	Date Sampled	Sample Type (S - soil W - water)	Container Type (G - glass B-Bag)	Analytes: Combo 8a	Combo 3a	Combo 3	TRH/BTEX	Metals	pH	CEC	On Hold		Notes/preservation
BH1/0.1-0.2	1	19/12/19	S	G								x		
BH1/0.4-0.5	2	19/12/19	S	G	x					x	x			
BH1/0.9-1.0	3	19/12/19	S	G								x		
BH1/1.9-2.0	4	19/12/19	S	G		x				x	x			
BH1/3.0-3.1	5	19/12/19	S	G			x							
BH1/3.9-4.0	6	19/12/19	S	G			x							
BH2/0.1-0.2	7	19/12/19	S	G	x									
BH2/0.4-0.5	8	19/12/19	S	G								x		
BH2/0.9-1.0	9	19/12/19	S	G								x		
BH2/1.9-2.0	10	19/12/19	S	G		x								
BH3/0.1-0.2	11	20/12/19	S	G								x		
BH3/0.4-0.5	12	20/12/19	S	G								x		
BH3/0.9-1.0	13	20/12/19	S	G		x								
BH3/1.5-1.6	14	20/12/19	S	G								x		
BH3/1.9-2.0	15	20/12/19	S	G								x		
PQL (S) mg/kg												**ANZECC PQLs req'd for all water analytes** ☐		

PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No:

Total number of samples in container: 32 **Relinquished by:** DIH **Transported to laboratory by:** BONDS

Send Results to: Douglas Partners Pty Ltd **Address:** **Phone:** **Fax:**

Signed: 20/12/19 3pm **Received by:** JYH **Date & Time:** 23/12/2019 11:42am

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

Job No: 233689

Date Received: 23/12/19
Time Received: 11:42
Received by: JYH
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Samples recd: 20/12/19 18:30.

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CHAIN OF CUSTODY DESPATCH SHEET

Project No:	99538.01	**Suburb:**	Paddington	**To:**	Envirolab Services
Project Name:	Contamination Investigation	**Order Number**			
Project Manager:	DIH	**Sampler:**	SI	**Attn:**	Aileen Hie
Emails:	david.holden@douglaspartners.com.au			**Phone:**	
Date Required:	Standard			**Email:**	

Prior Storage: Esky — Do samples contain 'potential' HBM? Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)

Sample ID	Lab ID 233689	Sampling Date	Sample Type S - soil W - water	Container Type G - glass B-Bag	Analytes: Combo 8a	Combo 3a	Combo 3	TRH/BTEX	Metals	pH	CEC	On Hold		Notes/preservation
BH4/0.1-0.2	16	18/12/19	S	G								x		
BH4/0.4-0.5	17	18/12/19	S	G	x									
BH4/0.9-1.0	18	18/12/19	S	G								x		
BH4/1.9-2.0	19	18/12/19	S	G		x				x	x			
BH4/3.0-3.1	20	18/12/19	S	G								x		
BH4/5.5-5.6	21	18/12/19	S	G			x							
BH5/0.2-0.3	22	18/12/19	S	G								x		
BH5/0.3-0.4	23	18/12/19	S	G								x		
BH5/0.4-0.5	24	18/12/19	S	G								x		
BH5/1.4-1.5	25	18/12/19	S	G		x								
BH5/1.9-2.0	26	18/12/19	S	G			x							
BH5/2.4-2.5	27	18/12/19	S	G								x		
BD1/18122019	28	18/12/19	S	g			x							
BD2/19122019	29	19/12/19	S	G			x							
BD3/20122019	30	20/12/19	S	G								x		
PQL (S) mg/kg												**ANZECC PQLs req'd for all water analytes** ☐		

PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No:

Total number of samples in container:		**Relinquished by:**	DIH	**Transported to laboratory by:**	BONDS
Send Results to:	Douglas Partners Pty Ltd	**Address:**		**Phone:**	**Fax:**
Signed:		**Received by:**	JYH	**Date & Time:**	23/12/2019 11:42am

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CHAIN OF CUSTODY DESPATCH SHEET

Project No:	99538.01	**Suburb:**	Paddington	**To:**	Envirolab Services
Project Name:	Contamination Investigation	**Order Number**			
Project Manager:	DIH	**Sampler:**	SI	**Attn:**	Aileen Hie
Emails:	david.holden@douglaspartners.com.au			**Phone:**	
Date Required:	Standard			**Email:**	

Prior Storage: Esky Do samples contain 'potential' HBM? Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)

Sample ID	Lab ID 233689	Sampling Date	Sample Type S - soil W - water	Container Type G - glass B-Bag	Analytes: Combo 8a	Combo 3a	Combo 3	TRH/BTEX	Metals	pH	CEC	On Hold		Notes/preservation
Trip Spike	31	18/12/19	S	G				x				x		
Trip Blank	32	18/12/19	S	G				x				x		
PQL (S) mg/kg												**ANZECC PQLs req'd for all water analytes** ☐		

PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No:

Total number of samples in container: **Relinquished by:** DIH **Transported to laboratory by:** BONDS

Send Results to: Douglas Partners Pty Ltd **Address:** **Phone:** **Fax:**

Signed: **Received by:** JYH **Date & Time:** 23/12/2019 11:42am

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Project Name:	Contamination Investigation	**Order Number**			
Project Manager:	DIH	**Sampler:**	SI	**Attn:**	Aileen Hie
Emails:	david.holden@douglaspartners.com.au			**Phone:**	
Date Required:	Standard			**Email:**	

Prior Storage: Esky Do samples contain 'potential' HBM? Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)

Sample ID	Lab ID	Date Sampled	Sample Type (S - soil W - water)	Container Type (G - glass B-Bag)	Analytes: Combo 8a	Combo 3a	Combo 3	TRH/BTEX	Metals	ASS	SPOCAS	On Hold		Notes/preservation
BH1/0.1-0.2	1	19/12/19	S	G								x		
BH1/0.4-0.5	2	19/12/19	S	G								x		
BH1/0.9-1.0	3	19/12/19	S	G								x		
BH1/1.9-2.0	4	19/12/19	S	G								x		
BH1/3.0-3.1	5	19/12/19	S	G								x		
BH1/3.9-4.0	6	19/12/19	S	G								x		
BH2/0.1-0.2	7	19/12/19	S	G								x		
BH2/0.4-0.5	8	19/12/19	S	G								x		
BH2/0.9-1.0	9	19/12/19	S	G								x		
BH2/1.9-2.0	10	19/12/19	S	G								x		
BH3/0.1-0.2	11	20/12/19	S	G								x		
BH3/0.4-0.5	12	20/12/19	S	G								x		
BH3/0.9-1.0	13	20/12/19	S	G								x		
BH3/1.5-1.6	14	20/12/19	S	G								x		
BH3/1.9-2.0	15	20/12/19	S	G								x		
PQL (S) mg/kg												**ANZECC PQLs req'd for all water analytes** ☐		

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

Job No: 233689
Date Received: 20/12/19
Time Received: 8:20
Received by:
Temp: ~~Cool~~/Ambient
~~Cooling: Ice/Icepack~~
Security: ~~Intact~~/Broken/None

PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No:

Total number of samples in container: 32 **Relinquished by:** DIH **Transported to laboratory by:** BONDS

Send Results to: Douglas Partners Pty Ltd **Address:** **Phone:** **Fax:**

Signed: 20/12/19 3pm **Received by:** **Date & Time:** 20/12/19

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CHAIN OF CUSTODY DESPATCH SHEET

Project No:	99538.01	**Suburb:**	Paddington	**To:**	Envirolab Services
Project Name:	Contamination Investigation	**Order Number**			
Project Manager:	DIH	**Sampler:**	SI	**Attn:**	Aileen Hie
Emails:	david.holden@douglaspartners.com.au			**Phone:**	
Date Required:	Standard			**Email:**	

Prior Storage: Esky — Do samples contain 'potential' HBM? Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil W - water)	Container Type (G - glass B-Bag)	Analytes: Combo 8a	Combo 3a	Combo 3	TRH/BTEX	Metals	ASS	SPOCAS	On Hold		Notes/preservation
BH4/0.1-0.2	16	18/12/19	S	G								x		
BH4/0.4-0.5	17	18/12/19	S	G								x		
BH4/0.9-1.0	18	18/12/19	S	G								x		
BH4/1.9-2.0	19	18/12/19	S	G								x		
BH4/3.0-3.1	20	18/12/19	S	G								x		
BH4/5.5-5.6	21	18/12/19	S	G								x		
BH5/0.2-0.3	22	18/12/19	S	G								x		
BH5/0.3-0.4	23	18/12/19	S	G								x		
BH5/0.4-0.5	24	18/12/19	S	G								x		
BH5/1.4-1.5	25	18/12/19	S	G								x		
BH5/1.9-2.0	26	18/12/19	S	G								x		
BH5/2.4-2.5	27	18/12/19	S	G								x		
BD1/18122019	28	18/12/19	S	g								x		
BD2/19122019	29	19/12/19	S	G								x		
BD3/20122019	30	20/12/19	S	G								x		
PQL (S) mg/kg												**ANZECC PQLs req'd for all water analytes** ☐		

PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit

Lab Report/Reference No:

Metals to Analyse: 8HM unless specified here:

Total number of samples in container: **Relinquished by:** DIH **Transported to laboratory by:** BONDS

Send Results to: Douglas Partners Pty Ltd **Address:** **Phone:** **Fax:**

Signed: 20/12/19 **Received by:** **Date & Time:** 20/12/19

233689

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No:	99538.01	**Suburb:**	Paddington	**To:**	Envirolab Services
Project Name:	Contamination Investigation	**Order Number**			
Project Manager:	DIH	**Sampler:**	SI	**Attn:**	Aileen Hie
Emails:	david.holden@douglaspartners.com.au			**Phone:**	
Date Required:	Standard			**Email:**	

Prior Storage: Esky — Do samples contain 'potential' HBM? Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, B-Bag)	Analytes: Combo 8a	Combo 3a	Combo 3	TRH/BTEX	Metals	ASS	SPOCAS	On Hold		Notes/preservation
Trip Spike	31	18/12/19	S	G								x		
Trip Blank	32	18/12/19	S	G								x		
PQL (S) mg/kg												**ANZECC PQLs req'd for all water analytes** ☐		

PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No:

Total number of samples in container: **Relinquished by:** DIH **Transported to laboratory by:** BONDS

Send Results to: Douglas Partners Pty Ltd **Address:** **Phone:** **Fax:**

Signed: 20/12/19 **Received by:** **Date & Time:** 20/12/19

233689

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

CERTIFICATE OF ANALYSIS 233689-A

Client Details

Client	Douglas Partners Pty Ltd
Attention	David Holden
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**99538.01, Contamination Investigation**
Number of Samples	32 Soil
Date samples received	20/12/2019
Date completed instructions received	02/01/2020

Analysis Details

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

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

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

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	09/01/2020
Date of Issue	07/01/2020

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Asbestos Approved By
Analysed by Asbestos Approved Identifier: Lucy Zhu
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By
Dragana Tomas, Senior Chemist
Jaimie Loa-Kum-Cheung, Metals Supervisor
Josh Williams, Senior Chemist
Lucy Zhu, Senior Asbestos Analyst

Authorised By

Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil		
Our Reference		233689-A-27
Your Reference	UNITS	BH5/2.4-2.5
Date Sampled		18/12/2019
Type of sample		Soil
Date extracted	-	03/01/2020
Date analysed	-	03/01/2020
TRH C_6 - C_9	mg/kg	<25
TRH C_6 - C_{10}	mg/kg	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
naphthalene	mg/kg	<1
Total +ve Xylenes	mg/kg	<3
Surrogate aaa-Trifluorotoluene	%	108

svTRH (C10-C40) in Soil		
Our Reference		233689-A-27
Your Reference	UNITS	BH5/2.4-2.5
Date Sampled		18/12/2019
Type of sample		Soil
Date extracted	-	03/01/2020
Date analysed	-	03/01/2020
TRH C_{10} - C_{14}	mg/kg	<50
TRH C_{15} - C_{28}	mg/kg	160
TRH C_{29} - C_{36}	mg/kg	<100
TRH >C_{10} -C_{16}	mg/kg	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50
TRH >C_{16} -C_{34}	mg/kg	230
TRH >C_{34} -C_{40}	mg/kg	<100
Total +ve TRH (>C10-C40)	mg/kg	230
Surrogate o-Terphenyl	%	79

PAHs in Soil		
Our Reference		233689-A-27
Your Reference	UNITS	BH5/2.4-2.5
Date Sampled		18/12/2019
Type of sample		Soil
Date extracted	-	03/01/2020
Date analysed	-	03/01/2020
Naphthalene	mg/kg	0.8
Acenaphthylene	mg/kg	1.2
Acenaphthene	mg/kg	0.4
Fluorene	mg/kg	0.8
Phenanthrene	mg/kg	6.7
Anthracene	mg/kg	1.8
Fluoranthene	mg/kg	11
Pyrene	mg/kg	10
Benzo(a)anthracene	mg/kg	6.6
Chrysene	mg/kg	6.4
Benzo(b,j+k)fluoranthene	mg/kg	8.2
Benzo(a)pyrene	mg/kg	5.9
Indeno(1,2,3-c,d)pyrene	mg/kg	2.8
Dibenzo(a,h)anthracene	mg/kg	0.9
Benzo(g,h,i)perylene	mg/kg	3.3
Total +ve PAH's	mg/kg	67
Benzo(a)pyrene TEQ calc (zero)	mg/kg	8.6
Benzo(a)pyrene TEQ calc(half)	mg/kg	8.6
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	8.6
Surrogate p-Terphenyl-d14	%	103

Acid Extractable metals in soil		
Our Reference		233689-A-27
Your Reference	UNITS	BH5/2.4-2.5
Date Sampled		18/12/2019
Type of sample		Soil
Date prepared	-	06/01/2020
Date analysed	-	06/01/2020
Arsenic	mg/kg	<4
Cadmium	mg/kg	<0.4
Chromium	mg/kg	8
Copper	mg/kg	130
Lead	mg/kg	340
Mercury	mg/kg	0.4
Nickel	mg/kg	3
Zinc	mg/kg	170

Moisture		
Our Reference		233689-A-27
Your Reference	UNITS	BH5/2.4-2.5
Date Sampled		18/12/2019
Type of sample		Soil
Date prepared	-	03/01/2020
Date analysed	-	06/01/2020
Moisture	%	8.7

Asbestos ID - soils		
Our Reference		233689-A-27
Your Reference	UNITS	BH5/2.4-2.5
Date Sampled		18/12/2019
Type of sample		Soil
Date analysed	-	06/01/2020
Sample mass tested	g	Approx. 35g
Sample Description	-	Brown coarse-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected

Metals in TCLP USEPA1311						
Our Reference		233689-A-2	233689-A-4	233689-A-5	233689-A-6	233689-A-10
Your Reference	UNITS	BH1/0.4-0.5	BH1/1.9-2.0	BH1/3.0-3.1	BH1/3.9-4.0	BH2/1.9-2.0
Date Sampled		19/12/2019	19/12/2019	19/12/2019	19/12/2019	19/12/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/01/2020	06/01/2020	06/01/2020	06/01/2020	06/01/2020
Date analysed	-	06/01/2020	06/01/2020	06/01/2020	06/01/2020	06/01/2020
pH of soil for fluid# determ.	pH units	9.1	8.8	8.3	8.0	8.0
pH of soil TCLP (after HCl)	pH units	1.8	1.7	1.7	1.7	1.7
Extraction fluid used	-	1	1	1	1	1
pH of final Leachate	pH units	5.1	5.0	5.0	5.0	5.0
Lead in TCLP	mg/L	4.3	[NA]	0.34	0.32	0.2

Metals in TCLP USEPA1311						
Our Reference		233689-A-13	233689-A-17	233689-A-19	233689-A-26	233689-A-27
Your Reference	UNITS	BH3/0.9-1.0	BH4/0.4-0.5	BH4/1.9-2.0	BH5/1.9-2.0	BH5/2.4-2.5
Date Sampled		20/12/2019	18/12/2019	18/12/2019	18/12/2019	18/12/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/01/2020	06/01/2020	06/01/2020	06/01/2020	06/01/2020
Date analysed	-	06/01/2020	06/01/2020	06/01/2020	06/01/2020	06/01/2020
pH of soil for fluid# determ.	pH units	9.1	9.0	9.2	9.3	9.3
pH of soil TCLP (after HCl)	pH units	1.7	1.8	1.9	2.0	1.9
Extraction fluid used	-	1	1	1	1	1
pH of final Leachate	pH units	5.0	5.1	5.3	5.4	5.1
Lead in TCLP	mg/L	[NA]	1.4	1.4	13	[NA]

PAHs in TCLP (USEPA 1311)						
Our Reference		233689-A-4	233689-A-5	233689-A-6	233689-A-10	233689-A-13
Your Reference	UNITS	BH1/1.9-2.0	BH1/3.0-3.1	BH1/3.9-4.0	BH2/1.9-2.0	BH3/0.9-1.0
Date Sampled		19/12/2019	19/12/2019	19/12/2019	19/12/2019	20/12/2019
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	06/01/2020	06/01/2020	06/01/2020	06/01/2020	06/01/2020
Date analysed	-	06/01/2020	06/01/2020	06/01/2020	06/01/2020	06/01/2020
Naphthalene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Acenaphthylene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Acenaphthene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Fluorene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Phenanthrene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Anthracene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Fluoranthene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Pyrene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Benzo(a)anthracene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Chrysene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Benzo(bjk)fluoranthene in TCLP	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002
Benzo(a)pyrene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Dibenzo(a,h)anthracene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Benzo(g,h,i)perylene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Total +ve PAH's	mg/L	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	74	72	81	70	71

PAHs in TCLP (USEPA 1311)				
Our Reference		233689-A-17	233689-A-19	233689-A-26
Your Reference	UNITS	BH4/0.4-0.5	BH4/1.9-2.0	BH5/1.9-2.0
Date Sampled		18/12/2019	18/12/2019	18/12/2019
Type of sample		Soil	Soil	Soil
Date extracted	-	06/01/2020	06/01/2020	06/01/2020
Date analysed	-	06/01/2020	06/01/2020	06/01/2020
Naphthalene in TCLP	mg/L	<0.001	0.003	<0.001
Acenaphthylene in TCLP	mg/L	<0.001	<0.001	<0.001
Acenaphthene in TCLP	mg/L	<0.001	0.001	<0.001
Fluorene in TCLP	mg/L	<0.001	<0.001	<0.001
Phenanthrene in TCLP	mg/L	<0.001	0.003	<0.001
Anthracene in TCLP	mg/L	<0.001	<0.001	<0.001
Fluoranthene in TCLP	mg/L	<0.001	<0.001	<0.001
Pyrene in TCLP	mg/L	<0.001	<0.001	<0.001
Benzo(a)anthracene in TCLP	mg/L	<0.001	<0.001	<0.001
Chrysene in TCLP	mg/L	<0.001	<0.001	<0.001
Benzo(bjk)fluoranthene in TCLP	mg/L	<0.002	<0.002	<0.002
Benzo(a)pyrene in TCLP	mg/L	<0.001	<0.001	<0.001
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	<0.001	<0.001	<0.001
Dibenzo(a,h)anthracene in TCLP	mg/L	<0.001	<0.001	<0.001
Benzo(g,h,i)perylene in TCLP	mg/L	<0.001	<0.001	<0.001
Total +ve PAH's	mg/L	NIL (+)VE	0.0074	NIL (+)VE
Surrogate p-Terphenyl-d14	%	78	76	73

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP) using Zero Headspace Extraction (zHE) using AS4439 and USEPA 1311.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using in house method INORG-004. Please note that the mass used may be scaled down from the default based on sample mass available.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-012/017	Leachates are extracted with Dichloromethane and analysed by GC-MS and/or GC-MS/MS.

