



## Randwick Barracks

Preliminary Site Investigation

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Defence Housing Australia



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K.2.7 Investigation, Remediation and Validation Report Lots 15, 16 and 17, Randwick Defence Site HLA-Envirosciences (HLA) (November 2003b)

K.2.8 SAS 2002/20E – Areas 5 and 6 – issued 6 September 2004

K.2.9 Stockpile Characterisation, Randwick Environmental Park and Stage 1B, 5&6, Randwick Defence Site, Avoca Street, Randwick NSW (GHD February 2010)

K.2.10 Randwick Barracks Housing Development, Limited Preliminary Site Investigation, Defence Housing Australia (Aurecon November 2016)

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## Executive Summary

Defence Housing Australia (DHA) is considering residential redevelopment options for approximately 19.5 Ha of brownfield Commonwealth-owned land within Randwick Barracks, NSW.

The area under consideration, which is the subject of this investigation (the Site), is within a secured area of Randwick Barracks enclosed by Joongah Street, Bunjan Street, Munda Street, Gumara Street and Bundock Street. The majority of the Site is currently vacant, with the southern portion of the Site remaining an active Defence facility. The Site has hosted a variety of former landuses and activities, including a rifle range, grenade bursting range, naval stores depot and Army transport compound.

This Preliminary Site Investigation (PSI) was undertaken to: assess the potential for contamination at the Site; establish the risk potential contamination may pose to human and / or environmental health in relation to the Site's redevelopment for residential use; and provide recommendations for further work that may be required should unacceptable risks and / or data gaps be identified.

A desktop study and site inspection were completed to inform this PSI. Sixteen (16) areas/activities of (potential) environmental concern (AEC) were identified, which recognised the potential for soil, groundwater or soil vapour contamination associated with the following activities/areas:

- § AEC 1: Debris and fill material
- § AEC 2: Former pesticide use
- § AEC 3: Former Rifle Range
- § AEC 4: Former Grenade Bursting Range
- § AEC 5: Site-wide and Sydney Water Sewers
- § AEC 6: Chemical storage at the Storage Yard
- § AEC 7: Vehicle storage at the Storage Yard
- § AEC 8: Former fuel infrastructure at the Former Heavy Vehicle Transport Yard
- § AEC 9: Former vehicle washing, refuelling and maintenance activities at the Former Heavy Vehicle Transport Yard
- § AEC 10: Oil-water separators at the Former Heavy Vehicle Transport Yard (Building 502) and Vehicle Wash Bay (off-site)
- § AEC 11: Former hazardous materials storage at Former Naval Store 14
- § AEC 12: Former metal treatment works at Former Building 9FSB
- § AEC 13: Stockpiles in various location across the Site
- § AEC 14: Stormwater infrastructure in the vicinity of building infrastructure
- § AEC 15: Current and former substations
- § AEC 16: Randwick Zone Substation (off-site)
- § AEC 17: Former launderette (off-site)

Based on the findings of this PSI report, the following recommendations for further work are provided:

- § Stage 2 Detailed Site Investigation (DSI) to be completed across all AECs to establish whether an unacceptable risk to human health and / or the environment in relation to the use of the site for residential purposes is present;
- § Should future development works be undertaken, development of a Construction Environment Management Plan (CEMP) for the construction phase of the development on the basis of an understanding of potentially encountering ACM and contamination at the Site (based on the outcome of the Stage 2 DSI).

## Important note about your report

The sole purpose of this report is to present the findings of a Preliminary Contaminated Land Site Investigation (PSI) carried out by Jacobs for Defence Housing Australia ('the Client') in connection with potential development of the Project Area located within Randwick Barracks. This report was produced in accordance with and is limited to the scope of services set out in the contract between Jacobs and the Client. That scope of services, as described in this report, was developed with the Client.

The scope of services was not intended to provide a definitive or quantitative investigation of the environmental impacts, performance and compliance of the subject sites. Environmental conditions may exist at the sites that are beyond the scope of our investigations and this report.

The findings presented in this report are professional opinions based solely upon information and data provided or made available by the Client [or otherwise available in the public domain] between October 2019 and January 2020, including (a) visual observations of the Site and its vicinity and (b) documentation made available by Department of Defence.

Jacobs has relied upon and presumed that this data is accurate and representative of the environmental conditions at the Site. Except as otherwise stated in the report, Jacobs has not attempted to verify the accuracy or completeness of any such information. If the information is subsequently determined to be false, inaccurate or incomplete or if site conditions change beyond the above dates then it is possible that our conclusions as expressed in this report may change. Because regulatory evaluation criteria are constantly changing, concentrations of contaminants present and considered to be acceptable at the time of this report may in the future become subject to different regulatory standards and require assessment.

Jacobs has prepared this report in accordance with the usual care and thoroughness of the consulting profession and by reference to applicable auditing procedures and practice at the date of issue of this report. For the reasons outlined above, however, no other warranty or guarantee, whether expressed or implied, is made as to the data, observations and findings expressed in this report, to the extent permitted by law. Opinions and judgements expressed in the report are based on Jacobs' understanding and interpretation of current regulatory standards and should not be construed as legal opinions.

Except as specifically stated in this report, Jacobs makes no statement or representation of any kind concerning the suitability of the Site for any purpose or the permissibility of any use. Use of the Site for any purpose may require planning and other approvals and, in some cases, regulatory and accredited site auditor approvals. Jacobs offers no opinion as to the likelihood of obtaining any such approvals, or the conditions and obligations which such approvals may impose, which may include the requirement for additional environmental investigations and / or works.

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# 1. Introduction

## 1.1 Background

Defence Housing Australia (DHA) is considering residential redevelopment options for approximately 19.5 Ha of brownfield Commonwealth land located within Randwick Barracks, NSW. As part of a due diligence exercise, Jacobs Group (Australia) Pty Ltd (Jacobs) has been engaged by DHA to undertake a Preliminary Site Investigation (PSI) at the portion of the Randwick Barracks that is enclosed by Joongah Street, Bunjan Street, Munda Street, Gumara Street and Bundock Street (the Site). The Site location and layout are presented in Appendix A, Figure 1.

This report summarises the results of the PSI (including the findings of an information review, a site inspection, and interviews), provides a preliminary conceptual site model (CSM), and provides recommendations for further work.

## 1.2 Objectives

The objectives of the work were to:

- § Identify potential risks to human health and/or the environment associated with the current or historical uses of the Site;
- § Establish the preliminary risk potential that contamination may pose to human and/or environmental health in relation to the Site's redevelopment for residential use; and
- § Provide recommendations for further work that may be required should unacceptable risks and / or data gaps be identified.

## 1.3 Scope of Works

This report presents the findings of the background information review (including site inspection and interviews) undertaken to meet the objectives and is consistent with the scope and limitations of a PSI as set out in the National Environment Protection Measure (NEPC, 2013) and the Phase I Environmental Site Assessment Process (ASTM, 2013). In summary the scope of works comprised:

- § A review of selected historical information was undertaken for the Site and surrounds, and included a review of aerial photographs, NSW EPA database records, NSW Department of Primary Industries (Water) groundwater data archives and Local Environmental Plans land zoning maps. A third-party information provider (Lotsearch Pty Ltd (Lotsearch)) was utilised to source and compile some of the publicly available data (Appendix B). It is noted that the investigation area as presented in the Lotsearch report is smaller than the Site as defined in this PSI report; this was due to changes in the area under investigation as requested by DHA after the Lotsearch report had been commissioned. Lotsearch database queries include a minimum 100m (maximum 2km) 'buffer zone' from the Site boundary, which fully encompasses the Site as defined in the PSI report. Therefore, no additional public database searches were considered necessary.

Collation and compilation of available background information relating to the physical and environmental setting of the Site and its surrounds including;

- A review of standard environmental record sources regarding environmental conditions for the property and surrounds;
- A review of publicly available historical aerial photographs, maps, local street directories and zoning/land use records;
- Review of environmental and contamination reports relevant to the Site, either publicly available or as provided by Defence;
- Review of underground utility service plans as available through a Dial Before You Dig (DBYD) request; and,

- Inspection of the Site and completion of interviews with current and past owners, operators and occupiers of the Site (where available) [REDACTED], a Jacobs environmental scientist.
- § Preparation of this PSI report, while compiles information obtained and sets out:
- A summary of the findings from review of the Site setting and Site history review, Site inspection and interviews;
  - Identified potential sources of contamination based on historic and existing site uses in areas/activities of environmental concern (AECs);
  - A preliminary CSM that outlines the current understanding of identified sources of contamination (AECs), pathways for contaminant migration, and receptors (human and environmental);
  - Based on the preliminary CSM, a preliminary assessment of the potential completeness of the source-pathway-receptor linkages would be made as it related to identified receptors. This is then used to inform any further work that may be required to assess risk to identified human and environmental receptors, or fill data gaps in our knowledge in this respect; and,
  - Identification of data gaps which would require further investigation to better understand risk to identified existing and future users of the Site and any management or remedial measures that may be required.

## 2. Regulatory and Policy Framework

Key policies, guidelines and legislation applicable to the works undertaken for this PSI are summarised in the following sections.

### 2.1 Defence Environmental Management Framework

#### 2.1.1 Environmental Policy and Strategic Aims

The Defence Environmental Policy states: "*Defence will be a leader in sustainable environmental management to support the ADF capability to defend Australia and its national interests*".

Defence has five (5) strategic aims to achieve this vision. Strategic Aim 3 states that "*Defence will minimise future pollution risks and manage existing contamination risks*". The strategic aims are detailed in the Environmental Strategy 2016 – 2036.

The priorities of Strategic Aim 3 are to:

- § Minimise future pollution and contamination risks both in Australia and overseas operations;
- § Understand emerging contamination risks and advances in remediation and management approaches;
- § Apply a risk-based approach to managing contaminated sites, including unexploded ordnance (UXO), to reduce impacts on human health and the natural environment and maintain public access to key information about these risks; and
- § Manage contaminated sites and potential pollutants in accordance with relevant legislative obligations and standards.

The actions, accountabilities and timeframes to achieve these priorities are provided in the Defence Environmental Plan.

##### 2.1.1.1 Contamination Directives, Guidelines and Policy

The Defence Contamination Management Manual (Department of Defence, 2018) within the Defence Estate Quality Management System, the key legislative instruments that guide Defence's approach to the management of the environment (including contamination) on Commonwealth land include:

- § *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (the EPBC Act)
- § National Environment Protection Council (NEPC) National Environment Protection Measures (NEPMs)
- § *Work Health and Safety Act 2011 (and as amended 2016)* (Cth) (WHS Act).

### 2.2 New South Wales Legislation, Policies and Guidelines

Defence may not be subject to State and Territory law in all situations. Whether or not Defence is bound by State or Territory law is a complex issue and legal advice must be obtained to confirm whether a particular State or Territory law is applicable to Defence. Defence contractors must comply with relevant State or Territory laws.

While not necessarily subject to State regulation, it is Defence policy to comply with the spirit and intent of State environmental management legislation where it does not conflict with obligations under applicable Commonwealth law. Reference has therefore been made to guidance endorsed by the New South Wales Environmental Protection Authority (NSW EPA) in compliance with the provisions of the NSW Contaminated Land Management Act 1997 (NSW Government, 1997). The documents where these standards and methodologies are described comprise:

This PSI has been prepared in general accordance with the following guidelines endorsed by the NSW EPA:

- § AS4482.1 (2005) *Guide to the Investigation and Sampling of Sites with Potentially Contaminated Soil: Part 1*;
- § AS4482.2 (1999) *Guide to the Investigation and Sampling of Sites with Potentially Contaminated Soil: Part 2*;
- § Contaminated Land Planning Guidelines (Draft) 2018 (New South Wales Government, 2018);
- § Centre of Research Cooperation for Contamination Assessment and Remediation of the Environment (CRC CARE) Health screening levels for petroleum hydrocarbons in soil and groundwater (CRC CARE, 2011);
- § Guidelines for the NSW Site Auditor Scheme (3rd Edition) (NSW EPA, 2017)
- § Guidelines for the Assessment and Management of Groundwater Contamination (NSW DEC, 2007)
- § National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013 (No. 1). Schedule B2. Guideline on Site Characterisation (B2): 2013, National Environment Protection Council Service Corporation, Canberra, A.C.T. (NEPM, 2013);
- § NSW Office of Environment and Heritage (2011) *Guidelines for Consultants Reporting on Contaminated Sites*;
- § PFAS National Environmental Management Plan. Version 2.- Consultation Draft (Heads of EPA Australia and New Zealand, 2018);
- § Protection of the Environment Operations Act (POEO Act) 1997 (New South Wales Government, 1997);
- § State Environment Planning Policy (SEPP) No 55 – Remediation of Land (New South Wales Government, 2019); and
- § State Environment Planning Policy (SEPP) (Coastal Management) (New South Wales Government, 2018).

The primary legislation relating to pollution control in NSW is the Contaminated Land Management Act 1997 (the Act), the objective of which is to establish a process for investigating and (where appropriate) remediating land that the EPA considers to be contaminated significantly enough to require regulation under the Act.

The Act defines contamination of land as:

*'The presence in, on or under the land of a substance at a concentration above the concentration at which the substance is normally present in, on or under (respectively) land in the same locality, being a presence that presents a risk of harm to human health or any other aspect of the environment.'*

In relation to groundwater, the State Groundwater Policy Framework Document (NSW DLWC, 1997) provides a framework for the management of groundwater resources in order to support relevant environmental values (values). The NSW Department of Environment and Conservation Guidelines for the Assessment and Management of Groundwater Contamination (NSW DEC, 2007) provides guidance in identifying relevant environmental values.



### 3. Site Information

#### 3.1 Site Identification

The Site is located between Joongah Street, Bunjan Street, Munda Street, Gumara Street and Bundock Street within the suburb of Randwick in NSW (the Site). General Site information is summarised in Table 3-1. A Site plan is attached as Appendix A, Figure 2.

Table 3-1: Summary Site information

Aspect	Response
Site owner	Department of Defence
Site name	Randwick Barracks
Site address	373A Avoca Street, Kingsford, NSW 2032
GIS coordinate of site centroid	335550.57 S, 1511418.81 E
Site area	Approximately 19.5 Ha
Elevation	30 m AHD
Map Reference	Sydney Online Map, Page 318, Grid F4
Municipality / Local Council	City of Randwick
Current land use zoning and overlays	Special Activities (SP1) – Purpose: Defence General Residential (R1) Environmental Conservation (E1)
Lot / Plan	Part of Lot 37 of DP1150819 Lot 13 DP1042814 Lot 16 of DP1042814

#### 3.2 Site Description

The Site is located on the eastern half of the greater Randwick Barracks, which is a military base that provides accommodation and support to the Australian Defence Force (Defence, 2020).

The following site description is based on a visual site inspection and interviews with the Base Services Manager and Environmental Services Manager during the site inspection. Relevant information has been incorporated into Table 3-2 The site inspection and interviews were carried out by [REDACTED] a Jacobs Environmental Scientist between 14 and 15 November 2019. Supplementary information regarding the Site history and infrastructure has also been incorporated into the following section (refer to Section 5 for additional detail).

The majority of the northern and central portions of the Site are unused, having formerly contained the Naval Stores and Old Married Soldiers Quarters area (see Appendix A, Figure 3 for locations of historical infrastructure and Section 5 for further discussion of Site history). The Naval Stores were demolished between the 1990s and 2000s, leaving large remnant concrete slabs in the northern and central portions of the Site (see Section 5.2 for historical aerial photographs showing the progressive demolition of the Naval Stores).

Except for the concrete slabs and roadways, the remainder of the ground surface is either bare or vegetated. An electrical substation is located on the north-eastern Site boundary, in the vicinity of the Old Married Soldiers Quarters area.

The southern portion of the Site is active and comprises the following:

- Storage Yard (including buildings 503 and 504) with ground maintenance area;
- Movement Control Office building and associated car park;



- Former Heavy Vehicle Transport Yard (Building 502), currently used as a temporary site office and storage area for contractors; and,
- Overflow carpark.

The majority of the Site boundary is fenced, with the exception of access to the overflow carpark and Movement Control Office from the west along Namurang Street and Galu Avenue.

Key site features are shown in Appendix A, Figure 2, while historical infrastructure is shown in Appendix A, Figure 3. A summary of the inspection observations is provided in Table 3-2. Site photographs are included in Appendix D.

Table 3-2: Summary of Visual Site Inspection and Interviews

Aspect	Description	Section / Figure Ref.
Access	<p>Randwick Barracks is accessed from Avoca Street. The Site is accessed from within the Barracks via a locked gate off of Felicity Place, adjacent to the Estate and Infrastructure Group (E&amp;IG) administration building in the northern portion of the Barracks. An alternative access point is via a locked gate off of Munda Street, adjacent to the Movement Control Office in the south eastern portion of the Barracks.</p> <p>The majority of the Site is fenced, with the exception of access to the overflow carpark and Movement Control Office from the west along Namurang Street and Galu Avenue.</p>	N/A
Topography	<p>The majority of the Site was observed to be relatively flat, with a gentle slope from the north to the south and east. Two excavated areas were observed in the western portion of the Site (see detail in Site Features/Structures below).</p> <p>A small rise in elevation was observed near the access gate and access road off Munda Street.</p>	Section 4.3
Site Features / Structures	<p>Northern Portion of Site</p> <ul style="list-style-type: none"> <li>• An electrical substation backs onto Bundock Street in the north western portion of the Site. Two stockpiles were noted directly south (soil) and east (soil and some vegetation) of the substation building.</li> <li>• A rock lined drain was observed running north-south from the northern Site boundary to concrete slab 17.</li> <li>• Remnants of the former residential areas were observed (i.e. light poles, sections of road).</li> </ul> <p>Central Portion of Site</p> <ul style="list-style-type: none"> <li>• The dominant Site features observed were six concrete slabs (former Naval Store Depot footprints) covering the majority of the central portion of the Site.</li> <li>• Two shipping containers (contents unknown) were present on the south-eastern corner of concrete slab 9.</li> <li>• Evidence of removed concrete slabs (former Naval Stores 8, 10, and 12 (see Appendix A, Figure 3), including concrete guttering and edging and associated infrastructure (hydrants and boosters) were observed.</li> <li>• An excavation (approximately 40m X 100 m X 2.0 m deep) was observed at the location of former Naval Store 12.</li> <li>• A small excavation (approximately 0.2 m deep) observed at the western end of and between concrete slabs 9 and 11.</li> </ul> <p>Southern Portion of Site</p> <p>Site features observed within the precinct include the Storage Yard, Movement Control Office and carpark, overflow carpark and Former Heavy Vehicle Transport Yard (currently used as a site office and storage area for contractors undertaking electrical works).</p> <p>The Storage Yard was observed to contain the following:</p>	Appendix A, Figures 2 and 3



Aspect	Description	Section / Figure Ref.
	<ul style="list-style-type: none"> <li>• Hardstand ground surface</li> <li>• Parked cars, boats, motor bikes, caravans and camp trailers.</li> <li>• A ground maintenance area including a small office building, chemical storage area, gas cylinder storage and ground maintenance equipment storage (mowers and spray tanks).</li> <li>• Three shipping containers (contents unknown) including a flammable liquids store</li> </ul> <p>Movement Control Office and carpark:</p> <ul style="list-style-type: none"> <li>• Hardstand ground surface</li> <li>• Two shipping containers located in the small carpark adjacent to the Movement Control Office</li> </ul> <p>The overflow car park comprised a handstand ground surface with approximately 6 shipping containers.</p> <p>Former Heavy Vehicle Transport Yard:</p> <ul style="list-style-type: none"> <li>• One (apparently disused) oil water separator was observed in the Former Heavy Vehicle Transport Yard and adjacent to a collection pit, vehicle inspection ramp and two vehicle inspection pits. No surface staining was observed in the immediate area.</li> <li>• Paint was observed to be flaking off the roof structure of the Storage Yard and Former Heavy Vehicle Transport Yard. A review of historical aerial photos indicated that these structures were constructed between 1982 and 1991 when lead-based paint use had largely been phased out.</li> <li>• 19 shipping containers present (contents unknown)</li> </ul> <p>Additional observations</p> <ul style="list-style-type: none"> <li>• An (apparently operational) oil water separator was observed off-Site in a shed adjacent to the Vehicle Wash Bay, west of the overflow carpark. No surface staining was observed in the immediate area.</li> </ul>	
Ground Cover	<p>A large portion of the Site (approximately 30%) has a hardstand cover (concrete and asphalt) with seven disused concrete slabs located across the central and northern portions of the Site, car parks, Storage Yard, Movement Control Office and Former Vehicle Maintenance Yard wash area.</p> <p>Areas of geofabric were noted in some garden bed areas and mulched areas, most notably adjacent to and south and east of the Storage Yard, eastern side of Movement Control Office, south of concrete slab 9, in the small excavation (at approximately 0.2 m below ground level) at the western end of and between concrete slabs 9 and 11, edge of concrete access road on the north eastern portion of the Site, north eastern edge of concrete slab 17 and along the north eastern edge of concrete slab 15.</p> <p>Areas of mulch were noted across the north eastern corner of the Site, along the southern boundary of the Site and the garden bed area south of concrete slab 9.</p> <p>Grass cover and general vegetation ground cover varied over the Site from sparse to thick with scrub and larger trees observed over various parts of the Site. Denser vegetation was noted around the northern and eastern edge of concrete slab 16.</p> <p>Several areas of bare earth are present within the Site.</p> <p>Minor volumes of demolition rubble were observed to be scattered across the surface of some portions of the Site where the surface soils could be observed. Fragments of potentially asbestos containing material were observed across the Site (refer to Photographs in Appendix D).</p>	N/A
Spoil and stockpiles	<p>A total of 19 stockpiles were observed across the Site. Observations of each stockpile are detailed below:</p> <p>Soil / Fill Stockpiles</p> <p>SP1 - Stockpile of sandy fill/soils (approximately 27m x 2m x 1 m) south of the electrical substation. The fill materials appear to have been derived from recent works undertaken at the sub-station.</p>	Appendix A, Figure 2



Aspect	Description	Section / Figure Ref.
	<p>SP2 - Small stockpile of sandy fill and vegetation east of the electrical substation.</p> <p>SP3 - Relatively small stockpile of sandy spoil located on the south eastern portion of the former transport compound and site.</p> <p>Relatively small stockpile of sandy spoil located on the south eastern portion of the former transport compound and site.</p> <p>In all cases, the source of the stockpiled fill/soil was unknown.</p> <p>Other Stockpiles</p> <p>SP4 - Relatively small stockpile of rock, planks of wood and wood posts and metal framework adjacent to the Storage Yard.</p> <p>SP5 - Relatively small stockpile of bricks and concrete located on the south eastern corner of the Former Heavy Vehicle Transport Yard.</p> <p>SP6 - Relatively small stockpile containing sections of concrete slab on the southern portion of the Former Heavy Vehicle Transport Yard.</p> <p>SP7 - Relatively small stockpile of roofing and downpipe under the canopy of the Former Heavy Vehicle Transport Yard and south of a brick building.</p> <p>SP8 - Relatively small stockpile of concrete rubble, bricks and pit lids was observed on the southern western portion of the former transport compound.</p> <p>SP9 - Relatively small stockpile of fencing, irrigation pipe and potential asbestos containing material (ACM) pipe was observed on the western edge of concrete slab 16 on the western portion of the Site.</p> <p>SP10 - Sump or pit filled with wooden posts located on the western portion of the Site.</p> <p>SP11 - Relatively small stockpile of wood sleepers and small stockpile of concrete footings and metals poles located on the western portion of the Site.</p> <p>SP12 - Relatively small stockpile of concrete footings, metal and wood poles was observed to be located on the western portion of the Site.</p> <p>SP13 - Relatively small stockpile of fencing material, large steel container and small steel tank located on the south eastern corner of concrete slab 14.</p> <p>SP14 - Relatively small area of concrete washout located on the south western corner of concrete slab 13.</p> <p>SP15 - Stockpile of vegetation within the storage yard on the southern portion of the Site.</p> <p>SP16 - Relatively small stockpile of demolition rubble and sandy soils located at the northern end of garden bed west of former transport compound.</p> <p>SP17 - Relatively small stockpile of demolition rubble and sandy soils, in garden bed west of Former Heavy Vehicle Transport Yard.</p> <p>SP18 - Stockpile of mulch located south of the substation.</p> <p>SP19 - Stockpile of mulch located on the southern portion of concrete area Former Heavy Vehicle Transport Yard.</p> <p>Approximately 13 used and rusted paint tins were also observed on the southern eastern edge of concrete slab 9.</p>	
Drainage	<p>A large portion of the Site has a hardstanding/building groundcover, a rock lined drain was observed running south from the eastern portion of the northern boundary of the site to its termination point at the northernmost concrete slab (concrete slab 5). Some drain pipes for collection of rainwater from the buildings across the southern portion of the site were observed and these are assumed to discharge to a below ground drainage network as detailed in the civil infrastructure network plan in Appendix H.</p> <p>The topography suggests that rainfall falling onto the unsealed areas is likely to infiltrate directly into site sub-soils. Rain falling onto the sealed areas of the concrete slabs is likely to run-off onto unsealed areas and to infiltrate directly into site sub-soils or drain into stormwater pits observed adjacent to some of the concrete slabs. Rain falling onto sealed areas of the southern portion of the site is likely to drain into</p>	Section 4.5.1

Aspect	Description	Section / Figure Ref.
	formalised drainage systems. Given that the civil infrastructure network plan in Appendix H shows a stormwater discharge point adjacent to the detention basin within the Randwick Environmental Park adjacent to the Site, stormwater entering the formalised drainage on the site is likely to discharge into the detention basin.	

### 3.3 Surrounding Land Use

Information on surrounding land uses (up to 1 km from the Site boundary) was obtained through the Lotsearch reporting. Surrounding land uses within approximately 100 m of the Site boundary are summarised in Table 3-3 and key land uses are shown in Appendix A, Figure 2.

Table 3-3: Summary of surrounding land uses within 100 metres of Site boundary

Direction from Site	Distance from Site Boundary	Surrounding Land Uses
North	adjacent	Bundock Street, then residential properties (R2 Low Density Residential).
	80 m	Randwick Zone substation
East	30 m	Residential properties (R1 General Residential)
	49 m	Munda Street Reserve (RE1 Public Recreation)
	177 m	Randwick Environmental Park & wetlands (E2 Environmental Conservation)
	29 m	Randwick Community Centre including Annabel House and The Infants House (21-27 Munda St, Randwick)
South	adjacent	Joongah Street, then residential properties (R2 Low Density Residential).
West	Randwick Barracks (SP1 Special Activities, Defence), including:	
	80 m	▪ Officers' Mess (heritage listed)
	30 m	▪ Tennis court
	80 m	▪ School of Musketry (heritage listed)
	adjacent	▪ Vehicle wash bay (Building 172) with oil-water separator
	50 m (south-west)	▪ Training area
	30 m	▪ Building 154 – Gymnasium
	110 m	▪ Swimming pool
	70 m	▪ Sports ovals
	80 m	▪ Officers' Mess and Garage (heritage listed)

### 3.4 Proposed Site Use

Jacobs' understanding of the current redevelopment plans (the Project) include the development of a combination of approximately 65 low density residential dwellings fronting Bundock Street and potential medium and high-density residential properties and associated car-parking areas and retail precincts running north-south from Bundock Street to Joongah Street.

Appendix G presents the proposed residential development plans.



## 4. Site Environmental Setting

### 4.1 General

This section describes key environmental conditions that may impact on the presence, concentration, migration and degradation of potential contaminants of concern. A review of available information was undertaken to establish the environmental setting of the Site and adjacent areas.

### 4.2 Climate

Climate averages (sourced from the Australian Bureau of Meteorology) for the Sydney Airport AMO weather station (Site No.066037), which is located approximately 5.5 km southwest of the Site) are:

- Mean Daily Temperature (annual average): 13.5°C (Min) 22.3°C (Max);
- Mean Rainfall (annual average): 1083.7 mm; and
- Average days per annum with rainfall >1mm: approximately 95.9 days.

### 4.3 Topography and Elevation

The Site is relatively flat with an average ground elevation of approximately 30 m AHD. The general topography of the Site and land surrounding the Site shows a gentle southerly to south-easterly slope towards Joongah Street.

### 4.4 Geology and Soils

#### 4.4.1 Geology

The Sydney 1:100 000 Geological Map (Geological Survey of N.S.W, 1983) indicates that the Site is likely to be underlain by Quaternary sediments (Qhd) comprising medium to fine-grained "marine" sands with podsols. It is possible that these Quaternary sediments are underlain by Hawkesbury Sandstone comprised of medium to coarse grained quartz sandstone with very minor shale and laminate lenses, given that there are outcroppings in the Randwick Environment Park and there was a former quartz quarry located to the east of this.

This description is consistent with previous investigations conducted across the Site and neighbouring sites which indicated a variable layer of fill materials, typically comprising a mixture of natural sands, natural sandstone, gravels and inert waste (brick, metals, glass etc.), overlying natural sands and outcrops of sandstone in some areas.

The anticipated stratigraphy at the Site is summarised in Table 4-1.

Table 4-1: Geological formations at the Site

Period and Epoch	Formation <sup>1</sup>	Notes
Recent	Fill	<p>A layer of fill materials is expected at the Site associated with development history of the Site. Previous investigations conducted in southern portions of the Site indicated fill materials comprising asbestos and aesthetic issues relating to slag and ash. No data exists for fill materials across the central and northern portions of the site.</p> <p>A review of the Joongah Street investigation (Jacobs 2018a) indicated variable fill depths ranging from 0 to 3 m bgl.</p>



Period and Epoch	Formation <sup>1</sup>	Notes
Quaternary Holocene <sup>2</sup>	Marine sands (Qhd)	Medium to fine-grained "marine" sands with podzols (varying thickness from 10-60 m).
Triassic <sup>2</sup>	Hawkesbury Sandstone (Rh)	Medium to coarse-grained quartz sandstone, very minor shale and laminate lenses.

Notes:

<sup>1</sup> Arranged by anticipated depth sequence below ground level

<sup>2</sup> Geological Survey of N.S.W (1983)

#### 4.4.2 Soils

Three soil groups and landscapes have been identified in the Randwick area, and include the following broad groups (in order of occurrence):

- Newport (Aeolian) – Siliceous sands overlying moderately deep buried sands including yellow podzolic soils with sandy top soils;
- Tuggerah (Aeolian) – deep podzols on dunes and Podsol/humus on swales;
- Podzols – coastal sand plains predominantly comprising leached sands, dunes comprising siliceous sands and/or calcareous sands and lagoons and swampy areas comprising soils with peaty surfaces in some areas.

Most soil at Randwick Barracks is Aeolian "Tuggerah" Group soil (The Soil Conservation Service of NSW, 1989) which are described as undulating to rolling coastal dune fields which are usually orientated north to south. These soils are considered highly susceptible to erosion due to their non-cohesive and permeable nature. Drainage is considered to be good, however this soil group is known to experience localised flooding and to have a high water table.

#### 4.4.3 Acid Sulphate Soils

A search of the Australian Soil Resources Information System (ASRIS) Acid Sulfate Soils (ASS) map<sup>1</sup> indicated that the site is characterised as having an extremely low (1-5%) probability of ASS occurring on site. The ASRIS output is presented within the Lotsearch report in Appendix B.

### 4.5 Hydrology and Hydrogeology

#### 4.5.1 Hydrology

Based on visual assessment undertaken during the Site inspection, approximately 30% of the Site is sealed (i.e. concrete or asphalt capped). Runoff from these sealed surfaces is expected to be channelled into the existing stormwater drainage network. Appendix H includes a copy of the Site's civil infrastructure network plan. Surface runoff entering the drainage network is expected to discharge to a point adjacent to the detention basin within the Randwick Environmental Park, near the south eastern boundary of the Site.

The remainder of the Site is unsealed or contains remnant concrete slabs. The topography and predominantly sandy soil-type underlying the Site indicates that rainfall is likely to infiltrate directly into the soil. Rain falling onto the concrete slabs may either run-off onto unsealed areas and infiltrate directly into Site sub-soils or drain into stormwater pits observed adjacent to some of the concrete slabs.

The nearest surface water body is the detention basin located within the Randwick Environment Park approximately 50 m east of the Site. This park is considered an ephemeral wetland and is understood to be connected to the regional aquifer given the highly permeable nature of soils in the area (see following section

<sup>1</sup> <http://www.asris.csiro.au/mapping/viewer.htm>

for more information). Based on the topography, this surface water body is likely to receive stormwater runoff from the Site.

Although the Site is not highlighted within the Randwick local environmental plan 2012 flood planning map<sup>2</sup> (Appendix B), the areas of Kingsford, South Coogee, Daceyville, Pagewood, Maroubra, Eastgardens, Hillsdale, Banksmeadow, Matraville and Port Botany are all considered to be within The Birds Gully and Bunnerong Road catchment flood area (WMAwater, 2018). The Randwick Barracks are located in the Bunnerong Road portion of this catchment. The catchment has been highly urbanised and most watercourses within the catchment have been replaced with concrete lined trunk drainage systems. There is a history of significant flooding within the larger catchment area which may have been aggravated by increased urbanisation and capping of surfaces.

#### 4.5.1.1 Wetlands

The Randwick Environmental Park is a State Environmental Planning Policy (SEPP) listed coastal wetland. Information obtained from within the *Randwick Environment Park Plan of Management (2015)* indicates the following:

- § *The soils within the Randwick Environmental Park are wind-blown Aeolian sands with high rates of permeability;*
- § *As a result, the wetland is directly connected to the Botany Sands aquifer, which explains the highly variable nature of water levels within the wetland;*
- § *The wetland is situated in the Botany Basin, which has a catchment area of 89 hectares, primarily made up of residual and Defence Lands;*
- § *There are three major stormwater inlets to the wetland from the Council's stormwater system, each with a Gross Pollutant Trap;*
- § *The maximum water level of the wetland is 31.0 m, overflows are directed to the Lurline Bay Outfall Tunnel; and*
- § *Water levels fluctuate naturally and are influenced by long periods of drought and rain, resulting in significant variations in wetland levels over long periods of time.*

Following a review of the Coastal Wetlands and Littoral Rainforests Area Map (2018) (the following Figure 4.1) it is identified that eastern portions (IP-F and IP-I) of the Site fall within land identified as 'Proximity Area for Coastal Wetlands'. With reference to the State Environmental Planning Policy (2018):

- § *Development consent must not be granted to development on land identified as "proximity area for coastal wetland" or "proximity area for littoral rainforest" on the Coastal Wetlands and Littoral Rainforest Area Map unless the consent authority is satisfied that the proposed development will not significantly impact on:*
  - *The biophysical, hydrological or ecological integrity of the adjacent coastal wetland or littoral; or*
  - *The quantity and quality of surface and ground water flows to and from the adjacent coastal wetland or littoral rainforest.*
- § The clause does not apply to land that is identified as "coastal wetlands" on the Coastal Wetlands and Littoral Rainforest Area Map.

<sup>2</sup>Randwick Local Environmental Plan 2012, [https://www.legislation.nsw.gov.au/maps/fec73d2c-3755-64e8-9dfe-a231c404605e/6550\\_COM\\_FLD\\_003\\_010\\_20120615.pdf](https://www.legislation.nsw.gov.au/maps/fec73d2c-3755-64e8-9dfe-a231c404605e/6550_COM_FLD_003_010_20120615.pdf), accessed 31 March 2020.





Figure 4.1: Randwick Environmental Park; Coastal Wetlands area (solid blue), and proximity to coastal wetlands area (hashed blue). Site boundary indicated in red.

#### 4.5.2 Hydrogeology

The aquifer present beneath the Site is expected to be within the Botany (Sands) Aquifer. A deeper aquifer also possibly exists within the bedrock sequences of the Hawkesbury Sandstone beneath the site. Connection between these two aquifer systems is assumed although not well understood (Australian Government, 2019). Groundwater recharge of the Botany Aquifer is considered to be primarily from rainfall given its high permeability (Acworth and Jackowski, 1993). This high permeability also results in both variable groundwater levels depending on rainfall events and pumping activities, and a highly productive aquifer with a hydraulic conductivity that is reported to range from 1 to 40 m/day (Acworth and Jackowski, 1993). A recent Hydrogeology Assessment (Jacobs, 2018) indicated hydraulic conductivity directly to the south of the Site to range between 4 and 24 m/day. Table 4-2 summarises the main hydro-stratigraphic units expected at the Site.

Table 4-2: Main hydro stratigraphic units and their classifications

Aquifer group	Principal Aquifer (Geologic Unit)	Description
Upper aquifer	Botany Sands (dune deposits)	Unconfined sand aquifer.
Middle aquifer	Hawkesbury Sandstone	Medium to coarse-grained quartz sandstone, very minor shale and laminate lenses.

Footnotes:

After Australian Government, 2019; Acworth and Jackowski, 1993

A review of the Department of Primary Industries (Water) Botany Sands groundwater management zone map indicated that the Site is not located within the restricted water areas for Botany Sands groundwater.

##### 4.5.2.1 Groundwater depth and flow direction

Groundwater has been investigated in various portions of the Site and greater Randwick Barracks. The reported depth to groundwater is variable depending on rainfall and local groundwater pumping activities, and generally

between 5-9 mbgl. CH2MHill, 2004 reports that "groundwater studies undertaken within the Defence site have indicated...the groundwater is typically shallower in the northern and eastern areas of the Defence site where bedrock is present in outcrops or at shallower depth".

Groundwater flow direction across Randwick Barracks is reported to be towards the south-west towards the Lachlan Swamps and Botany Bay, 5.5 km to the south-west, (AECOM, 2019; CH2MHill, 2002; EGIS, 2002, CMPS&F, 1998), with GHD (GHD, 2005) reporting that groundwater flow direction is to the south in the northernmost portion of the Site. The influence of the detention basin at the Randwick Environmental Park on groundwater flow direction is not well defined, although SARs for surroundings sites report that "groundwater recharge...occurs from rain falling within the catchment and stormwater discharge to lakes which are in direct hydraulic connection with the groundwater" (CH2MHill, 2004).

#### 4.5.2.2 Groundwater use

A search of the Bureau of Meteorology (BoM) groundwater explorer interactive map was undertaken to identify registered bores within 2 km of the site. Bores registered as water supply, domestic and stock and irrigation bores are considered the most sensitive to potential impacts.

A total of 289 bores were identified within the search area, with the registered uses being as follows:

- § 17 for commercial and industrial use;
- § 2 for irrigation use;
- § 47 for monitoring use;
- § 180 for domestic or stock use;
- § 3 for groundwater remediation;
- § 10 for recreational use (test bore)
- § 16 for "test bore"; and
- § 14 for unknown use.

A list of registered groundwater bores within 2 km of the site presented within the Lotsearch report in Appendix B and in Appendix C. The nearest bore is located 9 m from the eastern Site boundary and is used for recreational purposes. The nearest domestic bore is located 45 m to the south-east (cross-gradient), with the closest registered domestic bores down-gradient of the Site located between 253 m and 311 m to the south-west.

#### 4.5.2.3 Groundwater quality

Groundwater in the Botany Sands aquifer typically contains around 500 mg/L Total Dissolved Solids (TDS) and is within the range that is considered acceptable for drinking. It is noted that, overall groundwater quality in the Botany Sands aquifer is considered to have deteriorated in the last 50 years due to contamination associated with industrial developments, urbanisation and over-abstraction from the aquifer (CMPS&F Environmental, 1998).

Groundwater sampling was undertaken during an Assessment of Groundwater Quality (CMPS&F Environmental, 1998), the environmental audit conducted at Stage 1B (GHD, 2003) to the south-east of the site and during the contamination investigation (Jacobs, 2018) conducted to the south of the Site. No groundwater sampling was conducted during the environmental audit conducted at Areas 5 and 6 (HLA-Envirosciences, 2003) as the consultant considered that the groundwater condition at the site was suitable for residential land use.

These showed:

- § Oxygenated groundwater with a slightly acidic chemistry is present beneath the site (CMPS&F Environmental, 1998);



- Potential contaminants of concern including metals, volatile halogenated hydrocarbons (VHH), polycyclic aromatic hydrocarbons (PAHs) and phenols (CMPS&F Environmental, 1998); and
- Concentrations were recorded either below the LOR or at concentrations less than drinking water guidelines (GHD Pty Ltd, 2003).

A summary of the local groundwater quality from Jacobs data (Jacobs, 2018) is provided in Table 4-3 below.

Table 4-3: Summary of local groundwater quality parameters

	pH	EC (µS/cm)	Temperature (°C)	DO (mg/L)	Redox Potential (mV)
Minimum	5.93	283.3	21.0	0.15	130.9
Maximum	6.49	599	21.6	4.30	151.3

Notes:

Data extracted from the Contamination Investigation conducted at Lots 1-36 Joongah Street (Jacobs, 2018) located to the south of the Site. It is possible that conditions across the Site vary from this.

#### 4.5.2.4 Groundwater dependent ecosystems

Identification of local Groundwater Dependent Ecosystems (GDEs) can be used as a means of identifying areas of potentially shallow groundwater and areas where construction dewatering activities may have an adverse environmental impact. A search of the National Groundwater Atlas (presented within the Lotsearch report in Appendix B) indicated that no GDEs exist within 2 km of the site. The nearest GDE is considered to be Lachlan Swamps which is located approximately 2.7 km from the Site.

## 4.6 Ecology

A search of the Native vegetation of Sydney Metropolitan database (Appendix B) indicates the presence of areas with high biodiversity value. No areas of high biodiversity value were identified on the Site; however, Randwick Environmental Park to the east of the Site does have a high BV status based on the presence of threatened species or communities with the potential for serious and irreversible impacts.

Although the Site itself is not registered as having any significant BV ratings, it is highlighted to have some possible distribution of urban exotic and native species on Site that may require consideration. At this stage the extent of this possible distribution is unknown and does not appear to have been assessed.

The Site may have potential to support the following species of flora as listed in Table 4-4 although currently all species listed have only been encountered off site to the east in the Randwick Environmental Park and therefore may have been intentionally planted here and therefore not expected to be present on-Site.

Table 4-4: Species potentially supported in the vicinity of the Site

Species	Common name	Disturbance Index	EPBC Listing	Location
Banksia Spp.	Varies/NA	High	5 species listed as critically endangered 9 species listed as endangered 5 species listed as vulnerable	Randwick Environmental Park
Allocasuarina distyla	Scrub she-oak	High	NA	
Leptospermum laevigatum	Coastal Tea Tree	High	NA	



Species	Common name	Disturbance Index	EPBC Listing	Location
Acacia Spp.	Varies/NA	Rare	2 species listed as extinct 5 species listed as critically endangered 33 species listed as endangered 38 species listed as vulnerable	

#### 4.7 Fire

The Site is not located on Bush Fire Prone Land according to the NSW Rural Fire Service. Hazard reduction fires are known to have been conducted within Randwick Environmental Park to the east of the site with an event recorded as having taken place in December 2015. No other evidence pertaining to fires on-Site, or on surrounding sites, was available at the time of this investigation.

#### 4.8 Utilities and Underground Services

A request was made to Dial before you Dig<sup>3</sup> on 31 October 2019 to inform the location of potential utility services present within the Site which may act as preferential pathways for mobile contamination. Services information is included in Appendix E and summarised below.

Services existing on-site include the following:

- A sewer line (Sydney Water) run across the northern portion of the Site from north-east to south-west and north to south on the eastern boundary (see Figure 3, Appendix A);
- Gas services exist in the surrounding roadways of Bundock and Joongah Street. However, these do not appear to pass through the Site;
- High voltage service cables and auxiliary cables enter the Site on the southern border (IP-H), near Joongah Street, and run north-wards across the Site intersecting IP-G, IP-E, IP-C and IP-A. The service runs through the substation located in the north-western portion of the site (IP-A); and
- Inactive high voltage (HV) cable service running in the same conduit as the above mentioned active high voltage cable service.

Internal Defence services are not listed on the DBYD information.

<sup>3</sup> Dial before you Dig, <https://www.1100.com.au/>

## 5. Site History and Site Record Review

### 5.1 Site History

The following Site history summary is based on information obtained through review of previous reports (including Site Audit reports (SARs)), available historical records, and aerial photographs.

The Site is reported to have been acquired by the Commonwealth of Australia in 1788. The federation of Australia in 1901 resulted the official transfer of the Site to the Commonwealth (from the Australian Colonies), as evidenced by review of historical titles as provided in AECOM's Stage 1 PSI report, which trace the Commonwealth's land ownership back to 1901 (AECOM, 2019). Copies of historical titles are provided in Appendix J.

The earliest use of the Site was understood to be for military use (rifle matches) as early as the 1890s. The Site formed part of the Randwick Rifle Range from 1891 to 1924 and was used for both public and military rifle training. The Rifle Range is reported to have been closed in 1924 and used as a small arms school until 1942 (CH2MHill, 2004).

The Randwick Naval Stores Depot was constructed in 1943 and used for various Defence functions until 1967. Aerial images from 1943 show the Naval Stores, which consisted of 26 main stores and other buildings which stored a range of materials including machinery and dry goods. A small Transport Store building (identified as former Building 9FSB) was constructed adjacent to the retention basin on the eastern boundary of the Site between 1965-1970, which was used for administration and storage of miscellaneous (non-hazardous) items. The stores and buildings are reported to have been constructed using timber and asbestos cement cladding on concrete slabs (HLA, 2003). Store 14 was reported to have been used as a weapons equipment store and later as a hazardous material store which stored solvent, poisons, corrosives and general hazardous goods. The building is reported to have remained mostly vacant since 1998, with the exception of short-term use (CH2MHill, 2004).

CMPS&F (1995) reported that Stores 1 and 2 were removed between 1986 and 1991, although the aerial photograph from 1991 suggests that instead Stores 3, 5 and 7 were demolished between 1986 and 1991 and replaced by infrastructure associated with the Army Transport Compound (refer to Figure 3, Appendix A). Egis (1999) reports that the Army Transport Squadron took over the southern portion of the Site in 1984 for minor general repairs and vehicle maintenance.

Demolition of the Naval Stores occurred progressively between 1986 and 2009. Demolition is understood to have caused widespread scattering of asbestos cladding fragments across the Site.


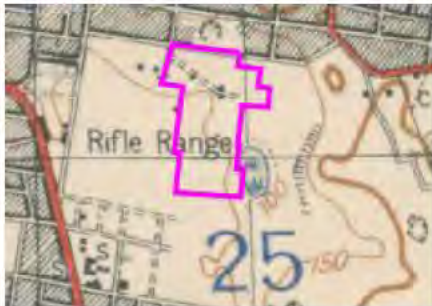


In 2012, 22 Ha of land to the east and south of the current Site boundary were divested from Defence and re-zoned for the development of residential lots, the Randwick Environmental Park and the Randwick Community Centre (AECOM, 2019). A series of non-statutory site audit statements (SASs) was issued for the validation of these portions of the former Randwick Barracks (refer to Section 5.3.1).

The prior land use information is not exhaustive and only a relatively general history of the Site has been established. However, the completeness and quality of the historical data is considered to be sufficient for the purposes of the assessment.




### 5.2 Review of Aerial Imagery and Historical Maps




Historical ownership and usage of the Site can be ascertained from the select aerial imagery and maps provided in the Lotsearch Report (Appendix B) and is summarised in Table 5-1. The aerials indicate the presence of Department of Defence on Site from 1917 onwards, which is consistent with reports indicating the presence of a Rifle Range on site from the 1890s.

Table 5-1: Aerial photograph and historical plan summary


Date	Photo / Plan	Description	Source
1917		Historical map indicating the presence of Randwick Rifle Range on site, and a quarry located to the east of the Site.	Australia 1:63360, Australian Section Imperial General Staff (presented within the Lotsearch report)
1936		Historical map indicating the presence of Randwick Rifle Range on Site. A wetland is identified off-Site to the south-east.	
1943		Historical aerial photograph showing the presence of the Rifle Range on Site. It is not clear from this aerial whether it is still in use, however previous reports indicate it was not in use at this time.	Aerial Imagery, Department of Finance (Present within the Lotsearch report).
1955		Historical aerial photograph showing the redevelopment of the Site as the Naval Stores Depot. This is consistent with the site's appearance from this date onwards until 1991 (with the exception of some minor changes). Structures in the north-west of the Site later to become associated with a community centre.	Aerial Imagery, Department of Finance, Services and Innovation (Presented within the Lotsearch report)



Date	Photo / Plan	Description	Source
1961		Historical aerial consistent with the previous aerial photograph.	Aerial Imagery, Department of Finance, Services and Innovation (Presented within the Lotsearch report)
1965		Historical aerial consistent with the previous aerial photograph, with the exception of some minor development in the north-western portions of the site.	Aerial Imagery, Department of Finance, Services and Innovation (Presented within the Lotsearch report)
1970		Historical aerial consistent with the previous aerial photograph. Minor changes to the now Randwick Environmental Park are apparent to the east of the site.	Aerial Imagery, Department of Finance, Services and Innovation (Presented within the Lotsearch report)

Date	Photo / Plan	Description	Source
1982		Historical aerial consistent with the previous aerial photograph. Residential development now present in the north-western portions of the site.	Aerial Imagery, Department of Finance, Services and Innovation (Presented within the Lotsearch report)
1991		Historical aerial photograph showing the demolition of storage facilities/warehouses and redevelopment of the southern portion of the Site.	Aerial Imagery, Department of Finance, Services and Innovation (Presented within the Lotsearch report)
2007		Historical aerial showing further demolition in the northern portions of the site. Demolition of housing associate with the site on the north-west boundary and some minor demolition of the community centre in the north-west of the site.	Aerial Imagery, Aerometrex Pty Ltd (Presented within the Lotsearch report)



Date	Photo / Plan	Description	Source
2014		Complete demolition of the community centre in the north-west of the site.	Aerial Imagery, Aerometrex Pty Ltd (Presented within the Lotsearch report)

### 5.3 Previous Contamination Assessments

Numerous contamination investigations have been conducted within the greater Randwick Barracks. Reports that were available to Jacobs for review are listed in the Site Specific References and discussed in the sections below with respect to potential contaminating activities and Contaminants of Potential Concern (CoPC).

#### 5.3.1 Site Audit Statement 2002

A series of non-statutory SASs were issued for the validation of portions of the former Randwick Barracks which included portions of land within, as well as to the east and south of, the Site. The locations of these SAS areas are presented in Appendix A, Figure 4.

The SASs (and associated primary documents) issued for the staged "signoff" are listed in Table 5-2.

Table 5-2: SAS 2002 Reports

SAS Stage	Primary Audit Document	SAS Issue Date
SAS 2002/20 – Stage 1A	GHD (2002) – Stage 1A subdivision Environmental Assessment and Validation, Bundock and Avoca Streets Randwick, NSW	14 November 2002
SAS 2002/20A – Community Centre	HLA (2003) – Investigation, Remediation and Validation Report, New Community Facility and Park, Randwick Defence Site, NSW	23 September 2003
SAS 2002/20B – Stage 1B	GHD (2003) – Stage 1B Subdivision, Environmental Assessment, Remediation and Validation, Randwick Defence Site, Avoca Street	28 October 2004
SAS 2002/20C – Randwick Environment Park	HLA (2003) – Investigation, Remediation and Validation Report, Lots 15, 16 and 17, Randwick Defence Site	date unknown
SAS 2002/20D – (on-Site) Energy Australia Cable Route	HLA (2004) – Investigation, Remediation and Validation Report, Proposed Energy Australia Cable Route, Randwick Defence Site	13 December 2004
SAS 2002/20E – Areas 5 and 6	HLA (2003) - Investigation, Remediation and Validation Report, Stages Part 5 & 6, Randwick Defence Site	6 September 2004

The purpose of the staged SASs was to assess the suitability of the land parcels for their intended future uses, which for on-Site SAS 2002/20D was assumed by the Assessor and Auditor to be residential. The land parcels underwent assessment, remediation, validation and NSW EPA auditor "signoff" for the parts of the Defence land that were identified for divestment.



Jacobs reviewed all available SARs and primary audit documents for information pertaining to the subject Site (see Appendix J). Most relevant to this PSI was SAS 2002/20D, the majority of which was located on-Site. In summary:

- § Soil assessment, remediation and validation was completed for the Audit site. No groundwater investigation was conducted as part of this assessment; however, previously collected groundwater data was discussed in the context of contaminants of concern (metals, PAHs and VHH). Groundwater quality was considered suitable for the proposed residential land use;
- § Prior to remediation, identified contaminants of primary concern in soil included: metals, Total Petroleum Hydrocarbons (TPH), benzene, toluene, ethylene and xylene (BTEX), Organochlorine Pesticides (OCPs), Organophosphate Pesticides (OPPs), polycyclic aromatic hydrocarbons (PAHs), Volatile Organic Compounds (VOCs) and asbestos. NEPM exposure setting A for 'Standard' residential land use was selected as the appropriate soil criteria.
- § Slabs 1 and 2, as well as approximately 100m of the road along the eastern boundary of the Community Centre, were removed and the soil beneath remediated;
- § Excavation of AC from beneath the roadway on the northern boundary was also conducted and cleared by a qualified Environmental Scientist. Additionally, PAH contamination encountered beneath the roadway slab was excavated to 0.5 m and stockpiled for disposal. Soil validation samples were collected, and further excavation conducted in areas where exceedances were still reported;
- § Validation of the site post-remediation was considered by the Auditor to be adequate. Migration of any remaining contamination at the site (post-remediation) from via soil, dust or surface water was considered to be negligible; and the Auditor concluded that there did not appear to be any unacceptable risks in the subject area proposed.

Based on review of SAS 2002/20D, the larger Site area hosting the former Naval Stores can reasonably be expected to share a similar history and similar CoPC in soil; namely metals, TPH, BTEX, OCPs, OPPs, PAHs, VOCs and asbestos. Jacobs notes that former Naval Store 14 was referenced as a former weapons and hazardous materials store, however was not investigated further in the SAR. Jacobs has identified the activities occurring at the former Naval Stores (and particularly at former Naval Store 14) as AECs due to the identified and potential presence of contamination, particularly asbestos, arising from the former land uses (see Section 6).

Jacobs also reviewed the other SARs (and associated primary documents), as summarised in Appendix J. The following summary information was relevant to the identification of potentially contaminating activities or CoPC at the Site:

- § Layers of ash and slag have been identified across the former Rifle Range area. The Labour Council of New South Wales review of Site contamination (LC-NSW, 2002) identified elevated PAHs associated with the ash and slag.
- § Overall, the land parcels subject to the off-Site SASs were remediated to a standard suitable for residential or open space land use. It is considered unlikely that these validated parcels of land (up-gradient of the Site) are significant sources of migratory contamination onto the Site.
- § A figure indicating the extent of audited portions of the Randwick Barracks (extracted from GHD 2002) shows that the former substation in the northern portion of the Site underwent
- § Stormwater culverts with asbestos cement formwork remained on the adjacent Lot 17 which forms the current Randwick Environmental Park (HLA, 2003). The pits were assessed and determined to not represent an unacceptable risk to human health; however, they were recommended to be managed in accordance with an Asbestos Management Policy and RAP if unearthed. Based on their shared site history, similar stormwater culverts are likely present on the subject Site and are therefore likely to also contain asbestos. This has been identified as an AEC (see Section 6).
- § While an SAS was issued for 2002/20B – Stage 1B, subsequent assessment of the land identified additional areas of concern associated (in part) with illegal dumping and use of more stringent assessment criteria. This highlighted the potential need for re-assessment of audited areas in line with current criteria and understandings of contamination risks.

### 5.3.2 Other Investigations

#### 5.3.2.1 Chlorinated Hydrocarbons in Sewer and Groundwater Monitoring (Egis 2002b)

Investigation of Chlorinated Hydrocarbons in Sewer and Groundwater Monitoring, Avoca and Bundock Streets, Randwick NSW

- § Analytical results from groundwater sampling conducted between 1995 and 2000 had indicated the presence of VHHs in groundwater at concentrations above the laboratory limit of reporting (5 µg/L) in on-Site groundwater wells MW2<sub>NAVAL</sub>, MW6<sub>NAVAL</sub>, as well as other wells within Randwick Barracks.
- § The maximum historical reported concentration of PCE was 115 µg/L at MW6<sub>NAVAL</sub> in 1999, above the 1996 Australian Drinking Water Guidelines adopted at the time (50 µg/L), and consistent with the current ADWG (after NHMRC 2015).
- § TCE, cis-1,2 DCE, dichloromethane, and chloroform were also detected in both wells, with MW6<sub>NAVAL</sub> generally reporting the highest reported concentrations.
- § A sewer traversing the Site from north to south-west was identified as the suspected source (see Appendix A, Figure 3).
- § Samples were collected from the sewer and again from groundwater wells across the Randwick site in three rounds in 2002. A tracer was used (Carotenol - human faecal bio-marker) to identify the presence of sewerage within groundwater. The tracer was identified within all groundwater and sewer samples analysed, indicating that the groundwater at the site was being impacted by the sewer;
- § The additional groundwater sampling did not find concentrations of VHHs above the limit of reporting in any sampled wells.
- § The report concluded that given the dilution of leaked sewerage within the groundwater, this pathway is not expected to have a significant effect on VHH concentrations within groundwater;
- § It was concluded that the historical and/or sporadic disposal of trade waste, generally containing greater concentrations of contaminants of concern than what would typically be allowed for disposal by this method, into the sewerage tanks at the Site and then through the sewer network into the groundwater, are more likely to have had a significant effect. Given that this discharge is/should no longer be occurring, the source is deemed to have been removed;
- § It was also noted that the presence of a former dry cleaners up-gradient of the Site may have also contributed; and
- § No special groundwater management controls were placed on groundwater at the Site and no further investigations were conducted.

Based on review of this report, the on-Site sewer is not considered a potential source of VHHs. However, as the sewer is known to have leaked in the past, more recent sewer discharges and their impact to groundwater at the Site should be considered. The sewer and former dry cleaners (laundrette) have been identified as AECs (see Section 6).

#### 5.3.2.2 Former 9FSB Building and Adjacent Slab No. 505 (GHD 2005)

Environmental Site Assessment of Former 9FSB Building and Adjacent Slab No. 505, Defence Site Avoca Street, Randwick

- § Stage 2 Environmental Assessment (ESA) conducted on the former 9FSB Transport Workshop/Store and the adjacent concrete slab located to the north of the building (refer to Figure 3, Appendix A);
- § Historically the building was used for metal treatment works; the contaminants of concern with regards to this historic land use included: petroleum hydrocarbons, pesticides, polychlorinated biphenyls (PCBs) and metals.

- § All identified and analysed chemical contaminants of concern were found to be below the adopted guidelines within the soil matrix for residential and open space land uses, with the exception of chlorinated solvents and asbestos;
- § Trichloroethylene (TCE) was considered an additional contaminant of concern associated with the metal treatment works and was identified through a soil gas sampling program, with high concentrations detected in two out of the six locations. TCE was found to be particularly localised to the northern portion of the building, where the metal treatment activities are thought to have occurred. Impacts of TCE within the subsurface were considered highly likely;
- § No groundwater investigation was conducted as part of the ESA, however it was recommended that an investigation be conducted to delineate any potential TCE impacts. Further delineation of soil and gas impacts are also recommended; and
- § It was concluded that the site could not be used for residential or open space land use as the contamination status with regards to the TCE could not be adequately determined. It is unclear at this stage whether or not a groundwater investigation was conducted and what the results of this were.

Based on review of this report, asbestos and VHH impacts to soil, groundwater and soil gas were recommended to be investigation in the vicinity of the former 9FSB building, which is located in the southern portion of the Site. Jacobs has identified the activities occurring at the former 9FSB building as an AEC due to the identified presence of contamination arising from the former land use (see Section 6).

#### 5.3.2.3 Defence 3 Year Regional Contamination Investigation Program (RCIP)

The Defence 3 Year RCIP program was initiated in 2017 to conduct investigations on the Defence estate nationally to understand and therefore reduce the risks associated with site contamination on human and environmental health. The primary aim of this program was to update and maintain a detailed understanding of the contamination status of sites under investigation around the country, which in turn will advise clear contamination investigations in the future to advise potential remediation and management options and support risk reduction under the NEPM (2013).

Contaminants of concern investigated during RCIP include:

- § Petroleum hydrocarbons
- § Heavy metals
- § Pesticides and herbicides
- § Asbestos in soils
- § Chlorinated hydrocarbons
- § Corrosives
- § Explosive residues
- § PFAS

Randwick Barracks, including the Randwick Environmental Park, is listed as part of the program. A review of the information provided indicated the historical presence of underground fuel storage tanks (USTs) with localised soil and groundwater contamination around these. The location of these tanks was not provided in this document, however it was noted that the USTs were removed or decommissioned.

#### 5.3.2.4 Stage 1 Preliminary Site Investigation (AECOM, 2019)

Preliminary Site Investigation conducted across the whole of Randwick Barracks as part of the Regional Contamination Investigation Program (RCIP).

Three Contaminated Site Records (CSRs) were identified on Site (refer Appendix A, Figure 5):

- § Historic oil discharge to stormwater in Buildings 503 and 504 (CSR\_NSW\_000719). This CSR was recommended for closure upon additional RCIP investigation;
- § Asbestos in soils across the entire Base (CSR\_NSW\_000720);
- § Two former USTs and one former aboveground storage tank (AST) in the former Transport Compound Building 502 (CSR\_NSW\_000723). Further investigation of this CSR was recommended.

Of the CSRs identified by AECOM, CSR\_NSW\_000720 and CSR\_NSW\_000723 have been identified by Jacobs as AECs 1 and 8, respectively (see Section 6). In accordance with AECOM's assessment of CSR\_NSW\_000719, this CSR is not considered to be an AEC.

Two additional CSRs were identified within Randwick Barracks (but outside of the Site boundary):

- § UST at Building 301 (CSR\_NSW\_000724). This CSR was recommended for closure upon additional RCIP investigation;
- § Potential lead impacts in the former Stop Butt (CSR\_NSW\_001036) located approximately 150m west of the Site. Further investigation of this CSR was recommended by AECOM, however is considered by Jacobs to be unlikely to impact the Site based on its distance and cross-gradient position relative to the Site.

Three additional Potential Pollution Sources (PPS) were identified;

- § Potential hydrocarbon leaks and spills from a diesel generator AST west of Building 404 (located in the south-west corner of the Randwick Barracks and unlikely to impact the Site),
- § Potential hydrocarbon and detergent spills at the vehicle wash bay (located within the Former Heavy Vehicle Yard),
- § The storage of chemicals, oils, lubricants or hazardous materials across Randwick Barracks;

Key identified source-pathway-receptor linkages included: asbestos in soils across the whole property as a result of historical demolition works, former USTs, ASTs, petroleum, oils and lubricants, wash bays, workshops and compounds and lead impacts within soil from former stop butt use;

The initial site risk assessment indicated that the risks these factors pose to the site were 'medium';

Updates of the Base Asbestos Register and management and/or maintenance of other areas of concern were recommended for the other areas.

## 5.4 NSW EPA Licences, Registers and Notices

The POEO Act aims to achieve the protection, restoration and enhancement of the quality of the NSW environment through the regulation of air, noise, waste and water pollution. The POEO Act repealed and consolidated a number of existing Acts to rationalise, simplify and strengthen the regulatory framework for environmental protection in NSW. Under the POEO Act an owner or operator of land that is engaged in a Scheduled Activity is required to hold an Environment Protection Licence (EPL). Scheduled Activities are detailed in Schedule 1 of the POEO Act and include activities with potentially significant environmental impact. The NSW EPA issues all EPLs and licences and are usually subject to conditions. Licences can control the air, noise, water and waste impact of an activity. Licences are ongoing but subject to review at least once every five years and can be varied, suspended or revoked.

Under Section 308 of the POEO Act, the EPA is required to keep a public register of the following:

- § Environment protection licences;
- § Applications for new licences and to transfer or vary existing licences;
- § Environment protection and noise control notices;
- § Penalty notices issued by the EPA;
- § Convictions in prosecutions under the POEO Act;
- § The results of civil proceedings;

- § Licence review information. Submissions regarding licence review can be made at any time;
- § Exemptions from the provisions of the POEO Act or regulations;
- § Any mandatory audits required to be undertaken in relation to a licence;
- § Each pollution study required by a condition of a licence;
- § Each pollution reduction program required by a condition of a licence;
- § Each penalty notice issued in relation to a premises;
- § Approvals granted under clause 9 of the POEO (Control of Burning) Regulation; and,
- § Approvals granted under clause 7A of the POEO (Clean Air) Regulation.

The NSW CLM Act is administered by the NSW EPA and establishes a process for the investigation and remediation of contaminated soils and groundwater. The CLM Act further establishes a legal framework that gives the EPA authority to require the assessment and/or remediation of sites that are deemed to pose significant contamination. Under Section 60 of the CLM Act, a person who has contaminated land or a landowner whose land has been contaminated is required to notify the NSW EPA of the contamination of land when they become aware of the contamination. Under Section 58 of the Act, the NSW EPA is required to keep a record of current and former sites it regulates or regulated. Certain information about current sites is then referred to relevant local councils, who must record and make such information available using planning certificates.

As part of the Site history and information review a search of the NSW EPA record of notices was undertaken. The NSW EPA public record search was undertaken to identify:

- § Orders made under Part 3 of the Contaminated Land Management Act 1997 (CLM Act);
- § Approved voluntary management proposals under the CLM Act that have not been fully carried out and where the approval of the Environment Protection Authority (EPA) has not been revoked;
- § Site audit statements provided to the EPA under section 53B of the CLM Act that relate to significantly contaminated land;
- § Where practicable, copies of anything formerly required to be part of the public record; and,
- § Actions taken by EPA under section 35 or 36 of the Environmentally Hazardous Chemicals Act 1985 (EHC Act).

The public record only includes documents that are required to be placed on the record by Section 58 of the CLM Act. It does not include notifications under section 60 of the CLM Act. Notification under section 60 does not automatically mean that a site will be regulated by the EPA under the CLM Act. When the EPA receives a report under section 60, it through the assessment process, determines whether the contamination is significant enough to warrant regulation under the CLM Act and thus whether the site is listed in the record of notices. In some circumstances the NSW EPA may consider that the contamination is not significant enough to warrant regulation. In the instance that a site has been notified under Section 60 of the Act and not regulated by the NSW EPA, the NSW EPA, under the Government Information (Public Access) Act 2009, publishes a "List of NSW contaminated sites notified to the EPA".

A search of the NSW EPA online database was undertaken for the Site and surrounding areas (within 1km) and is included in Appendix B.

One current licenced activity was identified within a 1km radius of the Site. The activity is associated with the construction of the CBD and South East Light Rail by Acciona Infrastructure Australia Pty Ltd, and is registered within 895m north-west of the Site. Based on distance and direction from the Site (cross-gradient), this licenced activity is not considered a potential off-Site source of contamination.

A search of the "List of NSW contaminated sites notified to the EPA" was undertaken and is included in Appendix B. The search results are discussed in the following Table 5-3.



Table 5-3: Contaminated sites notified to EPA

Property	Activity	Management Class	Details	Distance and direction	Gradient from Site
Metro Petroleum (345 Avoca Street, Randwick)	Service Station	Regulation under CLM Act not required (Current EPA List)	The EPA has completed an assessment of the contamination and decided that regulation under the Contaminated Land Management Act 1997 is not required.	379 m NW	Cross-gradient
Caltex Service Station (603-611 Anzac Parade, Kingsford)	Service Station	Regulation under CLM Act not required (Current EPA List)		649 m SW	Down-gradient
Caltex South Coogee Service Station (169-173 Malabar Road, South Coogee)	Service Station	Regulation under CLM Act not required (Current EPA List)		900 m E	Cross-gradient
7-Eleven Service Station (126-130 Barker Street, Randwick)	Service Station	Contamination currently regulated under CLM Act (Current EPA List)	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.	992 m NW	Cross-gradient

Based on the distance from each of the above listed service stations and the known groundwater flow direction, none of these service stations are considered a risk to groundwater quality at the Site.

## 5.5 Historical Business

Historical business directories indicated the presence of a laundrette located 21 m north-west of the Site between 1978 and 1986. This is considered to be up-gradient of the Site, and in combination with the close proximity to the northern Site boundary, had the potential to have impacted groundwater at the Site. The former laundrette was identified as a potential source of VHH contamination identified in groundwater at the Site, with the sewer identified as a likely pathway (Egis, 2002b; refer to Section 5.3.2.1).

Egis concluded, based on review of previous groundwater contaminant data and additional groundwater monitoring and collection of sewer samples, that migration of VHH from the leaking sewer was not expected to have a significant on-going effect on VHH concentrations within groundwater, and that observed concentrations (at the time) were below the laboratory limit of reporting.

Jacobs considers that impacts to the Site from direct down-gradient groundwater migration of VHH from the former laundrette has not been fully investigated and has identified the former laundrette as an AECs (see Section 6).



## 5.6 PFAS

### 5.6.1 PFAS Investigation and Management Program (PFASIM)

The PFASIM program has been initiated by Defence to review, investigate and implement a consistent approach to the management of PFAS on Defence sites nationally. This program is separate from the RCIP program described above, although they work collaboratively when the investigations overlap.

Randwick Barracks is not listed as a site under investigation or management on the PFASIM website (Defence, 2020a).

### 5.6.2 Other PFAS Sources

PFAS has become a key contaminant of concern on Defence sites across Australia. The PFAS NEMP (2018) identifies activities such as bulk fuel storage, chemical storage, and metal plating facilities as those with an elevated risk of utilising PFAS containing products. While no confirmed sources of PFAS have been identified based on the visual site inspection, interviews, and other documents reviewed as part of this investigation, further information should be sought regarding potential PFAS storage and use in the metal treatment works at the former 9FSB Building.

While the remnants of what appeared to be hydrants and boosters were observed around the concrete slabs and area of former concrete slabs across the former Naval Stores Depot portion of the site, it is not thought that these would constitute a potential source of PFAS as bulk storage of fuels is not documented to have occurred in this area. Anecdotal evidence provided during the site interview indicated that it is not known whether the hydrants and boosters observed during the site inspection formed part of a deluge system within the former Naval Stores Warehouses.

Given the solubility and mobility of PFAS in groundwater it is possible that up-gradient off-Site sources (although none have been identified within this report) could have impacted groundwater at the Site. There are no known PFAS production facilities within Australia, however there are numerous industries where PFAS containing articles and preparations are made, and where PFAS preparations are used in general industrial/commercial operations; such as:

- § Chromium plating
- § Coated paper, textiles, leather and carpet manufacturing industries
- § Semiconductor industry
- § Electronics industry
- § Photoimaging industry
- § Oil, mining and gas industries
- § Certain insecticide applications (such as sulfluramid) – although not typically used in Australia
- § Facilities where fire-fighting foams are used
- § Use of aviation hydraulic fluids

Treatment of metal surfaces associated with metal treatment works (metal plating and chroming) is an activity identified in the draft PFAS National Environmental Management Plan (HEPA, 2018) as a potential PFAS source as they may have involved PFAS-based surfactants or dust suppressants.

Additionally, PFAS can be found in wastes associated with landfills, waste water treatment plants and biosolids applications sites, which could also pose a potential off-Site source. However, as detailed further in Table 5-4 no landfills or other such waste-related activities have been identified as a result of the information reviewed as part of this PSI.

With the exception of the Metro Service Station located 349 m up-gradient and 7-Eleven Service Station located 992 m up-gradient, there was no evidence to suggest other surrounding industrial or commercial land uses with

the potential for PFAS contamination and migration on site, based on the information made available. Randwick Fire Station is located approximately 2 km north of the site, and therefore considering groundwater flow direction to the south west (discussed further in section 4.5.2) it is considered unlikely to act as a potential background source of PFAS that may impact the site. Further assessment of the potential connection of this facility through the Sydney Water sewer is a potential data gap that is identified for further assessment (refer to Table 7-1).

## 5.7 Heritage Database Search

Searches of the Commonwealth Heritage List and Environmental Planning Instrument (EPI) list were conducted to assess the presence of heritage listed items on or in the vicinity of the Site. No heritage listed items were reported on the Site. The heritage listed Randwick Barracks School of Musketry, Officers Mess, and Convention Centre is located approximately 15 m to the west of the western Site boundary; while the Randwick Environmental Park is located immediately to the east of the eastern Site boundary.

Copies of the database searches are provided in Appendix I.

## 5.8 Hazardous Materials

As part of the PSI the Site was investigated to identify known or potential historical and/ or current contamination risks from hazardous substances. Observations and recordings from the desktop study, interviews and site inspection are described in the following subsections.

A tabular summary of historical and/ or current storage and potential releases of hazardous substances into the environment are provided in Table 5-4.

Table 5-4: Hazardous substances

Aspect	Description
Asbestos	<p>Previous investigations conducted on site, and on surrounding Defence owned land, indicated the presence of asbestos in surficial soils and in building materials used on site. An Asbestos Management Strategy (HLA-Envirosciences, 2003) was prepared for the Site and highlighted that former warehouse/storage buildings at the Site were constructed of predominantly timber frames clad with AC sheeting on concrete slabs. Evidence suggests that these were later demolished using a bulldozer that would lead to significant ACM in surficial soils. Additionally, burial of ACM may have also occurred on-Site. Some soil asbestos remediation and validation has occurred on Site (see Section 5.3.2.1), however larger portions remain to be investigated and potentially remediated.</p> <p>Validation reports or SAS confirming any remediation and validation of asbestos impacted soils on site were reviewed for two on-Site areas. The Stage 1A (SAS 2002/20) area covers portions of the north eastern portion of the Site has been remediated and validated. Portions of the Energy Australia Cable Route (SAS 2002/2D) that pass through the Site consist of a narrow linear parcel of land that transects the centre of the Site (running between the concrete slabs) from the southern boundary to the northern boundary (see Figure 3).</p> <p>Small fragments of ACM on the surface of the site were observed in the approximate location of the Cable Route through the centre of the site. Two small excavations were observed east of and adjacent to the cable route alignment on the southern edge of concrete slab 5 and between concrete slabs 1 and 2, ACM fragments and potential ACM pipe were observed in fill material that had been excavated from these areas. Fragments of ACM were also observed across the surface of the southern portion of the site south of the former transport compound and car park.</p> <p>HLA Asbestos Management Strategy (2013) indicates two additional areas within the site have been remediated and validated that don't appeared to have been subject to a SAS. ACM fragments were identified across the surface of one of these areas (the western portion of the site south of concrete slab 7).</p> <p>AECOM (2019) Stage 1 PSI – Randwick Barracks (0407) reviewed the Contaminated Site Record (CSR) for the Randwick Barracks property and asbestos in soils across the base was identified as a CSR.</p>



Aspect	Description
	<p>Scattered fragments of potential ACM were observed on the surface of the site across portions of the central, western, southern, northern and north western portions of the site in areas not covered by hardstand and adjacent and west to the southern portion of the site near a vehicle wash bay and grey water pumping station. Isolated fragments of potential ACM were observed on hardstand on concrete slabs 4, 6 and 7, a small concrete slab near rocky outcrop on the northern portion of the site, driveway east of former transport compound and under the canopy and south of brick building in former transport compound. Visual detection of ACM was based on a non-systematic meander walk-through of the Site of both vegetated and non-vegetated areas.</p> <p>ACM was identified as a result of visual site inspections undertaken by AECOM (2019) and by Jacobs in both hotspots and sporadically across the site surface, suggesting a wide distribution throughout the Site</p>
Lead-based paint (LBP)	<p>The Australian Government Department of the Environment and Energy identified that pre-1970s, many paints contained high levels of lead. The recommended amount of lead in domestic paint declined from 50 percent before 1965, to 1 percent in 1965. During 1992, the amount of lead in paint was reduced to 0.25 percent; and in 1997, it was further reduced to 0.1 percent. LBP in Australia was not completely banned as an additive until 2010. Many homes built between 1970 and 1997 have the potential to contain LBP. The deterioration of LBP from these structures represents a health risk if paint chips and dust are inadvertently ingested, particularly by children.</p> <p>Paint was observed to be flaking off the roof structure of the storage yard and former transport compound in the southern portion of the Site. A review of historical aerial photos indicated that these structures were constructed between 1982 and 1991 when lead-based paint use had largely been phased out.</p> <p>As with asbestos, it is considered that lead-based paint (LBP) may be present within the soils in the vicinity of demolished buildings (Naval Store Depot buildings). It is unknown whether analytical testing of the soils for LBP has been performed within the subject property.</p>
Polychlorinated Biphenyls (PCBs)	<p>PCBs were used from the 1930s to the 1970s in a range of industrial products including sealing and caulking compounds, ink and paint additives, coolants and lubricants. The use of these compounds was phased out due to the health risks associated with contact with PCBs and the ability of these compounds to bioaccumulate within the environment.</p> <p>Historical records, interview records and observations during the visual site inspection identified an electrical substation on the north western portion of the site, the substation building appeared to have been recently constructed and was a replacement for an older substation building. A review of historical aerial photos indicated that the old substation building was constructed at some point between 1965 and 1970. The Randwick Substation was also identified on Canberra Street and is located approximately 85 m north of the Site. A review of historical aerial photos indicates that the substation building has been present in its current configuration since prior to 1943. Given the age of the former substation building that was demolished on the north western portion of the site and the Randwick Substation there may be a contamination risk due to potential leaks from transformers containing PCBs. PCBs may also be encountered in soils in the vicinity of former warehouses, workshops and demolished building as a result of poor demolition practices of potential PCB containing capacitors contained within light fittings.</p>
Military Munitions / Ordnance / UXO	<p>The Site was historically used as a Rifle Range before it was converted into the Naval Stores Depot. Lead is present in most types of ammunition and can be found in both the projectile and the primer. Surface soils within the Rifle Range may be contaminated with lead and other propellant and explosive residues associated with this use.</p> <p>Additionally, the southern portion of the site was historically part of the "Grenade Bursting Range". Although considered unlikely, UXO associated with this could be encountered on Site.</p> <p>A spent shell casing was observed during the Site inspection directly adjacent to and south of the eastern end storage yard on the southern portion of the site.</p>
Toxic Remnants of War - Medical or Bio-hazardous Wastes	<p>No known medical or bio-hazardous wastes are known to be present at the Site based on the visual site inspection, interviews, and/or other documents reviewed as part of this PSI.</p>
Radioactive Wastes	<p>No known radioactive wastes are known to be present at the Site based on the visual site inspection, interviews, and other documents reviewed as part of this PSI.</p>



Aspect	Description
Solid Municipal Wastes	<p>With the exception of miscellaneous (but undocumented) importation of fill from unknown origins potentially occurred during historic operation of the Site, the only identified information source of that may indicate actual disposal of waste on-site references ash identified as part of investigation and reporting that included the Site in 2002 (Labor Council, 2002).</p> <p>A review of the National Waste Management Site Database did not identify any registered waste management facilities within 1 km of the Property (AECOM, 2019). No known incidents or sources of solid or municipal wastes are otherwise known to be present at the Site based on the visual site inspection, interviews, and other documents reviewed as part of this PSI.</p> <p>Jacobs (2018a) has previously identified an off-site source of illegally dumped waste on land to the south of the Site.</p>

Notes:

- a) Feature # refers to annotation on Appendix A, Figure 2.

