DEVELOPMENT APPLICATION
249/2020
Amended/Additional Information
Randwick City Council
13 August 2020
Records Received

REPORT TO

SYDNEY CATHOLIC SCHOOLS

C/- QUINN O'HANLON ARCHITECTS PTY LTD

ON

PRELIMINARY SITE INVESTIGATION

FOR

PROPOSED CHAMPAGNAT CATHOLIC COLLEGE

PAGEWOOD DEVELOPMENT – STAGE 3

AT

35 DONOVAN AVENUE, MAROUBRA, NSW

Date: 10 August 2020

Ref: E33356PDrpt

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DOCUMENT REVISION RECORD

Report Reference	Report Status	Report Date
E33356PDrpt	Final Report	10 August 2020

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Executive Summary

Quinn O'Hanlon Architects Pty Ltd on behalf of Sydney Catholic Schools ('the client') commissioned JK Environments (JKE) to undertake a Preliminary Site Investigation (PSI) for the proposed Champagnat Catholic College Stage 3 development at the Champagnat Catholic College, 35 Donovan Avenue, Maroubra, NSW ('the site'). The purpose of the investigation is to make a preliminary assessment of site contamination. The site location is shown on Figure 1 and the investigation was confined to the site boundaries as shown on Figure 2.

This report has been prepared to support the lodgement of a Development Application (DA) for the proposed Stage 3 development.

The primary aims of the PSI were to identify any past or present potentially contaminating activities at the site, identify the potential for site contamination, and make a preliminary assessment of the soil contamination conditions. The objectives were to:

- Provide an appraisal of the past site use(s) based on a review of historical records;
- Assess the current site conditions and use(s) via a site walkover inspection;
- Identify potential contamination sources/areas of environmental concern (AEC) and contaminants of potential concern (CoPC);
- Assess the soil contamination conditions via implementation of a preliminary sampling and analysis program;
- Prepare a conceptual site model (CSM);
- Assess the potential risks posed by contamination to the receptors identified in the CSM (Tier 1 assessment);
- Assess whether the site is suitable or can be made suitable for the proposed development (from a contamination viewpoint); and
- Assess whether further intrusive investigation and/or remediation is required.

The scope of work included the following:

- Review of site information, including background and site history information from various sources outlined in the report;
- Preparation of a CSM;
- Design and implementation of a sampling, analysis and quality plan (SAQP);
- Interpretation of the analytical results against the adopted Site Assessment Criteria (SAC);
- Data Quality Assessment; and
- Preparation of a report including a Tier 1 risk assessment.

Review of site history information identified that the site was vacant until approximately 1961 after which the site has been occupied as a school. Potential sources of contamination included the historical importation of fill soil, use of pesticides beneath/around the buildings and hazardous building material present in former/current buildings at the site.

Soil samples were collected from seven boreholes using hand tools advanced in accessible areas of the site. The boreholes generally encountered fill material to depths of between 0.3m and 1.5m. The fill typically comprised silty sand or silty gravelly sand with inclusions of igneous and sandstone gravel. Slag and building rubble (bricks, concrete, glass, tile fragments) were detected in some of the boreholes. Alluvial natural sandy soils were encountered beneath the fill in the majority of the boreholes.

A selection of soil samples were analysed for the CoPC identified in the CSM. All of the soil results were below the relevant SAC, therefore a source of contamination was not identified and the risk to the receptors was assessed to be low.

Based on the findings of the investigation, JKE are of the opinion that the site is suitable for the proposed development described in Section 1.1 and remediation is not considered necessary. We recommend that an Unexpected Finds Procedure (UFP) is prepared by a suitably qualified contaminated land consultant and implemented throughout the redevelopment.

The conclusions and recommendations should be read in conjunction with the limitations presented in the body of this report.

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Abbreviations

Asbestos Fines/Fibrous Asbestos	**AF/FA**
Ambient Background Concentrations	**ABC**
Added Contaminant Limits	**ACL**
Asbestos Containing Material	**ACM**
Australian Drinking Water Guidelines	**ADWG**
Area of Environmental Concern	**AEC**
Australian Height Datum	**AHD**
Acid Sulfate Soil	**ASS**
Above-Ground Storage Tank	**AST**
Below Ground Level	**BGL**
Benzo(a)pyrene Toxicity Equivalent Factor	**BaP TEQ**
Benzene, Toluene, Ethylbenzene, Xylene	**BTEX**
Cation Exchange Capacity	**CEC**
Contaminated Land Management	**CLM**
Contaminant(s) of Potential Concern	**CoPC**
Chain of Custody	**COC**
Conceptual Site Model	**CSM**
Development Application	**DA**
Dial Before You Dig	**DBYD**
Data Quality Indicator	**DQI**
Data Quality Objective	**DQO**
Detailed Site Investigation	**DSI**
Ecological Investigation Level	**EIL**
Ecological Screening Level	**ESL**
Environment Protection Authority	**EPA**
Environmental Site Assessment	**ESA**
Ecological Screening Level	**ESL**
Fibre Cement Fragment(s)	**FCF**
Health Investigation Level	**HILs**
Health Screening Level	**HSL**
International Organisation of Standardisation	**ISO**
JK Environments	**JKE**
Lab Control Spike	**LCS**
Map Grid of Australia	**MGA**
National Association of Testing Authorities	**NATA**
National Environmental Protection Measure	**NEPM**
Organochlorine Pesticides	**OCP**
Organophosphate Pesticides	**OPP**
Polycyclic Aromatic Hydrocarbons	**PAH**
Potential ASS	**PASS**
Polychlorinated Biphenyls	**PCBs**
Per-and Polyfluoroalkyl Substances	**PFAS**
Photo-ionisation Detector	**PID**
Protection of the Environment Operations	**POEO**
Practical Quantitation Limit	**PQL**
Quality Assurance	**QA**
Quality Control	**QC**
Remediation Action Plan	**RAP**
Relative Percentage Difference	**RPD**
Site Assessment Criteria	**SAC**
Sampling, Analysis and Quality Plan	**SAQP**
Site Specific Assessment	**SSA**
Source, Pathway, Receptor	**SPR**

Trip Blank	**TB**
Total Recoverable Hydrocarbons	**TRH**
Trip Spike	**TS**
Upper Confidence Limit	**UCL**
Underground Storage Tank	**UST**
Virgin Excavated Natural Material	**VENM**
Volatile Organic Compounds	**VOC**
Work Health and Safety	**WHS**

Units

Litres	**L**
Metres BGL	**mBGL**
Metres	**m**
Millilitres	**ml or mL**
micro Siemens per Centimetre	**µS/cm**
Micrograms per Litre	**µg/L**
Milligrams per Kilogram	**mg/kg**
Milligrams per Litre	**mg/L**
Parts Per Million	**ppm**
Percentage	**%**

1 INTRODUCTION

Quinn O'Hanlon Architects Pty Ltd on behalf of Sydney Catholic Schools ('the client') commissioned JK Environments (JKE) to undertake a Preliminary Site Investigation (PSI) for the proposed Champagnat Catholic College Stage 3 development at the Champagnat Catholic College, 35 Donovan Avenue, Maroubra, NSW ('the site'). The purpose of the investigation is to make a preliminary assessment of site contamination. The site location is shown on Figure 1 and the investigation was confined to the site boundaries as shown on Figure 2.

This report has been prepared to support the lodgement of a Development Application (DA) for the proposed Stage 3 development.

JKE (formerly Environmental Investigation Services - EIS) have previously undertaken a Preliminary Soil Contamination Screening for a portion of the site (Ref: E25509Krpt, dated March 2012). A summary of this information has been included in Section 2.

1.1 Proposed Development Details

The proposed Stage 3 development includes the demolition of building Block B and partial demolition of building Block E followed by the construction of a three-storey building in the place of Block B, reconfiguration of the sports court, tree removal and replacement, soft and hardstand landscaping, and installation of signage and fencing. Additionally, temporary demountable type buildings including a canteen, general learning area and water closets are proposed in the north-east section of the site.

Details regarding excavation have not been provided to JKE at the time of the PSI, however, we understand that excavation is anticipated for piling, installation of new underground services and regrading of the sports court.

Selected proposed development plans are attached in the appendices.

1.2 Aims and Objectives

The primary aims of the investigation were to identify any past or present potentially contaminating activities at the site, identify the potential for site contamination, and make a preliminary assessment of the soil contamination conditions. The objectives were to:

- Provide an appraisal of the past site use(s) based on a review of historical records;
- Assess the current site conditions and use(s) via a site walkover inspection;
- Identify potential contamination sources/areas of environmental concern (AEC) and contaminants of potential concern (CoPC);
- Assess the soil contamination conditions via implementation of a preliminary sampling and analysis program;
- Prepare a conceptual site model (CSM);
- Assess the potential risks posed by contamination to the receptors identified in the CSM (Tier 1 assessment);

- Assess whether the site is suitable or can be made suitable for the proposed development (from a contamination viewpoint); and
- Assess whether further intrusive investigation and/or remediation is required.

1.3 Scope of Work

The investigation was undertaken generally in accordance with a JKE proposal (Ref: EP52191PDK) of 8 July 2020 and written acceptance from the client of 10 July 2020. The scope of work included the following:

- Review of site information, including background and site history information from various sources outlined in the report;
- Preparation of a CSM;
- Design and implementation of a sampling, analysis and quality plan (SAQP);
- Interpretation of the analytical results against the adopted Site Assessment Criteria (SAC);
- Data Quality Assessment; and
- Preparation of a report including a Tier 1 risk assessment.

The scope of work was undertaken with reference to the National Environmental Protection (Assessment of Site Contamination) Measure 1999 as amended (2013)[1], other guidelines made under or with regards to the Contaminated Land Management Act (1997)[2] and State Environmental Planning Policy No.55 – Remediation of Land (1998)[3]. A list of reference documents/guidelines is included in the appendices.

Subsequent to our engagement the client requested a soil waste classification for information purposes. Although a formal waste classification was outside our agreed scope of works, we have undertaken a high-level review of the available soil data for the site and assessed the results against the Waste Classification Guidelines, Part 1: Classifying Waste (2014)[4].

[1] National Environment Protection Council (NEPC), (2013). *National Environmental Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013).* (referred to as NEPM 2013)

[2] Contaminated Land Management Act 1997 (NSW) (referred to as CLM Act 1997)

[3] *State Environmental Planning Policy No. 55 – Remediation of Land 1998* (NSW) (referred to as SEPP55)

[4] NSW EPA, (2014). *Waste Classification Guidelines, Part 1: Classifying Waste.* (referred to as Waste Classification Guidelines 2014)

2 SITE INFORMATION

2.1 Background

2.1.1 Preliminary Soil Contamination Screening

A preliminary soil contamination screening was previously undertaken by EIS in 2012[5] for a portion of the site. The screening included a review of limited historical site information, a walkover site inspection and soil sampling from five boreholes (BH1 to BH5 inclusive as shown on Figure 2) located in the central and west sections of the site.

The limited historical information review, including review of historical aerial photographs, indicated that the site had been used for educational purposes since at least 1970 and that the site configuration over this time appeared generally consistent. Additionally, there were no recorded notices listed on the NSW EPA registers.

Potential contamination sources included: potentially contaminated, imported fill material; potential asbestos contamination associated with demolition of the former site building; and potential historical activities such as use of pesticides. No significant potential off-site contamination sources were identified during the site inspection.

Field works undertaken for the screening identified fill in all boreholes which extended to depths of between approximately 0.5m below ground level (BGL) to 1.5mBGL. The fill typically comprised of gravelly silty sand and silty sand with inclusions of igneous gravel, slag, brick, metal and concrete fragments. The natural silty sand below the fill material in boreholes BH1, BH3, BH4 and BH5 was logged as 'possible fill' to a maximum depth of 3.2mBGL.

The laboratory analysis results for the fill soil sample BH2 (0.8-1.0m) indicated that benzo(a)pyrene concentration of 2.1mg/kg exceeded the human health-based SAC of 2mg/kg. However, statistical analysis undertaken on the fill data set for benzo(a)pyrene indicated that the 95% UCL was 1.65mg/kg and was below the human health-based SAC.

EIS concluded that the site was considered to be suitable for use as a secondary school and for the proposed Trade Training Centre development (which has now been constructed as of August 2020).

JKE note that since the preparation of the EIS 2012 report, NEPM 2013 was introduced. The amended NEPM has resulted in some changes to the SAC and other aspects relating to the assessment of potential site contamination. JKE have undertaken a review of the EIS 2012 soil data and identified the need for calculation of the previous Polycyclic Aromatic Hydrocarbon (PAH) results using the toxicity equivalence factor for specific PAH compounds identified in Schedule B1 of NEPM 2013 to derive the relevant Carcinogenic PAHs values for consideration as data inputs for this PSI. The maximum calculated Carcinogenic PAH for EIS 2012 soil data was 3.02mg/kg for the fill soil sample BH2 (0.8-1.0m), which is lightly above the human health SAC of 3mg/kg. Further information on the significance of this result is presented in Section 8.4. With the exception of Carcinogenic PAHs, the EIS 2012 soil data have been considered on a qualitative basis for this PSI.

[5] EIS, (2012). *Report to APP Corporation Pty Ltd on Proposed Trade Training Centre Development at Marist College, Pagewood, NSW.* (Ref: E23809K, dated March 2012) (referred to as EIS 2012)

2.2 Site Identification

Table 2-1: Site Identification

Current Site Owner (certificate of title):	The Trustees of the Roman Catholic Church for the Archdiocese of Sydney
Site Address:	35 Donovan Avenue, Maroubra, NSW
Lot & Deposited Plan:	Part of Lot 5089 in DP 752015 and part of Lot 1 in DP 653398
Current Land Use:	Primary and secondary school
Proposed Land Use:	Continued use as a primary and secondary school
Local Government Authority:	Randwick City Council
Current Zoning:	SP2 – Infrastructure
Site Area (m^2) (approx.):	5,500
RL (AHD in m) (approx.):	20
Geographical Location (decimal degrees) (approx.):	Latitude: -33.946952 Longitude: 151.230219
Site Location Plan:	Figure 1
Sample Location Plan:	Figure 2

2.3 Site Location and Regional Setting

The site is located in a predominantly residential area of Maroubra, within Champagnat Catholic College grounds (referred to as the 'wider site' and shown on Figure 1). The site is separated into two sections, with the larger portion of the site located within the central portion of the wider site and a smaller portion of the site is located in the north east of the wider site.

The site is bound by Donovan Avenue to the north, Fitzgerald Avenue to the south and the wider site to the east and west.

A concrete lined open stormwater culvert was located to the east of the wider site boundary. The site is located approximately 1.7km to the south-east of the Mill Ponds and approximately 2.5km to the north east of Botany Bay.

2.4 Topography

The regional topography is generally characterised by relatively flat terrain, however slopes slightly to the south west at approximately 1° to 2°. The site is relatively flat, however slopes slightly to the east at

approximately 1° to 2°. Parts of the site appear to have been levelled to accommodate the existing development.

2.5 Site Inspection

A walkover inspection of the site was undertaken by JKE on 17 July 2020. The inspection was limited to accessible areas of the site and immediate surrounds. An internal inspection of buildings was not undertaken.

A summary of the inspection findings is outlined in the following subsections:

2.5.1 Current Site Use and/or Indicators of Former Site Use

At the time of the inspection, the site was occupied by a school/college and included a basketball court, two-storey educational buildings and associated outdoor areas.

2.5.2 Buildings, Structures and Roads

The site largely consisted of concrete and asphaltic paved open areas and two-storey educational buildings. The buildings were generally of constructed of brick, concrete and metal. The buildings located within the western area of the site appeared of relatively recent construction. JKE note that the western area of the site was subject to the Stage 2 development, which was assessed as part of the EIS 2012 screening. The northern and eastern areas of the site was occupied by older two-storey buildings also used for educational purposes associated with the school. The central area of the site was occupied by a concrete paved basketball court with synthetic grass covering. To the northern area of the site, along Donovan Avenue were grassed, with an asphaltic driveway accessible from Donovan Avenue.

2.5.3 Boundary Conditions, Soil Stability and Erosion

The site was fenced towards the north, south and east by steel lockable fence with pedestrian and vehicle access gates fronting Donovan Avenue and Bunnerong Road. The western site boundary was unfenced and formed continuum with the wider site.

All exposed soil were either grassed or mulch covered. No visible signs of soil erosion or instability were observed.

2.5.4 Presence of Drums/Chemical Storage and Waste

Chemicals or waste were not observed at the site. However, the internal areas of the buildings were not inspected. Based on the nature of schools, these areas would be unlikely to include the storage of significant quantities of dangerous goods such as paints, paint thinners and/or fuel that could pose a source of contamination for the site.

2.5.5 Evidence of Cut and Fill

The site appeared to have been levelled towards the central area to accommodate the basketball court. Based on observations from the central area of the site, the basketball court appeared to have been filled towards the western end.

2.5.6 Visible or Olfactory Indicators of Contamination (odours, spills etc)

Visible or olfactory indicators of contamination were not observed at the site. However, the buildings located within the east area of the site may contain asbestos containing material (ACM) due to their era of construction.

2.5.7 Drainage and Services

Surface water at the site is anticipated to either be collected onsite in stormwater drains or permeate through the sub-surface soil in unpaved areas. Surface water collected in onsite drains is likely to be discharged to the open stormwater culvert located to the east of the wider site.

2.5.8 Sensitive Environments

The concrete lined stormwater channel located along the eastern wider site boundary is considered a pathway for surface water discharge to Botany Bay located to the south of the site. Botany Bay is considered a marine ecosystem and is utilised for recreational purposes.

2.5.9 Landscaped Areas and Visible Signs of Plant Stress

Minor landscaped areas were located within the northern, southern and eastern areas of the site. Within the landscaped areas of the site, native trees of approximately 5m tall were located along the eastern and southern site boundaries. Exotic grass and shrubs were located in the landscaped areas along the northern site boundary, fronting Donovan Avenue. No signs of dieback or phyto-toxic stress were observed from the onsite vegetation during the inspection.

2.6 Surrounding Land Use

During the site inspection, JKE observed the following land uses in the immediate surrounds:

- North – Donovan Avenue and low-rise residential properties further to the north;
- South – inter-section of Bunnerong Road and Fitzgerald Avenue, beyond were low-rise residential properties. Grassed sports fields (Heffron Park) was located approximately 40m to the south east of the site. An industrial area was located approximately 475m to the south west of the site;
- East – An open stormwater culvert was located immediately to the east of the site, Walsh Avenue and low-rise residential properties were located further to the east; and
- West – Wider areas of Champagnat Catholic College, Parer Street and low-rise residential properties, including a church further to the west.

JKE did not observe any land uses in the immediate surrounds that were identified as potential contamination sources for the site.

2.7 Underground Services

The 'Dial Before You Dig' (DBYD) plans were reviewed for the investigation in order to establish whether any major underground services exist at the site or in the immediate vicinity that could act as a preferential pathway for contamination migration. Major services were not identified that would be expected to act as preferential pathways for contamination migration.

2.8 Section 10.7 Planning Certificate

The section 10.7 (2 and 5) planning certificates were reviewed for the investigation. Copies of the certificates are attached in the appendices. A summary of the relevant information is outlined below:

- The land is not deemed to be: significantly contaminated; subject to a management order; subject of an approved voluntary management proposal; or subject to an on-going management order under the provisions of the CLM Act 1997;
- The Council has not received a copy of Site Audit Statement (SAS), within the meaning of the CLM Act 1997;
- The land is affected by a policy adopted by Council including the Contaminated Land Policy;
- The land is not affected by a policy adopted by Council that restricts the development of the land due to land slip, bushfire, tidal inundation (other than flooding) subsidence and acid sulfate soils (ASS);
- The Council has not been notified of any property vegetation plan under the Native Vegetation Act 2003;
- The land is not located in a heritage conservation area; and
- The land is not biodiversity certified land within the meaning of Part 8 of the Biodiversity Conservation Act 2016.

3 GEOLOGY AND HYDROGEOLOGY

3.1 Regional Geology

Regional geological information was reviewed for the investigation. The information was sources from the Lotsearch report attached in the appendices. The report indicates that the site is underlain by underlain by Quaternary aged deposits of medium to fine-grained marine sands with podsols.

3.2 Acid Sulfate Soil (ASS) Risk and Planning

ASS information presented in the Lotsearch report indicated that the site is not located within an ASS risk area, with extremely low probability (1-5%) of ASS occurrence in small localised areas.

A review of the Randwick Council LEP 2012 indicated that the site is not located within an ASS risk area.

3.3 Hydrogeology

Hydrogeological information presented in the Lotsearch report indicated that the regional aquifer on-site and in the areas immediately surrounding the site includes porous, extensive aquifers of high productivity. There were numerous registered bores within the report buffer of 2,000m. In summary:

- There were three registered bores (GW108407, GW104391 and GW106108) at the site for domestic purposes;
- The remaining bores were registered over 30m from the site and were generally registered for domestic, monitoring or industrial purposes. The nearest bores to the site were registered for domestic purposes;
- The drillers log information from the onsite registered bores typically identified sand to the termination of the bores at depths of between 9-16mBGL. The drillers log information from the nearby registered bores identified sand to approximately 28mBGL underlain by bedrock; and
- The Standing Water Level (SWL) of a domestic bore (GW110785) was identified a 6.0mBGL.

The information reviewed for the PSI indicates that the subsurface conditions at the site are expected to consist of moderate to high permeability (alluvial) soils overlying relatively deep bedrock. Abstraction and use of groundwater at the site or in the immediate surrounds may be viable under these conditions. JKE have not been informed if the use of groundwater is proposed as part of the development. We note that there is a reticulated water supply in the area and consumption of groundwater from the existing bores at the school is not expected to occur. It's likely that these bores registered for the site are either used for irrigation purposes or not in use.

Considering the local topography and surrounding land features, JKE anticipate groundwater to flow towards the south west, towards Botany Bay.

3.4 Water Restrictions – Botany Sands Groundwater Source

The site is located approximately 27m to the north east of an area classed as Area 1/Zone 1 according to the NSW Department of Primary Industries, Botany Sands Groundwater Source map presented in the Lotsearch report.

Temporary water restrictions apply to the land within Area 1 as outlined in the order for the *Temporary Water Restrictions for the Botany Sands Groundwater Source 2018,* as follows:

Schedule 2 Prohibitions in Area 1

1. The taking of water from those parts of the Botany Sands Groundwater Source within Area 1 on Map A is prohibited.
2. The prohibition in paragraph (1) does not apply to:
   a. the taking of water for remediation, temporary construction dewatering, testing or monitoring purposes; or
   b. the taking of water using a water supply work nominated by water access licence 24611, 24613, 24566, 24600, 24564, 24583, 24545, or 24588, provided that the water is *fit for purpose*.
3. A person taking water under paragraph (2)(b) must:
   a. keep records of all testing of water undertaken for the duration of this order; and
   b. provide to an authorised officer, within 7 days of a request, written details of the results of any testing of water undertaken as requested by that officer.
4. In this Schedule:
   a. *Fit for purpose* means:
      i. There is a site testing plan certified by a site auditor accredited under the CLM Act 1997 as being appropriate to determine if the groundwater is safe and suitable for its intended use. This site testing plan must be certified and in place prior to water being used, and
      ii. The site testing plan includes for each proposed use of water the method of sampling, method of testing, frequency of testing, the analytes to be tested and the prescribed threshold level for each analyte above which water must not be taken, and
      iii. Once sampled in accordance with the site testing plan, a consultant certified under a NSW Environment Protection Authority (NSW EPA) recognised contaminated land consultant certification scheme ('the consultant') must assess the results and provide a written record as to whether the groundwater is safe and suitable for its intended use as defined in the site testing plan, and
      iv. All works in relation to the preparation and implementation of the site testing plan must be carried out consistent with guidelines made or approved by the EPA under section 105 of the Contaminated Land Management Act 1997.
   b. *Authorised officer* has the same meaning it has under the Water Management Act 2000.

The above water restrictions are in place due to historical and current industrial use of the Botany area and the contamination impacts on the regional groundwater aquifer. Although these are not applicable for the site which falls outside Area 1

3.5 Receiving Water Bodies

The site location and regional topography indicates that excess surface water flows have the potential to enter Botany Bay located approximately 2.5km to the south west of the site. This water body is a potential receptor.

4 SITE HISTORY INFORMATION

4.1 Review of Historical Aerial Photographs and Historical Maps

Historical aerial photographs were reviewed for the investigation. The information was sourced for the Lotsearch report. JKE has reviewed the photographs and summarised relevant information in the following table:

Table 4-1: Summary of Historical Aerial Photographs

Year	Details
1930	**On-site:** The site was vacant and generally vegetated. Areas of scouring/exposed soils were evident in the south west section of the site. **Off-site:** A roadway similar to the Bunnerong Road layout was evident to the south of the site. Areas of development (presumably residential) were located to the south of the site.
1943	**On-site:** the site generally appeared similar to the previous photograph. **Off-site:** Additional roadways had been constructed surrounding the site. The additional roadways generally appeared to be consistent with the current roadway alignment surrounding the site. An open stormwater culvert had been constructed adjacent to the east site boundary. Residential properties were evident approximately 140m to the north west of the site.
1951	**On-site:** The site generally appeared similar to the previous photograph. **Off-site:** The area located approximately 140m to the south east of the site appeared to have been development for commercial/industrial use, with a number of large and small rectangular shaped buildings evident. Residential use of the area appeared to have increased.
1955	**On-site:** The site generally appeared similar to the previous photograph. **Off-site:** The immediate surrounds generally appeared similar to the previous photograph. However residential use of the area appeared to have increased.
1961	**On-site:** The site appeared to have been developed for educational use. An irregular shaped building was located in the west section of the site and the building extended to the west to into the wider site area. What appeared to be hardstand pavements had been constructed in the central and north section of the site. **Off-site:** Two buildings appeared to have been constructed in the west section of the wider site area. Residential use of the area appeared to have increased.
1965	**On-site:** Three additional buildings appeared to have been constructed within the south of the site, fronting Fitzgerald Avenue. **Off-site:** The immediate surrounds generally appeared similar to the previous photograph.
1970	**On-site:** An additional rectangular shaped building appeared to have been constructed within the north east section of the site. **Off-site:** The immediate surrounds generally appeared similar to the previous photograph
1978	**On-site:** An additional square shaped building appeared to have been constructed in the north section of the site, the building appeared to provide connectivity to the adjoining site building and results in an open central courtyard (sports court) between the buildings. Established trees were evident around the in some areas of the site.

Year	Details
	Off-site: The immediate surrounds generally appeared similar to the previous photograph. However, the majority of the large commercial/industrial type building located to the south east of the site appeared to have been demolished.
1982	**On-site:** The site generally appeared similar to the previous photograph. **Off-site:** The surrounds appeared generally appeared similar to the previous photograph. However, the area to the south east of the site appeared to have been re-developed and used as a public park.
1986	The site and the immediate surrounds generally appeared similar to the previous photograph.
1991	The site and the immediate surrounds generally appeared similar to the previous photograph.
1994	The site and the immediate surrounds generally appeared similar to the previous photograph.
2000	The site and the immediate surrounds generally appeared similar to the previous photograph.
2009	**On-site:** The site generally appeared similar to the previous photograph. **Off-site:** The surrounds appeared generally appeared similar to the previous photograph. However, additional buildings appeared to have been constructed in the west and east section of the wider site.
2015	**On-site:** The buildings located in the west section of the site appear to have been demolished and new buildings constructed. The roofing of other buildings appeared to have been replaced with metal roofing. **Off-site:** New buildings appeared to have been constructed in the west section of the wider site. A large asphaltic carpark had been constructed to the south-east of the site. Large scale earthworks were evident at the park located to the south east of the site.
2020	**On-site:** The site generally appeared similar to the previous photograph. However, synthetic grass appeared to have been laid over the central courtyard (sports court). **Off-site:** The surrounds appeared generally appeared similar to the previous photograph. However, earth works to the south west of the site appeared to have been completed and the area re-turfed for use a park and sporting complex.

4.2 Review of Historical Land Title Records

Historical land title records were reviewed for the investigation. The record search was undertaken by Advance Legal Searchers Pty Ltd. Copies of the title records are attached in the appendices. The title records indicate that up until 1960 the site was Crown Land, after which the site has been owned by The Trustee of the Roman Catholic Church for the Archdiocese of Sydney. This was consistent with the aerial photographs and confirms that the educational site use commenced from the early 1960s.

4.3 Review of Council Records

Council records for historical applications submitted for the site were sourced for the investigation. A list of the applications provided by council is attached in the appendices. Review of the information provided by council indicated that a first application submitted in 1964 (Council ref: BA/411/1964) with the description of works identified as "School". JKE note that the review of the 1961 aerial photograph the site appeared to have been occupied for school use and we therefore assume that this application related to construction of new buildings, where were apparent in the 1965 aerial photograph. All other applications related to minor works or alterations and additions to the school. A list of the applications is included in the appendices.

4.4 SafeWork NSW Records

A review of SafeWork NSW records for the site is currently underway. The results will be summarised in a separate letter when received.

4.5 NSW EPA and Department of Defence Records

A review of the NSW EPA and Department of Defence databases was undertaken for the PSI. Information from the following databases were sourced from the Lotsearch report:

- Records maintained in relation to contaminated land under Section 58 of the CLM Act 1997;
- Records of sites notified in accordance with the Guidelines on the Duty to Report Contamination under Section 60 of the CLM Act 1997 (2015)[6];
- Licensed activities under the Protection of the Environment Operations Act (1997)[7];
- Sites being investigated under the NSW EPA per-and polyfluoroalkyl substances (PFAS) investigation program;
- Sites being investigated by the Department of Defence for PFAS contamination; and
- Sites being managed by the Department of Defence for PFAS contamination.

The search included the site and surrounding areas in the report buffer. A summary of the information is provided below:

Table 4-2: NSW EPA and Department of Defence Records

Records	On-site	Off-site
Records under Section 58 of the CLM Act 1997	None	There were two properties listed in the report buffer. These properties were associated with the Orica site (a chemical manufacturing industrial facility) in Banksmeadow located approximately 512m to the south-west and down gradient of the site. Due to the distance and down-gradient location, the property is not considered to represent an off-site source of contamination.
Records under the Duty to Report	None	There were six properties listed in the report buffer. Four of the notified sites related to the

[6] NSW EPA, (2015). *Guidelines on the Duty to Report Contamination under Section 60 of the CLM Act 1997.* (referred to as Duty to Report Contamination)

[7] Protection of the Environment Operations Act 1997 (NSW) (referred to as POEO Act 1997)

Records	On-site	Off-site
Contamination under Section 60 of the CLM Act 1997		Orica site. The other two notified sites (one of which is a services station) were located between 319m-512m to the north west and up and cross gradient of the site. Due to the distance and topographical location from the site, these properties are not considered to represent an off-site source of contamination.
Licences under the POEO Act 1997	None	Current and historical licenses were identified for several properties within the report buffer. All except one of the licences related to properties to the west of the site. Due to the distance and topographical location (down or cross gradient) from the site, these properties are not considered to represent an off-site source of contamination.
Records relating to the NSW EPA PFAS Investigation Program	None	There is one property listed in the report buffer. This property was associated with the Orica site. Due to the distance and down-gradient location, the property is not considered to represent an off-site source of PFAS contamination.
Records relating to the Department of Defence PFAS management and investigation programs	None	There is one property listed in the report buffer. This property was the Randwick Barracks located approximately 1,652m to the north-east and up and cross-gradient to the site. Due to the distance away from the site and topography, this property is not considered to represent an off-site source of PFAS contamination.

4.6 Historical Business Directory and Additional Lotsearch Information

Historical business records and other relevant information were reviewed for the investigation. The information was sourced from the Lotsearch report and summarised in the following table:

Table 4-3: Historical Business Directory and other Records

Records	On-site	Off-site
Historical dry cleaners, motor garages and service stations	None	There were three listed in the report buffer between 1950-1990. The closest property identified in the 1978 UBD records and located approximately 48m to the north west was identified as a dry cleaner, pressers and/or dryers. This property is located slightly up-gradient of the site, however the overall topography of the regional area slopes to the south west and groundwater is expected to flow to the south west with the regional topography. Further review of the historical aerial photographs suggests that this property has likely been occupied for residential use since

Records	On-site	Off-site
		1961. The property is not considered to represent an off-site source of contamination. The other two properties were identified as a motor garage and motor garage/service station and located down or cross gradient of the site. Due to the distance and topographical location from the site, these properties are not considered to represent an off-site source of contamination.
National liquid fuel facilities	None	There are two properties listed in the report buffer. These properties were petrol stations, one of which was located approximately 580m to the north and up/cross-gradient to the site and the other located approximately 932m to the east, also up up/cross-gradient to the site. These properties are not considered to represent an off-site source of contamination due to their proximity to the site.
Mapped heritage items	None	Various heritage items were mapped in the report buffer. These are not considered to have any relevance in the context of the PSI objectives.
Mapped ecological constraints	None	Various ecological items were mapped in the report buffer. These are not considered to have any relevance in the context of the PSI objectives.
Mapped naturally occurring asbestos	None	None

4.7 Summary of Site History Information

A time line summary of the historical land uses and activities is presented in the following table. The information presented in the table is based on a weight of evidence assessment of the site history documentation and observations made by JKE.

Table 4-4: Summary of Historical Land Uses / Activities

Year(s)	On-site - Potential Land Use / Activities	Off-site - Potential Land Use / Activities
Prior to 1960	Vacant and Crown Land.	Predominantly vacant land prior to 1943, after which the off-site regional area has progressively been development for residential use. An open stormwater culvert located to the east of the site / wider site appeared to have been constructed between 1930 and 1943. Large commercial/industrial building appeared to have been constructed to the south east sometime between 1943 and 1951.

Year(s)	On-site - Potential Land Use / Activities	Off-site - Potential Land Use / Activities
1961-present	Construction of a school and progressive alteration and additions, which has included demolition of buildings at times.	Further development of the surrounds occurred for residential use. Demolition of the commercial/industrial buildings to the south east of the site occurred circa 1978 followed by redevelopment of this off-site area as a park and sporting complex.

4.8 Integrity of Site History Information

The majority of the site history information was obtained from government organisations as outlined in the relevant sections of this report. The veracity of the information from these sources is considered to be relatively high. A certain degree of information loss can be expected given the lack of specific land use details over time. JKE have relied upon the Lotsearch report and have not independently verified any information contained within. However, it is noted that the Lotsearch report is generated based on databases maintained by various government agencies and is expected to be reliable.

5 CONCEPTUAL SITE MODEL

NEPM (2013) defines a CSM as a representation of site related information regarding contamination sources, receptors and exposure pathways between those sources and receptors. The CSM for the site is presented in the following sub-sections and is based on the site information (including the site inspection information) and the review of site history information. Reference should also be made to the figures attached in the appendices.

A review of the CSM in relation to source, pathway and receptor (SPR) linkages has been undertaken as part of the Tier 1 risk assessment process, as outlined in Section 10.

5.1 Potential Contamination Sources/AEC and CoPC

The potential contamination sources/AEC and CoPC are presented in the following table:

Table 5-1: Potential (and/or known) Contamination Sources/AEC and Contaminants of Potential Concern

Source / AEC	CoPC
Fill material – The EIS 2012 investigation (summarised in Section 2.1.1) identified fill in the south west section of the site which extended to depths of between 0.5-1.5mBGL. Elevated benzo(a)pyrene was identified within the fill at one of the sampling locations, however statistical analysis of the fill data demonstrated that the benzo(a)pyrene did not pose a risk that warranted remediation. The fill could have been imported from various sources and could be contaminated. Further assessment of the potential for contaminated fill at the site is required.	Heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), petroleum hydrocarbons (referred to as total recoverable hydrocarbons – TRHs), benzene, toluene, ethylbenzene and xylene (BTEX), polycyclic aromatic hydrocarbons (PAHs), organochlorine pesticides (OCPs), organophosphate pesticides (OPPs), polychlorinated biphenyls (PCBs) and asbestos.
Use of pesticides – Pesticides may have been used beneath the buildings and/or around the site.	Heavy metals and OCPs JKE note that OCPs only became commercially available in the 1940s. Prior to this time pesticides were predominantly heavy metal compounds.
Hazardous Building Material – Hazardous building materials may be present as a result of former building and demolition activities. These materials may also be present in the existing buildings/ structures on site.	Asbestos, lead and PCBs

5.2 Mechanism for Contamination, Affected Media, Receptors and Exposure Pathways

The mechanisms for contamination, affected media, receptors and exposure pathways relevant to the potential contamination sources/AEC are outlined in the following CSM table:

Table 5-2: CSM

Potential mechanism for contamination	Potential mechanisms for contamination include: • Fill material – importation of impacted material, 'top-down' impacts (e.g. placement of fill, leaching from surficial material etc), or sub-surface release (e.g. impacts from buried material); • Use of pesticides – 'top-down' and spills (e.g. during normal use, application and/or improper storage); and • Hazardous building materials – 'top-down' (e.g. demolition resulting in surficial impacts in unpaved areas).
Affected media	Soil has been identified as the potentially affected medium. The potential for groundwater impacts is considered to be relatively low. However, groundwater would need to be considered in the event significant/mobile contamination was identified in soil.
Receptor identification	Human receptors include site occupants/users (including adults and children), construction workers and intrusive maintenance workers. Off-site human receptors include adjacent land users, groundwater users in the area and recreational water users within Botany Bay. Ecological receptors include terrestrial organisms and plants within unpaved areas (including the proposed landscaped areas), and marine ecology in Botany Bay.
Potential exposure pathways	Potential exposure pathways relevant to the human receptors include ingestion, dermal absorption and inhalation of dust (all contaminants) and vapours (volatile TRH, naphthalene and BTEX). Potential exposure pathways for ecological receptors include primary/direct contact and ingestion. The potential for exposure would typically be associated with the construction and excavation works, and future use of the site. Exposure during future site use could occur via direct contact with soil in unpaved areas such as gardens, inhalation of airborne asbestos fibres during soil disturbance, or inhalation of vapours within enclosed spaces such as buildings. Direct exposure to groundwater is unlikely to occur based on the proposed development details.
Potential exposure mechanisms	The following have been identified as potential exposure mechanisms for site contamination: • Vapour intrusion into the proposed basement and/or building (i.e. from soil contamination); • Contact (dermal, ingestion or inhalation) with exposed soils in landscaped areas and/or unpaved areas; • Migration of groundwater off-site and into nearby water bodies, including aquatic ecosystems and those being used for recreation; and • Migration of groundwater off-site into areas where groundwater is being utilised as a resource (i.e. for irrigation or consumption).

6 SAMPLING, ANALYSIS AND QUALITY PLAN

6.1 Data Quality Objectives (DQO)

Data Quality Objectives (DQOs) were developed to define the type and quality of data required to achieve the project objectives outlined in Section 1.2. The DQOs were prepared with reference to the process outlined in Schedule B2 of NEPM (2013) and the Guidelines for the NSW Site Auditor Scheme, 3rd Edition (2017)[8]. The seven-step DQO approach for this project is outlined in the following sub-sections.

The DQO process is validated in part by the Data Quality Assurance/Quality Control (QA/QC) Evaluation. The Data (QA/QC) Evaluation is summarised in Section 8.1 and the detailed evaluation is provided in the appendices.

6.1.1 Step 1 - State the Problem

The CSM identified potential sources of contamination/AEC at the site that may pose a risk to human health and the environment. Investigation data is required to assess the contamination status of the site, assess the risks posed by the contaminants in the context of the proposed development/intended land use, and assess whether remediation is required. This information will be considered by the consent authority in exercising its planning functions in relation to the development proposal.

A waste classification is required prior to off-site disposal of excavated soil which is assumed piling, installation of new underground services and regrading of the sports court.

The investigation was constrained by the timeline imposed by the client as SafeWork NSW records were not available at the time of preparation of this report. Additionally, the investigation constrained, in-part, by access limitations associated with the existing structures on site.

6.1.2 Step 2 - Identify the Decisions of the Study

The objectives of the investigation are outlined in Section 1.2. The decisions to be made reflect these objectives and are as follows:

- Did the site inspection, or does the historical information identify potential contamination sources/AEC at the site?
- Are any results above the SAC?
- Do potential risks associated with contamination exist, and if so, what are they?
- Is remediation required?
- Is the site characterisation sufficient to provide adequate confidence in the above decisions?
- Is the site suitable for the proposed development, or can the site be made suitable subject to further characterisation and/or remediation?

[8] NSW EPA (2017). *Guidelines for the NSW Site Auditor Scheme, 3rd ed.* (referred to as Site Auditor Guidelines 2017)

6.1.3 Step 3 - Identify Information Inputs

The primary information inputs required to address the decisions outlined in Step 2 include the following:

- Existing relevant environmental data from previous reports;
- Site information, including site observations and site history documentation;
- Sampling of potentially affected media (soil);
- Observations of sub-surface variables such as soil type, photo-ionisation detector (PID) concentrations, odours and staining;
- Laboratory analysis of soils for the CoPC identified in the CSM; and
- Field and laboratory QA/QC data.

6.1.4 Step 4 - Define the Study Boundary

The sampling will be confined to the site boundaries as shown in Figure 2 and will be limited vertically to a depth of termination at each borehole (spatial boundary). The sampling was completed on 17 July 2020 (temporal boundary). The assessment of potential risk to adjacent land users has been made based on data collected within the site boundary.

Sampling was not undertaken within the existing building footprint due to access constraints.

6.1.5 Step 5 - Develop an Analytical Approach (or Decision Rule)

6.1.5.1 Tier 1 Screening Criteria

The laboratory data will be assessed against relevant Tier 1 screening criteria (referred to as SAC), as outlined in Section 7. Exceedances of the SAC do not necessarily indicate a requirement for remediation or a risk to human health and/or the environment. Exceedances are considered in the context of the CSM and valid SPR-linkages.

Where appropriate, data are assessed against valid statistical parameters to characterise the data population. This may include calculation and application of mean values and/or 95% upper confidence limit (UCL) values for the data set, with regards to the NEPM (2013) framework and other relevant guidelines made under the CLM Act 1997. UCLs are considered acceptable where the UCL is below the SAC, the standard deviation of the data is less than 50% of the SAC and none of the individual concentrations are more than 250% of the SAC.

6.1.5.2 Field and Laboratory QA/QC

Field QA/QC included analysis of inter-laboratory duplicates, intra-laboratory duplicates, trip spike, trip blank and rinsate samples. Further details regarding the sampling and analysis undertaken, and the acceptable limits adopted, is provided in the Data Quality (QA/QC) Evaluation in the appendices.

The suitability of the laboratory data is assessed against the laboratory QA/QC criteria which is outlined in the attached laboratory reports. These criteria were developed and implemented in accordance with the laboratory's National Association of Testing Authorities, Australia (NATA) accreditation and align with the acceptable limits for QA/QC samples as outlined in NEPM (2013) and other relevant guidelines.

In the event that acceptable limits are not met by the laboratory analysis, other lines of evidence are reviewed (e.g. field observations of samples, preservation, handling etc) and, where required, consultation with the laboratory is undertaken in an effort to establish the cause of the non-conformance. Where uncertainty exists, JKE typically adopt the most conservative concentration reported (or in some cases, consider the data from the affected sample as an estimate).

6.1.5.3 Appropriateness of Practical Quantitation Limits (PQLs)

The PQLs of the analytical methods are considered in relation to the SAC to confirm that the PQLs are less than the SAC. In cases where the PQLs are greater than the SAC, a discussion of this is provided.

6.1.6 Step 6 – Specify Limits on Decision Errors

To limit the potential for decision errors, a range of quality assurance processes are adopted. A quantitative assessment of the potential for false positives and false negatives in the analytical results is undertaken with reference to Schedule B(3) of NEPM (2013) using the data quality assurance information collected.

Decision errors can be controlled through the use of hypothesis testing. The test can be used to show either that the baseline condition is false or that there is insufficient evidence to indicate that the baseline condition is false. The null hypothesis is an assumption that is assumed to be true in the absence of contrary evidence. For this investigation, the null hypothesis has been adopted which is that, there is considered to be a complete SPR linkage for the CoPC identified in the CSM unless this linkage can be proven not to (or unlikely to) exist. The null hypothesis has been adopted for this investigation.

6.1.7 Step 7 - Optimise the Design for Obtaining Data

The most resource-effective design will be used in an optimum manner to achieve the investigation objectives. Adjustment of the investigation design can occur following consultation or feedback from project stakeholders. For this investigation, the design was optimised via consideration of the EIS 2012 data, various lines of evidence used to select the sample locations, the media being sampled, and also by the way in which the data were collected.

The sampling plan and methodology are outlined in the following sub-sections.

6.2 Soil Sampling Plan and Methodology

The soil sampling plan and methodology adopted for this investigation is outlined in the table below:

Table 6-1: Soil Sampling Plan and Methodology

Aspect	Input
Sampling Density	The sampling density for asbestos in soil included sampling at 50% of the minimum sampling density recommended in the Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia (2009)[9] (endorsed in NEPM 2013). This density met the

[9] Western Australian (WA) Department of Health (DoH), (2009). Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia. (referred to as WA DoH 2009)

Aspect	Input
	investigation regime outlined in Table 1 of the WA DoH (2009) guidelines, i.e. for sites where asbestos occurrence is "possible". The EIS 2012 investigation was not undertaken in accordance with the WA DoH 2009, as these guidelines were not endorsed by NEPM at the time. For the PSI the sampling plan for other potential contaminants included collection of soil samples from seven locations. The EIS 2012 investigation included soil sampling from five locations in the south west section of the site. The EIS 2012 and PSI sampling locations are shown on the attached Figure 2. Based on the site area (5,500m^2), this number of locations corresponded to a sampling density of approximately one sample per 458m^2. The sampling plan was not designed to meet the minimum sampling density for hotspot identification, as outlined in the NSW EPA Contaminated Sites Sampling Design Guidelines (1995)[10] as a probabilistic sample design could not be implemented due to access constraints.
Sampling Plan	The sampling locations were placed on a judgemental sampling plan and were broadly positioned for site coverage, taking into consideration areas that were not easily accessible (e.g. areas of the site occupied by the existing buildings). This sampling plan was considered suitable to make a preliminary assessment of potential risks associated with the AEC and CoPC identified in the CSM, and assess whether further investigation is warranted.
Set-out and Sampling Equipment	Sampling locations were set out using a tape measure. In-situ sampling locations were checked for underground services by an external contractor prior to sampling. Samples were collected using a hand auger.
Sample Collection and Field QA/QC	Soil samples were obtained on 17 July 2020 in accordance with our standard field procedures. Soil samples were collected from the fill and natural profiles based on field observations. The sample depths are shown on the logs attached in the appendices. Samples were placed in glass jars with plastic caps and teflon seals with minimal headspace. Samples for asbestos analysis were placed in zip-lock plastic bags. During sampling, soil at selected depths was split into primary and duplicate samples for field QA/QC analysis. The field splitting procedure included alternately filling the sampling containers to obtain a representative split sample.
Field Screening	A portable Photoionisation Detector (PID) fitted with a 10.6mV lamp was used to screen the samples for the presence of volatile organic compounds (VOCs). PID screening for VOCs was undertaken on soil samples using the soil sample headspace method. VOC data was obtained from partly filled zip-lock plastic bags following equilibration of the headspace gases. PID calibration records are maintained on file by JKE. The field screening for asbestos quantification included the following: • A representative bulk sample was collected from fill at 1m intervals, or from each distinct fill profile. The quantity of material for each sample varied based on whatever return could be achieved using the auger. The bulk sample intervals are shown on the attached borehole logs; • Each sample was weighed using an electronic scale; • Each bulk sample was passed through a sieve with a 7.1mm aperture and inspected for the presence of fibre cement;

[10] NSW EPA, (1995), *Contaminated Sites Sampling Design Guidelines.* (referred to as EPA Sampling Design Guidelines 1995)

Aspect	Input
	• The condition of fibre cement or any other suspected asbestos materials was noted on the field records (if encountered); and • If observed, any fragments of fibre cement in the bulk sample were collected, placed in a zip-lock bag and assigned a unique identifier. Calculations for asbestos content were undertaken based on the requirements outlined in Schedule B1 of NEPM (2013), as summarised in Section 7.1. A calibration/check of the accuracy of the scale used for weighing the fibre cement fragments was undertaken using a set of calibration weights. Calibration/check records are maintained on file by JKE. The scale used to weigh the 10L samples was not calibrated, however this is not considered significant as this method of providing a weight for the bulk sample is considered to be considerably more accurate than applying a nominal soil density conversion.
Decontami-nation and Sample Preservation	Sampling personnel used disposable nitrile gloves during sampling activities. Re-usable sampling equipment was decontaminated using Decon and potable water. Soil samples were preserved by immediate storage in an insulated sample container with ice. On completion of the fieldwork, the samples were stored temporarily in fridges in the JKE warehouse before being delivered in the insulated sample container to a NATA registered laboratory for analysis under standard chain of custody (COC) procedures.

6.2.1 Laboratory Analysis

Samples were analysed by an appropriate, NATA Accredited laboratory using the analytical methods detailed in Schedule B(3) of NEPM 2013. Reference should be made to the laboratory reports attached in the appendices for further details.

Table 6-2: Laboratory Details

Samples	Laboratory	Report Reference
All primary samples and field QA/QC samples including (intra-laboratory duplicates, trip blanks, trip spikes and field rinsate samples)	Envirolab Services Pty Ltd NSW, NATA Accreditation Number – 2901 (ISO/IEC 17025 compliance)	247348
Inter-laboratory duplicates	Envirolab Services Pty Ltd VIC, NATA Accreditation Number – 2901 (ISO/IEC 17025 compliance)	21935

7 SITE ASSESSMENT CRITERIA (SAC)

The SAC were derived from the NEPM 2013 and other guidelines as discussed in the following sub-sections. The guideline values for individual contaminants are presented in the attached report tables and further explanation of the various criteria adopted is provided in the appendices.

7.1 Soil

Soil data were compared to relevant Tier 1 screening criteria in accordance with NEPM (2013) as outlined below.

7.1.1 Human Health

- Health Investigation Levels (HILs) for a 'residential with accessible soils' exposure scenario (HIL-A), which apply to primary schools;
- Health Screening Levels (HSLs) for a 'low-high density residential' exposure scenario (HSL-A & HSL-B), which apply to primary schools. HSLs were calculated based on conservative assumptions including a 'sand' type and a depth interval of 0m to 1m;
- HSLs for direct contact presented in the CRC Care Technical Report No. 10 – Health screening levels for hydrocarbons in soil and groundwater Part 1: Technical development document (2011)[11]; and
- Asbestos was assessed against the HSL-A criteria. A summary of the asbestos criteria is provided in the table below:

Table 7-1: Details for Asbestos SAC

Guideline	Applicability
Asbestos in Soil	The HSL-A criteria were adopted for the assessment of asbestos in soil. The SAC adopted for asbestos were derived from the NEPM 2013 and are based on WA DoH (2009) guidance. The SAC include the following: • No visible asbestos at the surface/in the top 10cm of soil; • <0.01% w/w bonded asbestos containing material (ACM) in soil; and • <0.001% w/w asbestos fines/fibrous asbestos (AF/FA) in soil. Concentrations for bonded ACM concentrations in soil are based on the following equation which is presented in Schedule B1 of NEPM (2013): **% w/w asbestos in soil =** **% asbestos content x bonded ACM (kg)** / Soil volume (L) x soil density (kg/L) However, due to access restraints requiring the use of a hand auger for sampling a 10L bucket sample was unable to be obtained. Therefore, each bucket sample was weighed using electronic scales and the above equation was adjusted as follows (we note that the units have also converted to grams): **% w/w asbestos in soil =** **% asbestos content x bonded ACM (g)** / Soil weight (g)

[11] Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC Care), (2011). Technical Report No. 10 - *Health screening levels for hydrocarbons in soil and groundwater Part 1: Technical development document*

7.1.2 Environment (Ecological – terrestrial ecosystems)

- Ecological Investigation Levels (EILs) and Ecological Screening Levels (ESLs) for an 'urban residential and public open space' (URPOS) exposure scenario. These have only been applied to the top 2m of soil as outlined in NEPM (2013). The criterion for benzo(a)pyrene has been increased from the value presented in NEPM (2013) based on the Canadian Soil Quality Guidelines[12];
- ESLs were adopted based on the soil type; and
- EILs for selected metals were calculated based on the most conservative added contaminant limit (ACL) values presented in Schedule B(1) of NEPM (2013) and published ambient background concentration (ABC) values presented in the document titled Trace Element Concentrations in Soils from Rural and Urban Areas of Australia (1995)[13]. This method is considered to be adequate for the Tier 1 screening.

7.1.3 Management Limits for Petroleum Hydrocarbons

Management limits for petroleum hydrocarbons (as presented in Schedule B1 of NEPM 2013) were considered.

[12] Canadian Council of Ministers of the Environment, (1999). *Canadian soil quality guidelines for the protection of environmental and human health: Benzo(a)Pyrene (1997)* (referred to as the Canadian Soil Quality Guidelines)

[13] Olszowy, H., Torr, P., and Imray, P., (1995), *Trace Element Concentrations in Soils from Rural and Urban Areas of Australia. Contaminated Sites Monograph Series No. 4*. Department of Human Services and Health, Environment Protection Agency, and South Australian Health Commission

8 RESULTS

8.1 Summary of Data (QA/QC) Evaluation

The data evaluation is presented in the appendices. In summary, JKE are of the opinion that the data are adequately precise, accurate, representative, comparable and complete to serve as a basis for interpretation to achieve the investigation objectives.

8.2 Subsurface Conditions

A summary of the subsurface conditions encountered during the investigation is presented in the following table. Reference should be made to the borehole logs attached in the appendices for further details.

Table 8-1: Summary of Subsurface Conditions

Profile	Description
Pavement	Asphaltic Concrete or concrete was encountered at the surface in boreholes BH101, BH102, BH103 and BH104. The pavement depths ranged between approximately 0.03m and 0.22mBGL.
Fill	Fill was encountered at the surface or beneath the pavement in all boreholes and extended to depths of approximately 0.3mBGL (BH105) to 1.5mBGL (BH106). BH106 was terminated in the fill due refusal on a suspected pipe. The fill typically comprised silty sand or silty gravelly sand with inclusions of igneous and sandstone gravel. Slag and building rubble (bricks, concrete, glass, tile fragments) were detected in some of the boreholes. Neither staining or odours were encountered during sampling of the fill soils.
Natural Soil	Alluvial natural silty sand soils were encountered beneath the fill material in all boreholes, except BH106. The natural soil extended to the termination of the boreholes and at a maximum depth of approximately 1.5mBGL (BH103). Neither staining or odours were encountered during sampling of the natural soils.
Bedrock	Bedrock was not encountered during the investigation.
Groundwater	Groundwater seepage was not encountered in the boreholes during drilling. All boreholes remained dry on completion of drilling and a short time after.

8.3 Field Screening

A summary of the field screening results is presented in the following table:

Table 8-2: Summary of Field Screening

Aspect	Details
PID Screening of Soil Samples for VOCs	PID soil sample headspace readings are presented in attached report tables and the COC documents attached in the appendices. The results ranged from 0ppm to 2ppm equivalent isobutylene. These results indicate a general lack of PID detectable VOCs in the samples. All samples submitted for laboratory analysis were analysed for TRH and BTEX.

Aspect	Details
Bulk Screening for Asbestos	The bulk field screening results are summarised in the attached report tables (see Table S5). Potential ACM were not encountered during the bulk screening and therefore the ACM results were below the SAC.

8.4 Soil Laboratory Results

The soil laboratory results were assessed against the SAC presented in Section 7.1. Individual SAC are shown in the report tables attached in the appendices. A summary of the results is presented below:

8.4.1 Human Health and Environmental (Ecological) Assessment

Table 8-3: Summary of Soil Laboratory Results – Human Health and Environmental (Ecological)

Analyte	N	Max. (mg/kg)	N> Human Health SAC	N> Ecological SAC	Comments
Arsenic	7	7	0	NSL	-
Cadmium	7	<PQL	0	NSL	-
Chromium (total)	7	38	0	0	-
Copper	7	61	0	0	-
Lead	7	96	0	0	-
Mercury	7	0.4	0	NSL	-
Nickel	7	8	0	0	-
Zinc	7	120	0	0	-
Total PAHs	7	2.7	0	NSL	-
Benzo(a)pyrene	7	0.3	NSL	0	-
Carcinogenic PAHs (as BaP TEQ)	7	<PQL	0	NSL	As discussed in Section 2.1.1 the calculated Carcinogenic PAH for EIS 2012 soil data was slightly above the human health SAC of 3mg/kg. Statistical analysis of the Carcinogenic PAH fill data was undertaken for this PSI and the results are presented in Section 8.4.2.
Naphthalene	7	<PQL	0	NSL	-
DDT+DDE+DDD	7	0.2	0	NSL	DDE was detected at a concentration above the PQL in the primary sample BH103 (0.9-1.0m).
DDT	7	<PQL	NSL	0	-

Analyte	N	Max. (mg/kg)	N> Human Health SAC	N> Ecological SAC	Comments
Aldrin and dieldrin	7	0.1	0	NSL	-
Chlordane	7	<PQL	0	NSL	-
Heptachlor	7	<PQL	0	NSL	-
PCBs	7	<PQL	0	NSL	PCBs were detected at a concentration above the PQL in the fill duplicate sample SDUP102. The EIS 2012 investigation also detected PCBs above the PQL in the fill soil sample BH1 (0.2-0.3m) and in the underlying natural soil sample BH1 (0.8-1.0m). JKE note that the natural sample was logged as possibly fill.
TRH F1	7	<PQL	0	0	-
TRH F2	7	<PQL	0	0	-
TRH F3	7	160	0	0	-
TRH F4	7	<PQL	0	0	-
Benzene	7	<PQL	0	0	-
Toluene	7	<PQL	0	0	-
Ethylbenzene	7	<PQL	0	0	-
Xylenes	7	<PQL	0	0	-
Asbestos (in soil)	4	AF/FA <0.001 ACM >7mm <0.01%	0	NA	Asbestos was not detected in the samples analysed. Asbestos was also not identified by the EIS 2012 investigation.
Asbestos in fibre cement	NA	NA	NA	NA	Visible ACM was not encountered during the field work, therefore ACM was not analysed. ACM was also not identified by the EIS 2012 investigation.

Notes:

N: Total number (primary samples)

NSL: No set limit

NL: Not limiting

8.4.2 Statistical Analysis

Statistical calculations using the Carcinogenic PAH fill results obtained from the EIS 2012 and PSI were undertaken using ProUCL (Version 5.1). The statistical analysis results are attached in the appendices. In summary:

- The standard deviation (SD) of the Carcinogenic PAH results was 0.839mg/kg and was less than 50% of lead human health SAC of 3mg/kg;
- The 95% UCL on the mean Carcinogenic PAH result was 1.745mg/kg and less than human health SAC of 3mg/kg; and
- All of the Carcinogenic PAH results were less than 250% of the human health SAC.

9 PRELIMINARY WASTE CLASSIFICATION ASSESSMENT DISCUSSION

Based on our high-level review of the EIS 2012 and PSI soils results, JKE provide the following comments relating to waste classification of soils for the site:

- The fill soil is likely to be classified as **General Solid Waste (non-putrescible)** for off-site disposal;
- The natural soil is likely to meet the definition of **Virgin Excavated Natural Material (VENM)** for off-site disposal or re-use purposes; and
- Further assessment is required to confirm the above preliminary classifications prior to off-site disposal of the waste. The waste classification must be undertaken with reference to the Waste Classification Guidelines 2014.

Any soil waste classification documentation is to be prepared in accordance with the reporting requirements specified by the NSW EPA. Reports are to include:

- The full name, address, Australian Company Number (ACN) or Australian Business Number (ABN) of the organisation and person(s) providing the waste classification;
- Location of the site where the waste was generated, including the source site address;
- History of the material and the processes and activities that have taken place to produce the waste;
- Potential contaminating activities that may have occurred at the site where the waste was generated;
- Description of the waste, including photographs, visible signs of contamination, such as discolouration, staining, odours, etc;
- Quantity of the waste;
- Number of samples collected and analysed;
- Sampling method including pattern, depth, locations, sampling devices, procedures, and photos of the sample locations and samples;
- Contaminants tested;
- Laboratory documentation – chain-of-custody (COC), sample receipt, laboratory report;
- All results regardless of whether they are not used in the classification process;
- Results of sample mean, sample standard deviation and the 95% upper confidence limit (UCL) where relevant;
- Brief summary of findings including discussion of results; and
- A clear statement of the classification of the waste as at the time of the report.

10 DISCUSSION

10.1 Contamination Sources/AEC and Potential for Site Contamination

Based on the scope of work undertaken for this investigation, JKE identified the following potential contamination sources/AEC:

- Imported fill material;
- Use of pesticides; and
- Hazardous building materials.

Considering the above, and based on a qualitative assessment of various lines of evidence as discussed throughout this report, JKE are of the opinion that there is a potential for site contamination. The preliminary intrusive investigation, including the soil sampling and analysis outlined in this report, was used to quantitatively assess the risks associated with contamination. The preliminary soil data collected for the investigation is discussed further in the following subsection, as part of the Tier 1 risk assessment.

10.2 Tier 1 Risk Assessment and Review of CSM

For a contaminant to represent a risk to a receptor, the following three conditions must be present:

1. Source – The presence of a contaminant;
2. Pathway – A mechanism or action by which a receptor can become exposed to the contaminant; and
3. Receptor – The human or ecological entity which may be adversely impacted following exposure to contamination.

If one of the above components is missing, the potential for adverse risks is relatively low.

10.2.1 Soil

All of the soil results were below the relevant SAC, therefore a source of contamination was not identified and the risk to the receptors is considered low.

Detectable concentrations of OCPs and PCBs were encountered above laboratory PQLs and areas of the site were inaccessible due to the existing buildings. Although the risk is considered low, there is a potential for contamination in the areas of the site where pesticides could have been applied beneath the existing older buildings. The potential for OCPs and PCBs to occur beneath the buildings is considered a data gap. An assessment of the identified data gaps is presented in Section 10.4.

The soil contaminant concentrations were not considered to pose a risk to groundwater. All fill is above the water table and the majority of the site is paved which limits the transport mechanism for contaminants in soil to leach into the groundwater.

10.3 Decision Statements

The decision statements are addressed below:

Did the site inspection, or does the historical information identify potential contamination sources/AEC at the site?

Yes. Imported fill material, use of pesticides and hazardous building materials were identified as potential sources of contamination at the site.

Are any results above the SAC?

No.

Do potential risks associated with contamination exist, and if so, what are they?

Based on the results of the PSI, actual contamination risk where not identified. Data gaps have been identified and addressed via our recommendations.

Is remediation required?

No. Based on the results of the PSI remediation is not considered necessary. JKE recommended that an Unexcepted Finds Procedure (UFP) be prepared for the proposed development.

Is the site characterisation sufficient to provide adequate confidence in the above decisions?

Yes.

Is the site suitable for the proposed development, or can the site be made suitable subject to further characterisation and/or remediation?

The site is considered suitable for the proposed development. A UFP is to be prepared and implemented. The UFP will include mechanisms to address contamination in the event of an unexpected find following demolition and during construction.

10.4 Data Gaps

An assessment of data gaps is provided in the following table:

Table 10-1: Data Gap Assessment

Data Gap	Assessment
SafeWork records not received or reviewed.	Given the history of the site as a school, it is considered unlikely that any records relating to the storage of dangerous goods would exist. JKE will review the SafeWork records once received and issue a summary letter. Additional work to address this data gap is not considered necessary at this stage.

Data Gap	Assessment
Soil sampling density below minimum guideline density	The PSI sampling density, combined with the EIS 2012 sampling locations was approximately 85% of the minimum sampling density recommended in the EPA Sampling Design Guidelines 1995. Additional sampling to meet the EPA Sampling Design Guidelines 1995 and address this data gap is not considered necessary at this stage considering PSI results and the site access limitations. A UFP is recommended for the proposed development and the UFP will have a requirement to further investigate the soil beneath the existing buildings once they are demolished.

11 CONCLUSIONS AND RECOMMENDATIONS

The investigation included a review of historical information, review of the previous EIS 2012 investigation report and sampling from seven boreholes. The site has historically been used as a school snice approximately 1961.

Based on the findings of the investigation, JKE are of the opinion that the site is suitable for the proposed development described in Section 1.1. We recommend that a UFP is prepared by a suitably qualified contaminated land consultant[14] and implemented throughout the redevelopment.

JKE consider that the report objectives outlined in Section 1.2 have been addressed.

[14] JKE recommend that the consultancy engaged for the work be a member of the Australian Contaminated Land Consultants Associated (ACLCA), and/or the individual undertaking the works be certified under one of the NSW EPA endorsed certified practitioner schemes

12 LIMITATIONS

The report limitations are outlined below:

- JKE accepts no responsibility for any unidentified contamination issues at the site. Any unexpected problems/subsurface features that may be encountered during development works should be inspected by an environmental consultant as soon as possible;
- Previous use of this site may have involved excavation for the foundations of buildings, services, and similar facilities. In addition, unrecorded excavation and burial of material may have occurred on the site. Backfilling of excavations could have been undertaken with potentially contaminated material that may be discovered in discrete, isolated locations across the site during construction work;
- This report has been prepared based on site conditions which existed at the time of the investigation; scope of work and limitation outlined in the JKE proposal; and terms of contract between JKE and the client (as applicable);
- The conclusions presented in this report are based on investigation of conditions at specific locations, chosen to be as representative as possible under the given circumstances, visual observations of the site and immediate surrounds and documents reviewed as described in the report;
- Subsurface soil and rock conditions encountered between investigation locations may be found to be different from those expected. Groundwater conditions may also vary, especially after climatic changes;
- The investigation and preparation of this report have been undertaken in accordance with accepted practice for environmental consultants, with reference to applicable environmental regulatory authority and industry standards, guidelines and the assessment criteria outlined in the report;
- Where information has been provided by third parties, JKE has not undertaken any verification process, except where specifically stated in the report;
- JKE has not undertaken any assessment of off-site areas that may be potential contamination sources or may have been impacted by site contamination, except where specifically stated in the report;
- JKE accept no responsibility for potentially asbestos containing materials that may exist at the site. These materials may be associated with demolition of pre-1990 constructed buildings or fill material at the site;
- JKE have not and will not make any determination regarding finances associated with the site;
- Additional investigation work may be required in the event of changes to the proposed development or landuse. JKE should be contacted immediately in such circumstances;
- Material considered to be suitable from a geotechnical point of view may be unsatisfactory from a soil contamination viewpoint, and vice versa; and
- This report has been prepared for the particular project described and no responsibility is accepted for the use of any part of this report in any other context or for any other purpose.

Important Information About This Report

These notes have been prepared by JKE to assist with the assessment and interpretation of this report.

The Report is based on a Unique Set of Project Specific Factors
This report has been prepared in response to specific project requirements as stated in the JKE proposal document which may have been limited by instructions from the client. This report should be reviewed, and if necessary, revised if any of the following occur:

- The proposed land use is altered;
- The defined subject site is increased or sub-divided;
- The proposed development details including size, configuration, location, orientation of the structures or landscaped areas are modified;
- The proposed development levels are altered, eg addition of basement levels; or
- Ownership of the site changes.

JKE will not accept any responsibility whatsoever for situations where one or more of the above factors have changed since completion of the investigation. If the subject site is sold, ownership of the investigation report should be transferred by JKE to the new site owners who will be informed of the conditions and limitations under which the investigation was undertaken. No person should apply an investigation for any purpose other than that originally intended without first conferring with the consultant.

Changes in Subsurface Conditions
Subsurface conditions are influenced by natural geological and hydrogeological process and human activities. Groundwater conditions are likely to vary over time with changes in climatic conditions and human activities within the catchment (e.g. water extraction for irrigation or industrial uses, subsurface waste water disposal, construction related dewatering). Soil and groundwater contaminant concentrations may also vary over time through contaminant migration, natural attenuation of organic contaminants, ongoing contaminating activities and placement or removal of fill material. The conclusions of an investigation report may have been affected by the above factors if a significant period of time has elapsed prior to commencement of the proposed development.

This Report is based on Professional Interpretations of Factual Data
Site investigations identify actual subsurface conditions at the actual sampling locations at the time of the investigation. Data obtained from the sampling and subsequent laboratory analyses, available site history information and published regional information is interpreted by geologists, engineers or environmental scientists and opinions are drawn about the overall subsurface conditions, the nature and extent of contamination, the likely impact on the proposed development and appropriate remediation measures.

Actual conditions may differ from those inferred, because no professional, no matter how qualified, and no subsurface exploration program, no matter how comprehensive, can reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than an investigation indicates. Actual conditions in areas not sampled may differ from predictions. Nothing can be done to prevent the unanticipated, but steps can be taken to help minimise the impact. For this reason, site owners should retain the services of their consultants throughout the development stage of the project, to identify variances, conduct additional tests which may be needed, and to recommend solutions to problems encountered on site.

Investigation Limitations
Although information provided by a site investigation can reduce exposure to the risk of the presence of contamination, no environmental site investigation can eliminate the risk. Even a rigorous professional investigation may not detect all contamination on a site. Contaminants may be present in areas that were not surveyed or sampled, or may migrate to areas which showed no signs of contamination when sampled. Contaminant analysis cannot possibly cover every type of contaminant which may occur; only the most likely contaminants are screened.

Misinterpretation of Site Investigations by Design Professionals

Costly problems can occur when other design professionals develop plans based on misinterpretation of an investigation report. To minimise problems associated with misinterpretations, the environmental consultant should be retained to work with appropriate professionals to explain relevant findings and to review the adequacy of plans and specifications relevant to contamination issues.

Logs Should not be Separated from the Investigation Report

Borehole and test pit logs are prepared by environmental scientists, engineers or geologists based upon interpretation of field conditions and laboratory evaluation of field samples. Logs are normally provided in our reports and these should not be re-drawn for inclusion in site remediation or other design drawings, as subtle but significant drafting errors or omissions may occur in the transfer process. Photographic reproduction can eliminate this problem, however contractors can still misinterpret the logs during bid preparation if separated from the text of the investigation. If this occurs, delays, disputes and unanticipated costs may result. In all cases it is necessary to refer to the rest of the report to obtain a proper understanding of the investigation. Please note that logs with the 'Environmental Log' header are not suitable for geotechnical purposes as they have not been peer reviewed by a Senior Geotechnical Engineer.

To reduce the likelihood of borehole and test pit log misinterpretation, the complete investigation should be available to persons or organisations involved in the project, such as contractors, for their use. Denial of such access and disclaiming responsibility for the accuracy of subsurface information does not insulate an owner from the attendant liability. It is critical that the site owner provides all available site information to persons and organisations such as contractors.

Read Responsibility Clauses Closely

Because an environmental site investigation is based extensively on judgement and opinion, it is necessarily less exact than other disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, model clauses have been developed for use in written transmittals. These are definitive clauses designed to indicate consultant responsibility. Their use helps all parties involved recognise individual responsibilities and formulate appropriate action. Some of these definitive clauses are likely to appear in the environmental site investigation, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to any questions.

Appendix A: Report Figures



AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM

This plan should be read in conjunction with the Environmental report.

Title: **SITE LOCATION PLAN**

Location: 35 DONOVAN AVENUE, MAROUBRA, NSW

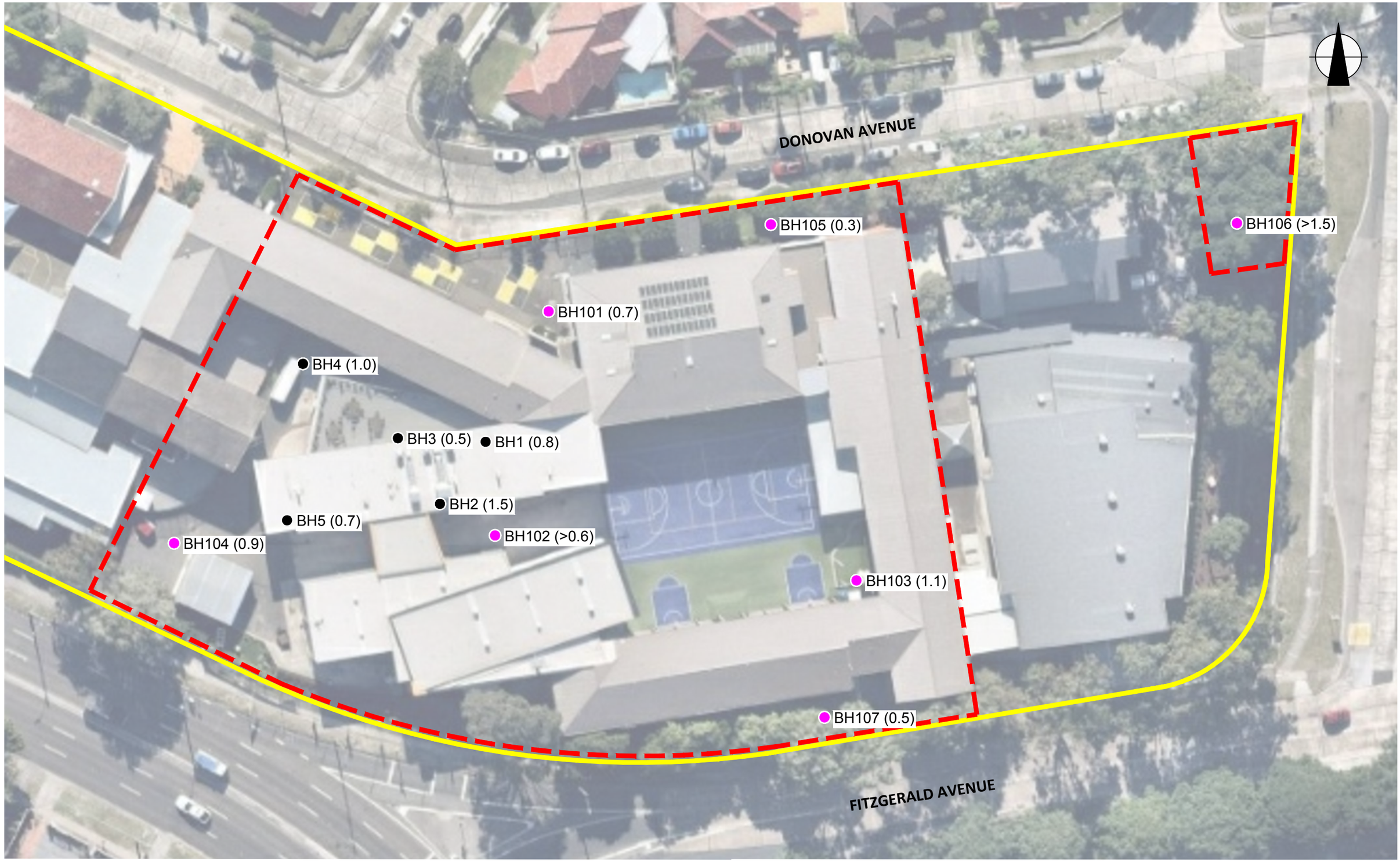
Project No: E33356PD

Figure No: 1

JKEnvironments

PLOT DATE: 30/07/2020 4:14:38 PM DWG FILE: Z:\5 EIS\5C EIS JOBS\33000'S\E33356PD MAROUBRA\CAD\E33356PD.DWG

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LEGEND

APPROXIMATE SITE BOUNDARY	
APPROXIMATE WIDER PROPERTY BOUNDARY	
BH(Fill Depth)	BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m), (JKE AUGUST 2020)
BH(Fill Depth)	BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m), (JKE MARCH 2012)

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM

0 5 10 15 20 25

SCALE 1:500 @A3 METRES

This plan should be read in conjunction with the Environmental report.

Title: **SAMPLE LOCATION PLAN**

Location: 35 DONOVAN AVENUE, MAROUBRA, NSW

Project No: E33356PD

Figure No: 2

JKEnvironments

PLOT DATE: 6/08/2020 12:15:52 PM DWG FILE: Z:\6 EIS\5C EIS \JOBS\33000\SIE33356PD MAROUBRA\CAD\E33356PD.DWG

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Appendix B: Site Information and Site History

Proposed Development Plans

CHAMPAGNAT CATHOLIC COLLEGE BLOCK B

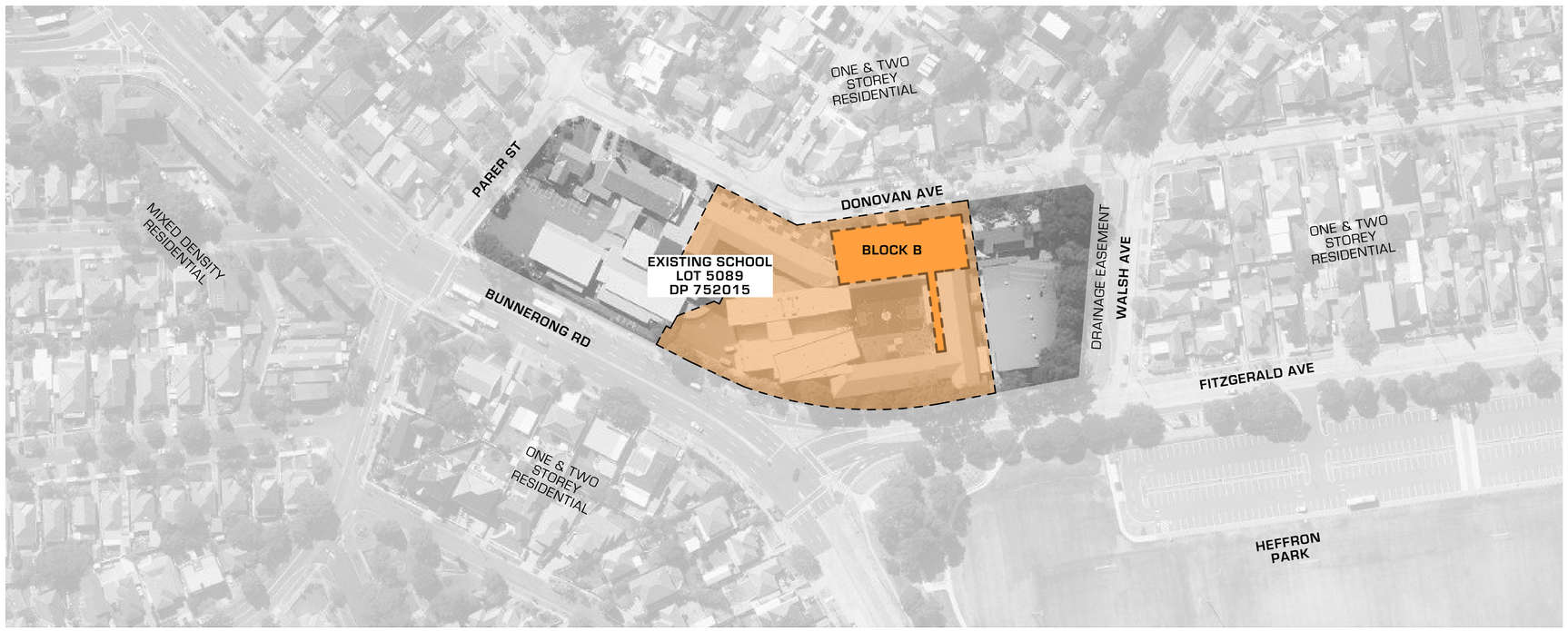
35 Donovan Avenue MAROUBRA NSW

DA DRAWING LIST

ID	NAME	REV
DA1000	DRAWING REGISTER AND LOCATION PLAN	03
DA1100	PROPOSED SITE PLAN	02
DA1101	SITE ANALYSIS PLAN	02
DA1500	SITE ELEVATIONS & SIGNAGE DETAILS	02
DA1550	SITE SECTIONS	02
DA2200	GROUND FLOOR DEMOLITION PLAN BLOCK B	02
DA2201	GROUND FLOOR DEMOLITION PLAN BLOCK B	01
DA2202	FIRST FLOOR DEMOLITION PLAN BLOCK B	02
DA2220	GROUND FLOOR PLAN BLOCK B	03
DA2221	FIRST FLOOR PLAN 1 BLOCK B	03
DA2222	FIRST FLOOR PLAN 2 BLOCK B	01
DA2223	SECOND FLOOR PLAN BLOCK B	03
DA2224	ROOF PLAN PLAN 1 BLOCK B	02
DA2225	ROOF PLAN PLAN 2 BLOCK B	01
DA2300	NORTH & SOUTH ELEVATION	03
DA2301	EAST & WEST ELEVATION	03
DA2350	SECTION 01	04
DA2900	SHADOW DIAGRAMS - 8am	02
DA2901	SHADOW DIAGRAMS - 12pm	02
DA2902	SHADOW DIAGRAMS - 4pm	02
DA2910	PORTABLE BUILDING FLOOR PLAN	03
DA2940	NOTIFICATION PLAN	02
DA2950	PERSPECTIVES 01	02
DA2951	PERSPECTIVES 02	02
DA2970	EXTERNAL FINISHES SAMPLE BOARD	01



STREET VIEW DONOVAN AVENUE



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NSW ARCHITECTS REGISTRATION NO. 5785

FIGURED DIMENSIONS TO BE USED ONLY. DO NOT SCALE

ANY DISCREPANCIES MUST BE REFERED TO THE ARCHITECT PRIOR TO THE COMMENCEMENT OF WORK ON SITE.