Method ID	Methodology Summary
Org-012/017	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			03/01/2020	[NT]	[NT]	[NT]	[NT]	03/01/2020	[NT]
Date analysed	-			03/01/2020	[NT]	[NT]	[NT]	[NT]	03/01/2020	[NT]
TRH C_6 - C_9	mg/kg	25	Org-016	<25	[NT]	[NT]	[NT]	[NT]	103	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-016	<25	[NT]	[NT]	[NT]	[NT]	103	[NT]
Benzene	mg/kg	0.2	Org-016	<0.2	[NT]	[NT]	[NT]	[NT]	85	[NT]
Toluene	mg/kg	0.5	Org-016	<0.5	[NT]	[NT]	[NT]	[NT]	104	[NT]
Ethylbenzene	mg/kg	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	107	[NT]
m+p-xylene	mg/kg	2	Org-016	<2	[NT]	[NT]	[NT]	[NT]	110	[NT]
o-Xylene	mg/kg	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	88	[NT]
naphthalene	mg/kg	1	Org-014	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	101	[NT]	[NT]	[NT]	[NT]	100	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			03/01/2020	[NT]	[NT]	[NT]	[NT]	03/01/2020	[NT]
Date analysed	-			03/01/2020	[NT]	[NT]	[NT]	[NT]	03/01/2020	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	102	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	112	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	128	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	102	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	112	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	128	[NT]
Surrogate o-Terphenyl	%		Org-003	94	[NT]	[NT]	[NT]	[NT]	106	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			03/01/2020	[NT]	[NT]	[NT]	[NT]	03/01/2020	[NT]
Date analysed	-			03/01/2020	[NT]	[NT]	[NT]	[NT]	03/01/2020	[NT]
Naphthalene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	112	[NT]
Acenaphthylene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Phenanthrene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Anthracene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Pyrene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012/017	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012/017	<0.05	[NT]	[NT]	[NT]	[NT]	96	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012/017	99	[NT]	[NT]	[NT]	[NT]	101	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			06/01/2020	[NT]	[NT]	[NT]	[NT]	06/01/2020	[NT]
Date analysed	-			06/01/2020	[NT]	[NT]	[NT]	[NT]	06/01/2020	[NT]
Arsenic	mg/kg	4	Metals-020	<4	[NT]	[NT]	[NT]	[NT]	111	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	[NT]	[NT]	[NT]	[NT]	110	[NT]
Chromium	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	119	[NT]
Copper	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	111	[NT]
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	117	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Nickel	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	109	[NT]
Zinc	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	115	[NT]

QUALITY CONTROL: Metals in TCLP USEPA1311						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	233689-A-5
Date extracted	-			06/01/2020	2	06/01/2020	06/01/2020		06/01/2020	06/01/2020
Date analysed	-			06/01/2020	2	06/01/2020	06/01/2020		06/01/2020	06/01/2020
Lead in TCLP	mg/L	0.03	Metals-020 ICP-AES	<0.03	2	4.3	4.3	0	102	96

QUALITY CONTROL: PAHs in TCLP (USEPA 1311)						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			06/01/2020	[NT]	[NT]	[NT]	[NT]	06/01/2020	[NT]
Date analysed	-			06/01/2020	[NT]	[NT]	[NT]	[NT]	06/01/2020	[NT]
Naphthalene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	124	[NT]
Acenaphthylene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	98	[NT]
Phenanthrene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	104	[NT]
Anthracene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	98	[NT]
Pyrene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	104	[NT]
Benzo(a)anthracene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	112	[NT]
Benzo(bjk)fluoranthene in TCLP	mg/L	0.002	Org-012/017	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	68	[NT]
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012/017	74	[NT]	[NT]	[NT]	[NT]	83	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
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Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
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Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Asbestos: A portion of the supplied sample was sub-sampled for asbestos analysis according to Envirolab procedures.
We cannot guarantee that this sub-sample is indicative of the entire sample. Envirolab recommends supplying 40-50g of sample in its own container.
Note: Sample 233689-A-27 was sub-sampled from a jar provided by the client.

Jessica Hie

From: David Holden <David.Holden@douglaspartners.com.au>
Sent: Thursday, 2 January 2020 11:36 AM
To: Simon Song; Jessica Hie
Subject: 233689 99538.01, Contamination Investigation, Paddington- TCLP Analysis

Hi Jess,

Could I please get the following additional analysis for 233689- 99538.01, Contamination Investigation, Paddington.

Sample 233689-2 (BH1/0.4-0.5)- TCLP: lead
Sample 233689-4 (BH1/1.9-2.0)- TCLP: PAH
Sample 233689-5 (BH1/3-3.1)- TCLP: lead, PAH
Sample 233689-6 (BH1/3.9-4.0)- TCLP: lead, PAH
Sample 233689-10 (BH2/1.9-2.0)- TCLP: lead, PAH
Sample 233689-13 (BH3/0.9-1.0)- TCLP: PAH
Sample 233689-17 (BH4/0.4-0.5)- TCLP: lead, PAH
Sample 233689-19 (BH4/1.9-2.0)- TCLP: lead, PAH
Sample 233689-26 (BH5/1.9-2.0)- TCLP: lead, PAH
Sample 233689-27 (BH5/2.4-2.5)- Combo 3a, TCLP prep

233689-A
Due: 09/01/20
Std TAT.

I could I please get these prepped ASAP. Analysis and reporting on standard TAT is fine.

Thanks

David Holden | Environmental Scientist
Douglas Partners Pty Ltd | ABN 75 053 980 117 | www.douglaspartners.com.au
96 Hermitage Road West Ryde NSW 2114 | PO Box 472 West Ryde NSW 1685
P: 02 8878 0652 | M: 0414 768 997 | E: David.Holden@douglaspartners.com.au

FINANCIAL REVIEW
CLIENT CHOICE AWARDS 2019
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CERTIFICATE OF ANALYSIS 233689-B

Client Details

Client	Douglas Partners Pty Ltd
Attention	David Holden
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**99538.01, Contamination Investigation**
Number of Samples	32 Soil
Date samples received	20/12/2019
Date completed instructions received	07/01/2020

Analysis Details

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

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

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

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	14/01/2020
Date of Issue	09/01/2020

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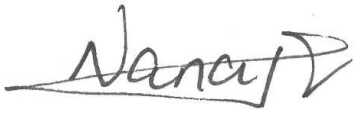
Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Josh Williams, Senior Chemist
Loren Bardwell, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

Metals in TCLP USEPA1311		
Our Reference		233689-B-27
Your Reference	UNITS	BH5/2.4-2.5
Date Sampled		18/12/2019
Type of sample		Soil
Date extracted	-	08/01/2020
Date analysed	-	08/01/2020
Lead in TCLP	mg/L	4.4

PAHs in TCLP (USEPA 1311)		
Our Reference	UNITS	233689-B-27
Your Reference		BH5/2.4-2.5
Date Sampled		18/12/2019
Type of sample		Soil
Date extracted	-	07/01/2020
Date analysed	-	07/01/2020
Naphthalene in TCLP	mg/L	0.005
Acenaphthylene in TCLP	mg/L	<0.001
Acenaphthene in TCLP	mg/L	0.002
Fluorene in TCLP	mg/L	0.002
Phenanthrene in TCLP	mg/L	0.004
Anthracene in TCLP	mg/L	0.001
Fluoranthene in TCLP	mg/L	<0.001
Pyrene in TCLP	mg/L	<0.001
Benzo(a)anthracene in TCLP	mg/L	<0.001
Chrysene in TCLP	mg/L	<0.001
Benzo(bjk)fluoranthene in TCLP	mg/L	<0.002
Benzo(a)pyrene in TCLP	mg/L	<0.001
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	<0.001
Dibenzo(a,h)anthracene in TCLP	mg/L	<0.001
Benzo(g,h,i)perylene in TCLP	mg/L	<0.001
Total +ve PAH's	mg/L	0.014
Surrogate p-Terphenyl-d14	%	86

Method ID	Methodology Summary
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Org-012/017	Leachates are extracted with Dichloromethane and analysed by GC-MS and/or GC-MS/MS.

QUALITY CONTROL: Metals in TCLP USEPA1311						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			08/01/2020	[NT]	[NT]	[NT]	[NT]	08/01/2020	[NT]
Date analysed	-			08/01/2020	[NT]	[NT]	[NT]	[NT]	08/01/2020	[NT]
Lead in TCLP	mg/L	0.03	Metals-020 ICP-AES	<0.03	[NT]	[NT]	[NT]	[NT]	103	[NT]

QUALITY CONTROL: PAHs in TCLP (USEPA 1311)						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			07/01/2020	[NT]	[NT]	[NT]	[NT]	07/01/2020	[NT]
Date analysed	-			07/01/2020	[NT]	[NT]	[NT]	[NT]	07/01/2020	[NT]
Naphthalene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	118	[NT]
Acenaphthylene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	98	[NT]
Phenanthrene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	104	[NT]
Anthracene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	102	[NT]
Pyrene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	106	[NT]
Benzo(a)anthracene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	112	[NT]
Benzo(bjk)fluoranthene in TCLP	mg/L	0.002	Org-012/017	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	92	[NT]
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012/017	70	[NT]	[NT]	[NT]	[NT]	92	[NT]

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Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

The samples were received outside of the recommended Technical Holding Time (THT) for PAH, however, the analysis has proceeded as requested.

Andrew (Fitzy) Fitzsimons

From: Simon Song
Sent: Tuesday, 7 January 2020 4:07 PM
To: David Holden; Andrew (Fitzy) Fitzsimons
Subject: RE: 233689-A 99538.01, Contamination Investigation- Additional TCLP analysis

Follow Up Flag: Follow up
Flag Status: Flagged

Ref: 233689-B
TAT: Std
Due: 14/1/20

No problem

Kind Regards,

fitz

Simon Song | Customer Service | Envirolab Services Pty Ltd

Great Science. Great Service.
12 Ashley Street Chatswood NSW 2067
T 612 9910 6200 **F** 612 9910 6201
E ssong@envirolab.com.au | **W** www.envirolab.com.au

New sampling bottle provision now available for PFAS and SVOCs in water samples

Please note that all samples submitted to the Envirolab Group laboratories will be analysed under the Envirolab Group Terms and Conditions. The Terms and Conditions are accessible by clicking this link

From: David Holden [mailto:David.Holden@douglaspartners.com.au]
Sent: Tuesday, 7 January 2020 3:57 PM
To: Simon Song <SSong@envirolab.com.au>
Subject: 233689-A 99538.01, Contamination Investigation- Additional TCLP analysis

Hi Simon,

Could I please get TCLP analysis on the following sample for job 233689-A 99538.01, Contamination Investigation, Paddington

Sample 233689-27 (BH5/2.4-2.5)- TCLP: lead, PAH.

TCLP prep should have already been undertaken.

Standard TAT is fine.

Thanks

Dave

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

CERTIFICATE OF ANALYSIS 235041

Client Details

Client	Douglas Partners Pty Ltd
Attention	David Holden, Joel James-Hall
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**99538.01, Paddington**
Number of Samples	9 Soil
Date samples received	22/01/2020
Date completed instructions received	22/01/2020

Analysis Details

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

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

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

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	30/01/2020
Date of Issue	29/01/2020

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Asbestos Approved By
Analysed by Asbestos Approved Identifier: Aida Marner
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By
Josh Williams, Senior Chemist
Loren Bardwell, Senior Chemist
Lucy Zhu, Asbestos Supervisor
Nick Sarlamis, Inorganics Supervisor

Authorised By

Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil				
Our Reference		235041-1	235041-2	235041-3
Your Reference	UNITS	BH6/0.4-0.5	BH6/2.4-2.5	BH7/0-0.1
Type of sample		Soil	Soil	Soil
Date extracted	-	23/01/2020	23/01/2020	23/01/2020
Date analysed	-	25/01/2020	25/01/2020	25/01/2020
TRH C_6 - C_9	mg/kg	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1
naphthalene	mg/kg	<1	1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	90	95	90

svTRH (C10-C40) in Soil				
Our Reference	UNITS	235041-1	235041-2	235041-3
Your Reference		BH6/0.4-0.5	BH6/2.4-2.5	BH7/0-0.1
Type of sample		Soil	Soil	Soil
Date extracted	-	23/01/2020	23/01/2020	23/01/2020
Date analysed	-	24/01/2020	24/01/2020	24/01/2020
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	260	<100
TRH C_{29} - C_{36}	mg/kg	<100	160	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	380	110
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	380	110
Surrogate o-Terphenyl	%	98	88	85

PAHs in Soil				
Our Reference		235041-1	235041-2	235041-3
Your Reference	UNITS	BH6/0.4-0.5	BH6/2.4-2.5	BH7/0-0.1
Type of sample		Soil	Soil	Soil
Date extracted	-	23/01/2020	23/01/2020	23/01/2020
Date analysed	-	23/01/2020	23/01/2020	23/01/2020
Naphthalene	mg/kg	0.3	1.4	<0.1
Acenaphthylene	mg/kg	0.2	1.3	0.2
Acenaphthene	mg/kg	<0.1	0.2	<0.1
Fluorene	mg/kg	<0.1	0.8	<0.1
Phenanthrene	mg/kg	2.8	12	0.7
Anthracene	mg/kg	0.4	3.0	0.2
Fluoranthene	mg/kg	3.5	19	2.1
Pyrene	mg/kg	3.1	18	2.3
Benzo(a)anthracene	mg/kg	1.5	9.5	1.5
Chrysene	mg/kg	1.6	11	1.6
Benzo(b,j+k)fluoranthene	mg/kg	2	11	2.0
Benzo(a)pyrene	mg/kg	1.0	7.7	1.3
Indeno(1,2,3-c,d)pyrene	mg/kg	0.7	4.4	0.9
Dibenzo(a,h)anthracene	mg/kg	0.2	1.6	0.3
Benzo(g,h,i)perylene	mg/kg	0.8	5.0	1.0
Total +ve PAH's	mg/kg	18	110	14
Benzo(a)pyrene TEQ calc (zero)	mg/kg	1.6	12	2.1
Benzo(a)pyrene TEQ calc(half)	mg/kg	1.6	12	2.1
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	1.6	12	2.1
Surrogate p-Terphenyl-d14	%	95	100	96

Acid Extractable metals in soil				
Our Reference		235041-1	235041-2	235041-3
Your Reference	UNITS	BH6/0.4-0.5	BH6/2.4-2.5	BH7/0-0.1
Type of sample		Soil	Soil	Soil
Date prepared	-	23/01/2020	23/01/2020	23/01/2020
Date analysed	-	23/01/2020	23/01/2020	23/01/2020
Arsenic	mg/kg	<4	<4	11
Cadmium	mg/kg	<0.4	<0.4	<0.4
Chromium	mg/kg	10	10	13
Copper	mg/kg	10	21	31
Lead	mg/kg	130	380	120
Mercury	mg/kg	0.3	0.5	1.3
Nickel	mg/kg	2	2	11
Zinc	mg/kg	68	92	170

Moisture				
Our Reference		235041-1	235041-2	235041-3
Your Reference	UNITS	BH6/0.4-0.5	BH6/2.4-2.5	BH7/0-0.1
Type of sample		Soil	Soil	Soil
Date prepared	-	23/01/2020	23/01/2020	23/01/2020
Date analysed	-	24/01/2020	24/01/2020	24/01/2020
Moisture	%	4.7	5.9	5.5

Asbestos ID - soils			
Our Reference		235041-1	235041-3
Your Reference	UNITS	BH6/0.4-0.5	BH7/0-0.1
Type of sample		Soil	Soil
Date analysed	-	24/01/2020	24/01/2020
Sample mass tested	g	Approx. 35g	Approx. 30g
Sample Description	-	Brown sandy soil & rocks	Brown sandy soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected

sPOCAS field test						
Our Reference		235041-4	235041-5	235041-6	235041-7	235041-8
Your Reference	UNITS	BH6/2.4-2.5	BH6/3.9-4.0	BH6/4-4.45	BH7/1.4-1.5	BH7/3.0-3.0
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	23/01/2020	23/01/2020	23/01/2020	23/01/2020	23/01/2020
Date analysed	-	23/01/2020	23/01/2020	23/01/2020	23/01/2020	23/01/2020
pH_F (field pH test)*	pH Units	8.3	8.5	7.9	8.3	7.5
pH_{FOX} (field peroxide test)*	pH Units	6.7	6.6	6.3	7.1	6.5
Reaction Rate*	-	High reaction	Medium reaction	Low reaction	High reaction	Medium reaction

sPOCAS field test		
Our Reference		235041-9
Your Reference	UNITS	BH7/5-5.1
Type of sample		Soil
Date prepared	-	23/01/2020
Date analysed	-	23/01/2020
pH_F (field pH test)*	pH Units	7.7
pH_{FOX} (field peroxide test)*	pH Units	6.6
Reaction Rate*	-	High reaction

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Inorg-063	pH- measured using pH meter and electrode. Soil is oxidised with Hydrogen Peroxide or extracted with water. Based on section H, Acid Sulfate Soils Laboratory Methods Guidelines, Version 2.1 - June 2004. To ensure accurate results these tests are recommended to be done in the field as pH may change with time thus these results may not be representative of true field conditions.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-012/017	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.