## 6. Areas (or Activities) of Environmental Concern

### 6.1 Summary of Areas (or Activities) of Environmental Concern

Numerous historical and current activities have been identified as a result of the Site inspection and historical review, which have the potential to contaminate soil, groundwater or soil vapour at the Site; these activities or land uses are identified as AECs and summarised in Table 6-1 below, with further discussion relating to associated potential CoPC discussed in further detail in Section 7.

The AECs are presented on Appendix A, Figure 6.

Table 6-1: Summary of AECs

AEC		Location	Current / Historical	Description
1	Debris and fill material	Majority of Site Excluding central portion of Site which was remediated and validated as part of SAS 2002/20D.	Historical & current	<p>Demolition debris</p> <ul style="list-style-type: none"> <li>Asbestos containing material derived from the former Naval Store buildings (constructed with asbestos-cladding) has been widely reported across the Site and was observed on the ground surface during the Site inspection. This is identified in the CSR as CSR_NSW_000720.</li> <li>Potential use of lead-based paint on the former Naval Store buildings</li> </ul> <p>Fill material</p> <ul style="list-style-type: none"> <li>Re-working of natural soils with waste material during demolition/construction (including ash and slag reported in previous investigations)</li> <li>Potential importation of uncontrolled fill over the history of the Site with a range of unidentified contaminants.</li> </ul>
2	Pesticide use	Vicinity of former Naval Stores	Historical	OCPs were reported to have been used under and around the slabs of the Naval Stores to protect against termites. Current use of pesticides across the former Naval Stores is unknown.
3	Rifle Range	Majority of northern and central portions of Site	Historical	Residual projectiles distributed across the range floor and stop butts resulting in elevated lead/metals and UXO impacts to the underlying soils.
4	Grenade Bursting Range	Small area in the southern portion of the Site	Historical	PAHs, nitrosamines and propellants/explosives and UXO may be present in soil in the former grenade bursting area.
5	Sewer – Site-wide and Sydney Water Sewer	Vicinity of Sydney Water sewer, northern portion of Site	Historical & current	<p>Leakage is known to have occurred from the Sydney Water sewer line. VHHs were historically reported above ADWG criteria and were attributed to historical and/or sporadic disposal of trade waste into the sewer that could impact the sewer, surrounding soil and groundwater due to leakage.</p> <p>The site-wide sewer network is poorly understood, therefore could represent a risk of impact from identified on-site sources resulting in contamination of the sewer and potential leakage resulting in soil and groundwater contamination.</p>
6	Chemical storage	Storage Yard	Historical & current	Chemical storage and grounds maintenance area including grounds maintenance, chemical storage, flammable liquids, fuels, lubricating and potentially parts cleaning (solvents) associated with vehicle maintenance and storage.



AEC		Location	Current / Historical	Description
7	Vehicle storage	Storage Yard	Historical & current	Potential spills as a result of historical and current vehicle storage and minor maintenance activities.
8	Fuel Infrastructure	Former Heavy Vehicle Transport Yard	Historical	The Former Heavy Vehicle Transport Yard reportedly consisted of three former USTs (UST-002, 40kL; UST-004, 40kL; UST, unknown capacity) and one former AST (<1kL) (all reportedly removed), a former above ground oil-water separator, vehicle inspection ramp, former dispensers, fuel lines and vent pipes associated with POL point. This area has been identified in the CSR as CSR_NSW_000723.
9	Vehicle Washing, Refueling and Maintenance Activities	Former Heavy Vehicle Transport Yard	Historical	Potential for spills during refueling maintenance and/or leakage from vehicles within the former vehicle compounds Storage and use of chemical associated with electronics, radio and vehicle maintenance activities, washing and refueling of vehicles.
10	Oil-water separators	Former Heavy Vehicle Transport Yard (Building 502) and and Vehicle Wash Bay (off-site)	Historical & current	Two oil-water separators were observed during the Site inspection. One (apparently disused) oil water separator was observed in the Former Heavy Vehicle Transport Yard and adjacent to a collection pit, vehicle inspection ramp and two vehicle inspection pits. No surface staining was observed in the immediate area. Another apparently operational oil water separator was observed off-Site in a shed adjacent to the current vehicle wash bay, west of the overflow carpark. No surface staining was observed in the immediate area.
11	Hazardous materials storage	Former Naval Store 14 Central portion of Site	Historical	Historical storage of weapons and hazardous materials including solvents, poisons, corrosives and general hazardous goods.
12	Metal treatment works	Former Building 9FSB – Former Transport Store and adjacent slab	Historical	Historical use and disposal of hazardous chemicals and materials (including metals, acids, solvents and PFAS-based surfactants) during metal treatment.
13	Stockpiles	Various - 19 observed during Site inspection	Current	Potential for leaching of contaminants into soil or groundwater. Four soil stockpiles and 15 hard waste or vegetation stockpiles were observed during Jacobs' site inspection. It is anticipated that only the soil stockpiles would pose a potential contamination risk to the Site.
14	Stormwater infrastructure	Various in vicinity of building infrastructure	Current	Potential for asbestos cladding in stormwater infrastructure

AEC		Location	Current / Historical	Description
15	Substations	Northern portion of Site	Historical & current	Possible leakage from transformers into soil and groundwater. Historical substation has been demolished, with a new substation constructed adjacent. An environmental audit appears to have been completed for the historical substation, however the audit report was not available for review.
16	Randwick Zone Substation	80 m North (up-gradient)	Current	Possible leakage from transformers into soil and groundwater.
17	Launderette	Off-site, 21 m north-west (up-gradient)	Historical	Possible historical leakage or disposal of chemicals (solvents), with migration into groundwater either directly from ground surface or through the sewer system.



## 7. Preliminary Conceptual Site Model and Risk Assessment

### 7.1 Summary of Key Information

The following points summarise key findings from the review of available information including that relating to the site history and use and previous investigation, site walkover and interviews:

- The geology underlying the Site comprises Quaternary sediments consisting of medium to fine-grained "marine" sands with podzols. It is possible that these Quaternary sediments are underlain by Hawkesbury Sandstone comprised of medium to coarse grained quartz sandstone with very minor shale and laminate lenses. The permeability of these geologies – particularly the sandstone – will increase the likelihood of contaminant migration from identified source zones and vertical migration to groundwater.
- Approximately 30% of the Site is sealed, with runoff channelled to the existing stormwater drainage network, ultimately discharging offsite to the detention basin within Randwick Environmental Park located adjacent the eastern Site boundary. As discussed in Section 4.5.1, surface water across the hardstand areas in the central and southern portions of the Site is expected to drain towards the Randwick detention basin to the south-east. The remainder of the Site is unsealed or contains remnant concrete slabs, therefore infiltration will drive the vertical migration in the vadose zone, increasing the likelihood of contaminant mobility from identified sources as noted in the previous point
- Previous investigation at the Site has identified that groundwater depth varies between 5 – 9 mbgl due to the influence of rainfall and local groundwater pumping activities, as well as the influence of bedrock outcropping in the northern and eastern areas of the Site resulting in shallower groundwater in the northern and eastern areas.
- Regional groundwater flow direction is to the south-west, with a southerly flow direction in the north due to the influence of the detention basin at Randwick Environmental Park. The detention basin may further influence groundwater flow direction as it is considered to be in hydraulic connection with the groundwater, therefore, may loose water after storm events have discharged to the retention basin.
- Groundwater is not anticipated to be extracted on the Site for drinking water purposes. While reported TDS concentrations in groundwater could be suitable for drinking water, AECOM (2019) reports that a reticulated water supply is available for the Randwick Barracks.
- A Sydney Water sewer line running across the northern portion of the Site has been reported to be acting as a source of VHH (Egis 2002b). The sewer line, surrounding packing materials and soils may variously be acting as both an ongoing source of VHH contamination in the soil and groundwater and as a preferential pathway for migration of this and other contaminants that may also migrate to the sewer. In addition, the VHH impacts in the sewer, surrounding soil and groundwater also represent an on and off-site vapour risk.

### 7.2 Identified Sources

Sources of broadly distributed contamination such as historically imported fill or asbestos impacts to soil, as well as point sources of contamination have been identified as a result of the information review and Site walkover. These have been listed in Section 6.

### 7.3 Transport Mechanisms

Transportation mechanisms are considered to include:

- Impacts due to historic release to soil
- Leaching of contaminants to groundwater in the Quaternary sands and Hawksbury Sandstone
- Migration of contaminants in the Quaternary sands and Hawksbury Sandstone dominated by a south-westerly groundwater flow direction that has been found to be southerly in the north due to the influence of the detention basin in Randwick Environmental Park. Stormwater flow into the same retention basin may also result in outward flow from this feature at times.



- Stormwater transportation of soil / sediment particles
- Surface run-off and stormwater run-off of contaminated water
- Transport via stormwater or Sydney Water sewer infrastructure (onsite and off-site)
- Vapour migration from volatile impacted soils and groundwater
- Extraction of impacted groundwater or surface water for irrigation and water supply

## 7.4 Identified Human and Environmental Receptors

As discussed in Section 3.4, the proposed land use comprises a mixture of low, medium and high density residential housing. Therefore, in addition to future residents on these properties, potential human receptors to contamination at the Site will comprise construction workers involved in development, general site visitors and maintenance workers. Therefore, the use of residential exposure scenarios to undertake a preliminary assessment of risk and inform the CSM was considered sufficiently conservative to cover anticipated future activities and use of the Site.

The Randwick Environmental Park has been identified as a potentially sensitive off-site environmental receptor, while off-site residents and Randwick Barracks staff and residents are potential human receptors if contamination originating from the Site were to migrate off-site through groundwater, surface water, soil gas or dust.

Therefore, in consideration of the above the following potential receptors have been identified:

- Human exposure through potential:
  - incidental ingestion / inhalation of soils or soil derived dust
  - direct contact with impacted surface water or groundwater
  - ingestion of impacted groundwater or surface water
  - ingestion of impacted edible products
  - recreational use of water bodies
  - vapour inhalation of volatile hydrocarbons
- Terrestrial ecology exposure through direct contact with soil or water
- Aquatic ecology exposure through direct contact with sediment or water (Randwick Environmental Park)
- Exposure of Groundwater Dependent Ecosystems to identified soil and groundwater contamination

## 7.5 Preliminary CSM and Risk

A preliminary CSM, with further consideration of the sources, pathways and receptors outlined in previous sections has been developed and presented in the following Table 7-1.

At this stage only a preliminary assessment of risk is possible to assess the potential linkage between identified sources (AECs), pathways and receptors associated with the current site activities and proposed future residential use of the Site.

Historic desktop information, observations from the site inspection and walkover, previous investigation information and even remedial works have allowed identification of AECs (as point sources, or as broader site-wide issues).

While the previous investigation and remedial reports allow some quantification of potential contaminants in a particular AEC, most of the CoPCs across the Site have been identified by reference to previous investigations. It must be noted however, that most of these previous investigations are now outdated (>15 years old) and have not necessarily classified the Site to the desired resolution, using relevant or current laboratory analytical methods or used dated assessment criteria to reach conclusions on risk. For example, SAS 2002/20E conducted on Areas 5 and 6 was signed off by the appointed Auditor in 2002 as being suitable for residential land use. However, a more recent PSI by Aurecon (2016) highlighted that further investigation and remediation was required to satisfy residential land use requirements based on current criteria. Review of historical analytical data

is warranted to determine whether previously investigated portions of the Site require further assessment or remediation.

Similarly, the influence of identified features either on and off-Site such as the Sydney Water sewer and the detention basin at the Randwick Environmental Park on groundwater flow direction is not well understood, with corresponding uncertainty that needs to be further addressed to understand the influence this may have on contaminant migration onto, across and off the Site.

The assessment of risk considers potential contaminants and their linkage through pathways to identified receptors. The purpose of the PSI assessment was to determine whether the Site is currently suitable for the proposed residential land use, or would require remediation to support the proposed land use and minimise the risks to human health and/or the environment.

It is recognised, based on current understanding, that nearly the entire Site has the potential to be contaminated to a degree unacceptable for the proposed land use. The CSM demonstrates that the primary risks to human health arise from the expected widespread presence of asbestos in surface and deeper soils. In addition, potential soil vapour risks have been identified in select locations within the Site which require further investigation and potential remediation prior to land development.



Table 7-1: Preliminary CSM and Risk Assessment

AECs		Source - CoPC	Potential Migration and Exposure Pathways	Potential Receptors	Comment on Current Data Uncertainty (data gaps)	Comment on Risk
1	Debris and fill material	Asbestos Lead Heavy metals TPH BTEXN PAH Phenols VOCs PCB OCP/OPP	Ingestion of soil Dermal contact with soil Inhalation (dry soil/dust) Migration to groundwater Inhalation (vapours)	Human Current site users (maintenance, construction, general site users) Future site users (residential, construction) Groundwater users (stock watering, irrigation, industrial)  Environmental Groundwater dependant ecosystems Surface water - Randwick Environmental Park retention basin	Portions of the Site have been remediated (excavation and removal) of asbestos to varying degrees, however it is noted that not all areas have been endorsed by an EPA appointed Site Auditor, therefore providing uncertainty with regards to whether this remediation was undertaken and validated correctly.	There is a high likelihood based on the Site history, results of previous investigations, and the Site inspection that asbestos will be encountered within surface soils at the Site.  The likelihood of encountering contaminants associated with uncontrolled filling at the Site is high based on observations of slag within fill material in the northern Site area during the Site inspection. Previous investigations have identified TPH, PAHs, heavy metals and asbestos in portions of the Naval Stores Depot area (which were subsequently remediated).  Use of lead-based paint on the former Naval Store buildings is not confirmed but considered possible based on the age of construction. Investigations of the Randwick Community Centre area (off-site) reported the historical presence of lead-based paint.
2	Pesticide use	OCP/OPP	Ingestion of soil Dermal contact with soil Inhalation (dry soil/dust) Migration to groundwater	Human Current site users (maintenance, construction, general site users) Future site users (residential, construction) Groundwater users (stock watering, irrigation, industrial)  Environmental Groundwater dependant ecosystems Surface water - Randwick Environmental Park retention basin	The concentration of pesticides in soils beneath the current slabs (and potentially the newly demolished slabs) has not been investigated.	Previous reporting indicated that pesticide contamination was low in the Naval Stores Area, although areas under existing slabs have not been investigated. Residual impacts may present a risk to anticipated future users of the site, particularly in a low or medium density residential exposure scenario, that has greater potential access to soils.
3	Rifle Range	Heavy metals (incl. antimony) PAHs	Ingestion of soil Dermal contact with soil Inhalation (dry soil/dust) Migration to groundwater	Human Current site users (maintenance, construction, general site users) Future site users (residential, construction) Groundwater users (stock watering, irrigation, industrial)  Environmental Groundwater dependant ecosystems	Investigation of CoPC associated with the former Rifle Range and form Grenade Bursting Range has occurred in portions of the Site to form a good generalised understanding of the nature and likely extent of contamination. Sufficient sampling placement and density to inform waste disposal options is required.	Lead and other heavy metal contamination associated with the Sites' former use as a rifle range is considered likely, therefore data is required to further assess risks associated with anticipated future landuse, particularly as it relates to low – medium density landuse that may have greater access to surface soils.
4	Grenade Bursting Range	Heavy metals Explosives and propellants PAHs UXO	Ingestion of soil Dermal contact with soil Inhalation (dry soil/dust) Surface runoff to stormwater network Migration to groundwater	Human Current site users (maintenance, construction, general site users) Future site users (residential, construction) Groundwater users (stock watering, irrigation, industrial)  Environmental Groundwater dependant ecosystems Surface water - Randwick Environmental Park retention basin		The likelihood of encountering UXO is deemed to be low given the previously developed nature of the Site.



AECs		Source - CoPC	Potential Migration and Exposure Pathways	Potential Receptors	Comment on Current Data Uncertainty (data gaps)	Comment on Risk
5	Site-wide and Sydney Water Sewer	Nutrients including nitrate and ammonia Chlorinated hydrocarbons VHH Sulphates/sulphides <i>Faecal coliforms</i> <i>E.coli</i> <i>Salmonella</i> PFAS Metals	Dermal contact Migration to groundwater Inhalation (vapours)	Human Future site users (residential, construction) Potential groundwater users (stock watering, irrigation, industrial) Environmental Groundwater dependant ecosystems Surface water - Randwick Environmental Park retention basin	Investigation into the leaking sewer are >15 years old, and additional investigation is recommended to confirm whether newer discharges to sewer have impacted soil and groundwater at the Site. Potential for this AEC to also act as a preferential pathway for off-site migration of contamination, or leak, resulting in impacts to groundwater and surrounding soils needs to be better understood as part of further investigation.  The Sydney Water sewer that runs south west across the top half of the Site from the northern boundary (refer to Appendix A, Figure 2) has previously been investigated and identified as a source of contaminants including VHH. Impacts to the surrounding soils and groundwater need to be better understood.  Potential connection with the Randwick Fire Station located over 2 km to the north of the Site is also another data gap that needs to be further assessed as part of the DSI through further assessment of potential linkage with the Site and this feature through the off-site sewer system.	Site-wide Sewer Network The site-wide sewer network is poorly understood, therefore investigation of the level of impact from identified sources of contamination across the site needs to be better understood to inform risk associated with the proposed residential development and construction activities at the Site.  Sydney Water Sewer The risk of contamination associated with this feature is considered high as the sewer running across the northern portion of the Site is known to have leaked in the past.  More recent sewer discharges and potential impact to groundwater are considered possible. These potential impacts, as well as the potential risk associated with volatile contaminants and vapour risk particularly as it relates sensitive residential future landuse need to be better understood and quantified to facilitate management of this issue if required.
6	Chemical storage / Storage Yard	VHH (TCE) TPH BTEX PCB Metals OCP/OPP Solvents	Ingestion of soil Dermal contact with soil Inhalation (dry soil/dust) Migration to groundwater Inhalation (vapours)	Human Current site users (maintenance, construction, general site users) Future site users (residential, construction) Potential groundwater users (stock watering, irrigation, industrial) Environmental Groundwater dependant ecosystems	The nature and extent of potential contamination within the Storage Yard is unknown.	Surface soils and groundwater may have been impacted from spills and leaks within the Storage Yard's chemical storage area (flammable liquid store and storage of mowers and spray tanks).  AECOM (2019) reported a low risk of contamination from alleged historical oil discharge to stormwater at the Storage Yard (Buildings 503 and 504). At the time of AECOM's inspection, no stormwater drain was observed. Data to quantify this issue in light of the proposed future landuses is required for decision-making purposes.
7	Vehicle storage / Storage Yard	TPH BTEXN PAH Phenols Lead MTBE	Ingestion of soil Dermal contact with soil Inhalation (dry soil/dust) Surface runoff to stormwater network Migration to groundwater Inhalation (vapours)	Human Current site users (maintenance, construction, general site users) Future site users (residential, construction) Potential groundwater users (stock watering, irrigation, industrial) Environmental Groundwater dependant ecosystems Surface water - Randwick Environmental Park retention basin		Minor contamination expected associated with the former and current storage of trucks and other machinery.
8	Fuel Infrastructure / Former Heavy Vehicle Transport Yard	TPH BTEXN PAH Phenols Lead	Ingestion of soil Dermal contact with soil Inhalation (dry soil/dust) Surface runoff to stormwater network Migration to groundwater Inhalation (vapours)	Human Current site users (maintenance, construction, general site users) Future site users (residential, construction) Potential groundwater users (stock watering, irrigation, industrial) Environmental Groundwater dependant ecosystems Surface water - Randwick Environmental Park retention basin	Information pertaining to the investigation of impacts associated with the former USTs and AST located at the former Heavy Vehicle Transport Yard was not made available during this PSI. The extent of residual impacts to soil and groundwater in the vicinity, and down-gradient, of these tanks and as a result of activities at these AECs is unknown.	Previous AECOM (2019) PSI report recommended further soil and groundwater investigations of the Former Heavy Vehicle Transport Yard and completion of a GPR survey to locate any remaining underground tanks or infrastructure.  Fragments of ACM observed on the surface within the Former Heavy Vehicle Transport Yard during the Site inspection. Assessment to better quantify asbestos risk is needed in light of the existing and proposed future landuses.



AECs		Source - CoPC	Potential Migration and Exposure Pathways	Potential Receptors	Comment on Current Data Uncertainty (data gaps)	Comment on Risk
9	Vehicle Washing, Refueling and Maintenance Activities / Former Heavy Vehicle Transport Yard	VHH (TCE) TPH BTEX PCB Metals	Ingestion of soil Dermal contact with soil Inhalation (dry soil/dust) Surface runoff to stormwater network Migration to groundwater Inhalation (vapours)	Human Current site users (maintenance, construction, general site users) Future site users (residential, construction) Potential groundwater users (stock watering, irrigation, industrial) Environmental Groundwater dependant ecosystems Surface water - Randwick Environmental Park retention basin		Documentation regarding the decommissioning, remediation and validation of the USTs and AST were not available for review.  Previous AECOM (2019) PSI report recommended further soil and groundwater investigations of the Former Heavy Vehicle Transport Yard and completion of a GPR survey to locate any remaining underground tanks or infrastructure.  Fragments of ACM observed on the surface within the Former Heavy Vehicle Transport Yard during the Site inspection. Assessment to better quantify asbestos risk is needed in light of the existing and proposed future landuses.
10	Oil-water separator / Former Heavy Vehicle Transport Yard (Building 502)	Heavy metals Asbestos PCBs PBDEs TPH BTEXN PAH Phenols MTBE OCP/OPP VOCs	Ingestion of soil Dermal contact with soil Surface runoff to stormwater network Migration to groundwater Inhalation (vapours)	Human Current site users (maintenance, construction, general site users) Future site users (residential, construction) Potential groundwater users (stock watering, irrigation, industrial) Environmental Groundwater dependant ecosystems Surface water - Randwick Environmental Park retention basin	The extent of residual impacts associated with the former oil-water separator located at the former Heavy Vehicle Transport Yard, is not known.  Documentation regarding the decommissioning and validation was not available for review.	Impacts as a result of this AEC need to be understood and better quantified in light of the existing and proposed future landuses. The risk associated with this AEC is considered moderate due to the range of potential contaminants and age since this AEC was in actual use.
11	Hazardous materials storage / Former Naval Store 14	Asbestos Lead Heavy metals TPH BTEXN PAH Phenols VOCs PCB PFAS	Ingestion of soil Dermal contact with soil Migration to groundwater Inhalation (vapours)	Human Current site users (maintenance) Future site users (residential, construction) Potential groundwater users (stock watering, irrigation, industrial) Environmental Groundwater dependant ecosystems	Current impacts to soils associated with identified sources of contamination are yet to be quantified.  No investigation information available for review regarding this AEC.  Identification of fire fighting system in this building may be associated with the use of AFFF, therefore PFAS will be included in the suite of further contaminants associated with this AEC.	Considering the age since last use of the Naval Store as a storage facility, the risk of contamination is considered low-moderate.
12	Metal treatment works / Former Building 9FSB	Chlorinated solvents (TCE) Asbestos Lead PFAS	Ingestion of soil Dermal contact with soil Migration to groundwater Inhalation (vapours)	Human Current site users (maintenance) Future site users (residential, construction) Potential groundwater users (stock watering, irrigation, industrial) Environmental Groundwater dependant ecosystems	Known groundwater and soil vapour impact (TCE) from the former metal treatment works area has not been fully delineated.  Since previous investigations have been completed PFAS has come to light as a potential contaminant of concern associated with this AEC.	TCE was identified in soil gas above adopted guidelines residential and open space land uses. Soil gas impacts were not delineated, and no groundwater investigation was conducted (GHD, 2005). Risk of unacceptable concentrations of TCE in soil gas and groundwater is considered likely.  Concentrations of all other identified contaminants of concern (petroleum hydrocarbons, pesticides, polychlorinated biphenyls (PCBs) and metals) with the exception of asbestos were found to be below the adopted guidelines within the soil matrix for residential and open space land uses. While not identified as specific CoPC, a broad contaminant screen will be undertaken during the DSI to verify the previous investigation results.  Residual impacts associated with this AEC need to be assessed and better delineated in light of the proposed existing and future landuses.



AECs		Source - CoPC	Potential Migration and Exposure Pathways	Potential Receptors	Comment on Current Data Uncertainty (data gaps)	Comment on Risk
13	Stockpiles	Asbestos Heavy metals TRH PCB Lead	Ingestion of soil Dermal contact with soil Surface runoff to stormwater network Migration to groundwater Inhalation (vapours)	Human Current site users (maintenance, construction, general site users) Future site users (residential, construction) Potential groundwater users (stock watering, irrigation, industrial) Environmental Groundwater dependant ecosystems	The nature of stockpiled soil at the Site is unknown.	If excavated from Site-based material, stockpiles are likely to contain similar concentrations of CoPC as general fill across the Site. Assessment of potential contaminant impacts and concentrations needs to be undertaken to assess their potential to impact the underlying soil and groundwater and management requirement and suitability of this material to remain on-site in light of the proposed future landuses.
14	Stormwater infrastructure	Asbestos Contaminants from other AECs (PFAS)	Ingestion of soil Dermal contact with soil Inhalation (dry soil/dust)	Human Current site users (construction) Future site users (construction)	The locations and composition of stormwater infrastructure which may contain asbestos are currently not well understood based on available information.	Asbestos was identified in stormwater infrastructure in former portions of Randwick Barracks (now divested). Residual impacts associated with other contaminants that may have entered the stormwater network from other AECs should be undertaken to assess management requirements as it is anticipated that the stormwater infrastructure would need to be modified or replaced as a result of the proposed future residential landuse.
15	Substations	Asbestos Lead Heavy metals TPH PCBs	Ingestion of soil Dermal contact with soil Inhalation (dry soil/dust) Surface runoff to stormwater network Migration to groundwater Inhalation (vapours)	Human Current site users (maintenance, construction, general site users) Future site users (residential, construction) Potential groundwater users (stock watering, irrigation, industrial) Environmental Groundwater dependant ecosystems	Little information data regarding the validation of the former sub-station area was available for review. SAS 2002/20 indicated that an environmental audit was completed for the former sub-station, which presents some risk with regards to understanding potential asbestos, lead, heavy metals, TPH, and PCBs associated with its former function and demolition of the sub-station infrastructure.	An SAS (SAS: 0039432) was issued for the former substation and surrounding area in 2006, the substation has since been demolished and removed and new substation been constructed in its place. No further information was available regarding the demolition and removal of the former substation.  Due to regulatory shift since the completion of previous investigation and remediation associated with this AEC, sampling to confirm residual soil and groundwater conditions is required to assess risk in light of the proposed future landuses.
16	Randwick Zone Substation (off-Site)	Lead Heavy metals TPH PCBs	Migration to groundwater Inhalation (vapours)	Human Current site users (maintenance) Future site users (residential, construction) Potential groundwater users (stock watering, irrigation, industrial) Environmental Groundwater dependant ecosystems	Impact to on-Site groundwater from the Randwick Zone Substation has not been previously assessed.	The Randwick Substation is located up-gradient of the Site and has been identified as a potential source of groundwater contamination based on land use and proximity to the Site. Jacobs is not aware of any specific contamination investigations of the Randwick Zone substation or surrounding off-Site areas.  Assessment of potential
17	Former Launderette (off-Site)	VOCs VHH Surfactants	Migration to groundwater Inhalation (vapours)	Human Current site users (maintenance, construction, general site users) Future site users (residential, construction) Potential groundwater users (stock watering, irrigation, industrial) Environmental Groundwater dependant ecosystems	Impacts to the Site from direct down-gradient groundwater migration of VHH from the former launderette have not been previously considered.	The former launderette was located up-gradient of the Site and CoPC had some potential to migrate onto Site within groundwater or via sewer discharge. Egis (2002) reported that the former launderette was a dry cleaners and was identified as a suspected source of the identified VHH contamination in groundwater (via sewer leakage). Data from the Egis (2002) report also suggested that concentrations of VHH had declined. However, current risk is considered low and on more recent groundwater sampling conducted the concentrations of VHH in groundwater suggest risk associated with this AEC was low.



## 8. Conclusions and Recommendations

### 8.1 Conclusions

Based on consideration of the PSI objectives and findings, Jacobs concludes that:

- Identified source of site-wide and point source contamination have been identified based on the information and site inspection undertaken;
- Based on the potential contaminants and pathways for contaminant migration identified, there is a risk to current future anticipated users of the Site (including construction workers involved in the proposed residential development of the Site and future residents); and
- To better understand the risk, further investigation is proposed to identify management or remedial measures that aim to mitigate the risk to identified receptors.

Further assessment is therefore required before determining the suitability of the Site for residential development. A number of potential sources of contamination have been identified at or in the vicinity of the Site, which are summarised in Table 8-1.

Table 8-1: Summary of AECs

AEC		Location	Current / Historical	Description
1	Debris and fill material	Majority of Site Excluding central portion of Site which was remediated and validated as part of SAS 2002/20D.	Historical & current	<p>Demolition debris</p> <ul style="list-style-type: none"> <li>Asbestos containing material derived from the former Naval Store buildings (constructed with asbestos-cladding) has been widely reported across the Site and was observed on the ground surface during the Site inspection.</li> <li>Potential use of lead-based paint on the former Naval Store buildings</li> </ul> <p>Fill material</p> <ul style="list-style-type: none"> <li>Re-working of natural soils with waste material during demolition/construction (including ash and slag reported in previous investigations)</li> <li>Potential importation of uncontrolled fill</li> </ul>
2	Pesticide use	Vicinity of former Naval Stores	Historical	Organochlorine insecticides were reported to have been used under and around the slabs of the Naval Stores to protect against termites.
3	Rifle Range	Majority of northern and central portions of Site	Historical	Residual projectiles distributed across the range floor and stop butts resulting in elevated lead/metals concentrations in surface soils.
4	Grenade Bursting Range	Small area in the southern portion of the Site	Historical	PAHs, nitrosamines and propellants/explosives may be present in soil in the former grenade bursting area.
5	Site-wide and Sydney Water Sewer	Vicinity of Sydney Water sewer, northern portion of Site and site-wide	Historical & current	Leakage is known to have occurred from the Sydney Water sewer line. VHHs were historically reported above ADWG criteria and were attributed to historical and/or sporadic disposal of trade waste.
6	Chemical storage	Storage Yard	Historical & current	Chemical storage and grounds maintenance area.



<b>AEC</b>		<b>Location</b>	<b>Current / Historical</b>	<b>Description</b>
7	Vehicle storage	Storage Yard	Historical & current	Potential spills as a result of historical and current vehicle storage and minor maintenance activities.
8	Fuel Infrastructure	Former Heavy Vehicle Transport Yard	Historical	The Former Heavy Vehicle Transport Yard reportedly consisted of three former USTs (UST-002, 40kL; UST-004, 40kL; UST, unknown capacity) and one former AST (<1kL) (all reportedly removed), a former above ground oil-water separator, vehicle inspection ramp, former dispensers, fuel lines and vent pipes associated with POL point.
9	Vehicle Washing, Refueling and Maintenance Activities	Former Heavy Vehicle Transport Yard	Historical	Potential for spills during refueling maintenance and/or leakage from vehicles within the former vehicle compounds Storage and use of chemical associated with electronics, radio and vehicle maintenance activities, washing and refueling of vehicles.
10	Oil-water separator	Former Heavy Vehicle Transport Yard (Building 502)	Historical	An abandoned above-ground oil water separator located in the centre of the wash bay area, supported by a collection pit and concrete drainage lines.
11	Hazardous materials storage	Former Naval Store 14 Central portion of Site	Historical	Historical storage of hazardous materials including solvents, poisons, corrosives and general hazardous goods.
12	Metal treatment works	Former Building 9FSB – Former Transport Store and adjacent slab	Historical	Historical use and disposal of hazardous chemicals and materials (including metals, acids, solvents) during metal treatment.
13	Stockpiles	Various - 19 observed during Site inspection	Current	Potential for leaching of contaminants into soil or groundwater. Four soil stockpiles and 15 hard waste or vegetation stockpiles were observed during Jacobs' site inspection. It is anticipated that only the soil stockpiles would pose a potential contamination risk to the Site, although it is expected that all stockpiles will require off-site disposal prior to development.
14	Stormwater infrastructure	Various in vicinity of building infrastructure	Current	Potential for asbestos cladding in stormwater infrastructure
15	Substations	Northern portion of Site	Historical & current	Possible leakage from transformers into soil and groundwater. Historical substation has been demolished, with a new substation constructed adjacent.
16	Randwick Zone Substation	80 m North (up-gradient)	Current	Possible leakage from transformers into soil and groundwater.
17	Launderette	Off-site, 21 m north-west (up-gradient)	Historical	Possible historical leakage or disposal of chemicals (solvents) into soil and groundwater or sewer system.

A preliminary CSM was completed, documenting the AECs and expected SPR linkages. The CSM demonstrates that the most significant risks to human health arise from the expected widespread presence of asbestos (as well as heavy metals and multiple other CoPC) in surface and deeper soils. In addition, potential soil vapour risks

have been identified in select locations within the Site which require further investigation and potential remediation prior to land development.

A preliminary risk assessment was completed to determine whether the Site is currently suitable for the proposed residential land use. It was identified, based on current understanding, that nearly the entire Site has the potential to be contaminated to a degree unacceptable for the proposed residential land use.

## 8.2 Recommendations and Next Steps

It is recommended that an intrusive investigation be undertaken at the Site to determine whether the identified AECs present an unacceptable risk to human health and / or the environment in relation to future redevelopment for residential purposes.

An indicative future work plan is presented in Appendix F highlighting the methodologies and considerations associated with this recommendation. A Sampling, Analysis and Quality Plan (SAQP) should be developed to detail the work plan and quality and assessment standards that the intrusive investigation will meet.



## 9. References

### General References

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## Appendix A. Figures

Figure 1 – Site Location

Figure 2 – Site Features

Figure 3 – Historical Site Features

Figure 4 – Previous Investigations

Figure 5 – Areas of Environmental Concern (AECs)

Figure 6 – Contaminated Site Records (CSRs)



Figure 1: Site Location and Setting

## Randwick Barracks

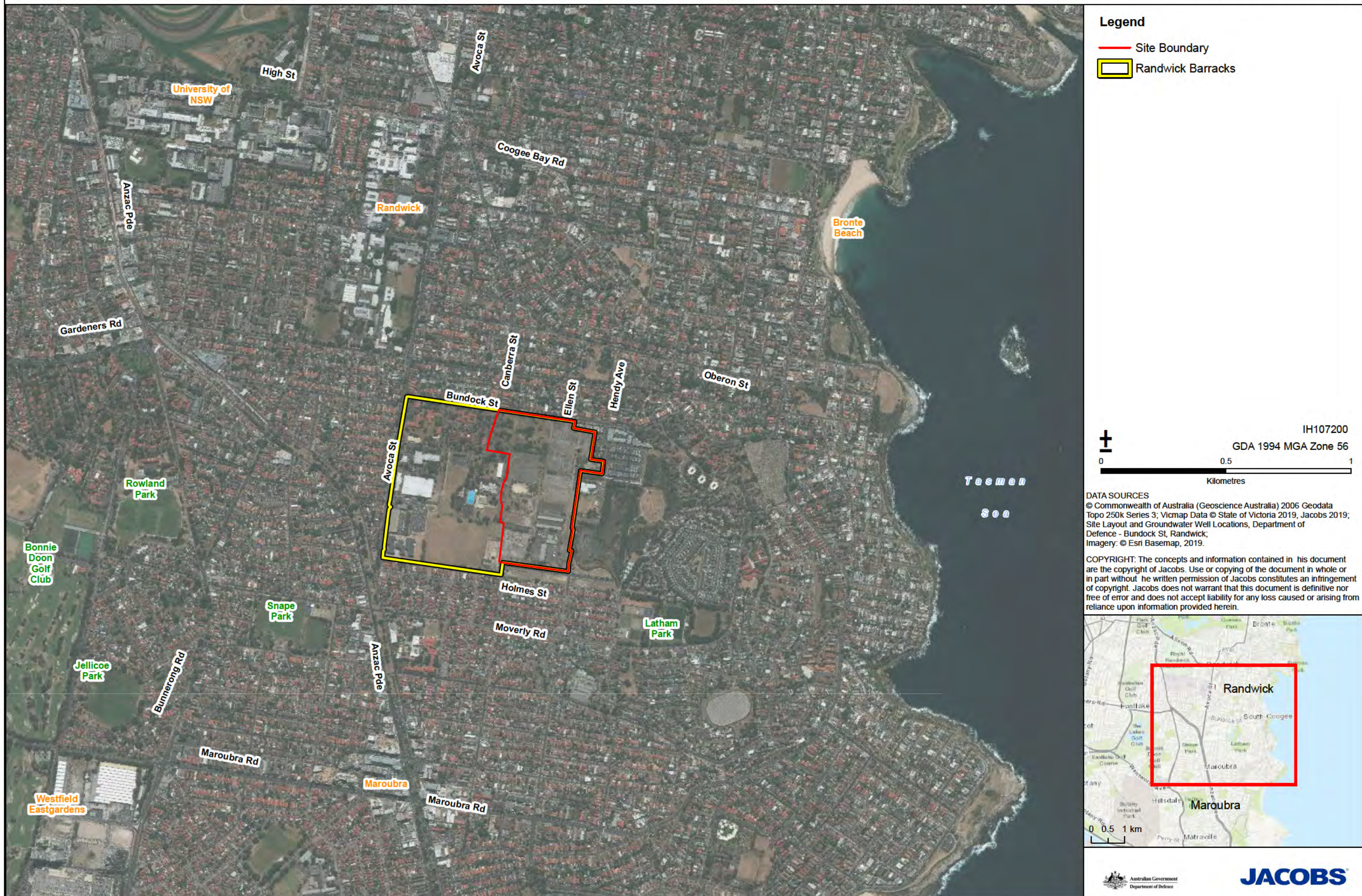




Figure 2: Site Features





# SITE LAYOUT (INCLUDING GROUNDWATER WELL AND SEWER ACCESS LOCATIONS)

DEPARTMENT OF DEFENCE - BUNDOCK STREET, RANDWICK

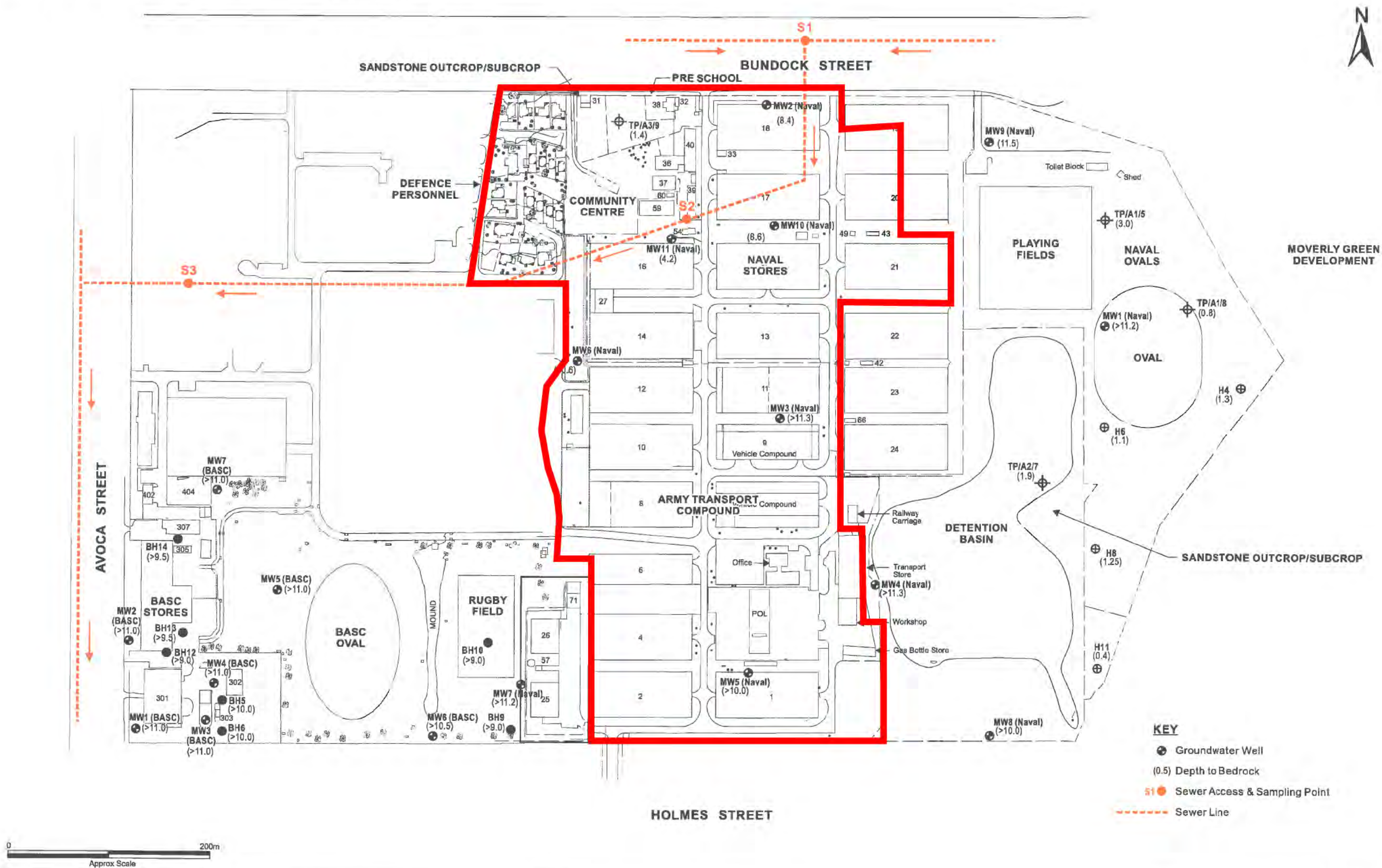




Figure 4: Previous Site Investigations

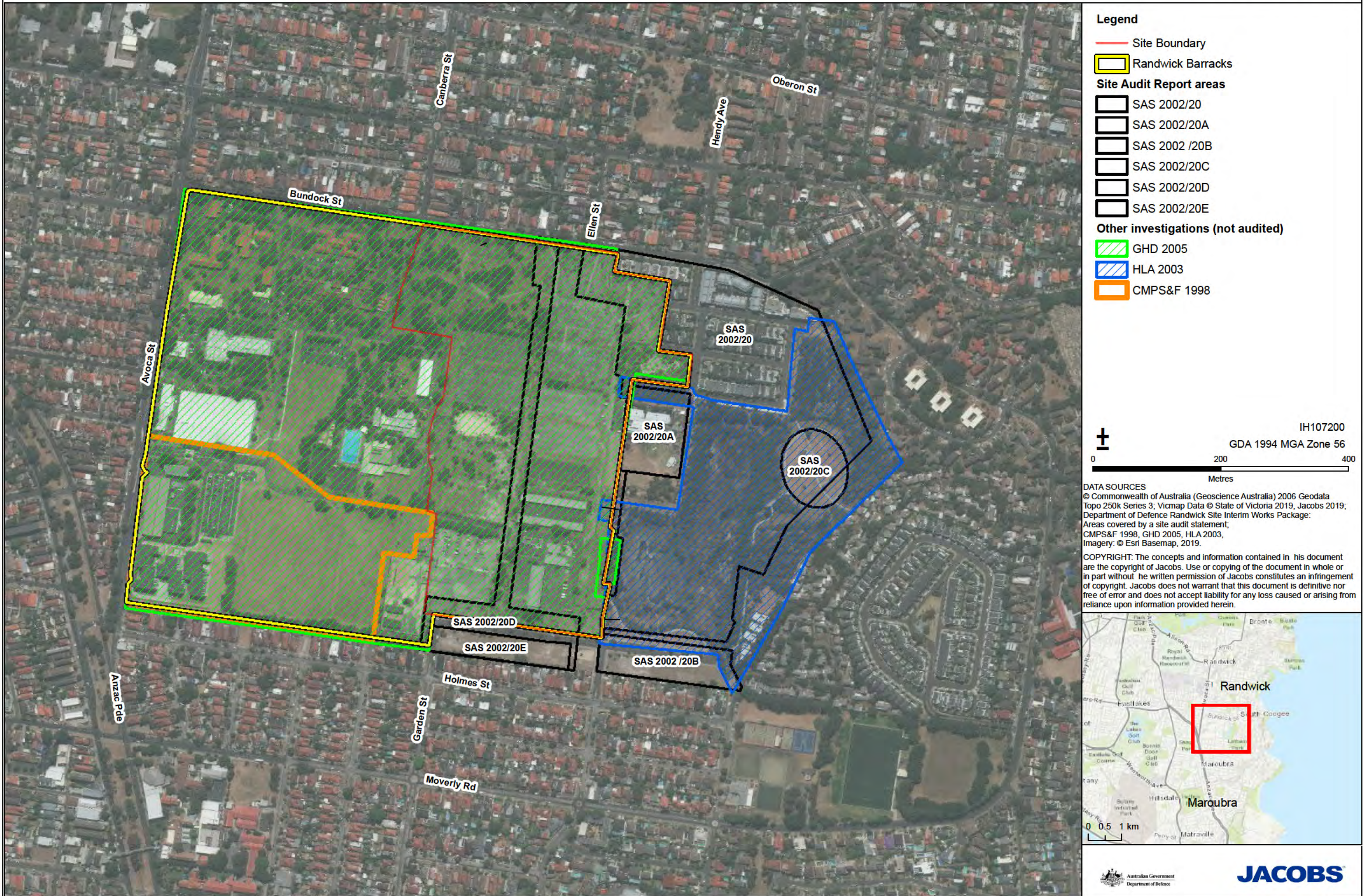
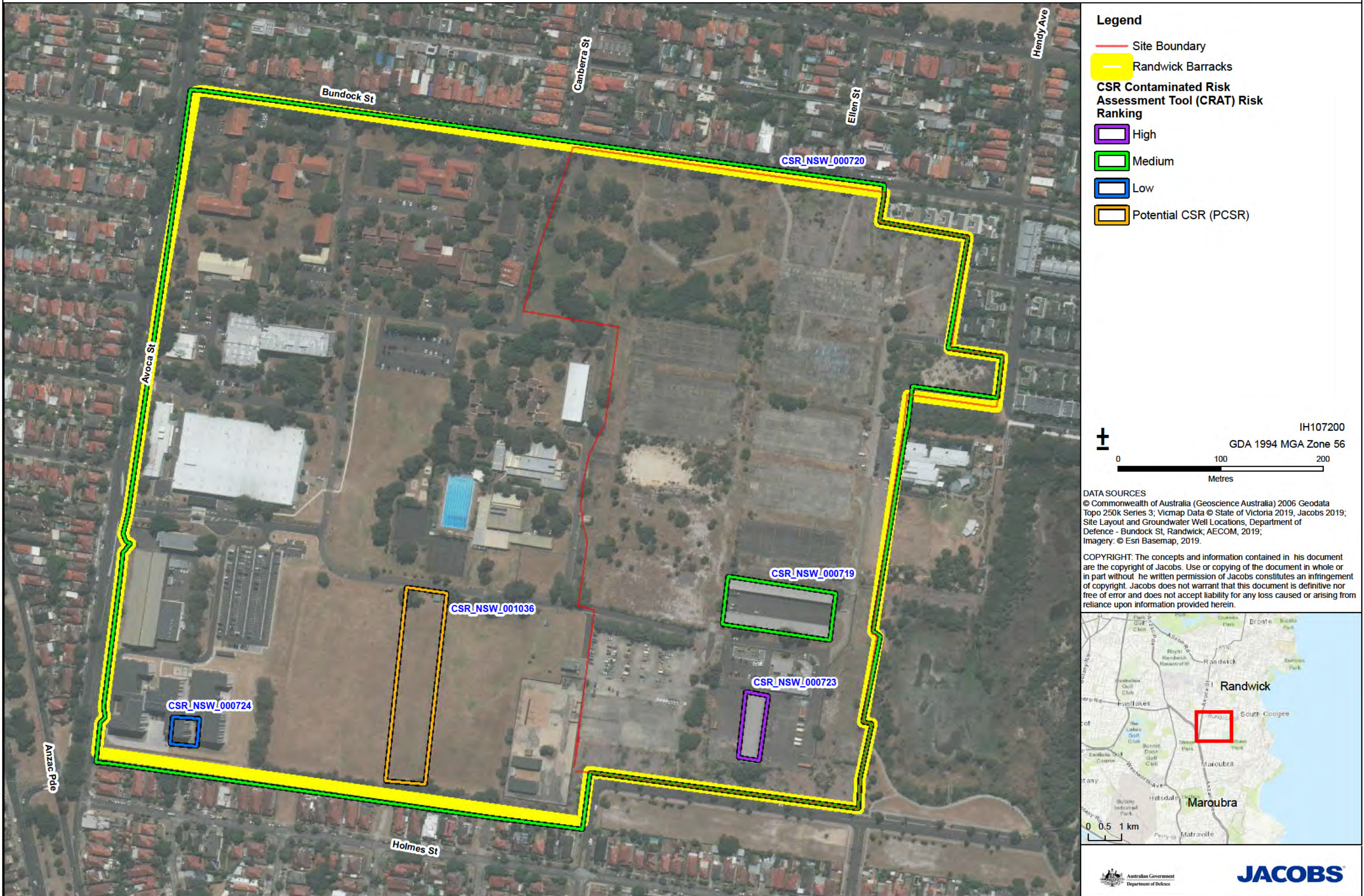




Figure 5: Contaminated Site Records (CSR)





## Randwick Barracks





## Appendix B. Lotsearch Report



# LOTSEARCH

LOTSEARCH ENVIRO PROFESSIONAL

**Date: 25 Oct 2019 10:26:59**

**Reference: LS009225 EP**

**Address: Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032**

**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.



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## Location Confidences

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

## 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	25/10/2019	25/10/2019	Daily	-	-	-	-
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	15/10/2019	15/10/2019	Monthly	1000	0	0	4
Contaminated Land Records of Notice	Environment Protection Authority	14/10/2019	14/10/2019	Monthly	1000	0	0	1
Former Gasworks	Environment Protection Authority	02/10/2019	11/10/2017	Monthly	1000	0	0	0
National Waste Management Facilities Database	Geoscience Australia	06/08/2019	07/03/2017	Quarterly	1000	0	0	0
EPA PFAS Investigation Program	Environment Protection Authority	02/10/2019	02/10/2019	Monthly	2000	0	0	0
Defence PFAS Investigation & Management Program	Department of Defence	02/10/2019	02/10/2019	Monthly	2000	0	0	0
Airservices Australia National PFAS Management Program	Airservices Australia	02/10/2019	02/10/2019	Monthly	2000	0	0	0
Defence 3 Year Regional Contamination Investigation Program	Department of Defence	02/10/2019	02/10/2019	Monthly	2000	1	1	1
EPA Other Sites with Contamination Issues	Environment Protection Authority	13/12/2018	13/12/2018	Annually	1000	0	0	0
Licensed Activities under the POEO Act 1997	Environment Protection Authority	26/09/2019	26/09/2019	Monthly	1000	0	0	0
Delicensed POEO Activities still regulated by the EPA	Environment Protection Authority	26/09/2019	26/09/2019	Monthly	1000	0	0	2
Former POEO Licensed Activities now revoked or surrendered	Environment Protection Authority	26/09/2019	26/09/2019	Monthly	1000	0	3	4
UPSS Environmentally Sensitive Zones	Environment Protection Authority	14/04/2015	12/01/2010	As required	1000	1	1	1
UBD Business to Business Directory 1991 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business to Business Directory 1991 (Road & Area Matches)	Hardie Grant			Not required	150	-	0	0
UBD Business to Business Directory 1986 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	2	2
UBD Business to Business Directory 1986 (Road & Area Matches)	Hardie Grant			Not required	150	-	0	0
UBD Business Directory 1982 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	2	2
UBD Business Directory 1982 (Road & Area Matches)	Hardie Grant			Not required	150	-	0	0
UBD Business Directory 1978 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	2	2
UBD Business Directory 1978 (Road & Area Matches)	Hardie Grant			Not required	150	-	0	0
UBD Business Directory 1975 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business Directory 1975 (Road & Area Matches)	Hardie Grant			Not required	150	-	0	0
UBD Business Directory 1970 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business Directory 1970 (Road & Area Matches)	Hardie Grant			Not required	150	-	1	1
UBD Business Directory 1965 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	2	2
UBD Business Directory 1965 (Road & Area Matches)	Hardie Grant			Not required	150	-	0	0
UBD Business Directory 1961 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	2	2



Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
UBD Business Directory 1961 (Road & Area Matches)	Hardie Grant			Not required	150	-	2	2
UBD Business Directory 1950 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	1	6
UBD Business Directory 1950 (Road & Area Matches)	Hardie Grant			Not required	150	-	6	6
UBD Business Directory Drycleaners & Motor Garages/Service Stations (Premise & Intersection Matches)	Hardie Grant			Not required	500	0	0	46
UBD Business Directory Drycleaners & Motor Garages/Service Stations (Road & Area Matches)	Hardie Grant			Not required	500	-	0	12
Points of Interest	NSW Department of Finance, Services & Innovation	25/06/2019	25/06/2019	Quarterly	1000	0	2	77
Tanks (Areas)	NSW Department of Finance, Services & Innovation	25/06/2019	25/06/2019	Quarterly	1000	0	0	2
Tanks (Points)	NSW Department of Finance, Services & Innovation	25/06/2019	25/06/2019	Quarterly	1000	0	0	1
Major Easements	NSW Department of Finance, Services & Innovation	25/06/2019	25/06/2019	Quarterly	1000	0	0	4
State Forest	NSW Department of Finance, Services & Innovation	18/01/2018	18/01/2018	As required	1000	0	0	0
NSW National Parks and Wildlife Service Reserves	NSW Office of Environment & Heritage	16/01/2019	14/11/2018	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	2
Botany Groundwater Management Zones	NSW Department of Primary Industries	15/03/2018	01/10/2005	As required	1000	0	0	0
Groundwater Boreholes	NSW Dept. of Primary Industries - Water NSW; Commonwealth of Australia (Bureau of Meteorology)	24/07/2018	23/07/2018	Annually	2000	0	4	289
Geological Units 1:100,000	NSW Dept. of Industry, Resources & Energy	20/08/2014		None planned	1000	1	-	3
Geological Structures 1:100,000	NSW Dept. of Industry, Resources & Energy	20/08/2014		None planned	1000	0	-	5
Naturally Occurring Asbestos Potential	NSW Dept. of Industry, Resources & Energy	04/12/2015	24/09/2015	Unknown	1000	0	0	0
Soil Landscapes	NSW Office of Environment & Heritage	12/08/2014		None planned	1000	3	-	4
Atlas of Australian Soils	ABARES	19/05/2017	17/02/2011	As required	1000	1	2	2
Environmental Planning Instrument Acid Sulfate Soils	NSW Department of Planning and Environment	18/10/2019	11/10/2019	Weekly	500	0	-	-
Atlas of Australian Acid Sulfate Soils	CSIRO	19/01/2017	21/02/2013	As required	1000	1	1	1
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 Office of Environment & Heritage	12/05/2017	01/01/2002	None planned	1000	-	-	-
Mining Subsidence Districts	NSW Department of Finance, Services & Innovation	11/04/2019	11/04/2019	Quarterly	1000	0	0	0
Environmental Planning Instrument SEPP State Significant Precincts	NSW Department of Planning and Environment	18/10/2019	07/12/2018	Weekly	1000	0	0	0
Environmental Planning Instrument Land Zoning	NSW Department of Planning and Environment	18/10/2019	11/10/2019	Weekly	1000	3	6	93
Commonwealth Heritage List	Australian Government Department of the Environment and Energy - Heritage Branch	16/01/2019	31/07/2018	Unknown	1000	0	1	1
National Heritage List	Australian Government Department of the Environment and Energy - Heritage Branch	16/01/2019	28/09/2018	Unknown	1000	0	0	0
State Heritage Register - Curtilages	NSW Office of Environment & Heritage	14/10/2019	09/11/2018	Quarterly	1000	0	0	0
Environmental Planning Instrument Heritage	NSW Department of Planning and Environment	18/10/2019	11/10/2019	Weekly	1000	1	4	92
Bush Fire Prone Land	NSW Rural Fire Service	28/08/2019	03/06/2019	Quarterly	1000	0	0	0

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
Native Vegetation of the Sydney Metropolitan Area	NSW Office of Environment & Heritage	01/03/2017	16/12/2016	As required	1000	1	3	5
Ramsar Wetlands of Australia	Commonwealth of Australia Department of 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 Signings	NSW Office of Environment & Heritage	25/10/2019	25/10/2019	Weekly	10000	-	-	-



Site Diagram

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

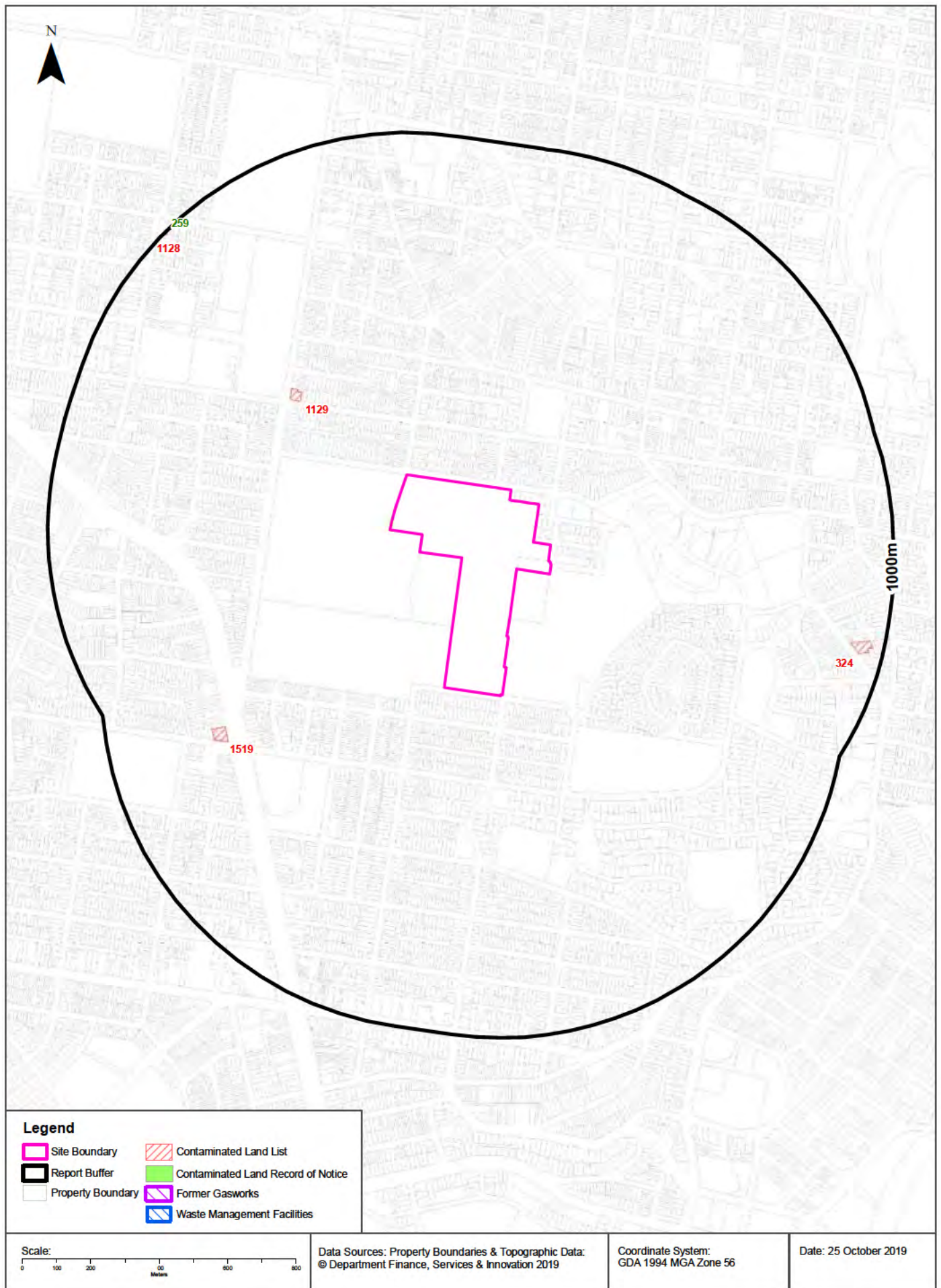


<div>Legend</div> <div><div></div> Site Boundary</div> <div><div></div> Internal Parcel Boundaries</div>	<div>Total Area: 150265m<sup>2</sup></div> <div>Total Perimeter: 2157m</div> <div>Disclaimers:</div> <div>Measurements are approximate only and may have been simplified or smaller lengths removed for readability.</div> <div>Parcels that make up less than 2.0% of the total site area have not been labeled for increased legibility.</div>	<div>Scale:</div> <div><div></div><div>02550100150</div><div>Meters</div></div> <div>Data Sources: Aerial Imagery: © Aerometrex Pty Ltd</div>	
		<div>Coordinate System:</div> <div>GDA 1994 MGA Zone 56</div>	<div>Date: 25 October 2019</div>



# Contaminated Land & Waste Management Facilities

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032





# Contaminated Land & Waste Management Facilities

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

## 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
1129	Metro Petroleum	345 Avoca Street	Randwick	Service Station	Regulation under CLM Act not required	Current EPA List	Premise Match	379m	North West
1519	Caltex Service Station	603-611 Anzac Parade	Kingsford	Service Station	Regulation under CLM Act not required	Current EPA List	Premise Match	649m	South West
324	Caltex South Coogee Service Station	169-173 Malabar Road	South Coogee	Service Station	Regulation under CLM Act not required	Current EPA List	Premise Match	900m	East
1128	7-Eleven Service Station	126-130 Barker Street	Randwick	Service Station	Contamination currently regulated under CLM Act	Current EPA List	Premise Match	992m	North 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.
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.

EPA site management class	Explanation
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 & Waste Management Facilities

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

## Contaminated Land: Records of Notice

Record of Notices within the dataset buffer:

Map Id	Name	Address	Suburb	Notices	Area No	Location Confidence	Distance	Direction
259	7-Eleven Service Station	126-130 Barker Street	Randwick	2 current and 11 former	3257	Premise Match	992m	North 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

## 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  
Creative Commons 3.0 © Commonwealth of Australia <http://creativecommons.org/licenses/by/3.0/au/deed.en>

## PFAS Investigation Sites

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

### 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
N/A	No records in buffer				

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

### Defence PFAS Investigation & Management Program

Sites being investigated or 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 Investigation & 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:

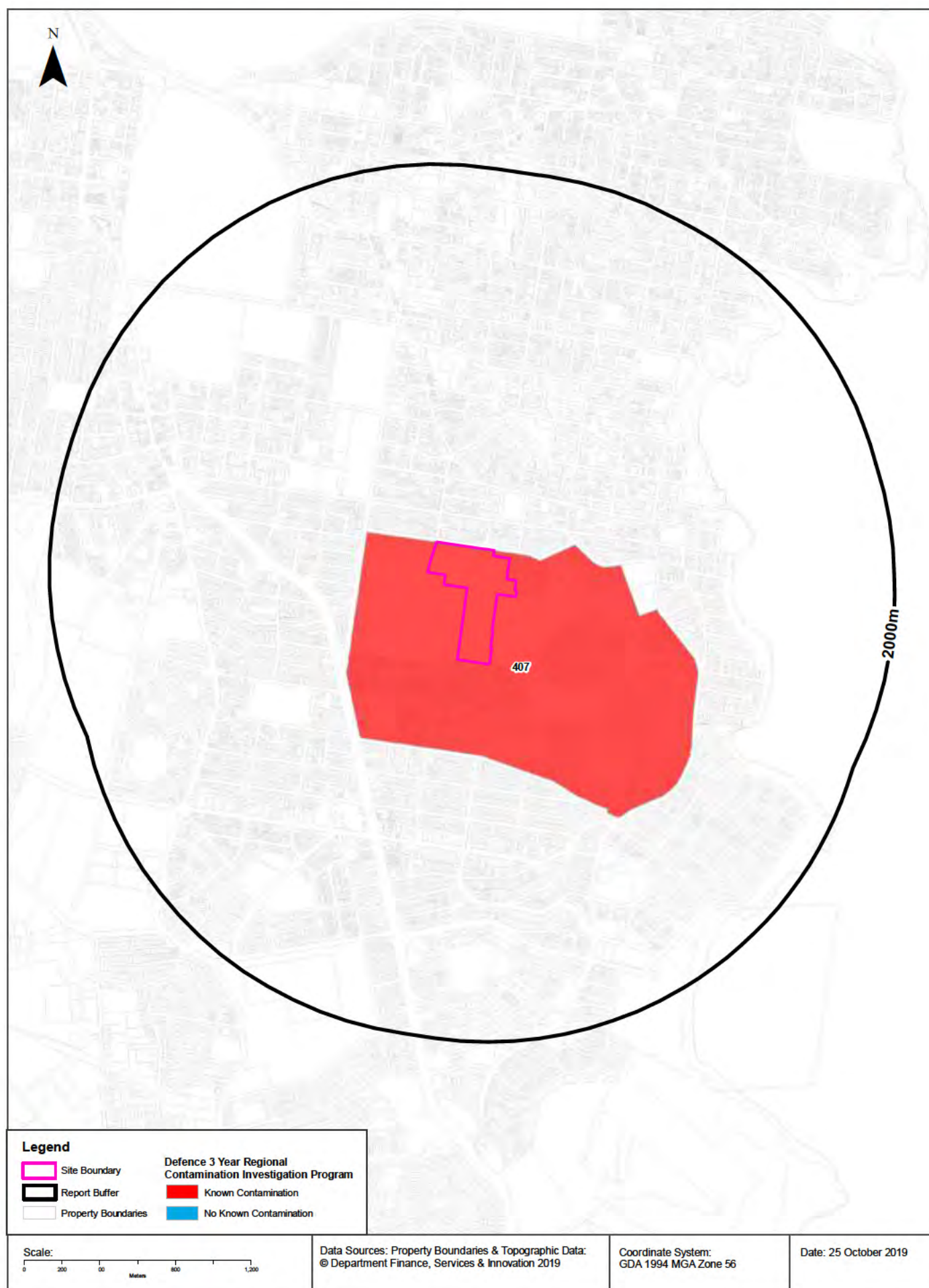
Map ID	Site Name	Impacts	Loc Conf	Dist	Dir
N/A	No records in buffer				

Airservices Australia National PFAS Management Program Data Custodian: Airservices Australia



# Defence 3 Year Regional Contamination Investigation Program

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032



## Defence Sites

**Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032**

### 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	<a href="#">Randwick Barracks</a>	Randwick, New South Wales	YES	Area Match	0m	Onsite

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



## EPA Other Sites with Contamination Issues

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

### 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

## EPA Activities

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

## 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
N/A	No records in buffer							

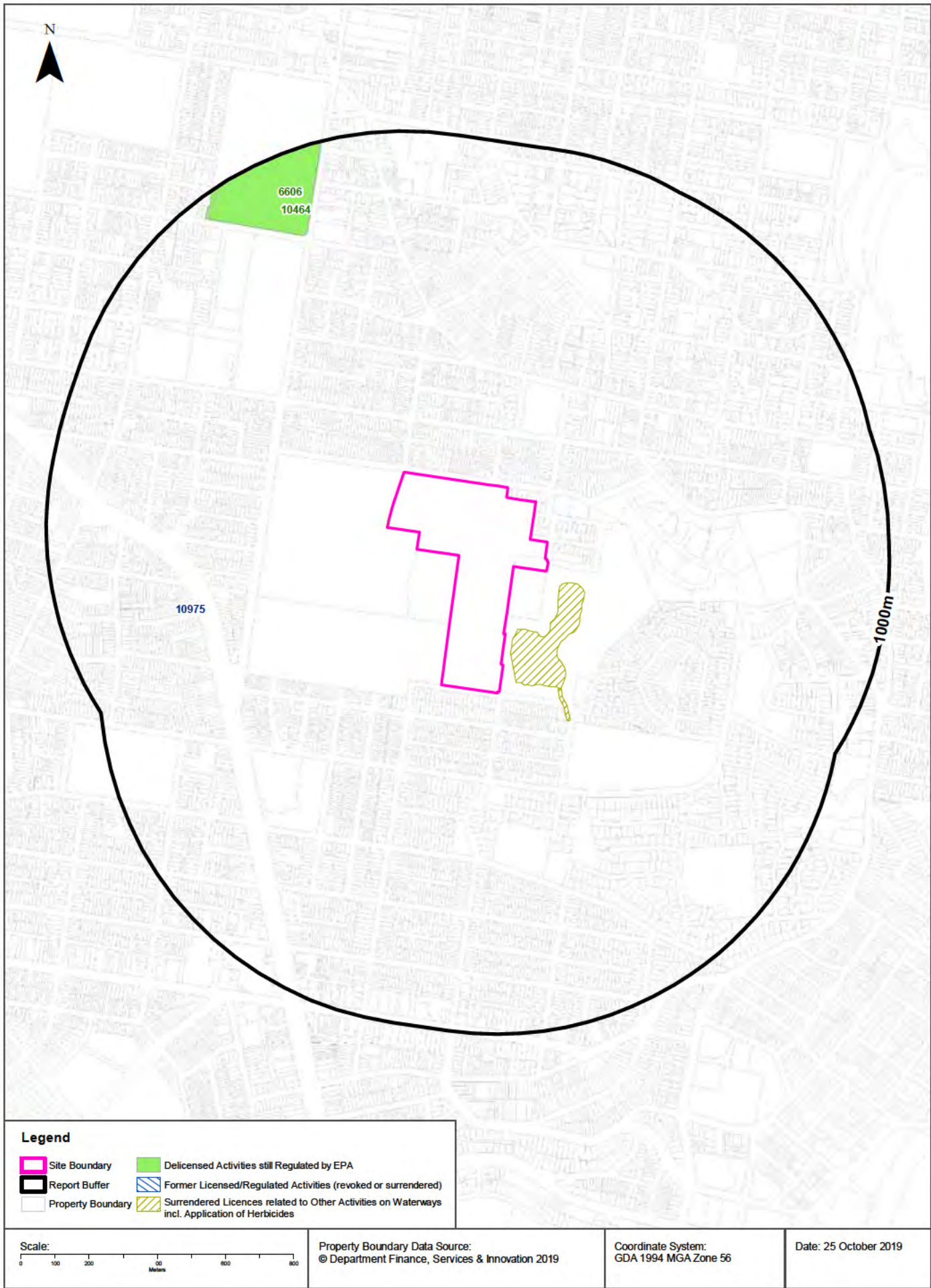
POEO Licence Data Source: Environment Protection Authority

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# Delicensed & Former Licensed EPA Activities

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032



## EPA Activities

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

### 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
6606	SOUTH EASTERN SYDNEY AND ILLAWARRA AREA HEALTH SERVICE	PRINCE OF WALES HOSPITAL	BARKER STREET	RANDWICK	Hazardous, Industrial or Group A Waste Generation or Storage	Premise Match	753m	North West
10464	P.O.W. HOSPITAL PTY LIMITED	PRINCE OF WALES PRIVATE HOSPITAL	Barker Street	RANDWICK	Hazardous, Industrial or Group A Waste Generation or Storage	Premise Match	753m	North West

Delicensed Activities Data Source: Environment Protection Authority  
© State of New South Wales through the Environment Protection Authority

### 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
4653	LUHRMANN ENVIRONMENT MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW	Surrendered	06/09/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	21m	-
4838	Robert Orchard	Various Waterways throughout New South Wales - SYDNEY NSW 2000	Surrendered	07/09/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	21m	-
6630	SYDNEY WEED & PEST MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW - PROSPECT, NSW, 2148	Surrendered	09/11/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	21m	-
10975	SOUTH EASTERN SYDNEY AND ILLAWARRA AREA HEALTH SERVICE	549 Anzac Parade, KINGSFORD, NSW 2032	Surrendered	30/06/2000	Hazardous, Industrial or Group A Waste Generation or Storage	Premise Match	608m	West

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





## Historical Business Directories

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

### 1991 Business to Business Directory Records Premise or Road Intersection Matches

Records from the 1991 UBD Business to Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
	No records in buffer					

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### 1991 Business to Business Directory Records Road or Area Matches

Records from the 1991 UBD Business to Business Directory, 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.	Location Confidence	Distance to Road Corridor or Area
	No records in buffer				

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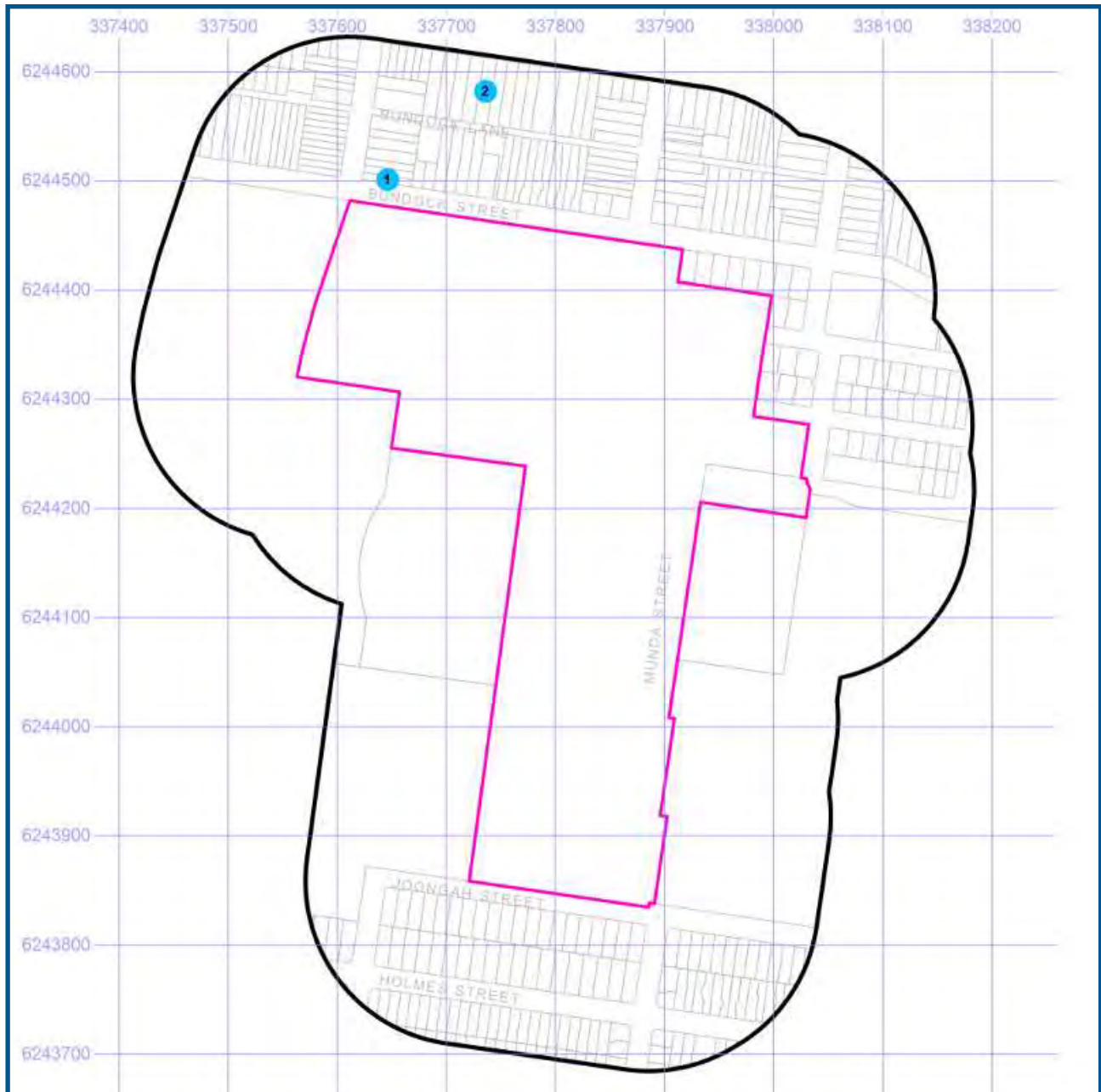