DIMENSIONS TO BE VERIFIED ON SITE BEFORE ANY SHOP DRAWINGS ARE COMMENCED OR OTHER WORK PUT IN HAND

IMMEDIATELY REFER ANY SIGNIFICANT DISCREPANCIES TO THE ARCHITECT

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SITE ANALYSIS PLAN LEGEND

NOTE: IF AN (e) IS LOCATED AT THE FRONT OF AN ABBREVIATION IT INDICATES THE ELEMENT IS EXISTING, OTHERWISE IT SHOULD BE ASSUMED AS NEW (n)

HATCH LEGEND

PROPOSED BUILDING

SITE AREA

QOH ARCHITECTS
QUINN O'HANLON ARCHITECTS PTY LTD

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1/153 Victoria Road, GLADESVILLE NSW 2111
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PO Box 293
NEWCASTLE NSW 2293
(02) 4929 1165 T

www.qoh.net.au W

PROJECT
CHAMPAGNAT CATHOLIC COLLEGE BLOCK B

ADDRESS
35 Donovan Avenue MAROUBRA NSW

CLIENT
SYDNEY CATHOLIC SCHOOLS

DATE	REVISION	ISSUE
1/05/20	REVISED DEVELOPMENT APPLICATION	03
27/04/20	DEVELOPMENT APPLICATION	02

SCALEBAR:

SCALE:	N/A @ A3
DRAWN BY:	JB, AB, AF, NZ, ST
CHECKED BY:	TB
DATE:	1/05/20

NORTH

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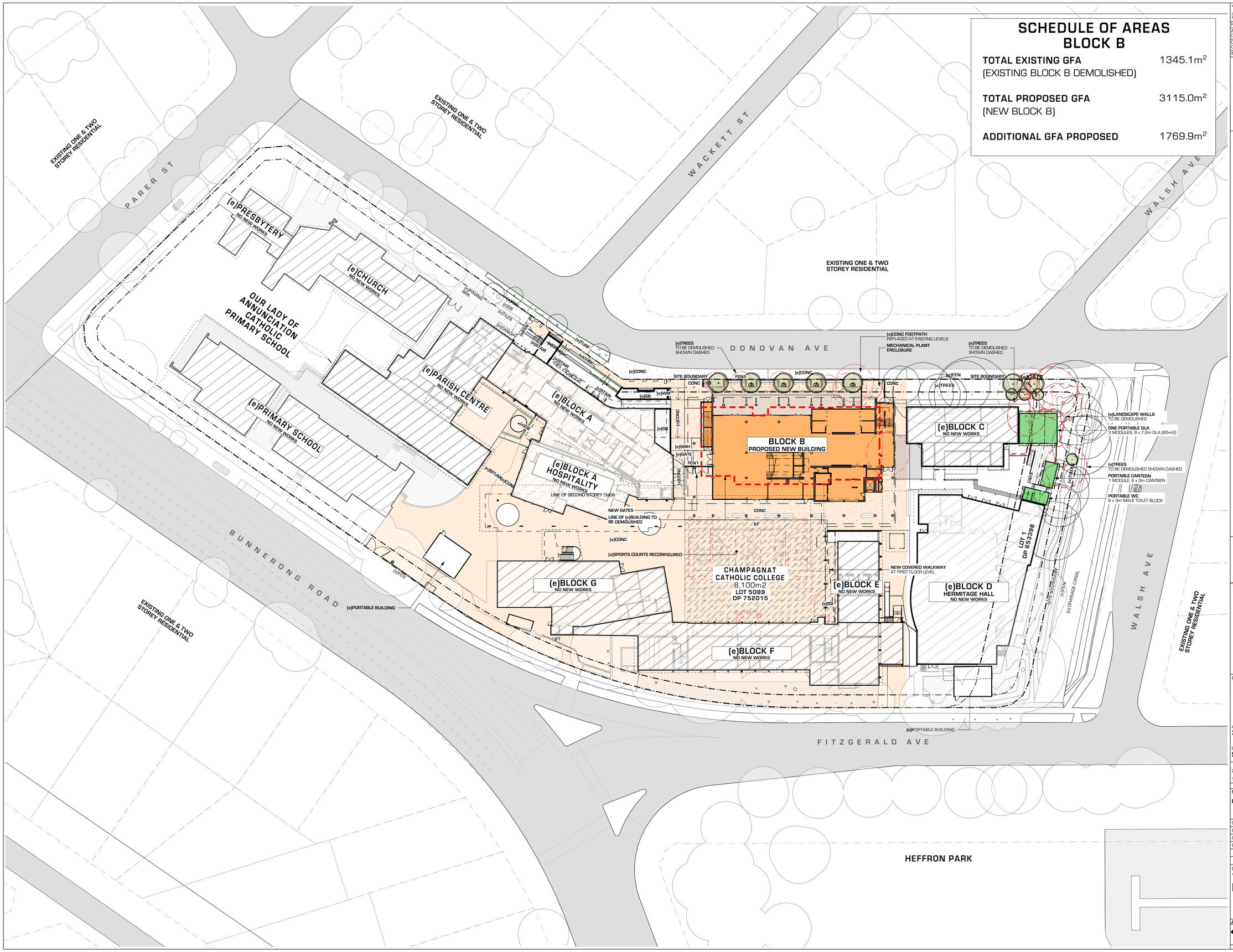
DRAWING TITLE
1000 SITE
DRAWING REGISTER AND LOCATION PLAN

JOB NUMBER	DRAWING NUMBER	ISSUE
1912N	DA1000	03

DEVELOPMENT APPLICATION

SCHEDULE OF AREAS
BLOCK B

TOTAL EXISTING GFA (EXISTING BLOCK B DEMOLISHED)	1345.1m²
TOTAL PROPOSED GFA (NEW BLOCK B)	3115.0m²
ADDITIONAL GFA PROPOSED	1769.9m²



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IMMEDIATELY REFER ANY SIGNIFICANT DISCREPANCIES TO THE ARCHITECT

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FLOOR PLAN LEGEND

NOTE: IF AN (e)/(r) LOCATED AT THE FRONT OF AN ABBREVIATION IT INDICATES THE ELEMENT IS EXISTING, OTHERWISE IT SHOULD BE ASSUMED AS NEW (n)

(e)	EXISTING		EDB	ELECTRICAL DISTRIBUTION BOARD	SC	STEEL COLUMN
(r)	RELOCATE				SCR	SCREEN
AC	AIR CONDITIONER		FEN	FENCE	SMH	SEWER MAN HOLE
AV	AUDIO/VISUAL EQUIPMENT		FFL	FINISHED FLOOR LEVEL	SVR	SERVER
BH	BULK HEAD		FLB	FLOOR BOX	SWP	STORMWATER PIT
BP	BRICK PIER		FHR	FIRE HOSE REEL	TF	TIMBER FLOOR
CC	CONCRETE COLUMN		FW	FLOOR WASTE	TGI	TACTILE GROUND INDICATOR
CO	CLEAR OUT		HR	HAND RAIL		
COM	COMMUNICATIONS		JD	JOINERY DETAIL	TME	TO MATCH EXISTING
CONC	CONCRETE		LD	LAUNDRY	TR	THRESHOLD PLATE
CT	CARPET		MB	NOTICEBOARDS	VNL	VINYL
D	DOOR		P	PROJECTOR	VOS	VERIFY ON SITE
DP	DOWNPIPE		PCC	PRECAST CONCRETE	W	WINDOW
			RL	RELATIVE LEVEL	WB	WHITEBOARD

SYMBOL LEGEND

- EXISTING TREE TO REMAIN
- PROPOSED TREE

HATCH LEGEND

- CARPET
- CONCRETE
- ARTIFICIAL TURF
- DECKING
- TURF
- VINYL
- PROPOSED BUILDING
- SITE AREA
- PROPOSED PORTABLE BUILDING

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www.qoh.net.au W

PROJECT
CHAMPAGNAT CATHOLIC COLLEGE BLOCK B

ADDRESS
35 Donovan Avenue MAROUBRA NSW

CLIENT
SYDNEY CATHOLIC SCHOOLS

DATE	REVISION	ISSUE
27/04/20	DEVELOPMENT APPLICATION	02
10/03/20	DEVELOPMENT APPLICATION	01

SCALEBAR: 0 — 20 — 40

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DRAWN BY:	JB, AB, AF, NZ, ST
CHECKED BY:	TB
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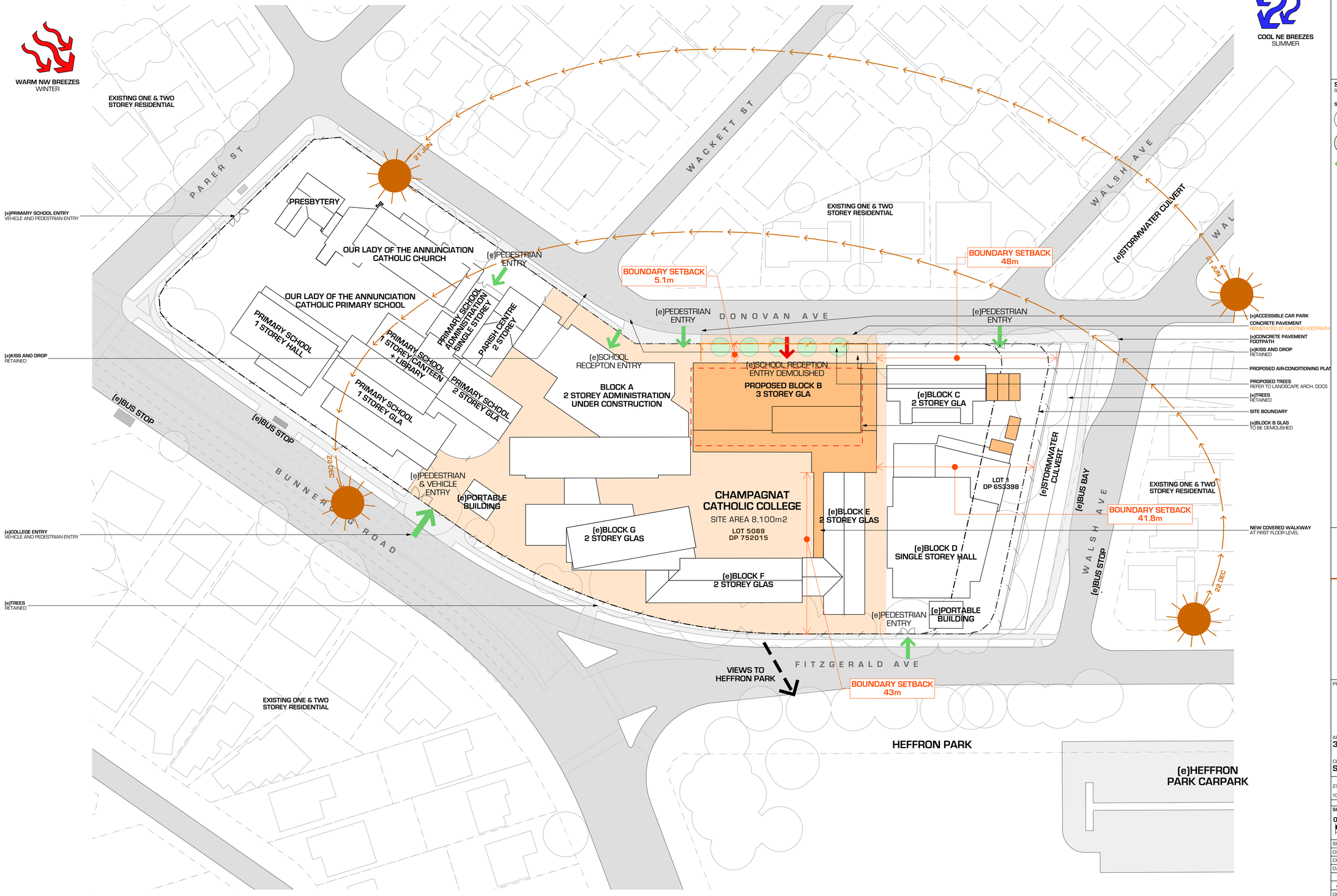
NORTH

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DRAWING TITLE
1100 SITE PLANS
PROPOSED SITE PLAN

JOB NUMBER	DRAWING NUMBER	ISSUE
1912N	DA1100	02

DEVELOPMENT APPLICATION



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NSW ARCHITECTS REGISTRATION NO. 5785

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SITE ANALYSIS PLAN LEGEND

NOTE: IF AN (e) IS LOCATED AT THE FRONT OF AN ABBREVIATION IT INDICATES THE ELEMENT IS EXISTING, OTHERWISE IT SHOULD BE ASSUMED AS NEW (n)

SYMBOL LEGEND

- EXISTING TREE TO REMAIN
- PROPOSED TREE
- SITE ENTRY

HATCH LEGEND

- PROPOSED BUILDING
- (e)ROAD
- SITE AREA
- (e)CONC PAVEMENT

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NEWCASTLE NSW 2293
(02) 4929 1165 T

www.qoh.net.au W

PROJECT
CHAMPAGNAT CATHOLIC COLLEGE BLOCK B

ADDRESS
35 Donovan Avenue MAROUBRA NSW

CLIENT
SYDNEY CATHOLIC SCHOOLS

DATE	REVISION	ISSUE
27/04/20	DEVELOPMENT APPLICATION	02
10/03/20	DEVELOPMENT APPLICATION	01

SCALEBAR: 0 25 50

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CHECKED BY:	TB
DATE:	27/04/20

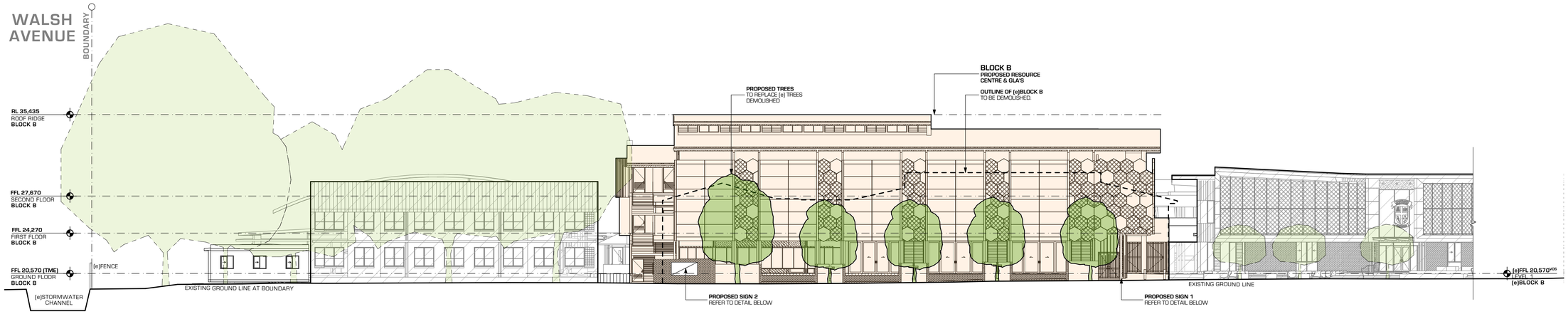
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DRAWING TITLE
1100 SITE PLANS
SITE ANALYSIS PLAN

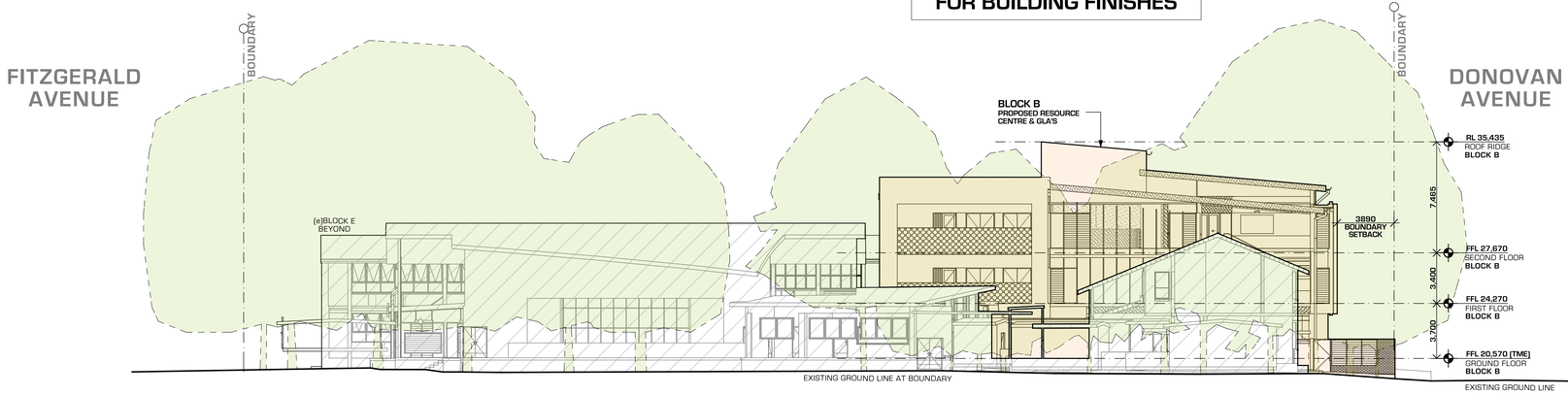
JOB NUMBER	DRAWING NUMBER	ISSUE
1912N	DA1101	02

DEVELOPMENT APPLICATION

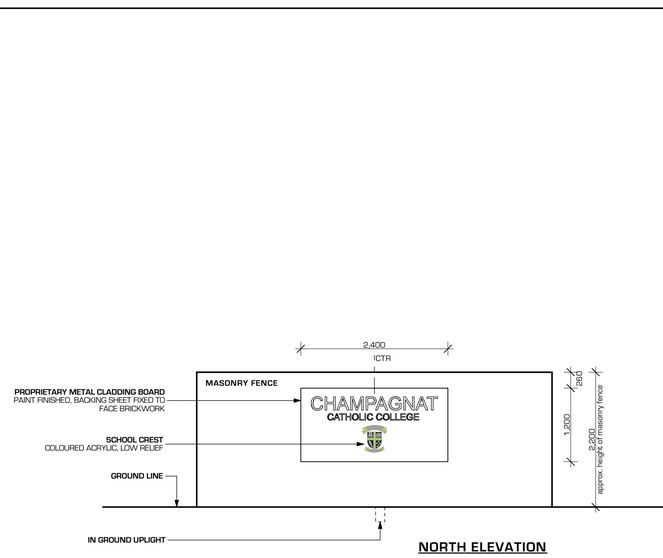


E/02 PROPOSED SITE ELEVATION - NORTH
(DONOVAN AVE VIEW)

REFER TO BUILDING ELEVATION DRAWINGS FOR BUILDING FINISHES

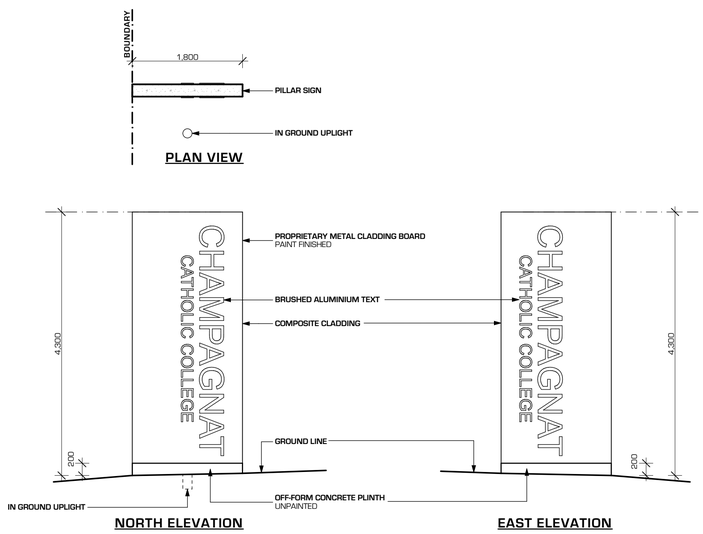


E/04 PROPOSED SITE ELEVATION - EAST
TO WALSH AVE



NORTH ELEVATION

PROPOSED SIGN 2
SCALE 1:100@A3



PLAN VIEW

NORTH ELEVATION EAST ELEVATION

PROPOSED SIGN 1
SCALE 1:100@A3

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NSW ARCHITECTS REGISTRATION NO. 5785

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SITE ELEVATION LEGEND
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HATCH LEGEND
- PROPOSED BUILDING
- EXISTING TREES
- PROPOSED TREES

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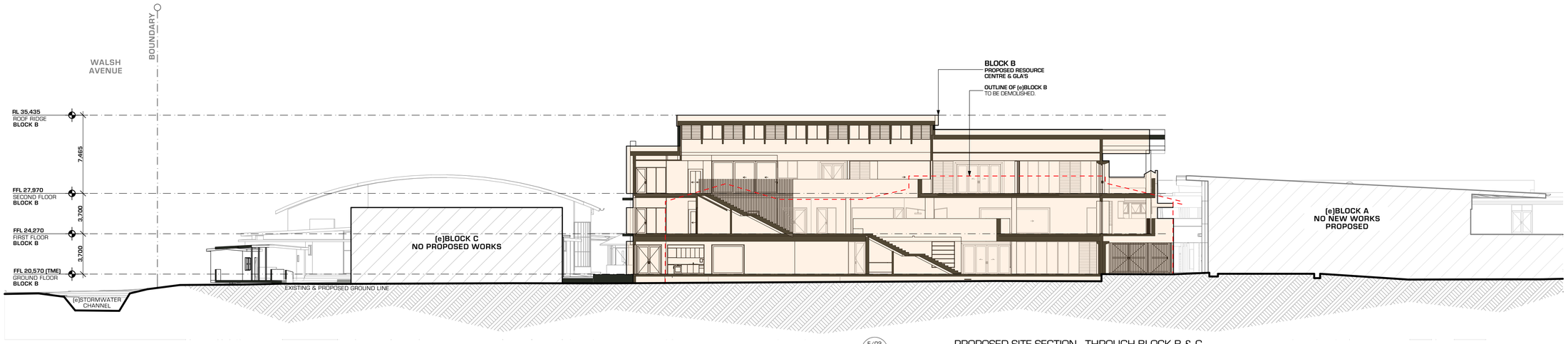
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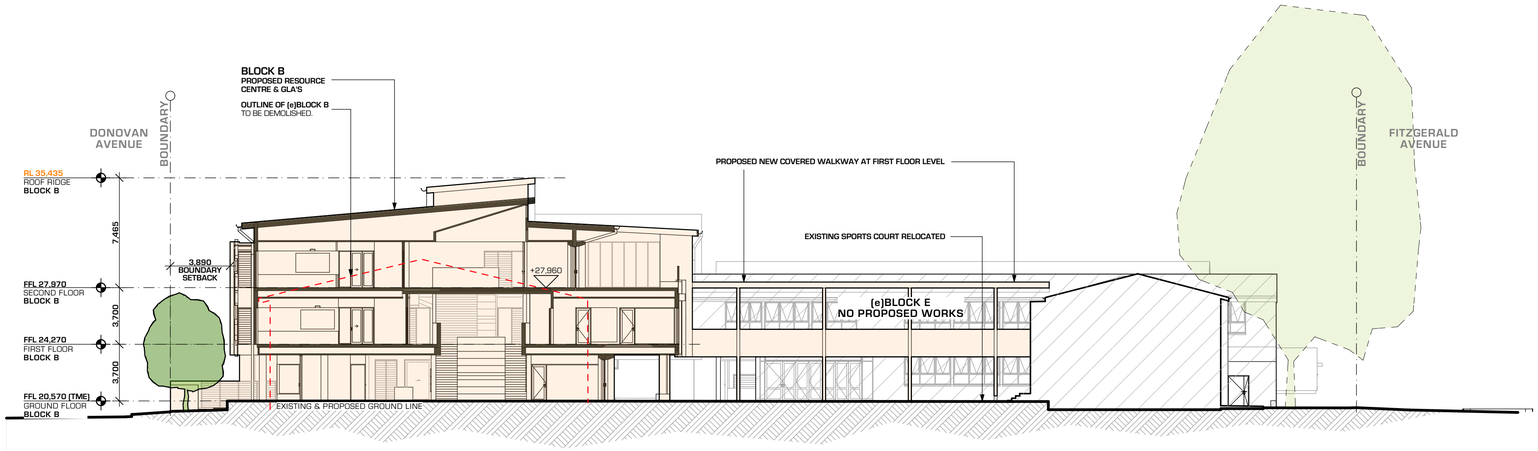
DRAWING TITLE
1500 SITE ELEVATIONS
SITE ELEVATIONS & SIGNAGE DETAILS

JOB NUMBER	DRAWING NUMBER	ISSUE
1912N	DA1500	02

DEVELOPMENT APPLICATION



E/02 PROPOSED SITE SECTION - THROUGH BLOCK B & C



E/02 PROPOSED SITE SECTION - THROUGH BLOCK B & F

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HATCH LEGEND
- PROPOSED BUILDING
- EXISTING TREES
- PROPOSED TREES

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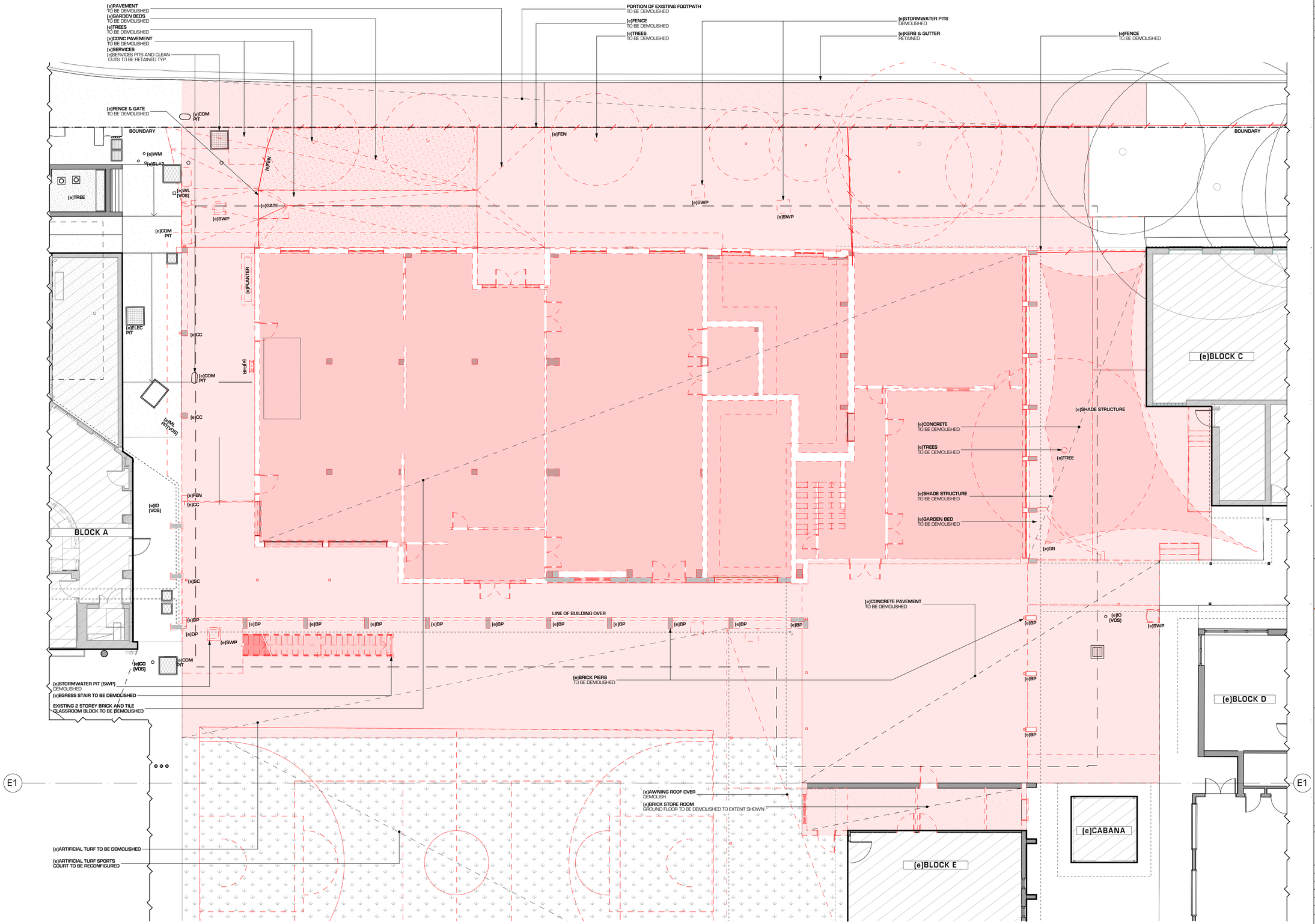
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DRAWING TITLE
1550 SITE SECTIONS
SITE SECTIONS

JOB NUMBER	DRAWING NUMBER	ISSUE
1912N	DA1550	02

DEVELOPMENT APPLICATION



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DEMOLITION PLAN LEGEND

NOTE: IF AN (e) IS LOCATED AT THE FRONT OF AN ABBREVIATION IT INDICATES THE ELEMENT IS EXISTING, OTHERWISE IT SHOULD BE ASSUMED AS NEW (n)

(e)	EXISTING	DP	DOWNPIPE	HR	HAND RAIL
AFL	ABOVE FLOOR LEVEL	(e)	EXISTING	P	PROJECTOR
BAL	BALUSTRADE	ES	EDGE STRIP	PB	PLASTERBOARD
BH	BULK HEAD	EDB	ELECTRICAL DISTRIBUTION BOARD	PP	POWER POLE
BP	BRICK PIER	FB	FACE BRICK	(r)	RELOCATE
CC	CONCRETE COLUMN	FW	FLOOR WASTE	S	SEAT
CL	LIGHT WEIGHT CLADDING	G	GRATE	STC	STEEL COLUMN
CONC	CONCRETE	GB	GARDEN BED	SWP	STORM WATER PIT
CPT	CARPET			TME	TO MATCH EXISTING
				WB	WHITE BOARD

GENERAL
1. WORK, AND HENCE DEMOLITION, TO BE CARRIED OUT IN STAGES. REFER TO STAGING DIAGRAM
2. ASBESTOS & CONTAMINATED MATERIALS - REFER TO SPECIFICATION CLAUSE 6.5 OF SECTION 2019 DEMOLITION.
3. MUD AND SOIL FROM VEHICULAR MOVEMENTS TO & FROM SITE MUST NOT BE DEPOSITED ON THE ROAD
4. ALL HAZE REMOVE AND STORE FOR CLIENT) ALL CLOCKS, WHITEBOARDS & RELIGIOUS ITEMS.
5. ALL SMART BOARDS & ASSOCIATED EQUIPMENT TO BE SALVAGED WHERE NOTED
6. WHEN REMOVING (e)JOINERY CAP OFF ALL SERVICES BEHIND THE LINE OF THE (n)LINING. MAKE GOOD ALL SURFACES TO ENSURE THAT (n)LININGS SIT SMOOTHLY
7. ALL EXISTING GAS BAYONETTES (IF ANY FOUND) TO BE SEALED & CAPPED OFF
8. ALL ITEMS SHOWN DOTTED TO BE DEMOLISHED UNLESS SPECIFICALLY NOTED TO BE SALVAGED FOR REUSE OR RETENTION BY SCHOOL

ROOF DEMOLITION
1. RETAIN ALL (e)GUTTERS AND DOWNPIPES UNLESS SPECIFICALLY NOTED OTHERWISE
2. WORK TO BE DONE PROGRESSIVELY WITH INSTALLATION OF (n)GUTTERS (IF ANY) & DOWNPIPES TO IMMEDIATELY FOLLOW
3. COMPLY WITH OH & S WORKCOVER REQUIREMENTS WHEN WORKING ON ROOF

FLOOR DEMOLITION
1. DEMOLISH (e)CARPET, CARPET TILES, CORK & VINYL FLOORING TO EXTENT OF WORKS UNLESS NOTED OTHERWISE
2. REMOVE ALL UNDERLAYS, ADHESIVES, FIXINGS & DIVIDER STRIPS

ELECTRICAL DEMOLITION
1. REFER TO ELECTRICAL ENGINEERS DRAWINGS FOR INSTRUCTIONS ON REMOVAL OF EXISTING ELECTRICAL ITEMS

DEFINITIONS

DEMOLISH	REMOVE CONTRACTOR TO DISPOSE OF ITEM OFF SITE
RELOCATE	REMOVE, STORE, REINSTALL IN GOOD WORKING CONDITION. RELOCATE ALSO REFERS TO CONTENTS OF CUPBOARDS & SHELVES
RETAIN	KEEP IN PLACE WITHOUT DAMAGE
SALVAGE	REMOVE AND GIVE TO SCHOOL OR RE-USE IN WORKS AS DIRECTED IN DRAWINGS AND SPECIFICATION

EXISTING TO BE DEMOLISHED

EXTENT OF BUILDING DEMOLITION

EXTENT OF PAVEMENT DEMOLITION

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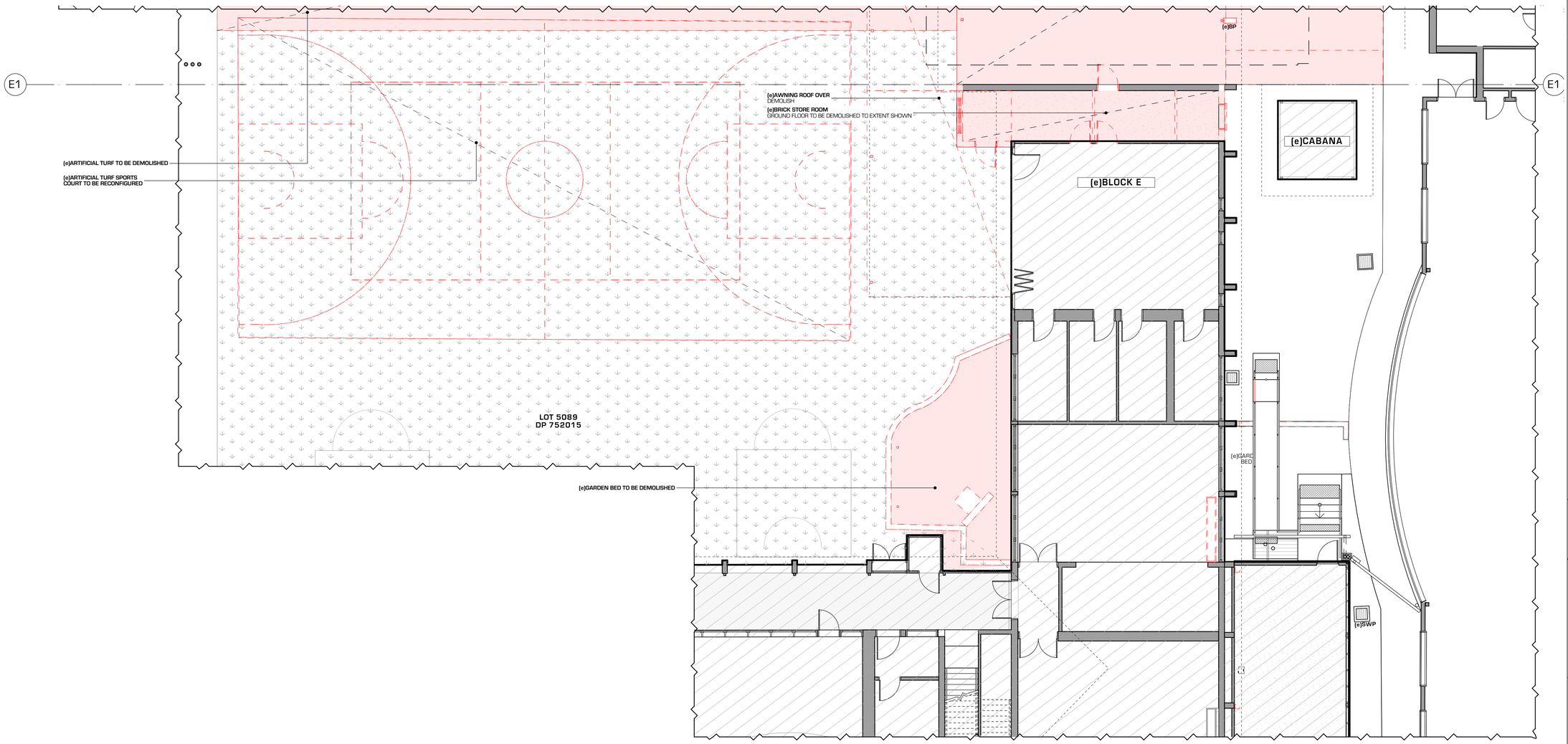
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DRAWING TITLE
2000 DEMOLITION PLANS
GROUND FLOOR DEMOLITION PLAN BLOCK B

JOB NUMBER	DRAWING NUMBER	ISSUE
1912N	DA2200	02

DEVELOPMENT APPLICATION



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NSW ARCHITECTS REGISTRATION NO: 5785

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DEMOLITION PLAN LEGEND

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(e)	EXISTING		DP	DOWNPIPE	HR	HAND RAIL
AFL	ABOVE FLOOR LEVEL		(e)	EXISTING	P	PROJECTOR
BAL	BALUSTRADE		ES	EDGE STRIP	PB	PLASTERBOARD
BH	BULK HEAD		EDB	ELECTRICAL DISTRIBUTION BOARD	PP	POWER POLE
BP	BRICK PIER				(r)	RELOCATE
CC	CONCRETE COLUMN		FB	FACE BRICK	S	SEAT
CL	LIGHT WEIGHT CLADDING		F/W	FLOOR WASTE	SC	STEEL COLUMN
CONC	CONCRETE		G	GRATE	SW	STORM WATER PIT
CPT	CARPET		GB	GARDEN BED	TWE	TO MATCH EXISTING
					WB	WHITE BOARD

GENERAL
1. WORK, AND HENCE DEMOLITION, TO BE CARRIED OUT IN STAGES. REFER TO STAGING DIAGRAM
2. ASBESTOS & CONTAMINATED MATERIALS - REFER TO SPECIFICATION CLAUSE 6.5 OF SECTION 2019 DEMOLITION.
3. MUD AND SOIL FROM VEHICULAR MOVEMENTS TO & FROM SITE MUST NOT BE DEPOSITED ON THE ROAD
4. WHERE INDICATED REMOVE AND STORE FOR CLIENT) ALL CLOCKS, WHITEBOARDS & RELIGIOUS ITEMS.
5. ALL SMART BOARDS & ASSOCIATED EQUIPMENT TO BE SALVAGED WHERE NOTED
6. WHEN REMOVING (e)JOINERY CAP OFF ALL SERVICES BEHIND THE LINE OF THE (n)LINING. MAKE GOOD ALL SURFACES TO ENSURE THAT (n)LININGS SIT SMOOTHLY
7. ALL EXISTING GAS BAYONETTES (IF ANY FOUND) TO BE SEALED & CAPPED OFF
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ROOF DEMOLITION
1. RETAIN ALL (e)GUTTERS AND DOWNPIPES UNLESS SPECIFICALLY NOTED OTHERWISE
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FLOOR DEMOLITION
1. DEMOLISH (e)CARPET, CARPET TILES, CORK & VINYL FLOORING TO EXTENT OF WORKS UNLESS NOTED OTHERWISE
2. REMOVE ALL UNDERLAYS, ADHESIVES, FIXINGS & DIVIDER STRIPS

ELECTRICAL DEMOLITION
1. REFER TO ELECTRICAL ENGINEERS DRAWINGS FOR INSTRUCTIONS ON REMOVAL OF EXISTING ELECTRICAL ITEMS

DEFINITIONS

DEMOLISH	REMOVE. CONTRACTOR TO DISPOSE OF ITEM OFF SITE.
RELOCATE	REMOVE, STORE, REINSTALL IN GOOD WORKING CONDITION. RELOCATE ALSO REFERS TO CONTENTS OF CUPBOARDS & SHELVES.
RETAIN	KEEP IN PLACE WITHOUT DAMAGE
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EXISTING TO BE DEMOLISHED

EXTENT OF BUILDING DEMOLITION

EXTENT OF PAVEMENT DEMOLITION

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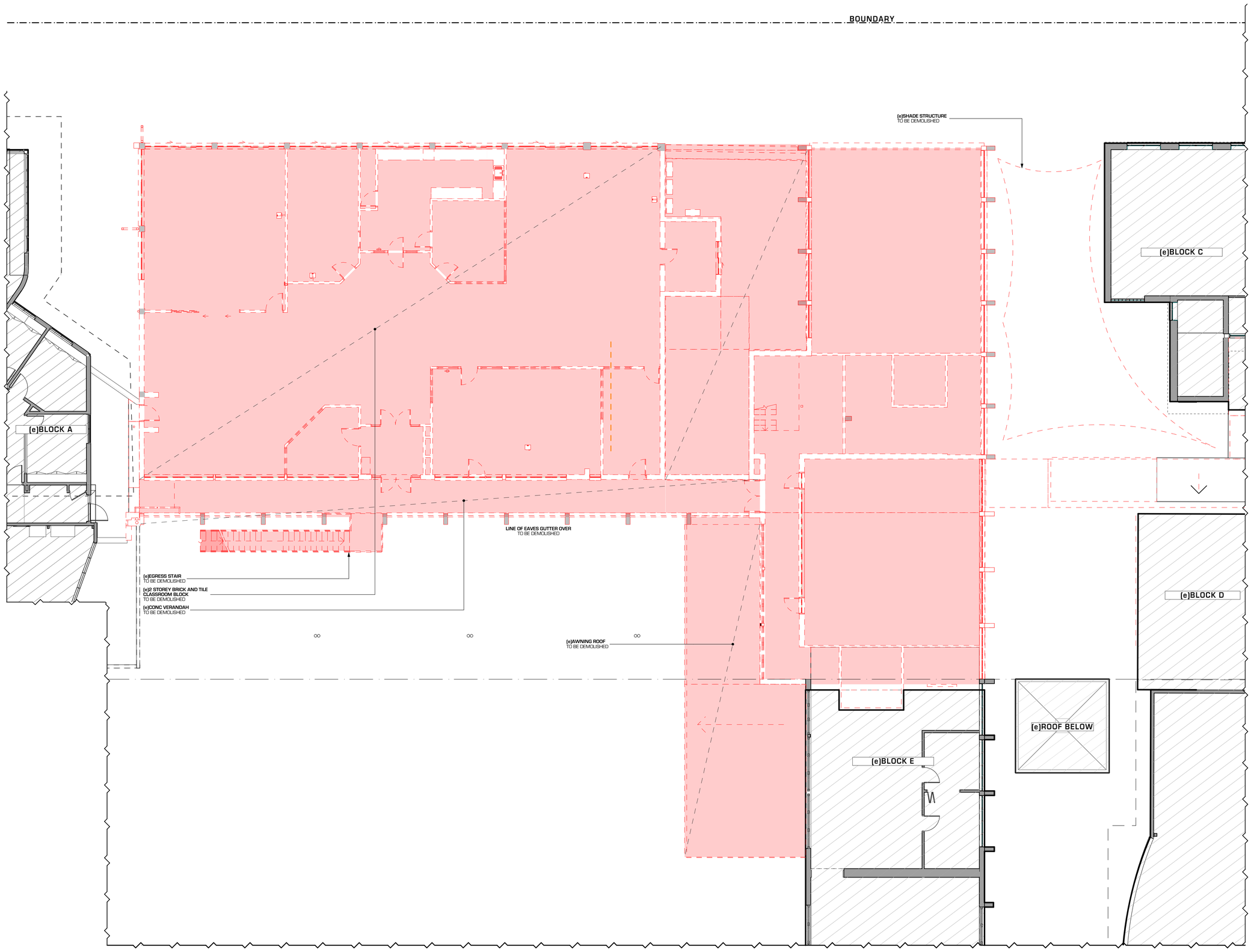
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DRAWING TITLE
2000 DEMOLITION PLANS
GROUND FLOOR DEMOLITION PLAN BLOCK B

JOB NUMBER	DRAWING NUMBER	ISSUE
1912N	DA2201	01

DEVELOPMENT APPLICATION



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NSW ARCHITECTS REGISTRATION NO. 5785

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AFL	ABOVE FLOOR LEVEL	(e)	EXISTING	P	PROJECTOR
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EXTENT OF BUILDING DEMOLITION

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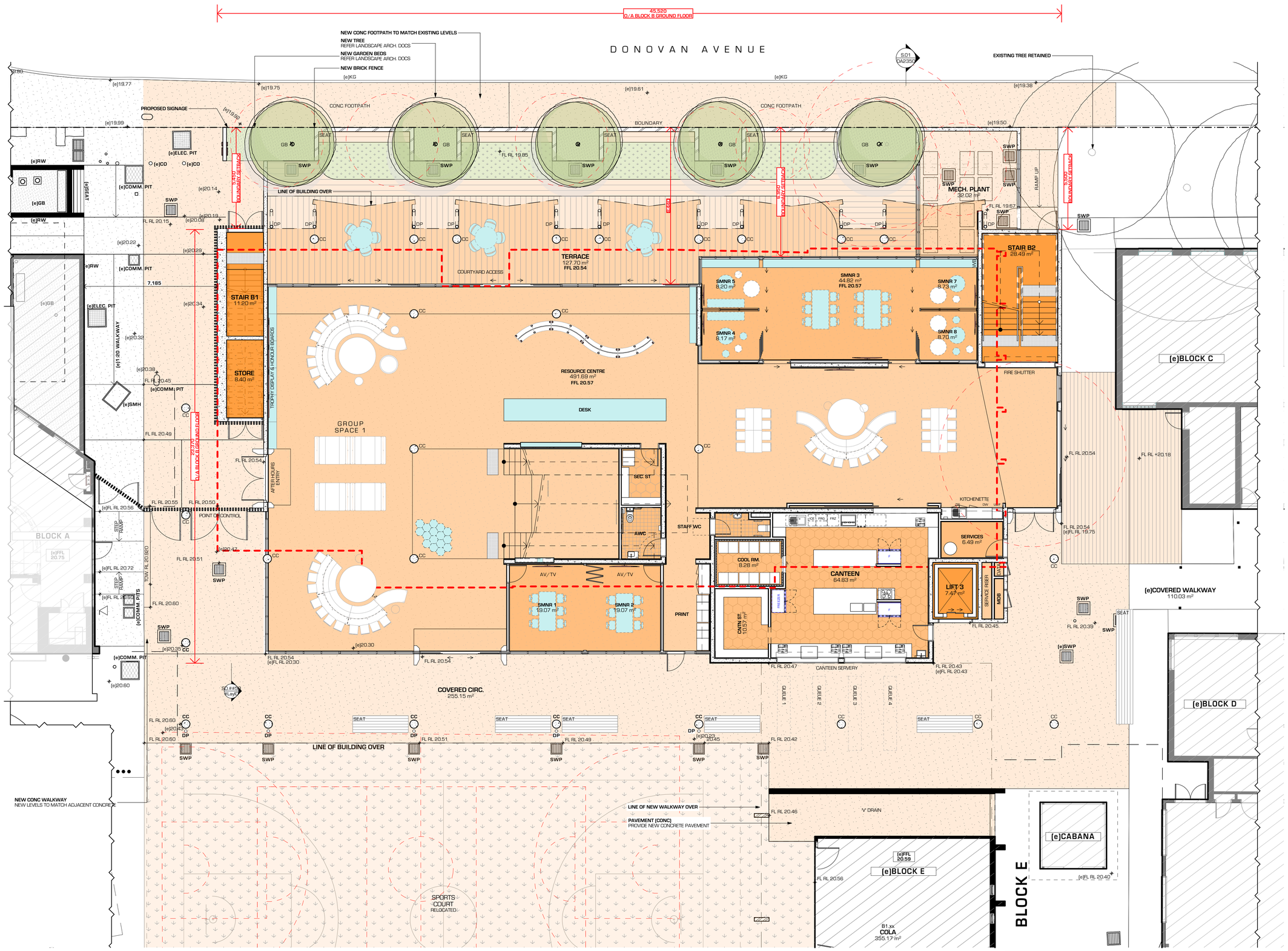
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DRAWING TITLE
2000 DEMOLITION PLANS
FIRST FLOOR DEMOLITION PLAN BLOCK B

JOB NUMBER	DRAWING NUMBER	ISSUE
1912N	DA2202	02

DEVELOPMENT APPLICATION



BLOCK B SUMMARY OF AREAS	- GROUND FLOOR
EXISTING GROSS FLOOR AREA	= 691.2m²
PROPOSED GROSS FLOOR AREA	= 865.8m²

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QUINN O'HANLON ARCHITECTS - NOMINATED ARCHITECT
NSW ARCHITECTS REGISTRATION NO: 5785

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FLOOR PLAN LEGEND

NOTE: IF AN (e) IS LOCATED AT THE FRONT OF AN ABBREVIATION IT INDICATES THE ELEMENT IS EXISTING, OTHERWISE IT SHOULD BE ASSUMED AS NEW (n)

(e)	EXISTING	EDB	ELECTRICAL DISTRIBUTION BOARD	SC	STEEL COLUMN
(r)	RELOCATE	FEN	FENCE	SCR	SCREEN
AC	AIR CONDITIONER	FFL	FINISHED FLOOR LEVEL	SMH	SEWER MAN HOLE
AV	AUDIO VISUAL EQUIPMENT	FLB	FLOOR BOX	SVR	SERVER
BH	BULK HEAD	FHR	FIRE HOSE REEL	SWP	STORMWATER PIT
BP	BRICK PIER	FW	FLOOR WASTE	TF	TIMBER FLOOR
CC	CONCRETE COLUMN	HR	HAND RAIL	TGI	TACTILE GROUND INDICATOR
CO	CLEAR OUT	JD	JUNCTION DETAIL	TME	TO MATCH EXISTING
COM	COMMUNICATIONS	MET	METER CUPBOARD	TR	TURNBUCKLE RAMP
CONC	CONCRETE	MB	NOTICEBOARDS	VNL	VINYL
CPT	CARPET	P	PROJECTOR	VOS	VERIFY ON SITE
D	DOOR	PCC	PRECAST CONCRETE	W	WINDOW
DP	DOWNPIPE	RL	RELATIVE LEVEL	WB	WHITEBOARD

SYMBOL LEGEND
EXISTING TREE TO REMAIN
PROPOSED TREE

HATCH LEGEND
CARPET
ARTIFICIAL TURF
TURF
VERTICAL CIRCULATION
CIRCULATION SPACE
CONCRETE
DECKING
VINYL
NON-CIRCULATION SPACE
PROPOSED LANDSCAPE

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CLIENT
SYDNEY CATHOLIC SCHOOLS

DATE	REVISION	ISSUE
27/04/20	DEVELOPMENT APPLICATION	03
23/03/20	ISSUED FOR CLIENT REVIEW	02

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DRAWING TITLE
2220 GA PLANS
GROUND FLOOR PLAN BLOCK B

JOB NUMBER	DRAWING NUMBER	ISSUE
1912N	DA2220	03

DEVELOPMENT APPLICATION



DRAWING CONTINUES DA2222

BLOCK B SUMMARY OF AREAS	- FIRST FLOOR
EXISTING GROSS FLOOR AREA	= 662.9m²
PROPOSED GROSS FLOOR AREA	= 1080.4m²

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FLOOR PLAN LEGEND

NOTE: IF AN (e) IS LOCATED AT THE FRONT OF AN ABBREVIATION IT INDICATES THE ELEMENT IS EXISTING, OTHERWISE IT SHOULD BE ASSUMED AS NEW (n)

(e)	EXISTING	EDB	ELECTRICAL DISTRIBUTION BOARD	SC	STEEL COLUMN
(r)	RELOCATE	FEN	FENCE	SCR	SCREEN
AC	AIR CONDITIONER	FFL	FINISHED FLOOR LEVEL	SMH	SEWER MAN HOLE
AV	AUDIO/VISUAL EQUIPMENT	FLB	FLOOR BOX	SVR	SERVER
BH	BULK HEAD	FHR	FIRE HOSE REEL	SWP	STORMWATER PIT
BP	BRICK PIER	FW	FLOOR WASTE	TF	TIMBER FLOOR
CC	CONCRETE COLUMN	HR	HAND RAIL	TGI	TACTILE GROUND INDICATOR
CO	CLEAR OUT	JD	JOINERY DETAIL	TME	TO MATCH EXISTING
COM	COMMUNICATIONS	MP	METER PIT	TR	THRESHOLD RAMP
CONC	CONCRETE	MB	NOTICEBOARDS	VNL	VINYL
CPT	CARPET	P	PROJECTOR	VOS	VERIFY ON SITE
D	DOOR	PCC	PRECAST CONCRETE	W	WINDOW
DP	DOWNPIPE	RL	RELATIVE LEVEL	WB	WHITEBOARD

SYMBOL LEGEND

EXISTING TREE TO REMAIN

PROPOSED TREE

HATCH LEGEND

CARPET
CONCRETE
ARTIFICAL TURF
DECKING
TURF
VINYL
VERTICAL CIRCULATION
NON-CIRCULATION SPACE
CIRCULATION SPACE
PROPOSED LANDSCAPE

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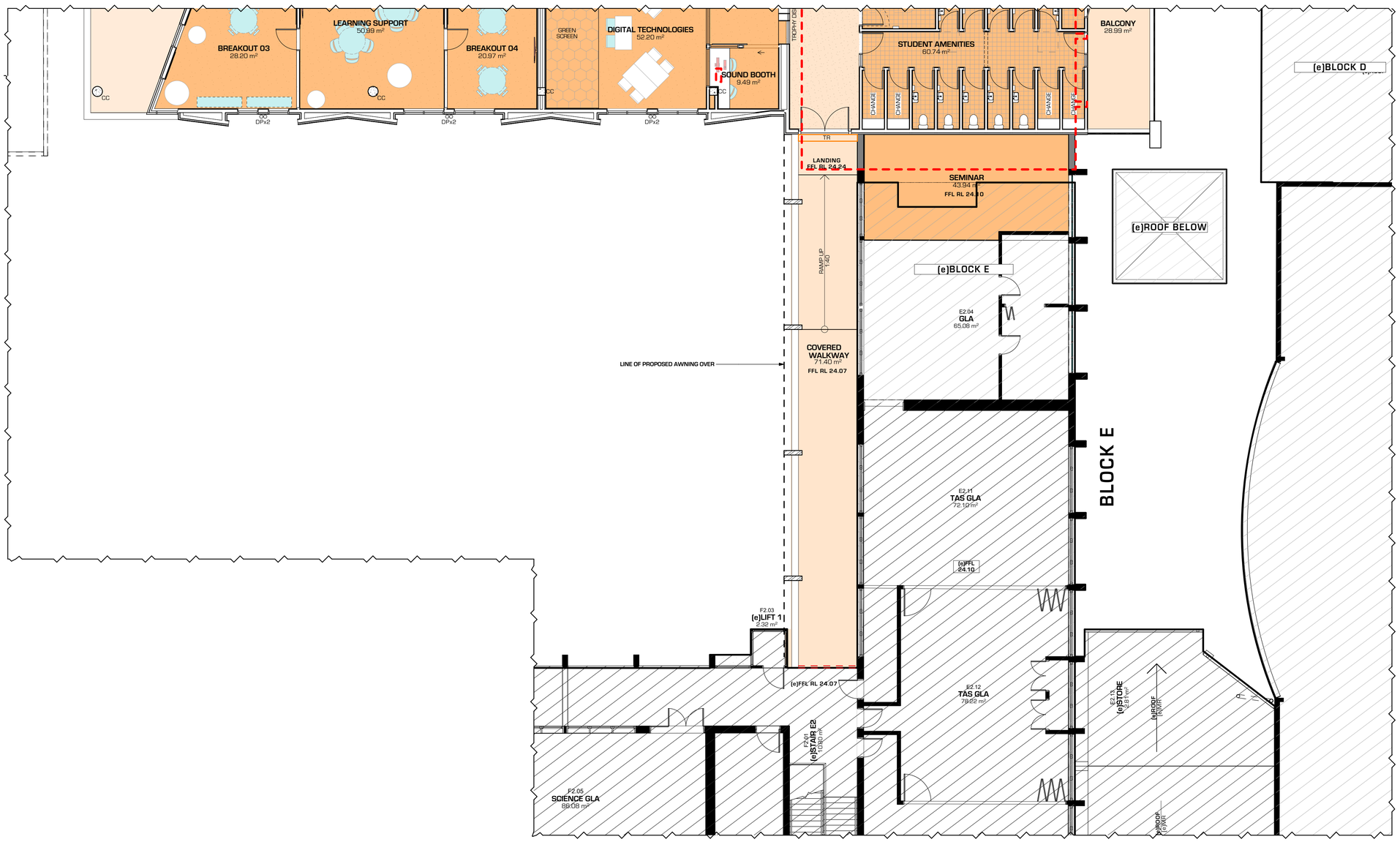
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DRAWING TITLE
2220 GA PLANS
FIRST FLOOR PLAN 1 BLOCK B

JOB NUMBER	DRAWING NUMBER	ISSUE
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FLOOR PLAN LEGEND

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(e)	EXISTING	EDB	ELECTRICAL DISTRIBUTION BOARD	SC	STEEL COLUMN
(r)	RELOCATE	FEN	FENCE	SCR	SCREEN
AC	AIR CONDITIONER	FFL	FINISHED FLOOR LEVEL	SMH	SEWER MAN HOLE
AV	AUDIO/VISUAL EQUIPMENT	FLB	FLOOR BOX	SVR	SERVER
BH	BULK HEAD	FHR	FIRE HOSE REEL	SWP	STORMWATER PIT
BP	BRICK PIER	FW	FLOOR WASTE	TF	TIMBER FLOOR
CC	CONCRETE COLUMN	HR	HAND RAIL	TGI	TACTILE GROUND INDICATOR
CO	CLEAR OUT	JD	JOINERY DETAIL	TME	TO MATCH EXISTING
COM	COMMUNICATIONS	MF	METAL FLOOR	TR	THRESHOLD RAMP
CONC	CONCRETE	MB	NOTICEBOARDS	VNL	VINYL
CPT	CARPET	P	PROJECTOR	VOS	VERIFY ON SITE
D	DOOR	PCC	PRECAST CONCRETE	W	WINDOW
DP	DOWNPIPE	RL	RELATIVE LEVEL	WB	WHITEBOARD

SYMBOL LEGEND

- EXISTING TREE TO REMAIN
- PROPOSED TREE

HATCH LEGEND

- CARPET
- ARTIFICIAL TURF
- TURF
- VERTICAL CIRCULATION
- CIRCULATION SPACE
- CONCRETE
- DECKING
- VINYL
- NON-CIRCULATION SPACE
- PROPOSED LANDSCAPE

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DRAWING TITLE
2220 GA PLANS
FIRST FLOOR PLAN 2 BLOCK B

JOB NUMBER	DRAWING NUMBER	ISSUE
1912N	DA2222	01

DEVELOPMENT APPLICATION



BLOCK B SUMMARY OF AREAS	- SECOND FLOOR
EXISTING GROSS FLOOR AREA	= nil
PROPOSED GROSS FLOOR AREA	= 1168.8m²

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FLOOR PLAN LEGEND

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(e)	EXISTING	EDB	ELECTRICAL DISTRIBUTION BOARD	SC	STEEL COLUMN
(r)	RELOCATE	FEN	FENCE	SCR	SCREEN
AC	AIR CONDITIONER	FFL	FINISHED FLOOR LEVEL	SMH	SEWER MAN HOLE
AV	AUDIO VISUAL EQUIPMENT	FLB	FLOOR BOX	SVR	SERVER
BH	BULK HEAD	FHR	FIRE HOSE REEL	SWP	STORMWATER PIT
BP	BRICK PIER	FW	FLOOR WASTE	TF	TIMBER FLOOR
CC	CONCRETE COLUMN	HR	HAND RAIL	TGI	TACTILE GROUND INDICATOR
CO	CLEAR OUT	JD	JOINERY DETAIL	TME	TO MATCH EXISTING
COM	COMMUNICATIONS	MB	MAIN SWITCHBOARD	TR	TURNSTILE
CONC	CONCRETE	NB	NOTICEBOARDS	VNL	VINYL
CPT	CARPET	P	PROJECTOR	VOS	VERIFY ON SITE
D	DOOR	PCC	PRECAST CONCRETE	W	WINDOW
DP	DOWNPIPE	RL	RELATIVE LEVEL	WB	WHITEBOARD

SYMBOL LEGEND

- EXISTING TREE TO REMAIN
- PROPOSED TREE

HATCH LEGEND

- CARPET
- CONCRETE
- ARTIFICIAL TURF
- DECKING
- TURF
- VINYL
- VERTICAL CIRCULATION
- NON-CIRCULATION SPACE
- CIRCULATION SPACE
- PROPOSED LANDSCAPE

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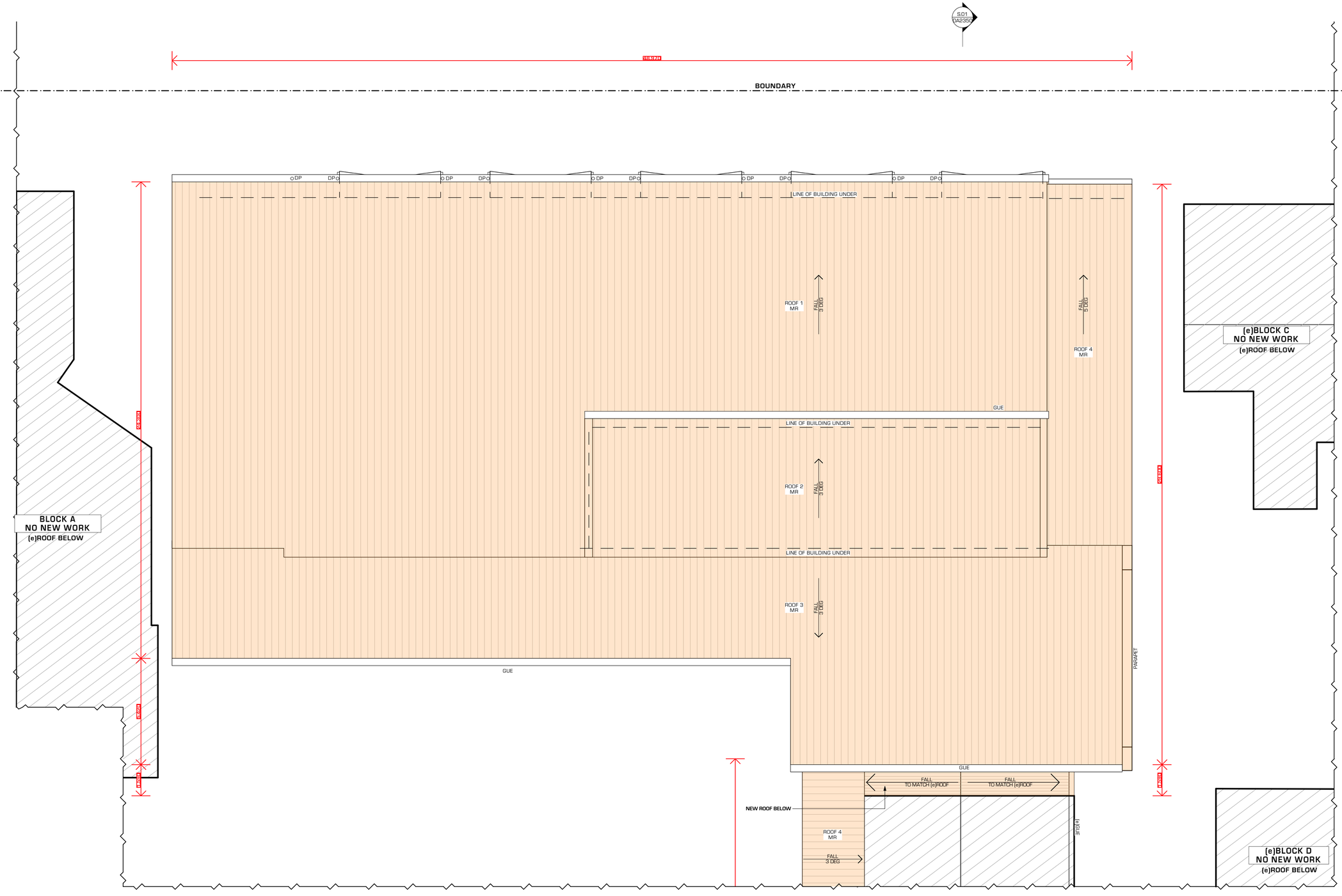
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DRAWING TITLE
2220 GA PLANS
SECOND FLOOR PLAN BLOCK B

JOB NUMBER	DRAWING NUMBER	ISSUE
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DEVELOPMENT APPLICATION



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ROOF LEGEND

NOTE: IF AN (e) IS LOCATED AT THE FRONT OF AN ABBREVIATION IT INDICATES THE ELEMENT IS EXISTING, OTHERWISE IT SHOULD BE ASSUMED AS NEW.

(e)	EXISTING
(n)	NEW
BC	BARGE CAPPING
DP	DOWNPIPE
GUE	GUTTER - EAVES
MR	METAL ROOF
RC	RIDGE CAPPING
RPF	ROOF PENETRATION FLASHING
RV	RIDGE VENT
RWT	RAIN WATER TANK
SPD	SPREADER DOWNPIPE
SK	SKY LIGHT
TR	TRANSLUCENT ROOF SHEETING
VOS	VERIFY ON SITE

ROOF NOTES

1) ALL SCREWS TO BE COLOUR MATCHED TO ROOF SHEETING
2) PROVIDE PROFILED FILLER STRIPS (CLOSED CELL POLYURETHANE FOAM) UNDER ALL FLASHINGS AND CAPPINGS
3) FILL ALL GAPS BETWEEN FASCIAS EAVES AND EXTERNAL WALLS.
4) PREFORM ALL CAPPINGS TO MATCH THE PROFILE OF THE ROOF SHEETING. COLOUR TO MATCH ROOF SHEETING UNO.
5) FULLY SARK UNDER ALL METAL ROOF SHEETING
6) PROVIDE GUTTER PROTECTION MESH AS SPECIFIED TO ALL GUTTERS
7) PROVIDE SEPARATION OF DISSIMILAR METALS
8) INSTALL IN ACCORDANCE WITH LYSAUGHTS REFEREE AND ROOFING INSTALLATION MANUALS AND SPECIFICATION.

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DATE	REVISION	ISSUE
27/04/20	DEVELOPMENT APPLICATION	02
10/03/20	DEVELOPMENT APPLICATION	01

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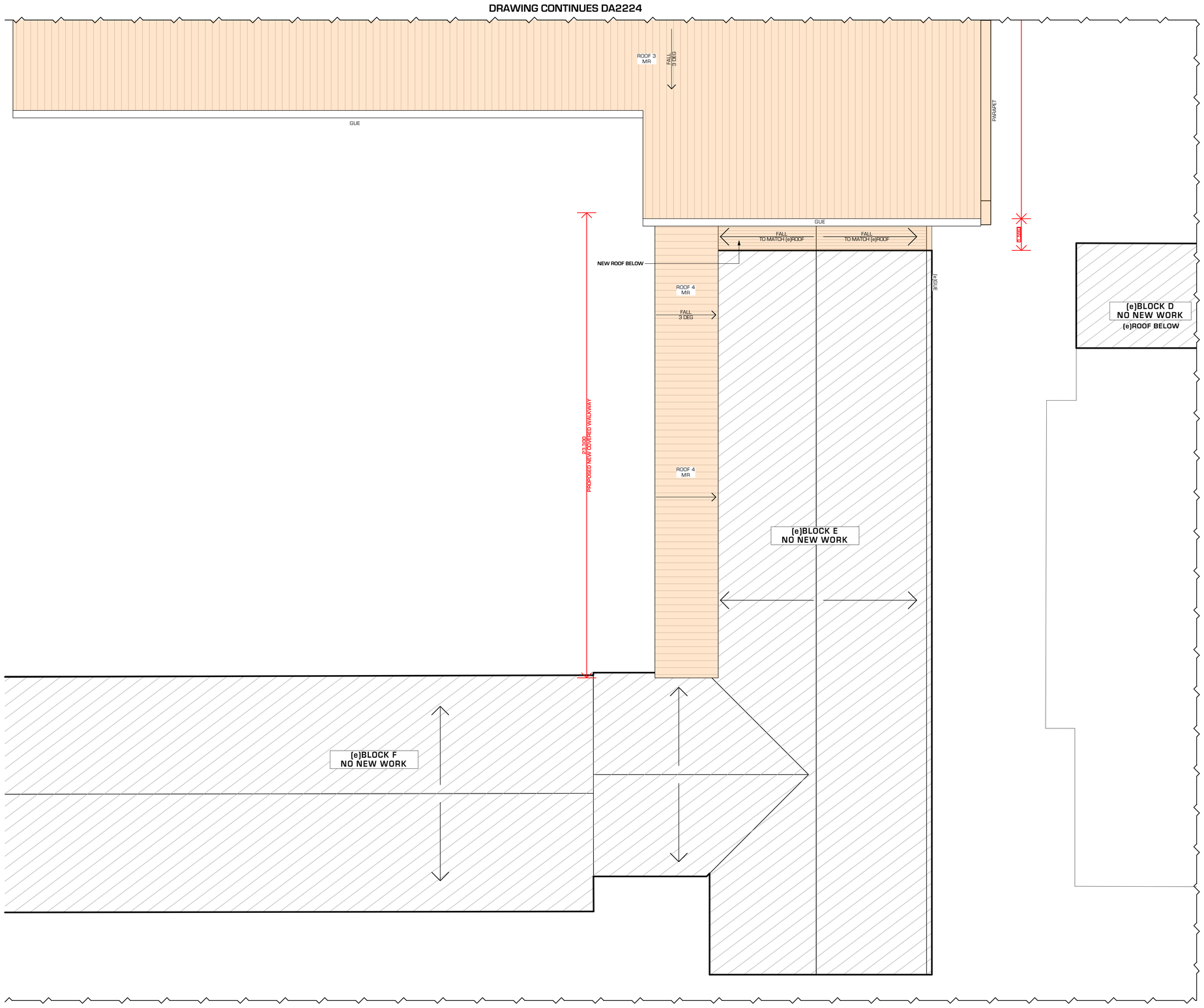
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DRAWING TITLE
2220 GA PLANS
ROOF PLAN PLAN 1 BLOCK B

JOB NUMBER	DRAWING NUMBER	ISSUE
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ROOF LEGEND

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(e)	EXISTING
(n)	NEW
BC	BARGE CAPPING
DP	DOWNPIPE
GUE	GUTTER - EAVES
MR	METAL ROOF
RC	RIDGE CAPPING
RPF	ROOF PENETRATION FLASHING
RV	RIDGE VENT
RWT	RAIN WATER TANK
SPD	SPREADER DOWNPIPE
SK	SKY LIGHT
TR	TRANSLUCENT ROOF SHEETING
VOS	VERIFY ON SITE

ROOF NOTES

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2) PROVIDE PROFILED FILLER STRIPS (CLOSED CELL POLYURETHANE FOAM) UNDER ALL FLASHINGS AND CAPPINGS
3) FILL ALL GAPS BETWEEN FASCIAS EAVES AND EXTERNAL WALLS.
4) PREFORM ALL CAPPINGS TO MATCH THE PROFILE OF THE ROOF SHEETING. COLOUR TO MATCH ROOF SHEETING UNO.
5) FULLY SARK UNDER ALL METAL ROOF SHEETING
6) PROVIDE GUTTER PROTECTION MESH AS SPECIFIED TO ALL GUTTERS
7) PROVIDE SEPARATION OF DISSIMILAR METALS
8) INSTALL IN ACCORDANCE WITH LYSAUGHTS REFEREE AND ROOFING INSTALLATION MANUALS AND SPECIFICATION.

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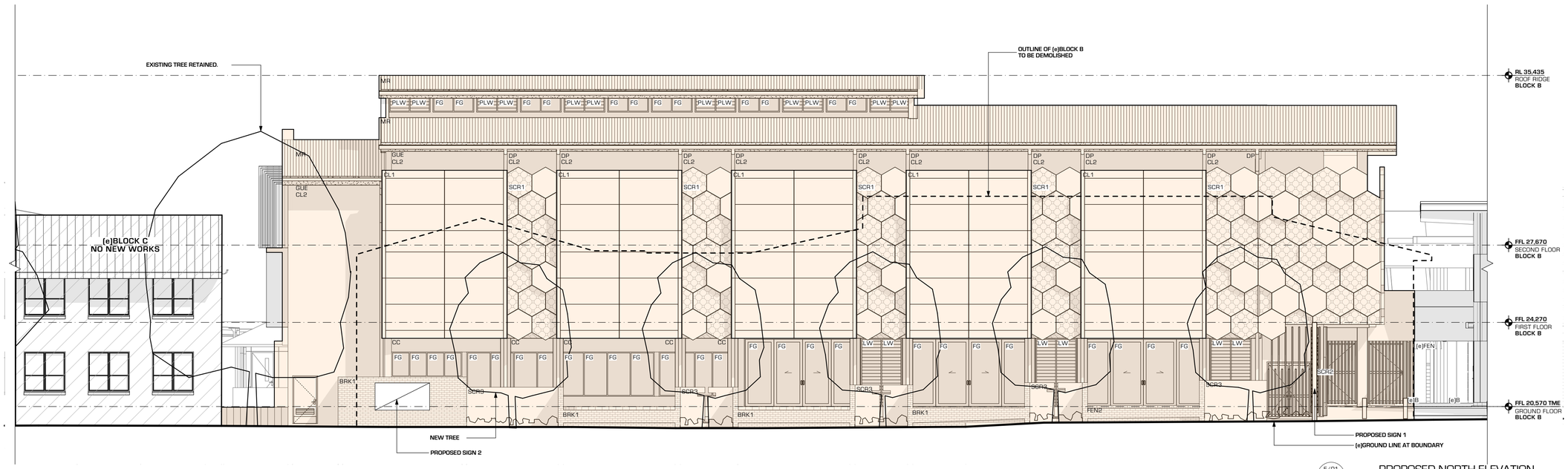
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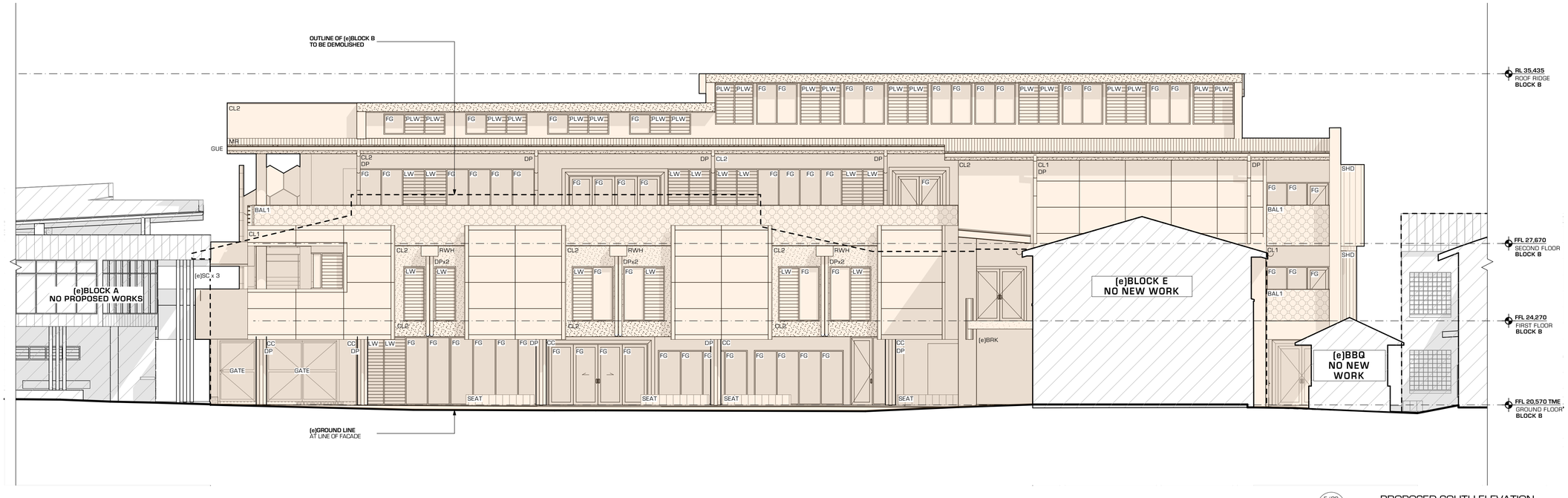
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ROOF PLAN PLAN 2 BLOCK B

JOB NUMBER	DRAWING NUMBER	ISSUE
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DEVELOPMENT APPLICATION



E/01 PROPOSED NORTH ELEVATION
DONOVAN AVENUE



E/02 PROPOSED SOUTH ELEVATION

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ELEVATION/SECTION LEGEND

NOTE: IF AN (e) IS LOCATED AT THE FRONT OF AN ABBREVIATION IT INDICATES THE ELEMENT IS EXISTING, OTHERWISE IT SHOULD BE ASSUMED AS NEW (n)

(e)	EXISTING		
AC	AIR CONDITIONER	MR	METAL ROOF
AV	AUDIO-VISUAL EQUIPMENT	MSS	METAL SLATTED SCREEN
BAL	BALUSTRADE	P	PROJECTOR
BP	BRICK PIER	PB	PLASTERBOARD
BR	BAG RACK	PDC	PRECAST CONCRETE
BRK	BRICK	PLW	POWERED LOUVRE WINDOW
CC	CONCRETE COLUMN	PT	PAINT FINISH
CL	CLADDING (LIGHTWEIGHT)	REN	RENDER
CF	CEILING FAN	RL	RELATIVE LEVEL
CONC	CONCRETE	RV	RIDGE VENT
DL	DOWN LIGHT	RW	RETAINING WALL
DP	DOWN PIPE	RWT	RAIN WATER TANK
EL	EXHAUST LOUVRE	SC	STEEL COLUMN
FCL	FINISHED CEILING LEVEL	SCM	SECURITY CAMERA
FCP	FEATURE CEILING PANEL	SCR	SCREEN
FEN	FENCE	SPD	SPREADER DOWNPIPE
FFL	FINISHED FLOOR LEVEL	S/FAN	SOLAR ROOF FAN/VENT
FG	FIXED GLASS	SHD	SUN SHADING
FWP	FEATURE WALL PANEL	SK	SKYLIGHT
GUE	EAVES GUTTER	SLF	SURFACE MOUNT LIGHT FITTING
HR	HANDRAIL	TC	TRANSLUCENT CLADDING
HWS	HOT WATER SYSTEM	TGI	TACTILE GROUND INDICATOR
IL	INTAKE LOUVRES	TME	TO MATCH EXISTING
JD	JOINERY DETAIL	TOW	TOP OF WALL
KR	KERB RAIL	TP	THRESHOLD PLATE
LW	LOUVRE WINDOW	WLF	WALL MOUNTED LIGHT FITTING

HATCH LEGEND

PROPOSED BUILDING

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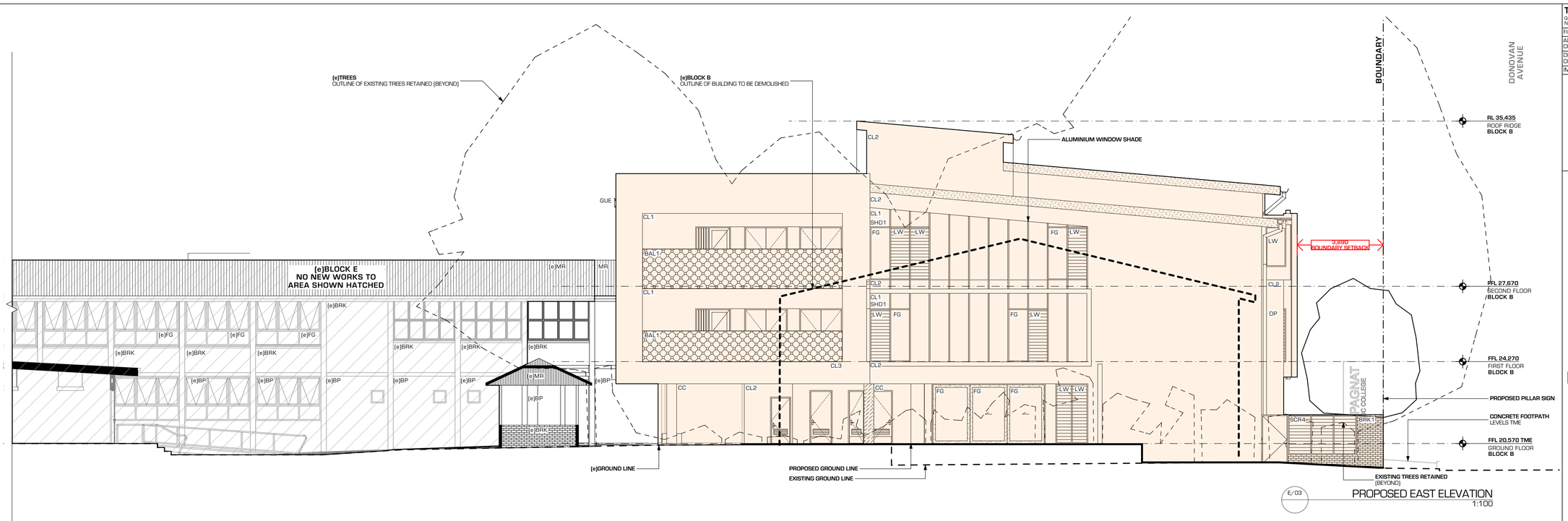
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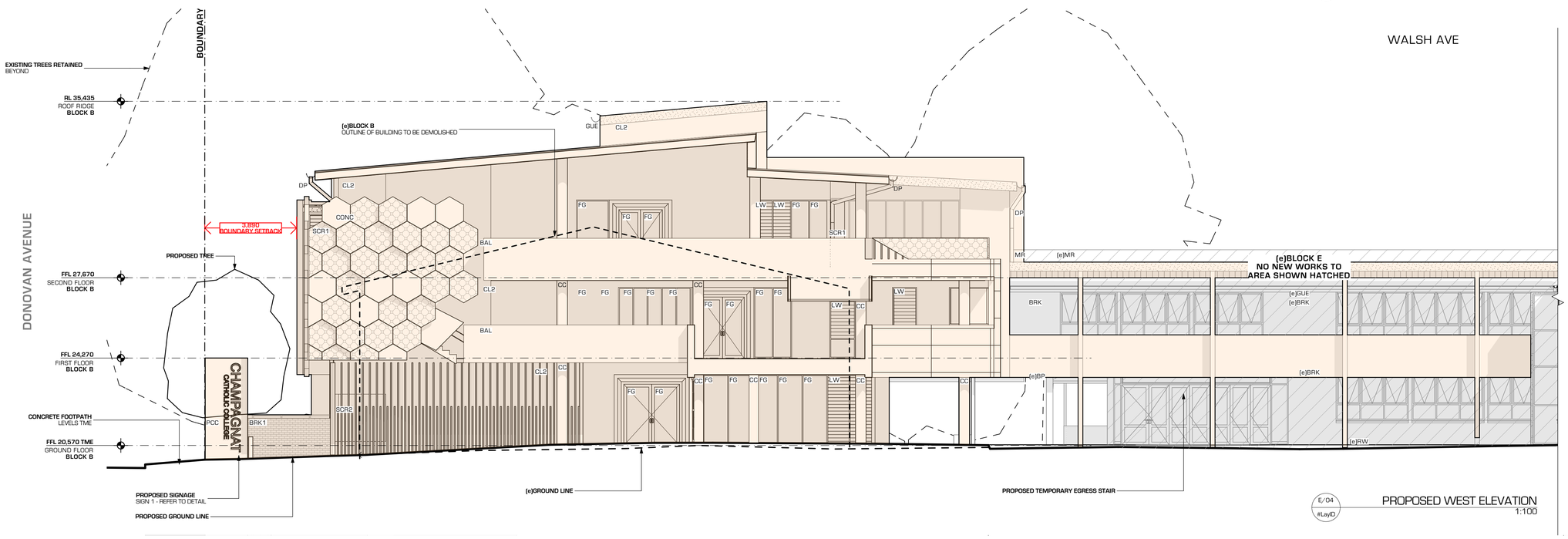
DRAWING TITLE
2300 ELEVATIONS
NORTH & SOUTH ELEVATION

JOB NUMBER	DRAWING NUMBER	ISSUE
1912N	DA2300	03

DEVELOPMENT APPLICATION



E/03 PROPOSED EAST ELEVATION
1:100



E/04 PROPOSED WEST ELEVATION
#LayID 1:100

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NSW ARCHITECTS REGISTRATION NO. 5785

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ELEVATION/SECTION LEGEND

NOTE: IF AN (e) IS LOCATED AT THE FRONT OF AN ABBREVIATION IT INDICATES THE ELEMENT IS EXISTING, OTHERWISE IT SHOULD BE ASSUMED AS NEW (n)

(e)	EXISTING		
AC	AIR CONDITIONER	MR	METAL ROOF
AV	AUDIO-VISUAL EQUIPMENT	MSS	METAL SLATTED SCREEN
BAL	BALUSTRADE	P	PROJECTOR
BP	BRICK PIER	PB	PLASTERBOARD
BR	BAG RACK	PCC	PRECAST CONCRETE
BRK	BRICK	PLW	POWERED LOUVRE WINDOW
CC	CONCRETE COLUMN	PT	PAINT FINISH
CL	CLADDING (LIGHTWEIGHT)	REN	RENDER
CF	CEILING FAN	RL	RELATIVE LEVEL
CONC	CONCRETE	RV	RIDGE VENT
DL	DOWN LIGHT	RW	RETAINING WALL
DP	DOWN PIPE	RWT	RAIN WATER TANK
EL	EXHAUST LOUVRE	SC	STEEL COLUMN
FCL	FINISHED CEILING LEVEL	SCM	SECURITY CAMERA
FCP	FEATURE CEILING PANEL	SCR	SCREEN
FEN	FENCE	SPD	SPREADER DOWNPIPE
FFL	FINISHED FLOOR LEVEL	S/FAN	SOLAR ROOF FAN/ VENT
FG	FIXED GLASS	SHD	SUN SHADING
FWP	FEATURE WALL PANEL	SK	SKYLIGHT
GUE	EAVES GUTTER	SLF	SURFACE MOUNT LIGHT FITTING
HR	HANDRAIL	TC	TRANSLUCENT CLADDING
HWS	HOT WATER SYSTEM	TGI	TACTILE GROUND INDICATOR
IL	INTAKE LOUVRES	TME	TO MATCH EXISTING
JD	JOINERY DETAIL	TOW	TOP OF WALL
KR	KERB RAIL	TP	THRESHOLD PLATE
LW	LOUVRE WINDOW	WLF	WALL MOUNTED LIGHT FITTING

HATCH LEGEND

PROPOSED BUILDING

QOH ARCHITECTS
QUINN O'HANLON ARCHITECTS PTY LTD

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1/153 Victoria Road, GLADESVILLE NSW 2111
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PROJECT
CHAMPAGNAT CATHOLIC COLLEGE BLOCK B

ADDRESS
35 Donovan Avenue MAROUBRA NSW

CLIENT
SYDNEY CATHOLIC SCHOOLS

DATE	REVISION	ISSUE
1/05/20	REVISED DEVELOPMENT APPLICATION	03
27/04/20	DEVELOPMENT APPLICATION	02

SCALEBAR: 0 5 10

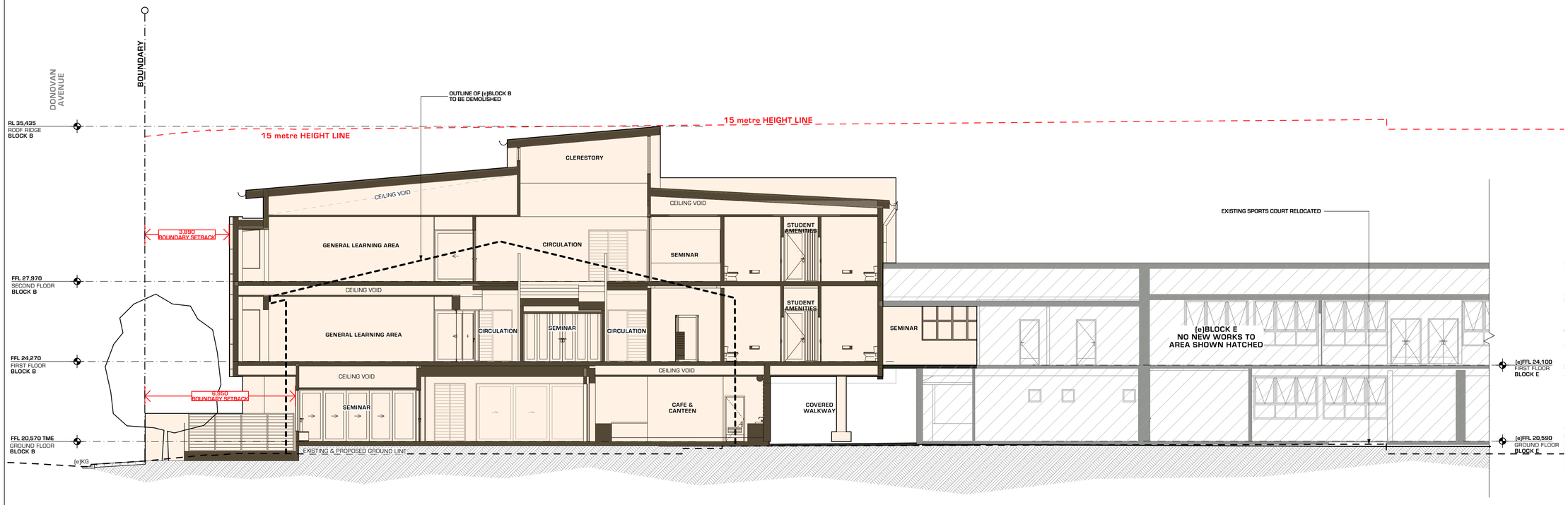
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DATE:	1/05/20

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DRAWING TITLE
2300 ELEVATIONS
EAST & WEST ELEVATION

JOB NUMBER	DRAWING NUMBER	ISSUE
1912N	DA2301	03

DEVELOPMENT APPLICATION



S01 SECTION 01 - BLOCK B

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(e)	EXISTING		
AC	AIR CONDITIONER	MR	METAL ROOF
AV	AUDIO-VISUAL EQUIPMENT	MSS	METAL SLATTED SCREEN
BAL	BALUSTRADE	P	PROJECTOR
BP	BRICK PIER	PB	PLASTERBOARD
BR	BAG RACK	PCC	PRECAST CONCRETE
BRK	BRICK	PLW	POWERED LOUVRE WINDOW
CC	CONCRETE COLUMN	PT	PAINT FINISH
CL	CLADDING (LIGHTWEIGHT)	REN	RENDER
CF	CEILING FAN	RL	RELATIVE LEVEL
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EL	EXHAUST LOUVRE	SC	STEEL COLUMN
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FCP	FEATURE CEILING PANEL	SCR	SCREEN
FEN	FENCE	SPD	SPREADER DOWNPIPE
FFL	FINISHED FLOOR LEVEL	S./FAN	SOLAR ROOF FAN/ VENT
FG	FIXED GLASS	SHD	SUN SHADING
FWP	FEATURE WALL PANEL	SK	SKYLIGHT
GUE	EAVES GUTTER	SLF	SURFACE MOUNT LIGHT FITTING
HR	HANDRAIL	TC	TRANSLUCENT CLADDING
HWS	HOT WATER SYSTEM	TGI	TACTILE GROUND INDICATOR
IL	INTAKE LOUVRES	TME	TO MATCH EXISTING
JD	JOINERY DETAIL	TOW	TOP OF WALL
KR	KERB RAIL	TP	THRESHOLD PLATE
LW	LOUVRE WINDOW	WLF	WALL MOUNTED LIGHT FITTING

HATCH LEGEND

PROPOSED BUILDING

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PROJECT
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DATE	REVISION	ISSUE
1/05/20	REVISED DEVELOPMENT APPLICATION	04
29/04/20	REVISED DEVELOPMENT APPLICATION	03

SCALEBAR: 0 5 10

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DRAWING TITLE
2350 SECTIONS
SECTION 01

JOB NUMBER	DRAWING NUMBER	ISSUE
1912N	DA2350	04

DEVELOPMENT APPLICATION



SHADOW DIAGRAM (EXISTING) **- 21 JUNE: 0800**



SHADOW DIAGRAM (PROPOSED) **- 21 JUNE: 0800**

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QUINN O'HANLON ARCHITECTS - NOMINATED ARCHITECT
NSW ARCHITECTS REGISTRATION NO: 5785

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NOTE: SHADOWS SHOWN FROM BUILDINGS ONLY. SHADOWS FROM EXISTING TREES TO NORTH, EAST & SOUTH BOUNDARIES SIGNIFICANTLY EXCEED BUILDING OVERSHADOWING.