Method ID	Methodology Summary
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	[NT]
Date extracted	-			23/01/2020	[NT]	[NT]	[NT]	[NT]	23/01/2020	[NT]
Date analysed	-			25/01/2020	[NT]	[NT]	[NT]	[NT]	25/01/2020	[NT]
TRH C_6 - C_9	mg/kg	25	Org-016	<25	[NT]	[NT]	[NT]	[NT]	96	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-016	<25	[NT]	[NT]	[NT]	[NT]	96	[NT]
Benzene	mg/kg	0.2	Org-016	<0.2	[NT]	[NT]	[NT]	[NT]	90	[NT]
Toluene	mg/kg	0.5	Org-016	<0.5	[NT]	[NT]	[NT]	[NT]	89	[NT]
Ethylbenzene	mg/kg	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
m+p-xylene	mg/kg	2	Org-016	<2	[NT]	[NT]	[NT]	[NT]	100	[NT]
o-Xylene	mg/kg	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	98	[NT]
naphthalene	mg/kg	1	Org-014	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	90	[NT]	[NT]	[NT]	[NT]	87	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	[NT]
Date extracted	-			23/01/2020	[NT]	[NT]	[NT]	[NT]	23/01/2020	[NT]
Date analysed	-			23/01/2020	[NT]	[NT]	[NT]	[NT]	23/01/2020	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	106	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	115	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	121	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	106	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	115	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	121	[NT]
Surrogate o-Terphenyl	%		Org-003	93	[NT]	[NT]	[NT]	[NT]	107	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	[NT]
Date extracted	-			23/01/2020	[NT]	[NT]	[NT]	[NT]	23/01/2020	[NT]
Date analysed	-			23/01/2020	[NT]	[NT]	[NT]	[NT]	23/01/2020	[NT]
Naphthalene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Acenaphthylene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	86	[NT]
Phenanthrene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Anthracene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Pyrene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012/017	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012/017	<0.05	[NT]	[NT]	[NT]	[NT]	82	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012/017	91	[NT]	[NT]	[NT]	[NT]	95	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	[NT]
Date prepared	-			23/01/2020	[NT]	[NT]	[NT]	[NT]	23/01/2020	[NT]
Date analysed	-			23/01/2020	[NT]	[NT]	[NT]	[NT]	23/01/2020	[NT]
Arsenic	mg/kg	4	Metals-020	<4	[NT]	[NT]	[NT]	[NT]	106	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	[NT]	[NT]	[NT]	[NT]	108	[NT]
Chromium	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	111	[NT]
Copper	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	110	[NT]
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	110	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Nickel	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Zinc	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	112	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Asbestos: A portion of the supplied samples were sub-sampled for asbestos analysis according to Envirolab procedures.
We cannot guarantee that these sub-samples are indicative of the entire sample.
Envirolab recommends supplying 40-50g of sample in its own container.
Note: Samples requested for asbestos testing were sub-sampled from jars provided by the client.

Douglas Partners
Geotechnics | Environment | Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No:	99538.01	**Suburb:**	Paddington	**To:**	EnviroLab
Project Name:	Contamination Investigation	**Order Number**			12 Ashley Street, Chatswood 2067
Project Manager:	David Holden	**Sampler:**		**Attn:**	Aileen Hie
Emails:	joel.james-hall@douglaspartners.com.au; david.holden@douglaspartners.com			**Phone:**	(02) 9910 6200
Date Required:	Same day ☑ 24 hours ☐ 48 hours ☐ 72 hours ☐ Standard ☑			**Email:**	Ahie@envirolab.com.au
Prior Storage:	☑ Esky ☑ Fridge ☐ Shelved	Do samples contain 'potential' HBM?	Yes ☐ No ☑ (If YES, then handle, transport and store in accordance with FPM HAZID)		

Sample ID	Lab ID	Date Sampled	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Combo 8a	Combo 3a	Combo 3	ASS Screening						Notes/preservation
BH6/0.4-0.5	1		S	G		x								
BH6/2.4-2.5	2		S	G			x							
BH7/0-0.1	3		S	G		x								
BH6/2.4-2.5	4		S	P				x						
BH6/3.9-4.0	5		S	P				x						
BH6/4-4.45	6		S	P				x						
BH7/1.4-1.5	7		S	P				x						
BH7/3.0-3.0	8		S	P				x						
BH7/5-5.1	9		S	P				x						
PQL (S) mg/kg														**ANZECC PQLs req'd for all water analytes** ☐

Envirolab Services
ENVIROLAB
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200
Job No: ~~235051~~ 235041
Date Received: 22/1/20
Time Received: 1346
Received by: CM
Temp: ~~Cool~~/Ambient
Cooling: Ice/Icepack
Security: ~~Intact/Broken~~/None

PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit

Metals to Analyse: 8HM unless specified here: 8HM ~~plus aluminium and iron~~

Lab Report/Reference No:

Total number of samples in container:

Relinquished by: JSH

Transported to laboratory by:

Send Results to: Douglas Partners Pty Ltd

Address:

Phone: **Fax:**

Signed:

Received by: EM Sydney CLAIRE MCCABE

Date & Time: 22/1/20 1346.

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

CERTIFICATE OF ANALYSIS 235041-A

Client Details

Client	Douglas Partners Pty Ltd
Attention	David Holden
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**99538.01, Paddington**
Number of Samples	9 Soil
Date samples received	22/01/2020
Date completed instructions received	28/01/2020

Analysis Details

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

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

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

Report Details

Date results requested by	04/02/2020
Date of Issue	31/01/2020

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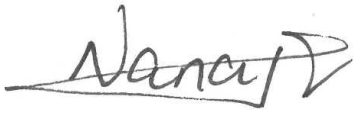
Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Josh Williams, Senior Chemist
Loren Bardwell, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

PAHs in TCLP (USEPA 1311)				
Our Reference		235041-A-1	235041-A-2	235041-A-3
Your Reference	UNITS	BH6/0.4-0.5	BH6/2.4-2.5	BH7/0-0.1
Type of sample		Soil	Soil	Soil
Date extracted	-	30/01/2020	30/01/2020	30/01/2020
Date analysed	-	30/01/2020	30/01/2020	30/01/2020
Naphthalene in TCLP	mg/L	<0.001	0.007	<0.001
Acenaphthylene in TCLP	mg/L	<0.001	0.001	<0.001
Acenaphthene in TCLP	mg/L	<0.001	<0.001	<0.001
Fluorene in TCLP	mg/L	<0.001	<0.001	<0.001
Phenanthrene in TCLP	mg/L	<0.001	0.002	<0.001
Anthracene in TCLP	mg/L	<0.001	<0.001	<0.001
Fluoranthene in TCLP	mg/L	<0.001	<0.001	<0.001
Pyrene in TCLP	mg/L	<0.001	<0.001	<0.001
Benzo(a)anthracene in TCLP	mg/L	<0.001	<0.001	<0.001
Chrysene in TCLP	mg/L	<0.001	<0.001	<0.001
Benzo(bjk)fluoranthene in TCLP	mg/L	<0.002	<0.002	<0.002
Benzo(a)pyrene in TCLP	mg/L	<0.001	<0.001	<0.001
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	<0.001	<0.001	<0.001
Dibenzo(a,h)anthracene in TCLP	mg/L	<0.001	<0.001	<0.001
Benzo(g,h,i)perylene in TCLP	mg/L	<0.001	<0.001	<0.001
Total +ve PAH's	mg/L	NIL (+)VE	0.0096	NIL (+)VE
Surrogate p-Terphenyl-d14	%	74	61	79

Metals in TCLP USEPA1311				
Our Reference		235041-A-1	235041-A-2	235041-A-3
Your Reference	UNITS	BH6/0.4-0.5	BH6/2.4-2.5	BH7/0-0.1
Type of sample		Soil	Soil	Soil
Date extracted	-	29/01/2020	29/01/2020	29/01/2020
Date analysed	-	29/01/2020	29/01/2020	29/01/2020
pH of soil for fluid# determ.	pH units	8.6	9.4	7.0
pH of soil TCLP (after HCl)	pH units	1.8	2.0	1.7
Extraction fluid used	-	1	1	1
pH of final Leachate	pH units	5.0	5.4	5.0
Lead in TCLP	mg/L	0.2	1.6	<0.03

Method ID	Methodology Summary
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP) using Zero Headspace Extraction (zHE) using AS4439 and USEPA 1311.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using in house method INORG-004. Please note that the mass used may be scaled down from the default based on sample mass available.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Org-012/017	Leachates are extracted with Dichloromethane and analysed by GC-MS and/or GC-MS/MS.

QUALITY CONTROL: PAHs in TCLP (USEPA 1311)					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			30/01/2020	[NT]	[NT]	[NT]	[NT]	30/01/2020	[NT]
Date analysed	-			30/01/2020	[NT]	[NT]	[NT]	[NT]	30/01/2020	[NT]
Naphthalene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	108	[NT]
Acenaphthylene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	96	[NT]
Phenanthrene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	92	[NT]
Anthracene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	94	[NT]
Pyrene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	98	[NT]
Benzo(a)anthracene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	116	[NT]
Benzo(bjk)fluoranthene in TCLP	mg/L	0.002	Org-012/017	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	104	[NT]
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012/017	86	[NT]	[NT]	[NT]	[NT]	76	[NT]

QUALITY CONTROL: Metals in TCLP USEPA1311						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			29/01/2020	[NT]	[NT]	[NT]	[NT]	29/01/2020	[NT]
Date analysed	-			29/01/2020	[NT]	[NT]	[NT]	[NT]	29/01/2020	[NT]
Lead in TCLP	mg/L	0.03	Metals-020 ICP-AES	<0.03	[NT]	[NT]	[NT]	[NT]	99	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Andrew (Fitzy) Fitzsimons

From: Simon Song
Sent: Tuesday, 28 January 2020 10:52 AM
To: Andrew (Fitzy) Fitzsimons
Subject: FW: 235041, 99538.01 Paddington- Additional TCLP

'A' pls

Ref: 235041-A
TAT: Std
Due: 4/2/20

Kind Regards,

Simon Song | Customer Service | Envirolab Services Pty Ltd

Great Science. Great Service.
12 Ashley Street Chatswood NSW 2067
T 612 9910 6200 **F** 612 9910 6201
E ssong@envirolab.com.au | **W** www.envirolab.com.au

New sampling bottle provision now available for PFAS and SVOCs in water samples

Please note that all samples submitted to the Envirolab Group laboratories will be analysed under the Envirolab Group Terms and Conditions. The Terms and Conditions are accessible by clicking this link

From: David Holden [mailto:David.Holden@douglaspartners.com.au]
Sent: Sunday, 26 January 2020 1:58 PM
To: Simon Song <SSong@envirolab.com.au>
Cc: Joel James-Hall <joel.james-hall@douglaspartners.com.au>
Subject: 235041, 99538.01 Paddington- Additional TCLP

Hi Simon,

Could you please undertake additional TCLP analysis on the following samples for job 235041, 99538.01 Paddington.

Sample 235041-1 (BH6/0.4-0.5) : TCLP- PAH and lead
Sample 235041-2 (BH6/2.4-2.5) : TCLP- PAH and lead
Sample 235041-3 (BH7/0-0.1): TCLP- PAH and lead

Standard TAT is fine.

Thanks

Dave

David Holden | Environmental Scientist
Douglas Partners Pty Ltd | ABN 75 053 980 117 | www.douglaspartners.com.au
96 Hermitage Road West Ryde NSW 2114 | PO Box 472 West Ryde NSW 1685
P: 02 8878 0652 | M: 0414 768 997 | E: David.Holden@douglaspartners.com.au

FINANCIAL REVIEW
CLIENT CHOICE AWARDS 2019
WINNER beaton

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

CERTIFICATE OF ANALYSIS 235370

Client Details

Client	Douglas Partners Pty Ltd
Attention	David Holden, Joel James-Hall
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**99538.01, Paddington**
Number of Samples	3 Soil
Date samples received	28/01/2020
Date completed instructions received	28/01/2020

Analysis Details

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

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

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

Report Details

Date results requested by	04/02/2020
Date of Issue	03/02/2020

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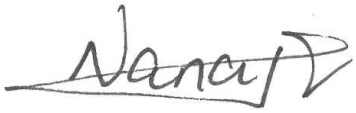
Results Approved By
Jaimie Loa-Kum-Cheung, Metals Supervisor
Loren Bardwell, Senior Chemist
Steven Luong, Organics Supervisor

Authorised By



Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil				
Our Reference		235370-1	235370-2	235370-3
Your Reference	UNITS	BH6	BH7	BH7
Depth		3.9-4.0	2.9-3.0	3.9-4.0
Date Sampled		15/01/2020	15/01/2020	15/01/2020
Type of sample		Soil	Soil	Soil
Date extracted	-	29/01/2020	29/01/2020	29/01/2020
Date analysed	-	31/01/2020	31/01/2020	31/01/2020
TRH C_6 - C_9	mg/kg	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	102	103	106

svTRH (C10-C40) in Soil				
Our Reference		235370-1	235370-2	235370-3
Your Reference	UNITS	BH6	BH7	BH7
Depth		3.9-4.0	2.9-3.0	3.9-4.0
Date Sampled		15/01/2020	15/01/2020	15/01/2020
Type of sample		Soil	Soil	Soil
Date extracted	-	29/01/2020	29/01/2020	29/01/2020
Date analysed	-	01/02/2020	01/02/2020	01/02/2020
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50
Surrogate o-Terphenyl	%	73	75	73

PAHs in Soil				
Our Reference		235370-1	235370-2	235370-3
Your Reference	UNITS	BH6	BH7	BH7
Depth		3.9-4.0	2.9-3.0	3.9-4.0
Date Sampled		15/01/2020	15/01/2020	15/01/2020
Type of sample		Soil	Soil	Soil
Date extracted	-	29/01/2020	29/01/2020	29/01/2020
Date analysed	-	30/01/2020	30/01/2020	30/01/2020
Naphthalene	mg/kg	0.2	0.4	<0.1
Acenaphthylene	mg/kg	0.2	0.6	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	0.3	<0.1
Phenanthrene	mg/kg	1.1	3.8	<0.1
Anthracene	mg/kg	0.3	0.9	<0.1
Fluoranthene	mg/kg	1.6	4.3	<0.1
Pyrene	mg/kg	1.6	3.9	<0.1
Benzo(a)anthracene	mg/kg	0.9	2.2	<0.1
Chrysene	mg/kg	1.1	2.2	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	1	2.7	<0.2
Benzo(a)pyrene	mg/kg	0.78	1.8	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	0.4	0.9	<0.1
Dibenzo(a,h)anthracene	mg/kg	0.1	0.3	<0.1
Benzo(g,h,i)perylene	mg/kg	0.4	1.1	<0.1
Total +ve PAH's	mg/kg	10	26	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	1.1	2.8	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	1.1	2.8	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	1.1	2.8	<0.5
Surrogate p-Terphenyl-d14	%	82	90	81

Acid Extractable metals in soil				
Our Reference		235370-1	235370-2	235370-3
Your Reference	UNITS	BH6	BH7	BH7
Depth		3.9-4.0	2.9-3.0	3.9-4.0
Date Sampled		15/01/2020	15/01/2020	15/01/2020
Type of sample		Soil	Soil	Soil
Date prepared	-	29/01/2020	29/01/2020	29/01/2020
Date analysed	-	29/01/2020	29/01/2020	29/01/2020
Arsenic	mg/kg	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4
Chromium	mg/kg	2	6	<1
Copper	mg/kg	4	42	4
Lead	mg/kg	88	260	90
Mercury	mg/kg	0.1	0.6	<0.1
Nickel	mg/kg	<1	2	<1
Zinc	mg/kg	19	150	20

Moisture				
Our Reference		235370-1	235370-2	235370-3
Your Reference	UNITS	BH6	BH7	BH7
Depth		3.9-4.0	2.9-3.0	3.9-4.0
Date Sampled		15/01/2020	15/01/2020	15/01/2020
Type of sample		Soil	Soil	Soil
Date prepared	-	29/01/2020	29/01/2020	29/01/2020
Date analysed	-	30/01/2020	30/01/2020	30/01/2020
Moisture	%	10	8.1	1.7

Method ID	Methodology Summary
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-012/017	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.