# Historical Business Directories

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032



## 1986 Business to Business Directory Records



- Site Boundary
- Buffer 150m
- Property Boundaries

Projected Coordinate System:  
GDA94 MGA Zone 56

- 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

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Property Boundaries © NSW Department Finance, Services & Innovation 2019

## Historical Business Directories

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

### 1986 Business to Business Directory Records Premise or Road Intersection Matches

Records from the 1986 UBD Business to Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	LAUNDRIES &/OR LAUNDRETTES.	Canberra Laundrette, 75 Canberra St., Randwick. 2031	51096	Premise Match	21m	North West
2	MIXED BUSINESSES.	Rainbow Self Serve, 205 Rainbow St., Randwick. 2031	60304	Premise Match	87m	North

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### 1986 Business to Business Directory Records Road or Area Matches

Records from the 1986 UBD Business to Business Directory, 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.	Location Confidence	Distance to Road Corridor or Area
	No records in buffer				

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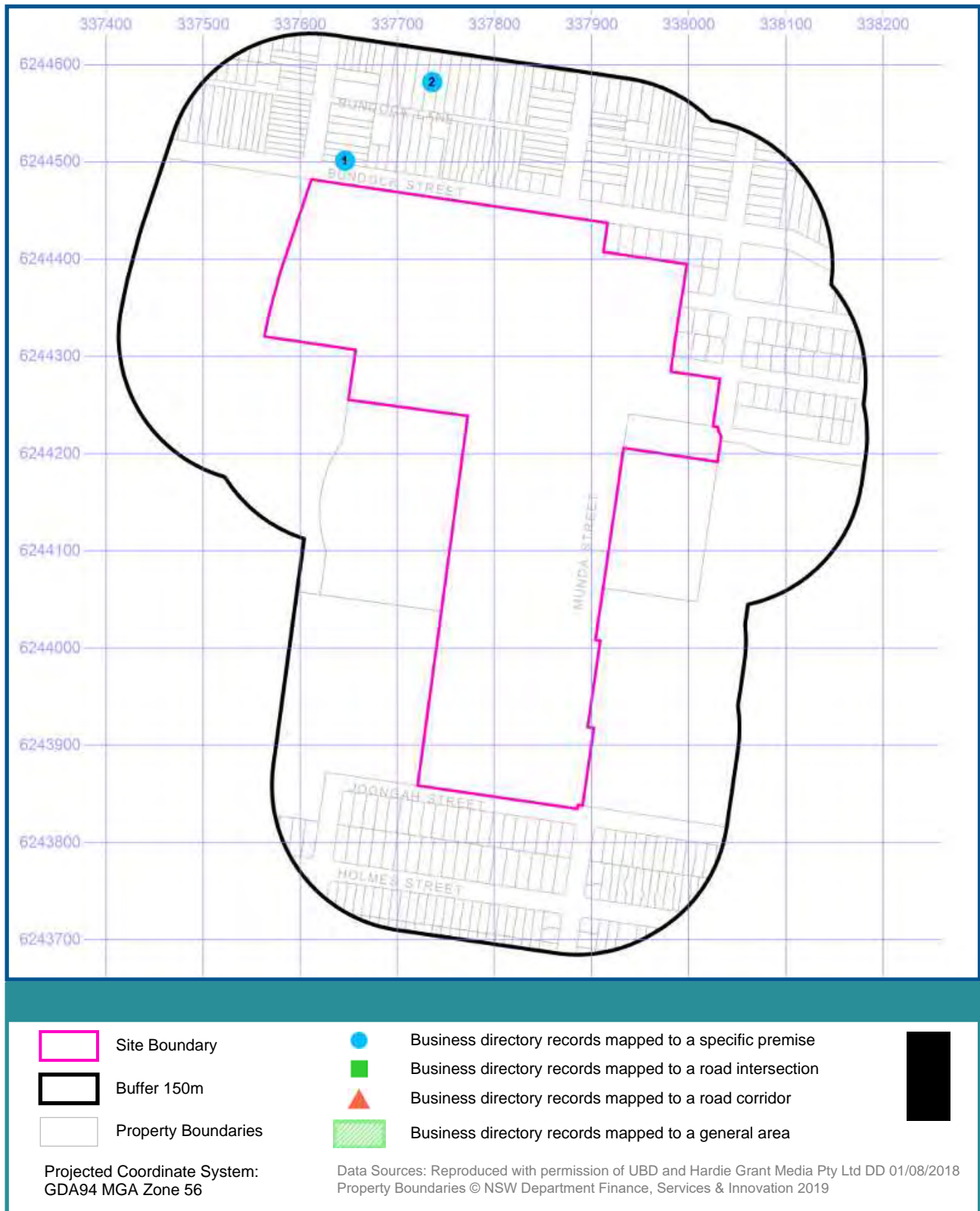


# Historical Business Directories

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032



## 1982 Business Directory Records



## Historical Business Directories

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

### 1982 Business Directory Records Premise or Road Intersection Matches

Records from the 1982 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	LAUNDRIES &/OR LAUNDRETTES.(L1850)	Christodoulides, M, 75 Canberra St., Randwick. 2031.	44741	Premise Match	21m	North West
2	MIXED BUSINESSES. (M4060)	Simos, J., 205 Rainbow St., Randwick. 2031.	53413	Premise Match	87m	North

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### 1982 Business Directory Records Road or Area Matches

Records from the 1982 UBD Business Directory, 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.	Location Confidence	Distance to Road Corridor or Area
	No records in buffer				

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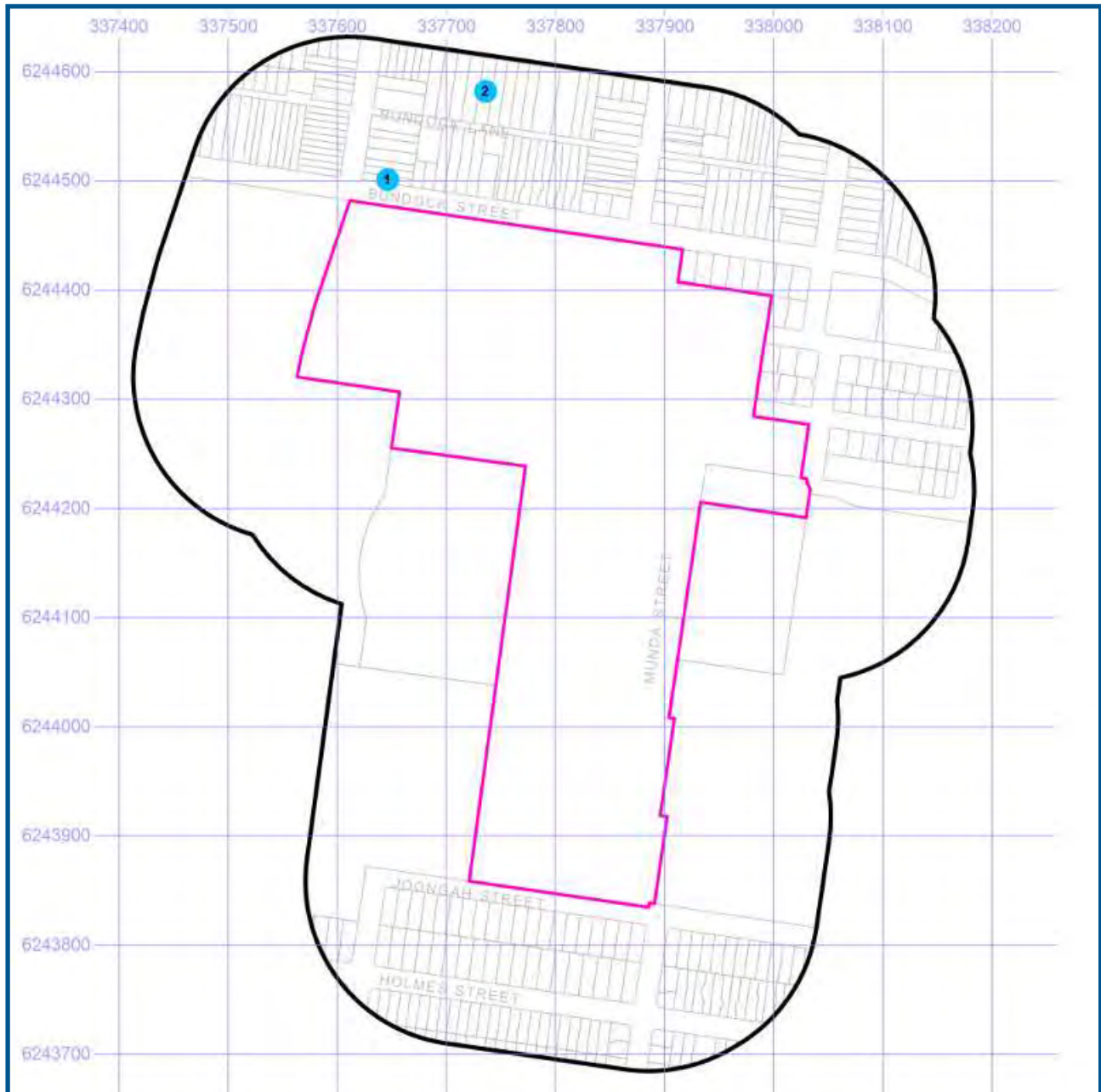


# Historical Business Directories

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032



## 1978 Business Directory Records



- Site Boundary
- Buffer 150m
- Property Boundaries

Projected Coordinate System:  
GDA94 MGA Zone 56

- 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

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## Historical Business Directories

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

### 1978 Business Directory Records Premise or Road Intersection Matches

Records from the 1978 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	LAUNDRIES &/OR LAUNDRETTES.	Christodoulides. M., 75 Canberra St., Randwick. 2031	39733	Premise Match	21m	North West
2	MIXED BUSINESSES.	Simos, J., 205 Rainbow St., Randwick. 2031	47033	Premise Match	87m	North

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### 1978 Business Directory Records Road or Area Matches

Records from the 1978 UBD Business Directory, 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.	Location Confidence	Distance to Road Corridor or Area
	No records in buffer				

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## Historical Business Directories

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

### 1975 Business Directory Records Premise or Road Intersection Matches

Records from the 1975 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
	No records in buffer					

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### 1975 Business Directory Records Road or Area Matches

Records from the 1975 UBD Business Directory, 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.	Location Confidence	Distance to Road Corridor or Area
	No records in buffer				

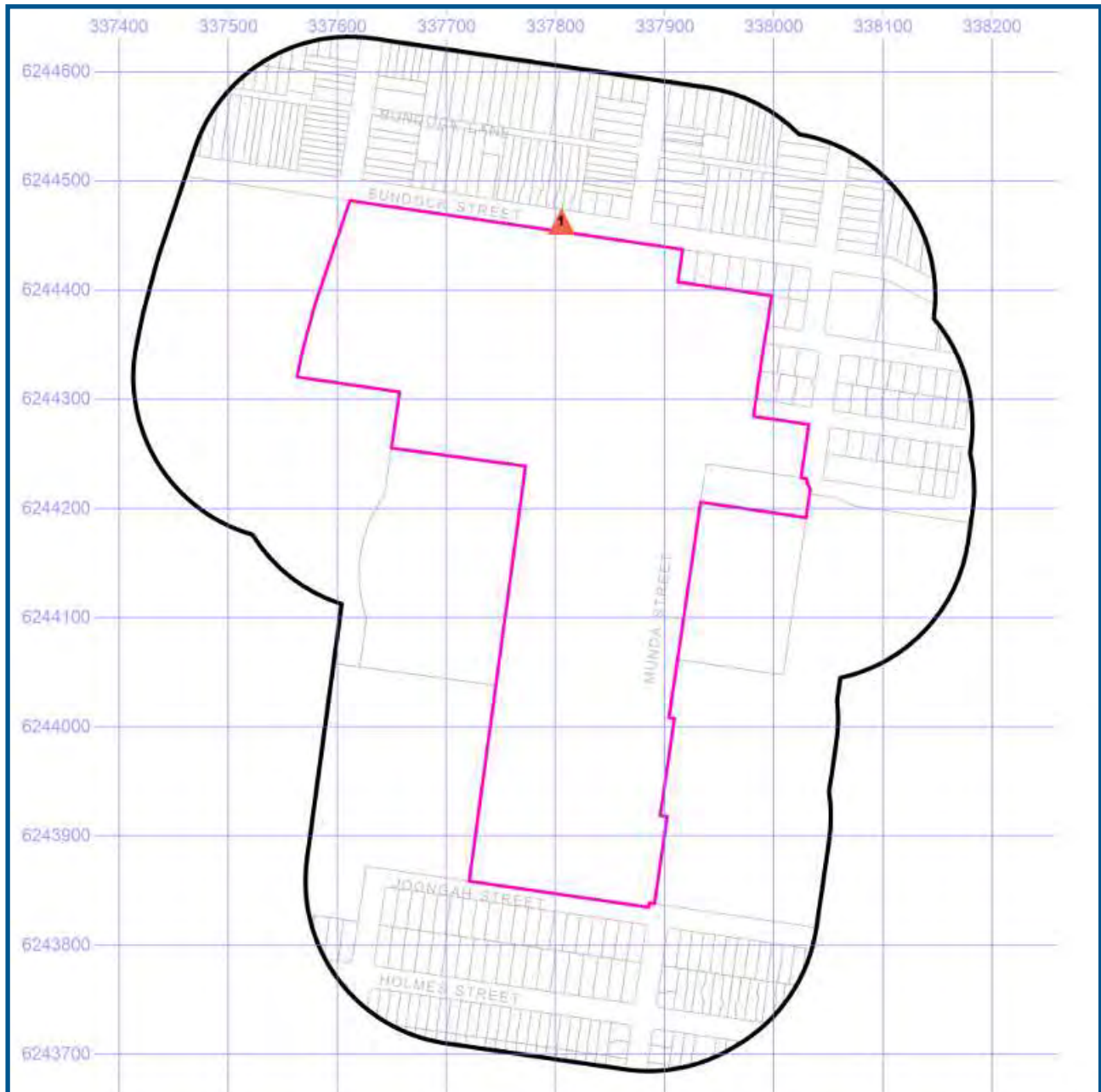
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# Historical Business Directories





Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032



## 1970 Business Directory Records



-  Site Boundary
-  Buffer 150m
-  Property Boundaries

-  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

Projected Coordinate System:  
GDA94 MGA Zone 56

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## Historical Business Directories

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

### 1970 Business Directory Records Premise or Road Intersection Matches

Records from the 1970 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
	No records in buffer					

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### 1970 Business Directory Records Road or Area Matches

Records from the 1970 UBD Business Directory, 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.	Location Confidence	Distance to Road Corridor or Area
1	STAMP DEALERS (\$490)	Bassam, P. A., 31 Bundock St., Randwick, 2031	364172	Road Match	0m

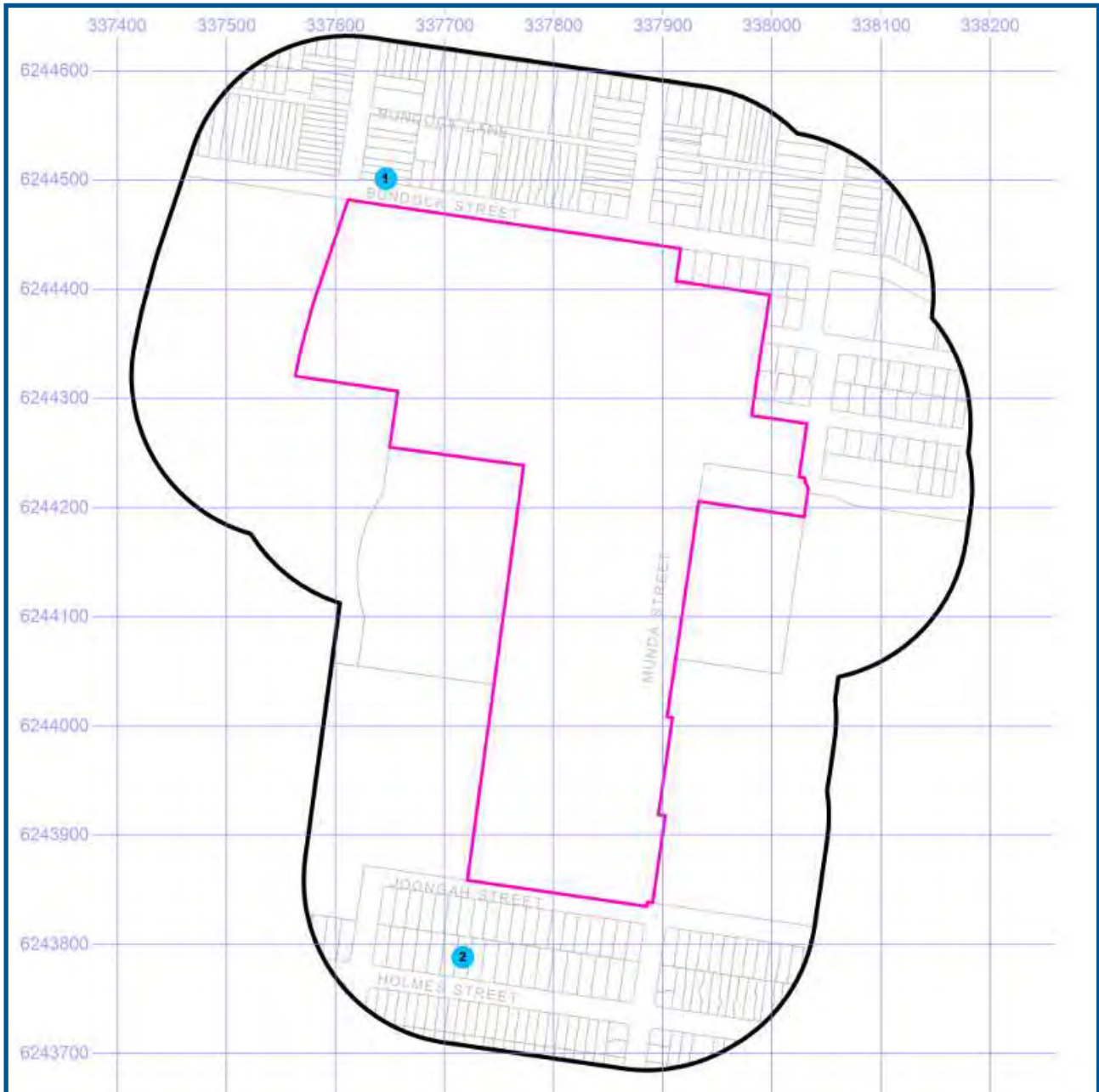
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# Historical Business Directories

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032



## 1965 Business Directory Records



- Site Boundary
- Buffer 150m
- Property Boundaries

Projected Coordinate System:  
GDA94 MGA Zone 56

- 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

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Property Boundaries © NSW Department Finance, Services & Innovation 2019



## Historical Business Directories

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

### 1965 Business Directory Records Premise or Road Intersection Matches

Records from the 1965 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	Mixed Businesses	Maxwell, V., 75 Canberra St., Randwick	118021	Premise Match	21m	North West
2	Plumbers, Gasfitters/Drainlayers	Needham, L. H., 96 Holmes St., Kingsford	134644	Premise Match	51m	South

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### 1965 Business Directory Records Road or Area Matches

Records from the 1965 UBD Business Directory, 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.	Location Confidence	Distance to Road Corridor or Area
	No records in buffer				

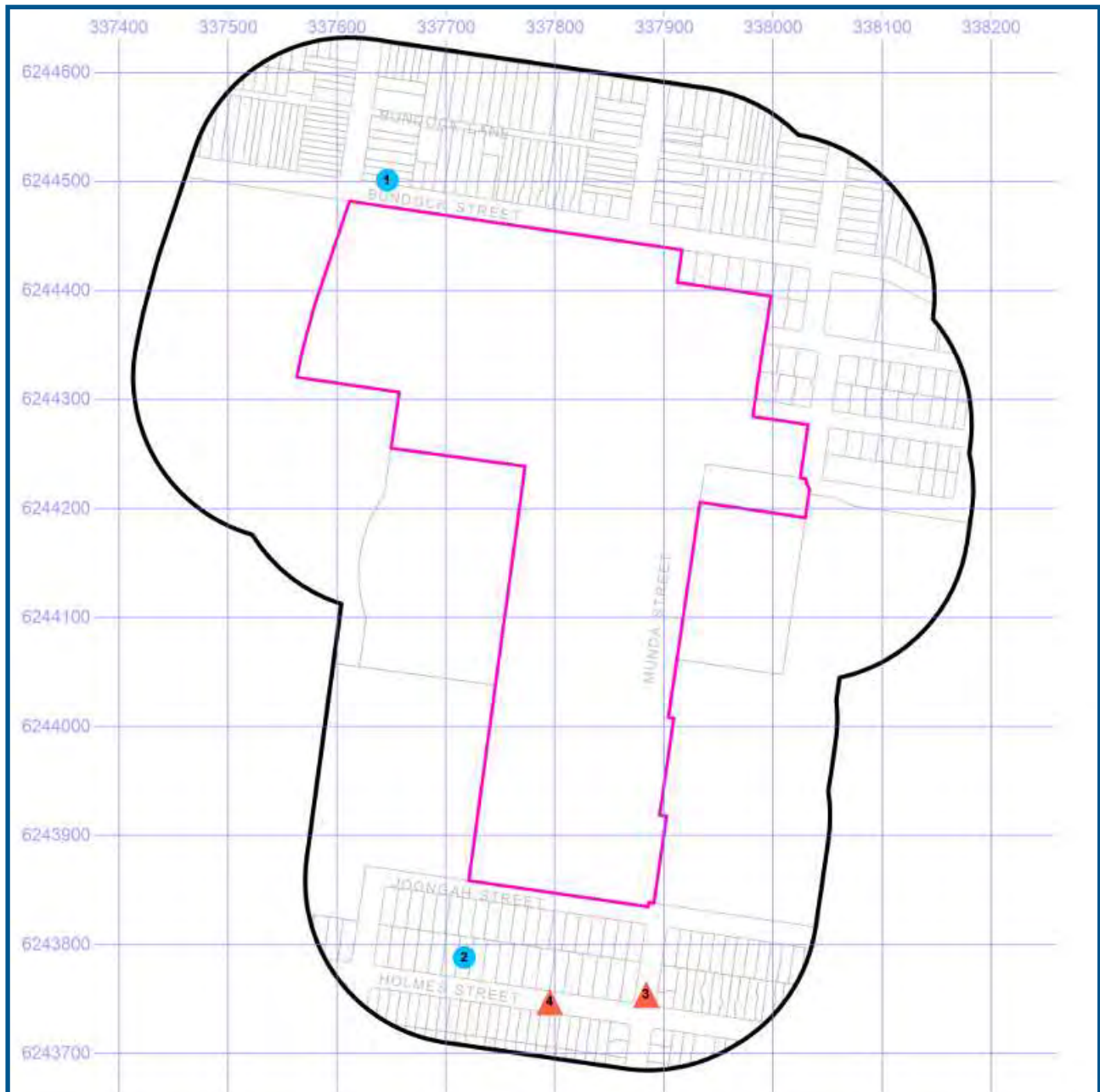
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# Historical Business Directories

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032



## 1961 Business Directory Records



- Site Boundary
- Buffer 150m
- Property Boundaries

- 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

Projected Coordinate System:  
GDA94 MGA Zone 56

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## Historical Business Directories

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

### 1961 Business Directory Records Premise or Road Intersection Matches

Records from the 1961 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	MIXED BUSINESS	Johnston, G. & M. M., 75 Canberra St., Randwick	341366	Premise Match	21m	North West
2	PLUMBERS, GASFITTERS/DRAINLAYERS	Needham, L. H., 96 Holmes St. Kingsford	360190	Premise Match	51m	South

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### 1961 Business Directory Records Road or Area Matches

Records from the 1961 UBD Business Directory, 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.	Location Confidence	Distance to Road Corridor or Area
3	ACCOUNTANTS & AUDITORS	Clorpac, M., 90 Cooper St., Maroubra Junction	264800	Road Match	18m
4	GRAVEL, SAND/SOIL SUPPLIES	Styles Sand Supply Pty. Ltd., Home St., Maroubra	319964	Road Match	89m

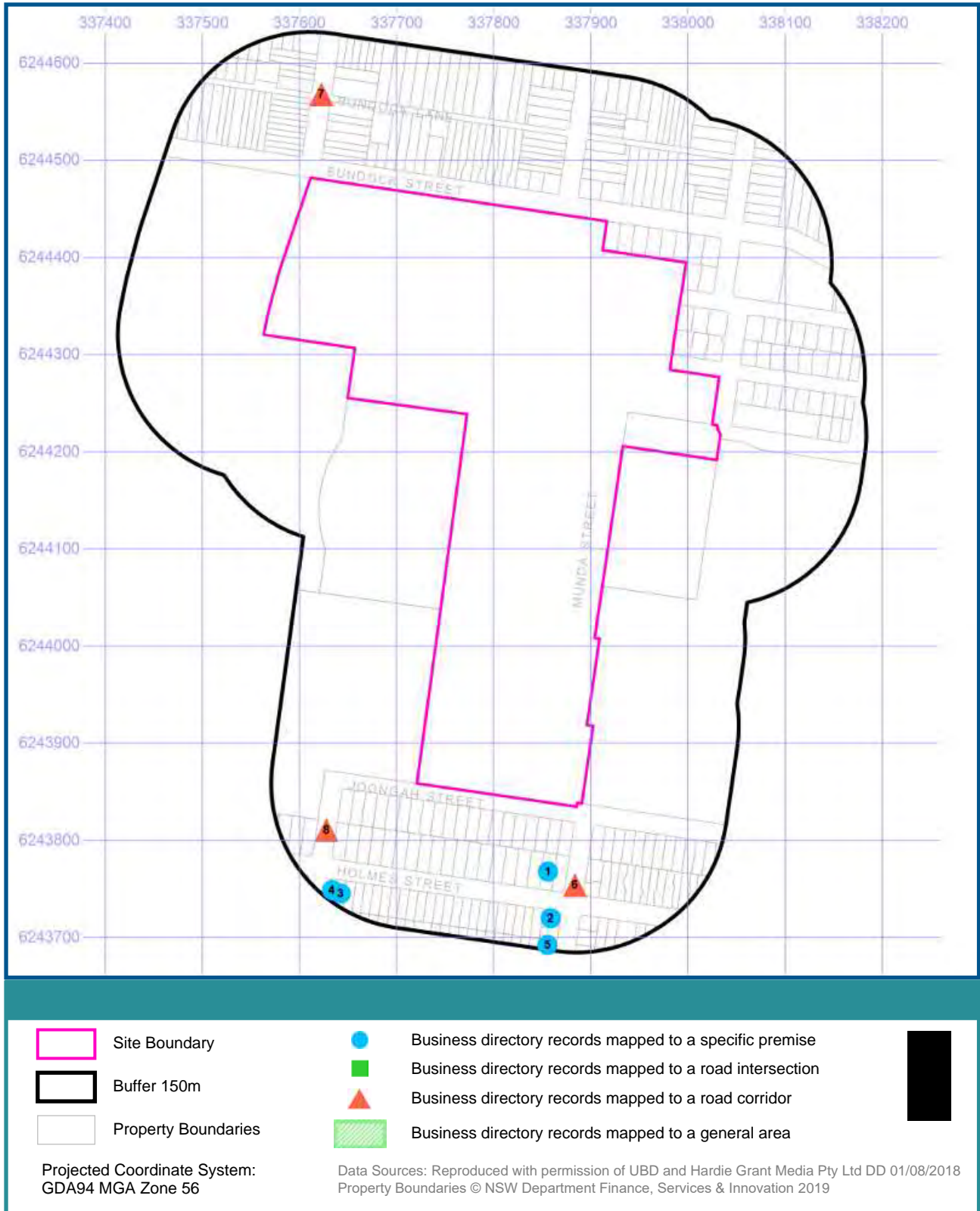
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# Historical Business Directories

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032



## 1950 Business Directory Records





## Historical Business Directories

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

### 1950 Business Directory Records Premise or Road Intersection Matches

Records from the 1950 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	ENGINEERS-GENERAL &/OR MANUFACTURING &/OR MECHANICAL	Zala, E., 118 Holmes St., Kingsford	41461	Premise Match	51m	South
2	DELICATESSENS & SMALLGOODS DEALERS	Hennessy's Cash Grocery, 2 Cooper St., Maroubra	30621	Premise Match	109m	South
	GROCERS-RETAIL	Hennessy's Cash Grocery, 2 Cooper St., Maroubra	57730	Premise Match	109m	South
3	MILK VENDORS	Bruce, A., 31 Holmes St., Kingsford	77655	Premise Match	123m	South
4	TAXIS	Combes, N., 29 Holmes St., Kingsford	107309	Premise Match	128m	South
5	STONE MERCHANTS	Blackburn, T., 6 Cooper St., Maroubra	105781	Premise Match	140m	South

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### 1950 Business Directory Records Road or Area Matches

Records from the 1950 UBD Business Directory, 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.	Location Confidence	Distance to Road Corridor or Area
6	MEDICAL PRACTITIONERS	Conneely, T. G., 97 Cooper St., Maroubra	72658	Road Match	18m
7	FRUITERERS & GREENGROCERS	Ackland, D. H., Canberra St., Randwick	49428	Road Match	21m
	CAKE SHOPS & PASTRYCOOKS	Helena (The), Canberra St., Randwick	16773	Road Match	21m
	HAIRDRESSERS (GENT.'S) &/OR TOBACCONISTS	Young, C., Canberra St., Randwick	60203	Road Match	21m
8	HALLS	Maroubra Masonic Hall, Garden St., Maroubra	60378	Road Match	77m
	SECONDHAND DEALERS	Opportunity Store, Garden St., Maroubra	101263	Road Match	77m

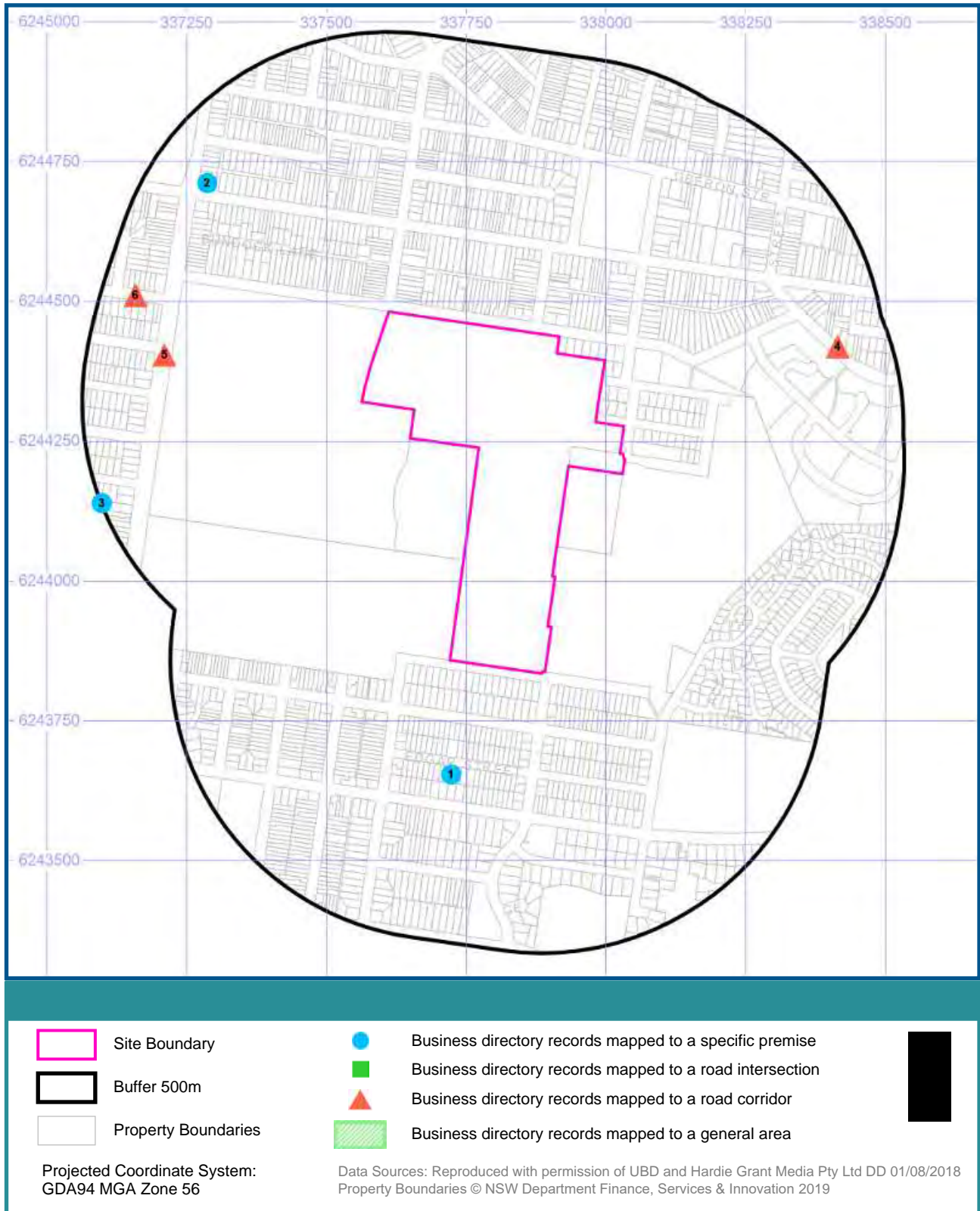
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# Historical Business Directories

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032



## Dry Cleaners, Motor Garages & Service Stations (1948-1993)





# Historical Business Directories

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

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

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	MOTOR GARAGES & ENGINEERS.	Austin E. A. E., 25 Edgar St Kingsford	32718	1962	Premise Match	187m	South
	MOTOR GARAGES & ENGINEERS	Austin, E. A. E., 25 Edgar St. KINGSFORD	346556	1961	Premise Match	187m	South
	MOTOR GARAGES & ENGINEERS.	Austin E. A. E., 25 Edgar St Kingsford	19333	1959	Premise Match	187m	South
	MOTOR GARAGE/ENGINEERS.	Austin E. A. E., 25 Edgar St Kingsford	562	1958	Premise Match	187m	South
	MOTOR GARAGES &/OR ENGINEERS.	Austin E. A. E., 25 Edgar St Kingsford	57184	1956	Premise Match	187m	South
	MOTOR GARAGES &/OR ENGINEERS.	Austin E. A. E., 25 Edgar St Kingsford	44753	1954	Premise Match	187m	South
	MOTOR GARAGES &/OR ENGINEERS.	Austin E. A. E., 25 Edgar St Kingsford	36546	1953	Premise Match	187m	South
	MOTOR GARAGES &/OR ENGINEERS.	Austin E. A. E., 25 Edgar St Kingsford	27464	1952	Premise Match	187m	South
	MOTOR GARAGES &/OR ENGINEERS	Austin, E. A. E., 25 Edgar St., Kingsford	83395	1950	Premise Match	187m	South
	MOTOR GARAGES &/OR ENGINEERS.	Austin E. A. E., 25 Edgar St Kingsford	17732	1948-49	Premise Match	187m	South
2	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	South Randwick Service Station Pty. Ltd., 345 Avoca St., Randwick 2031	34930	1976	Premise Match	379m	North West
	MOTOR GARAGES &/OR ENGINEERS.	South Randwick Service Station Pty. Ltd., 345 Avoca St., Randwick. 2031	59558	1975	Premise Match	379m	North West
	MOTOR GARAGES &/OR ENGINEERS.	South Randwick Service Station Pty. Ltd., 345 Avoca St., Randwick	12923	1972	Premise Match	379m	North West
	MOTOR GARAGES &/OR ENGINEERS.	South Randwick Service Station Pty. Ltd., 345 Avoca St Randwick	62584	1971	Premise Match	379m	North West
	MOTOR GARAGES & ENGINEERS(M6S6)	South Randwick Service Station Pty. Ltd., 345 Avoca St., RANDWICK	338632	1970	Premise Match	379m	North West
	MOTOR GARAGES & ENGINEERS.	South Randwick Service Station Pty. Ltd., 345 Avoca St Randwick	47023	1969	Premise Match	379m	North West
	MOTOR GARAGES & ENGINEERS	South Randwick Service Station Pty. Ltd., 345 Avoca St Randwick	26410	1968	Premise Match	379m	North West
	MOTOR GARAGES & ENGINEERS.	South Randwick Service Station Pty. Ltd., 345 Avoca St Randwick	10903	1967	Premise Match	379m	North West
	MOTOR GARAGES & ENGINEERS.	South Randwick Service Station Pty. Ltd., 345 Avoca St Randwick	60636	1966	Premise Match	379m	North West
	Motor Garages & Engineers	South Randwick Service Station Pty. Ltd., 345 Avoca St. Randwick	123272	1965	Premise Match	379m	North West
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	South Randwick Service Station., 345 Avoca St Randwick	52337	1964	Premise Match	379m	North West
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	South Randwick Service Station., 345 Avoca St Randwick	38603	1962	Premise Match	379m	North West

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
2	MOTOR SERVICE STATIONS—PETROL, OIL, Etc.	South Randwick Service Station, 345 Avoca St. RANDWICK	351100	1961	Premise Match	379m	North West
	MOTOR SERVICE STATIONS-PETROL., OIL, ETC.	South Randwick Service Station., 345 Avoca St Randwick	24496	1959	Premise Match	379m	North West
	MOTOR SERVICE STATIONS-PETROL, ETC.	South Randwick Service Station., 345 Avoca St Randwick S	9839	1958	Premise Match	379m	North West
	MOTOR SERVICE STATIONS-PETROL, ETC.	Frayne C. S. & C. N., 345 Avoca St Randwick	61904	1956	Premise Match	379m	North West
3	MOTOR GARAGES & SERVICE STATIONS.	Simonian S. (Caltex), 702 Anzac Pde., Kingsford. 2032	12145	1990	Premise Match	496m	West
	MOTOR GARAGE & SERVICE STATIONS.	Simonian, S. (Caltex), 702 Anzac Pde, Kingsford. 2032	5565	1989	Premise Match	496m	West
	MOTOR GARAGES & SERVICE STATIONS.	Simonian S. (Caltex), 702 Anzac Pde., Kingsford. 2032	59955	1988	Premise Match	496m	West
	MOTOR GARAGES & SERVICE STATIONS.	Simonian, S. (Caltex), 702 Anzac Pde., Kingsford. 2032	65455	1986	Premise Match	496m	West
	MOTOR GARAGES & SERVICE STATIONS.	Simonian S. (Caltex), 702 Anzac Pde., Kingsford. 2032	45566	1985	Premise Match	496m	West
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Simonian S. (Caltex), 702 Anzac Pde., Kingsford. 2032	34131	1984	Premise Match	496m	West
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Masano J. (Caltex), 702 Anzac Pde., Kingsford 2032	15084	1983	Premise Match	496m	West
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Masano, J. (Caltex), 702 Anzac Pde., Kingsford. 2032.	57154	1982	Premise Match	496m	West
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Masano J., 702 Anzac Pde., Kingsford 2032	3720	1981	Premise Match	496m	West
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Masano, J., 702 Anzac Pde., Kingsford. 2032	58455	1980	Premise Match	496m	West
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Masano J., 702 Anzac Pde., Kingsford. 2032.	45938	1979	Premise Match	496m	West
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Masano, J., 702 Anzac Pde., Kingsford. 2032	50447	1978	Premise Match	496m	West
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Masano. J., 702 Anzac Pde., Kingsford 2032	30439	1976	Premise Match	496m	West
	MOTOR SERVICE STATIONS - PETROL, OIL	Masano, J., 702 Anzac Pde., Kingsford. 2032	61863	1975	Premise Match	496m	West
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Masano G., 704 Anzac Pde Maroubra	16871	1972	Premise Match	496m	West
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Masano J., 702 Anzac Pde Kingsford	16805	1972	Premise Match	496m	West
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Masano G., 704 Anzac Pde Maroubra	2335	1971	Premise Match	496m	West
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Masano J., 702 Anzac Pde Kingsford	2269	1971	Premise Match	496m	West



Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
3	MOTOR SERVICE STATIONS-PETROL,OIL,Etc.	Masano, G., 704 Anzac Pde., MAROUBRA	341306	1970	Premise Match	496m	West
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Baldwin C. S., 702 Anzac Pde Kingsford	50346	1969	Premise Match	496m	West

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

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 GARAGES &/OR ENGINEERS.	Premier Garage & Service Station., Malabar Rd S Coogee	49870	1954	Road Match	317m
	MOTOR GARAGES &/OR ENGINEERS.	Premier Garage & Service Station., Malabar Rd., S. Coogee	32099	1952	Road Match	317m
	MOTOR GARAGES &/OR ENGINEERS	Premier Garage and Service Station, Malabar Rd., South Coogee	84228	1950	Road Match	317m
	MOTOR SERVICE STATIONS-PETROL, Etc.	Premier Garage and Service Station, Malabar Rd., South Coogee	86299	1950	Road Match	317m
5	MOTOR GARAGES & SERVICE STATIONS.	Avoca Rae Service Statio., Avoca St., Randwick. 2031	53548	1988	Road Match	348m
	MOTOR GARAGES & SERVICE STATIONS.	Avoca Rae Service Station, Avoca St., Randwick. 2031	63996	1986	Road Match	348m
	MOTOR GARAGES & SERVICE STATIONS.	Avoca Rae Service Station, Avoca St., Randwick. 2031	39014	1985	Road Match	348m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Avoca Rae Service Station, Avoca St., Randwick. 2031	27620	1984	Road Match	348m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Avoca Road Service Station., Avoca St., Randwick 2031	8978	1983	Road Match	348m
6	MOTOR GARAGES & ENGINEERS.	Paulston's Motor Body Works., Sturt St., Kingsford	19342	1959	Road Match	388m
	MOTOR GARAGES &/OR ENGINEERS.	Paulston's Motor Body Works., Sturt St Kingsford	61267	1956	Road Match	388m
	MOTOR GARAGES &/OR ENGINEERS.	Paulston's Motor Body Works., Sturt St Kingsford	49828	1954	Road Match	388m

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## Aerial Imagery 2019

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032





Aerial Imagery 2018

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032





## Aerial Imagery 2014

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032





## Aerial Imagery 2007

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032





## Aerial Imagery 2000

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032





Aerial Imagery 1991

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032





## Aerial Imagery 1982

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032





# Aerial Imagery 1970

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032





## Aerial Imagery 1965

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032





## Aerial Imagery 1961

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032





## Aerial Imagery 1961

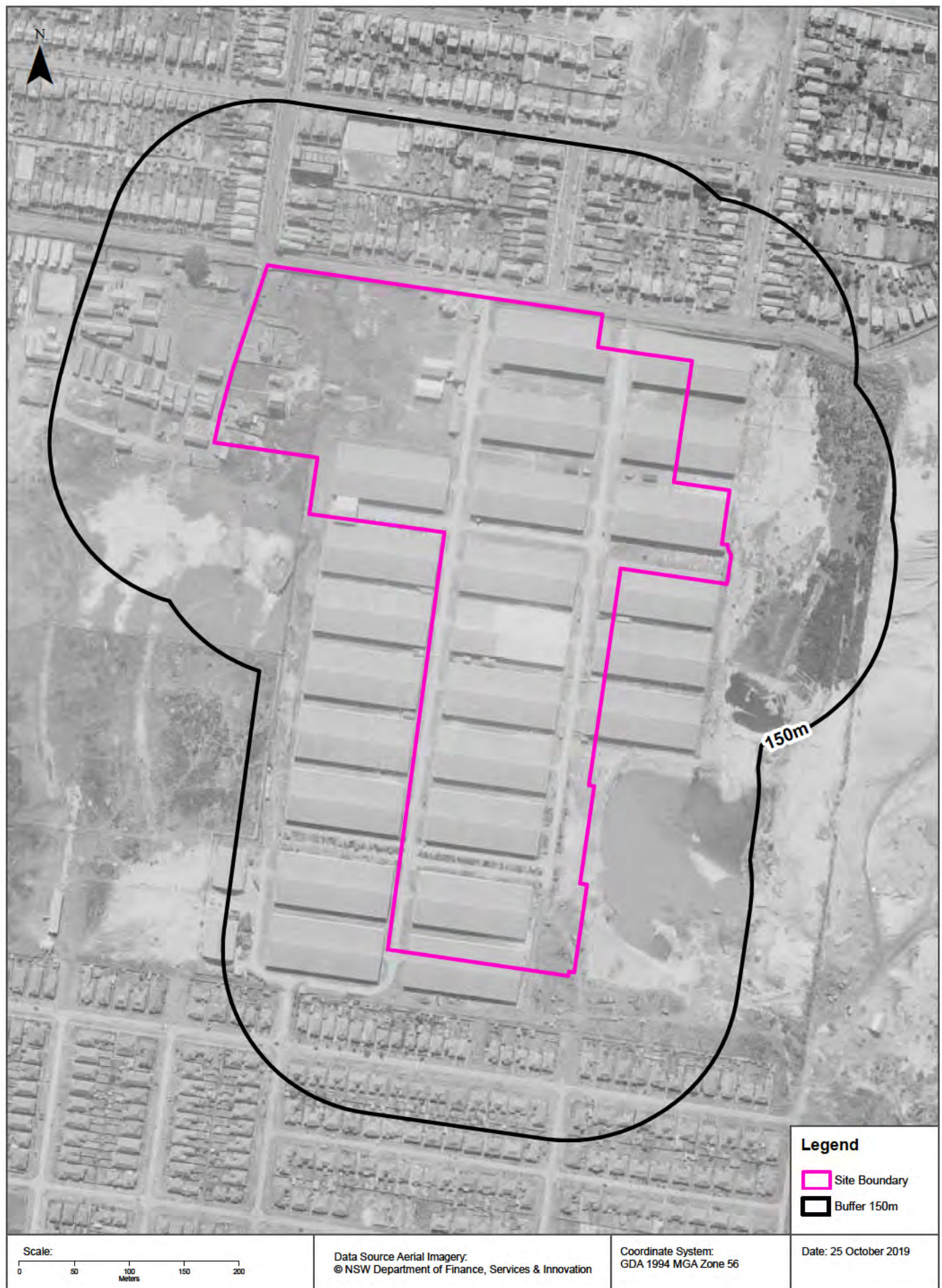
Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032



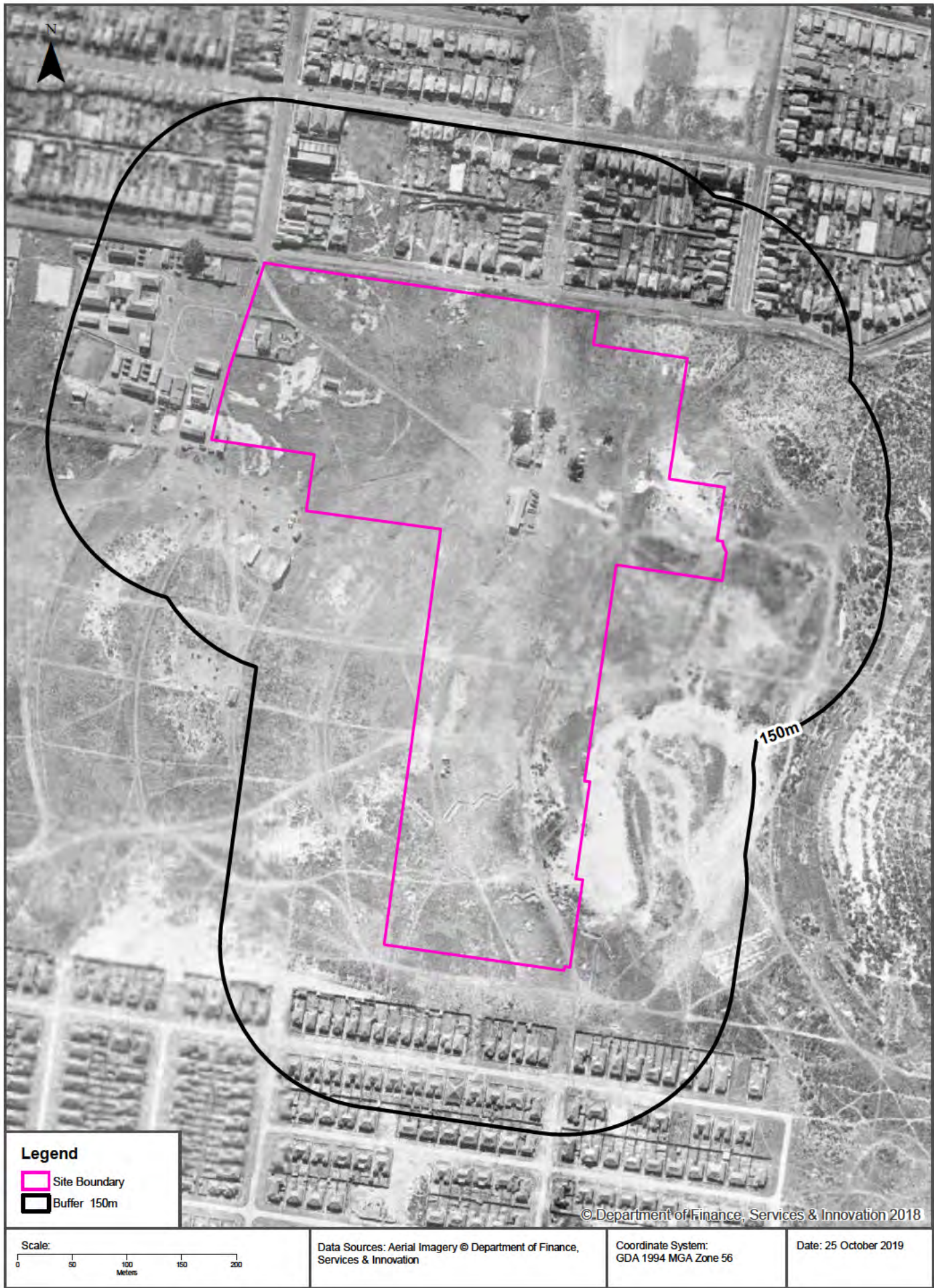


## Aerial Imagery 1955

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032



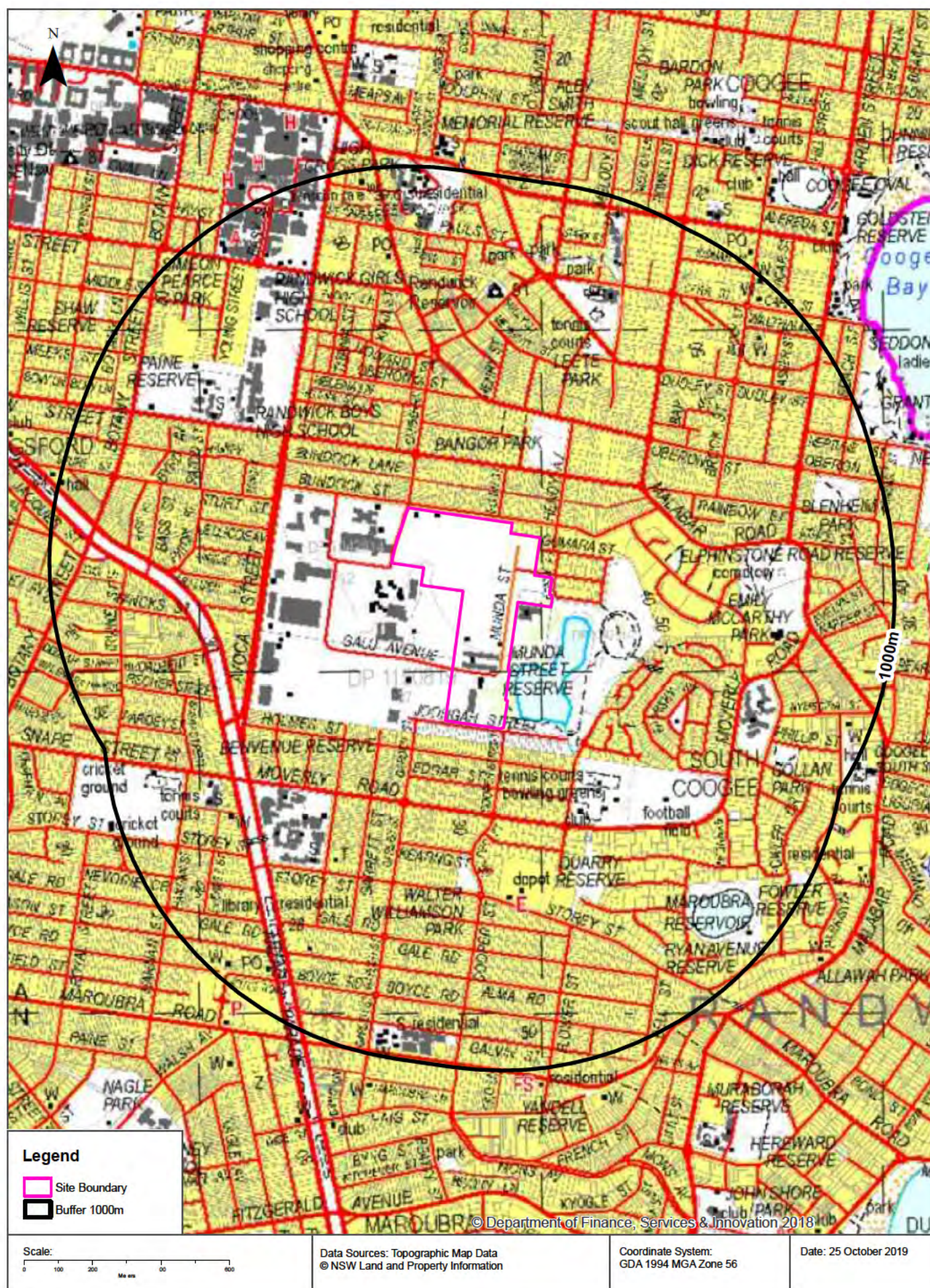






# Topographic Map 2015

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032





Historical Map 1975

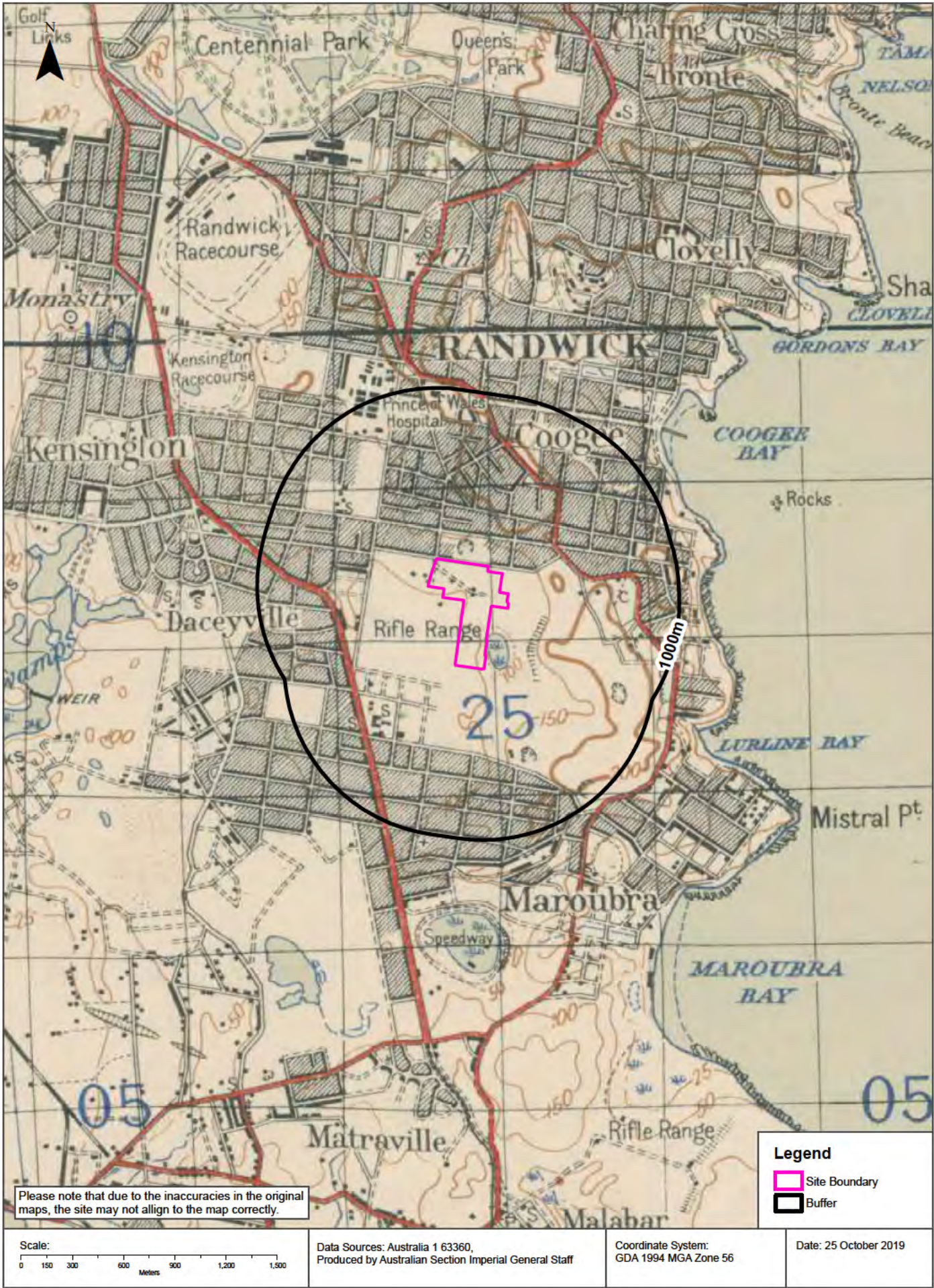
Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032





Historical Map c.1936

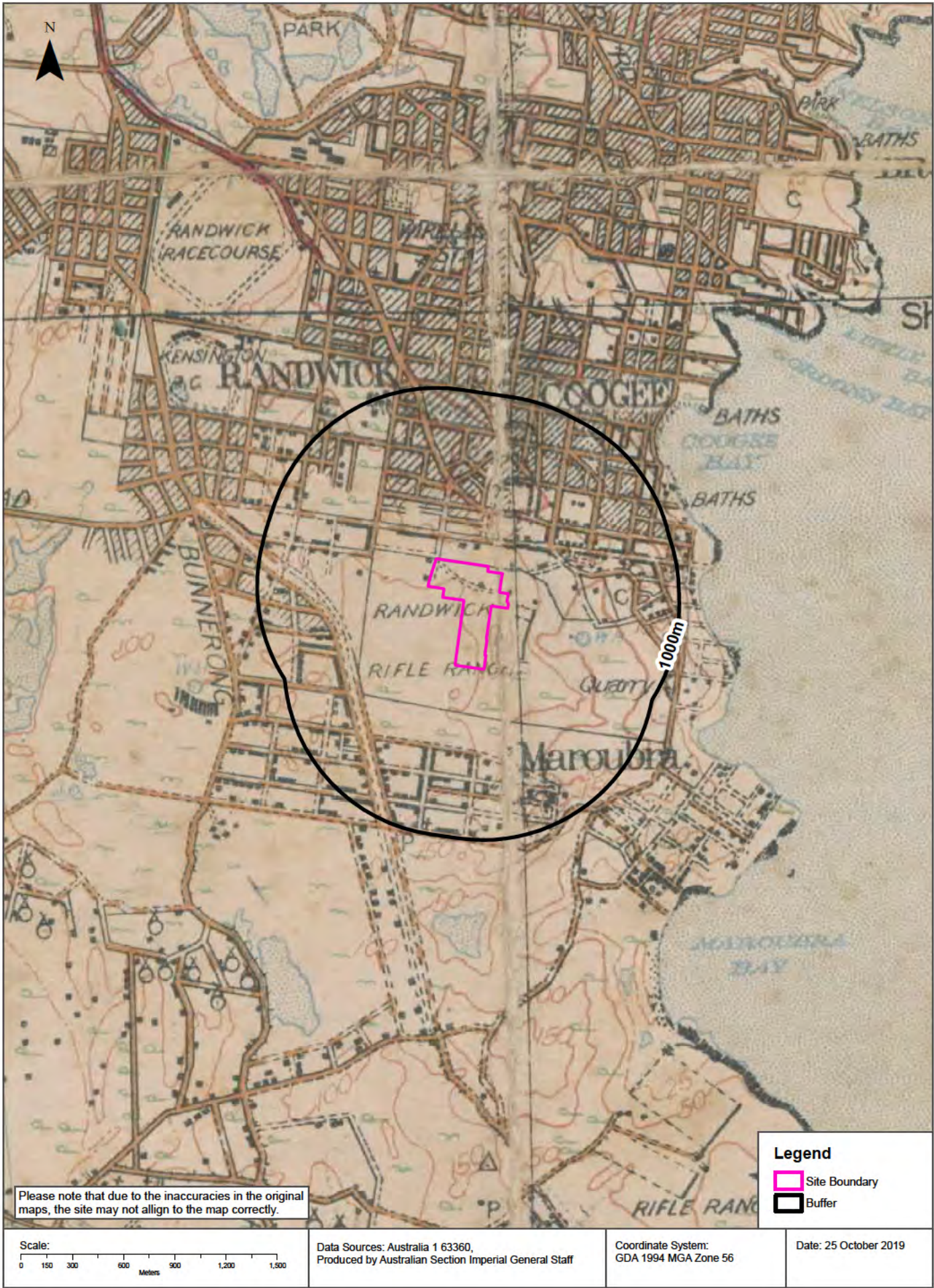
Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032





Historical Map c.1917

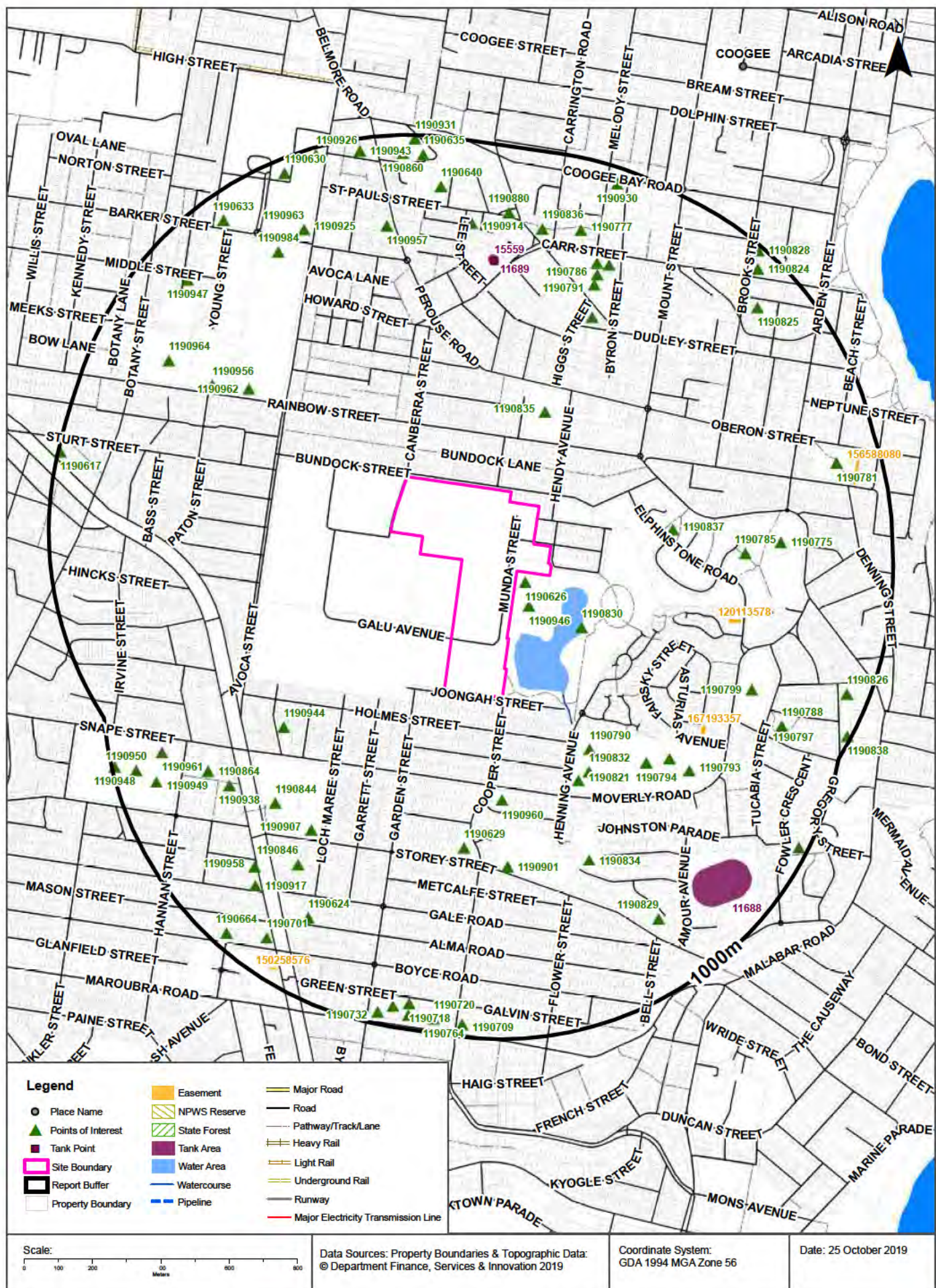
Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032





# Topographic Features

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032





# Topographic Features

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

## Points of Interest

What Points of Interest exist within the dataset buffer?

Map Id	Feature Type	Label	Distance	Direction
1190626	Community Facility	RANDWICK COMMUNITY CENTRE	29m	East
1190946	Park	MUNDA STREET RESERVE	49m	South East
1190830	Park	RANDWICK ENVIRONMENT PARK	177m	South East
1190835	Park	BANGOR PARK	254m	North East
1190790	Sports Court	TENNIS COURTS	297m	South East
1190960	Retirement Village	IVAN COURT	299m	South
1190821	Club	SOUTH COOGEE BOWLING CLUB	330m	South East
1190832	Sports Field	BOWLING GREENS	335m	South East
1190837	Park	ELPHINSTONE ROAD RESERVE	360m	East
1190629	Park	WALTER WILLIAMSON PARK	450m	South
1190794	Sports Field	FOOTBALL FIELD	463m	South East
1190944	Park	BENVENUE RESERVE	483m	South West
1190901	SES Facility	RANDWICK SES	495m	South
1190780	Park	LATHAM PARK	521m	South East
1190962	High School	RANDWICK BOYS HIGH SCHOOL	530m	North West
1190834	Park	QUARRY RESERVE	541m	South
1190847	Park	LEETE PARK	564m	North East
1190907	Primary School	MAROUBRA JUNCTION PUBLIC SCHOOL	566m	South West
1190785	Park	EMILY MCCARTHY PARK	569m	East
1190793	Sports Field	FOOTBALL FIELD	588m	South East
1190844	Combined Primary-Secondary School	LYCEE CONDORCET THE INTERNATIONAL FRENCH SCHOOL OF	596m	South West
1190956	Primary School	RAINBOW STREET PUBLIC SCHOOL	630m	North West
1190791	Sports Court	TENNIS COURTS	653m	North East
1190846	Nursing Home	MAROUBRA SHORES NURSING HOME	668m	South West
1190775	Cemetery	RANDWICK CEMETERY	673m	East
1190799	Primary School	SOUTH COOGEE PUBLIC SCHOOL	678m	South East
1190786	Park	BAKER PARK	684m	North
1190938	Place Of Worship	MAROUBRA SYNAGOGUE	689m	South West
1190831	Sports Field	BOWLING GREEN	715m	North
1190820	Club	COOGEE DIGGERS	723m	North East

Map Id	Feature Type	Label	Distance	Direction
1190864	Primary School	MOUNT SINAI COLLEGE	732m	South West
1190957	Post Office	ST PAULS POST OFFICE	736m	North
1190984	High School	RANDWICK GIRLS HIGH SCHOOL	758m	North West
1190958	Embassy	CONSULATE OF MALAYSIA	760m	South West
1190914	Retirement Village	KOINONIA RETIREMENT VILLAGE	762m	North
1190797	Suburb	SOUTH COOGEE	768m	South East
1190836	Park	Park	775m	North
1190964	Park	PAINE RESERVE	776m	North West
1190624	Community Facility	MAROUBRA SENIOR CITIZENS CENTRE	778m	South West
1190925	Medical Centre	SYDNEY CHILDREN'S COMMUNITY HEALTH CENTRE	784m	North West
1190963	Medical Centre	RANDWICK DEVELOPMENTAL CLINIC TUMBATIN BUILDING	784m	North West
1190777	Park	Park	793m	North
1190829	Park	RYAN AVENUE RESERVE	795m	South East
1190917	Library	BOWEN LIBRARY MAROUBRA	798m	South West
1190788	Park	GOLLAN PARK	808m	South East
1190880	Park	Park	809m	North
1190961	Sports Court	TENNIS COURTS	847m	South West
1190640	Nursing Home	ST BASILS NURSING HOME	856m	North
1190947	Park	SIMEON PEARCE PARK	863m	North West
1190825	Place Of Worship	ST BRIGID'S COOGEE	864m	North East
1190781	Park	BLENHEIM PARK	871m	East
1190949	Sports Field	CRICKET GROUND	885m	South West
1190701	Post Office	MAROUBRA POST OFFICE	894m	South West
1190633	Ambulance Station	RANDWICK AMBULANCE STATION	923m	North West
1190718	Community Home	SOUTHERN CROSS KILDARE APARTMENTS	924m	South
1190950	Park	SNAPE PARK	933m	South West
1190826	Place Of Worship	ST PAUL'S ANGLICAN CHURCH	935m	East
1190712	Primary School	ST AIDAN'S CATHOLIC PRIMARY SCHOOL	938m	South
1190635	Nursing Home	CATHOLIC HEALTHCARE BRIGIDINE HOUSE	944m	North
1190824	Place Of Worship	ST NICOLAS' ANGLICAN CHURCH	945m	North East
1190860	High School	BRIGIDINE COLLEGE RANDWICK	947m	North
1190930	Primary School	COOGEE PUBLIC SCHOOL	952m	North
1190664	Place Of Worship	SALVATION ARMY CHURCH	957m	South West
1190630	Helipad	Helipad	958m	North West
1190716	Retirement Village	SOUTHERN CROSS KILDARE APARTMENTS	958m	South
1190720	Retirement Village	ST BRIGID'S GREEN	958m	South
1190764	Nursing Home	ST BRIGID'S GREEN MAROUBRA	958m	South



Map Id	Feature Type	Label	Distance	Direction
1190732	Place Of Worship	CHURCH OF THE HOLY FAMILY MAROUBRA	963m	South
1190709	Embassy	CONSULATE-GENERAL OF THE REPUBLIC OF INDONESIA	963m	South
1190943	Place Of Worship	GRACEPOINT CHRISTIAN CHURCH	964m	North
1190782	Park	FOWLER RESERVE	973m	South East
1190926	Community Home	PRINCE OF WALES COMMUNITY HEALTH SERVICE	979m	North
1190828	Place Of Worship	COOGEE SYNAGOGUE	986m	North East
1190838	Park	POPPLEWELL PARK	988m	South East
1190931	Retirement Village	STRATHALLEN VILLAGE	989m	North
1190948	Sports Field	CRICKET GROUND	991m	South West
1190617	Community Facility	HOLY TRINITY ANGLICAN CHURCH HALL	994m	West

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

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## Topographic Features

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

### 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
11689	Water	Operational	RANDWICK RESERVOIR	01/09/2013	649m	North
11688	Water	Operational	MAROUBRA RESERVOIR	01/01/2008	769m	South East

### 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
15559	Water	Feature on Previous LPI Tank Area Supply		05/10/2000	662m	North

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
120113578	Primary	Undefined		540m	East
167193357	Primary	Right of way	5.5m	591m	South East
156588080	Primary	Right of way	3m	905m	East
150258576	Primary	Right of way	Variable	954m	South West

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

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## Topographic Features

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

### 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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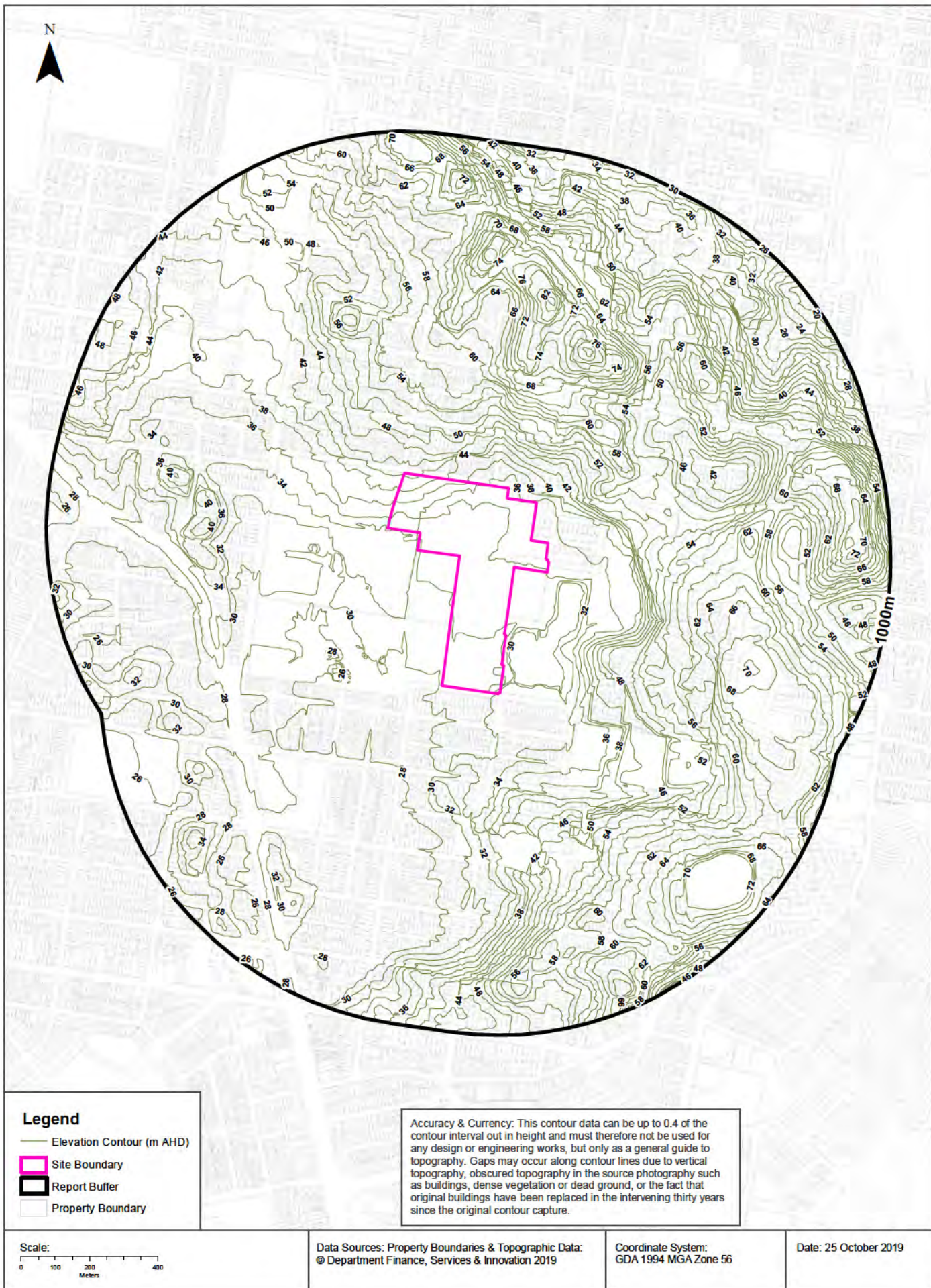
### National Parks and Wildlife Service Reserves

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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## Hydrogeology & Groundwater

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

### Hydrogeology

Description of aquifers on-site:

Description
Porous, extensive highly productive aquifers

Description of aquifers within the dataset buffer:

Description
Porous, extensive aquifers of low to moderate productivity
Porous, extensive highly productive aquifers

Hydrogeology Map of Australia : Commonwealth of Australia (Geoscience Australia)

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### Botany Groundwater Management Zones