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DATE	REVISION	ISSUE
27/04/20	DEVELOPMENT APPLICATION	02
10/03/20	DEVELOPMENT APPLICATION	01

SCALEBAR:

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CHECKED BY:	TB
DATE:	27/04/20

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DRAWING TITLE
ADDITIONAL DRAWINGS
SHADOW DIAGRAMS - 8am

JOB NUMBER	DRAWING NUMBER	ISSUE
1912N	DA2900	02

DEVELOPMENT APPLICATION



SHADOW DIAGRAM (EXISTING) **- 21 JUNE: 1200**



SHADOW DIAGRAM (PROPOSED) **- 21 JUNE: 1200**

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DATE	REVISION	ISSUE
27/04/20	DEVELOPMENT APPLICATION	02
10/03/20	DEVELOPMENT APPLICATION	01

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DRAWING TITLE
ADDITIONAL DRAWINGS
SHADOW DIAGRAMS - 12pm

JOB NUMBER	DRAWING NUMBER	ISSUE
1912N	DA2901	02

DEVELOPMENT APPLICATION



SHADOW DIAGRAM (EXISTING) **- 21 JUNE: 1600**



SHADOW DIAGRAM (PROPOSED) **- 21 JUNE: 1600**

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DATE	REVISION	ISSUE
27/04/20	DEVELOPMENT APPLICATION	02
10/03/20	DEVELOPMENT APPLICATION	01

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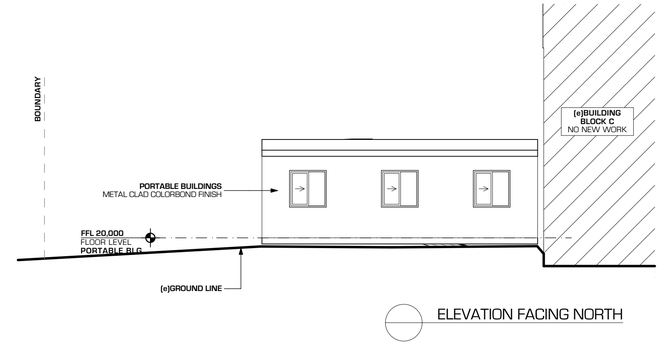
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CHECKED BY:	TB
DATE:	27/04/20

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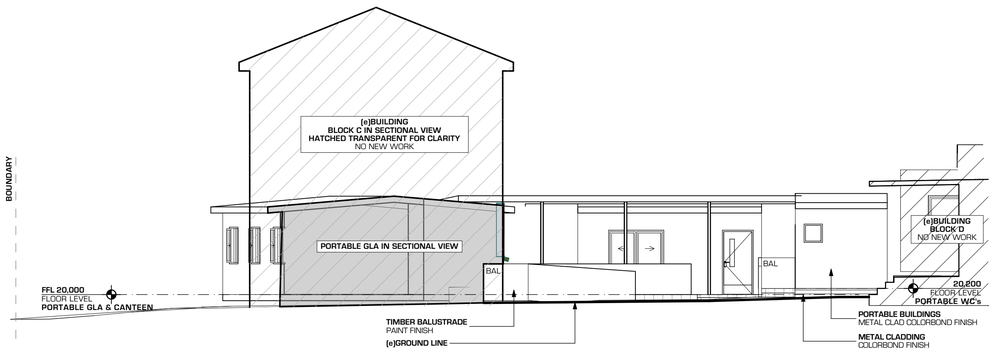
DRAWING TITLE
ADDITIONAL DRAWINGS
SHADOW DIAGRAMS - 4pm

JOB NUMBER	DRAWING NUMBER	ISSUE
1912N	DA2902	02

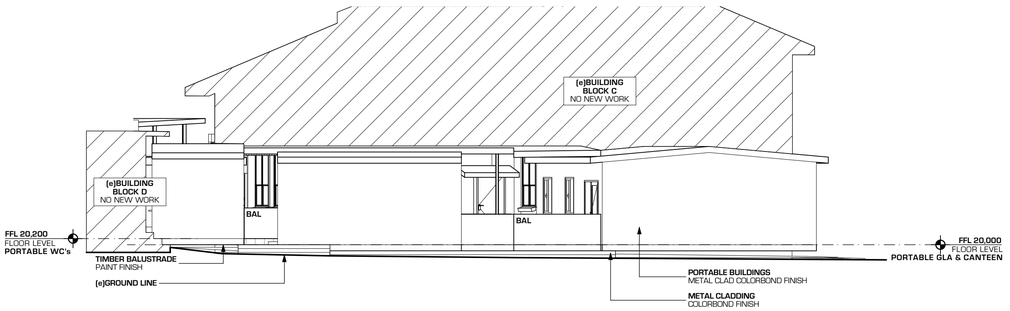
DEVELOPMENT APPLICATION



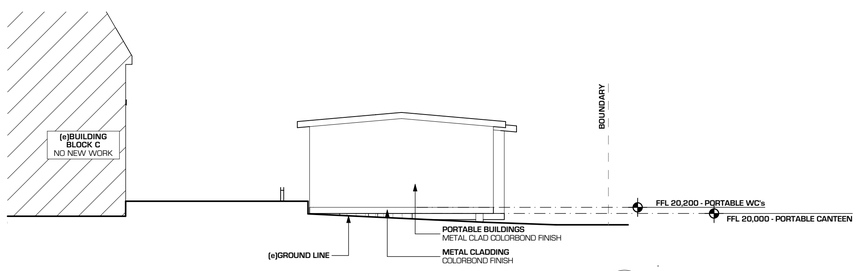
ELEVATION FACING NORTH



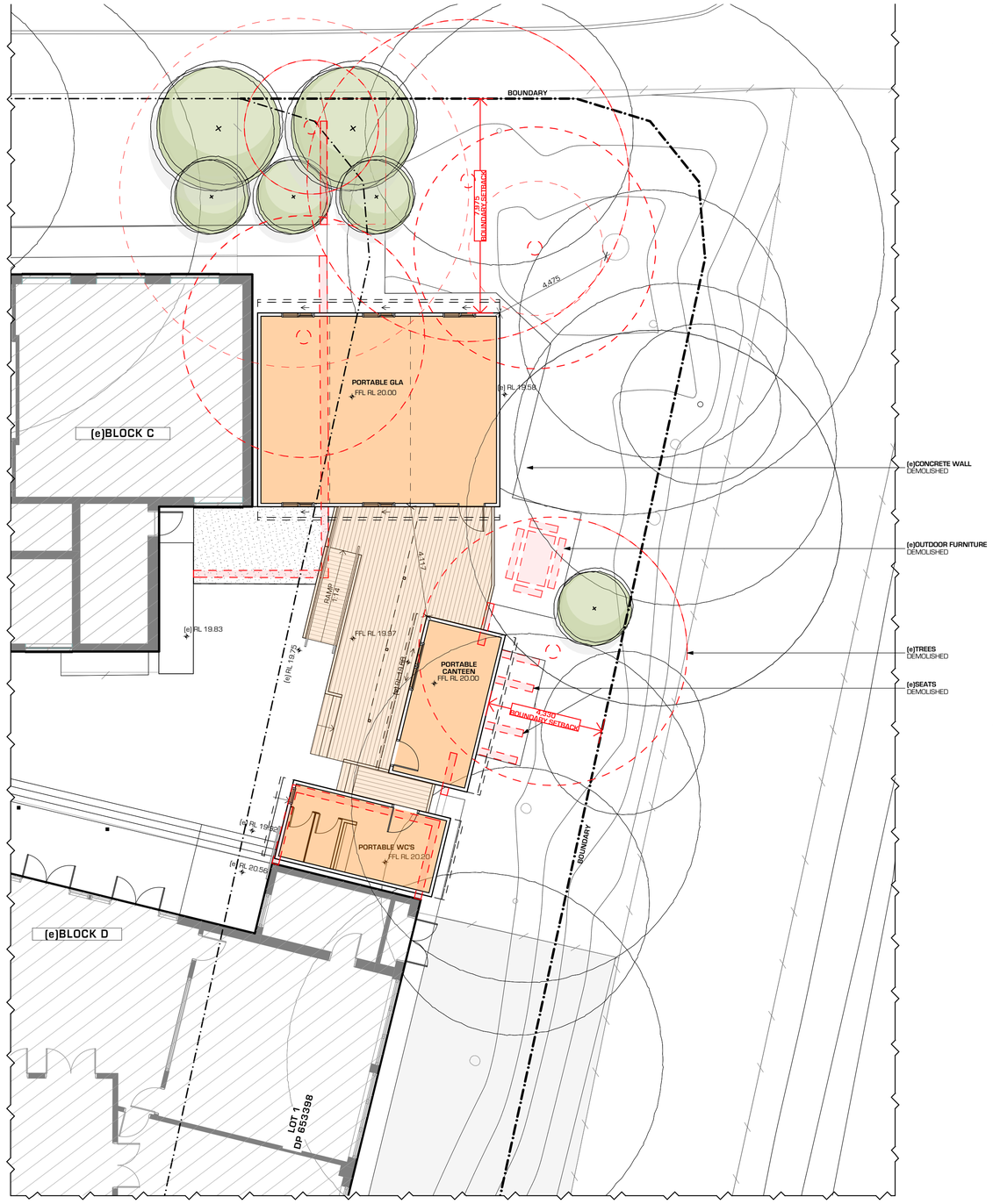
ELEVATION FACING WEST



ELEVATION FACING EAST



E/10 ELEVATION FACING SOUTH
1:100



2. PROPOSED PORTABLE BUILDING FLOOR PLAN
1:100

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FLOOR PLAN LEGEND

NOTE: IF AN (e) IS LOCATED AT THE FRONT OF AN ABBREVIATION IT INDICATES THE ELEMENT IS EXISTING, OTHERWISE IT SHOULD BE ASSUMED AS NEW (n)

(e)	EXISTING	EOB	ELECTRICAL DISTRIBUTION	SC	STEEL COLUMN
ALT	ALLOCATE		BOARD	SCR	SCREEN
AC	AIR CONDITIONER	FEN	FENCE	SMH	SEWER MAN HOLE
AV	AUDIO-VISUAL EQUIPMENT	FFL	FINISHED FLOOR LEVEL	SVR	SERVER
BH	BULK HEAD	FLB	FLOOR BOX	SWP	STORMWATER PIT
BP	BRICK PIER	FHR	FIRE HOSE REEL	TF	TIMBER FLOOR
CC	CONCRETE COLUMN	FW	FLOOR WASTE	TGI	TACTILE GROUND INDICATOR
CO	CLEAR OUT	HR	HAND RAIL	TME	TO MATCH EXISTING
COM	COMMUNICATIONS	JD	JOINERY DETAIL	TR	THRESHOLD RAMP
CONC	CONCRETE	ML	METAL LID	VNL	VINYL
CPT	CARPET	NB	NOTICEBOARDS	VOS	VERIFY ON SITE
D	DOOR	P	PROJECTOR	W	WINDOW
DP	DOWNPIPE	PCC	PRECAST CONCRETE	WB	WHITEBOARD
		RL	RELATIVE LEVEL		

SYMBOL LEGEND

- EXISTING TREE TO REMAIN
- PROPOSED TREE
- DEMOLISHED TREE

HATCH LEGEND

- CARPET
- ARTIFICAL TURF
- TURF
- VERTICAL CIRCULATION
- CIRCULATION SPACE
- CONCRETE
- DECKING
- VINYL
- NON-CIRCULATION SPACE
- PROPOSED LANDSCAPE
- DEMOLISHED LANDSCAPING

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PROJECT
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ADDRESS
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CLIENT
SYDNEY CATHOLIC SCHOOLS

DATE	REVISION	ISSUE
28/04/20	REVISED DEVELOPMENT APPLICATION	03
27/04/20	DEVELOPMENT APPLICATION	02

SCALEBAR: 0 5 10

SCALE:	1:200 @ A3
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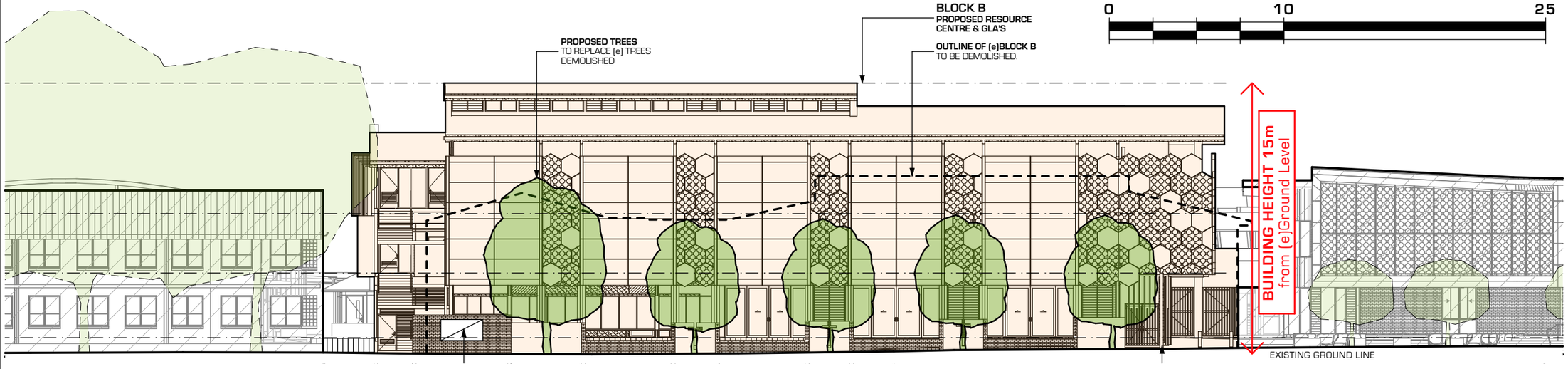
NORTH

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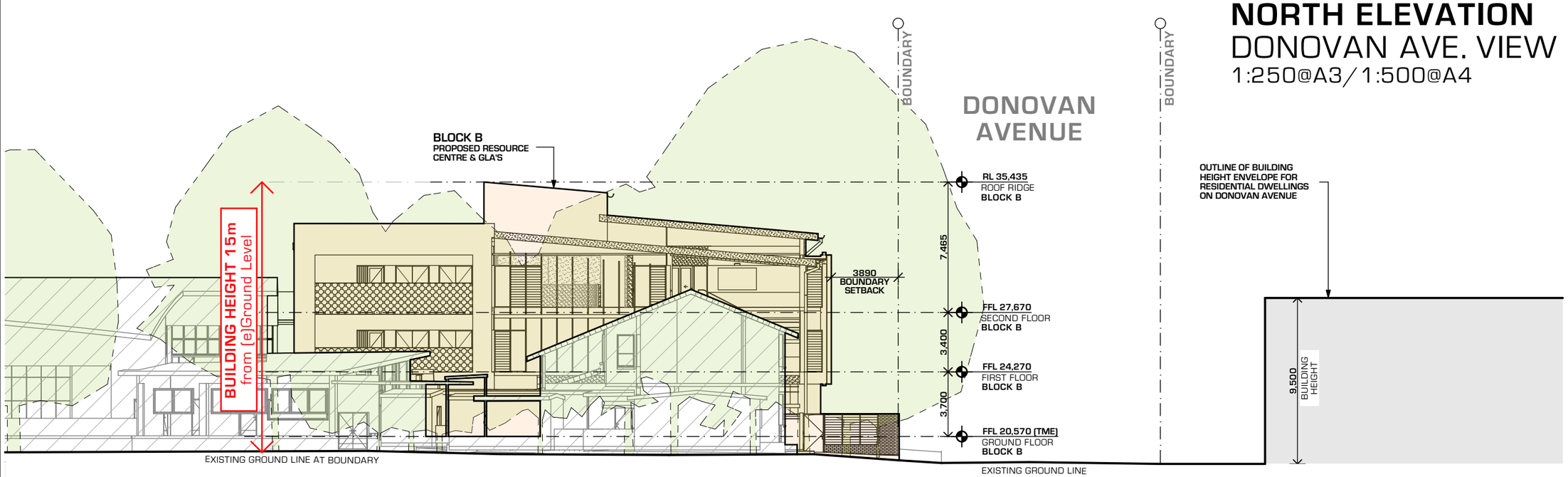
DRAWING TITLE
ADDITIONAL DRAWINGS
PORTABLE BUILDING FLOOR PLAN

JOB NUMBER	DRAWING NUMBER	ISSUE
1912N	DA2910	03

DEVELOPMENT APPLICATION

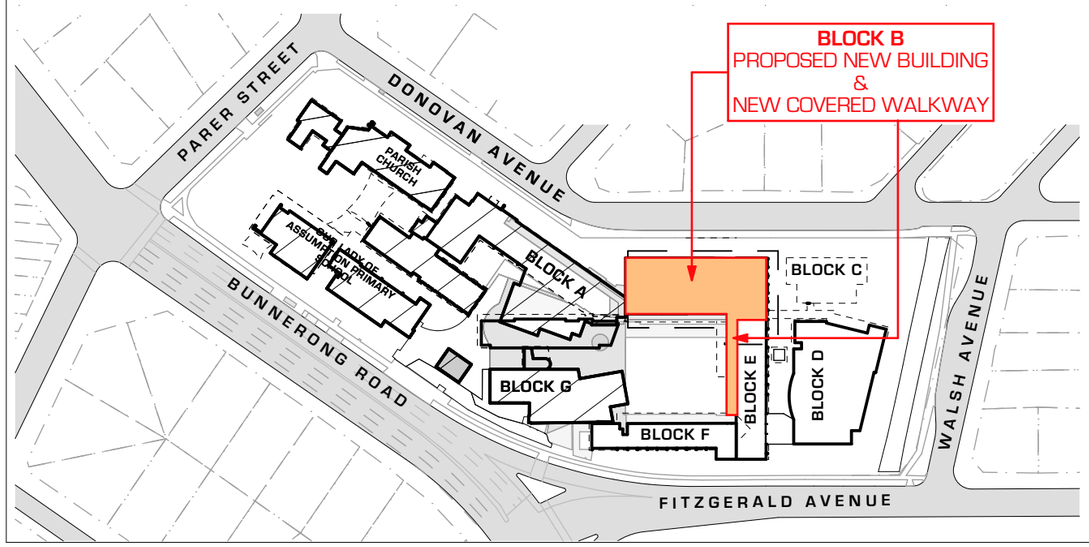


NORTH ELEVATION
DONOVAN AVE. VIEW
1:250@A3/1:500@A4



EAST ELEVATION
WALSH AVE. VIEW
1:250@A3/1:500@A4

0 10 25



0 100 200

SITE PLAN
1:2,000@A3/1:4,000@A4

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CLIENT
SYDNEY CATHOLIC SCHOOLS

DATE	REVISION	ISSUE
23/04/20	DEVELOPMENT APPLICATION	'01'

SCALEBAR:

SCALE:	AS NOTED @A4/ @ A3
DRAWN BY:	AB, NZ, CS, JB
CHECKED BY:	TB, JB
DATE:	29/04/20

NORTH

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DRAWING TITLE
NOTIFICATION PLAN

NOTIFICATION PLAN

JOB NUMBER	DRAWING NUMBER	ISSUE
1912N	DA2940	02

DEVELOPMENT APPLICATION



ARTISTS IMPRESSION - DONOVAN AVE (VIEW OF PROPOSED WORKS FROM NORTH-EAST)



ARTISTS IMPRESSION - DONOVAN AVE (VIEW OF PROPOSED WORKS FROM NORTH-WEST)



ARTISTS IMPRESSION - DONOVAN AVE STREET ELEVATION (NORTH ELEVATION)

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10/03/20	DEVELOPMENT APPLICATION	01

SCALEBAR:
0 10 20

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DRAWING TITLE
2950 PERSPECTIVES
PERSPECTIVES 01

JOB NUMBER	DRAWING NUMBER	ISSUE
1912N	DA2950	02

DEVELOPMENT APPLICATION



ARTISTS IMPRESSION - SENIORS DECK



ARTISTS IMPRESSION - VIEW OF PROPOSED WORKS FROM EAST



ARTISTS IMPRESSION - VIEW OF PROPOSED WORKS FROM CENTRAL COURTYARD



ARTISTS IMPRESSION - VIEW OF PROPOSED WORKS FROM CENTRAL COURTYARD

TIM BLACKALL
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QOH ARCHITECTS
QUINN O'HANLON ARCHITECTS PTY LTD

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NEWCASTLE NSW 2293
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PROJECT
CHAMPAGNAT CATHOLIC COLLEGE BLOCK B

ADDRESS
35 Donovan Avenue MAROUBRA NSW

CLIENT
SYDNEY CATHOLIC SCHOOLS

DATE	REVISION	ISSUE
27/04/20	DEVELOPMENT APPLICATION	02
10/03/20	DEVELOPMENT APPLICATION	01

SCALEBAR: 0 10 20

SCALE:	N/A @ A3
DRAWN BY:	JB, AB, AF, NZ, ST
CHECKED BY:	TB
DATE:	27/04/20

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DRAWING TITLE
2950 PERSPECTIVES
PERSPECTIVES 02

JOB NUMBER	DRAWING NUMBER	ISSUE
1912N	DA2951	02

DEVELOPMENT APPLICATION

CHAMPGNAT COLLEGE
STAGE 3
REVISION A 200124

REVISION: A

EXTERNAL FINISHES

01	**WALLS/FENCE: FACE BRICK (FEN2)** Austral Bowral	Simmental Silver
02	**WALLS: CLADDING PANEL (CL1)** Metal cladding panel	Dark Grey
03	**WALLS: CLADDING PANEL (CL3)** Metal cladding panel	Timber Look
04	**WALLS: CLADDING PANEL (CL2)** **BALUSTRADE: CLADDING PANEL (BAL)** Non-combustible composite cladding panel	White
05	**WALLS: CLADDING PANEL (CL4)** Non-combustible compostie cladding panel	Gold
06	**SCREENS: FACADE SCREEN** **BALUSTRADES (BAL1)** Perforated Metal Screen	Powdercoat Finish
07	**WINDOW SHADE (SHD1)** Powdercoat Finish	Timber Look
08	**EXPOSED STRUCTURAL STEEL FRAMING** Dulux Paint Finish	Black
09	**ROOF SHEETING (MR1)** Metal Roof Sheeting	Surfmist
10	**FLASHINGS, GUTTERS & DOWNPIPES** Colorbond	Dark Grey
11	**SOFFIT LININGS (CL2)** Metal Cladding panel	Timber Look
12	**ALUMINIUM WINDOW, DOOR FRAMES** Powdercoat Finish	Dark Grey
13	**SCREENS: BATTENED (SCR2)** Aluminium Batten, Powdercoat Finish	Timber Look
14	**CONCRETE PAVEMENT** Natural Concrete & Colour Through concrete	Natural Dark Grey
15	**DECKING: COMPOSITE TIMBER**	
16	**HANDRAILS** Stainless Steel	Brushed
17	**CONCRETE PAVERS**	



QOH ARCHITECTS

TIM BLACKALL
QUINN O'HANLON ARCHITECTS - NOMINATED ARCHITECT
NSW ARCHITECTS REGISTRATION NO. 5785

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PROJECT
CHAMPAGNAT CATHOLIC COLLEGE BLOCK B

ADDRESS
35 Donovan Avenue MAROUBRA NSW

CLIENT
SYDNEY CATHOLIC SCHOOLS

DATE	REVISION	ISSUE
28/04/20	REVISED DEVELOPMENT APPLICATION	01

SCALEBAR:
0 5 10

SCALE:	1:200 @ A3
DRAWN BY:	JB, AB, AF, NZ, ST
CHECKED BY:	TB
DATE:	28/04/20

NORTH

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DRAWING TITLE
2970 SAMPLE BOARD
EXTERNAL FINISHES SAMPLE BOARD

JOB NUMBER	DRAWING NUMBER	ISSUE
1912N	DA2970	01

DEVELOPMENT APPLICATION

Lotsearch Environmental Risk and Planning Report

LOTSEARCH

LOTSEARCH ENVIRO PROFESSIONAL

Date: 17 Jul 2020 11:37:35

Reference: LS013568 EP

Address: 35 Donovan Avenue, Maroubra, NSW 2035

Disclaimer:
The purpose of this report is to provide an overview of some of the site history, environmental risk and planning information available, affecting an individual address or geographical area in which the property is located. It is not a substitute for an on-site inspection or review of other available reports and records. It is not intended to be, and should not be taken to be, a rating or assessment of the desirability or market value of the property or its features.
You should obtain independent advice before you make any decision based on the information within the report.
The detailed terms applicable to use of this report are set out at the end of this report.

Dataset Listing

Datasets contained within this report, detailing their source and data currency:

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
Cadastre Boundaries	NSW Department of Finance, Services & Innovation	23/04/2020	23/04/2020	Quarterly	-	-	-	-
Topographic Data	NSW Department of Finance, Services & Innovation	25/06/2019	25/06/2019	As required	-	-	-	-
List of NSW contaminated sites notified to EPA	Environment Protection Authority	15/06/2020	15/06/2020	Monthly	1000	0	0	6
Contaminated Land Records of Notice	Environment Protection Authority	25/06/2020	25/06/2020	Monthly	1000	0	0	2
Former Gasworks	Environment Protection Authority	22/06/2020	11/10/2017	Monthly	1000	0	0	0
National Waste Management Facilities Database	Geoscience Australia	15/05/2020	07/03/2017	Quarterly	1000	0	0	0
National Liquid Fuel Facilities	Geoscience Australia	05/02/2020	13/07/2012	Quarterly	1000	0	0	2
EPA PFAS Investigation Program	Environment Protection Authority	01/07/2020	01/07/2020	Monthly	2000	0	0	1
Defence PFAS Investigation & Management Program - Investigation Sites	Department of Defence	12/02/2020	12/02/2020	Monthly	2000	0	0	0
Defence PFAS Investigation & Management Program - Management Sites	Department of Defence	12/02/2020	12/02/2020	Monthly	2000	0	0	0
Airservices Australia National PFAS Management Program	Airservices Australia	29/06/2020	29/06/2020	Monthly	2000	0	0	0
Defence 3 Year Regional Contamination Investigation Program	Department of Defence	14/07/2020	14/07/2020	Monthly	2000	0	0	1
EPA Other Sites with Contamination Issues	Environment Protection Authority	04/02/2020	13/12/2018	Annually	1000	0	0	0
Licensed Activities under the POEO Act 1997	Environment Protection Authority	15/07/2020	15/07/2020	Monthly	1000	0	0	13
Delicensed POEO Activities still regulated by the EPA	Environment Protection Authority	15/07/2020	15/07/2020	Monthly	1000	0	0	1
Former POEO Licensed Activities now revoked or surrendered	Environment Protection Authority	15/07/2020	15/07/2020	Monthly	1000	0	0	2
UBD Business Directories (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	6	7
UBD Business Directories (Road & Area Matches)	Hardie Grant			Not required	150	-	65	65
UBD Business Directory Dry Cleaners & Motor Garages/Service Stations (Premise & Intersection Matches)	Hardie Grant			Not required	500	0	1	36
UBD Business Directory Dry Cleaners & Motor Garages/Service Stations (Road & Area Matches)	Hardie Grant			Not required	500	-	20	53
Points of Interest	NSW Department of Finance, Services & Innovation	30/03/2020	30/03/2020	Quarterly	1000	3	3	53
Tanks (Areas)	NSW Department of Customer Service - Spatial Services	30/03/2020	30/03/2020	Quarterly	1000	0	0	0
Tanks (Points)	NSW Department of Customer Service - Spatial Services	30/03/2020	30/03/2020	Quarterly	1000	0	0	0
Major Easements	NSW Department of Finance, Services & Innovation	30/03/2020	30/03/2020	Quarterly	1000	0	0	3
State Forest	Forestry Corporation of NSW	18/01/2018	18/01/2018	As required	1000	0	0	0
NSW National Parks and Wildlife Service Reserves	NSW Office of Environment & Heritage	21/01/2020	30/09/2019	Annually	1000	0	0	0
Hydrogeology Map of Australia	Commonwealth of Australia (Geoscience Australia)	08/10/2014	17/03/2000	As required	1000	1	1	1
Botany Groundwater Management Zones	NSW Department of Planning, Industry and Environment	15/03/2018	01/10/2005	As required	1000	0	1	1

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
Groundwater Boreholes	NSW Dept. of Primary Industries - Water NSW; Commonwealth of Australia (Bureau of Meteorology)	24/07/2018	23/07/2018	Annually	2000	3	12	597
Geological Units 1:100,000	NSW Department of Planning, Industry and Environment	20/08/2014		None planned	1000	1	-	2
Geological Structures 1:100,000	NSW Department of Planning, Industry and Environment	20/08/2014		None planned	1000	0	-	1
Naturally Occurring Asbestos Potential	NSW Dept. of Industry, Resources & Energy	04/12/2015	24/09/2015	Unknown	1000	0	0	0
Atlas of Australian Soils	Australian Bureau of Agriculture and Resource Economics and Sciences (ABARES)	19/05/2017	17/02/2011	As required	1000	1	1	1
Soil Landscapes	NSW Department of Planning, Industry and Environment	12/08/2014		None planned	1000	2	-	3
Environmental Planning Instrument Acid Sulfate Soils	NSW Department of Planning, Industry and Environment	15/07/2020	01/05/2020	Monthly	500	0	-	-
Atlas of Australian Acid Sulfate Soils	CSIRO	19/01/2017	21/02/2013	As required	1000	1	1	2
Dryland Salinity - National Assessment	National Land and Water Resources Audit	18/07/2014	12/05/2013	None planned	1000	0	0	0
Dryland Salinity Potential of Western Sydney	NSW Department of Planning, Industry and Environment	12/05/2017	01/01/2002	None planned	1000	-	-	-
Mining Subsidence Districts	NSW Department of Customer Service - Subsidence Advisory NSW	30/03/2020	30/03/2020	Quarterly	1000	0	0	0
Environmental Planning Instrument SEPP State Significant Precincts	NSW Department of Planning, Industry and Environment	15/07/2020	07/12/2018	Monthly	1000	0	0	0
Environmental Planning Instrument Land Zoning	NSW Department of Planning, Industry and Environment	15/07/2020	05/06/2020	Monthly	1000	1	7	66
Commonwealth Heritage List	Australian Government Department of the Agriculture, Water and the Environment	18/05/2020	20/11/2019	Quarterly	1000	0	0	0
National Heritage List	Australian Government Department of the Agriculture, Water and the Environment	18/05/2020	20/11/2019	Quarterly	1000	0	0	0
State Heritage Register - Curtilages	NSW Department of Planning, Industry and Environment	12/02/2020	09/11/2018	Quarterly	1000	0	0	0
Environmental Planning Instrument Heritage	NSW Department of Planning, Industry and Environment	15/07/2020	05/06/2020	Monthly	1000	0	0	20
Bush Fire Prone Land	NSW Rural Fire Service	04/02/2020	14/12/2019	Quarterly	1000	0	0	0
Native Vegetation of the Sydney Metropolitan Area	NSW Office of Environment & Heritage	01/03/2017	16/12/2016	As required	1000	1	1	3
Ramsar Wetlands of Australia	Department of the Agriculture, Water and the Environment	08/10/2014	24/06/2011	As required	1000	0	0	0
Groundwater Dependent Ecosystems	Bureau of Meteorology	14/08/2017	15/05/2017	Unknown	1000	0	0	0
Inflow Dependent Ecosystems Likelihood	Bureau of Meteorology	14/08/2017	15/05/2017	Unknown	1000	0	0	0
NSW BioNet Species Sightings	NSW Office of Environment & Heritage	13/07/2020	13/07/2020	Weekly	10000	-	-	-

Site Diagram

35 Donovan Avenue, Maroubra, NSW 2035



Legend

- Site Boundary
- Internal Parcel Boundaries

Total Area: 15361m^2

Total Perimeter: 571m

Scale: 0 25 50 Meters

Data Sources: Aerial Imagery © Aerometrex Pty Ltd

Disclaimers:

Measurements are approximate only and may have been simplified or smaller lengths removed for readability.

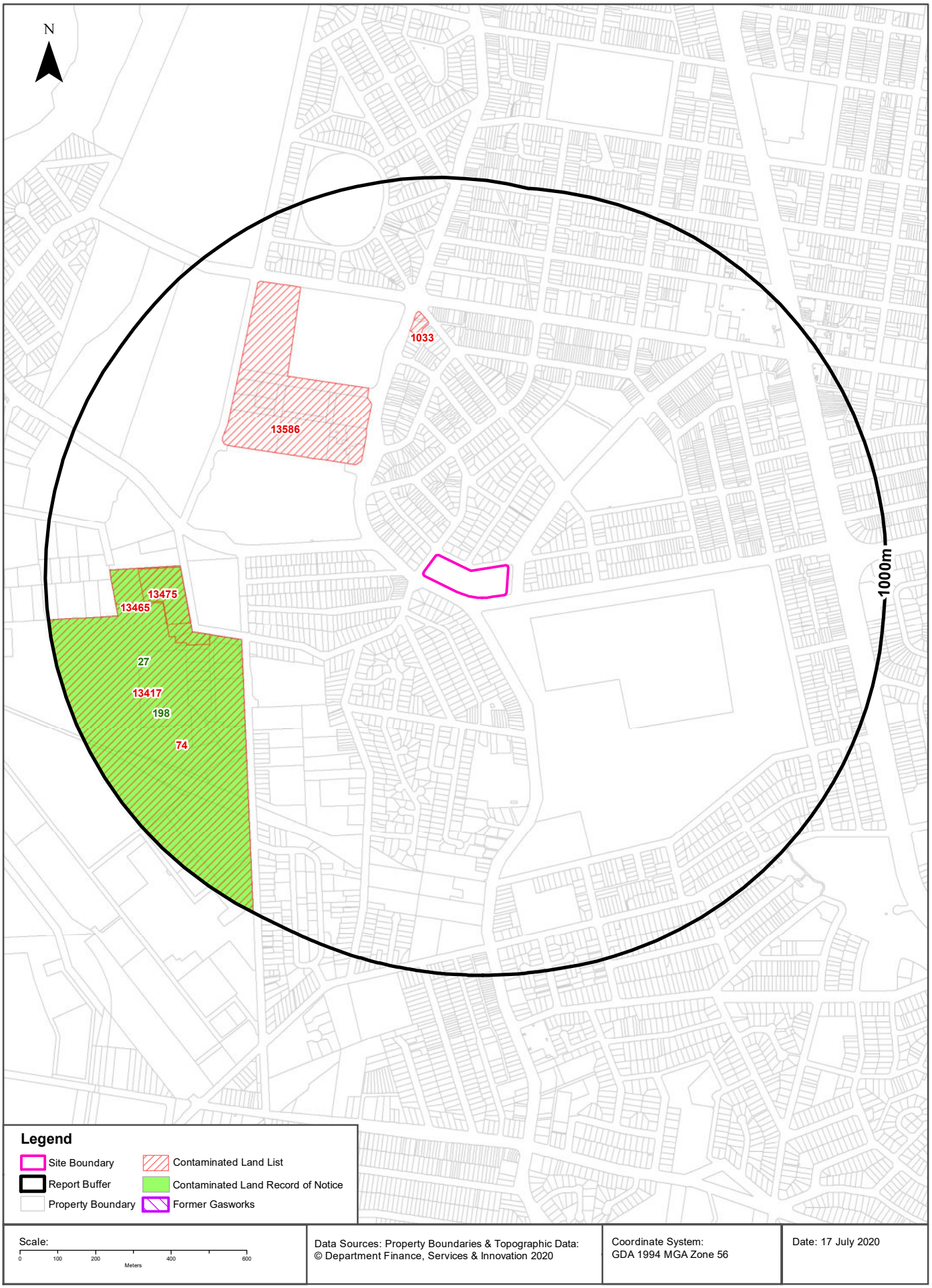
Parcels that make up a small percentage of the total site area have not been labelled for increased legibility.

Coordinate System: GDA 1994 MGA Zone 56

Date: 17 July 2020

Contaminated Land

35 Donovan Avenue, Maroubra, NSW 2035



Contaminated Land

35 Donovan Avenue, Maroubra, NSW 2035

List of NSW contaminated sites notified to EPA

Records from the NSW EPA Contaminated Land list within the dataset buffer:

Map Id	Site	Address	Suburb	Activity	Management Class	Status	Location Confidence	Dist (m)	Direction
13586	130-150 Bunnerong Road Eastgardens	130 - 150 Bunnerong ROAD	EASTGARDENS	Other Industry	Regulation under CLM Act not required	Current EPA List	Premise Match	319m	North West
74	Orica Botany Groundwater Project	16-20 Beauchamp Road	Banksmeadow	Chemical Industry	Contamination currently regulated under CLM Act	Current EPA List	Premise Match	512m	South West
13417	Orica Botany (Pre-2003 Regulation)	Port Feeder Road	Banksmeadow	Chemical Industry	Contamination currently regulated under CLM Act	Current EPA List	Premise Match	512m	South West
1033	Coles Express Pagewood Service Station, Maroubra	299 Bunnerong Parade	Maroubra	Service Station	Regulation under CLM Act not required	Current EPA List	Premise Match	580m	North
13465	Former Pipeline	Corish CIRCLE	BANKSMEADOW	Other Petroleum	Regulation being finalised	Current EPA List	Premise Match	588m	West
13475	Orica Car Park Waste Encapsulation	Corish CIRCLE	BANKSMEADOW	Landfill	Contamination formerly regulated under the POEO Act	Current EPA List	Premise Match	629m	West

The values within the EPA site management class in the table above, are given more detailed explanations in the table below:

EPA site management class	Explanation
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 currently regulated under 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 of Notices.
Contamination currently regulated under 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 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 under the Protection of the Environment Operations Act 1997 (POEO 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 of Notices.

EPA site management class	Explanation
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.
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.
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.

NSW EPA Contaminated Land List Data Source: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

Contaminated Land

35 Donovan Avenue, Maroubra, NSW 2035

Contaminated Land: Records of Notice

Record of Notices within the dataset buffer:

Map Id	Name	Address	Suburb	Notices	Area No	Location Confidence	Distance	Direction
27	Orica Botany Groundwater Project	16-20 Beauchamp Road	Banksmeadow	6 current and 26 former	3203	Premise Match	512m	South West
198	Orica Botany (Pre-2003 Regulation)	Port Feeder Road	Banksmeadow	12 former	3048	Premise Match	512m	South West

Contaminated Land Records of Notice Data Source: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority
Terms of use and disclaimer for Contaminated Land: Record of Notices, please visit http://www.epa.nsw.gov.au/clm/clmdisclaimer.htm

Former Gasworks

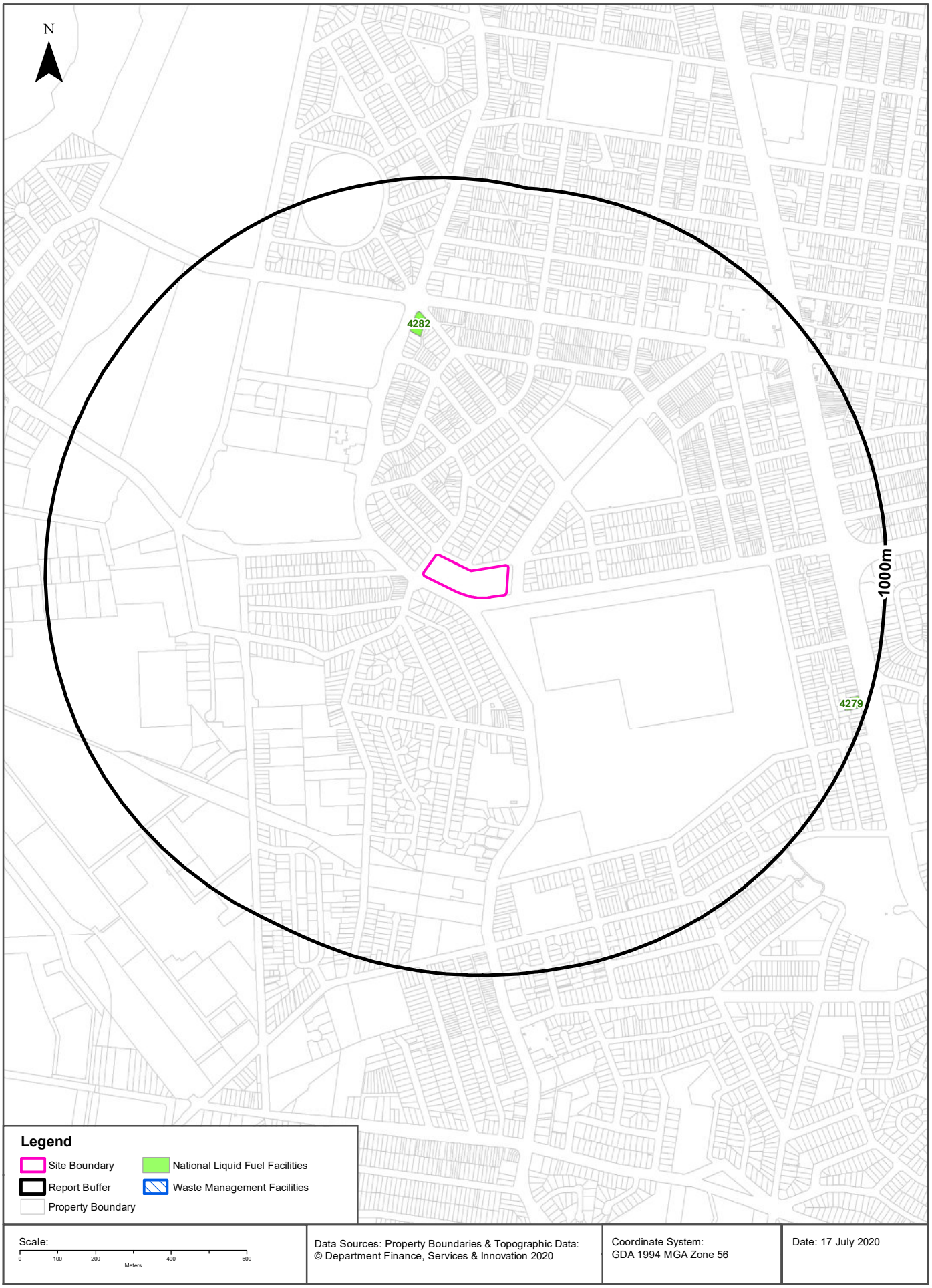
Former Gasworks within the dataset buffer:

Map Id	Location	Council	Further Info	Location Confidence	Distance	Direction
N/A	No records in buffer					

Former Gasworks Data Source: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

Waste Management & Liquid Fuel Facilities

35 Donovan Avenue, Maroubra, NSW 2035



Waste Management & Liquid Fuel Facilities

35 Donovan Avenue, Maroubra, NSW 2035

National Waste Management Site Database

Sites on the National Waste Management Site Database within the dataset buffer:

Site Id	Owner	Name	Address	Suburb	Class	Landfill	Reprocess	Transfer	Comments	Loc Conf	Dist (m)	Direction
N/A	No records in buffer											

Waste Management Facilities Data Source: Geoscience Australia
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National Liquid Fuel Facilities

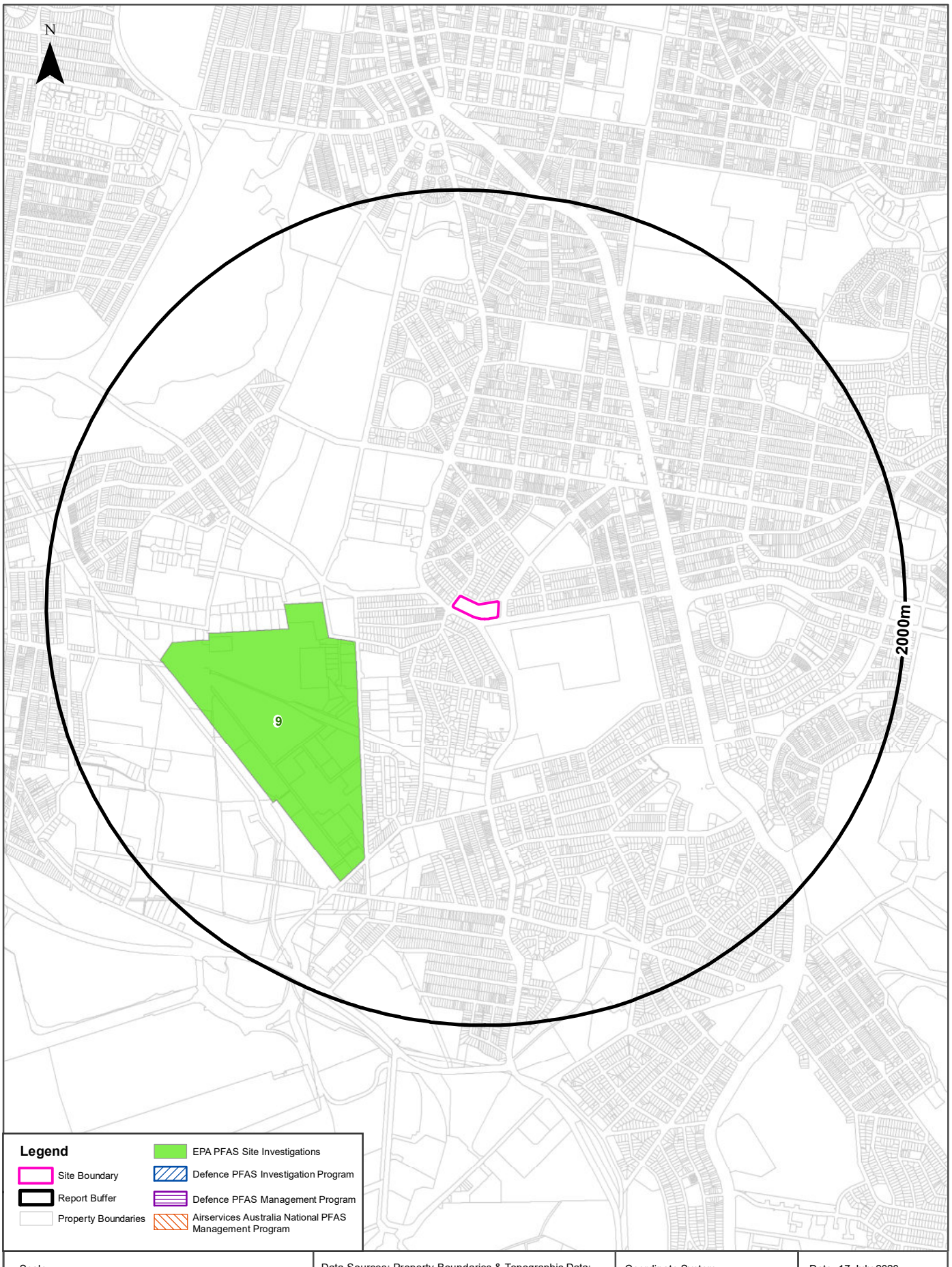
National Liquid Fuel Facilties within the dataset buffer:

Map Id	Owner	Name	Address	Suburb	Class	Operational Status	Operator	Revision Date	Loc Conf	Dist (m)	Direction
4282	Shell	Coles Express Pagewood	293-299 Bunnerong Road	Maroubra	Petrol Station	Operational		25/07/2011	Premise Match	580m	North
4279	Shell	Coles Express Maroubra	959-961 Anzac Parade	Maroubra	Petrol Station	Operational		25/07/2011	Premise Match	932m	East

National Liquid Fuel Facilities Data Source: Geoscience Australia
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PFAS Investigation & Management Programs

35 Donovan Avenue, Maroubra, NSW 2035



PFAS Investigation & Management Programs

35 Donovan Avenue, Maroubra, NSW 2035

EPA PFAS Investigation Program

Sites that are part of the EPA PFAS investigation program, within the dataset buffer:

Id	Site	Address	Loc Conf	Dist	Dir
9	Botany Industrial Park	Dent Street, Botany, 2019	General Area/ Suburb Match	512m	South West

EPA PFAS Investigation Program: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

Defence PFAS Investigation Program

Sites being investigated by the Department of Defence for PFAS contamination within the dataset buffer:

Map ID	Base Name	Address	Loc Conf	Dist	Dir
N/A	No records in buffer				

Defence PFAS Investigation Program Data Custodian: Department of Defence, Australian Government

Defence PFAS Management Program

Sites being managed by the Department of Defence for PFAS contamination within the dataset buffer:

Map ID	Base Name	Address	Loc Conf	Dist	Dir
N/A	No records in buffer				

Defence PFAS Management Program Data Custodian: Department of Defence, Australian Government

Airservices Australia National PFAS Management Program

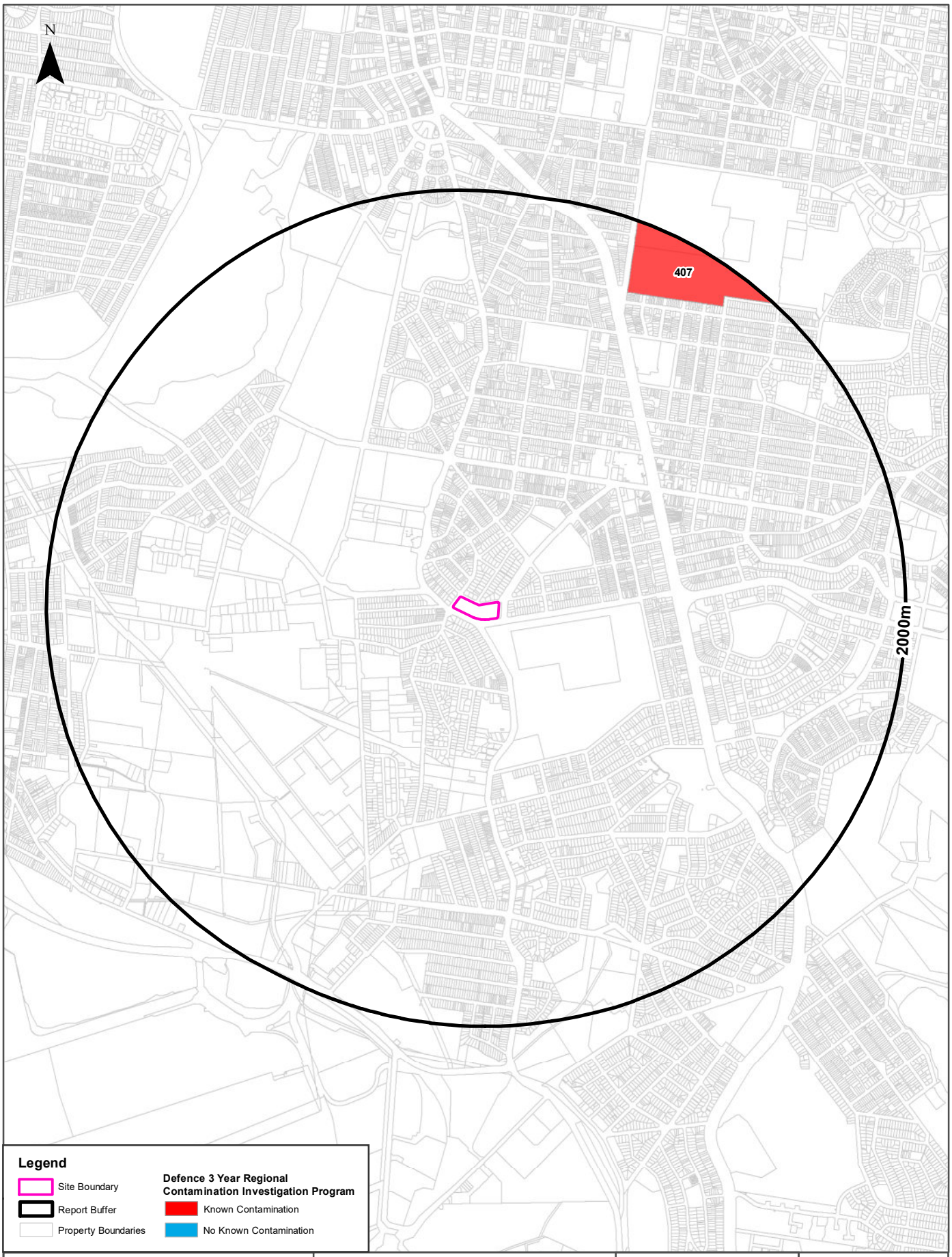
Sites being investigated or managed by Airservices Australia for PFAS contamination within the dataset buffer:

Map ID	Site Name	Impacts	Loc Conf	Dist	Dir
N/A	No records in buffer				

Airservices Australia National PFAS Management Program Data Custodian: Airservices Australia

Defence 3 Year Regional Contamination Investigation Program

35 Donovan Avenue, Maroubra, NSW 2035



Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2020

Coordinate System: GDA 1994 MGA Zone 56

Date: 17 July 2020

Defence Sites

35 Donovan Avenue, Maroubra, NSW 2035

Defence 3 Year Regional Contamination Investigation Program

Sites which have been assessed as part of the Defence 3 Year Regional Contamination Investigation Program within the dataset buffer:

Property ID	Base Name	Address	Known Contamination	Loc Conf	Dist	Dir
407	Randwick Barracks	Randwick, New South Wales	YES	Premise Match	1652m	North East

Defence 3 Year Regional Contamination Investigation Program, Data Custodian: Department of Defence, Australian Government

EPA Other Sites with Contamination Issues

35 Donovan Avenue, Maroubra, NSW 2035

EPA Other Sites with Contamination Issues

This dataset contains other sites identified on the EPA website as having contamination issues. This dataset currently includes:

- James Hardie asbestos manufacturing and waste disposal sites
- Radiological investigation sites in Hunter's Hill
- Pasminco Lead Abatement Strategy Area

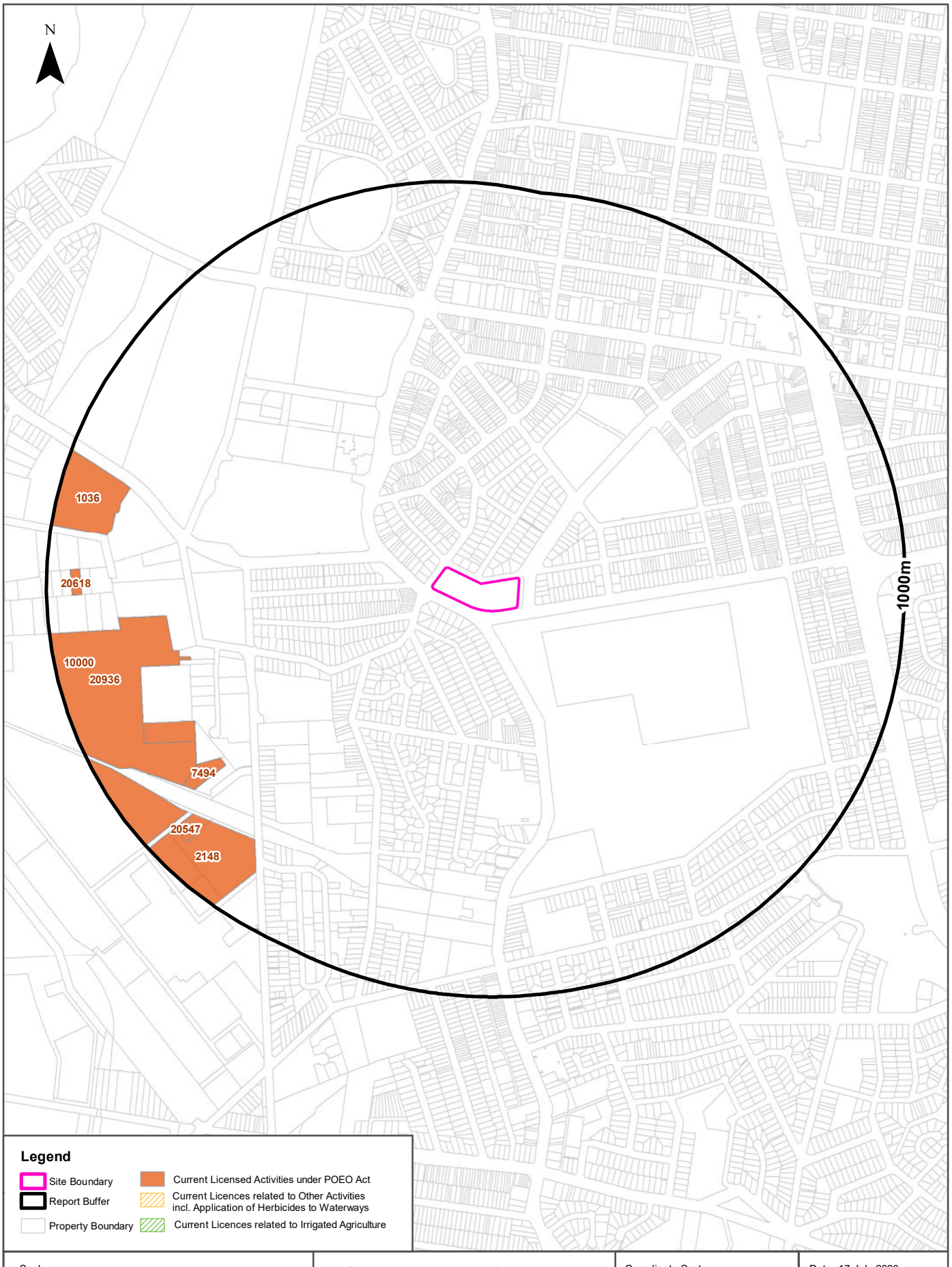
Sites within the dataset buffer:

Site Id	Site Name	Site Address	Dataset	Comments	Location Confidence	Distance	Direction
N/A	No records in buffer						

EPA Other Sites with Contamination Issues: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

Current EPA Licensed Activities

35 Donovan Avenue, Maroubra, NSW 2035



EPA Activities

35 Donovan Avenue, Maroubra, NSW 2035

Licensed Activities under the POEO Act 1997

Licensed activities under the Protection of the Environment Operations Act 1997, within the dataset buffer:

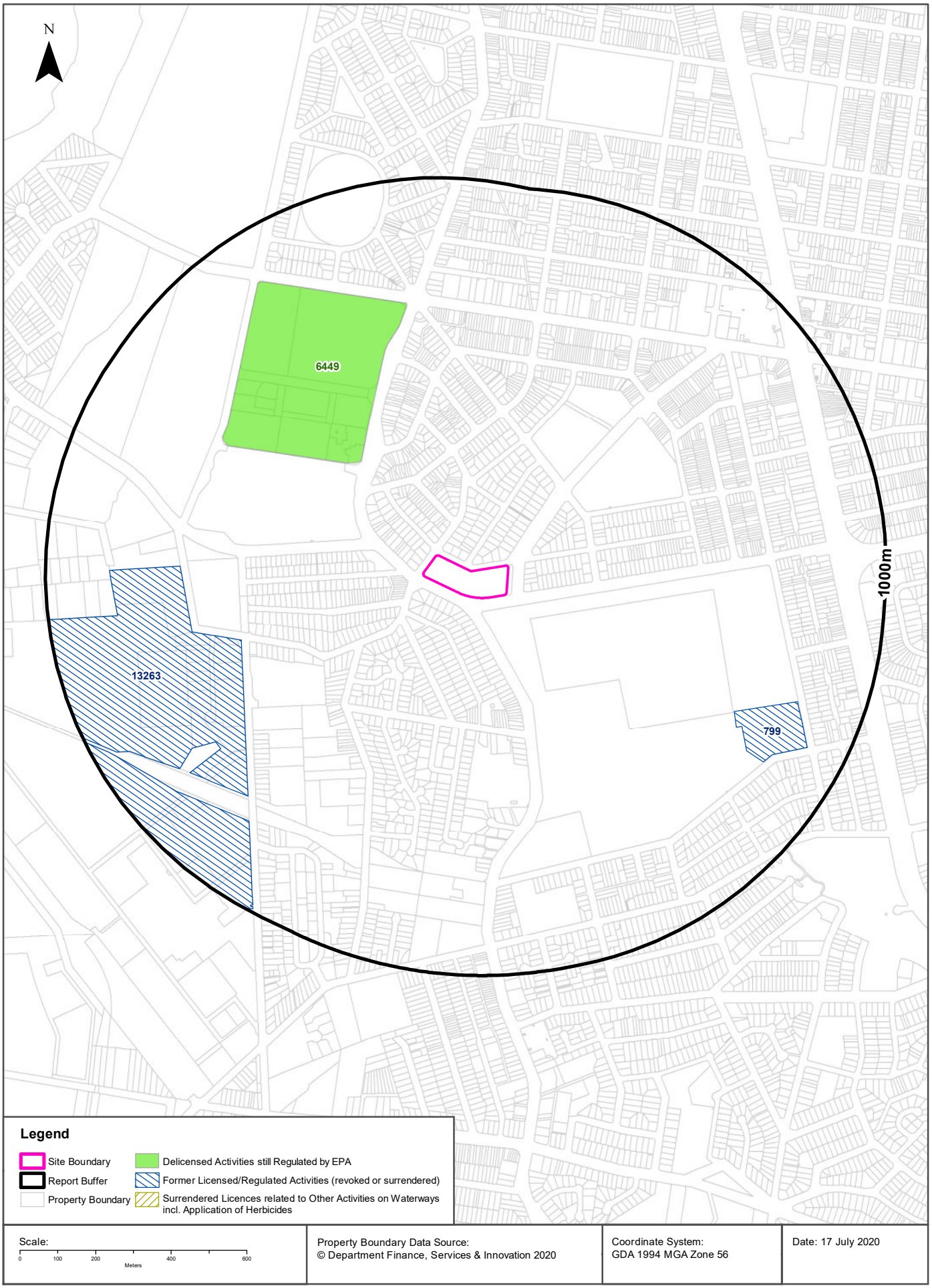
EPL	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
20936	AIR LIQUIDE AUSTRALIA LIMITED		21 Baker Street, BANKSMEADOW, NSW 2019		Dangerous goods production	Premise Match	653m	West
20936	AIR LIQUIDE AUSTRALIA LIMITED		21 Baker Street, BANKSMEADOW, NSW 2019		General chemicals storage	Premise Match	653m	West
10000	QENOS PTY LTD	QENOS PTY LTD	16-20 Beauchamp Road (Botany Industrial Park)	MATRAVILLE	Petrochemical production	Premise Match	677m	West
10000	QENOS PTY LTD	QENOS PTY LTD	16-20 Beauchamp Road (Botany Industrial Park)	MATRAVILLE	Plastic resins production	Premise Match	677m	West
7494	INDORAMA VENTURES OXIDES AUSTRALIA PTY LIMITED	HUNTSMAN SURFACTANTS PLANT	77 DENISON STREET, HILLSDALE, NSW 2036	MATRAVILLE	General chemicals storage	Premise Match	705m	South West
7494	INDORAMA VENTURES OXIDES AUSTRALIA PTY LIMITED	HUNTSMAN SURFACTANTS PLANT	77 DENISON STREET, HILLSDALE, NSW 2036	MATRAVILLE	Soap and detergents production	Premise Match	705m	South West
2148	ORICA AUSTRALIA PTY LTD	ORICA AUSTRALIA PTY LTD	16-20 BEAUCHAMP ROAD	MATRAVILLE	Contaminated groundwater treatment	Premise Match	797m	South West
2148	ORICA AUSTRALIA PTY LTD	ORICA AUSTRALIA PTY LTD	16-20 BEAUCHAMP ROAD	MATRAVILLE	General chemicals storage	Premise Match	797m	South West
2148	ORICA AUSTRALIA PTY LTD	ORICA AUSTRALIA PTY LTD	16-20 BEAUCHAMP ROAD	MATRAVILLE	Waste storage - hazardous, restricted solid, liquid, clinical and related waste and asbestos waste	Premise Match	797m	South West
1036	OPAL PACKAGING AUSTRALIA PTY LTD	AMCOR CARTONS	2-6 MOORE STREET, BANKSMEADOW, NSW 2019	BOTANY	Printing, packaging and visual communications waste generation	Premise Match	824m	West
20547	IXOM OPERATIONS PTY LTD	Botany ChlorAlkali Plant	16-20 BEAUCHAMP ROAD, MATRAVILLE, NSW 2036		Dangerous goods production; General chemicals storage; Non-thermal treatment of hazardous and other waste; Waste storage - hazardous, restricted solid, liquid, clinical and related waste and asbestos waste	Premise Match	869m	South West
20618	EMPIRE BINS PTY LTD		5 MEADOW WAY, BANKSMEADOW, NSW 2019		Recovery of general waste	Premise Match	909m	West
20618	EMPIRE BINS PTY LTD		5 MEADOW WAY, BANKSMEADOW, NSW 2019		Waste storage - other types of waste	Premise Match	909m	West

POEO Licence Data Source: Environment Protection Authority

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Delicensed & Former Licensed EPA Activities

35 Donovan Avenue, Maroubra, NSW 2035



EPA Activities

35 Donovan Avenue, Maroubra, NSW 2035

Delicensed Activities still regulated by the EPA

Delicensed activities still regulated by the EPA, within the dataset buffer:

Licence No	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
6449	BRITISH AMERICAN TOBACCO AUSTRALIA LIMITED	BRITISH AMERICAN TOBACCO AUSTRALIA LIMITED	WESTFIELD DRIVE	EASTGARDENS	Hazardous, Industrial or Group A Waste Generation or Storage	Premise Match	320m	North West

Delicensed Activities Data Source: Environment Protection Authority
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Former Licensed Activities under the POEO Act 1997, now revoked or surrendered

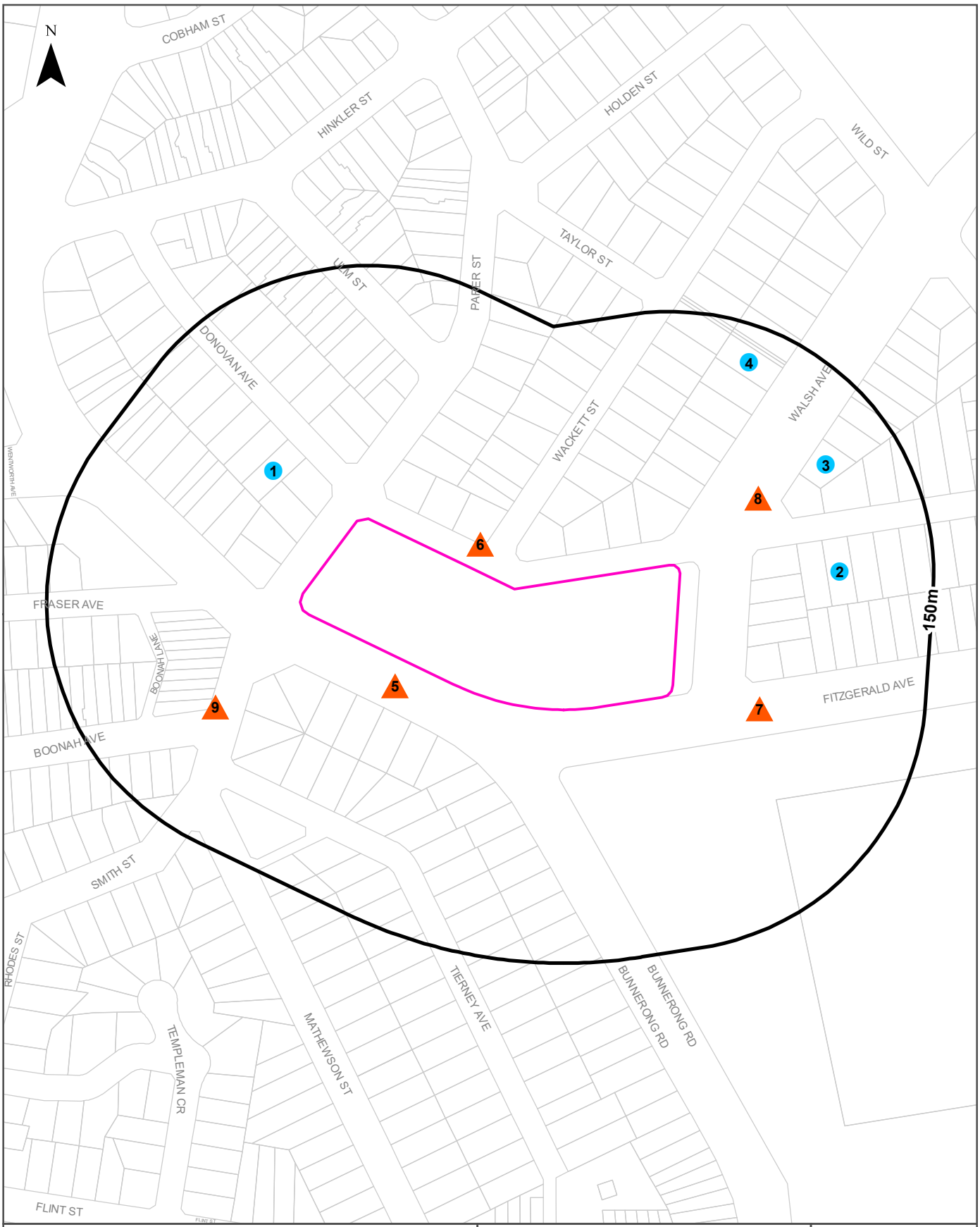
Former Licensed activities under the Protection of the Environment Operations Act 1997, now revoked or surrendered, within the dataset buffer:

Licence No	Organisation	Location	Status	Issued Date	Activity	Loc Conf	Distance	Direction
13263	ORICA AUSTRALIA PTY LTD	Corish Circle, BANKSMEADOW, NSW 2019	Surrendered	27/05/2010	Contaminated soil treatment	Premise Match	512m	South West
799	RANDWICK CITY COUNCIL	DES RENFORD AQUATIC CENTRE, ROBEY STREET, MAROUBRA, NSW 2035	Surrendered	27/07/2000	Miscellaneous licensed discharge to waters (at any time)	Premise Match	679m	South East

Former Licensed Activities Data Source: Environment Protection Authority
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Historical Business Directories

35 Donovan Avenue, Maroubra, NSW 2035



Legend

- Site Boundary
- Buffer 150m
- Property Boundary
- Business directory records mapped to a specific premise
- Business directory records mapped to a road intersection
- Business directory records mapped to a road corridor
- Business directory records mapped to a general area

Scale: 0 40 80 120 160 Meters

Coordinate System: GDA 1994 MGA Zone 56

Date: 17 July 2020

Data Sources: Reproduced with permission of UBD and Hardie Grant Media Pty Ltd DD 01/08/2018

Historical Business Directories

35 Donovan Avenue, Maroubra, NSW 2035

Business Directory Records 1950-1991
Premise or Road Intersection Matches

Universal Business Directory records from years 1991, 1986, 1982, 1978, 1975, 1970, 1965, 1961 & 1950, mapped to a premise or road intersection within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	DRY CLEANERS, PRESSERS &/OR DYERS	Flamos, M., 23 Donovan Ave., Maroubra. 2035	20776	1978	Premise Match	48m	North West
2	BUILDERS & CONTRACTORS-(M.M.B.A.)	Warner, H. Pty. Ltd 51 Donovan Ave MAROUBRA	277750	1961	Premise Match	86m	East
3	CARRIERS &/OR CARTAGE CONTRACTORS.	Ajax Carrying Co., 57 Walsh Ave., Maroubra. 2035	11702	1978	Premise Match	91m	North East
	CARRIERS & CARTAGE CONTRACTORS (C150)	Ajax Carrying Co., 57 Walsh Ave., Maroubra	277917	1970	Premise Match	91m	North East
	Carriers & Cartage Contractors	Ajax Carrying Co., 57 Walsh Ave., Maroubra	62837	1965	Premise Match	91m	North East
	CARRIERS & CARTAGE CONTRACTORS	Ajax Carrying Co., 57 Walsh Ave., Maroubra	284473	1961	Premise Match	91m	North East
4	FURNITURE DEALERS-SECONDHAND.	Joy. J.R., 40 Walsh Ave., Maroubra. 2035	31396	1978	Premise Match	117m	North East

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Business Directory Records 1950-1991
Road or Area Matches

Universal Business Directory records from years 1991, 1986, 1982, 1978, 1975, 1970, 1965, 1961 & 1950, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
5	MOTOR SERVICE STATIONS-PETROL,OIL,Etc.	White's, R., Service Station Bunnerong Rd., MAROUBRA	341628	1970	Road Match	0m
	Motor Service Stations - Petrol, Oil, Etc.	White's, R., Service Station, Bunnerong Rd. Maroubra	125890	1965	Road Match	0m
	MOTOR SERVICE STATIONS—PETROL, OIL, Etc.	White's, R., Service Station, Bunnerong Rd., MAROUBRA	351287	1961	Road Match	0m
	MILK VENDORS	N.S.W. Fresh Food and Ice Co. Ltd., Bunnerong Rd., Maroubra	77866	1950	Road Match	0m
	BAKERS-BREAD	Sendt, F. and Sons, Bunnerong Rd., Maroubra	5474	1950	Road Match	0m
6	Hire Car Services	Maroubra Hire Cars, 96 Donovan Ave., Maroubra (and Airport)	100295	1965	Road Match	0m
7	HIRE CAR SERVICES	Creevey, E. G., Fitzgerald Ave., Maroubra	62158	1950	Road Match	0m
	SURVEYORS-LAND	French, H. V., Fitzgerald Ave., Maroubra	105977	1950	Road Match	0m
8	MOTOR GARAGES & ENGINEERS(M6S6)	Total Service Station., Walsh Ave., MAROUBRA	338775	1970	Road Match	11m
	FRENCH POLISHERS	Fleming, H., Walsh Ave., Maroubra	313849	1961	Road Match	11m
	FRENCH POLISHERS	Fleming, H., Walsh Ave., Maroubra	48056	1950	Road Match	11m
9	GAS AGENTS	Abbott Hire Sales Service Industries Pty. Ltd. 57-59 Smith St., Hillsdale., 2036	38522	1986	Road Match	52m
	FOOD EXPORTERS. (F4725)	Master Foods of Aust. Pty. Ltd Smith St, Matraville. 2036.	31833	1982	Road Match	52m
	CANNERS &/OR PRESERVERS - PROCESSED FOODS, (C0915)	Master Foods of Aust. Pty. Ltd., Smith St., Matraville. 2036.	13008	1982	Road Match	52m
	CONDIMENT MFRS. & DISTS. (C7230)	Master Foods of Aust. Pty. Ltd., Smith St., Matraville. 2036.	17759	1982	Road Match	52m
	FOOD IMPORTERS. (F4750)	Master Foods of Aust. Pty. Ltd., Smith St., Matraville. 2036.	31913	1982	Road Match	52m
	FOOD PRODUCTS MFRS. &/OR DISTS. (F5050)	Master Foods of Aust. Pty. Ltd., Smith St., Matraville. 2036.	32080	1982	Road Match	52m
	VENDING MACHINE MFRS. &/OR DISTS.	Alex Cassette Drink Systems, Smith St., Matraville.2036	73390	1978	Road Match	52m
	FOOD IMPORTERS.	Fancifoods Sales, Smith St, Hillsdale. 2036	28887	1978	Road Match	52m
	FOOD PRODUCTS MFRS.&/OR DISTS.	Fancifoods Sales, Smith St, Hillsdale. 2036	29053	1978	Road Match	52m
	GROCERS-WHOLESALE.	Fancifoods Sales, Smith St, Hillsdale. 2036	34326	1978	Road Match	52m
	MERCHANTS-GENERAL.	Fancifoods Sales, Smith St, Hillsdale. 2036	45281	1978	Road Match	52m
	IMPORTERS.	Fancifoods Sales, Smith St., Hillsdale. 2036	36861	1978	Road Match	52m
	CANNERS &/OR CANNED FOOD SPECIALISTS.	Master Foods of Aust Pty. Ltd., Smith St, Matraville. 2036	11111	1978	Road Match	52m
	CANNERS &/OR PRESERVERS- FRUIT.	Master Foods of Aust Pty. Ltd., Smith St, Matraville. 2036	11123	1978	Road Match	52m
	CANNERS &/OR PRESERVERS- PROCESSED FOODS.	Master Foods of Aust Pty. Ltd., Smith St, Matraville. 2036	11127	1978	Road Match	52m
	CONDIMENT MFRS. & DISTS.	Master Foods of Aust Pty. Ltd., Smith St, Matraville. 2036	16042	1978	Road Match	52m

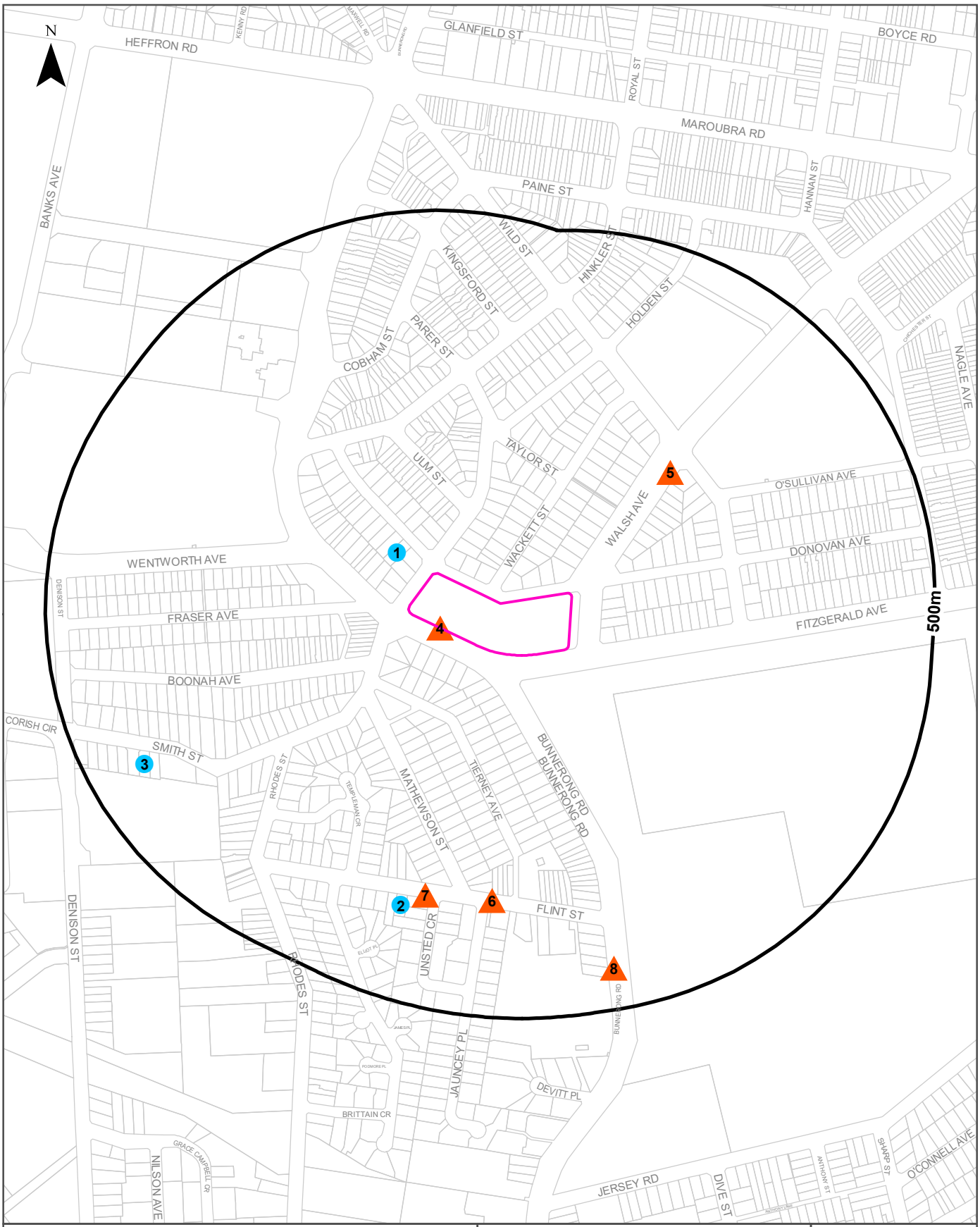
Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
9	FISH &/OR MEAT PASTE MFRS.	Master Foods of Aust Pty. Ltd., Smith St, Matraville. 2036	27951	1978	Road Match	52m
	FOOD EXPORTERS.	Master Foods of Aust Pty. Ltd., Smith St, Matraville. 2036	28815	1978	Road Match	52m
	FOOD IMPORTERS.	Master Foods of Aust Pty. Ltd., Smith St, Matraville. 2036	28901	1978	Road Match	52m
	FOOD PRODUCTS MFRS.&/OR DISTS.	Master Foods of Aust Pty. Ltd., Smith St, Matraville. 2036	29068	1978	Road Match	52m
	MERCHANTS-GENERAL.	Master Foods of Aust Pty. Ltd., Smith St, Matraville. 2036	45320	1978	Road Match	52m
	SMALL GOODS MFRS. &/OR W/SALERS.	Master Foods of Aust Pty. Ltd., Smith St., Matraville. 2036	66515	1978	Road Match	52m
	SPICE MERCHANTS.	Master Foods of Aust Pty. Ltd., Smith St., Matraville. 2036	66743	1978	Road Match	52m
	EXPORTERS.	Master Foods of Aust. Pty. Ltd, Smith St, Matraville. 2036	26930	1978	Road Match	52m
	GROCERS-WHOLESALE.	Master Foods of Aust. Pty. Ltd., Smith St, Matraville. 2036	34332	1978	Road Match	52m
	GROCERS-WHOLESALE	Fancffoods Pty. Ltd., Smith St., Hillsdale. 2036	40038	1975	Road Match	52m
	CHEESE MFRS. &/OR DISTS.	Fancifoods Pty. Ltd., Smith St, Hillsdale. 2036	14355	1975	Road Match	52m
	FOOD PRODUCTS MFRS. &/OR DISTS.	Fancifoods Pty. Ltd., Smith St, Hillsdale. 2036	33646	1975	Road Match	52m
	FOOD-FROZEN-MFRS &/OR IMPS &/OR DISTS.	Fancifoods Pty. Ltd., Smith St, Hillsdale. 2036	33413	1975	Road Match	52m
	MERCHANTS-GENERAL	Fancifoods Pty. Ltd., Smith St. Hillsdale. 2036	52558	1975	Road Match	52m
	FOOD IMPORTERS	Fancifoods Pty. Ltd., Smith St., Hillsdale. 2036	33478	1975	Road Match	52m
	IMPORTERS.	Fancifoods Pty. Ltd., Smith St., Hillsdale. 2036	43650	1975	Road Match	52m
	FISH &/OR MEAT PASTE MFRS.	Mastar Foods of Aust Pty. Ltd., Smith St. Matraville. 2036	32243	1975	Road Match	52m
	CANNERS &/OR PRESERVERS- PROCESSED FOODS.	Master Foods of Aust Pty. Ltd., Smith St, Matraville. 2036	12994	1975	Road Match	52m
	ISLAND MERCHANTS &/OR TRADERS.	Master Foods of Aust Pty. Ltd., Smith St, Matraville. 2036	45537	1975	Road Match	52m
	CANNERS &/OR CANNED FOOD SPECIALISTS.	Master Foods of Aust Pty. Ltd., Smith St, Matraville. 2036.	12963	1975	Road Match	52m
	EXPORTERS.	Master Foods Of Aust Pty. Ltd., Smith St, Matraville. 2036.	31102	1975	Road Match	52m
	FOOD EXPORTERS.	Master Foods of Aust Pty. Ltd., Smith St, Matraville. 2036.	33370	1975	Road Match	52m
	FOOD PRODUCTS MFRS. &/OR DISTS.	Master Foods of Aust Pty. Ltd., Smith St, Matraville. 2036.	33657	1975	Road Match	52m
	FOOD-FROZEN-MFRS &/OR IMPS &/OR DISTS.	Master Foods of Aust Pty. Ltd., Smith St, Matraville. 2036.	33433	1975	Road Match	52m
	CONDIMENT MFRS. & DISTS.	Master Foods of Aust Pty. Ltd., Smith St., Matraville. 2036	18607	1975	Road Match	52m
	FOOD IMPORTERS	Master Foods Of Aust Pty. Ltd., Smith St., Matraville. 2036	33492	1975	Road Match	52m
	GROCERS-WHOLESALE	Master Foods of Aust Pty. Ltd., Smith St., Matraville. 2036	40042	1975	Road Match	52m
	MERCHANTS-GENERAL	Master Foods of Aust Pty. Ltd., Smith St., Matraville. 2036	52617	1975	Road Match	52m
	SPICE MERCHANTS.	Master Foods of Aust Pty. Ltd., Smith St., Matraville. 2036	78904	1975	Road Match	52m
	CANNERS & /OR PRESERVERS-FRUIT	Master Foods of Aust. Pty. Ltd., Smith St, Matraville. 2036	12986	1975	Road Match	52m
	SMALL GOODS MFRS. &/OR W/SALERS.	Matter Foods of Aust Pty. Ltd., Smith St., Matraville. 2036	77858	1975	Road Match	52m
	EARTH MOVING CONTRACTORS.	Poole, J. Contractors Pty. Ltd., Smith St., Matraville. 2036	24764	1975	Road Match	52m
	ENGINEERS-MINING.	Poole, J. Contractors Pty. Ltd., Smith St., Matraville. 2036.	29879	1975	Road Match	52m

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
9	CHEMICAL MANUFACTURERS &/OR DISTRIBUTORS	Alpha Chemicals Pty Ltd., Reg. Office, Smith St., Botany	286525	1961	Road Match	52m
	COTTON WASTE MERCHANTS	Minc, O. & Horowitza., Smith St., Botany	293461	1961	Road Match	52m
	WOOL WASTE MERCHANTS	Mine, O. & Horonitza, Smith St., Botany	264079	1961	Road Match	52m
	CLOTHING MFRS. &/OR W'SALERS-BABY &/OR CHILDREN'S WEAR	Viko Manufacturing Co. Pty. Ltd., Off Smith St., Matraville	289135	1961	Road Match	52m
	NURSERYMEN	Talarico, P., Smith St., Matraville	89306	1950	Road Match	52m

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Dry Cleaners, Motor Garages & Service Stations

35 Donovan Avenue, Maroubra, NSW 2035



Legend

- Site Boundary
- Buffer 500m
- Property Boundary
- Business directory records mapped to a specific premise
- Business directory records mapped to a road intersection
- Business directory records mapped to a road corridor
- Business directory records mapped to a general area

Scale: 0 100 200 300 400 Meters

Coordinate System: GDA 1994 MGA Zone 56

Date: 17 July 2020

Data Sources: Reproduced with permission of UBD and Hardie Grant Media Pty Ltd DD 01/08/2018

Historical Business Directories

35 Donovan Avenue, Maroubra, NSW 2035

Dry Cleaners, Motor Garages & Service Stations 1948-1993 Premise or Road Intersection Matches

Dry Cleaners, Motor Garages & Service Stations from UBD Business Directories, mapped to a premise or road intersection, within the dataset buffer.

Note: The Universal Business Directories were published between 1948 and 1993. Dry Cleaners, Motor Garages & Service Stations have been extracted from all of these directories except the following years 1951, 1955, 1957, 1960, 1963, 1973, 1974, 1977, 1987.

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	DRY CLEANERS, PRESSERS &/OR DYERS	Flamos, M., 23 Donovan Ave., Maroubra. 2035	20776	1978	Premise Match	48m	North West
2	MOTOR GARAGES & SERVICE STATIONS.	J C Auto Mechanical Repairs, 20 Flint St., Hillsdale2036	19030	1993	Premise Match	356m	South
	Motor Garages & Service Stations	J.C. Auto Mechanical Repairs, 20 Flint St., Hillsdale 2036	96837	1991	Premise Match	356m	South
	MOTOR GARAGES & SERVICE STATIONS.	Matraville Garage, 20 Flint St., Hillsdale. 2036	11821	1990	Premise Match	356m	South
	MOTOR GARAGE & SERVICE STATIONS.	Matraville Garage, 20 Flint St., Hillsdale. 2036	5230	1989	Premise Match	356m	South
	MOTOR GARAGES & SERVICE STATIONS.	Matraville Garage, 20 Flint St., Hillsdale. 2036	59591	1988	Premise Match	356m	South
	MOTOR GARAGES & SERVICE STATIONS.	Matraville Garage, 20 Flint St., Hillsdale. 2036	65057	1986	Premise Match	356m	South
	MOTOR GARAGES & SERVICE STATIONS.	Matraville Garage, 20 Flint St., Hillsdale. 2036	45160	1985	Premise Match	356m	South
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Matraville Garage, 20 Flint St., Hillsdale. 2036	33737	1984	Premise Match	356m	South
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Matraville Garages., 20 Flint St., Hillsdale 2036	15087	1983	Premise Match	356m	South
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Matraville Garages, 20 Flint St., Hillsdale. 2036.	57158	1982	Premise Match	356m	South
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Matraville Garages., 20 Flint St., Hillsdale 2036	3726	1981	Premise Match	356m	South
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Matraville Garages., 20 Flint St., Hillsdale. 2036	58460	1980	Premise Match	356m	South
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Matraville Garages., 20 Flint St., Hillsdale. 2036.	45943	1979	Premise Match	356m	South
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Matraville Garages, 20 Flint St., Hillsdale. 2036	50453	1978	Premise Match	356m	South
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Matraville Garages., 20 Flint St., Hillsdale 2036	30446	1976	Premise Match	356m	South

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
2	MOTOR GARAGES &/OR ENGINEERS.	Matraville Garages., 20 Flint St., Hillsdale. 2036	59212	1975	Premise Match	356m	South
	MOTOR GARAGES &/OR ENGINEERS.	Matraville Garage., 20 Flint St Hillsdale	12310	1972	Premise Match	356m	South
	MOTOR GARAGES &/OR ENGINEERS.	Matraville Garage., 20 Flint St Hillsdale	56922	1971	Premise Match	356m	South
	MOTOR GARAGES & ENGINEERS(M6S6)	Matraville Garage., 20 Flint St., HILLSDALE	338220	1970	Premise Match	356m	South
	MOTOR GARAGES & ENGINEERS.	Matraville Garage., 20 Flint St, Hillsdale	42340	1969	Premise Match	356m	South
	MOTOR GARAGES & ENGINEERS	Matraville Garage., 20 Flint St Hillsdale	25856	1968	Premise Match	356m	South
	MOTOR GARAGES & ENGINEERS.	Matraville Garage., 20 Flint St Hillsdale	10358	1967	Premise Match	356m	South
	MOTOR GARAGES & ENGINEERS.	Matraville Garage., 20 Flint St., Hillsdale	60106	1966	Premise Match	356m	South
3	MOTOR GARAGE & SERVICE STATIONS.	C. & J. Auto Repairs, 47 Smith St., Hillsdale. 2036	64693	1989	Premise Match	406m	West
	MOTOR GARAGES & SERVICE STATIONS.	C. & J. Auto Repairs, 47 Smith St., Hillsdale. 2036	53818	1988	Premise Match	406m	West
	MOTOR GARAGES & SERVICE STATIONS.	C. & J. Auto Repairs, 47 Smith St, Hillsdale. 2036	64289	1986	Premise Match	406m	West
	MOTOR GARAGES & SERVICE STATIONS.	C. & J. Auto Repairs, 47 Smith St., Hillsdale. 2036	39292	1985	Premise Match	406m	West
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	C. & J. Auto Repairs, 47 Smith St., Hillsdale. 2036	27903	1984	Premise Match	406m	West
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	C. & J. Auto Repairs., 47 Smith St., Hillsdale 2036	14319	1983	Premise Match	406m	West
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	C. & J. Auto Repairs, 47 Smith St., Hillsdale. 2036.	56373	1982	Premise Match	406m	West
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	C. & J. Auto Repairs., 47 Smith St., Hillsdale. 2036	64046	1981	Premise Match	406m	West
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	C. & J. Auto Repairs., 47 Smith St., Hillsdale. 2036	51551	1980	Premise Match	406m	West
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	C. & J. Auto Repairs., 47 Smith St., Hillsdale. 2036.	41125	1979	Premise Match	406m	West
	MOTOR GARAGES & ENGINEERS.	Matraville Motors., 45-47 Smith St Matraville	32980	1962	Premise Match	406m	West
	MOTOR GARAGES & ENGINEERS	Matraville Motors, 45-47 Smith St. MATRAVILLE	347661	1961	Premise Match	406m	West

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Dry Cleaners, Motor Garages & Service Stations 1948-1993 Road or Area Matches

Dry Cleaners, Motor Garages & Service Stations from UBD Business Directories, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published.

Note: The Universal Business Directories were published between 1948 and 1993. Dry Cleaners, Motor Garages & Service Stations have been extracted from all of these directories except the following years 1951, 1955, 1957, 1960, 1963, 1973, 1974, 1977, 1987.