Method ID	Methodology Summary
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-13	[NT]
Date extracted	-			29/01/2020	[NT]	[NT]	[NT]	[NT]	29/01/2020	[NT]
Date analysed	-			31/01/2020	[NT]	[NT]	[NT]	[NT]	31/01/2020	[NT]
TRH C_6 - C_9	mg/kg	25	Org-016	<25	[NT]	[NT]	[NT]	[NT]	111	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-016	<25	[NT]	[NT]	[NT]	[NT]	111	[NT]
Benzene	mg/kg	0.2	Org-016	<0.2	[NT]	[NT]	[NT]	[NT]	118	[NT]
Toluene	mg/kg	0.5	Org-016	<0.5	[NT]	[NT]	[NT]	[NT]	116	[NT]
Ethylbenzene	mg/kg	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	105	[NT]
m+p-xylene	mg/kg	2	Org-016	<2	[NT]	[NT]	[NT]	[NT]	108	[NT]
o-Xylene	mg/kg	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	107	[NT]
naphthalene	mg/kg	1	Org-014	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	103	[NT]	[NT]	[NT]	[NT]	110	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-13	[NT]
Date extracted	-			29/01/2020	[NT]	[NT]	[NT]	[NT]	29/01/2020	[NT]
Date analysed	-			01/02/2020	[NT]	[NT]	[NT]	[NT]	01/02/2020	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	100	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	102	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	108	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	100	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	102	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	108	[NT]
Surrogate o-Terphenyl	%		Org-003	74	[NT]	[NT]	[NT]	[NT]	84	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-13	[NT]
Date extracted	-			29/01/2020	[NT]	[NT]	[NT]	[NT]	29/01/2020	[NT]
Date analysed	-			30/01/2020	[NT]	[NT]	[NT]	[NT]	30/01/2020	[NT]
Naphthalene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Acenaphthylene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Phenanthrene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Anthracene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Pyrene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	116	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012/017	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012/017	<0.05	[NT]	[NT]	[NT]	[NT]	108	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012/017	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012/017	90	[NT]	[NT]	[NT]	[NT]	90	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-13	[NT]
Date prepared	-			29/01/2020	[NT]	[NT]	[NT]	[NT]	29/01/2020	[NT]
Date analysed	-			29/01/2020	[NT]	[NT]	[NT]	[NT]	29/01/2020	[NT]
Arsenic	mg/kg	4	Metals-020	<4	[NT]	[NT]	[NT]	[NT]	101	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	[NT]	[NT]	[NT]	[NT]	93	[NT]
Chromium	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	103	[NT]
Copper	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Nickel	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Zinc	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No: 99538.01	**Suburb:** Paddington	**To:** Envirolab Services	
Project Name: Contamination Investigation	**Order Number**		
Project Manager: DIH	**Sampler:** KR	**Attn:** Aileen Hie	
Emails: david.holden@douglaspartners.com.au ; joel.james-hall@...		**Phone:**	
Date Required: Standard		**Email:**	
Prior Storage: Esky	Do samples contain 'potential' HBM? Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)		

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, B-Bag)	Analytes: Combo 3									Notes/preservation
BH6/3.9-4.0	1	15.1.20	S	G	x									
BH7/2.9-3.0	2	15.1.20	S	G	x									
BH7/3.9-4.0	3	15.1.20	S	G	x									

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

Job No: 235370
Date Received: 28/1/20
Time Received: 1210
Received by: SO
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: ~~Intact/Broken/None~~

PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No:

Total number of samples in container:	**Relinquished by:** DIH	**Transported to laboratory by:**	~~BONDS~~
Send Results to: Douglas Partners Pty Ltd	**Address:**	**Phone:**	**Fax:**
Signed:	**Received by:** Susan Day ES&S Syd	**Date & Time:** 1210	28/1/20

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

CERTIFICATE OF ANALYSIS 235370-A

Client Details

Client	Douglas Partners Pty Ltd
Attention	David Holden
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**99538.01, Paddington**
Number of Samples	3 Soil
Date samples received	28/01/2020
Date completed instructions received	03/02/2020

Analysis Details

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

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

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

Report Details

Date results requested by	10/02/2020
Date of Issue	07/02/2020

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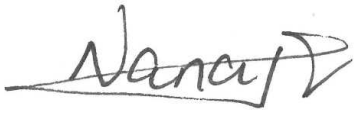
Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Jaimie Loa-Kum-Cheung, Metals Supervisor
Josh Williams, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

PAHs in TCLP (USEPA 1311)		
Our Reference		235370-A-2
Your Reference	UNITS	BH7
Depth		2.9-3.0
Date Sampled		15/01/2020
Type of sample		Soil
Date extracted	-	04/02/2020
Date analysed	-	04/02/2020
Naphthalene in TCLP	mg/L	<0.001
Acenaphthylene in TCLP	mg/L	0.001
Acenaphthene in TCLP	mg/L	<0.001
Fluorene in TCLP	mg/L	<0.001
Phenanthrene in TCLP	mg/L	0.002
Anthracene in TCLP	mg/L	<0.001
Fluoranthene in TCLP	mg/L	<0.001
Pyrene in TCLP	mg/L	<0.001
Benzo(a)anthracene in TCLP	mg/L	<0.001
Chrysene in TCLP	mg/L	<0.001
Benzo(bjk)fluoranthene in TCLP	mg/L	<0.002
Benzo(a)pyrene in TCLP	mg/L	<0.001
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	<0.001
Dibenzo(a,h)anthracene in TCLP	mg/L	<0.001
Benzo(g,h,i)perylene in TCLP	mg/L	<0.001
Total +ve PAH's	mg/L	0.0027
Surrogate p-Terphenyl-d14	%	79

Metals in TCLP USEPA1311		
Our Reference		235370-A-2
Your Reference	UNITS	BH7
Depth		2.9-3.0
Date Sampled		15/01/2020
Type of sample		Soil
Date extracted	-	05/02/2020
Date analysed	-	05/02/2020
pH of soil for fluid# determ.	pH units	9.2
pH of soil TCLP (after HCl)	pH units	1.9
Extraction fluid used	-	1
pH of final Leachate	pH units	5.5
Lead in TCLP	mg/L	0.72

Method ID	Methodology Summary
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP) using Zero Headspace Extraction (zHE) using AS4439 and USEPA 1311.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using in house method INORG-004. Please note that the mass used may be scaled down from the default based on sample mass available.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Org-012/017	Leachates are extracted with Dichloromethane and analysed by GC-MS and/or GC-MS/MS.

QUALITY CONTROL: PAHs in TCLP (USEPA 1311)					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			04/02/2020	[NT]	[NT]	[NT]	[NT]	04/02/2020	[NT]
Date analysed	-			04/02/2020	[NT]	[NT]	[NT]	[NT]	04/02/2020	[NT]
Naphthalene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	124	[NT]
Acenaphthylene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	98	[NT]
Phenanthrene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	102	[NT]
Anthracene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	100	[NT]
Pyrene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	106	[NT]
Benzo(a)anthracene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	120	[NT]
Benzo(bjk)fluoranthene in TCLP	mg/L	0.002	Org-012/017	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	64	[NT]
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene in TCLP	mg/L	0.001	Org-012/017	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012/017	78	[NT]	[NT]	[NT]	[NT]	87	[NT]

QUALITY CONTROL: Metals in TCLP USEPA1311						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			05/02/2020	[NT]	[NT]	[NT]	[NT]	05/02/2020	[NT]
Date analysed	-			05/02/2020	[NT]	[NT]	[NT]	[NT]	05/02/2020	[NT]
Lead in TCLP	mg/L	0.03	Metals-020 ICP-AES	<0.03	[NT]	[NT]	[NT]	[NT]	110	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Andrew (Fitzy) Fitzsimons

From: David Holden <David.Holden@douglaspartners.com.au>
Sent: Monday, 3 February 2020 6:06 PM
To: Customer Service
Subject: FW: 235370 99538.01, Paddington- TCLP Analysis

Follow Up Flag: Follow up
Flag Status: Flagged

Ref: 235370-A
TAT: Std
Due: 10/2/20

From: David Holden
Sent: Monday, 3 February 2020 6:04 PM
To: 'Simon Song'
Cc: Joel James-Hall
Subject: 235370 99538.01, Paddington- TCLP Analysis

Hi Simon,

Could you please undertake TCLP analysis on the following sample for job 235370 99538.01, Paddington.

Sample 235370-2 (BH7/2.9-3.0): TCLP- PAH, lead.

Could I please get this leached ASAP. Analysis and reporting on standard TAT is fine.

Thanks

Dave

David Holden | Environmental Scientist
Douglas Partners Pty Ltd | ABN 75 053 980 117 | www.douglaspartners.com.au
96 Hermitage Road West Ryde NSW 2114 | PO Box 472 West Ryde NSW 1685
P: 02 8878 0652 | M: 0414 768 997 | E: David.Holden@douglaspartners.com.au

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Appendix F

Site Assessment Criteria

Site Assessment Criteria

S1. Soil Investigation Levels

S1.1 Health Investigation Levels

The Health Investigation Levels (HIL) and Health Screening Levels (HSL) are scientifically-based, generic assessment criteria designed to be used in the first stage (Tier 1) of an assessment of potential human health risk from chronic exposure to contaminants.

HIL are applicable to assessing health risk arising *via* all relevant pathways of exposure for a range of metals and organic substances. The HIL are generic to all soil types and apply generally to a depth of 3 m below the surface. Site-specific conditions may determine the depth to which HILs apply for other land uses.

HSL are applicable to selected petroleum compounds and fractions to assess the risk to human health via inhalation and direct contact pathways. HSL have been developed for different land uses, soil types and depths to contamination.

The generic HIL and HSL are considered to be appropriate for the assessment of contamination at the site. Given the proposed land use for a recreational facility as a part of secondary school grounds and based on the CSM the adopted HIL and HSL are:

- **HIL-C; and**
- **HSL-A/B**

Health screening levels for the vapour intrusion pathway have been conservatively adopted.

Table H1 shows the HILs that have been adopted by NEPC (2013) Schedule B1, Table 1A(1). Table S1 only includes contaminants to be analysed during the further investigations, not the full list provided in NEPC (2013).

Table S1: Health Investigation Levels

Contaminant	HIL C – Recreational & Public Open Space (mg/kg)
Metals and Inorganics	
Arsenic	300
Cadmium	90
Chromium (IV)	300
Copper	17,000
Lead	600
Mercury (inorganic)	80
Nickel	1,200
Zinc	30,000
PAH	
Carcinogenic PAH (as benzo(a)pyrene TEQ) [1]	3
Total PAH	300
Phenols	
Pentachlorophenol (used as an initial screen)	120
OCP	
DDT + DDD + DDE	400
Aldrin + Dieldrin	10
Chlordane	70
Endosulfan (total)	340
Endrin	20
Hepatchlor	10
HCB	10
Methoxychlor	400
Other Pesticides	
Chlorpyrifos	250
Other Organics	
PCB [2]	1

Notes:

1 sum of carcinogenic PAH

2 non dioxin-like PCBs only.

Table S2 shows petroleum hydrocarbon compounds adopted from NEPC (2013) Schedule B1, Table 1A(3). The HSLs are based on overlying soil type and depth. HSLs for sand have been used based on the sandy clay fill material encountered at the site in the previous boreholes. Given the general depth of fill encountered in the investigation during the intrusive works, and using the most conservative values, the depth range of 0 m to <1 m has been used.

Table S2: Soil Health Screening Levels for Vapour Intrusion

Contaminant	Soil Type	HSL A & HSL B (mg/kg)
		Depth 0 m to <1m
Toluene	Sand	160
Ethylbenzene		55
Xylenes		40
Naphthalene		3
Benzene		0.5
TRH C_6-C_{10} less BTEX [F1]		45
TRH >C_{10}-C_{16} less naphthalene [F2]		110

Table S3 shows the health screening levels for direct contact adopted from the Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC CARE) Technical Report no.10 (Friebel and Nadebaum 2011), in accordance with NEPC (2013).

Table S3: Soil Health Screening Levels for Direct Contact (mg/kg)

Contaminant	HIL C – Recreational & Public Open Space (mg/kg)
Toluene	18,000
Ethylbenzene	5,300
Xylenes	15,000
Napthalene	1,900
Benzene	120
C6-C10	5,100
>C6-C16	3,800
>C16-C34	5,300
>C34-C40	7,400

S1.2 Ecological Investigation and Screening Levels

Ecological Investigation Levels (EIL) have been derived for selected metals and organic compounds and are applicable for assessing risk to terrestrial ecosystems (NEPC, 2013). EIL depend on specific soil physiochemical properties and land use scenarios and generally apply to the top 2 m of soil, which corresponds to the root zone and habitation zone of many species. The EIL is determined for a contaminant based on the sum of the ambient background concentration (ABC) and an added contaminant limit (ACL). The ABC of a contaminant is the soil concentration in a specific locality that is the sum of naturally occurring background levels and the contaminants levels that have been introduced from diffuse or non-point sources (e.g. motor vehicle emissions). The ACL is the added concentration (above the ABC) of a contaminant above which further appropriate investigation and evaluation of the impact on ecological values is required.

The EIL is calculated using the following formula:

EIL = ABC + ACL

The ABC is determined through direct measurement at an appropriate reference site (preferred) or through the use of methods defined by Olszowy et al *Trace element concentrations in soils from rural and urban areas of Australia*, Contaminated Sites monograph no. 4, South Australian Health Commission, Adelaide, Australia 1995 (Olszowy, 1995) or Hamon et al, *Geochemical indices allow estimation of heavy metal background concentrations in soils*, Global Biogeochemical Cycles, vol. 18, GB1014, (Hamon, 2004). ACL is based on the soil characteristics of pH, CEC and clay content.

EIL (and ACLs where appropriate) have been derived in NEPC (2013) for only a short list of contaminants comprising As, Cu, Cr (III), DDT, naphthalene, Ni, Pb and Zn. An *Interactive (Excel) Calculation Spreadsheet* may be used for calculating site-specific EIL for these contaminants, and has been provided in the ASC NEPM Toolbox available on the SCEW (Standing Council on Environment and Water) website (http://www.scew.gov.au/node/941).

The adopted EIL, derived from the *Interactive (Excel) Calculation Spreadsheet* are shown in the following Table S4. The following site specific data and assumptions have been used to determine the EILs:

- The EILs will apply to the top 2 m of the soil profile;
- Given the likely source of soil contaminants (i.e., historical site use/fill) the contamination is considered as “aged” (>2 years); and
- ABCs have been derived using the *Interactive (Excel) Calculation Spreadsheet* using input parameters of aged soil, CEC of 18.7 $cmol_c/kg$ and pH of 8.7 with high traffic and clay content of 1%.

Table S4: Ecological Investigation Levels (EIL) in mg/kg

Analyte		EIL Urban residential and public open space	Comments
Metals	Arsenic	100	Adopted averaged pH of 8.2 and CEC of 18.3 $cmol_c/kg$ (refer Appendix E); approximate clay content 25% (refer to borehole logs, Appendix G), high traffic area (NSW).
	Chromium III	200	
	Copper	330	
	Lead	1,100	
	Nickel	260	
	Zinc	780	
PAH	Naphthalene	170	
OCP	DDT	180	

Ecological Screening Levels (ESL) are used to assess the risk of selected petroleum hydrocarbon compounds, BTEX and benzo(a)pyrene to terrestrial ecosystems. ESL apply to the top 2 m of the soil profile as for EIL.

ESL have been derived in NEPC (2013) for petroleum fractions F1 to F4 as well as BTEX and Benzo(a)pyrene. Site specific data and assumptions as summarised in Table S5 have been used to determine the ESL. The more conservative soil type of coarse sand has been adopted. The adopted ESL, from Table 1B(6), Schedule B1 of NEPC (2013) are shown in Table S6.

Table S5: Inputs to the Derivation of ESL

Variable	Input	Rationale
Depth of ESL application	Top 2 m of the soil profile	The top 0 -1 m depth below ground level corresponds to the root zone and habitation zone of many species.
Land use	Range of uses	Recreational
Soil Texture	Coarse	Based on most conservative findings noted in test bore logs

Table S6: Ecological Screening Levels (ESL) in mg/kg

Analyte		ESL (Residential and open space)	Comments
TRH	C6 – C10 (less BTEX) [F1]	180*	All ESLs are low reliability apart from those marked with * which are moderate reliability
	>C10-C16 (less Naphthalene) [F2]	120*	
	>C16-C34 [F3]	300	
	>C34-C40 [F4]	2,800	
BTEX	Benzene	50	
	Toluene	85	
	Ethylbenzene	70	
	Xylenes	105	
PAH	Benzo(a)pyrene	0.7	

In addition, given the low reliability of the benzo(a)pyrene ESL in NEPC (2013) reference has been made to Table 11 of the CRC Care Technical Report No.39 *Risk-Based Remediation Guidance for Benzo(a)pyrene* March 2017 (CRC, 2017). CRC (2017) indicates a high reliability ecological guideline for fresh B(a)P of 33 mg/kg (and range of 21 mg/kg to 135 mg/kg).

S1.3 Management Limits

NEPC (2013) Table 1B(7) provides 'management limits' for TRH fractions, which are applied after consideration of relevant HSLs. The management limits have been adopted to avoid or minimise the following potential effects of petroleum hydrocarbons:

- Formation of non-aqueous phase liquids (LNAPL);
- Fire and explosive hazards; and
- Effects on buried infrastructure e.g., penetration of, or damage to, in-ground services by hydrocarbons.

The presence of site TRH contamination at the levels of the management limits does not imply that there is no need for administrative notification or controls in accordance with jurisdictional requirements. The adopted management limits are shown in Table S6 and have been selected based on the CSM.

Management limits for coarse material are presented in Table S6, since variable clay textures were encountered in the fill samples collected, and coarse texture management limits are more conservative of the two management limits available.

Table S7: Management Limits for TRH Fractions in Soil

TRH Fraction	Soil Texture	Management Limits: Residential, parkland and public open space (mg/kg)
C_6-C_{10} [F1]	Coarse	700
>C_{10}-C_{16} [F2]	Coarse	1,000
>C_{16}-C_{34} [F3]	Coarse	2,500
>C_{34}-C_{40} [F4]	Coarse	10,000

S1.4 Asbestos in Soil

Bonded asbestos-containing material (ACM) is the most common form of asbestos contamination across Australia, generally arising from:

- Inadequate removal and disposal practices during demolition of buildings containing asbestos products;
- Widespread dumping of asbestos products and asbestos containing fill on vacant land and development sites;
- Commonly occurring in historical fill containing unsorted demolition materials; and
- Importation of asbestos contaminated building products from China.

Mining, manufacturing or distribution of asbestos products may result in sites being contaminated by friable asbestos including free fibres. Severe weathering or damage to bonded ACM may also result in the formation of friable asbestos comprising fibrous asbestos (FA) and / or asbestos fines (AF).

Asbestos only poses a risk to human health when asbestos fibres are made airborne and inhaled. If asbestos is bound in a matrix such as cement or resin, it is not readily made airborne except through substantial physical damage. Bonded ACM in sound condition represents a low human health risk, whilst both FA and AF materials have the potential to generate, or be associated with, free asbestos fibres. Consequently, FA and AF must be carefully managed to prevent the release of asbestos fibres into the air.

The SAC to be adopted for the assessment of asbestos in the initial further investigation is no asbestos detected at the laboratory reporting limit of 0.1 g/kg.

Appendix G

Borehole Logs

Sampling Methods

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Sampling

Sampling is carried out during drilling or test pitting to allow engineering examination (and laboratory testing where required) of the soil or rock.

Disturbed samples taken during drilling provide information on colour, type, inclusions and, depending upon the degree of disturbance, some information on strength and structure.

Undisturbed samples are taken by pushing a thin-walled sample tube into the soil and withdrawing it to obtain a sample of the soil in a relatively undisturbed state. Such samples yield information on structure and strength, and are necessary for laboratory determination of shear strength and compressibility. Undisturbed sampling is generally effective only in cohesive soils.

Test Pits

Test pits are usually excavated with a backhoe or an excavator, allowing close examination of the in-situ soil if it is safe to enter into the pit. The depth of excavation is limited to about 3 m for a backhoe and up to 6 m for a large excavator. A potential disadvantage of this investigation method is the larger area of disturbance to the site.

Large Diameter Augers

Boreholes can be drilled using a rotating plate or short spiral auger, generally 300 mm or larger in diameter commonly mounted on a standard piling rig. The cuttings are returned to the surface at intervals (generally not more than 0.5 m) and are disturbed but usually unchanged in moisture content. Identification of soil strata is generally much more reliable than with continuous spiral flight augers, and is usually supplemented by occasional undisturbed tube samples.

Continuous Spiral Flight Augers

The borehole is advanced using 90-115 mm diameter continuous spiral flight augers which are withdrawn at intervals to allow sampling or in-situ testing. This is a relatively economical means of drilling in clays and sands above the water table. Samples are returned to the surface, or may be collected after withdrawal of the auger flights, but they are disturbed and may be mixed with soils from the sides of the hole. Information from the drilling (as distinct from specific sampling by SPTs or undisturbed samples) is of relatively low reliability, due to the remoulding, possible mixing or softening of samples by groundwater.