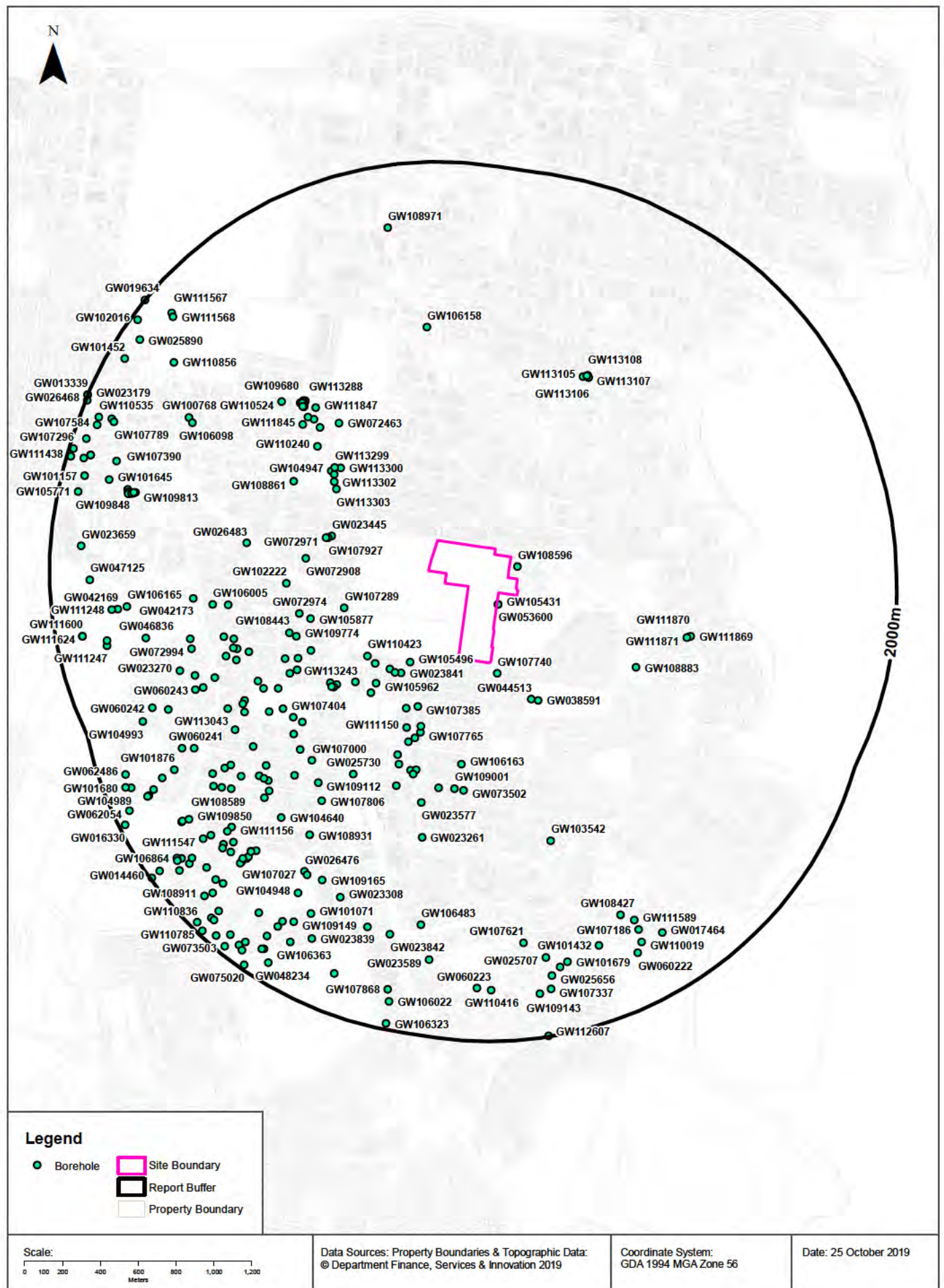
Groundwater management zones relating to the Botany Sand Beds aquifer within the dataset buffer:

Management Zone No.	Restriction	Distance	Direction
N/A	No records in buffer		

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

# Groundwater Boreholes

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032





# Hydrogeology & Groundwater

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

## 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)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW053600	10BL120842, 10BL604569, 10BL604809, 10BL605130, 10WA114691, 10WA117791	Bore	Local Govt	Recreation (groundwater), Test Bore	Recreation (groundwater)		01/04/1981	29.00	30.50	0-500 ppm				9m	Sou h East
GW105431	10BL163345, 10BL164439, 10BL604809, 10WA114723, 10WA117789	Bore		Recreation (groundwater), Test Bore	Recreation (groundwater)		02/08/2004	30.00	30.00		8.10	10.000		9m	Sou h East
GW108596	10BL601365, 10WA114327	Spear	Private	Domestic	Domestic		20/02/2007	16.00	16.00					45m	North East
GW107740	10BL165598, 10WA114001	Spear	Private	Domestic	Domestic		19/10/2005	11.50	11.50	Good	9.00	1.000		72m	Sou h
GW105496	10BL162469, 10WA113434	Bore		Domestic	Domestic		06/10/2003	10.00	10.00					253m	Sou h West
GW044513		Bore	Private		Irrigation		01/01/1959	9.40	9.40					294m	Sou h East
GW023841	10BL017496, 10WA112903	Spear	Private	Domestic	General Use		01/03/1966	4.50	4.60	Good				311m	Sou h West
GW038591	10BL100859, 10CA109595	Bore	Private	Recreation - Low Security	Irrigation		01/12/1955	10.20	10.20	Polluted				325m	Sou h East
GW107385	10BL164899, 10WA113880	Spear	Private	Domestic	Domestic		08/09/2005	9.50	9.50					334m	Sou h West
GW025716	10BL016548, 10WA112823	Spear	Private	Domestic	General Use		01/01/1945	4.80						340m	Sou h West
GW024206	10BL018634, 10WA112963	Spear	Private	Domestic	General Use		01/08/1966	5.40	5.50	Good				364m	Sou h West
GW107594	10BL165650, 10WA114010	Spear	Private	Domestic	Domestic		15/10/2005	10.00	10.00					381m	Sou h 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)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW110 439	10BL602 887, 10WA11 4551	Spear	Private	Domestic	Domestic		24/09/2009	12.00	12.00	Good	6.00	1.000		411m	Sou h
GW024 024	10BL018 394, 10WA11 2945	Spear	Private	Domestic	General Use		01/12/1965	6.00	6.10	Good				438m	Sou h West
GW107 765	10BL165 609, 10WA11 4002	Spear	Private	Domestic	Domestic		19/10/2005	12.00	12.00	Good	9.00	1.000		441m	Sou h
GW105 962	10BL163 248, 10WA11 3544	Bore		Domestic			24/05/2005	14.00						452m	Sou h West
GW1111 50	10BL600 535, 10WA11 4161	Spear	Private	Domestic	Domestic		20/10/2010	12.00	12.00					457m	Sou h West
GW110 423	10BL602 943, 10WA11 4561	Spear	Private	Domestic	Domestic		19/03/2009	12.00	12.00	Other	7.50	1.000		477m	Sou h West
GW108 657	10BL601 314, 10WA11 4317	Spear	Private	Domestic	Domestic		14/03/2007	15.00	15.00					481m	Sou h
GW107 289	10BL165 159, 10WA11 3928	Spear	Private	Domestic	Domestic		17/07/2005	14.03	14.03	Good	10.3 7	1.000		486m	West
GW026 584	10BL019 542, 10WA11 2986	Spear	Private	Domestic	General Use		01/11/1966	6.00	6.10					495m	Sou h West
GW025 545	10BL016 608, 10WA11 2829	Spear	Private	Domestic	General Use		01/11/1965	3.90						515m	Sou h West
GW023 445	10BL016 690, 10WA11 2836, 70WA60 6910	Spear	Private	Domestic, Stock	Domestic		01/11/1965	4.20	4.30	Good				538m	West
GW107 927	10BL600 176, 10WA11 4117	Spear	Private	Domestic	Domestic		28/03/2006	10.00						551m	West
GW106 163	10BL163 219	Bore	Private	Domestic	Domestic		09/07/2004	7.00	7.00					553m	Sou h
GW104 992	10BL160 433, 10WA11 3315	Bore	Private	Domestic	Domestic		24/01/2002	9.00	9.00		6.50	1.000		557m	Sou h West
GW072 971		Spear	Private		Commercial		27/02/1995	9.00	9.00					564m	West
GW113 303	10BL604 336	Bore	School	Monitoring Bore	Monitoring Bore	Dept of Ed - Rainbow St School	01/11/2010	5.20	5.20					598m	North West
GW107 583	10BL165 706, 10WA11 4027	Spear	Private	Domestic	Domestic		16/10/2005	9.50	9.50					602m	Sou h West
GW113 302	10BL604 336	Bore	School	Monitoring Bore	Monitoring Bore	Dept of Ed - Rainbow St School	01/11/2010	5.20	5.20					625m	North West
GW023 265	10BL016 452, 10WA11 2820	Spear	Private	Domestic	General Use		01/01/1955	3.60	3.70	Good				632m	Sou h
GW113 300	10BL604 336	Bore	School	Monitoring Bore	Monitoring Bore	Dept of Ed - Rainbow St School	01/11/2010	5.20	5.20					635m	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)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW108710	10BL601636, 10WA114394	Spear	Private	Domestic	Domestic		19/05/2007	15.55	15.56	Good	10.67	1.000		642m	Sou h West
GW108788	10BL601624, 10WA114391	Spear	Private	Domestic	Domestic		16/04/2007	14.64	14.64		10.68	1.000		645m	Sou h
GW113301	10BL604336	Bore	School	Monitoring Bore	Monitoring Bore	Dept of Ed - Rainbow St School	01/11/2010	5.20	5.20					646m	North West
GW072908		Spear	Private		Domestic		19/02/1995	8.00	8.00					649m	West
GW113245	10BL602802	Bore	Private	Monitoring Bore	Monitoring Bore	Caltex	10/11/2008	13.00	13.00					655m	Sou h West
GW111195	10BL165137, 10WA113924	Bore	Private	Domestic	Domestic		01/01/2005	18.28	18.28		9.14	0.046		658m	Sou h
GW113299	10BL604336	Well	Private	Monitoring Bore	Monitoring Bore		01/11/2010	5.20						663m	North West
GW104947	10BL160513	Bore		Test Bore	Test Bore		21/02/2002	5.00	5.00	210	2.71	0.650		668m	North West
GW105877	10BL162678, 10WA113472	Bore		Domestic			09/05/2005							671m	West
GW113244	10BL602802	Bore	Private	Monitoring Bore	Monitoring Bore	Caltex	10/11/2008	13.00	13.00					673m	Sou h West
GW113242	10BL602802	Bore	Private	Monitoring Bore	Monitoring Bore	Caltex	10/11/2008	13.00	13.00					684m	Sou h West
GW109001	10BL601183, 10WA114295	Spear	Private	Domestic	Domestic		09/07/2008	15.55		Good	15.55	1.000		686m	Sou h
GW113243	10BL602802	Bore	Private	Monitoring Bore	Monitoring Bore	Caltex	10/11/2008	13.00	13.00					687m	Sou h West
GW073502	10BL157286, 10WA113133	Spear	Private	Domestic	Domestic		04/11/1995	11.30	11.30	Good				688m	Sou h
GW101330	10BL158408, 10WA113230	Spear	Private	Domestic	Domestic		16/12/1997	9.00	9.00					693m	Sou h
GW072974		Bore	Private		Domestic		06/05/1995	10.00	10.00					716m	West
GW108883	10BL600582, 10BL602094, 10WA109511	Bore	School	Recreation (groundwater), Test Bore	Recreation (groundwater)		30/05/2008	210.00	210.00	272	55.80	0.200		737m	Sou h East
GW108448	10BL601046, 10WA114271	Spear	Private	Domestic	Domestic		19/01/2007	16.00	16.00					747m	West
GW109055	10BL602146, 10WA114451	Spear	Private	Domestic	Domestic		15/07/2008	15.86		Good	7.93	1.000		749m	Sou h
GW102222	10BL159077, 10WA113275	Spear	Private	Domestic	Domestic		11/03/1999	9.50	9.50					752m	West
GW109774	10BL165829, 10WA114047	Spear	Private	Domestic	Domestic		01/01/2005	10.00			3.00	0.500		778m	West
GW023577	10BL017473, 10WA112900	Spear	Private	Domestic	General Use		01/03/1966	3.60	3.70	Good				788m	Sou h

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)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW108 443	10BL600 984, 10WA11 4259	Spear	Private	Domestic	Domestic		12/01/2007	14.50	14.50		8.00			802m	West
GW110 240	10BL600 416, 10BL602 332, 10WA11 4779	Bore	Private	Recreation (groundwater), Stock, Test Bore	Recreation (groundwater)		12/11/2008	150.00	150.00	100	16.50	0.500		803m	North West
GW072 463	10BL156 227, 10WA11 4625	Bore	Private	Industrial	Industrial		14/11/1994	43.00	43.00		8.60	1.870		806m	North West
GW108 861	10BL164 832, 10BL601 893, 10WA10 9499	Bore	Local Govt	Recreation (groundwater), Test Bore	Recreation (groundwater)		08/05/2008	114.00	114.00		20.00	2.210		818m	North West
GW025 730	10BL016 420, 10WA11 2814	Spear	Private	Domestic	General Use		01/11/1965	0.00	6.40	Good				827m	Sou h West
GW109 769	10BL165 796, 10WA11 4044	Spear	Private	Domestic	Domestic		01/01/2005	8.00			2.00	2.500		828m	West
GW102 294	10BL159 092, 10WA11 3276	Spear	Private	Domestic	Domestic		06/03/1999	10.00	10.00					851m	Sou h West
GW111 844	10BL602 843	Bore	Local Govt	Monitoring Bore	Monitoring Bore		11/08/2009	4.80	4.80		2.67			859m	North West
GW101 883	10BL157 490, 10WA11 3161	Bore		Domestic	Domestic		26/02/1996	10.00	10.00					887m	West
GW042 165		Spear	NSW Office of Water		Monitoring Bore, Stock		13/02/1975						25.50	888m	Sou h West
GW107 578	10BL164 156, 10WA11 3741	Spear	Private	Domestic	Domestic		10/11/2004	16.47	16.47	Good	12.81	1.000		892m	Sou h West
GW111 846	10BL602 843	Bore	Local Govt	Monitoring Bore	Monitoring Bore		11/08/2009	5.60	5.60		2.94			911m	North West
GW029 354	10BL019 785, 10WA11 2993	Bore	Private	Industrial	Industrial		01/08/1968	37.70	37.80					923m	Sou h West
GW111 871	10BL602 809	Bore	Private	Monitoring Bore	Monitoring Bore		11/11/2008	10.60	10.60					926m	East
GW111 845	10BL602 843	Bore	Local Govt	Monitoring Bore	Monitoring Bore		11/08/2009	3.00	3.00		2.69			936m	North West
GW111 870	10BL602 809	Bore	Private	Monitoring Bore	Monitoring Bore		11/11/2008	12.00	12.00					940m	East
GW107 000	10BL163 006, 10WA11 3518	Spear	Private	Domestic	Domestic		16/04/2005	9.50	9.50					941m	Sou h West
GW017 851	10BL008 581	Bore	Private	Commercial	Commercial		01/03/1958	4.50	4.60					941m	North West
GW111 869	10BL602 809	Bore	Private	Monitoring Bore	Monitoring Bore		11/11/2008	12.50	12.50					945m	East
GW111 847	10BL602 843	Bore	Local Govt	Monitoring Bore	Monitoring Bore		11/08/2009	5.00	5.00		3.77			948m	North West
GW110 522	10BL601 432, 10WA11 4346	Spear	Private	Domestic	Domestic		24/10/2009	12.00	12.00	Good	6.00	1.000		957m	Sou h West



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GW107404	10BL164764, 10BL165185, 10WA114739	Bore		Recreation (groundwater), Test Bore	Irrigation		18/03/2005	32.00	32.00	Good	12.40	1.000		961m	Sou h West
GW027616	10BL019784, 10WA112992	Bore	Private	Industrial	Industrial		01/08/1967	32.60	32.60					962m	Sou h West
GW073458		Bore	Private		Domestic		03/10/1995	16.50	16.50	Good				964m	Sou h West
GW023261	10BL016689, 10WA112835	Spear	Private	Domestic	General Use		01/11/1965	5.40	5.50	Good				967m	Sou h
GW026483		Spear	Private		General Use		01/09/1966	4.80	4.90					969m	West
GW109112	10BL602317, 10WA114485	Spear	Private	Domestic	Domestic		24/07/2008	14.00						990m	Sou h West
GW112857	10BL603083	Bore	Private	Monitoring Bore	Monitoring Bore		05/05/2009	5.20	5.20					995m	North West
GW103542	10BL158194	Bore		Monitoring Bore	Monitoring Bore		01/01/1997	5.00	5.00		1.50			996m	Sou h
GW112856	10BL603083	Bore	Private	Monitoring Bore	Monitoring Bore		14/05/2009	5.00	5.00					998m	North West
GW112858	10BL603083	Bore	Private	Monitoring Bore	Monitoring Bore		14/05/2009	3.50	3.50					999m	North West
GW112855	10BL603083	Bore	Private	Monitoring Bore	Monitoring Bore		05/05/2009	6.50	6.50		2.23			1000m	North West
GW113288	10BL604337	Bore	Private	Monitoring Bore	Monitoring Bore	7-Eleven - Randwick	01/05/2010	4.00	4.00					1010m	North West
GW113287	10BL604337	Bore	Private	Monitoring Bore	Monitoring Bore	7-Eleven - Randwick	01/05/2010	3.90	3.90		2.50			1013m	North West
GW109681	10BL602763, 10WA109553	Well	Private	Groundwater Remediation	Groundwater Remediation		13/10/2008	6.00	6.00					1014m	North West
GW111554	10BL602666	Bore	Private	Monitoring Bore	Monitoring Bore		03/09/2008	4.00	4.00		2.58			1015m	North West
GW113105	10BL602800	Bore	Private	Monitoring Bore	Monitoring Bore	Caltex - Coogee	18/11/2008	4.90	4.90					1018m	North East
GW109679	10BL602763, 10WA109553	Well	Private	Groundwater Remediation	Groundwater Remediation		13/10/2008	6.00	6.00					1019m	North West
GW113289	10BL604337	Bore	Private	Monitoring Bore	Monitoring Bore	7-Eleven - Randwick	01/05/2010	4.00	4.00					1020m	North West
GW109680	10BL602763, 10WA109553	Well	Private	Groundwater Remediation	Groundwater Remediation		14/10/2008	5.50	5.50					1024m	North West
GW113107	10BL602800	Bore	Private	Monitoring Bore	Monitoring Bore	Caltex - Coogee	20/07/2009	8.50	8.50					1029m	North East
GW113106	10BL602800	Bore	Private	Monitoring Bore	Monitoring Bore	Caltex - Coogee	18/11/2008	5.50	5.50					1030m	North East
GW113109	10BL602800	Bore	Private	Monitoring Bore	Monitoring Bore	Caltex - Coogee	23/07/2009	3.50	3.50					1033m	North East
GW027615	10BL019783, 10WA112991	Bore	Private	Industrial	Industrial		01/07/1967	36.20	36.30					1037m	Sou h West
GW113108	10BL602800	Bore	Private	Monitoring Bore	Monitoring Bore	Caltex - Coogee	23/07/2009	7.00	7.00					1037m	North East
GW029355	10BL019786	Bore	Private	Industrial	Industrial		01/07/1968	28.90	29.00					1038m	Sou h West
GW025540	10BL016659, 10WA112833	Spear	Private	Domestic	General Use		01/12/1965	4.80	4.90	Good				1039m	West

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GW107806	10BL164562, 10WA113811	Spear	Private	Domestic	Domestic		18/12/2005	9.50	9.50					1043m	Sou h West
GW023989	10BL018138, 10WA112938	(Unknown)	Private	Domestic	General Use		01/04/1966	6.70	6.70	Fresh				1063m	Sou h West
GW112525	10BL600682, 10BL602307, 10WA118709	Bore	Private	Industrial, Test Bore	Industrial	Orara Ltd - Bore 13	16/10/2008	30.00	30.00		10.60			1064m	West
GW106661	10BL164001, 10WA113719	Spear	Private	Domestic	Domestic		10/10/2004	15.25	15.25		8.23	1.000		1071m	West
GW108472	10BL601127, 10WA114288	Spear	Private	Domestic	Domestic		06/01/2007	16.00	16.00					1087m	West
GW108822	10BL165672, 10WA114016	Spear	Private	Domestic	Domestic		12/12/2006	14.00	14.00	Good		1.000		1089m	West
GW110524	10BL601622, 10WA109195	Bore	Private	Domestic	Domestic		18/11/2009	1.50	1.50					1100m	North West
GW106752	10BL164167, 10WA113745	Spear	Private	Domestic	Domestic		30/10/2004	9.50	9.50					1105m	West
GW108394	10BL600558, 10WA114165	Bore	Private	Domestic	Domestic		26/10/2006	16.00	16.00					1117m	West
GW106158	10BL162658, 10WA113466	Bore		Domestic			29/06/2005							1126m	North
GW023529	10BL016955, 10WA112853	Spear	Private	Domestic	General Use		01/12/1965	6.70	6.70	Good				1133m	West
GW108498	10BL164824	Spear	Private	Domestic	Domestic		22/01/2006	18.00	18.00					1148m	Sou h West
GW106005	10BL163101, 10WA113526	Spear	Private	Domestic	Domestic		20/05/2004	12.29	12.29		7.93	1.000		1150m	West
GW110956	10BL601399, 10WA114338	Spear	Private	Domestic	Domestic		01/01/2007	12.19	12.19					1158m	West
GW111144	10BL601072, 10WA114279	Spear	Private	Domestic	Domestic		16/01/2007	8.00	8.00		4.00	0.500		1160m	Sou h West
GW104829	10BL161410, 10WA113337	Bore	Private	Domestic	Domestic		10/04/2003	10.00	10.00					1161m	Sou h West
GW013436	10BL006753, 10WA112788	Bore	Private	Industrial	Industrial		01/11/1955	34.30	34.30					1162m	Sou h West
GW108045	10BL600265, 10WA114131	Spear	Private	Domestic	Domestic		09/06/2006	19.00	19.00					1178m	Sou h West
GW108172	10BL600469, 10WA114153	Spear	Private	Domestic	Domestic		07/06/2006	18.00	18.00					1193m	Sou h West



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GW107829	10BL165411, 10WA113974	Spear	Private	Domestic	Domestic		24/02/2006	10.00	10.00					1205m	Sou h West
GW108931	10BL601452, 10WA114353	Spear	Private	Domestic	Domestic		18/06/2008	14.95		Good	10.68	1.000		1219m	Sou h West
GW108978	10BL602118, 10WA114444	Spear	Private	Domestic	Domestic		27/06/2008	16.50						1220m	Sou h West
GW108430	10BL600917, 10WA114243	Spear	Private	Domestic	Domestic		04/01/2007	18.00	18.00					1221m	Sou h West
GW026364	10BL018269	Bore	Private	Industrial	Industrial		01/08/1966	37.30	37.30	Good				1235m	Sou h West
GW113043	10BL602360, 10WA114497	Bore	Private	Domestic	Domestic		22/01/2008	12.00	12.00		9.00	0.250		1244m	Sou h West
GW042173		Spear	Local Govt		Stock								24.70	1248m	West
GW104640	10BL161217, 10BL600057, 10WA114088	Bore	Private	Domestic	Domestic		30/01/2003	10.00	10.00					1256m	Sou h West
GW023991	10BL018144, 10WA112940	Spear	Private	Domestic	General Use		01/05/1966	5.70	5.80	Good				1260m	West
GW111811	10BL601030, 10WA114267	Spear	Private	Domestic	Domestic		05/09/2012	16.00	16.00					1261m	Sou h 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	1305m	West
GW023983	10BL016020, 10WA112803	Bore	Private	Industrial	Industrial		01/11/1965	38.50	38.60	Good				1306m	Sou h West
GW072994	10BL156371, 10WA113044	Bore	Private	Domestic	Domestic		20/08/1995	9.50	9.50					1315m	West
GW025709	10BL015091	Bore	Private	Industrial	Industrial		01/10/1965	37.30	37.40					1325m	Sou h West
GW101069	10BL158216, 10WA113205	Spear	Private	Domestic	Domestic		11/10/1997	10.00	10.00					1338m	West
GW101072	10BL158251, 10WA113211	Spear	Private	Domestic	Domestic		11/11/1997	10.00	10.00					1350m	West
GW107933	10BL600191, 10WA114120	Spear	Private	Domestic	Domestic		17/04/2006	17.00	17.00					1361m	Sou h West
GW109165	10BL602398, 10WA114505	Spear	Private	Domestic	Domestic		05/08/2008	12.00						1374m	Sou h West
GW060243	10BL132429, 10WA114645	Bore	Local Govt	Recreation (groundwater)	Industrial, Recreation (groundwater)		01/05/1973	33.50						1379m	West

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GW108 589	10BL601 120, 10WA11 4287	Spear	Private	Domestic	Domestic		11/03/2007	18.00	18.00					1382m	Sou h West
GW026 476	10BL018 975, 10WA11 2977	Spear	Private	Domestic	General Use		01/09/1966	5.10	5.20	Good				1390m	Sou h West
GW025 552	10BL016 417, 10WA11 2812	Spear	Private	Domestic	General Use		01/01/1959	5.10	5.20					1396m	Sou h West
GW023 308	10BL017 211, 10WA11 2873	Spear	Private	Domestic	General Use		01/11/1965	2.80		Good				1408m	Sou h West
GW023 270	10BL016 732, 10WA11 2840	Spear	Private	Domestic, General Use	General Use			7.00	7.00					1413m	West
GW108 669	10BL601 534, 10WA11 4369	Spear	Private	Domestic	Domestic		30/03/2007	16.00	16.00					1423m	Sou h West
GW106 483	10BL163 971, 10WA11 3711	Spear	Private	Domestic	Domestic		12/10/2004	5.00	5.00					1423m	Sou h
GW108 670	10BL601 524, 10WA11 4368	Bore	Private	Domestic	Domestic		20/04/2007	16.00	16.00					1432m	Sou h West
GW106 098	10BL162 313, 10WA11 3401	Bore	Private	Domestic	Domestic		22/01/2004	9.50	9.50					1434m	North West
GW108 671	10BL601 523, 10WA11 4367	Bore	Private	Domestic	Domestic		31/03/2007	15.00	15.00					1457m	Sou h West
GW100 768	10BL157 198, 10WA11 3124	Bore	Private	Domestic	Domestic		01/10/1995	17.39	17.39	Good		0.500		1462m	North West
GW072 907		Bore	Private		Domestic		07/06/1995	10.00	10.00					1472m	Sou h West
GW101 008	10BL156 974, 10WA11 3093	Spear	Private	Domestic	Domestic		30/08/1995	9.00	9.00					1474m	Sou h West
GW1111 56	10BL601 750, 10WA11 4411	Spear	Private	Domestic	Domestic		20/10/2010	12.00	12.00					1492m	Sou h West
GW107 621	10BL165 717, 10WA11 4029	Spear	Private	Domestic	Domestic		15/11/2005	10.00	10.00					1492m	Sou h
GW108 963	10BL164 259, 10WA11 3767	Spear	Private	Domestic	Domestic		26/06/2008	11.50						1495m	Sou h West
GW026 786	10BL016 244	(Unknown)	Private	Industrial	Industrial		01/10/1965	13.10	13.10					1497m	Sou h West
GW101 735	10BL157 149, 10WA11 3119	Bore		Domestic	Domestic		10/10/1995	10.00	10.00					1499m	Sou h
GW104 948	10BL160 514	Bore		Test Bore	Test Bore		20/02/2002	7.00	7.00	120	4.35	0.300		1501m	Sou h West
GW108 427	10BL600 890, 10WA11 4238	Spear	Private	Domestic	Domestic		04/01/2007	8.00	8.00					1503m	Sou h East



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GW023 842	10BL017 532, 10WA11 2913	Spear	Private	Domestic	General Use		01/01/1966	7.60	7.60	Good				1505m	Sou h
GW111 646	10BL163 157, 10WA11 3533	Bore	Private	Domestic	Domestic		20/04/2004	15.00	15.00					1524m	Sou h West
GW110 871	10BL601 616, 10WA11 4390	Spear	Private	Domestic	Domestic		01/01/2007	8.00			2.00	2.500		1524m	Sou h West
GW046 836	10BL107 197, 10BL132 425, 10WA11 4639	Bore	Local Govt	Recreation (groundwater), Test Bore	Industrial, Recreation (groundwater)		01/10/1970	37.80	37.80					1531m	West
GW060 241	10BL132 427, 10WA11 4641	Bore	Local Govt	Recreation (groundwater)	Industrial, Recreation (groundwater)		01/05/1973	33.50						1533m	Sou h West
GW108 867	10BL600 746, 10WA11 4210	Spear	Private	Domestic	Domestic		01/01/1980	14.00			10.00	0.500		1534m	Sou h West
GW107 719	10BL162 983, 10WA11 3516	Spear	Private	Domestic	Domestic		01/06/2005	9.50	9.50					1538m	Sou h West
GW072 905		Bore	Private		Domestic		20/05/1995	10.00	10.00					1552m	West
GW107 044	10BL162 219, 10WA11 3366	Spear	Private	Domestic	Domestic		18/05/2005	9.50	9.50					1554m	Sou h West
GW101 071	10BL158 250, 10WA11 3210	Spear	Private	Domestic	Domestic		23/10/1997	6.50	6.50					1558m	Sou h West
GW111 589	10BL600 781, 10WA11 4217	Spear	Private	Domestic	Domestic		01/01/2007	7.00	7.00					1562m	Sou h East
GW107 027	10BL163 111, 10WA11 3527	Spear	Private	Domestic	Domestic		05/05/2005	9.50	9.50					1570m	Sou h West
GW105 765	10BL162 566, 10WA11 3449	Bore	Private	Domestic	Domestic		03/02/2004	9.50	9.50					1578m	Sou h West
GW107 369	10BL165 547, 10WA11 3990	Spear	Private	Domestic	Domestic		23/09/2005	10.00	10.00					1580m	Sou h West
GW108 572	10BL601 380, 10WA11 4333	Spear	Private	Domestic	Domestic		27/03/2007	18.00	18.00					1580m	Sou h West
GW025 707	10BL016 427, 10WA11 2817	Spear	Private	Domestic	General Use		01/12/1964	5.10	5.20					1586m	Sou h
GW107 587	10BL165 680, 10WA11 4017	Spear	Private	Domestic	Domestic		01/11/2005	9.50	9.50					1597m	Sou h West
GW109 813	10BL601 905	Well	Private	Monitoring Bore	Monitoring Bore		16/05/2007	9.00	9.00					1598m	West
GW106 165	10BL163 192, 10WA11 3536	Bore		Domestic			29/06/2005							1600m	West

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GW023 589	10BL017 644, 10WA11 2922	Spear	Private	Domestic	General Use		01/02/1966	3.60	3.70	Fair				1601m	Sou h
GW101 432	10BL158 221, 10WA11 3207	Spear	School	Domestic	Domestic		01/10/1997	7.00	7.00					1603m	Sou h
GW106 944	10BL164 904, 10WA11 3881	Spear	Private	Domestic	Domestic		11/04/2005	16.77	16.78	Good	12.8 1	1.000		1606m	Sou h West
GW023 612	10BL017 351, 10WA11 2893	Spear	Private	Domestic	General Use		01/01/1966	5.10	5.20	Good				1606m	West
GW109 849	10BL601 020	Bore	Private	Monitoring Bore	Monitoring Bore		09/08/2006	8.50	8.50		6.10			1608m	West
GW101 876	10BL157 470, 10WA11 3160	Bore		Domestic	Domestic		05/02/1996	9.50	9.50					1610m	Sou h West
GW109 810	10BL601 905	Well	Private	Monitoring Bore	Monitoring Bore		17/05/2007	9.00	9.00					1615m	West
GW107 186	10BL163 245, 10WA11 3542	Spear	Private	Domestic	Domestic		15/06/2005	7.00	7.00					1617m	Sou h East
GW109 809	10BL601 905	Well	Private	Monitoring Bore	Monitoring Bore		18/05/2007	9.00	9.00					1625m	West
GW060 242	10BL132 428, 10WA11 4643	Bore	Local Govt	Recreation (groundwater )	Industrial, Recreation (groundwater r)		01/05/1973	33.50						1627m	West
GW109 848	10BL601 020	Bore	Private	Monitoring Bore	Monitoring Bore		08/08/2006	8.70	8.70		6.40			1627m	West
GW109 847	10BL601 020	Bore	Private	Monitoring Bore	Monitoring Bore		07/08/2006	8.50	8.50		6.80			1632m	West
GW101 679	10BL158 814, 10WA11 3262	Bore		Domestic	Domestic		29/09/1998	7.00	7.00					1634m	Sou h
GW109 811	10BL601 905	Well	Private	Monitoring Bore	Monitoring Bore		16/05/2007	9.00	9.00					1636m	West
GW109 812	10BL601 905	Well	Private	Monitoring Bore	Monitoring Bore		15/04/2007	9.00	9.00					1640m	West
GW109 149	10BL602 052, 10WA11 4434	Spear	Private	Domestic	Domestic		05/08/2008	9.00						1642m	Sou h West
GW111 547	10BL600 944, 10WA11 4249	Bore	Private	Domestic	Domestic		09/12/2006	18.00	18.00					1649m	Sou h West
GW042 169		Bore - Nested (2)	NSW Office of Water		Monitoring Bore			29.80	29.80		0.00		20.20	1650m	West
GW025 656	10BL017 533, 10WA11 2914	Spear	Private	Domestic	General Use			4.80	4.90					1653m	Sou h
GW109 850	10BL601 023	Bore	Private	Monitoring Bore	Monitoring Bore		28/08/2006	14.00	14.00		11.8 0			1655m	Sou h West
GW108 971	10BL601 798, 10BL602 256, 10WA10 9523	Bore	Other Govt	Recreation (groundwater ), Test Bore	Recreation (groundwater r)		27/06/2008	216.00	216.00	Fresh	27.0 0	0.050		1670m	North
GW023 839	10BL017 534, 10WA11 2915	Spear	Private	Domestic	General Use		01/03/1966	8.20	8.20	Good				1671m	Sou h 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)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW102219	10BL159071, 10WA113272	Spear	Private	Domestic	Domestic		22/02/1999	7.63	7.63	Good	4.88	1.000		1673m	Sou h West
GW110856	10BL601283	Bore	Private	Monitoring Bore	Monitoring Bore		22/07/2004	13.20	13.20	176	10.00	1.000		1676m	North West
GW111248	10BL162151, 10BL601857, 10WA114799	Bore	Private	Recreation (groundwater), Test Bore	Recreation (groundwater)		20/01/2004	30.00	30.00		6.00			1681m	West
GW110019	10BL602523, 10BL602721, 10WA114773	Bore	Other Govt	Recreation (groundwater), Test Bore	Recreation (groundwater)		18/07/2008	9.00	9.00	120	2.40	3.000		1682m	Sou h East
GW072292		Spear	Private		Domestic		14/01/1995	10.00	10.00					1685m	Sou h West
GW114846	10WA118957	Spear	Private	Domestic	Domestic		20/04/2014	7.00	7.00		3.00			1687m	Sou h
GW109851	10BL601023	Bore	Private	Monitoring Bore	Monitoring Bore		30/08/2006	13.50	13.50		10.90			1690m	Sou h West
GW017464	10BL008214, 10WA112789	Spear	Private	Domestic	General Use		01/12/1957	7.60						1694m	Sou h East
GW109852	10BL601023	Bore	Private	Monitoring Bore	Monitoring Bore		30/08/2006	13.00	13.00		10.80			1696m	Sou h West
GW104993	10BL160434, 10WA113316	Bore	Private	Domestic	Domestic		26/01/2002	10.00	10.00		6.50	1.000		1696m	West
GW101653	10BL158900, 10WA113265	Bore		Domestic	Domestic		03/11/1998	7.63	7.63	Good	4.88	1.000		1707m	Sou h West
GW108587	10BL601049, 10WA114272	Spear	Private	Domestic	Domestic		18/02/2007	10.00	10.00					1708m	Sou h West
GW111602	10BL602836, 10WA114544	Spear	Private	Domestic	Domestic		24/08/2011	12.00	12.00					1720m	Sou h West
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		1721m	Sou h
GW060222	10BL132181	Battery Spears	Local Govt	Recreation (groundwater)	Recreation (groundwater)		01/01/1984					6.320		1723m	Sou h East
GW112349	10BL602320, 10WA114486	Spear	Private	Domestic	Domestic		01/02/2008	12.00	12.00		12.00			1728m	Sou h West
GW110416	10BL603247, 10WA114574	Spear	Private	Domestic	Domestic		06/09/2009	7.00	7.00					1732m	Sou h
GW108849	10BL601553	Spear	Private	Domestic	Domestic		20/05/2007	16.00	16.00					1734m	Sou h West
GW019633	10BL012858	(Unknown)	Other Govt	Irrigation	Recreation (groundwater)		01/11/1961	35.00	35.10					1734m	West
GW107390	10BL164155, 10WA113740	Spear	Private	Domestic	Domestic		13/09/2004	7.32	7.32	Good	4.88	1.000		1737m	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)	Yield (L/s)	Elev (AHD)	Dist	Dir
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			1741m	West
GW106 363	10BL163 687, 10WA11 3650	Bore	Private	Domestic	Domestic		02/08/2004	15.00	15.00		11.00	0.800		1743m	Sou h West
GW101 645	10BL154 344, 10WA11 3011	Bore		Domestic	Domestic		01/03/1994	7.00	7.00					1748m	West
GW024 372	10BL018 499, 10WA11 2951	Spear	Private	Domestic	General Use		01/08/1966	7.30	7.30	Good				1751m	Sou h West
GW107 337	10BL165 318, 10WA11 3960	Spear	Private	Domestic	Domestic		09/08/2005	6.00	6.00	Good	3.00	0.500		1755m	Sou h
GW108 665	10BL601 104, 10WA11 4285	Spear	Private	Domestic	Domestic		10/02/2007	18.00	18.00					1758m	Sou h West
GW109 143	10BL602 407, 10WA11 4507	Spear	Private	Domestic	Domestic		04/08/2008	5.00		Good	3.00	0.500		1771m	Sou h
GW108 226	10BL600 446, 10WA11 4147	Spear	Private	Domestic	Domestic		17/08/2006	13.42	13.42		9.15	1.000		1783m	Sou h West
GW108 232	10BL600 540, 10WA11 4163	Spear	Private	Domestic	Domestic		01/11/2006	16.00	16.00					1786m	Sou h West
GW024 037	10BL017 510, 10WA11 2904	Spear	Private	Domestic	General Use		01/03/1966	7.10	7.20	Good				1786m	Sou h West
GW047 125	10BL105 641, 10BL601 141	Bore	Local Govt	Recreation (groundwater), Test Bore	Recreation (groundwater)		01/05/1976	24.40	24.40		4.00			1786m	West
GW108 214	10BL600 201	Bore		Test Bore	Test Bore		13/09/2006	7.30	7.30					1790m	Sou h
GW107 868	10BL600 122, 10WA11 4102	Bore		Domestic	Domestic		13/03/2006							1790m	Sou h
GW072 238	10BL154 339, 10WA11 3010	Bore	Private	Domestic	Domestic		29/03/1994	10.00	10.00					1793m	Sou h West
GW111 454	10BL600 141, 10WA11 4110	Bore	Private	Domestic	Domestic		07/06/2011	12.00	12.00					1794m	Sou h West
GW108 664	10BL600 612, 10WA11 4177	Spear	Private	Domestic	Domestic		20/01/2007	16.00	16.00					1803m	Sou h West
GW107 789	10BL162 853, 10WA11 3498	Spear	Private	Domestic	Domestic		01/06/2004	7.00	7.00					1817m	North West
GW106 864	10BL164 863, 10WA11 3876	Spear	Private	Domestic	Domestic		14/03/2005	9.50	9.50					1822m	Sou h West
GW111 568	10BL604 946	Bore	Private	Monitoring Bore	Monitoring Bore		01/08/2011	8.60	8.60	123	5.20			1826m	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)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW107567	10BL165308, 10WA113956	Spear	Private	Domestic	Domestic		01/10/2005	9.50	10.00					1827m	Sou h West
GW108422	10BL600820, 10WA114228	Spear	Private	Domestic	Domestic		18/01/2007	14.00	14.00					1832m	North West
GW023659	10BL018050, 10WA112936	Spear	Private	Domestic	General Use		01/01/1966	4.80	4.90	Good				1835m	West
GW108911	10BL601556, 10WA114373	Spear	Private	Domestic	Domestic		12/06/2008	16.00						1836m	Sou h West
GW024369	10BL018434, 10WA112947	Spear	Private	Domestic	General Use		01/11/1965	8.80	8.80	Good				1838m	Sou h West
GW111567	10BL604946	Bore	Private	Monitoring Bore	Monitoring Bore		01/08/2011	8.00	8.00	145	5.20			1844m	North West
GW106812	10BL164368, 10WA113784	Spear	Private	Domestic	Domestic		14/12/2004	10.06	10.07	Good	7.01	1.000		1847m	Sou h West
GW11151	10BL601759, 10WA114413	Spear	Private	Domestic	Domestic		20/10/2010	17.00	17.00					1849m	Sou h West
GW106022	10BL162583, 10WA113454	Spear	Private	Domestic	Domestic		08/03/2004	5.00	5.00					1851m	Sou h
GW106960	10BL164703, 10WA113835	Spear	Private	Domestic	Domestic		01/03/2005	10.68	10.68	Good	7.01	1.000		1854m	Sou h West
GW111624	10BL165365	Bore	Private	Monitoring Bore	Monitoring Bore		05/08/2005	36.00	36.00		5.00			1856m	West
GW111600	10BL604978	Bore	Private	Monitoring Bore	Monitoring Bore		29/09/2011	20.00	20.00		5.00			1856m	West
GW104989	10BL160416, 10WA113312	Bore	Private	Domestic	Domestic		11/11/2002	10.00	10.00		7.00	1.000		1857m	Sou h West
GW062486	10BL105638, 10WA114679	Bore	Private	Recreation (groundwater)	Recreation (groundwater)		01/01/1919	20.00						1860m	Sou h West
GW110134	10BL602905, 10WA114556	Spear	Private	Domestic	Domestic		01/03/2009	10.00	10.00					1873m	Sou h West
GW109054	10BL602149, 10WA114453	Spear	Private	Domestic	Domestic		15/07/2008	8.00						1877m	West
GW108507	10BL600353, 10WA114138	Spear	Private	Domestic	Domestic		15/07/2006	8.00	8.00					1877m	West
GW101157	10BL157030, 10WA113099	Spear	Private	Domestic	Domestic		06/09/1995	6.10	6.10	Good	3.96	1.000		1878m	West
GW101680	10BL158812, 10WA113261	Bore		Domestic	Domestic		23/09/1998	7.93	7.93	Good		1.000		1883m	Sou h West
GW106996	10BL162984, 10WA113517	Spear	Private	Domestic	Domestic		17/05/2005	9.50	9.50					1890m	Sou h 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)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW107308	10BL165252, 10WA113939	Spear	Private	Domestic	Domestic		14/08/2005	9.50	9.50					1892m	Sou h West
GW025890	10BL014914, 10BL600316, 10WA112802	Bore	Other Govt	Industrial, Irrigation, Recreation (groundwater)	Irrigation		01/07/1965	31.30	31.40	0-500 ppm				1892m	North West
GW108772	10BL601114, 10WA114286	Spear	Private	Domestic	Domestic		16/04/2007	15.00	15.00					1893m	Sou h West
GW105771	10BL162543, 10WA113443	Spear	Private	Domestic	Domestic		08/12/2004	7.01	7.02			1.000		1893m	West
GW107584	10BL165704, 10WA114025	Spear	Private	Domestic	Domestic		10/10/2005	7.50	7.50					1894m	North West
GW048234	10BL107580, 10BL107585, 10WA114671	Bore	Local Govt	Recreation (groundwater), Test Bore	Recreation (groundwater)		01/11/1978	22.50	25.00	0-500 ppm				1895m	Sou h West
GW110535	10BL602777, 10WA114536	Bore	Private	Domestic	Domestic		30/10/2009	12.00	12.00					1901m	North West
GW101452	10BL158479, 10WA113247	Spear	Private	Domestic	Domestic		17/02/1998	6.00	6.00					1907m	North West
GW103051	10BL159257, 10WA113283	Bore		Domestic	Domestic		28/06/1999	5.80	5.80	Good	3.05	1.000		1908m	West
GW107325	10BL165270, 10WA113943	Spear	Private	Domestic	Domestic		16/08/2005	9.50	9.50					1908m	Sou h West
GW062054	10BL133716, 10BL602467, 10WA114755	Bore	Private	Recreation (groundwater)	Recreation (groundwater)		01/12/1985	37.40	40.00	Good	10.00	10.110		1913m	Sou h West
GW107119	10BL164843, 10WA113868	Spear	Private	Domestic	Domestic		10/05/2005	10.98	10.98	Good	7.93	1.000		1920m	Sou h West
GW108225	10BL600443, 10WA114146	Bore	Private	Domestic	Domestic		19/08/2006	14.00	14.00					1926m	West
GW016331	10BL012186	Bore	Private	Industrial	Industrial		01/01/1959	37.60	37.60					1935m	Sou h West
GW073503	10BL157287, 10WA113134	Spear	Private	Domestic	Domestic		01/11/1995	10.00	10.00					1943m	Sou h West
GW104391	10BL156509, 10WA113064	Bore	Private	Domestic	Domestic		27/02/1995	10.00	10.00					1959m	Sou h West
GW110836	10BL601332, 10WA114321	Spear	Private	Domestic	Domestic		30/03/2010	12.00	12.00					1961m	Sou h West
GW102016	10BL156792, 10WA114637	Bore		Industrial, Recreation (groundwater)	Industrial, Recreation (groundwater)		11/09/1995	32.00	35.00	Fresh	7.20	18.000		1963m	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)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW016330	10BL011315	Bore	Private	Industrial	Industrial		01/02/1961	26.20	26.20	Fresh				1967m	Sou h West
GW106323	10BL163402, 10WA113574	Bore	Private	Domestic	Domestic		09/02/2004	3.00	3.00		1.50	0.500		1968m	Sou h
GW107296	10BL163785, 10WA113680	Spear	Private	Domestic	Domestic		16/04/2005	6.00	6.00					1974m	West
GW110785	10BL603674, 10WA114596	Spear	Private	Domestic	Domestic		20/02/2010	12.00	12.00		6.00	1.500		1975m	Sou h 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	1977m	Sou h West
GW111438	10BL600923, 10WA114246	Spear	Private	Domestic	Domestic		11/02/2007	6.10	6.10	good	3.50	1.000		1977m	West
GW026468	10BL019000	Bore	Private	Recreation (groundwater)	Recreation (groundwater)		01/07/1966	19.60	19.70					1989m	North West
GW014460	10BL008488	Bore	Private	Industrial	Industrial		01/03/1958	38.40	38.40					1990m	Sou h West
GW019634	10BL012859	Bore	Other Govt	Irrigation	Recreation (groundwater)		01/04/1954	32.60	32.60					1997m	North West
GW112607	10BL603770	Bore	Private	Monitoring Bore	Monitoring Bore		10/12/2009	13.00	13.00					1998m	Sou h
GW013339	10BL006742	Bore	Private	Recreation (groundwater)	Recreation (groundwater)		01/05/1956	16.40	16.50	Good			20.90	1998m	North West
GW023179	10BL016742, 10WA114771	Spear	Private	Recreation (groundwater)	Irrigation			7.60	7.60	Good				1998m	North West

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

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

## Driller's Logs

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

Groundwater No	Drillers Log	Distance	Direction
GW053600	0.00m-2.50m Sand White 2.50m-13.00m Sand Yellow 13.00m-19.60m Sand White 19.60m-23.00m Sand White Peaty 23.00m-24.00m Peat Clay 24.00m-26.00m Sand Peaty 26.00m-30.00m Sand Yellow 30.00m-30.50m Clay Grey	9m	South East
GW105431	0.00m-6.00m SAND BROWN 6.00m-30.00m SAND WHITE	9m	South East
GW108596	0.00m-16.00m sand	45m	North East
GW107740	0.00m-11.50m Sand, unconsolidated	72m	South
GW044513	0.00m-3.35m Sand White Dry 3.35m-4.88m Clay Rock Quartz Traces 4.88m-6.40m Sand Clayey Water Supply 6.40m-6.71m Sandstone Soft Seam Water Supply 6.71m-8.84m Sand Clay Water Supply 8.84m-9.45m Clay Sandy	294m	South East
GW023841	0.00m-4.57m Sand Water Supply	311m	South West
GW038591	0.00m-0.67m Sand Grey 0.67m-0.85m Peat 0.85m-1.15m Sand Grey 1.15m-1.46m Peat 1.46m-9.63m Sand Yellow Water Supply 9.63m-10.24m Sandstone White 9.63m-10.24m Clay Bands	325m	South East
GW107385	0.00m-9.50m Sand	334m	South West
GW024206	0.00m-1.21m Topsoil Grey 1.21m-5.48m Sand Yellow Water Supply	364m	South West
GW107594	0.00m-10.00m sand	381m	South West
GW110439	0.00m-0.50m SOIL 0.50m-12.00m SAND CLEAN	411m	South
GW024024	0.00m-0.60m Sand Grey 0.60m-6.09m Sand White Water Supply	438m	South West
GW107765	0.00m-12.00m Sand, unconsolidated	441m	South
GW111150	0.00m-12.00m SAND	457m	South West
GW110423	0.00m-12.00m UNCONSOLIDATED ALL SANDS	477m	South West
GW108657	0.00m-15.00m sand	481m	South
GW107289	0.00m-14.03m Sand, unconsolidated	486m	West
GW026584	0.00m-6.09m Sand Grey	495m	South West
GW023445	0.00m-0.30m Sand 0.30m-3.35m Sand White Water Supply 3.35m-3.65m Loam 3.65m-4.26m Sand White	538m	West
GW106163	0.00m-6.00m sand 6.00m-7.00m rock	553m	South



Groundwater No	Drillers Log	Distance	Direction
GW104992	0.00m-9.00m SAND	557m	South West
GW072971		564m	West
GW107583	0.00m-9.50m sand	602m	South West
GW023265	0.00m-3.65m Sand Water Supply	632m	South
GW108710	0.00m-15.55m sand	642m	South West
GW108788	0.00m-14.64m sand	645m	South
GW072908		649m	West
GW104947	0.00m-0.30m TOPSOIL 0.30m-1.20m WHITE SAND 1.20m-1.40m ROCK COFFEE 1.40m-4.80m YELLOW SAND MG. 4.80m-5.00m YELLOW SILTY SAND	668m	North West
GW073502	0.00m-11.28m All Clear Sand (unconsolidated)	688m	South
GW101330	0.00m-9.00m sand	693m	South
GW072974		716m	West
GW108883	0.00m-2.50m SAND 2.50m-3.00m SANDY CLAY 3.00m-17.00m SANDSTONE L/BROWN 17.00m-17.50m SHALE 17.50m-38.00m SANDSTONE GREY 38.00m-41.00m SANDSTONE WITH SHALE HEDDING 41.00m-92.50m SANDSTONE GREY 92.50m-93.00m SILTSTONE AND FINE QUARTZ 93.00m-124.00m SANDSTONE GREY 124.00m-124.50m SANDSTONE,FINE QUARTZ 124.50m-140.00m SANDSTONE GREY 140.00m-140.50m SANDSTONE FINE QUARTZ 140.50m-172.50m SANDSTONE GREY 172.50m-172.80m SILTSTONE AND FINE QUARTZ 172.80m-191.50m SANDSTONE GREY 191.50m-210.00m SANDSTONE D/GREY,V/HARD F/GRAIN	737m	South East
GW108448	0.00m-16.00m Sand	747m	West
GW102222	0.00m-9.50m Sand	752m	West
GW023577	0.00m-3.65m Sand Water Supply	788m	South
GW110240	0.00m-0.50m TOPSOIL 0.50m-10.70m SAND COLOURED 10.70m-17.00m SOFT SANDSTONE 17.00m-150.00m HARD SANDSTONE	803m	North West
GW072463	0.00m-7.00m GREY SAND 7.00m-8.00m GREY CLAY 8.00m-10.50m BROWN SANDSTONE 10.50m-11.00m BROWN SOFT SANDSTONE 11.00m-17.00m GREY SANDSTONE 17.00m-17.50m GREY CLAY 17.50m-43.00m WHITE SANDSTONE	806m	North West
GW108861	0.00m-0.10m TOPSOIL 0.10m-0.80m SANDY CLAY 0.80m-0.90m GREY CLAY 0.90m-4.00m RED YELLOW SANDSTONE 4.00m-114.00m WHITE SANDSTONE	818m	North West
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	827m	South West
GW102294	0.00m-10.00m Sand	851m	South West
GW111844	0.00m-0.15m FILL,MOIST,GREY BROWN,LOOSE,SAND 0.15m-3.00m SAND,MEDIUM DENSE,MOIST,GREY,M/GRAINED 3.00m-4.80m SAND,WET,PALE BROWN,COARSE GRAINED	859m	North West

Groundwater No	Drillers Log	Distance	Direction
GW101883	0.00m-10.00m Sand	887m	West
GW107578	0.00m-16.47m Sand, unconsolidated	892m	South West
GW111846	0.00m-0.20m BITUMEN 0.20m-0.50m FILL, MOIST, BROWN, DENSE, SAND, MINOR ASPHALT 0.50m-5.60m SAND, DENSE, MOIST, ORANGE, BROWN, SANDSTONE	911m	North West
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	923m	South West
GW111871	0.00m-0.10m CONCRETE 0.10m-1.20m FILL, SAND, F/GRAINED, BROWN/GREY 1.20m-10.60m SAND, F/GRAINED, GREY/BROWN BEC. L/BROWN, YELLOW	926m	East
GW111845	0.00m-0.20m BITUMEN 0.20m-1.00m FILL, MOIST, ORANGE BROWN AND BLACK 1.00m-3.00m SAND MOIST, PALE, M/DENSE, COARSE	936m	North West
GW111870	0.00m-0.10m CONCRETE 0.10m-0.90m FILL, GRAVELLY SAND, F/GRAINED, GRAVELS, BRICK 0.90m-12.00m SAND, F/GRAINED, BROWN, GREY, YELLOW	940m	East
GW017851	0.00m-4.57m Sand Water Supply	941m	North West
GW107000	0.00m-9.50m Sand	941m	South West
GW111869	0.00m-0.10m CONCRETE 0.10m-0.90m FILL, SAND, FINE GRAINED, BROWN, GRAVELS 0.90m-12.50m SAND, L/BROWN, BEC. L/BROWN, YELLOW	945m	East
GW111847	0.00m-0.50m FILL, SLIGHTLY MOIST, PALE PINK, DENSE, SANDSTONE, SAND 0.50m-3.00m SAND, MOIST, PALE GREYS, BROWN, COARSE 3.00m-5.00m SAND, WET, PALE BROWN, MEDIUM GRAINED	948m	North West
GW110522	0.00m-0.50m (Unknown) 0.50m-12.00m (Unknown)	957m	South West
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	961m	South West
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	962m	South West
GW073458		964m	South West
GW023261	0.00m-5.48m Rock Nominal Sand Nominal Water Supply	967m	South
GW026483	0.00m-4.87m Sand	969m	West



Groundwater No	Drillers Log	Distance	Direction
GW109681	0.00m-1.00m CONCRETE,FILL,MOIST ORANGE 1.00m-1.30m SAND 1.30m-2.10m SANDSTONE,MOIST,DARK 2.10m-3.50m SAND,WET,PALE 3.50m-6.00m SANDSTONE,SLIGHTLY MOIST,WEATHERED	1014m	North West
GW109679	0.00m-0.10m CONCRETE 0.10m-1.00m FILL, MOIST,SAND, GRAVEL 1.00m-4.00m SAND, MOIST GREY BROWN 4.00m-6.00m SANDSTONE,ORANGE BROWN	1019m	North West
GW109680	0.00m-0.50m CONCRETE 0.50m-0.70m FILL,PALE,ORANGE 0.70m-1.50m SAND 1.50m-1.90m SANDSTONE 1.90m-3.90m SAND 3.90m-5.50m SANDSTONE,MOIST,PALE,GREY	1024m	North West
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	1037m	South West
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	1038m	South West
GW025540	0.00m-0.91m Sand Black 0.91m-4.87m Sand White Water Supply	1039m	West
GW107806	0.00m-9.50m sand	1043m	South West
GW023989	0.00m-2.13m Sand 2.13m-2.28m Sand Dark 2.28m-6.70m Sand Water Supply	1063m	South West
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	1064m	West
GW106661	0.00m-15.25m sand, unconsolidated	1071m	West
GW108472	0.00m-16.00m sand	1087m	West
GW108822	0.00m-14.00m sand	1089m	West
GW110524	0.00m-1.50m ROCK	1100m	North West
GW106752	0.00m-9.50m sand	1105m	West
GW108394	0.00m-16.00m SAND	1117m	West
GW023529	0.00m-0.91m Sand Grey 0.91m-6.70m Sand White Water Supply	1133m	West
GW108498	0.00m-18.00m Sand	1148m	South West
GW106005	0.00m-12.29m sand	1150m	West
GW104829	0.00m-10.00m SAND	1161m	South West

Groundwater No	Drillers Log	Distance	Direction
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	1162m	South West
GW108045	0.00m-19.00m sand	1178m	South West
GW108172	0.00m-18.00m sand	1193m	South West
GW107829	0.00m-10.00m sand	1205m	South West
GW108430	0.00m-18.00m Sand	1221m	South West
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	1235m	South West
GW104640	0.00m-10.00m SAND	1256m	South West
GW023991	0.00m-1.52m Sand White 1.52m-3.04m Sand Hard Cemented 3.04m-5.79m Sand Yellow Water Supply	1260m	West
GW111811	0.00m-16.00m SAND	1261m	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	1305m	West
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	1306m	South West
GW072994		1315m	West



Groundwater No	Drillers Log	Distance	Direction
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	1325m	South West
GW101069	1.00m-10.00m sand	1338m	West
GW101072	0.00m-10.00m Sand	1350m	West
GW108589	0.00m-18.00m Sand	1382m	South West
GW026476	0.00m-0.91m Sand 0.91m-1.09m Sand Hard Cemented 1.09m-5.18m Sand	1390m	South West
GW025552	0.00m-0.91m Sand 0.91m-5.18m Sand Hard Cemented 0.91m-5.18m Shale	1396m	South 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	1413m	West
GW106483	0.00m-5.00m sand, rock	1423m	South
GW108669	0.00m-16.00m sand	1423m	South West
GW108670	0.00m-16.00m sand	1432m	South West
GW106098	0.00m-9.50m sand	1434m	North West
GW108671	0.00m-15.00m sand	1457m	South West
GW100768	0.00m-17.39m UNCOSOLIDATED ALL SANDS	1462m	North West
GW072907		1472m	South West
GW101008	0.00m-9.00m SAND	1474m	South West
GW107621	0.00m-10.00m sand	1492m	South
GW111156	0.00m-12.00m SAND	1492m	South West
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	1497m	South West
GW101735	0.00m-10.00m SAND AND CLAY	1499m	South
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	1501m	South West
GW108427	0.00m-8.00m Sand	1503m	South East

Groundwater No	Drillers Log	Distance	Direction
GW023842	0.00m-1.21m Soil 1.21m-1.82m Sand Grey 1.82m-5.79m Sand White 5.79m-7.62m Water Supply	1505m	South
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	1531m	West
GW107719	0.00m-9.50m sand	1538m	South West
GW072905		1552m	West
GW107044	0.00m-9.50m sand	1554m	South West
GW101071	0.00m-6.50m SAND	1558m	South West
GW107027	0.00m-9.50m sand	1570m	South West
GW105765	0.00m-9.50m sand	1578m	South West
GW107369	0.00m-10.00m sand	1580m	South West
GW108572	0.00m-18.00m sand	1580m	South West
GW025707	0.00m-5.18m Sand Water Supply	1586m	South
GW107587	0.00m-9.50m sand	1597m	South West
GW109813	0.00m-1.00m GRAVELLY SILTY SAND, LOOSE, DRY, DARK GREY, PIECES OF RUBBLE 1.00m-9.00m SAND, MOIST, L/GREY, DARK BROWN, D/ORANGE, CREAM, SATURATED	1598m	West
GW023589	0.00m-3.65m Sand Grey Water Supply	1601m	South
GW101432	0.00m-7.00m SAND	1603m	South
GW023612	0.00m-5.18m Sand Water Supply	1606m	West
GW106944	0.00m-16.77m Sand, unconsolidated	1606m	South West
GW109849	0.00m-0.20m CONCRETE 0.20m-1.00m FILL 1.00m-8.50m SAND	1608m	West
GW101876	0.00m-9.50m Sand	1610m	South West
GW109810	0.00m-0.80m GRAVELLY SILTY SAND, FILL, LOOSE, DRY MOIST, DARK, BROWN, GREY 0.80m-9.00m SAND, MEDIUM DENSE, V/DARK BROWN/BLACK BECOMES SATURATED	1615m	West
GW107186	0.00m-7.00m sand	1617m	South East
GW109809	0.00m-0.20m CONCRETE 0.20m-0.60m GRAVELLY SILTY SAND, LOOSE, DRY 0.60m-9.00m SAND, MEDIUM DENSE/YELLOW, ORANGE, GRADES TO CREAM	1625m	West
GW109848	0.00m-0.20m CONCRETE 0.20m-1.70m FILL 1.70m-8.70m SAND	1627m	West
GW109847	0.00m-1.00m FILL 1.00m-8.50m SAND	1632m	West
GW101679	0.00m-7.00m Sand	1634m	South
GW109811	0.00m-0.30m SILTY SAND, DRY, BROWN, GREY, MINOR GLASS 0.30m-9.00m SAND, DRY, L/GREY, BROWN/COPPER, MOIST, BECOMES SATURATED	1636m	West



Groundwater No	Drillers Log	Distance	Direction
GW109812	0.00m-0.10m CONCRETE 0.10m-0.30m SILTY SAND, LOOSE, DRY, BROWN/GREY, SANDSTONE BRICK PIECES 0.30m-9.00m SAND, LOOSE, DRY, MOIST, ORANGE, BECOMES SATURATED	1640m	West
GW025656	0.00m-3.96m Sand 3.96m-4.87m Aquifer Water Supply	1653m	South
GW109850	0.00m-0.40m CONCRETE 0.40m-1.20m FILL 1.20m-14.00m SAND	1655m	South West
GW108971	0.00m-0.30m TOPSOIL 0.30m-1.80m SANDY CLAY 1.80m-3.50m WHITE CLAY 3.50m-9.00m COLOURED SANDSTONE 9.00m-39.00m WHITE SANDSTONE 39.00m-41.00m BLACK SANDSTONE 41.00m-208.00m WHITE SANDSTONE 208.00m-216.00m GREY SHALE	1670m	North
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	1671m	South West
GW102219	0.00m-7.63m Unconsolidated Sands	1673m	South West
GW110856	0.00m-13.00m SAND 13.00m-13.20m ROCKS	1676m	North West
GW111248	0.00m-2.00m TOPSOIL 2.00m-16.00m SAND 16.00m-17.00m PEAT AND COAL 17.00m-30.00m SAND	1681m	West
GW110019	0.00m-3.00m BROWN SAND 3.00m-5.70m BROWN SILTY SAND 5.70m-8.20m YELLOW SAND 8.20m-9.00m DARK YELLOW SAND	1682m	South East
GW072292		1685m	South West
GW109851	0.00m-0.20m CONCRETE 0.20m-0.40m FILL 0.40m-13.50m SAND	1690m	South West
GW104993	0.00m-10.00m SAND	1696m	West
GW109852	0.00m-0.20m CONCRETE 0.20m-0.80m FILL 0.80m-13.00m SAND	1696m	South West
GW101653	0.00m-7.63m Unconsolidated Sand	1707m	South West
GW111602	0.00m-12.00m SAND	1720m	South West
GW060223	0.00m-3.50m BROWN SAND 3.50m-7.00m BROWN SILTY SAND/SMALL PEAT LAYERS 7.00m-9.00m YELLOW SILTY SAND	1721m	South
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	1734m	West

Groundwater No	Drillers Log	Distance	Direction
GW108849	0.00m-16.00m sand	1734m	South West
GW107390	0.00m-7.32m Sand, unconsolidated	1737m	West
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	1741m	West
GW106363	0.00m-15.00m sand	1743m	South West
GW024372	0.00m-1.21m Sand Grey 1.21m-5.48m Sand Cream 5.48m-7.31m Sand White Water Supply	1751m	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	1755m	South
GW108665	0.00m-18.00m sand	1758m	South West
GW108226	0.00m-13.42m sand, decomposed	1783m	South West
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	1786m	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	1786m	West
GW108232	0.00m-16.00m sand	1786m	South 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	1790m	South
GW072238	0.00m-2.50m SAND 2.50m-3.50m ALLUVIUM 3.50m-10.00m SAND	1793m	South West
GW108664	0.00m-16.00m sand	1803m	South West
GW107789	0.00m-7.00m sand	1817m	North West
GW106864	0.00m-9.50m sand	1822m	South West
GW111568	0.00m-0.03m ASPHALT 0.03m-0.10m SAND AND GRAVEL 0.10m-1.20m SAND, YELLOW AND BROWN, F/GRAINED 1.20m-8.60m SAND, LIGHT YELLOW BROWN F/GRAINED	1826m	North West
GW107567	0.00m-10.00m sand	1827m	South West
GW108422	0.00m-14.00m Sand	1832m	North West
GW023659	0.00m-3.65m Soil Clay 3.65m-4.87m Sand Yellow Water Supply	1835m	West
GW024369	0.00m-0.91m Sand Black 0.91m-8.83m Sand White Water Supply	1838m	South West
GW111567	0.00m-0.03m ASPHALT 0.03m-0.10m SAND AND GRAVEL 0.10m-0.50m FILLING, DARK GREY SAND, TRACE OF GRAVEL 0.50m-0.70m FILLING, BROWN SAND 0.70m-4.00m SAND, ORANGE AND DARK BROWN, F/GRAINED 4.00m-4.50m SAND, LIGHT BROWN, F/GRAINED 4.50m-8.00m SAND, LIGHT YELLOW BROWN, F/GRAINED	1844m	North West



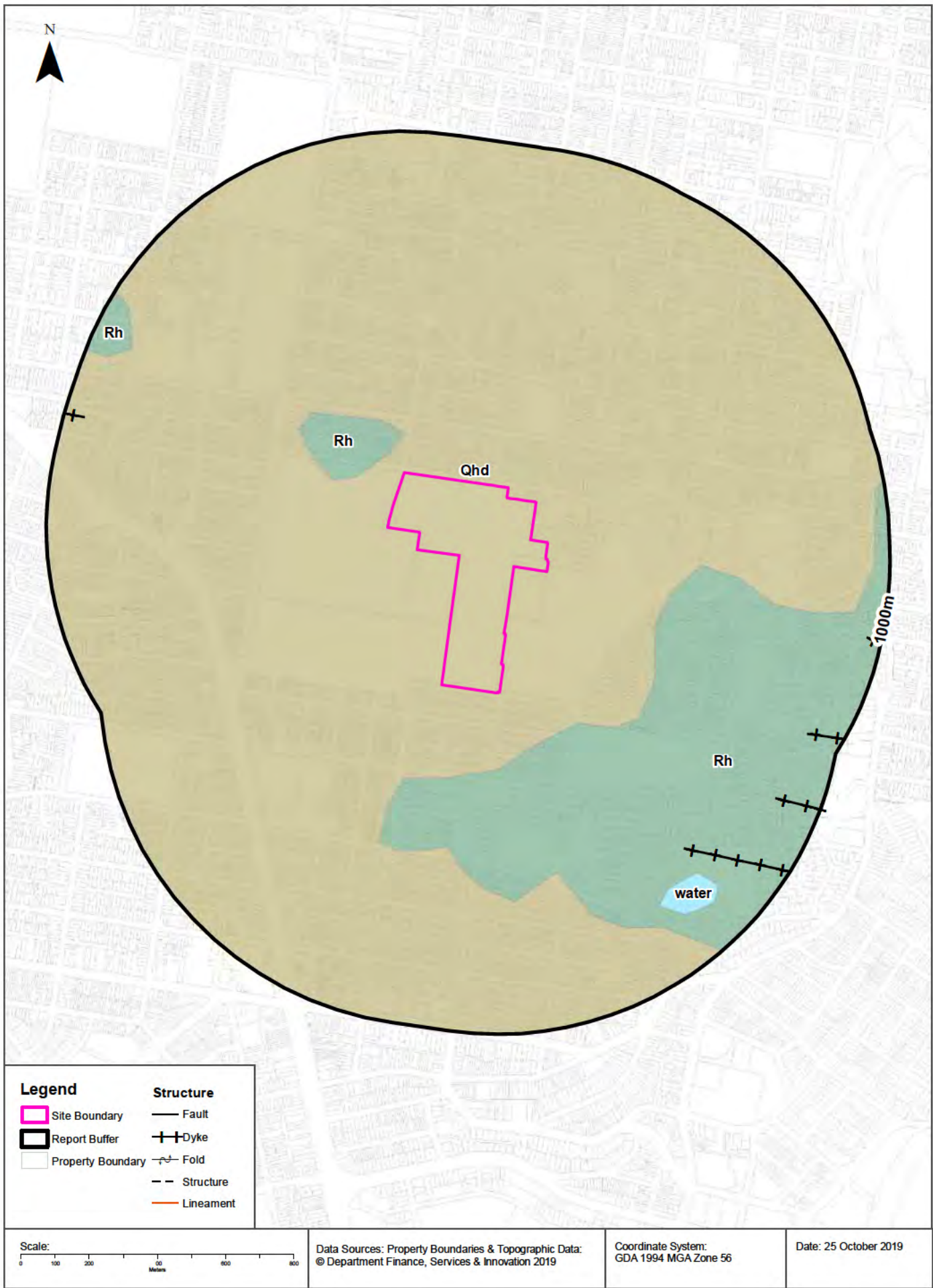
Groundwater No	Drillers Log	Distance	Direction
GW106812	0.00m-10.06m sand, unconsolidated	1847m	South West
GW111151	0.00m-17.00m SAND	1849m	South West
GW106022	0.00m-5.00m sand	1851m	South
GW106960	0.00m-10.68m Sand, unconsolidated	1854m	South West
GW111600	0.00m-20.00m SANDS,FINE,VERY FINE,DK GREY IN COLOUR	1856m	West
GW111624	0.00m-31.00m BOTANY SANDS 31.00m-36.00m HAWKESBURY SANDSTONE	1856m	West
GW104989	0.00m-10.00m SAND	1857m	South West
GW110134	0.00m-10.00m SAND	1873m	South West
GW108507	0.00m-8.00m sand	1877m	West
GW101157	0.00m-6.10m UNCONSOLIDATED, ALL CLEAN SAND	1878m	West
GW101680	0.00m-7.93m Unconsolidated Sand	1883m	South West
GW106996	0.00m-9.50m Sand	1890m	South West
GW025890	0.00m-0.30m Sand Grey 0.30m-10.05m Sand 10.05m-10.21m Sand Peaty 10.21m-10.97m Sand Dirty Wet 10.97m-12.19m Sand Wet 10.97m-12.19m Clay Bands 12.19m-13.71m Sand Dirty Wet 13.71m-15.24m Sand Water Supply 15.24m-16.76m Sand Grey Water Supply 16.76m-18.28m Sand Grey Peaty Water Supply 18.28m-19.81m Sand Grey Water Supply 19.81m-21.33m Sand Dark Brown Water Supply 19.81m-21.33m Clay Bands 21.33m-22.86m Sand Dark Brown Water Supply 22.86m-25.90m Sand Water Supply 25.90m-29.56m Sand Yellow Water Supply 29.56m-31.39m Sand Yellow Peat 29.56m-31.39m Clay Seams	1892m	North West
GW107308	0.00m-9.50m sand	1892m	South West
GW105771	0.00m-7.01m sand, unconsolidated	1893m	West
GW107584	0.00m-7.50m sand	1894m	North West
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	1895m	South West
GW110535	0.00m-12.00m SAND	1901m	North West
GW101452	0.00m-6.00m SAND	1907m	North West
GW103051	0.00m-5.79m UNCONSOLIDATED ALL SAND	1908m	West
GW107325	0.00m-9.50m sand	1908m	South West
GW062054	0.00m-1.00m Overburden Topsoil 1.00m-40.00m Sand White Some Slightly Peat Water Supply	1913m	South West
GW107119	0.00m-10.98m Sand, unconsolidated	1920m	South West
GW108225	0.00m-14.00m sand	1926m	West

Groundwater No	Drillers Log	Distance	Direction
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	1935m	South West
GW073503	0.00m-10.00m Sand	1943m	South West
GW104391	0.00m-10.00m SAND	1959m	South West
GW110836	0.00m-12.00m SAND	1961m	South West
GW102016	0.00m-1.00m Topsoil 1.00m-3.00m Fill material - ash and slag 3.00m-4.00m Light Brown Sand F.G., trace organic matter 4.00m-8.00m Light Brown Sand F.G. 8.00m-11.00m Yellow/Brown Sand F.G. 11.00m-14.00m Sand F.G. with thin peat stringers 14.00m-20.00m Light Brown Sand with trace peat 20.00m-33.00m White Sand F.G. 33.00m-35.00m Peat and Clay	1963m	North West
GW016330	0.00m-25.60m Sand Water Supply 25.60m-26.21m Sandstone	1967m	South West
GW106323	0.00m-3.00m sand, rock	1968m	South
GW107296	0.00m-6.00m sand	1974m	West
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	1977m	South West
GW111438	0.00m-6.10m UNCONSOLIDATED ALL SAND	1977m	West
GW026468	0.00m-0.91m Topsoil 0.91m-3.04m Sand Hard Cemented 3.04m-6.70m Clay Sandy 6.70m-7.31m Peat Wood 7.31m-9.14m Sand White Clean Water Supply 9.14m-10.05m Sand Yellow Clean Water Supply 10.05m-14.93m Sand White Clean Water Supply 14.93m-15.24m Sand Yellow Water Supply 15.24m-15.54m Sand Grey Water Supply 15.54m-19.66m Sand Grey Pete Water Supply 19.66m-19.67m Peat Water Supply	1989m	North 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	1990m	South West



Groundwater No	Drillers Log	Distance	Direction
GW019634	0.00m-0.91m Sand Made Ground 0.91m-1.21m Ash Made Ground 1.21m-1.82m Sand Hard Cemented 1.82m-6.70m Sand Packed 6.70m-9.14m Sand Light Brown 9.14m-10.97m Sand Yellow 9.14m-10.97m Peat Bands 10.97m-20.11m Peat Some 10.97m-20.11m Sand Grey 20.11m-23.16m Sand Grey Coarse 20.11m-23.16m Peat Bands 23.16m-26.21m Sand Yellow 26.21m-31.39m Sand White 31.39m-32.61m Sand Yellow 31.39m-32.61m Clay Bands 32.61m-32.62m Peat	1997m	North West
GW013339	0.00m-16.45m Sand Nominal Water Supply 0.00m-16.45m Mud Marine Nominal	1998m	North West
GW023179	0.00m-1.21m Sand 1.21m-1.52m Sand Hard Cemented 1.52m-7.62m Sand Water Supply	1998m	North West
GW112607	0.00m-13.00m SANDY CLAY,WET,ORANGE BROWN,FIRM	1998m	South

Drill Log Data Source: NSW Department of Primary Industries - Office of Water / Water Administration Ministerial Corp  
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## Geology

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

### 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
water							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
Dyke			Sydney	1:100,000
Dyke			Sydney	1:100,000
Dyke			Sydney	1:100,000
Dyke			Sydney	1:100,000

Geological Data Source : NSW Department of Industry, Resources & Energy

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## Naturally Occurring Asbestos Potential

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

## Naturally Occurring Asbestos Potential

Naturally Occurring Asbestos Potential within the dataset buffer:

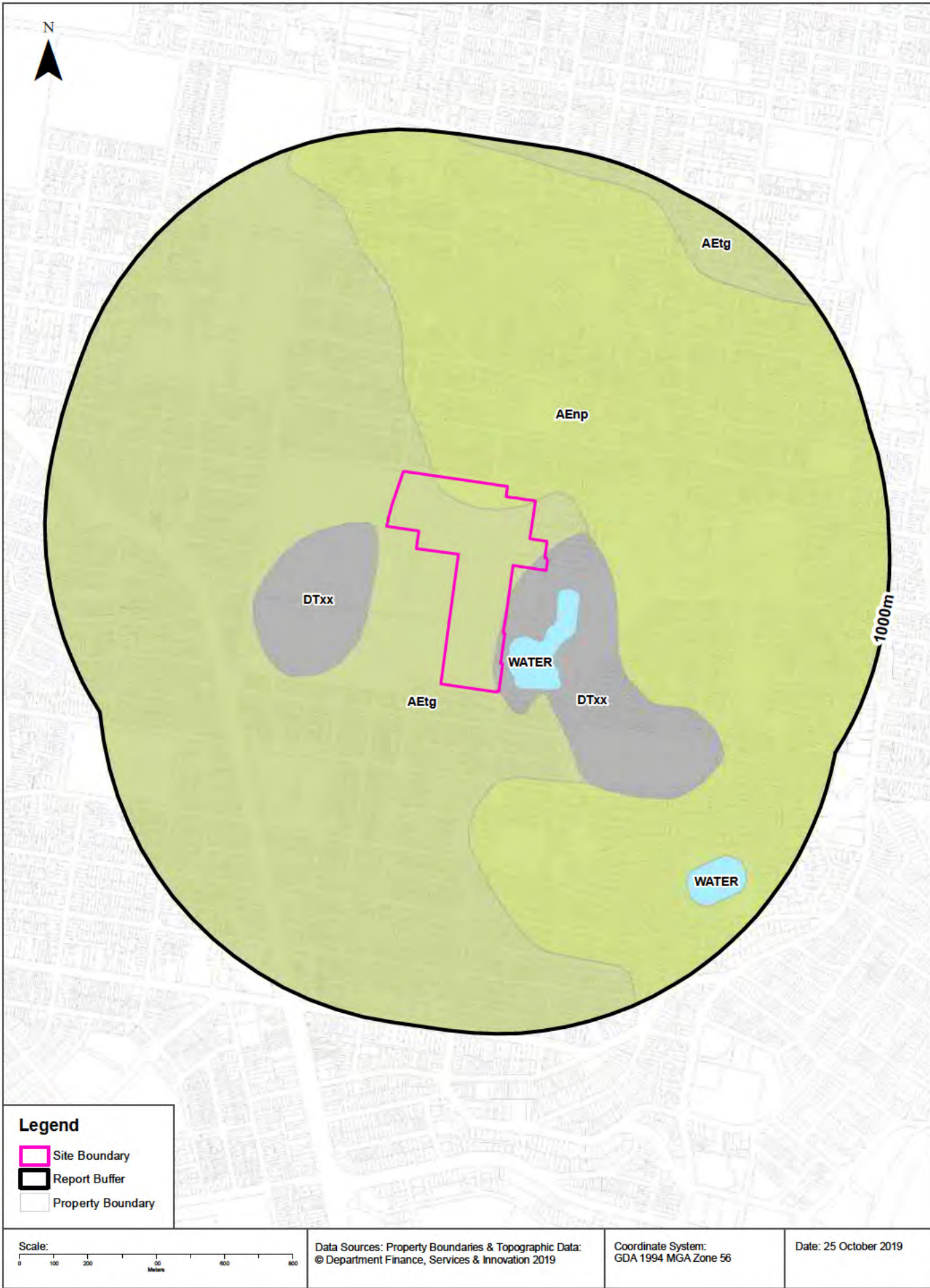
Potential	Sym	Strat Name	Group	Formation	Scale	Min Age	Max Age	Rock Type	Dom Lith	Description	Dist	Dir
No records in buffer												

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



Soil Landscapes

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032



## Soils

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

## Soil Landscapes

What are the onsite Soil Landscapes?