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
4	MOTOR SERVICE STATIONS-PETROL,OIL,Etc.	White's, R., Service Station Bunnerong Rd., MAROUBRA	341628	1970	Road Match	0m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	White's R Service Station., Bunnerong Rd Maroubra	50443	1969	Road Match	0m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	White's R Service Station., Bunnerong Rd Maroubra	32477	1968	Road Match	0m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	White's R Service Station., Bunnerong Rd Maroubra	15937	1967	Road Match	0m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	White's R Service Station., Bunnerong Rd Maroubra	1508	1966	Road Match	0m
	Motor Service Stations - Petrol, Oil, Etc.	White's, R., Service Station, Bunnerong Rd. Maroubra	125890	1965	Road Match	0m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	White's R Service Station., Bunnerong Rd Maroubra	52160	1964	Road Match	0m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	White's R Service Station., Bunnerong Rd Maroubra	38402	1962	Road Match	0m
	MOTOR SERVICE STATIONS—PETROL, OIL, Etc.	White's, R., Service Station, Bunnerong Rd., MAROUBRA	351287	1961	Road Match	0m
	MOTOR SERVICE STATIONS-PETROL,. OIL, ETC.	White's R Service Station., Bunnerong Rd Maroubra	24336	1959	Road Match	0m
	MOTOR SERVICE STATIONS-PETROL, ETC.	White's R. Srvice Station., Bunnerong Rd Maroubra	9919	1958	Road Match	0m
5	MOTOR GARAGES &/OR ENGINEERS.	Total Service Station., Walsh Ave Maroubra	62257	1971	Road Match	11m
	MOTOR GARAGES & ENGINEERS(M6S6)	Total Service Station., Walsh Ave., MAROUBRA	338775	1970	Road Match	11m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Auto Fix., Walsh Ave & Maroubra Rd Maroubra	50434	1969	Road Match	11m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Auto Fix., Walsh Ave & Maroubra Rd Maroubra	32468	1968	Road Match	11m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Auto Fix., Walsh Ave & Maroubra Rd Maroubra	15928	1967	Road Match	11m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Auto Fix., Walsh Ave & Maroubra Rd Maroubra	1502	1966	Road Match	11m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Auto Fix., Walsh Ave & Maroubra Rd Maroubra	52153	1964	Road Match	11m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Auto Fix., Walsh Ave & Maroubra Rd Maroubra	38397	1962	Road Match	11m
	MOTOR GARAGE/ENGINEERS.	Auto-Fix., Walsh Ave & Maroubra Rd Maroubra	568	1958	Road Match	11m

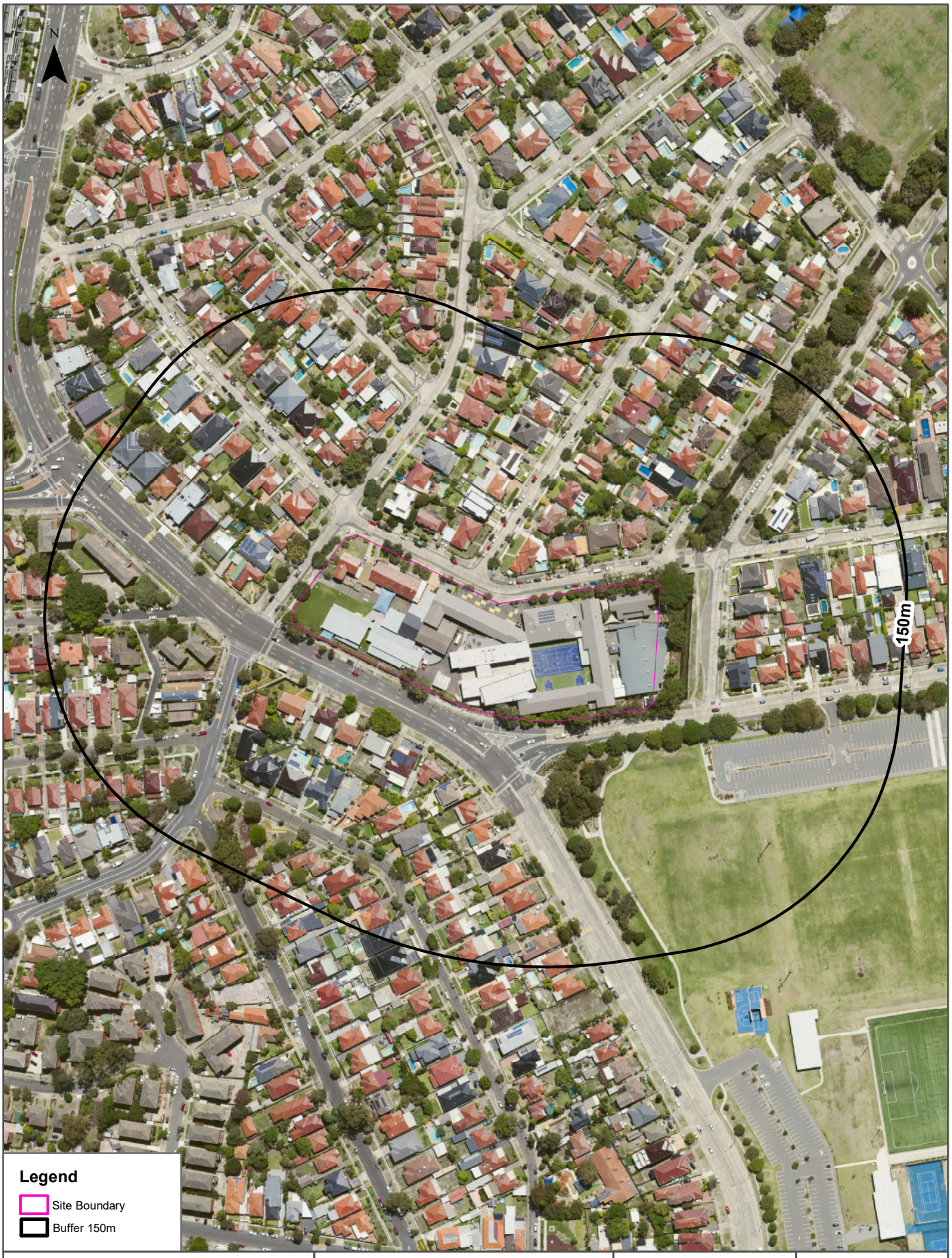
Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
6	Motor Garages & Engineers	Matraville Garage, Flint St. Matraville	123026	1965	Road Match	330m
	MOTOR GARAGES & ENGINEERS	Matraville Garage., Flint St Matraville	48298	1964	Road Match	330m
	MOTOR GARAGES & ENGINEERS.	Matraville Garage., Flint St Matraville	32978	1962	Road Match	330m
	MOTOR GARAGES & ENGINEERS	Matraville Garage, Flint St. MATRAVILLE	347660	1961	Road Match	330m
	MOTOR GARAGES & ENGINEERS.	Matraville Garage., Flint St Matraville	19571	1959	Road Match	330m
	MOTOR GARAGE/ENGINEERS.	Matraville Garage., Flint St Matraville	4567	1958	Road Match	330m
	MOTOR GARAGES &/OR ENGINEERS.	Matraville Garage., Flint St Matraville	44641	1954	Road Match	330m
7	MOTOR GARAGES & ENGINEERS.	Matraville Garage., Flint St Matraville	19574	1959	Road Match	330m
	MOTOR GARAGES &/OR ENGINEERS.	Matraville Garage., Flint St Matraville	61121	1956	Road Match	330m
	MOTOR GARAGES &/OR ENGINEERS.	Matraville Garage., Flint St Matraville	49680	1954	Road Match	330m
8	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Total Hillsdale Service Station, Bunnerong Rd., Hillsdale. 2036	34287	1984	Road Match	386m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Total Hillsdale Service Station., Bunnerong Rd., Hillsdale 2036	21729	1983	Road Match	386m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Total Hillsdale Service Station, Bunnerong Rd., Hillsdale. 2036.	57726	1982	Road Match	386m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Total Hillsdale Service Station., Bunnerong Rd., Hillsdale 2036	8312	1981	Road Match	386m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Total Hillsdale Service Station., Bunnerong Rd., Hillsdale. 2036	58998	1980	Road Match	386m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Total Service Station., Bunnerong Rd., Hillsdale. 2036.	46509	1979	Road Match	386m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Total Service Station, Bunnerong Rd., Hillsdale. 2036	50989	1978	Road Match	386m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Total Service Station., Bunnerong Rd., Hillsdale 2036	35067	1976	Road Match	386m
	MOTOR SERVICE STATIONS - PETROL, OIL	Total Service Station., Bunnerong Rd., Hillsdale. 2036	61998	1975	Road Match	386m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Total Service Station., Bunnerong Rd Hillsdale	16750	1972	Road Match	386m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Total Service Station., Bunnerong Rd Hillsdale	2216	1971	Road Match	386m
	MOTOR SERVICE STATIONS-PETROL,OIL,Etc.	Total Service Station., Bunnerong Rd., HILLSDALE	341566	1970	Road Match	386m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Total Service Station., Bunnerong Rd Hillsdale	47884	1969	Road Match	386m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Total Service Station., Bunnerong Rd Hillsdale	31310	1968	Road Match	386m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Total Service Station., Bunnerong Rd., Hillsdale	15787	1967	Road Match	386m
	MOTOR SERVICE STATIONS-PETROL, ETC.	Matraville Motors., 328 Bunnerong Rd Matraville	54577	1954	Road Match	386m
	MOTOR SERVICE STATIONS–PETROL, ETC.	Matraville Motors., 328 Bunnerong Rd Matraville	44141	1953	Road Match	386m
	MOTOR SERVICE STATIONS–PETROL, ETC.	Matraville Motors., 328 Bunnerong Rd Matraville	35917	1952	Road Match	386m

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
8	MOTOR SERVICE STATIONS-PETROL, Etc.	Matraville Motors, 328 Bunnerong Rd., Matraville	86183	1950	Road Match	386m
	MOTOR GARAGES &/OR ENGINEERS	Scott and Palmer, 328 Bunnerong Rd., Matraville	84350	1950	Road Match	386m
	MOTOR SERVICE STATIONS-PETROL, Etc.	Scott, D. and Palmer A., 356 Bunnerong Rd., Matraville	86376	1950	Road Match	386m
	MOTOR SERVICE STATIONS-PETROL, ETC.	Matraville Motors., 328 Bunnerong Rd., Matraville	26630	1948-49	Road Match	386m
	MOTOR GARAGES &/OR ENGINEERS.	Scott And Palmer., 328 Bunnerong Rd., Matraville	22845	1948-49	Road Match	386m

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Aerial Imagery 2020

35 Donovan Avenue, Maroubra, NSW 2035



Aerial Imagery 2015

35 Donovan Avenue, Maroubra, NSW 2035



Scale: 0 30 60 90 120 Meters	Data Sources: Aerial Imagery © Aerometrex Pty Ltd	Coordinate System: GDA 1994 MGA Zone 56	Date: 17 July 2020

Aerial Imagery 2009

35 Donovan Avenue, Maroubra, NSW 2035



Aerial Imagery 2000

35 Donovan Avenue, Maroubra, NSW 2035



Aerial Imagery 1994

35 Donovan Avenue, Maroubra, NSW 2035



Aerial Imagery 1991

35 Donovan Avenue, Maroubra, NSW 2035



Aerial Imagery 1986

35 Donovan Avenue, Maroubra, NSW 2035



Aerial Imagery 1982

35 Donovan Avenue, Maroubra, NSW 2035



Aerial Imagery 1978

35 Donovan Avenue, Maroubra, NSW 2035



Aerial Imagery 1970

35 Donovan Avenue, Maroubra, NSW 2035



Scale:	Data Source Aerial Imagery:	Coordinate System:	Date: 17 July 2020
0 30 60 90 120 Meters	© NSW Department of Customer Service	GDA 1994 MGA Zone 56	

Aerial Imagery 1965

35 Donovan Avenue, Maroubra, NSW 2035



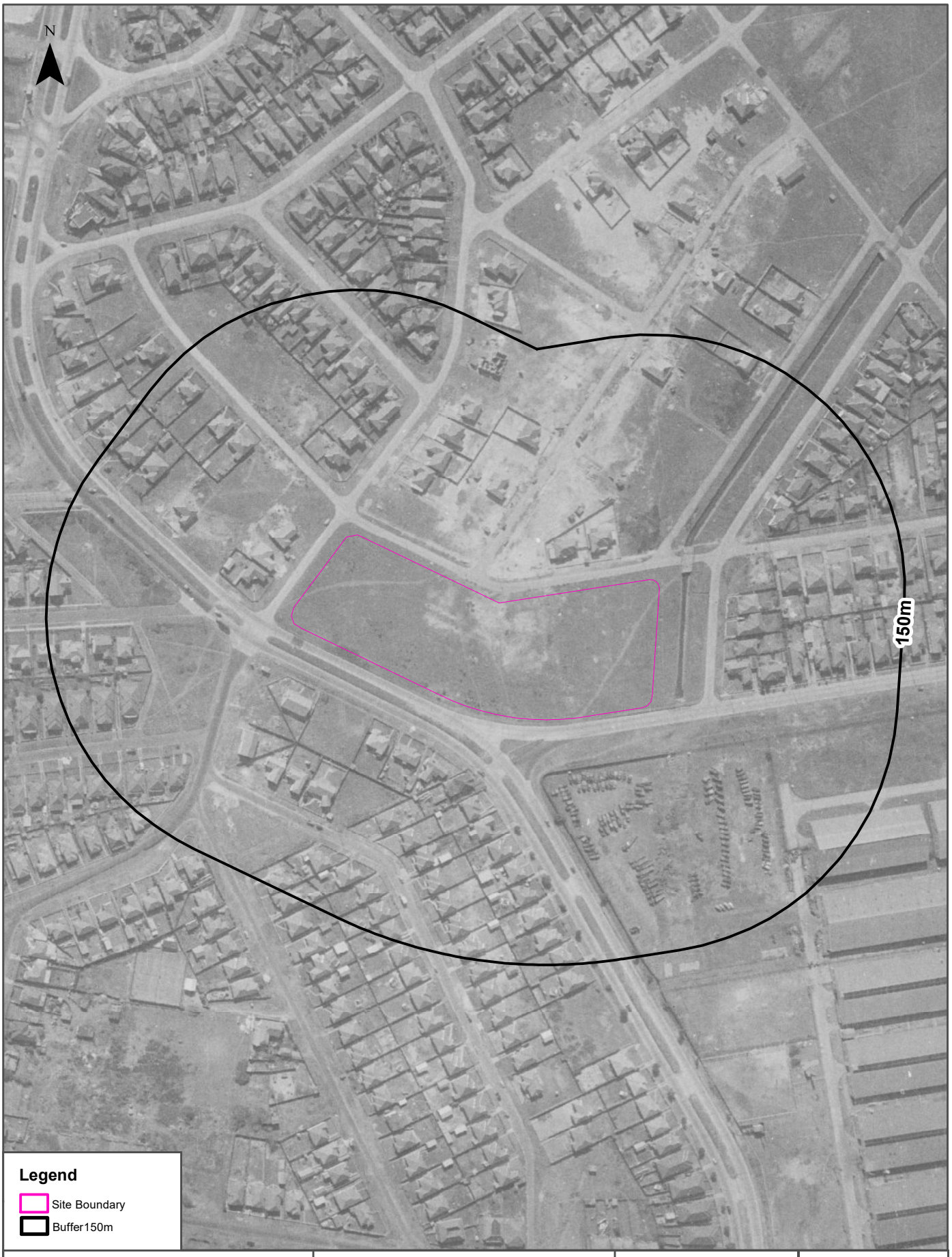
Aerial Imagery 1961

35 Donovan Avenue, Maroubra, NSW 2035



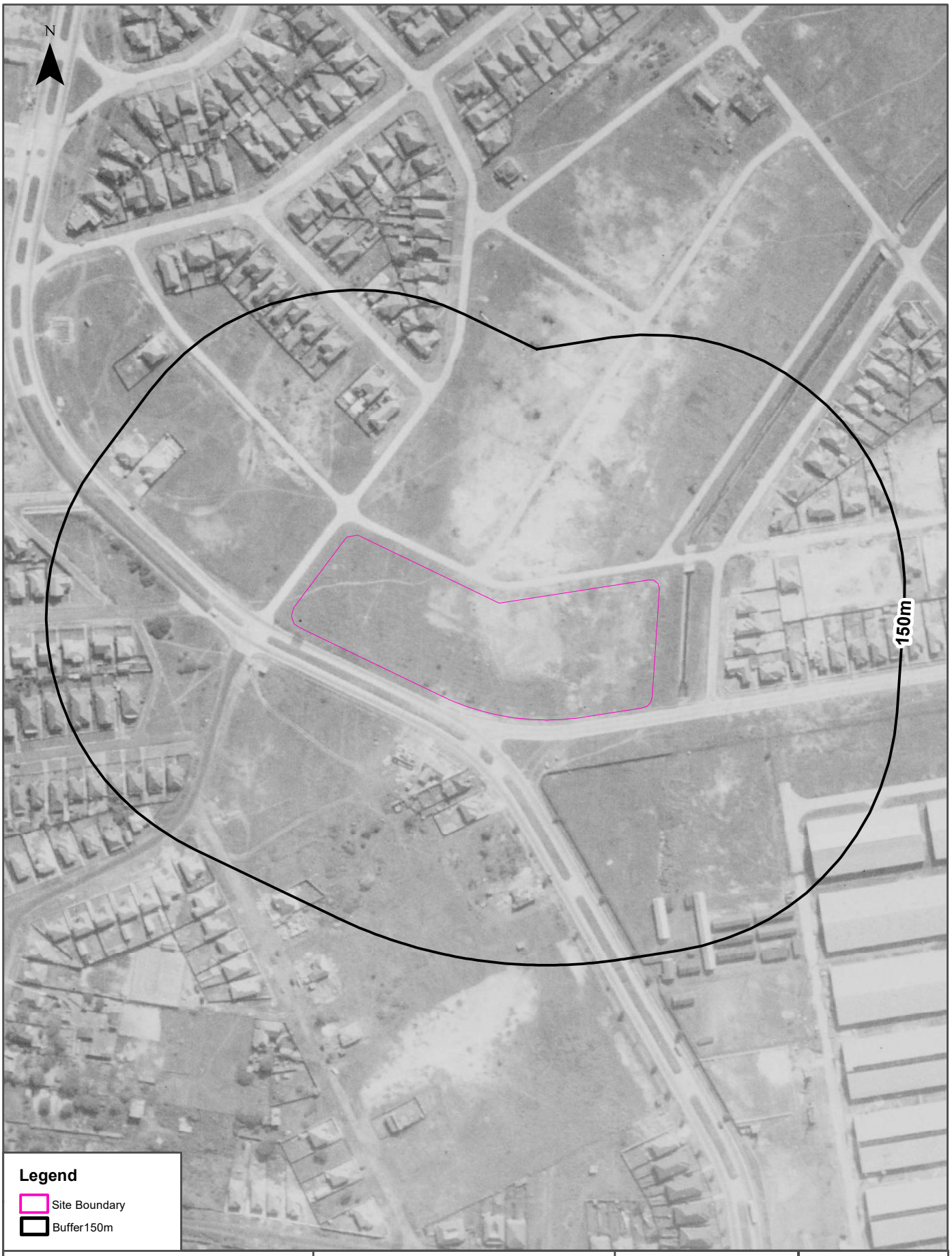
Aerial Imagery 1955

35 Donovan Avenue, Maroubra, NSW 2035



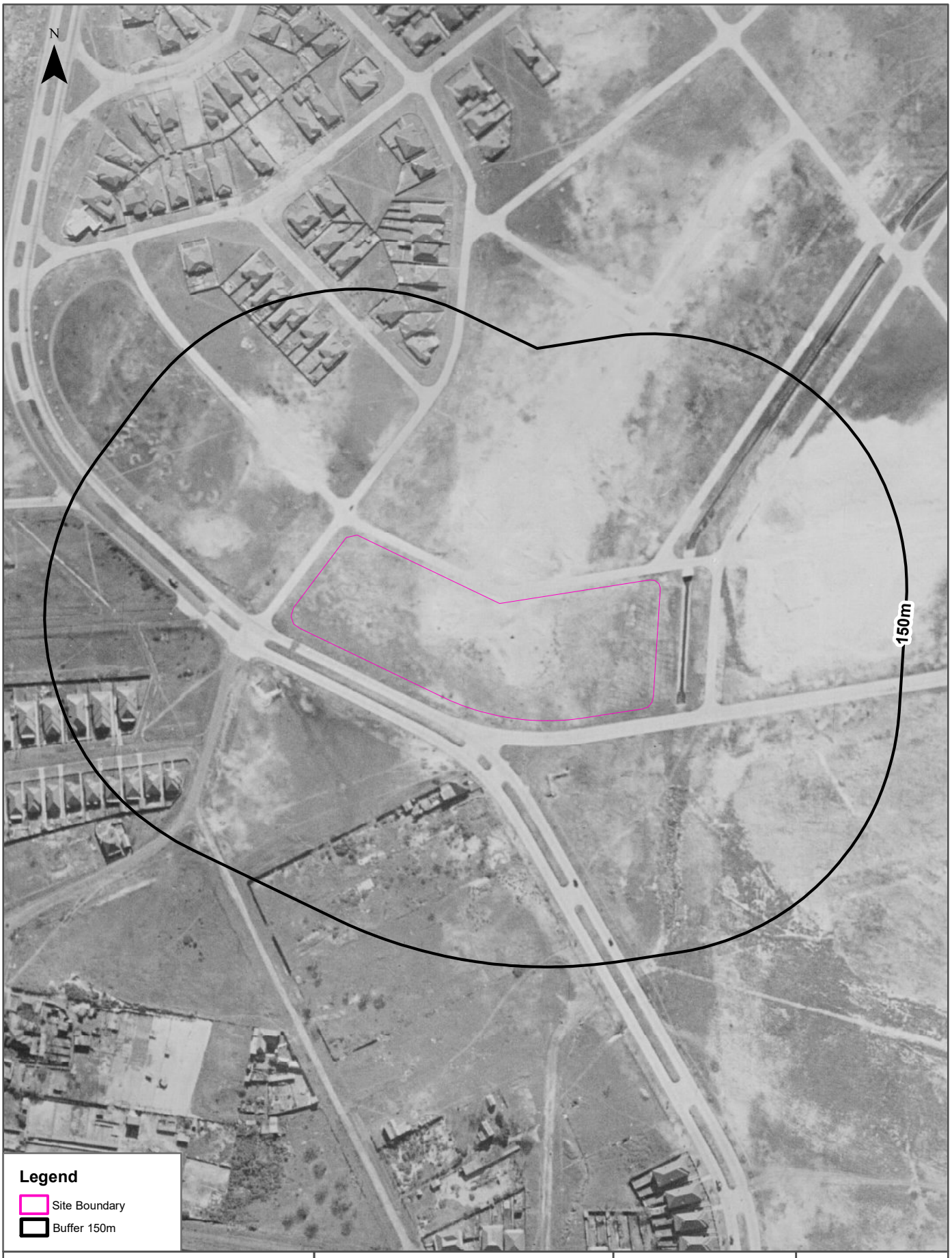
Aerial Imagery 1951

35 Donovan Avenue, Maroubra, NSW 2035



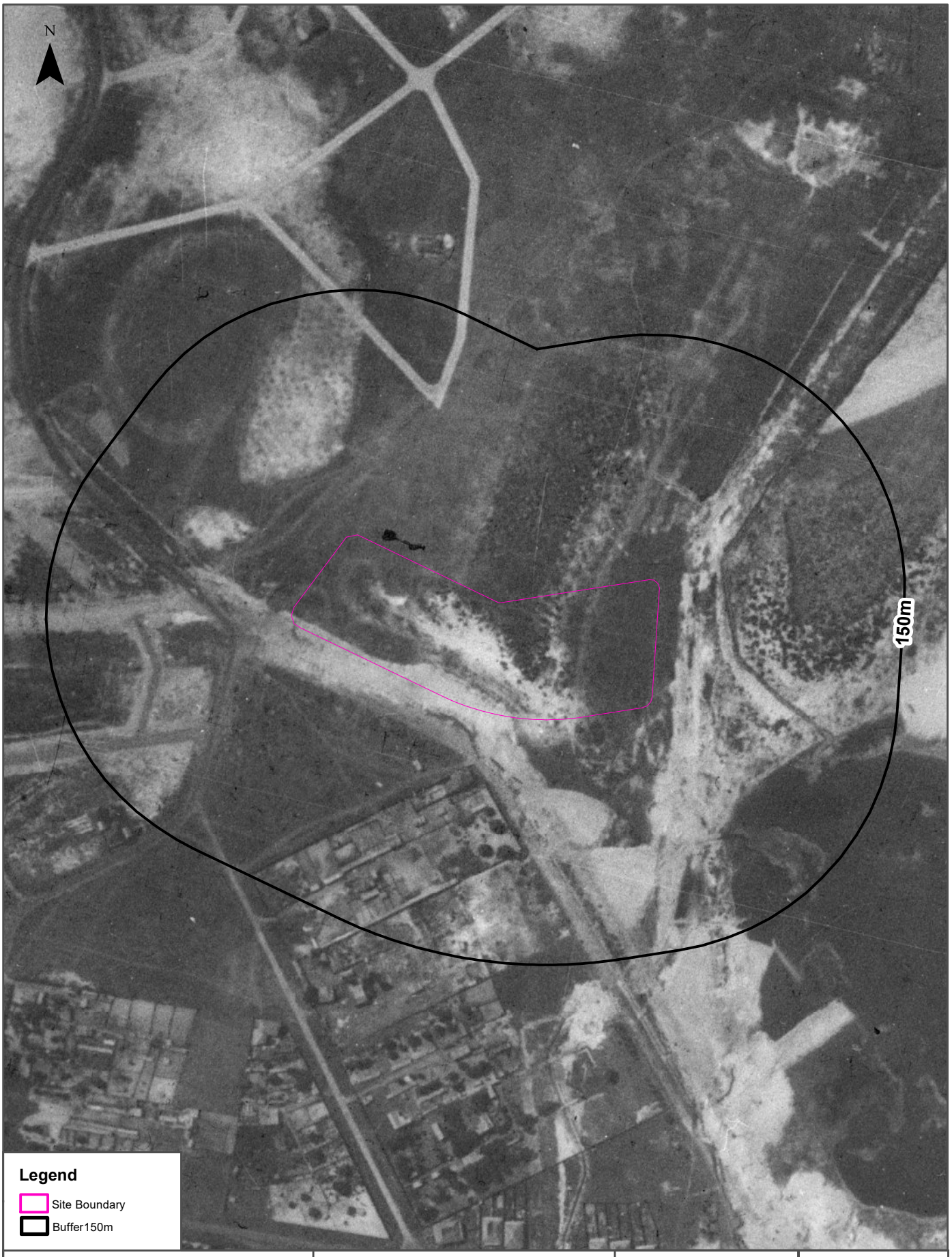
Aerial Imagery 1943

35 Donovan Avenue, Maroubra, NSW 2035



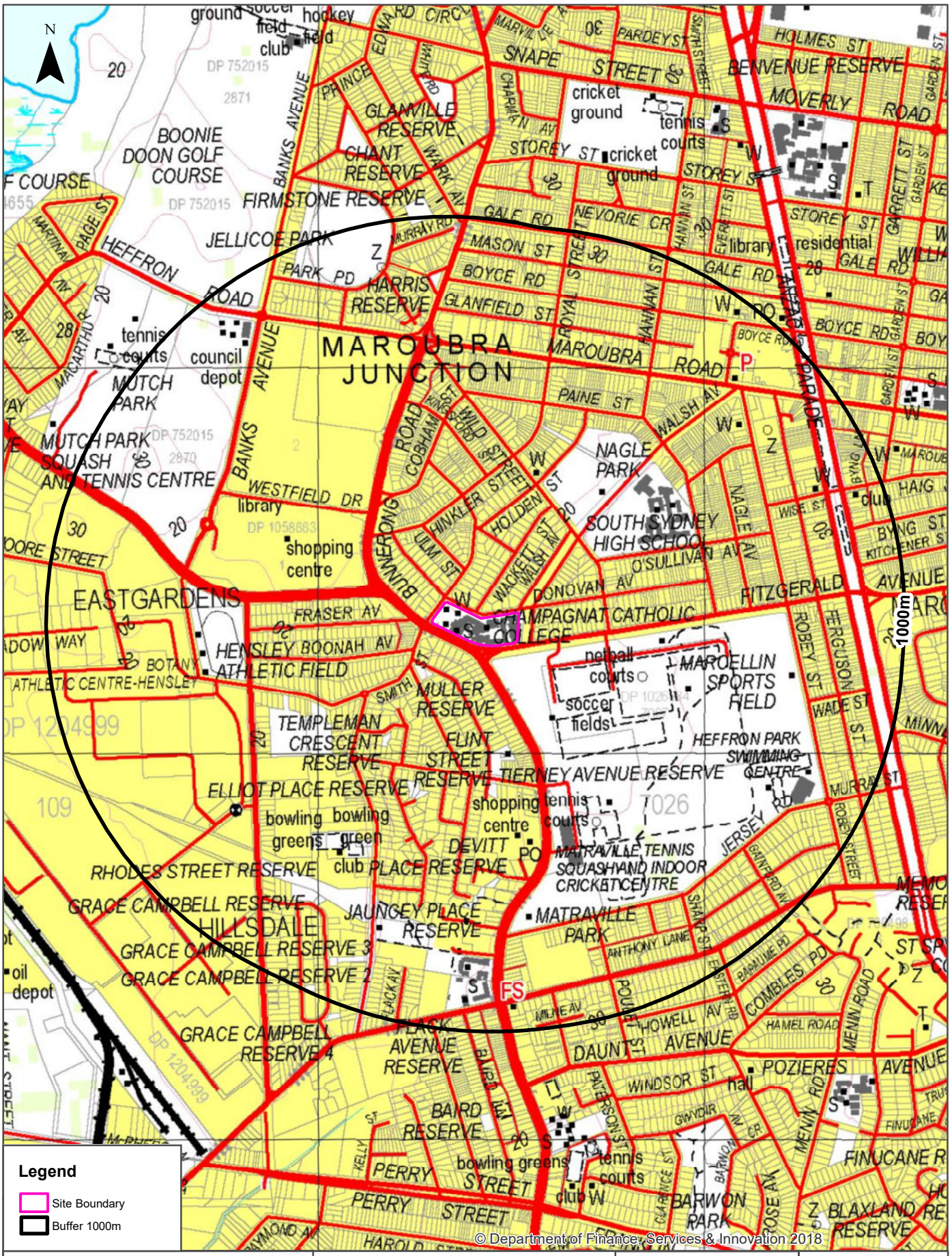
Aerial Imagery 1930

35 Donovan Avenue, Maroubra, NSW 2035



Topographic Map 2015

35 Donovan Avenue, Maroubra, NSW 2035



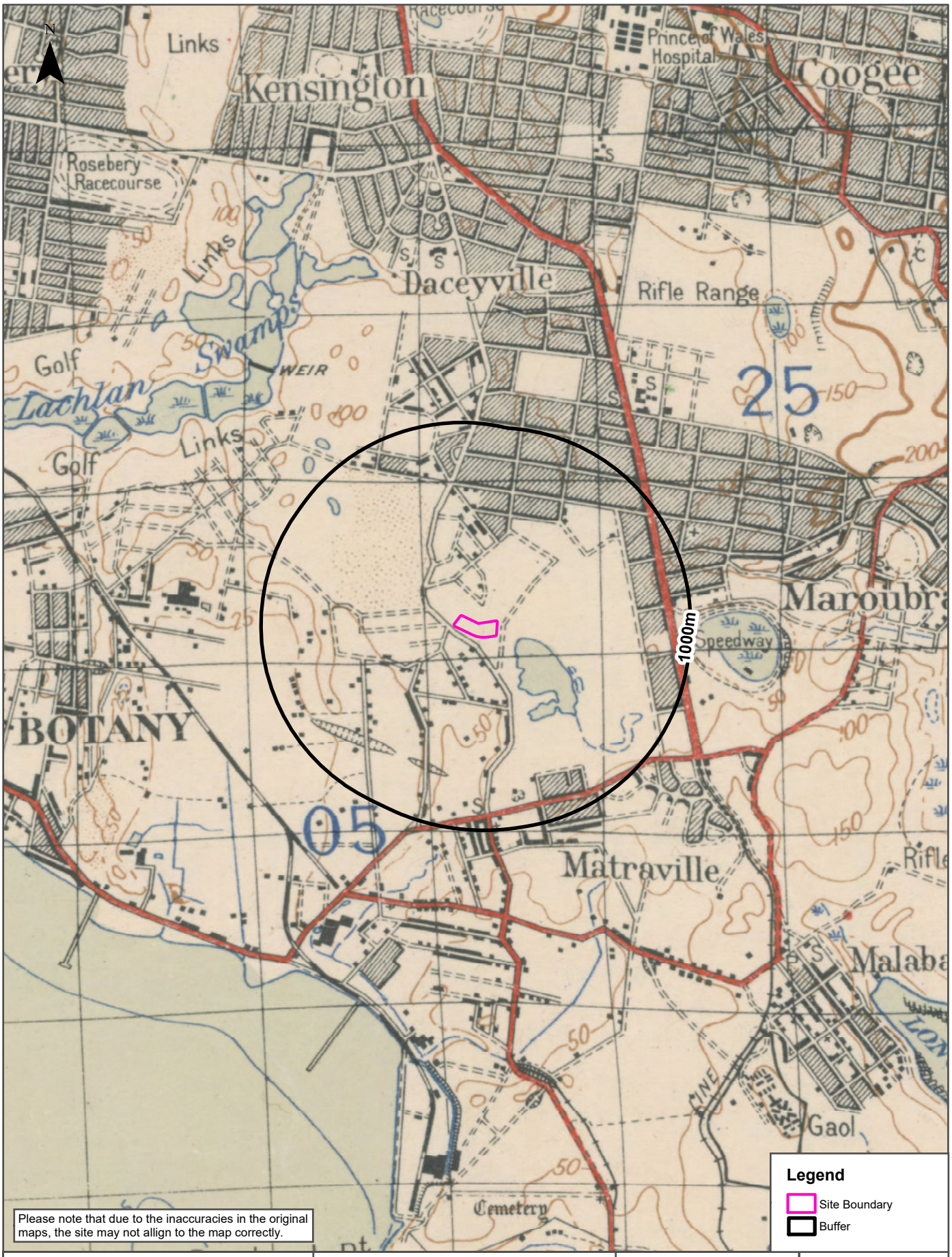
Historical Map 1975

35 Donovan Avenue, Maroubra, NSW 2035



Historical Map c.1936

35 Donovan Avenue, Maroubra, NSW 2035



Historical Map c.1917

35 Donovan Avenue, Maroubra, NSW 2035

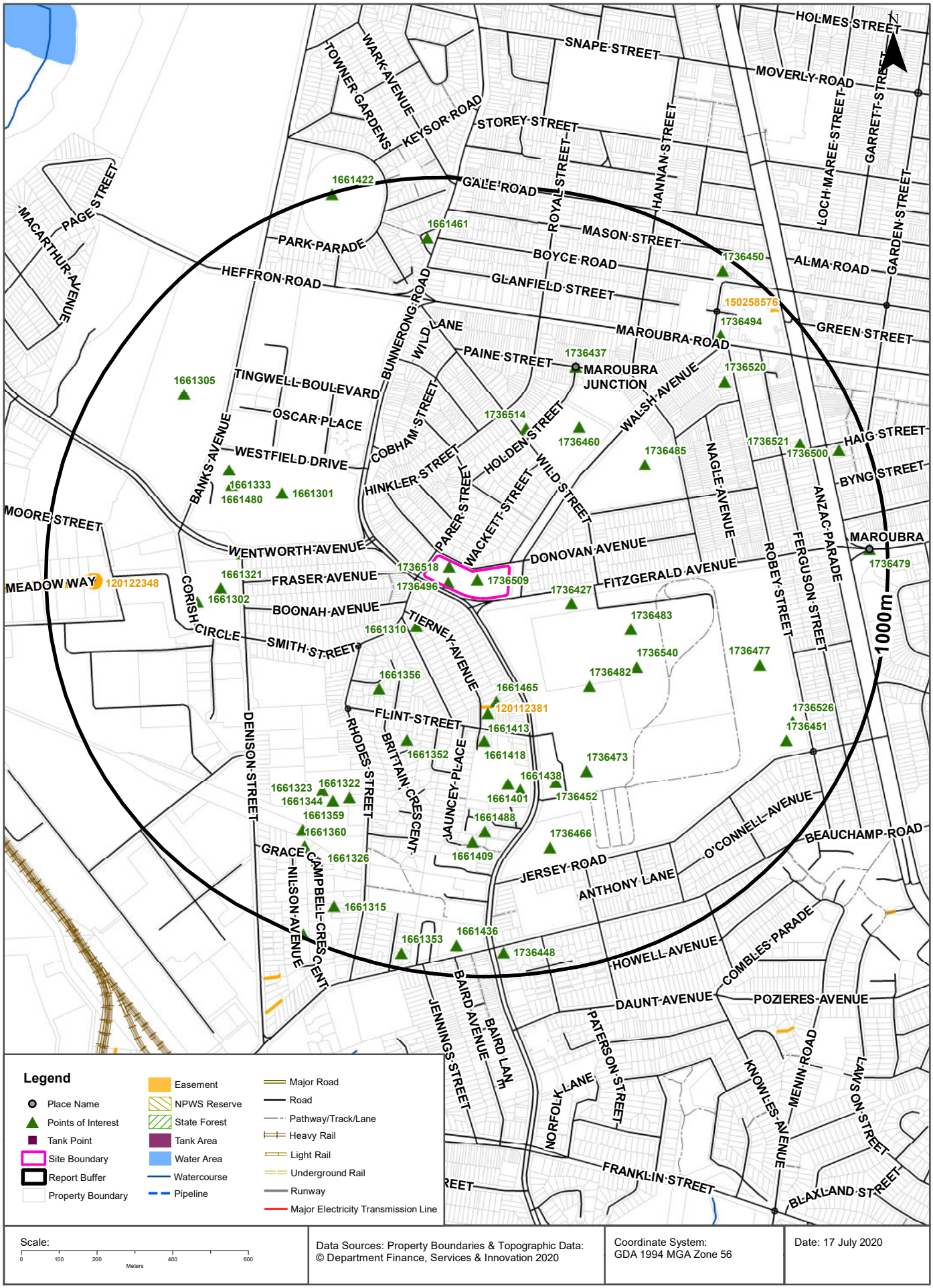


Scale:	Data Sources: Australia 1:63360, Produced by Australian Section Imperial General Staff	Coordinate System: GDA 1994 MGA Zone 56	Date: 17 July 2020

0 125 250 500 750 1,000 1,250 Meters

Topographic Features

35 Donovan Avenue, Maroubra, NSW 2035



Topographic Features

35 Donovan Avenue, Maroubra, NSW 2035

Points of Interest

What Points of Interest exist within the dataset buffer?

Map Id	Feature Type	Label	Distance	Direction
1736496	Primary School	OUR LADY OF THE ANNUNCIATION CATH PRIM SCHOOL	0m	Onsite
1736509	High School	CHAMPAGNAT CATHOLIC COLLEGE	0m	Onsite
1736518	Place Of Worship	OUR LADY OF THE ANNUNCIATION CATHOLIC CHURCH	0m	Onsite
1661310	Park	MULLER RESERVE	127m	South West
1736427	Parking Area	Parking Area	170m	East
1661465	Child Care Centre	HILLSDALE CHILD CARE CENTRE	274m	South
1661413	Park	TIERNEY AVENUE RESERVE	304m	South
1661356	Park	TEMPLEMAN CRESCENT RESERVE	320m	South West
1736482	Sports Field	SOCCER FIELDS	325m	South East
1736483	Sports Court	NETBALL COURTS	338m	East
1736514	Place Of Worship	ST EDMUNDS ANGLICAN CHURCH	368m	North
1661418	Park	FLINT STREET RESERVE	376m	South
1736540	Park	HEFFRON PARK	391m	South East
1661352	Park	ELLIOT PLACE RESERVE	411m	South
1736460	Park	NAGLE PARK	414m	North East
1661301	Shopping Centre	EASTGARDENS SHOPPING CENTRE	432m	North West
1736485	High School	SOUTH SYDNEY HIGH SCHOOL	449m	North East
1661332	Suburb	EASTGARDENS	483m	West
1661401	Shopping Centre	SOUTHPOINT SHOPPING CENTRE	493m	South
1736473	Sports Court	TENNIS COURTS	510m	South East
1736452	Sports Centre	MATRAVILLE TENNIS SQUASH AND INDOOR CRICKET CENTRE	511m	South East
1661438	Post Office	MATRAVILLE POST OFFICE	513m	South
1661321	Sports Field	HENSLEY ATHLETIC FIELD	539m	West
1736437	Urban Place	MAROUBRA JUNCTION	557m	North East
1661480	Community Medical Centre	EASTGARDENS EARLY CHILDHOOD HEALTH CENTRE	561m	West
1661333	Library	EASTGARDENS LIBRARY	584m	North West
1661302	Sports Centre	BOTANY ATHLETIC CENTRE-HENSLEY	603m	West
1661322	Sports Field	BOWLING GREEN	613m	South West
1661488	Park	DEVITT PLACE RESERVE	616m	South
1661323	Sports Field	BOWLING GREENS	627m	South West
1661344	Club	HILLSDALE BOWLING AND REC CLUB	639m	South West

Map Id	Feature Type	Label	Distance	Direction
1661409	Park	JAUNCEY PLACE RESERVE	644m	South
1736466	Park	MATRAVILLE PARK	676m	South
1736477	Sports Field	MARCELLIN SPORTS FIELD	691m	East
1661359	Park	RHODES STREET RESERVE	743m	South West
1736520	Place Of Worship	ST ANDREWS PRESBYTERIAN MEMORIAL CHURCH	751m	North East
1661360	Park	GRACE CAMPBELL RESERVE	780m	South West
1661305	Golf Course	BOONIE DOON GOLF COURSE	791m	North West
1661326	Suburb	HILLSDALE	801m	South West
1736526	Swimming Pool	DES RENFORD LEISURE CENTRE	825m	South East
1736494	Police Station	MAROUBRA POLICE STATION	829m	North East
1736451	Sports Centre	HEFFRON PARK SWIMMING CENTRE	831m	South East
1736521	Place Of Worship	HOPE UNITING CHURCH	834m	East
1661461	Park	HARRIS RESERVE	841m	North
1661315	Park	GRACE CAMPBELL RESERVE 3	892m	South West
1661436	Primary School	MATRAVILLE PUBLIC SCHOOL	919m	South
1736500	Club	JUNIORS AT THE JUNCTION	924m	East
1736448	Fire Station	MATRAVILLE FIRE STATION	937m	South
1736479	Suburb	MAROUBRA	952m	East
1661353	Park	FLACK AVENUE RESERVE	959m	South
1736450	Place Of Worship	SALVATION ARMY CHURCH	965m	North East
1661311	Park	GRACE CAMPBELL RESERVE 2	991m	South West
1661422	Park	JELLICOE PARK	998m	North

Topographic Data Source: © Land and Property Information (2015)
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Topographic Features

35 Donovan Avenue, Maroubra, NSW 2035

Tanks (Areas)

What are the Tank Areas located within the dataset buffer?
Note. The large majority of tank features provided by LPI are derived from aerial imagery & are therefore primarily above ground tanks.

Map Id	Tank Type	Status	Name	Feature Currency	Distance	Direction
	No records in buffer					

Tanks (Points)

What are the Tank Points located within the dataset buffer?
Note. The large majority of tank features provided by LPI are derived from aerial imagery & are therefore primarily above ground tanks.

Map Id	Tank Type	Status	Name	Feature Currency	Distance	Direction
	No records in buffer					

Tanks Data Source: © Land and Property Information (2015)
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Major Easements

What Major Easements exist within the dataset buffer?
Note. Easements provided by LPI are not at the detail of local governments. They are limited to major easements such as Right of Carriageway, Electrical Lines (66kVa etc.), Easement to drain water & Significant subterranean pipelines (gas, water etc.).

Map Id	Easement Class	Easement Type	Easement Width	Distance	Direction
120112381	Primary	Undefined		286m	South
120122348	Primary	Undefined		851m	West
150258576	Primary	Right of way	Variable	967m	North East

Easements Data Source: © Land and Property Information (2015)
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Topographic Features

35 Donovan Avenue, Maroubra, NSW 2035

State Forest

What State Forest exist within the dataset buffer?

State Forest Number	State Forest Name	Distance	Direction
N/A	No records in buffer		

State Forest Data Source: © NSW Department of Finance, Services & Innovation (2018)
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National Parks and Wildlife Service Reserves

What NPWS Reserves exist within the dataset buffer?

Reserve Number	Reserve Type	Reserve Name	Gazetted Date	Distance	Direction
N/A	No records in buffer				

NPWS Data Source: © NSW Department of Finance, Services & Innovation (2018)
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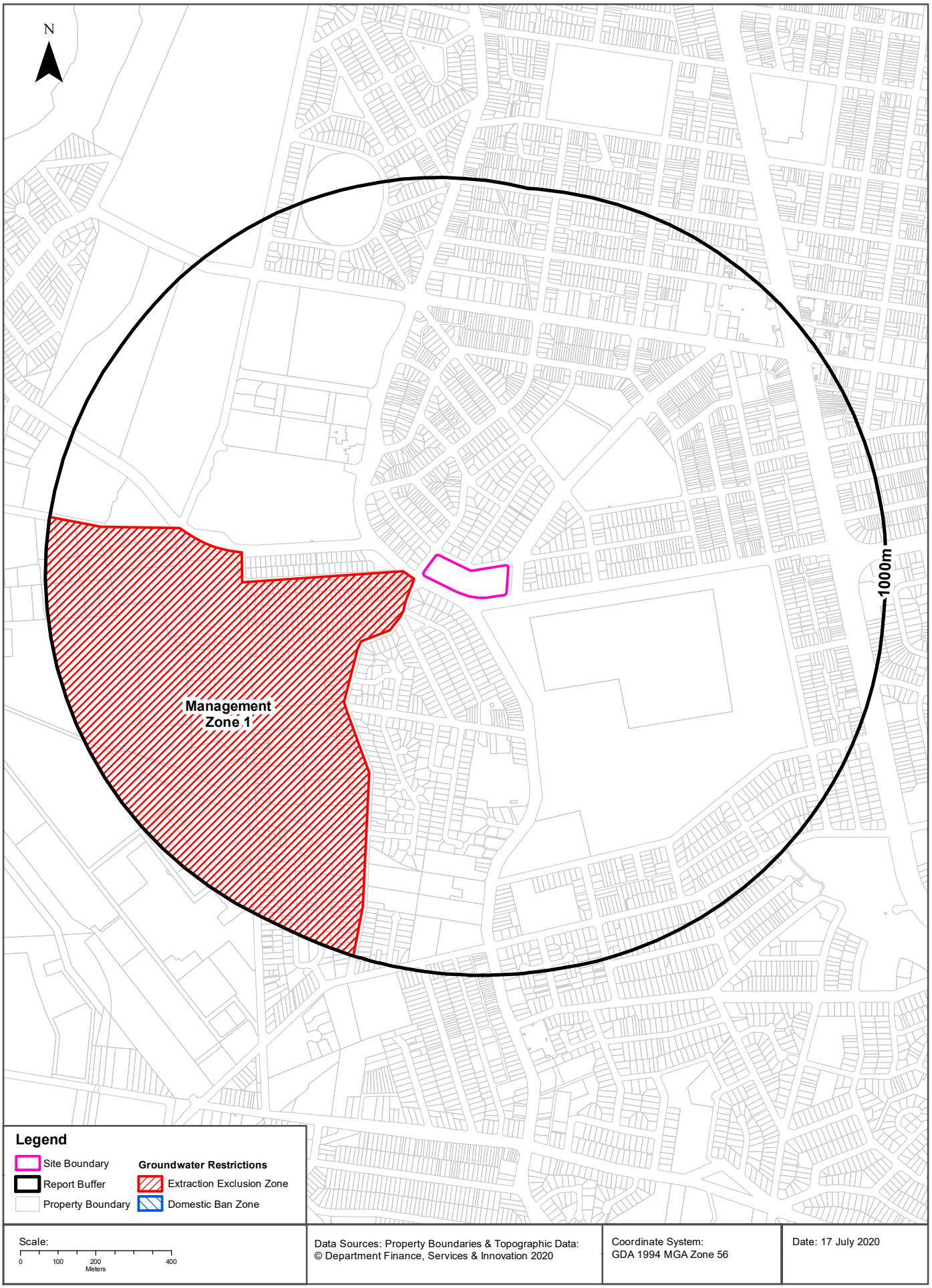
Elevation Contours (m AHD)

35 Donovan Avenue, Maroubra, NSW 2035



Botany Groundwater Management Zones

35 Donovan Avenue, Maroubra, NSW 2035



Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2020

Coordinate System: GDA 1994 MGA Zone 56

Date: 17 July 2020

Hydrogeology & Groundwater

35 Donovan Avenue, Maroubra, NSW 2035

Hydrogeology

Description of aquifers on-site:

Description
Porous, extensive highly productive aquifers

Description of aquifers within the dataset buffer:

Description
Porous, extensive highly productive aquifers

Hydrogeology Map of Australia : Commonwealth of Australia (Geoscience Australia)
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Botany Groundwater Management Zones

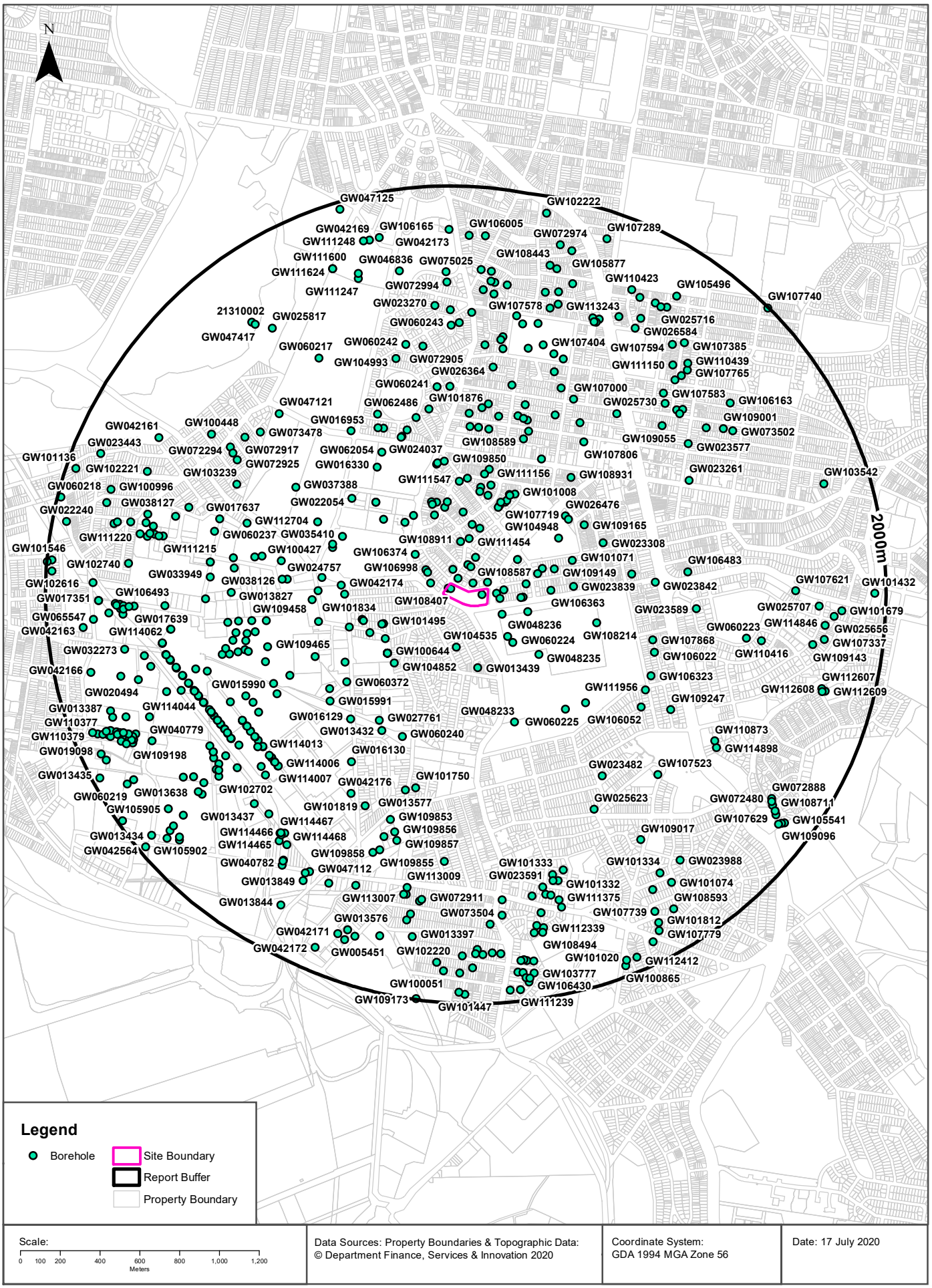
Groundwater management zones relating to the Botany Sand Beds aquifer within the dataset buffer:

Management Zone No.	Restriction	Distance	Direction
1	Extraction exclusion	27m	South West

Botany Groundwater Management Zones Data Source : NSW Department of Primary Industries

Groundwater Boreholes

35 Donovan Avenue, Maroubra, NSW 2035



Hydrogeology & Groundwater

35 Donovan Avenue, Maroubra, NSW 2035

Groundwater Boreholes

Boreholes within the dataset buffer:

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m bgl)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW108407	10BL600709, 10WA114203	Spear	Private	Domestic	Domestic		28/11/2006	16.00	16.00					0m	Onsite
GW104391	10BL156509, 10WA113064	Bore	Private	Domestic	Domestic		27/02/1995	10.00	10.00					0m	Onsite
GW106108	10BL162670, 10WA113469	Spear	Private	Domestic	Domestic		17/03/2004	9.00	9.00					0m	Onsite
GW107308	10BL165252, 10WA113939	Spear	Private	Domestic	Domestic		14/08/2005	9.50	9.50					33m	North East
GW110785	10BL603674, 10WA114596	Spear	Private	Domestic	Domestic		20/02/2010	12.00	12.00		6.00	1.500		38m	North West
GW073503	10BL157287, 10WA113134	Spear	Private	Domestic	Domestic		01/11/1995	10.00	10.00					39m	North East
GW107325	10BL165270, 10WA113943	Spear	Private	Domestic	Domestic		16/08/2005	9.50	9.50					45m	East
GW107119	10BL164843, 10WA113868	Spear	Private	Domestic	Domestic		10/05/2005	10.98	10.98	Good	7.93	1.000		62m	East
GW110836	10BL601332, 10WA114321	Spear	Private	Domestic	Domestic		30/03/2010	12.00	12.00					71m	North West
GW110134	10BL602905, 10WA114556	Spear	Private	Domestic	Domestic		01/03/2009	10.00	10.00					80m	East
GW107030	10BL164912, 10WA113885	Spear	Private	Domestic	Domestic		20/04/2005	9.50	9.50					80m	West
GW075020		Bore	NSW Office of Water		Monitoring Bore	BOTANY BOREFIELD AT HEFRON PARK	17/07/1998	28.00	29.00		7.76		8.48	93m	South East
GW106996	10BL162984, 10WA113517	Spear	Private	Domestic	Domestic		17/05/2005	9.50	9.50					117m	North
GW108772	10BL601114, 10WA114286	Spear	Private	Domestic	Domestic		16/04/2007	15.00	15.00					120m	North
GW106820	10BL162981, 10WA113515	Spear	Private	Domestic	Domestic		13/10/2004	9.50	9.50					123m	North West

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m bgl)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW106998	10BL162958, 10WA113512	Spear	Private	Domestic	Domestic		15/04/2005	9.50	9.50					137m	North West
GW024369	10BL018434, 10WA112947	Spear	Private	Domestic	General Use		01/11/1965	8.80	8.80	Good				164m	North
GW106960	10BL164703, 10WA113835	Spear	Private	Domestic	Domestic		01/03/2005	10.68	10.68	Good	7.01	1.000		168m	East
GW106812	10BL164368, 10WA113784	Spear	Private	Domestic	Domestic		14/12/2004	10.06	10.07	Good	7.01	1.000		179m	East
GW108226	10BL600446, 10WA114147	Spear	Private	Domestic	Domestic		17/08/2006	13.42	13.42		9.15	1.000		194m	East
GW048236	10BL107584	Bore	Local Govt	Test Bore	G/water Xplore		01/11/1977	0.00	38.00	0-500 ppm				195m	South East
GW048234	10BL107580, 10BL107585, 10WA114671	Bore	Local Govt	Recreation (groundwater), Test Bore	Recreation (groundwater)		01/11/1978	22.50	25.00	0-500 ppm				210m	East
GW108587	10BL601049, 10WA114272	Spear	Private	Domestic	Domestic		18/02/2007	10.00	10.00					213m	North East
GW108911	10BL601556, 10WA114373	Spear	Private	Domestic	Domestic		12/06/2008	16.00						215m	North
GW104535	10BL160245, 10WA113305	Bore	Private	Domestic	Domestic		02/10/2001	7.00	7.00					220m	South
GW106374	10BL163872, 10WA113699	Bore	Private	Domestic	Domestic		16/09/2004	15.00	15.00		13.00	0.800		227m	North West
GW060224	10BL132183, 10WA114671	Bore	Local Govt	Recreation (groundwater)	Recreation (groundwater)		01/01/1985	29.00	32.00	Good				235m	South East
GW111454	10BL600141, 10WA114110	Bore	Private	Domestic	Domestic		07/06/2011	12.00	12.00					243m	North
GW101653	10BL158900, 10WA113265	Bore		Domestic	Domestic		03/11/1998	7.63	7.63	Good	4.88	1.000		263m	East
GW102219	10BL159071, 10WA113272	Spear	Private	Domestic	Domestic		22/02/1999	7.63	7.63	Good	4.88	1.000		294m	East
GW111602	10BL602836, 10WA114544	Spear	Private	Domestic	Domestic		24/08/2011	12.00	12.00					305m	North
GW013439	10BL006750	Bore	Private	Industrial	Industrial		01/04/1948	24.80	24.90					312m	South
GW108849	10BL601553	Spear	Private	Domestic	Domestic		20/05/2007	16.00	16.00					315m	North
GW106363	10BL163687, 10WA113650	Bore	Private	Domestic	Domestic		02/08/2004	15.00	15.00		11.00	0.800		316m	East

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m bgl)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW101495	10BL158502, 10WA113252	Spear	Private	Domestic	Domestic		15/03/1998	9.00	9.00					335m	West
GW072291		Bore	Private		Domestic		08/02/1995	9.00	9.00					344m	West
GW109149	10BL602052, 10WA114434	Spear	Private	Domestic	Domestic		05/08/2008	9.00						350m	East
GW111151	10BL601759, 10WA114413	Spear	Private	Domestic	Domestic		20/10/2010	17.00	17.00					354m	North
GW112349	10BL602320, 10WA114486	Spear	Private	Domestic	Domestic		01/02/2008	12.00	12.00		12.00			364m	North
GW048235	10BL107581, 10BL107586, 10WA114671	Bore	Local Govt	Recreation (groundwater), Test Bore	Recreation (groundwater)		01/05/1979	22.50	24.00	0-500 ppm				365m	South East
GW019662	10BL012314, 10BL131788	Bore	Private	Industrial	Industrial		01/01/1962	32.00	32.00					369m	South West
GW014460	10BL008488	Bore	Private	Industrial	Industrial		01/03/1958	38.40	38.40					381m	North West
GW108232	10BL600540, 10WA114163	Spear	Private	Domestic	Domestic		01/11/2006	16.00	16.00					383m	North
GW016331	10BL012186	Bore	Private	Industrial	Industrial		01/01/1959	37.60	37.60					387m	North West
GW107567	10BL165308, 10WA113956	Spear	Private	Domestic	Domestic		01/10/2005	9.50	10.00					407m	North
GW100728	10BL157823, 10WA113181	Spear	Private	Domestic	Domestic		04/12/1996	7.63	7.63	Good	5.19	1.000		409m	South West
GW100042	10BL157497, 10WA113162	Bore		Industrial	Industrial		03/01/1996	130.00						409m	South West
GW100041	10BL157498	Bore	Private	Monitoring Bore	Monitoring Bore		03/01/1996	24.40	24.40					409m	South West
GW100508	10BL157979, 10WA113190	Spear	Private	Domestic	Domestic		22/03/1997	10.00	10.00					409m	South West
GW100644	10BL157112, 10WA113116	Bore		Domestic	Domestic		24/10/1995	4.00	4.50					409m	South West
GW100037	10BL157437, 10WA116405	Excavation	Private	Industrial	Industrial		03/01/1996	24.00	24.00					409m	South West
GW072631	10BL156286, 10WA113030	Spear	Private	Domestic	Domestic		06/02/1995	9.00	9.00					410m	South West
GW072430	10BL156196, 10WA113022	Spear	Private	Domestic	Domestic		31/10/1994	12.00	12.00					410m	South West
GW100824	10BL157607, 10WA113168	Spear	Private	Domestic	Domestic		23/04/1996	8.23	8.24	Good	5.80	0.800		410m	South West

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m bgl)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW072446	10BL156118, 10WA113018	Spear	Private	Domestic	Domestic		06/12/1994	9.00	9.00					410m	South West
GW108665	10BL601104, 10WA114285	Spear	Private	Domestic	Domestic		10/02/2007	18.00	18.00					410m	North
GW100743	10BL157771, 10WA113176	Spear	Private	Domestic	Domestic		18/10/1996	10.00	10.00					410m	South West
GW100488	10BL157862, 10WA113183	Spear	Private	Domestic	Domestic		04/03/1997	10.00	10.00					410m	South West
GW107369	10BL165547, 10WA113990	Spear	Private	Domestic	Domestic		23/09/2005	10.00	10.00					414m	North
GW108664	10BL600612, 10WA114177	Spear	Private	Domestic	Domestic		20/01/2007	16.00	16.00					414m	North
GW060195	10BL131789	Bore	Private	Industrial	Industrial		01/01/1919	30.00	30.00	0-500 ppm				418m	West
GW107027	10BL163111, 10WA113527	Spear	Private	Domestic	Domestic		05/05/2005	9.50	9.50					422m	North
GW106864	10BL164863, 10WA113876	Spear	Private	Domestic	Domestic		14/03/2005	9.50	9.50					422m	North
GW101835	10BL157451, 10WA113158	Bore		Domestic	Domestic		16/01/1996	10.00	10.00					424m	West
GW104852	10BL157106, 10WA113113	Bore	Private	Domestic	Domestic		18/08/2003	10.00	10.00					426m	South West
GW101834	10BL157450, 10WA113157	Bore		Domestic	Domestic		16/01/1996	10.00	10.00					427m	West
GW023839	10BL017534, 10WA112915	Spear	Private	Domestic	General Use		01/03/1966	8.20	8.20	Good				430m	East
GW104948	10BL160514	Bore		Test Bore	Test Bore		20/02/2002	7.00	7.00	120	4.35	0.300		439m	North East
GW107044	10BL162219, 10WA113366	Spear	Private	Domestic	Domestic		18/05/2005	9.50	9.50					440m	North
GW107719	10BL162983, 10WA113516	Spear	Private	Domestic	Domestic		01/06/2005	9.50	9.50					445m	North
GW101071	10BL158250, 10WA113210	Spear	Private	Domestic	Domestic		23/10/1997	6.50	6.50					450m	East
GW111646	10BL163157, 10WA113533	Bore	Private	Domestic	Domestic		20/04/2004	15.00	15.00					456m	North East
GW014459	10BL008490	Bore	Private	Industrial	Industrial		01/12/1956	29.20	29.30					464m	North West
GW105765	10BL162566, 10WA113449	Bore	Private	Domestic	Domestic		03/02/2004	9.50	9.50					469m	North

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m bgl)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW107587	10BL165680, 10WA114017	Spear	Private	Domestic	Domestic		01/11/2005	9.50	9.50					484m	North
GW026786	10BL016244	(Unknown)	Private	Industrial	Industrial		01/10/1965	13.10	13.10					484m	North East
GW108963	10BL164259, 10WA113767	Spear	Private	Domestic	Domestic		26/06/2008	11.50						487m	North East
GW035690	10BL030245, 10WA114619	Bore	Private	Recreation (groundwater)	Industrial		01/02/1971	38.70	38.70	0-500 ppm				494m	West
GW101008	10BL156974, 10WA113093	Spear	Private	Domestic	Domestic		30/08/1995	9.00	9.00					495m	North East
GW025948	10BL019507, 10WA114675	Bore	Private	Industrial	Industrial		01/02/1967	35.00	35.10					502m	West
GW108572	10BL601380, 10WA114333	Spear	Private	Domestic	Domestic		27/03/2007	18.00	18.00					506m	North
GW042174		Spear	NSW Office of Water		Monitoring Bore		17/01/1975						20.92	514m	West
GW111547	10BL600944, 10WA114249	Bore	Private	Domestic	Domestic		09/12/2006	18.00	18.00					515m	North
GW108867	10BL600746, 10WA114210	Spear	Private	Domestic	Domestic		01/01/1980	14.00			10.00	0.500		521m	North
GW025552	10BL016417, 10WA112812	Spear	Private	Domestic	General Use		01/01/1959	5.10	5.20					536m	North East
GW106944	10BL164904, 10WA113881	Spear	Private	Domestic	Domestic		11/04/2005	16.77	16.78	Good	12.81	1.000		536m	North
GW026476	10BL018975, 10WA112977	Spear	Private	Domestic	General Use		01/09/1966	5.10	5.20	Good				537m	North East
GW014462		Bore	Private		Industrial		01/11/1960	29.50	29.60	Fresh				553m	North West
GW014461	10BL008491	Bore	Private	Industrial	Industrial		01/11/1954	26.20	26.20					553m	North West
GW108214	10BL600201	Bore		Test Bore	Test Bore		13/09/2006	7.30	7.30					560m	East
GW110871	10BL601616, 10WA114390	Spear	Private	Domestic	Domestic		01/01/2007	8.00			2.00	2.500		575m	North
GW035410	10BL030306	Bore open thru rock	Private	Industrial	Industrial		01/12/1972	39.90	39.90					581m	North West
GW109165	10BL602398, 10WA114505	Spear	Private	Domestic	Domestic		05/08/2008	12.00						583m	North East
GW062266	10BL137026	Bore	Private	Recreation (groundwater)	Recreation (groundwater)		01/08/1987	31.00	31.00	Good				601m	West
GW111156	10BL601750, 10WA114411	Spear	Private	Domestic	Domestic		20/10/2010	12.00	12.00					601m	North

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m bgl)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW060371	10BL132800, 10WA114675	Bore	Private	Industrial	Industrial		01/01/1963	38.00		0-500 ppm				601m	South West
GW109852	10BL601023	Bore	Private	Monitoring Bore	Monitoring Bore		30/08/2006	13.00	13.00		10.80			605m	North
GW103500	10BL159710, 10WA114687	Bore		Recreation (groundwater)	Recreation (groundwater)		01/05/2000	41.00	41.00					606m	West
GW109851	10BL601023	Bore	Private	Monitoring Bore	Monitoring Bore		30/08/2006	13.50	13.50		10.90			610m	North
GW048233	10BL107583	Bore	Local Govt	Test Bore	G/water Xplore		01/11/1977	0.00	14.00	0-500 ppm				610m	South
GW042867	10BL105903, 10BL112762, 10WA114619	Bore	Private	Industrial, Recreation (groundwater)	Industrial, Recreation (groundwater)			36.60	36.60					615m	West
GW109850	10BL601023	Bore	Private	Monitoring Bore	Monitoring Bore		28/08/2006	14.00	14.00		11.80			616m	North
GW023308	10BL017211, 10WA112873	Spear	Private	Domestic	General Use		01/11/1965	2.80		Good				626m	East
GW047872	10BL112763	Bore	Private	Industrial	Industrial		01/11/1980	41.50	41.50	0-500 ppm				629m	West
GW025947	10BL019508	Bore	Private	Industrial	Industrial		01/02/1967	30.10	30.20					642m	West
GW022054	10BL014285	Bore	Private	Industrial	Industrial		01/06/1964	40.80	40.90					652m	North West
GW060372	10BL132801, 10WA114675	Bore	Private	Industrial	Industrial		01/01/1962	30.00		0-500 ppm				656m	South West
GW032150	10BL024964	Bore	Private	Industrial	Industrial		01/10/1962	38.70	38.70					659m	West
GW060225	10BL130938, 10WA114671	Bore	Local Govt	Recreation (groundwater)	Recreation (groundwater)			24.00						660m	South East
GW016330	10BL011315	Bore	Private	Industrial	Industrial		01/02/1961	26.20	26.20	Fresh				690m	North West
GW108931	10BL601452, 10WA114353	Spear	Private	Domestic	Domestic		18/06/2008	14.95		Good	10.68	1.000		701m	North East
GW028666	10BL019730	Bore	Local Govt	Irrigation	Irrigation		01/08/1967	25.20	25.30					702m	South East
GW104640	10BL161217, 10BL600057, 10WA114088	Bore	Private	Domestic	Domestic		30/01/2003	10.00	10.00					707m	North East
GW027761	10BL016146, 10WA114793	Bore	Private	Recreation (groundwater)	Irrigation		01/08/1965	31.00	31.10					712m	South West
GW042175		Bore	NSW Office of Water		Monitoring Bore		13/02/1975						16.23	717m	West
GW101594	10BL156491, 10CA114685	Bore		Irrigation, Recreation (groundwater)	Recreation (groundwater)		16/02/1995	31.00	38.00		15.40			724m	North West
GW101735	10BL157149, 10WA113119	Bore		Domestic	Domestic		10/10/1995	10.00	10.00					727m	East

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m bgl)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW060240	10BL132426, 10WA114673	Bore	Local Govt	Recreation (groundwater)	Recreation (groundwater)		01/01/1980	20.00						734m	South West
GW025949	10BL019506	Bore	Private	Industrial	Industrial		01/02/1967	35.00	35.10					743m	South West
GW062054	10BL133716, 10BL602467, 10WA114755	Bore	Private	Recreation (groundwater)	Recreation (groundwater)		01/12/1985	37.40	40.00	Good	10.00	10.110		744m	North West
GW013432	10BL006757	Bore	Private	Industrial	Industrial		01/07/1956	28.00	28.00					753m	South West
GW111811	10BL601030, 10WA114267	Spear	Private	Domestic	Domestic		05/09/2012	16.00	16.00					777m	North
GW072238	10BL154339, 10WA113010	Bore	Private	Domestic	Domestic		29/03/1994	10.00	10.00					777m	North West
GW024037	10BL017510, 10WA112904	Spear	Private	Domestic	General Use		01/03/1966	7.10	7.20	Good				779m	North
GW016129	10BL007611	(Unknown)	Private	Industrial	Industrial		01/11/1957	34.30	34.40					781m	South West
GW015991	10BL007097	Bore	Private	Industrial	Industrial		01/02/1957	30.00	30.10					783m	South West
GW024757	10BL019729	Bore	Private	Industrial	Industrial		01/01/1982	42.00						787m	West
GW108669	10BL601534, 10WA114369	Spear	Private	Domestic	Domestic		30/03/2007	16.00	16.00					795m	North
GW108671	10BL601523, 10WA114367	Bore	Private	Domestic	Domestic		31/03/2007	15.00	15.00					795m	North
GW108589	10BL601120, 10WA114287	Spear	Private	Domestic	Domestic		11/03/2007	18.00	18.00					798m	North
GW024372	10BL018499, 10WA112951	Spear	Private	Domestic	General Use		01/08/1966	7.30	7.30	Good				802m	North
GW029072		Bore	Private		Industrial		01/11/1967	40.90	41.00					813m	West
GW108978	10BL602118, 10WA114444	Spear	Private	Domestic	Domestic		27/06/2008	16.50						818m	North
GW100427	10BL157376, 10WA114659	Bore	Private	Recreation (groundwater)	Recreation (groundwater)		24/03/1997	37.00	37.00		13.50	1.250		830m	West
GW023842	10BL017532, 10WA112913	Spear	Private	Domestic	General Use		01/01/1966	7.60	7.60	Good				841m	East
GW104989	10BL160416, 10WA113312	Bore	Private	Domestic	Domestic		11/11/2002	10.00	10.00		7.00	1.000		850m	North West
GW072292		Spear	Private		Domestic		14/01/1995	10.00	10.00					851m	North
GW107868	10BL600122, 10WA114102	Bore		Domestic	Domestic		13/03/2006							853m	East

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GW108670	10BL601524, 10WA114368	Bore	Private	Domestic	Domestic		20/04/2007	16.00	16.00					861m	North
GW101680	10BL158812, 10WA113261	Bore		Domestic	Domestic		23/09/1998	7.93	7.93	Good		1.000		863m	North West
GW023983	10BL016020, 10WA112803	Bore	Private	Industrial	Industrial		01/11/1965	38.50	38.60	Good				870m	North
GW108172	10BL600469, 10WA114153	Spear	Private	Domestic	Domestic		07/06/2006	18.00	18.00					872m	North
GW109462	10BL600355	Bore	Private	Monitoring Bore	Monitoring Bore		18/10/2007	20.00			3.50			874m	South West
GW107829	10BL165411, 10WA113974	Spear	Private	Domestic	Domestic		24/02/2006	10.00	10.00					877m	North
GW106022	10BL162583, 10WA113454	Spear	Private	Domestic	Domestic		08/03/2004	5.00	5.00					878m	East
GW101876	10BL157470, 10WA113160	Bore		Domestic	Domestic		05/02/1996	9.50	9.50					883m	North
GW107806	10BL164562, 10WA113811	Spear	Private	Domestic	Domestic		18/12/2005	9.50	9.50					884m	North East
GW108430	10BL600917, 10WA114243	Spear	Private	Domestic	Domestic		04/01/2007	18.00	18.00					884m	North
GW107933	10BL600191, 10WA114120	Spear	Private	Domestic	Domestic		17/04/2006	17.00	17.00					898m	North
GW109458	10BL600355	Bore	Private	Monitoring Bore	Monitoring Bore		02/10/2007	20.00			3.50			900m	West
GW106323	10BL163402, 10WA113574	Bore	Private	Domestic	Domestic		09/02/2004	3.00	3.00		1.50	0.500		902m	South East
GW111956	10WA117972	Spear	Private	Domestic	Domestic		12/12/2012	10.00	10.00		5.00	1.000		908m	South East
GW037388	10BL030322	Bore	Private	Industrial - Sand & Gravel	Industrial		01/09/1972	37.70	37.80	0-500 ppm				911m	North West
GW016953	10BL007582, 10BL600163, 10BL600999, 10CA114685	Bore	Private	Irrigation, Recreation (groundwater), Test Bore	Irrigation, Recreation (groundwater)		01/01/1958	30.00	30.00		11.50			915m	North West
GW025709	10BL015091	Bore	Private	Industrial	Industrial		01/10/1965	37.30	37.40					921m	North
GW109465	10BL600355	Bore	Private	Monitoring Bore	Monitoring Bore		11/10/2007	20.00			3.30			922m	West
GW062486	10BL105638, 10WA114679	Bore	Private	Recreation (groundwater)	Recreation (groundwater)		01/01/1919	20.00						927m	North West
GW112706	10BL602988	Bore	Private	Monitoring Bore	Monitoring Bore	Amcor	14/10/2008	9.00	9.00					929m	West
GW106052	10BL161679, 10WA113342	Bore	Private	Domestic	Domestic		11/03/2004	9.00	9.00					934m	South East

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m bgl)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW023989	10BL018138, 10WA112938	(Unknown)	Private	Domestic	General Use		01/04/1966	6.70	6.70	Fresh				938m	North East
GW104829	10BL161410, 10WA113337	Bore	Private	Domestic	Domestic		10/04/2003	10.00	10.00					946m	North
GW109463	10BL600355	Bore	Private	Monitoring Bore	Monitoring Bore		11/10/2007	20.00			4.00			956m	West
GW101750	10BL157171, 10WA113120	Bore		Domestic	Domestic		11/10/1995	8.00	8.00					956m	South
GW109112	10BL602317, 10WA114485	Spear	Private	Domestic	Domestic		24/07/2008	14.00						957m	North East
GW016130	10BL007610	Bore	Private	Industrial	Industrial		01/11/1957	30.70	30.80					961m	South West
GW109487	10BL600355	Bore	Private	Monitoring Bore	Monitoring Bore		04/10/2007	13.00			3.40			964m	West
GW112705	10BL602988	Bore	Private	Monitoring Bore	Monitoring Bore	Amcor	14/10/2008	9.00	9.00					964m	West
GW015990	10BL007096	Bore	Private	Industrial	Industrial		01/02/1957	28.80	28.80					965m	South West
GW109459	10BL600355	Bore	Private	Monitoring Bore	Monitoring Bore		03/10/2007	20.00			3.40			971m	West
GW109477	10BL600355	Bore	Private	Monitoring Bore	Monitoring Bore		19/10/2007	20.00			2.40			975m	South West
GW013577	10BL006737	Bore	Private	Industrial (low Security)	Industrial		01/07/1957	26.80	26.80					981m	South
GW072907		Bore	Private		Domestic		07/06/1995	10.00	10.00					990m	North
GW060241	10BL132427, 10WA114641	Bore	Local Govt	Recreation (groundwater)	Industrial, Recreation (groundwater)		01/05/1973	33.50						992m	North
GW109486	10BL600355	Bore	Private	Monitoring Bore	Monitoring Bore		05/10/2007	11.00			3.00			1007m	West
GW106483	10BL163971, 10WA113711	Spear	Private	Domestic	Domestic		12/10/2004	5.00	5.00					1008m	East
GW109483	10BL600355	Bore	Private	Monitoring Bore	Monitoring Bore		24/10/2007	13.00						1021m	West
GW109481	10BL600355	Bore	Private	Monitoring Bore	Monitoring Bore		24/10/2007	13.00			2.50			1022m	West
GW108045	10BL600265, 10WA114131	Spear	Private	Domestic	Domestic		09/06/2006	19.00	19.00					1033m	North
GW107047	10BL164394	Spear	Private	Dewatering (groundwater)	Dewatering (groundwater)		08/11/2004	4.00	4.00		1.50			1037m	West
GW109460	10BL600355	Bore	Private	Monitoring Bore	Monitoring Bore		09/10/2007	20.00			3.00			1039m	West
GW023482	10BL017048, 10WA112859	Spear	Private	Domestic	General Use		01/12/1965	6.00	6.10	Good				1041m	South East
GW112704	10BL602988	Bore	Private	Monitoring Bore	Monitoring Bore	Amcor	13/10/2008	9.00	9.00					1047m	West
GW107000	10BL163006, 10WA113518	Spear	Private	Domestic	Domestic		16/04/2005	9.50	9.50					1049m	North East
GW023589	10BL017644, 10WA112922	Spear	Private	Domestic	General Use		01/02/1966	3.60	3.70	Fair				1052m	East

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m bgl)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW038126	10BL031387, 10BL156895	Bore	Private	Industrial	Industrial		01/05/1971	39.00	40.20	0-500 ppm		25.258		1057m	West
GW109485	10BL600355	Bore	Private	Monitoring Bore	Monitoring Bore		08/10/2007	13.00			3.30			1060m	West
GW013827	10BL009112	Bore	Private	Industrial	Industrial		01/08/1958	38.80	38.90					1066m	West
GW109247	10BL602507, 10WA114521	Spear	Private	Domestic	Domestic		20/08/2008	8.00			4.50			1068m	South East
GW112703	10BL602988	Bore	Private	Monitoring Bore	Monitoring Bore	Amcor	13/10/2008	9.00	9.00					1068m	West
GW109482	10BL600355	Bore	Private	Monitoring Bore	Monitoring Bore		24/10/2007	13.00			3.50			1071m	West
GW073458		Bore	Private		Domestic		03/10/1995	16.50	16.50	Good				1076m	North East
GW109484	10BL600355	Bore	Private	Monitoring Bore	Monitoring Bore		08/10/2007	13.00			3.30			1083m	West
GW109461	10BL600355	Bore	Private	Monitoring Bore	Monitoring Bore		10/10/2007	20.00			3.40			1093m	West
GW025730	10BL016420, 10WA112814	Spear	Private	Domestic	General Use		01/11/1965	0.00	6.40	Good				1095m	North East
GW109469	10BL600355	Bore	Private	Monitoring Bore	Monitoring Bore		22/10/2007	20.00			3.20			1101m	South West
GW109467	10BL600355	Battery Spears, Filter Pac	Private	Monitoring Bore	Monitoring Bore		20/09/2007	20.00			4.40			1103m	South West
GW042176		Bore - Nested (2)	NSW Office of Water		Monitoring Bore, Not Known			20.30	20.30		0.00		13.62	1104m	South West
GW026364	10BL018269	Bore	Private	Industrial	Industrial		01/08/1966	37.30	37.30	Good				1107m	North
GW109480	10BL600355	Bore	Private	Monitoring Bore	Monitoring Bore		23/10/2007	13.00			2.30			1117m	West
GW109468	10BL600355	Bore	Private	Monitoring Bore	Monitoring Bore		19/09/2007	20.00			4.30			1117m	South West
GW109479	10BL600355	Bore	Private	Monitoring Bore	Monitoring Bore		26/10/2007	12.40			2.30			1128m	West
GW101819	10BL157355, 10WA113147	Bore		Domestic	Domestic		20/10/1995	5.00	5.00					1130m	South West
GW110522	10BL601432, 10WA114346	Spear	Private	Domestic	Domestic		24/10/2009	12.00	12.00	Good	6.00	1.000		1143m	North
GW109853	10BL601153	Bore	Private	Monitoring Bore	Monitoring Bore		01/01/2006	6.00	6.00					1145m	South
GW023261	10BL016689, 10WA112835	Spear	Private	Domestic	General Use		01/11/1965	5.40	5.50	Good				1151m	North East
GW109478	10BL600355	Bore	Private	Monitoring Bore	Monitoring Bore		23/10/2007	13.00			3.20			1153m	West
GW104993	10BL160434, 10WA113316	Bore	Private	Domestic	Domestic		26/01/2002	10.00	10.00		6.50	1.000		1164m	North
GW025623	10BL019293, 10WA112983	Spear	Private	Domestic	Domestic		01/10/1965	3.60	3.60	Good	3.00	0.330		1166m	South East
GW103239	10BL157239, 10WA113131	Bore		Domestic	Domestic		24/10/1995	17.08	17.08	Good				1172m	North West

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m bgl)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW033949	10BL026423	(Unknown)		Test Bore	Industrial			30.50	30.50					1174m	West
GW017638	10BL008060	Bore	Private	Industrial	Industrial		01/08/1956	33.20	33.20					1181m	West
GW037821	10BL030427	Bore	Private	Industrial	Industrial		01/05/1970	34.10	34.10					1181m	West
GW017637	10BL008059	Bore	Private	Industrial	Industrial		01/10/1952	37.10	37.20					1184m	West
GW114018	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	27/02/2014	19.00	19.00					1188m	South West
GW114014	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	27/02/2014	16.20	16.20					1188m	South West
GW114019	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	27/02/2014	13.00	13.00					1188m	South West
GW114015	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	27/02/2014	12.00	12.00					1188m	South West
GW114017	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	27/02/2014	12.00	12.00					1188m	South West
GW060237	10BL132337	Bore	Private	Industrial	Industrial		01/01/1965	30.50		0-500 ppm				1189m	West
GW114020	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	27/02/2014	21.00	21.00					1189m	South West
GW114021	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	27/02/2014	13.00	13.00					1189m	South West
GW114023	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	27/02/2014	13.00	13.00					1190m	South West
GW114022	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	27/02/2014	22.00	22.00					1191m	South West
GW114010	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	27/02/2014	18.30	18.30					1193m	South West
GW114011	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	27/02/2014	12.00	12.00					1193m	South West
GW114013	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	27/02/2014	12.00	12.00					1193m	South West
GW114024	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	27/02/2014	22.00	22.00					1193m	South West
GW017640	10BL008061	Bore	Private	Industrial	Industrial		01/03/1956	29.40	29.50					1194m	West
GW114025	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	27/02/2014	13.00	13.00					1194m	South West
GW109856	10BL601153	Bore	Private	Monitoring Bore	Monitoring Bore		01/01/2006	7.50	7.50					1197m	South
GW114009	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	27/02/2014	12.00	12.00					1197m	South West

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m bgl)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW114008	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	27/02/2014	18.00	18.00					1197m	South West
GW114006	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	27/02/2014	18.00	18.00					1200m	South West
GW114007	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	27/02/2014	11.00	11.00					1200m	South West
GW109471	10BL600355	Bore	Private	Monitoring Bore	Monitoring Bore		25/09/2007	20.00			3.20			1201m	South West
GW109055	10BL602146, 10WA114451	Spear	Private	Domestic	Domestic		15/07/2008	15.86		Good	7.93	1.000		1201m	North East
GW072905		Bore	Private		Domestic		20/05/1995	10.00	10.00					1202m	North
GW013436	10BL006753, 10WA112788	Bore	Private	Industrial	Industrial		01/11/1955	34.30	34.30					1208m	North
GW114016	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	27/02/2014	17.00	17.00					1208m	South West
GW047121	10BL105635, 10WA114681	Bore	Local Govt	Recreation (groundwater)	Recreation (groundwater)		01/07/1973	42.70	42.70					1211m	North West
GW113043	10BL602360, 10WA114497	Bore	Private	Domestic	Domestic		22/01/2008	12.00	12.00		9.00	0.250		1212m	North
GW107523	10BL163738, 10WA113666	Bore	Private	Domestic	Domestic		26/11/2004	81.00	81.00	Fresh	5.00	0.500		1216m	South East
GW073478	10BL157227, 10WA113128	Bore		Domestic	Domestic		19/10/1995	10.00						1219m	North West
GW042165		Spear	NSW Office of Water		Monitoring Bore, Stock		13/02/1975						25.50	1219m	North
GW060242	10BL132428, 10WA114643	Bore	Local Govt	Recreation (groundwater)	Industrial, Recreation (groundwater)		01/05/1973	33.50						1224m	North
GW027615	10BL019783, 10WA112991	Bore	Private	Industrial	Industrial		01/07/1967	36.20	36.30					1228m	North
GW029354	10BL019785, 10WA112993	Bore	Private	Industrial	Industrial		01/08/1968	37.70	37.80					1228m	North
GW072925		Spear	Private		Domestic		18/02/1995	12.00	12.00					1231m	North West
GW109857	10BL601153	Bore	Private	Monitoring Bore	Monitoring Bore		01/01/2006	8.50	8.50					1236m	South
GW109854	10BL601153	Bore	Private	Monitoring Bore	Monitoring Bore		01/01/2006	6.00	6.00					1238m	South
GW023577	10BL017473, 10WA112900	Spear	Private	Domestic	General Use		01/03/1966	3.60	3.70	Good				1247m	North East
GW109466	10BL600355	Bore	Private	Monitoring Bore	Monitoring Bore		17/10/2007	20.00			0.90			1249m	West

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m bgl)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW111144	10BL601072, 10WA114279	Spear	Private	Domestic	Domestic		16/01/2007	8.00	8.00		4.00	0.500		1251m	North
GW107404	10BL164764, 10BL165185, 10WA114739	Bore		Recreation (groundwater), Test Bore	Irrigation		18/03/2005	32.00	32.00	Good	12.40	1.000		1259m	North
GW109472	10BL600355	Bore	Private	Monitoring Bore	Monitoring Bore		21/09/2007	20.00			2.30			1261m	South West
GW072917		Bore	Private		Domestic		18/02/1995	18.00	18.00					1265m	North West
GW108498	10BL164824	Spear	Private	Domestic	Domestic		22/01/2006	18.00	18.00					1268m	North
GW072287		Bore	Private		Domestic		14/01/1995	8.00	8.00					1268m	North West
GW109473	10BL600355	Bore	Private	Monitoring Bore	Monitoring Bore		21/09/2007	20.00			2.10			1276m	South West
GW109470	10BL600355	Bore	Private	Monitoring Bore	Monitoring Bore		24/09/2007	20.00			3.10			1277m	South West
GW114029	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	27/02/2014	13.00	13.00					1290m	South West
GW108710	10BL601636, 10WA114394	Spear	Private	Domestic	Domestic		19/05/2007	15.55	15.56	Good	10.67	1.000		1291m	North East
GW114028	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	27/02/2014	27.00	27.00					1291m	South West
GW114027	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	27/02/2014	13.00	13.00					1291m	South West
GW114030	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	28/02/2014	22.00	22.00					1292m	South West
GW114026	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	27/02/2014	26.00	26.00					1292m	South West
GW072898		Spear	Private		Domestic		19/12/1994	10.40	10.40	Good				1293m	South
GW114031	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	28/02/2014	14.00	14.00					1293m	South West
GW072294		Bore	Private		Domestic		16/01/1995	8.00	8.00					1296m	North West
GW114033	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	28/02/2014	21.00	21.00					1297m	South West
GW114032	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	28/02/2014	27.00	27.00					1297m	South West
GW114034	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	28/02/2014	13.50	13.50					1297m	South West
GW060243	10BL132429, 10WA114645	Bore	Local Govt	Recreation (groundwater)	Industrial, Recreation (groundwater)		01/05/1973	33.50						1299m	North
GW114036	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	28/02/2014	22.00	22.00					1300m	South West

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m bgl)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW114037	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	28/02/2014	12.50	12.50					1301m	South West
GW109464	10BL600355	Bore	Private	Monitoring Bore	Monitoring Bore		27/09/2007	20.00			2.40			1301m	West
GW114035	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	28/02/2014	26.00	26.00					1301m	South West
GW114038	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	28/02/2014	22.00	22.00					1305m	South West
GW111195	10BL165137, 10WA113924	Bore	Private	Domestic	Domestic		01/01/2005	18.28	18.28		9.14	0.046		1307m	North East
GW109855	10BL601153	Bore	Private	Monitoring Bore	Monitoring Bore		01/01/2006	6.00	6.00					1307m	South
GW114039	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	28/02/2014	29.00	29.00					1309m	South West
GW114040	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	28/02/2014	22.50	22.50					1309m	South West
GW108788	10BL601624, 10WA114391	Spear	Private	Domestic	Domestic		16/04/2007	14.64	14.64		10.68	1.000		1311m	North East
GW060217	10BL132125, 10CA114685	Bore	Private	Irrigation, Recreation (groundwater)	Recreation (groundwater)		01/01/1958	19.80						1312m	North West
GW114041	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	28/02/2014	29.30	29.30					1312m	South West
GW101069	10BL158216, 10WA113205	Spear	Private	Domestic	Domestic		11/10/1997	10.00	10.00					1312m	North
GW060223	10BL132182, 10BL602524, 10BL602722	Battery Spears	Local Govt	Recreation (groundwater), Test Bore	Recreation (groundwater)		01/01/1983	9.00	9.00	0-500 ppm	2.30	3.000		1317m	East
GW114044	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	28/02/2014	24.00	24.00					1323m	West
GW114043	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	28/02/2014	29.00	29.00					1323m	West
GW107583	10BL165706, 10WA114027	Spear	Private	Domestic	Domestic		16/10/2005	9.50	9.50					1323m	North East
GW109858	10BL601153	Bore	Private	Monitoring Bore	Monitoring Bore		01/01/2006	5.40	5.40					1331m	South
GW114046	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	28/02/2014	22.00	22.00					1333m	West
GW114045	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	28/02/2014	27.00	27.00					1333m	West

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m bgl)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW023265	10BL016452, 10WA112820	Spear	Private	Domestic	General Use		01/01/1955	3.60	3.70	Good				1334m	North East
GW110873	10BL600610, 10WA114175	Spear	Private	Domestic	Domestic		01/01/2006	8.00			2.00	2.500		1338m	South East
GW114048	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	03/03/2014	24.50	24.50					1341m	West
GW114049	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	03/03/2014	14.00	14.00					1342m	West
GW114047	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	03/03/2014	29.50	29.50					1343m	West
GW029355	10BL019786	Bore	Private	Industrial	Industrial		01/07/1968	28.90	29.00					1345m	North
GW022239	10BL030429	Bore	Private	Industrial	Industrial		01/06/1964	33.80	33.80	Good				1349m	West
GW109474	10BL600355	Bore	Private	Monitoring Bore	Monitoring Bore		21/03/2007	13.00			2.40			1355m	South West
GW114050	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	03/03/2014	26.70	26.70					1356m	West
GW114051	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	03/03/2014	14.00	14.00					1357m	West
GW027616	10BL019784, 10WA112992	Bore	Private	Industrial	Industrial		01/08/1967	32.60	32.60					1358m	North
GW109475	10BL600355	Bore	Private	Monitoring Bore	Monitoring Bore		20/03/2007	15.00			1.00			1363m	South West
GW114898	10BL604368, 10WA114610			Domestic	Domestic		29/11/2010	9.00	9.00		5.00			1363m	South East
GW101330	10BL158408, 10WA113230	Spear	Private	Domestic	Domestic		16/12/1997	9.00	9.00					1365m	North East
GW023991	10BL018144, 10WA112940	Spear	Private	Domestic	General Use		01/05/1966	5.70	5.80	Good				1366m	North
GW114052	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	03/03/2014	26.00	26.00					1373m	West
GW101072	10BL158251, 10WA113211	Spear	Private	Domestic	Domestic		11/11/1997	10.00	10.00					1375m	North
GW114053	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	03/03/2014	13.00	13.00					1375m	West
GW114065	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	03/03/2014	13.00	13.00					1381m	West
GW112525	10BL600682, 10BL602307, 10WA118709	Bore	Private	Industrial, Test Bore	Industrial	Orara Ltd - Bore 13	16/10/2008	30.00	30.00		10.60			1381m	North