Non-core Rotary Drilling

The borehole is advanced using a rotary bit, with water or drilling mud being pumped down the drill rods and returned up the annulus, carrying the drill cuttings. Only major changes in stratification can be determined from the cuttings, together with some information from the rate of penetration. Where drilling mud is used this can mask the cuttings and reliable identification is only possible from separate sampling such as SPTs.

Continuous Core Drilling

A continuous core sample can be obtained using a diamond tipped core barrel, usually with a 50 mm internal diameter. Provided full core recovery is achieved (which is not always possible in weak rocks and granular soils), this technique provides a very reliable method of investigation.

Standard Penetration Tests

Standard penetration tests (SPT) are used as a means of estimating the density or strength of soils and also of obtaining a relatively undisturbed sample. The test procedure is described in Australian Standard 1289, Methods of Testing Soils for Engineering Purposes - Test 6.3.1.

The test is carried out in a borehole by driving a 50 mm diameter split sample tube under the impact of a 63 kg hammer with a free fall of 760 mm. It is normal for the tube to be driven in three successive 150 mm increments and the 'N' value is taken as the number of blows for the last 300 mm. In dense sands, very hard clays or weak rock, the full 450 mm penetration may not be practicable and the test is discontinued.

The test results are reported in the following form.

- In the case where full penetration is obtained with successive blow counts for each 150 mm of, say, 4, 6 and 7 as:

  4,6,7
  N=13

- In the case where the test is discontinued before the full penetration depth, say after 15 blows for the first 150 mm and 30 blows for the next 40 mm as:

  15, 30/40 mm

The results of the SPT tests can be related empirically to the engineering properties of the soils.

Dynamic Cone Penetrometer Tests / Perth Sand Penetrometer Tests

Dynamic penetrometer tests (DCP or PSP) are carried out by driving a steel rod into the ground using a standard weight of hammer falling a specified distance. As the rod penetrates the soil the number of blows required to penetrate each successive 150 mm depth are recorded. Normally there is a depth limitation of 1.2 m, but this may be extended in certain conditions by the use of extension rods. Two types of penetrometer are commonly used.

- Perth sand penetrometer - a 16 mm diameter flat ended rod is driven using a 9 kg hammer dropping 600 mm (AS 1289, Test 6.3.3). This test was developed for testing the density of sands and is mainly used in granular soils and filling.
- Cone penetrometer - a 16 mm diameter rod with a 20 mm diameter cone end is driven using a 9 kg hammer dropping 510 mm (AS 1289, Test 6.3.2). This test was developed initially for pavement subgrade investigations, and correlations of the test results with California Bearing Ratio have been published by various road authorities.

Description and Classification Methods

The methods of description and classification of soils and rocks used in this report are generally based on Australian Standard AS1726:2017, Geotechnical Site Investigations. In general, the descriptions include strength or density, colour, structure, soil or rock type and inclusions.

Soil Types

Soil types are described according to the predominant particle size, qualified by the grading of other particles present:

Type	Particle size (mm)
Boulder	>200
Cobble	63 - 200
Gravel	2.36 - 63
Sand	0.075 - 2.36
Silt	0.002 - 0.075
Clay	<0.002

The sand and gravel sizes can be further subdivided as follows:

Type	Particle size (mm)
Coarse gravel	19 - 63
Medium gravel	6.7 - 19
Fine gravel	2.36 – 6.7
Coarse sand	0.6 - 2.36
Medium sand	0.21 - 0.6
Fine sand	0.075 - 0.21

Definitions of grading terms used are:

- Well graded - a good representation of all particle sizes
- Poorly graded - an excess or deficiency of particular sizes within the specified range
- Uniformly graded - an excess of a particular particle size
- Gap graded - a deficiency of a particular particle size with the range

The proportions of secondary constituents of soils are described as follows:

In fine grained soils (>35% fines)

Term	Proportion of sand or gravel	Example
And	Specify	Clay (60%) and Sand (40%)
Adjective	>30%	Sandy Clay
With	15 – 30%	Clay with sand
Trace	0 - 15%	Clay with trace sand

In coarse grained soils (>65% coarse)
- with clays or silts

Term	Proportion of fines	Example
And	Specify	Sand (70%) and Clay (30%)
Adjective	>12%	Clayey Sand
With	5 - 12%	Sand with clay
Trace	0 - 5%	Sand with trace clay

In coarse grained soils (>65% coarse)
- with coarser fraction

Term	Proportion of coarser fraction	Example
And	Specify	Sand (60%) and Gravel (40%)
Adjective	>30%	Gravelly Sand
With	15 - 30%	Sand with gravel
Trace	0 - 15%	Sand with trace gravel

The presence of cobbles and boulders shall be specifically noted by beginning the description with ‘Mix of Soil and Cobbles/Boulders’ with the word order indicating the dominant first and the proportion of cobbles and boulders described together.

Soil Descriptions

Cohesive Soils

Cohesive soils, such as clays, are classified on the basis of undrained shear strength. The strength may be measured by laboratory testing, or estimated by field tests or engineering examination. The strength terms are defined as follows:

Description	Abbreviation	Undrained shear strength (kPa)
Very soft	VS	<12
Soft	S	12 - 25
Firm	F	25 - 50
Stiff	St	50 - 100
Very stiff	VSt	100 - 200
Hard	H	>200
Friable	Fr	-

Cohesionless Soils

Cohesionless soils, such as clean sands, are classified on the basis of relative density, generally from the results of standard penetration tests (SPT), cone penetration tests (CPT) or dynamic penetrometers (PSP). The relative density terms are given below:

Relative Density	Abbreviation	Density Index (%)
Very loose	VL	<15
Loose	L	15-35
Medium dense	MD	35-65
Dense	D	65-85
Very dense	VD	>85

Soil Origin

It is often difficult to accurately determine the origin of a soil. Soils can generally be classified as:

- Residual soil - derived from in-situ weathering of the underlying rock;
- Extremely weathered material – formed from in-situ weathering of geological formations. Has soil strength but retains the structure or fabric of the parent rock;
- Alluvial soil – deposited by streams and rivers;
- Estuarine soil – deposited in coastal estuaries;
- Marine soil – deposited in a marine environment;
- Lacustrine soil – deposited in freshwater lakes;
- Aeolian soil – carried and deposited by wind;
- Colluvial soil – soil and rock debris transported down slopes by gravity;
- Topsoil – mantle of surface soil, often with high levels of organic material.
- Fill – any material which has been moved by man.

Moisture Condition – Coarse Grained Soils

For coarse grained soils the moisture condition should be described by appearance and feel using the following terms:

- Dry (D) Non-cohesive and free-running.
- Moist (M) Soil feels cool, darkened in colour.
  Soil tends to stick together.
  Sand forms weak ball but breaks easily.
- Wet (W) Soil feels cool, darkened in colour.
  Soil tends to stick together, free water forms when handling.

Moisture Condition – Fine Grained Soils

For fine grained soils the assessment of moisture content is relative to their plastic limit or liquid limit, as follows:

- ‘Moist, dry of plastic limit’ or ‘w <PL’ (i.e. hard and friable or powdery).
- ‘Moist, near plastic limit’ or ‘w ≈ PL (i.e. soil can be moulded at moisture content approximately equal to the plastic limit).
- ‘Moist, wet of plastic limit’ or ‘w >PL’ (i.e. soils usually weakened and free water forms on the hands when handling).
- ‘Wet’ or ‘w ≈LL’ (i.e. near the liquid limit).
- ‘Wet’ or ‘w >LL’ (i.e. wet of the liquid limit).

Rock Strength

Rock strength is defined by the Unconfined Compressive Strength and it refers to the strength of the rock substance and not the strength of the overall rock mass, which may be considerably weaker due to defects.

The Point Load Strength Index $Is_{(50)}$ is commonly used to provide an estimate of the rock strength and site specific correlations should be developed to allow UCS values to be determined. The point load strength test procedure is described by Australian Standard AS4133.4.1-2007. The terms used to describe rock strength are as follows:

Strength Term	Abbreviation	Unconfined Compressive Strength MPa	Point Load Index * $Is_{(50)}$ MPa
Very low	VL	0.6 - 2	0.03 - 0.1
Low	L	2 - 6	0.1 - 0.3
Medium	M	6 - 20	0.3 - 1.0
High	H	20 - 60	1 - 3
Very high	VH	60 - 200	3 - 10
Extremely high	EH	>200	>10

* Assumes a ratio of 20:1 for UCS to $Is_{(50)}$. It should be noted that the UCS to $Is_{(50)}$ ratio varies significantly for different rock types and specific ratios should be determined for each site.

Degree of Weathering

The degree of weathering of rock is classified as follows:

Term	Abbreviation	Description
Residual Soil	RS	Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are no longer visible, but the soil has not been significantly transported.
Extremely weathered	XW	Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are still visible
Highly weathered	HW	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable. Rock strength is significantly changed by weathering. Some primary minerals have weathered to clay minerals. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores.
Moderately weathered	MW	The whole of the rock material is discoloured , usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable, but shows little or no change of strength from fresh rock.
Slightly weathered	SW	Rock is partially discoloured with staining or bleaching along joints but shows little or no change of strength from fresh rock.
Fresh	FR	No signs of decomposition or staining.
Note: If HW and MW cannot be differentiated use DW (see below)		
Distinctly weathered	DW	Rock strength usually changed by weathering. The rock may be highly discoloured, usually by iron staining. Porosity may be increased by leaching or may be decreased due to deposition of weathered products in pores.

Rock Descriptions

Degree of Fracturing

The following classification applies to the spacing of natural fractures in diamond drill cores. It includes bedding plane partings, joints and other defects, but excludes drilling breaks.

Term	Description
Fragmented	Fragments of <20 mm
Highly Fractured	Core lengths of 20-40 mm with occasional fragments
Fractured	Core lengths of 30-100 mm with occasional shorter and longer sections
Slightly Fractured	Core lengths of 300 mm or longer with occasional sections of 100-300 mm
Unbroken	Core contains very few fractures

Rock Quality Designation

The quality of the cored rock can be measured using the Rock Quality Designation (RQD) index, defined as:

$$\text{RQD \%} = \frac{\text{cumulative length of 'sound' core sections} \geq \text{100 mm long}}{\text{total drilled length of section being assessed}}$$

where 'sound' rock is assessed to be rock of low strength or stronger. The RQD applies only to natural fractures. If the core is broken by drilling or handling (i.e. drilling breaks) then the broken pieces are fitted back together and are not included in the calculation of RQD.

Stratification Spacing

For sedimentary rocks the following terms may be used to describe the spacing of bedding partings:

Term	Separation of Stratification Planes
Thinly laminated	< 6 mm
Laminated	6 mm to 20 mm
Very thinly bedded	20 mm to 60 mm
Thinly bedded	60 mm to 0.2 m
Medium bedded	0.2 m to 0.6 m
Thickly bedded	0.6 m to 2 m
Very thickly bedded	> 2 m

Symbols & Abbreviations

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Introduction

These notes summarise abbreviations commonly used on borehole logs and test pit reports.

Drilling or Excavation Methods

C	Core drilling
R	Rotary drilling
SFA	Spiral flight augers
NMLC	Diamond core - 52 mm dia
NQ	Diamond core - 47 mm dia
HQ	Diamond core - 63 mm dia
PQ	Diamond core - 81 mm dia

Water

▷	Water seep
▽	Water level

Sampling and Testing

A	Auger sample
B	Bulk sample
D	Disturbed sample
E	Environmental sample
U_{50}	Undisturbed tube sample (50mm)
W	Water sample
pp	Pocket penetrometer (kPa)
PID	Photo ionisation detector
PL	Point load strength Is(50) MPa
S	Standard Penetration Test
V	Shear vane (kPa)

Description of Defects in Rock

The abbreviated descriptions of the defects should be in the following order: Depth, Type, Orientation, Coating, Shape, Roughness and Other. Drilling and handling breaks are not usually included on the logs.

Defect Type

B	Bedding plane
Cs	Clay seam
Cv	Cleavage
Cz	Crushed zone
Ds	Decomposed seam
F	Fault
J	Joint
Lam	Lamination
Pt	Parting
Sz	Sheared Zone
V	Vein

Orientation

The inclination of defects is always measured from the perpendicular to the core axis.

h	horizontal
v	vertical
sh	sub-horizontal
sv	sub-vertical

Coating or Infilling Term

cln	clean
co	coating
he	healed
inf	infilled
stn	stained
ti	tight
vn	veneer

Coating Descriptor

ca	calcite
cbs	carbonaceous
cly	clay
fe	iron oxide
mn	manganese
slt	silty

Shape

cu	curved
ir	irregular
pl	planar
st	stepped
un	undulating

Roughness

po	polished
ro	rough
sl	slickensided
sm	smooth
vr	very rough

Other

fg	fragmented
bnd	band
qtz	quartz

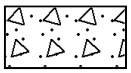
Symbols & Abbreviations

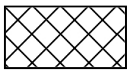
Graphic Symbols for Soil and Rock

General

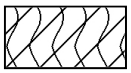
Asphalt

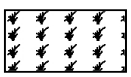
Road base

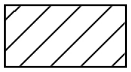

Concrete

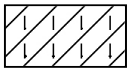

Filling

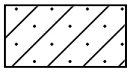
Soils


Topsoil

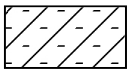

Peat

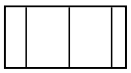

Clay

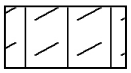

Silty clay

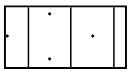

Sandy clay

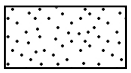
Gravelly clay

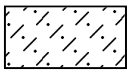

Shaly clay

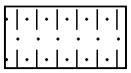

Silt


Clayey silt


Sandy silt

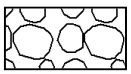

Sand

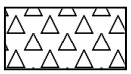

Clayey sand


Silty sand

Gravel

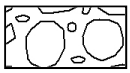
Sandy gravel


Cobbles, boulders

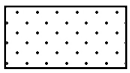

Talus

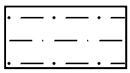
Sedimentary Rocks

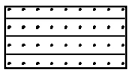
Boulder conglomerate

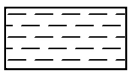

Conglomerate

Conglomeratic sandstone

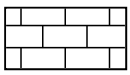

Sandstone


Siltstone

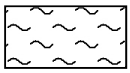

Laminite

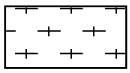

Mudstone, claystone, shale

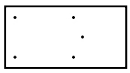
Coal


Limestone

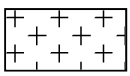
Metamorphic Rocks

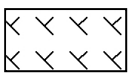

Slate, phyllite, schist

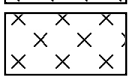

Gneiss

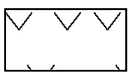

Quartzite

Igneous Rocks


Granite


Dolerite, basalt, andesite


Dacite, epidote


Tuff, breccia

Porphyry

BOREHOLE LOG

CLIENT: Sydney Grammar School
PROJECT: Grammar Edgecliff Sports Area
LOCATION: 11 Alma Street, Paddington

SURFACE LEVEL: 5.9 AHD
EASTING: 336157
NORTHING: 6249865
DIP/AZIMUTH: 90°/--

BORE No: BH1
PROJECT No: 99538.00
DATE: 19/12/2019
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.05	ASPHALTIC CONCRETE		A/E	0.0				Gatic flush with ground level Top Cap
	0.2	FILL/ROADBASE: grey, medium to coarse sand, angular to subangular igneous gravels, apparently well compacted, moist		A/E	0.2				Backfill Material (0.2-1.0m)
				A/E	0.5				
	1.2	FILL/SAND and GRAVEL: fine to medium, pale grey-brown, trace of brick fragments, charcoal, ash, clinker and organic matter, apparently poorly compacted, moist		S	1.0		6,3,2 N = 5		
		FILL/SAND : fine to medium grained, light brown, trace of concrete, ripped sandstone gravel, ash and charcoal, apparently poorly compacted, moist			1.45				Blank PVC Casing (0.2-3.0m) Bentonite Plug (1.0-2.5m)
				A/E	1.9 2.0				
				S	2.5		1,2,1 N = 3		
	2.8	FILL/SAND: fine to medium, brown, trace of indurated coffee sand, sandstone gravel, clinker and charcoal, loose, moist		A/E	2.95 3.0 3.1				
				A/E	3.9 4.0				
				S			1,0,1 N = 1		
	4.5	FILL/Clayey SAND: fine grained, low plasticity, grey, dark grey organic clay, trace sandstone gravel, clinker and charcoal, very loose to loose, wet			4.45				
	6.0	SAND SP: fine grained, grey, medium dense, alluvial, wet							
				S	7.5		2,3,5 N = 8		Gravel (2.5-11.7m) Slotted PVC Casing (3.0-11.7m)
		8.5m: becoming pale grey and dense, possibly aeolian			7.95				
	10.0								

RIG: Bobcat **DRILLER:** JE **LOGGED:** SI **CASING:** HQ to 8.0m

TYPE OF BORING: Solid flight auger (TC-bit) to 3.5m; Rotary (mud) to 12.0m

WATER OBSERVATIONS: Free groundwater observed at 3.0m whilst augering

REMARKS: Stand pipe installed to 11.7m (screen 11.7 to 3.0m, solid PVC 3.0 to 1.0m, gravel 11.7 to 2.5m, bentonite 1.0 to 2.5m, backfill to surface)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Sydney Grammar School
PROJECT: Grammar Edgecliff Sports Area
LOCATION: 11 Alma Street, Paddington

SURFACE LEVEL: 5.9 AHD
EASTING: 336157
NORTHING: 6249865
DIP/AZIMUTH: 90°/--

BORE No: BH1
PROJECT No: 99538.00
DATE: 19/12/2019
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
-5 / 11	11.1	SAND SP; fine grained pale grey, medium dense, possibly aeolian, wet							
		CLAY CI: medium plasticity, brown, with fine sand, w~PL, stiff, residual		S	11.0 11.45		2,4,6 N = 10		End Cap
-6 / 12	12.0	Bore discontinued at 12.0m							
-7 / 13									
-8 / 14									
-9 / 15									
-10 / 16									
-11 / 17									
-12 / 18									
-13 / 19									
-14									