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

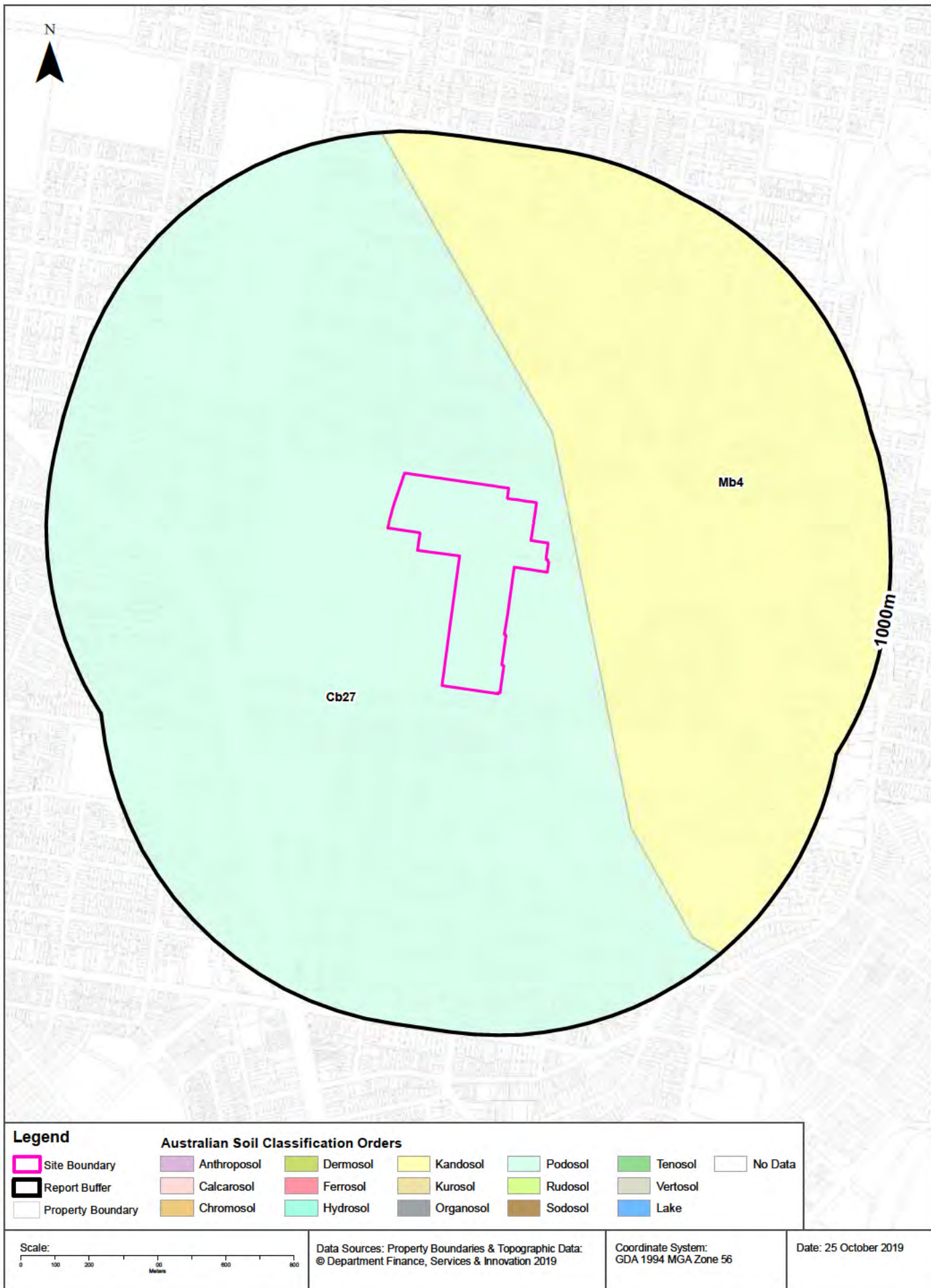
What are the Soil Landscapes within the dataset buffer?

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
WATER	WATER		WATER	Sydney	1:100,000

Soils Landscapes Data Source : NSW Office of Environment and Heritage

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## Soils

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

### 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 (Uc1.1) 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
Mb4	Kandosol	Coastal complex: chief soils are acid yellow leached earths (Gn2.74) and (Gn2.34), hard acidic yellow mottled soils (Dy3.41), and hard acidic red soils (Dr2.21). This unit includes headlands and rugged coastal areas of unit Mb2; ridges and slopes of unit Tb35; low-lying coastal areas of unit Cb27; and some swampy areas.	75m

Atlas of Australian Soils Data Source: CSIRO

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## Acid Sulfate Soils

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

### 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		

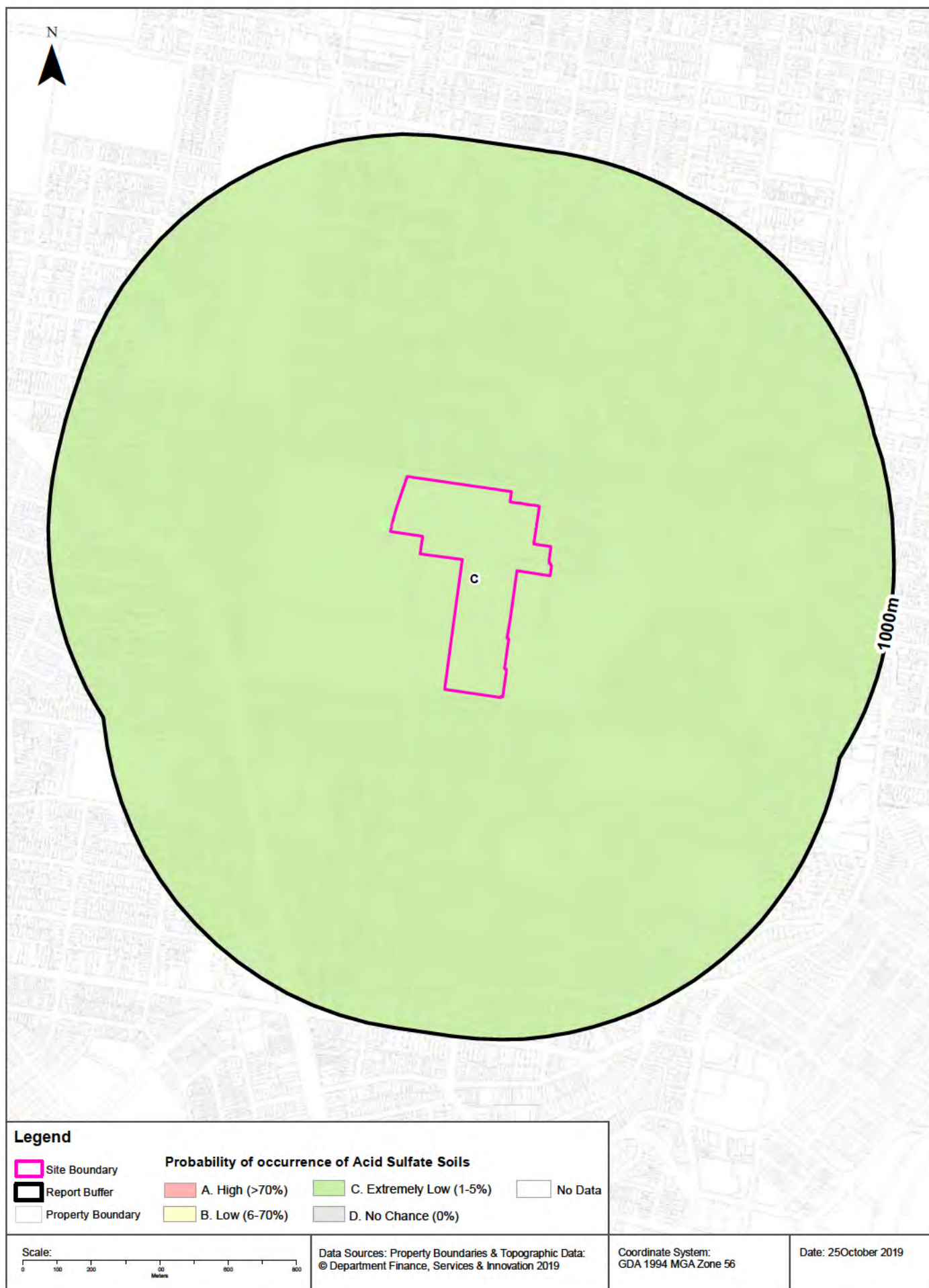
If the on-site Soil Class is 5, what other soil classes exist within 500m?

Soil Class	Description	EPI Name	Distance	Direction
N/A				

Acid Sulfate Data Source Accessed 23/10/2018: NSW Crown Copyright - Planning and Environment  
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# Atlas of Australian Acid Sulfate Soils

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032





## Acid Sulfate Soils

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

### 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

Atlas of Australian Acid Sulfate Soils Data Source: CSIRO

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## Dryland Salinity

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

### 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

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

## 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

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

## State Significant Precincts

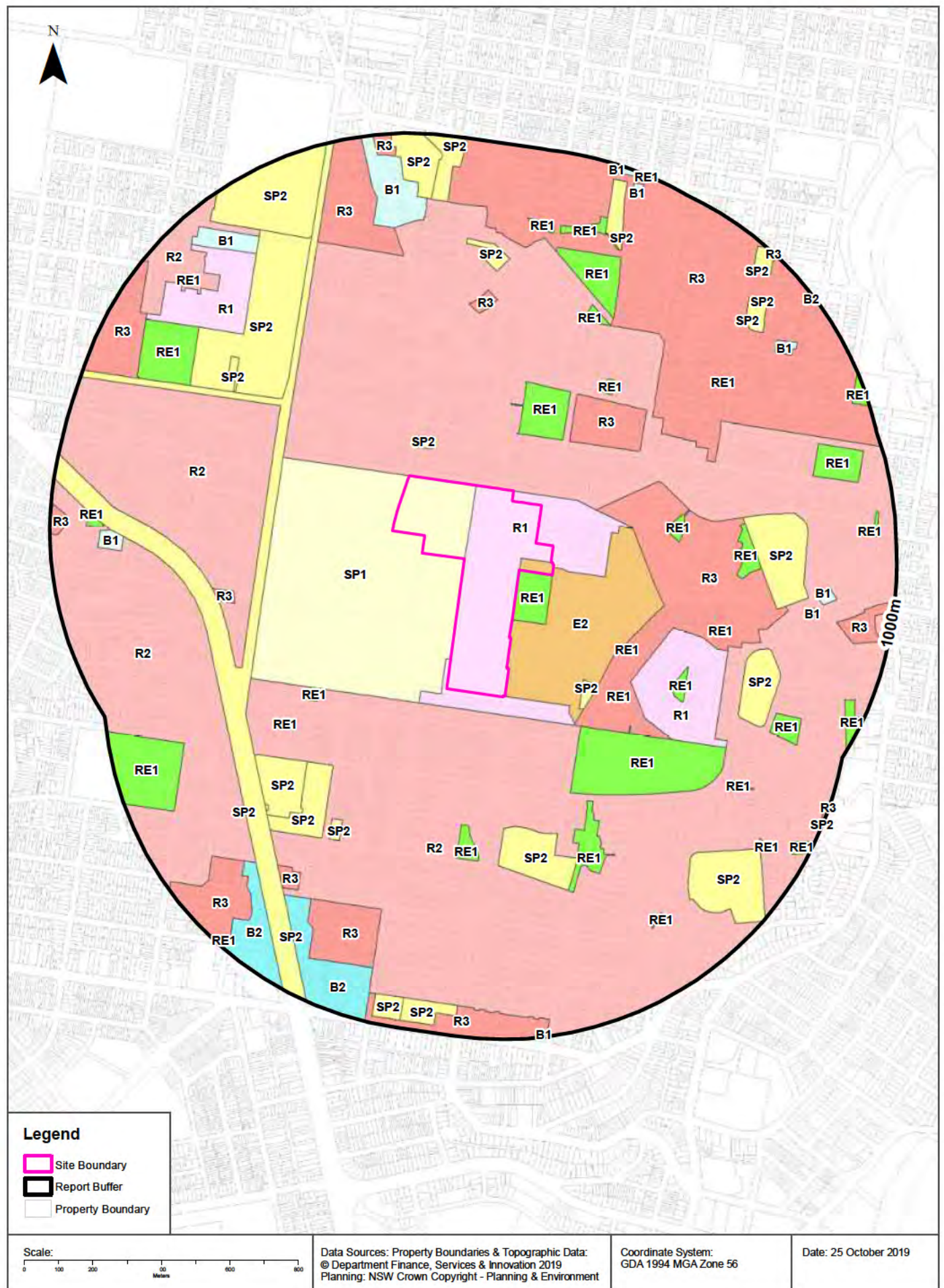
What SEPP State Significant Precincts exist within the dataset buffer?

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

State Environment Planning Policy Data Source: NSW Crown Copyright - Planning & Environment  
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# EPI Planning Zones

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032





# Environmental Planning Instrument

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

## 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
R1	General Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		0m	Onsite
SP1	Special Activities	Defence	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		0m	Onsite
E2	Environmental Conservation		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	South East
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		0m	South East
SP2	Infrastructure	Electricity Generating Works	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		87m	North West
R3	Medium Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		159m	East
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		168m	North East
R3	Medium Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		205m	North East
SP2	Infrastructure	Defence	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		219m	South East
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		238m	South East
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		292m	South East
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		314m	South East
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		332m	East
SP2	Infrastructure	Classified Road	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		348m	South West
R1	General Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		357m	South East
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		374m	South West
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		377m	North East
R2	Low Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		378m	West
SP2	Infrastructure	Council Depot	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		379m	South
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		386m	South
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		390m	South
SP2	Infrastructure	Educational Establishment	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		402m	South West
R3	Medium Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		407m	North
SP2	Infrastructure	Educational Establishment	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		434m	North West
SP2	Infrastructure	Educational Establishment	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		459m	South West
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		465m	South West

Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		475m	South East
SP2	Infrastructure	Telecommunications	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		489m	South West
R3	Medium Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		496m	West
R3	Medium Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		499m	North
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		507m	East
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		533m	East
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		535m	North East
SP2	Infrastructure	Cemetery	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		558m	East
SP2	Infrastructure	Childcare Centre	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		562m	North West
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		582m	North
R2	Low Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		608m	South West
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		619m	North East
SP2	Infrastructure	Educational Establishment	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		619m	South East
SP2	Infrastructure	Road Infrastructure	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		621m	South West
SP2	Infrastructure	Water Supply System	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		627m	North
R1	General Residential		Randwick Local Environmental Plan 2012	02/04/2015	02/04/2015	26/01/2018	Amendment No 2	636m	North West
R3	Medium Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		670m	South
R3	Medium Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		685m	South West
SP2	Infrastructure	Road Infrastructure	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		686m	South West
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		693m	North West
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		702m	South East
SP2	Infrastructure	Water Supply System	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		717m	South East
B1	Neighbourhood Centre		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		725m	North
B2	Local Centre		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		729m	South
B1	Neighbourhood Centre		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		752m	East
B2	Local Centre		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		753m	South West
SP2	Infrastructure	Health Services Facilities	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		753m	North West
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		761m	North
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		765m	North
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		766m	South East
SP2	Infrastructure	Educational Establishment	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		769m	North
B1	Neighbourhood Centre		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		772m	East
R3	Medium Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		775m	South West
R2	Low Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		777m	North West

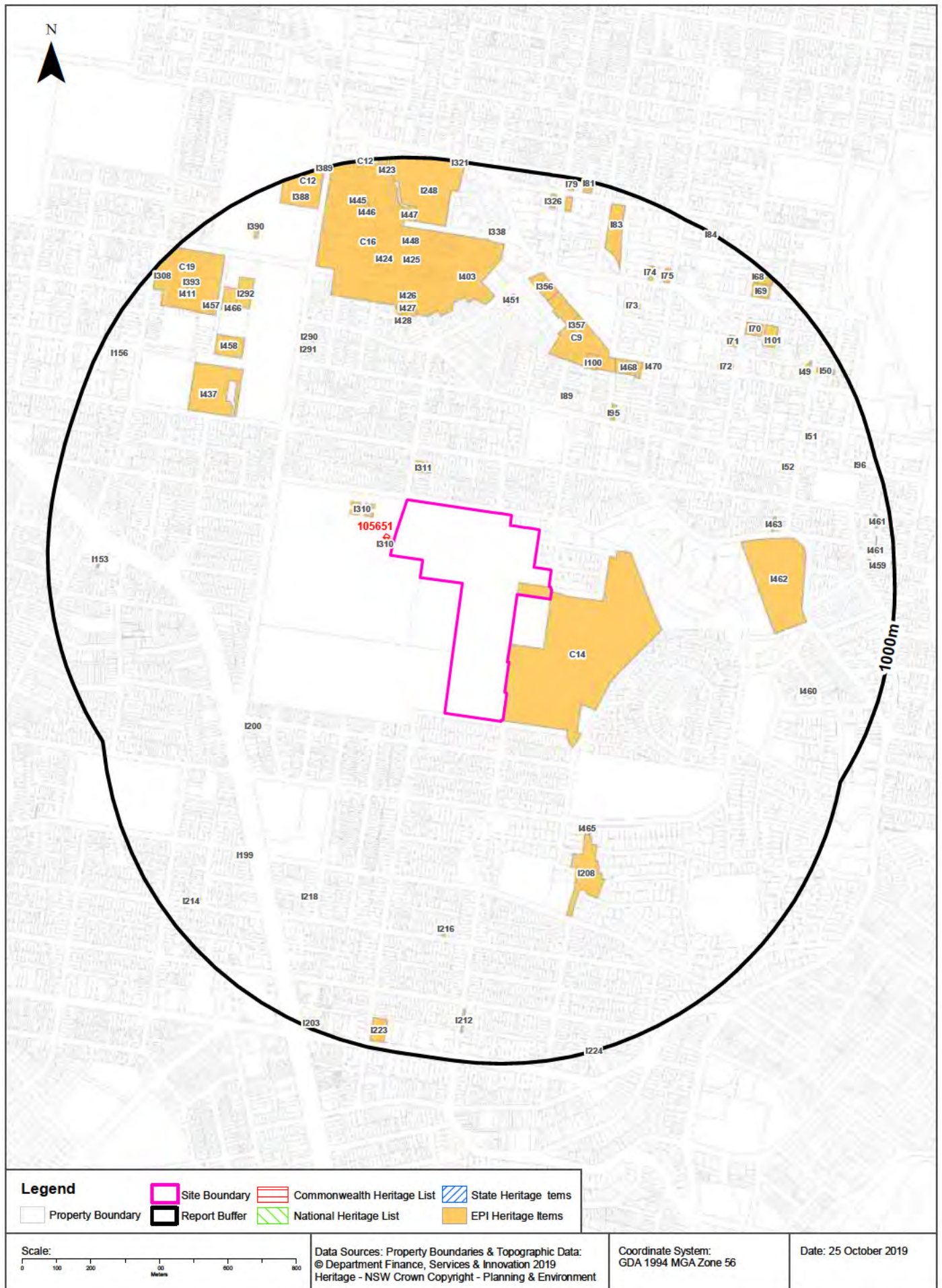
Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		779m	South East
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		782m	South West
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		784m	East
B1	Neighbourhood Centre		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		786m	West
B1	Neighbourhood Centre		Randwick Local Environmental Plan 2012	02/04/2015	02/04/2015	26/01/2018	Amendment No 2	787m	North West
SP2	Infrastructure	Place of Public Worship	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		797m	North East
SP2	Infrastructure	Electricity Generating Works	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		801m	North East
SP2	Infrastructure	Seniors Housing	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		808m	North
SP2	Infrastructure	Educational Establishment	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		811m	North
B1	Neighbourhood Centre		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		815m	North East
R3	Medium Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		834m	North West
R3	Medium Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		840m	East
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		844m	West
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		847m	North West
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		850m	South East
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		904m	East
SP2	Infrastructure	Educational Establishment	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		909m	South
SP2	Infrastructure	Seniors Housing	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		909m	South
R3	Medium Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		910m	South
SP2	Infrastructure	Place of Public Worship	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		921m	North East
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		927m	South East
B1	Neighbourhood Centre		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		934m	North East
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		940m	South East
R3	Medium Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		953m	West
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		953m	East
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		968m	South West
B2	Local Centre		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		973m	North East
B1	Neighbourhood Centre		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		975m	North
B1	Neighbourhood Centre		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		979m	South
R3	Medium Density Residential		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		989m	South East
RE1	Public Recreation		Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		993m	North East
SP2	Infrastructure	Educational Establishment	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	26/01/2018		993m	South East

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# Heritage Items

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032



## Heritage

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

### 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
105651	School of Musketry and Officers Mess, Randwick Army Barracks	Bundock St, Kingsford NSW	1/12/030/0060	Historic	Listed place	2004-06-22	15m	North West

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							

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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
C14	Randwick Environmental Park	Conservation Area - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	0m	Onsite
I310	Randwick Barracks School of Musketry, Officers, Mess and Convention Centre	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	8m	North West

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
I310	Randwick Barracks School of Musketry, Officers, Mess and Convention Centre	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	79m	North West
I311	Electricity Substation No 341	Item - General	State	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	87m	North West
I89	Electricity Substation No 280	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	382m	North East
I95	Edwardian bungalow	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	383m	North East
I464	'Quarry Reserve'	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	390m	South East
I465	'Quarry Reserve'	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	392m	South East
I208	'Quarry Reserve'	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	410m	South
C9	Dudley Street	Conservation Area - General	Local	Randwick Local Environmental Plan 2012	22/02/2019	22/02/2019	22/02/2019	481m	North
I100	Large bungalow	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	482m	North East
I291	'Canberra', Edwardian house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	509m	North West
I467	Interwar bungalow	Item - General	Local	Randwick Local Environmental Plan 2012	22/02/2019	22/02/2019	22/02/2019	510m	North East
I468	Late Federation house	Item - General	Local	Randwick Local Environmental Plan 2012	22/02/2019	22/02/2019	22/02/2019	518m	North East
I428	Federation Queen Anne houses	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	522m	North
C16	The Spot	Conservation Area - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	522m	North
I469	Late Federation house	Item - General	Local	Randwick Local Environmental Plan 2012	22/02/2019	22/02/2019	22/02/2019	524m	North East
I290	Late Edwardian house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	544m	North West
I200	Residential/commercial building	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	545m	South West
I427	Federation Queen Anne house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	546m	North
I437	Rainbow Street Public School	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	556m	North West
I470	Late Federation house	Item - General	Local	Randwick Local Environmental Plan 2012	22/02/2019	22/02/2019	22/02/2019	557m	North East
I462	Randwick Cemetery	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	558m	East
I426	Unusual Edwardian house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	559m	North
I357	Pair of bungalows	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	562m	North
I451	Spanish Mission style residential flat pair	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	605m	North



Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
I216	Stone bungalow	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	613m	South
I356	Group of 4 bungalows	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	635m	North
I458	Big Stable Newmarket	Item - General	State	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	636m	North West
I463	Timber cottage	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	651m	East
I218	Post-war bungalow	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	654m	South West
I403	Transitional Victorian/Edwardian style house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	664m	North
I425	Federation house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	685m	North
I424	Grand Edwardian mansion	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	687m	North
I73	'Byron Lodge'	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	692m	North East
I72	'Brooklyn Flats'	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	703m	North East
I199	'Yarrum', Edwardian bungalow	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	708m	South West
I292	Newmarket Sale Ring	Item - General	Local	Randwick Local Environmental Plan 2012	02/04/2015	02/04/2015	22/02/2019	724m	North West
I52	'Verona', Federation Queen Anne corner house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	727m	East
I466	Newmarket House	Item - General	Local	Randwick Local Environmental Plan 2012	02/04/2015	02/04/2015	22/02/2019	747m	North West
I448	Masonic Temple, classical revival style	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	747m	North
I71	3 storey Art Deco residential flat building	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	769m	North East
I460	'Santa Fe'	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	777m	East
C19	Struggletown	Conservation Area - General	Local	Randwick Local Environmental Plan 2012	02/04/2015	02/04/2015	22/02/2019	777m	North West
I83	Coogee Public School	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	787m	North
I457	Weatherboard cottage	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	789m	North West
I74	Federation house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	796m	North East
I338	St Pauls Road Sandstone Retaining Wall	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	806m	North
I248	'Aeolia', Brigidine Convent and Chapel	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	807m	North
I75	Late Victorian house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	809m	North East

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
I447	Ritz Cinema	Item - General	State	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	814m	North
I51	Art Deco residential flat building	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	822m	North East
I70	St Brigids Catholic Church	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	829m	North East
I446	Terraced pair	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	841m	North
I413	Edwardian timber cottage	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	843m	North West
I101	'Maidston', late Victorian mansion	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	843m	North East
I153	Edwardian bungalow	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	844m	West
I212	Cooper Street brick retaining wall	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	847m	South
I412	Old stone cottage	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	852m	North West
I445	Victorian Italianate boom style 2 storey house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	852m	North
I444	Federation single storey cottage	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	857m	North
I443	Victorian terrace	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	860m	North
I393	2 storey sandstone cottage	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	863m	North West
I411	St Jude's Mission Church	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	867m	North West
I392	Workers cottage	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	871m	North West
I390	Randwick Destitute Children's Asylum Cemetery	Item - General	State	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	880m	North West
I49	3 storey Neo-classical residential flat building	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	883m	North East
I388	Prince of Wales Hospital group (Main Block, Catherine Hayes Hospital and Superintendent's residence)	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	890m	North
C12	High Cross	Conservation Area - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	890m	North
I214	Californian bungalow	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	896m	South West
I80	Federation residence	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	904m	North
I326	Victorian semi-detached pair	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	905m	North
I223	Holy Family Church, Neo-romanesque style	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	910m	South

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
I69	St Nicolas Anglican Church	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	921m	North East
I459	Cairo Street stairs and associated sandstone retaining walls	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	923m	East
I156	1950s brick house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	927m	North West
I50	'Tudor Hall', Neo-Romanesque residential flat building	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	930m	North East
I461	Garnet Street Sandstone Retaining Wall, Embankment and Street Trees	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	941m	East
I96	Electricity Substation No 362	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	942m	East
I423	Pair of cottages	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	949m	North
I461	Garnet Street Sandstone Retaining Wall, Embankment and Street Trees	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	953m	East
I308	Georgian house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	954m	North West
I68	St Nicolas Rectory	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	955m	North East
I79	Victorian Gothic house	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	965m	North
I81	Inter-war residential flat buildings (pair to 94)	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	966m	North
I82	Inter-war residential flat buildings (pair to 92)	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	967m	North
I203	'Dudleys Emporium'	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	970m	South
I422	Royal Hotel	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	990m	North
I321	Coogee Bay Road Retaining Walls	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	991m	North
I84	Federation semi-detached pair	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	994m	North East
I224	'Eden Monaro', reconstruction of brick mansion	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	995m	South
I389	Prince of Wales Hospital gates and fence	Item - General	Local	Randwick Local Environmental Plan 2012	01/02/2013	15/02/2013	22/02/2019	998m	North

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## Natural Hazards

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

### Bush Fire Prone Land

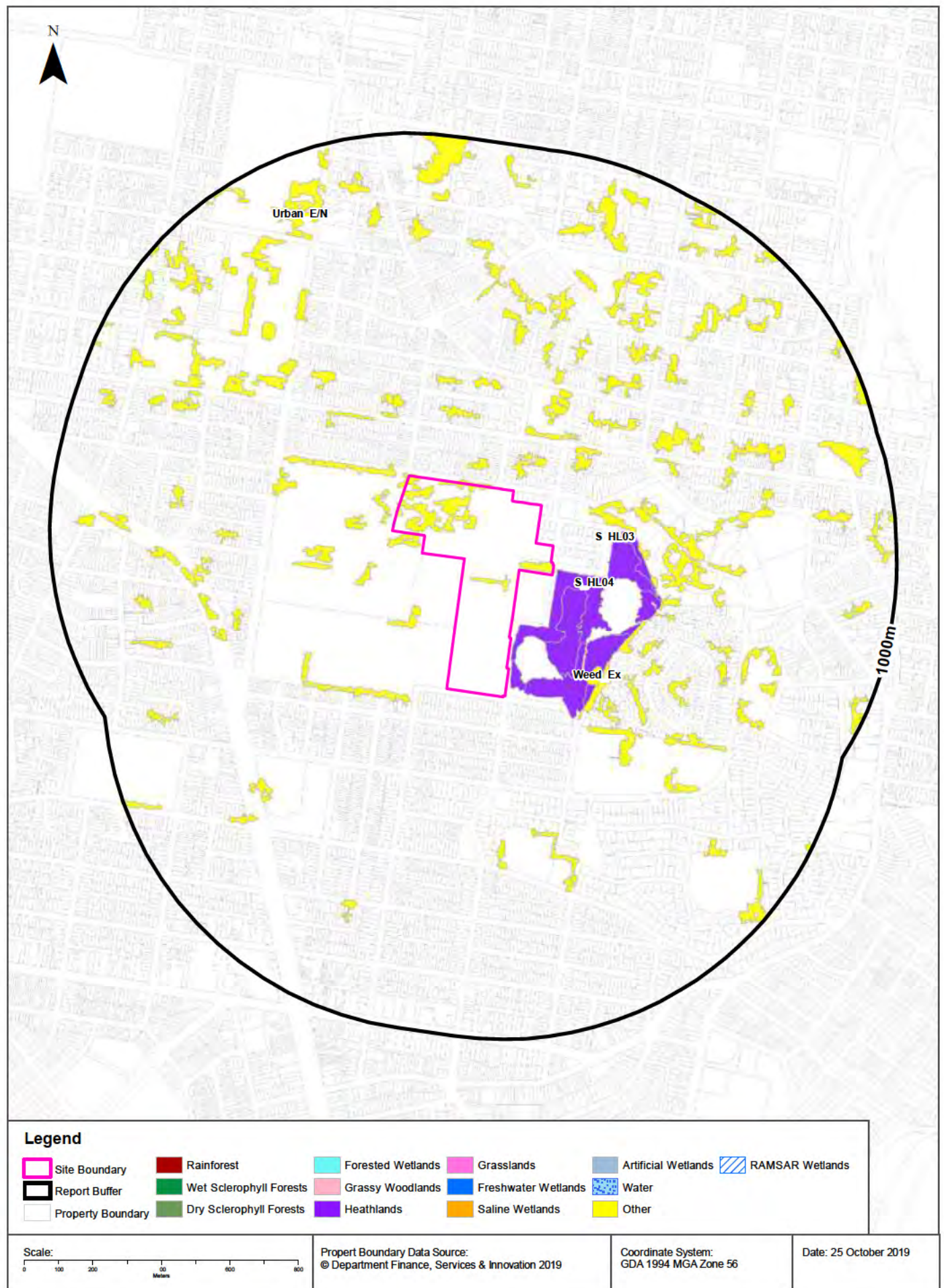
What are the nearest Bush Fire Prone Land Categories that exist within the dataset buffer?

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

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032



## Ecological Constraints

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

### 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_HL04	S_HL04: Coastal Sandplain Heath	Eastern Suburbs Banksia Scrub	Eastern Suburbs Banksia Scrub (possible)	33: Weedy shrubs	20: Previously cleared 1943	3: High	Banksia spp./A.distyla/L.laevigatum/Acacia spp.	6m	South
S_HL04	S_HL04: Coastal Sandplain Heath	Eastern Suburbs Banksia Scrub	Eastern Suburbs Banksia Scrub (possible)	33: Weedy shrubs	20: Previously cleared 1943	3: High	Banksia spp./A.distyla/L.laevigatum/Acacia spp.	6m	South East
S_HL03	S_HL03: Coastal Sand Mantle Heath	Eastern Suburbs Banksia Scrub	Eastern Suburbs Banksia Scrub (possible)	12: Dry xeric shrubs	21: Pioneering shrubs	3: High	L.laevigatum/B.integrifolia/Exotics/urban scrub	174m	East
Weed_Ex	Weed_Ex: Weeds and Exotics			00: Not assessed	00: Not assessed	0: Not assessed	Exotic Species >90%cover	220m	South East

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

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

### 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

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

### 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

Randwick Barracks, 373A Avoca Street, Kingsford, NSW 2032

## 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	Amphibia	Pseudophryne australis	Red-crowned Toadlet	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Actitis hypoleucos	Common Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Anseranas semipalmata	Magpie Goose	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	An hochaera 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	Ardea ibis	Cattle Egret	Not Listed	Not Sensitive	Not Listed	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	CAMBA;JAMBA
Animalia	Aves	Ardenna pacificus	Wedge-tailed Shearwater	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Ardenna tenuirostris	Short-tailed Shearwater	Not Listed	Not Sensitive	Not Listed	ROKAMBA;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 bairdii	Baird's Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;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 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	<i>Certhionyx variegatus</i>	Pied Honeyeater	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Charadrius leschenaultii</i>	Greater Sand-plover	Vulnerable	Not Sensitive	Vulnerable	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	<i>Charadrius mongolus</i>	Lesser Sand-plover	Vulnerable	Not Sensitive	Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	<i>Charadrius veredus</i>	Oriental Plover	Not Listed	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	<i>Chlidonias leucopterus</i>	White-winged Black Tern	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	<i>Daphoenositta chrysoptera</i>	Varied Sittella	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Dasyornis brachypterus</i>	Eastern Bristlebird	Endangered	Category 2	Endangered	
Animalia	Aves	<i>Diomedea antipodensis</i>	Antipodean Albatross	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Aves	<i>Diomedea exulans</i>	Wandering Albatross	Endangered	Not Sensitive	Endangered	JAMBA
Animalia	Aves	<i>Diomedea gibsoni</i>	Gibson's Albatross	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Aves	<i>Egretta sacra</i>	Eastern Reef Egret	Not Listed	Not Sensitive	Not Listed	CAMBA
Animalia	Aves	<i>Ep hianura albifrons</i>	White-fronted Chat	Endangered Population, Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Erythroriarchis radiatus</i>	Red Goshawk	Critically Endangered	Category 2	Vulnerable	
Animalia	Aves	<i>Fregata ariel</i>	Lesser Frigatebird	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	<i>Gallinago hardwickii</i>	Latham's Snipe	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	<i>Gelochelidon nilotica</i>	Gull-billed Tern	Not Listed	Not Sensitive	Not Listed	CAMBA
Animalia	Aves	<i>Glossopsitta pusilla</i>	Little Lorikeet	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Gygis alba</i>	White Tern	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Haematopus fuliginosus</i>	Sooty Oystercatcher	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Haematopus longirostris</i>	Pied Oystercatcher	Endangered	Not Sensitive	Not Listed	
Animalia	Aves	<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	Vulnerable	Not Sensitive	Not Listed	CAMBA
Animalia	Aves	<i>Hieraetus morphnoides</i>	Little Eagle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Hirundapus caudacutus</i>	White-bellied Needletail	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	<i>Hydroprogne caspia</i>	Caspian Tern	Not Listed	Not Sensitive	Not Listed	CAMBA;JAMBA
Animalia	Aves	<i>Ixobrychus flavicollis</i>	Black Bittern	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Lathamus discolor</i>	Swift Parrot	Endangered	Category 3	Critically Endangered	
Animalia	Aves	<i>Limicola falcinellus</i>	Broad-billed Sandpiper	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	<i>Limosa lapponica</i>	Bar-tailed Godwit	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	<i>Limosa limosa</i>	Black-tailed Godwit	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	<i>Lophochroa leadbeateri</i>	Major Mitchell's Cockatoo	Vulnerable	Category 2	Not Listed	
Animalia	Aves	<i>Lophoictinia isura</i>	Square-tailed Kite	Vulnerable	Category 3	Not Listed	
Animalia	Aves	<i>Macronectes giganteus</i>	Southern Giant Petrel	Endangered	Not Sensitive	Endangered	
Animalia	Aves	<i>Macronectes halli</i>	Northern Giant-Petrel	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Aves	<i>Manorina melanotis</i>	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	Merops ornatus	Rainbow Bee-eater	Not Listed	Not Sensitive	Not Listed	JAMBA
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	Pandion cristatus	Eastern Osprey	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Petroica boodang	Scarlet 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
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	JAMBA
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	Stagonopleura guttata	Diamond Firetail	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Stercorarius parasiticus	Arctic Jaeger	Not Listed	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Stercorarius pomarinus	Pomarine Jaeger	Not Listed	Not Sensitive	Not Listed	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
Animalia	Aves	Stictonetta naevosa	Freckled Duck	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Sula dactylatra	Masked Booby	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;JAMBA

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	<i>Sula leucogaster</i>	Brown Booby	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	<i>Sula sula</i>	Red-footed Booby	Not Listed	Not Sensitive	Not Listed	CAMBA;JAMBA
Animalia	Aves	<i>Thalassarche cauta</i>	Shy Albatross	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Aves	<i>Thalassarche chrysostoma</i>	Grey-headed Albatross	Not Listed	Not Sensitive	Endangered	
Animalia	Aves	<i>Thalassarche melanophris</i>	Black-browed Albatross	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Aves	<i>Thinornis rubricollis</i>	Hooded Plover	Critically Endangered	Not Sensitive	Vulnerable	
Animalia	Aves	<i>Tringa brevipes</i>	Grey-tailed Tattler	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	<i>Tringa glareola</i>	Wood Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	<i>Tringa incana</i>	Wandering Tattler	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	<i>Tringa nebularia</i>	Common Greenshank	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	<i>Tringa stagnatilis</i>	Marsh Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	<i>Tryngites subruficollis</i>	Buff-breasted Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	<i>Tyto novaehollandiae</i>	Masked Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	<i>Xenus cinereus</i>	Terek Sandpiper	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Insecta	<i>Petalura gigantea</i>	Giant Dragonfly	Endangered	Not Sensitive	Not Listed	
Animalia	Mammalia	<i>Aepyprymnus rufescens</i>	Rufous Bettong	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	<i>Arctocephalus forsteri</i>	New Zealand Fur-seal	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	<i>Arctocephalus pusillus doriferus</i>	Australian Fur-seal	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	<i>Cercartetus nanus</i>	Eastern Pygmy-possum	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	Vulnerable	Not Sensitive	Endangered	
Animalia	Mammalia	<i>Dasyurus viverrinus</i>	Eastern Quoll	Endangered	Not Sensitive	Endangered	
Animalia	Mammalia	<i>Dugong dugon</i>	Dugong	Endangered	Not Sensitive	Not Listed	
Animalia	Mammalia	<i>Eubalaena australis</i>	Southern Right Whale	Endangered	Not Sensitive	Endangered	
Animalia	Mammalia	<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	<i>Macrotis lagotis</i>	Bilby	Presumed Extinct	Not Sensitive	Vulnerable	
Animalia	Mammalia	<i>Megaptera novaeangliae</i>	Humpback Whale	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	<i>Micronomus norfolkensis</i>	Eastern Coastal Free-tailed Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	<i>Miniopterus australis</i>	Little Bent-winged Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	<i>Myotis macropus</i>	Southern Myotis	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	<i>Perameles nasuta</i>	Long-nosed Bandicoot	Endangered Population	Not Sensitive	Not Listed	
Animalia	Mammalia	<i>Petaurus norfolcensis</i>	Squirrel Glider	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	<i>Phascolarctos cinereus</i>	Koala	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	Vulnerable	Not Sensitive	Vulnerable	



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Animalia	Mammalia	Saccolaimus flaviventris	Yellow-bellied Sheath-tail-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 terminalis subsp. terminalis	Sunshine Wattle	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Allocasuarina portuensis	Nielsen Park She-oak	Endangered	Category 3	Endangered	
Plantae	Flora	Amperea xiphoclada var. pedicellata		Presumed Extinct	Not Sensitive	Extinct	
Plantae	Flora	Asterolasia buxifolia		Endangered	Not Sensitive	Not Listed	
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	Doryan hespalmeri	Giant Spear Lily	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Eucalyptus camfieldii	Camfield's Stringybark	Vulnerable	Not Sensitive	Vulnerable	
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-leaved 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	Grammitis stenophylla	Narrow-leaf Finger Fern	Endangered	Category 3	Not Listed	
Plantae	Flora	Grevillea caleyi	Caley's Grevillea	Critically Endangered	Category 3	Critically Endangered	
Plantae	Flora	Hibbertia puberula		Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Macadamia tetraphylla	Rough-shelled Bush Nut	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Melaleuca deanei	Deane's Paperbark	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Persoonia hirsuta	Hairy Geebung	Endangered	Category 3	Endangered	
Plantae	Flora	Pimelea curviflora var. curviflora		Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Prasophyllum fuscum	Slaty Leek Orchid	Critically Endangered	Category 2	Vulnerable	
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	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
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	Tetralathea glandulosa		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Tetralathea juncea	Black-eyed Susan	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Thelymitra atronitida	Black-hooded Sun Orchid	Critically Endangered	Category 2	Not Listed	
Plantae	Flora	Thesium australe	Austral Toadflax	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Triplarina imbricata	Creek Triplarina	Endangered	Not Sensitive	Endangered	

Data does not include NSW category 1 sensitive species.

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## Appendix C. Groundwater Bores within 2 km of the Site

## Registered Groundwater Bores within 2 km of Randwick Barracks

Bore ID	Bore Type	Registered Purpose	Complete Date	Borehole Depth (m)	Lithology	Salinity (mg/L)	SWL (m)	Yield (L/s)	Distance (m)	Direction
GW053 600	Bore	Recreation (groundwater), Test Bore	01/04/1981	29.00	Sand, clay	0-500 ppm			9m	South East
GW105 431	Bore	Recreation (groundwater), Test Bore	02/08/2004	30.00	Sand		8.10	10	9m	South East
GW108 596	Spear	Domestic	20/02/2007	16.00	Sand				45m	North East
GW107 740	Spear	Domestic	19/10/2005	11.50	Sand	Good	9.00	1.000	72m	South
GW105 496	Bore	Domestic	06/10/2003	10.00	-				253m	South West
GW044 513	Bore		01/01/1959	9.40	Sand, clay (quartz lenses), sandstone				294m	South East
GW023 841	Spear	Domestic	01/03/1966	4.50	Sand	Good			311m	South West
GW038 591	Bore	Recreation - Low Security	01/12/1955	10.20	Sand, peat, sandstone, clay	Polluted			325m	South East
GW107 385	Spear	Domestic	08/09/2005	9.50	Sand				334m	South West
GW025 716	Spear	Domestic	01/01/1945	4.80	-				340m	South West
GW024 206	Spear	Domestic	01/08/1966	5.40	Sand	Good			364m	South West
GW107 594	Spear	Domestic	15/10/2005	10.00	Sand				381m	South West
GW110 439	Spear	Domestic	24/09/2009	12.00	Sand	Good	6.00	1.000	411m	South
GW024 024	Spear	Domestic	01/12/1965	6.00	Sand	Good			438m	South West
GW107 765	Spear	Domestic	19/10/2005	12.00	Sand	Good	9.00	1.000	441m	South
GW105 962	Bore	Domestic	24/05/2005	14.00	-				452m	South West
GW1111 50	Spear	Domestic	20/10/2010	12.00	Sand				457m	South West
GW110 423	Spear	Domestic	19/03/2009	12.00	Sand	Other	7.50	1.000	477m	South West
GW108 657	Spear	Domestic	14/03/2007	15.00	Sand				481m	South
GW107 289	Spear	Domestic	17/07/2005	14.03	Sand	Good	10.37	1.000	486m	West
GW026 584	Spear	Domestic	01/11/1966	6.00	Sand				495m	South West
GW025 545	Spear	Domestic	01/11/1965	3.90	-				515m	South West
GW023 445	Spear	Domestic, Stock	01/11/1965	4.20	Sand	Good			538m	West
GW107 927	Spear	Domestic	28/03/2006	10.00	-				551m	West
GW106 163	Bore	Domestic	09/07/2004	7.00	Sand rock				553m	South
GW104 992	Bore	Domestic	24/01/2002	9.00	Sand		6.50	1.000	557m	South West
GW072 971	Spear		27/02/1995	9.00	-				564m	West
GW113 303	Bore	Monitoring Bore	01/11/2010	5.20	-				598m	North West
GW107 583	Spear	Domestic	16/10/2005	9.50	Sand				602m	South West
GW113 302	Bore	Monitoring Bore	01/11/2010	5.20	-				625m	North West
GW023 265	Spear	Domestic	01/01/1955	3.60	Sand	Good			632m	South
GW113 300	Bore	Monitoring Bore	01/11/2010	5.20	-				635m	North West
GW108 710	Spear	Domestic	19/05/2007	15.55	Sand	Good	10.67	1.000	642m	South West
GW108 788	Spear	Domestic	16/04/2007	14.64	Sand		10.68	1.000	645m	South
GW113 301	Bore	Monitoring Bore	01/11/2010	5.20	-				646m	North West
GW072 908	Spear		19/02/1995	8.00	-				649m	West
GW113 245	Bore	Monitoring Bore	10/11/2008	13.00	-				655m	South West
GW1111 95	Bore	Domestic	01/01/2005	18.28	-		9.14	0.046	658m	South
GW113 299	Well	Monitoring Bore	01/11/2010	5.20	-				663m	North West
GW104 947	Bore	Test Bore	21/02/2002	5.00	Sand, rock, silty sand	210	2.71	0.650	668m	North West
GW105 877	Bore	Domestic	09/05/2005	-	-				671m	West
GW113 244	Bore	Monitoring Bore	10/11/2008	13.00	-				673m	South West
GW113 242	Bore	Monitoring Bore	10/11/2008	13.00	-				684m	South West
GW109 001	Spear	Domestic	09/07/2008	15.55	-	Good	15.5	1.000	686m	South
GW113 243	Bore	Monitoring Bore	10/11/2008	13.00	-				687m	South West
GW073 502	Spear	Domestic	04/11/1995	11.30	Sand	Good			688m	South
GW101 330	Spear	Domestic	16/12/1997	9.00	Sand				693m	South
GW072 974	Bore		06/05/1995	10.00	-				716m	West
GW108 883	Bore	Recreation (groundwater), Test Bore	30/05/2008	210.00	Sand, sandstone (some quartz)	272	55.8	0.200	737m	South East
GW108 448	Spear	Domestic	19/01/2007	16.00	Sand				747m	West
GW109 055	Spear	Domestic	15/07/2008	15.86	-	Good	7.93	1.000	749m	South
GW102 222	Spear	Domestic	11/03/1999	9.50	Sand				752m	West
GW109 774	Spear	Domestic	01/01/2005	10.00	-		3.00	0.500	778m	West
GW023 577	Spear	Domestic	01/03/1966	3.60	Sand	Good			788m	South
GW108 443	Spear	Domestic	12/01/2007	14.50	-		8.00		802m	West
GW110 240	Bore	Recreation (groundwater), Stock, Test Bore	12/11/2008	150.00	Sand, Sandstone	100	16.5	0.500	803m	North West
GW072 463	Bore	Industrial	14/11/1994	43.00	Sand, Sandstone		8.60	1.870	806m	North West
GW108 861	Bore	Recreation (groundwater), Test Bore	08/05/2008	114.00	Sand, Sandstone		20	2.210	818m	North West
GW025 730	Spear	Domestic	01/11/1965	0.00	Sand	Good			827m	South West
GW109 769	Spear	Domestic	01/01/2005	8.00	-		2.00	2.500	828m	West
GW102 294	Spear	Domestic	06/03/1999	10.00	Sand				851m	South West
GW111 844	Bore	Monitoring Bore	11/08/2009	4.80	Sand		2.67		859m	North West
GW101 883	Bore	Domestic	26/02/1996	10.00	Sand				887m	West
GW042 165	Spear		13/02/1975	-	-				888m	South West
GW107 578	Spear	Domestic	10/11/2004	16.47	Sand	Good	12.81	1.000	892m	South West
GW111 846	Bore	Monitoring Bore	11/08/2009	5.60	Fill Sand		2.94		911m	North West
GW029 354	Bore	Industrial	01/08/1968	37.70	Sand				923m	South West
GW111 871	Bore	Monitoring Bore	11/11/2008	10.60	Fill, Sand				926m	East
GW111 845	Bore	Monitoring Bore	11/08/2009	3.00	Fill Sand		2.69		936m	North West
GW111 870	Bore	Monitoring Bore	11/11/2008	12.00	Fill Sand				940m	East
GW107 000	Spear	Domestic	16/04/2005	9.50	-				941m	South West
GW017 851	Bore	Commercial	01/03/1958	4.50	Sand				941m	North West
GW111 869	Bore	Monitoring Bore	11/11/2008	12.50	Fill, Sand				945m	East
GW111 847	Bore	Monitoring Bore	11/08/2009	5.00	Fill Sand		3.77		948m	North West



GW110 522	Spear	Domestic	24/10/2009	12.00	-	Good	6.00	1.000	957m	South West
GW107 404	Bore	Recreation (groundwater), Test Bore	18/03/2005	32.00	Sand	Good	12.4	1.000	961m	South West
GW027 616	Bore	Industrial	01/08/1967	32.60	Sand, clay				962m	South West
GW073 458	Bore		03/10/1995	16.50	-	Good			964m	South West
GW023 261	Spear	Domestic	01/11/1965	5.40	Rock	Good			967m	South
GW026 483	Spear		01/09/1966	4.80	Sand				969m	West
GW109 112	Spear	Domestic	24/07/2008	14.00	-				990m	South West
GW112 857	Bore	Monitoring Bore	05/05/2009	5.20	-				995m	North West
GW103 542	Bore	Monitoring Bore	01/01/1997	5.00	-		1.50		996m	South
GW112 856	Bore	Monitoring Bore	14/05/2009	5.00	-				998m	North West
GW112 858	Bore	Monitoring Bore	14/05/2009	3.50	-				999m	North West
GW112 855	Bore	Monitoring Bore	05/05/2009	6.50	-		2.23		1000m	North West
GW113 288	Bore	Monitoring Bore	01/05/2010	4.00	-				1010m	North West
GW113 287	Bore	Monitoring Bore	01/05/2010	3.90	-		2.50		1013m	North West
GW109 681	Well	Groundwater Remediation	13/10/2008	6.00	Sand, Sandstone				1014m	North West
GW111 554	Bore	Monitoring Bore	03/09/2008	4.00	Sand		2.58		1015m	North West
GW113 105	Bore	Monitoring Bore	18/11/2008	4.90	-				1018m	North East
GW109 679	Well	Groundwater Remediation	13/10/2008	6.00	-				1019m	North West
GW113 289	Bore	Monitoring Bore	01/05/2010	4.00	-				1020m	North West
GW109 680	Well	Groundwater Remediation	14/10/2008	5.50	-				1024m	North West
GW113 107	Bore	Monitoring Bore	20/07/2009	8.50	-				1029m	North East
GW113 106	Bore	Monitoring Bore	18/11/2008	5.50	-				1030m	North East
GW113 109	Bore	Monitoring Bore	23/07/2009	3.50	-				1033m	North East
GW027 615	Bore	Industrial	01/07/1967	36.20	-				1037m	South West
GW113 108	Bore	Monitoring Bore	23/07/2009	7.00	-				1037m	North East
GW029 355	Bore	Industrial	01/07/1968	28.90	-				1038m	South West
GW025 540	Spear	Domestic	01/12/1965	4.80	-	Good			1039m	West
GW107 806	Spear	Domestic	18/12/2005	9.50	Sand				1043m	South West
GW023 989	(Unkn own)	Domestic	01/04/1966	6.70	Sand	Fresh			1063m	South West
GW112 525	Bore	Industrial Test Bore	16/10/2008	30.00	Sand		10.6		1064m	West
GW106 661	Spear	Domestic	10/10/2004	15.25	Sand		8.23	1.000	1071m	West
GW108 472	Spear	Domestic	06/01/2007	16.00	Sand				1087m	West
GW108 822	Spear	Domestic	12/12/2006	14.00	Sand	Good		1.000	1089m	West
GW110 524	Bore	Domestic	18/11/2009	1.50	Rock				1100m	North West
GW106 752	Spear	Domestic	30/10/2004	9.50	Sand				1105m	West
GW108 394	Bore	Domestic	26/10/2006	16.00	Sand				1117m	West
GW106 158	Bore	Domestic	29/06/2005	-	-				1126m	North
GW023 529	Spear	Domestic	01/12/1965	6.70	Sand	Good			1133m	West
GW108 498	Spear	Domestic	22/01/2006	18.00	Sand				1148m	South West
GW106 005	Spear	Domestic	20/05/2004	12.29	Sand		7.93	1.000	1150m	West
GW110 956	Spear	Domestic	01/01/2007	12.19	-				1158m	West
GW111 44	Spear	Domestic	16/01/2007	8.00	-		4.00	0.500	1160m	South West
GW104 829	Bore	Domestic	10/04/2003	10.00	Sand				1161m	South West
GW013 436	Bore	Industrial	01/11/1955	34.30	Sand				1162m	South West
GW108 045	Spear	Domestic	09/06/2006	19.00	Sand				1178m	South West
GW108 172	Spear	Domestic	07/06/2006	18.00	Sand				1193m	South West
GW107 829	Spear	Domestic	24/02/2006	10.00	Sand				1205m	South West
GW108 931	Spear	Domestic	18/06/2008	14.95	-	Good	10.68	1.000	1219m	South West
GW108 978	Spear	Domestic	27/06/2008	16.50	-				1220m	South West
GW108 430	Spear	Domestic	04/01/2007	18.00	Sand				1221m	South West
GW026 364	Bore	Industrial	01/08/1966	37.30	Sand, Clay, Sandstone	Good			1235m	South West
GW113 043	Bore	Domestic	22/01/2008	12.00	-		9.00	0.250	1244m	South West
GW042 173	Spear			-	-				1248m	West
GW104 640	Bore	Domestic	30/01/2003	10.00	Sand, Clay, Sandstone				1256m	South West
GW023 991	Spear	Domestic	01/05/1966	5.70	Sand	Good			1260m	West
GW111 811	Spear	Domestic	05/09/2012	16.00	Sand				1261m	South West
GW075 025	Bore		20/07/1998	24.20	Sand, peat, silty sand, rock		9.13		1305m	West
GW023 983	Bore	Industrial	01/11/1965	38.50	Sand, Clay, Sandstone	Good			1306m	South West
GW072 994	Bore	Domestic	20/08/1995	9.50	-				1315m	West
GW025 709	Bore	Industrial	01/10/1965	37.30	Sand, Sandstone				1325m	South West
GW101 069	Spear	Domestic	11/10/1997	10.00	Sand				1338m	West
GW101 072	Spear	Domestic	11/11/1997	10.00	Sand				1350m	West
GW107 933	Spear	Domestic	17/04/2006	17.00	-				1361m	South West
GW109 165	Spear	Domestic	05/08/2008	12.00	-				1374m	South West
GW060 243	Bore	Recreation (groundwater)	01/05/1973	33.50	-				1379m	West
GW108 589	Spear	Domestic	11/03/2007	18.00	Sand				1382m	South West
GW026 476	Spear	Domestic	01/09/1966	5.10	Sand	Good			1390m	South West
GW025 552	Spear	Domestic	01/01/1959	5.10	Sand				1396m	South West
GW023 308	Spear	Domestic	01/11/1965	2.80	-	Good			1408m	South West
GW023 270	Spear	Domestic, General Use		7.00	Sand				1413m	West
GW108 669	Spear	Domestic	30/03/2007	16.00	Sand				1423m	South West
GW106 483	Spear	Domestic	12/10/2004	5.00	Sand				1423m	South
GW108 670	Bore	Domestic	20/04/2007	16.00	Sand				1432m	South West
GW106 098	Bore	Domestic	22/01/2004	9.50	Sand				1434m	North West
GW108 671	Bore	Domestic	31/03/2007	15.00	Sand				1457m	South West
GW100 768	Bore	Domestic	01/10/1995	17.39	Sand	Good		0.500	1462m	North West
GW072 907	Bore		07/06/1995	10.00	-				1472m	South West
GW101 008	Spear	Domestic	30/08/1995	9.00	Sand				1474m	South West
GW111 56	Spear	Domestic	20/10/2010	12.00	Sand				1492m	South West
GW107 621	Spear	Domestic	15/11/2005	10.00	Sand				1492m	South
GW108 963	Spear	Domestic	26/06/2008	11.50	-				1495m	South West
GW026 786	(Unkn own)	Industrial	01/10/1965	13.10	Sand, Sandstone				1497m	South West
GW101 735	Bore	Domestic	10/10/1995	10.00	Sand clay				1499m	South

GW104 948	Bore	Test Bore	20/02/2002	7.00	Sand, sandstone	120	4.35	0.300	1501m	South West
GW108 427	Spear	Domestic	04/01/2007	8.00	Sand				1503m	South East
GW023 842	Spear	Domestic	01/01/1966	7.60	Sand	Good			1505m	South
GW111 646	Bore	Domestic	20/04/2004	15.00	-				1524m	South West
GW110 871	Spear	Domestic	01/01/2007	8.00	-		2.00	2.500	1524m	South West
GW046 836	Bore	Recreation (groundwater), Test Bore	01/10/1970	37.80	Sand, clay				1531m	West
GW060 241	Bore	Recreation (groundwater)	01/05/1973	33.50	-				1533m	South West
GW108 867	Spear	Domestic	01/01/1980	14.00	-		10	0.500	1534m	South West
GW107 719	Spear	Domestic	01/06/2005	9.50	Sand				1538m	South West
GW072 905	Bore		20/05/1995	10.00	-				1552m	West
GW107 044	Spear	Domestic	18/05/2005	9.50	Sand				1554m	South West
GW101 071	Spear	Domestic	23/10/1997	6.50	Sand				1558m	South West
GW111 589	Spear	Domestic	01/01/2007	7.00	-				1562m	South East
GW107 027	Spear	Domestic	05/05/2005	9.50	Sand				1570m	South West
GW105 765	Bore	Domestic	03/02/2004	9.50	Sand				1578m	South West
GW107 369	Spear	Domestic	23/09/2005	10.00	Sand				1580m	South West
GW108 572	Spear	Domestic	27/03/2007	18.00	Sand				1580m	South West
GW025 707	Spear	Domestic	01/12/1964	5.10	Sand				1586m	South
GW107 587	Spear	Domestic	01/11/2005	9.50	Sand				1597m	South West
GW109 813	Well	Monitoring Bore	16/05/2007	9.00	Sand				1598m	West
GW106 165	Bore	Domestic	29/06/2005	-					1600m	West
GW023 589	Spear	Domestic	01/02/1966	3.60	Sand	Fair			1601m	South
GW101 432	Spear	Domestic	01/10/1997	7.00	Sand				1603m	South
GW106 944	Spear	Domestic	11/04/2005	16.77	Sand	Good	12.81	1.000	1606m	South West
GW023 612	Spear	Domestic	01/01/1966	5.10	Sand	Good			1606m	West
GW109 849	Bore	Monitoring Bore	09/08/2006	8.50	Fill Sand		6.10		1608m	West
GW101 876	Bore	Domestic	05/02/1996	9.50	Sand				1610m	South West
GW109 810	Well	Monitoring Bore	17/05/2007	9.00	Sand				1615m	West
GW107 186	Spear	Domestic	15/06/2005	7.00	Sand				1617m	South East
GW109 809	Well	Monitoring Bore	18/05/2007	9.00	Gravel Sand				1625m	West
GW060 242	Bore	Recreation (groundwater)	01/05/1973	33.50	-				1627m	West
GW109 848	Bore	Monitoring Bore	08/08/2006	8.70	Fill, Sand		6.40		1627m	West
GW109 847	Bore	Monitoring Bore	07/08/2006	8.50	Fill, Sand		6.80		1632m	West
GW101 679	Bore	Domestic	29/09/1998	7.00	Sand				1634m	South
GW109 811	Well	Monitoring Bore	16/05/2007	9.00	Sand				1636m	West
GW109 812	Well	Monitoring Bore	15/04/2007	9.00	Sand				1640m	West
GW109 149	Spear	Domestic	05/08/2008	9.00	-				1642m	South West
GW111 547	Bore	Domestic	09/12/2006	18.00	-				1649m	South West
GW042 169	Bore - Nested (2)			29.80	-		0.00		1650m	West
GW025 656	Spear	Domestic		4.80	Sand				1653m	South
GW109 850	Bore	Monitoring Bore	28/08/2006	14.00	Fill, Sand		11.8		1655m	South West
GW108 971	Bore	Recreation (groundwater), Test Bore	27/06/2008	216.00	Sand, Sandstone	Fresh	27	0.050	1670m	North
GW023 839	Spear	Domestic	01/03/1966	8.20	Sand	Good			1671m	South West
GW102 219	Spear	Domestic	22/02/1999	7.63	Sand	Good	4.88	1.000	1673m	South West
GW110 856	Bore	Monitoring Bore	22/07/2004	13.20	Sand		176	10	1.000	1676m
GW111 248	Bore	Recreation (groundwater), Test Bore	20/01/2004	30.00	Sand		6.00		1681m	West
GW110 019	Bore	Recreation (groundwater), Test Bore	18/07/2008	9.00	Sand	120	2.40	3.000	1682m	South East
GW072 292	Spear		14/01/1995	10.00	-				1685m	South West
GW114 846	Spear	Domestic	20/04/2014	7.00	-		3.00		1687m	South
GW109 851	Bore	Monitoring Bore	30/08/2006	13.50	Fill Sand		10.9		1690m	South West
GW017 464	Spear	Domestic	01/12/1957	7.60	-				1694m	South East
GW109 852	Bore	Monitoring Bore	30/08/2006	13.00	Fill, Sand		10.8		1696m	South West
GW104 993	Bore	Domestic	26/01/2002	10.00	Sand		6.50	1.000	1696m	West
GW101 653	Bore	Domestic	03/11/1998	7.63	Sand	Good	4.88	1.000	1707m	South West
GW108 587	Spear	Domestic	18/02/2007	10.00	-				1708m	South West
GW111 602	Spear	Domestic	24/08/2011	12.00	Sand				1720m	South West
GW060 223	Battery Spears	Recreation (groundwater), Test Bore	01/01/1983	9.00	Sand	0-500 ppm	2.30	3.000	1721m	South
GW060 222	Battery Spears	Recreation (groundwater)	01/01/1984	-				6.320	1723m	South East
GW112 349	Spear	Domestic	01/02/2008	12.00	-		12		1728m	South West
GW110 416	Spear	Domestic	06/09/2009	7.00	-				1732m	South
GW108 849	Spear	Domestic	20/05/2007	16.00	Sand				1734m	South West
GW019 633	(Unkn own)	Irrigation	01/11/1961	35.00	Sand				1734m	West
GW107 390	Spear	Domestic	13/09/2004	7.32	Sand	Good	4.88	1.000	1737m	West
GW111 247	Bore	Recreation (groundwater), Test Bore	14/04/2004	36.00	Sand, Peat		7.00		1741m	West
GW106 363	Bore	Domestic	02/08/2004	15.00	Sand		11	0.800	1743m	South West
GW101 645	Bore	Domestic	01/03/1994	7.00	-				1748m	West
GW024 372	Spear	Domestic	01/08/1966	7.30	Sand	Good			1751m	South West
GW107 337	Spear	Domestic	09/08/2005	6.00	Sand	Good	3.00	0.500	1755m	South
GW108 665	Spear	Domestic	10/02/2007	18.00	Sand				1758m	South West
GW109 143	Spear	Domestic	04/08/2008	5.00	-	Good	3.00	0.500	1771m	South
GW108 226	Spear	Domestic	17/08/2006	13.42	Sand		9.15	1.000	1783m	South West
GW108 232	Spear	Domestic	01/11/2006	16.00	-				1786m	South West
GW024 037	Spear	Domestic	01/03/1966	7.10	Sand	Good			1786m	South West
GW047 125	Bore	Recreation (groundwater), Test Bore	01/05/1976	24.40	Sand, Sandstone		4.00		1786m	West
GW108 214	Bore	Test Bore	13/09/2006	7.30	Sand				1790m	South
GW107 868	Bore	Domestic	13/03/2006	-					1790m	South
GW072 238	Bore	Domestic	29/03/1994	10.00	Sand				1793m	South West
GW111 454	Bore	Domestic	07/06/2011	12.00	-				1794m	South West
GW108 664	Spear	Domestic	20/01/2007	16.00	Sand				1803m	South West
GW107 789	Spear	Domestic	01/06/2004	7.00	Sand				1817m	North West
GW106 864	Spear	Domestic	14/03/2005	9.50	Sand				1822m	South West

GW111 568	Bore	Monitoring Bore	01/08/2011	8.60	Sand	123	5.20		1826m	North West
GW107 567	Spear	Domestic	01/10/2005	9.50	Sand				1827m	South West
GW108 422	Spear	Domestic	18/01/2007	14.00	-				1832m	North West
GW023 659	Spear	Domestic	01/01/1966	4.80	Sand, clay	Good			1835m	West
GW108 911	Spear	Domestic	12/06/2008	16.00	-				1836m	South West
GW024 369	Spear	Domestic	01/11/1965	8.80	Sand	Good			1838m	South West
GW111 567	Bore	Monitoring Bore	01/08/2011	8.00	Sand	145	5.20		1844m	North West
GW106 812	Spear	Domestic	14/12/2004	10.06	Sand	Good	7.01	1.000	1847m	South West
GW1111 51	Spear	Domestic	20/10/2010	17.00	Sand				1849m	South West
GW106 022	Spear	Domestic	08/03/2004	5.00	Sand				1851m	South
GW106 960	Spear	Domestic	01/03/2005	10.68	Snad	Good	7.01	1.000	1854m	South West
GW111 624	Bore	Monitoring Bore	05/08/2005	36.00	Hawkesbury Sandstone		5.00		1856m	West
GW111 600	Bore	Monitoring Bore	29/09/2011	20.00	Sand		5.00		1856m	West
GW104 989	Bore	Domestic	11/11/2002	10.00	Sand		7.00	1.000	1857m	South West
GW062 486	Bore	Recreation (groundwater)	01/01/1919	20.00	-				1860m	South West
GW110 134	Spear	Domestic	01/03/2009	10.00	Sand				1873m	South West
GW109 054	Spear	Domestic	15/07/2008	8.00	-				1877m	West
GW108 507	Spear	Domestic	15/07/2006	8.00	Sand				1877m	West
GW101 157	Spear	Domestic	06/09/1995	6.10	Sand	Good	3.96	1.000	1878m	West
GW101 680	Bore	Domestic	23/09/1998	7.93	Sand	Good		1.000	1883m	South West
GW106 996	Spear	Domestic	17/05/2005	9.50	Sand				1890m	South West
GW107 308	Spear	Domestic	14/08/2005	9.50	Sand				1892m	South West
GW025 890	Bore	Industrial, Irrigation, Recreation (groundwater)	01/07/1965	31.30	Sand, Clay	0-500 ppm			1892m	North West
GW108 772	Spear	Domestic	16/04/2007	15.00	-				1893m	South West
GW105 771	Spear	Domestic	08/12/2004	7.01	Sand			1.000	1893m	West
GW107 584	Spear	Domestic	10/10/2005	7.50	Sand				1894m	North West
GW048 234	Bore	Recreation (groundwater), Test Bore	01/11/1978	22.50	Sand, Peat	0-500 ppm			1895m	South West
GW110 535	Bore	Domestic	30/10/2009	12.00	Sand				1901m	North West
GW101 452	Spear	Domestic	17/02/1998	6.00	Sand				1907m	North West
GW103 051	Bore	Domestic	28/06/1999	5.80	Sand	Good	3.05	1.000	1908m	West
GW107 325	Spear	Domestic	16/08/2005	9.50	Sand				1908m	South West
GW062 054	Bore	Recreation (groundwater)	01/12/1985	37.40	Sand	Good	10	10.110	1913m	South West
GW107 119	Spear	Domestic	10/05/2005	10.98	Sand	Good	7.93	1.000	1920m	South West
GW108 225	Bore	Domestic	19/08/2006	14.00	Sand				1926m	West
GW016 331	Bore	Industrial	01/01/1959	37.60	Sand				1935m	South West
GW073 503	Spear	Domestic	01/11/1995	10.00	Sand				1943m	South West
GW104 391	Bore	Domestic	27/02/1995	10.00	Snad				1959m	South West
GW110 836	Spear	Domestic	30/03/2010	12.00	Sand				1961m	South West
GW102 016	Bore	Industrial, Recreation (groundwater)	11/09/1995	32.00	Sand, Peat, Clay	Fresh	7.20	18.000	1963m	North West
GW016 330	Bore	Industrial	01/02/1961	26.20	Sand, Sandstone	Fresh			1967m	South West
GW106 323	Bore	Domestic	09/02/2004	3.00	Sand rock		1.50	0.500	1968m	South
GW107 296	Spear	Domestic	16/04/2005	6.00	Sand				1974m	West
GW110 785	Spear	Domestic	20/02/2010	12.00	-		6.00	1.500	1975m	South West
GW075 020	Bore	Domestic	17/07/1998	28.00	Sand, Rock		7.76		1977m	South West
GW111 438	Spear	Domestic	11/02/2007	6.10	Sand	good	3.50	1.000	1977m	West
GW026 468	Bore	Recreation (groundwater)	01/07/1966	19.60	Sand Peat				1989m	North West
GW014 460	Bore	Industrial	01/03/1958	38.40	Sand Peat				1990m	South West
GW019 634	Bore	Irrigation	01/04/1954	32.60	Sand, Clay, Peat				1997m	North West
GW112 607	Bore	Monitoring Bore	10/12/2009	13.00	Sand Clay				1998m	South
GW013 339	Bore	Recreation (groundwater)	01/05/1956	16.40	Sand	Good			1998m	North West
GW023 179	Spear	Recreation (groundwater)		7.60	Sand	Good			1998m	North West



## Appendix D. Photographic Log

Photo No.	1	
Date:	14/11/19	
Direction photo taken:	South	
Description: Shipping containers stored on concrete slab 9 and paint tins stored south of the southern edge of concrete slab 9.		

Photo No.	2	
Date:	14/11/19	
Direction photo taken:	East	
Description: Hydrant/booster at the eastern end of concrete slab 13.		



Photo No.	3	
Date:	14/11/19	
Direction photo taken:	West	
Description: Concrete slab 13 looking west.		

Photo No.	4	
Date:	14/11/19	
Direction photo taken:	East	
Description: ACM fragments observed on the eastern edge of concrete slab 15.		



Photo No.	5	
Date:	14/11/19	
Direction photo taken:	East	
Description: Mulch observed across the surface of the north eastern portion of the Site.		

Photo No.	6	
Date:	14/11/19	
Direction photo taken:	North	
Description: Rock lined drain on the northern portion of the Site.		




Photo No.	7	
Date:	14/11/19	
Direction photo taken:	South	
Description: Stockpile of fencing, irrigation pipe and potential ACM pipe (SP9) observed on the western edge of concrete slab 16.		


Photo No.	8	
Date:	14/11/19	
Direction photo taken:	West	
Description: Excavated area north of concrete slab 16 on the western portion of the Site.		


Photo No.	9	
Date:	14/11/19	
Direction photo taken:	South	
Description: Sections of steel cable and concrete rubble observed on the western portion of the Site.		



Photo No.	10	
Date:	14/11/19	
Direction photo taken:	-	
Description: ACM fragment observed on the western portion of the Site		

Photo No.	11	
Date:	14/11/19	
Direction photo taken:	east	
Description: Excavated at the western end of and between concrete slabs 1 and 2.		




Photo No.	12	
Date:	14/11/19	
Direction photo taken:	-	
<p>Description:</p> <p>Fragment of potential ACM observed in material from the excavation between concrete slabs 1 and 2.</p>		


Photo No.	13	
Date:	14/11/19	
Direction photo taken:	-	
<p>Description:</p> <p>Concrete rubble observed across the surface of the western portion of the Site.</p>		



Photo No.	14	
Date:	14/11/19	
Direction photo taken:	North	
Description: Edge of former concrete slab on the western portion of the Site.		
Photo No.	15	
Date:	14/11/19	
Direction photo taken:	-	
Description: ACM fragments observed on the surface of the western portion of the Site		



Photo No.	16	
Date:	14/11/19	
Direction photo taken:	West	
Description: Steel container observed on the central portion of the Site on the south eastern corner of concrete slab 7.		

Photo No.	17	
Date:	14/11/19	
Direction photo taken:	East	
Description: Small steel tank located on the central portion of the Site on the south eastern corner of concrete slab 7.		



Photo No.	18	
Date:	14/11/19	
Direction photo taken:	South East	
<p>Description:</p> <p>Demolition rubble observed on Rocky outcrop on the northern portion of the Site.</p>		
Photo No.	19	
Date:	14/11/19	
Direction photo taken:	West	
<p>Description:</p> <p>Stockpile of sandy fill/soils (approximately 27 X 2 X 1 m) observed on the north western portion of the Site adjacent to and south of an electrical substation.</p>		





Photo No.	20	
Date:	14/11/19	
Direction photo taken:	-	
Description: ACM fragment observed on the surface of the north western portion of the Site.		
Photo No.	21	
Date:	14/11/19	
Direction photo taken:	South East	
Description: Flammable liquid store located in the storage yard on the southern portion of the Site.		




Photo No.	22	
Date:	14/11/19	
Direction photo taken:	South West	
Description: Minor surface staining around mower in the storage yard on the southern portion of the Site, flammable liquid storage cabinets can be seen in the background.		


Photo No.	23	
Date:	14/11/19	
Direction photo taken:	-	
Description: Spent shell casing and fragments of ACM observed adjacent to and directly south of the storage yard		




Photo No.	24	
Date:	14/11/19	
Direction photo taken:	North	
Description: Staining observed under compressor at the former transport compound.		


Photo No.	25	
Date:	14/11/19	
Direction photo taken:	North	
Description: Former vehicle wash bay and brick building in former transport compound.		





Photo No.	26	
Date:	14/11/19	
Direction photo taken:	-	
Description: ACM fragment observed on the surface of the southern portion of the Site south of the former transport compound.		
Photo No.	27	
Date:	14/11/19	
Direction photo taken:	North west	
Description: Stockpile of construction rubble observed on the surface of the southern portion of the Site south of the former transport compound.		




Photo No.	28	
Date:	14/11/19	
Direction photo taken:	North	
Description: Oil water separator and collection pit observed adjacent to vehicle inspection ramp and two vehicle inspection pits in the former transport compound on the southern portion of the Site..		

Photo No.	29	
Date:	15/11/19	
Direction photo taken:	East	
Description: Staining observed adjacent to stormwater drain and southern side of brick building in the former transport compound on the southern portion of the Site.		

Photo No.	30	
Date:	15/11/19	
Direction photo taken:	North west	
Description: Staining observed (foreground) adjacent to and west of the vehicle inspection pit in the former transport compound on the south portion of the Site.		

Photo No.	31	
Date:	15/11/19	
Direction photo taken:	North west	
Description: Staining observed on the south western portion of concrete area in the former transport compound on the southern portion of the Site.		



Photo No.	32	
Date:	15/11/19	
Direction photo taken:	West	
Description: Vehicle wash bay west of adjacent to the south western portion of the Site.		

Photo No.	33	
Date:	15/11/19	
Direction photo taken:	North west	
Description: Greywater pumping station located adjacent to the south western portion of the Site.		

Photo No.	34	
Date:	15/11/19	
Direction photo taken:	-	
Description: ACM fragments scattered across the surface on a garden bed on the southern portion of the Site north of car park.		

---

## Appendix E. Underground Utilities



## Caller Details

**Contact:** [REDACTED]  
**Company:** Jacobs  
**Address:** L12 452 Flinders Street  
Melbourne VIC 3000

**Caller Id:** 2193128  
**Mobile:** [REDACTED]  
**Email:** [REDACTED]  
**Phone:** [REDACTED]  
**Fax:** Not Supplied

## Dig Site and Enquiry Details

**WARNING:** The map below only displays the location of the proposed dig site and does not display any asset owners' pipe or cables. The area highlighted has been used only to identify the participating asset owners, who will send information to you directly.