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m bgl)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW114064	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	03/03/2014	27.00	27.00					1383m	West
GW109773	10BL165864, 10WA114051	Spear	Private	Domestic	Domestic		01/01/2005	6.00			3.00	0.500		1391m	South
GW114054	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	03/03/2014	26.00	26.00					1391m	West
GW110416	10BL603247, 10WA114574	Spear	Private	Domestic	Domestic		06/09/2009	7.00	7.00					1392m	East
GW114055	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	03/03/2014	13.00	13.00					1393m	West
GW103746	10BL156772, 10WA114633	Bore		Industrial	Industrial		01/01/1961	18.28	18.28					1398m	West
GW017641	10BL008062	Bore	Private	Industrial	Industrial		01/12/1957	27.10	27.10					1400m	West
GW101333	10BL158415, 10WA113232	Spear	Private	Domestic	Domestic		02/01/1998	5.00	5.00					1401m	South
GW023270	10BL016732, 10WA112840	Spear	Private	Domestic, General Use	General Use			7.00	7.00					1401m	North
GW114042	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	28/02/2014	23.00	23.00					1401m	South West
GW102698	10BL159422	Bore		Monitoring Bore	Test Bore		22/11/1999	4.50	4.50					1402m	South West
GW102697	10BL159422	Bore		Monitoring Bore	Test Bore		22/11/1999	4.50	4.50					1402m	South West
GW025710	10BL015090	Bore	Private	Industrial	Industrial		01/07/1965	29.50	29.70	Good				1404m	West
GW100448	10BL157815, 10WA113180	Spear	Private	Domestic	Domestic		24/03/1997	9.15	9.15	6000	5.80	0.670		1410m	North West
GW025545	10BL016608, 10WA112829	Spear	Private	Domestic	General Use		01/11/1965	3.90						1411m	North East
GW114056	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	03/03/2014	24.50	24.50					1411m	West
GW114012	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	27/02/2014	17.50	17.50					1412m	South West
GW114057	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	03/03/2014	12.00	12.00					1413m	West
GW114058	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	03/03/2014	33.00	33.00					1413m	West
GW102700	10BL159422	Bore		Monitoring Bore	Test Bore		22/11/1999	4.50	4.50					1416m	South West
GW109017	10BL600593, 10WA114174	Spear	Private	Domestic	Domestic		10/07/2008	80.00						1416m	South East

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m bgl)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW102699	10BL159422	Bore		Monitoring Bore	Test Bore		22/11/1999	4.50	4.50					1419m	South West
GW013437	10BL006752	Bore	Private	Industrial	Industrial		01/01/1947	21.30	21.40					1420m	South West
GW114059	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	03/03/2014	23.50	23.50					1427m	West
GW114060	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	03/03/2014	14.00	14.00					1428m	West
GW101322	10BL158398, 10WA113226	Spear	Private	Domestic	Domestic		24/12/1997	5.00	5.00					1431m	South
GW114062	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	03/03/2014	25.00	25.00					1432m	West
GW109001	10BL601183, 10WA114295	Spear	Private	Domestic	Domestic		09/07/2008	15.55		Good	15.55	1.000		1432m	North East
GW114063	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	03/03/2014	13.00	13.00					1432m	West
GW114061	10BL603115	Bore	Private	Groundwater Remediation	Groundwater Remediation	Botany Industrial Park	03/03/2014	32.80	32.80					1433m	West
GW102701	10BL159422	Bore		Monitoring Bore	Test Bore		22/11/1999	4.50	4.50					1435m	South West
GW111215	10BL602660	Bore	Private	Monitoring Bore	Monitoring Bore		24/08/2008	16.00	16.30					1435m	West
GW101332	10BL158414, 10WA113231	Spear	Private	Domestic	Domestic		17/12/1997	5.00	5.00					1437m	South
GW114468	10BL605077	Bore	Private	Monitoring Bore	Monitoring Bore		24/01/2012	3.13	3.13					1442m	South West
GW109476	10BL600355	Bore	Private	Monitoring Bore	Monitoring Bore		22/03/2007	13.00			1.10			1443m	South West
GW113242	10BL602802	Bore	Private	Monitoring Bore	Monitoring Bore	Caltex	10/11/2008	13.00	13.00					1447m	North East
GW107578	10BL164156, 10WA113741	Spear	Private	Domestic	Domestic		10/11/2004	16.47	16.47	Good	12.81	1.000		1448m	North
GW113244	10BL602802	Bore	Private	Monitoring Bore	Monitoring Bore	Caltex	10/11/2008	13.00	13.00					1449m	North East
GW108657	10BL601314, 10WA114317	Spear	Private	Domestic	Domestic		14/03/2007	15.00	15.00					1449m	North East
GW023591	10BL017217, 10WA112875	Spear	Private	Domestic	General Use		01/04/1966	3.60	3.70	Fresh				1451m	South
GW114464	10BL605077	Bore	Private	Monitoring Bore	Monitoring Bore		30/01/2012	4.00	4.00					1452m	South West
GW113009	10BL603712	Bore	Other Govt	Monitoring Bore	Monitoring Bore	Sydney Water Corporation	22/12/2009	8.00	8.00					1452m	South
GW102702	10BL159422	Bore		Monitoring Bore	Test Bore		22/11/1999	4.50	4.50					1453m	South West
GW114467	10BL605077	Bore	Private	Monitoring Bore	Monitoring Bore		24/01/2012	3.00	3.00					1455m	South West
GW111216	10BL602660	Bore	Local Govt	Monitoring Bore	Monitoring Bore		09/11/2010	8.00	8.00					1457m	West

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m bgl)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW114466	10BL605077	Bore	Private	Monitoring Bore	Monitoring Bore		25/01/2012	3.00	3.00					1459m	South West
GW111150	10BL600535, 10WA114161	Spear	Private	Domestic	Domestic		20/10/2010	12.00	12.00					1462m	North East
GW113243	10BL602802	Bore	Private	Monitoring Bore	Monitoring Bore	Caltex	10/11/2008	13.00	13.00					1462m	North East
GW073502	10BL157286, 10WA113133	Spear	Private	Domestic	Domestic		04/11/1995	11.30	11.30	Good				1467m	North East
GW113245	10BL602802	Bore	Private	Monitoring Bore	Monitoring Bore	Caltex	10/11/2008	13.00	13.00					1468m	North East
GW108394	10BL600558, 10WA114165	Bore	Private	Domestic	Domestic		26/10/2006	16.00	16.00					1471m	North
GW017350	10BL008532	Bore	Private	Irrigation	Industrial		01/11/1957	32.30	32.30					1476m	West
GW102294	10BL159092, 10WA113276	Spear	Private	Domestic	Domestic		06/03/1999	10.00	10.00					1476m	North
GW111217	10BL602660	Bore	Local Govt	Monitoring Bore	Monitoring Bore		24/08/2008	16.00	16.30					1480m	West
GW102687	10BL159264	Bore	Private	Monitoring Bore	Monitoring Bore		09/06/1999	5.00	5.00		1.70			1486m	South
GW110956	10BL601399, 10WA114338	Spear	Private	Domestic	Domestic		01/01/2007	12.19	12.19					1486m	North
GW114469	10BL605077	Bore	Private	Monitoring Bore	Monitoring Bore		24/01/2012	4.00	4.00					1486m	South West
GW110738	10BL600678, 10WA114194	Spear	Private	Domestic	Domestic		01/01/2006	8.00			2.00	2.500		1486m	South
GW113008	10BL603712	Bore	Other Govt	Monitoring Bore	Monitoring Bore	Sydney Water Corporation	22/12/2009	8.00	8.00					1488m	South
GW101548	10BL158556, 10WA113254	Bore		Domestic	Domestic		06/04/1998	5.00	5.00					1490m	South
GW114465	10BL605077	Bore	Private	Monitoring Bore	Monitoring Bore		23/01/2012	3.00	3.00					1490m	South West
GW113007	10BL603712	Bore	Other Govt	Monitoring Bore	Monitoring Bore	Sydney Water Corp	22/12/2009	8.00	8.00					1491m	South
GW107765	10BL165609, 10WA114002	Spear	Private	Domestic	Domestic		19/10/2005	12.00	12.00	Good	9.00	1.000		1491m	North East
GW017642	10BL008064	Bore	Private	Industrial	Industrial		01/04/1957	23.00	23.00					1495m	West
GW072911		Bore	Private		Domestic		16/02/1995	6.00	6.00					1498m	South
GW101550	10BL158557, 10WA113255	Bore		Domestic	Domestic		05/04/1998	5.00	5.00					1499m	South
GW111218	10BL602660	Bore	Local Govt	Monitoring Bore	Monitoring Bore		24/08/2008	8.00	8.00					1504m	West
GW026584	10BL019542, 10WA112986	Spear	Private	Domestic	General Use		01/11/1966	6.00	6.10					1508m	North East
GW072910		Bore	Private		Domestic		18/04/1995	5.00	5.00					1509m	South
GW111219	10BL602660	Bore	Local Govt	Monitoring Bore	Monitoring Bore		24/08/2008	16.00	16.30					1513m	West

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m bgl)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW028 592	10BL017 316	Bore	Private	Industrial	Industrial		01/03/1966	28.00	28.00	Good				1514m	West
GW110 439	10BL602 887, 10WA11 4551	Spear	Private	Domestic	Domestic		24/09/2009	12.00	12.00	Good	6.00	1.000		1516m	North East
GW072 994	10BL156 371, 10WA11 3044	Bore	Private	Domestic	Domestic		20/08/1995	9.50	9.50					1516m	North
GW013 438	10BL006 751	Bore	Private	Industrial	Industrial		01/06/1952	32.60	32.60					1517m	South
GW101 883	10BL157 490, 10WA11 3161	Bore		Domestic	Domestic		26/02/1996	10.00	10.00					1519m	North
GW104 992	10BL160 433, 10WA11 3315	Bore	Private	Domestic	Domestic		24/01/2002	9.00	9.00		6.50	1.000		1520m	North East
GW025 540	10BL016 659, 10WA11 2833	Spear	Private	Domestic	General Use		01/12/1965	4.80	4.90	Good				1526m	North
GW108 822	10BL165 672, 10WA11 4016	Spear	Private	Domestic	Domestic		12/12/2006	14.00	14.00	Good		1.000		1530m	North
GW111 375	10BL600 635, 10WA11 4185	Spear	Private	Domestic	Domestic		24/01/2011	12.00	12.00					1532m	South
GW062 280	10BL135 457	Bore	Private	Industrial	Fire Fighting		01/02/1987	21.00	21.00	Good				1533m	South West
GW106 752	10BL164 167, 10WA11 3745	Spear	Private	Domestic	Domestic		30/10/2004	9.50	9.50					1533m	North
GW042 168		Bore	NSW Office of Water		Monitoring Bore		13/02/1975		13.00				6.56	1535m	West
GW103 745	10BL156 773, 10WA11 4633	Bore		Industrial	Industrial		01/01/1961	18.28	18.28					1535m	West
GW038 127	10BL101 579	Bore	Private	Industrial	Industrial		01/10/1974	33.20	33.20	Good				1536m	West
GW109 769	10BL165 796, 10WA11 4044	Spear	Private	Domestic	Domestic		01/01/2005	8.00			2.00	2.500		1536m	North
GW106 163	10BL163 219	Bore	Private	Domestic	Domestic		09/07/2004	7.00	7.00					1537m	North East
GW107 594	10BL165 650, 10WA11 4010	Spear	Private	Domestic	Domestic		15/10/2005	10.00	10.00					1542m	North East
GW107 621	10BL165 717, 10WA11 4029	Spear	Private	Domestic	Domestic		15/11/2005	10.00	10.00					1546m	East
GW047 112		Bore	Private		Industrial		01/08/1976	0.00	24.40	Very Poor				1549m	South West
GW111 220	10BL602 660	Bore	Local Govt	Monitoring Bore	Monitoring Bore		24/08/2008	8.00	8.00					1552m	West
GW017 639	10BL008 063	Bore	Private	Industrial	Industrial		01/08/1955	27.40	27.40					1554m	West
GW062 281	10BL135 458	Bore	Private	Industrial	Fire Fighting		01/02/1987	21.00	22.00	Good				1557m	South West
GW103 971	10BL158 131	Bore		Industrial	Industrial		20/08/1997	10.00	10.00					1559m	South West

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GW114470	10BL605077	Bore	Private	Monitoring Bore	Monitoring Bore		23/01/2012	5.00	5.00					1561m	South West
GW073504	10BL157288, 10WA113135	Well	Private	Domestic	Domestic		03/11/1995	7.00	7.00					1563m	South
GW042177		Bore - Nested (3)	Private		Not Known		19/05/1911				0.00		10.10	1564m	South West
GW025817	10BL018476	Bore	Private	Recreation (groundwater)	Recreation (groundwater)		01/04/1965	22.80	22.90					1564m	North West
GW105962	10BL163248, 10WA113544	Bore		Domestic			24/05/2005	14.00						1565m	North East
GW114471	10BL605077	Bore	Private	Monitoring Bore	Monitoring Bore		25/12/2012	4.00	4.00					1565m	South West
GW075025		Bore	NSW Office of Water		Monitoring Bore	BOTANY BOREFIELD AT ROWLAND PARK	20/07/1998	24.20	25.50		9.13		8.52	1567m	North
GW023137	10BL016700, 10WA112838	Bore	Private	Stock	General Use		01/11/1965	9.10						1570m	South
GW100982	10BL158118, 10WA113197	Spear	Private	Domestic	Domestic		12/08/1997	6.00	6.00					1576m	South
GW109708	10BL161997	Bore	Private	Monitoring Bore	Test Bore		12/03/2004	11.00	11.00		1.50			1577m	South West
GW062073	10BL136096	Bore	Private	Industrial	Industrial		01/09/1986	29.00	31.00	Good				1579m	West
GW102270	10BL159133, 10WA113278	Spear	Private	Domestic	Domestic		27/04/1999	8.00	8.00					1580m	South
GW108472	10BL601127, 10WA114288	Spear	Private	Domestic	Domestic		06/01/2007	16.00	16.00					1581m	North
GW109711	10BL161997	Bore	Private	Monitoring Bore	Test Bore		02/12/2003	11.00	11.00		1.50			1584m	South West
GW040782		Bore	Private					6.88						1585m	South West
GW107385	10BL164899, 10WA113880	Spear	Private	Domestic	Domestic		08/09/2005	9.50	9.50					1586m	North East
GW023529	10BL016955, 10WA112853	Spear	Private	Domestic	General Use		01/12/1965	6.70	6.70	Good				1586m	North
GW102740	10BL159438, 10WA113289	Bore		Domestic	Domestic		24/10/1999	10.00	10.00					1589m	West
GW020494	10BL013506	Bore	Private	Industrial	Industrial		01/06/1963	30.90	31.00					1593m	West
GW046836	10BL107197, 10BL132425, 10WA114639	Bore	Local Govt	Recreation (groundwater), Test Bore	Industrial, Recreation (groundwater)		01/10/1970	37.80	37.80					1593m	North
GW108448	10BL601046, 10WA114271	Spear	Private	Domestic	Domestic		19/01/2007	16.00	16.00					1594m	North
GW062282	10BL135459	Bore	Private	Industrial	Fire Fighting		01/03/1987	21.00	22.50	Good				1599m	South West

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GW040 779		Bore	Private					10.66						1601m	West
GW111 247	10BL162 151, 10BL601 856, 10WA11 4799	Bore	Private	Recreation (groundwater), Test Bore	Recreation (groundwater)		14/04/2004	36.00	36.00		7.00			1601m	North
GW100 557	10BL158 010, 10WA11 3193	Spear	Private	Domestic	Domestic		18/04/1997	5.00	5.00					1603m	South
GW013 849	10BL107 406	Bore	Private	Industrial	Industrial		01/05/1951	29.90	29.90					1604m	South West
GW102 221	10BL159 073, 10WA11 3274	Spear	Private	Domestic	Domestic		01/03/1999	9.50	9.50					1608m	West
GW101 334	10BL158 417, 10WA11 3233	Spear	Private	Domestic	Domestic		15/12/1997	5.00	5.00					1609m	South East
GW106 499	10BL160 829	Bore		Monitoring Bore	Monitoring Bore		18/07/2002	0.60	0.60					1609m	West
GW104 930	10BL160 641, 10WA11 3320	Bore	Private	Domestic	Domestic		06/06/2002	7.00	7.00		5.50	1.000		1610m	West
GW106 497	10BL160 829	Bore		Monitoring Bore	Monitoring Bore		18/07/2002	1.20	1.20					1610m	West
GW042 178		Spear	Private		Not Known		13/02/1975						8.00	1613m	South
GW106 496	10BL160 829	Bore		Monitoring Bore	Monitoring Bore		19/07/2002	6.20	6.20					1614m	West
GW023 988	10BL017 668, 10WA11 2926	Spear	Private	Domestic	General Use		01/03/1966	7.10	7.20	Good				1615m	South East
GW106 498	10BL160 829	Bore		Monitoring Bore	Monitoring Bore		18/07/2002	1.25	1.25					1618m	West
GW106 495	10BL160 829	Bore		Monitoring Bore	Monitoring Bore		19/07/2002	1.30	1.30					1624m	West
GW106 492	10BL160 829	Bore		Monitoring Bore	Monitoring Bore		19/07/2002	6.30	6.30					1624m	West
GW032 273	10BL103 884	Bore	Private	Industrial	Industrial		01/01/1970	31.30	31.40					1625m	West
GW042 161		Bore	NSW Office of Water		Monitoring Bore	BOTANY BOREFIELD AT EASTLAKES GOLF COURSE		33.50	33.50				8.48	1627m	North West
GW019 633	10BL012 858	(Unknown)	Other Govt	Irrigation	Recreation (groundwater)		01/11/1961	35.00	35.10					1627m	North
GW047 417	10BL105 924, 10BL163 817, 10CA11 4693	Bore	Private	Irrigation, Recreation (groundwater)	Irrigation, Recreation (groundwater)		01/03/1980	23.50	23.50					1630m	North West
GW106 950	10BL164 756, 10WA11 3852	Spear	Private	Domestic	Domestic		05/04/2005	7.00	7.00					1635m	South
GW022 471	10BL015 198	Bore	Private	Industrial	Industrial		01/01/1960	33.00	33.10					1640m	South West
GW106 494	10BL160 829	Bore		Monitoring Bore	Monitoring Bore		19/07/2002	7.30	7.30					1643m	West
GW109 774	10BL165 829, 10WA11 4047	Spear	Private	Domestic	Domestic		01/01/2005	10.00			3.00	0.500		1646m	North

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213100 02					UNK								17.52	1648m	North West
GW109 143	10BL602 407, 10WA11 4507	Spear	Private	Domestic	Domestic		04/08/2008	5.00		Good	3.00	0.500		1649m	East
GW106 493	10BL160 829	Bore		Monitoring Bore	Monitoring Bore		19/07/2002	1.10	1.10					1649m	West
GW112 339	10BL165 883, 10WA11 4054	Spear	Private	Domestic	Domestic		01/10/2006	6.10	6.10		2.35	1.000		1653m	South
GW024 024	10BL018 394, 10WA11 2945	Spear	Private	Domestic	General Use		01/12/1965	6.00	6.10	Good				1655m	North East
GW108 443	10BL600 984, 10WA11 4259	Spear	Private	Domestic	Domestic		12/01/2007	14.50	14.50		8.00			1658m	North
GW101 070	10BL158 252, 10WA11 3212	Spear	Private	Domestic	Domestic		08/11/1997	5.00	5.00					1661m	South East
GW025 716	10BL016 548, 10WA11 2823	Spear	Private	Domestic	General Use		01/01/1945	4.80						1666m	North East
GW025 707	10BL016 427, 10WA11 2817	Spear	Private	Domestic	General Use		01/12/1964	5.10	5.20					1666m	East
GW024 206	10BL018 634, 10WA11 2963	Spear	Private	Domestic	General Use		01/08/1966	5.40	5.50	Good				1667m	North East
GW106 951	10BL164 757, 10WA11 3853	Spear	Private	Domestic	Domestic		06/04/2005	7.00	7.00					1670m	South
GW110 423	10BL602 943, 10WA11 4561	Spear	Private	Domestic	Domestic		19/03/2009	12.00	12.00	Other	7.50	1.000		1671m	North East
GW042 167		Spear	NSW Office of Water		Monitoring Bore			13.01	13.01				7.68	1673m	West
GW108 494	10BL600 772, 10WA11 4215	Spear	Private	Domestic	Domestic		18/10/2006	6.10	6.10	Good	2.35	1.000		1674m	South
GW101 711	10BL158 558, 10WA11 3256	Bore		Domestic	Domestic		07/04/1998	10.00	10.00					1675m	West
GW023 841	10BL017 496, 10WA11 2903	Spear	Private	Domestic	General Use		01/03/1966	4.50	4.60	Good				1680m	North East
GW101 074	10BL158 228, 10WA11 3208	Spear	Private	Domestic	Domestic		28/10/1997	5.00	5.00					1681m	South East
GW065 548		Bore	Private		Industrial		01/05/1989	26.50		7001-10000 ppm				1683m	West
GW111 624	10BL165 365	Bore	Private	Monitoring Bore	Monitoring Bore		05/08/2005	36.00	36.00		5.00			1690m	North
GW013 397	10BL006 744	(Unknown)	Private	Industrial	Industrial		01/01/1938	27.70	27.70					1690m	South
GW111 600	10BL604 978	Bore	Private	Monitoring Bore	Monitoring Bore		29/09/2011	20.00	20.00		5.00			1690m	North

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GW101721	10BL157138, 10WA113117	Bore		Domestic	Domestic		07/10/1995	6.00	6.00					1691m	West
GW109194	10BL602391	Bore	Private	Monitoring Bore	Monitoring Bore		11/08/2008	7.00	7.00					1698m	South West
GW114846	10WA118957	Spear	Private	Domestic	Domestic		20/04/2014	7.00	7.00		3.00			1704m	East
GW107337	10BL165318, 10WA113960	Spear	Private	Domestic	Domestic		09/08/2005	6.00	6.00	Good	3.00	0.500		1705m	East
GW013383	10BL006747	Bore	Private	Industrial	Industrial		01/01/1958	34.10	34.20	Good				1711m	West
GW105904	10BL161996	Bore		Monitoring Bore	Test Bore		09/01/2004	21.00	21.00		1.50			1717m	South West
GW112837	10BL604407	Bore	Private	Monitoring Bore	Monitoring Bore	Nuplex	08/12/2010	8.10	8.10		5.30			1717m	South West
GW109171	10BL602340	Bore	Private	Monitoring Bore	Monitoring Bore		06/08/2008	5.60	5.60		3.61			1720m	South
GW112841	10BL604407	Bore	Private	Monitoring Bore	Monitoring Bore	Nuplex	08/12/2010	8.10	8.10		5.30			1721m	South West
GW101323	10BL158399, 10WA113227	Spear	Private	Domestic	Domestic		22/12/1997	6.00	6.00					1729m	South
GW109196	10BL602391	Bore	Private	Monitoring Bore	Monitoring Bore		11/08/2008	4.00	4.00					1730m	South West
GW109198	10BL602391	Bore	Private	Monitoring Bore	Monitoring Bore		11/08/2008	4.00	4.00					1731m	South West
GW112838	10BL604407	Bore	Private	Monitoring Bore	Monitoring Bore	Nuplex	08/12/2010	8.05	8.05		5.30			1732m	West
GW017351	10BL008541	Bore	Private	Industrial	Industrial		01/07/1957	22.50	22.60					1733m	West
GW065549		Bore	Private		Industrial		01/07/1980	22.50						1733m	West
GW072888	10BL156275, 10WA113027	Spear	Private	Domestic	Domestic		04/05/1995	9.00	9.00					1735m	South East
GW112607	10BL603770	Bore	Private	Monitoring Bore	Monitoring Bore		10/12/2009	13.00	13.00					1738m	East
GW013576	10BL006739	Bore	Private	Industrial	Industrial		01/10/1957	27.40	27.50					1739m	South
GW110378	10BL601968	Well	Private	Monitoring Bore	Monitoring Bore		16/04/2004	7.00	7.00					1739m	South West
GW072480	10BL156279, 10WA113029	Spear	Private	Domestic	Domestic		19/10/1994	8.74	8.80	Good	5.79	1.000		1743m	South East
GW112608	10BL603770	Bore	Private	Monitoring Bore	Monitoring Bore		10/12/2009	13.80	13.00					1743m	East
GW025656	10BL017533, 10WA112914	Spear	Private	Domestic	General Use			4.80	4.90					1744m	East
GW105878	10BL161416, 10WA113338	Bore		Domestic			09/05/2005							1748m	South
GW100920	10BL156874, 10WA113081	Bore	Private	Domestic	Domestic		06/11/1997	6.00			5.00	40.000		1749m	South
GW101335	10BL158418, 10WA113234	Spear	Private	Domestic	Domestic		30/12/1997	10.67	10.67	Good	7.62	1.000		1750m	West
GW100996	10BL158171, 10WA113199	Spear	Private	Domestic	Domestic		01/10/1997	9.76	9.76	Good	7.01	0.750		1750m	West

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m bgl)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW106005	10BL163101, 10WA113526	Spear	Private	Domestic	Domestic		20/05/2004	12.29	12.29		7.93	1.000		1752m	North
GW112843	10BL604407	Bore	Private	Monitoring Bore	Monitoring Bore	Nuplex	10/12/2010	8.10	8.10		5.30			1752m	West
GW105877	10BL162678, 10WA113472	Bore		Domestic			09/05/2005							1753m	North
GW105496	10BL162469, 10WA113434	Bore		Domestic	Domestic		06/10/2003	10.00	10.00					1754m	North East
GW100563	10BL158042, 10WA113194	Spear	Private	Domestic	Domestic		21/05/1997	5.00	5.00					1755m	South
GW105905	10BL161996	Bore		Monitoring Bore	Test Bore		15/01/2004	21.00	21.00		1.00			1755m	South West
GW100919	10BL156873, 10WA113080	Bore		Domestic	Domestic		18/11/1994	6.00			5.00	40.000		1756m	South
GW106661	10BL164001, 10WA113719	Spear	Private	Domestic	Domestic		10/10/2004	15.25	15.25		8.23	1.000		1756m	North
GW112609	10BL603770	Bore	Private	Monitoring Bore	Monitoring Bore		10/12/2009	13.00	13.00					1756m	East
GW108711	10BL601630, 10WA114393	Spear	Private	Domestic	Domestic		03/05/2007	9.15	9.15	Good	9.15	1.000		1758m	South East
GW042170		Bore - Nested (2)	NSW Office of Water		Monitoring Bore		13/02/1975				0.00		6.80	1760m	South
GW032339		Spear	Private		Industrial		01/02/1970	33.20	33.20					1761m	West
GW065547		Bore	Private		Industrial		01/04/1981	34.00						1761m	West
GW024116	10BL018377, 10WA112944	Spear	Private	Domestic, General Use	General Use		01/02/1966	4.20						1762m	South
GW110376	10BL601968	Well	Private	Monitoring Bore	Monitoring Bore		18/11/1999	7.50	7.50					1762m	South West
GW013844	10BL009227	(Unknown)	Private	Industrial (low Security)	Industrial		01/07/1951	21.30	21.30					1763m	South West
GW107739	10BL165932, 10WA114062	Spear	Private	Domestic	Domestic		05/01/2006	10.00	10.00					1763m	South East
GW112835	10BL604407	Bore	Private	Monitoring Bore	Monitoring Bore	Nuplex	08/12/2010	7.70	7.70		5.30			1765m	West
GW072974		Bore	Private		Domestic		06/05/1995	10.00	10.00					1769m	North
GW112842	10BL604407	Bore	Private	Monitoring Bore	Monitoring Bore	Nuplex	08/12/2010	8.10	8.10		5.30			1770m	West
GW103542	10BL158194	Bore		Monitoring Bore	Monitoring Bore		01/01/1997	5.00	5.00		1.50			1771m	East
GW042169		Bore - Nested (2)	NSW Office of Water		Monitoring Bore			29.80	29.80		0.00		20.20	1773m	North
GW013387	10BL006746	Bore	Private	Industrial	Industrial		01/05/1957	34.70	34.80	Good				1773m	West
GW110015	10BL601969	Well	Private	Monitoring Bore	Monitoring Bore		09/05/2007	7.00	7.00					1775m	West

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m bgl)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW106165	10BL163192, 10WA113536	Bore		Domestic			29/06/2005							1776m	North
GW042171		Bore - Nested (2)	Private		Monitoring Bore		13/02/1975				0.00		5.78	1776m	South
GW111248	10BL162151, 10BL601857, 10WA114799	Bore	Private	Recreation (groundwater), Test Bore	Recreation (groundwater)		20/01/2004	30.00	30.00		6.00			1777m	North
GW022536	10BL015199	Bore	Private	Industrial	Industrial		01/01/1958	27.80	27.80					1780m	South West
GW042173		Spear	Local Govt		Stock								24.70	1780m	North
GW101679	10BL158814, 10WA113262	Bore		Domestic	Domestic		29/09/1998	7.00	7.00					1781m	East
GW112836	10BL604407	Bore	Private	Monitoring Bore	Monitoring Bore	Nuplex	08/12/2010	7.80	7.80		5.30			1784m	West
GW109197	10BL602391	Bore	Private	Monitoring Bore	Monitoring Bore		11/08/2008	7.00	7.00					1785m	West
GW105622	10BL162343, 10WA113409	Spear	Private	Domestic	Domestic		11/11/2003	8.23	8.24		5.18	1.500		1785m	South East
GW105906	10BL161996	Bore		Monitoring Bore	Test Bore		05/01/2004	21.00	21.00		1.70			1789m	South West
GW005451	10BL006749	Bore	Private	Industrial	Industrial		01/12/1949	47.50	47.50					1792m	South
GW107869	10BL600127, 10WA114104	Spear	Private	Domestic	Domestic		10/03/2006	6.10	6.10		2.44	1.000		1797m	South
GW108593	10BL601317, 10WA114319	Spear	Private	Domestic	Domestic		01/11/2003	20.00						1798m	South East
GW108601	10BL601418, 10WA114342	Spear	Private	Domestic	Domestic		05/03/2007	6.10	6.10	Good	2.44	1.000		1798m	South
GW107629	10BL162345, 10WA113410	Spear	Private	Domestic	Domestic		12/12/2003	9.15	9.15	Good	6.10	1.000		1799m	South East
GW111744	10BL604392	Spear	Private	Domestic	Domestic		28/03/2011	6.10	6.10	good	1.81	1.000		1802m	South
GW102220	10BL159072, 10WA113273	Spear	Private	Domestic	Domestic		26/02/1999	5.00	5.00		3.00	0.500		1803m	South
GW109709	10BL161997	Bore	Private	Monitoring Bore	Test Bore		23/12/2003	21.00	21.00		1.50			1803m	South West
GW109195	10BL602391	Bore	Private	Monitoring Bore	Monitoring Bore		11/08/2008	7.80	7.80					1808m	West
GW060595	10BL131786	Bore	Private	Domestic	Domestic		01/10/1984	6.50	6.50	Good				1809m	South
GW105903	10BL161996	Bore		Monitoring Bore	Test Bore		20/02/2004	21.00	21.00		1.00			1813m	South West
GW013638	10BL006759	Bore	Private	Industrial	Industrial		01/11/1956	20.40	20.40					1814m	South West
GW042166		Spear	NSW Office of Water		Monitoring Bore, Stock		13/02/1975		11.50				10.79	1815m	West
GW042163		Bore	NSW Office of Water		Monitoring Bore			24.00	24.00				13.14	1817m	West

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m bgl)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW109710	10BL161997	Bore	Private	Monitoring Bore	Test Bore		17/12/2003	21.00	21.00		1.70			1818m	South West
GW112844	10BL604407	Bore	Private	Monitoring Bore	Monitoring Bore	Nuplex	10/12/2010	8.10	8.10		5.30			1819m	West
GW101812	10BL157316, 10WA113138	Bore		Domestic	Domestic		16/11/1995	9.15	9.15	Good	6.10	1.000		1822m	South East
GW102472	10BL159175, 10WA113280	Bore		Domestic	Domestic		12/05/1999	8.00	8.00					1822m	South
GW112839	10BL604407	Bore	Private	Monitoring Bore	Monitoring Bore	Nuplex	08/12/2010	8.10	8.10		5.30			1829m	West
GW112840	10BL604407	Bore	Private	Monitoring Bore	Monitoring Bore	Nuplex	07/12/2010	8.10	8.10		5.30			1829m	West
GW108698	10BL601576, 10WA114379	Spear	Private	Domestic	Domestic		23/04/2007	8.85	8.85	Good	5.80	1.000		1838m	South East
GW100051	10BL156696, 10WA113075	Spear	Private	Domestic	Domestic		08/06/1995	6.00	6.00					1841m	South
GW109096	10BL162285, 10WA113392	Spear	Private	Domestic	Domestic		22/07/2008	8.85		Good	5.79	1.000		1848m	South East
GW100299	10BL154887, 10WA113015	Spear	Private	Domestic	Domestic		15/07/1995	5.00	5.00					1849m	South
GW110380	10BL601968	Well	Private	Monitoring Bore	Monitoring Bore		08/05/2007	7.00	7.00					1853m	West
GW105902	10BL161996	Bore		Monitoring Bore	Test Bore		26/02/2004	21.00	21.00		1.20			1854m	South West
GW107324	10BL165291, 10WA113948	Spear	Private	Domestic	Domestic		15/08/2005	7.00	7.00					1855m	South
GW060219	10BL132709	Bore	Private	Industrial	Industrial		01/01/1970	25.00						1855m	South West
GW023443	10BL017240, 10WA112876	Spear	Private	Domestic	General Use		01/01/1966	7.60	7.60	Good				1857m	West
GW105541	10BL162198, 10WA113362	Bore		Domestic	Domestic		22/10/2003	10.07	10.07		6.40	1.000		1858m	South East
GW107779	10BL165930, 10WA114060	Spear	Private	Domestic	Domestic		13/02/2006	9.15	9.15	Good	5.80	1.000		1858m	South East
GW107882	10BL600091, 10WA114099	Spear	Private	Domestic	Domestic		27/02/2006	6.10	6.10		2.44	1.000		1859m	South
GW107289	10BL165159, 10WA113928	Spear	Private	Domestic	Domestic		17/07/2005	14.03	14.03	Good	10.37	1.000		1860m	North
GW103777	10BL156603, 10WA113073	Bore		Domestic	Domestic		01/01/1995	8.50	8.50					1869m	South
GW110377	10BL601968	Well	Private	Monitoring Bore	Monitoring Bore		18/11/1999	7.00	7.00					1874m	West
GW042172		Bore - Nested (2)	NSW Office of Water		Monitoring Bore		13/02/1975				0.00		5.74	1882m	South West

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m bgl)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW105776	10BL162643, 10WA113463	Spear	Private	Domestic	Domestic		08/01/2004	6.00	6.00		3.00	0.500		1888m	South
GW018547	10BL012043	Bore	Private	Industrial	Industrial		01/10/1961	32.30	32.30					1889m	South West
GW107173	10BL163141, 10WA113531	Spear	Private	Domestic	Domestic		07/06/2004	5.80	5.80		3.05	1.000		1892m	South
GW108230	10BL600479, 10WA114155	Spear	Private	Domestic	Domestic		26/07/2006	13.00	13.00					1894m	South East
GW110379	10BL601968	Well	Private	Monitoring Bore	Monitoring Bore		08/05/2007	7.00	7.00					1897m	West
GW019098	10BL011647	Bore	Private	Industrial	Industrial		01/01/1959	27.40	27.40	Poor				1899m	South West
GW013434	10BL006756	Bore	Private	Industrial	Industrial		01/04/1955	25.90	25.90					1904m	South West
GW106430	10BL163586, 10WA113620	Spear	Private	Domestic	Domestic		10/08/2004	6.10	6.10	Good	3.50	1.000		1910m	South
GW102222	10BL159077, 10WA113275	Spear	Private	Domestic	Domestic		11/03/1999	9.50	9.50					1913m	North
GW101020	10BL156995, 10WA113095	Spear	Private	Domestic	Domestic		30/09/1995	7.31	7.31	Good	4.88	1.000		1924m	South East
GW022240	10BL014322, 10WA114741	Bore	Private	Recreation (groundwater)	Industrial		01/12/1964	25.20	25.30					1927m	West
GW112412	10BL602262, 10WA114475	Spear	Private	Domestic	Domestic		20/01/2008	10.00	10.00		6.00	0.250		1930m	South East
GW104828	10BL161219, 10WA113331	Bore	Private	Domestic	Domestic		08/04/2003	7.00	7.00					1942m	South
GW111239	10BL601566, 10WA114376	Bore	Private	Domestic	Domestic		22/11/2010	8.00	8.00					1943m	South
GW101432	10BL158221, 10WA113207	Spear	School	Domestic	Domestic		01/10/1997	7.00	7.00					1945m	East
GW101473	10BL158446, 10WA113238	Bore	Private	Domestic	Domestic		06/01/1998	6.00	6.00					1945m	South
GW101136	10BL158206, 10WA113203	Spear	Private	Domestic	Domestic		02/01/1998	7.32	7.32	Good	4.58	1.000		1948m	West
GW100865	10BL157577, 10WA113167	Spear	Private	Domestic	Domestic		03/09/1996	6.71	6.71	Good		1.000		1948m	South East
GW101447	10BL158462, 10WA113244	Spear	Private	Domestic	Domestic		06/01/1997	6.00	6.00					1955m	South
GW013435	10BL006754	(Unknown)	Private	Industrial	Industrial		01/10/1948	53.60	53.60					1959m	South West
GW047125	10BL105641, 10BL601141	Bore	Local Govt	Recreation (groundwater), Test Bore	Recreation (groundwater)		01/05/1976	24.40	24.40		4.00			1961m	North

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m bgl)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW042564	10BL030054	Bore	Local Govt	Irrigation	Irrigation		01/12/1969	28.00	28.00	1001-3000 ppm				1963m	South West
GW102616	10BL159382, 10WA113285	Bore		Domestic	Domestic		27/09/1999	6.00	6.00					1969m	West
GW101546	10BL158533, 10WA113253	Bore		Domestic	Domestic		16/03/1998	4.58	4.58	Good	1.83	1.000		1972m	West
GW015273	10BL006743	Bore	Private	Not Known	Industrial		01/03/1957	22.50	22.60					1975m	South West
GW060218	10BL132126	Bore	Private	Recreation (groundwater)	Recreation (groundwater)		01/06/1964	18.30						1981m	West
GW025544	10BL016968, 10WA112855	Bore	Private	Domestic	General Use		01/10/1965	4.80	4.90	Good				1995m	West
GW109173	10BL602340	Bore	Private	Monitoring Bore	Monitoring Bore		06/08/2008	4.50	4.50		3.06			1996m	South
GW107740	10BL165598, 10WA114001	Spear	Private	Domestic	Domestic		19/10/2005	11.50	11.50	Good	9.00	1.000		1997m	North East

Borehole Data Source : NSW Department of Primary Industries - Office of Water / Water Administration Ministerial Corporation for all bores prefixed with GW. All other bores © Commonwealth of Australia (Bureau of Meteorology) 2015. Creative Commons 3.0 © Commonwealth of Australia http://creativecommons.org/licenses/by/3.0/au/deed.en

Hydrogeology & Groundwater

35 Donovan Avenue, Maroubra, NSW 2035

Driller's Logs

Drill log data relevant to the boreholes within the dataset buffer:

Groundwater No	Drillers Log	Distance	Direction
GW104391	0.00m-10.00m SAND	0m	Onsite
GW106108	0.00m-9.00m sand	0m	Onsite
GW108407	0.00m-16.00m sand	0m	Onsite
GW107308	0.00m-9.50m sand	33m	North East
GW073503	0.00m-10.00m Sand	39m	North East
GW107325	0.00m-9.50m sand	45m	East
GW107119	0.00m-10.98m Sand, unconsolidated	62m	East
GW110836	0.00m-12.00m SAND	71m	North West
GW107030	0.00m-9.50m Sand	80m	West
GW110134	0.00m-10.00m SAND	80m	East
GW075020	0.00m-2.00m SAND,MED GRAINED WHITE 2.00m-5.00m SAND,MED GRAINED COFFEE BROWN 5.00m-6.00m SAND MED GRAINED,YELLOW 6.00m-12.50m SAND,FINE GRAINED,GREY WHITE 12.50m-15.50m SAND,SLIGHTLY SILTY 15.50m-17.00m PEATY SAND 17.00m-28.00m SAND,SLIGHTLY SILTY 28.00m-29.00m BED ROCK	93m	South East
GW106996	0.00m-9.50m Sand	117m	North
GW106820	0.00m-9.50m sand	123m	North West
GW106998	0.00m-9.50m Sand	137m	North West
GW024369	0.00m-0.91m Sand Black 0.91m-8.83m Sand White Water Supply	164m	North
GW106960	0.00m-10.68m Sand, unconsolidated	168m	East
GW106812	0.00m-10.06m sand, unconsolidated	179m	East
GW108226	0.00m-13.42m sand, decomposed	194m	East
GW048236	0.00m-0.80m Sand Dirty 0.80m-5.00m Sand Grey 5.00m-13.22m Sand 13.22m-17.00m Sand Peaty Dirty Water Supply 17.00m-17.50m Sand Some Small Gravel 17.50m-25.00m Sand Yellow Water Supply 25.00m-30.00m Sand Water Supply 25.00m-30.00m Clay Grey Some Small Layer 30.00m-31.00m Sand Grey Some Peat 31.00m-35.00m Sand Grey Peaty Water Supply 35.00m-36.50m Sand Grey Stiff Water Supply 36.50m-38.00m Clay Grey Stiff	195m	South East

Groundwater No	Drillers Log	Distance	Direction
GW048234	0.00m-0.20m Loam Sandy 0.20m-1.00m Sand Grey 1.00m-5.00m Sand Grey Peat 5.00m-7.50m Sand Yellow 7.50m-8.50m Sand Yellow Peat 8.50m-16.50m Sand White Water Supply 16.50m-17.00m Clay White Sandy 17.00m-23.00m Sand White Water Supply 23.00m-24.00m Sand Grey Water Supply 24.00m-25.00m Shale	210m	East
GW104535	0.00m-7.00m SAND	220m	South
GW106374	0.00m-15.00m sand	227m	North West
GW060224	0.00m-1.00m Sand White 1.00m-7.70m Sand 7.70m-12.00m Sand White Water Supply 12.00m-22.00m Sand Water Supply 22.00m-22.80m Clay White Water Supply 22.80m-23.00m Sand Grey Peaty Water Supply 23.00m-29.00m Sand White Water Supply 23.00m-29.00m Clay White Seams 29.00m-32.00m Clay Grey Stiff	235m	South East
GW101653	0.00m-7.63m Unconsolidated Sand	263m	East
GW102219	0.00m-7.63m Unconsolidated Sands	294m	East
GW111602	0.00m-12.00m SAND	305m	North
GW013439	0.00m-0.60m Sand Grey 0.60m-1.52m Sand Hard Cemented 1.52m-5.48m Sand Packed 5.48m-9.44m Sand Yellow Wet 9.44m-9.60m Clay Grey 9.60m-9.90m Peat 9.90m-10.36m Sand 10.36m-12.19m Sand Grey 12.19m-13.41m Sand Yellow 13.41m-13.71m Peat Water Supply 13.71m-16.76m Sand Hard Cemented Seams 16.76m-19.81m Sand Yellow 19.81m-21.33m Sand Yellow Gravel Water Supply 21.33m-22.25m Clay Seams 22.25m-23.77m Sand Yellow Fine 23.77m-24.38m Sand White 24.38m-24.53m Peat Water Supply 24.53m-24.84m Sand Yellow 24.84m-24.85m Sandstone	312m	South
GW108849	0.00m-16.00m sand	315m	North
GW106363	0.00m-15.00m sand	316m	East
GW101495	0.00m-9.00m SAND	335m	West
GW072291		344m	West
GW111151	0.00m-17.00m SAND	354m	North
GW048235	0.00m-1.00m Made Ground 1.00m-2.00m Sand Yellow 2.00m-15.00m Sand Grey 15.00m-15.15m Clay Sandy 15.15m-21.00m Sand Yellow Water Supply 21.00m-22.50m Sand Grey Water Supply 22.50m-24.00m Clay Grey 24.00m-24.01m Shale	365m	South East

Groundwater No	Drillers Log	Distance	Direction
GW019662	0.00m-0.91m Sand Made Ground 0.91m-2.74m Sand 2.74m-4.87m Sand Yellow 4.87m-7.62m Sand Peaty 7.62m-11.27m Sand Yellow Clean 11.27m-12.80m Peat Sandy Water Supply 12.80m-13.71m Sand Peaty Water Supply 13.71m-15.24m Sand Clean Water Supply 15.24m-16.76m Sand Peaty Water Supply 16.76m-21.94m Sand Clean Water Supply 21.94m-22.86m Sand Slightly Peaty Water Supply 22.86m-32.00m Sand Clean Water Supply 32.00m-32.01m Sand Slightly Clayey	369m	South West
GW014460	0.00m-0.30m Made Ground 0.30m-10.97m Sand Grey Dry 10.97m-12.80m Sand White Clayey Dry Water Supply 12.80m-14.02m Sand White Water Supply 14.02m-14.63m Peat Water Supply 14.63m-18.59m Sand Grey Dry Water Supply 18.59m-18.89m Peat Water Supply 18.89m-21.33m Sand Dirty Water Supply 21.33m-30.78m Sand Yellow Water Supply 30.78m-34.13m Sand Light Yellow Water Supply 34.13m-36.57m Sand White Water Supply 36.57m-37.49m Sand White Peaty 37.49m-38.40m Clay Grey	381m	North West
GW108232	0.00m-16.00m sand	383m	North
GW016331	0.00m-0.45m Ash Sand 0.45m-8.22m Sand Yellow Dry Water Supply 8.22m-13.41m Sand Yellow Water Supply 13.41m-13.56m Clay Grey Sandy 13.56m-16.76m Sand Yellow Water Supply 16.76m-17.98m Sand Water Supply 17.98m-28.04m Sand Yellow Water Supply 28.04m-31.69m Sand White Water Supply 31.69m-31.79m Clay White Sandy 31.79m-37.49m Sand White Water Supply 37.49m-37.64m Peat	387m	North West
GW107567	0.00m-10.00m sand	407m	North
GW100037	0.00m-2.00m SAND SILT WITH WOOD FRAGMENTS, BOULDERS 2.00m-12.00m LAND AND HYDRAULIC FILL 12.00m-16.00m SAND WITH MINOR PEAT BED 16.00m-18.00m PEAT 18.00m-23.00m SAND 23.00m-24.00m WEATHERED SANDSTONE THEN SHEET SANDSTONE BELOW 24 METRES	409m	South West
GW100041	0.00m-24.40m BACKFILL AND SAND WITH PEAT INCLUSIONS. BEDROCK FROM 24.4 METRES APPROX.	409m	South West
GW100508	0.00m-10.00m SAND	409m	South West
GW100728	0.00m-7.63m SAND	409m	South West
GW072430	0.00m-12.00m SAND	410m	South West
GW072446	0.00m-9.00m SAND	410m	South West
GW072631	0.00m-9.00m SAND	410m	South West
GW100488	0.00m-10.00m SAND	410m	South West
GW100743	0.00m-10.00m SAND	410m	South West
GW100824	0.00m-8.23m UNCOSOLIDATED ALL SANDS	410m	South West
GW108665	0.00m-18.00m sand	410m	North
GW107369	0.00m-10.00m sand	414m	North
GW108664	0.00m-16.00m sand	414m	North

Groundwater No	Drillers Log	Distance	Direction
GW060195	0.00m-2.44m Topsoil 2.44m-4.88m Sand Clean 4.88m-6.40m Sand Peaty 6.40m-10.67m Sand White Clean 10.67m-14.63m Sand Small Gravel 14.63m-18.59m Sand Grey Water Supply 18.59m-20.42m Peat Water Supply 20.42m-20.60m Sand Peaty Water Supply 20.60m-21.09m Sand Water Supply 21.09m-29.02m Sand White Water Supply 29.02m-30.00m Clay Sand Water Supply	418m	West
GW106864	0.00m-9.50m sand	422m	North
GW107027	0.00m-9.50m sand	422m	North
GW101835	0.00m-10.00m SAND	424m	West
GW104852	0.00m-10.00m ALL SAND	426m	South West
GW101834	0.00m-10.00m SAND	427m	West
GW023839	0.00m-1.21m Sand Grey 1.21m-1.37m Sand Hard Cemented 1.37m-3.65m Sand White 3.65m-5.48m Sand Grey 5.48m-8.22m Sand Yellow Water Supply	430m	East
GW104948	0.00m-0.30m TOPSOIL,BROWN SAND,BACKFILL 0.30m-2.80m GREY SAND MG 2.80m-6.20m LT BROWN SAND MG 6.20m-6.60m SILTY YELLOW SAND WITH CLAY 6.60m-7.00m SANDSTONE	439m	North East
GW107044	0.00m-9.50m sand	440m	North
GW107719	0.00m-9.50m sand	445m	North
GW101071	0.00m-6.50m SAND	450m	East
GW014459	0.00m-1.52m Sand Dirty 1.52m-6.09m Sand Yellow 6.09m-7.62m Sand Hard Cemented 7.62m-9.14m Sand Wet 9.14m-12.19m Sand Light Yellow Water Supply 12.19m-13.71m Peat Water Supply 13.71m-18.28m Sand Grey Water Supply 18.28m-26.21m Clay Grey Water Supply 26.21m-29.26m Sand White Water Supply	464m	North West
GW105765	0.00m-9.50m sand	469m	North
GW026786	0.00m-3.04m Sand 3.04m-4.26m Sand Grey 4.26m-8.53m Sand Clean 8.53m-10.36m Sand White 10.36m-10.45m Clay 10.45m-12.49m Sand Clean 12.49m-13.10m Sandstone	484m	North East
GW107587	0.00m-9.50m sand	484m	North

Groundwater No	Drillers Log	Distance	Direction
GW035690	0.00m-3.04m Made Ground 3.04m-4.57m Sand 4.57m-6.09m Sand Clean 6.09m-9.14m Sand 9.14m-9.75m Peat 9.75m-10.66m Sand Peaty 10.66m-12.19m Sand 12.19m-15.24m Sand Clean 15.24m-15.84m Sand 15.84m-16.15m Peat 16.15m-16.76m Clay Sand 16.76m-19.81m Sand Dark Brown 19.81m-28.65m Sand Water Supply 28.65m-35.96m Sand White Water Supply 35.96m-36.27m Peat Wood 36.27m-38.40m Sand Yellow Grey Water Supply 38.40m-38.70m Clay Grey	494m	West
GW101008	0.00m-9.00m SAND	495m	North East
GW025948	0.00m-1.82m Sand Grey 1.82m-2.43m Sand Hard Cemented 2.43m-4.57m Sand Yellow 4.57m-6.09m Sand White 6.09m-8.53m Sand White Slightly Clayey 8.53m-11.27m Sand Slightly Peaty 11.27m-14.47m Sand Very Dirty Peaty 14.47m-15.24m Sand Yellow 15.24m-16.45m Sand Slightly Clayey 16.45m-18.28m Sand Yellow Clean 18.28m-19.20m Sand Slightly Clayey 19.20m-22.55m Sand 22.55m-25.29m Sand Peaty 25.29m-25.90m Sand Clean 25.90m-30.17m Sand White 30.17m-31.39m Sand White Slightly Clayey 31.39m-35.05m Sand White 35.05m-35.08m Clay	502m	West
GW108572	0.00m-18.00m sand	506m	North
GW025552	0.00m-0.91m Sand 0.91m-5.18m Sand Hard Cemented 0.91m-5.18m Shale	536m	North East
GW106944	0.00m-16.77m Sand, unconsolidated	536m	North
GW026476	0.00m-0.91m Sand 0.91m-1.09m Sand Hard Cemented 1.09m-5.18m Sand	537m	North East
GW014461	0.00m-3.04m Sand Dirty 3.04m-3.65m Sand Hard Cemented 3.65m-7.62m Sand Yellow 7.62m-9.14m Sand White 9.14m-11.27m Sand White Yellow 11.27m-26.21m Sand White Water Supply	553m	North West
GW014462	0.00m-16.76m Sand Water Supply 16.76m-18.59m Sand Peat Bands Water Supply 18.59m-28.95m Sand Water Supply 28.95m-29.56m Sandstone Soft	553m	North West
GW108214	0.00m-0.30m TOPSOIL 0.30m-2.20m GREY SAND 2.20m-7.10m YELLOW SAND 7.10m-7.30m WHITE SANDSTONE	560m	East

Groundwater No	Drillers Log	Distance	Direction
GW035410	0.00m-10.66m Sand 10.66m-11.88m Sand White Peat Traces 11.88m-14.93m Sand Peaty Dirty 14.93m-17.06m Sand Peaty 17.06m-17.37m Peat 17.37m-19.20m Sand Peaty Dirty 19.20m-19.81m Peat 19.81m-20.42m Peat Sandy Some Clay 20.42m-21.03m Sand Clean Water Supply 21.03m-21.94m Sand Very Dirty Peaty 21.94m-22.86m Sand Peat Traces Water Supply 22.86m-24.38m Sand Clayey 24.38m-29.56m Sand 29.56m-31.69m Sand Slightly Clayey 31.69m-32.91m Sand White 32.91m-37.79m Sand White Clay Traces Water Supply 37.79m-39.92m Sandstone Decomposed Medium	581m	North West
GW062266	0.00m-1.00m Fill 0.00m-1.00m Sandstone Sand 1.00m-8.00m Sand White 8.00m-17.00m Sand Peaty Water Supply 17.00m-19.00m Peat Water Supply 19.00m-25.00m Sand Water Supply 25.00m-31.00m Sand Grey Water Supply	601m	West
GW111156	0.00m-12.00m SAND	601m	North
GW109852	0.00m-0.20m CONCRETE 0.20m-0.80m FILL 0.80m-13.00m SAND	605m	North
GW103500	0.00m-5.00m LT. BROWN MEDIUM GR. SAND 5.00m-10.00m WHITE YELLOW MEDIUM GR. SAND 10.00m-12.00m DARK BROWN SAND / LIGNITE 12.00m-14.00m LIGNITE AND SAND MED. GR. 14.00m-18.00m SAND WITH LIGNITE 18.00m-27.00m DARK SAND WITH LIGNITE 27.00m-41.00m LT. BROWN SAND,MINOR SILT	606m	West
GW048233	0.00m-1.00m Made Ground Sand 1.00m-8.00m Sand Yellow 8.00m-11.00m Sand Grey Water Supply 11.00m-13.00m Clay Grey Sandy 13.00m-14.00m Sandstone Red	610m	South
GW109851	0.00m-0.20m CONCRETE 0.20m-0.40m FILL 0.40m-13.50m SAND	610m	North
GW042867	0.00m-0.61m Topsoil 0.61m-3.05m Sand 3.05m-3.35m Peat 3.35m-15.24m Clay Water Supply 15.24m-16.76m Sand Peaty Water Supply 16.76m-18.29m Sand Grey Dirty Water Supply 18.29m-20.12m Sand Grey Water Supply 20.12m-24.99m Sand Water Supply 24.99m-25.30m Sand Clay Water Supply 25.30m-34.75m Sand White Water Supply 34.75m-35.05m Sandstone 35.05m-36.58m Clay White	615m	West
GW109850	0.00m-0.40m CONCRETE 0.40m-1.20m FILL 1.20m-14.00m SAND	616m	North
GW047872	0.00m-0.50m Loam Black Sandy 0.50m-1.20m Sand Yellow 1.20m-9.00m Sand Grey 9.00m-10.20m Sand Yellow 10.20m-16.00m Sand Peaty Water Supply 16.00m-31.00m Sand Yellow Water Supply 31.00m-36.90m Sand White Water Supply 36.90m-38.10m Sand Yellow Water Supply 38.10m-40.30m Sand White Water Supply 40.30m-40.40m Peat Sand Water Supply 40.40m-41.50m Peat Water Supply	629m	West

Groundwater No	Drillers Log	Distance	Direction
GW025947	0.00m-0.60m Made Ground 0.60m-3.04m Sand Yellow 3.04m-5.18m Sand 5.18m-7.62m Sand Slightly Peaty 7.62m-7.92m Peat 7.92m-10.66m Sand Very Dirty Peaty 10.66m-14.63m Sand Grey 14.63m-15.24m Sand Yellow 15.24m-18.59m Sand Yellow Water Supply 18.59m-23.77m Sand Clayey Peaty Water Supply 23.77m-25.90m Sand Grey Water Supply 25.90m-29.26m Sand White Water Supply 29.26m-30.17m Clay Water Supply 30.17m-30.20m Clay	642m	West
GW022054	0.00m-0.24m Made Ground 0.24m-0.46m Sand Some Hard Cemented 0.46m-11.73m Sand Light Brown 11.73m-15.85m Sand Water Supply 15.85m-20.88m Sand Peat Seams Water Supply 20.88m-21.03m Sand Hard Cemented 21.03m-24.38m Sand Water Supply 24.38m-28.96m Sand Water Supply Clay Traces Pete 28.96m-30.78m Sand Yellow Grey Water Supply Clay Traces 30.78m-32.00m Sand Grey Water Supply 32.00m-32.31m Sand Reddish Water Supply 32.31m-38.19m Sand White Grey Water Supply 38.19m-38.25m Peat 38.25m-40.84m Sand Grey Clay 40.84m-40.86m Sandstone	652m	North West
GW032150	0.00m-1.52m Sand White 1.52m-5.18m Sand 5.18m-6.40m Sand Peaty Very Dirty 6.40m-7.31m Sand Peaty 7.31m-8.83m Sand Clean 8.83m-10.66m Peat Hard 10.66m-10.97m Sand Peaty 10.97m-13.71m Sand Wet 13.71m-16.15m Sand Clean 16.15m-16.76m Sand Peaty Water Supply 16.76m-17.37m Peat Hard 17.37m-17.67m Peat Sandy Water Supply 17.67m-18.28m Sand Peaty Very Dirty 18.28m-18.89m Sand Peaty 18.89m-22.86m Sand 22.86m-30.48m Sand Slightly Clayey 30.48m-31.39m Sand 31.39m-31.54m Sand Slightly Peaty 31.54m-33.52m Sand White Water Supply 33.52m-36.27m Sand White 36.27m-36.88m Sand White 36.27m-36.88m Clay Yellow 36.88m-38.70m Sand White	659m	West
GW016330	0.00m-25.60m Sand Water Supply 25.60m-26.21m Sandstone	690m	North West
GW028666	0.00m-4.87m Sand White 4.87m-5.79m Sand 5.79m-7.31m Sand Clayey 7.31m-10.97m Sand Coarse Water Supply 10.97m-12.19m Sand Coarse 10.97m-12.19m Peat Bands Water Supply 12.19m-15.24m Sand Yellow Clayey Coarse Water Supply 15.24m-15.84m Sand White Water Supply 15.84m-17.06m Sand Grey Yellow 15.84m-17.06m Clay Bands Water Supply 17.06m-17.98m Sand White Water Supply 17.98m-24.99m Sand White 17.98m-24.99m Clay Bands Water Supply 24.99m-25.29m Clay Sandy	702m	South East
GW104640	0.00m-10.00m SAND	707m	North East

Groundwater No	Drillers Log	Distance	Direction
GW027761	0.00m-1.37m Sand 1.37m-1.52m Sand Grey 1.52m-3.81m Sand Peaty Hard Cemented 3.81m-4.87m Sand Light Brown 4.87m-7.01m Sand Clayey Peaty 7.01m-7.31m Sand Grey Clayey 7.31m-8.22m Sand Grey 8.22m-9.75m Sand Peaty 9.75m-19.20m Sand Light Brown Grey 19.20m-22.55m Sand Light Brown Water Supply 22.55m-31.08m Sand Grey Slightly Peaty Water Supply	712m	South West
GW101594	0.00m-1.00m White Sand 1.00m-1.30m Coffee Rock 1.30m-9.50m Light Brown Shale 9.50m-11.50m Light Brown Peaty Sand 11.50m-13.00m Dark Brown Peaty Sand 13.00m-25.50m Light Brown Peaty Sand 25.50m-27.00m Peat 27.00m-31.00m Brown Peaty Sand 31.00m-38.00m Grey/Brown Peaty Clay	724m	North West
GW101735	0.00m-10.00m SAND AND CLAY	727m	East
GW025949	0.00m-0.91m Made Ground 0.91m-4.57m Sand 4.57m-7.62m Sand Peaty 7.62m-13.71m Sand Clean 13.71m-14.93m Sand Peaty 14.93m-18.89m Sand 18.89m-19.81m Sand Peaty 19.81m-23.77m Sand 23.77m-28.34m Sand White 28.34m-28.65m Sand Clayey 28.65m-28.95m Clay Peaty 28.95m-29.56m Clay Grey 29.56m-30.78m Sand Grey 30.78m-35.05m Sand White 35.05m-35.08m Clay	743m	South West
GW062054	0.00m-1.00m Overburden Topsoil 1.00m-40.00m Sand White Some Slightly Peat Water Supply	744m	North West
GW013432	0.00m-2.43m Sand 2.43m-4.57m Sand White 4.57m-11.58m Sand Light Brown Water Supply 11.58m-11.89m Sand Hard Cemented Pete 11.89m-15.24m Quartz Small Sand Water Supply 15.24m-16.15m Peat 16.15m-19.81m Sand White Fine Water Supply 19.81m-21.33m Sand Yellow Water Supply 21.33m-26.51m Sand White Fine Water Supply 26.51m-27.43m Clay Sandy Some Peat 27.43m-28.04m Sand Clay	753m	South West
GW072238	0.00m-2.50m SAND 2.50m-3.50m ALLUVIUM 3.50m-10.00m SAND	777m	North West
GW111811	0.00m-16.00m SAND	777m	North
GW024037	0.00m-0.91m Sand Grey 0.91m-2.13m Sand Yellow 2.13m-2.74m Sand Hard Cemented 2.74m-7.16m Sand Yellow Water Supply	779m	North

Groundwater No	Drillers Log	Distance	Direction
GW016129	0.00m-0.45m Sand Peaty Dry 0.45m-2.43m Sand White Dry 2.43m-7.01m Sand Clean 7.01m-7.31m Peat 7.31m-7.92m Sand Clean 7.92m-8.22m Sand Peaty Dry 8.22m-10.97m Sand 10.97m-13.71m Sand Wet Water Supply 13.71m-13.86m Clay Bands Water Supply 13.86m-17.67m Sand Water Supply 17.67m-17.98m Clay Peaty Bands 17.98m-23.46m Sand Water Supply 23.46m-23.77m Sand White Water Supply 23.77m-26.21m Sand White 23.77m-26.21m Clay Sandy Bands 26.21m-32.15m Sand White Water Supply 32.15m-32.61m Clay Peaty 32.61m-32.91m Sand Dirty 32.91m-34.38m Clay Dark Grey Stiff	781m	South West
GW015991	0.00m-8.53m Sand Dry 8.53m-10.97m Sand Wet 10.97m-11.88m Clay Grey Sandy 11.88m-14.63m Clay Sandy Water Supply 14.63m-19.81m Sand Water Supply 19.81m-24.99m Sand White Water Supply 24.99m-29.56m Sand Light Brown Water Supply 29.56m-30.08m Sand Clay Bands	783m	South West
GW108669	0.00m-16.00m sand	795m	North
GW108671	0.00m-15.00m sand	795m	North
GW108589	0.00m-18.00m Sand	798m	North
GW024372	0.00m-1.21m Sand Grey 1.21m-5.48m Sand Cream 5.48m-7.31m Sand White Water Supply	802m	North
GW029072	0.00m-0.91m Made Ground 0.91m-1.29m Sand Hard Cemented 1.29m-2.13m Sand Yellow 2.13m-8.53m Sand Grey 8.53m-8.76m Peat 8.76m-14.02m Sand Peaty Water Supply 14.02m-14.70m Peat 14.70m-16.45m Sand Peaty Water Supply 16.45m-24.38m Sand Slightly Clay Water Supply 24.38m-36.57m Sand Grey Water Supply 36.57m-39.62m Sand Grey Slightly Clay Water Supply 39.62m-40.84m Sand Orange Grey Sandstone Decomposed Water Supply 40.84m-40.99m Peat Clay	813m	West
GW100427	0.00m-1.50m SANDSTONE FILL 1.50m-9.00m WHITE SAND 9.00m-11.50m BROWN SAND WITH SEAMS OF PEAT 11.50m-15.50m WHITE SAND 15.50m-21.50m PEATY BROWN SAND 21.50m-31.00m BROWN SAND 31.00m-37.00m WHITE SAND	830m	West
GW023842	0.00m-1.21m Soil 1.21m-1.82m Sand Grey 1.82m-5.79m Sand White 5.79m-7.62m Water Supply	841m	East
GW104989	0.00m-10.00m SAND	850m	North West
GW072292		851m	North
GW108670	0.00m-16.00m sand	861m	North
GW101680	0.00m-7.93m Unconsolidated Sand	863m	North West

Groundwater No	Drillers Log	Distance	Direction
GW023983	0.00m-0.30m Sand Grey 0.30m-0.60m Sand White 0.60m-6.09m Sand Yellow 6.09m-7.92m Sand Yellow Water Supply 7.92m-7.95m Peat 7.95m-10.05m Sand Water Supply 10.05m-13.71m Sand Yellow White Water Supply 13.71m-15.84m Sand Water Supply 15.84m-17.06m Sand White Water Supply 17.06m-17.37m Clay Grey 17.37m-18.28m Sand Water Supply 18.28m-18.59m Clay Grey 18.59m-25.29m Sand Yellow 18.59m-25.29m Clay Small Bands 25.29m-36.88m Sand Yellow Water Supply 36.88m-37.49m Sand Light Brown Water Supply 37.49m-38.55m Sand Dark Brown Clay Seams 38.55m-38.58m Sandstone	870m	North
GW108172	0.00m-18.00m sand	872m	North
GW107829	0.00m-10.00m sand	877m	North
GW106022	0.00m-5.00m sand	878m	East
GW101876	0.00m-9.50m Sand	883m	North
GW107806	0.00m-9.50m sand	884m	North East
GW108430	0.00m-18.00m Sand	884m	North
GW106323	0.00m-3.00m sand, rock	902m	South East
GW111956	0.00m-10.00m SAND CLEAN WHITE	908m	South East
GW037388	0.00m-2.13m Sand Cemented 2.13m-4.57m Sand 4.57m-8.53m Sand Peaty 8.53m-15.24m Sand Grey 15.24m-16.76m Peat 16.76m-19.51m Sand Grey Water Supply 19.51m-22.56m Peat 22.56m-25.60m Sand White Water Supply 25.60m-26.52m Sand Peaty Some Clayey Water Supply 26.52m-27.43m Sand Grey Dirty Water Supply 27.43m-37.49m Sand White Water Supply 37.49m-37.80m Clay Grey	911m	North West
GW016953	0.00m-4.50m LIGHT BROWN SAND 4.50m-5.00m BROWN SAND AND WOOD 5.00m-8.60m LIGHT BROWN SAND 8.60m-9.40m BLACK PEAT 9.40m-16.90m LIGHT BROWN SAND 16.90m-18.50m BLACK PEAT 18.50m-22.70m BROWN SILTY SAND 22.70m-24.00m BLACK PEAT 24.00m-26.50m BROWN PEATY SAND 26.50m-30.00m LIGHT BROWN SAND	915m	North West
GW025709	0.00m-0.30m Sand Grey 0.30m-1.22m Sand White 1.22m-3.51m Sand Yellow 3.51m-5.94m Sand White 5.94m-8.84m Sand Yellow Water Supply 8.84m-10.06m Sand Grey Water Supply 10.06m-10.97m Sand White Water Supply 10.97m-11.58m Sand Grey Water Supply 11.58m-13.72m Sand Yellow Water Supply 13.72m-15.24m Sand White Water Supply 15.24m-16.76m Sand White Dry Water Supply 16.76m-17.53m Sand Yellow Water Supply 17.53m-17.68m Clay Dark Grey 17.68m-18.90m Sand Yellow Some Small Clay Bands Water Supply 18.90m-24.38m Sand Dirty Water Supply 24.38m-28.04m Sand Yellow White Water Supply 28.04m-33.22m Sand White Water Supply 33.22m-34.90m Sand Yellow Water Supply 34.90m-36.94m Sand 36.94m-37.35m Sandstone	921m	North
GW106052	0.00m-9.00m sand	934m	South East

Groundwater No	Drillers Log	Distance	Direction
GW023989	0.00m-2.13m Sand 2.13m-2.28m Sand Dark 2.28m-6.70m Sand Water Supply	938m	North East
GW104829	0.00m-10.00m SAND	946m	North
GW101750	0.00m-8.00m SAND	956m	South
GW016130	0.00m-3.65m Sand 3.65m-4.57m Sand Dark Brown 4.57m-7.31m Sand Dry 7.31m-7.92m Sand Dark Brown 7.92m-11.27m Sand Clean 11.27m-13.01m Sand Wet 13.01m-13.16m Clay Grey 13.16m-13.41m Sand Water Supply 13.41m-13.56m Clay Grey Stiff Water Supply 13.56m-19.38m Sand Water Supply 19.38m-19.50m Clay Quartz Gravel 19.50m-20.11m Sand 20.11m-26.51m Sand White Water Supply 26.51m-27.43m Sand White Clay Water Supply 27.43m-28.65m Sand Peaty 28.65m-29.87m Clay Peaty 29.87m-30.48m Sand Dirty Coarse 30.48m-30.78m Clay Grey Dirty Sandy Coarse	961m	South West
GW015990	0.00m-0.91m Made Ground Sand 0.91m-1.37m Sand 1.37m-2.74m Peat 2.74m-6.09m Sand Dirty 6.09m-10.66m Sand Wet 10.66m-13.71m Sand Water Supply 13.71m-15.24m Sand Clay Bands 15.24m-21.64m Sand Water Supply 21.64m-23.16m Sand White Water Supply 23.16m-23.40m Sand White 23.40m-23.46m Clay White Bands 23.46m-26.21m Sand White Water Supply 26.21m-28.83m Sand White Clay Bands	965m	South West
GW013577	0.00m-0.60m Made Ground 0.60m-2.13m Sand Dry 2.13m-3.04m Sand Dry Hard Cemented 3.04m-3.65m Sand Dry Clean 3.65m-6.09m Sand White 6.09m-6.70m Clay White Sandy Water Supply 6.70m-9.14m Sand White Water Supply 9.14m-9.44m Sand Light Brown Water Supply 9.44m-13.10m Sand Light Brown Clay Hard Cemented 13.10m-15.24m Sand Dark Brown Peat Water Supply 15.24m-15.39m Sand Dark Quartz 15.39m-15.84m Sand Dark Hard Cemented 15.84m-16.76m Sand Light Brown Hard Cemented 16.76m-19.81m Sand Light Brown Clay Hard Cemented 19.81m-24.99m Sand Grey Hard Cemented 24.99m-25.29m Sand White Clay Clay Hard Cemented Water Supply 25.29m-26.67m Sand Grey Hard Cemented 26.67m-26.82m Sand Dirty Clay Peaty 26.82m-26.83m Clay	981m	South
GW072907		990m	North
GW106483	0.00m-5.00m sand, rock	1008m	East
GW108045	0.00m-19.00m sand	1033m	North
GW023482	0.00m-0.60m Sand Grey 0.60m-6.09m Sand White Water Supply 0.60m-6.09m Sandstone	1041m	South East
GW107000	0.00m-9.50m Sand	1049m	North East
GW023589	0.00m-3.65m Sand Grey Water Supply	1052m	East

Groundwater No	Drillers Log	Distance	Direction
GW038126	0.00m-5.48m Sand White 5.48m-8.53m Sand 8.53m-8.83m Peat 8.83m-14.63m Sand 14.63m-17.06m Sand Dirty 17.06m-17.37m Peat 17.37m-19.81m Sand Peaty 19.81m-21.94m Peat Wood Decomposed 21.94m-28.65m Sand Peaty Water Supply 28.65m-36.27m Sand White Water Supply 36.27m-36.42m Peat 36.42m-39.31m Sand White Water Supply 39.31m-40.23m Clay Grey	1057m	West
GW013827	0.00m-1.52m Sand Grey 1.52m-4.57m Sand Cream 4.57m-4.72m Sand Hard Cemented 4.72m-7.62m Clay Peaty 7.62m-10.36m Sand Water Supply 10.36m-10.97m Clay Peaty 10.97m-11.58m Sand Peaty 11.58m-12.49m Sand Dirty 12.49m-13.71m Peat 13.71m-14.32m Sand Peaty 14.32m-17.06m Sand Dirty Water Supply 17.06m-18.89m Clay Peaty 18.89m-19.20m Sand Peaty 19.20m-19.81m Sand White Wood 19.81m-24.38m Sand White Water Supply 24.38m-26.51m Sand Water Supply 26.51m-27.43m Sand White Water Supply 27.43m-27.58m Clay Peaty 27.58m-32.76m Sand White Water Supply 32.76m-33.07m Clay Peaty 33.07m-33.52m Sand Water Supply 33.52m-38.40m Sand White Water Supply 38.40m-38.86m Clay Peaty Wood	1066m	West
GW073458		1076m	North East
GW025730	0.00m-0.60m Sand Grey 0.60m-1.82m Sand White 1.82m-2.43m Loam 2.43m-6.40m Sand White Water Supply	1095m	North East
GW026364	0.00m-1.06m Sand Dark Grey 1.06m-1.44m Sand White 1.44m-1.52m Sand Hard Cemented 1.52m-7.62m Sand Water Supply 7.62m-13.71m Sand White 13.71m-16.45m Sand Clay 16.45m-16.76m Sand 16.45m-16.76m Gravel 16.76m-17.98m Sand Slightly Clay 17.98m-18.28m Clay Sandy 18.28m-23.46m Sand White 23.46m-27.43m Sand Cream 27.43m-31.69m Sand White 31.69m-34.13m Clay Yellow Sandy 34.13m-36.57m Sand Yellow 36.57m-37.18m Sand Dirty 37.18m-37.33m Sandstone	1107m	North
GW101819	0.00m-5.00m SAND	1130m	South West
GW110522	0.00m-0.50m (Unknown) 0.50m-12.00m (Unknown)	1143m	North
GW109853	0.00m-1.60m FILLING 1.60m-6.00m SAND	1145m	South
GW023261	0.00m-5.48m Rock Nominal Sand Nominal Water Supply	1151m	North East
GW104993	0.00m-10.00m SAND	1164m	North
GW103239	0.00m-17.08m UNCONSOLIDATED ALL SAND	1172m	North West

Groundwater No	Drillers Log	Distance	Direction
GW033949	0.00m-0.91m Made Ground 0.91m-3.65m Sand 3.65m-3.81m Sand Hard Cemented 3.81m-7.92m Sand 7.92m-11.88m Sand Peaty Coarse 11.88m-12.19m Peat 12.19m-14.93m Sand Grey 14.93m-15.84m Peat 15.84m-21.03m Sand Peaty 21.03m-22.86m Peat 22.86m-23.77m Peat Black Sand Fossils:wood Water Supply 23.77m-25.75m Clay Peaty Fossils:wood 25.75m-27.73m Sand Grey Dirty Clay Seams Water Supply 27.73m-29.26m Peat 29.26m-30.48m Clay Grey Peaty	1174m	West
GW017638	0.00m-0.30m Sand Dark Grey 0.30m-0.99m Sand White 0.99m-1.21m Sand Hard Cemented 1.21m-2.43m Clay Sandy 2.43m-3.65m Sand 3.65m-3.96m Sand Some Hard Cemented 3.96m-6.09m Sand 6.09m-7.01m Clay Sandy 7.01m-7.62m Sand Peaty 7.62m-10.66m Sand Coloured 10.66m-12.19m Peat Wood Water Supply 12.19m-14.02m Sand Dark Brown Water Supply 14.02m-14.63m Clay Peaty 14.63m-16.61m Sand Dark Brown Water Supply 16.61m-16.76m Clay Peaty 16.76m-18.89m Sand Dark Brown Water Supply 18.89m-19.20m Sand Dirty 19.20m-20.42m Peat Wood 20.42m-22.55m Sand Dirty Water Supply 22.55m-25.29m Clay Sandy Water Supply 25.29m-25.60m Wood Clay Water Supply 25.60m-27.12m Peat 27.12m-32.91m Sand Water Supply 32.91m-33.22m Sand Grey Dirty	1181m	West
GW037821	0.00m-0.91m Sand Dry 0.91m-1.21m Sand Hard Cemented 1.21m-6.09m Sand 6.09m-10.66m Sand Peaty 10.66m-14.02m Sand 14.02m-16.76m Sand Peaty 16.76m-19.20m Sand 19.20m-19.81m Sand Peat 19.81m-21.33m Peat Wood 21.33m-22.55m Sand Peaty 22.55m-24.38m Sand 22.55m-24.38m Clay Peaty 24.38m-24.68m Peat 24.68m-28.04m Sand Dirty Water Supply 28.04m-32.91m Sand Grey Water Supply 32.91m-34.13m Clay Peaty	1181m	West
GW017637	0.00m-7.62m Sand 7.62m-9.14m Sand Dark Brown Water Supply 9.14m-10.97m Sand Hard Cemented 10.97m-11.58m Sand Water Supply 11.58m-12.19m Sand White Water Supply 12.19m-15.24m Sand Water Supply 15.24m-16.45m Sand Hard Cemented 15.24m-16.45m Peat 16.45m-23.16m Sand Water Supply 23.16m-23.77m Peat Sand 23.77m-24.38m Sand 24.38m-25.90m Peat 25.90m-27.43m Clay 27.43m-28.34m Peat 28.34m-31.39m Sand Water Supply 31.39m-35.35m Sand Grey Water Supply 35.35m-37.18m Clay	1184m	West

Groundwater No	Drillers Log	Distance	Direction
GW017640	0.00m-11.58m Sand Peaty Clay 11.58m-12.19m Wood Peaty 12.19m-14.02m Sand Peaty Water Supply 14.02m-16.15m Sand Pete Water Supply 16.15m-19.20m Wood Peat Solid 19.20m-21.33m Sand Dirty Water Supply 21.33m-21.64m Peat 21.64m-22.86m Sand Clay Coarse Water Supply 22.86m-24.08m Sand Grey Pete Water Supply 24.08m-29.44m Sand Grey Water Supply 29.44m-29.45m Clay Grey Bands	1194m	West
GW109856	0.00m-4.80m FILLING.BROWN SANDY CLAY,DARK GREY 4.80m-7.50m SAND,GREY,STRONG HYDROCARBON ODOUR	1197m	South
GW072905		1202m	North
GW013436	0.00m-4.57m Sand 4.57m-9.14m Sand Wet 9.14m-12.50m Sand Water Supply 12.50m-13.11m Sand Clay Bands Water Supply 13.11m-17.98m Sand Water Supply 17.98m-21.03m Sand Clay Bands Water Supply 21.03m-22.56m Sand Yellow Water Supply 22.56m-34.29m Sand Water Supply	1208m	North
GW047121	0.00m-8.53m Sand Light Brown 8.53m-20.73m Sand Peaty Water Supply 20.73m-24.38m Sand Light Brown Water Supply 24.38m-26.82m Sand Peaty Water Supply 26.82m-32.00m Sand Water Supply 32.00m-33.83m Sand White Water Supply 33.83m-34.44m Peat 34.44m-35.97m Sand Water Supply 35.97m-41.76m Sand White Water Supply 41.76m-42.37m Peat Sand 42.37m-42.67m Clay Grey	1211m	North West
GW107523	0.00m-7.00m sand 7.00m-14.00m clay, grey 14.00m-81.00m sandstone	1216m	South East
GW027615	0.00m-0.91m Sand Hard Cemented 0.91m-9.14m Sand 9.14m-11.27m Sand Grey 11.27m-13.71m Sand Yellow 13.71m-15.24m Sand White 15.24m-16.15m Sand Clayey Peaty 16.15m-19.20m Sand Grey 19.20m-19.50m Sand Clayey 19.50m-25.60m Sand 25.60m-35.66m Sand White 35.66m-36.27m Sand 35.66m-36.27m Clay Traces 36.27m-36.28m Clay	1228m	North
GW029354	0.00m-1.52m Sand 1.52m-2.43m Sand Hard Cemented 2.43m-6.70m Sand 6.70m-7.62m Sand Slightly Peaty 7.62m-14.63m Sand Water Supply 14.63m-17.06m Sand White Water Supply 17.06m-18.28m Clay Sand 18.28m-23.46m Sand Yellow Water Supply 23.46m-32.91m Sand White Water Supply 32.91m-34.13m Sand Yellow Water Supply 34.13m-34.74m Sand 34.13m-34.74m Clay Yellow 34.74m-36.57m Sand Yellow Water Supply 36.57m-37.79m Sand Yellow Clayey	1228m	North
GW072925		1231m	North West
GW109857	0.00m-5.80m FILLING,BROWN SAND 5.80m-8.50m SAND,GREY,WHITE,YELLOW,STRONG HYDROCARBON ODOUR	1236m	South
GW109854	0.00m-3.20m FILLING 3.20m-6.00m SAND	1238m	South
GW023577	0.00m-3.65m Sand Water Supply	1247m	North East

Groundwater No	Drillers Log	Distance	Direction
GW107404	0.00m-0.30m TOPSOIL 0.30m-2.30m GREY SAND 2.30m-3.40m BROWN SAND 3.40m-6.10m YELLOW SAND 6.10m-13.20m BROWN SILTY SAND 13.20m-24.50m WHITE SAND 24.50m-29.20m GREY SAND 29.20m-30.00m SILTY GREY SAND 30.00m-31.50m YELLOW SILTY SAND 31.50m-32.00m YELLOW SANDY CLAY	1259m	North
GW072917		1265m	North West
GW072287		1268m	North West
GW108498	0.00m-18.00m Sand	1268m	North
GW108710	0.00m-15.55m sand	1291m	North East
GW072898	0.00m-10.36m Unconsolidated Sand. Clay Below 10.36	1293m	South
GW072294		1296m	North West
GW109855	0.00m-1.60m FILLING,ROADBASE,GRAVEL AND GREY ASH 1.60m-6.00m SAND,BROWN,WHITE,STRONG HYDROCARBON ODOUR	1307m	South
GW108788	0.00m-14.64m sand	1311m	North East
GW101069	1.00m-10.00m sand	1312m	North
GW060223	0.00m-3.50m BROWN SAND 3.50m-7.00m BROWN SILTY SAND/SMALL PEAT LAYERS 7.00m-9.00m YELLOW SILTY SAND	1317m	East
GW107583	0.00m-9.50m sand	1323m	North East
GW109858	0.00m-0.45m FILLING,BROWN,GRAVELLY SAND 0.45m-5.40m SAND,DARK BROWN,BLACK,WHITE	1331m	South
GW023265	0.00m-3.65m Sand Water Supply	1334m	North East
GW029355	0.00m-2.43m Sand 2.43m-2.74m Clay Sand 2.74m-3.20m Sand Hard Cemented 3.20m-11.27m Sand 11.27m-14.02m Sand Clayey 14.02m-14.32m Sand Water Supply 14.32m-15.24m Sand White Water Supply 15.24m-28.95m Sand Water Supply 28.95m-28.97m Sandstone	1345m	North
GW022239	0.00m-0.30m Loam Sandy 0.30m-0.91m Sand 0.91m-1.82m Sand Grey 1.82m-2.13m Sand Hard Cemented 2.13m-3.04m Sand Dark Brown 3.04m-7.62m Sand 7.62m-8.53m Sand Peaty 8.53m-11.27m Sand 11.27m-12.19m Clay Peaty 12.19m-13.71m Sand Dirty 13.71m-14.02m Clay Grey 14.02m-14.63m Sand Clean 14.63m-15.24m Peat 15.24m-16.76m Sand Dirty Water Supply 16.76m-22.55m Sand Water Supply 22.55m-24.07m Peat Water Supply 24.07m-24.99m Sand Dirty Water Supply 24.99m-27.12m Clay Grey Water Supply 27.12m-30.41m Sand Grey Dirty Water Supply 30.41m-33.68m Sand Grey Water Supply 33.68m-33.83m Peat Water Supply	1349m	West

Groundwater No	Drillers Log	Distance	Direction
GW027616	0.00m-0.91m Sand Made Ground 0.91m-1.82m Sand Hard Cemented 1.82m-3.65m Sand White 3.65m-5.48m Sand White Some Clay 5.48m-8.22m Sand 8.22m-10.05m Sand Slightly Peaty Water Supply 10.05m-12.19m Sand Yellow Some Clay Water Supply 12.19m-27.43m Sand White Water Supply 27.43m-32.00m Sand Water Supply 32.00m-32.61m Sandstone Decomposed	1358m	North
GW101330	0.00m-9.00m sand	1365m	North East
GW023991	0.00m-1.52m Sand White 1.52m-3.04m Sand Hard Cemented 3.04m-5.79m Sand Yellow Water Supply	1366m	North
GW101072	0.00m-10.00m Sand	1375m	North
GW112525	0.00m-4.50m SAND LIGHT BROWN 4.50m-9.00m SAND YELLOW 9.00m-17.00m SAND LIGHT BROWN 17.00m-21.50m SAND GREY 21.50m-26.00m SAND LIGHT BROWN 26.00m-30.00m SAND WHITE	1381m	North
GW017641	0.00m-1.37m Peat 1.37m-5.18m Sand Peaty 5.18m-14.23m Sand Water Supply 14.23m-21.33m Wood Peat 21.33m-22.86m Sand Peaty Peat 22.86m-24.38m Sand Peaty Wood Water Supply 24.38m-27.12m Sand Water Supply	1400m	West
GW023270	0.00m-3.65m Sand 3.65m-3.74m Sand Hard Cemented 3.74m-5.18m Sand White 5.18m-7.01m Sand Water Supply	1401m	North
GW101333	0.00m-5.00m sand	1401m	South
GW102697	0.00m-1.00m FILL 1.00m-4.50m SAND MED. FINE	1402m	South West
GW102698	0.00m-1.00m fill 1.00m-4.50m sand med. fine	1402m	South West
GW025710	0.00m-0.91m Made Ground 0.91m-4.57m Sand Dirty 4.57m-9.44m Sand Peaty 9.44m-14.02m Sand Peaty Peat Wood Water Supply 14.02m-17.06m Sand Yellow Peat Water Supply 17.06m-17.67m Peat Wood Water Supply 17.67m-19.50m Sand Peaty Water Supply 19.50m-22.55m Sand Yellow Clean Water Supply 22.55m-26.21m Sand Yellow Peat Water Supply 26.21m-29.56m Sand White Peat Bands Water Supply 29.56m-29.71m Clay Grey	1404m	West
GW100448	0.00m-9.15m UNCONSOLIDATED - ALL SAND	1410m	North West
GW102700	0.00m-1.00m FILL 1.00m-4.50m SAND MED. FINE	1416m	South West
GW102699	0.00m-1.00m FILL 1.00m-4.50m SAND MED. FINE	1419m	South West
GW013437	0.00m-1.68m Peat 1.68m-2.29m Sand 2.29m-3.96m Sand Yellow Water Supply 3.96m-4.42m Clay Grey 4.42m-9.45m Sand Grey Water Supply 9.45m-11.89m Sand Yellow 11.89m-15.85m Sand White Water Supply 15.85m-15.86m Clay Seam 15.86m-20.42m Sand Light Yellow Clay Bands Water Supply 20.42m-20.73m Clay Grey 20.73m-21.35m Sandstone White Hard	1420m	South West
GW101322	0.00m-5.00m sand	1431m	South
GW102701	0.00m-1.00m FILL 1.00m-4.50m SAND MED. FINE	1435m	South West