RIG: Bobcat **DRILLER:** JE **LOGGED:** SI **CASING:** HQ to 8.0m

TYPE OF BORING: Solid flight auger (TC-bit) to 3.5m; Rotary (mud) to 12.0m

WATER OBSERVATIONS: Free groundwater observed at 3.0m whilst augering

REMARKS: Stand pipe installed to 11.7m (screen 11.7 to 3.0m, solid PVC 3.0 to 1.0m, gravel 11.7 to 2.5m, bentonite 1.0 to 2.5m, backfill to surface)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Sydney Grammar School
PROJECT: Grammar Edgecliff Sports Area
LOCATION: 11 Alma Street, Paddington

SURFACE LEVEL: 4.1 AHD
EASTING: 336199
NORTHING: 6249875
DIP/AZIMUTH: 90°/--

BORE No: BH2
PROJECT No: 99538.00
DATE: 19/12/2019
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.1	FIILL/TOPSOIL: grey-brown, silty sand, with rootlets		A/E	0.1–0.2				
	0.5	FILL/SAND: fine to medium, pale brown to brown, trace brick and concrete fragments, ash, slag and rootlets, apparently loose, dry		A/E	0.4–0.5				
		FILL/Sandy GRAVEL: fine grained, with clay, crushed sandstone gravel and cobbles, trace shale gravel, slag and rootlets, apparently poorly to moderately compacted, moist		A/E	0.9–1.0				
				S	1.0–1.45		5,2,4 N = 6		
				*A/E	1.9–2.0				
		2.4m: becoming wet							
	2.5	FIll/Clayey SAND: fine to medium grained, dark grey, with organic matter, trace ash, wet, very loose to loose, alluvial		S	2.5–2.95		0,0,1 N = 1		
	3.5	SAND: fine to medium, pale grey to grey, trace organic matter, loose, wet, alluvial		S	4.0–4.45		3,2,3 N = 5		
				S	5.5–5.95		1,2,1 N = 3		
	7.0	SAND: fine, pale grey brown, medium dense, wet , alluvial (possibly aeolian)		S	7.0–7.45		5,4,5 N = 9		
				S	8.5–8.95		6,7,7 N = 14		

RIG: Bobcat **DRILLER:** JE **LOGGED:** SI **CASING:** HQ to 8.0m

TYPE OF BORING: Solid flight auger to 3.5m; Rotary (mud) to 12.0m

WATER OBSERVATIONS: Free groundwater observed at 2.4m whilst augering

REMARKS: *BD219122019

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Sydney Grammar School
PROJECT: Grammar Edgecliff Sports Area
LOCATION: 11 Alma Street, Paddington

SURFACE LEVEL: 4.1 AHD
EASTING: 336199
NORTHING: 6249875
DIP/AZIMUTH: 90°/--

BORE No: BH2
PROJECT No: 99538.00
DATE: 19/12/2019
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
-6	10	SAND: fine, pale grey brown, medium dense, wet , alluvial (possibly aeolian) *(continued)*		S	10.0		8,12,11 N = 23		
					10.45				
-7	11								11
	11.7	Clay CI: medium plasticity, pale brown to brown, trace silt and fine sand, apparently stiff to very stiff, residual							
-8	12 12.0	Bore discontinued at 12.0m							12
-9	13								13
-10	14								14
-11	15								15
-12	16								16
-13	17								17
-14	18								18
-15	19								19

RIG: Bobcat **DRILLER:** JE **LOGGED:** SI **CASING:** HQ to 8.0m

TYPE OF BORING: Solid flight auger to 3.5m; Rotary (mud) to 12.0m

WATER OBSERVATIONS: Free groundwater observed at 2.4m whilst augering

REMARKS: *BD219122019

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Sydney Grammar School
PROJECT: Grammar Edgecliff Sports Area
LOCATION: 11 Alma Street, Paddington

SURFACE LEVEL: 4.1 AHD
EASTING: 336235
NORTHING: 6249860
DIP/AZIMUTH: 90°/--

BORE No: BH3
PROJECT No: 99538.00
DATE: 20/12/2019
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
4	0.1	FiLL/TOPSOIL : grey, silty sand, with rootlets		A/E	0.1–0.2				
		FILL/SAND: fine to medium grained, pale grey, with ripped sandstone gravel, dry, trace ash, apparently poorly compacted		*A/E	0.4–0.5				
	0.7	FILL/Silty CLAY: low plasticity, grey, with ripped shale gravel, w<PL, moderately compacted		A/E	0.9–1.0				
3	1			S			4,5,2 N = 7		1
	1.4	FILL/Clayey SAND: low plasticity, dark grey, with sandstone gravels and cobbles, apparently well compacted, w<PL, dry		A/E	1.45–1.6				
				A/E	1.9–2.0				
2	2.1	Clayey SAND SC: fine to medium grained, dark grey, with oraganic matter, trace sandstone gravel, wet, loose, alluvial (possibly fill)		S	2.5		3,2,3 N = 5		2
	3				2.95				3
1	3.62	SANDSTONE: medium grained, brown to dark brown, medium strength to high strength, moderately weathered, slightly fractured and unbroken, Hawkesbury Sandstone		C	3.62–3.75		PL(A) = 0.9		
0	4				4.6		PL(A) = 0.8		4
-1	5				5.4		PL(A) = 1.3		5
					5.8				
-2	6								6
	6.1	SANDSTONE: medium to coarse grained, pale grey, high strength, fresh, slightly fractured and unbroken, Hawkesbury Sandstone			6.1		PL(A) = 1.5		
-3	7			C	7.2		PL(A) = 1.8		7
	8				8.3		PL(A) = 1.7		8
-4					8.75				
-5	9			C	9.2		PL(A) = 2.1		9
	10.0								

RIG: Bobcat **DRILLER:** JE **LOGGED:** SI **CASING:** HQ to 3.8m

TYPE OF BORING: Solid flight auger (TC-bit) to 3.62m; NMLC Coring to 10.3m

WATER OBSERVATIONS: Free groundwater observed at 2.5m whilst augering

REMARKS: *BD320122019

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Sydney Grammar School
PROJECT: Grammar Edgecliff Sports Area
LOCATION: 11 Alma Street, Paddington

SURFACE LEVEL: 4.1 AHD
EASTING: 336235
NORTHING: 6249860
DIP/AZIMUTH: 90°/--

BORE No: BH3
PROJECT No: 99538.00
DATE: 20/12/2019
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
-6		SANDSTONE: as above		C	10.1		PL(A) = 1.5		
	10.3	Bore discontinued at 10.3m			10.3				
-7	11								
-8	12								
-9	13								
-10	14								
-11	15								
-12	16								
-13	17								
-14	18								
-15	19								

RIG: Bobcat **DRILLER:** JE **LOGGED:** SI **CASING:** HQ to 3.8m

TYPE OF BORING: Solid flight auger (TC-bit) to 3.62m; NMLC Coring to 10.3m

WATER OBSERVATIONS: Free groundwater observed at 2.5m whilst augering

REMARKS: *BD320122019

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Sydney Grammar School
PROJECT: Grammar Edgecliff Sports Area
LOCATION: 11 Alma Street, Paddington

SURFACE LEVEL: 6.2 AHD
EASTING: 336115
NORTHING: 6249834
DIP/AZIMUTH: 90°/--

BORE No: BH4
PROJECT No: 99538.00
DATE: 18/12/2019
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		FILL/SAND: fine to medium, pale grey to grey-brown, with ripped sandstone and brick gravel and cobbles, trace of decomposed organic matter and ash, dry, apparently moderately compacted to well compacted		A/E	0.1–0.2				
				A/E	0.4–0.5				
				A/E	0.9–1.0				
				S	1.0–1.45		6,6,10 N = 16		
				A/E	1.9–2.0				
		2.5m: becoming wet		S	2.5–2.95		5,5,13 N = 18		
				A/E	2.95–3.1				
	3.5	FILL/SAND: fine to medium, grey, trace of clay, sandstone gravel, clinker and organic matter, wet, very loose to loose, alluvial		A/E	3.9–4.0				
				S	4.0–4.45		0,0,1 N = 1		
	5.0	SAND: fine to medium, grey, trace of clay, wet, very loose to loose, alluvial		A/E	5.5–5.6				
		SAND: fine to medium, pale brown to pale grey, wet, dense, alluvial		S	7.0–7.45		12,16,25 N = 41		

RIG: Rig 16 **DRILLER:** BG **LOGGED:** SI **CASING:** HQ to 5.0m

TYPE OF BORING: Solid flight auger to 3.0m, Rotary to 12.0m

WATER OBSERVATIONS: Free groundwater observed at 3.5m

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
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BOREHOLE LOG

CLIENT: Sydney Grammar School
PROJECT: Grammar Edgecliff Sports Area
LOCATION: 11 Alma Street, Paddington

SURFACE LEVEL: 6.2 AHD
EASTING: 336115
NORTHING: 6249834
DIP/AZIMUTH: 90°/--

BORE No: BH4
PROJECT No: 99538.00
DATE: 18/12/2019
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
-4		SAND: fine to medium, pale brown to pale grey, wet, dense, alluvial *(continued)*							
-5	11			S	11.0		14,16,23 N = 39		
					11.45				
	12 12.0	Bore discontinued at 12.0m							
-6	13								
-7									
-8	14								
-9	15								
-10	16								
-11	17								
-12	18								
-13	19								

RIG: Rig 16 **DRILLER:** BG **LOGGED:** SI **CASING:** HQ to 5.0m

TYPE OF BORING: Solid flight auger to 3.0m, Rotary to 12.0m

WATER OBSERVATIONS: Free groundwater observed at 3.5m

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Sydney Grammar School
PROJECT: Grammar Edgecliff Sports Area
LOCATION: 11 Alma Street, Paddington

SURFACE LEVEL: 7.0 AHD
EASTING: 336220
NORTHING: 6249815
DIP/AZIMUTH: 90°/--

BORE No: BH5
PROJECT No: 99538.00
DATE: 18/12/2019
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
7	0.06	ASPHALTIC CONCRETE							
	0.2	ROADBASE GRAVEL: medium to coarse, angular to subangular gravel, apparently well compacted, dry		A/E	0.2				
				A/E	0.3 0.4				
		FILL/SAND: fine to medium, grey-brown to pale grey, with ripped sandstone gravel and cobbles, brick and aspahltic fagments, trace of ash, dry to moist, variably compacted			0.5				
6	1	0.6m: hydrocarbon odour		A/E	0.9 1.0				1
				S			0,0,1 N = 1		
					1.45				
				A/E	1.5 1.6				
5	2			A/E	1.9 2.0				2
				A/E	2.4 2.5				
	2.7	SAND: fine grained, pale grey brown, moist, very loose to loose, alluvial (possibly colluvial)		S			1,1,1 N = 2		
4	3				2.95				3
	3.5								
	3.57	SANDSTONE: medium grained, pale grey brown, low to medium strength, Hawkesbury Sandstone			3.57 3.7		PL(A) = 0.7		
3	4	SANDSTONE: medium grained, brown, medium strength, moderately weathered, slightly fractured, Hawkesbury Sandstone							4
	4.0	SANDSTONE: medium grained, pale grey, brown then pale grey, high strength, moderately weathered then fresh, slightly fractured and unbroken Hawkesbury Sandstone			4.65		PL(A) = 1.7		
2	5			C					5
					5.5		PL(A) = 1.1		
1	6								6
					6.3		PL(A) = 2		
					6.52				
0	7								7
					7.25		PL(A) = 2.1		
-1	8			C					8
					8.3		PL(A) = 2.1		
-2	9								9
					9.3		PL(A) = 2.2		
					9.58				
	10.0			C					

RIG: Bobcat **DRILLER:** JE **LOGGED:** SI **CASING:** HQ to 3.57m

TYPE OF BORING: Solid flight auger to 0.4m, diacore to 0.6m; NMLC Coring to 10.25m

WATER OBSERVATIONS: Free groundwater observed at 3.1m whilst augering

REMARKS: HC odour at 0.8m to 1.0m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Sydney Grammar School
PROJECT: Grammar Edgecliff Sports Area
LOCATION: 11 Alma Street, Paddington

SURFACE LEVEL: 7.0 AHD
EASTING: 336220
NORTHING: 6249815
DIP/AZIMUTH: 90°/--

BORE No: BH5
PROJECT No: 99538.00
DATE: 18/12/2019
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
-3		SANDSTONE: as above		C	10.15		PL(A) = 2.3		
		Bore discontinued at 10.25m			10.25				
-4	11								
-5	12								
-6	13								
-7	14								
-8	15								
-9	16								
-10	17								
-11	18								
-12	19								

RIG: Bobcat **DRILLER:** JE **LOGGED:** SI **CASING:** HQ to 3.57m

TYPE OF BORING: Solid flight auger to 0.4m, diacore to 0.6m; NMLC Coring to 10.25m

WATER OBSERVATIONS: Free groundwater observed at 3.1m whilst augering

REMARKS: HC odour at 0.8m to 1.0m

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Sydney Grammar School
PROJECT: Grammar Edgecliff Sports Area
LOCATION: 11 Alma Street, Paddington

SURFACE LEVEL: 6.3 AHD
EASTING: 336165
NORTHING: 6249825
DIP/AZIMUTH: 90°/--

BORE No: BH6
PROJECT No: 99538.00
DATE: 15/1/2020
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
	0.15	FILL/Silty SAND: fine to medium, dark brown with fine sandstone gravel, brick fragments, moist		*A/E	0.0 0.01				
	0.5	FILL/Clayey SAND: fine to medium, yellow-brown, with clay, moist, variably compacted		A/E	0.3 0.4				
	1.3	FILL/Silty SAND: fine to medium, brown, with fine sandstone gravel and cobble, moderately to well compacted, moist		A/E S	0.9 1.0		6,5,5 N = 10		
		FILL/Silty SAND: fine to medium, grey to brown, with clay, fine sandstone gravel, trace brick fragments, ash, clinker and decomposing organic matter, moist, apparently moderately to well compacted, burnt odour		A/E	1.4 1.45 1.5				
				A/E	1.9 2.0				
				A/E S	2.4 2.5		3,3,9 N = 12		
					2.95				
	3.5	SAND: fine to medium, dark grey and pale grey, trace silt, medium dense, moist, alluvial							
		4.0 m: becoming wet		A/E S	3.9 4.0		4,5,6 N = 11		
					4.45				
				S	7.0		5,8,12 N = 20		
					7.45				
	8.53	SANDSTONE: orange-brown, medium to coarse grained, moderately weathered, slightly fractured, medium strength with very to low strength bands, Hawkesbury Sandstone		C	8.53				

RIG: BG 17 **DRILLER:** BG **LOGGED:** KR **CASING:** HQ to 8.53 m

TYPE OF BORING: Solid flight auger to 4.0m, Rotary to 8.53 m; NMLC to 14.56 m

WATER OBSERVATIONS: Free groundwater observed at 4.0m whilst augering

REMARKS: *BD220200116

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Sydney Grammar School
PROJECT: Grammar Edgecliff Sports Area
LOCATION: 11 Alma Street, Paddington

SURFACE LEVEL: 6.3 AHD
EASTING: 336165
NORTHING: 6249825
DIP/AZIMUTH: 90°/--

BORE No: BH6
PROJECT No: 99538.00
DATE: 15/1/2020
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
-4		SANDSTONE: orange-brown, medium to coarse grained, moderately weathered, slightly fractured, medium strength with very to low strength bands, Hawkesbury Sandstone *(continued)*		C					
-5	10.97	SANDSTONE: medium to coarse grained, pale grey, fresh, unbroken, medium to high strength, Hawkesbury Sandstone			11.58				
-7				C					
-8	14.56	Bore discontinued at 14.56m			14.56				

RIG: BG 17 **DRILLER:** BG **LOGGED:** KR **CASING:** HQ to 8.53 m

TYPE OF BORING: Solid flight auger to 4.0m, Rotary to 8.53 m; NMLC to 14.56 m

WATER OBSERVATIONS: Free groundwater observed at 4.0m whilst augering

REMARKS: *BD220200116

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Sydney Grammar School
PROJECT: Grammar Edgecliff Sports Area
LOCATION: 11 Alma Street, Paddington

SURFACE LEVEL: 6.3 AHD
EASTING: 336179
NORTHING: 6249822
DIP/AZIMUTH: 90°/--

BORE No: BH7
PROJECT No: 99538.00
DATE: 15/1/2020
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		FILL/Silty SAND: fine to medium, brown, trace clay, fine sandstone gravel and brick fragments, moist, variably compacted		B	0.0				
				A/E	0.04				
					0.1				
				A/E	0.4				
	0.7				0.5				
		FILL/SAND: fine to medium, pale grey, with sandstone gravel and cobbles, trace silt and clay, moist, apparently moderately to well compacted		A/E	0.9				
					1.0				
				S			8,10,7 N = 17		
				A/E	1.4				
					1.45				
	1.7				1.5				
		FILL/SAND: fine to mediumm, brown, fine sandstone gravel, with, sandstone gravels and clay, trace glass fragment, ash and clinker, moist, apparently poorly to moderately compacted		A/E	1.9				
					2.0				
					2.5				
	2.7			S			2,2,2 N = 4		
		SAND SW: fine to medium, brown to pale grey, trace silt, clay and decomposing organic matter, moist, medium dense, alluvial (possibly fill)		A/E	2.9				
					2.95				
					3.0				
				A/E	3.9				
					4.0				
				S			3,5,5 N = 10		
	4.5				4.45				
		Silty SAND SM: fine to medium , dark brown to brown, wet, medium dense, alluvial		A	5.0				
					5.1				
				A	5.4				
	5.5				5.5				
		SAND SW: fine to medium, grey and brown, trace silt, wet, very loose to loose, alluvial		S			1,0,0 N = 0		
					5.95				
	6.61				6.61				
		SANDSTONE: medium to coarse grained, orange and brown, , medium to high strength, moderately weathered, slightly fractured, Hawkesbury Sandstone		C					
					7.9				
				C					
	9.1								
		SANDSTONE: medium to coarse grained, pale grey, high strength, fresh, slightly fractured to unbroken, Hawkesbury Sandstone							

RIG: BG 17 **DRILLER:** BG **LOGGED:** KR **CASING:** HQ to 6.61 m

TYPE OF BORING: Solid flight auger to 6.61 m; NMLC to 13.49 m

WATER OBSERVATIONS: Free groundwater observed at 3.9m whilst augering

REMARKS: *BD120200115

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Sydney Grammar School
PROJECT: Grammar Edgecliff Sports Area
LOCATION: 11 Alma Street, Paddington