**User Reference:** IH107200 Randwick  
**Working on Behalf of:** Private  
**Enquiry Date:** 31/10/2019  
**Start Date:** 01/11/2019  
**End Date:** 01/11/2020  
**Address:** Randwick Barracks 373a Avoca Street  
Kingsford NSW 2032  
**Job Purpose:** Design  
**Location of Workplace:** Private Property  
**Onsite Activity:** Planning & Design  
**Location in Road:** Not Supplied

- Check the location of the dig site is correct. If not submit a new enquiry.
- If the scope of works change, or plan validity dates expire, resubmit your enquiry.
- Do NOT dig without plans. Safe excavation is your responsibility. If you do not understand the plans or how to proceed safely, please contact the relevant asset owners.

### Notes/Description of Works:

## Your Responsibilities and Duty of Care

- The lodgement of an enquiry does not authorise the project to commence. You must obtain all necessary information from any and all likely impacted asset owners prior to excavation.
- If plans are not received within 2 working days, contact the asset owners directly & quote their Sequence No.
- ALWAYS perform an onsite inspection for the presence of assets. Should you require an onsite location, contact the asset owners directly. Please remember, plans do not detail the exact location of assets.
- Pothole to establish the exact location of all underground assets using a hand shovel, before using heavy machinery.
- Ensure you adhere to any State legislative requirements regarding Duty of Care and safe digging requirements.
- If you damage an underground asset you MUST advise the asset owner immediately.
- By using this service, you agree to Privacy Policy and the terms and disclaimers set out at [www.1100.com.au](http://www.1100.com.au)
- For more information on safe excavation practices, visit [www.1100.com.au](http://www.1100.com.au)

## Asset Owner Details

The assets owners listed below have been requested to contact you with information about their asset locations within 2 working days. Additional time should be allowed for information issued by post. It is **your responsibility** to identify the presence of any underground assets in and around your proposed dig site. Please be aware, that not all asset owners are registered with the Dial Before You Dig service, so it is **your responsibility** to identify and contact any asset owners not listed here directly.

\*\* Asset owners highlighted by asterisks \*\* require that you visit their offices to collect plans.


# Asset owners highlighted with a hash require that you call them to discuss your enquiry or to obtain plans.

Seq. No.	Authority Name	Phone	Status
91658757	Ausgrid	0249510899	NOTIFIED
91658759	Jemena Gas South	1300880906	NOTIFIED
91658761	NBN Co, NswAct	1800626762	NOTIFIED
91658756	PIPE Networks, Nsw	1800201100	NOTIFIED
91658760	Sydney Water	132092	NOTIFIED
91658758	Telstra NSW, Central	1800653935	NOTIFIED

END OF UTILITIES LIST



To: [REDACTED]  
Phone: [REDACTED]  
Fax: Not Supp ed  
Email: [REDACTED]

Dial before you dig Job #:	18490145	 <b>DIAL BEFORE YOU DIG</b> www.1100.com.au
Sequence #	91658761	
Issue Date:	31/10/2019	
Location:	373a Avoca Street , K ngsford , NSW , 2032	Some impact. No onsite action required.

## Information

The area of interest requested by you conta ns one or more assets.

nbn Assets	Search Results
Communications	Asset dent f ed
Electricity	No assets

In th s not ce **NBN Facilities** means *underground fibre optic, telecommunications and/or power facilities, including but not limited to cables, owned and controlled by nbn*

## Location of Underground Power Facilities

We thank you for your enqury. In re at on to your enqury at the above address:

- **nbn's** records nd cate that there **ARE nbn** Fac t es n the v c n ty of the ocat on dent f ed above ("Locat on").
- **nbn** nd cat ve P an/s are attached w th th s not ce ("Ind cat ve P ans").
- The Ind cat ve P an/s show genera depth and a gnment nformat on on y and are not an exact, sca e or accurate dep ct on of the ocat on, depth and a gnment of **nbn** Fac t es shown on the P an/s.
- In part cu ar, the fact that the Ind cat ve P ans show that a fac ty s nsta ed n a straight ne, or at un form depth a ong ts ength cannot be re ed upon as ev dence that the fac ty s, n fact, nsta ed n a straight ne or at un form depth.
- You shou d read the Ind cat ve P ans n conjunct on w th th s not ce and n part cu ar, the notes be ow.
- You shou d note that, at the present t me, the Ind cat ve P ans are ke y to be more accurate n show ng ocat on of f bre opt cs and telecomun cat ons cab es than power cab es. There may be a var at on between the ne dep ct on the Ind cat ve P ans and the ocat on of any power cab es. As such, cons tent w th the notes be ow, part cu ar care must be taken by you to make your own enqur es and nvest gat ons to prec se y ocate any power cab es and manage the r sk ar s ng from such cab es accord ng y.
- The nformat on conta ned n the Ind cat ve P an/s s va d for 28 days from the date of ssue set out



above. You are expected to make your own enquiries and perform your own investigations (including engaging appropriate qualified plant operators at your cost to locate **nbn** Facilities during any activities you carry out on site).

We thank you for your enquiry and appreciate your continued use of the Data Before You Dig Service. If you are planning to excavate and require further information, please contact **nbn** on 1800 626 329. For any enquiries related to moving assets or Planning and Design activities, please visit the **nbn** [Commercial Works](#) website to complete the online application form.

#### Notes:

1. You are now aware that there are **nbn** Facilities in the vicinity of the above property that could be damaged as a result of activities carried out (or proposed to be carried out) by you in the vicinity of the Location.
2. You should have regard to section 474.6 and 474.7 of the *Criminal Code Act 1995* (CoA) which deals with the consequences of interfering or tampering with telecommunications facilities. Only persons authorised by **nbn** can interfere with **nbn's** network facilities.
3. Any information provided is valid only for **28 days** from the date of issue set out above.

## Referral Conditions

The following are conditions on which **nbn** provides you with the Indicative Plans. By accepting the plans, you are agreeing to these conditions. These conditions are in addition, and not in replacement of, any duties and obligations you have under applicable law.

1. **nbn** does not accept any responsibility for any inaccuracies of its plans including the Indicative Plans. You are expected to make your own enquiries and perform your own investigations (including engaging appropriate qualified plant operators at your expense to locate **nbn** Facilities during any activities you carry out on site).
2. You acknowledge that **nbn** has specified that you are advised above that the Indicative Plans are likely to be more accurate in showing location of fibre optics and telecommunications cables than power cables. There may be a variation between the one depicted on the Indicative Plans and the location of any power cables.
3. You should not assume that **nbn** Facilities follow straight lines or are installed at uniform depths along the lengths, even if they are indicated on plans provided to you. Careful investigations are essential to locate the exact position of cables.
4. In carrying out any works in the vicinity of **nbn** Facilities, you must maintain the following minimum clearances:
  - 300mm when laying assets in the, horizontally or vertically.
  - 500mm when operating vibratory equipment, for example: jackhammers or vibratory plates.
  - 1000mm when operating mechanical excavators.
  - Adherence to clearances as directed by other asset owner's instructions and take into account any uncertainty for power cables.
5. You are aware that there are inherent risks and dangers associated with carrying out work in the vicinity of underground facilities (such as **nbn** fibre optic, copper and coaxial cables, and power cable feed to **nbn** assets). Damage to underground electrical cables may result in:
  - Injury from electrical shock or severe burns, with the possibility of death.
  - Interruption of the electricity supply to wide areas of the city.
  - Damage to your excavating plant.
  - Responsibility for the cost of repairs.
6. You must take all reasonable precautions to avoid damaging **nbn** Facilities. These precautions may include but not limited to the following:
  - An excavation site should be examined for underground cables by careful hand excavation. Cable cover signs present must not be disturbed. Hand excavation needs to be undertaken with extreme care to





minimise the likelihood of damage to the cable, for example: the blades of hand equipment should be aligned parallel to the line of the cable rather than digging across the cable.

- If any undiscussed underground cables are located, notify **nbn** immediately.
- A person must be properly briefed, particularly those associated with the use of earth-moving equipment, trenching, boring and pneumatic equipment.
- The safety of the public and other workers must be ensured.
- All excavations must be undertaken in accordance with all relevant legislation and regulations.

- You will be responsible for all damage to **nbn** Facilities that are connected whether directly, or indirectly with work you carry out (or work that is carried out for you or on your behalf) at the Location. This will include, without limitation, all losses and expenses incurred by **nbn** as a result of any such damage.
- You must immediately report any damage to **nbn**™ network that you are/become aware of. Notification may be by telephone - 1800 626 329.
- Except to the extent that liability may not be capable of lawful exclusion, **nbn** and its servants and agents and the related bodies corporate of **nbn** and their servants and agents shall be under no liability whatsoever to any person for any loss or damage (including indirect or consequential loss or damage) however caused (including, without limitation, breach of contract negligence and/or breach of statute) which may be suffered or incurred from or in connection with this information sheet or any plans (including Indicative Plans) attached hereto. Except as expressly provided to the contrary in this information sheet or the attached plans (including Indicative Plans), all terms, conditions, warranties, undertakings or representations (whether expressed or implied) are excluded to the fullest extent permitted by law.

All works undertaken shall be in accordance with all relevant legislation, acts and regulations applicable to the particular state or territory of the Location. The following table lists all relevant documents that shall be considered and adhered to.

State/Territory	Documents
<b>National</b>	Work Health and Safety Act 2011
	Work Health and Safety Regulations 2011
	Safe Work Australia - Working in the Vicinity of Overhead and Underground Electrical Lines (Draft)
	Occupational Health and Safety Act 1991
<b>NSW</b>	Electricity Supply Act 1995
	Work Cover NSW - Work Near Underground Assets Guide
	Work Cover NSW - Excavation Work: Code of Practice
<b>VIC</b>	Electricity Safety Act 1998
	Electricity Safety (Network Asset) Regulations 1999
<b>QLD</b>	Electricity Safety Act 2002
	Code of Practice for Working Near Exposed Live Parts
<b>SA</b>	Electricity Act 1996
<b>TAS</b>	Tasmanian Electricity Supply Industry Act 1995
<b>WA</b>	Electricity Act 1945
	Electricity Regulations 1947
<b>NT</b>	Electricity Reform Act 2005
	Electricity Reform (Safety and Technical) Regulations 2005
<b>ACT</b>	Electricity Act 1971

Thank You,

**Network Operations Centre - Assurance**



Date: 31/10/2019

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# Working near **nbn**<sup>TM</sup> cables

**nbn** has partnered with Dial Before You Dig to give you a single point of contact to get information about **nbn** underground services owned by **nbn** and other utility/service provider in your area including communications, electricity, gas and other services. Contact with underground power cables and gas services can result in serious injury to the worker, and damage and costly repairs. You must familiarise yourself with all of the Referral Conditions (meaning the referral conditions referred to in the DBYD Notice provided by **nbn**).

## Practice safe work habits

Once the DBYD plans are reviewed, the Five P's of Excavation should be adopted in conjunction with your safe work practices (which must be compliant with the relevant state Electrical Safety Act and Safe Work Australia "Excavation Work Code of Practice", as a minimum) to ensure the risk of any contact with underground **nbn** assets are minimised.



**Plan:** Plan your job ensuring the plans received are current and apply to the work to be performed. Also check for any visual cues that may indicate the presence of services not covered in the DBYD plans.



**Prepare:** Prepare for your job by engaging a DBYD qualified Plant Locator to help interpret plans and identify on-site assets. Contact **nbn** should you require further assistance.



**Pothole:** Non-destructive potholing (i.e. hand digging or hydro excavation) should be used to positively locate **nbn** underground assets with minimal risk of contact and service damage.



**Protect:** Protecting and supporting the exposed **nbn** underground asset is the responsibility of the worker. Exclusion zones for **nbn** assets are clearly stated in the plan and appropriate controls must be implemented to ensure that encroachment into the exclusion zone by machinery or activities with the potential to damage the asset is prevented.



**Proceed:** Proceed only when the appropriate planning, preparation, potholing and protective measures are in place.



# Working near **nbn**<sup>TM</sup> cables



Identify all electrical hazards, assess the risks and establish control measures.



When using excavators and other machinery, also check the location of overhead power lines.



Workers and equipment must maintain safety exclusion zones around power lines.

Once all work is completed, the excavation should be re-instated with the same type of excavated material unless specified by **nbn**. Please note:

- Construction Partners of **nbn** may require additional controls to be in place when performing excavation activities.
- The information contained within this pamphlet must be used in conjunction with other material supplied as part of this request for information to adequately control the risk of potential asset damage.

## Contact

In the event of the **nbn**<sup>TM</sup> network facility damage please call 1800 626 329

### Disclaimer

This brochure is a guide only. It does not address all the matters you need to consider when working near our cables. You must familiarise yourself with other material provided (including the Referral Conditions) and make your own inquiries as appropriate.


**nbn** will not be liable or responsible for any loss, damage or costs incurred as a result of reliance on this brochure.

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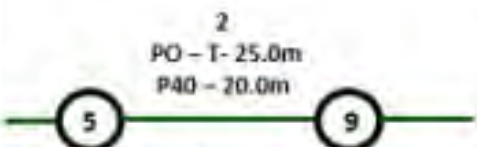
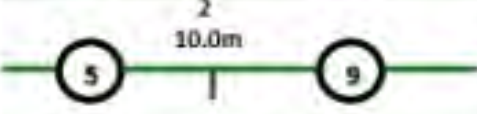









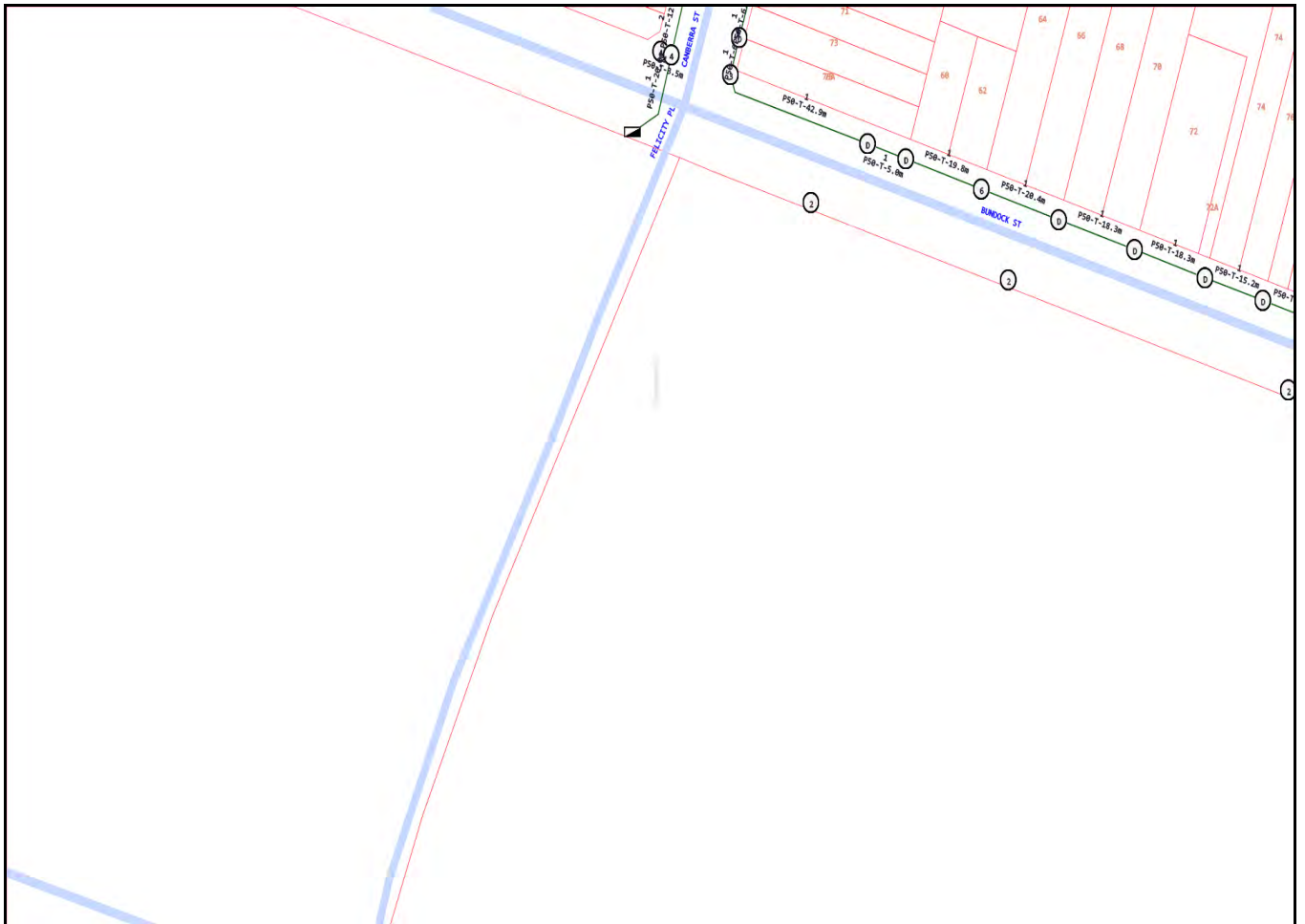
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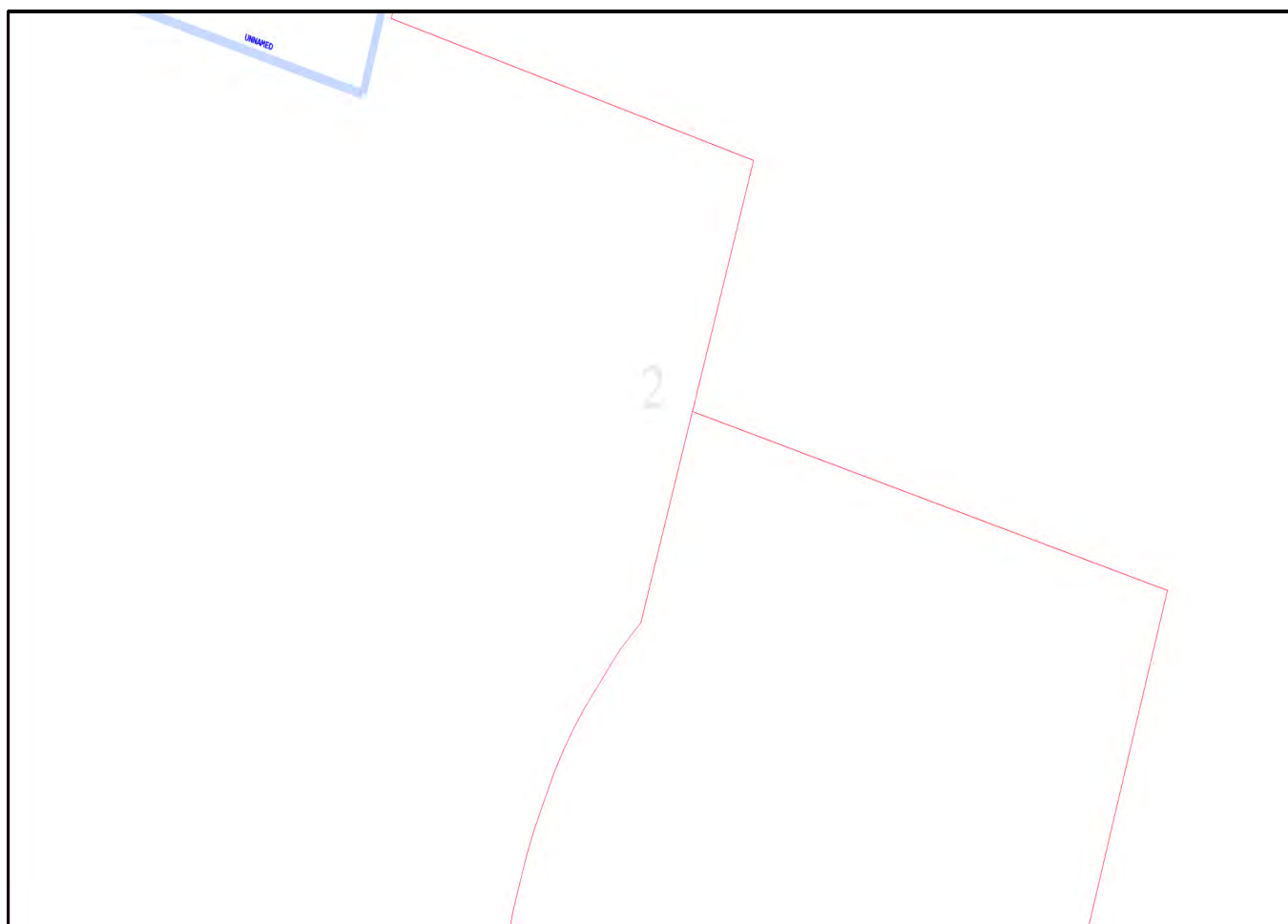
Issue Date:	31/10/2019	 <b>DIAL BEFORE YOU DIG</b> www.1100.com.au
Location:	373a Avoca Street , K ngsford , NSW , 2032	

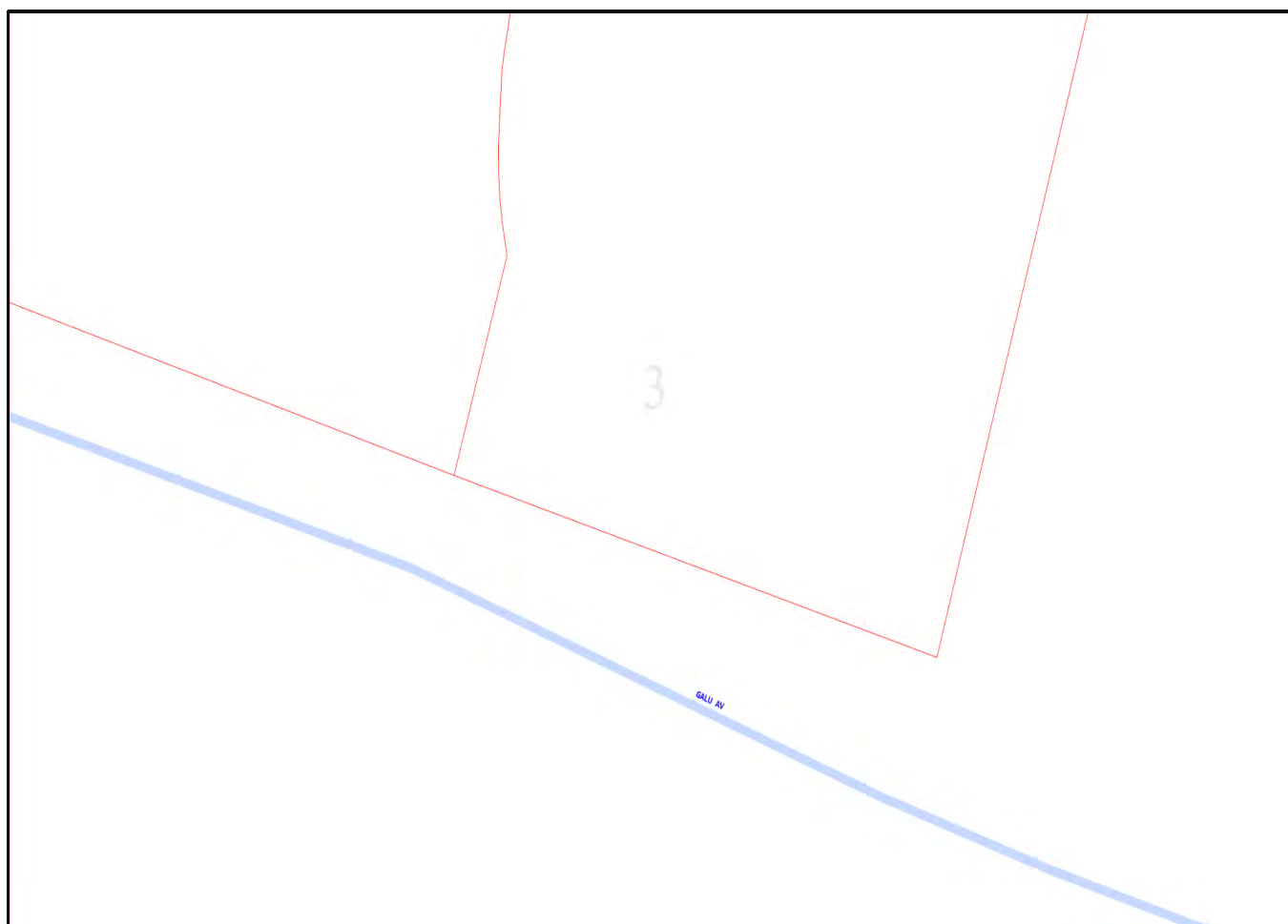
1	5
2	6
3	7
4	8

	<h2>LEGEND</h2>
	<p>Parcel and the location</p>
	<p>Pit with size "5"</p>
	<p>Power Pit with size "2E". Valid PIT Size: e.g. 2E, 5E, 6E, 8E, 9E, E, null.</p>
	<p>Manhole</p>
	<p>Pillar</p>
	<p>Cable count of trench is 2. One "Other size" PVC conduit (PO) owned by Telstra (-T-), between pits of sizes, "5" and "9" are 25.0m apart. One 40mm PVC conduit (P40) owned by NBN, between pits of sizes, "5" and "9" are 20.0m apart.</p>
	<p>2 Direct buried cables between pits of sizes, "5" and "9" are 10.0m apart.</p>
	<p>Trench containing any <b>INSERVICE/CONSTRUCTED</b> (Copper/RF/Fibre) cables.</p>
	<p>Trench containing only <b>DESIGNED/PLANNED</b> (Copper/RF/Fibre/Power) cables.</p>
	<p>Trench containing any <b>INSERVICE/CONSTRUCTED</b> (Power) cables.</p>
	<p>Road and the street name "Broadway ST".</p>
<p>Scale</p>	<p>0 20 40 60 Meters 1:2000 1 cm equals 20 m</p> 

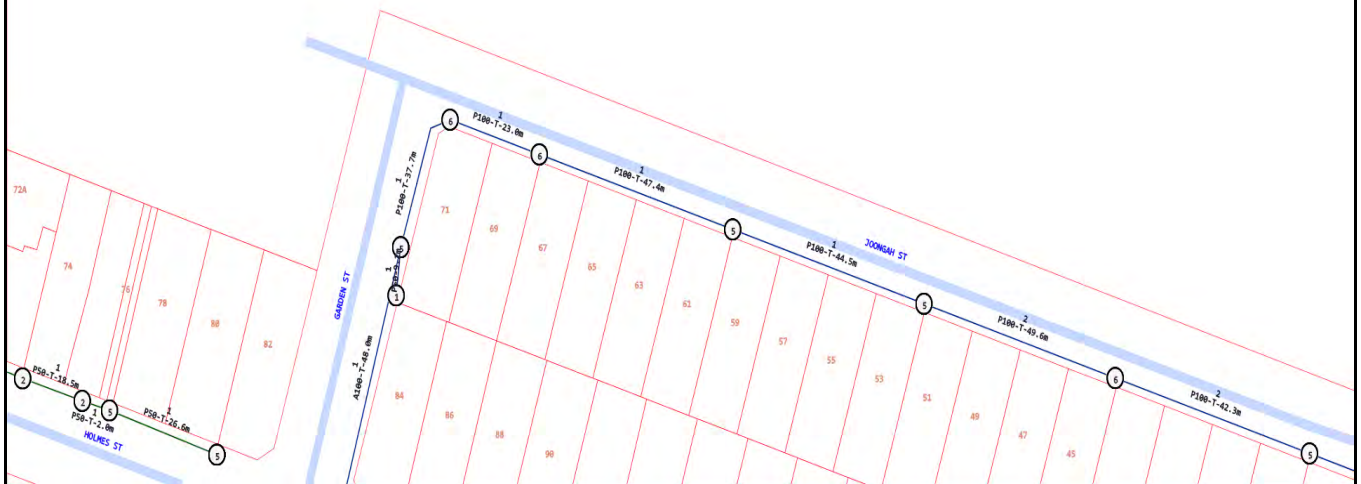


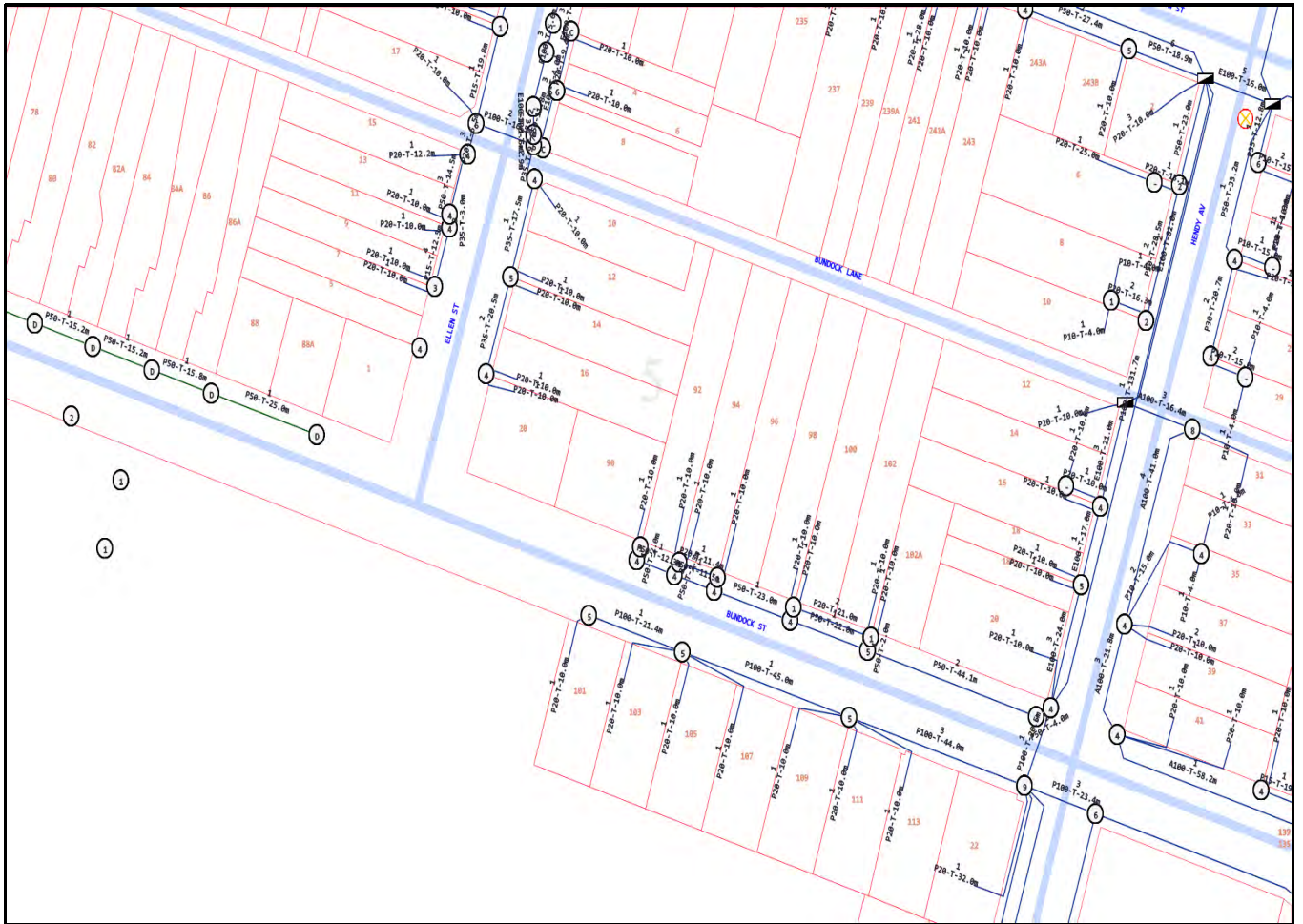






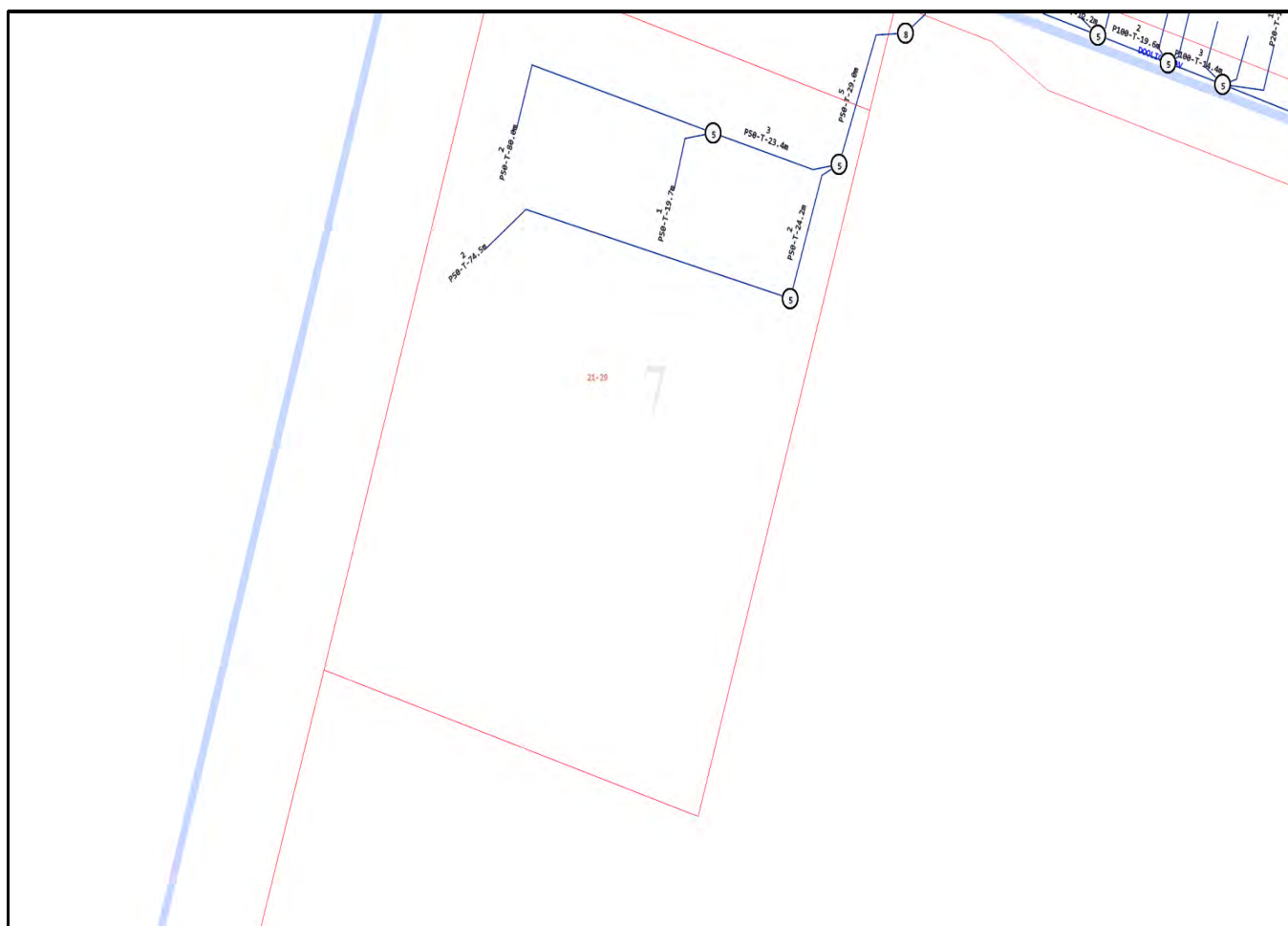














## Emergency Contacts

You must immediately report any damage to **nbn™** network that you are/become aware of. Notification may be by telephone - 1800 626 329.

## IMPORTANT INFORMATION - DIAL BEFORE YOU DIG

### Attention: You must read the information below

The material provided or made available to you by Sydney Water (including on the Sydney Water website) in relation to your Dial Before You Dig enquiry (**Information**) is provided on each of the following conditions, which you are taken to have accepted by using the Information:

- 1 The Information has been generated by an automated system based on the area highlighted in the "Locality Indication Only" window on your Caller Confirmation. It is your responsibility to ensure that the dig site is properly defined when submitting your Dial Before You Dig enquiry and, if the Information does not match the dig site, to resubmit your enquiry for the correct dig site.
- 2 Neither Sydney Water nor Dial Before You Dig make any representation or give any guarantee, warranty or undertaking (express or implied) as to the currency, accuracy, completeness, effectiveness or reliability of the Information. The Information, including Sydney Water plans and work-as-executed diagrams, amongst other things:
  - (a) may not show all existing structures, including Sydney Water's pipelines, particularly in relation to newer developments and in relation to structures owned by parties who do not participate in the Dial Before You Dig service;
  - (b) may be out of date and not show changes to surface levels, road alignments, fences, buildings and the like;
  - (c) is approximate only and is therefore not suitable for scaling purposes; and
  - (d) does not show locations of property services (often called house service lines) belonging to or servicing individual customers, which are usually connected to Sydney Water's structures.
- 3 You are responsible for, amongst other things:
  - (a) exposing underground structures, including Sydney Water's pipelines, by pot-holing using hand-held tools or vacuum techniques so as to determine the precise location and extent of structures before any mechanical means of excavation are used;
  - (b) the safe and proper excavation of and for underground works and structures, including having regard to the fact that asbestos cement pipelines, which can pose a risk to health, may form part of Sydney Water's water and sewerage reticulation systems;
  - (c) protecting underground structures, including Sydney Water's pipelines, from damage and interference;
  - (d) maintaining minimum clearances between Sydney Water's structures and structures belonging to others;
  - (e) ensuring that backfilling of excavation work in the vicinity of Sydney Water's structures complies with Sydney Water's standards contained on its website or otherwise communicated to you;
  - (f) notifying Sydney Water immediately of any damage caused or threat of damage to Sydney Water's structures;
  - (g) ensuring that plans are approved by Sydney Water (usually signified by stamping) prior to landscaping or building over or in the vicinity of any Sydney Water structure; and
  - (h) ensuring that the Information is used only for the purposes for which Sydney Water and Dial Before You Dig intended.



- 4 You acknowledge that you use the Information at your own risk. In consideration for the provision of the Dial Before You Dig service and the Information by Sydney Water and Dial Before You Dig, to the fullest extent permitted by law:
- (a) all conditions and guarantees concerning the Information (whether as to quality, outcome, fitness, care, skill or otherwise) expressed or implied by statute, common law, equity, trade, custom or usage or otherwise are expressly excluded and to the extent that those statutory guarantees cannot be excluded, the liability of Sydney Water and Dial Before You Dig to you is limited to either of the following as nominated by Sydney Water in its discretion, which you agree is your only remedy:
    - (i) the supplying of the Information again; or
    - (ii) payment of the cost of having the Information supplied again;
  - (b) in no event will Sydney Water or Dial Before You Dig be liable for, and you release Sydney Water and Dial Before You Dig from, any Loss arising from or in connection with the Information, including the use of or inability to use the Information and delay in the provision of the Information:
    - (i) whether arising under statute or in contract, tort or any other legal doctrine, including any negligent act, omission or default (including wilful default) by Sydney Water or Dial Before You Dig; and
    - (ii) regardless of whether Sydney Water or Dial Before You Dig are or ought to have been aware of, or advised of, the possibility of such loss, costs or damages;
  - (c) you will indemnify Sydney Water and Dial Before You Dig against any Loss arising from or in connection with Sydney Water providing incorrect or incomplete information to you in connection with the Dial Before You Dig service; and
  - (d) you assume all risks associated with the use of the Dial Before You Dig and Sydney Water websites, including risk to your computer, software or data being damaged by any virus, and you release and discharge Sydney Water and Dial Before You Dig from all Loss which might arise in respect of your use of the websites.
- 5 **“Sydney Water”** means Sydney Water Corporation and its employees, agents, representatives and contractors. **“Dial Before You Dig”** means Dial Before You Dig Incorporated and its employees, agents, representatives and contractors. References to **“you”** include references to your employees, agents, representatives, contractors and anyone else using the Information. References to **“Loss”** include any loss, cost, expense, claim, liability or damage (including arising in connection with personal injury, death or any damage to or loss of property and economic or consequential loss, lost profits, loss of revenue, loss of management time, opportunity costs or special damages). To the extent of any inconsistency, the conditions in this document will prevail over any other information provided to you by Sydney Water and Dial Before You Dig.

**In an emergency, or to notify Sydney Water of damage or threats to its structures, call 13 20 90 (24 hours, 7 days)**

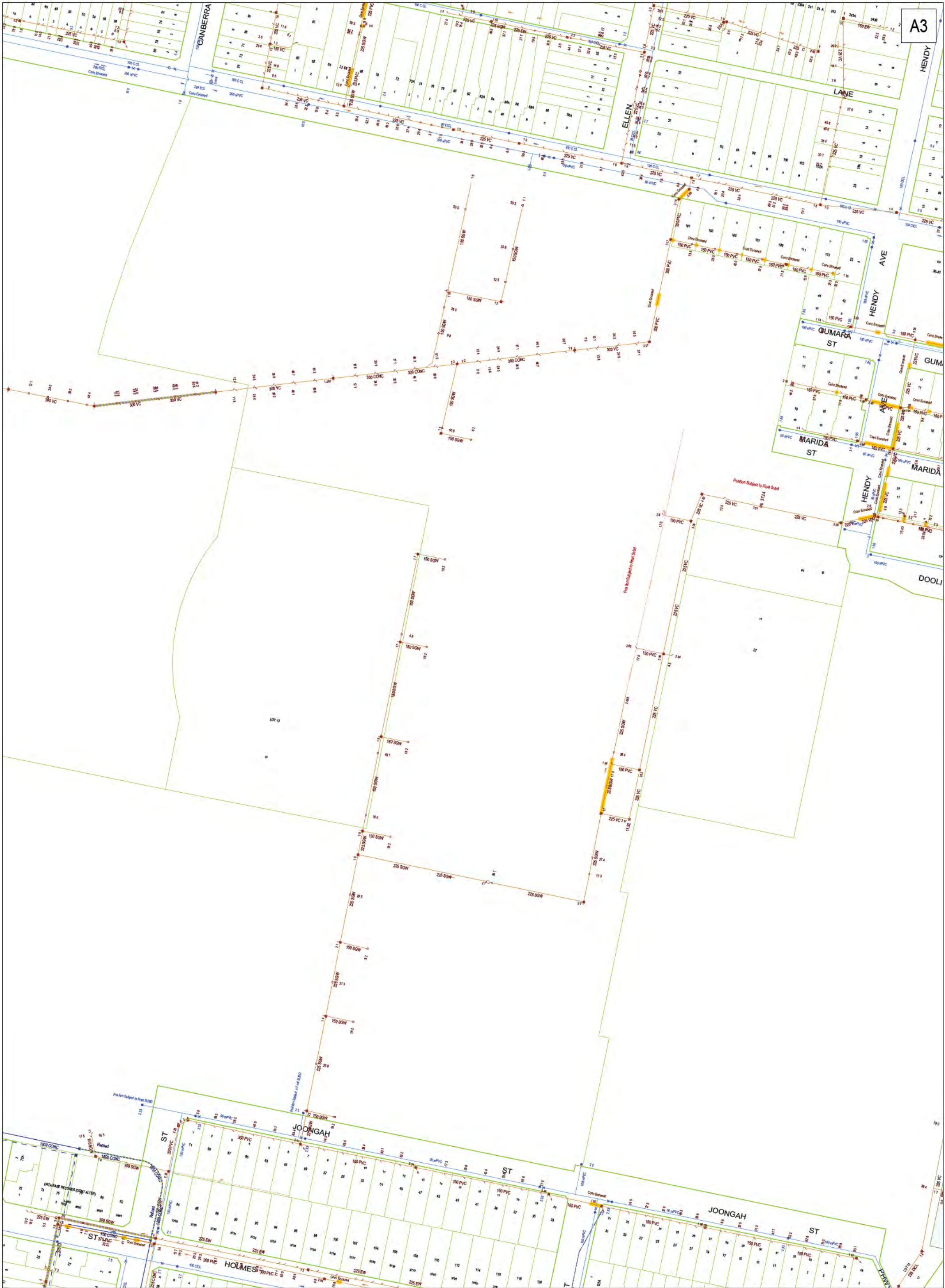
Further information and guidance is available in the Building Development and Plumbing section of Sydney Water's website at [www.sydneywater.com.au](http://www.sydneywater.com.au), where you will find the following documents under 'Dial Before You Dig':

- Avoid Damaging Water and Sewer Pipelines
- Water Main Symbols
- Depths of Mains
- Guidelines for Building Over/Adjacent to Sydney Water Assets
- Clearances Between Underground Services

Or call **13 20 92** for Customer Enquires.

Note: The lodging of enquiries via **[www.1100.com.au](http://www.1100.com.au)** will enable you to receive colour plans in PDF format 24 hours a day, 7 days a week via email.

**This communication is confidential. If you are not the intended recipient, please destroy all copies immediately. Sydney Water Corporation prohibits unauthorised copying or distribution of this communication.**



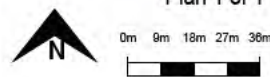
A3

DBYD Address:  
373a Avoca Street  
Kingsford NSW 2032

DBYD Job No: 18490145  
DBYD Sequence No: 91658760

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SYDNEY WATER CORPORATION

Scale: 1:2000  
Date of Production: 31/10/2019































































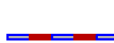
Plan 1 of 1



# Guide to reading Sydney Water DBYD Plans



## Legend

Sewer		Property Details	
Sewer Main (with flow arrow & size type text)		Boundary Line	
Disused Main		Easement Line	
Rising Main		House Number	
Maintenance Hole (with upstream depth to invert)		Lot Number	
Sub-surface chamber		Proposed Land	
Maintenance Hole with Overflow chamber		Sydney Water Heritage Site (please call 132 092 and ask for the Heritage Unit)	
Ventshaft EDUCT			
Ventshaft INDUCT			
Property Connection Point (with chainage to downstream MH)			
Concrete Encased Section			
Terminal Maintenance Shaft			
Maintenance Shaft			
Rodding Point			
Lamphole			
Vertical			
Pumping Station			
Sewer Rehabilitation			
Pressure Sewer		Water	
Pressure Sewer Main		WaterMain - Potable (with size type text)	
Pump Unit (Alarm, Electrical Cable, Pump Unit)		Disconnected Main - Potable	
Property Valve Boundary Assembly		Proposed Main - Potable	
Stop Valve		Water Main - Recycled	
Reducer / Taper		Special Supply Conditions - Potable	
Flushing Point		Special Supply Conditions - Recycled	
Vacuum Sewer		Restrained Joints - Potable	
Pressure Sewer Main		Restrained Joints - Recycled	
Division Valve		Hydrant	
Vacuum Chamber		Maintenance Hole	
Clean Out Point		Stop Valve	
Stormwater		Stop Valve with By-pass	
Stormwater Pipe		Stop Valve with Tapers	
Stormwater Channel		Closed Stop Valve	
Stormwater Gully		Air Valve	
Stormwater Maintenance Hole		Valve	
		Scour	
		Reducer / Taper	
		Vertical Bends	
		Reservoir	
		Recycled Water is shown as per Potable above. Colour as indicated	
		Private Mains	
		Potable Water Main	
		Recycled Water Main	
		Sewer Main	
		Symbols for Private Mains shown grey	

## Pipe Types

<b>ABS</b>	Acrylonitrile Butadiene Styrene	<b>AC</b>	Asbestos Cement
<b>BRICK</b>	Brick	<b>CI</b>	Cast Iron
<b>CICL</b>	Cast Iron Cement Lined	<b>CONC</b>	Concrete
<b>COPPER</b>	Copper	<b>DI</b>	Ductile Iron
<b>DICL</b>	Ductile Iron Cement (mortar) Lined	<b>DIPL</b>	Ductile Iron Polymeric Lined
<b>EW</b>	Earthenware	<b>FIBG</b>	Fibreglass
<b>FL BAR</b>	Forged Locking Bar	<b>GI</b>	Galvanised Iron
<b>GRP</b>	Glass Reinforced Plastics	<b>HDPE</b>	High Density Polyethylene
<b>MS</b>	Mild Steel	<b>MSCL</b>	Mild Steel Cement Lined
<b>PE</b>	Polyethylene	<b>PC</b>	Polymer Concrete
<b>PP</b>	Polypropylene	<b>PVC</b>	Polyvinylchloride
<b>PVC - M</b>	Polyvinylchloride, Modified	<b>PVC - O</b>	Polyvinylchloride, Oriented
<b>PVC - U</b>	Polyvinylchloride, Unplasticised	<b>RC</b>	Reinforced Concrete
<b>RC-PL</b>	Reinforced Concrete Plastics Lined	<b>S</b>	Steel
<b>SCL</b>	Steel Cement (mortar) Lined	<b>SCL IBL</b>	Steel Cement Lined Internal Bitumen Lined
<b>SGW</b>	Salt Glazed Ware	<b>SPL</b>	Steel Polymeric Lined
<b>SS</b>	Stainless Steel	<b>STONE</b>	Stone
<b>VC</b>	Vitrified Clay	<b>WI</b>	Wrought Iron
<b>WS</b>	Woodstave		

## Further Information

Please consult the [Dial Before You Dig enquiries](#) page on the Sydney Water website

For general enquiries please call the Customer Contact Centre on 132 092

**In an emergency, or to notify Sydney Water of damage or threats to its structures, call 13 20 90 (24 hours, 7 days)**



# Network Protection

## Assets Affected

In reply to your enquiry, there are gas mains at the location of your intended work as per the attached map. For an explanation of the map, please see the key below. The following excavation guidelines apply.

### Excavation Guidelines:

It is essential the location of gas pipe/s are confirmed by carefully pot-holing by hand excavation prior to proceeding with mechanical excavation in the vicinity of gas pipes. If you cannot locate the gas main, contact the local depot.

In accordance with clause 34(5) of the Gas Supply (Safety and Network Management) Regulation 2013 (NSW), you should be informed that all excavation, (including pot-holing by hand to confirm the location of pipes) should be performed in accordance with ***“Work Near Underground Assets Guideline”*** published in 2007 by the Work Cover Authority.

A copy of this Guideline is available at: [www.safework.nsw.gov.au](http://www.safework.nsw.gov.au)

DBYD Administration 1300 880 906

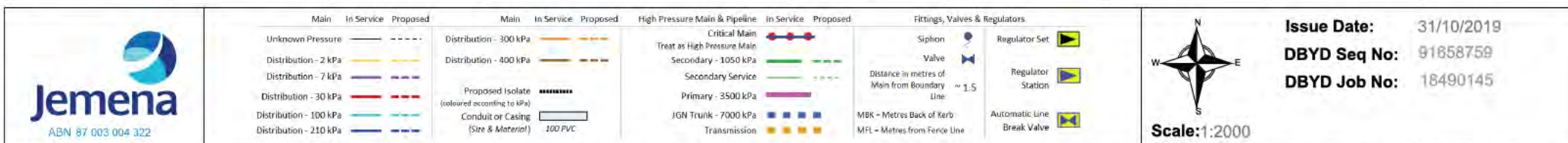
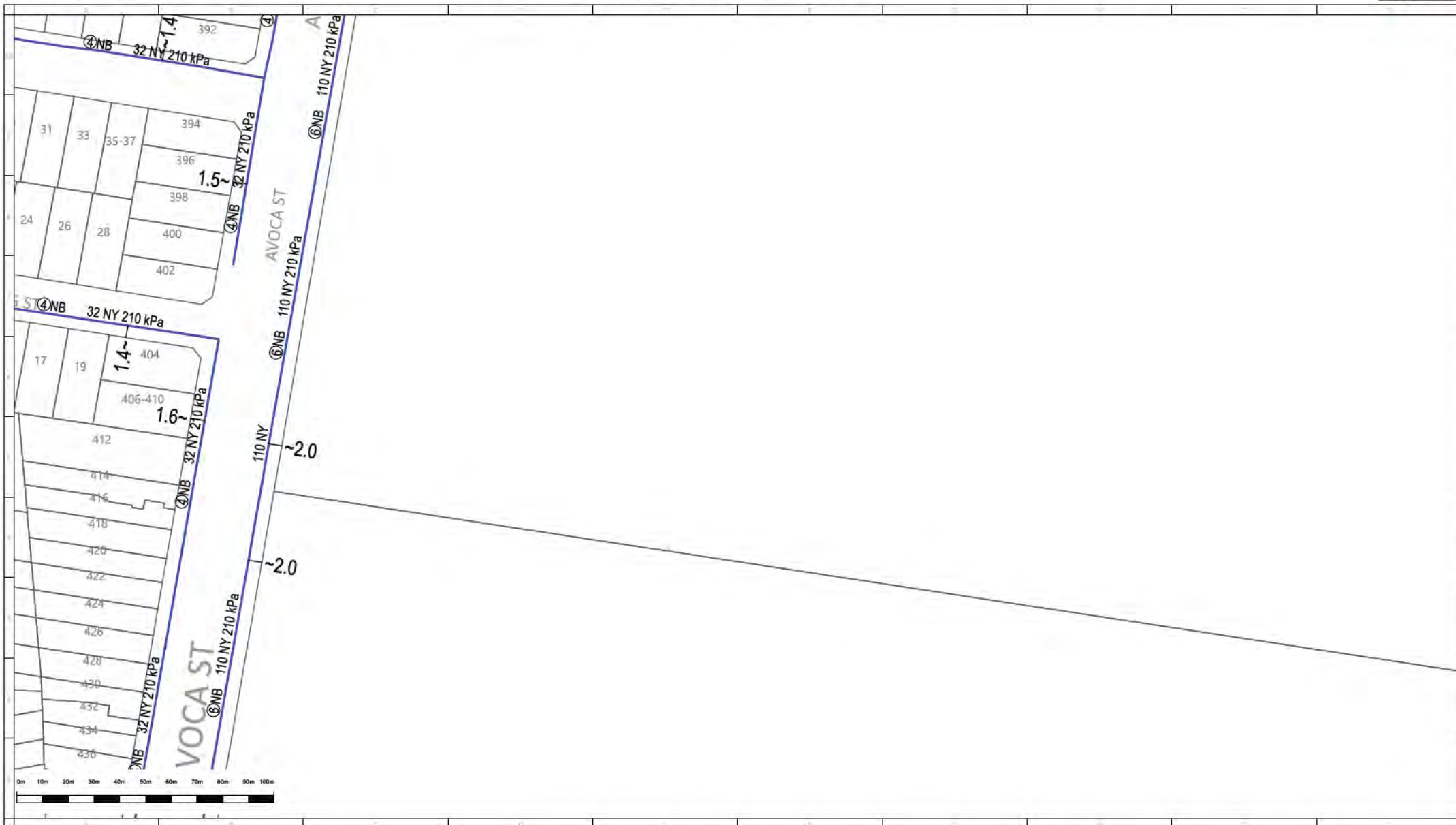
KEY									
Main	In Service	Proposed	High Pressure Main & Pipeline		In Service	Proposed	Fittings, Valves & Regulators		
Unknown Pressure			Critical Main Treat as High Pressure Main				Regulator Set		
Distribution - 2 kPa			Secondary - 1050 kPa				Regulator Station		
Distribution - 7 kPa			Secondary Service - 1050kPa				Automatic Line Break Valve		
Distribution - 30 kPa			Primary - 3500 kPa				Valve		
Distribution - 100 kPa			JGN Trunk - 4000 to 14500 kPa				Siphon		
Distribution - 210 kPa			Transmission						
Distribution - 300 kPa			50mm Nylon main inserted into 6 inch (Nominal Bore) Cast Iron Main			50MM NY			
Distribution - 400 kPa			32mm Nylon main inserted into 50mm Steel Main			32MM NY			
Proposed Isolate (coloured according to kPa)									
Conduit or Casing Size & Material			~1.5 = Distance in metres of Main from Boundary Line						
(PL - Plastic, PVC, PE, NY, ST)	100 PVC		MBK = Metres Back of Kerb MFL = Metres from Fence Line						

**Warning:** The enclosed plans show the position of Jemena Gas Networks (NSW) Ltd's underground gas mains and installations in public gazetted roads only. **Individual customers' services and services belonging to other third parties are not included** on these plans. These plans have been prepared solely for the use of Jemena Gas Networks (NSW) Ltd and Jemena Asset Management Pty Ltd (together **“Jemena”**) and any reliance placed on these plans by you is entirely at your own risk. The plans may show the position of underground mains and installations relative to fences, buildings etc., as they existed at the time the mains etc were installed. The plans may not have been updated to take account of any subsequent change in the location or style of those features since the time at which the plans were initially prepared. Jemena makes no warranty as to the accuracy or completeness of the enclosed plans and does not assume any duty of care to you nor any responsibility for the accuracy, adequacy, suitability or completeness of the plans or for any error, omission, lack of detail, transmission failure or corruption in the information provided. Jemena does not accept any responsibility for any loss that you or anyone else may suffer in connection with the provision of these plans, however that loss may arise (including whether or not arising from the negligence of Jemena, its employees, agents, officers or contractors). The recipient of these plans must use their own care and diligence in carrying out their works and must carry out further surveys to locate services at their work site. Persons excavating or carrying out other earthworks will be held responsible for any damage caused to Jemena's underground mains and equipment. In accordance with the Work Near Underground Assets Guideline published in 2007 by Work Cover Authority, Jemena recommends that you carry out potholing by hand to accurately confirm the location of gas mains and installation prior to commencing excavations.

**In case of Emergency Phone 131 909 (24 hours)**

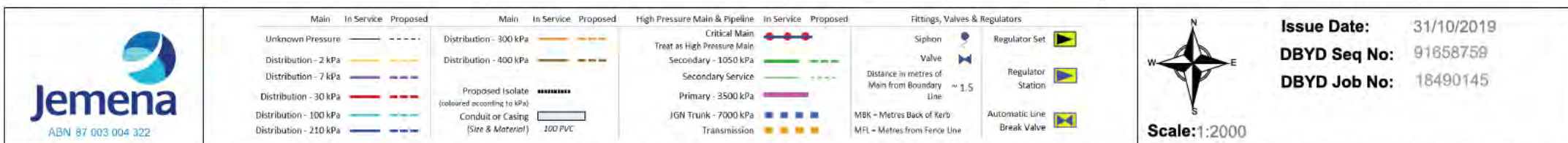
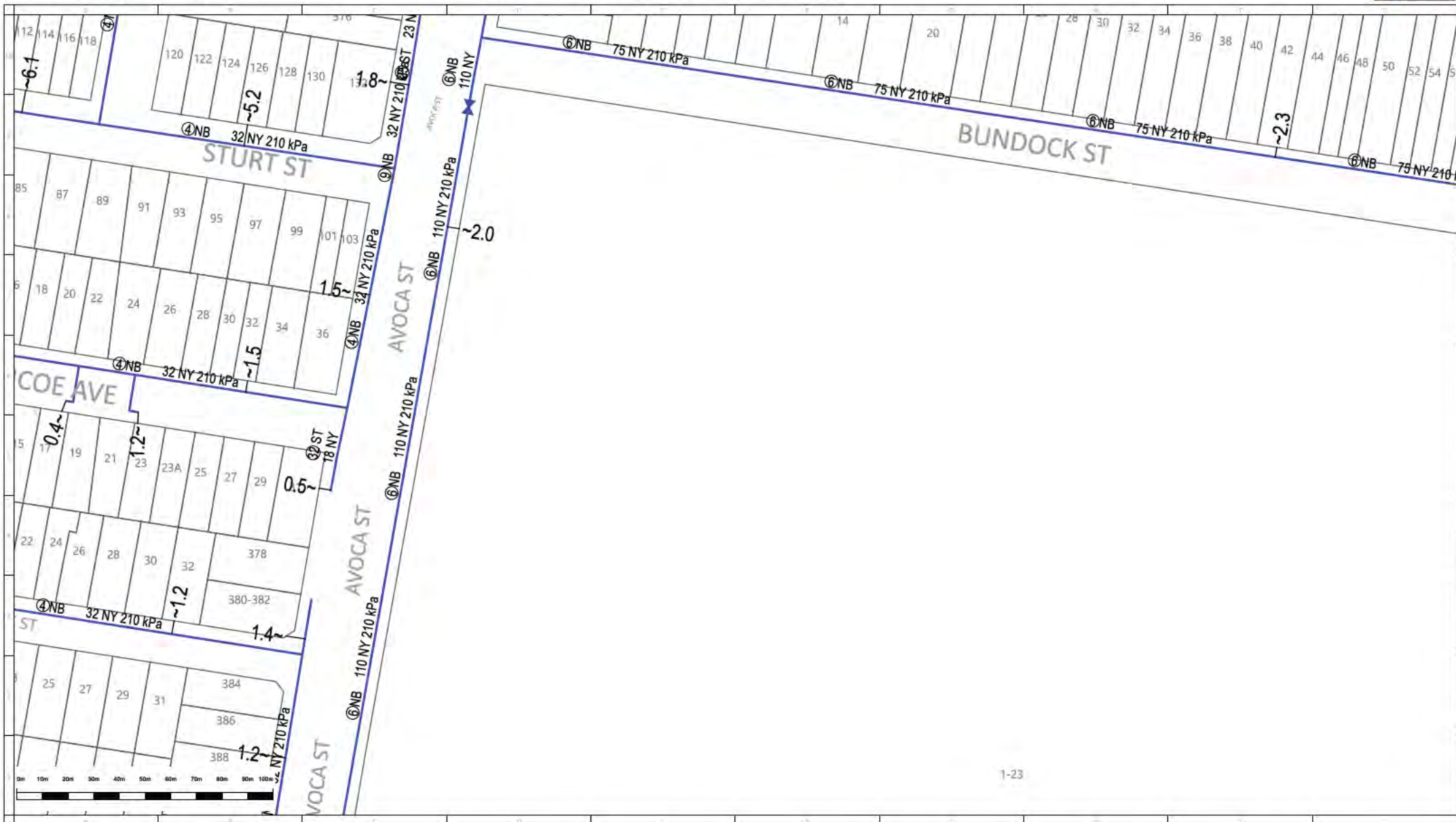
**Admin**  
**1300 880 906**

**Jemena Asset Management Pty Ltd ABN 53 086 013 461**  
**for and on behalf of Jemena Gas Networks (NSW) Ltd ABN 87 003 004 322**



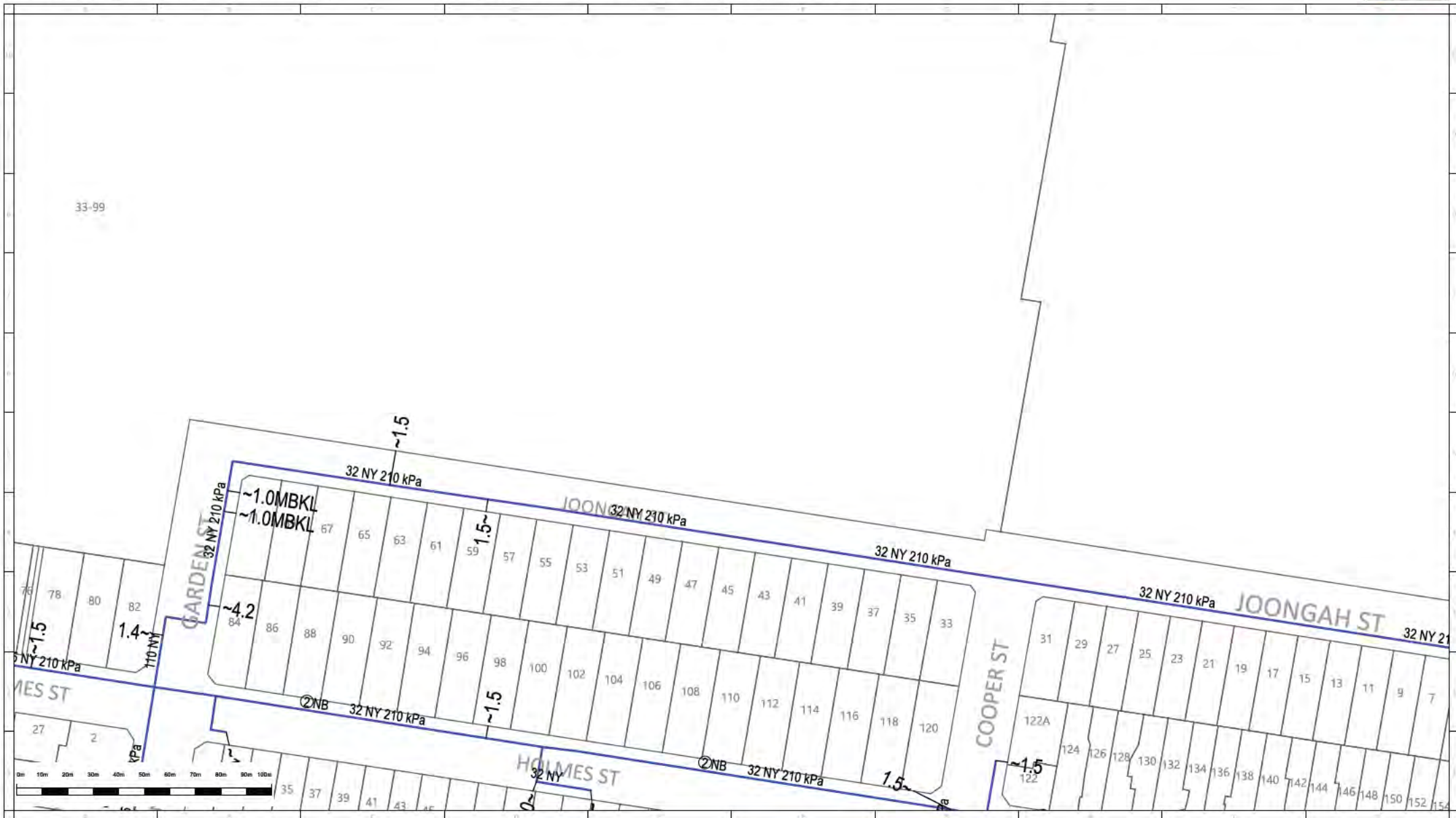
**WARNING:** This is a representation of Jemena Gas Networks underground assets only and may not indicate all assets in the area. It must not be used for the purpose of exact asset location in order to undertake any type of excavation. This plan is diagrammatic only, and distances scaled from this plan may not be accurate. Please read all conditions and information on the attached information sheet. This extract is subject to those conditions. The information contained on this plan is only valid for 28 days from the date of issue.

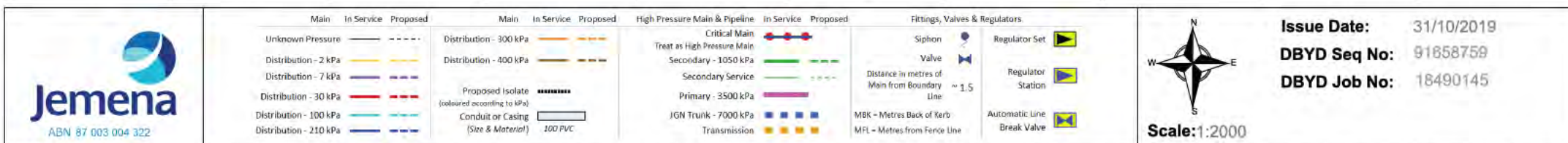
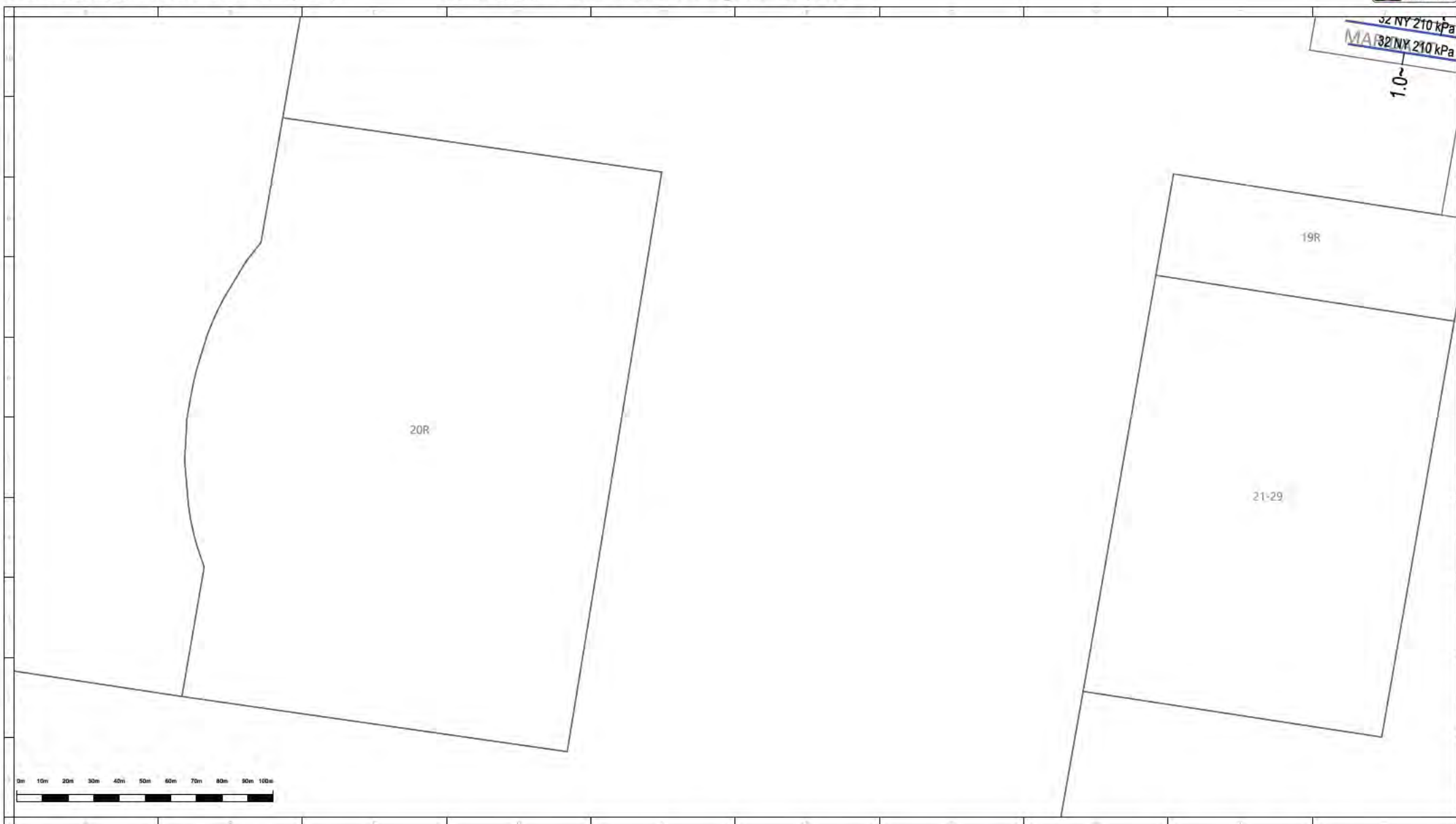




**WARNING:** This is a representation of Jemena Gas Networks underground assets only and may not indicate all assets in the area. It must not be used for the purpose of exact asset location in order to undertake any type of excavation. This plan is diagrammatic only, and distances scaled from this plan may not be accurate. Please read all conditions and information on the attached information sheet. This extract is subject to those conditions. The information contained on this plan is only valid for 28 days from the date of issue.

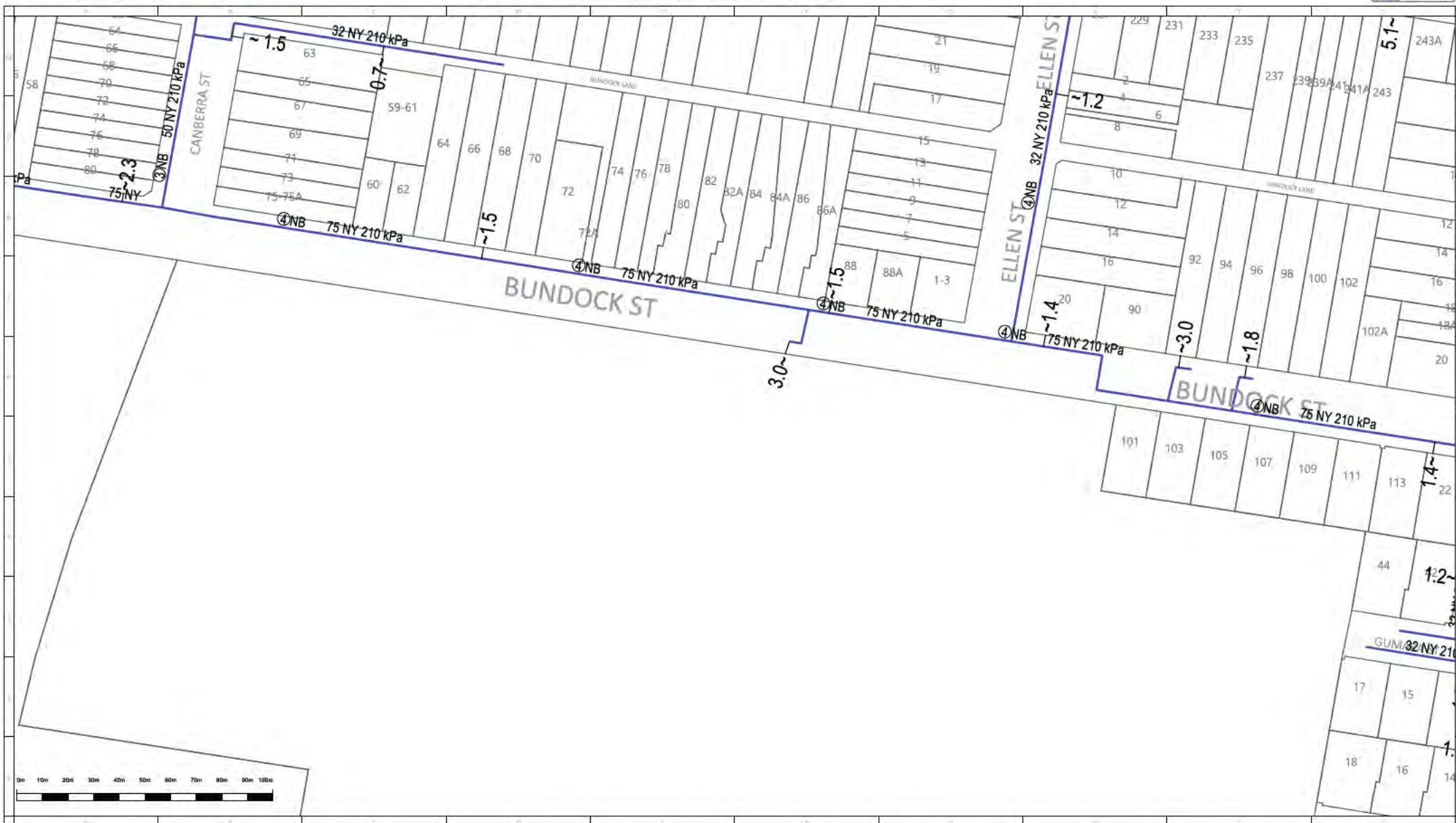




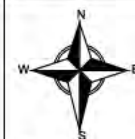
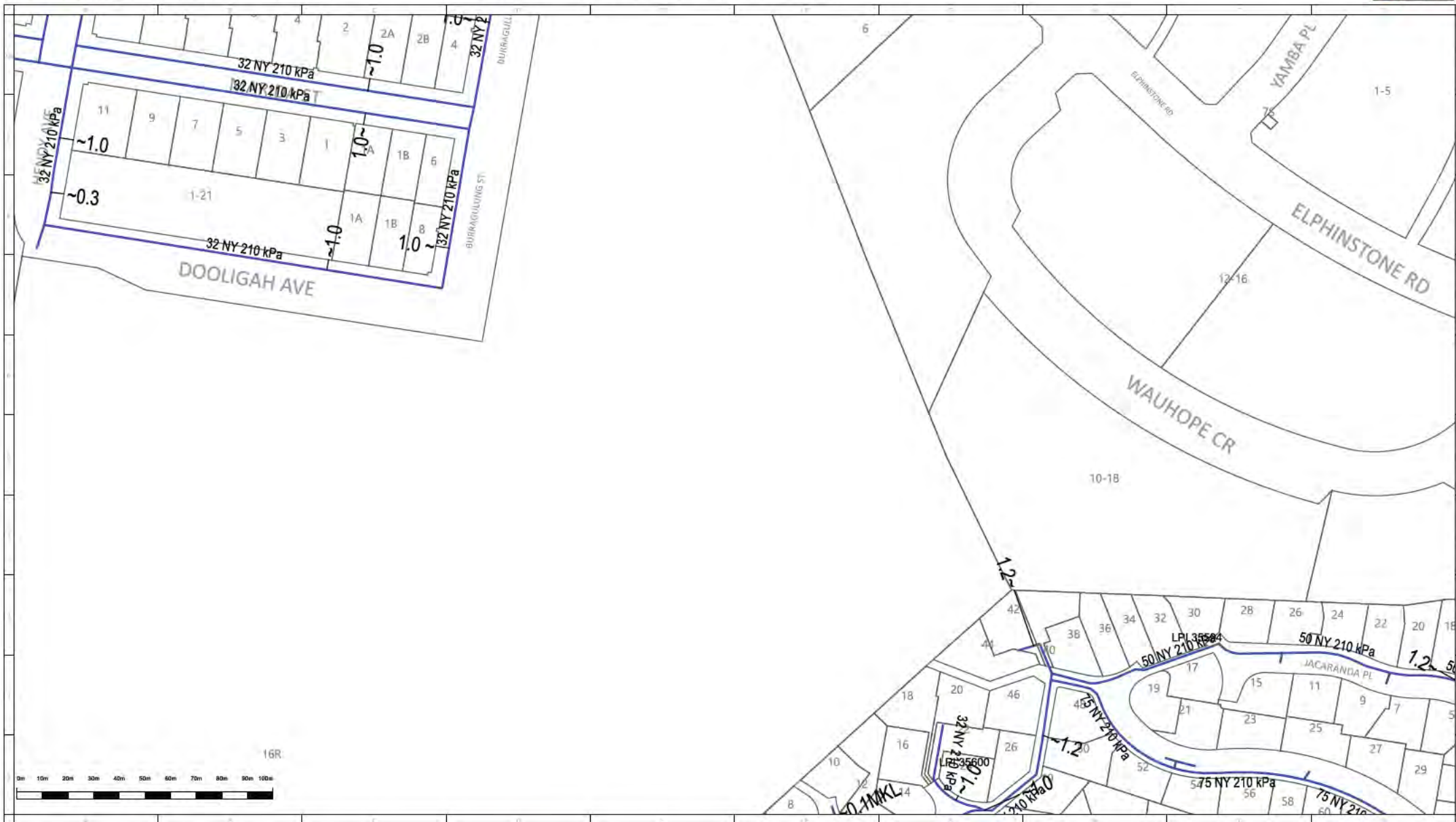


**WARNING:** This is a representation of Jemena Gas Networks underground assets only and may not indicate all assets in the area. It must not be used for the purpose of exact asset location in order to undertake any type of excavation. This plan is diagrammatic only, and distances scaled from this plan may not be accurate. Please read all conditions and information on the attached information sheet. This extract is subject to those conditions. The information contained on this plan is only valid for 28 days from the date of issue.