Groundwater No	Drillers Log	Distance	Direction
GW111215	0.00m-0.05m BITUMEN 0.05m-0.60m FILL,SAND,GRAVEL , BRICK 0.60m-2.30m SAND DARK GREY FINE 2.30m-5.00m LIGHT GREY YELLOW SAND 5.00m-9.10m YELLOW WHITE SAND 9.10m-11.80m DARK GREY FINE SAND 11.80m-13.60m DENSE FINE SAND 13.60m-14.00m COFFEY ROCK 14.00m-16.30m FINE SAND DARK GREY	1435m	West
GW101332	0.00m-5.00m sand	1437m	South
GW114468	0.00m-0.10m CONCRETE SLAB 0.10m-0.30m FILLING DARK GREY,SAND AND SILT 0.30m-0.60m FILING BLACK DARK GREY,SOME GRAVEL 0.60m-3.13m SAND,L/BROWN FINE GRAINED,SILT	1442m	South West
GW107578	0.00m-16.47m Sand, unconsolidated	1448m	North
GW108657	0.00m-15.00m sand	1449m	North East
GW023591	0.00m-3.65m Sand Water Supply 3.65m-3.67m Clay	1451m	South
GW114464	0.00m-0.20m FILLING,GREY GRAVEL 0.20m-0.35m CONCRETE 0.35m-0.70m FILLING TRACE OF GRAVEL 0.70m-1.30m FILLING DARK GREY/BLACK SANDY SILT 1.30m-1.40m FILLING LIGHT GREY 1.40m-1.60m FILLING DARK GREY TO BLACK,SOME SAND 1.60m-1.70m FILLING DARK GREY CLAYEY SANDY SILT 1.70m-2.40m SAND,MEDIUM GREY 2.40m-4.00m SAND LIGHT YELLOW BROWN	1452m	South West
GW102702	0.00m-1.00m FILL 1.00m-4.50m SAND MED. FINE	1453m	South West
GW114467	0.00m-0.10m CONCRETE SLAB 0.10m-0.55m FILLING GREY 0.55m-0.75m FILLING YELLOW GREY 0.75m-1.40m FILLING BLACK SANDY GRAVEL 1.40m-1.90m FILLING ,BLACK SILT 1.90m-3.00m SAND YELLOW TO YELLOW GREY	1455m	South West
GW114466	0.00m-0.15m CONCRETE 0.15m-0.45m FILING GREY BROWN,SAND AND GRAVEL 0.45m-0.60m FILLING DARK GREY BLACK 0.60m-0.85m FILLING GREY BLACK AND GRAVEL 0.85m-1.15m FILLING GREY BLACK,SILTY SAND 1.15m-1.25m FILLING GREY/SANDY SILT 1.25m-1.35m FILLING BROWN GREY /SILTY SAND 1.35m-1.45m FILLING GREY BLACK 1.45m-2.15m FILLING L/BROWN GREY/SAND/SILT 2.15m-3.00m SAND LIGHT GREY WITH TRACE SILT	1459m	South West
GW111150	0.00m-12.00m SAND	1462m	North East
GW073502	0.00m-11.28m All Clear Sand (unconsolidated)	1467m	North East
GW108394	0.00m-16.00m SAND	1471m	North
GW017350	0.00m-0.76m Soil Black Sandy Made Ground 0.76m-2.43m Sand Light Brown 2.43m-3.65m Sand Grey Dirty 3.65m-11.36m Sand Light Brown Water Supply 11.36m-12.58m Peat 12.58m-15.24m Sand Dark Brown Water Supply 15.24m-26.82m Sand Grey Clean 26.82m-26.97m Peat 26.97m-28.19m Sand Dark Grey 28.19m-28.28m Peat 28.28m-31.85m Sand 31.85m-32.30m Clay Grey Sandy	1476m	West
GW102294	0.00m-10.00m Sand	1476m	North

Groundwater No	Drillers Log	Distance	Direction
GW111217	0.00m-0.05m BITUMEN 0.05m-0.60m FILL,SAND, GRAVEL 0.60m-2.30m DARK GREY FINE SAND 2.30m-5.00m LIGHT GREY YELLOW SAND 5.00m-9.10m YELLOW WHITE SAND 9.10m-11.80m DARK GREY FINE SAND 11.80m-13.60m DENSE FINE SAND 13.60m-14.00m COFFEY ROCK 14.00m-16.30m FINE SAND DARK GREY	1480m	West
GW102687	0.00m-4.60m FINE QUARTZ SAND 4.60m-5.00m SANDY CLAY	1486m	South
GW114469	0.00m-0.05m FILLING RED BROWN 0.05m-0.25m FILLING GRAVELLY CLAYEY SAND 0.25m-0.30m FILLLING ORANGE PINK SANDSTONE 0.30m-0.70m FILLING BLACK SILT,TRACE OF SAND 0.70m-1.20m FILLING DARK GREY, SILTY ,F/GRAINED 1.20m-1.80m SAND YELLOW BROWN FINE GRAINED 1.80m-4.00m SAND LIGHT GREY,FINE GRAINED	1486m	South West
GW114465	0.00m-0.14m CONCRETE SLAB 0.14m-0.50m FILLING DARK GREY/ GRAVEL 0.50m-0.70m FILLING DARK GREY /SANDY CLAY 0.70m-1.11m FILLING BLACK ORGANIC CLAYEY SILT 1.11m-1.60m FILLING LIGHT BROWN,SAND 1.60m-2.40m FILLING LIGHT BROWN,SAND WITH ORGANIC MATTER	1490m	South West
GW107765	0.00m-12.00m Sand, unconsolidated	1491m	North East
GW017642	0.00m-0.30m Ash 0.30m-4.57m Sand Dry 4.57m-8.22m Sand 8.22m-10.66m Sand Wet Peaty 10.66m-12.19m Sand Dark Brown Water Supply 12.19m-15.24m Sand Peaty 15.24m-17.37m Sand Water Supply 17.37m-19.75m Sand Dirty Water Supply 19.75m-20.11m Clay Peaty 20.11m-21.33m Sand Dark Brown Water Supply 21.33m-23.01m Sand Dirty Water Supply 23.01m-23.02m Clay Peaty	1495m	West
GW072911		1498m	South
GW101550	0.00m-5.00m SAND	1499m	South
GW026584	0.00m-6.09m Sand Grey	1508m	North East
GW072910		1509m	South
GW111219	0.00m-0.05m BITUMEN 0.05m-0.60m FILL SAND GRAVEL 0.60m-2.30m DARK GREY FINE SAND 2.30m-5.00m LIGHT GREY YELLOW SAND 5.00m-9.10m YELLOW WHITE SAND 9.10m-11.80m DARK GREY FINE SAND 11.80m-13.60m DENSE FINE SAND 13.60m-14.00m COFFEY ROCK 14.00m-16.30m FINE SAND DARK GREY	1513m	West
GW028592	0.00m-0.76m Loam Sandy 0.76m-1.06m Sand 1.06m-2.13m Sand Peaty 2.13m-2.43m Peat 2.43m-2.59m Sand 2.59m-3.04m Clay Sandy 3.04m-3.65m Clay Grey Soft 3.65m-4.26m Clay Sandy 4.26m-4.87m Sand Gravel Small 4.87m-5.48m Clay Sandy 5.48m-8.83m Sand 8.83m-10.66m Sand Clay 10.66m-14.63m Sand Peaty 14.63m-15.84m Wood Decomposed Peaty 15.84m-27.43m Sand Dirty Water Supply 27.43m-28.04m Peat	1514m	West
GW072994		1516m	North
GW110439	0.00m-0.50m SOIL 0.50m-12.00m SAND CLEAN	1516m	North East

Groundwater No	Drillers Log	Distance	Direction
GW013438	0.00m-1.21m Sand Grey Dry 1.21m-1.52m Sand Black Dry 1.52m-4.57m Sand Yellow Dry 4.57m-7.01m Sand Yellow Water Supply 7.01m-7.31m Sand Grey Water Supply 7.31m-7.62m Sand Clayey Fossils:peat 7.62m-13.10m Sand Grey Clay Seams Water Supply 13.10m-15.84m Sand Yellow Clay Seams Water Supply 15.84m-16.76m Sand Grey Water Supply 16.76m-18.59m Sand Grey Loose Some Solid Seams 18.59m-19.50m Sand Yellow Water Supply 19.50m-20.11m Sand White Water Supply 20.11m-20.42m Peat 20.42m-21.94m Sand White Coarse Water Supply 21.94m-22.25m Peat 22.25m-24.38m Sand White Clay Coarse Seams 24.38m-25.75m Sand Yellow Water Supply 25.75m-26.06m Clay Peaty 26.06m-26.36m Sand White Coarse Water Supply 26.36m-27.12m Clay Hard Fossils:peat 27.12m-28.80m Sand White Coarse Water Supply 27.12m-28.80m Clay Peaty Seams 28.80m-30.78m Clay Stiff Sandy 30.78m-31.69m Sand Water Supply 31.69m-32.00m Clay 32.00m-32.61m Sand Water Supply	1517m	South
GW101883	0.00m-10.00m Sand	1519m	North
GW104992	0.00m-9.00m SAND	1520m	North East
GW025540	0.00m-0.91m Sand Black 0.91m-4.87m Sand White Water Supply	1526m	North
GW108822	0.00m-14.00m sand	1530m	North
GW111375	0.00m-12.00m SAND	1532m	South
GW062280	0.00m-1.00m Fill 1.00m-6.40m Sand Peaty Water Supply 6.40m-20.80m Sand Water Supply 20.80m-21.00m Clay Dark Grey	1533m	South West
GW106752	0.00m-9.50m sand	1533m	North
GW038127	0.00m-11.89m Sand White 11.89m-14.02m Sand 14.02m-23.77m Sand Water Supply 23.77m-26.21m Peat 26.21m-29.87m Clay 29.87m-31.39m Sand Peaty 29.87m-31.39m Clay 31.39m-33.22m Sand Grey Clay 33.22m-33.24m Clay	1536m	West
GW106163	0.00m-6.00m sand 6.00m-7.00m rock	1537m	North East
GW107594	0.00m-10.00m sand	1542m	North East
GW107621	0.00m-10.00m sand	1546m	East
GW047112	0.00m-5.49m Sand White 5.49m-10.36m Sand Green 10.36m-11.89m Peat 11.89m-18.59m Sand Grey 18.59m-24.39m Sand White	1549m	South West

Groundwater No	Drillers Log	Distance	Direction
GW017639	0.00m-0.91m Sand Peaty 0.91m-1.52m Sand Light Brown 1.52m-4.57m Sand Yellow 4.57m-5.63m Sand Peaty 5.63m-8.22m Sand Dark Brown 8.22m-9.14m Clay Dark Grey Sandy 9.14m-9.44m Sand Wood 9.44m-12.19m Sand Dirty 12.19m-12.80m Sand 12.80m-15.54m Sand Dirty 15.54m-16.45m Peat 16.45m-17.06m Sand Peaty 17.06m-18.28m Clay Grey Sandy 18.28m-19.51m Clay Grey Pete 19.51m-27.43m Sand Coarse Water Supply	1554m	West
GW062281	0.00m-4.20m Fill Water Supply 4.20m-21.00m Sand Peaty Water Supply 21.00m-22.00m Clay Dark Grey	1557m	South West
GW103971	0.00m-10.00m SAND	1559m	South West
GW114470	0.00m-0.05m ASPHALT PAVEMENT 0.05m-0.40m FILLING GREY BROWN,GRAVEL AND SAND 0.40m-0.60m FILLING DARK BROWN TO GREY 0.60m-0.70m FILLING BROWN AND GREY,SILTY SAND 0.70m-0.80m FILLING MEDIUM GREY/SILTY SAND 0.80m-1.50m FILLING LIGHT GREY,SILTY SAND FILLING 1.50m-2.50m FILLING DARK BROWN,SILTY SAND 2.50m-5.00m SAND LIGHT GREY,FINE GRAINED	1561m	South West
GW073504	0.00m-7.00m Sand	1563m	South
GW025817	0.00m-4.87m Sand Yellow 4.87m-8.22m Sand Clean 8.22m-8.99m Peat Water Supply 8.99m-10.05m Sand Peaty Water Supply 10.05m-10.54m Peat Water Supply 10.54m-14.32m Sand Peaty Water Supply 14.32m-16.45m Sand 16.45m-17.98m Sand Bands 17.98m-19.50m Peat Fossils:wood 19.50m-22.86m Sand Clay Bands 22.86m-22.87m Clay	1564m	North West
GW114471	0.00m-0.15m CONCRETE SLAB 0.15m-0.35m FILLING,GREY/DARK GREYSAND AND GRAVEL 0.35m-0.95m FILLING GREY AND BROWN,SILTY SAND 0.95m-1.10m FILLING DARK BROWN,CLAYEY SILTY SAND 1.10m-2.10m FILLING DARK BROWN,SILTY SAND 2.10m-2.30m FILLING GREY DARK GREY 2.30m-2.50m FILLING LIGHT BROWN, SAND AND SILT 2.50m-2.75m FILLING DARK BROWN GREY ,SILTY SAND 2.75m-2.90m FILLING BROWN,SAND WITH SILT 2.90m-4.00m SAND L/GREY,WITH FAINT ORGANIC ODOUR	1565m	South West
GW075025	0.00m-2.00m SAND,COFFEE BROWN 2.00m-5.00m SAND,MED GRAINED,YELLOW 5.00m-7.50m SAND,FINE,WHITE 7.50m-8.00m PEAT,FINE,BLACK 8.00m-12.00m PEATY SAND,DARK BROWN 12.00m-18.00m SILTY SAND,FINE GRAINED 18.00m-24.50m SAND,MED. COARSE 24.50m-25.50m BEDROCK	1567m	North
GW100982	0.00m-6.00m SAND	1576m	South
GW109708	0.00m-1.00m FILL,MEDIUM GRAINED SAND,SOME CLAY 1.00m-1.50m FILL,FINE TO MEDIUM GRAINED,YELLOW,GREY 1.50m-3.60m FILL,BECOMING BLACK,YELLOW,GRAVEL 3.60m-4.50m SAND,FINE TO MEDIUM GRAINED 4.50m-5.50m SAND,MEDIUM GRAINED,BLACK,YELLOW,TRACE CLAY 5.50m-6.50m SAND,FINE GRAINED YELLOW,GREY,TRACE ORGANIC 6.50m-7.00m SAND BECOMING FINE TO MEDIUM GRAINED 7.00m-7.50m SAND,FINE GRAINED,YELLOW,GREY 7.50m-8.00m SAND,MEDIUM GRAINED,UNIFORM 8.00m-9.00m SAND,FINE GRAINED,YELLOW,GREY,WELL ROUNDED 9.00m-11.00m SAND MEDIUM GRAINED,UNIFORM,WELL ROUNDED,YELOW,WHITE.	1577m	South West

Groundwater No	Drillers Log	Distance	Direction
GW062073	0.00m-1.00m Sand 1.00m-5.00m Sand White Peaty 5.00m-6.00m Peat Water Supply 6.00m-12.60m Sand Water Supply 12.60m-13.00m Peat Water Supply 13.00m-15.20m Sand Peaty Water Supply 15.20m-16.40m Sand Water Supply 16.40m-17.00m Peat Water Supply 17.00m-18.20m Sand Peaty Water Supply 18.20m-21.40m Sand Grey Silty Water Supply 21.40m-29.00m Sand Light Brown Peaty Water Supply 29.00m-31.00m Clay Grey	1579m	West
GW102270	0.00m-8.00m Sand	1580m	South
GW108472	0.00m-16.00m sand	1581m	North
GW109711	0.00m-1.00m FILL,MEDIUM GRAINED SAND,SOME CLAY,GRAVEL,SILT 1.00m-1.50m FILL,FINE TO MEDIUM GRAINED,YELLOS GREY,ASH,SILT,GRAVEL 1.50m-3.60m FILL,BECOMING BLACK/YELLOW,GRAVEL,TRACE SILT 3.60m-4.50m SAND,FINE TO MEDIUM GRAINED,UNIFOR,WELL ROUNDED 4.50m-5.50m SAND.MEDIUM GRAINED,BLACK,YELLOW,CLAY,MINOR PEAT LAYER 5.50m-6.50m SAND,FINE GRAINED,YELLOS\W,GREY,ORGANIC GRAINS 6.50m-7.00m SAND BECOMING FINE TO MEDIUM GRAINED 7.00m-7.50m SAND,FINE GRAINED,YELLOW,GREY,ORGANIC GRAINS 7.50m-8.00m SAND,MEDIUM GRAINED,UNIFORM,YELLOW / WHITE 8.00m-9.00m SAND,FINE GRAINED,YELLOW,GREY,WELL ROUNDED 9.00m-11.00m SAND,MEDIUM GRAINED,UNIFORM,WELL ROUNDED,YELLOW/WHITE	1584m	South West
GW023529	0.00m-0.91m Sand Grey 0.91m-6.70m Sand White Water Supply	1586m	North
GW107385	0.00m-9.50m Sand	1586m	North East
GW102740	0.00m-10.00m SAND	1589m	West
GW020494	0.00m-2.74m Sand 2.74m-2.89m Peat 2.89m-6.09m Sand Dirty 6.09m-10.66m Sand Dirty 10.66m-11.58m Sand Peaty 11.58m-13.71m Sand Dirty Water Supply 13.71m-14.63m Sand Clean Water Supply 14.63m-15.24m Peat 15.24m-16.76m Sand Dirty Peaty Water Supply 16.76m-18.59m Sand Peaty Water Supply 18.59m-24.38m Sand Clean Water Supply 24.38m-24.99m Wood Peaty 24.99m-26.21m Sand Dirty Water Supply 26.21m-26.82m Peat 26.82m-28.04m Sand Clean Water Supply 28.04m-28.65m Clay Peaty 28.65m-29.87m Sand Water Supply 29.87m-30.93m Sand Dirty Water Supply 30.93m-30.96m Clay Peaty	1593m	West
GW046836	0.00m-6.10m Sand White 6.10m-7.92m Sand Yellow 7.92m-10.97m Sand Some Traces Clay Fine 10.97m-14.63m Sand White 14.63m-16.46m Sand 16.46m-18.29m Sand White 18.29m-18.90m Sand Water Supply 18.90m-21.95m Sand White Water Supply 21.95m-24.08m Sand Dirty Water Supply 24.08m-24.38m Sand White Water Supply 24.38m-25.91m Sand Water Supply 25.91m-35.97m Sand White Water Supply 35.97m-37.49m Sand Some Clay 37.49m-37.80m Clay Grey	1593m	North
GW108448	0.00m-16.00m Sand	1594m	North
GW062282	0.00m-4.00m Fill Water Supply 4.00m-13.00m Sand Peaty Water Supply 13.00m-13.50m Peat Water Supply 13.50m-19.00m Sand Peaty Water Supply 19.00m-20.80m Sand Water Supply 20.80m-22.50m Clay Dark Grey Water Supply	1599m	South West

Groundwater No	Drillers Log	Distance	Direction
GW111247	0.00m-1.00m TOPSOIL 1.00m-3.00m SILT 3.00m-19.00m SAND 19.00m-20.00m PEAT/COAT 20.00m-36.00m SAND	1601m	North
GW100557	0.00m-5.00m SAND	1603m	South
GW013849	0.00m-0.60m Sand Grey 0.60m-1.52m Sand Hard Cemented 1.52m-5.18m Sand Dry 5.18m-6.09m Clay Black 6.09m-10.05m Sand Some Hard Cemented 10.05m-18.59m Sand White Water Supply 18.59m-19.20m Clay Seams 19.20m-19.81m Sand Water Supply 19.81m-19.96m Peat Seams 19.96m-22.25m Sand Grey Gravel Water Supply 22.25m-23.16m Clay Grey Stiff 23.16m-24.00m Sand Grey 24.00m-24.60m Peat 24.60m-28.24m Sand Grey Clay 28.24m-29.87m Peat Clay	1604m	South West
GW102221	0.00m-9.50m Sand	1608m	West
GW101334	0.00m-5.00m sand	1609m	South East
GW106499	0.00m-0.60m CONCRETE,BROWN SAND,ROCK FRAG.	1609m	West
GW104930	0.00m-7.00m SANDS	1610m	West
GW106497	0.00m-0.35m CONCRETE 0.35m-0.80m SAND DARK GREY, M/GREY 0.80m-1.20m SAND MOTTLED WHITES,BRICK FRAG.	1610m	West
GW106496	0.00m-0.35m CONCRETE 0.35m-0.80m SAND ORANGE, M/G 0.80m-1.20m SAND DARK GREY 1.20m-1.60m PEAT COFFEE ROCK 1.60m-3.00m SAND YELLOW/ORANGEY M/G 3.00m-6.20m SAND WHITE/PALE GREY,M/G	1614m	West
GW023988	0.00m-7.16m Sand White Water Supply	1615m	South East
GW106498	0.00m-0.40m CONCRETE,FILL SAND,DARK GREY 0.40m-0.75m NATURAL SAND,WHITE PALE GREY 0.75m-1.25m COFFEE ROCK	1618m	West
GW106492	0.00m-0.45m FILL, DARK BROWN SAND 0.45m-4.50m NATURAL SAND PAL ORANGE,WHITE,M/G 4.50m-6.30m WATER,SAND SATURATED	1624m	West
GW106495	0.00m-0.45m FILL BLACK TO DARK GREY SAND 0.45m-1.30m SAND GREY	1624m	West
GW032273	0.00m-1.61m Sand 1.61m-2.46m Sand Some Hard Cemented 2.46m-7.31m Sand 7.31m-8.22m Peat 8.22m-9.14m Sand Peaty 9.14m-9.75m Sand Clayey 9.75m-10.66m Sand 10.66m-12.19m Peat Wood 12.19m-19.20m Sand Water Supply 19.20m-19.50m Peat 19.50m-21.03m Sand Grey Water Supply 21.03m-23.46m Clay Grey Sandy 23.46m-27.12m Sand Grey Dirty 27.12m-28.34m Peat 28.34m-31.39m Clay Grey 28.34m-31.39m Sand Grey Water Supply	1625m	West

Groundwater No	Drillers Log	Distance	Direction
GW019633	0.00m-4.57m Sand 4.57m-6.09m Sand Wet 6.09m-7.31m Sand Peaty 7.31m-10.97m Sand 10.97m-11.58m Sand Dark Brown 11.58m-14.63m Sand 14.63m-14.93m Clay Sandy 14.93m-16.15m Sand 16.15m-16.76m Clay Peaty 16.76m-18.28m Sand 18.28m-18.89m Peat Bands 18.89m-19.50m Clay Sandy 19.50m-20.72m Sand White 20.72m-21.94m Sand 21.94m-22.55m Sand Yellow 22.55m-24.99m Sand Gravel 24.99m-29.87m Sand Clean 29.87m-33.52m Sand White Clean 33.52m-34.13m Sand Yellow 34.13m-35.05m Sand Peaty	1627m	North
GW047417	0.00m-0.20m Sand Black Peat 0.20m-7.20m Sand Yellow Water Supply 7.20m-7.50m Clay Yellow Sandy Water Supply 7.50m-8.20m Peat Sandy Water Supply 8.20m-12.60m Peat Water Supply 12.60m-18.10m Sand Peat Water Supply 18.10m-18.40m Sand Dirty Silty Water Supply 18.40m-19.00m Peat Water Supply 19.00m-19.20m Sand Yellow Water Supply 19.20m-20.30m Sand Water Supply 20.30m-23.34m Clay Yellow Water Supply 20.30m-23.34m Sand Small Bands 23.34m-23.50m Sandstone	1630m	North West
GW106950	0.00m-7.00m sand	1635m	South
GW022471	0.00m-1.21m Made Ground 1.21m-3.65m Sand Peaty 3.65m-4.57m Sand Peaty Wet 4.57m-9.14m Sand Dirty 9.14m-10.66m Sand Peaty Water Supply 10.66m-15.24m Sand Dirty 15.24m-19.50m Sand Water Supply 19.50m-20.72m Sand Dirty 20.72m-21.03m Sand Peaty Dirty 21.03m-23.77m Sand Peaty Wood 23.77m-25.90m Sand Peaty 25.90m-27.43m Clay Grey 27.43m-28.95m Sand Dirty Peaty 28.95m-32.91m Sand Dirty 32.91m-33.07m Clay Grey	1640m	South West
GW106494	0.00m-0.45m FILL,DARK GREY TO BLACK SAND 0.45m-0.90m SAND/BROWN/ORANGE 0.90m-2.50m COFFEE ROCK,BROWN/ORANGE,HARD 2.50m-7.30m SAND WHITE,PALE GREY M/G	1643m	West
GW106493	0.10m-0.25m FILL,SAND GREY MOTTLED WHITES,BLACKS 0.25m-0.70m COFFE ROCK PEAT 0.70m-1.10m NATURAL SAND,ORANGE/YELLOW,M/G	1649m	West
GW024024	0.00m-0.60m Sand Grey 0.60m-6.09m Sand White Water Supply	1655m	North East
GW101070	0.00m-5.00m sand	1661m	South East
GW025707	0.00m-5.18m Sand Water Supply	1666m	East
GW024206	0.00m-1.21m Topsoil Grey 1.21m-5.48m Sand Yellow Water Supply	1667m	North East
GW106951	0.00m-7.00m sand	1670m	South
GW110423	0.00m-12.00m UNCONSOLIDATED ALL SANDS	1671m	North East
GW108494	0.00m-6.10m Sand, unconsolidated	1674m	South
GW101711	0.00m-10.00m SAND	1675m	West
GW023841	0.00m-4.57m Sand Water Supply	1680m	North East

Groundwater No	Drillers Log	Distance	Direction
GW101074	0.00m-5.00m Sand	1681m	South East
GW013397	0.00m-1.82m Sand Grey 1.82m-2.43m Sand Hard Cemented 2.43m-3.65m Sand 3.65m-4.87m Sand Clay 4.87m-6.09m Sand Yellow 6.09m-6.55m Sandstone Soft 6.55m-7.62m Sand White 7.62m-7.92m Sandstone Soft 7.92m-13.71m Sand Yellow 13.71m-13.86m Clay Yellow 13.86m-17.98m Sand Yellow Water Supply 17.98m-18.28m Clay Sandy 18.28m-19.20m Sand Yellow Water Supply 19.20m-19.81m Sand Water Supply 19.81m-23.77m Sand Yellow Water Supply 23.77m-24.38m Clay Grey Sandy 24.38m-26.51m Sand White Water Supply 26.51m-27.12m Clay Sandy Water Supply 27.12m-27.43m Sand Grey 27.43m-27.73m Sandstone	1690m	South
GW111600	0.00m-20.00m SANDS,FINE,VERY FINE,DK GREY IN COLOUR	1690m	North
GW111624	0.00m-31.00m BOTANY SANDS 31.00m-36.00m HAWKESBURY SANDSTONE	1690m	North
GW101721	0.00m-6.00m SAND	1691m	West
GW109194	0.00m-0.20m FILL,GRAVEL 0.20m-2.00m SAND,FINE TO MEDIUM GRAINED. 2.00m-3.00m SAND, FINE TO MEDIUM GRAINED,YELLOW 3.00m-3.60m SAND,F/TO MEDIUM GR. L/BROWN.MOIST 3.60m-7.00m SAND,FINE TO MEDIIUM,GR. TAN,MOIST	1698m	South West
GW107337	0.00m-0.30m topsoil 0.30m-2.50m sand, yellow 2.50m-3.00m rock, coffee 3.00m-6.00m sand, brown	1705m	East
GW013383	0.00m-7.31m Sand White Dry 7.31m-9.14m Sand Dark Grey Water Supply 9.14m-10.36m Sand Dark Brown Water Supply 10.36m-16.61m Sand Water Supply 16.61m-18.28m Peat Wood Dry 18.28m-21.33m Sand Grey Clean Water Supply 21.33m-24.99m Sand Light Brown Water Supply 24.99m-26.21m Sand Dark Brown Water Supply 26.21m-28.04m Sand Dark Grey Water Supply 28.04m-34.13m Sand Dark Brown Peat Water Supply 34.13m-34.15m Clay Peaty	1711m	West
GW105904	0.00m-2.00m FILL,SAND BROWN/S/S,BRICK,CONCRETE 2.00m-3.60m SAND,FINE TO MEDIUM GRAINED 3.60m-11.40m SAND, MEDIUM GRAINED, WHITE,YELLOW 11.40m-11.90m CLAY,PEAT,DARK BROWN 11.90m-15.60m SAND,YELLOW,WHITE 15.60m-21.00m SAND,UNIFORM, WELL ROUNDED	1717m	South West
GW109171	0.00m-0.10m BITUMEN 0.10m-0.30m SAND,LIGHT / BROWN 0.30m-0.60m SAND GREY 0.60m-0.90m SAND,RED BROWN 0.90m-5.60m SAND YELLOW	1720m	South
GW101323	0.00m-6.00m sand	1729m	South
GW109196	0.00m-0.20m CONCRETE 0.20m-0.30m FILL,ROADBASE,GRAVEL 0.30m-2.20m SAND,FINE TO MEDIUM GRAINED 2.20m-3.50m SAND,FINE TO MEDIUM GR. L/BROWN 3.50m-4.00m SAND,FINE TO MEDIUM,YELLOW,TAN	1730m	South West
GW109198	0.00m-0.20m CONCRETE 0.20m-0.30m FILL, ROADBASE 0.30m-1.60m SAND,FINE TO MED. GRAINED 1.60m-2.50m SAND,FINE TO MED. GRAINED YELLOW,MOIST 2.50m-3.10m SAND, FINE TO MED,GRAINED,YELLOW,TAN 3.10m-4.00m SAND,FINE TO MED GRAINED,YELLOW,TAN,MOIST	1731m	South West

Groundwater No	Drillers Log	Distance	Direction
GW017351	0.00m-0.54m Made Ground 0.54m-1.67m Ash 1.67m-4.57m Sand Grey 4.57m-5.79m Sand 5.79m-6.40m Sand Light Grey 6.40m-7.62m Sand Grey Dirty 7.62m-8.83m Sand White Water Supply 8.83m-9.44m Sand Yellow 9.44m-9.84m Sand White 9.84m-10.21m Clay Peaty 10.21m-13.80m Sand Dark Brown Water Supply 13.80m-14.63m Peat 14.63m-18.53m Sand Water Supply 18.53m-19.20m Peat 19.20m-22.25m Sand Water Supply 22.25m-22.55m Sand Grey 22.55m-22.57m Peat	1733m	West
GW072888	0.00m-9.00m SAND	1735m	South East
GW112607	0.00m-13.00m SANDY CLAY,WET,ORANGE BROWN,FIRM	1738m	East
GW013576	0.00m-2.13m Sand Greasy 2.13m-5.63m Sand Light Brown 5.63m-6.40m Mud Peaty 6.40m-9.44m Sand White Water Supply 9.44m-13.19m Sand White Yellow Water Supply 13.19m-13.41m Sand Light Brown Wet Water Supply 13.41m-18.59m Sand Light Brown Water Supply 18.59m-18.65m Clay Peaty 18.65m-21.64m Sand River Coarse Water Supply 21.64m-22.09m Sand Greasy Water Supply 22.09m-25.60m Sand, with peat bands, and hard cemented bands, water supply 25.60m-26.06m Sand Greasy Water Supply 26.06m-26.15m Clay White 26.15m-26.51m Sand Water Supply 26.51m-26.57m Clay 26.57m-26.82m Sand Water Supply 26.82m-26.91m Clay 26.91m-27.12m Sand Water Supply 27.12m-27.49m Peat	1739m	South
GW110378	0.00m-0.20m CONCRETE 0.20m-0.40m ASPHALT 0.40m-1.40m SAND,FINE GRAINED,BROWN AND ORANGE 1.40m-5.00m SAND,FINE GRAINED,LIGHT BROWN 5.00m-7.00m SAND,FINE GRAIN,LIGHT YELLOW,MOIS	1739m	South West
GW072480	0.00m-8.74m UNCONSOLIDATED ALL SANDS 8.74m-8.80m CLAY	1743m	South East
GW112608	0.00m-13.00m SANDY CLAY,WET,ORANGE,BROWN.FIRM	1743m	East
GW025656	0.00m-3.96m Sand 3.96m-4.87m Aquifer Water Supply	1744m	East
GW100996	0.00m-9.76m UNCONSOLIDATED SAND	1750m	West
GW101335	0.00m-10.67m unconsolidated - all sand.	1750m	West
GW106005	0.00m-12.29m sand	1752m	North
GW100563	0.00m-5.00m Sand	1755m	South
GW105905	0.00m-1.70m FILL,GRAVELLY SAND 1.70m-4.00m SAND,MEDIUM GRAINED 4.00m-9.60m SAND,YELLOW,WHITE 9.60m-10.00m PEAT LAYER 10.00m-16.40m SAND,MEDIUM GRAINED,YELLOW,WHITE 16.40m-21.00m SAND,UNIFORM,WELL ROUNDED	1755m	South West
GW106661	0.00m-15.25m sand, unconsolidated	1756m	North
GW112609	0.00m-13.00m SANDY CLAY,WET,ORANGE,BROWN,FIRM	1756m	East
GW108711	0.00m-9.15m sand	1758m	South East

Groundwater No	Drillers Log	Distance	Direction
GW032339	0.00m-0.60m Made Ground 0.60m-10.05m Sand 10.05m-13.10m Clay Sandy 13.10m-16.15m Sand Dark Brown 16.15m-21.33m Sand Water Supply 21.33m-21.94m Sand Peat Bands Water Supply 21.94m-27.12m Clay Peaty 27.12m-28.95m Clay Dirty Water Supply 28.95m-30.48m Clay Peaty 30.48m-32.00m Peat Clay 32.00m-33.22m Clay Grey Sandstone	1761m	West
GW110376	0.00m-0.10m CONCRETE 0.10m-0.25m FILL,GRAVELLY SAND,GRAVEL M/GRAINED 0.25m-7.50m SAND,FINE TO COARSE,YELLOW L/BROWN	1762m	South West
GW013844	0.00m-9.14m Sand Dry 9.14m-12.19m Clay Sandy Bands 12.19m-15.24m Sand Wet 15.24m-20.11m Sand Water Supply 20.11m-21.33m Clay Grey Stiff	1763m	South West
GW107739	0.00m-10.00m sand	1763m	South East
GW072974		1769m	North
GW013387	0.00m-1.82m Sand 1.82m-9.14m Sand Dry 9.14m-11.58m Sand Black 9.14m-11.58m Peat Some 11.58m-12.34m Clay Black 12.34m-16.15m Sand Grey Water Supply 16.15m-16.76m Sand Hard Cemented 16.76m-18.28m Sand Dry 18.28m-19.65m Clay 19.65m-24.99m Sand Grey Water Supply 24.99m-26.82m Sand Water Supply 26.82m-28.65m Sand Pete Water Supply 28.65m-34.75m Sand Grey Pete Water Supply	1773m	West
GW110015	0.00m-0.20m CONCRETE 0.20m-0.50m SAND,FINE GRAINED,BROWN,FEW GRAVEL 0.50m-7.00m SAND,BROWN,FINE GRAINED,WHITE,WET,STRONG HYDROCARBON ODOUR	1775m	West
GW111248	0.00m-2.00m TOPSOIL 2.00m-16.00m SAND 16.00m-17.00m PEAT AND COAL 17.00m-30.00m SAND	1777m	North
GW022536	0.00m-6.70m Sand Grey Dry 6.70m-8.83m Sand Peaty Wet 8.83m-9.14m Sand Hard Cemented 9.14m-12.80m Sand Water Supply 12.80m-15.84m Sand Grey Peat 15.84m-16.45m Peat 16.45m-17.98m Peat Sandy Water Supply 17.98m-24.68m Sand Water Supply 24.68m-25.60m Sand Peaty 25.60m-26.82m Sand Wood 26.82m-27.43m Sand Dirty 26.82m-27.43m Peat 27.43m-27.82m Clay Peaty	1780m	South West
GW101679	0.00m-7.00m Sand	1781m	East
GW105622	0.00m-8.23m sand, unconsolidated	1785m	South East
GW109197	0.00m-0.20m CONCRETE 0.20m-0.40m FILL,ROADBASE 0.40m-2.00m SAND,FINE TO MEDIUM,GRAINED,L/GREY 2.00m-2.20m SAND,FINE TO MED. GRAINED 2.20m-3.50m SAND,FINE TO MED GR. MOIST 3.50m-5.00m SAND FINE TO MED. L/GREY 5.00m-7.00m SAND.FINE TO MED GR. WET,SWEET ODOUR	1785m	West
GW105906	0.00m-2.00m FILL.GRAVELLY SAND 2.00m-6.20m SAND,MEDIUM GRAINED 6.20m-10.50m SAND,GRAINED,FIRMER THEN ABOVE 10.50m-11.00m CLAYEY PEAT,DARK BROWN 11.00m-16.40m SAND,MEDIUM GRAINED,WHITE,YELLOW 16.40m-21.00m SAND,M/GRAINED,UNIFORM,YELLOW	1789m	South West

Groundwater No	Drillers Log	Distance	Direction
GW005451	0.00m-0.91m Sand Grey 0.91m-1.21m Sand Hard Cemented 1.21m-3.04m Sand Yellow 3.04m-5.48m Sand Light Yellow 5.48m-6.09m Clay Sandy 6.09m-17.98m Sand Light Yellow Water Supply 17.98m-18.59m Clay White 18.59m-18.89m Peat 18.89m-21.33m Sand Water Supply 21.33m-21.64m Clay Soft 21.64m-22.55m Sand Coarse Water Supply 22.55m-23.16m Wood Peat 23.16m-24.68m Sand Grey 24.68m-24.99m Clay Grey 24.99m-27.12m Sand Grey Coarse Water Supply 27.12m-28.04m Clay Sandy 28.04m-29.26m Sand Coarse Water Supply 29.26m-29.87m Stones Loose Pyrite 29.87m-32.00m Sand Grey Water Supply 32.00m-32.30m Stones Large Loose Water Supply 32.30m-34.13m Clay Grey Tight 34.13m-36.57m Clay Grey Soft 36.57m-37.79m Sandstone Grey Soft 37.79m-38.40m Clay Grey Soft 38.40m-39.92m Sand White Water Supply 39.92m-41.45m Clay White Stiff 41.45m-45.11m Sand Light Brown Water Supply 45.11m-46.02m Mud 46.02m-46.63m Clay 46.63m-47.54m Sandstone	1792m	South
GW107869	0.00m-6.10m sand	1797m	South
GW108601	0.00m-6.10m sand	1798m	South
GW107629	0.00m-9.15m Sand, unconsolidated	1799m	South East
GW111744	0.00m-6.10m UNCONSOLIDATED ALL SANDS.	1802m	South
GW102220	0.00m-5.00m Sand	1803m	South
GW109709	0.00m-3.00m FILL,GRAVELLY SAND,MEDIUM GRAIN,ORANGE 3.00m-8.00m SAND,MEDIUM GRAIN,DARK BROWN,YELLOW 8.00m-10.00m PEAT LAYER,DARK BROWN , STIFF 10.00m-21.00m SAND MEDIUM GRAIN,YELLOW,UNIFORM,,WHITE,UNIFORM	1803m	South West
GW109195	0.00m-0.20m CONCRETE 0.20m-0.40m FILL,ROADBASE 0.40m-2.00m SAND,L/GREY/BROWN,TAN,MOIST 2.00m-3.50m SAND,ORANGE/BROWN,MOIST 3.50m-5.50m SAND,LIGHT,ORANGE,TAN 5.50m-7.80m SAND,L/TAN,FINE TO MED.	1808m	West
GW060595	0.00m-2.50m Sand Grey 2.50m-3.00m Sand Dark Brown Indurated 3.00m-6.50m Sand White Water Supply	1809m	South
GW105903	0.00m-3.00m FILL,BRICKS, CLAY 3.00m-6.50m BROWN SAND 6.50m-17.00m YELLOW SAND 17.00m-20.50m BROWN SAND 20.50m-21.00m DARK BROWN CLAY	1813m	South West
GW013638	0.00m-0.76m Made Ground 0.76m-1.52m Peat 1.52m-7.62m Sand 7.62m-7.92m Sand Hard Cemented 7.92m-12.98m Sand Water Supply 12.98m-13.28m Wood 13.28m-15.42m Sand 15.42m-15.54m Clay 15.54m-17.67m Sand White 17.67m-19.20m Sand Water Supply 19.20m-20.11m Clay Stiff 20.11m-20.42m Clay Grey 20.42m-20.43m Sandstone	1814m	South West

Groundwater No	Drillers Log	Distance	Direction
GW109710	0.00m-1.00m FILL,MEDIUM GRAINED SAND,SOME CLAY 1.00m-1.50m FILL,FINE TO MEDIUM,YELLOW GREY,TRACE ASH.SILT,GRAVEL 1.50m-3.60m FILL.BECOMING BLACK,YELLOW,GRAVEL 3.60m-4.50m SAND,FINE TO MEDIUM GRAINED,BLACK,YELLOW,CLAY 4.50m-5.50m SAND F/GRAINED,BLACK/YELLOW,TRACE CLAY 5.50m-6.60m SAND,F/GRAINED,ORGANIC GRAINS 6.60m-7.00m SAND,BECOMING FINE TO MEDIUM GRAINED 7.00m-7.50m SAND,FINE GRAINED,YELLOW/GREY,ORGANIC GRAINS 7.50m-8.00m SAND.M/GRAINED,UNIFOR,WELL ROUNDED 8.00m-9.00m SAND,FINE GRAINED,YELLOW/GREY,ORGANIC GRAINS 9.00m-11.00m SAND,MEDIUM GRAINED,UNIFOR,WELL ROUNDED,YELLOW/WHITE	1818m	South West
GW101812	0.00m-9.15m UNCONSOLIDATED SAND	1822m	South East
GW102472	0.00m-8.00m SAND	1822m	South
GW108698	0.00m-8.85m sand	1838m	South East
GW100051	0.00m-6.00m SAND	1841m	South
GW100299	0.00m-5.00m SAND	1849m	South
GW110380	0.00m-0.20m CONCRETE 0.20m-0.40m GRAVELLY SAND,WELL GRADED 0.40m-0.90m SAND, DARK BROWN 0.90m-1.30m SAND,FINE GRAINED 1.30m-2.20m SAND,BROWN, FINE GRAINED 2.20m-7.00m SAND,YELLOW,WHITE,VERY MOIST	1853m	West
GW105902	0.00m-3.00m FILL ROCKS 3.00m-6.00m BROWN SAND 6.00m-10.00m YELLOW SAND 10.00m-21.00m BROWN SAND	1854m	South West
GW107324	0.00m-7.00m sand	1855m	South
GW023443	0.00m-0.60m Sand Grey 0.60m-7.62m Sand Yellow Water Supply	1857m	West
GW105541	0.00m-10.06m UNCONSOLIDATED ALL SAND	1858m	South East
GW107779	0.00m-9.15m Sand, unconsolidated	1858m	South East
GW107882	0.00m-6.10m sand	1859m	South
GW107289	0.00m-14.03m Sand, unconsolidated	1860m	North
GW110377	0.00m-0.15m CONCRETE 0.15m-0.40m FILL,GRAVELLY SAND,FINE TO COARSE,GRAVEL FINE TO MEDIUM GRAINED 0.40m-2.20m SAND,FINE TO COARSE GRAINED,L/BROWN 2.20m-2.60m SAND,FINE TO MEDIUM GRAINED DARK BROWN 2.60m-3.40m SAND,FINE TO MEDIUM GRAINED,ORANGE BROWN 3.40m-5.10m SAND,FINE TO COARSE GRAINED,YELLOW L/BROWN 5.10m-7.00m SAND	1874m	West
GW105776	0.00m-0.30m topsoil 0.30m-3.50m sand, light brown 3.20m-5.00m sand, light silty brown 5.00m-6.00m sand, yellow	1888m	South
GW018547	0.00m-0.60m Made Ground 0.60m-2.74m Sand Clean Dry 2.74m-3.96m Sand Dry Peaty 3.96m-4.87m Sand Dry 4.87m-8.22m Sand White Clean 8.22m-9.75m Sand White Slightly Coloured Pete Water Supply 9.75m-12.80m Sand Very Dirty Pete Water Supply 12.80m-14.32m Sand Peaty Water Supply 14.32m-14.94m Sand Very Dirty Pete Water Supply 14.94m-16.76m Peat Water Supply 16.76m-18.28m Sand Peaty Water Supply 18.28m-21.64m Sand White Clean Water Supply 21.64m-22.25m Sand Water Supply Clay Traces Water Supply 22.25m-25.29m Sand Yellow Clean Water Supply 25.29m-29.57m Sand Grey Slightly Coloured Pete Water Supply 29.57m-32.30m Peat Sand Water Supply	1889m	South West
GW107173	0.00m-5.79m san	1892m	South
GW108230	0.00m-13.00m sand	1894m	South East

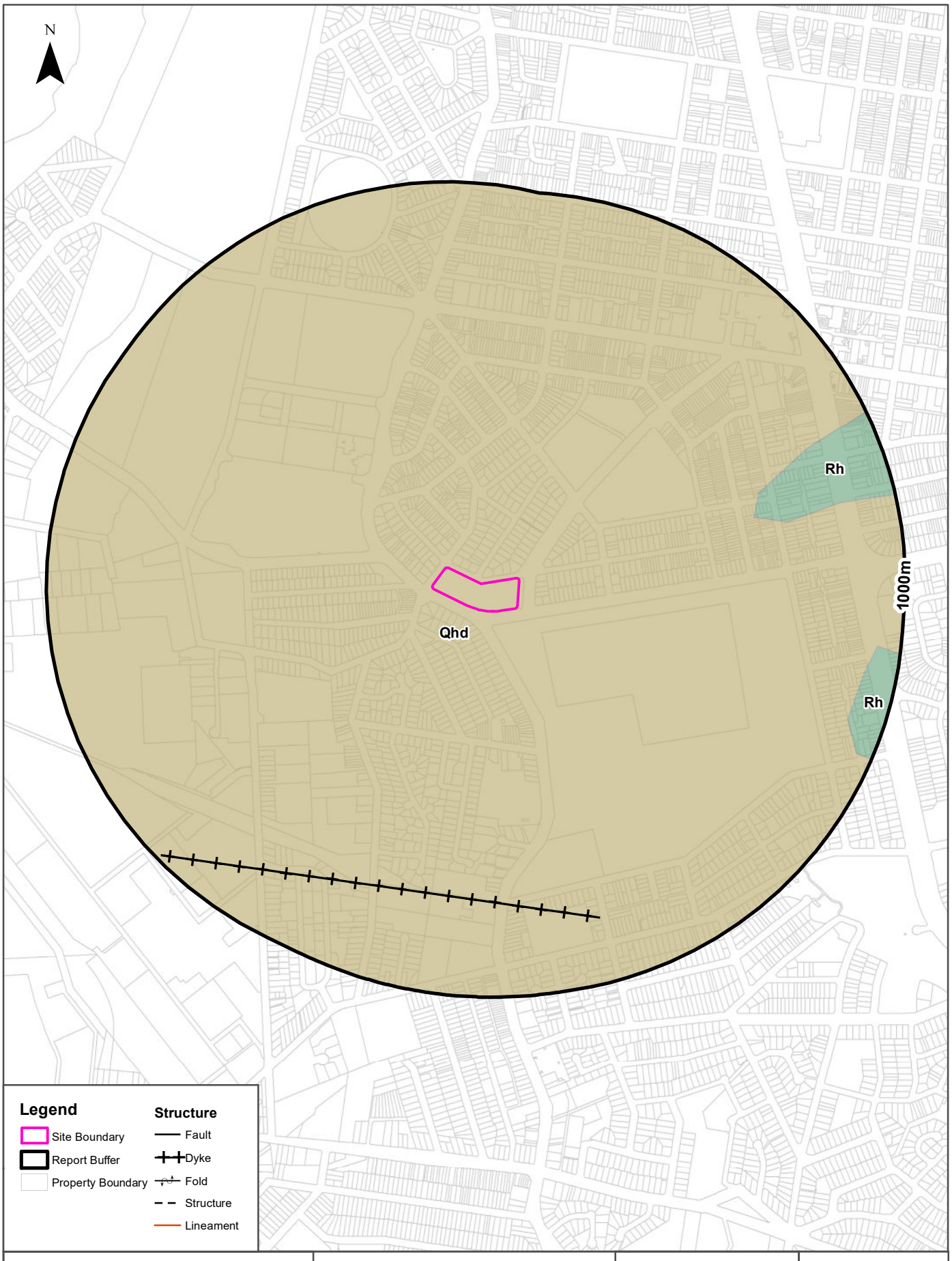
Groundwater No	Drillers Log	Distance	Direction
GW110379	0.00m-0.20m CONCRETE 0.20m-0.30m GRAVELLY SAND DARK BROWN 0.30m-7.00m SAND,DARK,BROWN,WET,WHITE,MOIST	1897m	West
GW019098	0.00m-1.82m Ash Made Ground 1.82m-8.53m Sand Dry 8.53m-10.97m Sand Peaty Hard Cemented 10.97m-12.19m Sand Dark Brown Wet 12.19m-14.32m Sand Hard Cemented Bands 14.32m-15.24m Sand Peaty 15.24m-16.61m Sand Water Supply 16.61m-18.28m Peat Solid 18.28m-20.87m Sand Clean Water Supply 20.87m-23.77m Sand Water Supply 23.77m-24.07m Sand Peat Water Supply 24.07m-27.12m Sand Water Supply 27.12m-27.43m Peat	1899m	South West
GW013434	0.00m-1.21m Made Ground 1.21m-4.87m Peat Sand 4.87m-8.53m Sand Dark Brown Water Supply 8.53m-10.97m Sand 10.97m-11.43m Peat 11.43m-13.41m Sand Water Supply 13.41m-15.54m Sand Dirty 15.54m-16.76m Sand Water Supply 16.76m-17.06m Clay Grey 17.06m-18.59m Sand Water Supply 18.59m-19.81m Sand Dirty Water Supply 19.81m-21.03m Sand Peaty 21.03m-21.64m Peat Clay 21.64m-25.90m Clay Sandy	1904m	South West
GW106430	0.00m-6.10m sand, unsolidated	1910m	South
GW102222	0.00m-9.50m Sand	1913m	North
GW101020	0.00m-7.31m UNCONSOLIDATED ALL SANDS	1924m	South East
GW022240	0.00m-0.30m Made Ground 0.30m-4.57m Sand 4.57m-8.83m Sand White 8.83m-9.75m Sand Peat 9.75m-13.10m Sand Peaty Water Supply 13.10m-14.02m Peat 14.02m-14.63m Sand Peaty Water Supply 14.63m-15.24m Peat 15.24m-16.45m Sand Peaty Water Supply 16.45m-21.64m Sand Clean Water Supply 21.64m-24.99m Sand Slightly Peaty Water Supply 24.99m-25.29m Peat 25.29m-25.31m Clay	1927m	West
GW104828	0.00m-7.00m SAND	1942m	South
GW111239	0.00m-8.00m SAND	1943m	South
GW101432	0.00m-7.00m SAND	1945m	East
GW101473	0.00m-6.00m SAND	1945m	South
GW100865	0.00m-6.71m UNCOSOLIDATED ALL SANDS	1948m	South East
GW101136	0.00m-7.32m Unconsolidated - all sand	1948m	West
GW101447	0.00m-6.00m SAND	1955m	South

Groundwater No	Drillers Log	Distance	Direction
GW013435	0.00m-1.21m Sand Dry 1.21m-1.52m Sand Hard Cemented 1.52m-6.70m Sand White 6.70m-6.85m Sand Hard Cemented 6.85m-9.29m Sand White Water Supply 9.29m-9.75m Peat 9.75m-10.97m Sand Dark Grey 10.97m-12.19m Sand Hard Cemented Peaty 12.19m-16.76m Sand Grey Water Supply 16.76m-29.71m Sand Yellow Water Supply 29.71m-30.17m Peat 30.17m-31.08m Sand Light Grey Water Supply 31.08m-31.24m Peat Clay 31.24m-33.98m Sand Grey Water Supply 33.98m-34.74m Peat Hard Fossils:wood 34.74m-35.96m Clay Dark Grey 35.96m-37.33m Sand Dark Grey Clay Seams Water Supply 37.33m-38.55m Clay Grey Shaley 38.55m-39.01m Sand Dark Grey Water Supply 39.01m-43.73m Sand Dark Grey Water Supply 39.01m-43.73m Clay Peat Bands 43.73m-44.50m Clay Light Grey Sandy 44.50m-45.72m Clay Black Stiff 45.72m-47.24m Clay Grey Stiff 47.24m-49.68m Clay Grey Shaley 49.68m-53.34m Sand Grey Coarse Water Supply 53.34m-53.64m Clay Grey	1959m	South West
GW047125	0.00m-0.61m Made Ground 0.61m-3.05m Sand Yellow 3.05m-3.96m Peat 3.96m-5.79m Sand Grey Water Supply 5.79m-15.85m Sand White Water Supply 15.85m-18.59m Sand Water Supply 18.59m-18.75m Wood 18.75m-20.73m Sand Water Supply 20.73m-24.38m Sandstone Water Supply	1961m	North
GW042564	0.00m-1.06m Made Ground 1.06m-4.72m Sand Black 4.72m-6.55m Sand Yellow 6.55m-9.44m Sand Yellow Clean Water Supply 9.44m-10.21m Sand Peaty Water Supply 10.21m-11.21m Peat Water Supply Sand Yellow Water Supply 11.21m-18.28m Sand Yellow Clean Water Supply 18.28m-20.72m Sand Black Peaty Water Supply 20.72m-21.94m Clay Peaty 21.94m-27.73m Sand Black Water Supply 27.73m-28.04m Clay	1963m	South West
GW102616	0.00m-6.00m SAND	1969m	West
GW101546	0.00m-4.58m SAND, UNCONSOLIDATED	1972m	West
GW015273	0.00m-0.91m Ash 0.91m-1.52m Made Ground 1.52m-4.57m Sand 4.57m-4.87m Peat 4.87m-10.66m Sand 10.66m-21.03m Sand Yellow Water Supply 21.03m-21.33m Peat Water Supply 21.33m-22.55m Sand White Water Supply	1975m	South West
GW025544	0.00m-1.21m Grey 1.21m-1.82m White 1.82m-2.28m Yellow Water Supply 2.28m-4.87m Sand Cream Cryptocrystalline Water Supply	1995m	West
GW109173	0.00m-0.20m CONCRETE 0.20m-0.60m SAND,DARK BROWN 0.60m-0.80m SAND,LIGHT BROWN 0.80m-1.20m SAND,RED,BROWN 1.20m-4.50m SAND YELLOW	1996m	South
GW107740	0.00m-11.50m Sand, unconsolidated	1997m	North East

Drill Log Data Source: NSW Department of Primary Industries - Office of Water / Water Administration Ministerial Corp
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Geology 1:100,000

35 Donovan Avenue, Maroubra, NSW 2035



Geology

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Geological Units

What are the Geological Units onsite?

Symbol	Description	Unit Name	Group	Sub Group	Age	Dom Lith	Map Sheet	Dataset
Qhd	Medium to fine-grained marine sand with podsols				Quaternary		Sydney	1:100,000

What are the Geological Units within the dataset buffer?

Symbol	Description	Unit Name	Group	Sub Group	Age	Dom Lith	Map Sheet	Dataset
Qhd	Medium to fine-grained marine sand with podsols				Quaternary		Sydney	1:100,000
Rh	Medium to coarse grained quartz sandstone, very minor shale and laminate lenses				Triassic		Sydney	1:100,000

Geological Structures

What are the Geological Structures onsite?

Feature	Name	Description	Map Sheet	Dataset
No features				1:100,000

What are the Geological Structures within the dataset buffer?

Feature	Name	Description	Map Sheet	Dataset
Dyke			Sydney	1:100,000

Geological Data Source : NSW Department of Industry, Resources & Energy
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Naturally Occurring Asbestos Potential

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Naturally Occurring Asbestos Potential

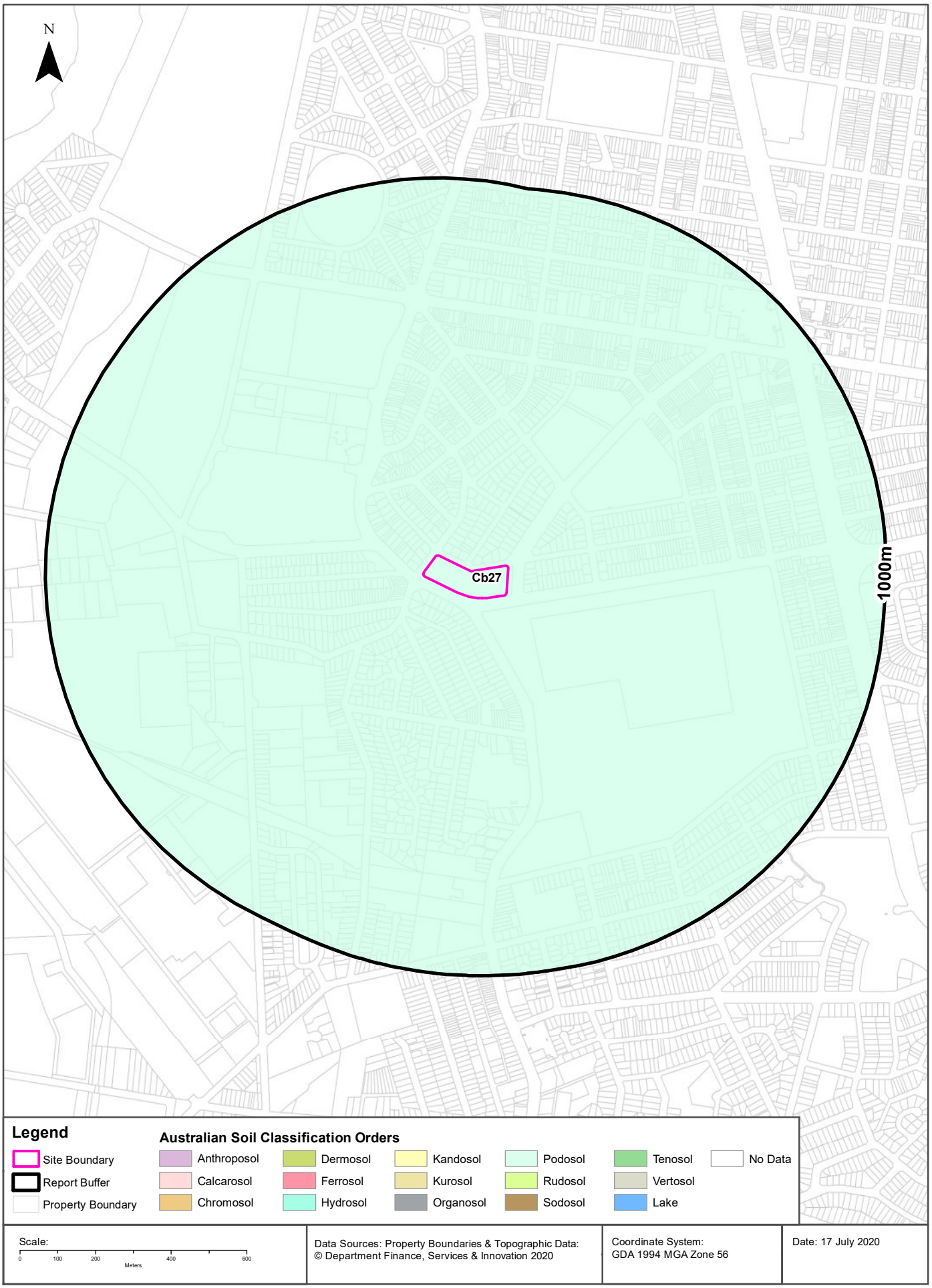
Naturally Occurring Asbestos Potential within the dataset buffer:

Potential	Sym	Strat Name	Group	Formation	Scale	Min Age	Max Age	Rock Type	Dom Lith	Description	Dist	Dir
No records in buffer												

Mining Subsidence District Data Source: © State of New South Wales through NSW Department of Industry, Resources & Energy

Atlas of Australian Soils

35 Donovan Avenue, Maroubra, NSW 2035



Soils

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Atlas of Australian Soils

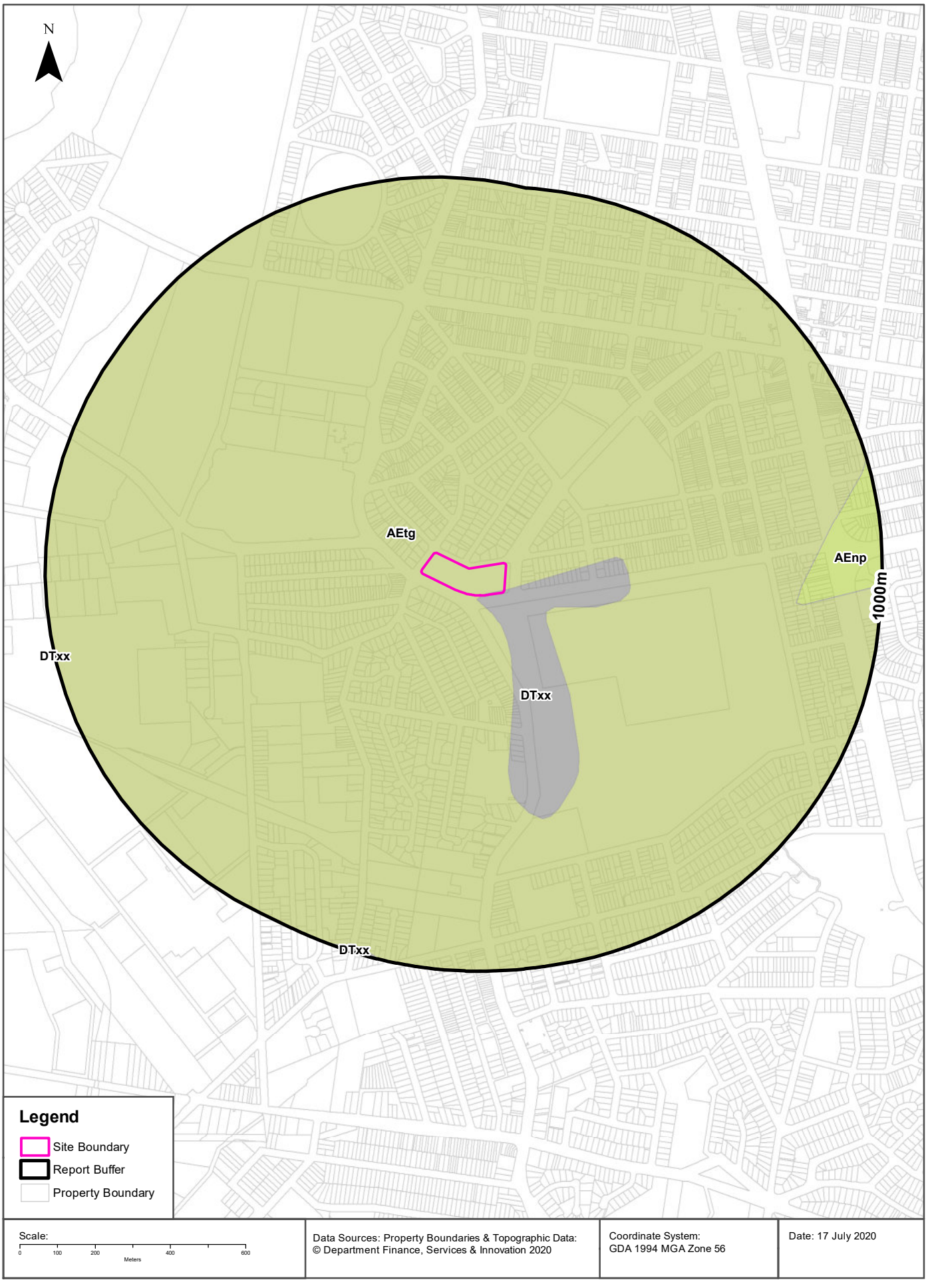
Soil mapping units and Australian Soil Classification orders within the dataset buffer:

Map Unit Code	Soil Order	Map Unit Description	Distance
Cb27	Podosol	Coastal sand plains and dunes, lagoons, and swampy areas: chief soils are leached sands (Uc2.3 and Uc2.2). Associated are dunes of siliceous sands (Uc1.2) and/or calcareous sands (Uc1.l) fringing the coastline; and swampy areas of (Uf6) soils and (Uc1.2) soils with peaty surfaces. Unit Cb27 has similarities with units Cb28 and Ca6.	0m

Atlas of Australian Soils Data Source: CSIRO
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Soil Landscapes

35 Donovan Avenue, Maroubra, NSW 2035



Soils

35 Donovan Avenue, Maroubra, NSW 2035

Soil Landscapes

What are the onsite Soil Landscapes?

Soil Code	Name	Group	Process	Map Sheet	Scale
AEtg	TUGGERAH		AEOLIAN	Sydney	1:100,000
DTxx	DISTURBED TERRAIN		DISTURBED TERRAIN	Sydney	1:100,000

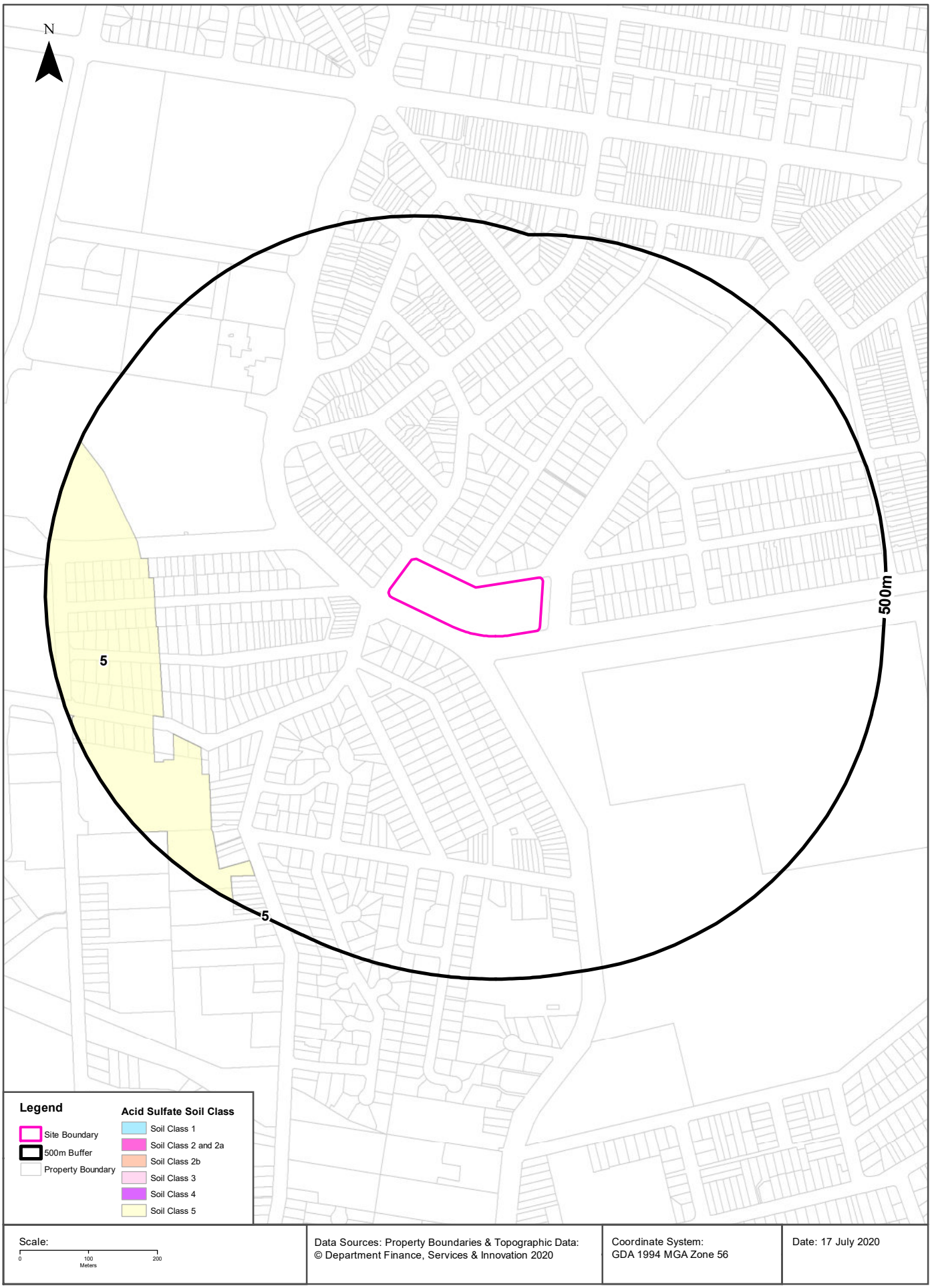
What are the Soil Landscapes within the dataset buffer?

Soil Code	Name	Group	Process	Map Sheet	Scale
AEnp	NEWPORT		AEOLIAN	Sydney	1:100,000
AEtg	TUGGERAH		AEOLIAN	Sydney	1:100,000
DTxx	DISTURBED TERRAIN		DISTURBED TERRAIN	Sydney	1:100,000

Soils Landscapes Data Source : NSW Office of Environment and Heritage
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Acid Sulfate Soils

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Acid Sulfate Soils

35 Donovan Avenue, Maroubra, NSW 2035

Environmental Planning Instrument - Acid Sulfate Soils

What is the on-site Acid Sulfate Soil Plan Class that presents the largest environmental risk?

Soil Class	Description	EPI Name
N/A		

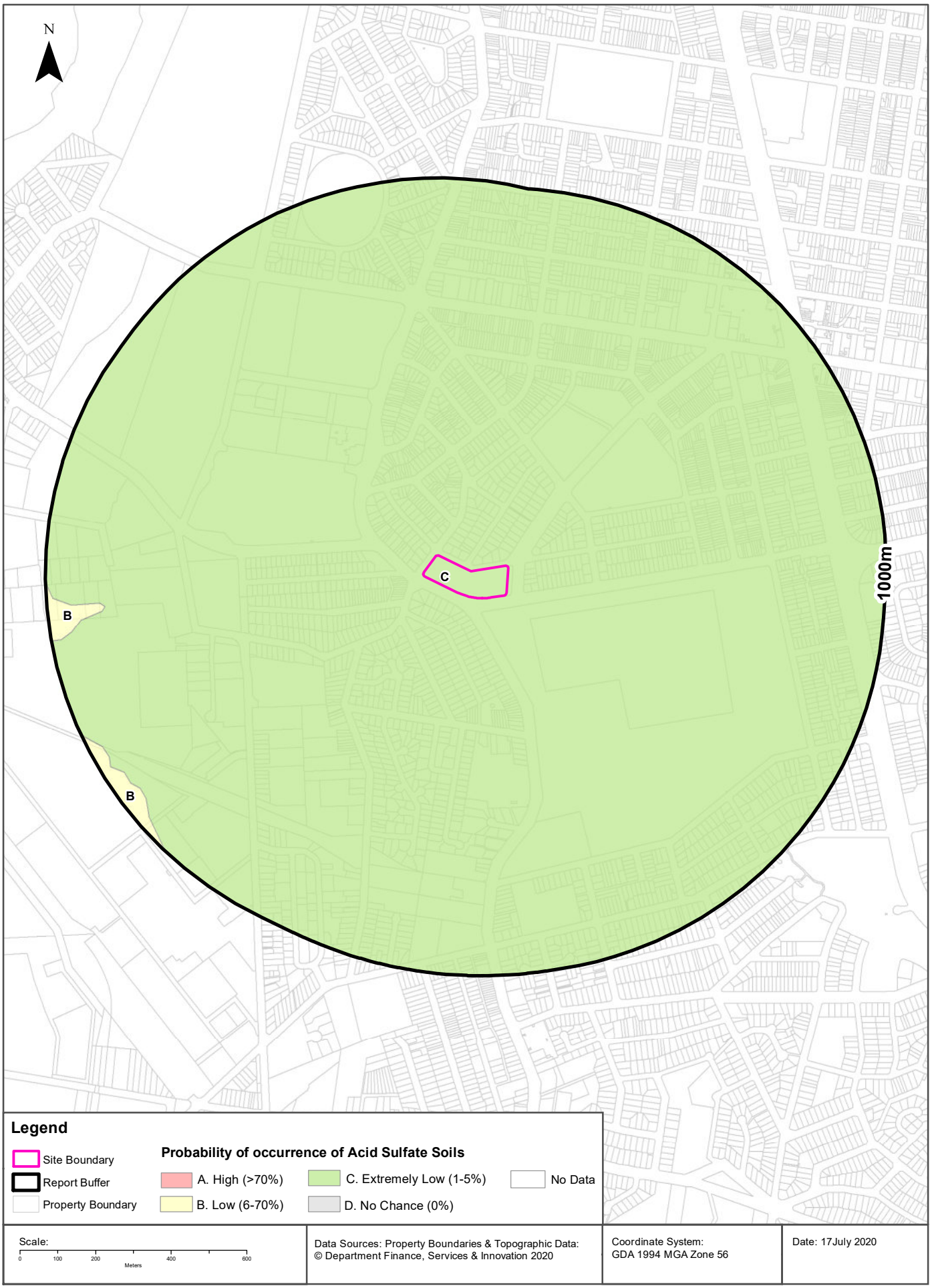
If the on-site Soil Class is 5, what other soil classes exist within 500m?

Soil Class	Description	EPI Name	Distance	Direction
N/A				

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Atlas of Australian Acid Sulfate Soils

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Acid Sulfate Soils

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Atlas of Australian Acid Sulfate Soils

Atlas of Australian Acid Sulfate Soil categories within the dataset buffer:

Class	Description	Distance
C	Extremely low probability of occurrence. 1-5% chance of occurrence with occurrences in small localised areas.	0m
B	Low Probability of occurrence. 6-70% chance of occurrence.	846m

Atlas of Australian Acid Sulfate Soils Data Source: CSIRO
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Dryland Salinity

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Dryland Salinity - National Assessment

Is there Dryland Salinity - National Assessment data onsite?

No

Is there Dryland Salinity - National Assessment data within the dataset buffer?

No

What Dryland Salinity assessments are given?

Assessment 2000	Assessment 2020	Assessment 2050	Distance	Direction
N/A	N/A	N/A	N/A	N/A

Dryland Salinity Data Source : National Land and Water Resources Audit
The Commonwealth and all suppliers of source data used to derive the maps of "Australia, Forecast Areas Containing Land of High Hazard or Risk of Dryland Salinity from 2000 to 2050" do not warrant the accuracy or completeness of information in this product. Any person using or relying upon such information does so on the basis that the Commonwealth and data suppliers shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information. Any persons using this information do so at their own risk.
In many cases where a high risk is indicated, less than 100% of the area will have a high hazard or risk.

Dryland Salinity Potential of Western Sydney

Dryland Salinity Potential of Western Sydney within the dataset buffer?

Feature Id	Classification	Description	Distance	Direction
N/A	Outside Data Coverage			

Dryland Salinity Potential of Western Sydney Data Source : NSW Office of Environment and Heritage
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Mining Subsidence Districts

35 Donovan Avenue, Maroubra, NSW 2035

Mining Subsidence Districts

Mining Subsidence Districts within the dataset buffer:

District	Distance	Direction
There are no Mining Subsidence Districts within the report buffer		

Mining Subsidence District Data Source: © Land and Property Information (2016)
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State Environmental Planning Policy

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State Significant Precincts

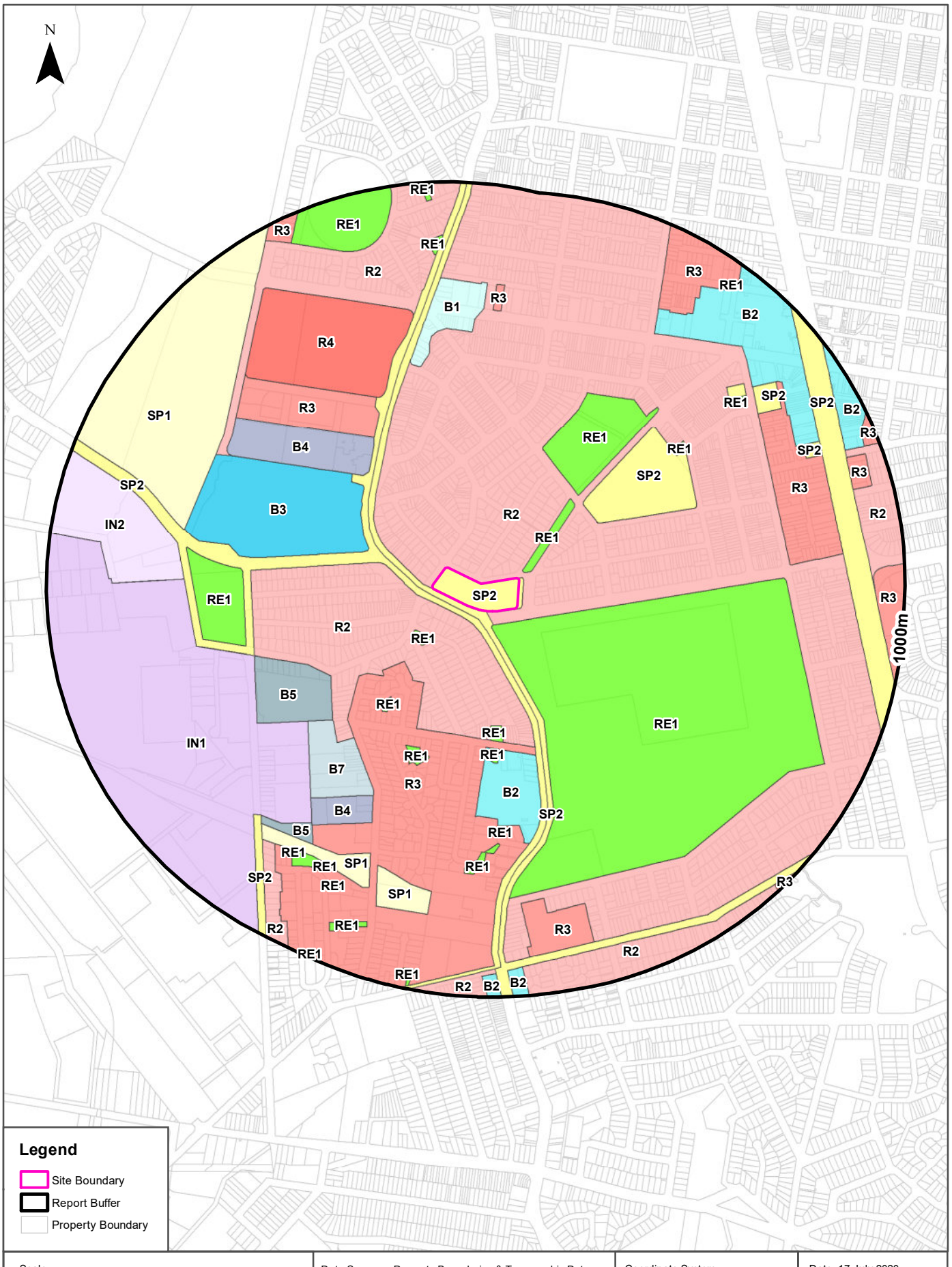
What SEPP State Significant Precincts exist within the dataset buffer?

Map Id	Precinct	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
N/A	No Records in Buffer							

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EPI Planning Zones

35 Donovan Avenue, Maroubra, NSW 2035



Legend

- Site Boundary
- Report Buffer
- Property Boundary

Scale: 0 100 200 400 600 Meters	Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2020 Planning: NSW Crown Copyright - Planning & Environment	Coordinate System: GDA 1994 MGA Zone 56	Date: 17 July 2020

Environmental Planning Instrument

35 Donovan Avenue, Maroubra, NSW 2035

Land Zoning

What EPI Land Zones exist within the dataset buffer?

Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
SP2	Infrastructure	Educational Establishment	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		0m	Onsite
R2	Low Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		0m	North East
SP2	Infrastructure	Classified Road	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		0m	North East
SP2	Infrastructure	Classified Road	Botany Bay Local Environmental Plan 2013	09/10/2015	09/10/2015	22/11/2019	Amendment No 4	15m	North West
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		22m	North East
R2	Low Density Residential		Botany Bay Local Environmental Plan 2013	21/06/2013	21/06/2013	22/11/2019		30m	South West
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		32m	South East
RE1	Public Recreation		Botany Bay Local Environmental Plan 2013	21/06/2013	21/06/2013	22/11/2019		114m	South West
B3	Commercial Core		Botany Bay Local Environmental Plan 2013	21/06/2013	21/06/2013	22/11/2019		191m	West
R3	Medium Density Residential		Botany Bay Local Environmental Plan 2013	21/06/2013	21/06/2013	22/11/2019		201m	South
SP2	Infrastructure	Educational Establishment	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		251m	North East
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		267m	North East
RE1	Public Recreation		Botany Bay Local Environmental Plan 2013	21/06/2013	21/06/2013	22/11/2019		296m	South
RE1	Public Recreation		Botany Bay Local Environmental Plan 2013	21/06/2013	21/06/2013	22/11/2019		298m	South West
B4	Mixed Use		Botany Bay Local Environmental Plan 2013	21/06/2013	21/06/2013	22/11/2019		319m	North West
B5	Business Development		Botany Bay Local Environmental Plan 2013	21/06/2013	21/06/2013	22/11/2019		348m	South West
B2	Local Centre		Botany Bay Local Environmental Plan 2013	21/06/2013	21/06/2013	22/11/2019		353m	South
RE1	Public Recreation		Botany Bay Local Environmental Plan 2013	21/06/2013	21/06/2013	22/11/2019		354m	South
R3	Medium Density Residential		Botany Bay Local Environmental Plan 2013	22/11/2019	22/11/2019	22/11/2019	Amendment No 8	386m	North West
RE1	Public Recreation		Botany Bay Local Environmental Plan 2013	21/06/2013	21/06/2013	22/11/2019		387m	South
B7	Business Park		Botany Bay Local Environmental Plan 2013	21/06/2013	21/06/2013	22/11/2019		428m	South West
IN1	General Industrial		State Environmental Planning Policy (Three Ports) 2013	31/05/2013	31/05/2013	31/05/2013	State Environmental Planning Policy (Port Botany) Amendment (Port Kembla) 2013	472m	South West
R4	High Density Residential		Botany Bay Local Environmental Plan 2013	22/11/2019	22/11/2019	22/11/2019	Amendment No 8	475m	North West
RE1	Public Recreation		Botany Bay Local Environmental Plan 2013	21/06/2013	21/06/2013	22/11/2019		489m	West
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		519m	North East

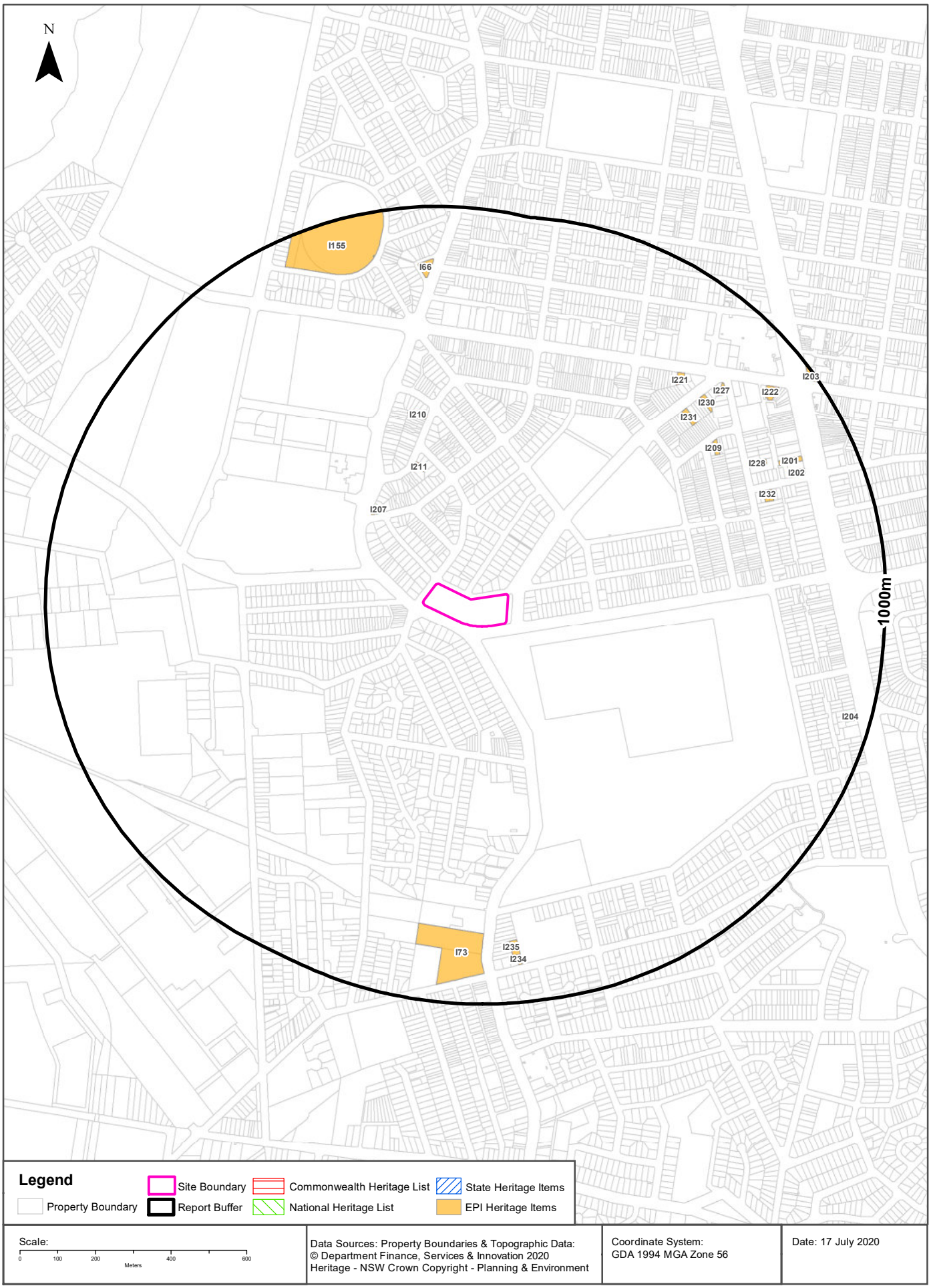
Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
B1	Neighbourhood Centre		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		527m	North
B4	Mixed Use		Botany Bay Local Environmental Plan 2013	21/06/2013	21/06/2013	22/11/2019		548m	South West
RE1	Public Recreation		Botany Bay Local Environmental Plan 2013	21/06/2013	21/06/2013	22/11/2019		556m	South
RE1	Public Recreation		Botany Bay Local Environmental Plan 2013	21/06/2013	21/06/2013	22/11/2019		601m	South
R2	Low Density Residential		Botany Bay Local Environmental Plan 2013	09/10/2015	09/10/2015	22/11/2019	Amendment No 4	619m	North
IN2	Light Industrial		Botany Bay Local Environmental Plan 2013	21/06/2013	21/06/2013	22/11/2019		644m	West
SP1	Special Activities	Recreation Facility (Outdoor)	Botany Bay Local Environmental Plan 2013	21/06/2013	21/06/2013	22/11/2019		650m	North West
R3	Medium Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		679m	North
B5	Business Development		Botany Bay Local Environmental Plan 2013	21/06/2013	21/06/2013	22/11/2019		681m	South West
SP1	Special Activities	Recreation Facility (Outdoor)	Botany Bay Local Environmental Plan 2013	21/06/2013	21/06/2013	22/11/2019		689m	South West
R3	Medium Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		695m	East
SP1	Special Activities	Recreation Facility (Outdoor)	Botany Bay Local Environmental Plan 2013	21/06/2013	21/06/2013	22/11/2019		711m	South
SP2	Infrastructure	Place of Public Worship	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		718m	North East
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		719m	North East
B2	Local Centre		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		726m	North East
R3	Medium Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		752m	South
SP2	Infrastructure	Electricity Distribution	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		754m	North East
RE1	Public Recreation		Botany Bay Local Environmental Plan 2013	21/06/2013	21/06/2013	22/11/2019		758m	South West
RE1	Public Recreation		Botany Bay Local Environmental Plan 2013	21/06/2013	21/06/2013	22/11/2019		760m	South West
R2	Low Density Residential		Botany Bay Local Environmental Plan 2013	21/06/2013	21/06/2013	22/11/2019		777m	South West
R3	Medium Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		790m	North East
RE1	Public Recreation		Botany Bay Local Environmental Plan 2013	21/06/2013	21/06/2013	22/11/2019		791m	South West
SP2	Infrastructure	Place of Public Worship	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		808m	North East
RE1	Public Recreation		Botany Bay Local Environmental Plan 2013	21/06/2013	21/06/2013	22/11/2019		812m	North
RE1	Public Recreation		Botany Bay Local Environmental Plan 2013	21/06/2013	21/06/2013	22/11/2019		853m	North
RE1	Public Recreation		Botany Bay Local Environmental Plan 2013	21/06/2013	21/06/2013	22/11/2019		856m	South
R2	Low Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		895m	North East
R3	Medium Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		896m	East
R2	Low Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		907m	South East
B2	Local Centre		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		909m	North East
R3	Medium Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		918m	East
B2	Local Centre		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		924m	South
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		925m	North East

Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
R2	Low Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		926m	South
R3	Medium Density Residential		Botany Bay Local Environmental Plan 2013	21/06/2013	21/06/2013	22/11/2019		932m	North West
B2	Local Centre		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		938m	South
RE1	Public Recreation		Botany Bay Local Environmental Plan 2013	21/06/2013	21/06/2013	22/11/2019		947m	South
RE1	Public Recreation		Botany Bay Local Environmental Plan 2013	21/06/2013	21/06/2013	22/11/2019		952m	North
R3	Medium Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		957m	East
RE1	Public Recreation		Botany Bay Local Environmental Plan 2013	21/06/2013	21/06/2013	22/11/2019		978m	South West
R3	Medium Density Residential		Randwick Local Environmental Plan 2012	26/01/2018	26/01/2018	26/01/2018	Amendment No 4	980m	South East

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Heritage Items

35 Donovan Avenue, Maroubra, NSW 2035



Heritage

35 Donovan Avenue, Maroubra, NSW 2035

Commonwealth Heritage List

What are the Commonwealth Heritage List Items located within the dataset buffer?

Place Id	Name	Address	Place File No	Class	Status	Register Date	Distance	Direction
N/A	No records in buffer							

Heritage Data Source: Australian Government Department of the Environment and Energy - Heritage Branch
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National Heritage List

What are the National Heritage List Items located within the dataset buffer?
Note. Please click on Place Id to activate a hyperlink to online website.

Place Id	Name	Address	Place File No	Class	Status	Register Date	Distance	Direction
N/A	No records in buffer							

Heritage Data Source: Australian Government Department of the Environment and Energy - Heritage Branch
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State Heritage Register - Curtilages

What are the State Heritage Register Items located within the dataset buffer?

Map Id	Name	Address	LGA	Listing Date	Listing No	Plan No	Distance	Direction
N/A	No records in buffer							

Heritage Data Source: NSW Crown Copyright - Office of Environment & Heritage
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Environmental Planning Instrument - Heritage

What are the EPI Heritage Items located within the dataset buffer?