SURFACE LEVEL: 6.3 AHD
EASTING: 336179
NORTHING: 6249822
DIP/AZIMUTH: 90°/--

BORE No: BH7
PROJECT No: 99538.00
DATE: 15/1/2020
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
-4	11	SANDSTONE: medium to coarse grained, pale grey, high strength, fresh, slightly fractured to unbroken, Hawkesbury Sandstone *(continued)*		C	10.51				
-5	12			C					
-6	13								
-7	13.49	Bore discontinued at 13.49m			13.49				
-8	14								
-9	15								
-10	16								
-11	17								
-12	18								
-13	19								

RIG: BG 17 **DRILLER:** BG **LOGGED:** KR **CASING:** HQ to 6.61 m

TYPE OF BORING: Solid flight auger to 6.61 m; NMLC to 13.49 m

WATER OBSERVATIONS: Free groundwater observed at 3.9m whilst augering

REMARKS: *BD120200115

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Appendix H

Summary Results

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Table H1a: Summary of Laboratory Results – Metals, TRH, BTEX, PAH

				Metals								TRH						BTEX				PAH			
				Arsenic	Cadmium	Total Chromium	Copper	Lead	Mercury (inorganic)	Nickel	Zinc	TRH C6 - C10	TRH >C10-C16	F1 ((C6-C10)-BTEX)	F2 (>C10-C16 less Naphthalene)	F3 (>C16-C34)	F4 (>C34-C40)	Benzene	Toluene	Ethylbenzene	Total Xylenes	Naphthalene [b]	Benzo(a)pyrene (BaP)	Benzo(a)pyrene TEQ	Total PAHs
			PQL	4	0.4	1	1	1	0.1	1	1	25	50	25	50	100	100	0.2	0.5	1	1	1	0.05	0.5	0.05
Sample ID	Depth	Material Type	Sampled Date	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
On-Site Samples																									
BH1	0.4-0.5	Fill	19/12/2019	<4	0.5	3	2700	270	0.2	29	400	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0.74	1.1	9.9
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC
BH1	1.9-2.0	Fill	19/12/2019	<4	<0.4	4	11	93	0.1	2	71	<25	<50	<25	<50	230	<100	<0.2	<0.5	<1	<1	<1	4.8	7	53
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC
BH1	3.0-3.1	Sand (pos. fill)	19/12/2019	<4	<0.4	7	29	120	0.4	3	89	<25	<50	<25	<50	140	<100	<0.2	<0.5	<1	<1	<1	3.7	5.3	37
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC
BH1	3.9-4.0	Sand (pos. fill)	19/12/2019	<4	<0.4	6	22	120	0.3	2	88	<25	<50	<25	<50	250	<100	<0.2	<0.5	<1	<1	<1	4.9	7.1	54
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC
BH2	0.1-0.2	Fill	19/12/2019	<4	<0.4	6	9	37	0.1	3	37	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0.4	0.5	4
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC
BH2	1.9-2.0	Fill	19/12/2019	<4	<0.4	6	34	130	0.5	3	71	<25	<50	<25	<50	250	100	<0.2	<0.5	<1	<1	<1	4.6	6.8	49
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC
BH4	0.4-0.5	Fill	18/12/2019	5	<0.4	10	49	370	0.7	5	210	<25	<50	<25	<50	320	140	<0.2	<0.5	<1	<1	<1	4.9	7.3	54
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC
BH4	1.9-2.0	Fill	18/12/2019	5	<0.4	32	50	290	0.6	4	220	<25	<50	<25	<50	360	130	<0.2	<0.5	<1	<1	<1	5.5	8	61
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC
BH4	5.5-5.6	Sand	18/12/2019	<4	<0.4	12	5	76	<0.1	3	15	<25	<50	<25	<50	100	<100	<0.2	<0.5	<1	<1	<1	0.79	1.2	11
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC
BH6	0.4-0.5	Fill	15/01/2020	<4	<0.4	10	10	130	0.3	2	68	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	1	1.6	18
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC
BH6	2.4-2.5	Fill	15/01/2020	<4	<0.4	10	21	380	0.5	2	92	<25	<50	<25	<50	380	<100	<0.2	<0.5	<1	<1	1.4	7.7	12	110
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC
BH6	3.9 - 4m	Sand	15/01/2020	<4	<0.4	2	4	88	0.1	<1	19	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0.78	1.1	10
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	110 180	440 120	NC 300	NC 2800	0.5 50	310 85	NL 70	95 105	NL 170	NC 0.7	3 NC	300 NC
BH7	0-0.1	Fill	15/01/2020	11	<0.4	13	31	120	1.3	11	170	<25	<50	<25	<50	110	<100	<0.2	<0.5	<1	<1	<1	1.3	2.1	14
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC
BH7	2.9 - 3m	Sand (pos. fill)	15/01/2020	<4	<0.4	6	42	260	0.6	2	150	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	1.8	2.8	26
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	110 180	440 120	NC 300	NC 2800	0.5 50	310 85	NL 70	95 105	NL 170	NC 0.7	3 NC	300 NC
BH7	3.9 - 4m	Sand (pos. fill)	15/01/2020	<4	<0.4	<1	4	90	<0.1	<1	20	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	<0.05	<0.5	<0.05
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	110 180	440 120	NC 300	NC 2800	0.5 50	310 85	NL 70	95 105	NL 170	NC 0.7	3 NC	300 NC
BD1/18122019	0.4-1.5	Fill	18/12/2019	4	<0.4	11	39	230	0.6	7	200	<25	<50	<25	<50	310	160	<0.2	<0.5	<1	<1	<1	3.2	4.9	35
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC
BD2/19122019	1.9-2.0	Fill	19/12/2019	<4	<0.4	7	23	130	0.4	2	65	<25	<50	<25	<50	220	<100	<0.2	<0.5	<1	<1	<1	4.4	6.5	50
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC
BH1/0.4-0.5 - [TRIPLICATE]	0.4-0.5	Fill	19/12/2019	<4	<0.4	5	120	500	0.2	21	390	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC
Off-Site Samples																									
BH3	0.9-1.0	Fill	20/12/2019	14	<0.4	7	60	29	0.2	7	110	<25	<50	<25	<50	110	<100	<0.2	<0.5	<1	<1	<1	1.3	1.9	14
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC
BH5	1.4-1.5	Fill	18/12/2019	9	0.7	7	190	410	0.5	3	420	<25	<50	<25	<50	110	<100	<0.2	<0.5	<1	<1	<1	1.5	2.2	16
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC
BH5	1.9-2.0	Fill	18/12/2019	6	0.4	10	250	2300	0.5	3	310	<25	<50	<25	<50	230	<100	<0.2	<0.5	<1	<1	<1	4.1	6.1	47
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC
BH5	2.4-2.5	Fill	18/12/2019	<4	<0.4	8	130	340	0.4	3	170	<25	<50	<25	<50	230	<100	<0.2	<0.5	<1	<1	<1	5.9	8.6	67
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC
BH5/1.4-1.5 - [TRIPLICATE]	1.4-1.5	Fill	18/12/2019	6	0.6	7	3100	340	0.7	3	340	NT	<50	NT	<50	200	<100	NT	NT	NT	NT	NT	NT	NT	NT
				300 100	90 NC	300 200	17000 230	600 1100	80 NC	1200 260	30000 780	NC NC	NC NC	45 180	110 120	NC 300	NC 2800	0.5 50	160 85	55 70	40 105	3 170	NC 0.7	3 NC	300 NC

Lab result
HIL/HSL value EIL/ESL value

HIL/HSL exceedance | EIL/ESL exceedance | HIL/HSL and EIL/ESL exceedance | ML exceedance | ML and HIL/HSL or EIL/ESL exceedance

Indicates that asbestos has been detected by the lab below the PQL, refer to the lab report **Blue** = DC exceedance

Bold = Lab detections NT = Not tested NL = Non limiting NC = No criteria NA = Not applicable NAD = No asbestos detected

Notes:

HIL/HSL/DC	NEPC, Schedule B1 - HIL C (Recreational / Open Space), HSL A/B (Residential / Low - High Density), DC HSL C (Reactional / Open Space)
EIL/ESL	NEPC, Schedule B1 - EIL UR/POS (Urban Residential and Public Open Space), ESL UR/POS (Urban Residential and Public Open Space)
ML	NEPC, Schedule B1 - ML R/P/POS (Residential, Parkland and Public Open Space)
a	QA/QC replicate of sample listed directly below the primary sample
b	reported naphthalene laboratory result obtained from BTEXN suite
c	criteria applies to DDT only

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Table H1b: Summary of Laboratory Results – Phenol, OCP, OPP, PCB, Asbestos

				Phenol	OCP												OPP	PCB	Asbestos		
				Phenol	DDT+DDE+DDD c	DDD	DDE	DDT	Aldrin & Dieldrin	Total Chlordane	Total Endosulfan	Endrin	Heptachlor	HCB	Methoxychlor	Chlorpyriphos	Total PCB	Asbestos ID in soil >0.1g/kg	Trace Analysis	Asbestos (50 g)
			PQL	5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1			
Sample ID	Depth	Material Type	Sampled Date	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-
On-Site Samples																				
BH1	0.4-0.5	Fill	19/12/2019	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BH1	1.9-2.0	Fill	19/12/2019	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BH1	3.0-3.1	Sand (pos. fill)	19/12/2019	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BH1	3.9-4.0	Sand (pos. fill)	19/12/2019	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BH2	0.1-0.2	Fill	19/12/2019	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BH2	1.9-2.0	Fill	19/12/2019	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BH4	0.4-0.5	Fill	18/12/2019	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BH4	1.9-2.0	Fill	18/12/2019	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BH4	5.5-5.6	Sand	18/12/2019	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BH6	0.4-0.5	Fill	15/01/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BH6	2.4-2.5	Fill	15/01/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BH6	3.9 - 4m	Sand	15/01/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BH7	0-0.1	Fill	15/01/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BH7	2.9 - 3m	Sand (pos. fill)	15/01/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BH7	3.9 - 4m	Sand (pos. fill)	15/01/2020	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BD1/18122019	0.4-1.5	Fill	18/12/2019	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BD2/19122019	1.9-2.0	Fill	19/12/2019	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BH1/0.4-0.5 - [TRIPLICATE]	0.4-0.5	Fill	19/12/2019	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
Off-Site Samples																				
BH3	0.9-1.0	Fill	20/12/2019	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BH5	1.4-1.5	Fill	18/12/2019	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NAD	NAD	NAD
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BH5	1.9-2.0	Fill	18/12/2019	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BH5	2.4-2.5	Fill	18/12/2019	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			
BH5/1.4-1.5 - [TRIPLICATE]	1.4-1.5	Fill	18/12/2019	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
				120 NC	400 180	NC NC	NC NC	NC 180	10 NC	70 NC	340 NC	20 NC	10 NC	10 NC	400 NC	250 NC	1 NC			

Lab result
HIL/HSL value EIL/ESL value

HIL/HSL exceedance EIL/ESL exceedance HIL/HSL and EIL/ESL exceedance ML exceedance ML and HIL/HSL or EIL/ESL exceedance

Indicates that asbestos has been detected by the lab below the PQL, refer to the lab report **Blue** = DC exceedance

Bold = Lab detections NT = Not tested NL = Non limiting NC = No criteria NA = Not applicable NAD = No asbestos detected

Notes:

HIL/HSL/DC	NEPC, Schedule B1 - HIL C (Recreational / Open Space), HSL A/B (Residential / Low - High Density), DC HSL B (Direct contact HSL C Recreational / Open Space)
EIL/ESL	NEPC, Schedule B1 - EIL UR/POS (Urban Residential and Public Open Space), ESL UR/POS (Urban Residential and Public Open Space)
ML	NEPC, Schedule B1 - ML R/P/POS (Residential, Parkland and Public Open Space)
a	QA/QC replicate of sample listed directly below the primary sample
b	reported naphthalene laboratory result obtained from BTEXN suite
c	criteria applies to DDT only

Table H2: Summary Acid Sulfate Soil Results

Sample ID	Sample Depth (m)	Summary Sample Description (refer to attached logs, Appendix G)	Date	Screening Resullts				Chromium Reducible Sulfur Results	
				pH_f	pH_{fox}	Change (pH_f-pH_{fox})	Strength of Reaction	Net Acidity (mol H+/tonne)	Chromium Reducible Sulfur (%w/w)
ASSMAC Action Criteria (Stone, Ahern and Blunden 1998)				≤4 [1] or >4 and <5.5 [2]	<3 [2] or 3 – 4 [2]	> 1 [2]	-	18 [3]	0.03 [3]
BH1	0.4-0.5	Fill, pale gre-brown sand and gravel	19/12/2019	5.6	4.9	0.7	Low reaction	-	-
BH1	0.9-1	Fill, pale gre-brown sand and gravel	19/12/2019	7.8	6.2	1.6	Low reaction	-	-
BH1	1.5-1.6	Fill, light brown sand	19/12/2019	7.7	5.6	2.1	Low reaction	-	-
BH1	1.9-2	Fill, light brown sand	19/12/2019	8.5	6.1	2.4	Low reaction	-	-
BH1	3-3.1	Brown sand (possible fill)	19/12/2019	7.8	4	3.8	Medium reaction	-	-
BH1	3.9-4	Dark grey clayey sand, wet (possible fill)	19/12/2019	7.6	5.1	2.5	Medium reaction	-	-
BH1	4-4.45	Dark grey clayey sand, wet (possible fill)	19/12/2019	5.9	3.3	2.6	High reaction	**20**	0.02
BH1	5.5-5.95	Dark grey clayey sand, wet (possible fill)	19/12/2019	6.7	3.2	3.5	Low reaction	11	0.02
BH1	7-7.45	Grey sand	19/12/2019	6.5	2.7	3.8	Low reaction	17	**0.03**
BH1	8.5-8.95	Grey sand	19/12/2019	7.9	7	0.9	Low reaction	-	-
BH1	10-10.45	Grey sand	19/12/2019	7	4.8	2.2	Low reaction	**-**	-
BH1	11.5-11.95	Brown clay with sand	19/12/2019	5.6	3.1	2.5	Low reaction	**26**	<0.005
BH2	0.4-0.5	Fill, pale brown sand	19/12/2019	6.8	4.9	1.9	High reaction	-	-
BH2	0.9-1	Fill, sandy gravel with clay	19/12/2019	7.7	6.3	1.4	Low reaction	-	-
BH2	1.9-2	Fill, sandy gravel with clay	19/12/2019	8	5.3	2.7	Low reaction	-	-
BH2	2.5-2.95	Dark grey clayey sand, wet (possible fill)	19/12/2019	6.5	1.9	4.6	High reaction	**130**	**0.21**
BH2	4-4.45	Pale grey to grey sand	19/12/2019	6.6	2	4.6	Low reaction	17	**0.03**
BH2	7-7.45	Pale grey brown sand	19/12/2019	7	5.3	1.7	Low reaction	-	-
BH2	8.5-8.95	Pale grey brown sand	19/12/2019	7.4	5.8	1.6	Low reaction	-	-
BH2	10-10.45	Pale grey brown sand	19/12/2019	7.1	5.8	1.3	Low reaction	-	-
BH6	2.4-2.5	Fill, grey to brown silty sand with clay	1/15/2020	8.3	6.7	1.6	High reaction	<5	<0.005
BH6	3.9-4.0	Dark grey and pale grey sand, trace silt	1/15/2020	8.5	6.6	1.9	Medium reaction	-	-
BH6	4-4.45	Dark grey and pale grey sand, trace silt	1/15/2020	7.9	6.3	1.6	Low reaction	-	-
BH7	1.4-1.5	Fill, pale grey sand	1/15/2020	8.3	7.1	1.2	High reaction	-	-
BH7	2.9-3.0	Brown to pale grey sand trace silt and clay (possible fill)	1/15/2020	7.5	6.5	1	Medium reaction	-	-
BH7	5-5.1	Dark brown to brown silty sand, wet	1/15/2020	7.7	6.6	1.1	High reaction	<5	<0.005

Notes:
pHf - non-oxidised pH
pHfox - oxidised pH
1 - Indicative value only for Actual Acid Sulfate Soil
2 - Indicative value only for Potential Acid Sulfate Soil
3 - Action criteria for coarse textured soils

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Table H3: Summary Waste Classification Assessment

			Metals							TRH		BTEX						PAH			Phenol	OCP		OPP	PCB	Asbestos		
			Arsenic	Cadmium	Total Chromium	Lead	TCLP Lead	Mercury (inorganic)	Nickel	TRH C6 - C9	C10-C36 recoverable hydrocarbons	Benzene	Toluene	Ethylbenzene	m+p-Xylene	o-Xylene	Xylenes (total)	Benzo(a)pyrene (BaP)	TCLP Benzo(a)pyrene (BaP)	Total PAHs	Phenol	Total Endosulfan	Total Analysed OCP	Total Analysed OPP	Total PCB	Asbestos ID in soil >0.1g/Kg	Trace Analysis	Total Asbestos
		PQL	4	0.4	1	1	0.03	0.1	1	25	50	0.2	0.5	1	2	1	3	0.05	0.001	0.05	5	0.1	0.1	0.1	0.1			
Sample ID	Depth	Sampled Date	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-
On-Site Samples																												
BH1	0.4-0.5	19/12/2019	<4	0.5	3	270	4.3	0.2	29	<25	<50	<0.2	<0.5	<1	<2	<1	<3	0.74	NT	9.9	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD
BH1	1.9-2.0	19/12/2019	<4	<0.4	4	93	NT	0.1	2	<25	260	<0.2	<0.5	<1	<2	<1	<3	4.8	<0.001	53	NT	NT	NT	NT	NT	NAD	NAD	NAD
BH1	3.0-3.1	19/12/2019	<4	<0.4	7	120	0.34	0.4	3	<25	<50	<0.2	<0.5	<1	<2	<1	<3	3.7	<0.001	37	NT	NT	NT	NT	NT	NT	NT	NT
BH1	3.9-4.0	19/12/2019	<4	<0.4	6	120	0.32	0.3	2	<25	280	<0.2	<0.5	<1	<2	<1	<3	4.9	<0.001	54	NT	NT	NT	NT	NT	NT	NT	NT
BH2	0.1-0.2	19/12/2019	<4	<0.4	6	37	NT	0.1	3	<25	<50	<0.2	<0.5	<1	<2	<1	<3	0.4	NT	4	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD
BH2	1.9-2.0	19/12/2019	<4	<0.4	6	130	0.2	0.5	3	<25	290	<0.2	<0.5	<1	<2	<1	<3	4.6	<0.001	49	NT	NT	NT	NT	NT	NAD	NAD	NAD
BD2/19122019	0m	19/12/2019	<4	<0.4	7	130	NT	0.4	2	<25	250	<0.2	<0.5	<1	<2	<1	<3	4.4	NT	50	NT	NT	NT	NT	NT	NT	NT	NT
BH4	0.4-0.5	18/12/2019	5	<0.4	10	370	1.4	0.7	5	<25	370	<0.2	<0.5	<1	<2	<1	<3	4.9	<0.001	54	<5	<0.1	<0.1	<0.1	<0.1	NAD	NAD	NAD
BD1/18122019	0m	18/12/2019	4	<0.4	11	230	NT	0.6	7	<25	370	<0.2	<0.5	<1	<2	<1	<3	3.2	NT	35	NT	NT	NT	NT	NT	NT	NT	NT
BH4	1.9-2.0	18/12/2019	5	<0.4	32	290	1.4	0.6	4	<25	420	<0.2	<0.5	<1	<2	<1	<3	5.5	<0.001	61	NT	NT	NT	NT	NT	NAD	NAD	NAD
BH4	5.5-5.6	18/12/2019	<4	<0.4	12	76	NT	<0.1	3	<25	<50	<0.2	<0.5	<1	<2	<1	<3	0.79	NT	11	NT	NT	NT	NT	NT	NT	NT	NT
BH6	0.4-0.5	15/01/2020	<4	<0.4	10	130	0.2	0.3	2	<25	<50	<0.2	<0.5	<1	<2	<1	<3	1	<0.001	18	NT	NT	NT	NT	NT	NAD	NAD	NAD
BH6	2.4-2.5	15/01/2020	<4	<0.4	10	380	1.6	0.5	2	<25	420	<0.2	<0.5	<1	<2	<1	<3	7.7	<0.001	110	NT	NT	NT	NT	NT	NT	NT	NT
BH6	3.9 - 4m	15/01/2020	<4	<0.4	2	88	NT	0.1	<1	<25	<50	<0.2	<0.5	<1	<2	<1	<3	0.78	NT	10	NT	NT	NT	NT	NT	NT	NT	NT
BH7	0-0.1	15/01/2020	11	<0.4	13	120	<0.03	1.3	11	<25	<50	<0.2	<0.5	<1	<2	<1	<3	1.3	<0.001	14	NT	NT	NT	NT	NT	NAD	NAD	NAD
BH7	2.9 - 3m	15/01/2020	<4	<0.4	6	260	0.72	0.6	2	<25	<50	<0.2	<0.5	<1	<2	<1	<3	1.8	<0.001	26	NT	NT	NT	NT	NT	NT	NT	NT
BH7	3.9 - 4m	15/01/2020	<4	<0.4	<1	90	NT	<0.1	<1	<25	<50	<0.2	<0.5	<1	<2	<1	<3	<0.05	NT	<0.05	NT	NT	NT	NT	NT	NT	NT	NT
BH1/0.4-0.5 - [TRIPLICATE]	0.4-0.5	19/12/2019	<4	<0.4	5	500	NT	0.2	21	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BH5/1.4-1.5 - [TRIPLICATE]	1.4-1.5	18/12/2019	6	0.6	7	340	NT	0.7	3	NT	140	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Off-Site Samples																												
BH3	0.9-1.0	20/12/2019	14	<0.4	7	29	NT	0.2	7	<25	<50	<0.2	<0.5	<1	<2	<1	<3	1.3	<0.001	14	NT	NT	NT	NT	NT	NAD	NAD	NAD
BH5	1.4-1.5	18/12/2019	9	0.7	7	410	NT	0.5	3	<25	<50	<0.2	<0.5	<1	<2	<1	<3	1.5	NT	16	NT	NT	NT	NT	NT	NAD	NAD	NAD
BH5	1.9-2.0	18/12/2019	6	0.4	10	2300	13	0.5	3	<25	260	<0.2	<0.5	<1	<2	<1	<3	4.1	<0.001	47	NT	NT	NT	NT	NT	NT	NT	NT
BH5	2.4-2.5	18/12/2019	<4	<0.4	8	340	4.4	0.4	3	<25	160	<0.2	<0.5	<1	<2	<1	<3	5.9	<0.001	67	NT	NT	NT	NT	NT	NT	NT	NT

Waste Classification Criteria																											
CT1 (mg/kg)	100	20	100	100	N/A	4	40	650	10000	10	288	600	N/A	N/A	1000	0.8	N/A	200	288	60	50	4	50	N/A	N/A	N/A
SCC1 (mg/kg)	500	100	1900	1500	N/A	50	1050	650	10000	18	518	1080	N/A	N/A	1800	10	N/A	200	518	108	50	7.5	50	N/A	N/A	N/A
TCLP1 (mg/L)	N/A	N/A	N/A	N/A	5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.04	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CT2 (mg/kg)	400	80	400	400	N/A	16	160	2600	40000	40	1152	2400	N/A	N/A	4000	3.2	N/A	800	1152	240	50	16	50	N/A	N/A	N/A
SCC2(mg/kg)	2000	400	7600	6000	N/A	200	4200	2600	40000	72	2073	4320	N/A	N/A	7200	23	N/A	800	2073	432	50	30	50	N/A	N/A	N/A
TCLP2 (mg/L)	N/A	N/A	N/A	N/A	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

CT1 exceedance TCLP1 and/or SCC1 exceedance CT2 exceedance TCLP2 and/or SCC2 exceedance Asbestos detection

NT = Not tested NC = No criteria AD = Asbestos detected NAD = No asbestos detected

Notes:

*	QA/QC replicate of sample listed directly below the primary sample
**	Total chromium used as initial screen for chromium(VI).
***	Total recoverable hydrocarbons (TRH) used as an initial screen for total petroleum hydrocarbons (TPH)
****	Criteria for scheduled chemicals used as an initial screen
*****	Criteria for Chlorpyrifos used as initial screen
PQL	Practical quantitation limit
CT1	NSW EPA, 2014, Waste Classification Guidelines Part 1; Classifying Waste, Maximum values of specific contaminant concentration (SCC) for classification without TCLP: General sol
SCC1	NSW EPA, 2014, Waste Classification Guidelines Part 1; Classifying Waste, Maximum values for leachable concentration (TCLP) and specific contaminant concentration (SCC) when
TCLP1	NSW EPA, 2014, Waste Classification Guidelines Part 1; Classifying Waste, Maximum values for leachable concentration (TCLP) and specific contaminant concentration (SCC) when
CT2	NSW EPA, 2014, Waste Classification Guidelines Part 1; Classifying Waste, Maximum values of specific contaminant concentration (SCC) for classification without TCLP: Restricted s
SCC2	NSW EPA, 2014, Waste Classification Guidelines Part 1; Classifying Waste, Maximum values for leachable concentration (TCLP) and specific contaminant concentration (SCC) when
TCLP2	NSW EPA, 2014, Waste Classification Guidelines Part 1; Classifying Waste, Maximum values for leachable concentration (TCLP) and specific contaminant concentration (SCC) when

UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	ProUCL 5.127/02/2020 3:17:58 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

F3

General Statistics

Total Number of Observations	22	Number of Distinct Observations	11
		Number of Missing Observations	0
Minimum	100	Mean	188.6
Maximum	380	Median	170
SD	94.53	Std. Error of Mean	20.15
Coefficient of Variation	0.501	Skewness	0.642

Normal GOF Test

Shapiro Wilk Test Statistic	0.843	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.911	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.252	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.184	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	223.3	95% Adjusted-CLT UCL (Chen-1995)	224.7
		95% Modified-t UCL (Johnson-1978)	223.8

Gamma GOF Test

A-D Test Statistic	1.465	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.747	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.262	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.186	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	4.364	k star (bias corrected MLE)	3.799
Theta hat (MLE)	43.23	Theta star (bias corrected MLE)	49.65
nu hat (MLE)	192	nu star (bias corrected)	167.2
MLE Mean (bias corrected)	188.6	MLE Sd (bias corrected)	96.78
		Approximate Chi Square Value (0.05)	138.3
Adjusted Level of Significance	0.0386	Adjusted Chi Square Value	136.3

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	228.1	95% Adjusted Gamma UCL (use when n<50)	231.3

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.836	**Shapiro Wilk Lognormal GOF Test**
5% Shapiro Wilk Critical Value	0.911	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.255	**Lilliefors Lognormal GOF Test**

55	5% Lilliefors Critical Value					0.184	Data Not Lognormal at 5% Significance Level					
56	**Data Not Lognormal at 5% Significance Level**											
57												
58	**Lognormal Statistics**											
59	Minimum of Logged Data					4.605	Mean of logged Data					5.121
60	Maximum of Logged Data					5.94	SD of logged Data					0.498
61												
62	**Assuming Lognormal Distribution**											
63	95% H-UCL					235.5	90% Chebyshev (MVUE) UCL					250.7
64	95% Chebyshev (MVUE) UCL					279	97.5% Chebyshev (MVUE) UCL					318.1
65	99% Chebyshev (MVUE) UCL					395.1						
66												
67	**Nonparametric Distribution Free UCL Statistics**											
68	**Data do not follow a Discernible Distribution (0.05)**											
69												
70	**Nonparametric Distribution Free UCLs**											
71	95% CLT UCL					221.8	95% Jackknife UCL					223.3
72	95% Standard Bootstrap UCL					220.6	95% Bootstrap-t UCL					226.9
73	95% Hall's Bootstrap UCL					224.1	95% Percentile Bootstrap UCL					221.4
74	95% BCA Bootstrap UCL					223.6						
75	90% Chebyshev(Mean, Sd) UCL					249.1	95% Chebyshev(Mean, Sd) UCL					276.5
76	97.5% Chebyshev(Mean, Sd) UCL					314.5	99% Chebyshev(Mean, Sd) UCL					389.2
77												
78	**Suggested UCL to Use**											
79	95% Student's-t UCL					223.3	or 95% Modified-t UCL					223.8
80												
81	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
82	Recommendations are based upon data size, data distribution, and skewness.											
83	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
84	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
85												
86												
87	**Lead**											
88												
89	**General Statistics**											
90	Total Number of Observations					23	Number of Distinct Observations					18
91							Number of Missing Observations					0
92	Minimum					29	Mean					298
93	Maximum					2300	Median					130
94	SD					456.4	Std. Error of Mean					95.17
95	Coefficient of Variation					1.532	Skewness					4.152
96												
97	**Normal GOF Test**											
98	Shapiro Wilk Test Statistic					0.473	**Shapiro Wilk GOF Test**					
99	5% Shapiro Wilk Critical Value					0.914	Data Not Normal at 5% Significance Level					
100	Lilliefors Test Statistic					0.316	**Lilliefors GOF Test**					
101	5% Lilliefors Critical Value					0.18	Data Not Normal at 5% Significance Level					
102	**Data Not Normal at 5% Significance Level**											
103												
104	**Assuming Normal Distribution**											
105	**95% Normal UCL**						**95% UCLs (Adjusted for Skewness)**					
106	95% Student's-t UCL					461.4	95% Adjusted-CLT UCL (Chen-1995)					542.5
107							95% Modified-t UCL (Johnson-1978)					475.1
108												

109	**Gamma GOF Test**											
110				A-D Test Statistic		1.067	**Anderson-Darling Gamma GOF Test**					
111				5% A-D Critical Value		0.767	Data Not Gamma Distributed at 5% Significance Level					
112				K-S Test Statistic		0.194	**Kolmogorov-Smirnov Gamma GOF Test**					
113				5% K-S Critical Value		0.186	Data Not Gamma Distributed at 5% Significance Level					
114	**Data Not Gamma Distributed at 5% Significance Level**											
115												
116	**Gamma Statistics**											
117				k hat (MLE)		1.138	k star (bias corrected MLE)					1.019
118				Theta hat (MLE)		261.8	Theta star (bias corrected MLE)					292.5
119				nu hat (MLE)		52.35	nu star (bias corrected)					46.86
120				MLE Mean (bias corrected)		298	MLE Sd (bias corrected)					295.2
121							Approximate Chi Square Value (0.05)					32.15
122				Adjusted Level of Significance		0.0389	Adjusted Chi Square Value					31.27
123												
124	**Assuming Gamma Distribution**											
125			95% Approximate Gamma UCL (use when n>=50))			434.3	95% Adjusted Gamma UCL (use when n<50)					446.5
126												
127	**Lognormal GOF Test**											
128				Shapiro Wilk Test Statistic		0.948	**Shapiro Wilk Lognormal GOF Test**					
129				5% Shapiro Wilk Critical Value		0.914	Data appear Lognormal at 5% Significance Level					
130				Lilliefors Test Statistic		0.159	**Lilliefors Lognormal GOF Test**					
131				5% Lilliefors Critical Value		0.18	Data appear Lognormal at 5% Significance Level					
132	**Data appear Lognormal at 5% Significance Level**											
133												
134	**Lognormal Statistics**											
135				Minimum of Logged Data		3.367	Mean of logged Data					5.197
136				Maximum of Logged Data		7.741	SD of logged Data					0.942
137												
138	**Assuming Lognormal Distribution**											
139				95% H-UCL		460.5	90% Chebyshev (MVUE) UCL					454.9
140				95% Chebyshev (MVUE) UCL		536.7	97.5% Chebyshev (MVUE) UCL					650.3
141				99% Chebyshev (MVUE) UCL		873.5						
142												
143	**Nonparametric Distribution Free UCL Statistics**											
144	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
145												
146	**Nonparametric Distribution Free UCLs**											
147				95% CLT UCL		454.5	95% Jackknife UCL					461.4
148				95% Standard Bootstrap UCL		453.9	95% Bootstrap-t UCL					747.6
149				95% Hall's Bootstrap UCL		1060	95% Percentile Bootstrap UCL					469.7
150				95% BCA Bootstrap UCL		595.4						
151				90% Chebyshev(Mean, Sd) UCL		583.5	95% Chebyshev(Mean, Sd) UCL					712.8
152				97.5% Chebyshev(Mean, Sd) UCL		892.3	99% Chebyshev(Mean, Sd) UCL					1245
153												
154	**Suggested UCL to Use**											
155				95% H-UCL		460.5						
156												
157	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
158	Recommendations are based upon data size, data distribution, and skewness.											
159	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
160	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
161												
162	**ProUCL computes and outputs H-statistic based UCLs for historical reasons only.**											

163	**H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.**											
164	**It is therefore recommended to avoid the use of H-statistic based 95% UCLs.**											
165	**Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.**											
166												
167												
168	**BAP TEQ**											
169												
170	**General Statistics**											
171						Total Number of Observations	21				Number of Distinct Observations	19	
172											Number of Missing Observations	0
173						Minimum	0.5				Mean	4.505
174						Maximum	12				Median	4.9
175						SD	3.271				Std. Error of Mean	0.714
176						Coefficient of Variation	0.726				Skewness	0.466
177												
178	**Normal GOF Test**											
179						Shapiro Wilk Test Statistic	0.91				**Shapiro Wilk GOF Test**	
180						5% Shapiro Wilk Critical Value	0.908				Data appear Normal at 5% Significance Level	
181						Lilliefors Test Statistic	0.188				**Lilliefors GOF Test**	
182						5% Lilliefors Critical Value	0.188				Data appear Normal at 5% Significance Level	
183	**Data appear Normal at 5% Significance Level**											
184												
185	**Assuming Normal Distribution**											
186	**95% Normal UCL**										**95% UCLs (Adjusted for Skewness)**	
187						95% Student's-t UCL	5.736				95% Adjusted-CLT UCL (Chen-1995)	5.756
188											95% Modified-t UCL (Johnson-1978)	5.748
189												
190	**Gamma GOF Test**											
191						A-D Test Statistic	0.727				**Anderson-Darling Gamma GOF Test**	
192						5% A-D Critical Value	0.758				Detected data appear Gamma Distributed at 5% Significance Level	
193						K-S Test Statistic	0.174				**Kolmogorov-Smirnov Gamma GOF Test**	
194						5% K-S Critical Value	0.193				Detected data appear Gamma Distributed at 5% Significance Level	
195	**Detected data appear Gamma Distributed at 5% Significance Level**											
196												
197	**Gamma Statistics**											
198						k hat (MLE)	1.548				k star (bias corrected MLE)	1.359
199						Theta hat (MLE)	2.909				Theta star (bias corrected MLE)	3.315
200						nu hat (MLE)	65.03				nu star (bias corrected)	57.07
201						MLE Mean (bias corrected)	4.505				MLE Sd (bias corrected)	3.864
202											Approximate Chi Square Value (0.05)	40.71
203						Adjusted Level of Significance	0.0383				Adjusted Chi Square Value	39.65
204												
205	**Assuming Gamma Distribution**											
206						95% Approximate Gamma UCL (use when n>=50))	6.316				95% Adjusted Gamma UCL (use when n<50)	6.485
207												
208	**Lognormal GOF Test**											
209						Shapiro Wilk Test Statistic	0.907				**Shapiro Wilk Lognormal GOF Test**	
210						5% Shapiro Wilk Critical Value	0.908				Data Not Lognormal at 5% Significance Level	
211						Lilliefors Test Statistic	0.2				**Lilliefors Lognormal GOF Test**	
212						5% Lilliefors Critical Value	0.188				Data Not Lognormal at 5% Significance Level	
213	**Data Not Lognormal at 5% Significance Level**											
214												
215	**Lognormal Statistics**											
216						Minimum of Logged Data	-0.693				Mean of logged Data	1.149

	A	B	C	D	E	F	G	H	I	J	K	L
217	Maximum of Logged Data					2.485	SD of logged Data					0.965
218												
219	**Assuming Lognormal Distribution**											
220	95% H-UCL					8.652	90% Chebyshev (MVUE) UCL					8.312
221	95% Chebyshev (MVUE) UCL					9.869	97.5% Chebyshev (MVUE) UCL					12.03
222	99% Chebyshev (MVUE) UCL					16.28						
223												
224	**Nonparametric Distribution Free UCL Statistics**											
225	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
226												
227	**Nonparametric Distribution Free UCLs**											
228	95% CLT UCL					5.679	95% Jackknife UCL					5.736
229	95% Standard Bootstrap UCL					5.663	95% Bootstrap-t UCL					5.813
230	95% Hall's Bootstrap UCL					5.814	95% Percentile Bootstrap UCL					5.657
231	95% BCA Bootstrap UCL					5.767						
232	90% Chebyshev(Mean, Sd) UCL					6.646	95% Chebyshev(Mean, Sd) UCL					7.616
233	97.5% Chebyshev(Mean, Sd) UCL					8.962	99% Chebyshev(Mean, Sd) UCL					11.61
234												
235	**Suggested UCL to Use**											
236	95% Student's-t UCL					5.736						
237												
238	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
239	Recommendations are based upon data size, data distribution, and skewness.											
240	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
241	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
242												