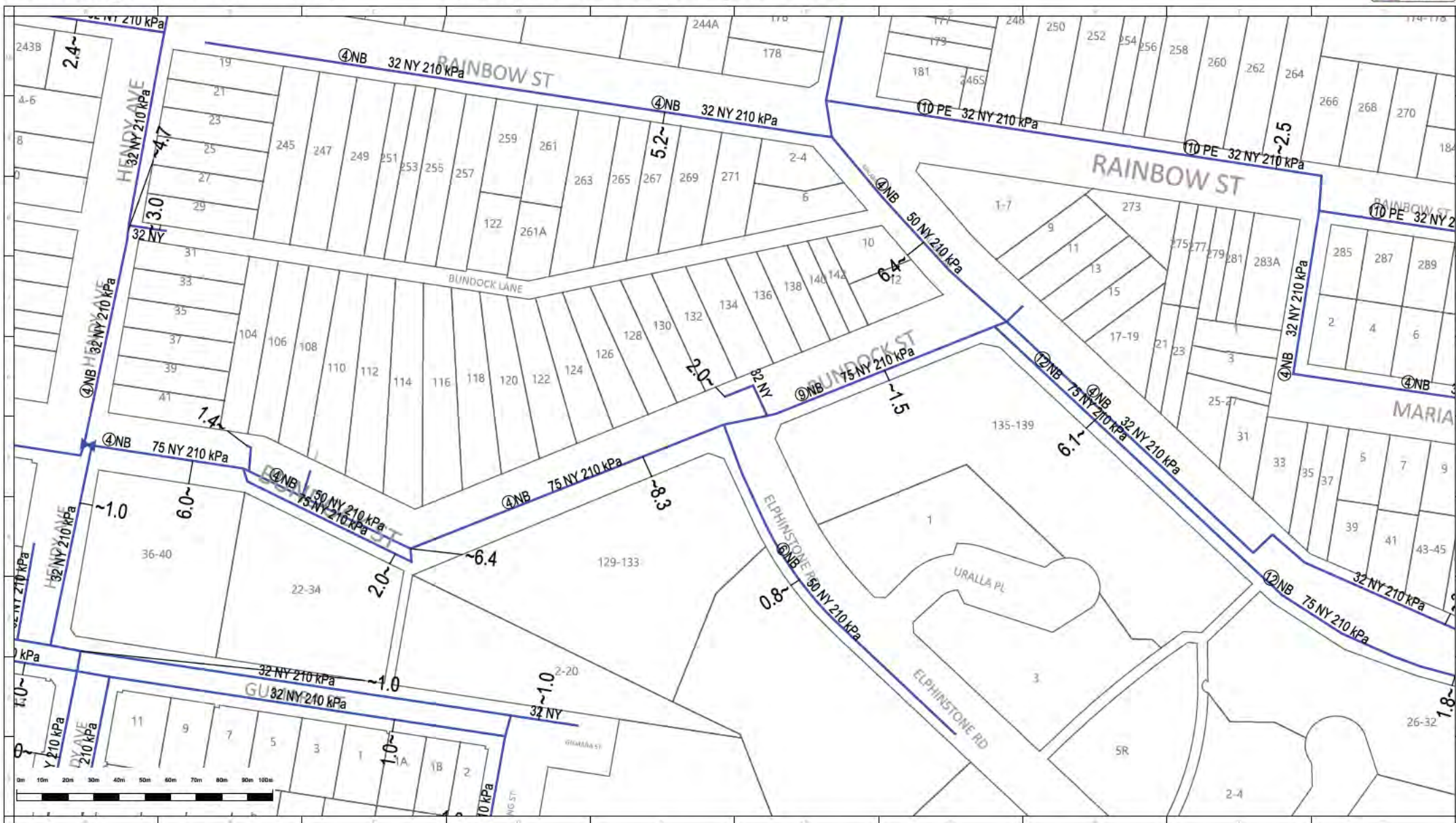












## Appendix F. Future Work Plan

### F.1 Introduction

Under the Defence Housing Authority ACT 1987, DHA was established to provide suitable and reasonable housing to members and families of the Australian Defence Force (ADF), the Department of Defence (DoD) and other persons as required. In order to perform this function, the Directorate of Relocations and Housing (DRH) and DHA are seeking to develop approximately 19.5 hectares of brownfield Commonwealth owned land within Randwick Barracks comprising the area enclosed by Joongah Road, Bunjan Street, Munda Street, Gumara Street and Bundock Street (the Site).

It is recommended that as part of the planning phase for the proposed development of the Site, DHA should undertake a due diligence exercise, to identify potential risks to human health and/or the environment associated with the legacy Site and if required remediate areas of concern as part of the development process.

The purpose of the proposed additional work is to:

- § Understand the *actual* contamination status of the Site, and how this possibly affects human and and/or environmental health at the Site;
- § Demonstrate due diligence in accordance with Defence policy and procedures;
- § Demonstrate consistency with the NSW EPA endorsed guidelines in order to ensure that the Site is suitable for the proposed land use (mixed density residential land use);

The reports generated throughout the proposed Phase 2 processes will inform decision-making processes for the project planning and design. Currently limited physical information is available for the Site, and thus potential investigation and remediation requirements are largely unknown.

### F.2 Approach

It is noted that Australian Standard AS4482.1-2005: *Guide to the investigation and sampling of site with potentially contaminated soil* recommends a phased approach to the investigation of potentially contaminated sites, which includes:

- § Phase 1 - a desktop review of all available information, site inspection and preliminary risk assessment (*this report*);
- § Phase 2 – DSI, including sampling and testing of soils and groundwater (if required) to assess the nature and extent of contamination;

Where contamination requiring ongoing management or mitigation has been identified on Site during the investigation phase the assessment will continue to:

- § Phase 3 – development of a detailed waste disposal assessment or site remediation plan, including an independent site audit by an approved EPA auditor;
- § Phase 4 – validation and site monitoring to assess the results/execution of the remediation plan and site clean-up.

### F.3 Next Steps

Upon successful completion of the PSI (*included herein*), the following steps should be taken:

- § Preparation of a Sampling Analysis and Quality Plan (SAQP);
- § DSI of the proposed development area (incorporating the findings of the PSI and SAQP) comprising soil and groundwater sampling and preliminary in-situ waste classification and associated reporting.

#### F.3.1 Sampling, Analysis & Quality Plan



The SAQP must be prepared based on the guidance provided in the National Environmental Protection (Assessment of Site Contamination) Measure 1999 (ASC NEPM) and must include the following Sections:

- § An introduction describing the project background and objectives, a summary of previous report and the environmental setting of the Site.
- § A preliminary CSM, describing potential contaminant sources, pathways and receptors and identified data gaps.
- § A discussion of the adopted assessment criteria.
- § A discussion of the DSI Data Quality Objectives (DQO) in accordance with the ASC NEPM.
- § Details of sample collection locations and techniques.
- § Nominal specification for samples analysis.
- § Specifications for QA/QC Procedures.
- § A description of the contents of the DSI report.

#### F.3.2 Detailed Site Investigation

The objective of the DSI is to better understand prevailing ground conditions and the potential of contamination to impact on the proposed end-use of the Site. Additionally, the DSI will aim to:

- § Assess the current condition of soils at the Site with respect to potential impacts resulting from historic land use and other potentially contaminating activities identified within the Site as identified by the PSI;
- § Characterise soils and/or fill materials associated with the Site for the purpose of in-situ waste classification, where material is considered unsuitable for beneficial re-use; and
- § To determine whether remedial action is required to render the Site suitable for its intended use.

In particular, the key work items are to:

- § Advance boreholes and test-pits across the Site to the occurrence of bedrock or 1.0 m below the depth of natural soils or to the occurrence groundwater (if any), whichever comes first.
- § Installation of groundwater monitoring wells up-gradient and down-gradient (if possible) of key AECs.
- § A focussed soil vapour assessment near the former transport store, and other soil vapour assessment as required based on the results of soil and groundwater investigations.
- § Preparation of a DSI report in accordance with relevant NSW EPA Guidelines. The report would provide a description of the site setting, ground conditions, reviewed data and an assessment of potential environmental liabilities in relation to soil and/or groundwater contamination, in addition to the following:
  - § A detailed statement of the works undertaken (DSI);
  - § An explanation of sampling rationale and methodology;
  - § Graphics of Site location, Site layout and assessment locations;
  - § The results of the review of information, the field work and laboratory analyses including QA/QC;
  - § An assessment of the data against relevant NSW EPA and NSW EPA endorsed/published criteria for soil for and groundwater;
  - § A refined CSM, describing Potential Contaminant Sources, Pathways and Receptors and identified data gaps
  - § Recommendations for additional intrusive/groundwater investigations or remedial works, if necessary.

## Appendix G. Development Plans





## BUNDOCK STREET & JOONGAH STREET, RANDWICK, NSW PROPOSED LAYOUT

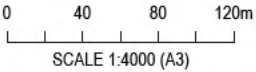
0 40 80 120m  
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DHA GUIDANCE





BUNDOCK STREET & JOONGAH STREET, RANDWICK, NSW  
PROPOSED LAYOUT



DHA GUIDANCE

Architecture Engineering Planning Project Management Validation







## BUNDOCK STREET, RANDWICK, NSW PROPOSED LAYOUT

0 25 50 75m  
SCALE 1:2500 (A3)

DHA GUIDANCE

Architecture Engineering Planning Project Management Validation

**JACOBS**



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## Appendix H. Randwick Barracks – Civil Infrastructure Network Plan





Key: Civil Infrastructure

Randwick Barracks

Buildings

Cadastral

Pavement

Drainage infrastructure

Underground domestic water supply

Underground fire water supply

Stormwater discharge point

Underground sewer mains

Connections to Sydney Water Corporation (SWC) sewer network

SWC water billing meters

Connections to SWC water mains (fire water)

Connections to SWC water mains (domestic water)

RANDWICK BARRACKS

Infrastructure network - Civil

Source: Department of Defence, 2006; AECOM, 2011

02 FEB 2012

60221324

Fig. 10





# Appendix I. Heritage Register Outputs

## Place Details

[Send Feedback](#)

### School of Musketry and Officers Mess, Randwick Army Barracks, Bundock St, Kingsford, NSW, Australia

#### Photographs



<b>List</b>	Commonwealth Heritage List
<b>Class</b>	Historic
<b>Legal Status</b>	<a href="#">Listed place</a> (22/06/2004)
<b>Place ID</b>	105651
<b>Place File No</b>	1/12/030/0060

#### Summary Statement of Significance

The School of Musketry, 1898, and the Officers' Mess, c1927, located at the Randwick Army Barracks, are historically significant. The School of Musketry was constructed in association with the Randwick Rifle Range, which operated on the Army Barracks site from 1891-1920s and then on a reduced scale until 1942. The raised position of the School of Musketry and its location on the higher ground at the north of the defence site is indicative of its orientation when built, overlooking the Rifle Range. The School of Musketry was the first permanent building erected at the site. The Officers' Mess was built as part of ongoing development of the site by the military in the late 1920s. The buildings remain as the two oldest buildings at the Barracks and are still in use by the Army.

The School of Musketry was the first official training centre for infantry forces in NSW. It had a fundamental role in the military infrastructure established at the turn of the century which led to the development of the Australian Army. In 1911 it became the first National School of Musketry for the Australian Army (Criteria A.4 and B.2).

The School of Musketry is associated with Brigadier F. B. Heritage who was commandant and chief instructor at the school from 1911-1922. He made a major contribution to the high standard of training by the army in small arms (Criterion H.1).

The School of Musketry and the Officers' Mess are of architectural and aesthetic significance. The School of Musketry is a representative example of a modest, well proportioned building in the Queen Anne style, with fine internal and external architectural details. Features include timber verandahs, a fine marble chimney piece, joinery and hardware, roughcast rendered gables with round vents, face brick walls and terracotta tiled roof, pressed metal ceilings, and a moulded plaster arch between the two main rooms. These and other elements of original and early fabric, both internal and external, contribute to the significance. The setting of the School of Musketry, raised on terracing with open space surrounding to the north, east and south, enhances our ability to understand its original use and context.

The Officers' Mess is a solid, functionally designed accommodation and mess building, with minimal detailing similar in some respects to Stripped Classical style. Its original and early fabric, such as the brick verandah columns, brick walling, tile roof, fleche, multi-pane windows and other elements external and internal, including the garage, contribute to the significance. The aesthetic qualities of the building are heightened by fig trees nearby. (Criteria D.2 and E.1).

The buildings have social significance for many Army personnel who have lived and worked at the Barracks and within these buildings (Criterion G.1).

#### Official Values



### Criterion A Processes

The School of Musketry, 1898, and the Officers' Mess, c1927, located at the Randwick Army Barracks, are historically significant. The School of Musketry was constructed in association with the Randwick Rifle Range, which operated on the Army Barracks site from 1891-1920s and then on a reduced scale until 1942. The raised position of the School of Musketry and its location on the higher ground at the north of the defence site is indicative of its orientation when built, overlooking the Rifle Range. The School of Musketry was the first permanent building erected at the site. The Officers' Mess was built as part of ongoing development of the site by the military in the late 1920s. The buildings remain as the two oldest buildings at the Barracks and are still in use by the Army.

#### Attributes

All of the historic fabric of both the School of Musketry building and the Officer's Mess, including the raised location of the School of Musketry building.

### Criterion B Rarity

The School of Musketry was the first official training centre for infantry forces in NSW. It had a fundamental role in the military infrastructure established at the turn of the century which led to the development of the Australian Army. In 1911 it became the first National School of Musketry for the Australian Army.

#### Attributes

All of the historic fabric of the School of Musketry building.

### Criterion D Characteristic values

The School of Musketry is a representative example of a modest, well proportioned building in the Queen Anne style, with fine internal and external architectural details. Features include timber verandahs, a fine marble chimney piece, joinery and hardware, roughcast rendered gables with round vents, face brick walls and terracotta tiled roof, pressed metal ceilings, and a moulded plaster arch between the two main rooms. These and other elements of original and early fabric, both internal and external, contribute to the significance. The setting of the School of Musketry, raised on terracing with open space surrounding to the north, east and south, enhances our ability to understand its original use and context.

#### Attributes

The building's form, detailing, historic fabric and setting.

### Criterion E Aesthetic characteristics

The School of Musketry and the Officers' Mess are of architectural and aesthetic significance. The School of Musketry is a representative example of a modest, well proportioned building in the Queen Anne style, with fine internal and external architectural details.

#### Attributes

The proportions, style and internal and external details of the School of Musketry and its setting. The early fabric of the Officer's Mess including brick verandah columns, brick walling, tile roof, fleche, multi-pane windows and other elements external and internal, including the garage. The aesthetic qualities of the building are heightened by fig trees nearby.

### Criterion G Social value

The buildings have social significance for many Army personnel who have lived and worked at the Barracks and within these buildings.

#### Attributes

Not specified.

### Criterion H Significant people

The School of Musketry is associated with Brigadier F. B. Heritage who was commandant and chief instructor at the school from 1911-1922. He made a major contribution to the high standard of training by the army in small arms.

#### Attributes

The whole of the School of Musketry building.

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## Description

### HISTORY

For most of the nineteenth century, a large tract of land dedicated as Church and School Land remained undeveloped amongst the housing of Randwick. Occupation of the land was granted to the Musketry Office in 1891.

The Randwick Rifle Range was designed and partially built by military personnel and paid for out of the defence budget. It was near completion by May 1891. It was to be used by the Musketry Office, Rifle Reserve Companies and Defence Force Rifle Clubs for practice and training. The 30th Annual Prize Meeting of the National Rifle Association of NSW was held there in the last week of October 1891. However, the range was closed again due to danger arising from stray bullets in the vicinity of neighbouring housing.

The School of Musketry was built on higher land to the immediate north of the Randwick Rifle Range in 1898. The School of Musketry building was designed for use in association with the Rifle Range as a school, offices and committee room. The first record of its use is in 1898, when it was used at the Annual Prize Meeting of the National Rifle Association of NSW. It first appears on an 1899 plan of the Rifle Range.

The School of Musketry was the only official musketry training centre in New South Wales, although there were many rifle ranges. The Randwick Rifle Range was located to the south of the building on flatter ground, the firing area was located on what is now Navy land, and the range faced west with ranges running along to Avoca Street.

At the end of the 1890s and early 1900s between five hundred and six hundred men were shooting at Randwick every Saturday. The importance of the range increased with the involvement of Australian troops in the Boer War. From 1900 the site was also used by the NSW Military Forces for military exercise and training.

In 1901 with the formation of the Commonwealth Government, defence became a federal responsibility. Other buildings associated with the range at this time included a magazine, two storage sheds, latrines, testing ammunition store, Warrant Officer's quarters, office and store room, large store shed, pistol shed, caretaker's quarters, target shed and canteen, caretaker's cottage at the gate and a signal mast. The total value of the facilities was placed at 41,240 pounds in 1903.

Photographs taken in 1909-1914 show the School of Musketry building located on a slight rise in an open expanse of ground surrounded by tents. It appears as the only permanent building in the immediate vicinity. A tramway was extended to the site c1905-1907 and terminated adjacent to the building.

In 1911 the School of Musketry was established as the National School of Musketry for the Australian Army. In September 1911 Major Heritage (later Brigadier) was appointed commandant and chief instructor of the School of Musketry. Major Heritage initiated a weapons museum at the School, originally comprising foreign rifles and muskets. In 1921 the school was renamed the School of Small Arms. The exhibits of the museum were then widened in scope and Lieutenant Latchford secured a quantity of weapons from the Australian War Memorial, then in Melbourne. These items largely consisted of machine guns, grenades and pistols of First World War vintage. Lieutenant-Colonel Heritage departed in 1922 and the development of the museum continued under the direction of Lieutenants Latchford and Edwards. They were responsible for acquiring a number of museum items from service members, units, Ordnance depots and other arms of the service. Following the death of the then Brigadier Heritage, in 1934 the remainder of his personal collection was acquired from his estate, including many rare rifles and pistols dating back to the 16th century. Brigadier Heritage's work made a major contribution to the army's high standard of training in small arms.

A number of buildings at the site were demolished in 1925 and many were re-erected at the Long Bay Rifle Range. The Randwick Rifle Range was closed to civilian training in 1924 and was also substantially reduced in size.

The Officers' Mess appears to have been constructed c1927 as part of ongoing military development of the site. In September 1927 approval was given by the Minister for Defence for the erection of officers' accommodation and kitchen facilities. The scheme was to be initiated in phases. When completed the building consisted of four accommodation blocks off a central kitchen block; the building was in a shape similar to an H.

From the 1930s the Small Arms School expanded its facilities at Randwick over the area of the former targets on the rifle range. These new works, completed during 1935-36 saw the demolition of some older buildings and their replacement with a miniature rifle range, the extension of electric power, the construction of an experimental and testing gas chamber and the erection of a live grenade emplacement and control post.

In 1942 the School of Small Arms was relocated away from the site, with the museum, first to Bonegilla, Victoria. It became the School of Infantry in 1945, which moved to Seymour, Victoria in 1947. The Infantry Centre at Singleton Barracks is the current descendent of the School of Musketry.

In 1943 the Land Headquarters (LHQ) School of Artillery moved to Randwick from Clarendon and many new buildings were erected on the site, mostly timber framed which, after the war, were disposed of. The Royal Australian Navy was allocated land at the east of the site from 1943 and constructed a number of large storage and associated buildings (RNE Indicative 102394).

Following the war the Army and Navy allowed sandmining of land to the east of the Navy stores. Between 1947 and

1967 sand dunes were removed and a swamp area was filled in.

Since the Second World War the site has been progressively developed for defence housing and training including development over the rifle range. During the 1980s the Navy returned some of the land to the Army for ongoing use. The area remains in Defence ownership.

## DESCRIPTION

The Randwick Army Barracks has many buildings on the site, largely consisting of offices, training facilities, housing, and transport compounds.

The School of Musketry (Building 41) is located at the north-east of the Army site. It is located on a raised terraced area with carparking to the north and south and a road to the east. The building is in the Queen Anne style, is single storey, and constructed of red face brick in Flemish Bond pattern with alternate rows of headers and stretchers. The main roof and verandah roof is terracotta tiles with terracotta finials. The front elevation has a verandah with timber posts, and a timber frieze around the perimeter of the verandah with turned timber spindles. There are carved or fretted timber brackets either side of the verandah posts. The ceiling to the verandah is timber boards. Windows are double-hung timber sashes with single panes to the lower sash and four panes to the top sash.

Queen Anne style features include circular gable vents and roughcast render in the gables, the moulded brick string course separating the gables from the walls, timber verandahs with spindled frieze, face brick walls and terracotta finials on the gable ends of the roof. Internally, the building contains many original elements including metal ceiling lining, a fine marble chimney piece, timber joinery to doors and windows, and hardware throughout, and the moulded plaster arch between the two main rooms. The courtyard was enclosed in the 1910s-20s. The south verandah has also been enclosed.

In 2001, the building was occupied by Defence Housing Allocations and Removals.

The Officers' Mess (Building 11) is located at the central north of the site. It is a single storey building constructed of dark purple brown brick. It is in an H plan consisting of four accommodation blocks connected by a central kitchen. It is used for senior officer/sergeant accommodation and the central block is a function centre with kitchen and dining area. It has a terracotta tiled roof with a small decorative fleche with timber ventilation. The entrance is via the eastern end. The building has multi-pane timber windows and doors, and a brick chimney with terracotta pots. Verandah columns are brick. The style has similarities with Interwar Stripped Classical.

To the north of the Mess building is a similarly designed brick five car garage with timber garage doors.

A row of fig trees is planted along the inside of the fence line along Bundock Street.

A heritage assessment of the whole Barracks site may reveal further elements of heritage significance.

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## History Not Available

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## Condition and Integrity

The School of Musketry is generally intact. Although the building has been added to several times, alterations have generally not been made to the original sections. The original flagmast has been removed from the east front of the building.

The Officers' Mess is in good condition. It has had minor alterations, including a covered walkway and modernisation of the central kitchen/function room area (2001).

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## Location

Randwick Army Barracks, Bundock Street, Kingsford, comprising Building Nos 41 and 11.

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Design 5 Architects. "School of Musketry, Building 41, Randwick Barracks, Sydney: Conservation Management Plan", Final Report, May 1997.

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Department of Defence, "Royal Australian Infantry Corps Museum" notes, n.d.

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# Randwick Local Environmental Plan 2012

Current version for 15 January 2020 to date (accessed 22 January 2020 at 16:51)

[Schedule 5](#)

## Schedule 5 Environmental heritage

(Clause 5.10)

### Part 1 Heritage items

Suburb	Item name	Address	Property description	Significance	Item no
Centennial Park	Centennial Park, including Federation monument, Superintendent's residence, park gates, 2 Corinthian columns, 2 statues	1R Oxford Street; 2R Darley Road; 1 Martin Road	Lots 1723 and 1730, DP 45644	State	I01
Centennial Park	Centennial Park Reservoir WS001	3R Oxford Street	Part of Lot 1, DP 582822	State	I02
Centennial Park	Woollahra Reservoir WS022	5R Oxford Street	Lot 1729, DP 45644	State	I03
Clovelly	St Luke's Anglican Church	26 Arden Street	Lot 1, DP 2214	Local	I04
Clovelly	St Anthony's Catholic Church, Primary School and Presbytery	58–60 Arden Street	Lot 7, DP 71081; Lot 1, DP 71082; Lot 2, DP 85963; Lot 1, DP 76693	Local	I05
Clovelly	“Boherbue”	6 Barry Street	Lot 9, DP 1069	Local	I06
Clovelly	Federation house	16 Barry Street	Lot 113, DP 1035102	Local	I07
Clovelly	Federation house	18 Barry Street	Lot 2, DP 942879	Local	I08
Clovelly	Late Victorian stone cottage	23 Campbell Street	Lot 47, DP 2598	Local	I09
Clovelly	Old timber cottage	4 Clifton Road	Lot 15, DP 979309	Local	I10
Clovelly	Bungalow	55 Clifton Road	Lot 9, Section B, DP 6512	Local	I11
Clovelly	1930s shopfront	221–223 Clovelly Road	Lot 101, DP 1061955 (SP 71660)	Local	I12
Clovelly	Clovelly RSL and Air Force Club (formerly Kings Theatre)	263–269 Clovelly Road	Lots 18 and 19, Section 3, DP 719	Local	I13
Clovelly	“Warrah Flats”	298 Clovelly Road	SP 19923	Local	I14

Clovelly	“Pohills Corner”	317 Clovelly Road	Lot 1, DP 10532	Local	I15
Clovelly	Commercial/residential group, “Walders Corner”	319–325 Clovelly Road	Lots 1–4, DP 70321	Local	I16
Clovelly	Clovelly Hotel	379–401 Clovelly Road	Lot 1, DP 105854	Local	I17
Clovelly	Early timber cottage	16 Douglas Street	Lot 23, Section A, DP 1827	Local	I18
Clovelly	Clovelly Bay enclosure, including baths	3–25R Eastbourne Avenue	Part of Lot 7011, DP 1112993; Lot D, DP 316077; Lot 7128, DP 1113902; Lot 7010, DP 1113071 and unknown lot and DPs	Local	I20
Clovelly	James Bundock fountain	11M Eastbourne Avenue	Part of Lot 7011, DP 1112993	Local	I19
Clovelly	Victorian Italianate two storey house (pair to 67)	65 Fern Street	Lot 6, Section B, DP 1827; Lot 1, DP 114441	Local	I21
Clovelly	Victorian Italianate two storey house (pair to 65)	67 Fern Street	Lot 7, DP 662267	Local	I22
Clovelly	Electricity Substation No. 300	21S Flood Street	Lot 1, DP 323046	Local	I23
Clovelly	Two storey semi-detached pair	5–7 Greville Street	Lots A and B, DP 176223	Local	I24
Clovelly	“Clara”, mid-Victorian house	6 Greville Street	Lot 2, DP 1069	Local	I25
Clovelly	Symmetrical bungalow	20 Greville Street	Lot 1, Section 2, DP 719	Local	I26
Clovelly	Georgian sandstone cottage	2 Nolan Avenue	Lot 8, Section A, DP 1827	Local	I27
Clovelly	Attached cottage group	3–7 Nolan Avenue	Lots 1–3, DP 815775	Local	I28
Clovelly	Shark Point, Burrows Park	31R and 33R Ocean Street	Lots 1–3, DP 90410 and unknown lot and DP—Burrows Park—Shark Point Coastal Reserve	Local	I29
Clovelly	Victorian cottage	7 Pacific Street	Lot 22, DP 976620	Local	I30
Clovelly	Seaview Street sandstone drain	10–12LH Seaview Street	Road reserve	Local	L31
Clovelly	Bungalow	32 Shackel Avenue	Lot A, DP 300298	Local	I32
Clovelly	Victory Street sandstone retaining wall	2–14LH Victory Street	Road reserve	Local	L33



Clovelly	“Peace”, early bungalow	39 Winchester Road	Lot 7, Section C, DP 6512	Local	I34
Coogee	Abbott Street sandstone retaining walls	9–23LH Abbott Street	Road reserve	Local	L35
Coogee	Bungalow	296 Alison Road	Lot 2, DP 300482	Local	I36
Coogee	Alison Road sandstone retaining walls and embankment	329–347LH and 340–356LH Alison Road	Road reserve	Local	L37
Coogee	“Ocean View”, Edwardian mansion	370 Alison Road	Lot 21, DP 1136133	Local	I38
Coogee	Arcadia Street sandstone retaining wall	26–30LH Arcadia Street	Road reserve	Local	L39
Coogee	“Roslyn”, Victorian residence	29 Arcadia Street	Lot B, DP 101510	Local	I40
Coogee	“Ballamac”, Victorian villa	39 Arcadia Street	SP 13296, SP 37904 and SP 57370	Local	I41
Coogee	Spanish Mission residential flat building	109 Arden Street	SP 9161	Local	I42
Coogee	Spanish Mission style house	143 Arden Street	Lot C, DP 320743	Local	I43
Coogee	Arden Street sandstone retaining walls	158–176LH and 149–165LH Arden Street	Road reserve	Local	L44
Coogee	“Juvina”, Art Deco residential flat building	182 Arden Street	SP 23085	Local	I45
Coogee	“Beach Court”, Neo-classical residential flat building	184 Arden Street	SP 54713	Local	I46
Coogee	James Robertson Fountain	201M Arden Street	Unknown Lot and DP	Local	I47
Coogee	Coogee Bay Hotel	212 Arden Street	Lot 1, DP 872553	Local	I48
Coogee	3 storey Neo-classical residential flat building	286–290 Arden Street	SP 14074	Local	I49
Coogee	“Tudor Hall”, Neo-Romanesque residential flat building	291 Arden Street	SP 46227	Local	I50
Coogee	Art Deco residential flat building	321 Arden Street	SP 8512	Local	I51
Coogee	“Verona”, Federation Queen Anne corner house	340 Arden Street	Lot 1, DP 799790	Local	I52
Coogee	“Cliffbrook”, Edwardian villa	45–51 Beach Street	Lot 1, DP 8162; Part of State Lot 1, DP 109530		I53

Coogee	“Warimoo”, Bungalow style house	69 Beach Street	Lot 24, DP 9552	Local	I54
Coogee	“San Antonio”, Federation house	75 Beach Street	Lot 21, DP 9552; Lot 1, DP 322784	Local	I55
Coogee	Giles Baths	105–109R Beach Street	Lot 1745, DP 727310; Lot 1580, DP 752011	Local	I56
Coogee	Sandstone wall	111–131R Beach Street	Unknown Lot and DP, Coogee Beach	Local	I57
Coogee	Ross Jones Memorial Pool	133R Beach Street	Unknown Lot and DP	Local	I58
Coogee	McIver Women’s Baths	145–149R Beach Street	Lot 1492 and Part of Lot 1304, DP 752011	State	I59
Coogee	“The Warwick”, 4 storey residential flat building	154–156 Beach Street	SP 55031; SP 64894	Local	I60
Coogee	Weatherboard cottage	26 Bream Street	Lot 1, DP 414536	Local	I61
Coogee	“Smithfield Grange”, Victorian mansion	88 Brook Street	Lot 3, DP 15808	Local	I62
Coogee	2 storey semi-detached group	90–100 Brook Street	Lots 1–2, DP 531000; Lots 1–4, DP 531082	Local	I63
Coogee	Residential flat building	101 Brook Street	SP 1274	Local	I64
Coogee	“Catley’s Wall”, sandstone retaining wall	108 Brook Street	SP 12764; SP 16301	Local	I65
Coogee	Inter-war residential flat building	108 Brook Street	SP 12764; SP 16301	Local	I66
Coogee	Federation house	113 Brook Street	Lot B, DP 364506	Local	I67
Coogee	St Nicolas Rectory	123–123A Brook Street	Lots 1 and 2, DP 1059940	Local	I68
Coogee	St Nicolas Anglican Church	125 Brook Street	Lots 3–6, DP 1230	Local	I69
Coogee	St Brigids Catholic Church	135B Brook Street	Lots 1–4 and Part of Lot 24, Section 3, DP 976802	Local	I70
Coogee	3 storey Art Deco residential flat building	142A Brook Street	SP 13844	Local	I71
Coogee	“Brooklyn Flats”	152 Brook Street	Lot 1, DP 195960	Local	I72
Coogee	“Byron Lodge”	25 Byron Street	Lot 1, DP 780573	Local	I73
Coogee	Federation house	15 Carr Street	Lots 1 and 2, DP 129892	Local	I74
Coogee	Late Victorian house	21 Carr Street	Lot 1, DP 900107	Local	I75

Coogee	Grand Pacific Hotel	64 Carr Street	Lot B, DP 386645	Local	I76
Coogee	Spanish Mission residential flat building	117 Carrington Road	SP 21030	Local	I77
Coogee	Spanish Mission residential flat building	127 Carrington Road	SP 52684	Local	I78
Coogee	Victorian Gothic house	86 Coogee Bay Road	Lot C, DP 323037	Local	I79
Coogee	Federation residence	87 Coogee Bay Road	Lots 1 and 2, DP 1100355	Local	I80
Coogee	Inter-war residential flat buildings (pair to 94)	92 Coogee Bay Road	SP 15817	Local	I81
Coogee	Inter-war residential flat buildings (pair to 92)	94 Coogee Bay Road	SP 8691	Local	I82
Coogee	Coogee Public School	107–121E Coogee Bay Road	Lots 569 and 570, DP 752011; Lot 1, DP 119120; Lot 1, DP 524199	Local	I83
Coogee	Federation semi-detached pair	165–167 Coogee Bay Road	Lots 1 and 2, DP 232179	Local	I84
Coogee	Art Deco residential flat buildings	201–203 Coogee Bay Road	SP 9395	Local	I85
Coogee	1920s house	78 Dolphin Street	Lot 1, DP 302000	Local	I86
Coogee	Coogee Palace, replica of original building	169–181 Dolphin Street	Lot 1, DP 792311	Local	I87
Coogee	Inter-war bungalow	38 Dudley Street	Lot 17, DP 6489	Local	I467
Coogee	Late Federation house	42 Dudley Street	Lot 19, DP 6489	Local	I468
Coogee	Late Federation house	44 Dudley Street	Lot 20, DP 6489; Lot 1, DP 952229	Local	I469
Coogee	2 storey arts and crafts house	2 Gordon Avenue	Lot 4, Section 2, DP 11754	Local	I88
Coogee	Electricity Substation No 280	15S Higgs Street	Lot 1, DP 181656	Local	I89
Coogee	Spanish Mission house	1 Hill Street	Lot 10, Section D, DP 619	Local	I90
Coogee	Bungalow	31 Melody Street	Lot 1, DP 150309	Local	I91
Coogee	Art Deco residential flat building	1A Mount Street (222–226 Clovelly Road)	SP 9826; SP 15254	Local	I92
Coogee	Bungalow	14 Mount Street	Lot 79, DP 13810	Local	I93
Coogee	Late Federation house	122 Mount Street	Lot 22, DP 6489	Local	I470
Coogee	Wylies Baths	4B Neptune Street	Lots 1798 and 1799, DP 822244; R35160	State	I94



Coogee	Edwardian bungalow	153 Oberon Street	Lot 38, DP 6489	Local	I95
Coogee	Electricity Substation No 362	245S Oberon Street	Lot 2, DP 553153	Local	I96
Coogee	“Catley’s Wall”, sandstone retaining wall	6–8 Ormond Gardens	SP 13043	Local	I65
Coogee	“Belle”, Federation house	28 Powell Street	Lot 1, DP 983623	Local	I97
Coogee	Edwardian cottage	3 Quail Street	Lot 1, DP 83175	Local	I98
Coogee	1950s house	9 Ritchard Avenue	Lot 112, DP 14523	Local	I99
Coogee	Large bungalow	7 Thomas Street	Lot X, DP 387111	Local	I100
Coogee	“Maidston”, late Victorian mansion	1A Waltham Street	Lot 1, DP 166742; Lot 1, DP 1107144	Local	I101
Kensington	“Parkside”, Federation semi-detached pair	5–5A Abbotford Street	Lots 1 and 2, DP 847803	Local	I102
Kensington	Tay Reserve	1R Alison Road	Unknown lot and DP; road closure	Local	I103
Kensington	“The Legers“, Federation dwelling	29 Alison Road	Lot 19, DP 658546	Local	I104
Kensington	2 storey Federation duplex	31 Alison Road	Lot 20, Section 28, DP 4601	Local	I105
Kensington	Masonic Temple	199–201 Anzac Parade	Lot 63, Section 14, DP 7698	Local	I106
Kensington	Doncaster Hotel	268–270 Anzac Parade	Lot 202, DP 1092019	Local	I107
Kensington	Late Federation house	6 Balfour Road	Lot 1, DP 938193	Local	I108
Kensington	Late nineteenth century cottage	25 Balfour Road	Lot 20, Section 5A, DP 4745	Local	I109
Kensington	Late nineteenth century cottage	31 Balfour Road	Lot 23, Section 5A, DP 4745	Local	I110
Kensington	Semi-detached pair	49–51 Boronia Street	Lots 1 and 2, DP 538834	Local	I111
Kensington	“T’olle Goes“, Federation house	2–4 Carlton Street	Lot B, DP 324590	Local	I112
Kensington	Bungalow	25 Cottenham Avenue	Lot 123, DP 7698	Local	I113
Kensington	Single storey terrace group	1–27 Darling Street	Lots A–N and P, DP 32991	Local	I114
Kensington	Bungalow (1 of 3)	1 Day Avenue	Lot 245, DP 13208	Local	I115
Kensington	Bungalow (2 of 3)	3 Day Avenue	Lot 244, DP 13208	Local	I116
Kensington	Bungalow (3 of 3)	5 Day Avenue	Lot 243, DP 13208	Local	I117
Kensington	Bungalow (1 of 3)	6 Day Avenue	Lot 248, DP 13208	Local	I118

Kensington	Bungalow (2 of 3)	8 Day Avenue	Lot 249, DP 13208	Local	I119
Kensington	Bungalow (3 of 3)	10 Day Avenue	Lot 250, DP 13208	Local	I120
Kensington	Bungalow	24 Day Avenue	Lot 128, Section 14, DP 7698	Local	I121
Kensington	2 storey terraced pair	10–12 Doncaster Avenue	Lot 1, DP 1033442; Lot 1, DP 981704; Lot 51, DP 2905	Local	I122
Kensington	“Walsworth”, Victorian cottage	25 Doncaster Avenue	SP 50146	Local	I123
Kensington	“Creswell”, Victorian terrace house	58 Doncaster Avenue	Lot 66, DP 2905	Local	I124
Kensington	Detached cottage group	68–82 Doncaster Avenue	Lots 1-8, DP 11419	Local	I125
Kensington	Kensington Public School buildings	77–79E Doncaster Avenue	Lot 1, DP 914422	Local	I126
Kensington	Victorian mansion	86–92 Doncaster Avenue	Lot 1, SP 83561	Local	I127
Kensington	Edwardian house	127 Doncaster Avenue	Lot 54, Section 14, DP 7698	Local	I128
Kensington	Corner bungalow	167 Doncaster Avenue	Lot 34, DP 7698	Local	I129
Kensington	Bungalow	202 Doncaster Avenue	Lot 18, Section 14, DP 7698	Local	I130
Kensington	1920s house	23 Duke Street	Lot B, DP 341780	Local	I131
Kensington	Edwardian cottage	16 Grosvenor Street	Lot 1, DP 171849	Local	I132
Kensington	Our Lady of the Rosary Church	1 Kensington Road	Part of Lot 1, DP 936804	Local	I133
Kensington	Our Lady of the Sacred Heart Convent	2 Kensington Road	Lot 1, DP 923373; Lots 102, 103, 112 and 113 Section 3, DP 3292; Lot 1, DP 380326	Local	I134
Kensington	“Hastings”, Federation dwelling	25 Lenthall Street	Lot 58, Section 10, DP 5759	Local	I135
Kensington	Late Federation house	42 Lenthall Street	Lot 10, Section 10, DP 5759	Local	I136
Kensington	Federation house	7 McDougall Street	Lot 4, Section 11, DP 5759	Local	I137
Kensington	Federation house	10 McDougall Street	Lot 86, DP 5081	Local	I138
Kensington	“Marathon”, Federation dwelling	55 Milroy Avenue	Lot 66, Section 9, DP 5081	Local	I139
Kensington	Sacred Heart Monastery and Chapel	1 Roma Avenue	Lot 12, DP 776835; Lot 272, DP 13208; Lot 1, DP 177912	Local	I140

Kensington	Group of Art Deco flat buildings (part of 1–21 Todman Avenue)	1 and 3 Samuel Terry Avenue	SP 1104; SP 1107	Local	I141
Kensington	Edwardian house	57 Samuel Terry Avenue	Lot 47, Section 12, DP 5759	Local	I142
Kensington	Corner bungalow	67 Samuel Terry Avenue	Lot 42, Section 12, DP 5759	Local	I143
Kensington	Group of Art Deco residential flat buildings	1–27 Todman Avenue	SP 2275; SP 1103; SP 1105; SPs 733–739	Local	I144
Kensington	Former Administration building for WD and HO Wills, Raleigh Park	12 Todman Avenue	Lot 17, DP 270003	Local	I145
Kensington	“Carthona”, Federation style house	85 Todman Avenue	Lot 8, DP 5081	State	I146
Kensington	St. Martin’s Church	101–105 Todman Avenue	Lots 46 and 47, DP 5081	Local	I147
Kensington	Semi-detached pair	117–119 Todman Avenue	Lots 1 and 2, DP 510903	Local	I148
Kensington	“Cooma”, Edwardian mansion	161 Todman Avenue	SP 57028	Local	I149
Kensington	“Avalon”, bungalow	4 Villiers Street	Lot 2, DP 306713	Local	I150
Kensington	Semi-detached pair	14–16 Villiers Street	Lot A and B, DP 445620	Local	I151
Kingsford	Commercial/residential group, “O’Dea’s Corner”	424–436 Anzac Parade	Lots A–E, DP 436786; Part of Lot 1, DP 814016	Local	I152
Kingsford	Edwardian bungalow	487 Anzac Parade	Lot 3, DP 1137712	Local	I153
Kingsford	Edwardian timber cottage	24 Borrodale Road	Lot 1, DP 947543	Local	I154
Kingsford	St. Spyridon Church	78–88 Gardeners Road	Lot 1, DP 1149256	Local	I155
Kingsford	1950s brick house	69 Meeks Street	Lot A, DP 377722	Local	I156
Kingsford	“Lanor”, Edwardian house	9 Middle Street	Lot 1234, DP 668058	Local	I157
Kingsford	Late 1920s house	79 Middle Street	Lot 1, DP 306041	Local	I158
Kingsford	1930s bungalow	22 Shaw Avenue	Lot 434, DP 10752	Local	I159
Kingsford	Spanish Mission dwelling	47 Tunstall Avenue	Lot 463, DP 10752	Local	I160
Kingsford	Late modern house	42 Wallace Street	Lot B, DP 322938	Local	I161
Kingsford	Late 1920s residential flat building	44 Wallace Street	Lot 2, DP 314644	Local	I162



Kingsford	Inter-war mansion	53–53A Willis Street	Part of Lot 822, DP 752011	Local	I163
La Perouse	Mission Church	46 Adina Avenue	Part of Lot 5195, DP 752015	Local	I164
La Perouse	Henry Head Fort	1530R Anzac Parade	Part of Lot 5, DP 1110408	Local	I165
La Perouse	Macquarie Watchtower	1538 Anzac Parade	Part of Lot 3, DP 232077	Local	I166
La Perouse	Tomb of Pere le Receveur	1540 Anzac Parade	Part of Lot 3, DP 232077	Local	I167
La Perouse	La Perouse Museum (former Cable Station)	1542 Anzac Parade	Part of Lot 3, DP 232077	Local	I168
La Perouse	La Perouse Memorial	1544 Anzac Parade	Part of Lot 3, DP 232077	Local	I169
La Perouse	Jessie Stuart Broomfield Fountain	1597A Anzac Parade	Lot 2, DP 776343	Local	I170
La Perouse	Bare Island Fort	1617R Anzac Parade	Part of Lot 3, DP 232077	State	I171
La Perouse	“Yarra Bay House”	1 Elaroo Avenue	Lot 2, DP 777908	Local	I172
La Perouse	1920s bungalow	27 Goorawahl Avenue	Lot 126, DP 752015	Local	I173
Little Bay	Entrance gates to former CEO’s residence	1420 Anzac Parade	Part of Lot 48, DP 27042	State	I178
Little Bay	Prince Henry Site and Coast Hospital Heritage Conservation Area and their settings, significant built and landscape components, including historic precinct (comprising significant buildings, structures and landscape features such as ornamental plantings, retaining walls, kerbs and significant road alignments)	2–6, 5R and 8 Brodie Avenue; 2 and 2R Coast Hospital Road; 2–6 and 8 Curie Street; 2–4 and 6–10 Darwin Avenue; 2 Ewing Avenue; 1 Fleming Street; 30–36 Harvey Street; 18–32, 18–32R and 50 Jenner Street; 1–17 Lister Avenue; 16 Murra Murra Place; 1 Pavilion Drive; 1–5, 10R, 11–13R, 12–40, 15, 17R, 19, 21R, 23R, 42–46 and 50 Pine Avenue	Lots 13, 25, 31, 34, 39–41, 43–47, 52–55, 57–59, 73, 79, 82, 91 and 99–101, DP 270427; Lots 1–9, DP 286146; DP 1096554	State	I175
Little Bay	Former Prince Henry Hospital—Coast Golf and Recreation Club clubhouse (former Coast Hospital steam laundry)	1 Coast Hospital Road	Lot 70, DP 270427	State	I176

Little Bay	Former Prince Henry Hospital—Alignments of Lister Avenue, Coast Hospital Road and Cemetery Road	1 Coast Hospital Road	Lot 70, DP 270427	State	I182
Little Bay	Former Prince Henry Hospital—The Dam	5R Coast Hospital Road	Lot 98, DP 270427	State	I179
Little Bay	Former Prince Henry Hospital—Former Male Lazaret site	5R Coast Hospital Road	Lot 98, DP 270427	State	I180
Little Bay	Former Prince Henry Hospital—Former Coast Hospital Services Area retaining walls	5R Coast Hospital Road	Lot 98, DP 270427	State	I181
Little Bay	Former Prince Henry Hospital—Former Coast Hospital water tower	7R Coast Hospital Road	Lot 71, DP 270427	State	I177
Little Bay	Townhouse complex	45–59 Mirrabooka Crescent	Lot 1, DP 231930	Local	I183
Malabar	“C Levitt”, commercial building	1212 Anzac Parade	Lot 7, DP 23513	Local	I184
Malabar	Edwardian cottage	1234–1236 Anzac Parade	Lot 1, DP 113091	Local	I185
Malabar	Long Bay Gaol Gatehouses —Long Bay Correctional Centre	1250–1300 Anzac Parade	Lots 132 and 133, DP 1142190	State	I186
Malabar	Long Bay Correctional Centre	1250–1300 Anzac Parade	Lots 132 and 133, DP 1142190	State	I187
Malabar	Weatherboard cottage	18 Austral Street	Lot 1, DP 1043888	Local	I188
Malabar	Group of semi-detached cottages	20–26 Austral Street	Lots 5279–5282, DP 824057	Local	I189
Malabar	John Mewburn Reserve	28–32R Austral Street	Part of Lot 133, DP 1142190	State	I190
Malabar	Cromwell Park fountain	4R Dacre Street	Part of Lot 7300, DP 1145253	Local	I191
Malabar	Malabar Headland	7R and 9R Fishermans Road; 3R Brown Street	Lot 2, DP 809094; Part of Lot 102, DP 1162245; Unknown lot and DP	State	I192
Malabar	Malabar Public School	231–239E Franklin Street	Lot 5238, DP 729683	Local	I193
Malabar	Late 19th Century house	39 Napier Street	Lot 3A, DP 365283	Local	I194

Malabar	St. Andrew's Church	2–8 Prince Edward Street	Lot 301, DP 807604	Local	I195
Malabar	Stella Maris Convent	10–14 Prince Edward Street	Lot 202, DP 717359	Local	I196
Malabar	Prince Edward Street sandstone retaining wall and road cutting	68–96LH Prince Edward Street	Road reserve	Local	L197
Malabar	“Sunnyside”, Edwardian cottage	66 Victoria Street	Lot 2, DP 975744	Local	I198
Maroubra	“Yarrum”, Edwardian bungalow	653 Anzac Parade	Lot 1, DP 9394	Local	I199
Maroubra	Residential/commercial building	730–732 Anzac Parade	Lot 2971, DP 752015	Local	I200
Maroubra	Art Deco residential flat building	817 Anzac Parade	Lot 100, DP 1139005 (SP 84775)	Local	I201
Maroubra	“Corio House”	829 Anzac Parade	Lot A, DP 321064	Local	I202
Maroubra	“Dudleys Emporium”	892–906 Anzac Parade; 5–17 Green Street	SP 75825; SP 84761; Part SP 75824	Local	I203
Maroubra	Edwardian house	953 Anzac Parade	Lot 1, DP 860501	Local	I204
Maroubra	Bond Street sandstone retaining wall	6–8LH Bond Street	Road reserve	Local	I205
Maroubra	Post-war cottage	3 Bridges Street	Lot 1535, DP 752015	Local	I206
Maroubra	Inter-war house	379 Bunnerong Road	Lot 2318, DP 752015	Local	I207
Maroubra	“Quarry Reserve”	2–4R Cantrill Avenue	Lot 5190, DP 752015; unknown Lot and DP; road closure	Local	I208
Maroubra	Californian bungalow	23 Chichester Street	Lot 2573, DP 752015	Local	I209
Maroubra	Brick bungalow	12 Cobham Street	Lot 2279, DP 752015	Local	I210
Maroubra	Neo-romanesque house	21 Cobham Street	Lot 2306, DP 752015	Local	I211
Maroubra	Cooper Street brick retaining wall	77–85LH Cooper Street	Road reserve	Local	I212
Maroubra	1930s bungalow	6 Duncan Street	Lot 3, DP 13363	Local	I213
Maroubra	Californian bungalow	28 Everett Street	Lot 12, DP 8156	Local	I214
Maroubra	The Causeway sandstone retaining walls	32–34LH First Avenue	Road reserve	Local	I215
Maroubra	Stone bungalow	152 Gale Road	Lot 52, DP 556901	Local	I216
Maroubra	Row of Art Deco style residential flat buildings	8–14 Hereward Street	SP 50331; SP 21464	Local	I217



Maroubra	Post-war bungalow	84 Loch Maree Street	Lot 11, DP 9393	Local	I218
Maroubra	Mahon Pool	15R Marine Parade	Part of Lot 1, Section 3, DP 758649; unknown Lot and DP	Local	I219
Maroubra	Maroubra Beach Hotel and mixed commercial/residential building attached to the hotel	178–182 Marine Parade	SP 73559	Local	I220
Maroubra	Art Deco residential flat building	139 Maroubra Road	Lot 2246, DP 752015	Local	I221
Maroubra	Maroubra Junction Hotel	195–199 Maroubra Road	Lot 32, DP 805755	Local	I222
Maroubra	Holy Family Church, Neo-romanesque style	214 Maroubra Road	Lot 902 and Part of Lot 1110, DP 752015	Local	I223
Maroubra	“Eden Monaro”, reconstruction of brick mansion	306 Maroubra Road	Lot 3, DP 313495	Local	I224
Maroubra	Maroubra Fire Station	325 Maroubra Road	Lot 1339, DP 752015	Local	I225
Maroubra	“Palmyra”, late Victorian cottage	18 Percival Street	Lot 1, DP 973773	Local	I226
Maroubra	Post-war house	2 Robey Street	Lot B, DP 336085	Local	I227
Maroubra	“Elwi Ento”, late modern house	37 Robey Street	Lot A, DP 330338	Local	I228
Maroubra	Spanish Mission house	43 Sackville Street	Lot E, DP 16837	Local	I229
Maroubra	Semi-detached pair	7–9 Walsh Avenue	Lots C and D, DP 415525	Local	I230
Maroubra	Semi-detached pair	23–25 Walsh Avenue	Lots A and B, DP 101318	Local	I231
Maroubra	Semi-detached pair	11–11A Wise Street	Lot 11, DP 1065082; Lot 1, DP 957996	Local	I232
Matraville	Group of 3 bungalows	27–31 Baird Avenue	Lot 6, DP 15983; Lots 7 and 8, DP 15983	Local	I233
Matraville	Electricity Substation No 25	224S Beauchamp Road	Lot 1212, DP 752015	Local	I234
Matraville	Brick sewer vent	465W Bunnerong Road	Lot C, DP 180474	Local	I235
Matraville	“Alice Villa”, bungalow	17 Jennings Street	Lot 11, DP 13198	Local	I236
Matraville	Former Soldiers Settlement Public School	2–6 Menin Road	SP 63228	Local	I237
Matraville	Eastern Suburbs Crematorium	45–63 Military Road	Part of both Lots 7049 and 7050, DP 1110708	Local	I238

Matraville	Pioneers Memorial Park, Botany Cemetery	45–63 Military Road	Part of Lot 7090, DP 1110711	Local	I239
Matraville	Post-war brick house	18 Moorina Avenue	Lot 186, DP 16138	Local	I240
Matraville	Late modern house	34 Murrabin Avenue	Lot 15, DP 16138	Local	I241
Matraville	Matraville Hotel	144–148 Perry Street	Lots 8–10, DP 13830	Local	I242
Matraville	Soldiers Settlement House	1 Somme Way	Part of Lot 6, DP 700498	Local	I243
Phillip Bay	Phillip Monument	1M Koorringai Avenue	Part of Lot 1140, DP 752015	Local	I244
Phillip Bay	Yarra Bay Beach and Reserve	5–33R Koorringai Avenue; 63R, 65R and 67–73 Yarra Road	Part of Lot 1, DP 912264; Yarra Beach; Lot 7302-7305, DP 1131943 R 62422; Part of Lot 1140, DP 752015; Part of Reserve 23068 (Parking); Lots 3945, 4684, 4685, 4846, DP 752015	Local	I245
Phillip Bay	Chinese Market Gardens	1–19 and 21–39 Koorooera Avenue; 1002–1110 Bunnerong Road; 1R Koorringai Avenue	Lots 1077–1079, DP 752015; Lot 5245, DP 820345	State	I246
Phillip Bay	Our Lady of Good Counsel Church	11 Yarra Road	Lot 3347, DP 752015	Local	I247
Randwick	“Aeolia”, Brigidine Convent and Chapel	6 Aeolia Street	Lot 21, DP 1134767	Local	I248
Randwick	Members’ Stand/Official Stand, Royal Randwick Racecourse	77–97 Alison Road	Lot 1, DP 130234	Local	I249
Randwick	Part of Normanhurst boundary wall (adjacent to former tramway reservation)	90A Alison Road	Lots 1 and 2, DP 304897; part of sandstone wall	Local	I332
Randwick	“Shahzada”, Victorian house	114 Alison Road	Lot 115, DP 552581	Local	I250
Randwick	“Carlton”, Victorian house	122 Alison Road	Lot 6, DP 2556	Local	I251
Randwick	“Verona”, “Amphion” and “Donacis”, Boom style houses	126–130 Alison Road	Lots A–C, DP 108150	Local	I252
Randwick	“Rothesay”, Art Deco residential flats	132–134 Alison Road	Lot 2, DP 2556	Local	I253
Randwick	St Jude’s Well, early stone fountain	138M Alison Road	Unknown Lot and DP	Local	I254

Randwick	“Rexmere”, Victorian terrace	143 Alison Road	Part of Lot 1, DP 609890	Local	I255
Randwick	“Hillcrest”, Victorian terrace	145–147 Alison Road	Part of Lot 1, DP 74946	Local	I256
Randwick	Randwick Presbyterian Church	162–194 Alison Road	Lot 12, DP 1134788	State	I257
Randwick	“Seabird”, Victorian house	191 Alison Road	Part of Lot 1, DP 811872	Local	I258
Randwick	“Glanmire”, Victorian house	193 Alison Road	Part of Lot 1, DP 811872	Local	I259
Randwick	Stone commercial building	200 Alison Road	Lot 1, DP 947598; Lot A, DP 439249	Local	I260
Randwick	Residential flat building	212–214 Alison Road	Lots 5 and 7, DP 84551	Local	I261
Randwick	Freestanding Victorian house	238–242 Alison Road	Lot 1, DP 743787	Local	I262
Randwick	2 storey semi-detached pair of houses	44–46 Avoca Street	Lots 1 and 2, DP 202777	Local	I263
Randwick	“Archina”, 2 storey Federation house	49 Avoca Street	Lot 1, DP 878999	Local	I264
Randwick	Site of Father Shaw’s Wireless Works	51 Avoca Street	Lot 2, DP 878999 (SP 62199)	Local	I265
Randwick	Randwick Public School (c 1924) and Randwick North High School (1886)	62–88E Avoca Street	Lot 1, DP 797564; Lot 1, DP 537130; Lots 1–4, DP 797629; Lots 8, 10–13 and 15, Section 10, DP 758867	Local	I266
Randwick	“Eulalia”	87 Avoca Street	Lot 1, DP 1088378	Local	I268
Randwick	“Aloha”	89 Avoca Street	Lot 2, DP 1088378	Local	I269
Randwick	Post box	90M Avoca Street	Unknown Lot and DP	Local	I267
Randwick	“Braemar”	91 Avoca Street	Lot 2, DP 321037	Local	I270
Randwick	St Jude’s Group (St Jude’s Anglican Church, Rectory, Old Borough Chambers and Hall (Note - Cemetery is at 21 Frances Street. I374)	100–108 Avoca Street	Lot 260 and Lot 497, DP 979237; Part of Lot 572, DP 752011	State	I271
Randwick	Hetta Building, commercial/residential building	110–116 Avoca Street	Lot 1, DP 510301	Local	I272



Randwick	Victorian and inter-war building (shopfronts with residences above)	115–137 Avoca Street	Lot 1, DP 730681; Lot 1, DP 795156; Lot 6, DP 1047871; Lot 1, DP 703116; Lots 51 and 52, DP 709074; Lots 1 and 2, DP 212197; Lots A and B, DP 107198; Lot 2, DP 668133	Local	I273
Randwick	Former Randwick Post Office	124 Avoca Street (206A Alison Road)	Lot 1, DP 788986	State	I274
Randwick	Jubilee Fountain	124M Avoca Street	Unknown Lot and DP	State	I275
Randwick	Commercial building	126–128 Avoca Street	SP 78189	Local	I276
Randwick	Commercial building	130–138 Avoca Street	SP 11937	Local	I277
Randwick	Part of Victorian and inter-war building	139–145 Avoca Street	SP 20684	Local	I278
Randwick	“Clovelly”, “Ilfracombe” and “Torquay”, Italianate houses	146–150 Avoca Street	Lot 2, DP 600693; Lot 1, DP 600694; Lot 1, DP 66096	Local	I279
Randwick	Coach and Horses Hotel	147 Avoca Street	Lot A, DP 323736	Local	I280
Randwick	Terraced pair	152–154 Avoca Street	Lot 1, DP 91045	Local	I281
Randwick	Terraced pair	156–158 Avoca Street	Lots 1 and 2, DP 715235	Local	I282
Randwick	“Somerset” and “Glastonbury”	160–162 Avoca Street	Lot 1, DP 770913; Lot 19, DP 82545	Local	I283
Randwick	Our Lady of the Sacred Heart Church and “Ventnor”, sandstone house	189–193 Avoca Street	Lot B, DP 157005; Part of Lot 1, DP 216223; Part of Lot 1, DP 82225; unknown lot on DP 216223	Local	I284
Randwick	Late Victorian shop and residence	194 Avoca Street	Lot 1, DP 405712	Local	I285
Randwick	“Goldring House”	203–209 Avoca Street	Lots 1–4, DP 204750	Local	I286
Randwick	“Corana” and “Hygeia”	211–215 Avoca Street	Lot 1, DP 854977	State	I287
Randwick	High Cross Park	217–219R Avoca Street	Lot 1, DP 1122573	Local	I288
Randwick	Post box	225M Avoca Street	Unknown Lot and DP	Local	I289
Randwick	Late Edwardian house	303 Avoca Street	Lot 4, Section 1, DP 975345	Local	I290
Randwick	“Canberra”, Edwardian house	311 Avoca Street	Lots 8 and 9, DP 74238	Local	I291
Randwick	Newmarket House	164–174 Barker Street	Lot A, DP 330407	Local	I466

Randwick	Newmarket sale ring	164–174 Barker Street	Lot A, DP 330407	Local	I292
Randwick	Single storey 1920s cottage	6 Barrett Place	Lot 2, DP 8897	Local	I293
Randwick	3 storey Art Deco commercial building	35–43 Belmore Road	Lot 1, DP 725269; Lots 14–16, Section 2, DP 979310	Local	I294
Randwick	Residential/commercial building	48–60 Belmore Road	SP 7779	Local	I295
Randwick	3 storey commercial building	70–82 Belmore Road	SP 1527	Local	I296
Randwick	“Koorowi Flats” 3 storey commercial/residential building	84–90 Belmore Road	SP 10616	Local	I297
Randwick	“Cooks Lodge” 2 storey commercial building	119–123 Belmore Road	Lot 1, DP 103290	Local	I298
Randwick	Commercial building	120–126 Belmore Road	Lot C, DP 101802	Local	I299
Randwick	Federation commercial building	125–133 Belmore Road	SP 49956	Local	I300
Randwick	“Sandgate”	128 Belmore Road	Lot 2, DP 623630	State	I301
Randwick	The Star and Garter Inn	141–143 Belmore Road	Lot 7, DP 789629	Local	I302
Randwick	Statue of Captain James Cook	145M Belmore Road	Lot 2, DP 936733	Local	I303
Randwick	2 storey stone pair of semi-detached houses	2–4 Bishops Avenue	Lots 1 and 2, DP 525186	Local	I304
Randwick	Late nineteenth century 2 storey house	8 Bishops Avenue	Lot 57, DP 1189	Local	I305
Randwick	“Artney”	14 Bishops Avenue	Lot 61, DP 1189	Local	I306
Randwick	Blenheim House and outbuilding	17 Blenheim Street	Lot 341, DP 848149	Local	I307
Randwick	Georgian house	139 Botany Street	Lot A, DP 155310	Local	I308
Randwick	“Redlands”, Art Deco flats	2A Bradley Street	SP 82099	Local	I309
Randwick	Randwick Barracks School of Musketry, Officers’ Mess and Convention Centre	1–23 Bundock Street	Part of Lot 12, DP 1042814	Local	I310
Randwick	Electricity Substation No 341	55–61S Canberra Street	Lot 1144, DP 1104033; State Lot 1145, DP 752015		I311

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Randwick	Part of Normanhurst boundary wall (adjacent to former tramway reservation)	4–6 and 6A Cowper Street	SP 63281; SP 69452	Local	I332
Randwick	“Pepadeniya”, Federation bungalow	29 Cowper Street	Lot 1147, DP 752011	Local	I333
Randwick	Semi-detached pair	33–35 Cowper Street	Lots 1 and 2, DP 548731	Local	I334
Randwick	“Peckham”, Victorian mansion	79–81 Cowper Street	Lot 81, DP 826166	Local	I335
Randwick	“Essex”, Victorian house	7–9 Cuthill Street	Lot 1, DP 1099036	Local	I336
Randwick	“Edith”, Victorian house	11 Cuthill Street	Lot 7, DP 1829; Lot 1, DP 100108	Local	I337
Randwick	St Pauls Street sandstone retaining wall	26LH Daintrey Crescent		Local	L338
Randwick	“Monte, Carlo” Edwardian house	37 Darley Road	Lot 21, Section 26, DP 4589	Local	I339
Randwick	Federation house	71 Darley Road	Lot 15, Section 24, DP 4589	Local	I340
Randwick	Bungalow	73 Darley Road	Lot 16, Section 24, DP 4589	Local	I341
Randwick	“Shaldon”, Queen Anne residence	85 Darley Road	Lot 4, Section 23, DP 4589	Local	I342
Randwick	“Swan Isle”, two storey mansion	87–89 Darley Road	Lots 6 and 7, Section 23, DP 4589	Local	I343
Randwick	“Wollungra” corner bungalow	115 Darley Road	Lot A, DP 175928	Local	I344
Randwick	“Alhawa”, Federation house	127 Darley Road	Lot 6, Section 19, DP 4698; Lot 7, Section 19, DP 4698	Local	I345
Randwick	Unusual symmetrical house	135 Darley Road	Lot 11, Section 19, DP 4698	Local	I346
Randwick	Late Edwardian house	143 Darley Road	Lot 15, Section 19, DP 4698	Local	I347
Randwick	Edwardian bungalow	147 Darley Road	Lot 17, DP 4698	Local	I348
Randwick	Attached row of cottages	169–177 Darley Road	Lots A–E, DP 442452	Local	I349
Randwick	Triple gabled bungalow	195 Darley Road	Lot 6, DP 667294	Local	I350
Randwick	Semi-detached pair	199–201 Darley Road	Lots A and B, DP 404043	Local	I351
Randwick	Federation residence	1 Dick Street	Lot 4, DP 315059	Local	I352

Randwick	Dolphin Street sandstone retaining wall and embankment	1–21LH Dolphin Street	Road reserve	Local	I353
Randwick	Federation corner house	12 Douglas Street	Lot 27, DP 1208	Local	I354
Randwick	Turn of the century house	19 Douglas Street	Lot 1, DP 370570	Local	I355
Randwick	Group of 4 bungalows	16–22 Dudley Street	Corner Lot 2, DP 936001; Lots A and B, DP 317489; Lot 1, DP 963881	Local	I356
Randwick	Pair of bungalows	32–34 and 36 Dudley Street	Lots 1 and 2, DP 5108	Local	I357
Randwick	“Ascot”, Victorian residence	4 Dutruc Street	Lot 3, DP 878999	Local	I358
Randwick	Electricity Substation No 287	9S Dutruc Street	Lot 10, DP 864725	Local	I359
Randwick	Pair of Victorian residences	11A and 15 Dutruc Street	Lots 6 and 7, DP 245089	Local	I360
Randwick	Victorian Italianate villa	21 Dutruc Street	Lot 10, DP 245089	Local	I361
Randwick	Victorian Italianate residence	54 Dutruc Street	Lot 32, DP 73390	Local	I362
Randwick	Sandstone cottage and terraced pair	60B, 62–64 Dutruc Street	Lot A, DP 341677; Lots 1 and 2, DP 519206	Local	I363
Randwick	Timber semi-detached pair	55–57 Earl Street	Lots 40 and 41, DP 1853	Local	I364
Randwick	Pair of timber cottages	59 and 61 Earl Street	Lots 42 and 43, DP 1853	Local	I365
Randwick	“Farnham House”	3 Farnham Avenue	Lot 1, DP 165543	Local	I366
Randwick	Victorian cottage	16 Fern Street	Lot 10, DP 3260	Local	I367
Randwick	Federation arts and crafts 2 storey house	2–4 Frances Street	SP 74533	Local	I368
Randwick	Federation arts and crafts 2 storey house	2–4 Frances Street	SP 74533	Local	I369
Randwick	Electricity Substation No 349	2S Frances Street	Lot 1, DP 182713	State	I370
Randwick	Federation Queen Anne single storey house	11 Frances Street	Lot 2, DP 927034	Local	I371
Randwick	Federation Queen Anne single storey house	11A Frances Street	Lot 1, DP 927034	Local	I372

Randwick	Group of Federation mansions	14–14A, 16 and 18 Frances Street	Lots 1 and 2, DP 926313; Lots 101 and 102, DP 1131604	Local	I373
Randwick	St Jude's Cemetery	21 Frances Street	Lot 1, DP 840568	State	I374
Randwick	Randwick Town Hall	30 Frances Street	Lots 4 and 7 Section 10, DP 758867	Local	I375
Randwick	Bus shelter	2R Frenchmans Road	Part of unknown Lot	Local	I376
Randwick	2 storey house	29 Frenchmans Road	Lot 15, Section 1, DP 1045	Local	I377
Randwick	"Glendu", Federation Queen Anne cottage	41 Frenchmans Road	Lot 9, Section 1, DP 1062	Local	I378
Randwick	2 storey commercial/residential building	49–51, 53–55B and 55C Frenchmans Road	SP 73982; Lot 14, DP 25257	Local	I379
Randwick	"Venice", grand late Victorian/early Edwardian house	66 Frenchmans Road	Lot 1, DP 34630	State	I380
Randwick	Pair of 2 storey stone cottages	6–8 George Street	Lot 1, DP 199788; Lot 1, DP 997983	Local	I381
Randwick	"Hooper Cottage"	17 Gilderthorpe Avenue	Lot 1, Section 1, DP 448756	State	I382
Randwick	Federation house	63–71 Gilderthorpe Avenue	Lots 20 and 21 SP 64147	Local	I383
Randwick	Federation semi-detached pair of cottages	63–71 Gilderthorpe Avenue	Lots 16–19 SP 64147	Local	I384
Randwick	Victorian Gothic house	81–83 Gilderthorpe Avenue	Lots 17 and 18, SP 66920	Local	I385
Randwick	"Gordon Terrace"	2–26 Gordon Street	Lots 1–13, DP 107876	Local	I386
Randwick	"Cotswold", late Victorian cottage	4 Hay Street	Lot 3, DP 808414	Local	I387
Randwick	Prince of Wales Hospital group (Main Block, Catherine Hayes Hospital and Superintendent's residence)	61 High Street	Lot 1, DP 870720	Local	I388
Randwick	Prince of Wales Hospital gates and fence	61 High Street	Part of Lot 1, DP 870720	Local	I389
Randwick	Randwick Destitute Children's Asylum Cemetery	61 High Street	Part of Lot 1, DP 870720	Local	I390



Randwick	Part of Normanhurst boundary wall (adjacent to former tramway reservation)	8 Holkham Avenue	SP 12482	Local	I332
Randwick	Semi-detached pair	57–59 Hooper Street	Lots 1 and 2, DP 226802	Local	I391
Randwick	Workers cottage	11 Jane Street	Lot B, DP 320163	Local	I392
Randwick	2 storey sandstone cottage	15 Jane Street	Lot A, DP 320163	Local	I393
Randwick	Judge Street sandstone stairs and retaining walls	18–20LH Judge Street	Road reserve	Local	L394
Randwick	2 storey Federation house	23 Judge Street	Lot 45, DP 867679	Local	I395
Randwick	Part of Victorian terrace row	1–13 Kemmis Street	Lots 14–20, DP 251302	Local	I396
Randwick	Wide-fronted semi-detached pair	15 and 17 Kemmis Street	Lots 21 and 22, DP 251302	Local	I397
Randwick	Group of grand Victorian houses	23–27 Kemmis Street	Lots 8–10, DP 243471	Local	I398
Randwick	Federation cottage	3 King Street	Lot 4, Section 1, DP 902	Local	I399
Randwick	Former Tramways Repair Shop	22–32 King Street	Lot 4, DP 212352; Lot 1, DP 228903	Local	I400
Randwick	Former Tramways Workshop	22–32 King Street	Lot 4, DP 212352; Lot 1, DP 228903	Local	I401
Randwick	Brick chimney stack	88–98 King Street	SP 75411	Local	I402
Randwick	Transitional Victorian/Edwardian style house	13 Lee Street	Lot 10, SP 56114	Local	I403
Randwick	“Ramona Hall”, Spanish Mission influenced residential flat building	23 Marcel Avenue	Lot 20, DP 13587	Local	I404
Randwick	Residential flat building with neo-classical entry	31 Marcel Avenue	SP 14380	Local	I405
Randwick	Randwick Literary Institute	47A Market Street	Lots 1 and 2, DP 566976	Local	I406
Randwick	Californian bungalow	12 McLennan Avenue	Lot 10, DP 13779	Local	I407
Randwick	Californian bungalow	23 McLennan Avenue	Lot 5, DP 13779	Local	I408
Randwick	Californian bungalow	25 McLennan Avenue	Lot 6, DP 13779	Local	I409

Randwick	“Brighton Terrace”	2–20 Mears Avenue	Lots 2 and B–E, DP 110106; Lots 51–55, DP 260216	Local	I410
Randwick	St Jude’s Mission Church	84 Middle Street	Lot 1, DP 774765	Local	I411
Randwick	Old stone cottage	88 Middle Street	Lot 1, DP 83413	Local	I412
Randwick	Edwardian timber cottage	90 Middle Street	Lot 1, DP 83414	Local	I413
Randwick	Victorian mansion	2–4 Milford Street	Lot 2, DP 234445	Local	I414
Randwick	Californian bungalow	10 Milford Street	Part of Lot 71, DP 1168871	Local	I415
Randwick	“Nugal Hall”, Gothic revival sandstone mansion	16–18 Milford Street	Lot 4, DP 530998	State	I416
Randwick	Federation house	2 Monmouth Street	Lot 1, DP 963384	Local	I417
Randwick	Bungalow	19 Monmouth Street	Lot 23, Section 1, DP 3716	Local	I418
Randwick	Spanish Mission flats	3 Mulwarree Avenue	Lot 2, DP 17536	Local	I419
Randwick	Terraced row	1–19 Oswald Street	Lots 1–10, DP 108445	Local	I420
Randwick	“The Pines”, boom style house	11A Park Avenue	Lot 3, DP 74835	Local	I421
Randwick	Royal Hotel	2–4 Perouse Road	Lot 1, DP 573912	Local	I422
Randwick	Pair of cottages	15–19 Perouse Road	Lot 6, DP 3564; Lot 7, Section A, DP 3564	Local	I423
Randwick	Grand Edwardian mansion	82–84 Perouse Road	Lot 131, DP 613647	Local	I424
Randwick	Federation house	85 Perouse Road	Lot 4, DP 5614	Local	I425
Randwick	Unusual Edwardian house	98–100 Perouse Road	Lots A and B, DP 951214	Local	I426
Randwick	Federation Queen Anne house	106 Perouse Road	Lot 1, DP 875098	Local	I427
Randwick	Federation Queen Anne houses	108 and 110 Perouse Road	Lots 1 and 2, DP 981182	Local	I428
Randwick	Transitional style Victorian 2 storey house	30 Pine Street	Lot 1, DP 302357	Local	I429
Randwick	Edwardian style cottage	71 Pine Street	Lot 18, DP 2892	Local	I430
Randwick	2 storey semi-detached pair	81–83 Pine Street	Lot 13, Section 1, DP 2892; Lot 12, DP 2892	Local	I431
Randwick	3 storey 1930s residential flat building	2 Prince Street	SP 16310	Local	I432

Randwick	Small Gothic church	1 Rae Street	Lot 12, DP 866464	Local	I433
Randwick	Part of historic residential streetscape	3, 5, 7 and 9–11 Rae Street	Lots F–H, DP 84853; Lot 1, DP 745599; Lot 11, DP 1109320	Local	I434
Randwick	Part of historic residential streetscape	11A–23 Rae Street	Lot 1, DP 741141; Lot 2, DP 707130; Lot 3, DP 731596; Lot 1, DP 534053; Lot 50, DP 607648; Lot 6, DP 1109345	Local	I435
Randwick	Victorian residence	37–39 Rae Street	Lots 4 and 5, DP 226878	Local	I436
Randwick	Rainbow Street Public School	90–98E Rainbow Street	Lot 1738, DP 48445	Local	I437
Randwick	Group of Italianate houses	4–8 Silver Street	Lots 8–10, Section 2, DP 3496	Local	I438
Randwick	Duke of Gloucester Hotel	2 St Marks Road	Lot 1, DP 80766	Local	I439
Randwick	Single storey semi-detached cottage group	4–10 St Marks Road	Lot 1, DP 1046576; Lots 1 and 2, DP 233923	Local	I440
Randwick	“Rathven”, large Italianate house	43 St Marks Road	Lot 1, DP 623700	State	I441
Randwick	Group of Italianate houses	48, 50, 52–56, 58, 60, 62, 64 and 66 St Marks Road	Lots 18, 19, 21, 22, 24 and 25, DP 245089; Lot 1, DP 1012684; Lot 91, DP 596460	Local	I442
Randwick	Victorian terrace	15 St Pauls Street	Lot A, DP 350130	Local	I443
Randwick	Federation single storey cottage	17 St Pauls Street	Lot B, DP 350130	Local	I444
Randwick	Victorian Italianate boom style 2 storey house	19 St Pauls Street	Lot 21, DP 1829	Local	I445
Randwick	Terraced pair	25–27 St Pauls Street	Lots 1 and 2, DP 230596	Local	I446
Randwick	Ritz Cinema	39–47 St Pauls Street	Lot 101, DP 1029883	State	I447
Randwick	Masonic Temple, classical revival style	42–44 St Pauls Street	Lot 2, DP 303070	Local	I448
Randwick	Sandstone boundary wall to Daintrey Crescent, gardens and landscape associated with “Aeolia”, Brigidine Convent and Chapel	57–63 St Pauls Street	Lot 1, DP 776899; Lot 1494, DP 752011	Local	I248