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
I207	Inter-war house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	241m	North West
I211	Neo-romanesque house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	300m	North
I210	Brick bungalow	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	437m	North

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
I209	Californian bungalow	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	662m	North East
I231	Semi-detached pair	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	663m	North East
I221	Art Deco residential flat building	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	712m	North East
I228	'Elwi Ento', late modern house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	723m	North East
I230	Semi-detached pair	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	724m	North East
I232	Semi-detached pair	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	725m	East
I227	Post-war house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	765m	North East
I201	Art Deco residential flat building	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	796m	North East
I73	Matraville Public School	Item - General	Local	Botany Bay Local Environmental Plan 2013	21/06/2013	21/06/2013	09/10/2015	800m	South
I202	'Corio House'	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	808m	East
I66	Harris Reserve	Item - Landscape	Local	Botany Bay Local Environmental Plan 2013	21/06/2013	21/06/2013	09/10/2015	812m	North
I235	Brick sewer vent	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	832m	South
I155	Jellico Park	Item - Landscape	Local	Botany Bay Local Environmental Plan 2013	21/06/2013	21/06/2013	09/10/2015	854m	North
I222	Maroubra Junction Hotel	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	859m	North East
I234	Electricity Substation No 25	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	872m	South
I204	Edwardian house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	930m	East
I203	'Dudleys Emporium'	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	978m	North East

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Natural Hazards

35 Donovan Avenue, Maroubra, NSW 2035

Bush Fire Prone Land

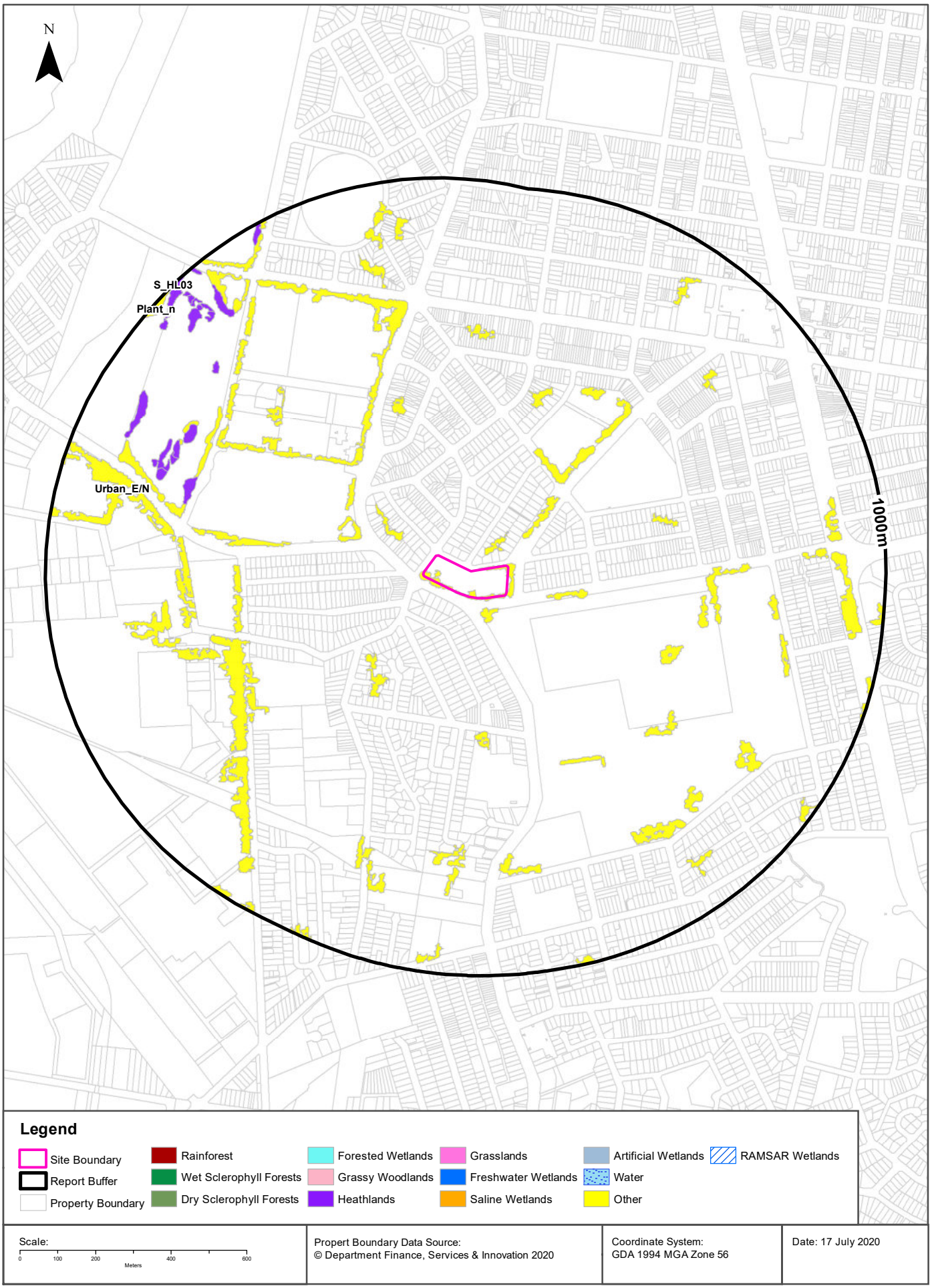
What are the nearest Bush Fire Prone Land Categories that exist within the dataset buffer?

Bush Fire Prone Land Category	Distance	Direction
No records within buffer		

NSW Bush Fire Prone Land - © NSW Rural Fire Service under Creative Commons 4.0 International Licence

Ecological Constraints - Native Vegetation & RAMSAR Wetlands

35 Donovan Avenue, Maroubra, NSW 2035



Ecological Constraints

35 Donovan Avenue, Maroubra, NSW 2035

Native Vegetation

What native vegetation exists within the dataset buffer?

Map ID	Map Unit Name	Threatened Ecological Community NSW	Threatened Ecological Community EPBC Act	Understorey	Disturbance	Disturbance Index	Dominant Species	Dist	Direction
Urban_E/N	Urban_E/N: Urban Exotic/Native			00: Not assessed	00: Not assessed	0: Not assessed	Urban Exotic/Native	0m	Onsite
S_HL03	S_HL03: Coastal Sand Mantle Heath	Eastern Suburbs Banksia Scrub	Eastern Suburbs Banksia Scrub (possible)	33: Weedy shrubs	17: Rural residential subdivision	3: High	L.laviegatum/B.integrifolia/Exotics/urban scrub	646m	West
Plant_n	Plant_n: Plantation (native and/or exotic)			00: Not assessed	00: Not assessed	0: Not assessed	Native or Exotic Plantations	713m	North West

Native Vegetation of the Sydney Metropolitan Area : NSW Office of Environment and Heritage
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Ramsar Wetlands

What Ramsar Wetland areas exist within the dataset buffer?

Map Id	Ramsar Name	Wetland Name	Designation Date	Source	Distance	Direction
N/A	No records in buffer					

Ramsar Wetlands Data Source: © Commonwealth of Australia - Department of Environment

Ecological Constraints

35 Donovan Avenue, Maroubra, NSW 2035

Groundwater Dependent Ecosystems Atlas

Type	GDE Potential	Geomorphology	Ecosystem Type	Aquifer Geology	Distance
N/A	No records within buffer				

Groundwater Dependent Ecosystems Atlas Data Source: The Bureau of Meteorology
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Ecological Constraints

35 Donovan Avenue, Maroubra, NSW 2035

Inflow Dependent Ecosystems Likelihood

Type	IDE Likelihood	Geomorphology	Ecosystem Type	Aquifer Geology	Distance
N/A	No records within buffer				

Inflow Dependent Ecosystems Likelihood Data Source: The Bureau of Meteorology
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Ecological Constraints

35 Donovan Avenue, Maroubra, NSW 2035

NSW BioNet Atlas

Species on the NSW BioNet Atlas that have a NSW or federal conservation status, a NSW sensitivity status, or are listed under a migratory species agreement, and are within 10km of the site?

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Amphibia	Crinia tinnula	Wallum Froglet	Vulnerable	Not Sensitive	Not Listed	
Animalia	Amphibia	Litoria aurea	Green and Golden Bell Frog	Endangered	Not Sensitive	Vulnerable	
Animalia	Aves	Actitis hypoleucos	Common Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Amaurornis moluccana	Pale-vented Bush-hen	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Anseranas semipalmata	Magpie Goose	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Anthochaera phrygia	Regent Honeyeater	Critically Endangered	Not Sensitive	Critically Endangered	
Animalia	Aves	Apus pacificus	Fork-tailed Swift	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Ardenna carneipes	Flesh-footed Shearwater	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Ardenna grisea	Sooty Shearwater	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Ardenna pacifica	Wedge-tailed Shearwater	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Ardenna tenuirostris	Short-tailed Shearwater	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Arenaria interpres	Ruddy Turnstone	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Artamus cyanopterus cyanopterus	Dusky Woodswallow	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Botaurus poiciloptilus	Australasian Bittern	Endangered	Not Sensitive	Endangered	
Animalia	Aves	Burhinus grallarius	Bush Stone-curlew	Endangered	Not Sensitive	Not Listed	
Animalia	Aves	Calidris acuminata	Sharp-tailed Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris alba	Sanderling	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris canutus	Red Knot	Not Listed	Not Sensitive	Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris ferruginea	Curlew Sandpiper	Endangered	Not Sensitive	Critically Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris melanotos	Pectoral Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Calidris ruficollis	Red-necked Stint	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris tenuirostris	Great Knot	Vulnerable	Not Sensitive	Critically Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Callocephalon fimbriatum	Gang-gang Cockatoo	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Calyptorhynchus banksii banksii	Red-tailed Black-Cockatoo (coastal subspecies)	Critically Endangered	Category 2	Not Listed	
Animalia	Aves	Calyptorhynchus banksii samueli	Red-tailed Black-Cockatoo (inland subspecies)	Vulnerable	Category 2	Not Listed	
Animalia	Aves	Calyptorhynchus lathami	Glossy Black-Cockatoo	Vulnerable	Category 2	Not Listed	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Certhionyx variegatus	Pied Honeyeater	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Charadrius leschenaultii	Greater Sand-plover	Vulnerable	Not Sensitive	Vulnerable	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Charadrius mongolus	Lesser Sand-plover	Vulnerable	Not Sensitive	Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Charadrius veredus	Oriental Plover	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Chlidonias leucopterus	White-winged Black Tern	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Daphoenositta chrysoptera	Varied Sittella	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Dasyornis brachypterus	Eastern Bristlebird	Endangered	Category 2	Endangered	
Animalia	Aves	Diomedea antipodensis	Antipodean Albatross	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Aves	Diomedea exulans	Wandering Albatross	Endangered	Not Sensitive	Endangered	
Animalia	Aves	Diomedea gibsoni	Gibson's Albatross	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Aves	Epthianura albifrons	White-fronted Chat	Endangered Population, Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Erythrotriorchis radiatus	Red Goshawk	Critically Endangered	Category 2	Vulnerable	
Animalia	Aves	Esacus magnirostris	Beach Stone-curlew	Critically Endangered	Not Sensitive	Not Listed	
Animalia	Aves	Fregata ariel	Lesser Frigatebird	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Gallinago hardwickii	Latham's Snipe	Not Listed	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Gelochelidon nilotica	Gull-billed Tern	Not Listed	Not Sensitive	Not Listed	CAMBA
Animalia	Aves	Glossopsitta pusilla	Little Lorikeet	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Gygis alba	White Tern	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Haematopus fuliginosus	Sooty Oystercatcher	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Haematopus longirostris	Pied Oystercatcher	Endangered	Not Sensitive	Not Listed	
Animalia	Aves	Haliaeetus leucogaster	White-bellied Sea-Eagle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Hieraaetus morphnoides	Little Eagle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Hirundapus caudacutus	White-throated Needletail	Not Listed	Not Sensitive	Vulnerable	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Hydroprogne caspia	Caspian Tern	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Ixobrychus flavicollis	Black Bittern	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Lathamus discolor	Swift Parrot	Endangered	Category 3	Critically Endangered	
Animalia	Aves	Limicola falcinellus	Broad-billed Sandpiper	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Limosa lapponica	Bar-tailed Godwit	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Limosa limosa	Black-tailed Godwit	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Lophochroa leadbeateri	Major Mitchell's Cockatoo	Vulnerable	Category 2	Not Listed	
Animalia	Aves	Lophoictinia isura	Square-tailed Kite	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Macronectes giganteus	Southern Giant Petrel	Endangered	Not Sensitive	Endangered	
Animalia	Aves	Macronectes halli	Northern Giant-Petrel	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Aves	Manorina melanotis	Black-eared Miner	Critically Endangered	Not Sensitive	Endangered	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Neochmia ruficauda	Star Finch	Presumed Extinct	Not Sensitive	Endangered	
Animalia	Aves	Neophema chrysogaster	Orange-bellied Parrot	Critically Endangered	Category 3	Critically Endangered	
Animalia	Aves	Neophema pulchella	Turquoise Parrot	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Neophema splendida	Scarlet-chested Parrot	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Ninox strenua	Powerful Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Numenius madagascariensis	Eastern Curlew	Not Listed	Not Sensitive	Critically Endangered	ROKAMBA;CAMBA;JAMBA
Animalia	Aves	Numenius minutus	Little Curlew	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA;JAMBA
Animalia	Aves	Numenius phaeopus	Whimbrel	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA;JAMBA
Animalia	Aves	Onychoprion fuscata	Sooty Tern	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Oxyura australis	Blue-billed Duck	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Pandion cristatus	Eastern Osprey	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Petroica boodang	Scarlet Robin	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Petroica phoenicea	Flame Robin	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Pezoporus wallicus wallicus	Eastern Ground Parrot	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Phaethon lepturus	White-tailed Tropicbird	Not Listed	Not Sensitive	Not Listed	CAMBA;JAMBA
Animalia	Aves	Phaethon rubricauda	Red-tailed Tropicbird	Vulnerable	Not Sensitive	Not Listed	CAMBA;JAMBA
Animalia	Aves	Philomachus pugnax	Ruff	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA;JAMBA
Animalia	Aves	Pluvialis fulva	Pacific Golden Plover	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA;JAMBA
Animalia	Aves	Pluvialis squatarola	Grey Plover	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA;JAMBA
Animalia	Aves	Polytelis swainsonii	Superb Parrot	Vulnerable	Category 3	Vulnerable	
Animalia	Aves	Procelsterna cerulea	Grey Ternlet	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Pterodroma leucoptera leucoptera	Gould's Petrel	Vulnerable	Not Sensitive	Endangered	
Animalia	Aves	Pterodroma neglecta neglecta	Kermadec Petrel (west Pacific subspecies)	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Aves	Pterodroma solandri	Providence Petrel	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Ptilinopus regina	Rose-crowned Fruit-Dove	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Ptilinopus superbus	Superb Fruit-Dove	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Puffinus assimilis	Little Shearwater	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Rostratula australis	Australian Painted Snipe	Endangered	Not Sensitive	Endangered	
Animalia	Aves	Stagonopleura guttata	Diamond Firetail	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Stercorarius parasiticus	Arctic Jaeger	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA;JAMBA
Animalia	Aves	Stercorarius pomarinus	Pomarine Jaeger	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA;JAMBA
Animalia	Aves	Sterna hirundo	Common Tern	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA;JAMBA
Animalia	Aves	Sternula albifrons	Little Tern	Endangered	Not Sensitive	Not Listed	ROKAMBA;CAMBA;JAMBA

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Stictonetta naevosa	Freckled Duck	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Sula leucogaster	Brown Booby	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Sula sula	Red-footed Booby	Not Listed	Not Sensitive	Not Listed	CAMBA;JAMBA
Animalia	Aves	Thalassarche cauta	Shy Albatross	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Aves	Thalassarche chrysostoma	Grey-headed Albatross	Not Listed	Not Sensitive	Endangered	
Animalia	Aves	Thalassarche melanophris	Black-browed Albatross	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Aves	Thalasseus bergii	Crested Tern	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Thinornis rubricollis	Hooded Plover	Critically Endangered	Not Sensitive	Vulnerable	
Animalia	Aves	Tringa brevipes	Grey-tailed Tattler	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Tringa glareola	Wood Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Tringa incana	Wandering Tattler	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Tringa nebularia	Common Greenshank	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Tringa stagnatilis	Marsh Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Tyto longimembris	Eastern Grass Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Tyto novaehollandiae	Masked Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Xenus cinereus	Terek Sandpiper	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Mammalia	Aepyprymnus rufescens	Rufous Bettong	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Arctocephalus forsteri	New Zealand Fur-seal	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Arctocephalus pusillus doriferus	Australian Fur-seal	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Cercartetus nanus	Eastern Pygmy-possum	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Chalinolobus dwyeri	Large-eared Pied Bat	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Dasyurus maculatus	Spotted-tailed Quoll	Vulnerable	Not Sensitive	Endangered	
Animalia	Mammalia	Dasyurus viverrinus	Eastern Quoll	Endangered	Not Sensitive	Endangered	
Animalia	Mammalia	Dugong dugon	Dugong	Endangered	Not Sensitive	Not Listed	
Animalia	Mammalia	Eubalaena australis	Southern Right Whale	Endangered	Not Sensitive	Endangered	
Animalia	Mammalia	Macrotis lagotis	Bilby	Presumed Extinct	Not Sensitive	Vulnerable	
Animalia	Mammalia	Megaptera novaeangliae	Humpback Whale	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Miniopterus australis	Little Bent-winged Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Miniopterus orianae oceanensis	Large Bent-winged Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Myotis macropus	Southern Myotis	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Perameles nasuta	Long-nosed Bandicoot	Endangered Population	Not Sensitive	Not Listed	
Animalia	Mammalia	Phascolarctos cinereus	Koala	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Pteropus poliocephalus	Grey-headed Flying-fox	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	Vulnerable	Not Sensitive	Not Listed	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Mammalia	Scoteanax rueppellii	Greater Broad-nosed Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Reptilia	Antaresia stimsoni	Stimson's Python	Vulnerable	Not Sensitive	Not Listed	
Animalia	Reptilia	Aspidites ramsayi	Woma	Vulnerable	Not Sensitive	Not Listed	
Animalia	Reptilia	Caretta caretta	Loggerhead Turtle	Endangered	Not Sensitive	Endangered	
Animalia	Reptilia	Chelonia mydas	Green Turtle	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Reptilia	Dermochelys coriacea	Leatherback Turtle	Endangered	Not Sensitive	Endangered	
Animalia	Reptilia	Tiliqua occipitalis	Western Blue-tongued Lizard	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Acacia gordonii		Endangered	Not Sensitive	Endangered	
Plantae	Flora	Acacia pubescens	Downy Wattle	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Acacia terminalis subsp. terminalis	Sunshine Wattle	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Amperea xiphoclada var. pedicellata		Presumed Extinct	Not Sensitive	Extinct	
Plantae	Flora	Caladenia tessellata	Thick Lip Spider Orchid	Endangered	Category 2	Vulnerable	
Plantae	Flora	Callistemon linearifolius	Netted Bottle Brush	Vulnerable	Category 3	Not Listed	
Plantae	Flora	Dichanthium setosum	Bluegrass	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Diuris arenaria	Sand Doubletail	Endangered	Category 2	Not Listed	
Plantae	Flora	Doryanthes palmeri	Giant Spear Lily	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Epacris purpurascens var. purpurascens		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Eucalyptus fracta	Broken Back Ironbark	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Eucalyptus leucoxylon subsp. pruinosa	Yellow Gum	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Eucalyptus nicholii	Narrow-leaved Black Peppermint	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Eucalyptus pulverulenta	Silver-leafed Gum	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Eucalyptus scoparia	Wallangarra White Gum	Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Genoplesium baueri	Bauer's Midge Orchid	Endangered	Category 2	Endangered	
Plantae	Flora	Hibbertia puberula		Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Melaleuca deanei	Deane's Paperbark	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Persoonia hirsuta	Hairy Geebung	Endangered	Category 3	Endangered	
Plantae	Flora	Prostanthera marifolia	Seaforth Mintbush	Critically Endangered	Category 3	Critically Endangered	
Plantae	Flora	Pterostylis sp. Botany Bay	Botany Bay Bearded Orchid	Endangered	Category 2	Endangered	
Plantae	Flora	Rhodamnia rubescens	Scrub Turpentine	Critically Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Senecio spathulatus	Coast Groundsel	Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Senna acclinis	Rainforest Cassia	Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Syzygium paniculatum	Magenta Lilly Pilly	Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Tetratheca juncea	Black-eyed Susan	Vulnerable	Not Sensitive	Vulnerable	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Plantae	Flora	Thelymitra atronitida	Black-hooded Sun Orchid	Critically Endangered	Category 2	Not Listed	
Plantae	Flora	Tinospora tinosporoides	Arrow-head Vine	Vulnerable	Not Sensitive	Not Listed	

Data does not include NSW category 1 sensitive species.

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Where Lotsearch has had to georeference features from supplied addresses, a location confidence has been assigned to the data record. This indicates a confidence to the positional accuracy of the feature. Where applicable, a code is given under the field heading “LC” or “LocConf”. These codes lookup to the following location confidences:

LC Code	Location Confidence
Premise match	Georeferenced to the site location / premise or part of site
General area or suburb match	Georeferenced with the confidence of the general/approximate area
Road match	Georeferenced to the road or rail
Road intersection	Georeferenced to the road intersection
Feature is a buffered point	Feature is a buffered point
Land adjacent to geocoded site	Land adjacent to Georeferenced Site
Network of features	Georeferenced to a network of features

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Land Title Records

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(ACN 147 943 842)
ABN 82 147 943 842

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Manly NSW 2095

Telephone: +612 9977 6713
Mobile: 0412 169 809
Email: search@alsearchers.com.au

17th July 2020

JKENVIRONMENTS PTY LIMITED
PO BOX 976,
NORTH RYDE BC NSW 1670

Attention: Harley Wang,

RE: **35 Donovan Avenue,**
Maroubra
Job No. E33356PD

Current Search

Folio Identifier 5089/752015 (title attached)
Crown Plan 7453-2030 (plan attached)
Dated 15th July, 2020
Registered Proprietor:
THE TRUSTEES OF THE ROMAN CATHOLIC CHURCH FOR THE ARCHDIOCESE OF SYDNEY

Title Tree
Lot 5089 DP 752015

Folio Identifier 5089/752015

Certificate of Title Volume 7882 Folio 8

Crown Land

Government Gazette 9th August 1935

****

Summary of proprietor(s)
Lot 5089 DP 752015

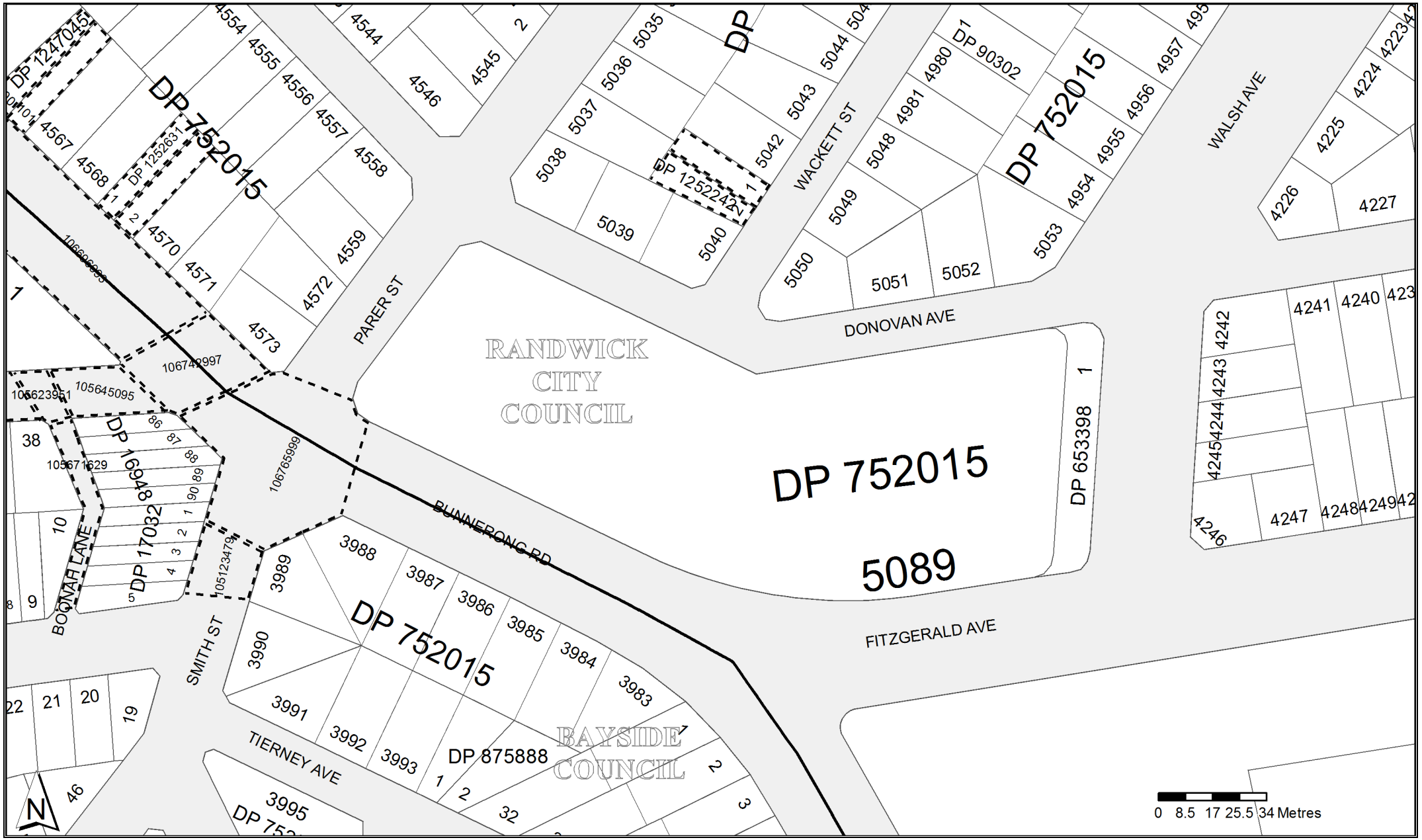
Year	Proprietor(s)
	(Lot 5089 DP 752015)
1989 – todate	The Trustees of the Roman Catholic Church for the Archdiocese of Sydney
	(Portion 5089 Parish Botany – Area 3 Acres 3 Roods 12 Perches – CTVol 7882 Fol 8)
1960 – 1989	The Trustees of the Roman Catholic Church for the Archdiocese of Sydney
	(Portion 5089 Parish Botany – Area 3 Acres 3 Roods 12 Perches)
Prior – 1960	Crown Land
(1949 – 1960)	*(Special Purchase 1949/37 Metropolitan)*
(1935 – 1949)	*(Reserve 1986 from Occupation under Mining Reserve or Business License, notified 9th August 1935)*

****

Cadastral Records Enquiry Report : Lot 5089 DP 752015

Ref : NOUSER

Locality : MAROUBRA
Parish : BOTANY
LGA : RANDWICK
County : CUMBERLAND



Report Generated 4:14:57 PM, 15 July, 2020

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	Status	Surv/Comp	Purpose
DP1247045			
Lot(s): 100, 101			
DP752015	HISTORICAL	COMPILATION	CROWN ADMIN NO.
DP1252242			
Lot(s): 1, 2			
DP752015	HISTORICAL	COMPILATION	CROWN ADMIN NO.
DP1252631			
Lot(s): 1, 2			
DP752015	HISTORICAL	COMPILATION	CROWN ADMIN NO.
Road			
Polygon Id(s): 105123479, 105623951, 105645095, 105650455, 105671629, 106696993, 106742997, 106765999			
EX-SUR 31/13 DP983337			

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Plan	Surv/Comp	Purpose
DP16948	SURVEY	UNRESEARCHED
DP17032	SURVEY	UNRESEARCHED
DP21719	SURVEY	UNRESEARCHED
DP22933	SURVEY	UNRESEARCHED
DP24695	SURVEY	UNRESEARCHED
DP27224	SURVEY	UNRESEARCHED
DP35657	SURVEY	UNRESEARCHED
DP90302	SURVEY	UNRESEARCHED
DP124569	COMPILATION	DEPARTMENTAL
DP215259	SURVEY	SUBDIVISION
DP653398	COMPILATION	DEPARTMENTAL
DP752015	COMPILATION	CROWN ADMIN NO.
DP875888	COMPILATION	SUBDIVISION
DP1026884	COMPILATION	DEPARTMENTAL
DP1247045	UNRESEARCHED	SUBDIVISION
DP1247045	SURVEY	SUBDIVISION
DP1252242	UNRESEARCHED	SUBDIVISION
DP1252242	SURVEY	SUBDIVISION
DP1252631	SURVEY	SUBDIVISION
DP1252631	UNRESEARCHED	SUBDIVISION

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Req:R346546 /Doc:CP 07453-2030 P /Rev:22-Nov-2013 /NSW LRS /Prt:15-Jul-2020 16:03 /Seq:1 of 1
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PLAN OF PORTION 5089

PAPERS L.B.49·1652 Ten 54·4629. A.294

PARISH BOTANY COUNTY CUMBERLAND

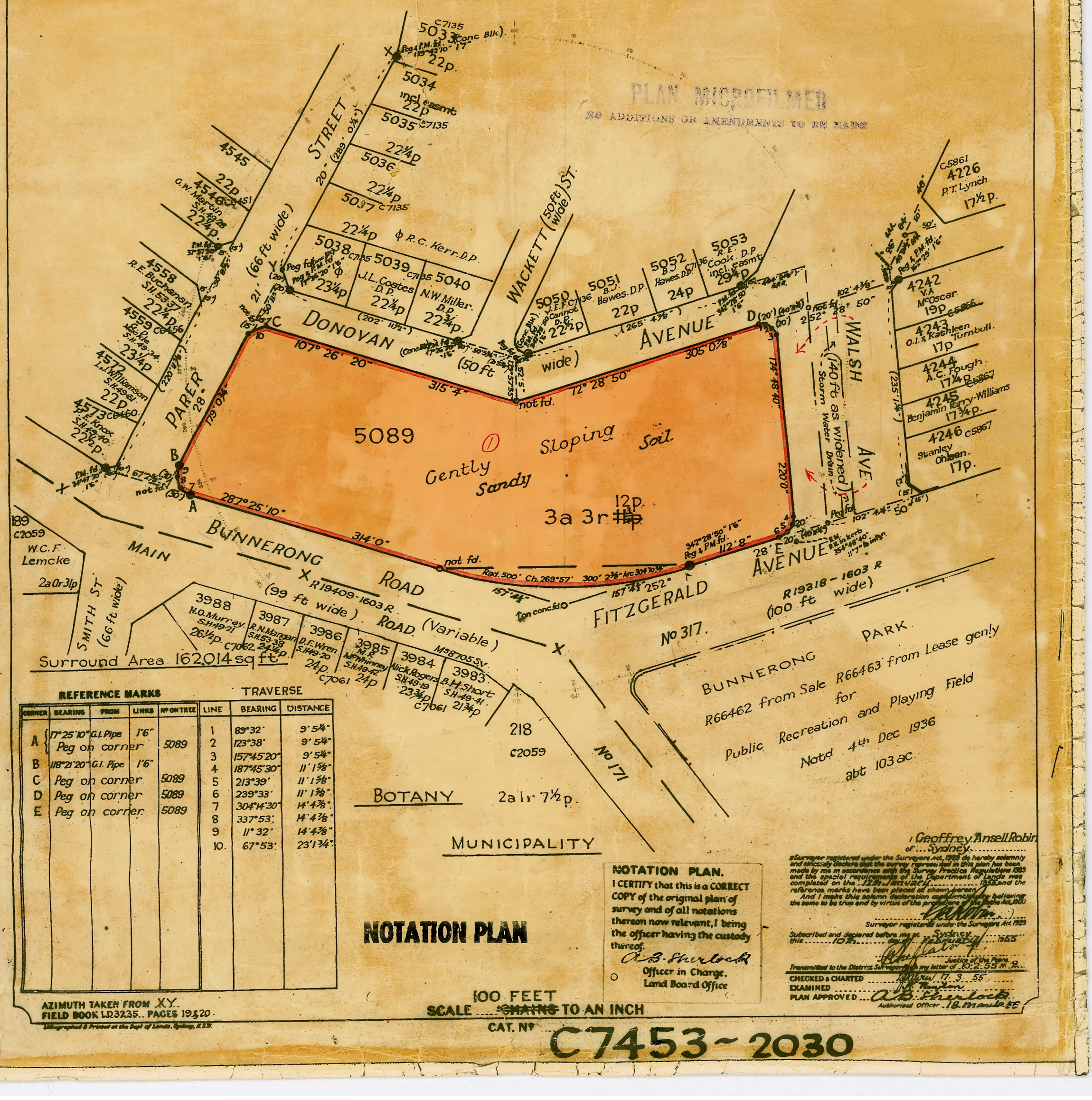
LAND DISTRICT METROPOLITAN LAND BOARD DISTRICT SYDNEY

~~SHIRE~~ RANDWICK MUNICIPALITY

Applied for under the 66(2a) Section of the Crown Lands Consolidation Act, 1913, by The Trustees of the Roman Catholic Church for the Archdiocese of Sydney.

Within Population Area of Sydney, Proclaimed 22nd April 1886
do an Extension to the Suburban Lands City of Sydney Notified 21st May 1898.
do R 1986 from Occn. under M.R. or B.L., Notified 9th August 1935.
(1) Sp. Pur 49·37. Gaz 1·4·55. Sale Completed. Ten. 59·6617.

PLAN MICROFILMED
NO ADDITIONS OR AMENDMENTS TO BE MADE



REFERENCE MARKS

CORNER	BEARING	FROM	LINKS	No ON TREE
A	17°25'10" Peg on corner	G.I. Pipe	1'6"	5089
B	118°21'20"	G.I. Pipe	1'6"	
C	Peg on corner			5089
D	Peg on corner			5089
E	Peg on corner			5089

TRAVERSE

LINE	BEARING	DISTANCE
1	89°32'	9'5¼"
2	123°38'	9'5¼"
3	157°45'20"	9'5¼"
4	187°45'30"	11'1⅝"
5	213°39'	11'1⅝"
6	239°33'	11'1⅝"
7	304°14'30"	14'4⅞"
8	337°53'	14'4⅞"
9	11°32'	14'4⅞"
10	67°53'	23'1¾"

AZIMUTH TAKEN FROM XY.
FIELD BOOK LR3235.. PAGES 19 & 20.

Lithographed & Printed at the Dept of Lands, Sydney, N.S.W.

NOTATION PLAN

NOTATION PLAN.
I CERTIFY that this is a CORRECT COPY of the original plan of survey and of all notations thereon now relevant, I being the officer having the custody thereof.
A.B. Sherlock
Officer in Charge, Land Board Office

I Geoffrey Ansell Robin of Sydney
*Surveyor registered under the Surveyors Act, 1929 do hereby solemnly and sincerely declare that the survey represented in this plan has been made by me in accordance with the Survey Practice Regulations 1933 and the special requirements of the Department of Lands was completed on the 12th January 1955 and the reference marks have been placed as shown hereon.
And I make this solemn declaration conscientiously believing the same to be true and by virtue of the provisions of the Oaths Act, 1900.
Surveyor registered under the Surveyors Act 1929
Subscribed and declared before me at Sydney this 10th day of February 1955
Justice of the Peace
Transmitted to the District Surveyor with my letter of 10.2.55 No. 2.
CHECKED & CHARTED 17.3.55
EXAMINED
PLAN APPROVED A.B. Sherlock
Authorised Officer 18 March 55

100 FEET
SCALE ~~CHAINS~~ TO AN INCH

CAT. No C7453~2030

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
15/7/2020 3:52PM

FOLIO: 5089/752015

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 7882 FOL 8

Recorded	Number	Type of Instrument	C.T. Issue
27/2/1989		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
11/5/1989		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
3/9/1997		AMENDMENT: LOCAL GOVT AREA	
25/10/2007	AD514005	POSITIVE COVENANT	
25/10/2007	AD514006	REQUEST	EDITION 1
6/6/2013	AH782893	CAVEAT	
2/8/2017	AM597029	TRANSFER GRANTING EASEMENT	EDITION 2

*** END OF SEARCH ***

advlegs PRINTED ON 15/7/2020

Obtained from NSW LRS on 15 July 2020 03:52 PM AEST

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NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 5089/752015

SEARCH DATE	TIME	EDITION NO	DATE
15/7/2020	3:52 PM	2	2/8/2017

LAND

LOT 5089 IN DEPOSITED PLAN 752015
LOCAL GOVERNMENT AREA RANDWICK
PARISH OF BOTANY COUNTY OF CUMBERLAND
(FORMERLY KNOWN AS PORTION 5089)
TITLE DIAGRAM CROWN PLAN 7453.2030

FIRST SCHEDULE

THE TRUSTEES OF THE ROMAN CATHOLIC CHURCH FOR THE ARCHDIOCESE OF SYDNEY

SECOND SCHEDULE (5 NOTIFICATIONS)

1 LAND EXCLUDES MINERALS AND IS SUBJECT TO RESERVATIONS AND CONDITIONS IN FAVOUR OF THE CROWN - SEE CROWN GRANT(S)
2 EXCEPTING LAND BELOW A DEPTH FROM THE SURFACE OF 15.24 METRES
3 AD514005 POSITIVE COVENANT
4 AD514006 RESTRICTION AS TO USER (S.88E(3) CONVEYANCING ACT, 1919)
5 AM597029 EASEMENT FOR ELECTRICITY AND OTHER PURPOSES 3.3 WIDE AFFECTING THE PART DESIGNATED (B) IN PLAN WITH AM597029

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

advlegs PRINTED ON 15/7/2020

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Section 10.7 Certificates

Randwick City Council
a sense of community

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Find us on:

PLANNING CERTIFICATE

ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

Ms M Richard
PO Box 976
NORTH RYDE BC NSW 1670

Description of land:	**Lot 5089 DP 752015, Lot 1 DP 653398**
Address:	**25-45 Donovan Avenue, MAROUBRA NSW 2035**
Date of Certificate:	17 July 2020
Certificate No:	54749
Receipt No:	4583494
Amount:	$133.00
Reference:	E33356PD HW:53791

This planning certificate should be read in conjunction with the **Randwick City Council Local Environmental Plan 2012.** This is available on the NSW Legislation website at https://www.legislation.nsw.gov.au/#/view/EPI/2013/36

The land to which this planning certificate relates, being the lot or one of the lots described in the application made for this certificate, is shown in the Council's record as being situated at the "Address" stated above. The legal "description of land" (by lot(s) and DP/SP numbers) is obtained from NSW Land Registry Services. It is the responsibility of the applicant to enquire and confirm with NSW Land Registry Services the accuracy of the lot(s) and DP/SP numbers pertaining to the land for which application is made for the certificate.

There is more information about some property conditions than is included on this property certificate.

If this case, after the condition text, there is a URL and a square bar code or 'QR code' which provides the address of a page on the Randwick City Council website.
You will need internet access and either:

*1. **Download a QR code scanner** app to your phone and scan the QR code*
or
*2. **Type the URL** into your internet browser*

INFORMATION PROVIDED UNDER SECTION 10.7 (2)

In accordance with the requirements of section 10.7 of the Environmental Planning and Assessment Act 1979 (as amended), the following prescribed matters relate to the land as at the date of this certificate. The information provided in reference to the prescribed matters has been obtained from Council's records and/or from other authorities/government department. Council provides the information in good faith but disclaims all liability for any omission or inaccuracy. Specific inquiry should be made where doubt exists as to the accuracy of the information so provided.

1 Names of relevant planning instruments and DCPs

(1) The name of each environmental planning instrument that applies to the carrying out of development on the land.

Randwick Local Environmental Plan (LEP) 2012, and relevant State Environmental Planning Policies (SEPPs) apply to the land.

- **SEPP No. 19** - Bushland in Urban Areas
- **SEPP No. 21** - Caravan Parks
- **SEPP No. 33** - Hazardous and Offensive Development
- **SEPP No. 55** - Remediation of Land
- **SEPP No. 64** - Advertising and Signage
- **SEPP No. 65** - Design Quality of Residential Flat Development
- **SEPP No. 70** - Affordable Housing
- **SEPP** - (Affordable Rental Housing) 2009
- **SEPP** - BASIX (Building Sustainability Index) 2004
- **SEPP** - (Coastal Management) 2018
- **SEPP** - (Concurrence) 2018
- **SEPP** - (Educational Establishments and Child Care Facilities) 2017
- **SEPP** - (Exempt and Complying Development Codes) 2008
- **SEPP** - (Housing for Seniors or People with a Disability) 2004
- **SEPP** - (Infrastructure) 2007
- **SEPP** - (Mining, Petroleum Production and Extractive Industries) 2007
- **SEPP** - (Miscellaneous Consent Provisions) 2007
- **SEPP** - (State and Regional Development) 2011
- **SEPP** - (State Significant Precincts) 2005
- **SEPP** - (Three Ports) 2013
- **SEPP** - (Vegetation in Non-Rural Areas) 2017

Note: Any questions regarding State Environmental Planning Policies and Regional Environmental Plans should also be directed to the Department of Planning & Infrastructure (02) 9228 6111 or www.planning.nsw.gov.au.

Local Environmental Plan (LEP) Gazetted 15 February 2013

- **Randwick LEP 2012 (Amendment No1) - Gazetted 21 November 2014**
  Applies to part of Royal Randwick Racecourse (identified as "Area A" on the LEP Additional Permitted Uses Map). Permits additional uses of hotel or motel accommodation, serviced apartments and function centres with development consent.

- **Randwick LEP 2012 (Amendment No2) - Gazetted 2 April 2015**
  Applies to land at Young Street Randwick – Inglis Newmarket Site (shown as Area 1 on the LEP Key Sites Map). Amendment to planning controls, including zoning, height of buildings, heritage items and heritage area, FSR (subject to new Clause 6.16) and inclusion of the site as a Key Site.

- **Randwick LEP 2012 (Amendment No3) - Gazetted 15 July 2016**
  Amends Schedule 1 to include 'childcare centre' as an additional permitted use (with development consent) at 270 Malabar Road, Maroubra (Lot 3821, DP 752015).

- **Randwick LEP 2012 (Amendment No4) - Gazetted 25 January 2018**
  Applies to part of the land at 1T Romani Way, MATRAVILLE (Lot 1 DP 107189). Amendment to planning controls, including zoning, height of buildings and FSR.

- **Randwick LEP 2012 (Amendment No5) - Gazetted 17 August 2018**
  Applies to subdivision of dual occupancies (attached) in the Zone R2 Low Density Residential for which development consent was granted before 6 July 2018. Permits development consent to be granted for the Torrens Title or Strata subdivision of a dual occupancy if the development meets certain standards specified in State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

- **Randwick LEP 2012 (Amendment No 6) – Gazetted 22 February 2019**
  Applies to the following land in Coogee, 38 Dudley Street (Lot 17 DP 6489), 40 Dudley Street (Lot 18 DP 6489), 42 Dudley Street (Lot 19 DP 6489), 44 Dudley Street (Lot 20 DP 6489 & Lot 1 DP 952229), 46 Dudley Street (Lot 2 in DP 952229) and 122 Mount Street (Lot 22 DP 6489) by incorporating these properties into the Dudley Street Heritage Conservation Area. Further, 38 Dudley Street (Lot 17 DP 6489), 42 Dudley Street (Lot 19 DP 6489), 44 Dudley Street (Lot 20 DP 6489 & Lot 1 DP 952229) and 122 Mount Street (Lot 22 DP 6489) have been listed as local heritage items in Schedule 5 the Randwick LEP 2012.

- **Randwick LEP 2012 (Amendment No 7) – Gazetted 10 July 2020**
  Applies to the following land in Coogee, 39 Dudley Street (Lot B DP 301192), 41 Dudley Street (Lot C DP 301192) and 148 Brook Street (Lot B DP 305284) which have now been listed as Local Heritage Items in Schedule 5 the Randwick LEP 2012.

(2) The name of each proposed environmental planning instrument that will apply to the carrying out of development on the land and that is or has been the subject of community consultation or on public exhibition under the Act (unless the Secretary has notified the council that the making of the proposed instrument has been deferred indefinitely or has not been approved).

- **draft Environment State Environmental Planning Policy (SEPP)**

- **On the 15th of May 2019, Council received a Gateway Determination from the Department of Planning, Industry and Environment with conditions to progress a Planning Proposal to amend Schedule 5 of the Randwick Local Environmental Plan 2012 (RLEP) which relates to Environmental Heritage. Part of the proposal seeks to create a new Heritage Conservation Area (HCA) known as 'Edgecumbe Estate' incorporating properties at 142A to 152 Brook Street, COOGEE, 37 to 41 Dudley Street, COOGEE and 5 Edgecumbe Avenue, COOGEE. The proposal was publicly exhibited from Tuesday 28 May to 25 June 2019 and the proposal is now subject to due process.**

- **On 10 December 2019, Council resolved to submit the Kensington to Kingsford Planning Proposal with minor amendments to the Department of Planning, Industry and Environment requesting to amend the Randwick Local Environmental Plan *(RLEP)* 2012. The Planning Proposal introduces a range of new provisions relating to building heights and density, community infrastructure, affordable housing, design excellence and building setbacks. The Planning Proposal applies to areas currently zoned B2 Local Centre in the Kensington and Kingsford town centres, two locations immediately adjoining the Kensington town centre comprising 7 Addison Street and 157 Todman Avenue, Kensington, and three locations immediately adjoining the Kingsford town centre comprising 16, 18 and 20 Barker Street, 582-584 and 586-592 Anzac Parade, 63 Harbourne Road and 12, 14, 16 and 18 Rainbow Street, Kingsford. Further information can be obtained from Council's website at** https://www.yoursay.randwick.nsw.gov.au/k2k

(3) The name of each development control plan that applies to the carrying out of development on the land.

- **Randwick DCP adopted by Council on the 28 May 2013 and came into effect on the 14th of June 2013**

  Provides detailed planning controls and guidance for development applications

- **Amendment to Randwick DCP 2013 Newmarket Green, Randwick (E5)**

  Site-specific DCP controls to supplement Randwick LEP 2012 (Amendment No 2)

- **Amendment to Randwick DCP 2013, Public Notification (A3)**

  Section A3 of the DCP was repealed on the 15 January 2020. The Randwick City Council Community Participation Plan now guides notification requirements previously outlined in Section A3.

(4) In this clause, proposed environmental planning instrument includes a planning proposal for a LEP or a draft environmental planning instrument.

2 Zoning and land use under relevant LEPs

For each environmental planning instrument or proposed instrument referred to in clause 1 (other than a SEPP or proposed SEPP) that includes the land in any zone (however described)

(a) The identity of the zone, whether by reference to a name (such as "Residential Zone" or "Heritage Area") or by reference to a number (such as "Zone No 2 (a)")

(b) The purposes for which the instrument provides that development may be carried out within the zone without the need for development consent

(c) The purposes for which the instrument provides that development may not be carried out within the zone except with development consent

(d) The purposes for which the instrument provides that development is prohibited within the zone

Zone SP2 (Infrastructure) in Randwick LEP 2012**.**

1. Objectives of zone

- To provide for infrastructure and related uses.
- To prevent development that is not compatible with or that may detract from the provision of infrastructure.
- To facilitate development that will not adversely affect the amenity of nearby and adjoining development.
- To protect and provide for land used for community purposes.

2. Permitted without consent

Recreation areas

3. Permitted with consent

Aquaculture; Environmental protection works; Flood mitigation works; Roads; The purpose shown on the Land Zoning Map, including any development that is ordinarily incidental or ancillary to development for that purpose

4. Prohibited

Any development not specified in item 2 or 3.

(e) Whether any development standards applying to the land fix minimum land dimensions for the erection of a dwelling - house on the land, and if so, the minimum land dimensions so fixed

The land IS NOT subject to any development standards that fix minimum land dimensions for the erection of a dwelling house.

(f) Whether the land includes or comprises critical habitat

The land DOES NOT include or comprise a critical habitat area under the Threatened Species Conservation Act 1995.

(g) Whether the land is in a conservation area (however described)

The land IS NOT located in a heritage conservation area under the Randwick LEP 2012.

(h) Whether an item of environmental heritage (however described) is situated on the land.

The land IS NOT listed as a heritage item under the Randwick LEP 2012.

The land IS NOT listed on the State Heritage Register under Heritage Act 1977.

2A Zoning and land use under State Environmental Planning Policy (Sydney Region Growth Centres) 2006

To the extent that the land is within any zone (however described) under:

(a) Part 3 of the State Environmental Planning Policy (Sydney Region Growth Centres) 2006 (the 2006 SEPP), or

(b) a Precinct Plan (within the meaning of the 2006 SEPP), or

(c) a proposed Precinct Plan that is or has been the subject of community consultation or on public exhibition under the Act,

the particulars referred to in clause 2 (a)–(h) in relation to that land (with a reference to "the instrument" in any of those paragraphs being read as a reference to Part 3 of the 2006 SEPP, or the Precinct Plan or proposed Precinct Plan, as the case requires).

The land IS NOT within any zone (however described) under this planning policy.

3 Complying Development

(1) The extent to which the land is land on which complying development may be carried out under each of the codes for complying development because of the provisions of clauses 1.17.A (1) (c) to (e), (2), (3) and (4), 1.18(1)(c3) and 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

(2) extent to which complying development may not be carried out on that land because of the provisions of clauses 1.17A (1) (c) to (e), (2), (3) and (4), 1.18(1)(c3) and 1.19 of that Policy and the reasons why it may not be carried out under those clauses.

(3) If the council does not have sufficient information to ascertain the extent to which complying development may or may not be carried out on the land, a statement that a restriction applies to the land, but it may not apply to all of the land, and that council does not have sufficient information to ascertain the extent to which complying development may or may not be carried out on the land.

Housing Code

Complying development under the Housing Code **MAY** be carried out on the land.

Low Rise Housing Diversity Code

Complying development under the Low Rise Housing Diversity Code **MAY** be carried out on the land.

Rural Housing Code

Complying development under the Rural Housing Code **MAY** be carried out on the land.

Housing Alterations Code

Complying development under the Housing Alterations Code **MAY** be carried out on the land.

General Development Code

Complying development under the General Development Code **MAY** be carried out on the land.

Commercial and Industrial Alteration Code

Complying development under the Commercial and Industrial Alteration Code **MAY** be carried out on the land.

Commercial and Industrial (New Buildings and Additions) Code

Complying development under the Commercial and Industrial (New Buildings and Additions) Code **MAY** be carried out on the land.

Container Recycling Facilities Code

Complying Development under the Container Recycling Facilities Code **MAY** be carried out on the land.

Subdivisions Code

Complying development under the Subdivisions Code **MAY** be carried out on the land.

Demolition Code

Complying development under the Demolition Code **MAY** be carried out on the land.

Fire Safety Code

Complying development under the Fire Safety Code **MAY** be carried out on the land.

A copy of the Codes SEPP is available at www.planning.nsw.gov.au. For further information please call the Department of Planning and Infrastructure's Information Centre on Free call 1300 305 695 or 02 9228 6333.

Note: To be complying development, the development must meet the General requirements set out in clause 1.18 of the Codes SEPP. Development must also meet all development standards set out in the relevant code.

4 Coastal protection

Whether or not the land is affected by the operation of section 38 or 39 of The Coastal Protection Act 1979, but only to the extent that the council has been so notified by the Department of Services,Technology and Administration.

Council HAS NOT been notified by the Department that the land is affected by the operation of section 38 or 39 of the Coastal Protection Act 1979.

4A Certain information relating to beaches and coasts

(1) Whether an order has been made under Part 4D of the Coastal Protection Act 1979 in relation to emergency coastal protection works (within the meaning of that Act) on the land (or on public land adjacent to that land), except where the council is satisfied that such an order has been fully complied with.

An order HAS NOT been made under Part 4D of the *Coastal Protection Act 1979* in relation to emergency coastal protection works (within the meaning of that Act) on the land (or on public land adjacent to that land).

(2) (a) Whether the council has been notified under section 55X of the Coastal Protection Act 1979 that emergency coastal protection works (within the meaning of that Act) have been placed on the land (or on public land adjacent to that land), and

The council HAS NOT been notified under section 55X of the *Coastal Protection Act 1979* that emergency coastal protection works have been placed on the land (within the meaning of that Act) on the land (or on public land adjacent to that land).

(b) if works have been so placed – whether the council is satisfied that the works have been removed and the land restored in accordance with that Act.

Not applicable.

(3) (Repealed)

4B Annual charges under Local Government Act 1993 for coastal protection services that relate to existing coastal protection works

Whether the owner (or any previous owner) of the land has 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).

Not applicable.

5 Mine subsidence

Whether or not the land is proclaimed to be a mine subsidence district within the meaning of section 15 of the Mine Subsidence Compensation Act 1961.

The land IS NOT proclaimed to be a mine subsidence district within the meaning of section 15 of the Mine Subsidence Compensation Act 1961.

6 Road widening and road realignment

Whether or not the land is affected by any road widening or road realignment under:

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

The land IS NOT affected by any road widening or road realignment under Division 2 of Part 3 of the Roads Act 1993.

(b) Any environmental planning instrument, or

The land IS NOT affected by any road widening or road realignment under the provisions of Randwick LEP 2012.

(c) Any resolution of the council.

The land IS NOT affected by any resolution of the Council for any road widening or road realignment.

7 Council and other public authority policies on hazard risk restrictions

Whether or not the land is affected by a policy:

(a) adopted by the council

The land **IS** affected by a policy adopted by the Council as follows:

Contaminated Land Policy. This policy does not specifically identify the subject land (or any other land) as contaminated. The policy does, however, apply to all land in the City of Randwick. The policy requires Council to consider the possibility of land contamination and its implications for any proposed or permissible future uses of the land, including all rezoning, subdivision and development applications. This policy will restrict development of land:

(1) Which is affected by contamination; or
(2) Which has been used for certain purposes; or
(3) In respect of which there is not sufficient information about contamination; or
(4) Which is proposed to be used for certain purposes; or
(5) In other circumstances contained in the policy.

Excluding Councils Contaminated Land Policy, the subject land IS NOT affected by any other council policy relating to hazard risk restrictions.

(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 sulphate soils or any other risk (other than flooding).

The land IS NOT affected by a policy 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, (other than flooding), tidal inundation, subsidence, acid sulphate soils or any other risk.

7A Flood related development controls information

(1) Whether or not development on that 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) is subject to flood related development controls.

Development on the land subject of this planning certificate for the purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings **IS** subject to flood related development controls (provided that such development is permissible on the land with or without development consent).

(2) Whether or not development on that land or part of the land for any other purpose is subject to flood related development controls.

Development on the land subject of this planning certificate for purposes other than dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings **IS** subject to flood related development controls (provided that such development is permissible on the land with or without development consent).

(3) Words and expressions in this clause have the same meanings as in the Standard Instrument.

The expressions "dwelling houses", "dual occupancies", "multi dwelling housing" and "residential flat buildings" as used in clauses (1) and (2) above have the same meanings as in the instrument set out in the Schedule to the Standard Instrument (Local Environmental Plans) Order 2006 but do not include development for the purposes of group homes or seniors housing.

8 Land reserved for acquisition

Whether or not any environmental planning instrument or proposed environmental planning instrument referred to in clause 1 makes provision in relation to the acquisition of the land by a public authority, as referred to in section 27 of the Act.

The land IS NOT affected by any environmental planning instrument or proposed environmental planning instrument referred to in clause 1 that makes provision in relation to the acquisition of the land by a public authority, as referred to in Section 27 of the Act.

9 Contributions plans

The name of each contributions plan applying to the land.

Randwick City Council Section 7.12 (previously Section 94A) Development Contributions Plan (effective 21 April 2015).

9A Biodiversity certified land

If the land is biodiversity certified land under Part 8 of the Biodiversity Conservation Act 2016, a statement to that effect.

The land IS NOT biodiversity certified land.

Note. *Biodiversity certified land includes land certified under Part 7AA of the Threatened Species Conservation Act 1995 that is taken to be certified under Part 8 of the Biodiversity Conservation Act 2016. (within the meaning of Part 7AA of the Threatened Species Conservation Act 1995).*

10 Biodiversity stewardship sites

If the land is a biodiversity stewardship site under a biodiversity stewardship agreement under Part 5 of the Biodiversity Conservation Act 2016, a statement to that effect (but only if the council has been notified of the existence of the agreement by the Chief Executive of the Office of Environment and Heritage).

Council HAS NOT been notified that the land is a biodiversity stewardship site by the Chief Executive of the Office of Environment and Heritage.

Note. *Biodiversity stewardship agreements include biobanking agreements under Part 7A of the Threatened Species Conservation Act 1995 that are taken to be biodiversity stewardship agreements under Part 5 of the Biodiversity Conservation Act 2016.*

10A Native vegetation clearing set asides

If the land contains a set aside area under section 60ZC of the Local Land Services Act 2013, a statement to that effect (but only if the council has been notified of the existence of the set aside area by Local Land Services or it is registered in the public register under that section).

The land DOES NOT contain a set aside area under section 60ZC of the Local Land Services Act 2013.

11 Bush fire prone land

If any of the land is bush fire prone land (as defined in the Act), a statement that all or, as the case may be, some of the land is bush fire prone land.

If none of the land is bush fire prone land, a statement to that effect.

The land IS NOT bush fire prone land (as defined in the act).

12 Property vegetation plans

If the land is land to which a property vegetation plan approved under Part 4 of the Native Vegetation Act 2003 (and that continues in force) applies, a statement to that effect (but only if the council has been notified of the existence of the plan by the person or body that approved the plan under that Act).

Council HAS NOT been notified of any property vegetation plan under the Native Vegetation Act 2003 applying to the land.

13 Orders under Trees (Disputes Between Neighbours) Act 2006

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

The land IS NOT land to which an order under Trees (Disputes Between Neighbours) Act 2006 applies.

14 Directions under Part 3A

If there is 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, a statement to that effect identifying the provision that does not have effect.

There IS NOT a direction by the Minister under section 75P (2) (c1) of the Act that a provision of an environmental planning instrument does not have effect.

15 Site compatibility certificates and conditions for seniors housing

If the land is land to which State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004 applies:

(a) a statement of whether there is a current site compatibility certificate (seniors housing), of which the council is aware, in respect of proposed development on the land and, if there is a certificate, the statement is to include:
(i) the period for which the certificate is current, and
(ii) that a copy may be obtained from the head office of the Department, and

(b) a statement setting out any terms of a kind referred to in clause 18 (2) of that Policy that have been imposed as a condition of consent to a development application granted after 11 October 2007 in respect of the land.

The land IS NOT subject of a current site compatibility certificate (of which the Council is aware) that has been issued under the State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004.

16 Site compatibility certificates for infrastructure

A statement of whether there is a valid site compatibility certificate (of which the council is aware), issued under clause 19 of State Environmental Planning Policy (Infrastructure) 2007 in respect of proposed development on the land and, if there is a certificate, the statement is to include:
(a) the period for which the certificate is valid, and
(b) that a copy may be obtained from the head office of the Department of Planning.

The land IS NOT subject to a valid site compatibility certificate (of which the Council is aware), issued under clause 19 of State Environmental Planning Policy (Infrastructure) 2007.

17 Site compatibility certificates and conditions for affordable rental housing

(1) A statement of whether there is a current site compatibility certificate (affordable rental housing), of which the council is aware, in respect of proposed development on the land and, if there is a certificate, the statement is to include:
(a) the period for which the certificate is current, and
(b) that a copy may be obtained from the head office of the Department of Planning.
(2) A statement setting out any terms of a kind referred to in clause 17 (1) or 38 (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.

The land IS NOT subject to a current site compatibility certificate (of which the council is aware) for affordable rental housing.

18 Paper subdivision information

(1) The name of any development plan adopted by a relevant authority that applies to the land or that is proposed to be subject to a consent ballot.
(2) The date of any subdivision order that applies to the land.
(3) Words and expressions used in this clause have the same meaning as they have in Part 16C of this Regulation.

The land IS NOT land to which a development plan or subdivision order applies.

19 Site verification certificates

A statement of whether there is a current site verification certificate, of which the council is aware, in respect of the land and, if there is a certificate, the statement is to include:

(a) the matter certified by the certificate, and

Note. A site verification certificate sets out the Secretary'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*.

(b) the date on which the certificate ceases to be current (if any), and

(c) that a copy may be obtained from the head office of the Department of Planning and Environment.

The land IS NOT subject to a current site verification certificate (of which the council is aware), in relation to State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007.

20 Loose-fill asbestos insulation

If the land includes any residential premises (within the meaning of Division 1A of Part 8 of the Home Building Act 1989) that are listed on the register that is required to be maintained under that Division, a statement to that effect.

The land DOES NOT include any residential premises (within the meaning of Division 1A of Part 8 of the Home Building Act 1989) that are listed on the register that is required to be maintained under that Division.

21 Affected building notices and building product rectification orders

(1) A statement of whether there is any affected building notice of which the council is aware that is in force in respect of the land

(2) A statement of:

(a) *whether there is any building product rectification order of which the council is aware that is in force in respect of the land and has not been fully complied with, and*

(b) *whether any notice of intention to make a building product rectification order of which the council is aware has been given in respect of the land and is outstanding.*

(3) In this clause:

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.

The land IS NOT affected by any notice or order within the meaning of the Building Products (Safety) Act 2017.

Contaminated Land Management Act 1997

***Note**. The following matters are prescribed by section 59 (2) of the Contaminated Land Management Act 1997 as additional matters to be specified in a planning certificate:*

(a) that the land to which the certificate relates is significantly contaminated land within the meaning of that Act—if the land (or part of the land) is significantly contaminated land at the date when the certificate is issued,

The land IS NOT significantly contaminated land within the meaning of the Contaminated Land Management Act 1997.

(b) that the land to which the certificate relates is subject to a management order within the meaning of that Act—if it is subject to such an order at the date when the certificate is issued,

The land IS NOT subject to a management order within the meaning of the Contaminated Land Management Act 1997.

(c) that the land to which the certificate relates is the subject of an approved voluntary management proposal within the meaning of that Act—if it is the subject of such an approved proposal at the date when the certificate is issued,

The land IS NOT the subject of an approved voluntary management proposal within the meaning of the Contaminated Land Management Act 1997.

(d) that the land to which the certificate relates is subject to an ongoing maintenance order within the meaning of that Act—if it is subject to such an order at the date when the certificate is issued,

The land IS NOT the subject to an ongoing maintenance order within the meaning of the Contaminated Land Management Act 1997.

(e) that the land to which the certificate relates is the subject of a site audit statement within the meaning of that Act—if a copy of such a statement has been provided at any time to the local authority issuing the certificate,

Council HAS NOT received a copy of a site audit statement, within the meaning of the Contaminated Land Management Act 1997, for this land.

Note. Section 26 of the Nation Building and Jobs Plan (State Infrastructure Delivery) Act 2009 provides that a planning certificate must include advice about any exemption under section 23 or authorisation under section 24 of that Act if the council is provided with a copy of the exemption or authorisation by the Co-ordinator General under that Act.

INFORMATION PROVIDED UNDER SECTION 10.7(5)

NOTE:
Council has no obligation to provide any advice in this planning certificate in response to a request made under s.10.7 (5) of the Act.

If Council does include advice in this planning certificate in response to a s.10.7 (5) request then, as far as practicable on the information available to Council, the advice shall be current as at 12:noon two(2) working days prior to the date of issue of this planning certificate.

Council draws your attention to the fact that if there is an omission or absence of reference in any advice given in this planning certificate, that is or may be relevant to the subject land, that shall not imply that the land is not affected by any matter not mentioned or referred to in this planning certificate.

Council draws your attention to s.10.7(6) of the Act which provides that Council shall not incur any liability in respect of any advice provided in good faith pursuant to s.10.7(5) of the Act.

Additional Relevant Matters

At the date of this certificate, the following relevant matters affecting the land are provided in good faith in accordance with the requirements of Section 10.7(5) of the Environmental Planning and Assessment Act 1979.

Council resolutions to prepare draft Local Environmental Plans

Name of proposed environmental planning instrument that includes a planning proposal for LEP or a draft environmental planning instrument.

- On the 25th February 2020, Council resolved to endorse a draft Local Strategic Planning Statement (LSPS) and a draft Housing Strategy (HS) for the Randwick City Council Local Government Area. Further to this, it was resolved to commence preparation of a planning proposal which gives effect to the planning priorities and actions outlined in Councils LSPS and HS including the recommendation of rezoning requests. For further information, please see the link provided below:

  http://www.randwick.nsw.gov.au/planning-and-building/planning/vision-2040-shaping-randwicks-future

Note: Draft Local Environmental Plans that have yet to be placed on Community Consultation under the Environmental Planning and Assessment Act, 1979.

Terrestrial Biodiversity

The land IS NOT identified and mapped as `Biodiversity' in Randwick LEP 2012.

Foreshore Scenic Protection Areas

The land IS NOT identified and mapped within a Foreshore Scenic Protection Area in Randwick LEP 2012.

Foreshore Area (Foreshore Building Line)

The land IS NOT identified and mapped as "Foreshore Area" within the Randwick LEP 2012 Foreshore Building Line Map.

Licences Under The Water Act 1912

The Property **IS** within the ground water extraction embargo area or the water shortage zone declared under the Water Act 1912.

For more information please see:
www.randwick.nsw.gov.au/149-Groundwater

Aircraft Noise (ANEF)

This property IS NOT affected by aircraft noise levels as measured by the Australian Noise Exposure Forecast (ANEF) identified by Sydney Airport Corporation Limited (SACL), endorsed by Air Services Australia (ASA).

Flood Studies

Council **IS** in possession of a flood study that covers the catchment in which this property is located. The flood study is available for inspection at the Council if required.

For more information please see:

www.randwick.nsw.gov.au/149-Flooding

Residential Parking Schemes

No resident parking permits will be issued for new development or for significant alterations and additions to residential flat buildings that have been determined under Randwick Local Environmental Plan 2012 and Randwick Development Control Plan 2013.

Alan Bright
Manager Strategic Planning
1300 722 542

Date: 17-Jul-2020

Council Records

Property Address	Property Status	Application
25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	BA/411/1964, SCHOOL
25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	BA/1078/1969, NEW SCHOOL BLOCK
25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	BA/539/1972, ALTERATIONS TO SCHOOL
25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	TA/360/2001, App. to REMOVE Dangerous App. to REMOVE Other Reason
25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	DA/935/2002, New switch room
25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	CC/624/2002, Construction a new electrical switchroom.
25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	TA/960/2003, App. to REMOVE Inapp. Location
25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	CDC/135/2004, Demolish one internal wall, erect steel support beam for use as classroom.
25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	PL/67/2004, Erect multi purpose hall for Marist College.
25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	BA/486/1967, SCHOOL ADDITIONS FOR ST GABRIEL PRIMARY SCHOOL
25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	BA/1064/1968, ADDITIONS TO ST GABRIEL SCHOOL
25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	BA/449/1961, SCHOOL
25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	BA/34/1977, CLASSROOM

25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	DA/432/2005, Demolish existing demountable buildings & construct a new multi use hall to be located along the corner of Fitzgerald Ave & Walsh Ave. The new hall building will include a basketball court, performance stage, adjoining amenity areas & new rooms for hospitality classes, including new commercial kitchen for Marist College.
25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	DA/432/2005/A, Section 96(1) Amend condition No 107 relating to Council's nature strip., Original proposal: Demolish existing demountable buildings & construct a new multi use hall to be located along the corner of Fitzgerald Ave & Walsh Ave. The new hall building will include a basketball court, performance stage, adjoining amenity areas & new rooms for hospitality classes, including new commercial kitchen for Marist College.
25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	CC/433/2006, Demolish existing demountable buildings & construct a new multi use hall to be located along the corner of Fitzgerald Ave & Walsh Ave. The new hall building will include a basketball court, performance stage, adjoining amenity areas & new rooms for hospitality classes, including new commercial kitchen for Marist College.
25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	DA/432/2005/B, Section 96(1A) Remove a further seven trees on site and amend condition 109., Original proposal: Demolish existing demountable buildings & construct a new multi use hall to be located along the corner of Fitzgerald Ave & Walsh Ave. The new hall building will include a basketball court, performance stage, adjoining amenity areas & new rooms for hospitality classes, including new commercial kitchen for Marist College.
25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	DA/925/2006, Erection of shade structure over playground area at Our Lady of Annunciation School
25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	CC/703/2006, Erection of shade structure over playground area at Our Lady of Annunciation School
25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	PL/15/2008, Pre-lodgement assessment of proposal for construction of a new 2 storey library and staff facilities block, refurbishment of existing buildings, construction of a new covered area and removal of existing demountable buildings.
25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	DA/685/2008, Alterations & additions to the existing primary school - Our Lady of Annunciation.
25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	DA/685/2008/A, Section 96(1) modification to amend condition 15 relating to stormwater discharge, Original Consent: Alterations & additions to the existing primary school Our Lady of the Annunciation.

25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	BA/514/1957, BRICK CHURCH HALL
25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	DA/150/1988, ALTS & ADDS TO EASTERN SIDE OF EXISTING CHURCH
25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	CC/404/2009, Accreditors CC-2848/09 - Alterations & additions to the existing primary school - Our Lady of Annunciation.
25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	CDC/35/2010, Construction of new multipurpose school hall., AC CDC No.10/2362-41.
25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	BA/237/1969, GARAGES ADJACENT TO PRIMARY SCHOOL
25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	BA/422/1968, BRICK ADDITIONS
25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	CDC/7/2012, Proposed new training building, classrooms and refurbishment works to the existing buildings. AC CDC No. 3388/11
25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	BA/3330/1960, CHURCH PRIMARY SCHOOL
25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	BA/900/1960, PRIMARY SCHOOL FOR CHURCH
25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	BA/485/1988, ADDITIONS to the church
25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	CDC/282/2014, Construct of a store room between the administration building and gym, AC CDC no: 4056/14
25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	CDC/109/2019, Conversion of existing building into eight (8) new temporary General Learning Areas and Block E deck space to be converted into a permanent General Learning Area - AC CDC No. 19/0111-01
25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	QU/341/2019, Construction of a new building on an existing school site

25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	CDC/197/2019, Alterations and additions to existing school building and associated external works. AC CDC No. P180269/01
25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	PL/49/2019, PreDA for construction of new building at Champagnat Catholic College and installation of demountables.
25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	CDC/287/2019, Installation of solar panels on the roof 99.9kw photovoltaic cells with 82.5kv invertor 264 panels.
25-45 Donovan Avenue, MAROUBRA NSW 2035	Current	157/2020/EDAQUT, Demolition and replacement of Block B, landscaping works, signage and temporary demountable buildings
31E Donovan Avenue, MAROUBRA NSW 2035	Current	CDC/21/2011, Construct new multi purpose hall AC CDC no. 11/2362-41
31E Donovan Avenue, MAROUBRA NSW 2035	Current	BA/3330/1960, CHURCH PRIMARY SCHOOL
35E Donovan Avenue, MAROUBRA NSW 2035	Current	BA/900/1960, PRIMARY SCHOOL FOR CHURCH
35E Donovan Avenue, MAROUBRA NSW 2035	Current	DA/111/2018, Construction of storage shed to construction workshop of Champagnat Catholic college.
35E Donovan Avenue, MAROUBRA NSW 2035	Current	LA/1097/2019, Vehicular access
35E Donovan Avenue, MAROUBRA NSW 2035	Current	DA/249/2020, Demolition of existing Block B, construction and replacement of Block B (three storeys), temporary demountable buildings, continued use as an educational establishment, building identification signage, tree removal, landscaping and associated works.

Appendix C: Laboratory Results Summary Tables

ABBREVIATIONS AND EXPLANATIONS

Abbreviations used in the Tables:

ABC:	Ambient Background Concentration
ACM:	Asbestos Containing Material
ADWG:	AustralianDrinking Water Guidelines
AF:	Asbestos Fines
ANZG	Australian and New Zealand Guidelines
B(a)P:	Benzo(a)pyrene
CEC:	Cation Exchange Capacity
CRC:	Cooperative Research Centre
CT:	Contaminant Threshold
EILs:	Ecological Investigation Levels
ESLs:	Ecological Screening Levels
FA:	Fibrous Asbestos
GIL:	Groundwater Investigation Levels
GSW:	General Solid Waste
HILs:	Health Investigation Levels
HSLs:	Health Screening Levels
HSL-SSA:	Health Screening Level-SiteSpecific Assessment
kg/L	kilograms per litre
NA:	Not Analysed
NC:	Not Calculated
NEPM:	National Environmental Protection Measure
NHMRC:	National Health and Medical Research Council
NL:	Not Limiting
NSL:	No Set Limit
OCP:	Organochlorine Pesticides
OPP:	Organophosphorus Pesticides
PAHs:	Polycyclic Aromatic Hydrocarbons
%w/w:	weight per weight
ppm:	Parts per million
PCBs:	Polychlorinated Biphenyls
PCE:	Perchloroethylene (Tetrachloroethylene or Teterachloroethene)
pH_{KCL} :	pH of filtered 1:20, 1M KCL extract, shaken overnight
pH_{ox} :	pH of filtered 1:20 1M KCl after peroxide digestion
PQL:	Practical Quantitation Limit
RS:	Rinsate Sample
RSL:	Regional Screening Levels
RSW:	Restricted Solid Waste
SAC:	Site Assessment Criteria
SCC:	Specific Contaminant Concentration
S_{Cr}:	Chromium reducible sulfur
S_{POS}:	Peroxide oxidisable Sulfur
SSA:	Site Specific Assessment
SSHSLs:	Site Specific Health Screening Levels
TAA:	Total Actual Acidity in 1M KCL extract titrated to pH6.5
TB:	Trip Blank
TCA:	1,1,1 Trichloroethane (methyl chloroform)
TCE:	Trichloroethylene (Trichloroethene)
TCLP:	Toxicity Characteristics Leaching Procedure
TPA:	Total Potential Acidity, 1M KCL peroxide digest
TS:	Trip Spike
TRH:	Total Recoverable Hydrocarbons
TSA:	Total Sulfide Acidity (TPA-TAA)
UCL:	Upper Level Confidence Limit on Mean Value
USEPA	United States Environmental Protection Agency
VOCC:	Volatile Organic Chlorinated Compounds
WHO:	World Health Organisation

Table Specific Explanations:

HIL Tables:

- The chromium results are for Total Chromium which includes Chromium III and VI. For initial screening purposes, we have assumed that the samples contain only Chromium VI unless demonstrated otherwise by additional analysis.
- Carcinogenic PAHs is a toxicity weighted sum of analyte concentrations for a specific list of PAH compounds relative to B(a)P. It is also refered to as the B(a)P Toxic Equivalence Quotient (TEQ).
- Statistical calculations are undertaken using ProUCL (USEPA). Statistical calculation is usually undertaken using data from fill samples.

EIL/ESL Table:

- ABC Values for selected metals have been adopted from the published background concentrations presented in Olszowy et. al., (1995), Trace Element Concentrations in Soils from Rural and Urban New South Wales (the 25th percentile values for old suburbs with high traffic have been quoted).

QA/QC Table:

- Field blank, Inter and Intra laboratory duplicate results are reported in mg/kg.
- Trip spike results are reported as percentage recovery.
- Field rinsate results are reported in µg/L.

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TABLE S1
SOIL LABORATORY RESULTS COMPARED TO NEPM 2013.
HIL-A: 'Residential with garden/accessible soils; children's day care centers; preschools; and primary schools'

All data in mg/kg unless stated otherwise			HEAVY METALS								PAHs		ORGANOCHLORINE PESTICIDES (OCPs)							OP PESTICIDES (OPPs)	TOTAL PCBs	ASBESTOS FIBRES
			Arsenic	Cadmium	Chromium VI	Copper	Lead	Mercury	Nickel	Zinc	Total PAHs	Carcinogenic PAHs	HCB	Endosulfan	Methoxychlor	Aldrin & Dieldrin	Chlordane	DDT, DDD & DDE	Heptachlor	Chlorpyrifos		
PQL - Envirolab Services			4	0.4	1	1	1	0.1	1	1	-	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	100
Site Assessment Criteria (SAC)			100	20	100	6000	300	40	400	7400	300	3	10	270	300	6	50	240	6	160	1	Detected/Not Detected
Sample Reference	**Sample Depth**	**Sample Description**																				
BH101	0.5-0.7	Fill: Silty Sand	<4	<0.4	**2**	**5**	**47**	<0.1	**2**	**32**	**0.3**	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH101 (lab duplicate)	0.5-0.7	Fill: Silty Sand	<4	<0.4	**2**	**5**	**53**	<0.1	**2**	**39**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH102	0.22-0.4	Fill: Silty Gravelly Sand	<4	<0.4	**16**	**29**	**57**	<0.1	**4**	**73**	**2.7**	<0.5	<0.1	<0.1	<0.1	**0.1**	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH103	0.9-1.1	Fill: Silty Gravelly Sand	<4	<0.4	**4**	**11**	**41**	<0.1	**8**	**65**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	**0.2**	<0.1	<0.1	<0.1	Not Detected
BH104	0.03-0.2	Fill: Silty Gravelly Sand	<4	<0.4	**18**	**61**	**25**	<0.1	**7**	**47**	**2.4**	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH105	0-0.3	Fill: Silty Sand	**7**	<0.4	**4**	**8**	**17**	<0.1	**3**	**45**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH106	0-0.1	Fill: Silty Sand	<4	<0.4	**4**	**11**	**25**	<0.1	**2**	**60**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH107	0-0.1	Fill: Silty Sand	<4	<0.4	**38**	**34**	**96**	**0.4**	**4**	**120**	**0.3**	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
SDUP101	-	Fill: Silty Sand	**6**	<0.4	**5**	**9**	**19**	<0.1	**3**	**42**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
SDUP102	-	Fill: Silty Sand	<4	<0.4	**18**	**34**	**100**	**0.3**	**3**	**94**	**0.68**	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**0.1**	NA
SDUP102 (lab duplicate)	-	Fill: Silty Sand	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1	NA	NA
Total Number of Samples			10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	11	10	4
Maximum Value			7	<PQL	38	61	100	0.4	8	120	2.7	<PQL	<PQL	<PQL	<PQL	0.1	<PQL	0.2	<PQL	<PQL	0.1	Not Detected

Concentration above the SAC **VALUE**
Concentration above the PQL **Bold**

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TABLE S2
SOIL LABORATORY RESULTS COMPARED TO HSLs
All data in mg/kg unless stated otherwise

					C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	Field PID Measurement
PQL - Envirolab Services					25	50	0.2	0.5	1	1	1	ppm
NEPM 2013 HSL Land Use Category					HSL-A/B:LOW/HIGH DENSITY RESIDENTIAL							
Sample Reference	**Sample Depth**	**Sample Description**	**Depth Category**	**Soil Category**								
BH101	0.5-0.7	Fill: Silty Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH101 (lab duplicate)	0.5-0.7	Fill: Silty Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH102	0.22-0.4	Fill: Silty Gravelly Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH103	0.9-1.1	Fill: Silty Gravelly Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH104	0.03-0.2	Fill: Silty Gravelly Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0.4
BH105	0-0.3	Fill: Silty Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	2
BH106	0-0.1	Fill: Silty Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH107	0-0.1	Fill: Silty Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
SDUP101	-	Fill: Silty Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	-
SDUP102	-	Fill: Silty Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	-
Total Number of Samples					10	10	10	10	10	10	10	8
Maximum Value					<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	2

Concentration above the SAC **VALUE**
Concentration above the PQL **Bold**
The guideline corresponding to the concentration above the SAC is highlighted in grey in the Site Assessment Criteria Table below

HSL SOIL ASSESSMENT CRITERIA

Sample Reference	**Sample Depth**	**Sample Description**	**Depth Category**	**Soil Category**	C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene
BH101	0.5-0.7	Fill: Silty Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH101 (lab duplicate)	0.5-0.7	Fill: Silty Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH102	0.22-0.4	Fill: Silty Gravelly Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH103	0.9-1.1	Fill: Silty Gravelly Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH104	0.03-0.2	Fill: Silty Gravelly Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH105	0-0.3	Fill: Silty Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH106	0-0.1	Fill: Silty Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH107	0-0.1	Fill: Silty Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP101	-	Fill: Silty Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP102	-	Fill: Silty Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3

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TABLE S3
SOIL LABORATORY RESULTS COMPARED TO MANAGEMENT LIMITS
All data in mg/kg unless stated otherwise

			C_6-C_{10} (F1) plus BTEX	>C_{10}-C_{16} (F2) plus napthalene	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)
PQL - Envirolab Services			25	50	100	100
NEPM 2013 Land Use Category			**RESIDENTIAL, PARKLAND & PUBLIC OPEN SPACE**			
Sample Reference	**Sample Depth**	**Soil Texture**				
BH101	0.5-0.7	Coarse	<25	<50	<100	<100
BH101 (lab duplicate)	0.5-0.7	Coarse	<25	<50	<100	<100
BH102	0.22-0.4	Coarse	<25	<50	<100	<100
BH103	0.9-1.1	Coarse	<25	<50	<100	<100
BH104	0.03-0.2	Coarse	<25	<50	<100	<100
BH105	0-0.3	Coarse	<25	<50	<100	<100
BH106	0-0.1	Coarse	<25	<50	**150**	<100
BH107	0-0.1	Coarse	<25	<50	**160**	<100
SDUP101	-	Coarse	<25	<50	<100	<100
SDUP102	-	Coarse	<25	<50	**120**	<100
Total Number of Samples			10	10	10	10
Maximum Value			<PQL	<PQL	160	<PQL

Concentration above the SAC **VALUE**
Concentration above the PQL **Bold**

MANAGEMENT LIMIT ASSESSMENT CRITERIA

Sample Reference	**Sample Depth**	**Soil Texture**	C_6-C_{10} (F1) plus BTEX	>C_{10}-C_{16} (F2) plus napthalene	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)
BH101	0.5-0.7	Coarse	700	1000	2500	10000
BH101 (lab duplicate)	0.5-0.7	Coarse	700	1000	2500	10000
BH102	0.22-0.4	Coarse	700	1000	2500	10000
BH103	0.9-1.1	Coarse	700	1000	2500	10000
BH104	0.03-0.2	Coarse	700	1000	2500	10000
BH105	0-0.3	Coarse	700	1000	2500	10000
BH106	0-0.1	Coarse	700	1000	2500	10000
BH107	0-0.1	Coarse	700	1000	2500	10000
SDUP101	-	Coarse	700	1000	2500	10000
SDUP102	-	Coarse	700	1000	2500	10000

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TABLE S4
SOIL LABORATORY RESULTS COMPARED T0 DIRECT CONTACT CRITERIA
All data in mg/kg unless stated otherwise

Analyte		C_6-C_{10}	>C_{10}-C_{16}	>C_{16}-C_{34}	>C_{34}-C_{40}	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	PID
PQL - Envirolab Services		25	50	100	100	0.2	0.5	1	1	1	
CRC 2011 -Direct contact Criteria		4,400	3,300	4,500	6,300	100	14,000	4,500	12,000	1,400	
Site Use		**RESIDENTIAL WITH ACCESSIBLE SOIL- DIRECT SOIL CONTACT**									
Sample Reference	**Sample Depth**										
BH101	0.5-0.7	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH101 (lab duplicate)	0.5-0.7	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH102	0.22-0.4	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH103	0.9-1.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH104	0.03-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0.4**
BH105	0-0.3	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**2**
BH106	0-0.1	<25	<50	**150**	<100	<0.2	<0.5	<1	<3	<1	0
BH107	0-0.1	<25	<50	**160**	<100	<0.2	<0.5	<1	<3	<1	0
SDUP101	-	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	-
SDUP102	-	<25	<50	**120**	<100	<0.2	<0.5	<1	<1	<1	-
Total Number of Samples		10	10	10	10	10	10	10	10	10	8
Maximum Value		<PQL	<PQL	160	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	2

Concentration above the SAC **VALUE**
Concentration above the PQL **Bold**

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TABLE S5
ASBESTOS QUANTIFICATION - FIELD OBSERVATIONS AND LABORATORY RESULTS
HSL-A: Residential with garden/accessible soils; children's day care centers; preschools; and primary schools

HSL-A: Residential with garden/accessible soils; children's day care centers; preschools; and primary schools

FIELD DATA															LABORATORY DATA											
Date Sampled	Sample reference	Sample Depth	Visible ACM in top 100mm	Approx. Volume of Soil (L)	Soil Mass (g)	Mass ACM (g)	Mass Asbestos in ACM (g)	[Asbestos from ACM in soil] (%w/w)	Mass ACM <7mm (g)	Mass Asbestos in ACM <7mm (g)	[Asbestos from ACM <7mm in soil] (%w/w)	Mass FA (g)	Mass Asbestos in FA (g)	[Asbestos from FA in soil] (%w/w)	Lab Report Number	Sample refeference	Sample Depth	Sample Mass (g)	Asbestos ID in soil (AS4964) >0.1g/kg	Trace Analysis	Total Asbestos (g/kg)	Asbestos ID in soil <0.1g/kg	ACM >7mm Estimation (g)	FA and AF Estimation (g)	ACM >7mm Estimation %(w/w)	FA and AF Estimation %(w/w)
SAC			**No**					**0.01**			**0.001**			**0.001**											**0.01**	**0.001**
17.7.20	BH101	0.06-0.7	No	10	3,920	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17.7.20	BH102	0.22-0.6	NA	10	3,860	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	247348	BH102	0.22-0.6		No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
17.7.20	BH103	0.05-0.9	No	10	3,980	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17.7.20	BH103	0.9-1.1	NA	10	3,600	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	247348	BH103	0.9-1.1		No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
17.7.20	BH104	0.03-0.2	No	10	3,450	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	247348	BH104	0.03-0.2		No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected: Synthetic mineral fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
17.7.20	BH104	0.2-0.9	NA	10	2,670	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17.7.20	BH105	0-0.3	No	10	5,500	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17.7.20	BH106	0-0.1	No	10	10,430	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	247348	BH106	0-0.1		No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
17.7.20	BH106	0.1-1.1	NA	10	10,100	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17.7.20	BH106	1.1-1.4	NA	10	7,650	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
17.7.20	BH107	0-0.5	No	10	8,250	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Concentration above the SAC **VALUE**

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TABLE S6
SOIL LABORATORY RESULTS COMPARED TO NEPM 2013 EILs AND ESLs
All data in mg/kg unless stated otherwise

Land Use Category				URBAN RESIDENTIAL AND PUBLIC OPEN SPACE																	
							AGED HEAVY METALS-EILs						EILs		ESLs							
				pH	CEC (cmolc/kg)	Clay Content (% clay)	Arsenic	Chromium	Copper	Lead	Nickel	Zinc	Naphthalene	DDT	C_6-C_{10} (F1)	>C_{10}-C_{16} (F2) plus napthalene	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P
PQL - Envirolab Services				-	1	-	4	1	1	1	1	1	1	0.1	25	50	100	100	0.2	0.5	1	1	0.05
Ambient Background Concentration (ABC)				-	-	-	NSL	13	28	163	5	122	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL
Sample Reference	**Sample Depth**	**Sample Description**	**Soil Texture**																			
BH101	0.5-0.7	Fill: Silty Sand	Coarse	NA	NA	NA	<4	**2**	**5**	**47**	**2**	**32**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	**0.06**
BH101 (lab duplicate)	0.5-0.7	Fill: Silty Sand	Coarse	NA	NA	NA	<4	**2**	**5**	**53**	**2**	**39**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH102	0.22-0.4	Fill: Silty Gravelly Sand	Coarse	NA	NA	NA	<4	**16**	**29**	**57**	**4**	**73**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	**0.3**
BH103	0.9-1.1	Fill: Silty Gravelly Sand	Coarse	NA	NA	NA	<4	**4**	**11**	**41**	**8**	**65**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH104	0.03-0.2	Fill: Silty Gravelly Sand	Coarse	NA	NA	NA	<4	**18**	**61**	**25**	**7**	**47**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	**0.2**
BH105	0-0.3	Fill: Silty Sand	Coarse	NA	NA	NA	**7**	**4**	**8**	**17**	**3**	**45**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH106	0-0.1	Fill: Silty Sand	Coarse	NA	NA	NA	<4	**4**	**11**	**25**	**2**	**60**	<1	<0.1	<25	<50	**150**	<100	<0.2	<0.5	<1	<3	<0.05
BH107	0-0.1	Fill: Silty Sand	Coarse	NA	NA	NA	<4	**38**	**34**	**96**	**4**	**120**	<1	<0.1	<25	<50	**160**	<100	<0.2	<0.5	<1	<3	**0.07**
SDUP101	-	Fill: Silty Sand	Coarse	NA	NA	NA	**6**	**5**	**9**	**19**	**3**	**42**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
SDUP102	-	Fill: Silty Sand	Coarse	NA	NA	NA	<4	**18**	**34**	**100**	**3**	**94**	<1	<0.1	<25	<50	**120**	<100	<0.2	<0.5	<1	<1	**0.11**
Total Number of Samples				0	0	0	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Maximum Value				NA	NA	NA	7	38	61	100	8	120	<PQL	<PQL	<PQL	<PQL	160	<PQL	<PQL	<PQL	<PQL	<PQL	0.3

Concentration above the SAC — **VALUE**
Concentration above the PQL — **Bold**
The guideline corresponding to the elevated value is highlighted in grey in the EIL and ESL Assessment Criteria Table below

EIL AND ESL ASSESSMENT CRITERIA

Sample Reference	**Sample Depth**	**Sample Description**	**Soil Texture**	pH	CEC (cmolc/kg)	Clay Content (% clay)	Arsenic	Chromium	Copper	Lead	Nickel	Zinc	Naphthalene	DDT	C_6-C_{10} (F1)	>C_{10}-C_{16} (F2) plus napthalene	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P
BH101	0.5-0.7	Fill: Silty Sand	Coarse	NA	NA	NA	100	200	90	1300	35	190	170	180	180	120	300	2800	50	85	70	105	20
BH101 (lab duplicate)	0.5-0.7	Fill: Silty Sand	Coarse	NA	NA	NA	100	200	90	1300	35	190	170	180	180	120	300	2800	50	85	70	105	20
BH102	0.22-0.4	Fill: Silty Gravelly Sand	Coarse	NA	NA	NA	100	200	90	1300	35	190	170	180	180	120	300	2800	50	85	70	105	20
BH103	0.9-1.1	Fill: Silty Gravelly Sand	Coarse	NA	NA	NA	100	200	90	1300	35	190	170	180	180	120	300	2800	50	85	70	105	20
BH104	0.03-0.2	Fill: Silty Gravelly Sand	Coarse	NA	NA	NA	100	200	90	1300	35	190	170	180	180	120	300	2800	50	85	70	105	20
BH105	0-0.3	Fill: Silty Sand	Coarse	NA	NA	NA	100	200	90	1300	35	190	170	180	180	120	300	2800	50	85	70	105	20
BH106	0-0.1	Fill: Silty Sand	Coarse	NA	NA	NA	100	200	90	1300	35	190	170	180	180	120	300	2800	50	85	70	105	20
BH107	0-0.1	Fill: Silty Sand	Coarse	NA	NA	NA	100	200	90	1300	35	190	170	180	180	120	300	2800	50	85	70	105	20
SDUP101	-	Fill: Silty Sand	Coarse	NA	NA	NA	100	200	90	1300	35	190	170	180	180	120	300	2800	50	85	70	105	20
SDUP102	-	Fill: Silty Sand	Coarse	NA	NA	NA	100	200	90	1300	35	190	170	180	180	120	300	2800	50	85	70	105	20

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TABLE S7
SOIL QA/QC SUMMARY

| | | | TRH C6 - C10 | TRH >C10-C16 | TRH >C16-C34 | TRH >C34-C40 | Benzene | Toluene | Ethylbenzene | m+p-xylene | o-Xylene | Naphthalene | Acenaphthylene | Acenaph-thene | Fluorene | Phenanthrene | Anthracene | Fluoranthene | Pyrene | Benzo(a)anthracene | Chrysene | Benzo(b,j+k)fluoranthene | Benzo(a)pyrene | Indeno(1,2,3-c,d)pyrene | Dibenzo(a,h)anthra-cene | Benzo(g,h,i)perylene | HCB | alpha- BHC | gamma- BHC | beta- BHC | Heptachlor | delta- BHC | Aldrin | Heptachlor Epoxide | Gamma- Chlordane | alpha- chlordane | Endosulfan I | pp- DDE | Dieldrin | Endrin | pp- DDD | Endosulfan II | pp- DDT | Endrin Aldehyde | Endosulfan Sulphate | Methoxychlor | Azinphos-methyl (Guthion) | Bromophos-ethyl | Chlorpyriphos | Chlorpyriphos-methyl | Diazinon | Dichlorvos | Dimethoate | Ethion | Fenitrothion | Malathion | Parathion | Ronnel | Total PCBS | Arsenic | Cadmium | Chromium VI | Copper | Lead | Mercury | Nickel | Zinc |
|---|---|---

Appendix D: Borehole Logs

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ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **BH101** **1/1**

Client: SYDNEY CATHOLIC SCHOOLS

Project: PROPOSED CHAMPAGNAT CATHOLIC COLLEGE STAGE 3 REDEVELOPMENT

Location: 35 DONOVAN AVENUE, MAROUBRA, NSW

Job No.: E33356PD **Method:** HAND AUGER **R.L. Surface:** N/A

Date: 17/7/20 **Datum:** -

Plant Type: - **Logged/Checked by:** H.W./M.D.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE-TION							0			ASPHALTIC CONCRETE: 60mm.t				
									-	FILL: Silty sand, fine to medium grained, grey, trace of igneous gravel, glass and sandstone gravel.	M			3.92kg BUCKET NO FCF OBSERVED IN TOP 100mm
							0.5							NO FCF OBSERVED IN BUCKET
									SM	Silty SAND: fine to medium grained, yellow brown, trace of cemented sands nodules.	M			ALLUVIAL
							1							
										END OF BOREHOLE AT 1.3m				
							1.5							
							2							
							2.5							
							3							
							3.5							

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Environmental logs are not to be used for geotechnical purposes

Log No. **BH102** **1/1**

Client: SYDNEY CATHOLIC SCHOOLS

Project: PROPOSED CHAMPAGNAT CATHOLIC COLLEGE STAGE 3 REDEVELOPMENT

Location: 35 DONOVAN AVENUE, MAROUBRA, NSW

Job No.: E33356PD **Method:** HAND AUGER **R.L. Surface:** N/A

Date: 17/7/20 **Datum:** -

Plant Type: - **Logged/Checked by:** H.W./M.D.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE-TION	■		■		■		0			CONCRETE: 220mm.t				
	■		■		■				-	FILL: Silty gravelly sand, fine to medium grained, brown, fine to medium grained igneous gravel, sub-angular, trace of concrete fragments, ceramic tile fragments and slag.	M			3.86kg BUCKET NO FCF OBSERVED IN TOP 100mm
							0.5							NO FCF OBSERVED IN BUCKET
										END OF BOREHOLE AT 0.6m				HAND AUGER REFUSAL ON COMPACTED GRAVEL
							1							
							1.5							
							2							
							2.5							
							3							
							3.5							

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Environmental logs are not to be used for geotechnical purposes

Log No. **BH103** **1/1**

Client: SYDNEY CATHOLIC SCHOOLS

Project: PROPOSED CHAMPAGNAT CATHOLIC COLLEGE STAGE 3 REDEVELOPMENT

Location: 35 DONOVAN AVENUE, MAROUBRA, NSW

Job No.: E33356PD **Method:** HAND AUGER **R.L. Surface:** N/A

Date: 17/7/20 **Datum:** -

Plant Type: - **Logged/Checked by:** H.W./M.D.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE-TION							0			CONCRETE: 50mm.t				
									-	FILL: Silty sand, fine to medium grained, brown, trace of igneous gravel, terracotta tile fragments, steel and slag.	M			3.98kg BUCKET NO FCF OBSERVED IN TOP 100mm
							0.5							NO FCF OBSERVED IN BUCKET
										FILL: Silty gravelly sand, fine to medium grained, dark grey, fine to medium grained igneous gravel, sub-angular, trace of terracotta pipe fragments and slag.				3.60kg BUCKET NO FCF OBSERVED IN BUCKET
							1		SM	Silty SAND: fine to medium grained, light grey.	M			ALLUVIAL
							1.5			END OF BOREHOLE AT 1.5m				
							2							
							2.5							
							3							
							3.5							

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Environmental logs are not to be used for geotechnical purposes

Log No. **BH104** **1/1**

Client: SYDNEY CATHOLIC SCHOOLS

Project: PROPOSED CHAMPAGNAT CATHOLIC COLLEGE STAGE 3 REDEVELOPMENT

Location: 35 DONOVAN AVENUE, MAROUBRA, NSW

Job No.: E33356PD **Method:** HAND AUGER **R.L. Surface:** N/A

Date: 17/7/20 **Datum:** -

Plant Type: - **Logged/Checked by:** H.W./M.D.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE-TION							0		-	ASPHALTIC CONCRETE: 30mm.t	M			3.45kg BUCKET NO FCF OBSERVED IN TOP 100mm
										FILL: Silty gravelly sand, fine to medium grained, brown, fine to medium grained igneous gravel, sub-angular, trace of asphaltic concrete fragments.	D			NO FCF OBSERVED IN BUCKET
							0.5			FILL: Silty sand, fine to medium grained, brown, trace of igneous gravel.				2.67kg BUCKET NO FCF OBSERVED IN BUCKET
							1		SM	Silty SAND: fine to medium grained, yellow brown.	D			ALLUVIAL POSSIBLY FILL
										END OF BOREHOLE AT 1.0m				HAND AUGER REFUSAL DUE TO COLLAPSE
							1.5							
							2							
							2.5							
							3							
							3.5							

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Environmental logs are not to be used for geotechnical purposes

Log No. BH105 1/1

SDUP101: 0-0.3m

Client: SYDNEY CATHOLIC SCHOOLS

Project: PROPOSED CHAMPAGNAT CATHOLIC COLLEGE STAGE 3 REDEVELOPMENT

Location: 35 DONOVAN AVENUE, MAROUBRA, NSW

Job No.: E33356PD **Method:** HAND AUGER **R.L. Surface:** N/A

Date: 17/7/20 **Datum:** -

Plant Type: - **Logged/Checked by:** H.W./M.D.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE-TION	■		■	■	■		0			FILL: Silty sand, fine to medium grained, brown, trace of igneous gravel and root fibres.	M			GRASS COVER 5.50kg BUCKET NO FCF OBSERVED IN TOP 100mm
									SM	Silty SAND: fine to medium grained, grey.	M			NO FCF OBSERVED IN BUCKET ALLUVIAL
							0.5			as above, but light grey.				
							1			END OF BOREHOLE AT 1.0m				
							1.5							
							2							
							2.5							
							3							
							3.5							

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Environmental logs are not to be used for geotechnical purposes

Log No. **BH106** **1/1**

Client: SYDNEY CATHOLIC SCHOOLS

Project: PROPOSED CHAMPAGNAT CATHOLIC COLLEGE STAGE 3 REDEVELOPMENT

Location: 35 DONOVAN AVENUE, MAROUBRA, NSW

Job No.: E33356PD **Method:** HAND AUGER AND SHOVEL **R.L. Surface:** N/A

Date: 17/7/20 **Datum:** -

Plant Type: - **Logged/Checked by:** H.W./M.D.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE-TION	■		■		■		0			FILL: Silty sand, fine to medium grained, brown, trace of igneous gravel, slag and root fibres.	M-D			MULCH COVER 10.43kg BUCKET NO FCF OBSERVED IN TOP 100mm 10.10kg BUCKET NO FCF OBSERVED IN BUCKET TEST PIT TO APPROXIMATELY 1.0m DEPTH 7.65kg BUCKET NO FCF OBSERVED IN BUCKET
							0.5							
							1							
							1.5			END OF BOREHOLE AT 1.5m				HAND AUGER REFUSAL ON SUSPECTED PIPE
							2							
							2.5							
							3							
							3.5							

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ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. BH107 1/1

SDUP102: 0-0.1m

Client: SYDNEY CATHOLIC SCHOOLS

Project: PROPOSED CHAMPAGNAT CATHOLIC COLLEGE STAGE 3 REDEVELOPMENT

Location: 35 DONOVAN AVENUE, MAROUBRA, NSW

Job No.: E33356PD **Method:** HAND AUGER **R.L. Surface:** N/A

Date: 17/7/20 **Datum:** -

Plant Type: - **Logged/Checked by:** H.W./M.D.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLE-TION	■		■		■		0			FILL: Silty sand, fine to medium grained, brown, trace of igneous gravel and slag.	M			MULCH COVER 8.25kg BUCKET NO FCF OBSERVED IN TOP 100mm NO FCF OBSERVED IN BUCKET
	■		■		■		0.5		SM	Silty SAND: fine to medium grained, light brown.	M			ALLUVIAL
							1			END OF BOREHOLE AT 1.0m				
							1.5							
							2							
							2.5							
							3							
							3.5							

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ENVIRONMENTAL LOGS EXPLANATION NOTES

INTRODUCTION

These notes have been provided to amplify the environmental report in regard to classification methods, field procedures and certain matters relating to the logging of soil and rock. Not all notes are necessarily relevant to all reports.