Randwick	Emanuel School	18–20 Stanley Street	Lots 1 and 2, DP 709332	State	I449
Randwick	Part of terrace and cottage group	10–14 Stephen Street	Lots 1 and 2, DP 511401; Lot 12, Section 2, DP 3716	Local	I450
Randwick	Spanish Mission style residential flat pair	1 and 1A Sully Street	Lots 200 and 201, DP 1104698	Local	I451
Randwick	“Tayar”, Italianate house	1–3 The Avenue	Lot 11, DP 883045	Local	I452
Randwick	Randwick Fire Station	6 The Avenue	Lot 14, Section 10, DP 758867	Local	I453
Randwick	“Avonmore Terrace”	26–42 The Avenue	Lot 1, DP 966761; Lots A–C, DP 950369; Lots 1–5, DP 14466	State	I454
Randwick	2 storey semi-detached pair	8–10 Victoria Street	Lot A, DP 442243; Lot 2, DP 505908	Local	I455
Randwick	“Keletera”, symmetrical cottage	5 Wentworth Street	Lot 12, Section 28, DP 975242	Local	I456
Randwick	Weatherboard cottage	22 Young Street	Lot 2, DP 545098	Local	I457
Randwick	Big Stable Newmarket	29–39 Young Street	Lot B, DP 330407	State	I458
South Coogee	Cairo Street stairs and associated sandstone retaining walls	1–21LH Cairo Street	Road reserve	Local	I459
South Coogee	“Santa Fe”	28 Coldstream Street	Lot 2366, DP 752015	Local	I460
South Coogee	Garnet Street sandstone retaining wall, embankment and street trees	7–13LH Denning Street; 347H Rainbow Street; 2LH and 6LH Garnet Street	Garnet Street sandstone retaining wall, embankment and street trees	Local	L461
South Coogee	Randwick Cemetery	42–138 Malabar Road	Lot 54 and 55, DP 752015	Local	I462
South Coogee	Timber cottage	85 Malabar Road	Lot 1, DP 943175	Local	I463
South Coogee	“Quarry Reserve”	95 Moverley Road	Lot 1, DP 553251	Local	I464
South Coogee	“Quarry Reserve”	95S Moverley Road	Part of Lot 5190, DP 75015	Local	I465

## Part 2 Heritage conservation areas

Name of area	Identification on <a href="#">Heritage Map</a>	Significance
North Randwick	Shown by red hatching and labelled “C1”	Local and State (in part)
Old Tote and Figtree Theatre	Shown by red hatching and labelled “C2”	Local
Sacred Heart	Shown by red hatching and labelled “C3”	Local

West Kensington	Shown by red hatching and labelled “C4”	Local
Botany Bay National Park (Botany Bay National Park, La Perouse Headland, Yarra Bay and Frenchmans Bay)	Shown by red hatching and labelled “C5”	State and Local (in part)
Prince Henry Hospital Site	Shown by red hatching and labelled “C6”	Local
Malabar Headland	Shown by red hatching and labelled “C7”	State
Bunnerong Power Station	Shown by red hatching and labelled “C8”	Local
Dudley Street	Shown by red hatching and labelled “C9”	Local
Gordon Square	Shown by red hatching and labelled “C10”	Local
Moirra Crescent	Shown by red hatching and labelled “C11”	Local
High Cross	Shown by red hatching and labelled “C12”	Local
Racecourse	Shown by red hatching and labelled “C13”	Local
Randwick Environmental Park	Shown by red hatching and labelled “C14”	Local
Randwick Junction	Shown by red hatching and labelled “C15”	Local
The Spot	Shown by red hatching and labelled “C16”	Local
St Jude’s	Shown by red hatching and labelled “C17”	Local
St Mark’s	Shown by red hatching and labelled “C18”	Local
Struggletown	Shown by red hatching and labelled “C19”	Local
Caerleon Crescent	Shown by red hatching and labelled “C20”	Local

### Part 3 Archaeological sites

Suburb	Item name	Address	Property description	Significance	Item no
Coogee	Bishopscourt	21–29 Moira Crescent	SP 3850; Lot 39, DP 13587; SP 82854; Lot B, DP 319928	Local	A1

[https://www.legislation.nsw.gov.au/#/view/EPI/2013/36/sch5?EPITITLE=Randwick Local Environmental Plan 2012&autoquery=\(Content%3D\("...](https://www.legislation.nsw.gov.au/#/view/EPI/2013/36/sch5?EPITITLE=Randwick Local Environmental Plan 2012&autoquery=(Content%3D() 26/27



## Part 4 Aboriginal heritage

[https://www.legislation.nsw.gov.au/#/view/EPI/2013/36/sch5?EPITITLE=Randwick Local Environmental Plan 2012&autoquery=\(Content%3D\(](https://www.legislation.nsw.gov.au/#/view/EPI/2013/36/sch5?EPITITLE=Randwick Local Environmental Plan 2012&autoquery=(Content%3D(\) 27/27

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## Appendix J. Historical Titles



ABN: 36 092 724 251  
Ph: 02 9099 7400  
[Redacted]

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

Report

LRS NSW

Sydney

Address: - 373A Avoca Street, Kingsford

Description: - Lot 13 and part Lot 16 D.P. 1042814 also part Lot 37 D.P. 1150819

As regards Lot 13 D.P. 1042814 and part Lot 37 D.P. 1150819

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) &amp; Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
01.03.1901	The Public Service of New South Wales transferred from the State to the Commonwealth	Gazette
01.03.1901	Land used exclusively in connection with the Department of Defence	
12.12.1927	Agreement to issue freehold Titles to the Commonwealth	
17.11.1964	Issue of freehold Grant Title to the Commonwealth of Australia	Vol 9865 Fol 28
01.03.1901 (1901 to date)	# Commonwealth of Australia	Gazette Then Vol 9865 Fol 28 Now 13/1042814 & 37/1150819 (Intervening titles not investigated)

# Denotes current registered proprietor

Leases: - NIL

Easements: -

- 18.02.1954 (Book 2285 No. 458) Easement for Underground Electricity Main for a period of 20 years from 04.08.1952

Email: [Redacted]





ABN: 36 092 724 251  
Ph: 02 9099 7400  
[Redacted]

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

As regards Part Lot 16 D.P. 1042814

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) &amp; Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
01.03.1901	The Public Service of New South Wales transferred from the State to the Commonwealth	Gazette
01.03.1901	Land used exclusively in connection with the Department of Defence	
12.12.1927	Agreement to issue freehold Titles to the Commonwealth	
17.11.1964	Issue of freehold Grant Title to the Commonwealth of Australia	Vol 9865 Fol 28
01.03.1901 (1901 to 2010)	# Commonwealth of Australia	Gazette Then Vol 9865 Fol 28 Now 16/1042814 (Intervening titles not investigated)
04.11.2010 (2010 to date)	# Randwick City Council	16/1042814

# Denotes current registered proprietor

Leases: - NIL

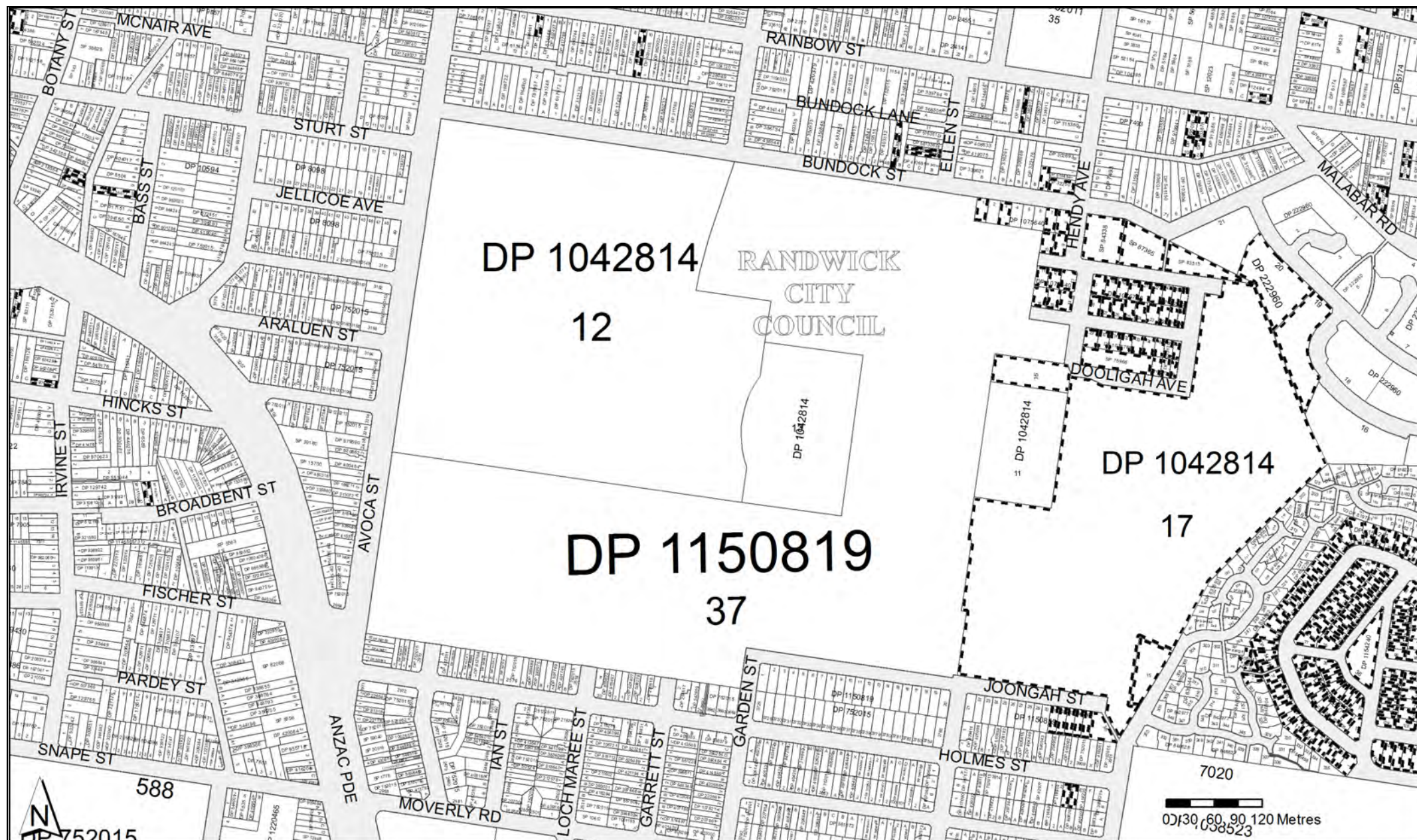
Easements: -

- 28.07.2014 (D.P. 1070717) Easement for Sewerage Purposes 3.05 wide
- 08.05.2006 (D.P. 1096242) Right of Way Variable Width

Yours Sincerely,

[Redacted]  
15 March 2020

Email: [Redacted]







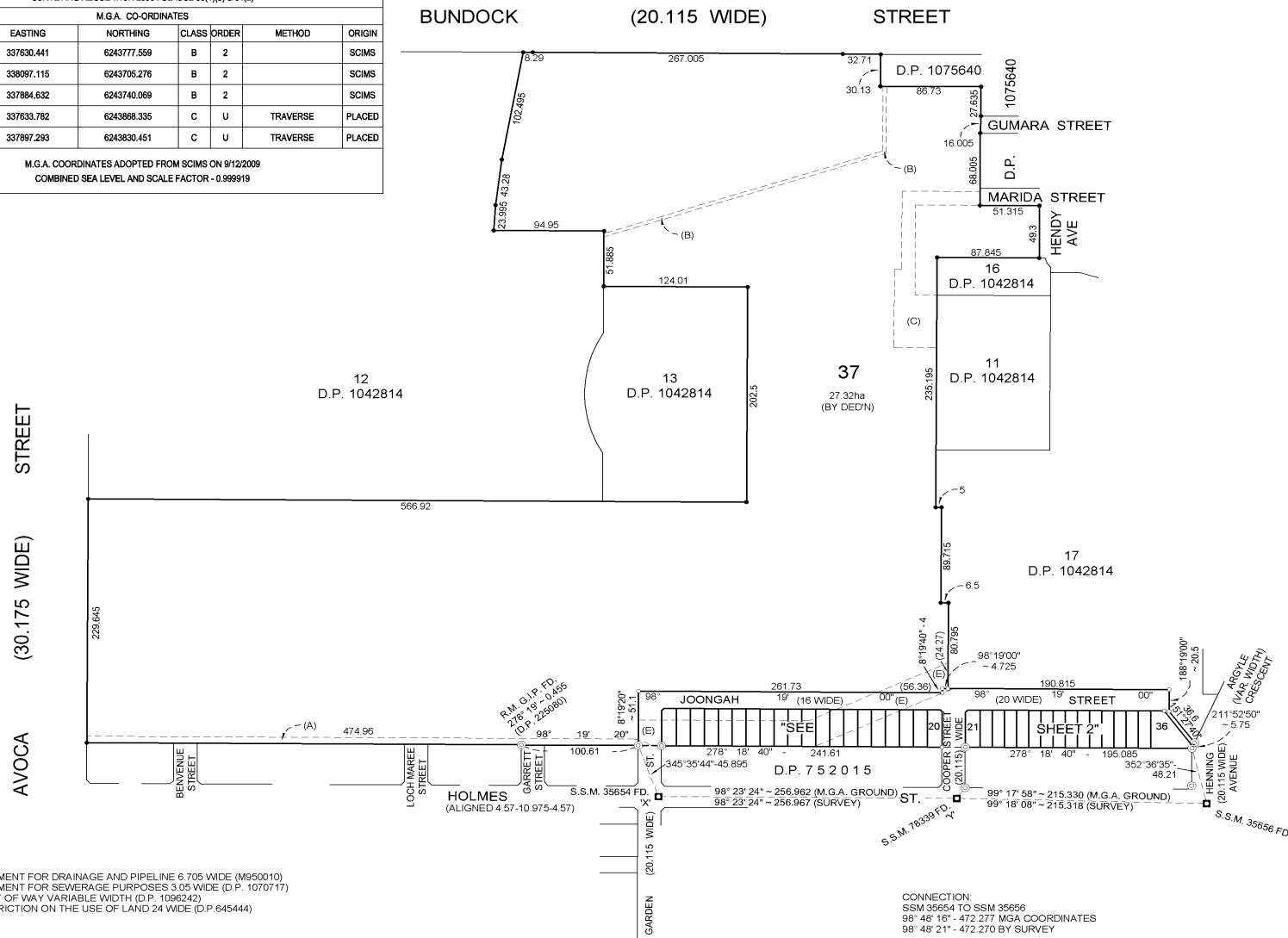


PLAN FORM 2 (A2)

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

ePlan Sheet 1 of 2 Sheets

SURVEYING REGULATION 2006 : CLAUSE 35(1)(b) & 61(2)						
M.G.A. CO-ORDINATES						
MARK	EASTING	NORTHING	CLASS	ORDER	METHOD	ORIGIN
SSM 35654	337630.441	6243777.559	B	2		SCIMS
SSM 35656	338097.115	6243705.278	B	2		SCIMS
SSM 78339	337884.632	6243740.069	B	2		SCIMS
SSM 126298	337633.782	6243868.335	C	U	TRAVERSE	PLACED
SSM 154957	337897.293	6243830.451	C	U	TRAVERSE	PLACED
M.G.A. COORDINATES ADOPTED FROM SCIMS ON 9/12/2009						
COMBINED SEA LEVEL AND SCALE FACTOR - 0.999919						



- (A) - EASEMENT FOR DRAINAGE AND PIPELINE 6.705 WIDE (M950010)
- (B) - EASEMENT FOR SEWERAGE PURPOSES 3.05 WIDE (D.P. 1070717)
- (C) - RIGHT OF WAY VARIABLE WIDTH (D.P. 1096242)
- (E) - RESTRICTION ON THE USE OF LAND 24 WIDE (D.P. 645444)

CONNECTION:  
 SSM 35654 TO SSM 35656  
 98° 48' 15" - 472.277 M.G.A. COORDINATES  
 98° 48' 21" - 472.270 BY SURVEY

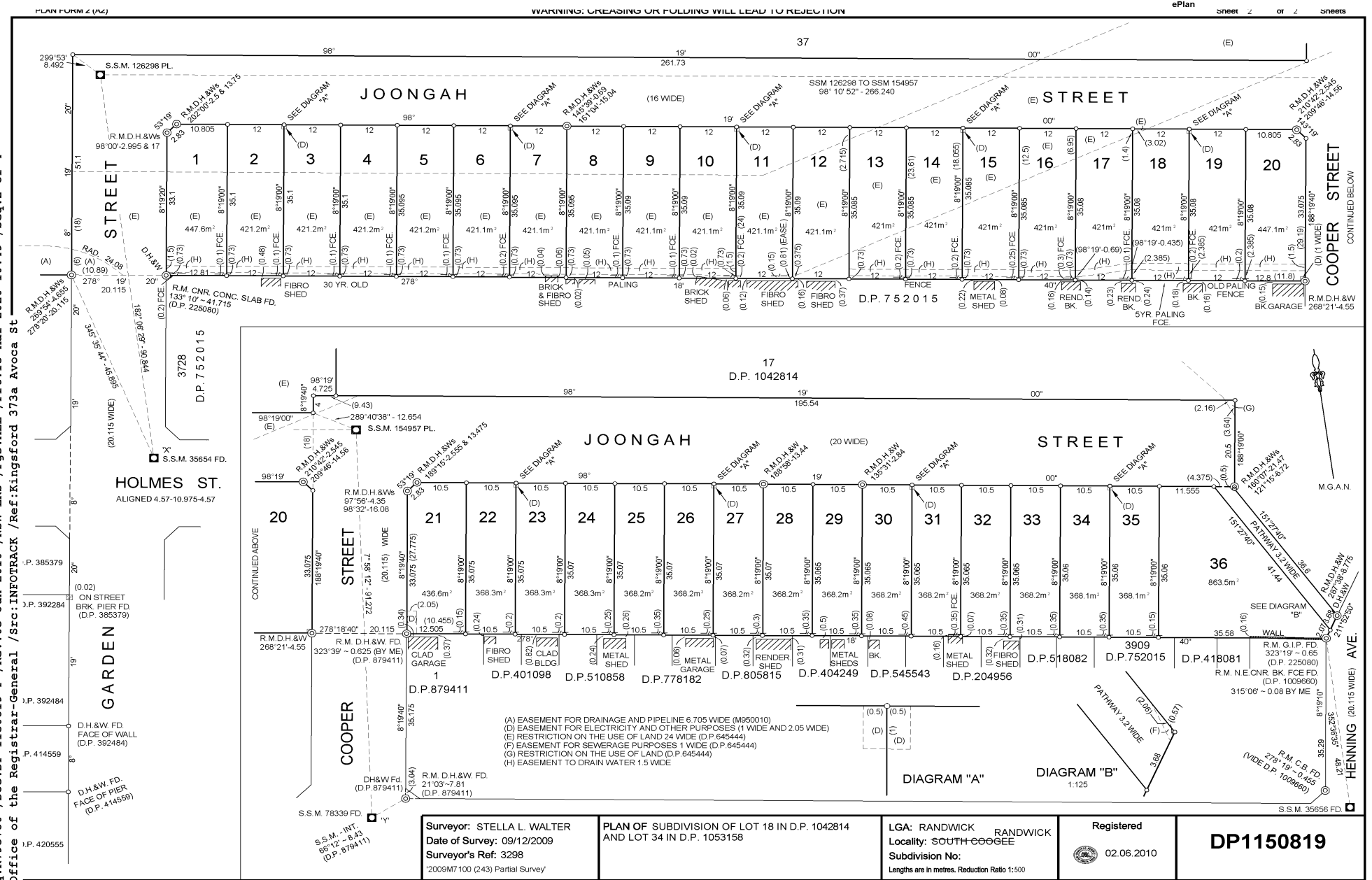
Surveyor: STELLA L. WALTER  
 Date of Survey: 09/12/2009  
 Surveyor's Ref: 3298  
 '2009M7100 (243) Partial Survey'

PLAN OF SUBDIVISION OF LOT 18 IN D.P. 1042814  
 AND LOT 34 IN D.P. 1053158

LGA: RANDWICK RANDWICK  
 Locality: SOUTH-GOOGEE  
 Subdivision No:  
 Lengths are in metres. Reduction Ratio 1: 2500

Registered  
 02.06.2010

DP1150819



PLAN FORM 6

WARNING: Creasing or folding will lead to rejection

ePlan

DEPOSITED PLAN ADMINISTRATION SHEET

Sheet 1 of 2 sheet(s)

SIGNATURES, SEALS and STATEMENTS of intention to dedicate public roads, to create public reserves, drainage reserves, easements, restrictions on the use of land or positive covenants.

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

1. EASEMENT FOR ELECTRICITY AND OTHER PURPOSES 1 AND 2.05 WIDE
2. EASEMENT TO DRAIN WATER 1.5 WIDE

IT IS INTENDED TO DEDICATE TO THE PUBLIC AS PUBLIC ROAD:

1. THE EXTENSION OF COOPER STREET 20.115 WIDE (SUBJECT TO THE RESTRICTION ON THE USE OF LAND 24 WIDE SHOWN IN D.P. 645444).
2. THE EXTENSION OF GARDEN STREET 20.115 WIDE (SUBJECT TO THE RESTRICTION ON THE USE OF LAND 24 WIDE SHOWN IN D.P. 645444 AND THE EASEMENT FOR DRAINAGE AND PIPELINE 6.705 WIDE (M950010))
3. JOONGAH STREET 16 & 20 WIDE (SUBJECT TO THE RESTRICTION ON THE USE OF LAND AND RESTRICTION ON THE USE OF LAND 24 WIDE SHOWN IN D.P. 645444)
4. THE PATHWAY 3.2 WIDE (SUBJECT TO EASEMENT FOR SEWERAGE PURPOSES 1 WIDE D.P. 645444)

Use PLAN FORM 6A for additional certificates, signatures, seals and statements

Crown Lands NSW/Western Lands Office Approval

I ..... in approving this plan certify  
 (Authorised Officer)  
 that all necessary approvals in regard to the allocation of the land shown herein have been given

Signature: .....  
 Date: .....  
 File Number: .....  
 Office: .....

Subdivision Certificate

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

the proposed ..... set out herein  
 (insert 'subdivision' or 'new road')

\* Authorised Person/General Manager/Accredited Certifier

Consent Authority: .....  
 Date of Endorsement: .....  
 Accreditation no: .....  
 Subdivision Certificate no: .....  
 File no: .....

\* Delete whichever is inapplicable.

**DP1150819**

Registered:  02.06.2010

Title System: TORRENS

Purpose: SUBDIVISION

**PLAN OF SUBDIVISION OF LOT 18 IN D.P. 1042814 AND LOT 34 IN D.P. 1053158**

LGA: RANDWICK

Locality: ~~SOUTH COOGEE~~ RANDWICK

Parish: BOTANY

County: CUMBERLAND

Surveying Regulation, 2006

I, STELLA LOUISE WALTER  
 of MEPSTEAD & ASSOCIATES PTY. LTD.  
PO BOX 208, PENNANT HILLS 1715

a surveyor registered under the *Surveying Act, 2002*, certify that the survey represented in this plan is accurate, has been made in accordance with the *Surveying Regulation, 2006* and was completed on 9TH DECEMBER 2009

The survey relates to  
LOTS 1-36 INCLUSIVE  
LOT 37 IS COMPILED

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

Signature Stella Walter Dated: 9th Dec 2009  
 Surveyor registered under the *Surveying Act, 2002*

Datum Line: 'X'-'Y'  
 Type: Urban/Rural

Plans used in the preparation of survey/compilation

DP 392284	DP 1009660
DP 392484	DP 1042814
DP 225080	DP 1053158
DP 645444	DP 1070717
DP 879411	DP 1096242

(if insufficient space use Plan Form 6A annexure sheet)

SURVEYOR'S REFERENCE: 3298 '2009M7100 (243) Partial Survey'

\* OFFICE USE ONLY



PLAN FORM 6A (Annexure Sheet)

WARNING: Creasing or folding will lead to rejection

ePlan

DEPOSITED PLAN ADMINISTRATION SHEET

Sheet 2 of 2 sheet(s)

PLAN OF SUBDIVISION OF LOT 18 IN D.P.1042814  
AND LOT 34 IN D.P.1053158

**DP1150819**

Registered:



02.06.2010

Subdivision Certificate No:

Date of Endorsement:

SIGNED SEALED AND DELIVERED

for and on behalf of EnergyAustralia

by KATHERINE MARGARET GUNTON

its duly constituted Attorney pursuant

to Power of Attorney registered

Book 4528 No. 401

Attorney

Witness

*P. Gagel*  
09.03.2010.

PAT GAGEL  
DELEGATE OF THE  
DEPARTMENT OF DEFENCE

THE PLAN IS EXEMPT FROM SUBDIVISION CERTIFICATE UNDER  
SECTION 195C (2) OF THE CONVEYANCING ACT 1919.

SURVEYOR'S REFERENCE: 3298 '2009M7100 (243) Partial Survey'

\* OFFICE USE ONLY

PLAN FORM 2

SIGNATURES AND SEALS ONLY

Witnessed on behalf of  
The Government of Australia  
by its authorised officer  
No 5541 Mr Bernard Blackley

Witness  
Name: Witness Craig Kelly

THE PLAN IS EXEMPT FROM  
SUBDIVISION CERTIFICATE UNDER  
SECTION 145C(2) OF THE CONVEYANCING  
ACT 1919

Crown Lands Office Approval

LAN APPROVED

Land District

Paper No.

Field Book

Subdivision Certificate

certifies that the provisions of s. 109(1) of the Environmental Planning  
and Assessment Act 1979 have been satisfied in relation to the  
proposed

(Insert subdivision or new road)

\*Authorised Person/General Manager/Accredited Certifier

Consent Authority

Date of endorsement

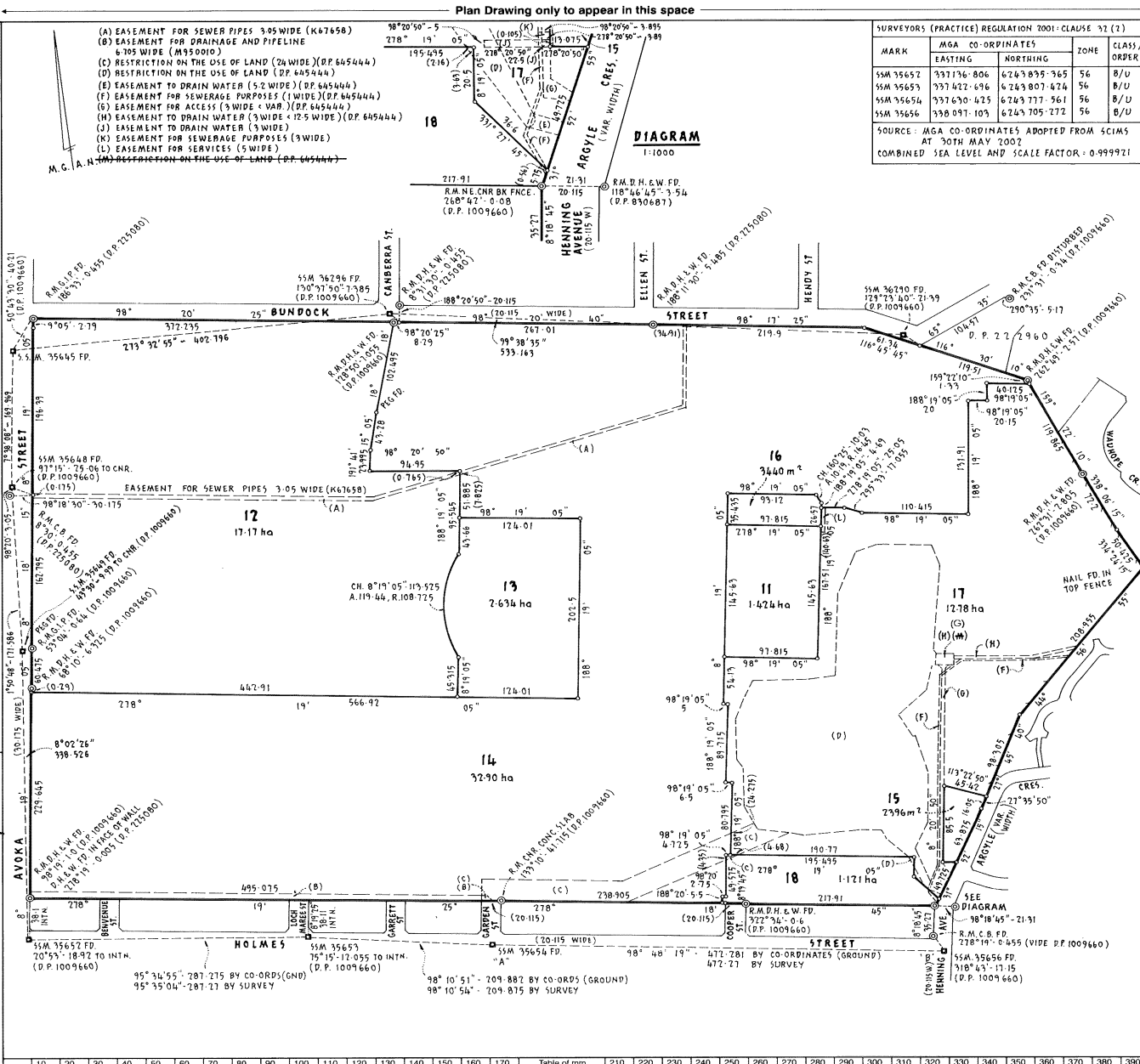
Accreditation No.

Subdivision Certificate No.

File No.

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

Delete whichever is inapplicable





*Cancels plans Ms. 1227 Sy. LF. & Ms. 4921 Sy. R.*

~~Original, not in this Department~~<sup>plan</sup>

Note: Alterations initialled, effected by Surv. L. Heydon  
authorised by Surv. D.P. Rich vide letter 6/1/60. Pks 55-5346. LB. 58.2463

① For 4911 Grant Issued to The Commonwealth of Australia Pks 555346

PLAN OF PORTION 4911.

~~of part of~~ (Commonwealth Transferred Property No 329)  
~~and land acquired by the Commonwealth Gaz. No 12 of 10<sup>th</sup> March 1955 p. 85~~  
 PARISH OF BOTANY | COUNTY OF CUMBERLAND

within an Extension to the Suburban Lands City of Sydney Notified 21st May 1898  
do P 1926 from Queen, under M. P. or B.L., Notified 2nd August 1935.

Scale :- 200 feet to an inch

## NOTATION PLAN

4911

~~201A OR 7P~~

+200 A 3 R 18 1/4 P+  
(incl. easements)

# PLAN MICROFILMED

NO ADDITIONS OR AMENDMENTS TO BE MADE

Approved by Council & covered by Council Clerks Certificate

Council Clerk

Datum Line of Azimuth A-B

Proposed Alignment of Holmes St  
is 15'-36'-15' wide R341928 & R351928

9 J.N. Koosache S.H. 51-50.

Surround area: 8.749061 sq. ft.

~~R. 72933 from Sale R. 72934 from Lease~~  
for Public Recreation Not<sup>d</sup> 1712-1948

Checked and Charted *[Signature]*  
{ Examined *[Signature]*  
AND  
Approved *[Signature]*  
19th May 1881

I, Donald Percival Rich of the Department of the Interior, Sydney, a surveyor registered under the Surveyors Act, 1929-1946, hereby certify that the survey represented in this plan is accurate and has been made by me under my immediate supervision in accordance with the Survey Practice Regulations, 1933, and was completed on 15<sup>th</sup> Dec. 1957

I hereby solemnly and sincerely declare that the Permanent Marks have been placed as shown on the plan.

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

(Signature) *Donald A. Keith*

Surveyor registered under the Surveyors Act, 1929-1946

DEPT. OF THE INTERIOR  
NEG. NO. 10789 NSW.

ADJOINING		OWNERS		&		OCCUPIERS		MOVERLEY R <sup>o</sup>	
HOLMES		ST.							
Area	Owner	Occupier	Area	Owner	Occupier	Area	Owner	Occupier	
2365	Arca St	W C King	3723	28	K M M Haggott	10	SA	10	10
2468	2	Mr R Richmond	3730	88	Mrs C M King	10	SA	10	10
2963	6	Mrs N Hardwell	3731	50	Mrs J Begerley	3	10	10	10
2970	1	Mr W Brierley	3732	29	Mrs C D Smith	3	10	10	10
2970	1	Ms D E Bent	3733	54	R L Rowe	3	10	10	10
2580	14	R A N King	3734	36	L H Woodham	3	10	10	10
16	44 C E King	3735	36	Mrs N O Dromey	Mr Byrn	55	10	10	10
	Miss E M Ryan	Mrs B Moagher		55	Down St	6	10	10	10
	Grayfield	Mrs J Danmuth		Paddington		6	10	10	10
2581	2	Maroubra Junction	3736	100	R G G Leachmore	9	10	10	10
	PR Dec	Mrs T Buckingham	3737	102	Mrs E M Chalmers	10	10	10	10
2583	24	S D Jones	3739	106	Mrs L M Jones	12	10	10	10
26	S D Jones	3740	106	W M J K Macneustre	12	10	10	10	10
26	W M J K Macneustre	3741	106	Mrs H J Harper	14	10	10	10	10
26	Mrs M Casill	3742	106	A Wood	14	10	10	10	10
26	D B Hock	3743	106	O M Rankin	14	10	10	10	10
30	D B Hock	3744	106	L A B Book	17	10	10	10	10
30	D B Hock	3745	106	C G Horne	18	10	10	10	10
30	D B Hock	3746	106	C S H Karmachian	Mr Carvan	18	10	10	10
30	D B Hock	3747	106	Conna S W		18	10	10	10
30	D B Hock	3748	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3749	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3750	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3751	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3752	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3753	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3754	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3755	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3756	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3757	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3758	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3759	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3760	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3761	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3762	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3763	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3764	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3765	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3766	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3767	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3768	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3769	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3770	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3771	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3772	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3773	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3774	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3775	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3776	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3777	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3778	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3779	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3780	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3781	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3782	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3783	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3784	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3785	106	Cooper St	J J Pearce	18	10	10	10
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30	D B Hock	3789	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3790	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3791	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3792	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3793	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3794	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3795	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3796	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3797	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3798	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3799	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3800	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3801	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3802	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3803	106	Cooper St	J J Pearce	18	10	10	10
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30	D B Hock	3812	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3813	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3814	106	Cooper St	J J Pearce	18	10	10	10
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30	D B Hock	3852	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3853	106	Cooper St	J J Pearce	18	10	10	10
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30	D B Hock	3856	106	Cooper St	J J Pearce	18	10	10	10
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30	D B Hock	3871	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3872	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3873	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3874	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3875	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3876	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3877	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3878	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3879	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3880	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3881	106	Cooper St	J J Pearce	18	10	10	10
30	D B Hock	3882	106						

## RANDWICK CEMETRY

Appropriated for Housing Commission 10-12-48  
37120

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.  
*H. L. W. W.*  
Officer in Charge,  
Land Board Office.

MACLEAY ST

Alto 19 Sec 5a (28 3/4 p)  
Acquired by the Community  
Day 12 of 13-1955 P. 851  
(R.P.A. No 39805)



No. 19 64/1443



New South Wales



09865028

Vol. 9865 Fol. 28  
Registered 17-11-1964

*James*  
Registrar General.

CANCELLED

## GRANT OF LAND

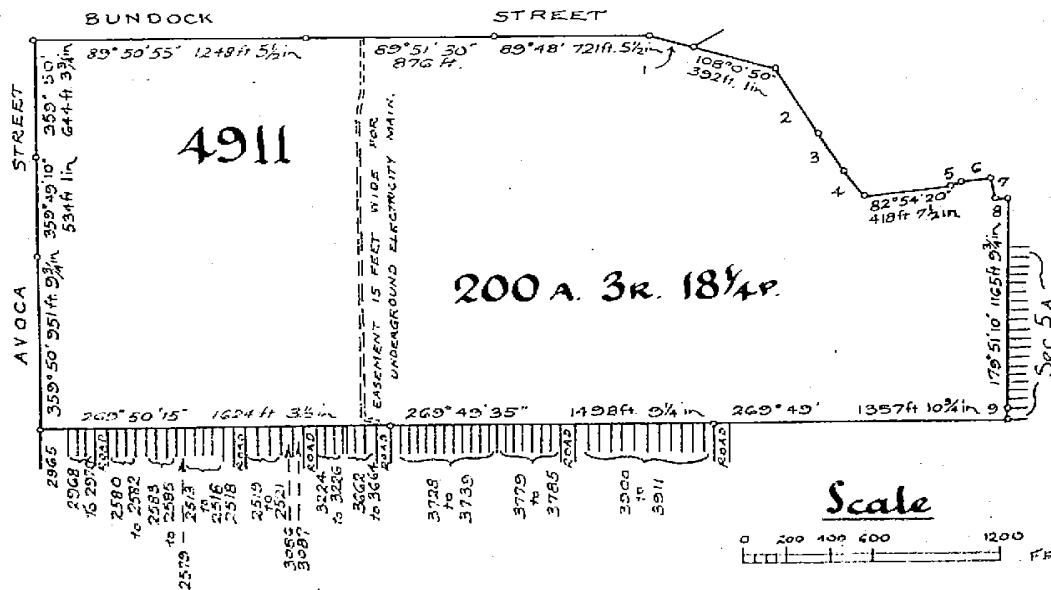
WE, HEREBY the SECOND, by the Grace of God of the United Kingdom, Australia and Her other  
Realms and Territories Queen, Head of the Commonwealth, Defender of the Faith:--  
To All to whom these Presents shall come, Greeting:--

Whereas by virtue of Section 69 of the Commonwealth of Australia Constitution the Department of Defence of the Public Service of New South Wales became transferred to The Commonwealth of Australia (hereinafter called The Commonwealth) on the first day of March 1901 pursuant to a Proclamation by the then Governor-General of The Commonwealth Published in the Commonwealth of Australia Gazette on the twentieth day of February 1901 AND WHEREAS on the said first day of March 1901 the land hereinafter described was with other lands used exclusively in connection with the said Department of Defence AND WHEREAS by virtue of Section 85(1) of the said Commonwealth of Australia Constitution the said land hereinafter described became vested in The Commonwealth on the said first day of March 1901 AND WHEREAS by an Agreement dated the twelfth day of December 1927 and made between The Commonwealth of the first part the State of New South Wales of the second part the State of Victoria of the third part the State of Queensland of the fourth part the State of South Australia of the fifth part the State of Western Australia of the sixth part and the State of Tasmania of the seventh part which Agreement was validated by The Commonwealth by the Financial Agreement Validation Act, 1929 and approved and ratified by the State of New South Wales by the Financial Agreement Ratification Act, 1928 the State of New South Wales contracted and agreed amongst other things to issue to The Commonwealth freehold titles for such of the "transferred properties"

NORTH

REFERENCE

LINE	BEARING	DISTANCE
1	108° 16' 20"	201ft. 3in
2	150° 52' 50"	397ft. 7in
3	149° 36' 50"	236ft. 10in
4	145° 54' 50"	165ft. 5in
5	72° 14' 20"	47ft. 3in
6	80° 46' 20"	131ft. 9in
7	169° 16' 50"	118ft. 5in
8	89° 51' 10"	55ft. 3in
9	179° 51' 10"	66ft. 0in




referred to in that Agreement as are situated within the State of New South Wales AND WHEREAS the said land hereinafter described is one of such "transferred properties" and is situated within the said State of New South Wales and The Commonwealth has accordingly requested Us to issue to it pursuant to such Agreement this Our Grant which We have agreed to do AND WHEREAS by Deed dated the eighteenth day of February 1954 registered Number 458 Book 2285 and made between The Commonwealth of the one part and The Sydney County Council (hereinafter called the Council) of the other part The Commonwealth did grant to the Council certain rights relating to the construction and maintenance of an underground electricity main and the transmission of electric current in and through the parcel of land as delineated in the plan hereon (being part of the land intended to be hereby granted) for a period of twenty (20) years from the fourth day of August 1952 NOW THESE PRESENTS WITNESS that in pursuance of the aforesaid Agreement WE DO HEREBY GRANT unto The Commonwealth ALL THAT parcel of land in Our said State of New South Wales containing by admeasurement two hundred acres three roods eighteen perches and one quarter of a perch be the same more or less situated in the County of Cumberland Parish of Botany at Randwick being Portion 4911 as shown in plan catalogued No. C.8004-2030 in the Department of Lands and as per plan hereon TO HOLD unto The Commonwealth in fee simple SUBJECT as regards the said land shown in the said plan hereon to the right of the Council created by and more fully set forth in the hereinbefore in part recited Deed registered Number 458 Book 2285 IN TESTIMONY WHEREOF We have caused this Our Grant to be Sealed with the Seal of Our said State

Witness Our Governor of Our State of New South Wales and its Dependencies in the Commonwealth of Australia, at Sydney in Our said State, this twenty third day of October in the thirteenth year of Our Reign and in the year of Our Lord one Thousand nine hundred and sixty four

*James*  
Governor

## Vol. 9865 Fol. 28

SCHEDULE OF REGISTERED PROPRIETORS					
REGISTERED PROPRIETOR	INSTRUMENT			ENTERED	Signature of Registrar General
	NATURE	NUMBER	DATE		
<p>This deed is cancelled as to <u>Beach</u></p> <p>New Certificates of Title have issued for lots in</p> <p><u>Deposited</u> Plan No. <u>225062</u> as follows:</p> <p>Lot <u>1</u> Vol. <u>9952</u> Fol. <u>88</u> 126 respectively</p> <p><i>[Signature]</i></p> <p>REGISTRAR GENERAL</p> 					

D.P. 22504  
unpublished  
with  
PA. 5912  
7-1-68  
Book for  
T. P. 55508  
Lund

(Page 2 of 2 pages)

[illegible]

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



# Historical Title



NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE

15/3/2020 10:50AM

FOLIO: 13/1042814

First Title(s): VOL 9865 FOL 28  
Prior Title(s): 1/1009660 3/1009660

Recorded	Number	Type of Instrument	C.T. Issue
22/7/2002	DP1042814	DEPOSITED PLAN	FOLIO CREATED EDITION 1

\*\*\* END OF SEARCH \*\*\*

Kingsford 373a Avoca St

PRINTED ON 15/3/2020

InfoTrack an approved NSW Information Broker hereby certifies that the information contained in this document has been provided electronically by the Registrar General in accordance with Section 96B(2) of the Real Property Act 1900.





FOLIO: 13/1042814

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SEARCH DATE	TIME	EDITION NO	DATE
-----	----	-----	----
15/3/2020	10:48 AM	1	22/7/2002

LAND

----

LOT 13 IN DEPOSITED PLAN 1042814  
AT SOUTH COOGEE  
LOCAL GOVERNMENT AREA RANDWICK  
PARISH OF BOTANY COUNTY OF CUMBERLAND  
TITLE DIAGRAM DP1042814

FIRST SCHEDULE

-----

THE COMMONWEALTH OF AUSTRALIA

SECOND SCHEDULE (1 NOTIFICATION)

-----

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)

NOTATIONS

-----

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

UNREGISTERED DEALINGS: NIL

\*\*\* END OF SEARCH \*\*\*



# Historical Title



NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE

15/3/2020 10:50AM

FOLIO: 37/1150819

First Title(s): VOL 9865 FOL 28  
Prior Title(s): 34/1053158

Recorded	Number	Type of Instrument	C.T. Issue
2/6/2010	DP1150819	DEPOSITED PLAN	FOLIO CREATED EDITION 1

\*\*\* END OF SEARCH \*\*\*

Kingsford 373a Avoca St

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FOLIO: 37/1150819

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SEARCH DATE	TIME	EDITION NO	DATE
-----	----	-----	----
15/3/2020	10:48 AM	1	2/6/2010

LAND

----

LOT 37 IN DEPOSITED PLAN 1150819  
AT RANDWICK  
LOCAL GOVERNMENT AREA RANDWICK  
PARISH OF BOTANY COUNTY OF CUMBERLAND  
TITLE DIAGRAM DP1150819

FIRST SCHEDULE

-----

THE COMMONWEALTH OF AUSTRALIA

SECOND SCHEDULE (5 NOTIFICATIONS)

-----

- 1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
- 2 M950010 EASEMENT FOR DRAINAGE AND PIPELINE 6.705 WIDE  
AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE  
DIAGRAM
- 3 DP645444 RESTRICTION(S) ON THE USE OF LAND
- 4 DP1070717 EASEMENT FOR SEWERAGE PURPOSES 3.05 METRE(S) WIDE  
AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE  
DIAGRAM
- 5 DP1096242 RIGHT OF WAY VARIABLE WIDTH AFFECTING THE PART(S)  
SHOWN SO BURDENED IN THE TITLE DIAGRAM

NOTATIONS

-----

UNREGISTERED DEALINGS: NIL

\*\*\* END OF SEARCH \*\*\*





# Historical Title



NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE

15/3/2020 10:50AM

FOLIO: 16/1042814

First Title(s): VOL 9865 FOL 28

Prior Title(s): 2-3/1009660

Recorded	Number	Type of Instrument	C.T. Issue
22/7/2002	DP1042814	DEPOSITED PLAN	FOLIO CREATED EDITION 1
18/6/2003	DP1053158	DEPOSITED PLAN	EDITION 2
4/11/2010	AF854037	TRANSFER	
4/11/2010	AF854038	RESTRICTION ON USE OF LAND BY/VESTED IN PRESCRIBED AUTHORITY	EDITION 3

\*\*\* END OF SEARCH \*\*\*

Kingsford 373a Avoca St

PRINTED ON 15/3/2020

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(2)



Form 01T  
Release: 4.1  
www.lpma.nsw.gov.au

**TRANSFER**  
New South Wales  
Real Property Act 1900

AF854037J

**PRIVACY NOTE:** Section 31B of the Real Property Act 1900 (RP Act) authorises the Registrar General to collect the information required by this form for the establishment and maintenance of the Real Property Act Register. Section 96B RP Act requires that the Register is made available to any person for search upon payment of a fee, if any.

**STAMP DUTY**

Office of State Revenue use only

Office of State Revenue

NSW Treasury

Client No: 111172138

2892

Duty: **EXEMPT**

Trans No: **605807**

Asst details:

(A) **TORRENS TITLE**

Identifiers 16/1042814 and 17/1042814

(B) **LODGED BY**

Document  
Collection  
Box

**134B**

Name, Address or DX, Telephone, and Customer Account Number if any

LLPN: 123070P SHAW REYNOLDS BOWEN & GERATHY  
Level 3, 151 Macquarie Street, Sydney  
NSW 2000 Tel: (02) 9271 0300

Reference: AMB:AMB:100149:NXL

**CODES**

T JT

TF TJ

TK TW

(C) **TRANSFEROR**

THE COMMONWEALTH OF AUSTRALIA

(D) **CONSIDERATION**

The transferor acknowledges receipt of the consideration of \$ 10.00 and as regards

(E) **ESTATE**

the abovementioned land transfers to the transferee an estate in fee simple

(F) **SHARE  
TRANSFERRED**

(G) **Encumbrances (if applicable):**

(H) **TRANSFeree**

RANDWICK CITY COUNCIL

(I) **TENANCY:**

DATE **3 November 2010**

- (J) I certify that the person(s) signing opposite, with whom I am personally acquainted or as to whose identity I am otherwise satisfied, signed this instrument in my presence.

Signature of witness:

Name of witness:

Address of witness:

*P. Lough*

PATRICK JOHN LOUGH

BP3-1-ED31

CANBERRA ACT 2600

I certify that the person(s) signing opposite, with whom I am personally acquainted or as to whose identity I am otherwise satisfied, signed this instrument in my presence.

Signature of witness:

Name of witness:

Address of witness:

*Melanie Mason*

MELANIE MASON

30 FRANKS ST RANDWICK

40 RANDWICK CITY COUNCIL

Certified correct for the purposes of the Real Property Act 1900 by the authorised officer named below.

Signature of authorised officer:

Authorised officer's name:

Authority of officer:

Signing on behalf of:

*Michael C. Healy*  
Michael Gregory Healy  
Assistant Secretary  
Property Services  
Position Number 104742

The Commonwealth of Australia

Certified correct for the purposes of the Real Property Act 1900 by the authorised officer named below.

Signature of authorised officer:

Authorised officer's name:

Authority of officer:

Signing on behalf of:

*Ray Branne*  
Ray Branne  
Clerk of Council  
Randwick City Council

- (K) The transferee certifies that the eNOS data relevant to this dealing has been submitted and stored under eNOS ID No. **62451** Full name: **GERARD EUGENE O'NEILL** Signature: *G. E. O'Neill*

1008



LAND  
REGISTRY  
SERVICES

# Title Search



NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 16/1042814

-----

SEARCH DATE	TIME	EDITION NO	DATE
-----	----	-----	----
15/3/2020	10:48 AM	3	4/11/2010

LAND

----

LOT 16 IN DEPOSITED PLAN 1042814  
AT SOUTH COOGEE  
LOCAL GOVERNMENT AREA RANDWICK  
PARISH OF BOTANY COUNTY OF CUMBERLAND  
TITLE DIAGRAM DP1042814

FIRST SCHEDULE

-----

RANDWICK CITY COUNCIL (T AF854037)

SECOND SCHEDULE (3 NOTIFICATIONS)

-----

- 1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
- 2 DP1053158 EASEMENT TO DRAIN WATER 5 METRE(S) WIDE APPURTENANT  
TO THE LAND ABOVE DESCRIBED
- 3 AF854038 RESTRICTION(S) ON THE USE OF LAND

NOTATIONS

-----

UNREGISTERED DEALINGS: NIL

\*\*\* END OF SEARCH \*\*\*

Kingsford 373a Avoca St

PRINTED ON 15/3/2020

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



## Appendix K. Review of Previous Reports

### K.1 On-site Assessments

#### K.1.1 The Labour Council of New South Wales (April 2002)

Stage 2 Report, Site Assessment and Management Review of Remediation Process, Department of Defence Lands, Avoca Street Randwick

- The Labour Council of NSW conducted a review of contamination studies, documents associated with the remediation of hazardous chemicals and documents associated with the community consultation process; in order to provide further recommendations for the remediation strategy proposed at Randwick Barracks. The site considered within this Labour Council report includes the whole of Randwick Barracks, i.e. Naval Stores Depot, Randwick Environmental Park including the detention basin, Naval Ovals areas. Community sector (north-western portions), Army Transport Compound, Defence Housing areas, and the BASC area investigated within the CMPS&F report reviewed above). This includes areas located on-Site (Site considered herein) and off-site;
- The document summarises the understanding of site conditions after a review of all previous assessments conducted across Randwick Barracks as a whole. A summary of this information is presented in Table K-1 below:

Table K- 1: Summary of Labour Council NSW review

Area of Randwick Barracks	Direction from the Site considered herein	Sampling Conducted/Contamination Encountered	Comments
Eastern Parcel (General)	East (now Randwick Environmental Park)	N/A	Area contains indigenous floral species of conservation value.
Eastern Parcel (Wetlands Basin)	East (detention basin within the now Randwick Environmental Park)	Asbestos. Future possible risk from inflow of stormwater.	Area found to be suitable for open space use. Area was remediated of surface asbestos fragments in 2000.
Eastern Parcel (Naval Ovals Area)	East (now Randwick Environmental Park)	Heavy metals and pH contamination anticipated associated with former use a rifle range and armaments testing facility. Investigations to date indicated that the only source of contamination is spent bullet and hand grenade fragment deposition. Heavy metals concentrations were encountered below the adopted environmental criteria.	At the time of this report no Site Audit Statement had been completed for the area. Further sampling and validation was required.
Naval Stores Area	On site (central portions)	Several rounds of sampling and analysis undertaken for the delineation of 'hot spot' areas. Pesticide contamination was considered low even though organochlorine insecticides were typically used under and around the slabs of the stores (to protect against termites). Hot spots of TPH, PAHs, heavy metals and asbestos were encountered.	No information regarding whether or not this was later remediated.
Community Sector	On-site (north-eastern portions)	Heavy metals around the buildings, lead based paints and asbestos. Hot spots of PAHs, including BaP were encountered within slag matrix encountered across areas of the community sector including in the school	Contamination remaining beneath large trees. Hot spot (localised) contamination removed (excavated) and placed in temporary storage



Area of Randwick Barracks	Direction from the Site considered herein	Sampling Conducted/Contamination Encountered	Comments
		playground, gardens and generally around the community centre.	in Building 20. No further information regarding remediation or waste disposal was provided.
BASC Area	West	Deep fill materials containing inert waste (brick, wire, concrete etc.). Localised hotspots of heavy metals, organochlorine pesticides and "contaminated" ash have been identified. No further information regarding the nature of the "contaminated ash" was provided.	Limited investigations conducted beneath BASC buildings, and no information exists for the elevated stretch of land between the two ovals.
Army Transport Compound	On-site (southern portions of the site)	Several rounds of sampling have been conducted, with hot spot delineation. Heavy metals, asbestos and pesticides are known to be present.	Recommendation for more accurate delineation of hot spots, and calculation of impacted soils.
Defence Housing	Not specified within the report	Several rounds of sampling have been conducted, PAHs, including elevated BaP were identified.	Further sampling and risk assessment was recommended.

- Hazardous substances were known to be present across areas investigated within this report including; asbestos, ash, heavy metals associated with numerous site activities includes grenade and armaments testing, use of lead based paints, hazardous chemical storage, groundwater contamination in the form of chloroform, methylene chloride, trichloroethane and tetrachloroethylene, PAHs associated with slag, PCBs identified within capacitors (requiring management for disposal), pesticides, petroleum hydrocarbons, synthetic mineral fibre and treated timber (creosote-type oil stain); and
- Proposed remediation methods included excavation, surface capping, stockpiling, characterisation, screening, beneficial re-use, on-site bioremediation, stabilisation, sieving, re-instatement, compaction and off-site disposal, re-vegetation and validation. There is no further information provided within the report indicating whether or not these actions were adopted.

#### K.1.2 Asbestos Management Strategy (HLA 2003a)

- The asbestos management strategy document was relevant to the "Randwick Defence Site", which included the Site extent under consideration in this report as well as the Randwick Environmental Park and Community Centre to the east (prior to divestment).
- It is reported that structures (referring to Former Naval Stores and other buildings) on Site were constructed with predominantly timber frames and clad with asbestos-cement sheeting on concrete slabs;
- Some buildings were reportedly demolished using a bulldozer, which indicates the high probability of encountering broken fragments of ACM within surface fill at the Site;
- A map included within the report indicates that the areas to the north, west, south and east of the concrete slabs were remediated of asbestos and validated, however the areas in the centre of the Site and underneath the concrete slabs have not been;
- The report highlights the high likelihood of asbestos being buried at the Site in areas that have not been investigated or remediated yet; and
- Stormwater pits on site are known to contain asbestos-cement.

#### K.1.3 Contamination Status and Remediation Strategy, Strategic Business Case (SBC) Randwick (GHD November 2005)

- § The contamination status of the Site was described as hosting soils containing the presence of heavy metals, PAHs, phenols, petroleum hydrocarbons and asbestos;
- § Asbestos was considered to be widely distributed amongst surface soils across the Site;
- § The overarching objective of the remediation of the Site was to result in a site that does not present an unacceptable risk to human health in accordance with the appropriate criteria for the proposed residential land use of the site;
- § Asbestos remediation was recommended through the abatement of ACM from soils by sieving, or through the direct disposal of soils offsite or capped and contained on site appropriately. Off-site disposal of soil was the preferred option since this results in the greatest reduction to residual risk;
- § Chemical contaminants were recommended to be remediated through excavation and off-site disposal;
- § Petroleum contaminants within soils can be bio-remediated with subsequent reuse of soil;
- § A residual risk remains on site even after asbestos remediation from soils and is considered to be based on the amount of asbestos remaining in the near surface and surface soils, i.e. remediation will reduce the amount of asbestos in surface soils to a level that is considered acceptable to have reduced the overall risk to an acceptable level;
- § Remediation is recommended in stages to allow for better control over the remediation standards achieved, followed by validation to confirm the extent of remediation; and
- § Further detailed site investigations are recommended prior to remediation activities.

## K.2 Off-Site Assessments

### K.2.1 Contamination Assessment, Phase 2 – Field Investigation and Data Assessment, Randwick Base Administrative Support Centre (BASC) (CMPS&F April 1998)

- § Phase 2 investigation conducted on a 16 Ha portion of the Randwick Barracks known as the Base Administrative Support Centre (BASC) area, to the west of the Site. This investigation was conducted in order to re-zone the land for residential use;
- § A number of potential areas of contamination were identified. Areas of specific concern that were located adjacent to or with potential to impact the Site included: the former rifle range and mantlets (large gun shields), an area occupied by a former stormwater collection pond (Pond B), areas of fill and a flammable goods store;
- § Groundwater was reported to flow in a south westerly direction towards Botany Bay. Groundwater levels ranged from approximately 8.3 to 9.8 m below the existing ground surface;
- § A number of fuel underground storage tanks (USTs, south-western corner) and additional hazardous or flammable storage areas were identified (down-gradient of the Site). A 'hot dip tank' was also identified within Building 404, which was reportedly used for medical store and production. Further information may be available within the CMPS&F Phase 1 report, however this was not available for review. Jacobs considers that 'hot dip tank' may be a reference to a process for zinc-coating steel.
- § The subsurface conditions encountered were reported to be similar to those encountered during investigations of the adjacent RNSD site. The soil profile consisted of a surface fill/topsoil layer 0.1-0.2 m thick comprising fine to coarse grained sands with pieces of wire, brick and plastic noted. Deeper fill was noted across much of the site and consisted of fine to coarse grained sands with bricks, concrete pipe, wire, rock fragments and boulders, metals, bottles, wheels, metal shavings, car parts, hoses, railway sleepers and glass noted, some areas of clays and clayey sands were also noted. The fill was noted at greater depths (2.5 – 3.5 m) in the east of the investigation area in areas closer to the Site considered herein. Natural sands where encountered consisted of grey to brown fine to coarser grained sands to about 2 m depth, becoming orange/ tan to 6m and white to yellow at about 6 m and becoming white below 6 m. Hard layers of 'Coffee Rock' and indurated sand (iron cemented red/brown) were noted at a number of locations, no bedrock was noted;



- § Results of the soil contamination investigation reported concentrations of metals (cadmium, copper, lead, nickel, tin and zinc), PAHs including benzo(a)pyrene, petroleum hydrocarbons, dieldrin and Dichlorodiphenyldichloroethylene (DDE) and asbestos exceeding the adopted assessment criteria for residential land use (ANZECC/NHMRC, 1992<sup>4</sup>; MHPSE, 1994<sup>5</sup>; NEHF, 1996<sup>6</sup>, NSW EPA, 1994<sup>7</sup>). These adopted assessment criteria have since been superseded and in the case of PAHs, including benzo(a)pyrene, underestimate the risk to human and ecological health. The criteria adopted for metals is generally consistent with updated criteria, yet it does overestimate (mercury) and underestimate (chromium);
- § A risk assessment was completed to determine the remediation requirements of the site to make it suitable for residential land use. Remediation and/or management of the elevated metal concentrations was recommended, in the absence of the collection of further data for increased statistical power;
- § Remediation of the PAH soil impacts were also recommended since it is thought that the site was behaving as the source for PAHs detected in down-gradient monitoring wells;
- § USTs at the site were recommended to be removed and associated soil impacts remediated. The elevated concentrations of petroleum hydrocarbons in soils in front of the vehicle compounds correspond with elevated TCE concentrations in soils and therefore both should be remediated simultaneously;
- § Elevated concentrations of dieldrin and DDE were not recommended for remediation. It is noted that at the time of this report (circa 1998), it was still common practice to treat around and underneath buildings with these substances to kill termites;
- § Asbestos management (such as maintenance of grass cover and minimising dusts etc.) was deemed to be suitable in the short term, with remediation recommended as a future action;
- § Elevated concentrations of lead, copper and PAHs (acenaphthylene, acenaphthene, phenanthrene and anthracene), above the adopted assessment criteria was encountered within groundwater at the BASC site. Chloroform and TCE were also reported above the LOR, but not above the adopted assessment criteria (ANZECC, 1992<sup>8</sup>; NSW EPA, 1994<sup>5</sup>). These adopted criteria were superseded by the updated ANZECC criteria (2000). The criteria used within this assessment remain fairly consistent with updated criteria but did overestimate (lead, copper, anthracene and phenanthrene) the risks posed in some cases;
- § It was hypothesised that the source of the reported chloroform contamination could be associated with the burial of drums at the RNSD (further investigated as part of the Stage 1B Subdivision investigation (GHD, 2003)). However, the location of the buried drums within the RSND would not be considered up-gradient of the BASC site, but cross-gradient, on this basis these drums are not the most likely source;
- § No remediation of groundwater contamination was recommended, given that it is assumed that if soil remediation occurs, thus removing the source, then groundwater concentrations will reduce over time; and
- § There was no evidence demonstrating that the recommended remediation occurred. The contaminants identified throughout this investigation are identified as being down- or cross-gradient from the investigation area considered herein.

#### K.2.2 Investigation, Remediation and Validation Report, Stages Part 5 & 6, Randwick Defence Site HLA-Envirosciences (HLA November 2003c)

- § Audit report conducted on a small rectangle of land directly to the south of the Site (see SAS 2002/20E on Figure 4, Appendix A);
- § The Grenade bursting range was reported to be located within the broader Rifle Range located to the north of the Stages 5 & 6 area;

<sup>4</sup> Australia and New Zealand Environment and Conservation Council (ANZECC) and the National Health and Medical Research Council (NHMRC), 1992. *Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites*.

<sup>5</sup> Ministry of Housing, Spatial Planning and the Environment (MHSPE), 1994. *Environmental Quality Objectives in the Netherlands*.

<sup>6</sup> National Health Forum, 1996. *Soil Series No. 1 – Health-Based Soil Investigation Levels*.

<sup>7</sup> NSW EPA, 1994. *Contaminated Sites – Guidelines for Assessing Service Station Sites*.

<sup>8</sup> ANZECC, 1992. *Australian Water Quality Guidelines for Fresh and Marine Waters*.

- § The likelihood of explosive ordnance waste (EOW) remaining on site was low as any grenades used during training that failed to function correctly would have been removed immediately to allow training activities to continue;
- § Given the high degree of redevelopment at the Barracks already, it is likely that if EOW had remained, it would have been encountered during the initial development of the Naval Stores;
- § Zinc exceedances (ecological) in soil against the provisional phytotoxicity-based investigation levels were observed (750 mg/kg), however it was considered that given the isolated nature of the exceedance, it was not considered to have a detrimental effect on the outcome of the investigation to assess the suitability of the land for residential use;
- § Aesthetic issues relating to the presence of slag and ash in surface soils at the site was noted. Previous remediation conducted included the removal of asbestos and slag/fill. Both the removal of asbestos and slag/fill were visually validated;
- § The report indicated that further groundwater sampling was not conducted, stating that sampling conducted during the CMPS&F (1996) Phase 2 investigations was sufficient to characterise the site. An extract taken from the CMPS&F (1996) report (full report was not available at the time of reporting) indicated the following:
  - 12 rounds of groundwater sampling were conducted between 1995 and 2000;
  - Concentrations of metals (zinc and lead), PAHs and VHHs were inconsistently identified below the adopted assessment criteria for residential use;
  - These aforementioned low concentrations were deemed to pose no adverse risk to human health, with the exception of *"sporadic elevated chlorinated hydrocarbons occasionally exceeding Australian Drinking Water Guidelines"*;
  - Elevated VHH concentrations reported to be likely a result of leakage from on-Site sewers;
- § To conclude the audit, there did not appear to be any unacceptable risks in the subject area proposed for residential and related uses proposed at the site.

K.2.3 Stage 1B Subdivision, Environmental Assessment, Remediation and Validation, Randwick Defence Site, Avoca Street (GHD December 2003)

The Detention basin within Randwick Environmental Park is known to collect surface water runoff from nearby sites including the Randwick Barracks. The report indicated that when the Detention Basin is dry it has been used for equestrian activities in recent times. Evidence for this was gained through anecdotal evidence (unknown source);

- § Buried drums were identified during the investigation which lead to the inclusion of TPH as a contaminant of concern. The drums contents were analysed and found to contain an oil-diesel like emulsion with elevated TPH, PAH and BaP concentrations;
- § Buried drums (as identified previously within CMPS&F, 1998) were excavated from the site and validation samples collected from the walls and floors of the excavation and analysed for TPH, BTEXN and PAHs. Validation sampling was continually conducted during the excavation process until concentrations were below the adopted screening criteria to ensure all impacted soil was removed;
- § Buried ash was also encountered on site, consistent with observations made by HLA (2003b and 2003c) during the investigation of other areas. It was remediated visually since no detectable concentrations of contaminants of concern were encountered;
- § Asbestos was encountered with fill material within the investigation area and remediated by excavation and removal. Remediation was validated by visual inspection and selected soil analysis; and
- § No groundwater sampling was conducted as part of this assessment. The report considered historical groundwater data from the Barracks collected between 1995 and 2000. Detectable concentrations, below the adopted drinking water criteria, were identified within these records, indicating that the historical data

didn't suggest that there was a significant impact by contaminants (chloroethene, methylene chloride, 1,1-dichloroethane, 1,1,1-trichloroethane, TCE and PCE) within the groundwater within the investigation area. The auditor considered the data appropriate to validate groundwater at the site and confirm the suitability of the site for residential use.

#### K.2.4 SAS 2002/20 – Stage 1A – issued 14 November 2002

- § Site Audit Report for GHD (September 2002) Stage 1A sub-division Environmental Assessment and Validation, Bundock and Avoca Streets Randwick, NSW. The investigation area subject to the audit comprised the area to the east of the site, including a small area of the north eastern portion of the site (Figure 3);
- § Three asbestos hotspots were identified within the investigation area, all of these were remediated using a combination of excavation and off-site disposal. The remediation activities were validated on the understanding that the site should be considered asbestos free or to a level where no unacceptable health risk remains. Visual inspection was used to validate remediation;
- § Buried ash covering an area of approximately 30 by 50 meters was remediated in the eastern extremity of the Naval Ovals and was in an area considered off-site for the current investigation;
- § Volatile Organic Compounds (VOC) were tested in groundwater in three wells on the site, all concentrations were below the Laboratory Limit of Reporting (LOR);
- § Land was designated suitable for residential use with accessible soil, including garden (minimal home-grown produce contributing less than 10% fruit and vegetable intake) excluding poultry. The land was further considered suitable for Park and recreational open space and commercial and industrial land use(s);
- § Auditor statement regarding the negligible potential for contaminant migration off-site, and for unacceptable human health or other environmental aspects; and
- § No site-specific management strategy was required for the parcel of land for which the SAS applies.

#### K.2.5 SAS 2002/20A – Community centre, issued 23 September 2003

- § Site Audit Report for HLA-Envirosciences Pty Ltd. (September 2003) Investigation, Remediation and Validation Report, New Community Facility and Park, Randwick Defence Site, Randwick, NSW, prepared for Department of Defence;
- § The area subject to the SAS comprised a small parcel of land located directly adjacent to and east of the northern portions of the Site;
- § Near surface soils (<100 mm) were excavated and validated at twenty-four locations for asbestos;
- § Metal impacted soils were identified at three locations and were excavated and validated to a maximum depth of 0.5 m;
- § The site is certified for residential with accessible soil, including garden (minimal home-grown produce contributing less than 10% fruit and vegetable intake) excluding poultry, and park and recreation space;
- § Auditor comment included informing that all excavations within this area should be conducted in accordance with NSW WorkCover Authority Guidance for Excavation; and
- § No site-specific management strategy was required for the parcel of land for which the SAS applies.

#### K.2.6 SAS 2002/20B – Stage 1B – issued 28 October 2004

- § Site Audit Report for GHD (December 2003) Stage 1B Subdivision, Environmental Assessment, Remediation and Validation, Randwick Defence Site, Avoca Street;
- § The area subject to the SAS comprised a small parcel of land located directly adjacent to and south east of the south eastern portion of the site and directly south of the detention basin. It forms the eastern portion of the current Joongah Street development area which was further investigated by Jacobs (June 2018 and November 2018) of which the reports are reviewed below;



- § Auditor indicates that the identified contaminants of concern were appropriate given the historic use of the land and encountered contamination sources (i.e. buried drums);
- § A total of 31 drums were removed from the eastern portion of the site and the excavation validated. It is noted however the TPH and PAH were identified within the contents of the drums however PAHs were not analysed within the excavated material prior to re-use on site. Conversely, PAHs were analysed within the validation samples collected from beneath the drums and did not indicate any exceedances of the relevant criteria;
- § An ash lens at one location was identified and remediated in the western portion of the Stage 1B area. Fragments of asbestos sheeting material were identified in the ash material and were also remediated;
- § No further groundwater assessments were undertaken;
- § The site was certified for residential with accessible soil, including garden (minimal home-grown produce contributing less than 10% fruit and vegetable intake) excluding poultry;
- § Auditor comment included that all excavations within this area should be conducted in accordance with NSW Work Cover Authority Guidance for Excavation; and
- § No site-specific management strategy was required for the parcel of land for which the SAS applies.

**K.2.7 Investigation, Remediation and Validation Report Lots 15, 16 and 17, Randwick Defence Site HLA-Envirosciences (HLA) (November 2003b)**

- § Lot 15 designated for residential land use, and Lots 16 and 17 for use as open space;
- § The investigation area incorporates the eastern portions of the site including the Naval Stores Oval, Detention Basin (Figure 3) and the area of the protected Eastern Suburbs Banksia Scrub;
- § The site consisted of a Rifle Range, Naval Stores Depot, Randwick Army base Administrative Support Centre (BASC), Army Transport Squadron and open space (playing fields);
- § Structures associated with the Naval Stores buildings are reported to have been constructed of timber and asbestos-cement, and later demolished using a bulldozer resulting in deposition of ACM across the site. ACM is not expected to be present in Lots 16 and 17 to the extent present in Lot 15, however the potential for waste to have been buried is recognised;
- § The depth of fill at the site is reported to be up to 3 m bgl in some areas, which is underlain by natural well sorted sand (Botany Sand Group) and 'coffee rock'. Groundwater was indicated to be present at between 5 and 9 m bgl;
- § Slag and ash were identified in areas across the site, 'in small pockets/layers at the base of the fill layers'. It is not clear whether the slag/ash layers were targeted for sampling.
- § The major contaminant across these areas was found to be ACM within surface soils;
- § Mercury exceeding the provisional phytotoxicity investigation (1.2 mg/kg exceeding the adopted 1 mg/kg criterion) levels was also identified at one sample location which was not considered to be representative of the site as whole and therefore is not significant in the context of the proposed land use;
- § The report concluded that Lot 15 is suitable for residential land use, and Lots 16 and 17 are suitable for use as open space; and
- § It is noted that stormwater infrastructure constructed of ACM remains underground, on site, however it is not considered of concern until soil are to be excavated from around it. Additionally, it is noted that any ACM that is encountered on site, should be managed according to the site-specific Asbestos Management Policy (HLA, 2003a – see above).

**K.2.8 SAS 2002/20E – Areas 5 and 6 – issued 6 September 2004**

- § Site Audit Report for HLA-Envirosciences. (November 2003) Investigation, Remediation, and Validation Report, Stages Part 5 & 6, Randwick Defence Site, Randwick NSW, prepared for Department of Defence

- § The area subject to the SAS comprised a small parcel of land located directly adjacent to and south of the south western portion of the Site. It forms the western portion of the current Joongah Street development area which was further investigated by Jacobs (June 2018 and November 2018) of which the reports are reviewed below;
- § Ash, slag area excavated and remediated to a depth of 0.3 m for aesthetic reasons only;
- § Asbestos was observed and remediated at one test pit location, and consisted of asbestos fibres within the surface soil (<150 mm) and ACM fragment in surface soils of that location. Scattered ACM fragments were also noted in the grassed verges of the two concrete slabs within the investigation area, these were also remediated.
- § No further groundwater assessments were undertaken;
- § Auditor indicates that the site does not appear to present any unacceptable risks in relation to use as residential land;
- § Soils have been appropriately assessed against the lower of the appropriate health-based investigation levels and below the asbestos criteria. Additionally, there are no specific required for soil management;
- § Specifically, the auditor is happy that the risk posed by the former use of the site as a grenade bursting range is low, and does not pose an unacceptable risk to human health;
- § Potential for contaminant migration from the subject area is negligible; and
- § No special conditions have been applied to the site audit statement.

**K.2.9 Stockpile Characterisation, Randwick Environmental Park and Stage 1B, 5&6, Randwick Defence Site, Avoca Street, Randwick NSW (GHD February 2010)**

- § Stockpiles sourced from the redevelopment of the Randwick Environmental Park Stage 1B, and parts of Stage 5 and 6;
- § The 36 stockpiles consisted of either bitumen, demolition waste, wood waste, or sand with gravels with minor quantities of the aforementioned inorganic constituents;
- § Only a visual assessment of the stockpiles was completed to provide a "pre-classification" to Defence on the basis of their visual contents; and
- § All stockpiles were recommended for further chemical testing.

**K.2.10 Randwick Barracks Housing Development, Limited Preliminary Site Investigation, Defence Housing Australia (Aurecon November 2016)**

- § PSI conducted on the 'Joongah Street development area', a parcel of land to the south of the detention pond (located to the east of the Site considered within this report);
- § Five (5) AECs were identified at the site;
- § The risk to site users and construction workers should the AECs not be appropriately managed was considered to be moderate;
- § The report highlighted the potential for illegal dumping since the site was not completely secured;
- § CoPC include ACM, heavy metals, petroleum hydrocarbons, PCBs, OCP/OPP and VOCs;
- § A Construction Environment Management Plan (CEMP) was recommended for the site; and
- § It is worth noting that a previous audit investigation (2002/20B – Stage 1B, above) was conducted within this area and was endorsed as being suitable for residential use with accessible soil and no site-specific management requirements were highlighted. This highlights the potential need of the reassessment of audited areas in line with current criteria and understandings of contamination risks.

**K.2.11 Randwick Barracks Housing Development, Contamination Investigation, Defence Housing Australia (Jacobs 2018a)**

- § This report focusses on the potential risks associated with contaminated soils relating to the potential construction of residential properties at the 1-71 Joongah Street, Randwick, development (i.e., the Joongah Street Development Area);
- § Minor illegal dumping was noted to have occurred on site, resulting in possible asbestos contamination in surface soils. Asbestos was identified within surface soils to the east and west of Cooper Street;
- § The areas to the east and west of Cooper Street were later remediated to remove asbestos and slag/fill;
- § During this investigation 25 test pits were excavated to investigate contamination, 8 test pits were excavated to investigate geophysical anomalies, confirmatory sampling of the soil berm (southern boundary and east of Cooper Street) for offsite disposal classification, installation of 3 new groundwater wells and the collection of groundwater samples from these;
- § Zinc concentrations (360 to 900 mg/kg) in soil exceeded NEPM EILs (250 mg/kg) at three sample locations taken from a depth of 0.1 m BGL;
- § Total recoverable hydrocarbon (TRH) fraction >C16-C34 concentrations exceeded the NEPM Ecological Screening Levels (assessment criteria) at two sample locations collected from between 0.1 and 0.3 m BGL;
- § A total of five soil locations reported the presence of asbestos in surface soils (0-0.4 m BGL);
- § These exceedances resulted in a recommendation that the site is not currently suitable for residential land use without remediation;
- § Groundwater at the site was considered to be slightly acidic to neutral, fresh to brackish and was potentially oxidising based on the groundwater water quality parameters collected during sampling;
- § All analytical results for contaminants of concern in groundwater were reported either non-detectable or below the adopted assessment criteria with the exception of chloroform (18 µg/L) which was reported above the Tier 1 human health screening criterion (8 µg/L). Bromodichloromethane (6 µg/L) and chlorodibromomethane (1 µg/L) were elevated above background concentrations but did not exceed the adopted assessment criteria (18 µg/L);
- § These reported elevated concentrations in groundwater were reported to present a potential vapour risk to on-site users and off-site receptors, therefore further assessment of the vapour risk posed to on-site and off-site residents was recommended (this has since been completed by Jacobs in 2018 – refer below); and
- § Remediation Action Plan (RAP) and consequent activities recommended for the site before any development activities can commence.

#### K.2.12 Randwick Barracks Housing Development, 1-71 Joongah Street Randwick (Jacobs 2018b)

- § The previous investigation conducted by Jacobs (see above) indicated the presence of VOCs within groundwater and soil at the site, but only chloroform was found to exceed the adopted screening criteria, as a result a vapour assessment was completed;
- § Assessment of the risks posed by chloroform within groundwater and soil for future on-Site and nearby off-site residents was conducted;
- § The estimated concentration of chloroform in indoor air was calculated on the basis of measured concentrations on-site in groundwater and soil alongside vapour migration equations; and
- § The outcome of the assessment was that groundwater is considered sufficiently deep, and the concentrations of chloroform sufficiently low that the risk posed to future users of the site, on off-site, is considered to be 'low and acceptable'.