Where geotechnical borehole logs are utilised for environmental purpose, reference should also be made to the explanatory notes included in the geotechnical report. Environmental logs are not suitable for geotechnical purposes.

The ground is a product of continuing natural and man-made processes and therefore exhibits a variety of characteristics and properties which vary from place to place and can change with time. Environmental studies include gathering and assimilating limited facts about these characteristics and properties in order to understand or predict the behaviour of the ground on a particular site under certain conditions. This report may contain such facts obtained by inspection, excavation, probing, sampling, testing or other means of investigation. If so, they are directly relevant only to the ground at the place where and time when the investigation was carried out.

DESCRIPTION AND CLASSIFICATION METHODS

The methods of description and classification of soils and rocks used in this report are based on Australian Standard 1726:2017 *'Geotechnical Site Investigations'*. In general, descriptions cover the following properties – soil or rock type, colour, structure, strength or density, and inclusions. Identification and classification of soil and rock involves judgement and the Company infers accuracy only to the extent that is common in current geoenvironmental practice.

Soil types are described according to the predominating particle size and behaviour as set out in the attached soil classification table qualified by the grading of other particles present (eg. sandy clay) as set out below:

Soil Classification	Particle Size
Clay	< 0.002mm
Silt	0.002 to 0.075mm
Sand	0.075 to 2.36mm
Gravel	2.36 to 63mm
Cobbles	63 to 200mm
Boulders	> 200mm

Non-cohesive soils are classified on the basis of relative density, generally from the results of Standard Penetration Test (SPT) as below:

Relative Density	SPT 'N' Value (blows/300mm)
Very loose (VL)	< 4
Loose (L)	4 to 10
Medium dense (MD)	10 to 30
Dense (D)	30 to 50
Very Dense (VD)	> 50

Cohesive soils are classified on the basis of strength (consistency) either by use of a hand penetrometer, vane shear, laboratory testing and/or tactile engineering examination. The strength terms are defined as follows.

Classification	Unconfined Compressive Strength (kPa)	Indicative Undrained Shear Strength (kPa)
Very Soft (VS)	≤ 25	≤ 12
Soft (S)	> 25 and ≤ 50	> 12 and ≤ 25
Firm (F)	> 50 and ≤ 100	> 25 and ≤ 50
Stiff (St)	> 100 and ≤ 200	> 50 and ≤ 100
Very Stiff (VSt)	> 200 and ≤ 400	> 100 and ≤ 200
Hard (Hd)	> 400	> 200
Friable (Fr)	Strength not attainable – soil crumbles	

Rock types are classified by their geological names, together with descriptive terms regarding weathering, strength, defects, etc. Where relevant, further information regarding rock classification is given in the text of the report. In the Sydney Basin, 'shale' is used to describe fissile mudstone, with a weakness parallel to bedding. Rocks with alternating inter-laminations of different grain size (eg. siltstone/claystone and siltstone/fine grained sandstone) are referred to as 'laminite'.

INVESTIGATION METHODS

The following is a brief summary of investigation methods currently adopted by the Company and some comments on their use and application. All methods except test pits, hand auger drilling and portable Dynamic Cone Penetrometers require the use of a mechanical rig which is commonly mounted on a truck chassis or track base.

Test Pits: These are normally excavated with a backhoe or a tracked excavator, allowing close examination of the insitu soils and 'weaker' bedrock if it is safe to descend into the pit. The depth of penetration is limited to about 3m for a backhoe and up to 6m for a large excavator. Limitations of test pits are the problems associated with disturbance and difficulty of reinstatement and the consequent effects on close-by structures. Care must be taken if construction is to be carried out near test pit locations to either properly recompact the backfill during construction or to design and construct the

structure so as not to be adversely affected by poorly compacted backfill at the test pit location.

Hand Auger Drilling: A borehole of 50mm to 100mm diameter is advanced by manually operated equipment. Refusal of the hand auger can occur on a variety of materials such as obstructions within any fill, tree roots, hard clay, gravel or ironstone, cobbles and boulders, and does not necessarily indicate rock level.

Continuous Spiral Flight Augers: The borehole is advanced using 75mm to 115mm diameter continuous spiral flight augers, which are withdrawn at intervals to allow sampling and insitu testing. This is a relatively economical means of drilling in clays and in sands above the water table. Samples are returned to the surface by the flights or may be collected after withdrawal of the auger flights, but they can be very disturbed and layers may become mixed. Information from the auger sampling (as distinct from specific sampling by SPTs or undisturbed samples) is of limited reliability due to mixing or softening of samples by groundwater, or uncertainties as to the original depth of the samples. Augering below the groundwater table is of even lesser reliability than augering above the water table.

Rock Augering: Use can be made of a Tungsten Carbide (TC) bit for auger drilling into rock to indicate rock quality and continuity by variation in drilling resistance and from examination of recovered rock cuttings. This method of investigation is quick and relatively inexpensive but provides only an indication of the likely rock strength and predicted values may be in error by a strength order. Where rock strengths may have a significant impact on construction feasibility or costs, then further investigation by means of cored boreholes may be warranted.

Wash Boring: The borehole is usually advanced by a rotary bit, with water being pumped down the drill rods and returned up the annulus, carrying the drill cuttings. Only major changes in stratification can be assessed from the cuttings, together with some information from "feel" and rate of penetration.

Mud Stabilised Drilling: Either Wash Boring or Continuous Core Drilling can use drilling mud as a circulating fluid to stabilise the borehole. The term 'mud' encompasses a range of products ranging from bentonite to polymers. The mud tends to mask the cuttings and reliable identification is only possible from intermittent intact sampling (eg. from SPT and U50 samples) or from rock coring, etc.

Continuous Core Drilling: A continuous core sample is obtained using a diamond tipped core barrel. Provided full core recovery is achieved (which is not always possible in very low strength rocks and granular soils), this technique provides a very reliable (but relatively expensive) method of investigation. In rocks, NMLC or HQ triple tube core barrels, which give a core of about 50mm and 61mm diameter, respectively, is usually used with water flush. The length of core recovered is compared to the length drilled and any length not recovered is shown as NO CORE. The location of NO CORE recovery is determined on site by the supervising engineer; where the location is uncertain, the loss is placed at the bottom of the drill run.

Standard Penetration Tests: Standard Penetration Tests (SPT) are used mainly in non-cohesive soils, but can also be used in cohesive soils, as a means of indicating density or strength and also of obtaining a relatively undisturbed sample. The test procedure is described in Australian Standard 1289.6.3.1–2004 (R2016) *'Methods of Testing Soils for Engineering Purposes, Soil Strength and Consolidation Tests – Determination of the Penetration Resistance of a Soil – Standard Penetration Test (SPT)'*.

The test is carried out in a borehole by driving a 50mm diameter split sample tube with a tapered shoe, under the impact of a 63.5kg hammer with a free fall of 760mm. It is normal for the tube to be driven in three successive 150mm increments and the 'N' value is taken as the number of blows for the last 300mm. In dense sands, very hard clays or weak rock, the full 450mm 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 150mm of, say, 4, 6 and 7 blows, as

  N = 13
  4, 6, 7

- In a case where the test is discontinued short of full penetration, say after 15 blows for the first 150mm and 30 blows for the next 40mm, as

  N > 30
  15, 30/40mm

The results of the test can be related empirically to the engineering properties of the soil.

A modification to the SPT is where the same driving system is used with a solid 60° tipped steel cone of the same diameter as the SPT hollow sampler. The solid cone can be continuously driven for some distance in soft clays or loose sands, or may be used where damage would otherwise occur to the SPT. The results of this Solid Cone Penetration Test (SCPT) are shown as 'N_c' on the borehole logs, together with the number of blows per 150mm penetration.

LOGS

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

The terms and symbols used in preparation of the logs are defined in the following pages.

Interpretation of the information shown on the logs, and its application to design and construction, should therefore take into account the spacing of boreholes or test pits, the method of drilling or excavation, the frequency of sampling and testing and the possibility of other than 'straight line' variations between the boreholes or test pits. Subsurface conditions between boreholes or test pits may vary significantly from conditions encountered at the borehole or test pit locations.

GROUNDWATER

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

- Although groundwater may be present, in low permeability soils it may enter the hole slowly or perhaps not at all during the time it 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 and may not be the same at the time of construction.
- 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 be washed out of the hole or 'reverted' chemically if reliable water observations are to be made.

More reliable measurements can be made by installing standpipes which are read after the groundwater level has stabilised at intervals ranging from several days to 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 perched water tables or surface water.

FILL

The presence of fill materials can often be determined only by the inclusion of foreign objects (eg. bricks, steel, etc) or by distinctly unusual colour, texture or fabric. Identification of the extent of fill materials will also depend on investigation methods and frequency. Where natural soils similar to those at the site are used for fill, it may be difficult with limited testing and sampling to reliably assess the extent of the fill.

The presence of fill materials is usually regarded with caution as the possible variation in density and material type is much greater than with natural soil deposits. Consequently, there is an increased risk of adverse environmental characteristics or behaviour. If the volume and nature of fill is of importance to a project, then frequent test pit excavations are preferable to boreholes.

LABORATORY TESTING

Laboratory testing has not been undertaken to confirm the soil classification and rock strengths indicated on the environmental logs unless noted in the report.

SYMBOL LEGENDS

SOIL


FILL


TOPSOIL


CLAY (CL, CI, CH)


SILT (ML, MH)


SAND (SP, SW)


GRAVEL (GP, GW)


SANDY CLAY (CL, CI, CH)


SILTY CLAY (CL, CI, CH)


CLAYEY SAND (SC)


SILTY SAND (SM)


GRAVELLY CLAY (CL, CI, CH)


CLAYEY GRAVEL (GC)


SANDY SILT (ML, MH)


PEAT AND HIGHLY ORGANIC SOILS (Pt)

ROCK


CONGLOMERATE


SANDSTONE


SHALE/MUDSTONE


SILTSTONE


CLAYSTONE


COAL


LAMINITE


LIMESTONE


PHYLLITE, SCHIST


TUFF


GRANITE, GABBRO


DOLERITE, DIORITE


BASALT, ANDESITE


QUARTZITE

OTHER MATERIALS


BRICKS OR PAVERS


CONCRETE


ASPHALTIC CONCRETE

CLASSIFICATION OF COARSE AND FINE GRAINED SOILS

Major Divisions		Group Symbol	Typical Names	Field Classification of Sand and Gravel	Laboratory Classification	
Coarse grained soil (more than 65% of soil excluding oversize fraction is greater than 0.075mm)	GRAVEL (more than half of coarse fraction is larger than 2.36mm	GW	Gravel and gravel-sand mixtures, little or no fines	Wide range in grain size and substantial amounts of all intermediate sizes, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	$C_u > 4$ $1 < C_c < 3$
		GP	Gravel and gravel-sand mixtures, little or no fines, uniform gravels	Predominantly one size or range of sizes with some intermediate sizes missing, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	Fails to comply with above
		GM	Gravel-silt mixtures and gravel-sand-silt mixtures	'Dirty' materials with excess of non-plastic fines, zero to medium dry strength	≥ 12% fines, fines are silty	Fines behave as silt
		GC	Gravel-clay mixtures and gravel-sand-clay mixtures	'Dirty' materials with excess of plastic fines, medium to high dry strength	≥ 12% fines, fines are clayey	Fines behave as clay
	SAND (more than half of coarse fraction is smaller than 2.36mm)	SW	Sand and gravel-sand mixtures, little or no fines	Wide range in grain size and substantial amounts of all intermediate sizes, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	$C_u > 6$ $1 < C_c < 3$
		SP	Sand and gravel-sand mixtures, little or no fines	Predominantly one size or range of sizes with some intermediate sizes missing, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	Fails to comply with above
		SM	Sand-silt mixtures	'Dirty' materials with excess of non-plastic fines, zero to medium dry strength	≥ 12% fines, fines are silty	N/A
		SC	Sand-clay mixtures	'Dirty' materials with excess of plastic fines, medium to high dry strength	≥ 12% fines, fines are clayey	

Major Divisions		Group Symbol	Typical Names	Field Classification of Silt and Clay			Laboratory Classification
				Dry Strength	Dilatancy	Toughness	% < 0.075mm
Fine grained soils (more than 35% of soil excluding oversize fraction is less than 0.075mm)	SILT and CLAY (low to medium plasticity)	ML	Inorganic silt and very fine sand, rock flour, silty or clayey fine sand or silt with low plasticity	None to low	Slow to rapid	Low	Below A line
		CL, CI	Inorganic clay of low to medium plasticity, gravelly clay, sandy clay	Medium to high	None to slow	Medium	Above A line
		OL	Organic silt	Low to medium	Slow	Low	Below A line
	SILT and CLAY (high plasticity)	MH	Inorganic silt	Low to medium	None to slow	Low to medium	Below A line
		CH	Inorganic clay of high plasticity	High to very high	None	High	Above A line
		OH	Organic clay of medium to high plasticity, organic silt	Medium to high	None to very slow	Low to medium	Below A line
	Highly organic soil	Pt	Peat, highly organic soil	–	–	–	–

Laboratory Classification Criteria

A well graded coarse grained soil is one for which the coefficient of uniformity $Cu > 4$ and the coefficient of curvature $1 < C_c < 3$. Otherwise, the soil is poorly graded. These coefficients are given by:

$$C_U = \frac{D_{60}}{D_{10}} \qquad and \qquad C_C = \frac{(D_{30})^2}{D_{10}\, D_{60}}$$

Where D_{10}, D_{30} and D_{60} are those grain sizes for which 10%, 30% and 60% of the soil grains, respectively, are smaller.

NOTES:

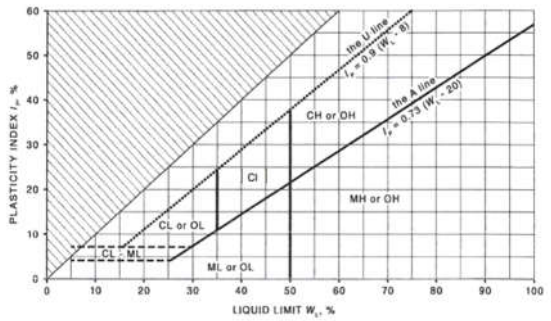
1 For a coarse grained soil with a fines content between 5% and 12%, the soil is given a dual classification comprising the two group symbols separated by a dash; for example, for a poorly graded gravel with between 5% and 12% silt fines, the classification is GP-GM.

2 Where the grading is determined from laboratory tests, it is defined by coefficients of curvature (C_c) and uniformity (C_u) derived from the particle size distribution curve.

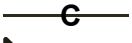
3 Clay soils with liquid limits > 35% and ≤ 50% may be classified as being of medium plasticity.

4 The U line on the Modified Casagrande Chart is an approximate upper bound for most natural soils.

Modified Casagrande Chart for Classifying Silts and Clays according to their Behaviour



LOG SYMBOLS

Log Column	Symbol	Definition
Groundwater Record		Standing water level. Time delay following completion of drilling/excavation may be shown.
		Extent of borehole/test pit collapse shortly after drilling/excavation.
		Groundwater seepage into borehole or test pit noted during drilling or excavation.
Samples	ES	Sample taken over depth indicated, for environmental analysis.
	U50	Undisturbed 50mm diameter tube sample taken over depth indicated.
	DB	Bulk disturbed sample taken over depth indicated.
	DS	Small disturbed bag sample taken over depth indicated.
	ASB	Soil sample taken over depth indicated, for asbestos analysis.
	ASS	Soil sample taken over depth indicated, for acid sulfate soil analysis.
	SAL	Soil sample taken over depth indicated, for salinity analysis.
Field Tests	N = 17 4, 7, 10	Standard Penetration Test (SPT) performed between depths indicated by lines. Individual figures show blows per 150mm penetration. 'Refusal' refers to apparent hammer refusal within the corresponding 150mm depth increment.
	N_c = 5 7 3R	Solid Cone Penetration Test (SCPT) performed between depths indicated by lines. Individual figures show blows per 150mm penetration for 60° solid cone driven by SPT hammer. 'R' refers to apparent hammer refusal within the corresponding 150mm depth increment.
	VNS = 25 PID = 100	Vane shear reading in kPa of undrained shear strength. Photoionisation detector reading in ppm (soil sample headspace test).
Moisture Condition (Fine Grained Soils)	$w > PL$ $w \approx PL$ $w < PL$ $w \approx LL$ $w > LL$	Moisture content estimated to be greater than plastic limit. Moisture content estimated to be approximately equal to plastic limit. Moisture content estimated to be less than plastic limit. Moisture content estimated to be near liquid limit. Moisture content estimated to be wet of liquid limit.
(Coarse Grained Soils)	D M W	DRY – runs freely through fingers. MOIST – does not run freely but no free water visible on soil surface. WET – free water visible on soil surface.
Strength (Consistency) Cohesive Soils	VS S F St VSt Hd Fr ( )	VERY SOFT – unconfined compressive strength ≤ 25kPa. SOFT – unconfined compressive strength > 25kPa and ≤ 50kPa. FIRM – unconfined compressive strength > 50kPa and ≤ 100kPa. STIFF – unconfined compressive strength > 100kPa and ≤ 200kPa. VERY STIFF – unconfined compressive strength > 200kPa and ≤ 400kPa. HARD – unconfined compressive strength > 400kPa. FRIABLE – strength not attainable, soil crumbles. Bracketed symbol indicates estimated consistency based on tactile examination or other assessment.
Density Index/ Relative Density (Cohesionless Soils)	VL L MD D VD ( )	**Density Index (I_D) Range (%)** / **SPT 'N' Value Range (Blows/300mm)** VERY LOOSE ≤ 15 / 0 – 4 LOOSE > 15 and ≤ 35 / 4 – 10 MEDIUM DENSE > 35 and ≤ 65 / 10 – 30 DENSE > 65 and ≤ 85 / 30 – 50 VERY DENSE > 85 / > 50 Bracketed symbol indicates estimated density based on ease of drilling or other assessment.
Hand Penetrometer Readings	300 250	Measures reading in kPa of unconfined compressive strength. Numbers indicate individual test results on representative undisturbed material unless noted otherwise.

Log Column	Symbol	Definition
Remarks	'V' bit	Hardened steel 'V' shaped bit.
	'TC' bit	Twin pronged tungsten carbide bit.
	T_{60}	Penetration of auger string in mm under static load of rig applied by drill head hydraulics without rotation of augers.
	Soil Origin	The geological origin of the soil can generally be described as: RESIDUAL – soil formed directly from insitu weathering of the underlying rock. No visible structure or fabric of the parent rock. EXTREMELY WEATHERED – soil formed directly from insitu weathering of the underlying rock. Material is of soil strength but retains the structure and/or fabric of the parent rock. ALLUVIAL – soil deposited by creeks and rivers. ESTUARINE – soil deposited in coastal estuaries, including sediments caused by inflowing creeks and rivers, and tidal currents. MARINE – soil deposited in a marine environment. AEOLIAN – soil carried and deposited by wind. COLLUVIAL – soil and rock debris transported downslope by gravity, with or without the assistance of flowing water. Colluvium is usually a thick deposit formed from a landslide. The description 'slopewash' is used for thinner surficial deposits. LITTORAL – beach deposited soil.

Classification of Material Weathering

Term		Abbreviation		Definition
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	Distinctly Weathered (Note 1)	HW	DW	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		Rock shows no sign of decomposition of individual minerals or colour changes.

NOTE 1: The term 'Distinctly Weathered' is used where it is not practicable to distinguish between 'Highly Weathered' and 'Moderately Weathered' rock. 'Distinctly Weathered' is defined as follows: *'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 weathering products in pores'*. There is some change in rock strength.

Rock Material Strength Classification

Term	Abbreviation	Uniaxial Compressive Strength (MPa)	Guide to Strength	
			Point Load Strength Index $Is_{(50)}$ (MPa)	Field Assessment
Very Low Strength	VL	0.6 to 2	0.03 to 0.1	Material crumbles under firm blows with sharp end of pick; can be peeled with knife; too hard to cut a triaxial sample by hand. Pieces up to 30mm thick can be broken by finger pressure.
Low Strength	L	2 to 6	0.1 to 0.3	Easily scored with a knife; indentations 1mm to 3mm show in the specimen with firm blows of the pick point; has dull sound under hammer. A piece of core 150mm long by 50mm diameter may be broken by hand. Sharp edges of core may be friable and break during handling.
Medium Strength	M	6 to 20	0.3 to 1	Scored with a knife; a piece of core 150mm long by 50mm diameter can be broken by hand with difficulty.
High Strength	H	20 to 60	1 to 3	A piece of core 150mm long by 50mm diameter cannot be broken by hand but can be broken by a pick with a single firm blow; rock rings under hammer.
Very High Strength	VH	60 to 200	3 to 10	Hand specimen breaks with pick after more than one blow; rock rings under hammer.
Extremely High Strength	EH	> 200	> 10	Specimen requires many blows with geological pick to break through intact material; rock rings under hammer.

Appendix E: Laboratory Report(s) & COC Documents

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CERTIFICATE OF ANALYSIS 247348

Client Details

Client	Environmental Investigation Services
Attention	Mitchell Delaney
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	**E33356PD, Maroubra**
Number of Samples	26 soil, 1 Rinsate
Date samples received	20/07/2020
Date completed instructions received	20/07/2020

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	27/07/2020
Date of Issue	24/07/2020

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Asbestos Approved By
Analysed by Asbestos Approved Identifier: Nyovan Moonean
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By
Dragana Tomas, Senior Chemist
Hannah Nguyen, Senior Chemist
Lucy Zhu, Asbestos Supervisor
Manju Dewendrage, Chemist

Authorised By



Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		247348-2	247348-5	247348-9	247348-11	247348-14
Your Reference	UNITS	BH101	BH102	BH103	BH104	BH105
Depth		0.5-0.7	0.22-0.4	0.9-1.1	0.03-0.2	0-0.3
Date Sampled		17/07/2020	17/07/2020	17/07/2020	17/07/2020	17/07/2020
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
Date analysed	-	22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
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	%	82	97	90	90	94

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		247348-17	247348-21	247348-24	247348-25	247348-26
Your Reference	UNITS	BH106	BH107	SDUP101	TB-S101	TS-S101
Depth		0-0.1	0-0.1	-	-	-
Date Sampled		17/07/2020	17/07/2020	17/07/2020	17/07/2020	17/07/2020
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
Date analysed	-	22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
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	74%
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	75%
Ethylbenzene	mg/kg	<1	<1	<1	<1	70%
m+p-xylene	mg/kg	<2	<2	<2	<2	69%
o-Xylene	mg/kg	<1	<1	<1	<1	68%
naphthalene	mg/kg	<1	<1	<1	<1	[NA]
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	[NA]
Surrogate aaa-Trifluorotoluene	%	97	86	90	108	91

svTRH (C10-C40) in Soil						
Our Reference		247348-2	247348-5	247348-9	247348-11	247348-14
Your Reference	UNITS	BH101	BH102	BH103	BH104	BH105
Depth		0.5-0.7	0.22-0.4	0.9-1.1	0.03-0.2	0-0.3
Date Sampled		17/07/2020	17/07/2020	17/07/2020	17/07/2020	17/07/2020
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
Date analysed	-	22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<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	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	95	90	87	91	90

svTRH (C10-C40) in Soil				
Our Reference		247348-17	247348-21	247348-24
Your Reference	UNITS	BH106	BH107	SDUP101
Depth		0-0.1	0-0.1	-
Date Sampled		17/07/2020	17/07/2020	17/07/2020
Type of sample		soil	soil	soil
Date extracted	-	22/07/2020	22/07/2020	22/07/2020
Date analysed	-	22/07/2020	22/07/2020	22/07/2020
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	110	110	<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	150	160	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	150	160	<50
Surrogate o-Terphenyl	%	100	102	87

PAHs in Soil						
Our Reference		247348-2	247348-5	247348-9	247348-11	247348-14
Your Reference	UNITS	BH101	BH102	BH103	BH104	BH105
Depth		0.5-0.7	0.22-0.4	0.9-1.1	0.03-0.2	0-0.3
Date Sampled		17/07/2020	17/07/2020	17/07/2020	17/07/2020	17/07/2020
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
Date analysed	-	22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	0.2	<0.1	0.2	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	0.5	<0.1	0.5	<0.1
Pyrene	mg/kg	0.1	0.4	<0.1	0.4	<0.1
Benzo(a)anthracene	mg/kg	<0.1	0.3	<0.1	0.2	<0.1
Chrysene	mg/kg	<0.1	0.3	<0.1	0.2	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	0.5	<0.2	0.4	<0.2
Benzo(a)pyrene	mg/kg	0.06	0.3	<0.05	0.2	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	0.1	<0.1	0.2	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	0.2	<0.1	0.2	<0.1
Total +ve PAH's	mg/kg	0.3	2.7	<0.05	2.4	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	97	96	90	96	95

PAHs in Soil				
Our Reference		247348-17	247348-21	247348-24
Your Reference	UNITS	BH106	BH107	SDUP101
Depth		0-0.1	0-0.1	-
Date Sampled		17/07/2020	17/07/2020	17/07/2020
Type of sample		soil	soil	soil
Date extracted	-	22/07/2020	22/07/2020	22/07/2020
Date analysed	-	22/07/2020	22/07/2020	22/07/2020
Naphthalene	mg/kg	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	0.1	<0.1
Pyrene	mg/kg	<0.1	0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	0.07	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	0.3	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	95	94	97

Organochlorine Pesticides in soil						
Our Reference		247348-2	247348-5	247348-9	247348-11	247348-14
Your Reference	UNITS	BH101	BH102	BH103	BH104	BH105
Depth		0.5-0.7	0.22-0.4	0.9-1.1	0.03-0.2	0-0.3
Date Sampled		17/07/2020	17/07/2020	17/07/2020	17/07/2020	17/07/2020
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
Date analysed	-	22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	0.2	<0.1	<0.1
Dieldrin	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	0.2	<0.1	<0.1
Surrogate TCMX	%	99	97	99	96	98

Organochlorine Pesticides in soil				
Our Reference		247348-17	247348-21	247348-24
Your Reference	UNITS	BH106	BH107	SDUP101
Depth		0-0.1	0-0.1	-
Date Sampled		17/07/2020	17/07/2020	17/07/2020
Type of sample		soil	soil	soil
Date extracted	-	22/07/2020	22/07/2020	22/07/2020
Date analysed	-	22/07/2020	22/07/2020	22/07/2020
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	%	98	100	100

Organophosphorus Pesticides in Soil						
Our Reference		247348-2	247348-5	247348-9	247348-11	247348-14
Your Reference	UNITS	BH101	BH102	BH103	BH104	BH105
Depth		0.5-0.7	0.22-0.4	0.9-1.1	0.03-0.2	0-0.3
Date Sampled		17/07/2020	17/07/2020	17/07/2020	17/07/2020	17/07/2020
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
Date analysed	-	22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	99	97	99	96	98

Organophosphorus Pesticides in Soil				
Our Reference		247348-17	247348-21	247348-24
Your Reference	UNITS	BH106	BH107	SDUP101
Depth		0-0.1	0-0.1	-
Date Sampled		17/07/2020	17/07/2020	17/07/2020
Type of sample		soil	soil	soil
Date extracted	-	22/07/2020	22/07/2020	22/07/2020
Date analysed	-	22/07/2020	22/07/2020	22/07/2020
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	%	98	100	100

PCBs in Soil						
Our Reference		247348-2	247348-5	247348-9	247348-11	247348-14
Your Reference	UNITS	BH101	BH102	BH103	BH104	BH105
Depth		0.5-0.7	0.22-0.4	0.9-1.1	0.03-0.2	0-0.3
Date Sampled		17/07/2020	17/07/2020	17/07/2020	17/07/2020	17/07/2020
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
Date analysed	-	22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	99	97	99	96	98

PCBs in Soil				
Our Reference		247348-17	247348-21	247348-24
Your Reference	UNITS	BH106	BH107	SDUP101
Depth		0-0.1	0-0.1	-
Date Sampled		17/07/2020	17/07/2020	17/07/2020
Type of sample		soil	soil	soil
Date extracted	-	22/07/2020	22/07/2020	22/07/2020
Date analysed	-	22/07/2020	22/07/2020	22/07/2020
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	%	98	100	100

Acid Extractable metals in soil						
Our Reference		247348-2	247348-5	247348-9	247348-11	247348-14
Your Reference	UNITS	BH101	BH102	BH103	BH104	BH105
Depth		0.5-0.7	0.22-0.4	0.9-1.1	0.03-0.2	0-0.3
Date Sampled		17/07/2020	17/07/2020	17/07/2020	17/07/2020	17/07/2020
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
Date analysed	-	22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
Arsenic	mg/kg	<4	<4	<4	<4	7
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	2	16	4	18	4
Copper	mg/kg	5	29	11	61	8
Lead	mg/kg	47	57	41	25	17
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	2	4	8	7	3
Zinc	mg/kg	32	73	65	47	45

Acid Extractable metals in soil				
Our Reference		247348-17	247348-21	247348-24
Your Reference	UNITS	BH106	BH107	SDUP101
Depth		0-0.1	0-0.1	-
Date Sampled		17/07/2020	17/07/2020	17/07/2020
Type of sample		soil	soil	soil
Date prepared	-	22/07/2020	22/07/2020	22/07/2020
Date analysed	-	22/07/2020	22/07/2020	22/07/2020
Arsenic	mg/kg	<4	<4	6
Cadmium	mg/kg	<0.4	<0.4	<0.4
Chromium	mg/kg	4	38	5
Copper	mg/kg	11	34	9
Lead	mg/kg	25	96	19
Mercury	mg/kg	<0.1	0.4	<0.1
Nickel	mg/kg	2	4	3
Zinc	mg/kg	60	120	42

Moisture						
Our Reference		247348-2	247348-5	247348-9	247348-11	247348-14
Your Reference	UNITS	BH101	BH102	BH103	BH104	BH105
Depth		0.5-0.7	0.22-0.4	0.9-1.1	0.03-0.2	0-0.3
Date Sampled		17/07/2020	17/07/2020	17/07/2020	17/07/2020	17/07/2020
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
Date analysed	-	23/07/2020	23/07/2020	23/07/2020	23/07/2020	23/07/2020
Moisture	%	5.3	11	12	21	9.1

Moisture				
Our Reference		247348-17	247348-21	247348-24
Your Reference	UNITS	BH106	BH107	SDUP101
Depth		0-0.1	0-0.1	-
Date Sampled		17/07/2020	17/07/2020	17/07/2020
Type of sample		soil	soil	soil
Date prepared	-	22/07/2020	22/07/2020	22/07/2020
Date analysed	-	23/07/2020	23/07/2020	23/07/2020
Moisture	%	10	20	8.7

Asbestos ID - soils NEPM - ASB-001					
Our Reference		247348-5	247348-9	247348-11	247348-17
Your Reference	UNITS	BH102	BH103	BH104	BH106
Depth		0.22-0.4	0.9-1.1	0.03-0.2	0-0.1
Date Sampled		17/07/2020	17/07/2020	17/07/2020	17/07/2020
Type of sample		soil	soil	soil	soil
Date analysed	-	22/07/2020	22/07/2020	22/07/2020	22/07/2020
Sample mass tested	g	858.98	631.66	953.38	741.05
Sample Description	-	Brown sandy soil & rocks	Brown sandy soil & rocks	Brown fine-grained soil & rocks	Brown sandy soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	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 Synthetic mineral 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
Total Asbestos[#1]	g/kg	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–
FA and AF Estimation*	g	–	–	–	–
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001

BTEX in Water		
Our Reference		247348-27
Your Reference	UNITS	FR-HA101
Depth		-
Date Sampled		17/07/2020
Type of sample		Rinsate
Date extracted	-	22/07/2020
Date analysed	-	22/07/2020
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Surrogate Dibromofluoromethane	%	129
Surrogate toluene-d8	%	96
Surrogate 4-BFB	%	94

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.
ASB-001	Asbestos ID - Identification of asbestos in soil samples using Polarised Light Microscopy and Dispersion Staining Techniques. Minimum 500mL soil sample was analysed as recommended by "National Environment Protection (Assessment of site contamination) Measure, Schedule B1 and "The Guidelines from the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia - May 2009" with a reporting limit of 0.1g/kg (0.01% w/w) as per Australian Standard AS4964-2004. Results reported denoted with * are outside our scope of NATA accreditation. **NOTE** #1 Total Asbestos g/kg was analysed and reported as per Australian Standard AS4964 (This is the sum of ACM >7mm, <7mm and FA/AF) **NOTE** #2 The screening level of 0.001% w/w asbestos in soil for FA and AF only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. Estimation = Estimated asbestos weight Results reported with "--" is equivalent to no visible asbestos identified using Polarised Light microscopy and Dispersion Staining Techniques.
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-020	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-020	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-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.

Method ID	Methodology Summary
Org-021	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-022	Determination of VOCs sampled onto coconut shell charcoal sorbent tubes, that can be desorbed using carbon disulphide, and analysed by GC-MS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS/GC-MSMS. 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-022/025	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-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	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-023	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	247348-5
Date extracted	-			22/07/2020	2	22/07/2020	22/07/2020		22/07/2020	22/07/2020
Date analysed	-			22/07/2020	2	22/07/2020	22/07/2020		22/07/2020	22/07/2020
TRH C_6 - C_9	mg/kg	25	Org-023	<25	2	<25	<25	0	86	92
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	2	<25	<25	0	86	92
Benzene	mg/kg	0.2	Org-023	<0.2	2	<0.2	<0.2	0	96	99
Toluene	mg/kg	0.5	Org-023	<0.5	2	<0.5	<0.5	0	87	90
Ethylbenzene	mg/kg	1	Org-023	<1	2	<1	<1	0	79	86
m+p-xylene	mg/kg	2	Org-023	<2	2	<2	<2	0	85	93
o-Xylene	mg/kg	1	Org-023	<1	2	<1	<1	0	84	91
naphthalene	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	103	2	82	97	17	100	95

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	247348-5
Date extracted	-			22/07/2020	2	22/07/2020	22/07/2020		22/07/2020	22/07/2020
Date analysed	-			22/07/2020	2	22/07/2020	22/07/2020		22/07/2020	22/07/2020
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	2	<50	<50	0	120	104
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	2	<100	<100	0	88	86
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	2	<100	<100	0	92	74
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	2	<50	<50	0	120	104
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	2	<100	<100	0	88	86
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	2	<100	<100	0	92	74
Surrogate o-Terphenyl	%		Org-020	99	2	95	94	1	130	117

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	247348-5
Date extracted	-			22/07/2020	2	22/07/2020	22/07/2020		22/07/2020	22/07/2020
Date analysed	-			22/07/2020	2	22/07/2020	22/07/2020		22/07/2020	22/07/2020
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	92	92
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	88	86
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	94	76
Anthracene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	2	0.1	<0.1	0	88	75
Pyrene	mg/kg	0.1	Org-022/025	<0.1	2	0.1	<0.1	0	92	80
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	84	76
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	2	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	2	0.06	<0.05	18	100	91
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	99	2	97	97	0	96	91

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	247348-5
Date extracted	-			22/07/2020	2	22/07/2020	22/07/2020		22/07/2020	22/07/2020
Date analysed	-			22/07/2020	2	22/07/2020	22/07/2020		22/07/2020	22/07/2020
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	92	90
HCB	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	92	96
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	76	74
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	102	98
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	96	92
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	96	92
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	102	94
Endrin	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	90	88
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	84	80
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	78	70
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	101	2	99	98	1	98	95

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	247348-5
Date extracted	-			22/07/2020	2	22/07/2020	22/07/2020		22/07/2020	22/07/2020
Date analysed	-			22/07/2020	2	22/07/2020	22/07/2020		22/07/2020	22/07/2020
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	98	72
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	98	86
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	94	78
Malathion	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	79	71
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	108	100
Parathion	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	110	94
Bromophos-ethyl	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	106	96
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	101	2	99	98	1	98	95

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	247348-5
Date extracted	-			22/07/2020	2	22/07/2020	22/07/2020		22/07/2020	22/07/2020
Date analysed	-			22/07/2020	2	22/07/2020	22/07/2020		22/07/2020	22/07/2020
Aroclor 1016	mg/kg	0.1	Org-021	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	<0.1	2	<0.1	<0.1	0	86	84
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	101	2	99	98	1	98	95

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	247348-5
Date prepared	-			22/07/2020	2	22/07/2020	22/07/2020		22/07/2020	22/07/2020
Date analysed	-			22/07/2020	2	22/07/2020	22/07/2020		22/07/2020	22/07/2020
Arsenic	mg/kg	4	Metals-020	<4	2	<4	<4	0	97	96
Cadmium	mg/kg	0.4	Metals-020	<0.4	2	<0.4	<0.4	0	95	80
Chromium	mg/kg	1	Metals-020	<1	2	2	2	0	97	92
Copper	mg/kg	1	Metals-020	<1	2	5	5	0	101	98
Lead	mg/kg	1	Metals-020	<1	2	47	53	12	94	130
Mercury	mg/kg	0.1	Metals-021	<0.1	2	<0.1	<0.1	0	81	72
Nickel	mg/kg	1	Metals-020	<1	2	2	2	0	96	88
Zinc	mg/kg	1	Metals-020	<1	2	32	39	20	96	81

QUALITY CONTROL: BTEX in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			22/07/2020	[NT]	[NT]	[NT]	[NT]	22/07/2020	[NT]
Date analysed	-			22/07/2020	[NT]	[NT]	[NT]	[NT]	22/07/2020	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	116	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	110	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	114	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	115	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	118	[NT]
Surrogate Dibromofluoromethane	%		Org-023	112	[NT]	[NT]	[NT]	[NT]	97	[NT]
Surrogate toluene-d8	%		Org-023	95	[NT]	[NT]	[NT]	[NT]	96	[NT]
Surrogate 4-BFB	%		Org-023	95	[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.

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.

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-ID in soil: NEPM
This report is consistent with the reporting recommendations in the National Environment Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013. This is reported outside our scope of NATA accreditation.

Note: All samples analysed as received. However, sample 247348-9 is below the minimum 500mL sample volume as per National Environment Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013.

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SAMPLE RECEIPT ADVICE

Client Details

Client	Environmental Investigation Services
Attention	Mitchell Delaney

Sample Login Details

Your reference	E33356PD, Maroubra
Envirolab Reference	247348
Date Sample Received	20/07/2020
Date Instructions Received	20/07/2020
Date Results Expected to be Reported	27/07/2020

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	26 soil, 1 Rinsate
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	16.8
Cooling Method	Ice
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

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Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

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Sample ID	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides in Soil	PCBsin Soil	Acid Extractable metalsin soil	Asbestos ID - soils NEPM - ASB-001	BTEX in Water	On Hold
BH101-0.06-0.2										✓
BH101-0.5-0.7	✓	✓	✓	✓	✓	✓	✓			
BH101-0.7-0.8										✓
BH101-1.2-1.3										✓
BH102-0.22-0.4	✓	✓	✓	✓	✓	✓	✓	✓		
BH102-0.5-0.6										✓
BH103-0.05-0.2										✓
BH103-0.5-0.7										✓
BH103-0.9-1.1	✓	✓	✓	✓	✓	✓	✓	✓		
BH103-1.2-1.4										✓
BH104-0.03-0.2	✓	✓	✓	✓	✓	✓	✓	✓		
BH104-0.5-0.7										✓
BH104-0.9-1.0										✓
BH105-0-0.3	✓	✓	✓	✓	✓	✓	✓			
BH105-0.5-0.7										✓
BH105-0.9-1.0										✓
BH106-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓		
BH106-0.5-0.7										✓
BH106-1.0-1.1										✓
BH106-1.4-1.5										✓
BH107-0-0.1	✓	✓	✓	✓	✓	✓	✓			
BH107-0.4-0.5										✓
BH107-0.6-0.7										✓
SDUP101	✓	✓	✓	✓	✓	✓	✓			
TB-S101	✓									
TS-S101	✓									
FR-HA101									✓	

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
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Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	JKE Job Number: E33356PD Date Results Required: STANDARD Page: 1	JKEnvironments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: Mitchell Delaney

Location:	Maroubra	Sample Preserved in Esky on Ice
Sampler:	AM	Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 6	Asbestos (WA 500ml method)	BTEX
17.7.20	1	BH101	0.06-0.2	G, A	0	F: Silty Sand			
17.7.20	2	BH101	0.5-0.7	G, A	0	F: Silty Sand	X		
17.7.20	3	BH101	0.7-0.8	G, A	0	Silty Sand			
17.7.20	4	BH101	1.2-1.3	G	0	Silty Sand			
17.7.20	5	BH102	0.22-0.4	G, A	0	F: Silty Gravelly	X	X	
17.7.20	6	BH102	0.5-0.6	G, A	0	F: Silty Gravelly			
17.7.20	7	BH103	0.05-0.2	G, A	0	F: Silty Sand			
17.7.20	8	BH103	0.5-0.7	G, A	0	F: Silty Sand			
17.7.20	9	BH103	0.9-1.1	G, A	0	F: Silty Gravelly	X	X	
17.7.20	10	BH103	1.2-1.4	G, A	0	Silty Sand			
17.7.20	11	BH104	0.03-0.2	G, A	0.4	F: Silty Gravelly	X	X	
17.7.20	12	BH104	0.5-0.7	G, A	0	F: Silty Sand			
17.7.20	13	BH104	0.9-1.0	G, A	0	Silty Sand			
17.7.20	14	BH105	0-0.3	G, A	2	F: Silty Sand	X		
17.7.20	15	BH105	0.5-0.7	G, A	0.6	Silty Sand			
17.7.20	16	BH105	0.9-1.0	G	0	Silty Sand			
17.7.20	17	BH106	0-0.1	G, A	0	F: Silty Sand	X	X	
17.7.20	18	BH106	0.5-0.7	G, A	0	F: Silty Sand			
17.7.20	19	BH106	1.0-1.1	G, A	0	F: Silty Sand			
17.7.20	20	BH106	1.4-1.5	G, A	0	F: Silty Sand			
17.7.20	21	BH107	0-0.1	G, A	0	F: Silty Sand	X		
17.7.20	22	BH107	0.4-0.5	G, A	0	F: Silty Sand			
17.7.20	23	BH107	0.6-0.7	G, A	0	Silty Sand			
17.7.20	24	SDUP101	-	G	-	Dup Soil	X		
17.7.20	-	SDUP102	-	G	-	Dup Soil	X		Please send SDUP102 to Envirolab VIC

ENVIROLAB SDUP

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

Job No: 247348

Date Received: 20/07/20
Time Received: 1620
Received By: KC
Temp: Cool/Ambient 16.8 °C
Cooling: Ice/Icepack
Security: Intact/Broken/None

Remarks (comments/detection limits required):

Sample Containers:
G - 250mg Glass Jar
A - Ziplock Asbestos Bag
P - Plastic Bag

Relinquished By: MD	Date: 20.7.20	Time:	Received By: K-Lowe	Date: 20/7/20

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD	JKE Job Number: E33356PD	JKEnvironments
12 ASHLEY STREET		REAR OF 115 WICKS ROAD
CHATSWOOD NSW 2067		MACQUARIE PARK, NSW 2113
P: (02) 99106200	Date Results Required: STANDARD	P: 02-9888 5000 F: 02-9888 5001
F: (02) 99106201		Attention: Mitchell Delaney
Attention: Aileen	Page: 2	

Location:	Maroubra	Sample Preserved in Esky on Ice
Sampler:	AM	Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 6	Asbestos (WA 500ml method)	BTEX
17.7.20	25	TB-S101	-	G	-	Trip Blank Soil			X
17.7.20	26	TS-S101	-	V	-	Trip Spike Soil			X
17.7.20	27	FR-HA101	-	V	-	Field Rinsate			X

Remarks (comments/detection limits required):	Sample Containers: G - 250mg Glass Jar A - Ziplock Asbestos Bag P - Plastic Bag	247348

Relinquished By: MD	Date: 20.7.20	Time:	Received By: K-Chan	Date: 20/7/20

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CERTIFICATE OF ANALYSIS 21935

Client Details

Client	JK Environments
Attention	Mitch Delaney
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	**E33356PD**
Number of Samples	1 Soil
Date samples received	22/07/2020
Date completed instructions received	22/07/2020

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	28/07/2020
Date of Issue	28/07/2020

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

Results Approved By
Chris De Luca, Operations Manager

Authorised By

Pamela Adams, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil		
Our Reference		21935-1
Your Reference	UNITS	SDUP102
Date Sampled		17/07/2020
Type of sample		Soil
Date extracted	-	24/07/2020
Date analysed	-	25/07/2020
vTRH C_6 - C_9	mg/kg	<25
vTRH C_6 - C_{10}	mg/kg	<25
TRH 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 BTEX	mg/kg	<1
Total +ve Xylenes	mg/kg	<1
Surrogate aaa-Trifluorotoluene	%	96

TRH Soil C10-C40 NEPM		
Our Reference		21935-1
Your Reference	UNITS	SDUP102
Date Sampled		17/07/2020
Type of sample		Soil
Date extracted	-	24/07/2020
Date analysed	-	26/07/2020
TRH C_{10} - C_{14}	mg/kg	<50
TRH C_{15} - C_{28}	mg/kg	<100
TRH C_{29} - C_{36}	mg/kg	120
Total +ve TRH (C10-C36)	mg/kg	120
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	120
TRH >C_{34} -C_{40}	mg/kg	<100
Total +ve TRH (>C10-C40)	mg/kg	120
Surrogate o-Terphenyl	%	85

PAHs in Soil		
Our Reference		21935-1
Your Reference	UNITS	SDUP102
Date Sampled		17/07/2020
Type of sample		Soil
Date extracted	-	24/07/2020
Date analysed	-	25/07/2020
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	0.2
Pyrene	mg/kg	0.2
Benzo(a)anthracene	mg/kg	0.1
Chrysene	mg/kg	<0.1
Benzo(b,j&k)fluoranthene	mg/kg	<0.2
Benzo(a)pyrene	mg/kg	0.11
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	0.1
Total +ve PAH's	mg/kg	0.68
Benzo(a)pyrene TEQ calc (Zero)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc (Half)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc (PQL)	mg/kg	<0.5
Surrogate p-Terphenyl-d_{14}	%	116

OCP in Soil		
Our Reference		21935-1
Your Reference	UNITS	SDUP102
Date Sampled		17/07/2020
Type of sample		Soil
Date extracted	-	24/07/2020
Date analysed	-	25/07/2020
alpha-BHC	mg/kg	<0.1
Hexachlorobenzene	mg/kg	<0.1
beta-BHC	mg/kg	<0.1
gamma-BHC	mg/kg	<0.1
Heptachlor	mg/kg	<0.1
delta-BHC	mg/kg	<0.1
Aldrin	mg/kg	<0.1
Heptachlor Epoxide	mg/kg	<0.1
gamma-Chlordane	mg/kg	<0.1
alpha-chlordane	mg/kg	<0.1
Endosulfan I	mg/kg	<0.1
pp-DDE	mg/kg	<0.1
Dieldrin	mg/kg	<0.1
Endrin	mg/kg	<0.1
Endosulfan II	mg/kg	<0.1
pp-DDD	mg/kg	<0.1
Endrin Aldehyde	mg/kg	<0.1
pp-DDT	mg/kg	<0.1
Endosulfan Sulphate	mg/kg	<0.1
Methoxychlor	mg/kg	<0.1
Total +ve reported Aldrin + Dieldrin	mg/kg	<0.1
Total +ve reported DDT+DDD+DDE	mg/kg	<0.1
Surrogate 2-chlorophenol-d4	%	106

OP in Soil		
Our Reference		21935-1
Your Reference	UNITS	SDUP102
Date Sampled		17/07/2020
Type of sample		Soil
Date extracted	-	24/07/2020
Date analysed	-	25/07/2020
Azinphos-methyl	mg/kg	<0.1
Bromophos-ethyl	mg/kg	<0.1
Chlorpyrifos	mg/kg	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1
Diazinon	mg/kg	<0.1
Dichlorovos	mg/kg	<0.1
Dimethoate	mg/kg	<0.1
Ethion	mg/kg	<0.1
Fenitrothion	mg/kg	<0.1
Malathion	mg/kg	<0.1
Parathion	mg/kg	<0.1
Ronnel	mg/kg	<0.1
Surrogate 2-chlorophenol-d4	%	106

PCBs in Soil		
Our Reference		21935-1
Your Reference	UNITS	SDUP102
Date Sampled		17/07/2020
Type of sample		Soil
Date extracted	-	24/07/2020
Date analysed	-	25/07/2020
Total PCB (Arochlor 1016-1260)	mg/kg	0.1
Surrogate 2-fluorobiphenyl	%	104

Acid Extractable metals in soil		
Our Reference		21935-1
Your Reference	UNITS	SDUP102
Date Sampled		17/07/2020
Type of sample		Soil
Date digested	-	25/07/2020
Date analysed	-	25/07/2020
Arsenic	mg/kg	<4
Cadmium	mg/kg	<0.4
Chromium	mg/kg	18
Copper	mg/kg	34
Lead	mg/kg	100
Mercury	mg/kg	0.3
Nickel	mg/kg	3
Zinc	mg/kg	94

Moisture		
Our Reference		21935-1
Your Reference	UNITS	SDUP102
Date Sampled		17/07/2020
Type of sample		Soil
Date prepared	-	24/07/2020
Date analysed	-	25/07/2020
Moisture	%	19

Method ID	Methodology Summary
Inorg-008	Moisture content determined by heating at 105 deg C for a minimum of 12 hours.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Org-020	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-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-021/022	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD or GC-MS. 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-022	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
Org-022	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Note, For OCs 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.

Method ID	Methodology Summary
Org-022	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-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-022	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	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	-			24/07/2020	[NT]	[NT]	[NT]	[NT]	24/07/2020	[NT]
Date analysed	-			25/07/2020	[NT]	[NT]	[NT]	[NT]	25/07/2020	[NT]
vTRH C_6 - C_9	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	81	[NT]
vTRH C_6 - C_{10}	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	81	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	[NT]	[NT]	[NT]	[NT]	80	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	[NT]	[NT]	[NT]	[NT]	83	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	79	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	82	[NT]
o-Xylene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	81	[NT]
Naphthalene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	107	[NT]	[NT]	[NT]	[NT]	102	[NT]

QUALITY CONTROL: TRH Soil C10-C40 NEPM						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			24/07/2020	[NT]	[NT]	[NT]	[NT]	24/07/2020	[NT]
Date analysed	-			25/07/2020	[NT]	[NT]	[NT]	[NT]	25/07/2020	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	95	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	96	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	107	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	95	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	96	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	107	[NT]
Surrogate o-Terphenyl	%		Org-020	92	[NT]	[NT]	[NT]	[NT]	85	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			24/07/2020	[NT]	[NT]	[NT]	[NT]	24/07/2020	[NT]
Date analysed	-			25/07/2020	[NT]	[NT]	[NT]	[NT]	25/07/2020	[NT]
Naphthalene	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Acenaphthylene	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Acenaphthene	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Phenanthrene	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Anthracene	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Pyrene	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Benzo(b,j&k)fluoranthene	mg/kg	0.2	Org-022	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022	<0.05	[NT]	[NT]	[NT]	[NT]	86	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d_{14}	%		Org-022	104	[NT]	[NT]	[NT]	[NT]	104	[NT]

QUALITY CONTROL: OCP in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			24/07/2020	[NT]	[NT]	[NT]	[NT]	24/07/2020	[NT]
Date analysed	-			25/07/2020	[NT]	[NT]	[NT]	[NT]	25/07/2020	[NT]
alpha-BHC	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Hexachlorobenzene	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	90	[NT]
gamma-BHC	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	90	[NT]
delta-BHC	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	76	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	88	[NT]
alpha-chlordane	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	86	[NT]
Dieldrin	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	80	[NT]
Endrin	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	72	[NT]
Endosulfan II	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	114	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Methoxychlor	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate 2-chlorophenol-d4	%		Org-022	98	[NT]	[NT]	[NT]	[NT]	102	[NT]

QUALITY CONTROL: OP in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	21935-1
Date extracted	-			24/07/2020	1	24/07/2020	24/07/2020		24/07/2020	24/07/2020
Date analysed	-			25/07/2020	1	25/07/2020	25/07/2020		25/07/2020	25/07/2020
Azinphos-methyl	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	88	101
Chlorpyrifos-methyl	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dichlorovos	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	84	123
Fenitrothion	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	72	122
Malathion	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate 2-chlorophenol-d4	%		Org-022	98	1	106	100	6	102	104

QUALITY CONTROL: PCBs in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			24/07/2020	[NT]	[NT]	[NT]	[NT]	24/07/2020	[NT]
Date analysed	-			25/07/2020	[NT]	[NT]	[NT]	[NT]	25/07/2020	[NT]
Aroclor 1016	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	84	[NT]
Aroclor 1260	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Total PCB (Arochlor 1016-1260)	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate 2-fluorobiphenyl	%		Org-022	98	[NT]	[NT]	[NT]	[NT]	98	[NT]

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date digested	-			25/07/2020	[NT]	[NT]	[NT]	[NT]	25/07/2020	[NT]
Date analysed	-			25/07/2020	[NT]	[NT]	[NT]	[NT]	25/07/2020	[NT]
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	[NT]	[NT]	[NT]	[NT]	95	[NT]
Cadmium	mg/kg	0.4	Metals-020 ICP-AES	<0.4	[NT]	[NT]	[NT]	[NT]	97	[NT]
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Copper	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	[NT]	[NT]	97	[NT]
Lead	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	[NT]	[NT]	95	[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.

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

PCB: The Total PCB is calculated by summing 6 of the 7 congeners and multiplying this sum by 5 (according to DIN 51 527). The PCB congener C118 is excluded from the calculation. This method gives a good consistent estimate of the Total PCB present

Envirolab Services Pty Ltd
ABN 37 112 535 645 - 002
25 Research Drive Croydon South VIC 3136
ph 03 9763 2500 fax 03 9763 2633
melbourne@envirolab.com.au
www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details

Client	JK Environments
Attention	Mitch Delaney

Sample Login Details

Your reference	E33356PD
Envirolab Reference	21935
Date Sample Received	22/07/2020
Date Instructions Received	22/07/2020
Date Results Expected to be Reported	28/07/2020

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	1 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	8.0
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Pamela Adams	Chris De Luca
Phone: 03 9763 2500	**Phone: 03 9763 2500**
Fax: 03 9763 2633	**Fax: 03 9763 2633**
Email: padams@envirolab.com.au	**Email: cdeluca@envirolab.com.au**

Analysis Underway, details on the following page:

Envirolab Services Pty Ltd
ABN 37 112 535 645 - 002
25 Research Drive Croydon South VIC 3136
ph 03 9763 2500 fax 03 9763 2633
melbourne@envirolab.com.au
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Sample ID	vTRH(C6-C10)/BTEXN in Soil	TRH Soil C10-C40 NEPM	PAHs in Soil	OCP in Soil	OP in Soil	PCBsin Soil	Acid Extractable metalsin soil
SDUP102	✓	✓	✓	✓	✓	✓	✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.

SAMPLE AND CHAIN OF CUSTODY FORM

TO:
ENVIROLAB SERVICES PTY LTD
12 ASHLEY STREET
CHATSWOOD NSW 2067
P: (02) 99106200
F: (02) 99106201

Attention: Aileen

JKE Job Number: E33356PD

Date Results Required: STANDARD

Page: 1

FROM:
JKEnvironments
REAR OF 115 WICKS ROAD
MACQUARIE PARK, NSW 2113
P: 02-9888 5000 F: 02-9888 5001
Attention: Mitchell Delaney

Location: Maroubra
Sampler: AM

Sample Preserved in Esky on Ice

Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 6	Asbestos (WA 500ml method)	BTEX
17.7.20	1	BH101	0.06-0.2	G, A	0	F: Silty Sand			
17.7.20	2	BH101	0.5-0.7	G, A	0	F: Silty Sand	X		
17.7.20	3	BH101	0.7-0.8	G, A	0	Silty Sand			
17.7.20	4	BH101	1.2-1.3	G	0	Silty Sand			
17.7.20	5	BH102	0.22-0.4	G, A	0	F: Silty Gravelly	X	X	
17.7.20	6	BH102	0.5-0.6	G, A	0	F: Silty Gravelly			
17.7.20	7	BH103	0.05-0.2	G, A	0	F: Silty Sand			
17.7.20	8	BH103	0.5-0.7	G, A	0	F: Silty Sand			
17.7.20	9	BH103	0.9-1.1	G, A	0	F: Silty Gravelly	X	X	
17.7.20	10	BH103	1.2-1.4	G, A	0	Silty Sand			
17.7.20	11	BH104	0.03-0.2	G, A	0.4	F: Silty Gravelly	X	X	
17.7.20	12	BH104	0.5-0.7	G, A	0	F: Silty Sand			
17.7.20	13	BH104	0.9-1.0	G, A	0	Silty Sand			
17.7.20	14	BH105	0-0.3	G, A	2	F: Silty Sand	X		
17.7.20	15	BH105	0.5-0.7	G, A	0.6	Silty Sand			
17.7.20	16	BH105	0.9-1.0	G	0	Silty Sand			
17.7.20	17	BH106	0-0.1	G, A	0	F: Silty Sand	X	X	
17.7.20	18	BH106	0.5-0.7	G, A	0	F: Silty Sand			
17.7.20	19	BH106	1.0-1.1	G, A	0	F: Silty Sand			
17.7.20	20	BH106	1.4-1.5	G, A	0	F: Silty Sand			
17.7.20	21	BH107	0-0.1	G, A	0	F: Silty Sand	X		
17.7.20	22	BH107	0.4-0.5	G, A	0	F: Silty Sand			
17.7.20	23	BH107	0.6-0.7	G, A	0	Silty Sand			
17.7.20	24	SDUP101	-	G	-	Dup Soil	X		
17.7.20	-	SDUP102	-	G	-	Dup Soil	X		Please send SDUP102 to Envirolab VIC

ENVIROLAB
Envirolab Services
25 Research Drive
Croydon South VIC 3136
Ph: (03) 9763 2500
Job No: 21935
Date Received: 22/7/20
Time Received: 2:20pm
Received By: KS
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None
8.0C

ENVIROLAB
Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200
Job No: 247390
Date Received: 20/07/20
Time Received: 16:20
Received By: KG
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None
16.8°C

Remarks (comments/detection limits required):
ELS Sydney

Sample Containers:
G - 250mg Glass Jar
A - Ziplock Asbestos Bag
P - Plastic Bag

Relinquished By: MD	C. Mullens	Date: 20.7.20	21/7/20 830.	Time:	Received By: K-LOK	Date: 20/7/20

Appendix F: Report Explanatory Notes

QA/QC Definitions

The QA/QC terms used in this report are defined below. The definitions are in accordance with US EPA publication SW-846, entitled *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (1994)[15] methods and those described in *Environmental Sampling and Analysis, A Practical Guide,* (1991)[16]. The NEPM (2013) is consistent with these documents.

A. Practical Quantitation Limit (PQL), Limit of Reporting (LOR) & Estimated Quantitation Limit (EQL)

These terms all refer to the concentration above which results can be expressed with a minimum 95% confidence level. The laboratory reporting limits are generally set at ten times the standard deviation for the Method Detection Limit for each specific analyte. For the purposes of this report the LOR, PQL, and EQL are considered to be equivalent.

When assessing laboratory data it should be borne in mind that values at or near the PQL have two important limitations: *"The uncertainty of the measurement value can approach, and even equal, the reported value. Secondly, confirmation of the analytes reported is virtually impossible unless identification uses highly selective methods. These issues diminish when reliably measurable amounts of analytes are present. Accordingly, legal and regulatory actions should be limited to data at or above the reliable detection limit*" (Keith, 1991).

B. Precision

The degree to which data generated from repeated measurements differ from one another due to random errors. Precision is measured using the standard deviation or Relative Percent Difference (RPD).

C. Accuracy

Accuracy is a measure of the agreement between an experimental result and the true value of the parameter being measured (i.e. the proximity of an averaged result to the true value, where all random errors have been statistically removed). The assessment of accuracy for an analysis can be achieved through the analysis of known reference materials or assessed by the analysis of surrogates, field blanks, trip spikes and matrix spikes. Accuracy is typically reported as percent recovery.

D. Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness is primarily dependent upon the design and implementation of the sampling program. Representativeness of the data is partially ensured by the avoidance of contamination, adherence to sample handing and analysis protocols and use of proper chain-of-custody and documentation procedures.

E. Completeness

Completeness is a measure of the number of valid measurements in a data set compared to the total number of measurements made and overall performance against DQIs. The following information is assessed for completeness:

- Chain-of-custody forms;
- Sample receipt form;
- All sample results reported;
- All blank data reported;

[15] US EPA, (1994). *SW-846: Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* (US EPA SW-846)

[16] Keith., H, (1991). *Environmental Sampling and Analysis, A Practical Guide*

- All laboratory duplicate and RPDs calculated;
- All surrogate spike data reported;
- All matrix spike and lab control spike (LCS) data reported and RPDs calculated;
- Spike recovery acceptable limits reported; and
- NATA stamp on reports.

F. Comparability

Comparability is the evaluation of the similarity of conditions (e.g. sample depth, sample homogeneity) under which separate sets of data are produced. Data comparability checks include a bias assessment that may arise from the following sources:

- Collection and analysis of samples by different personnel; Use of different techniques;
- Collection and analysis by the same personnel using the same methods but at different times; and
- Spatial and temporal changes (due to environmental dynamics).

G. Blanks

The purpose of laboratory and field blanks is to check for artefacts and interferences that may arise during sampling, transport and analysis.

H. Matrix Spikes

Samples are spiked with laboratory grade standards to detect interactive effects between the sample matrix and the analytes being measured. Matrix Spikes are reported as a percent recovery and are prepared for 1 in every 20 samples. Sample batches that contain less than 20 samples may be reported with a Matrix Spike from another batch. The percent recovery is calculated using the formula below. Acceptable recovery limits are 70% to 130%.

$$\frac{\text{(Spike Sample Result – Sample Result) x 100}}{\text{Concentration of Spike Added}}$$

I. Surrogate Spikes

Samples are spiked with a known concentration of compounds that are chemically related to the analyte being investigated but unlikely to be detected in the environment. The purpose of the Surrogate Spikes is to check the accuracy of the analytical technique. Surrogate Spikes are reported as percent recovery.

J. Duplicates

Laboratory duplicates measure precision, expressed as Relative Percent Difference. Duplicates are prepared from a single field sample and analysed as two separate extraction procedures in the laboratory. The RPD is calculated using the formula where D1 is the sample concentration and D2 is the duplicate sample concentration:

$$\frac{(D1 - D2) \times 100}{\{(D1 + D2)/2\}}$$

Appendix G: Data (QA/QC) Evaluation

Data (QA/QC) Evaluation

A. INTRODUCTION

This Data (QA/QC) Evaluation forms part of the validation process for the DQOs documented in Section 6.1 of this report. Checks were made to assess the data in terms of precision, accuracy, representativeness, comparability and completeness. These 'PARCC' parameters are referred to collectively as DQIs and are defined in the Report Explanatory Notes attached in the report appendices.

1. Field and Laboratory Considerations

The quality of the analytical data produced for this project has been considered in relation to the following:

- Sample collection, storage, transport and analysis;
- Laboratory PQLs;
- Field QA/QC results; and
- Laboratory QA/QC results.

2. Field QA/QC Samples and Analysis

A summary of the field QA/QC samples collected and analysed for this investigation is provided in the following table:

Sample Type	Sample Identification	Frequency (of Sample Type)	Analysis Performed
Intra-laboratory duplicate (soil)	SDUP101 (primary sample BH105 0-0.3m)	Approximately 14% of primary samples	Heavy metals, TRH/BTEX, PAHs, OCPs, OPPs and PCBs
Inter-laboratory duplicate (soil)	SDUP102 (primary sample BH107 0-0.1m)	Approximately 14% of primary samples	Heavy metals, TRH/BTEX, PAHs, OCPs, OPPs and PCBs
Trip spike (soil)	TS-S101 (17.7.20)	One per day of soil sampling	BTEX
Trip blank (soil)	TB-S101 (17.7.20)	One per day of soil sampling	BTEX
Rinsate (soil SPT)	FR-HA101 (17.7.20)	One per day of soil sampling	TRH/BTEX

The results for the field QA/QC samples are detailed in the laboratory summary table (Table S7) attached to the investigation report and are discussed in the subsequent sections of this Data (QA/QC) Evaluation report.

3. Data Assessment Criteria

JKE adopted the following criteria for assessing the field and laboratory QA/QC analytical results:

Field Duplicates

Acceptable targets for precision of field duplicates in this report will be 30% or less, consistent with NEPM (2013). RPD failures will be considered qualitatively on a case-by-case basis taking into account factors such

as the concentrations used to calculate the RPD (i.e. RPD exceedance where concentrations are close to the PQL are typically not as significant as those where concentrations are reported at least five or 10 times the PQL), sample type, collection methods and the specific analyte where the RPD exceedance was reported.

Field/Trip Blanks and Rinsates

Acceptable targets for field blank and rinsate samples in this report will be less than the PQL for organic analytes. Metals will be considered on a case-by-case basis with regards to typical background concentrations in soils and published drinking water guidelines for waters.

Trip Spikes

Acceptable targets for trip spike samples in this report will be 70% to 130%.

Laboratory QA/QC

The suitability of the laboratory data is assessed against the laboratory QA/QC criteria which is outlined in the laboratory reports. These criteria were developed and implemented in accordance with the laboratory's NATA accreditation and align with the acceptable limits for QA/QC samples as outlined in NEPM (2013) and other relevant guidelines.

A summary of the acceptable limits adopted by the primary laboratory (Envirolab) is provided below:

RPDs

- Results that are <5 times the PQL, any RPD is acceptable; and
- Results >5 times the PQL, RPDs between 0-50% are acceptable.

Laboratory Control Samples (LCS) and Matrix Spikes

- 70-130% recovery acceptable for metals and inorganics;
- 60-140% recovery acceptable for organics; and
- 10-140% recovery acceptable for VOCs.

Surrogate Spikes

- 60-140% recovery acceptable for general organics; and
- 10-140% recovery acceptable for VOCs.

Method Blanks

- All results less than PQL.

B. DATA EVALUATION

1. Sample Collection, Storage, Transport and Analysis

Samples were collected by trained field staff in accordance. Field sampling procedures were designed to be consistent with relevant guidelines, including NEPM (2013) and other guidelines made under the CLM Act 1997.

Appropriate sample preservation, handling and storage procedures were adopted. Laboratory analysis was undertaken within specified holding times in accordance with Schedule B(3) of NEPM (2013) and the laboratory NATA accredited methodologies.

JKE note that the temperature on receipt of soil samples was reported to be up to 16.8°C. JKE understand that the temperature is measured at the laboratory using an infrared temperature probe by scanning the outside of the sample container (i.e. one sample jar/container at the time of registering the samples). This procedure is not considered to be robust as there is a potential for the outside of the jar to warm to ambient temperature, or at least to increase from that of the internal contents, relatively quickly. On this basis, JKE are of the opinion that the temperatures reported on the Sample Receipts are unlikely to be reliable or representative of the overall batch.

Envirolab noted that the asbestos results were reported to be consistent with the recommendations in NEPM (2013), however this level of reporting is outside the scope of their NATA accreditation. In the absence of other available analytical methods for asbestos, this was found to be acceptable for the purpose of this investigation.

Review of the project data also indicated that:

- COC documentation was adequately maintained;
- Sample receipt advice documentation was provided for all sample batches;
- All analytical results were reported; and
- Consistent units were used to report the analysis results.

2. Laboratory PQLs

Appropriate PQLs were adopted for the analysis and all PQLs were below the SAC.

3. Field QA/QC Sample Results

Field Duplicates

The results indicated that field precision was acceptable. RPD non-conformances were reported for some analytes as discussed below:

- Elevated RPDs were reported for several PAH compound in SDUP102/BH107 (0-0.1m);
- Elevated RPDs were reported for Chromium in SDUP102/BH107 (0-0.1m); and
- Elevated RPDs were reported for Total PCBs in SDUP102/BH107 (0-0.1m).

Values outside the acceptable limits have been generally attributed to sample heterogeneity and the difficulties associated with obtaining homogenous duplicate samples of heterogeneous matrices. Although we also note that most of the exceedances could also be attributed to results close to the PQLs. As both the primary and duplicate sample results were less than the SAC, the exceedances are not considered to have had an adverse impact on the data set as a whole.

Field/Trip Blanks

During the investigation, one soil trip blank was placed in the esky during sampling and transported back to the laboratory. The results were all less than the PQLs, therefore cross contamination between samples that may have significance for data validity did not occur.

Rinsates
All results were below the PQL. This indicated that cross-contamination artefacts associated with sampling equipment were not present and the potential for cross-contamination to have occurred was low.

Trip Spikes
The results ranged from 68% to 75%. The xylene spike recovery results were outside of the acceptable range of 70% to 130%.

We note that soil samples for this investigation were couriered to the laboratory in an esky chilled with ice bricks to the laboratory on 20 July 2020. Upon receipt of the samples in the late afternoon on 20 July 2020 the laboratory informed JKE that the trip spike, trip bank and field rinstate QA/QC samples had not been received with the soil samples (as shown on the COC, lab report ref 247348). JKE inspected our sample processing area the following day and discovered that the trip spike, trip bank and field rinstate QA/QC samples had accidently been left on the sample processing bench overnight.

Whilst it could be argued that up to a 32% loss of volatiles may have led volatile contaminants being under-reported (i.e. the lower end of the trip spike recovery was 68%), it is noted that all BTEX results and volatile TRHs (F1 and F2) were below the PQLs and even a nominal 32% increase of TRH/BTEX concentrations in these samples (from the PQL) would not result in exceedance of the SAC. Additionally, the soil samples were issued to the laboratory in an esky chilled with ice bricks and not left out on the samples processing bench overnight.

The above is not considered to have an impact on the data quality for this investigation. We have reviewed our sample packing processes internally and have implemented steps so that this event does not reoccur.

4. Laboratory QA/QC

The analytical methods implemented by the laboratory were performed in accordance with their NATA accreditation and were consistent with Schedule B(3) of NEPM (2013). The frequency of data reported for the laboratory QA/QC (i.e. duplicates, spikes, blanks, LCS) was considered to be acceptable for the purpose of this investigation.

A review of the laboratory QA/QC data identified the following non-conformance for Lab Report – 247348: Asbestos-ID in soil, NEPM: All samples were analysed as received. However, sample 247349-9 was below the minimum 500ml sample volume. As there was no asbestos detected in the sample, the marginally lower sample volume does not impact on the results overall.

C. DATA QUALITY SUMMARY

Non-conformances were reported for some field QA/QC samples and laboratory QA/QC analysis. These non-conformances were considered to be sporadic and minor, and were not considered to be indicative of systematic sampling or analytical errors. On this basis, these non-conformances are not considered to materially impact the report findings.

JKE are of the opinion that the data are adequately precise, accurate, representative, comparable and complete to serve as a basis for interpretation to achieve the investigation objectives.

Appendix H: UCL Calculation Sheets

Carcinogenic PAHs Results Used for UCL Calculation

All data in mg/kg unless stated otherwise			Carcinogenic PAHs
PQL - Envirolab Services			0.5
Site Assessment Criteria (SAC) HIL-A			3
Sample Reference	**Sample Depth**	**Sample Description**	
BH1	0.2-0.3	Fill: Silty sand	0.768
BH2	0.2-0.3	Fill: Silty sand	1.051
BH2	0.8-1.0	Fill: Silty sand	3.02
BH2	1.3-1.5	Fill: Silty sand	0.202
BH3	0.2-0.3	Fill: Silty sand	0.313
BH4	0.2-0.3	Fill: Silty sand	2.777
BH4	0.8-1.0	Fill: Silty sand	0.525
BH5	0.2-0.3	Fill: Silty sand	0.929
BH5	0.8-1.0	Silty sand/possibly fill	0.202
BH101	0.5-0.7	Fill: Silty Sand	0.5
BH102	0.22-0.4	Fill: Silty Gravelly Sand	0.5
BH103	0.9-1.1	Fill: Silty Gravelly Sand	0.5
BH104	0.03-0.2	Fill: Silty Gravelly Sand	0.5
BH105	0-0.3	Fill: Silty Sand	0.5
BH106	0-0.1	Fill: Silty Sand	0.5
BH107	0-0.1	Fill: Silty Sand	0.5
Total Number of Samples			16
Maximum Value			3.02

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1	UCL Statistics for Uncensored Full Data Sets										
2											
3	User Selected Options										
4	Date/Time of Computation	ProUCL 5.16/08/2020 9:30:14 AM									
5	From File	WorkSheet.xls									
6	Full Precision	OFF									
7	Confidence Coefficient	95%									
8	Number of Bootstrap Operations	2000									
9											
10											
11	Carcinogenic PAHs										
12											
13	General Statistics										
14	Total Number of Observations	16					Number of Distinct Observations	9			
15							Number of Missing Observations	0			
16	Minimum	0.202					Mean	0.83			
17	Maximum	3.02					Median	0.5			
18	SD	0.839					Std. Error of Mean	0.21			
19	Coefficient of Variation	1.01					Skewness	2.188			
20											
21	Normal GOF Test										
22	Shapiro Wilk Test Statistic	0.632					Shapiro Wilk GOF Test				
23	5% Shapiro Wilk Critical Value	0.887					Data Not Normal at 5% Significance Level				
24	Lilliefors Test Statistic	0.33					Lilliefors GOF Test				
25	5% Lilliefors Critical Value	0.213					Data Not Normal at 5% Significance Level				
26	Data Not Normal at 5% Significance Level										
27											
28	Assuming Normal Distribution										
29	95% Normal UCL						95% UCLs (Adjusted for Skewness)				
30	95% Student's-t UCL	1.198					95% Adjusted-CLT UCL (Chen-1995)	1.298			
31							95% Modified-t UCL (Johnson-1978)	1.217			
32											
33	Gamma GOF Test										
34	A-D Test Statistic	1.491					Anderson-Darling Gamma GOF Test				
35	5% A-D Critical Value	0.753					Data Not Gamma Distributed at 5% Significance Level				
36	K-S Test Statistic	0.304					Kolmogorov-Smirnov Gamma GOF Test				
37	5% K-S Critical Value	0.218					Data Not Gamma Distributed at 5% Significance Level				
38	Data Not Gamma Distributed at 5% Significance Level										
39											
40	Gamma Statistics										
41	k hat (MLE)	1.734					k star (bias corrected MLE)	1.45			
42	Theta hat (MLE)	0.479					Theta star (bias corrected MLE)	0.573			
43	nu hat (MLE)	55.48					nu star (bias corrected)	46.41			
44	MLE Mean (bias corrected)	0.83					MLE Sd (bias corrected)	0.69			
45							Approximate Chi Square Value (0.05)	31.78			
46	Adjusted Level of Significance	0.0335					Adjusted Chi Square Value	30.4			
47											
48	Assuming Gamma Distribution										
49	95% Approximate Gamma UCL (use when n>=50))	1.213					95% Adjusted Gamma UCL (use when n<50)	1.268			
50											
51	Lognormal GOF Test										
52	Shapiro Wilk Test Statistic	0.865					Shapiro Wilk Lognormal GOF Test				
53	5% Shapiro Wilk Critical Value	0.887					Data Not Lognormal at 5% Significance Level				
54	Lilliefors Test Statistic	0.263					Lilliefors Lognormal GOF Test				
55	5% Lilliefors Critical Value	0.213					Data Not Lognormal at 5% Significance Level				
56	Data Not Lognormal at 5% Significance Level										
57											

58	Lognormal Statistics										
59				Minimum of Logged Data	-1.599			Mean of logged Data	-0.501		
60				Maximum of Logged Data	1.105			SD of logged Data	0.756		
61											
62	Assuming Lognormal Distribution										
63				95% H-UCL	1.276			90% Chebyshev (MVUE) UCL	1.265		
64				95% Chebyshev (MVUE) UCL	1.48			97.5% Chebyshev (MVUE) UCL	1.78		
65				99% Chebyshev (MVUE) UCL	2.367						
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	1.175			95% Jackknife UCL	1.198		
72				95% Standard Bootstrap UCL	1.166			95% Bootstrap-t UCL	1.969		
73				95% Hall's Bootstrap UCL	3.11			95% Percentile Bootstrap UCL	1.183		
74				95% BCA Bootstrap UCL	1.293						
75				90% Chebyshev(Mean, Sd) UCL	1.46			95% Chebyshev(Mean, Sd) UCL	1.745		
76				97.5% Chebyshev(Mean, Sd) UCL	2.14			99% Chebyshev(Mean, Sd) UCL	2.918		
77											
78	Suggested UCL to Use										
79				95% Chebyshev (Mean, Sd) UCL	1.745						
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											

Appendix I: Guidelines and Reference Documents

Acid Sulfate Soils Management Advisory Committee (ASSMAC), (1998). Acid Sulfate Soils Manual

Australian and New Zealand Environment Conservation Council (ANZECC), (2000). Australian and New Zealand Guidelines for Fresh and Marine Water Quality

Canadian Council of Ministers of the Environment, (1999). Canadian soil quality guidelines for the protection of environmental and human health: Benzo(a)Pyrene (1997)

CRC Care, (2011). Technical Report No. 10 – Health screening levels for hydrocarbons in soil and groundwater Part 1: Technical development document

Contaminated Land Management Act 1997 (NSW)

Department of Land and Water Conservation, (1997). 1:25,000 Acid Sulfate Soil Risk Map Series

Managing Land Contamination, Planning Guidelines SEPP55 – Remediation of Land (1998)

National Health and Medical Research Council (NHMRC), (2018). National Water Quality Management Strategy, Australian Drinking Water Guidelines 2011

NSW Department of Environment and Conservation, (2007). Guidelines for the Assessment and Management of Groundwater Contamination

NSW EPA, (1995). Contaminated Sites Sampling Design Guidelines

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

NSW EPA, (2015). Guidelines on the Duty to Report Contamination under Section 60 of the CLM Act 1997

NSW EPA, (2017). Guidelines for the NSW Site Auditor Scheme, 3rd Edition

NSW EPA, (2020). Consultants Reporting on Contaminated Land, Contaminated Land Guidelines

National Environment Protection Council (NEPC), (2013). National Environmental Protection (Assessment of Site Contamination) Measure 1999 as amended (2013)

Olszowy, H., Torr, P., and Imray, P., (1995). Trace Element Concentrations in Soils from Rural and Urban Areas of Australia. Contaminated Sites Monograph Series No. 4. Department of Human Services and Health, Environment Protection Agency, and South Australian Health Commission

Protection of the Environment Operations Act 1997 (NSW)

State Environmental Planning Policy No.55 – Remediation of Land 1998 (NSW)

World Health Organisation (WHO), (2008). Petroleum Products in Drinking-water, Background document for the development of WHO Guidelines for Drinking Water Quality

Western Australia Department of Health, (2009). Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia