PRELIMINARY
SITE CONTAMINATION INVESTIGATION

PROPOSED RSL CLUB REDEVELOPMENT
20 - 22 MELWOOD AVENUE, FORESTVILLE NSW

PREPARED FOR THE FORESTVILLE RSL CLUB LIMITED
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Client:
Forestville RSL Club Limited
20 Melwood Avenue
Forestville NSW

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EXECUTIVE SUMMARY

GEE was commissioned the Forestville RSL Club Limited to undertake a Preliminary Site (contamination) Investigation (PSI) for 20 - 22 Melwood Avenue, Forestville NSW 2087 (herein referred to as the 'site'). The site covers an area of approximately 8,970m^2 (by calculation) and encompasses the following legal allotments:

- Lot 31 Deposited Plan (DP) 366454 (No. 20 Melwood Ave)
- No. 22: Lot 2589 DP 752038 (No. 22 Melwood Ave)

The investigation relates to the proposed redevelopment of Forestville RSL Club which will also include the construction of a senior's living development on the site. Currently the site is occupied by an RSL Club building and memorial garden in the central portion of the site, car parking on the northern portion of the site, and disused bowling greens in the southern portion of the site.

GEE understands that this PSI was requested by Council as part of the planning process to address the requirements of *State Environmental Planning Policy (Resilience and Hazards) 2021* (reference 1) by identifying past and present contaminating activities, potential contamination types and to assess the need for further investigation.

The investigation comprised a:

- Review of previous investigation reports relevant to the site,
- Review of the site's history to provide an understanding of past and present site activities which in turn may indicate sources and areas of potential contamination as well as potential chemicals of concern,
- Review of the environmental and physical setting in which the site lies,
- A detailed site inspection for potential sources of contamination, and
- Preparation of an initial Conceptual Site Model (CSM), and
- Preliminary field investigations including the sampling and analysis of soil samples from two boreholes positioned across the northern part of the site and the sampling and analysis of groundwater from three wells installed across the site.

Based on the site history information, combined with a review of the site's physical and environmental setting, the main areas of environmental concern (AEC) and sources of potential contamination are as follows:

Onsite Areas and Sources of Potential Contamination	
Entire Site. In Particular the south-eastern half.	Fill Material: There exists some fill material (i.e. either imported soil material or previously disturbed soil) beneath the site. If imported to site, and sourced from an unknown location, the quality of fill material is also unknown and potentially contaminated.
Vehicle Accessible Areas / Carparks (particularly the northern carpark)	Past and Present Vehicle Movements: Vehicles accessing and parking on site may have resulted in leaks and spillage of fuel and oils.
Entire Site	Use of Lead based Paint and Asbestos Containing Materials (ACM) on existing and former structures: Any renovations or maintenance work over the years, or the demolition of former structures, may have resulted in near surface soil being impacted with lead and asbestos.
Bowling Greens (Southern Portion of Site)	Application of Fertilisers and Herbicides for Bowling Green Maintenance: As part of the maintenance and upkeep of the bowling greens, fertiliser and/or herbicide application may have resulted in near surface soils and potentially underlying soils being impacted with pesticides and to a lesser extent metals.
Areas of Current and Past Storage of Chemicals. (i.e. Greenkeepers shed, Fire Response System Shed & Storage Room in the north-west corner of the RSL Club)	Minor Storage of Chemicals: This may have resulted in top-down contamination from leaking or spilt chemicals. However, the concrete floor slab in these areas is likely to have restricted any migration of the chemicals.
Off-Site Areas and Sources of Potential Contamination	
-	-

The potential for contamination is from to-down sources and therefore the potential contaminated media comprises the near surface soil profile (either fill and/or natural soil). Groundwater is unlikely to be contaminated, although it has been assessed as part of this investigation. Soil Vapour is also unlikely to be contaminated but should be assessed if significant volatile contamination is encountered in the soil and/or groundwater.

Based on the proposed development, the potential receptors to any contamination (if present) include:

- ◊ Workers (adults) engaged to construct the proposed development including earthworks contractors for the basement,
- ◊ Existing users of the site (adults and children),
- ◊ Future occupants and visitors of the new development (adults and children), and
- ◊ Workers (adults) engaged to maintain any buried services/utilities.

Furthermore, the potential exposure pathways include:

- ◊ Ingestion of soil (workers) during redevelopment of the site.
- ◊ Ingestion of soil (adults and children) during future use of the site.
- ◊ Direct (dermal) contact for future users of the site (via any unsealed / deep soil areas).
- ◊ Direct (dermal) contact for workers (adults) engaged to construct the proposed development or maintain any buried services/utilities.
- ◊ Inhalation of any volatile contaminants (if present).
- ◊ Inhalation of asbestos fibres from degraded ACM (if present).

The limited soil sampling and analysis program completed herein did not identify any significant contamination. Likewise, the groundwater assessment did not identify any significant contamination. However, not all the Areas of Environmental Concern (AEC) have been assessed and therefore GEE recommends that a Detailed Site Investigation (DSI) be completed in accordance with the NSW Environment Protection Authority (NSW EPA) *Contaminated Land Guidelines: Consultants Reporting on Contaminated Land* (reference 1) and NEPM (2013) Schedule B(2) *Guideline on Site Characterisation* (reference 3). The objective of the DSI should be to better characterise the contamination status of the fill and natural soil across the site with particular focus on the AEC.

Finally, it is the opinion of GEE that the site can be made suitable for the proposed use, subject to the carrying out of a DSI and, if necessary, the preparation and implementation of a remediation action plan and standard remediation works. Particularly given that most of the site will be excavated to at least 3m depth and into the bedrock formation to construct the proposed two basements. In this regard, GEE considers that the DSI can be completed as a condition of DA consent and during the Construction Certificate (CC) stage.

1 PROJECT INFORMATION

1.1 INTRODUCTION

Geo-Environmental Engineering (GEE) was commissioned by the Forestville RSL Club to undertake a Preliminary Site (contamination) Investigation (PSI) for 20 - 22 Melwood Avenue, Forestville NSW 2087 (herein referred to as the 'site'). The site covers an area of approximately 8,970m^2 (by calculation) and encompasses the following legal allotments:

- ◊ Lot 31 Deposited Plan (DP) 366454 (No. 20 Melwood Ave)
- ◊ No. 22: Lot 2589 DP 752038 (No. 22 Melwood Ave)

A survey plan showing the layout of the site is provided in **Appendix A**, while a site location map is provided as **Figure 1**.

The investigation relates to the proposed redevelopment of the Forestville RSL Club which will also include the construction of a senior's living development on the site. Architectural plans are provided for reference in **Appendix A** along with a survey plan showing existing site features. Currently the site is occupied by an RSL Club building and memorial garden in the central portion of the site, car parking on the northern portion of the site, and disused bowling greens in the southern portion of the site.

GEE understands that this PSI was requested by Council as part of the planning process to address the requirements of *State Environmental Planning Policy (Resilience and Hazards) 2021* (reference 1) by identifying past and present contaminating activities, potential contamination types and to assess the need for further investigation.

The PSI has been prepared in accordance with the NSW Environment Protection Authority (NSW EPA) *Contaminated Land Guidelines: Consultants Reporting on Contaminated Land* (reference 1) and NEPM (2013) Schedule B(2) *Guideline on Site Characterisation* (reference 2).

Finally, this PSI has been completed in conjunction with a geotechnical investigation, the results of which are provided separately.

1.2 PREVIOUS INVESTIGATIONS

GEE is not aware of any previous environmental site assessments that have been conducted at the site, or part thereof. However, in 2023 JK Geotechnics Pty Ltd completed a geotechnical report for the site which was associated with an earlier version of the

proposed Club redevelopment (reference 4). The geotechnical investigation does not provide any specific information about site contamination. However, it included the drilling of three boreholes (BH1 to BH3) across the southern part of the site which provide preliminary information on the subsurface conditions across the site and potential adverse aesthetics. The investigation also included the installation of a groundwater monitoring well within one of the boreholes (i.e. BH1).

The information from these boreholes and well have been incorporated into our summary of the subsurface conditions across the site, while the borehole logs are also provided in **Appendix B**. The approximate locations of these boreholes are also shown on **Figure 2** which includes an extract of the survey plan, and **Figure 3**, which includes a recent aerial photograph.

1.3 PROPOSED DEVELOPMENT

Based on the architectural plans provided in **Appendix A**, it is proposed to construct the proposed development in two stages.

The first stage of the development (Stage 1) will comprise:

◊ The construction of a new RSL Club and seniors living apartments at the southern end of the site where the existing Bowling Greens are located. The new development will comprise three levels above ground with the RSL Club at ground level and the seniors living apartments occupying the upper two levels. There will also be three basement levels for parking and general storage. During this stage of works the existing Club and the open-air parking area to the north will be retained and remain operational.

The second stage of the development (Stage 2) will comprise:

◊ The demolition of the existing Club and associated carparking area in the northern part of the site, followed by the construction of a seniors living apartment building which will comprise three, three-level buildings over a two-level basement for parking that will ultimately integrate with the upper two basement levels from the Stage 1 works.

The approximate outline of each stage of the basements are indicated on the attached **Figure 2** which includes an extract of the survey plan, and **Figure 3**, which includes a recent aerial photograph.

The southern basement is proposed to extend up to the western boundary and will be within proximity (~1 metre) of the existing Club building to the north and the southern

boundary. It will also be setback approximately 9.0 metres from the eastern boundary, although there will be an access ramp in the south-eastern corner that will extend up to the eastern boundary and beyond to connect with Melwood Avenue. The lowest of the southern basement levels is proposed to have a Finished Floor Level of between 117.7 metres AHD. Based on existing surface elevations, GEE expects that excavation of between approximately 8.5 to 9.5 metres depth will be required with deeper excavations are also expected to be required locally to accommodate the proposed lift shafts.

The northern, two-level basement is proposed to be setback approximately 8.0 metres from the western boundary, 9.0 metres from the eastern boundary and at least 7m from the northern boundary. The lowest basement level will have a FFL of 120.7 metres above Australian Height Datum (AHD) and therefore GEE expects that excavation of between approximately 7.0 to 7.5 metres depth will be required.

GEE understands that both basements, where possible, will be 'drained' basement meaning that groundwater will be allowed to seep into the basement before being directed to a sump and then pumped out to the regional stormwater system.

1.4 Objectives and Scope of Work

The objective of the PSI was to identify past and present contaminating activities, potential contamination types and to assess the need for further investigation.

To achieve the above objectives, GEE completed the following scope of works:

- ◊ Review of previous investigation reports relevant to the site,
- ◊ Review of the site's history to provide an understanding of past and present site activities which in turn may indicate sources and areas of potential contamination as well as potential chemicals of concern,
- ◊ Review of the environmental and physical setting in which the site lies,
- ◊ A detailed site inspection for potential sources of contamination,
- ◊ Preparation of an initial Conceptual Site Model (CSM),
- ◊ Preliminary field investigations including:
    - o The drilling of two boreholes (BH101 and BH102) across the southern portion of the site which was also undertaken as part of the concurrent geotechnical investigation,

- The installation of a groundwater well in both boreholes, which complements the previous well installed as part of the JK Geotechnics geotechnical investigation (BH1),
- Sampling of soil from the two boreholes, and
- The collection of a groundwater sample from the newly installed wells and the pre-existing well.

◊ Laboratory analysis of selected soil samples for Chemicals of Potential Concern (CoPC),

◊ Laboratory analysis of the groundwater samples for CoPC, and

◊ Preparation of this report, including a statement as to the risk of contamination beneath the site and whether further investigation is warranted.

2 SITE IDENTIFICATION

A summary of the site identification details is provided below, while a site location map is provided as **Figure 1**:

Street Address:	20 - 22 Melwood Avenue, Forestville NSW 2087
Legal Description:	No. 20: Lot 2589 in Deposited Plan DP 752038
	No. 22: Lot 31 in Deposited Plan DP 366454
Coordinates (MGA 56):	-33.762765 Lat., 151.210648 Long
Local Government Area:	Northern Beaches Council
Site Area:	8,790m^2 (approximately)
Current Zoning:	R2 – Low Density Residential[1]
Current Use:	Commercial / Retail
Proposed Zoning:	R2 – Low Density Residential
Proposed Use:	Mixed (Commercial/Retail and Residential)

[1] Warringah Local Environmental Plan 2011

3 SITE HISTORY

The history of the site was researched to provide an understanding of past and present site activities which in turn may indicate sources and areas of potential contamination.

Information obtained and reviewed included:

- ◊ Historical aerial photographs dating back to 1930, as supplied by the NSW Land and Property Information, or online sources such as Google Earth, and obtained by Lotsearch Pty Ltd.
- ◊ Historical title information obtained from InfoTrack.
- ◊ Historical business directory records dating back to the mid 1950s which is provided in the Lotsearch Report.
- ◊ Online search of Council development applications and approvals.
- ◊ An internet search for any relevant historical information about the site.
- ◊ A search of historical Google Street View Photographs.
- ◊ A search of the contaminated land database was conducted which reveals if there have been any records of written notices issued on the site by EPA under the Contaminated Land Management Act 1997 (CLM Act), including preliminary investigation orders. Additionally, the search can reveal if the site has ever been notified to the EPA under Section 60 duty to report contaminated sites, of the CLM Act.
- ◊ A search of records under the PFAS investigation program.
- ◊ A search of the NSW EPA Protection of the Environment Act public register of licences, applications and notices that are maintained under Section 308 of the Protection of the Environment Operations (POEO) Act 1997.
- ◊ A search of local and state heritage registers.

3.1 HISTORICAL AERIAL PHOTOGRAPHS

Historical aerial photography was sourced by Lotsearch and included in their report, a copy of which is provided in **Appendix C**. This included aerial photographs from between 1930 and 2024. A summary of the findings from each photograph is provided below with information (where possible) from our site inspection.

Year	**Site**	**Surrounding Land**
1930	The site comprises undeveloped land with grass and tree cover.	The surrounding areas and streets are largely undeveloped land, with some agricultural land approximately 150m to the east of the site.
1943	No significant changes.	A large area of ground disturbance has appeared in a previously tree covered area, approximately 70m south-west of the site.
1951	Tree clearing has occurred at the northern end of the site (i.e. No. 22 Melwood Ave) and a house appears to have been constructed on this allotment.	There has been a noticeable increase in residential developments north of the site, and areas are undergoing development south-east of the site.
1955	No significant changes.	The previously observed residential developments have expanded and more houses have been constructed to the north and south-east of the site.
1961	No. 20 Melwood Ave (Lot 2589) has been cleared of the former vegetation and part of the existing RSL Club has been constructed in the centre of the site. The existing two bowling greens have also been constructed at the southern end of the site and the existing memorial garden to the east of the Club building. The northern part of Lot 2589 is being used for car-parking. A separate small structure is evident in the central-western part of the site.	Most of the area north and east of the site now comprises well-established low density residential developments, with the exception of an allotment undergoing earthworks approximately 100m to 150m north-east of the site. This is where Forestville Public School and the associated sports field currently exists.
1965	The small structure observed in the central-western part of the site in the previous photograph has been replaced by a larger structure, and a tennis / sports court has been constructed between the western boundary of the site and the western end of the main club building. Ground disturbance can be observed across the north-western part of the site.	A large area of open space (a sports field) has been created immediately south-west of the site, replacing the large area of ground disturbance which was first observed in the 1943 photograph.

1970	The RSL Club building has been renovated by replacing the central part of the building with a new two-storey building. The previously observed area with ground disturbance in the north-western part of the site has been incorporated into the car park. Ground disturbance is evident in the memorial garden and the south-western bowling green.	A carpark is under construction adjacent to the southern boundary of the site, and an additional sports field is being constructed further south. Some buildings have been constructed to the east of the site (which today make up the Forestville Youth Centre / Community Hall and Forestville Guide Hall).
1978	No significant changes, however, there appears to be a crane in the memorial garden and possible building materials on the roof of the building, which (with reference to the 1982 photograph) indicates renovation is occurring.	No significant changes.
1982	The main building has been renovated and the tennis court between the western boundary and the club building has been re-surfaced / re-painted. Otherwise, no significant changes.	No significant changes.
1986	The tennis court between the western boundary and the club building has been re-surfaced again. Otherwise, no significant changes.	A small structure has been constructed in the park approximately 80m south of the site. Otherwise, no significant changes.
1991	No significant changes.	No significant changes.
1994	No significant changes.	Additions have occurred within the parkland south of the site, including construction / renovation of structures within the park, and the construction of a cricket pitch within the sports field. Otherwise, no significant changes.
2005	The tennis court along the western boundary has been replaced by an extension of the RSL Club building. The house on No, 22 Melwood Ave (Lot 31) has been demolished and replaced by a carpark for the RSL Club.	A medium density residential development has replaced the former low-density dwellings immediately to the north-west of the site. A playground has been constructed within the park south of the site. The site surrounds are largely consistent with the current layout.

	Finally, a paved footpath has been added to the memorial garden (surrounding the statue). A small structure (i.e. shed) has been constructed adjacent to the eastern boundary, between the memorial garden and main entrance driveway. From our site inspection it was determined that this shed is occupied by some fire safety hydrant / equipment. The site is now relatively consistent with the current site layout.	
2014	A loading dock has been added to the north-western part of the building. Solar panels have been added to the roof of the RSL Club building. Otherwise, no significant changes.	No significant changes.
2018	No significant changes.	A medium density residential development have replaced low density residential dwellings approximately 150m north of the site.
2021	Approximately one third of the western bowling green has been converted into an alfresco dining area.	No significant changes.
2024	No significant changes.	No significant changes.

A summary of the findings from the aerial photography is provided below:

The Site

Based on a review of the aerial photographs, the site was originally a part of a larger parcel of land that was undeveloped and covered by trees and grass. Initial development of the site occurred between 1943 and 1951 when the northern allotment (Lot 31) was cleared of vegetation and a house was constructed at the eastern end of this allotment.

Between 1955 and 1961 the southern allotment (Lot 2589) was formed and the first RSL Club building was constructed in the centre of this allotment. The two bowling greens at the southern end of the site were also constructed during this time along with the existing memorial garden in the front (east) of the Club building. The northern part of this allotment was converted into a carpark.

Between 1961 and 1965, a tennis court was constructed between the Club building and the western boundary.

Between 1965 and 1970, the main club building was either replaced or significantly renovated, with several more alterations and additions to the Club building occurring up until 2005, including the removal of the tennis court.

Between 1994 and 2005, the RSL Club acquired the northern allotment (Lot 31) and subsequently demolished the former house and expanded their carpark across this allotment.

From 2005, there were no significant changes to the site and its layout.

Surrounding Land

In the earliest available photograph (i.e. 1930), the surrounding land within 150m of the site comprised tree covered bushland / scrubland, with some agricultural land further to the east. Between 1943 and 1951, early stages of development of the Forestville suburb had begun, with earthworks observed in the 1951 photograph. Between 1951 and 1961 the surrounding area transitioned towards low density residential developments with recreational parkland and a school nearby.

By 1961 the surrounding area was mostly developed (low density residential dwellings to the north, east and south-east, a school to the north-east, and parkland to the south and west). Between 2007 and 2018 there was a gradual transition to medium density residential developments in isolated parts of the surrounding area, particularly the allotment adjacent to the northern boundary of the site.

3.2 Historical Title Information

A copy of the historical title information dating back to the late 1800s and early 1900s is provided for reference in **Appendix D**, while a summary is provided below:

Lot 31 DP 366454 (22 Melwood Ave)

This allotment was formed by subdivision of a larger parcel of land in late 1946. The former, larger parcel of land dating back to at least 1925, and this allotment after being formed, was owned by various individuals up until 1986, which suggests residential land-use rather than commercial and/or industrial land-use, and this is supported by the aerial photographs.

In 1986, the allotment was purchased by the Forestville RSL Club, and with reference to the aerial photographs, it remained being used as a residential property until sometime between 1994 and 2005 when the RSL Club demolished the former house and expanded their carpark.

Lot 2589 DP 752038 (20 Melwood Ave)

The title information indicates that was originally part of crown land before being leased the RSL Club in 1955. Originally the land that was leased to the Club was larger than it is now and included property to the south and west. The existing allotment was formed Circa 1964. From 2001, the RSL Club has owned this allotment.

3.3 BUSINESS DIRECTORY LISTINGS

A search of available business directory listings dating back to the mid-1950s was completed by Lotsearch Pty Ltd (**Appendix C**) to assist with determining any past land-use activities, particularly those that may cause contamination.

Site Specific Listings

The were no site-specific listings.

Surrounding Land

The business listings within proximity of the site (i.e. 400m) predominately comprise retail and/or commercial businesses which are considered to be relatively benign from a site contamination perspective. A review of the data revealed no business listings directly associated with the site. Notable business directory listings within proximity of the site (i.e. 500m) are listed below:

Business Activity	Premise	Year(s) Listed	Distance to Property Boundary (m)	Direction
MOTOR GARAGES & ENGINEERS	Sheppards Service Station / Safety Drive Service Station / Forestville Service Station / Forestville Auto Port, Forestville Safety Drive Service Station Warringah Rd. Forestville	1956 - 1969	223	Road Match
DRY CLEANERS, PRESSERS &/OR DYERS	Grosvenor Valet Service / Littles Dry Cleaners / Mackellar Dri-Cleaners 7 Mall Centre Forestville. 2087	1970 – 1979	274	Road Match
MOTOR GARAGES & SERVICE STATIONS	Forestville Service Station, Swans Service Station / Vidler's Service Station, Caltex Forrestville Service Station 656 Warringah Rd Forestville	1965 - 1990	277	North
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS	Roseville Bridge Service Centre Pty. Ltd. 702 Warringah Rd., Forestville. 2087	1971 - 1993	285	West

DRY CLEANERS, PRESSERS &/OR DYERS	Centre Dry Cleaners, Ninety Minute-Ridgeways Dry Cleaners, Ridgeways Dry Cleaners, Lloyd Jones Dry Cleaners. 28 Mall Centre., Forestville. 2087	1967 - 1988	309	East
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	B.P. Forestville Service Station 632 Warringah Rd., Forestville. 2087	1965 – 1993	342	North-East
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Total Service Station Forestville 8 Starkey St., Forestville. 2087	1970 - 1990	396	East
MOTOR GARAGES & ENGINEERS.	Total Service Station., Forestville Starkey St Forestville	1965 – 1969	469	Road Match

Each of the above entities have the potential to cause chemical contamination beyond their boundaries via the migration of groundwater and/or vapour. Underground fuel storage tanks associated with motor garages / service stations pose a risk of leakage, which can result in petrochemicals entering the groundwater table and migrating off the property via groundwater. Such impacted groundwater can also generate unacceptable soil vapours. Dry cleaners use volatile chemicals such as Tetrachloroethene (PCE) which when allowed to enter the ground can result also impact groundwater and result in an unacceptable vapour cloud.

Notwithstanding these nearby entities, based on the regional topography and hydrology information included herein in Section 6.1.4, the entities listed above are not up-hydraulic gradient of the site (as the site is located on a hilltop), and therefore it is unlikely that the site would be impacted from migration of contaminated groundwater originating from these properties.

3.4 Online Search of Council Development Application Records

GEE made an online enquiry with the Council about past development applications and approvals relating to the site which can provide an indication of past land-use activities. Applications were found as follows:

20 Melwood Avenue: Lot 31 Deposited Plan (DP) 366454

Five applications were found that all relate to the construction of the car park (as a club addition), and other applications associated with the car park such as security installation.

22 Melwood Avenue: Lot 2589 DP 752038

Various applications were found that relate to club additions, extensions and fencing.

3.5 HISTORICAL INTERNET SEARCH

An internet search of the site and general area was completed by GEE to gain any relevant information relating to past land-use activities. This included the Local History webpage of the Northern Beaches Council Library for potential historical photographs and any historical documents detailing the site and the suburb which may be relevant to this investigation. Information obtained included the following photographs dating back to c1940 – 1960:

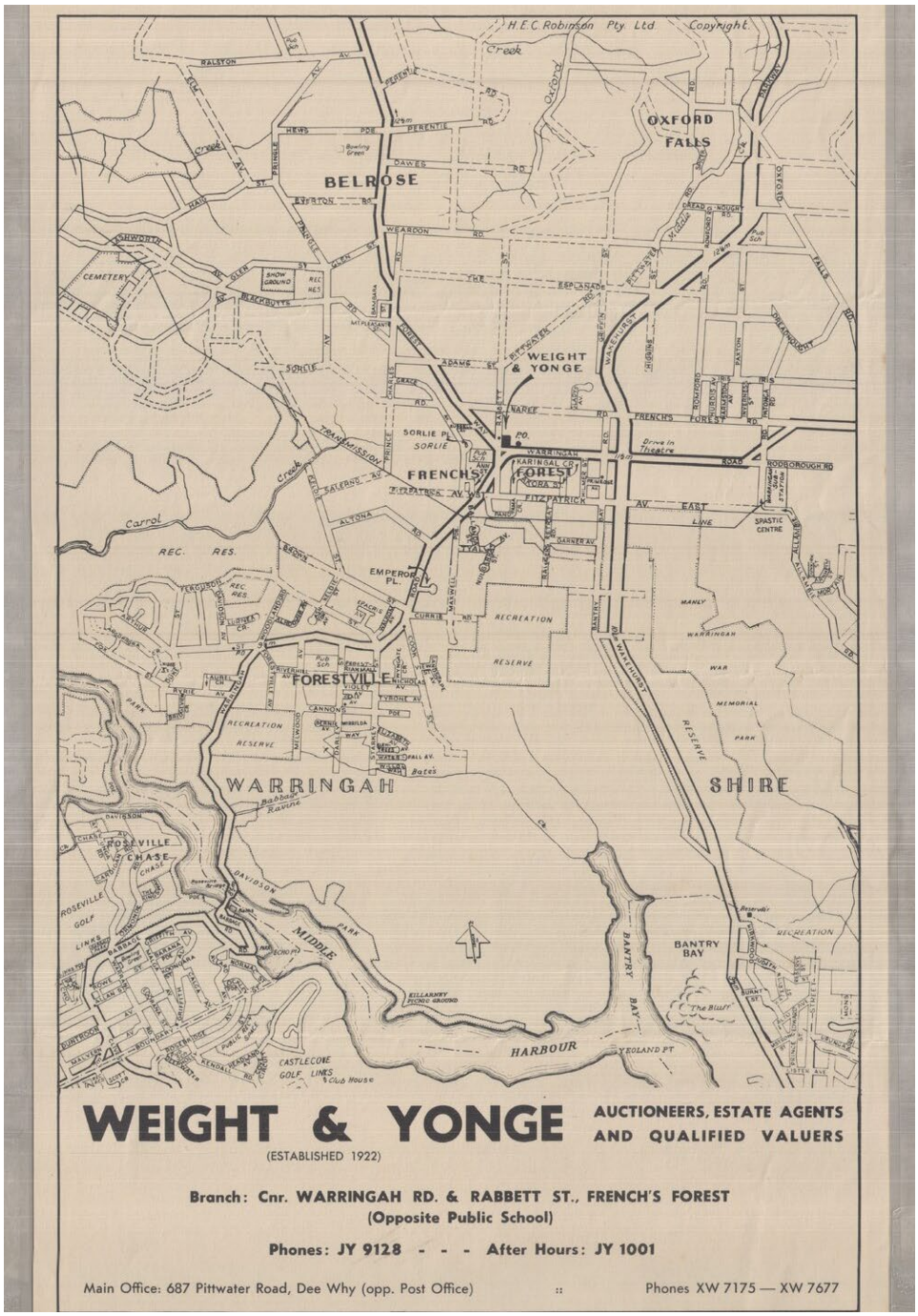

Plate 1 – Advertisement dated c1940 - 1950 (Source: Northern Beaches Library Local Studies).

The above photo is a map of Forestville and surrounding suburbs dating back to c1940 – 1950. It shows that the site was a recreation reserve at this time, prior to further development of the suburb and surrounding areas.

Plate 2 – Aerial photograph dated c1950 - 1960 (Source: Northern Beaches Library Local Studies).

The above photo is an aerial photograph of Forestville dating back to c1950 – 1960. It shows the early stages of the development of Forestville, particularly the construction of roads and earthworks associated with housing / commercial developments (which were observed in the historical aerial photographs from 1951 and 1955, discussed previously in section 3.1). This was also around the time the Forestville RSL Club was constructed (known as the Forestville RSL Sub- Branch Club at the time it was built), which was observed in the 1961 historical aerial photograph.

Plate 3 – Advertisement dated c1962 (Source: Northern Beaches Library Local Studies).

The above photo is an advertisement for the sale of Crown Land within Forestville dating back to c1962. Whilst the map on this advertisement does not cover Melwood Avenue (which is approximately 750m to the south-west of the corner of Arthur Street and Angophora Crescent shown on this advertisement). This demonstrates the establishment and expansion of Forestville during the early development stage, which occurred around the same time that the RSL Club was constructed.

Finally, a search of the Forestville RSL Club website indicates revealed that "*On July 3rd, 1957 the Forestville RSL Sub- branch acquired a lease of 2.5 acres of land, cleared of scrub – to form a club.*" This supports the historical aerial photographs and the land title records. which revealed that the Club was first constructed between 1955 and 1961.

3.6 GOOGLE STREET VIEW PHOTOGRAPHS

Google provides Street View images for the site from between 2009 and 2021. A review of these images revealed that the existing development on the site has remained relatively unchanged since 2009.

3.7 CONTAMINATED LAND DATABASE

A search of the contaminated land database was conducted by Lotsearch Pty Ltd (**Appendix C**) and revealed there has been no record of written notices issued on the site, by the EPA, under the Contaminated Land Management Act 1997 (CLM Act), including preliminary investigation orders. Additionally, the site has never been notified to the EPA under Section 60 duty to report contaminated sites, of the CLM Act.

Beyond the subject site, there were two properties within 1km of the site which had been notified to the NSW EPA under Section 60 of the CLM Act and neither of these properties have had notices issued on them. These properties are listed below:

Site	Address	Suburb	EPA Site Management	Distance (m) From Site	Direction From Site
BP Service Station, Forestville	632 Warringah Road	Forestville	Contamination formerly regulated under the CLM Act	358	North East
Shell Service Station	667 Warringah Road	Forestville	Contamination formerly regulated under the CLM Act	678	East

Both properties are located a significant distance from the site and based on the regional topography, they are situated down-hydraulic gradient, therefore any contamination issue associated with this property would unlikely impact on the subject site. Furthermore, the contamination associated with two the properties have been reviewed by the EPA and they concluded that they do not warrant regulation, which suggests that there is no widespread contamination extending beyond the properties.

3.8 EPA PFAS Investigation Program

A search of sites that are part of the EPA, Defence or Airservices Australia PFAS investigation programs was completed by Lotsearch (**Appendix C**) and it revealed no records within the search buffer of 2km.

3.9 POEO Register Search

A search of the NSW EPA Protection of the Environment Act public register of licence, applications and notices was undertaken by Lotsearch (**Appendix C**) which contains information on:

- ◊ 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.
- ◊ exemptions from the provisions of the POEO Act or regulations.
- ◊ approvals granted under clause 9 of the POEO (Control of Burning) Regulation.
- ◊ approvals granted under clause 7A of the POEO (Clean Air) Regulation.
- ◊ 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; and
- ◊ each penalty notice issued in relation to a premises.

The search did not identify any records for the site, or for any properties located immediately adjacent to the site.

3.10 Heritage Registers

A search of the Commonwealth, State and local heritage registers was undertaken with the results provided in the Lotsearch report (**Appendix C**). The buildings and other structures on the site are not listed on any of these heritage registers.

3.11 SUMMARY OF THE HISTORICAL INFORMATION

3.11.1 The Site

The site was originally part of a larger parcel of land that was originally Crown Land, comprising bushland / scrubland.

Initial development of the site occurred between 1943 and 1951 when the northern allotment (Lot 31) was cleared of vegetation and a house was constructed at the eastern end of this allotment.

In 1957 the Forestville RSL Sub- branch acquired the southern allotment (Lot 2589) via a long-term lease before clearing the bushland and soon thereafter they constructed the first RSL Club building in the centre of this allotment. The two bowling greens at the southern end of the site were also constructed at this time along with the existing memorial garden in the front (east) of the Club building. The northern part of this allotment was converted into a carpark.

Between 1961 and 1965, a tennis court was constructed between the Club building and the western boundary.

Between 1965 and 1970, the main club building was either replaced or significantly renovated, with several more alterations and additions to the Club building occurring up until 2005, including the removal of the tennis court.

Between 1994 and 2005, the RSL Club acquired the northern allotment (Lot 31) and subsequently demolished the former house and expanded their carpark across this allotment.

From 2005, there were no significant changes to the site and its layout.

In summary, the historical site activities are considered to be relatively benign from a land contamination perspective. However, the age of the original house in the northern part of the site, and the original RSL Club building, suggests that Asbestos Containing Material (ACM) and lead based paints may have been used. Therefore, any renovations, maintenance, or the demolition of these structures, may have resulted in near surface soils being impacted with lead and/or ACM.

3.11.2 Surrounding Land

The surrounding land within 150m of the site was tree covered bushland / scrubland, with some agricultural land further to the east, until 1951 when the early stages of development of Forestville began. Between 1951 and 1961 the surrounding area quickly transitioned into low density residential dwellings with recreational parkland and a school nearby, as returned soldiers started to populate the area and assisted with construction of the houses.

The historical business directories noted some former businesses within proximity of the site which are often related to site contamination and have the potential to cause chemical contamination beyond their boundaries via groundwater or vapour migration. This included a number of service stations and dry cleaners within 400m of the site. However, the location of these businesses and distances relative to the site suggest that any contamination from these properties are unlikely to have impacted the site.

4 SITE CONDITION AND SURROUNDING ENVIRONMENT

This section of the report provides a detailed description of the physical and environmental setting of the site, including a description of the site and the presence of any visible signs of contamination.

4.1 SITE DESCRIPTION

The site is bounded by Melwood Avenue to the east (beyond which is a low-density residential development), a low to medium density residential development to the north, and to the west is Forestville Dog Park, Forestville Community Hall and Forestville Scouts Hall. To the south the site is bounded by Forestville War Memorial Playing Fields, which comprise the ANZAC Memorial Pathway, Poppy Park Memorial playground and BBQ area, Forest Rugby Club, Forest Killarney Football Club (Melwood Oval), the associated carparks and several sports fields / courts.

The two-storey Forestville RSL Club building is located centrally to the site and is bounded by an open-air, asphalt paved carpark to the north, two bowling greens to the south (making up the entire southern portion of the site), and a war memorial garden to the east (between the club building and Melwood Avenue). The lower level of the club building interior comprised the gaming room, dining areas, kitchen, bars in the main area (accessible to customers), various staff rooms and storage rooms (some utilised for minor storage of cleaning/industrial chemicals), the loading dock and the cooler room in the back area. On the upper level were mixed-use rooms, including a board room, function rooms, a snooker room and offices. Neither of the bowling greens were being utilised (or maintained) for lawn bowling, and half of the bowling green on the western side had been converted into an alfresco dining area.

Near the bowling greens, and attached to the rear south-western corner of the RSL Club building, was the green keepers shed. The shed was being utilised for storage of maintenance equipment, outdoor furniture/décor and minor storage of chemicals (including paint/lacquer and turpentine). Adjacent to the eastern border (between the main entrance driveway and the memorial garden) was a small shed containing pumps relating to fire response systems. This fire response pump shed was concurrently being utilised for minor storage of fertiliser (dynamic lifter) and fuel in jerry cans (which presented a moderate hydrocarbon odour).

Based on the regional topography and the site inspection there is potential for fill material to have been introduced to site to raise the site surface or create a level platform for the

existing buildings and the bowling greens in the southern portion of the site. This is supported by the fact that the former geotechnical boreholes by JK Geotechnics Pty Ltd (reference 3), adjacent to the bowling greens, did encounter some fill material ranging in depth from 0.7m to 1.65m (**Appendix B**).

Aside from the moderate hydrocarbon odour noted within the fire response pump shed, there were no other unusual odours or surface staining that could be potentially associated with contamination. There was no evidence of under-ground or above-ground, fuel or chemical, storage tanks observed across the site. Building demolition was observed within the garden bed adjacent to the back fence at the southern end of the site (which presents potential asbestos contamination), otherwise, there was no obvious evidence of Asbestos Containing Materials (ACM) on the surface of the site.

Photographs of the site are provided for reference in Plates 4 to 16.

Plate 4 – View towards the west showing the front entrance of the RSL Club (the central portion of the site).

Plate 5 – View towards the south-west showing the bowling greens (the southern portion of the site).

Plate 6 – View towards the north-east showing the back of the RSL Club.

Plate 7 – View to the north-west showing the memorial garden and fire response pump shed to the right.

Plate 8 – View to the south-west showing the alfresco area within the former bowling green.

Plate 9 – View to the north-east, showing the garden bed and fill batter at the southern end of the site.

Plate 10 – Fill containing building demolition observed in the garden bed at the southern end of the site.

Plate 11 – View of the interior of the green keeper shed attached to the rear, south-western corner of the Club building.

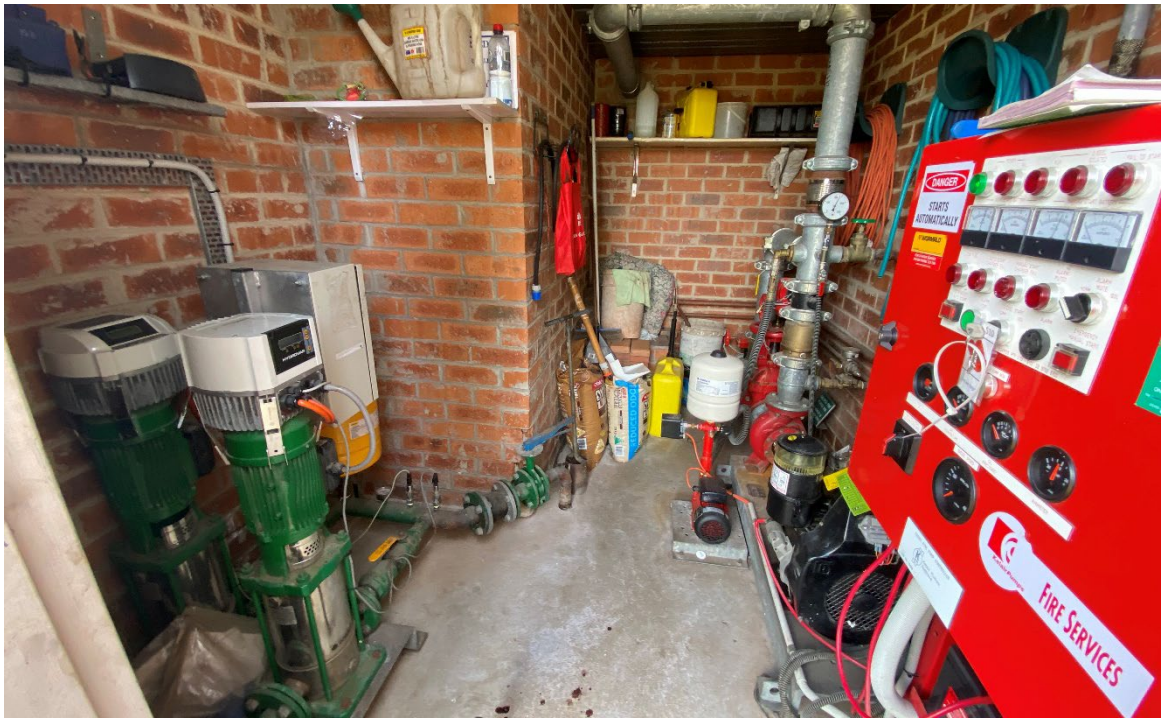

Plate 12 – View of the interior of the fire services pump shed.

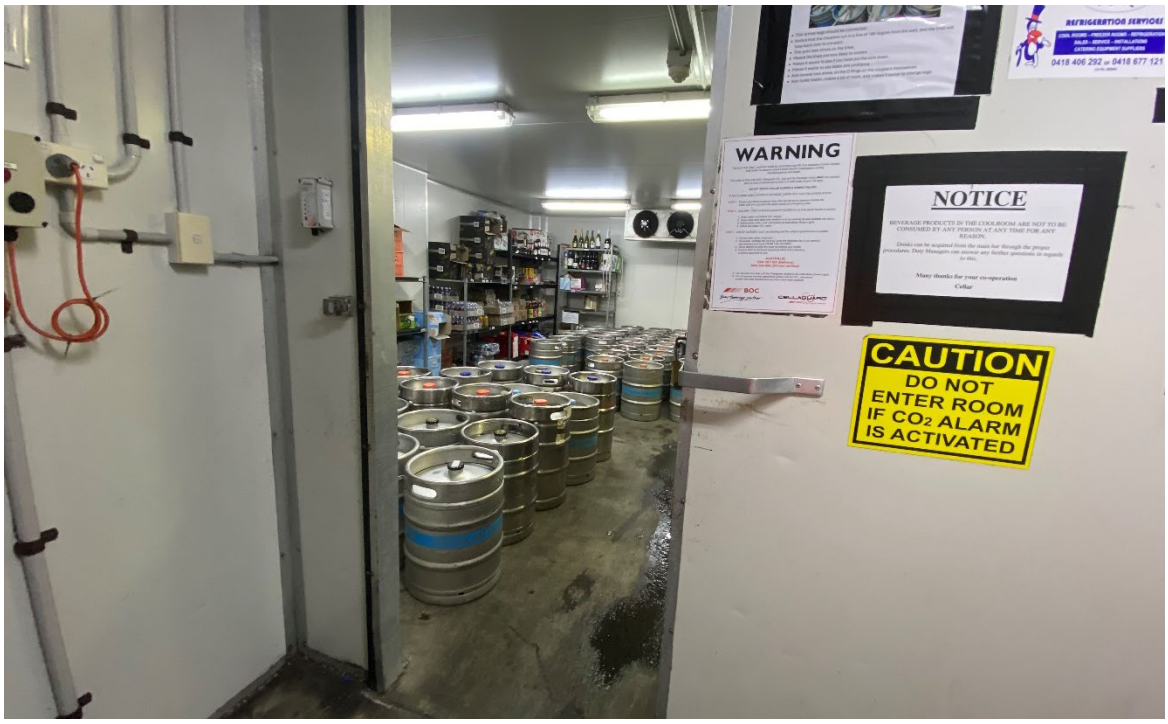

Plate 13 – View of the cooler room.

Plate 14 – View of a staff room (cleaning supplies storage area) at the back of the club (just inside from the loading dock).

Plate 15 – Historical image on display within the upper level of the RSL Club Building (c1960), showing the former RSL Club building (known at the time as Forestville RSL Sub- Branch Club) shortly after the establishment of the Forestville RSL Club.

Plate 16 – View to the south, showing the low cut into the natural hillslope supported by a mortared brick retaining wall.

4.2 Surrounding Land Uses and Activities

Surrounding land uses observed from the aerial photographs and our site inspection are predominately low-density and medium-density residential dwellings, open-space and community engagement.

4.3 Topography

Our site inspection revealed that the site is located on a hilltop and has an overall fall of about 1° to 2° down to the south-east. A review of the survey plan (**Appendix A**) indicates that the site surface elevation is approximately 127.8m AHD at the northern end of the site and falls to approximately 126m AHD in the south-eastern corner.

4.4 Regional Geology and Soils

A review of the regional geological map (reference 5) indicates that the site is underlain by the Triassic aged Hawkesbury Sandstone Formation. The Hawkesbury Sandstone Formation typically comprises "*…Medium to coarse-grained quartz sandstone, very minor shale and laminite lenses*".

A review of the regional soils map indicates that the site is located within the Lucas Heights Soil Landscape Group (reference 6), recognised by gently undulating crests and ridges on plateau surfaces. Local reliefs are generally up to 30m, slopes typically less than 10% in gradient. Soils of the Lucas Heights Group typically comprise residual sands and clays, are often stony and have low soil fertility.

Site specific geological and soil conditions encountered across the site are provided in Section 6.1.2 and incorporates any the relevant information from the former geotechnical and our recent boreholes.

4.5 Regional Groundwater / Hydrogeology

Based on the geological information it was anticipated that the regional and permanent groundwater in the vicinity of the site is likely to be confined, or partly confined, within discrete water-bearing zones within the bedrock formation. However, intermittent 'perched' water seepage is likely to occur at the soil-bedrock interface following heavy and prolonged rainfall events.

A search of registered groundwater bores within 2km of the site was completed and the results are provided in the Lotsearch report (**Appendix C**). There are 31 registered bores

within 2km of the site, with the closest bore (GW109140) located 299m to the south-west of the site. This bore is a 210m deep unknown bore drilled on the 4th of August 2008, with a measured standing water level of 108 m below ground level, a salinity of 340 mg/L (indicating this groundwater bore produces fresh water), and a yield of 0.3 L/s.

A review of the bore information does not provide any useful information about specific groundwater levels beneath the site.

Site specific information on groundwater levels across the site from the three monitoring wells is provided in Section 6.1.4.

5 INITIAL CONCEPTUAL SITE MODEL

The conceptual site model (CSM) is a representation, or summary, of information obtained regarding potential contamination sources, receptors and exposure pathways between the sources and receptors. The key elements of a CSM include:

- ◊ known and potential sources of contamination, areas of environmental concern (AEC) and chemicals of potential concern (CoPC), including the mechanisms of contamination (such as 'top down' spills or sub-surface releases from corroded tanks or pipes),
- ◊ potentially affected media (such as soil, sediment, groundwater, surface water, indoor and ambient air),
- ◊ human and ecological receptors, and
- ◊ potential and complete exposure pathways.

GEE notes that this CSM is based on existing information and will require revision once more information is obtained.

5.1 POTENTIAL CONTAMINATION SOURCES AND COPC

Based on the site history information, a review of the site's physical and environmental setting, and the results of the previous field investigations, the areas of environmental concern (AEC), potential for contamination and CoPC are summarised in **Table 1**.

Table 1: Potential Contamination Sources and CoPC

Area of Environmental Concern (AEC)	Potential Contaminating Source	Chemical of Potential Concern (CoPC)	Estimated Risk of Contamination
On-Site			
Entire Site. In Particular the south-eastern half.	Fill Material: There exists some fill material (i.e. either imported soil material or previously disturbed soil) beneath the site. If imported to site, and sourced from an unknown location, the quality of fill material is also unknown and potentially contaminated.	Metals, Polycyclic Aromatic Hydrocarbons (PAHs), Total Recoverable Hydrocarbons (TRH), Benzene, Toluene, Ethylbenzene, Xylene and Naphthalene (BTEXN), Pesticides, PCBs and Asbestos[2]	Medium
Vehicle Accessible Areas / Carparks (particularly the northern carpark)	Past and Present Vehicle Movements: Vehicles accessing and parking on site may have resulted in leaks and spillage of fuel and oils.	TRH, BTEXN, Lead and PAHs	Low
Entire Site	Use of Lead based Paint and Asbestos Containing Materials (ACM) on existing and former structures: Any renovations or maintenance work over the years, or the demolition of former structures, may have resulted in near surface soil being impacted with lead and asbestos.	Lead and Asbestos	Medium
Bowling Greens (Southern Portion of Site)	Application of Fertilisers and Herbicides for Bowling Green Maintenance: As part of the maintenance and upkeep of the bowling greens, fertiliser and/or herbicide application may have resulted in near surface soils and potentially underlying soils being impacted with pesticides and to a lesser extent metals.	Pesticides, Metals	Medium
Areas of Current and Past Storage of Chemicals. (i.e. Greenkeepers shed, Fire Response System Shed & Storage Room in the north-west corner of the RSL Club)	Minor Storage of Chemicals: This may have resulted in top-down contamination from leaking or spilt chemicals. However, the concrete floor slab in these areas is likely to have restricted any migration of the chemicals.	TRH, BTEXN, Metals, OCPs, PAHs and VOCs.	Low

[2] These are common contaminants of concern for developed areas across Sydney.

Off-Site			
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5.2 Potential or Known Contaminated Media

The potential for contamination on site is from top-down sources and therefore the potential contaminated media is the near surface soils and any fill material across the site. To a lesser extent is the deeper soil profile because there is always potential for contaminants to leach down through the soil.

Groundwater is unlikely to be contaminated, although it has been assessed as part of this investigation.

Soil Vapour is also unlikely to be contaminated but should be assessed if significant volatile contamination is encountered in the soil and/or groundwater.

5.3 Contaminant Receptors

Considering the existing land-uses and the fact that the proposed development will cover the majority of the site, potential receptors to the any contamination would include:

Human Receptors

- ◊ Workers (adults) engaged to construct the proposed development including earthworks contractors for the basement,
- ◊ Existing users of the site (adults and children),
- ◊ Future occupants and visitors of the new development (adults and children), and
- ◊ Workers (adults) engaged to maintain any buried services/utilities.

Environmental Receptors

- ◊ Future deep soil environments beneath the site and their associated ecosystems, and
- ◊ Buildings and structures.

5.4 Potential Exposure Pathways

At this preliminary stage, potential exposure pathways include:

- ◊ Ingestion of soil (workers) during redevelopment of the site.

- ◊ Ingestion of soil (adults and children) during future use of the site.
- ◊ Direct (dermal) contact for future users of the site (via any unsealed / deep soil areas).
- ◊ Direct (dermal) contact for workers (adults) engaged to construct the proposed development or maintain any buried services/utilities.
- ◊ Inhalation of any volatile contaminants (if present).
- ◊ Inhalation of asbestos fibres from degraded ACM (if present).

6 LIMITED SAMPLING AND ANALYSIS PROGRAM

A limited sampling and analysis program was completed to provide a preliminary characterisation of the areas of the areas and sources of environmental concern detailed in the conceptual site model and whether further assessment was warranted.

In accordance with NSW EPA *Contaminated Sites: Guidelines for NSW Site Auditor Scheme* (reference 5) and Appendix B of Schedule B2 of the NEPM (reference 3), the Data Quality Objectives (DQOs) process was used to define the type, quantity and quality of the data needed to support decisions relating to the environmental condition of a site. Details of the DQO process adopted for the soil sampling and analysis program is provided in **Appendix E**.

6.1 SAMPLING PROGRAM

The sampling program was undertaken on the 25th July 2024 by Zachary Ziesel from GEE and the field work comprised:

- ◊ The drilling of two boreholes (BH101 and BH102) across the northern part of the site to complement the former boreholes by JK Geotechnics,
- ◊ The collection of representative soil samples from each of the boreholes for selective laboratory analysis of the CoPC,
- ◊ The installation of a groundwater monitoring well within each of the two boreholes to compliment the two pre-existing groundwater well (BH1),
- ◊ Development of the new groundwater wells at BH101 & BH102, and
- ◊ The purging and sampling of groundwater from each of the three wells (BH101, BH102 and BH1) along with the measurement of field parameters (pH, redox potential (Eh), electrical conductivity (EC), dissolved oxygen (DO) and temperature) and water levels.

6.1.1 Borehole Drilling and Logging

Both of our boreholes were drilled with a mechanical rig (which was owned and operated by Terratest Pty Ltd) utilising solid flight augers (SFA) through the soil profile and into the upper part of the weathered bedrock formation, while NMLC diamond coring was adopted within the deeper sandstone bedrock formation. Borehole BH101 was terminated at 10.23m below ground surface (bgs), while BH101 was terminated at 5.7m bgs. These depths equate to elevations of approximately 117.4m AHD and 121.8m AHD, respectively.

GEE notes that the number of sampling points (i.e. boreholes) does not meet the minimum number that is recommended for adequate site characterisation (reference 8), however, it was considered sufficient for this preliminary assessment of soil conditions and potential contamination.

To minimise cross contamination, the first length of the solid flight auger was washed with Decon 90, a laboratory grade cleaning agent and decontaminant, at the start of the fieldwork and between borehole locations. The solid flight auger was then rinsed with water and the cleaning agent afterwards. To check the adequacy of the decontamination procedure, GEE collected a rinsate quality control sample from the drilling bit at the end of the solid flight auger (ZZ250724-R) and submitted it for analysis of some contaminants of concern, in particular volatile contaminants which are most likely to cause cross-contamination.

During drilling, the encountered fill material and any natural soil were geologically logged, taking care to describe the presence and depth of any adverse aesthetics such as discolouration or odours. There was no obvious Asbestos Containing Material (ACM) observed during drilling, however, there was some occasional anthropogenic inclusions in the fill layer (e.g. brick fragments).

Groundwater was not observed in our boreholes prior to the introduction of water during the drilling process (i.e. NMLC Coring). However, groundwater was present within the wells after developing the wells. Information on measured groundwater levels is provided in Section 6.1.4.

A summary of the borehole information, including total depth, the depth of filling and the depth to bedrock, is provided in **Table 2** along with information from the former JK Geotechnics boreholes. The location of the GEE boreholes are shown on **Figure 2** and **Figure 3**, along with the location of the former boreholes

Table 2: Summary of the Borehole Information

Borehole ID	Date Completed	Drilling Method	Total Depth	Depth of Filling [1]	Depth to Bedrock [1]	Well Screen Interval
			(m BGS)	(m BGS)	(m BGS)	(m BGS)
GEE Geotechnical Boreholes 2023						
BH101	25 July 2024	SFA / NMLC	10.23	0.10	1.72	5.0 – 9.0
BH102	25 July 2024	SFA / NMLC	5.70	0.30	1.50	2.6 – 5.6
JK Geotechnics Boreholes 2018						
BH1	16 Nov 2018	SFA / NMLC	9.00	0.70	1.60	3.0 – 9.0
BH2	12 Nov 2018	SFA / NMLC	8.92	1.65	3.10	-
BH3	12 Nov 2018	SFA / NMLC	8.98	0.80	2.00	-

m BGS = metres below ground surface
SFA = Solid Flight Auger
NMLC = Diamond Coring
Note 1: Depth of fill included the surface pavements.

6.1.2 Subsurface Conditions

The subsurface conditions, as observed in the boreholes, typically comprised a layer of fill material over natural sandy soil which then graded into sandstone bedrock. Detailed descriptions of the subsurface conditions on site are provided in the GEE borehole logs provided in **Appendix F** and the JK borehole logs provided in **Appendix B**, while a summary of the subsurface conditions across the site are provided in **Table 3**.

Table 3: Summary of Subsurface Conditions and Geological Model

Layer / Unit	Description	Depth to Base of Layer (m)[1]	Soil Consistency / Relative Density[1] / Rock Strength
1 - FILL	ASPHALT / CONCRETE	0.1 – 1.65	--
	Silty SAND / Clayey SAND / Gravelly SAND: orange, red, brown, grey, fine to coarse sand and gravel with trace anthropogenic inclusions (brick) in BH3, moist.		Variable
2 - NATURAL SOIL	SAND / Silty SAND with Clay: red, orange, brown, grey fine to medium grained, bands of highly weathered sandstone, moist. *BH201 and BH203 only*	1.5 – 3.1	Medium Dense to Dense

3 - BEDROCK	SANDSTONE: red, orange, grey and dark grey, fine to coarse grained, highly to moderately weathered.	4.8 – 5.5	Very Low to Low Strength
	SANDSTONE: orange, grey, red, fine to coarse, moderately to slightly weathered and fresh.	>10.23	Medium to High Strength

6.1.3 Soil Sampling

Four primary soil samples were collected from the boreholes drilled by GEE. This included:

- A near-surface sample at approximately 0.2m to 0.3m in the natural sand layer of BH101, noting that the overlying fill layer between the surface asphalt pavement and the natural sand layer was too thin to effectively sample,
- A near-surface sample at approximately 0.1m to 0.2m in the fill layer of BH102.
- Two samples from the natural sand layer at BH102, including one from approximately 0.4m to 0.5m depth and another from 1.0 m to 1.1m depth.

Each sample was collected by hand using dedicated, disposable nitrile gloves in general accordance with techniques described in Australian Standard AS4482.2 (reference 10) and NEPM (2013 – reference 3), to maintain the representativeness and integrity of the samples. The soil was then placed in laboratory supplied glass jars.

The samples for laboratory analysis were each labelled with a unique sample identification number, in addition to the date of collection and project number, before being placed on ice within an esky. The sample identification number was repeated on the borehole logs (**Appendix F**).

In accordance with AS4482.1 (reference 9), a series of Quality Assurance (QA) procedures were integrated within the sampling plan and included:

- The collection of Quality Control (QC) samples.
- The use of standardised field sampling forms developed by GEE.
- Documentation of calibration and use of field instruments.

QC samples were collected as appropriate including a blind replicate at a frequency of 5% as well as a trip blank and trip spike. A split (inter-laboratory) duplicate was not collected due to the small number of samples involved. More detail about the QC sampling and analysis is provided in Section 7 and **Appendix H**. A summary of the samples collected during this investigation is provided in **Table 4**.

Table 4 - Summary of the Soil Sampling and Analysis Program

Location	Sample Depth	Sample ID	Material Type	Analytical Program					
				Metals	TRH/BTEXN	PAHs	OCPs	PCBs	Asbestos
Primary Samples									
BH101	0.2 – 0.3	ZZ250724-01	Nat. SAND	✓	✓	✓	✓	✓	✓
BH102	0.1 – 0.2	ZZ250724-02	Fill – Gravelly SAND	✓	✓	✓	✓	✓	✓
BH102	0.4 – 0.5	ZZ250724-03	Nat. SAND	✓	✓	✓	-	-	-
BH102	1.0 – 1.1	ZZ250724-04	Nat. SAND	-	-	-	-	-	-
		TOTALS		3	3	3	2	2	2
Quality Control Samples									
BH102	0.1 – 0.2	ZZ250724-100	Blind Replicate of ZZ250724-02	✓	✓	✓	✓	✓	-
-	-	Trip Blank	Trip Blank	-	✓[1]	-	-	-	-
-	-	Trip Spike	Trip Spike	-	✓[2]	-	-	-	-
-	-	ZZ250724-R	Rinsate	✓	✓[1]	-	-	-	-

Note 1: Volatile TRH and BTEXN only.
Note 2: BTEXN Only

6.1.4 Groundwater Well Installations, Development and Monitoring

A groundwater monitoring well was installed in boreholes BH101 and BH102 in general accordance with the Land and Water Biodiversity Committee (2012) *Minimum Construction Requirements for Water Bores in Australia* (reference 7), using 50 mm diameter uPVC pipe, with a machine slotted screen section, 2 mm sand pack and a bentonite seal. Details of the installation are shown on the borehole logs in **Appendix F**, while the screen intervals are also detailed in **Table 2**.

On the same day as installing the wells, they were developed by removing at least 3 well volumes of water using a water foot valve and dedicated tubing. The groundwater removed was collected in a bucket and poured across the asphalt pavement for evaporation. During development there was no obvious hydrocarbon odour or sheen.

The stabilised level of groundwater within the wells was measured on the 6th of August 2024 (~2 weeks after installation of the GEE well) and their depths are shown in **Table 5** along with field measurements taken during sampling of the groundwater wells. GEE notes that the water elevations are estimated from spot heights shown on the survey plan and therefore are likely to be ±0.2m.

Table 5: Groundwater Levels and Field Data

Well ID	Date	Stabilised Water Levels		pH	Dissolved Oxygen	Electrical Conductivity	Redox	Temp.
		m BGS	m AHD (Approx)	pH units	mg/L	µS/cm	mV	^{0}C
BH101	06 August 2024	3.23	124.37	5.95	0.86	390	50.3	20.50
BH102	06 August 2024	2.73	124.77	6.11	2.36	294	43.5	17.57
BH1	06 August 2024	2.19	124.31	5.63	2.05	231	72.4	16.53

Notes:
m BGS = metres below ground surface
m AHD = metres above Australian Height Datum (Estimated using survey spot heights)

Based on the layout of the wells and the water elevations, the groundwater is following the regional topography and flowing towards the southeast and Bates Creek which is approximately 500m from the site.

6.1.5 Groundwater Sampling

Groundwater was sampled from the wells on the 6th August 2024 following purging to remove stagnant water from the well casing and ensure that the samples are

representative of groundwater in the surrounding geological formation. Immediately prior to purging and sampling, the wells were dipped to determine the depth to standing water level. A clear disposable bailer was also used to check for the presence of a hydrocarbon sheen and Light Non-Aqueous Phase Liquids (LNAPLs) which may be floating on the water. A new bailer was used for each well and neither sheen, nor LNAPLs, were observed on the surface of the water within the bailer. There was also no adverse odour associated with the water.

Purging of the bore at BH101 was performed with a peristaltic pump using a micro-purge method with dedicated tubing. The inlet tubing was set within 1m of the surface of the water table and within well screen intervals, and the water flow rate was controlled to achieve a stabilised levels which suggests that water being removed from the well is from the surrounding aquifer rather than the bore annulus. A calibrated water quality meter, placed within a flow cell, was also used during the purging process to assess chemical equilibrium by measuring pH, redox potential (Eh), electrical conductivity (EC), dissolved oxygen (DO) and temperature. Sampling occurred once the parameters were stable (i.e. consecutive readings of ±10% for redox and DO, ± 3% for EC, 0.1 pH units for pH, and 0.1 degrees for temperature) and the water level was stabilised. At BH1 and BH102, the water level kept dropping regardless of the pumping rate. In this regard, the bores were allowed to pump dry and recharge to at least 80% before sampling later on the same day. Sampling of the bores was carried out using a dedicated clear disposable bailer equipped with a single check valve for transferring the sample into the sample containers. Care was also taken to minimise disturbance of the water and prevent the bailer from submerging completely which in turn would minimise the loss of any volatiles in the water.

Groundwater samples were collected directly into laboratory supplied sample containers in order of volatility, with the most volatile substances collected first. Samples to be analysed for metals were collected last and filtered in the field using a new disposable 0.45micron filter and syringe. Samples to be analysed for volatile substances (*e.g.* BTEX), were filled to the container brim and capped, making sure that there were no bubbles/headspace. The sample containers were labelled with the sample number, project number and date collected, and the information repeated on a Chain-of-Custody (COC) form which accompanied the samples to the laboratory. The chain-of custody form (provided by the laboratory) demonstrates that the samples were properly received, documented, processed and stored.

All the sample containers were immediately placed within an esky in which ice had been added. At the end of the day the samples in the esky were delivered to the laboratory.

During sampling, a calibrated water quality meter was used to measure the pH, redox potential (Eh), electrical conductivity (EC), dissolved oxygen (DO) and temperature of the water within each of the bores. Additionally, excess water from the purging and sampling work was poured across the asphalt pavement for evaporation.

The field data measurements are presented in **Table 4** along with the water level readings. The field measurements revealed relatively low pH levels and low electrical conductivity results. The dissolved oxygen results were relatively low in most bores, which is common for groundwater.

In accordance with AS4482.1 (reference 9), a series of Quality Assurance (QA) procedures were integrated within the sampling plan and included:

- The collection of Quality Control (QC) samples.
- The use of standardised field sampling forms developed by GEE.
- Documentation of calibration and use of field instruments.

QC samples were collected as appropriate including a blind replicate (at a frequency of one per three samples) and the analysis of a trip blank and trip spike. More detail about the QC sampling and analysis is provided in Section 7 and **Appendix H**. It is noted that the purging and sampling equipment did not require decontamination because GEE used dedicated equipment for each well.

While on site, the supervising engineer/scientist also filled out a copy of the GEE "Groundwater Sampling Field Sheet" which documents, the sample identification, date of sampling, time of sampling, stabilised groundwater level, water quality field screening results, physical description of the water, presence or absence of odour, well condition and volumes purged. A copy of the "Groundwater Sampling Field Sheet" is provided in **Appendix G**.

A summary of the groundwater samples collected and analysed during this investigation are provided in **Table 6**.

Table 6: Summary of the GEE Groundwater Sampling and Analysis Program

Location	Sample Id	Material Type	Analytical Program				
			Metals	TRH/ BTEXN	PAH	VOCs	Hardness
Primary Groundwater Samples							
BH101	ZZ060824-01	Groundwater	✓	✓	✓	✓	✓
BH102	ZZ060824-02	Groundwater	✓	✓	✓	✓	✓
BH1	ZZ060824-03	Groundwater	✓	✓	✓	✓	✓
Quality Control Samples							
BH101	ZZ060824-101	Blind Replicate of BH101	✓	✓	✓	✓	✓
--	Trip Blank	Trip Blank water	-	✓[1]	-	-	-
--	Trip Spike	Trip Spike water	-	✓[2]	-	-	-

Note 1: Volatile TRH only.
Note 2: Volatile TRH and BTEXN only.

6.2 *Analytical Program*

The primary environmental samples and quality control samples were analysed by Envirolab laboratory in Chatswood which is National Association of Testing Authorities (NATA) registered for the testing undertaken.

6.2.1 Soil

In accordance with Section 5.1, selected soil samples were analysed for the CoPC for the borehole locations, including:

- ◊ Metals (Arsenic, Cadmium, Chromium, Copper, Mercury, Nickel, Lead and Zinc)
- ◊ TRH
- ◊ BTEXN
- ◊ PAHs
- ◊ OCPs
- ◊ PCBs and
- ◊ Asbestos.

A summary of the soil analytical program, including which samples were selected for analysis and the chemicals analysed, is provided in **Table 4**.

6.2.2 Groundwater

The groundwater sample was analysed for the following broad suite of potential contaminants:

- ◊ Metals (dissolved),
- ◊ TRH,
- ◊ BTEXN,
- ◊ PAH,
- ◊ VOCs, and
- ◊ Hardness.

A summary of the groundwater analytical program, including which samples were selected for analysis and the chemicals analysed, is provided in **Table 6**.

7 DATA QUALITY ASSESSMENT

A detailed Quality Assurance (QA) assessment, including the analysis of Quality Control (QC) samples, was carried out by GEE to determine the suitability and reliability of field procedures and analytical results. In accordance with Appendix C of Schedule B2 of the NEPM (reference 3), the QA assessment used Data Quality Indicators (DQIs) which included:

- precision.
- accuracy (or bias).
- representativeness.
- completeness.
- comparability.

The detailed QA assessment report is provided in **Appendix H** and concludes that the field procedures and analytical data presented herein are of suitable quality for making conclusions and recommendations regarding the contamination status of the site.

8 ASSESSMENT CRITERIA

To determine the significance of any contaminants detected in the soil and groundwater samples, appropriate Site Assessment Criteria (SAC) and Groundwater Acceptance Criteria (GAC) have been defined and are based on guidelines endorsed by the NSW EPA.

8.1 SOIL SAMPLES

For any contamination assessment, it is necessary to assess the human health and ecological risks associated with the presence of site contamination. Also, in accordance with the NSW EPA Site Auditor Guidelines (reference 3) and section 3.6 of Schedule B1 of the NEPM (reference 12), residential sites need to address aesthetics such as highly malodorous soils.

8.1.1 Aesthetics

Aesthetics were assessed in the field during borehole drilling and no significant observations were noted.

8.1.2 Ecological Risk

The site will be completely covered by buildings or pavements meaning that ecological interaction with soil contaminants will be limited. Therefore, ecological criteria are not relevant.

8.1.3 Health Risk

To address potential health impacts at the site, GEE has compared the analytical results against Health Investigation Levels (HILs) and Health Screening Levels (HSLs), provided in NEPM (2013), *Schedule B(1) – Guidelines on Investigation Levels for Soil and Groundwater* (reference 12).

8.1.3.1 Health Investigation Levels (HILs)

HILs for soil contaminants are provided in Table 1A(1) of the NEPM guidelines and have been developed for a broad range of metals and organic substances (i.e. PAHs, Pesticides and PCBs). Asbestos and petroleum hydrocarbons are not included.

The HILs are scientifically based, generic assessment criteria to be used as a first stage (or tier 1) screening of potential risks to human health from chronic exposure to contaminants. They are intentionally conservative and are based on the following four different and generic land use scenarios (or exposure scenarios) which are based on long-term exposures for the most sensitive receptor populations exposed:

- ◊ HIL-A described as residential with accessible soils and includes childcare centres, preschools and primary schools,
- ◊ HIL-B which includes residential with minimal opportunities for soil access and includes high rise apartments,
- ◊ HIL-C for public space such as parks and secondary schools, and
- ◊ HIL-D for commercial/industrial sites.

Each land-use scenario assumes different exposure scenarios and when land is used for more than one purpose, the HILs that are relevant to the more sensitive land-use should be adopted. In this regard the most relevant land use scenario would be HIL-B. A summary of the HIL-B criteria is provided in **Table 7**. Finally, it is important to note that an exceedance of the HIL does not necessarily mean that there is a risk, rather further appropriate evaluation and/or investigation is required.

8.1.3.2 Health Screening Levels (HSLs)

Health Screening Levels (HSLs) were developed for selected petroleum hydrocarbons (specifically TRH C_6 – C_{10} or F1 fraction, TRH >C_{10} – C_{16} or F2 fraction and BTEX) by the Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC CARE) and have been adopted and are referenced in Schedule B(1) of NEPM (2013 – reference 12) and Friebel & Nadebaum (2011 – reference 13). HSLs were also developed for asbestos in soil by the WA DoH (reference 14) and have been adopted in Schedule B(1) of NEPM.

Petroleum Hydrocarbons

The assessment of petroleum hydrocarbon contamination is primarily driven by human health concerns relating to:

1. Volatile components (e.g., TRH C_6 – C_{10}, TRH >C_{10} – C_{16} and Benzene) which have the potential to cause health issues via vapour intrusion (e.g., from inhalation), and
2. Direct contact with the hydrocarbons.

For vapour intrusion, different HSLs apply for different land use scenarios, different soil types (i.e. sand, silt and clay) and different depths. For the purpose of this investigation, criteria relevant for shallow (0m to 1m) soils has been adopted because they are the most conservative and most of the samples collected for analysis were from less than 1m depth. For soil type, the criteria for sand soils have been adopted because this was the dominant soil type.

With respect to land-use, there are five scenarios:

- ◊ HSL-A for low density residential sites
- ◊ HSL-B for high density residential sites
- ◊ HSL-C for recreational/open space areas
- ◊ HSL-D for commercial and industrial sites
- ◊ HSL – Intrusive Maintenance Workers

The first four land-use scenarios are based on the land-use at the lowest level (i.e. either ground or basement) because if vapour exposure is acceptable at this level, it can be assumed that it is also acceptable for the floors above ground level. In this regard, HSL-D is applicable for vapour intrusion for this part of the site. However, the HSL-A/B criteria has been adopted as a preliminary assessment of the analytical results. Intrusive maintenance worker HSLs are also relevant but are much higher than the soil vapour criteria.

For direct contact, which is also appropriate for the part of the site, different HSLs apply for various land-use scenarios. And the most appropriate for this site are those relating to HSL-B.

In summary, and for the purpose of a preliminary assessment of the results, GEE has adopted the lowest criteria from the HSLs for vapour intrusion (HSL-A/B), HSLs for the protection of intrusive maintenance workers and HSLs for direct contact (HSL-B). Like with the HILs, an exceedance of the HSL does not necessarily mean that there is a risk, rather further appropriate evaluation and/or investigation is required. A summary of the HSLs adopted for the site is provided in **Table 7**.

Asbestos is Soil

GEE has adopted a zero-tolerance approach to asbestos on the surface and therefore any detection of asbestos fibres will result in the need for further assessment and/or management. For asbestos fibres in soil, the HSL screening levels are based on scenario-specific likely exposure levels associated with land-use. Considering the proposed land-use GEE has adopted criteria for residential land-use with minimal access to soil.

Table 7: Soil Site Assessment Criteria (SAC)

Analyte	Health Investigation/Screening Levels (HILs/HSLs) (mg/kg)	Reference
Total Metals		
Arsenic	500	(HIL-B) Table 1A – Reference 12
Cadmium	150	(HIL-B) Table 1A – Reference 12
Chromium (VI)	500	(HIL-B) Table 1A – Reference 12
Copper	30,000	(HIL-B) Table 1A – Reference 12
Lead	1,200	(HIL-B) Table 1A – Reference 12
Mercury (inorganic)	120	(HIL-B) Table 1A – Reference 12
Nickel	1,200	(HIL-B) Table 1A – Reference 12
Zinc	60,000	(HIL-B) Table 1A – Reference 12
Polycyclic Aromatic Hydrocarbons (PAHs)		
Benzo(a)pyrene	--	--
Benzo(a)pyrene TEQ	4	(HIL-B) Table 1A – Reference 12
TOTAL PAHs	400	(HIL-B) Table 1A – Reference 12
Organochlorine Pesticides (OCP)		
Heptachlor	10	(HIL-B) Table 1A – Reference 12
Aldrin + Dieldrin	10	(HIL-B) Table 1A – Reference 12
Endrin	20	(HIL-B) Table 1A – Reference 12
Chlordane	90	(HIL-B) Table 1A – Reference 12
Endosulfan	400	(HIL-B) Table 1A – Reference 12
HCB	15	(HIL-B) Table 1A – Reference 12
Methoxychlor	500	(HIL-B) Table 1A – Reference 12
DDE + DDD + DDT	600	(HIL-B) Table 1A – Reference 12
BTEXN		
Benzene	0.5	(HSL-A/B Vapour) Table 1A(3) – Reference 12
Toluene	160	(HSL-A/B Vapour) Table 1A(3) – Reference 12
Ethylbenzene	55	(HSL-A/B Vapour) Table 1A(3) – Reference 12
Xylenes	40	(HSL-A/B Vapour) Table 1A(3) – Reference 12
Naphthalene	3	(HSL-A/B Vapour) Table 1A(3) – Reference 12
Total Recoverable Hydrocarbons (TRH)		
(F1) C6 – C10	45	(HSL-A/B Vapour) Table 1A(3) – Reference 12
(F2) >C10 - C16	110	(HSL-A/B Vapour) Table 1A(3) – Reference 12
(F3) >C16 – C34	5,800	(HSL-B direct contact) Table A4 – Reference 13
(F4) >C34 – C40	8,100	(HSL-B direct contact) Table A4 – Reference 13
PCBs		
Total PCBs	1	(HIL-B) Table 1A – Reference 12
Asbestos		
Surface Soil	No Visible Asbestos	(HSL-B) Table 7 – Reference 12
Buried Bonded	0.04%	(HSL-B) Table 7 – Reference 12
Buried Friable	0.001%	(HSL-B) Table 7 – Reference 12

8.2 GROUNDWATER

When assessing groundwater contamination, all relevant environmental values should be considered and the term '*environmental values*' includes consideration of human as well as ecological health and incorporates values associated with what are commonly termed the 'beneficial uses' of groundwater (reference 15). Typically, groundwater quality at a particular site may protect some or all of the following environmental values:

- ◊ Aquatic ecosystems both fresh and marine waters,
- ◊ Human uses - such as drinking water,
- ◊ Human health in non-use scenarios, and
- ◊ Buildings and structures.

The environmental values that are considered to be relevant to this site are:

- ◊ Aquatic ecosystems, specifically those relating to freshwater ecosystems because the EC values of the water were relatively low, although the receiving water is expected to be Sydney Harbour which is marine water, and
- ◊ Human health in non-use scenarios, particularly from potential vapours from volatile contaminants which might be within the groundwater.

Drinking Water GILs are <u>not</u> considered to be relevant because:

- ◊ There are no potable extraction bores located within close proximity to the site,
- ◊ The pH of the groundwater in all wells was found to be outside the recommended potable range of 6.5 to 8.5 when monitored (refer to Table 4), and
- ◊ The region is surrounded by reticulated water.

The protection of buildings and structures are also considered relevant given that the basements will likely intercept the water table. Specifically, this would relate to the aggressivity of the water on the buried concrete and/or unprotected steel elements and should be covered by the geotechnical investigation of the site.

8.2.1 Aquatic Ecosystems

For the protection of aquatic ecosystems, GEE has adopted relevant criteria from the NEPM (2013), *Schedule B(1) – Guidelines on Investigation Levels for Soil and Groundwater* (reference 12) which are based on the ANZECC/ARMCANZ (2000) *Water Quality Guidelines* (reference 11). Specifically freshwater Groundwater Investigation Levels (GILs), although if freshwater trigger values are not available then marine water trigger values have been adopted.

ANZECC/ARMCANZ (2000) specifies four sets of trigger values corresponding with different levels of protection for ecosystem conditions. Trigger values, derived using the statistical distribution method, relate to the protection of 99%, 95%, 90% and 80% of species in an aquatic ecosystem. Three "categories of ecosystem conditions" are developed in the guidelines and the level of protection afforded to a particular ecosystem should be determined following consideration of site conditions in consultation with key stakeholders. Additionally, for each chemical, ANZECC/ARMCANZ (2000) provides three grades of guideline trigger values: high, moderate or low reliability trigger values. The grade depends on the data available and hence the confidence or reliability of the final figures.

The groundwater investigation levels (GILs) in NEPM (2013) relate to "slightly to moderately disturbed" aquatic ecosystems and adopt trigger values with high or moderate reliability. In the absence of high or moderate reliable fresh water criteria, GEE has adopted the high or moderate reliable criteria for marine water. Then, in the absence of high or moderate trigger values, GEE has applied low reliability trigger levels from ANZECC/ ARMCANZ (2000) as 'first pass' criteria. It should be noted that low reliability trigger values were originally derived from insufficient data sets and should not be used as final guidelines but as indicative interim figures, which if exceeded, suggest the need to obtain further data.

Finally, the GILs are not acceptance criteria, rather they are used to trigger further consideration of groundwater contamination and its potential impact on the aquatic ecosystem.

8.2.2 Human Health

For protection of human health in non-use scenarios, GEE has adopted the NEPM (2013) Health Screening Levels (HSLs) developed by the Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC CARE) and published by Friebel & Nadebaum (2011 – reference 13). The groundwater HSLs relate to petroleum hydrocarbons and are used to assess potential human health concerns relating to volatile components (e.g. TRH $C_6 – C_{10}$, TRH $>C_{10} – C_{16}$ and Benzene) which have the potential to cause health issues via vapour intrusion (e.g. from inhalation). Different HSLs apply for different land use scenarios, different soil types (i.e. sand, silt and clay) and different depths.

With respect to land-use, there are five scenarios:

HSL-A for low density residential sites

HSL-B for high density residential sites

HSL-C for recreational/open space areas

HSL-D for commercial and industrial sites

HSL – Intrusive Maintenance Workers

For the site, and the exposure scenario provided by the proposed development, both HSL-B and HSLs for intrusive maintenance workers are relevant. Although, the proposed basements are likely to be 'drained' rather than 'tanked' which means that groundwater can enter the basement before being pumped to the regional stormwater system. In this regard, any vapour derived from the groundwater can penetrate basement then the lift shafts and stair wells and migrate into the upper floors. As such HSL-A criteria would be appropriate. Although the HSL/A and HSL-B criteria are the same.

With respect to soil type, sand has been adopted for a preliminary screening of the results because this is the most conservative. However, it is noted that the groundwater beneath the site is actually within sandstone bedrock. Finally, HSLs for water at a depth of between 2m to <4m have been adopted because this was the shallowest depth of groundwater beneath the site.

In summary, and for the purpose of a preliminary assessment of the results, GEE has adopted the lowest criteria from the HSLs for vapour intrusion (HSL-A/B) and the HSLs for the protection of intrusive maintenance workers. A summary of the Groundwater Assessment Criteria (GAC) adopted for this site is provided in **Table 8**.

Table 8: Groundwater Assessment Criteria (GACs)

Analyte	Units	GAC [1]			
		Protection of Aquatic Ecosystems [1]	Source	Human Health	Source
Metals					
Arsenic V	µg/L	13	Table 1C (fresh) - Reference 12	-	-
Cadmium	µg/L	0.2 [3]	Table 1C (fresh) - Reference 12	-	-
Chromium IV	µg/L	1.0	Table 1C (fresh) - Reference 12	-	-
Copper	µg/L	1.4 [3]	Table 1C (fresh) - Reference 12	-	-
Lead	µg/L	3.4 [3]	Table 1C (fresh) - Reference 12	-	-
Nickel	µg/L	11 [3]	Table 1C (fresh) - Reference 12	-	-
Zinc	µg/L	8 [3]	Table 1C (fresh) - Reference 12	-	-
Mercury (inorganic)	µg/L	0.06	Table 1C (fresh) - Reference 12	-	-
Total Recoverable Hydrocarbons (TRH)					
(F1) C6 – C10	µg/L	–	–	1,000 [2]	HSL-A/B Table 1A(4) - Reference 12
(F2) >C10 - C16	µg/L	–	–	1,000 [2]	HSL-A/B Table 1A(4) - Reference 12
(F3) >C16 – C34	µg/L	–	–	-	-
(F4) >C34 – C40	µg/L	–	–	-	-
Volatile Organic Compounds (VOCs) – Includes BTEXN					
Benzene	µg/L	950	Table 1C (fresh) - Reference 12	800 [2]	HSL-A/B Table 1A(4) - Reference 12
Toluene	µg/L	*180*	(fresh) - Reference 11	NL	HSL-A/B Table 1A(4) - Reference 12
Ethylbenzene	µg/L	*80*	(fresh) - Reference 11	NL	HSL-A/B Table 1A(4) - Reference 12
para-Xylene	µg/L	200	Table 1C (fresh)- Reference 12	-	-
ortho-Xylene	µg/L	350	Table 1C (fresh)- Reference 12	-	-
Total Xylenes	µg/L	-	-	NL	HSL-A/B Table 1A(4) - Reference 12
1.2-Dichloropropane	µg/L	*900*	(marine & fresh) - Reference 11	-	-
1.3-Dichloropropane	µg/L	*1,100*	(marine & fresh) - Reference 11	-	-
Carbon Tetrachloride (tetrachloromethane)	µg/L	*240*	(marine & fresh) - Reference 11	-	-
1,1-Dichloroethane	µg/L	*90*	(fresh) - Reference 11	-	-
1.2-Dichloroethane	µg/L	*1,900*	(marine & fresh) - Reference 11	-	-
1.1.1-Trichloroethane	µg/L	*270*	(marine & fresh) - Reference 11	-	-
1.1.2-Trichloroethane	µg/L	6,500	(fresh) - Reference 11	-	-
1.1.2.2-Tetrachloroethane	µg/L	*400*	(marine & fresh) - Reference 11	-	-
1.2.3-Trichlorobenzene	µg/L	*3*	(marine & fresh) - Reference 11	-	-
Chloroform (trichloromethane)	µg/L	*370*	(marine & fresh) - Reference 11	-	-
Chlorobenzene	µg/L	55	(marine & fresh) - Reference 11	-	-
1.2-Dichlorobenzene	µg/L	160	Table 1C (fresh)- Reference 12	-	-
1.3-Dichlorobenzene	µg/L	260	Table 1C (fresh)- Reference 12	-	-
1.4-Dichlorobenzene	µg/L	60	Table 1C (fresh)- Reference 12	-	-
Vinyl Chloride (chloroethylene, Chloroethene)	µg/L	100	(marine & fresh) - Reference 11	-	-
1,1-Dichloroethylene (1,1-dichloroethene)	µg/L	700	(marine & fresh) - Reference 11	-	-
Trichloroethylene (trichloroethene, TCE)	µg/L	330	(marine & fresh) - Reference 11	-	-
Tetrachloroethylene (tetrachloroethene)	µg/L	70	(marine & fresh) - Reference 11	-	-
1,1-dichloroethene	µg/L	–	–	-	-
1,2-dichloroethene	µg/L	–	–	-	-
Polycyclic Aromatic Hydrocarbons (PAHs)					
Naphthalene	µg/L	16	Table 1C (fresh) - Reference 12	NL	HSL-B Table 1A(4) - Reference 12
Anthracene	µg/L	*0.4*	Table 1C (fresh) - Reference 12	-	-
Phenanthrene	µg/L	*2*	Table 1C (fresh) - Reference 12	-	-
Fluoranthene	µg/L	*1.4*	Table 1C (fresh) - Reference 12	-	-
Benzo(a)pyrene	µg/L	*0.2*	Table 1C (fresh) - Reference 12	-	-

Table Notes:

[1] Criteria shown in italics are low reliability trigger values used as a first pass assessment in the absence of more reliable trigger values.

[2] Criteria depends on the type of soil and depth of sample. Criteria adopted is for sand soil at a depth of between >2m and <4m.

[3] Criteria is hardness dependant and will increase with increasing hardness.

NL = Criteria is Non Limiting (which means that it cannot result in an unacceptable vapour risk)

9 ANALYTICAL RESULTS

9.1 SOIL SAMPLES

A copy of the laboratory report is provided in **Appendix I**, while a summary of the results is provided in **Table 9** and discussed in the following sections.

9.1.1 Metals

Three (3) primary soil samples were analysed during this investigation for arsenic, cadmium, chromium, copper, lead, nickel, mercury and zinc. In summary, there were no sample concentrations above the health-based SAC.

9.1.2 TRH and BTEXN

Three (3) primary soil samples were selected for TRH and BTEXN analysis. In summary, the sample concentrations were below the relevant health-based SAC.

9.1.3 PAHs

Three (3) primary soil samples were analysed for PAHs, which includes Benzo(a)Pyrene (BaP) Toxicity Equivalent Quotient (BaP TEQ). In summary, the sample concentrations were below the relevant health-based SAC.

9.1.4 OCPs

Two (2) primary soil samples were analysed for OCPs, and the concentrations were less than the adopted health-based SAC and the laboratory LOR.

9.1.5 PCBs

Two (2) primary soil sample was analysed for PCBs, and the concentrations were less than the adopted health-based SAC and the laboratory LOR.

9.1.6 Asbestos

The presence of asbestos fibres was inspected in two of the near surface samples which are most likely to be impacted by asbestos. Asbestos fibres were not detected in each of the soil samples.

TABLE 9 - Summary of the Soil Analytical Results (HIL-B & HSL-B)

Analyte	Units	Limit Of Reporting (LOR)	Sample ID	BH101	BH102	BH102	BH102	Site Acceptance Criteria
			Location	0.2 – 0.3	0.1 – 0.2	0.1 – 0.2	0.4 – 0.5	Health Based Criteria (HILs & HSLs)
			Depth	ZZ250724-01	ZZ250724-02	ZZ250724-100	ZZ250724-03	
			Type	Nat. SAND	Fill – Gravelly SAND	Blind Replicate of ZZ250724-02	Nat. SAND	
Asbestos ID Soil								
Asbestos ID	g/kg	0.1g/kg (0.01%)		<0.1	<0.1	-	-	**0.04%**
Trace Analysis [2]	Yes/No	-		No	No	-	-	**0.001%**
Lab Comment [3]	-	-		Not Visible	Not Visible	-	-	**-**
Metals								
Arsenic	mg/kg	4		14	12	8	6	**500**
Cadmium	mg/kg	0.4		<0.4	<0.4	<0.4	<0.4	**150**
Chromium[1]	mg/kg	1		34	16	17	29	**500**
Copper	mg/kg	1		2	7	13	<1	**30,000**
Lead	mg/kg	1		13	24	19	9	**1,200**
Mercury	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1	**120**
Nickel	mg/kg	1		2	7	24	1	**1,200**
Zinc	mg/kg	1		7	35	35	6	**60,000**
BTEXN								
Benzene	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2	**1**
Toluene	mg/kg	0.5		<0.5	<0.5	<0.5	<0.5	**160**
Ethylbenzene	mg/kg	1		<1	<1	<1	<1	**55**
Total Xylenes	mg/kg	1		<1	<1	<1	<1	**40**
Naphthalene	mg/kg	1		<1	<1	<1	<1	**3**
TRH								
TRH C_6 - C_{10} (F1)	mg/kg	25		<25	<25	<25	<25	**45**
TRH >C_{10} - C_{16} (F2)	mg/kg	50		<50	<50	<50	<50	**110**
TRH >C_{16}-C_{34} (F3)	mg/kg	100		<100	<100	<100	<100	**5,800**
TRH >C_{34}-C_{40} (F4)	mg/kg	100		<100	<100	<100	<100	**8,100**
PAHs								
Benzo(a)pyrene	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	**-**
Benzo(a)pyrene TEQ	mg/kg	0.5		<0.5	<0.5	<0.5	<0.5	**4**
Total PAHs	mg/kg	0.05		<0.05	<0.05	<0.05	<0.05	**400**
OCPs								
Heptachlor	mg/kg	0.1		<0.1	<0.1	<0.1	-	**10**
Aldrin	mg/kg	0.1		<0.1	<0.1	<0.1	-	**10**
Dieldrin	mg/kg	0.1		<0.1	<0.1	<0.1	-	
Endrin	mg/kg	0.1		<0.1	<0.1	<0.1	-	**20**
gamma-Chlordane	mg/kg	0.1		<0.1	<0.1	<0.1	-	**90**
alpha-chlordane	mg/kg	0.1		<0.1	<0.1	<0.1	-	
Endosulfan I	mg/kg	0.1		<0.1	<0.1	<0.1	-	**400**
Endosulfan II	mg/kg	0.1		<0.1	<0.1	<0.1	-	
HCB	mg/kg	0.1		<0.1	<0.1	<0.1	-	**15**
Methoxychlor	mg/kg	0.1		<0.1	<0.1	<0.1	-	**500**
DDE + DDD + DDT	mg/kg	0.1		<0.1	<0.1	<0.1	-	**600**
Remaining OCPs	mg/kg	0.1		<0.1	<0.1	<0.1	-	-
PCBs								
Total PCBs	mg/kg	0.1		<0.1	<0.1	<0.1	-	**1**

TABLE NOTES:

Analytical results which exceed any of the Health-based Investigation Levels (HILs) are shown as **bold** text.

1 – Total Chromium analytical result includes chromium (III) and (VI).

2 - Trace Analysis relates results from Polarised Light microscopy and Dispersion Staining Techniques (Fibres not Visioble to the naked eye)

3 – The lab will comment if they observed asbestos fibres even if the concentration was below the LOR of 0.1g/kg

9.2 GROUNDWATER SAMPLES

Groundwater from the three monitoring wells were analysed for dissolved metals, TRH, BTEXN, PAH, VOCs and Hardness. Hardness was calculated to assist with determining the correct criteria for some of the metals. The laboratory results are provided in the laboratory reports in **Appendix F**, while the tabulated results are provided in **Table 10** and summarised below.

9.2.1 Metals

The concentration of dissolved metals was below the GAC except for copper, nickel and zinc in the some of the wells. Further discussion about the significance of the exceedances is provided in Section 10.5.

9.2.2 TRH and BTEXN

The concentrations of TRH and BTEXN in each of the groundwater samples were below the GAC. In this regard, TRH and BTEXN do not present a groundwater contamination issue at the site.

9.2.3 PAHs

The concentration of PAHs in the groundwater were all less than the GAC where available. In this regard, PAHs do not present a groundwater contamination issue at the site.

9.2.4 VOCs

The concentration of VOCs (excluding BTEXN) in the groundwater were all less than the GAC where available. In this regard, VOCs do not present a groundwater contamination issue at the site.

TABLE 10 - Groundwater Analytical Results

Sample Date		22-July-2024				Groundwater Assessment Criteria (GAC) [1]	
Sample Identification		ZZ060824-01	ZZ060824-101	ZZ060824-02	ZZ060824-03	Protection of Aquatic Ecosystems	Human Health
Analyte	Units	Primary sample from BH101	Blind Duplicate of BH101	Primary sample from BH102	Primary sample from BH1		
Dissolved Metals							
Arsenic	µg/L	<1	<1	<1	<1	**13**	-
Cadmium	µg/L	<0.1	<0.1	<0.1	<0.1	**0.2**	-
Chromium	µg/L	<1	<1	<1	<1	**1**	-
Copper	µg/L	<1	<1	**3**	**2**	**1.4**	-
Lead	µg/L	<1	<1	<1	<1	**3.4**	-
Mercury	µg/L	<0.05	<0.05	<0.05	<0.05	**0.06**	-
Nickel	µg/L	**20**	**19**	8	2	**11**	-
Zinc	µg/L	**37**	**36**	**31**	7	**8**	-
BTEXN							
Benzene	µg/L	<1	<1	<1	<1	**500**	**800**
Toluene	µg/L	1	1	<1	<1	**180**	**NL**
Ethylbenzene	µg/L	<1	<1	<1	<1	**80**	**NL**
m+p-xylene	µg/L	2	2	<2	<2	**200**	-
o-xylene	µg/L	2	2	<1	<1	**350**	-
Naphthalene	µg/L	<1	<1	<1	<1	**50**	**NL**
TRH							
vTRH C_6 - C_{10} (F1)	µg/L	65	55	<10	<10	-	**1,000**
TRH >C_{10} - C_{16} (F2)	µg/L	92	95	<50	<50	-	**1,000**
TRH >C_{16}-C_{34} (F3)	µg/L	<100	<100	<100	<100	-	-
TRH >C_{34}-C_{40} (F4)	µg/L	<100	<100	<100	<100	-	-
PAHs							
Anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	**0.4**	--
Phenanthrene	µg/L	<0.1	<0.1	<0.1	<0.1	**2**	--
Fluoranthene	µg/L	<0.1	<0.1	<0.1	<0.1	**1**	--
Benzo(a)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	**0.2**	--
Naphthalene	µg/L	0.1	0.1	<0.1	<0.1	**50**	**NL**
Total PAHs	µg/L	0.1	0.12	<0.1	<0.1	--	--
VOCs (Excluding BTEXN)							
1.2-Dichloropropane	µg/L	<1	<1	<1	<1	***900***	-
1.3-Dichloropropane	µg/L	<1	<1	<1	<1	***1,100***	-
Carbon Tetrachloride (tetrachloromethane)	µg/L	<1	<1	<1	<1	***240***	-
1,1-Dichloroethane	µg/L	<1	<1	<1	<1	**250**	-
1.2-Dichloroethane	µg/L	<1	<1	<1	<1	***1900***	-
1.1.1-Trichloroethane	µg/L	<1	<1	<1	<1	***270***	-
1.1.2-Trichloroethane	µg/L	<1	<1	<1	<1	***1,900***	-
1.1.2.2-Tetrachloroethane	µg/L	<1	<1	<1	<1	***400***	-
1.2.3-Trichlorobenzene	µg/L	<1	<1	<1	<1	***3***	-
Chlorobenzene	µg/L	<1	<1	<1	<1	***55***	-
Chloroform (trichloromethane)	µg/L	4	4	2	<1	**370**	-
1.2-Dichlorobenzene	µg/L	<1	<1	<1	<1	**160**	-
1.3-Dichlorobenzene	µg/L	<1	<1	<1	<1	***260***	-
1.4-Dichlorobenzene	µg/L	<1	<1	<1	<1	***60***	-
Vinyl Chloride (chloroethylene, Chloroethene)	µg/L	<10	<10	<10	<10	***100***	-
Trichloroethylene (trichloroethene, TCE)	µg/L	<1	<1	<1	<1	**330**	-
Tetrachloroethylene (tetrachloroethene)	µg/L	<1	<1	<1	<1	**70**	-
1,3,5-trimethyl benzene	µg/L	10	11	<1	<1	-	-
1,2,4-trimethyl benzene	µg/L	19	21	<1	<1	-	-
Remaining VOCs	µg/L	<10	<10	<10	<10	-	-
Other Tests							
Hardness	mg/L	79	80	22	29	-	-

Notes:

-- No Criteria Established / Not Analysed

LOR = Limit of Reporting

NL = Not Limiting

Results exceeding the Aquatic Ecosystem criteria shown are in **bold** text and shaded in yellow

Results exceeding the Human Health Criteria shown are Shaded in **RED**

10 SITE CHARACTERISATION

A summary of the information obtained herein, and results of this assessment is presented below.

10.1 SITE HISTORY AND POTENTIAL FOR CONTAMINATION

The Site

The site was originally part of a larger parcel of land that was originally Crown Land, comprising bushland / scrubland.

Initial development of the site occurred between 1943 and 1951 when the northern allotment (Lot 31) was cleared of vegetation and a house was constructed at the eastern end of this allotment.

In 1957 the Forestville RSL Sub- branch acquired the southern allotment (Lot 2589) via long term lease before clearing the bushland and soon thereafter they constructed the first RSL Club building in the centre of this allotment. The two bowling greens at the southern end of the site were also constructed at this time along with the existing memorial garden in the front (east) of the Club building. The northern part of this allotment was converted into a carpark.

Between 1961 and 1965, a tennis court was constructed between the Club building and the western boundary.

Between 1965 and 1970, the main club building was either replaced or significantly renovated, with several more alterations and additions to the Club building occurring up until 2005, including the removal of the tennis court.

Between 1994 and 2005, the RSL Club acquired the northern allotment (Lot 31) and subsequently demolished the former house and expanded their carpark across this allotment.

From 2005, there were no significant changes to the site and its layout.

In summary, the historical site activities are considered to be relatively benign from a land contamination perspective. However, the age of the original house in the northern part of the site, and the original RSL Club building, suggests that Asbestos Containing Material (ACM) and lead based paints may have been used. Therefore, any renovations,

maintenance, or the demolition of these structures, may have resulted in near surface soils being impacted with lead and/or ACM.

Surrounding Land

The surrounding land within 150m of the site was tree covered bushland / scrubland, with some agricultural land further to the east, until 1951 when the early stages of development of Forestville began. Between 1951 and 1961 the surrounding area quickly transitioned into low density residential dwellings with recreational parkland and a school nearby, as returned soldiers started to populate the area and assisted with construction of the houses.

The historical business directories noted some former businesses within proximity of the site which are often related to site contamination and have the potential to cause chemical contamination beyond their boundaries via groundwater or vapour migration. This included a number of service stations and dry cleaners within 400m of the site. However, the location of these businesses and distances relative to the site suggest that any contamination from these properties are unlikely to have impacted the site.

10.2 Site Description and Surface Conditions

At the time of this investigation, the site was occupied by a two-storey Forestville RSL Club building that was located centrally to the site and was bounded by an open-air, asphalt paved carpark to the north, two bowling greens to the south (making up the entire southern portion of the site), and a war memorial garden to the east (between the club building and Melwood Avenue). The lower level of the club building interior comprised the gaming room, dining areas, kitchen, bars in the main area (accessible to customers), various staff rooms and storage rooms (some utilised for minor storage of cleaning/industrial chemicals), the loading dock and the cooler room in the back area. On the upper level were mixed-use rooms, including a board room, function rooms, a snooker room and offices. Neither of the bowling greens were being utilised (or maintained) for lawn bowling, and half of the bowling green on the western side had been converted into an alfresco dining area.

Near the bowling greens and attached to the rear south-western corner of the RSL Club building, was the green keepers shed that was being utilised for storage of maintenance equipment, outdoor furniture/décor and minor storage of chemicals (including paint/lacquer and turpentine). Adjacent to the eastern border (between the main entrance driveway and the memorial garden) was a small shed containing pumps relating to fire response systems. This fire response pump shed was concurrently being utilised for minor

storage of fertiliser (dynamic lifter) and fuel in jerry cans (which presented a moderate hydrocarbon odour).

Based on the regional topography and the site inspection there is potential for fill material to have been introduced to site to raise the site surface or create a level platform for the existing buildings and the bowling greens in the southern portion of the site. Particularly across the southern and south-eastern parts of the site as indicated by the former geotechnical boreholes by JK Geotechnics Pty Ltd (reference 3).

Aside from the moderate hydrocarbon odour noted within the fire response pump shed, there were no other unusual odours or surface staining that could be potentially associated with contamination. There was no evidence of under-ground or above-ground, fuel or chemical, storage tanks observed across the site. Building demolition was observed within the garden bed adjacent to the back fence at the southern end of the site (which presents potential asbestos contamination), otherwise, there was no obvious evidence of Asbestos Containing Materials (ACM) on the surface of the site.

10.3 Potential For Contamination

Based on the site history information, combined with a review of the site's physical and environmental setting, the main areas of environmental concern (AEC) and sources of potential contamination are as follows:

Onsite Areas and Sources of Potential Contamination	
Entire Site. In Particular the south-eastern half.	Fill Material: There exists some fill material (i.e. either imported soil material or previously disturbed soil) beneath the site. If imported to site, and sourced from an unknown location, the quality of fill material is also unknown and potentially contaminated.
Vehicle Accessible Areas / Carparks (particularly the northern carpark)	Past and Present Vehicle Movements: Vehicles accessing and parking on site may have resulted in leaks and spillage of fuel and oils.
Entire Site	Use of Lead based Paint and Asbestos Containing Materials (ACM) on existing and former structures: Any renovations or maintenance work over the years, or the demolition of former structures, may have resulted in near surface soil being impacted with lead and asbestos.
Bowling Greens (Southern Portion of Site)	Application of Fertilisers and Herbicides for Bowling Green Maintenance: As part of the maintenance and upkeep of the bowling greens, fertiliser and/or herbicide application may have resulted in near surface soils and potentially underlying soils being impacted with pesticides and to a lesser extent metals.

Areas of Current and Past Storage of Chemicals. (i.e. Greenkeepers shed, Fire Response System Shed & Storage Room in the north-west corner of the RSL Club)	Minor Storage of Chemicals: This may have resulted in top-down contamination from leaking or spilt chemicals. However, the concrete floor slab in these areas is likely to have restricted any migration of the chemicals.
Off-Site Areas and Sources of Potential Contamination	
-	-

The potential for contamination is from to-down sources and therefore the potential contaminated media comprises the near surface soil profile (either fill and/or natural soil). Groundwater is unlikely to be contaminated, although it has been assessed as part of this investigation. Soil Vapour is also unlikely to be contaminated but should be assessed if significant volatile contamination is encountered in the soil and/or groundwater.

Based on the proposed development, the potential receptors to any contamination (if present) include:

- ◊ Workers (adults) engaged to construct the proposed development including earthworks contractors for the basement,
- ◊ Existing users of the site (adults and children),
- ◊ Future occupants and visitors of the new development (adults and children), and
- ◊ Workers (adults) engaged to maintain any buried services/utilities.

10.4 Limited Soil Assessment

A preliminary assessment of the fill and natural soil conditions across the northern part of the site was undertaken by GEE in conjunction with a geotechnical investigation to assist with the structural design of the proposed development. These two boreholes complement three previous geotechnical boreholes drilled across the southern part of the site in 2022 by JK Geotechnics. GEE notes that the number of sampling points does not meet the minimum number that is recommended for adequate site characterisation by the NSW EPA and Australian standards, however, the number of sampling points was considered to be appropriate as a preliminary assessment of soil conditions and potential contamination.

The site stratigraphy, as observed in the boreholes typically comprised a layer of fill material (i.e. either imported or previously disturbed soil) over natural sandy soil which then graded into sandstone bedrock. The depth of the fill layer varied from 0.1m to 1.65m

and the depth to bedrock varied from 1.5m to 3.1m with the deeper fill and rock occurring in the south-eastern part of the site.

During drilling, the encountered fill material and any natural soil were geologically logged, taking care to describe the presence and depth of any adverse aesthetics such as discolouration or odours. There was no obvious Asbestos Containing Material (ACM) observed during drilling and no adverse odours or staining which might indicate contamination.

To provide a preliminary assessment of the fill and natural soil profile in our two boreholes, GEE submitted three (3) soil samples to a NATA accredited laboratory for analysis of metals (arsenic, cadmium, chromium, copper, nickel, lead, mercury and zinc), TRH, BTEXN, PAHs, OCPs, PCBs and asbestos. The analytical results were compared against a relevant set of health-based SAC appropriate for the proposed land-use and the exposure scenario applicable to that land-use. In summary, the sample concentrations were all below the health-based SAC.

10.5 GROUNDWATER CONDITIONS

Groundwater conditions beneath the site were assessed using water collected from three (3) monitoring wells installed across the site (BH101, BH102 and BH1). The location of the wells is shown on **Figure 2**.

The stabilised level of groundwater within the wells was measured along with field measurements taken during sampling of the groundwater wells. The depth to groundwater varied from 2.19m bgs to 3.23m bgs and based on the associated groundwater elevations it was inferred that the groundwater is flowing through defects within the bedrock formation and towards the south-east and Bates Creek which is approximately 500m from the site.

Immediately prior to sampling, the wells were dipped to determine the depth to stabilised water level and, using a clear disposable bailer, assessed for the presence of a hydrocarbon sheen and Light Non-Aqueous Phase Liquids (LNAPLs) which may be floating on the water. Neither sheen, nor LNAPLs, were observed on the surface of the water.

Water within the monitoring wells were slightly acidic, while the electrical conductivity was very low. The dissolved oxygen results were relatively low, which is common for groundwater.

To assess the presence of contamination within the groundwater beneath the site, water from the wells were analysis for dissolved metals (arsenic, cadmium, chromium, copper, nickel, lead, zinc and mercury), TRH, PAHs, VOCs (including BTEXN) and hardness. The analytical results were then compared against a set of Groundwater Acceptance Criteria (GACs) considered appropriate for the environmental setting of the site. In summary, the groundwater concentrations were below the GAC except for copper, nickel and zinc in the some of the wells.

It is noted that the GAC for these metals relates to soft water (approximately 30 mg/L CaCo3 or less) and can be adjusted for the actual hardness of the water. However, it is noted that the GAC for cadmium, copper and zinc provided in Table 8, and reiterated in Table 10, relates to soft water (approximately 30 mg/L CaCo3 or less) and the GAC increases with increasing water hardness as seen below.

Location	Sample Concentration (µg/L)	'First Pass' GAC (µg/L)	Hardness (mg.$CaCO_3$/L)	Actual GAC (µg/L)
		Copper		
BH102	**3**	1.4	22	1.4
BH1	**2**		29	1.4
		Nickel		
BH101	20	11	79	25.05
		Zinc		
BH101	**37**	8	79	18.2
BH102	**31**		22	8.0

When adjusting for hardness the concentrations in the wells, the sample concentrations are below the final GAC, except for copper in BH102 and BH1 and zinc in BH101 and BH102. Notwithstanding this, GEE considers that the elevated copper and zinc concentrations do not pose a significant contamination issue for the site or environmental setting because:

- ◊ The contaminants of concern relating to the site are from top-down sources,
- ◊ The regional groundwater in the vicinity of the site is confined or partly confined, discrete, water-bearing zones within the underlying sandstone bedrock formation,
- ◊ The bedrock formation of sandstone is expected to have a relatively low permeability (in the order of 10^{-7}m/sec – reference 16) and would restrict the migration of contaminants,

- ◊ The GAC is the expected water quality at the 'Point of use' or 'discharge' from groundwater into a surface body of water and the nearest water body is ~500m to the south-east.
- ◊ No significant source of these metals was identified in the fill and natural soils across the site.
- ◊ The concentrations detected are commensurate with metal concentrations within the groundwater across urban areas.

11 CONCLUSION AND RECOMMENDATIONS

GEE was commissioned the Forestville RSL Club Limited to undertake a Preliminary Site (contamination) Investigation (PSI) for 20 - 22 Melwood Avenue, Forestville NSW 2087 (herein referred to as the 'site'). The site covers an area of approximately 8,970m^2 (by calculation) and encompasses the following legal allotments:

- Lot 31 Deposited Plan (DP) 366454 (No. 20 Melwood Ave)
- No. 22: Lot 2589 DP 752038 (No. 22 Melwood Ave)

The investigation relates to the proposed redevelopment of the Forestville RSL Club which will also include the construction of a senior's living development on the site. Currently the site is occupied by an RSL Club building and memorial garden in the central portion of the site, car parking on the northern portion of the site, and disused bowling greens in the southern portion of the site.

GEE understands that this PSI was requested by Council as part of the planning process to address the requirements of *State Environmental Planning Policy (Resilience and Hazards) 2021* (reference 1) by identifying past and present contaminating activities, potential contamination types and to assess the need for further investigation.

The investigation comprised a:

- Review of previous investigation reports relevant to the site,
- Review of the site's history to provide an understanding of past and present site activities which in turn may indicate sources and areas of potential contamination as well as potential chemicals of concern,
- Review of the environmental and physical setting in which the site lies,
- A detailed site inspection for potential sources of contamination, and
- Preparation of an initial Conceptual Site Model (CSM), and
- Preliminary field investigations including the sampling and analysis of soil samples from two boreholes positioned across the northern part of the site and the sampling and analysis of groundwater from three wells installed across the site.

In summary, the review of the site's history, combined with a review of the site's physical and environmental setting, revealed evidence of potential contamination associated with the site from on-site sources. The potential for contamination is from to-down sources and

therefore the most likely media to be impacted is near surface fill and/or natural soil material. Groundwater was assessed as being unlikely to be contaminated, although it was assessed as part of this investigation. Soil Vapour was also assessed as being unlikely to be contaminated.

The limited soil sampling and analysis program completed herein did not identify any significant contamination. Likewise, the groundwater assessment did not identify any significant contamination. However, not all the Areas of Environmental Concern (AEC) have been assessed and therefore GEE recommends that a Detailed Site Investigation (DSI) be completed in accordance with the NSW Environment Protection Authority (NSW EPA) *Contaminated Land Guidelines: Consultants Reporting on Contaminated Land* (reference 1) and NEPM (2013) Schedule B(2) *Guideline on Site Characterisation* (reference 3). The objective of the DSI should be to better characterise the contamination status of the fill and natural soil across the site with particular focus on the AEC.

Finally, it is the opinion of GEE that the site can be made suitable for the proposed use, subject to the carrying out of a DSI and, if necessary, the preparation and implementation of a remediation action plan and standard remediation works. Particularly given that most of the site will be excavated to at least 3m depth and into the bedrock formation to construct the proposed two basements. In this regard, GEE considers that the DSI can be completed as a condition of DA consent and during the Construction Certificate (CC) stage.

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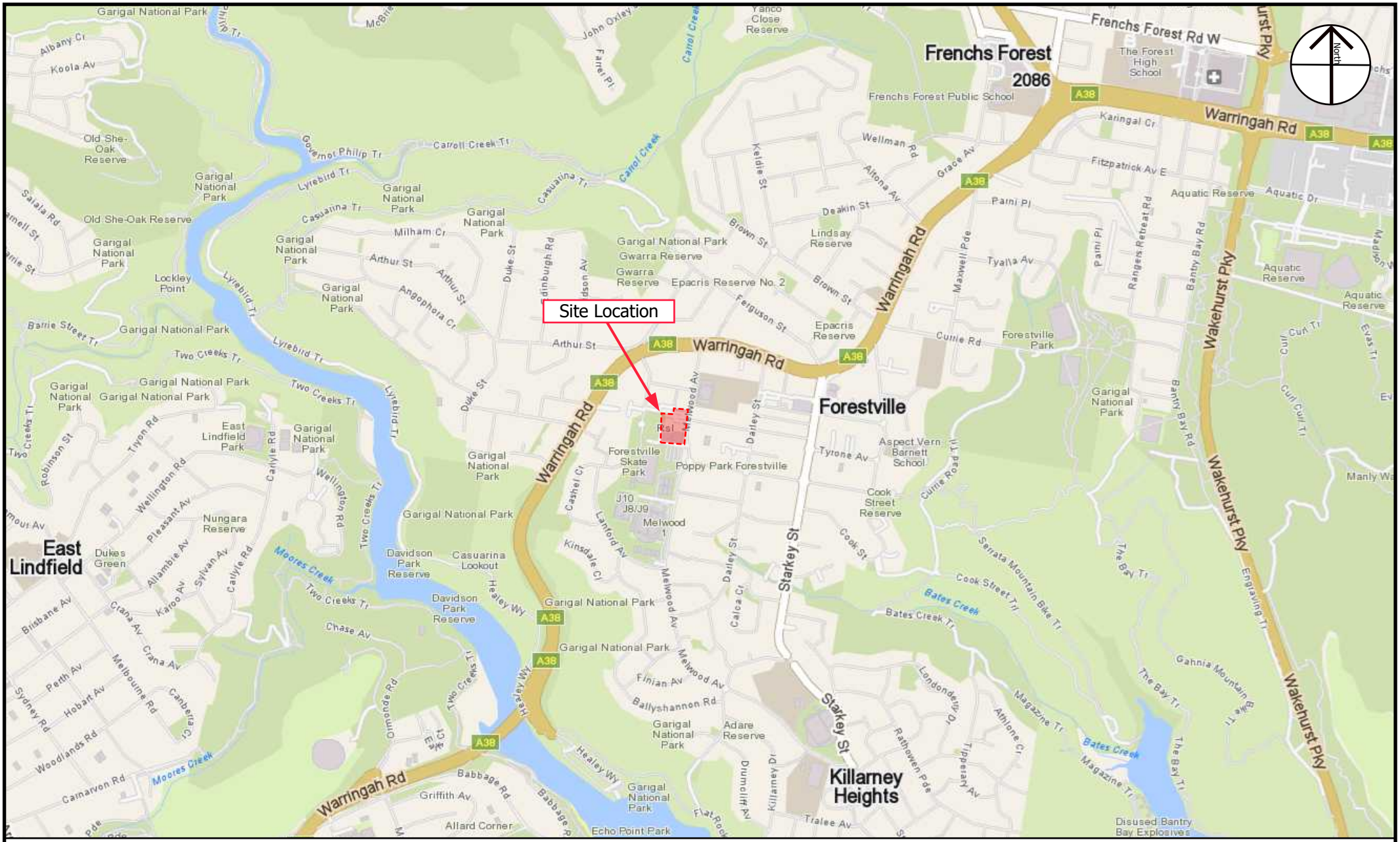
FIGURES

1 – SITE LOCATION MAP
2 - SITE PLAN (SURVEY)
3 – SITE PLAN (AERIAL)



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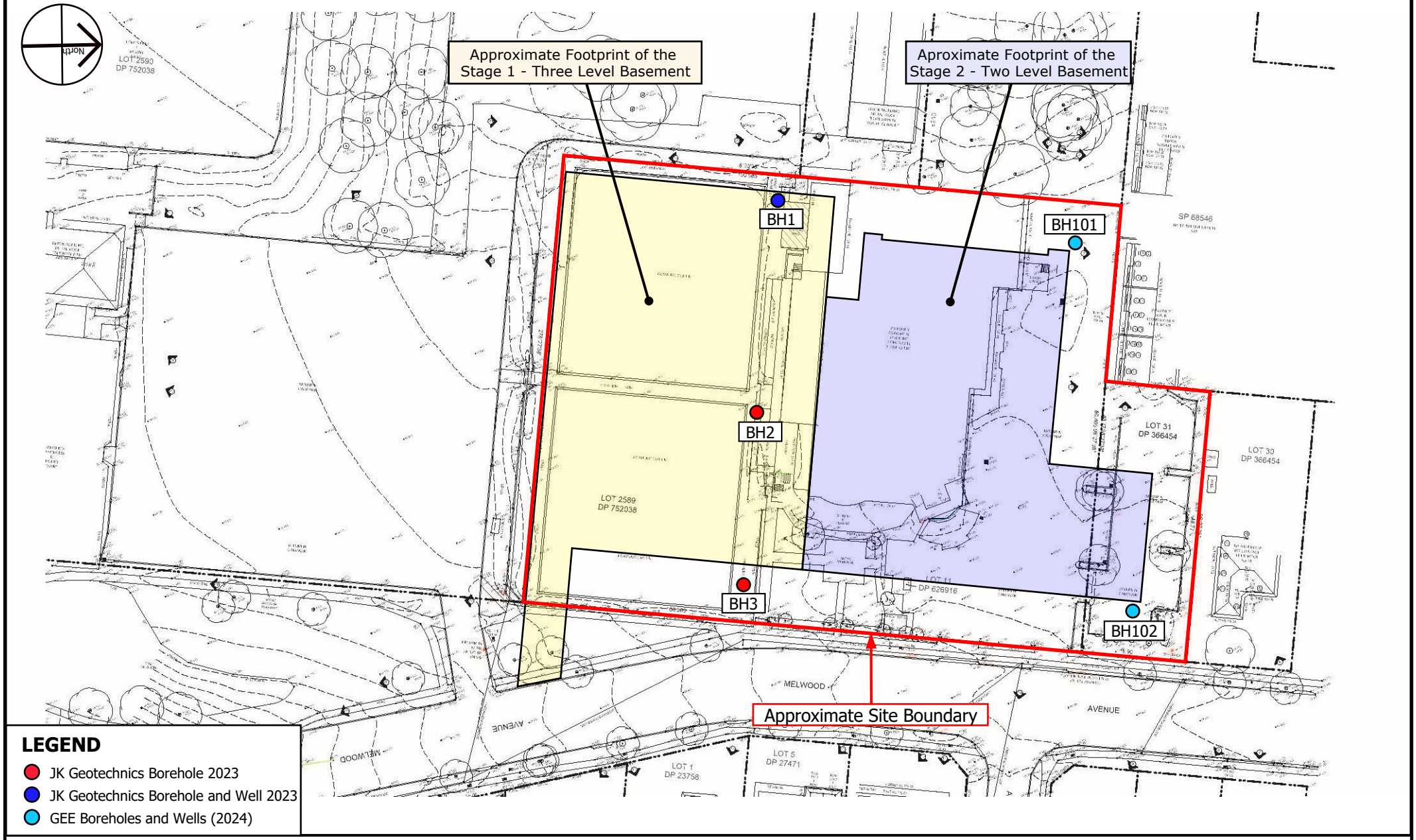
TITLE: SITE LOCATION MAP 20 - 22 Melwood Ave, Forestville NSW	SCALE: **N.T.S**	DATE: **27 April 2025**	FIGURE No.: **1**
	DRAWN: **S. McC**	JOB No.: **E24016FOR**	REVISION: **A**



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TITLE: **Site Plan (SURVEY)** 20-22 Melwood Ave, Forestville NSW	SCALE: **N.T.S**	DATE: **29 April 2025**	FIGURE No.: **2**
	DRAWN: **S. McC**	JOB No.: **E24016FOR**	REVISION: A

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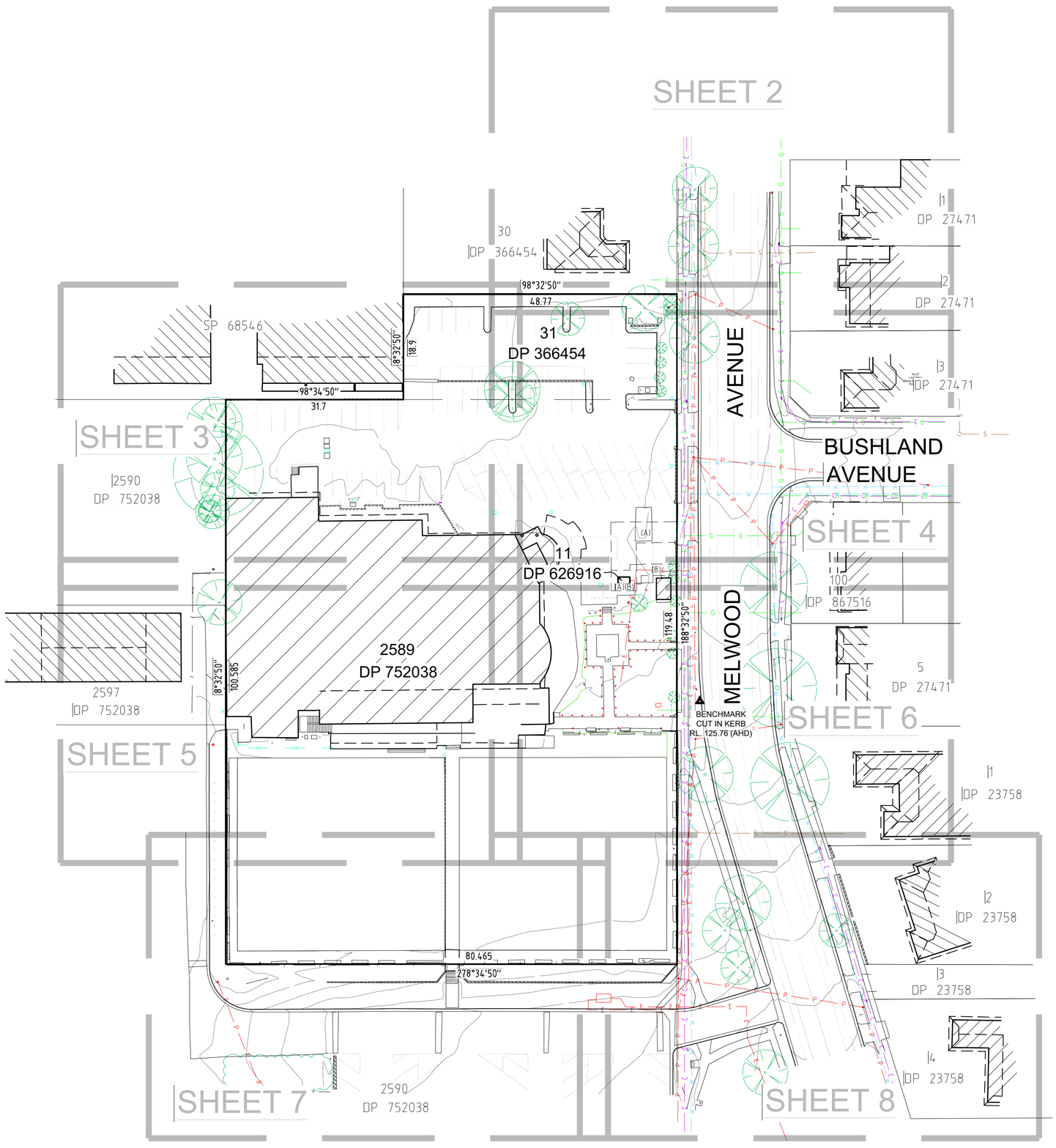
TITLE: **SITE PLAN (AERIAL)** 20-22 Melwood Ave, Forestville NSW	SCALE: **N.T.S**	DATE: **15 Aug 2024**	FIGURE No.: **3**
	DRAWN: **S. McC**	JOB No.: **E24016FOR**	REVISION: **A**

APPENDIX A

SURVEY AND ARCHITECTURAL PLANS

LEGEND

BENCH MARK	▲
TELSTRA PIT	TEL
ELECTRIC LIGHT POLE	ELP
ELECTRIC LIGHT BOLLARD	LB
ELECTRICITY PIT	EPIT
ELECTRICITY BOX	EL
POWER POLE	PP
POWER POLE WITH LIGHT	PPL
GRATED INLET PIT	GIP
DRAIN	DRN
SEWER MANHOLE	SMH
SEWER INSPECTION POINT	SIP
STOP VALVE	SV
HYDRANT	HYD
WATER METER	WM
WATER TAP	TAP
PIT WITH CONCRETE LID	CLID
PIT WITH METAL LID	MLID
STREET SIGN	SS
BOLLARD	BOL
PLAQUE	PLQ
VEHICLE CROSSING	(VC)
PRAM CROSSING	(PC)
WINDOW	W
DOOR	D
HEAD/SILL	H/S
COMMUNICATIONS (DBYD)	C
ELECTRICITY (U'GROUND DBYD)	E
ELECTRICITY (OVERHEAD)	P
SEWER (DBYD)	S
WATER (DBYD)	W
GAS (DBYD)	G
STORMWATER PIPE	SW



NOTES

1. THE BOUNDARIES HAVE NOT BEEN MARKED ON GROUND
2. THE BOUNDARY SURVEY (DIMENSIONS AND AREA) HAVE BEEN SURVEYED IN ACCORDANCE WITH SURVEYING AND SPATIAL INFORMATION REGULATION 2017 CLAUSE 10 "IDENTIFICATION SURVEYS" AND ARE SUBJECT TO FINAL SURVEY
3. ADJOINING BOUNDARIES WITHIN THIS FILE HAVE BEEN ADDED FROM DCDB DATA OBTAINED FROM NSW LAND REGISTRY SERVICES AND ARE APPROXIMATE ONLY
4. ORIGIN OF **MGA2020** COORDINATES IS TAKEN FROM **SSM 489** - E.**334242.546**, N.**6262662.240** IN MELWOOD AVENUE
5. ORIGIN OF LEVELS ON A.H.D. IS TAKEN FROM **SSM 489** R.L. **126.683** (A.H.D.) IN MELWOOD AVENUE
6. CONTOUR INTERVAL **0.5m**
7. CONTOURS ARE INDICATIVE ONLY. ONLY SPOT LEVELS SHOULD BE USED FOR CALCULATIONS OF QUANTITIES WITH CAUTION
8. KERB LEVELS ARE TO THE TOP OF KERB UNLESS SHOWN OTHERWISE
9. FLOOR LEVELS SHOWN ARE THRESHOLD LEVELS. NO INVESTIGATION OF INTERNAL FLOOR LEVELS HAS BEEN UNDERTAKEN
10. NO INVESTIGATION OF UNDERGROUND SERVICES HAS BEEN MADE. SERVICES HAVE BEEN PLOTTED FROM RELEVANT AUTHORITIES INFORMATION AND HAVE NOT BEEN SURVEYED. ALL RELEVANT AUTHORITIES SHOULD BE NOTIFIED PRIOR TO ANY EXCAVATION ON OR NEAR THE SITE
11. 8/4.7 DENOTES TREE SPREAD OF 8m, TRUNK DIAMETER OF 0.4m & APPROX HEIGHT OF 7m
12. SHOWS APPROXIMATE POSITION OF ROAD LINEMARKING AND IS INDICATIVE ONLY
13. BEARINGS SHOWN ARE MGA (MAP GRID OF AUSTRALIA) ADD APPROX. 1°00' FOR TRUE NORTH

EASEMENTS & RESTRICTIONS

(A) RIGHT OF WAY (GOV GAZ DATED 24-6-1983 FOL 2925 & DP626916)
(B) EASEMENT FOR ELECTRICITY PURPOSES 2 WIDE (GOV GAZ DATED 24-6-1983 FOL 292 & DP626916)

COVENANTS AFFECTING WHOLE OF LOT 31 IN DP366454
- POSITIVE COVENANT (3933586)
- POSITIVE COVENANT (6795670)

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GDA2020

0 8 16 24 32 40
SCALE 1: 400 @ A1

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B	00/00/00	–	00
A	00/00/00	–	00

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Registered Surveyor NSW

Client CONSTRUCTION MANAGEMENT SERVICES

Drawing title
PLAN OF DETAIL AND LEVELS OVER LOT 2589 IN DP 752038 & LOT 31 IN DP 366454, KNOWN AS FORESTVILLE RSL, No.22 MELWOOD AVENUE, FORESTVILLE

datum	AHD	reference number	52165 002DT
site Area	9015m² (CALC)	scale	1: 400 @A1
		date of survey	17/07/2024
LGA	NORTHERN BEACHES	SHEET OF	1 | 11

MGA

TN

APPROX 1:00

No.18
1 STOREY
BRICK RESIDENCE
TILE ROOF

RIDGE 133.47

30
DP 366454

No.18 MELWOOD AVENUE - SOUTH ELEVATION

No.18 MELWOOD AVENUE - EAST ELEVATION

AVENUE

MELWOOD

1
DP 27471

No.23
2 STOREY
BRICK RESIDENCE
TILE ROOF

RIDGE 133.77

2
DP 27471

No.25
1 STOREY
BRICK RESIDENCE
TILE ROOF

RIDGE 130.98

98°32'50"
48.77

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GDA2020

0 2 4 6 8 10
SCALE 1:100 @ A1

SEE SHEET 1 FOR LEGEND & NOTES

ADJOINS SHEET 4

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datum AHD
site Area 9015m² (CALC)
LGA NORTHERN BEACHES

reference number 52165 002DT
scale 1:100 @A1
date of survey 17/07/2024
SHEET 2 OF 11

MGA

TN

APPROX 1°00'

No.17
2 STOREY
BRICK RESIDENCE
TILE ROOF

RIDGE 136.18

SP 68546

No.17
2 STORY
BRICK RESIDENCE
TILE ROOF

RIDGE 136.32

30
DP 366454

BRICK WALL

GARDEN

KERB

BITUMEN CARPARK

31
DP 366454

8°32'50"
18.9

SPEED HUMP

BRICK WALL

98°34'50"
31.7

PALING FENCE

BRICK

WALL

ELEVATION 1 - No.17 FORESTVILLE AVENUE

ELEVATION 2 - No.17 FORESTVILLE AVENUE

SHEET 4

GATE

FENCE

WIRE

GATE

CHAIN

GRASS

POST

2590
DP 752038

2589
DP 752038

BITUMEN CARPARK

CONCRETE LOADING DOCK

CONCRETE

PANEL

WALL

PARAPET 136.50

2 STOREY
BRICK & RENDERED
BUILDING
"FORESTVILLE RSL"

BIN

GATE

ADJOINS

SEE SHEET 1 FOR LEGEND & NOTES

ADJOINS

SHEET 5

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GDA2020

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SCALE 1:100 @ A1

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datum AHD | reference number 52165 002DT
site Area 9015m² (CALC) | scale 1:100 @A1 | date of survey 17/07/2024
LGA NORTHERN BEACHES | SHEET 3 OF 11

ADJOINS

SHEET 2

SHEET 3

ADJOINS

SHEET 6

98°32'50"
48.77

BRICK

GARDEN

TOP

DF

KERB

WALL

BITUMEN CARPARK

31
DP 366454

BRICK

GARDEN

KERB

GRASS

FOOTPATH

CONCRETE

TOP OF KERB

GARDEN

BLOCKED

CONCRETE DRIVEWAY

RENDERED

WALL

AVENUE

2
DP 27471

No.25
1 STORY
BRICK RESIDENCE
TILE ROOF

RIDGE 130.98

3
DP 27471

No.27
1 STORY
BRICK RESIDENCE
TILE ROOF

RIDGE 130.93

PALING

FENCE

CONCRETE

FOOTPATH

GRASS

KERB

(VC)

CONCRETE DRIVEWAY

BUSHLAND AVENUE

MELWOOD

2589
DP 752038

BITUMEN CARPARK

SPEED HUMP

(A)

RAISED PAVEMENT MARKERS

11
DP 626916

(A)(B)

(B)

PAVED

REND

RAISED PAVEMENT MARKERS

100
DP 867516

GATE

No.31
1 STORY
BRICK RESIDENCE
METAL ROOF

PARAPET 129.96

MGA

TN

100

APPROX

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GDA2020

0 2 4 6 8 10
SCALE 1:100 @ A1

SEE SHEET 1 FOR LEGEND & NOTES

ADJOINS

SHEET 6

Revision	Date	Description	Reference
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E	00/00/00	–	00

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date of survey	17/07/2024
LGA	NORTHERN BEACHES
SHEET	4 OF 11

ADJOINS

SHEET 3

MGA

TN

100 APPROX

2590
DP 752038

"FORESTVILLE COMMUNITY HALL"
2 STOREY
BRICK STRUCTURE
TILE ROOF
RIDGE 133.67

2597
DP 752038

2590
DP 752038

2 STOREY
BRICK & RENDERED
BUILDING
"FORESTVILLE RSL"

2589
DP 752038

8°32'50" 100.585

RIDGE 136.49

GUTTER 135.06

SHEET 6

ADJOINS

GATE
FENCE
GRASS
SIGN
METAL
CONCRETE DRIVEWAY
VC()
RAMP
WALL
KERB
DRIVEWAY
BITUMEN
BENCH
BRICK
TOP
EDGE
CONCRETE
PATH
BALCONY
AWNING
GRATED DRAIN
RETAINING
LAWN BOWL GREEN

SEE SHEET 1 FOR LEGEND & NOTES

ADJOINS

SHEET 7

Revision	Date	Description	Reference
H	00/00/00	–	00
G	00/00/00	–	00
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0 2 4 6 8 10

SCALE 1:100 @ A1

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datum AHD
site Area 9015m² (CALC)
LGA NORTHERN BEACHES

reference number 52165 002DT
scale 1:100 @A1
date of survey 17/07/2024
SHEET 5 OF 11

ADJOINS

SHEET 4

SHEET 5

ADJOINS

SHEET 8

11
DP 626916

2589
DP 752038

100
DP 867516

5
DP 27471

1
DP 23758

2 STOREY
BRICK & RENDERED
BUILDING
"FORESTVILLE RSL"

No.31
1 STOREY
BRICK RESIDENCE
METAL ROOF

No.33
2 STOREY
BRICK RESIDENCE
TILE ROOF

No.35
1 STOREY
BRICK RESIDENCE
TILE ROOF

REND SERVICE HUT

ANZAC MONUMENT

BENCHMARK
CUT IN KERB
RL. 125.76 (AHD)

AVENUE

MELWOOD

PARAPET 136.50

GUTTER 135.06

BALCONY

AWNING

RAMP

SYNTHETIC GRASS

LAWN BOWL GREEN

BITUMEN CARPARK

PAVED

GRASS

CONCRETE

EDGE

PATH

METAL

FENCE

BENCH

GARDEN

RETAINING WALL

FOOTPATH

BRICK

GLASS PANEL

CONCRETE DRIVEWAY

GATE

RIDGE 131.65

RIDGE 129.48

PARAPET 129.96

119.48
188°32'50"

MGA

TN

100 APPROX

SEE SHEET 1 FOR LEGEND & NOTES

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GDA2020

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datum	AHD
site Area	9015m² (CALC)
LGA	NORTHERN BEACHES
reference number	52165 002DT
scale	1:100 @A1
date of survey	17/07/2024
SHEET	6
OF	11

ADJOINS

SHEET 5

MGA

TN

APPROX 1:00

2589
DP 752038

LAWN BOWL GREEN

LAWN BOWL GREEN

DRIVEWAY

BITUMEN

SPEED HUMP

KERB

TOP OF BANK

GRASS

CONCRETE

EDGE

FENCE

WALL

BENCH

METAL

BRICK

RET

RETAINING WALL

CONCRETE PATH

AWNING

80.465 CONCRETE

278°34'50"

GARDEN

BLOCK

SUBSTATION

BITUMEN CARPARK

GROUP OF SMALL TREES

2590
DP 752038

SHEET 8

ADJOINS

SEE SHEET 1 FOR LEGEND & NOTES

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SCALE 1:100 @ A1

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datum AHD

reference number 52165 002DT

site Area 9015m² (CALC)

scale 1:100 @A1

date of survey 17/07/2024

LGA NORTHERN BEACHES

SHEET 7 OF 11

ADJOINS

SHEET 6

SHEET 7

ADJOINS

MELWOOD AVENUE

2589
DP 752038

2590
DP 752038

2
DP 23758

3
DP 23758

4
DP 23758

No.37
1 STOREY
BRICK RESIDENCE
TILE ROOF

No.41
1 STOREY
BRICK RESIDENCE
TILE ROOF

MGA

TN

APPROX

SEE SHEET 1 FOR LEGEND & NOTES

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SCALE 1:100 @ A1

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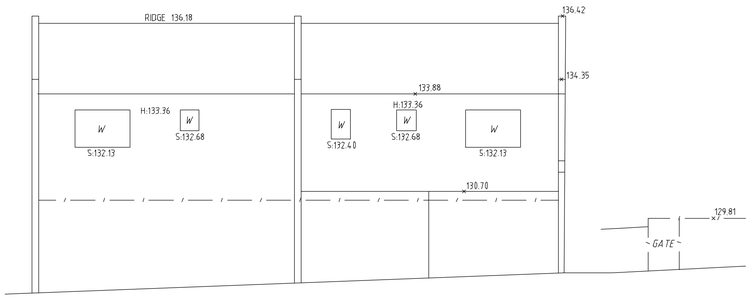
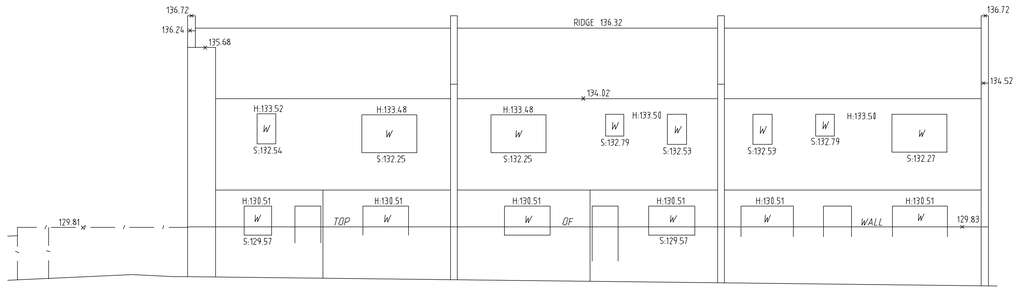
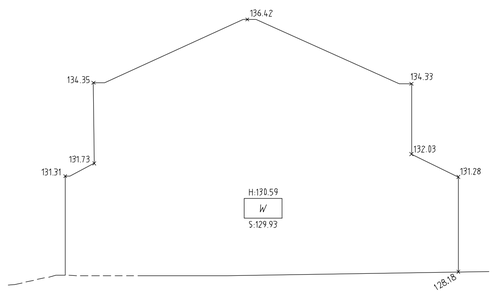
site Area	9015m² (CALC)	scale 1:100 @A1	date of survey 17/07/2024
LGA	NORTHERN BEACHES	SHEET OF 11	8



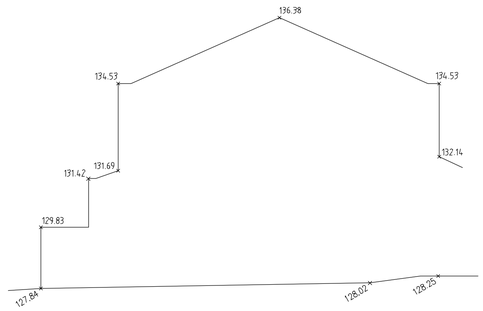
ELEVATION No.1 - 17 FORESTVILLE AVENUE



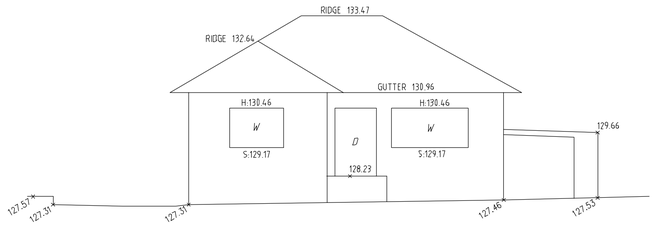
ELEVATION No.2 - 17 FORESTVILLE AVENUE



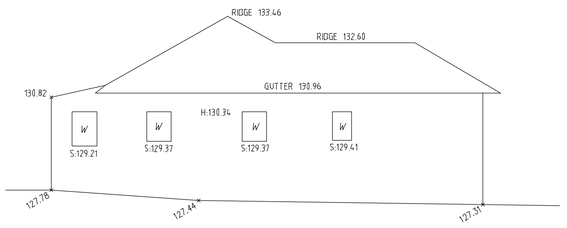
EAST ELEVATION - No.17 FORESTVILLE AVENUE LOT A



EAST ELEVATION - No.17 FORESTVILLE AVENUE LOT B



EAST ELEVATION - No.18 MELWOOD AVENUE



SOUTH ELEVATION - No.18 MELWOOD AVENUE

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GDA2020

SEE SHEET 1 FOR LEGEND & NOTES

0 2 4 6 8 10

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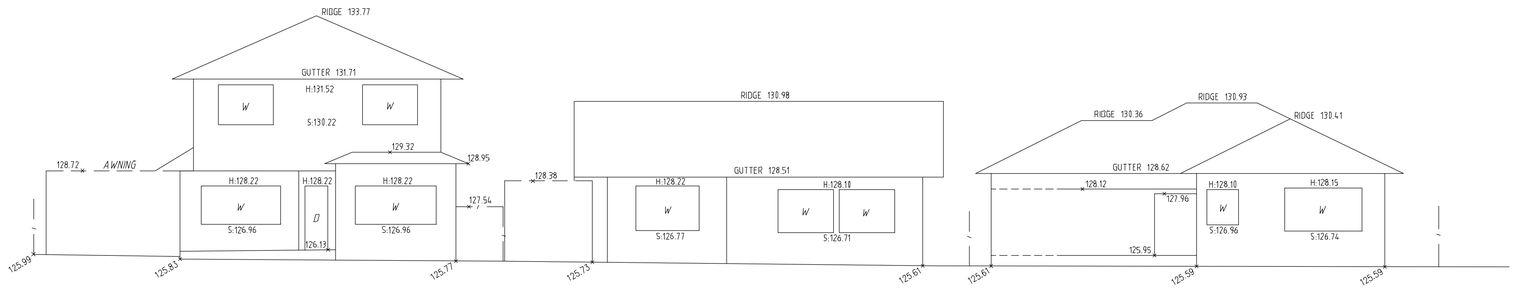
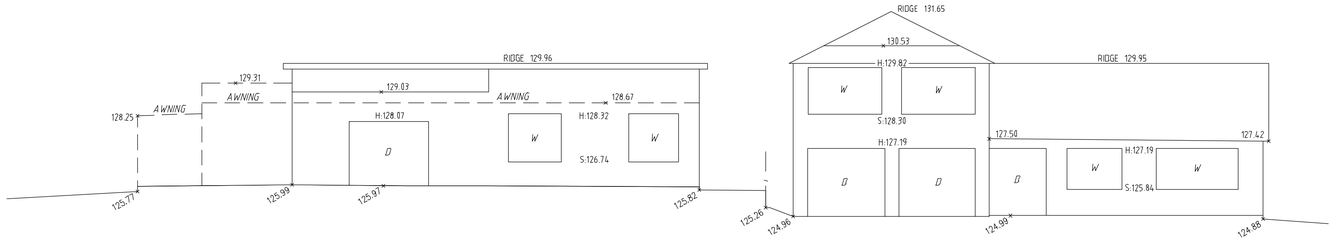
datum AHD
reference number 52165 002DT
site Area 9015m² (CALC)
scale 1:100 @A1
date of survey 17/07/2024
LGA NORTHERN BEACHES
SHEET 9 OF 11



WEST ELEVATION - No.23-27 MELWOOD AVENUE



WEST ELEVATION - No.31-33 MELWOOD AVENUE

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GDA2020

0 2 4 6 8 10

SCALE 1:100 @ A1

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reference number 52165 002DT

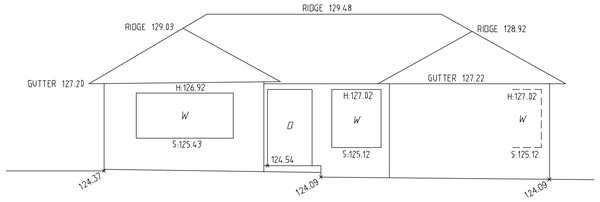
site Area 9015m² (CALC)

scale 1:100 @A1

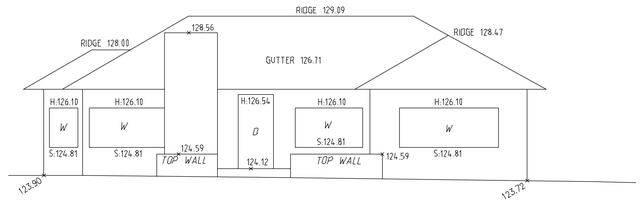
date of survey 17/07/2024

LGA NORTHERN BEACHES

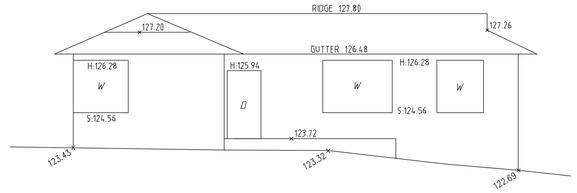
SHEET 10 OF 11



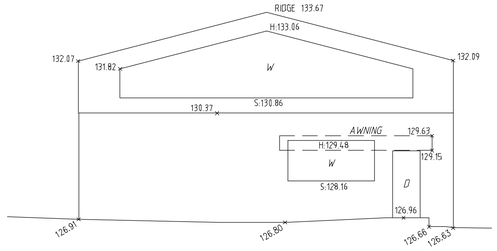
WEST ELEVATION - No.35 MELWOOD AVENUE



WEST ELEVATION - No.37 MELWOOD AVENUE



WEST ELEVATION - No.41 MELWOOD AVENUE



EAST ELEVATION - FORESTVILLE COMMUNITY HALL

BEFORE YOU DIG www.byda.com.au Zero Damage - Zero Harm

GDA2020

0 2 4 6 8 10

SCALE 1:100 @ A1

SEE SHEET 1 FOR LEGEND & NOTES

Revision	Date	Description	Reference
H	00/00/00	–	00
G	00/00/00	–	00
F	00/00/00	–	00
E	00/00/00	–	00

Revision	Date	Description	Reference
D	00/00/00	–	00
C	00/00/00	–	00
B	00/00/00	–	00
A	00/00/00	–	00

LTS CONFIDENCE TOGETHER

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THIS IS THE PLAN REFERRED TO IN MY LETTER DATED:

Registered Surveyor NSW

Client CONSTRUCTION MANAGEMENT SERVICES

Drawing title
PLAN OF DETAIL AND LEVELS OVER LOT 2589 IN DP 752038 & LOT 31 IN DP 366454, KNOWN AS FORESTVILLE RSL, No.22 MELWOOD AVENUE, FORESTVILLE

datum AHD

reference number 52165 002DT

site Area 9015m² (CALC)

scale 1:100 @A1

date of survey 17/07/2024

LGA NORTHERN BEACHES

SHEET 11 OF 11

N

FORESTVILLE RSL REDEVELOPMENT

LOT 2589 & LOT 31
DP752038 & DP 366454
22 MELWOOD AVE, FORESTVILLE NSW 2087

1. MASTERPLAN SET - SITE ANALYSIS

2. CLUB AND SENIORS LIVING - ADG / SHDG ANALYSIS
3. SENIORS LIVING - 3 X BUILDINGS - ADG / SHDG ANALYSIS
4. ADG SOLAR STUDY
5. SENIORS LIVING APARTMENT LAYOUTS

01 EASTERN BUILDING ELEVATION - MELWOOD AVENUE
scale 1:200

DA

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Quattro ARCHITECTURE

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Kingston ACT 2604
Tim Zuber Registered Architect - 2384

ACN 150 198 842 **W:** www.qarch.com.au

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CLIENT
FORESTVILLE RSL

PROJECT
CLUB REDEVELOPMENT
22 MELWOOD AVE
LOT 2589 & LOT 31
DP752038 & DP 366454

DRAWING
COVER SHEET

MASTERPLAN SET

DRAWN	DATE	CHKD
AL	20/04/2023	PH
PROJECT #	SHEET #	REVISION #
22-0716	**DA_A_000**	**G**

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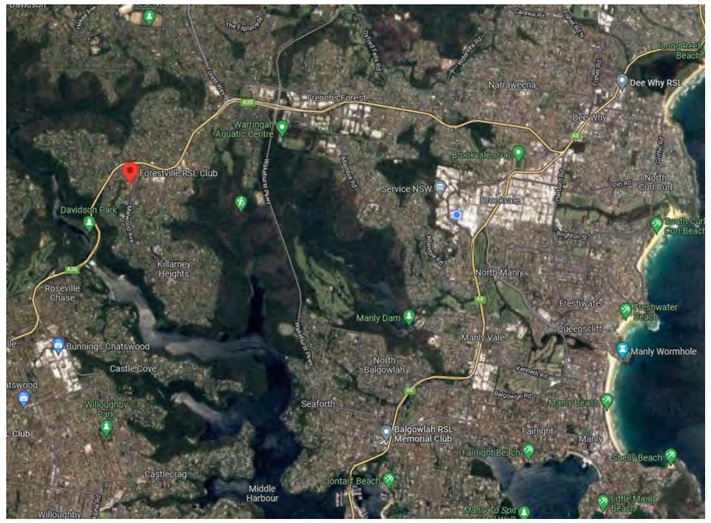


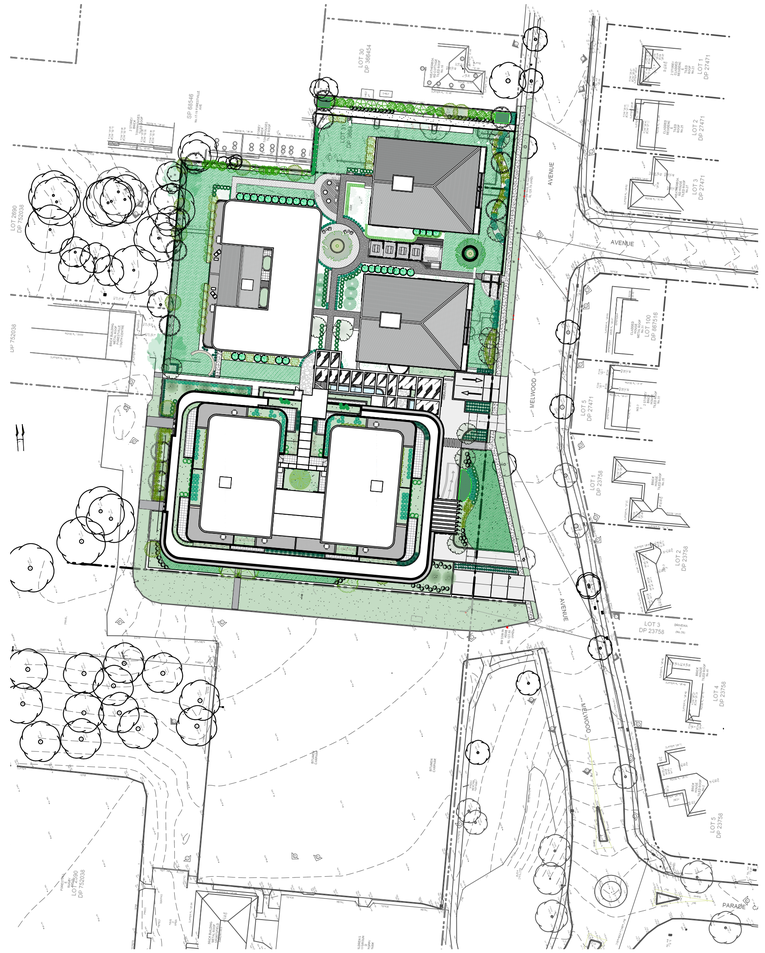
01 REGIONAL MAP
scale 1:NTS

Documentation	Required information	Provided	
		Yes (✓)	No (x)
Site location	Broad map or aerial photo showing site location in relation to surrounding centres, shops, civic/community facilities and transport	✓	
Aerial photograph	Colour aerial photographs of site in its context	✓	
Local context plan	Plan(s) of the existing features of the wider context including adjoining properties and the other side of the street, that show:	✓	
	• pattern of buildings, proposed building envelopes, setbacks and subdivision pattern	✓	
	• land use and building typologies of adjacent and opposite buildings in the street	✓	
	• movement and access for vehicles, servicing, pedestrians and cyclists	✓	
	• topography, landscape, open spaces and vegetation	✓	
	• significant views to and from the site	✓	
	• significant noise sources in the vicinity of the site, particularly vehicular traffic, train, aircraft and industrial noise	✓	

02 PRE-DA REQUIREMENTS
scale 1:-

03 LOCAL MAP
scale 1:NTS

04 SITE PLAN PHOTO EXISTING
scale 1:750



05 PROPOSED SITE PLAN
scale 1:750

N

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CLIENT
FORESTVILLE RSL

PROJECT
CLUB REDEVELOPMENT
22 MELWOOD AVE
LOT 2589 & LOT 31
DP752038 & DP 366454

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DRAWING
REGIONAL SITE PLAN

Scale at A1 1:750
Scale at A3 1:1500
0m 5 10 20 50 60

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MASTERPLAN SET

DRAWN	DATE	CHKD
AL	20/04/2023	PH
PROJECT #	SHEET #	REVISION #
22-0716	DA_A_047	G

Documentation	Required information	Provided	
		Yes (✓)	No (x)
Site context and survey plan	Plan(s) of the existing site based on a survey drawing showing the features of the immediate site including:	✓	
	• boundaries, site dimensions, site area, north point	✓	
	• topography, showing relative levels and contours at 0.5 metre intervals for the site and across site boundaries where level changes exist, any unique natural features such as rock outcrops, watercourses, existing cut or fill, adjacent streets and sites	✓	
	• location and size of major trees on site and relative levels where relevant, on adjacent properties and street trees	✓	
	• location and use of existing buildings or built features on the site	✓	
	• location and important characteristics of adjacent public, communal and private open spaces	✓	
	• location and height of existing windows, balconies, walls and fences on adjacent properties facing the site, as well as parapet and ridge lines	✓	
	• pedestrian and vehicular access points, driveways and features such as service poles, bus stops, fire hydrants etc.	✓	
	• location of utility services, including easements and drainage	✓	
	• location of any other relevant features	✓	

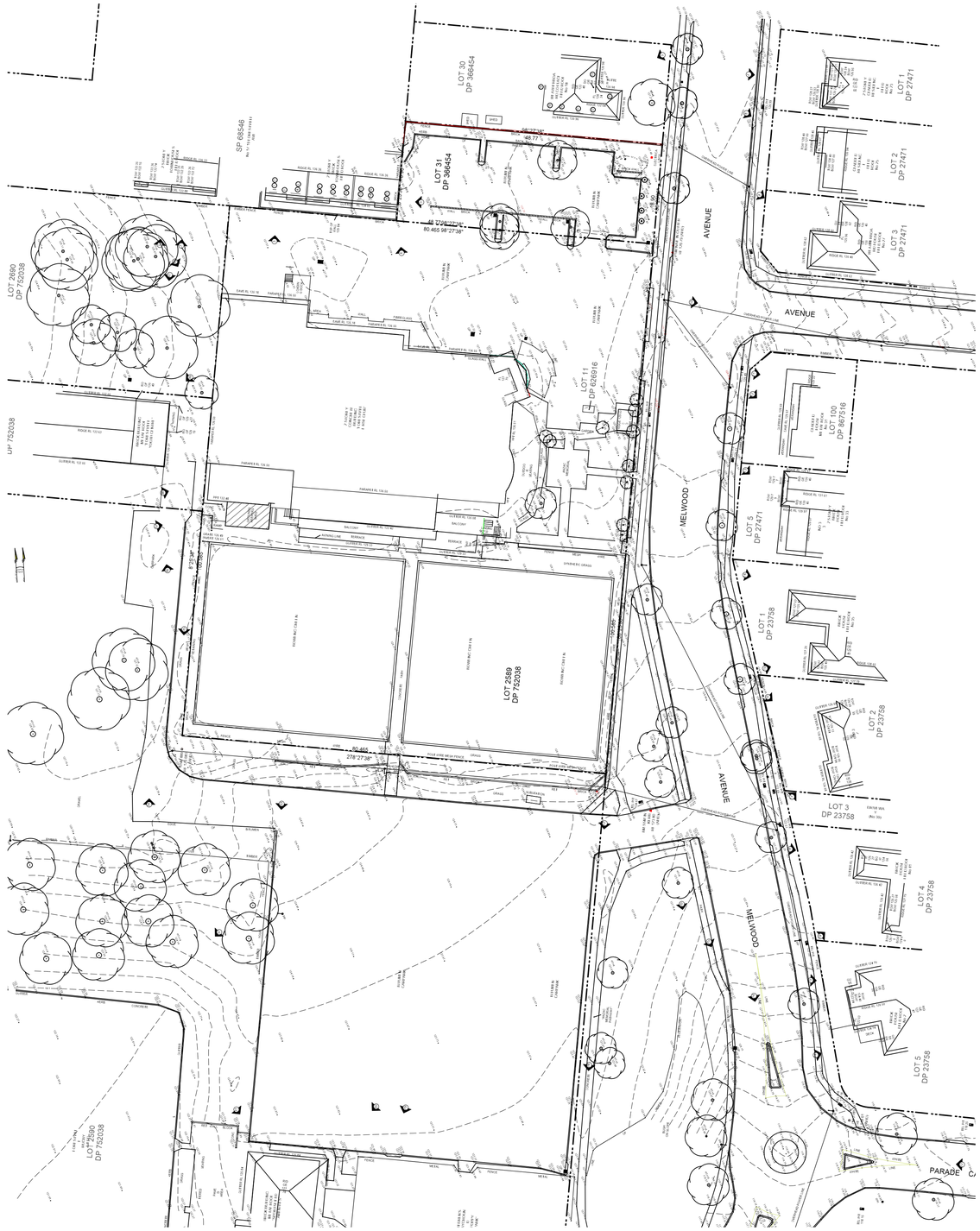
01 PRE-DA REQUIREMENTS
scale 1:-

02 EXISTING RSL CLUB PHOTO
scale 1:-

03 FORESTVILLE YOUTH CENTRE PHOTO
scale 1:-

04 EXISTING RSL CLUB ENTRY PHOTO
scale 1:-

05 MELWOOD AVENUE PHOTO
scale 1:-



01 SITE SURVEY
scale 1:500

DA

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CLIENT
FORESTVILLE RSL

PROJECT
CLUB REDEVELOPMENT
22 MELWOOD AVE
LOT 2589 & LOT 31
DP752038 & DP 366454

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DRAWING
SURVEY & SURROUNDINGS

Scale at A1 1:500
Scale at A3 1:1000
0m 5 10 25 40

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MASTERPLAN SET

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AL	20/04/2023	PH
PROJECT #	SHEET #	REVISION #
22-0716	**DA_A_048**	**G**

N

PHOTOGRAPH LOCATION 1
17-19 FORESTVILLE AVE

PHOTOGRAPH LOCATION 2
17-19 FORESTVILLE AVE

PHOTOGRAPH LOCATION 3
17-19 FORESTVILLE AVE

PHOTOGRAPH LOCATION 4
17-19 FORESTVILLE AVE

PHOTOGRAPH LOCATION 5
17-19 FORESTVILLE AVE

PHOTOGRAPH LOCATION 6
No.18 MELWOOD AVE

PHOTOGRAPH LOCATION 7
No.23 MELWOOD AVE

PHOTOGRAPH LOCATION 8

PHOTOGRAPH LOCATION 9
No.27 MELWOOD AVE

PHOTOGRAPH LOCATION 10
INTERSECTION BUSHLAND AVE

PHOTOGRAPH LOCATION 11
No.31 MELWOOD AVE

PHOTOGRAPH LOCATION 12
No.31 MELWOOD AVE

PHOTOGRAPH LOCATION 13
No.33 MELWOOD AVE

PHOTOGRAPH LOCATION 14
No.35 MELWOOD AVE

PHOTOGRAPH LOCATION 15
No.35 MELWOOD AVE

PHOTOGRAPH LOCATION 16
No.37 MELWOOD AVE

PHOTOGRAPH LOCATION 17
No.37 MELWOOD AVE

PHOTOGRAPH LOCATION 18
No.41 MELWOOD AVE

PHOTOGRAPH LOCATION 19
No.41 MELWOOD AVE

PHOTOGRAPH LOCATION 20
No.2 CANNONS PARADE

PHOTOGRAPH LOCATION 21
No.2 CANNONS PARADE

PHOTOGRAPH LOCATION 22

PHOTOGRAPH LOCATION 23

PHOTOGRAPH LOCATION 24

PHOTOGRAPH LOCATION 25

PHOTOGRAPH LOCATION 26

PHOTOGRAPH LOCATION 27

PHOTOGRAPH LOCATION 28

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PHOTOGRAPH LOCATION 30

PHOTOGRAPH LOCATION 31

PHOTOGRAPH LOCATION 32

PHOTOGRAPH LOCATION 33

PHOTOGRAPH LOCATION 34

PHOTOGRAPH LOCATION 35

PHOTOGRAPH LOCATION 36

PHOTOGRAPH LOCATION 37

PHOTOGRAPH LOCATION 38

PHOTOGRAPH LOCATION 39

PHOTOGRAPH LOCATION 40

PHOTOGRAPH LOCATION 41
FORESTVILLE YOUTH CENTRE

DA

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FORESTVILLE RSL

PROJECT
CLUB REDEVELOPMENT
22 MELWOOD AVE
LOT 2589 & LOT 31
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DRAWING
SURVEY PHOTOS

MASTERPLAN SET

DRAWN	DATE	CHKD
AL	20/04/2023	PH
PROJECT #	SHEET #	REVISION #
22-0716	**DA_A_049**	**G**

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SITE ANALYSIS

SENIORS HOUSING

RESIDENTIAL FLAT BUILDING
APARTMENT DESIGN GUIDE
SENIORS HOUSING GUIDE 2023

3.1 FLOOR TO FLOOR HEIGHT
BOUNDARY SETBACKS 9 mtrs
BUILDING SEPARATION 12mtrs
BUILDING MAX SIZE 20m X 40m

EXISTING CLUB TO MAINTAIN TRADING WHILST NEW CLUB CONSTRUCTED

EXISTING BUILDING LINE RESIDENTIAL NEIGHBOURS

MAINTAIN ACCESS FOR NEIGHBOURS

SPACE AVAILABLE FOR 3 X SENIORS BUILDINGS

PLANNING

R 2 ZONE
HOUSING SEPP
9.5 MTR HEIGHT LIMIT WITH 11.5MTR MAX ALLOWED FOR SERVICING EQUIPMENTS

8.5 MTR HEIGHT LIMIT
FOR THE CLUB FROM THE LEP

SITE AREA = 9,014m^2

EASIL ELOPED PORTION OF SITE

GREAT VEHICULAR ACCESS OFF MELWOOD AVE

IONAL VIEWS

COOL SUMMER WINDS

WINTER SUN

SUMMER SUN

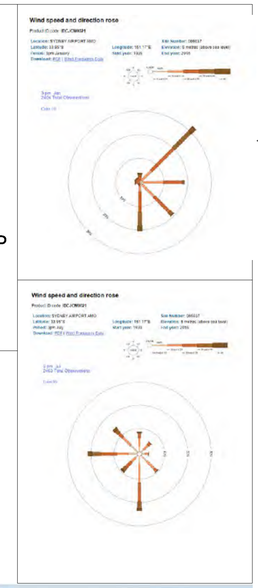
COLD WINTER WINDS

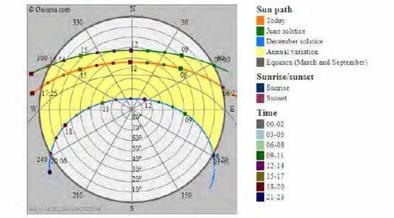
COLD WINTER WINDS

AVENUE

MELWOOD

BUSHLAND





Documentation	Required information	Provided	
		Yes (✓)	No (x)
Streetscape elevations and sections	Photographs or drawings of the site in relation to the streetscape and along both sides of any street that the development fronts, that show:		
	• overall height (storeys, metres) and important parapet/datum lines of adjacent buildings		
	• patterns of building frontage, street setbacks and side setbacks		
	• planned heights		
Analysis	Plan that synthesises and interprets the context, streetscape and site documentation into opportunities and constraints that generate design parameters, including the following information:		
	• orientation and any overshadowing of the site and adjoining properties by neighbouring structures (excludes vegetation). The winter sun path should also be shown between 9 am and 3 pm on 21 June		
	• identification of prevailing wind	✓	
	• the geotechnical characteristics of the site and suitability of the proposed development	✓	
	• the public domain interface and street setback	✓	
	• relationship to and interface with adjacent properties, including side and rear setbacks	✓	
	• ventilation for the subject site and immediate neighbours	✓	
	• proposed building footprint location		
	• retained and proposed significant trees and deep soil zones		
	• proposed communal open space		
	• proposed car park footprint and depth		
	• proposed building entries		
	• supporting written material - this should include technical advice from specialists involved in the development process including landscape architects, arborists, geotechnical engineers and/or contamination specialists where applicable	✓	

01 SITE ANALYSIS
scale 1:500

DA

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CLIENT
FORESTVILLE RSL

PROJECT
CLUB REDEVELOPMENT
22 MELWOOD AVE
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DRAWING
SITE ANALYSIS

Scale at A1 1:500
Scale at A3 1:1000
0m 5 10 25 40

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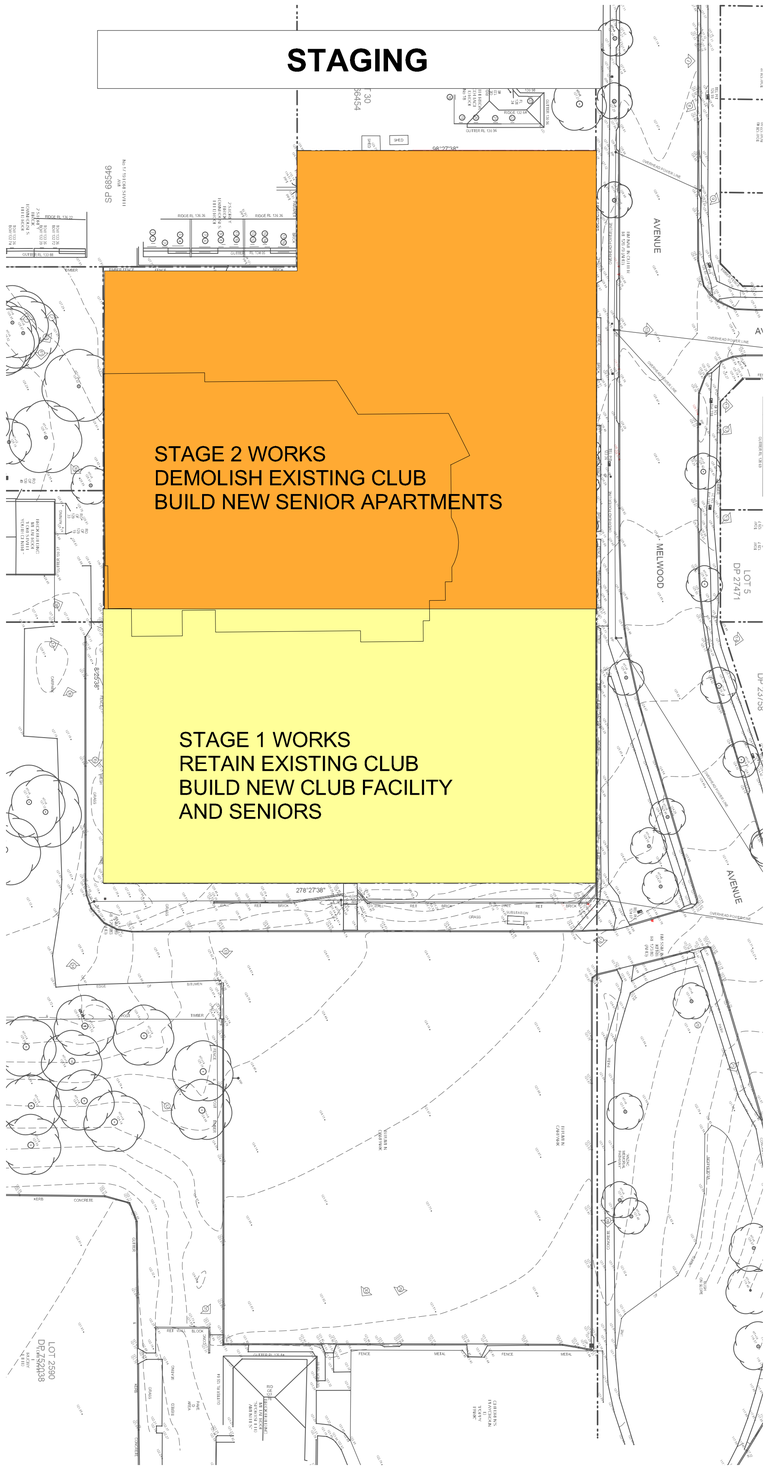
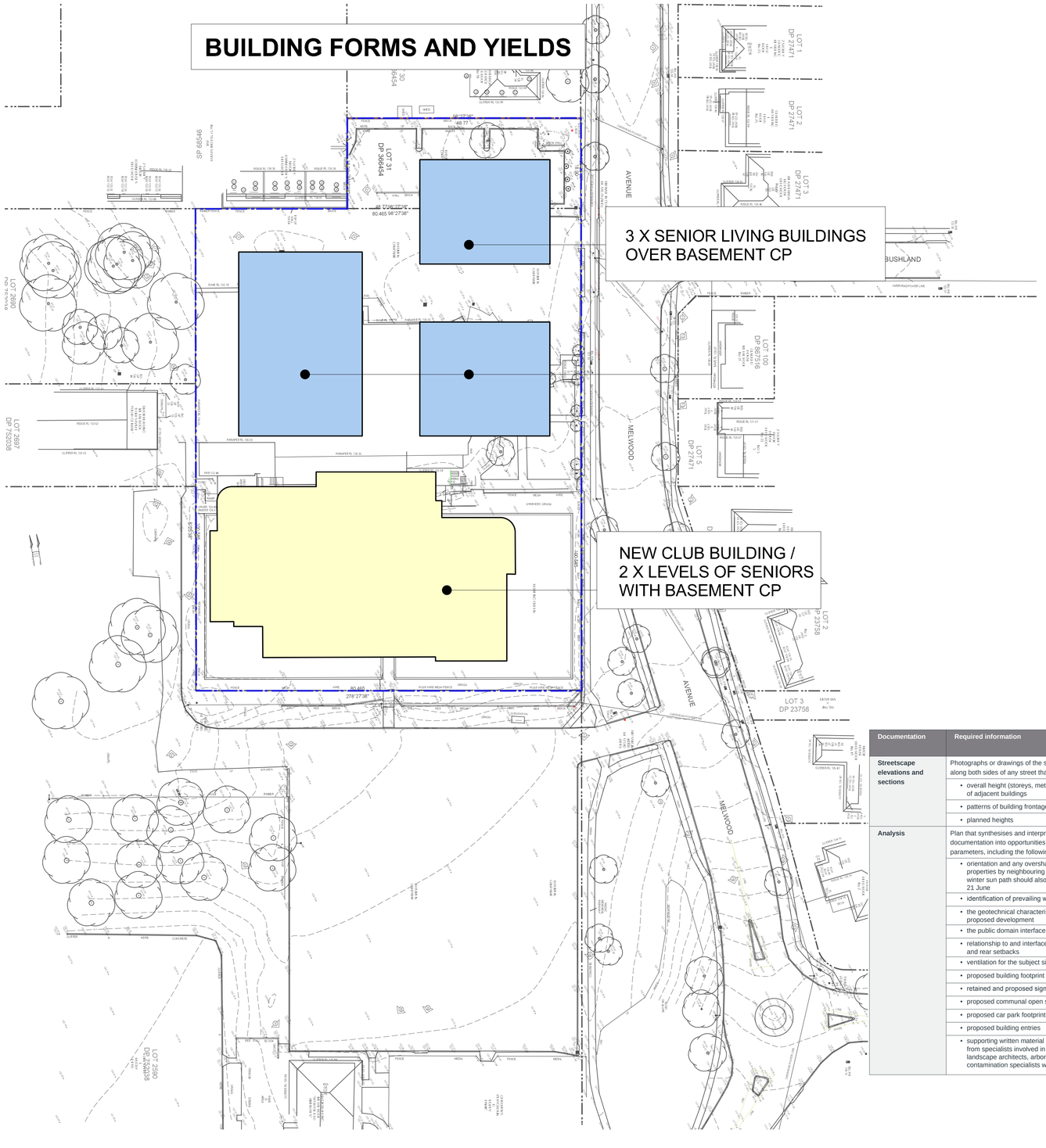
22-0716	DA_A_050	G

N

STAGING



BUILDING FORMS AND YIELDS



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	• the public domain interface and street setback	✓	
	• relationship to and interface with adjacent properties, including side and rear setbacks	✓	
	• ventilation for the subject site and immediate neighbours	✓	
	• proposed building footprint location	✓	
	• retained and proposed significant trees and deep soil zones		
	• proposed communal open space		
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CLIENT
FORESTVILLE RSL

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CLUB REDEVELOPMENT
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DRAWING
SITE ANALYSIS

Scale at A1 1:500
Scale at A3 1:1000
0m 5 10 25 40

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MASTERPLAN SET

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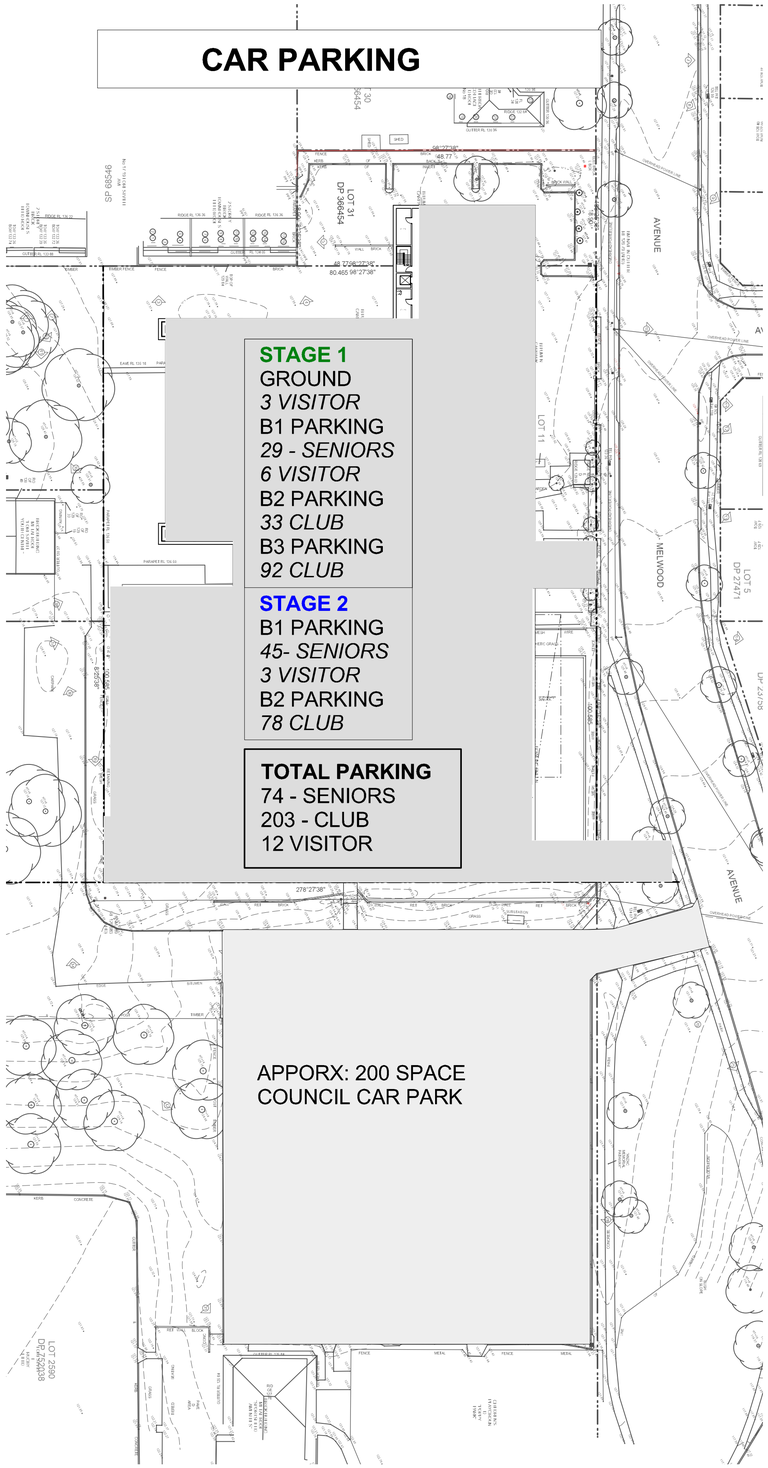
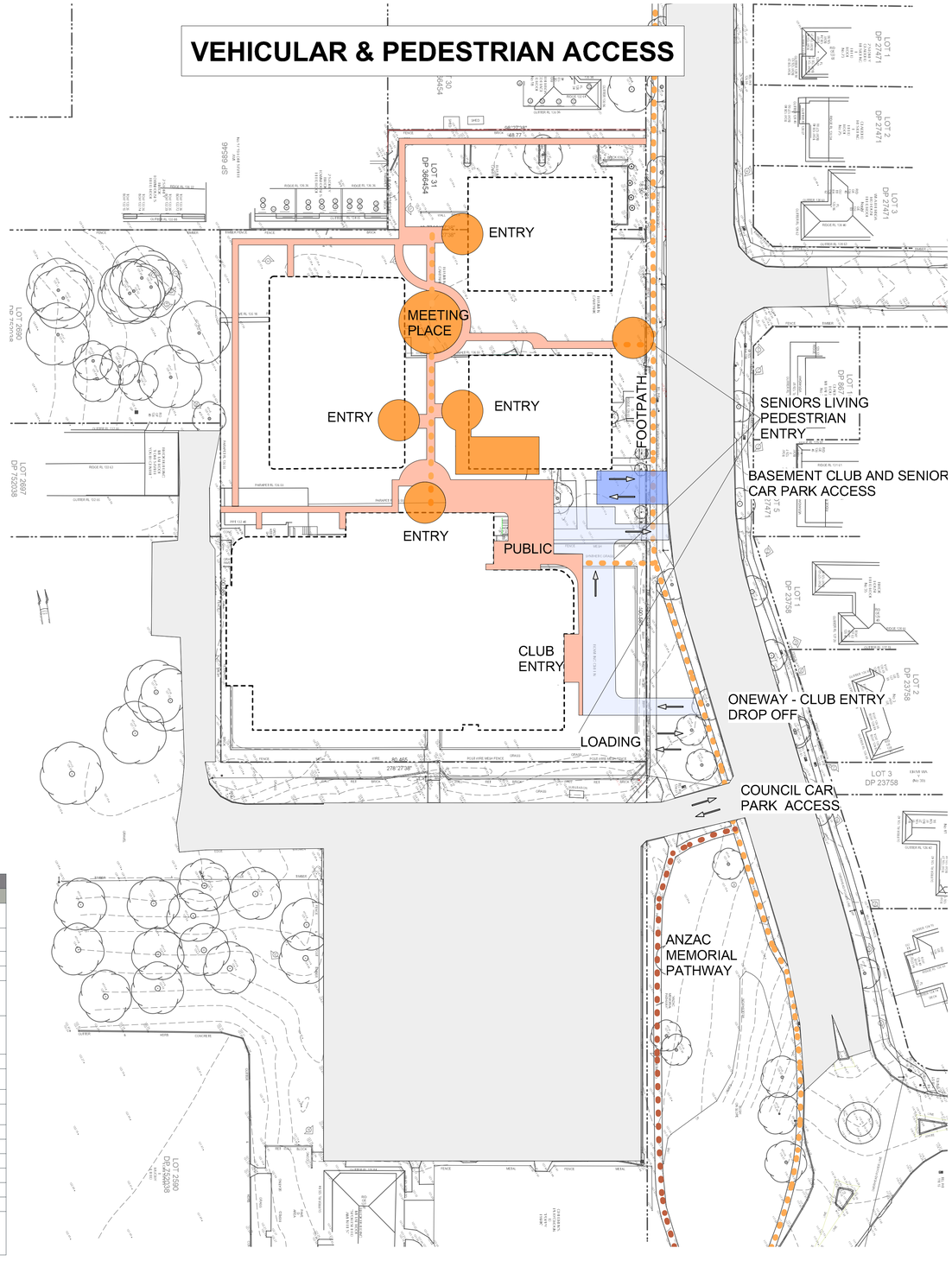
22-0716	**DA_A_051**	**G**

CAR PARKING



VEHICULAR & PEDESTRIAN ACCESS



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	• ventilation for the subject site and immediate neighbours		
	• proposed building footprint location		
	• retained and proposed significant trees and deep soil zones		
	• proposed communal open space		
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G	5/05/2025	DA RESUBMISSION	pjh

CLIENT
FORESTVILLE RSL

PROJECT
CLUB REDEVELOPMENT
22 MELWOOD AVE
LOT 2589 & LOT 31
DP752038 & DP 366454

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DRAWING
SITE ANALYSIS - CAR PARKING

MASTERPLAN SET

Scale at A1 1:500
Scale at A3 1:1000
0m 5 10 25 40

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AL	20/04/2023	PH
PROJECT #	SHEET #	REVISION #
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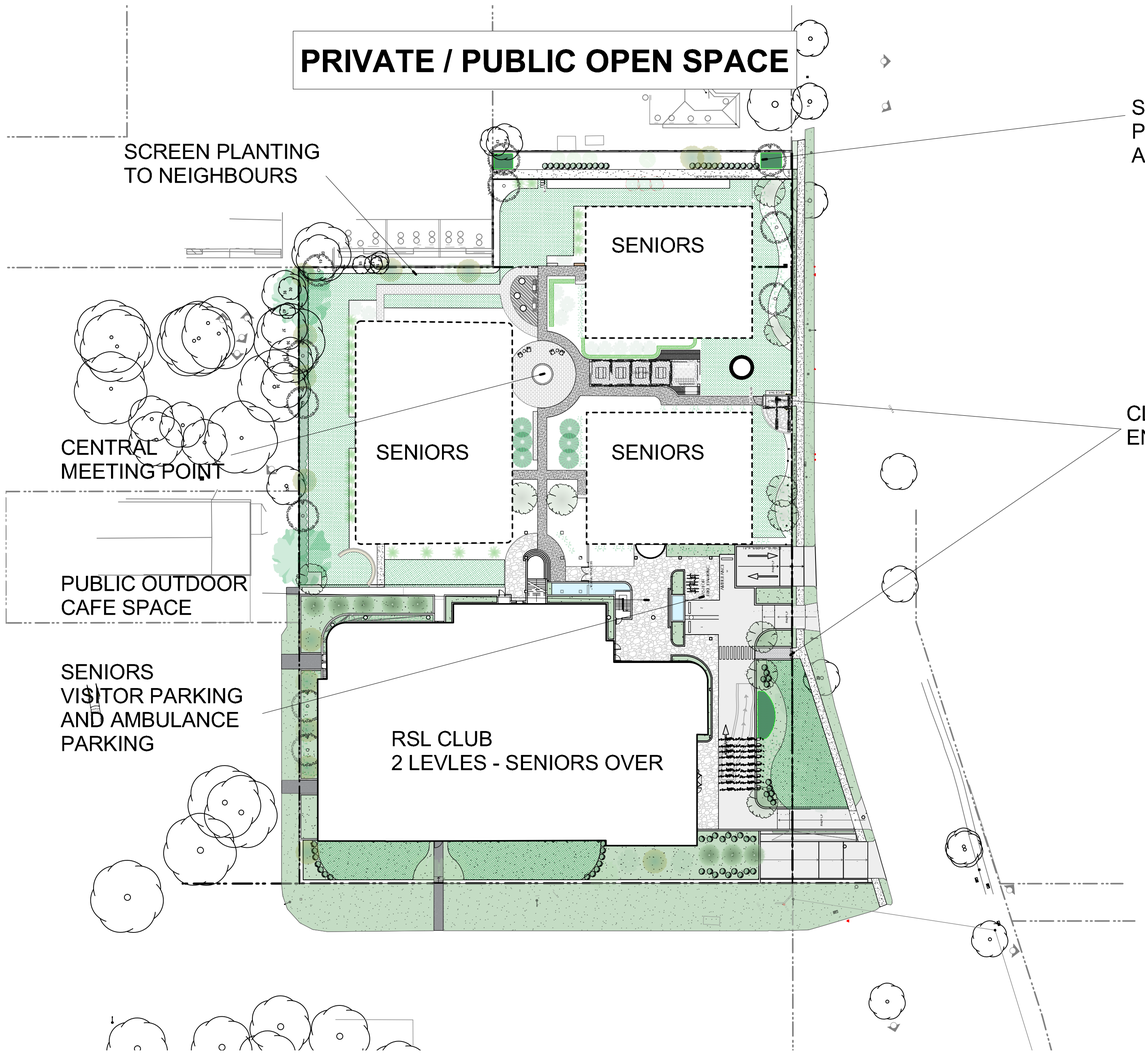
N

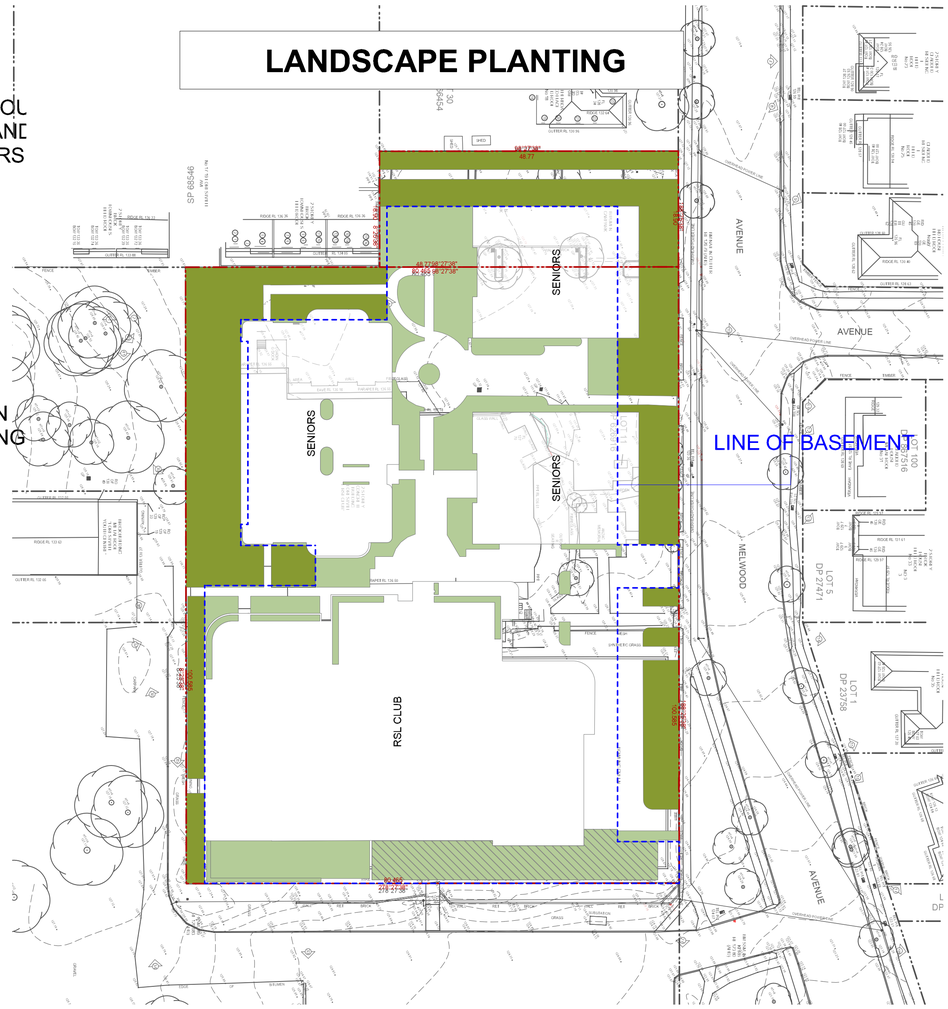
PRIVATE / PUBLIC OPEN SPACE



SCREEN PLANTING TO NEIGHBOU
PROVISION OF FENCE / GATE AND
ACCESS PATH FOR NEIGHBOURS

CLEARLY DEFINED PEDESTRIAN
ENTRY POINTS AND WAY FINDING

LANDSCAPE PLANTING



Documentation	Required information	Provided	
		Yes (✓)	No (x)
Analysis	Plan that synthesises and interprets the context, streetscape and site documentation into opportunities and constraints that generate design parameters, including the following information:		
	• orientation and any overshadowing of the site and adjoining properties by neighbouring structures (excludes vegetation). The winter sun path should also be shown between 9 am and 3 pm on 21 June		
	• identification of prevailing wind		
	• the geotechnical characteristics of the site and suitability of the proposed development		
	• the public domain interface and street setback		
	• relationship to and interface with adjacent properties, including side and rear setbacks		
	• ventilation for the subject site and immediate neighbours		
	• proposed building footprint location		
	• retained and proposed significant trees and deep soil zones	✓	
	• proposed communal open space	✓	
	• proposed car park footprint and depth		
	• proposed building entries		
	• supporting written material - this should include technical advice from specialists involved in the development process including landscape architects, arborists, geotechnical engineers and/or contamination specialists where applicable		

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ACN 150 198 842 **W:** www.qarch.com.au

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DRAWING
SITE ANALYSIS - OPEN SPACE

Scale at A1 1:500
Scale at A3 1:1000
0m 5 10 25 40

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MASTERPLAN SET

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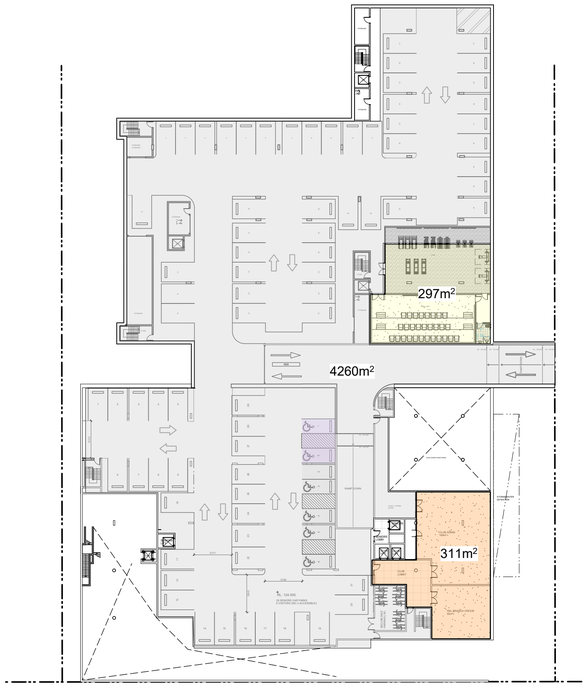
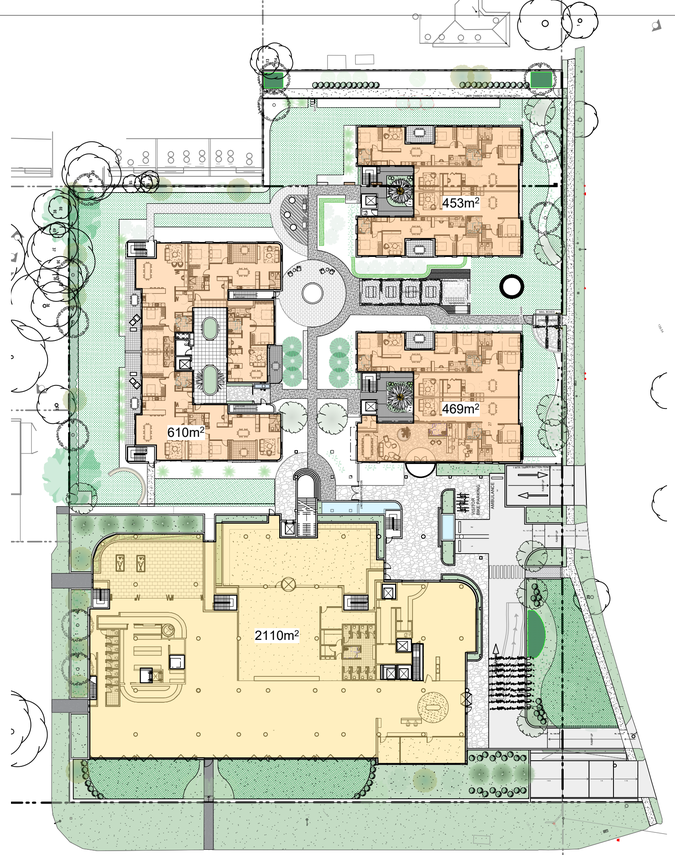
22-0716	**DA_A_053**	**G**

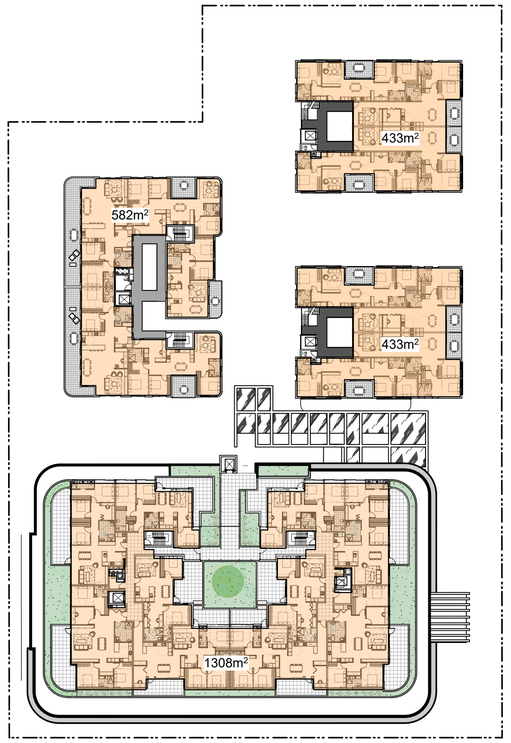


02 AREA CALCULATIONS - BASEMENT 1
scale 1:500

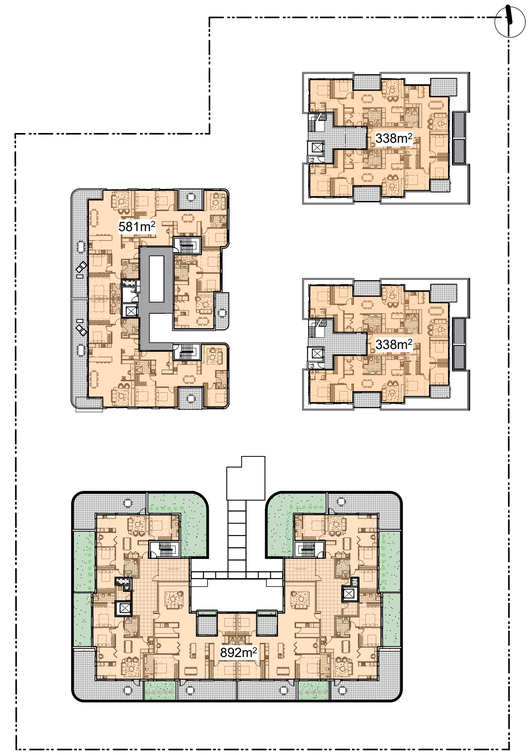


2084 m²

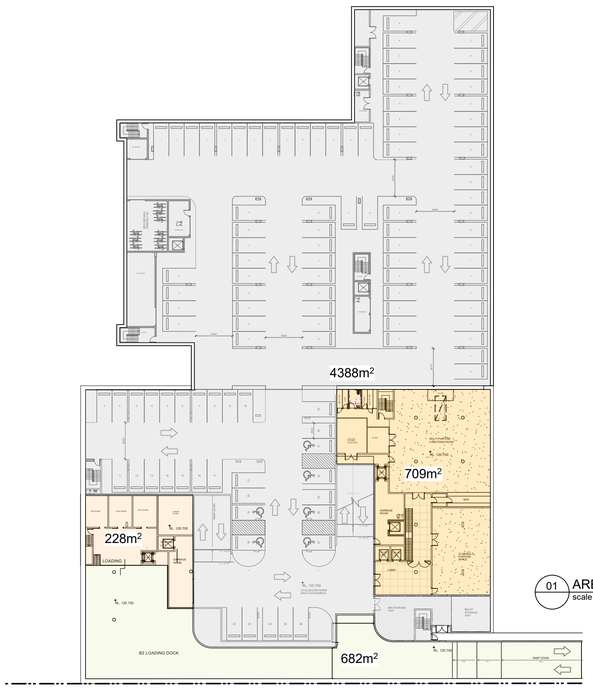
03 AREA CALCULATIONS - GROUND FLOOR
scale 1:500



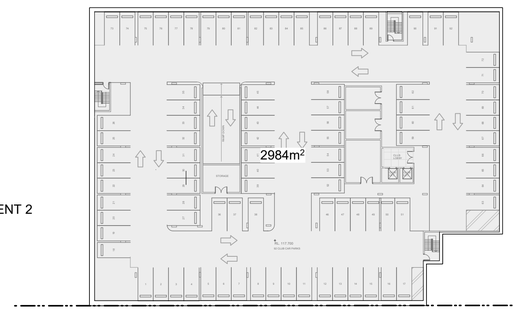
04 AREA CALCULATIONS - LEVEL 1
scale 1:500



05 AREA CALCULATIONS - LEVEL 2
scale 1:500



01 AREA CALCULATIONS - BASEMENT 2
scale 1:500



06 AREA CALCULATIONS - BASEMENT 3
scale 1:500

Forestville RSL - Building AREAS	GFA	
	m2	FSR
SITE AREA	9014	
SENIOR TOTAL GFA	6669	0.753:1
CLUB AREA GFA	3358	0.31:1
TOTAL	10027	1:07
Club Building		
	GFA	
B 2	937	
B1	311	
G	2110	
	3358	
Retirement Living - Club	GFA	
1	1308	
2	892	
	2200	
Retirement Living - Building 1 - GFA	GFA	
B1	232	
G	453	
1	433	
2	338	
	1456	
Retirement Living - Building 2	GFA	
G	469	
1	433	
2	338	
	1240	
Retirement Living - Building 3	GFA	
G	610	
1	582	
2	581	
	1773	

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DRAWING
SITE ANALYSIS - AREA CALCS

MASTERPLAN SET

Scale at A1 1:500
Scale at A3 1:1000
0m 5 10 25 40

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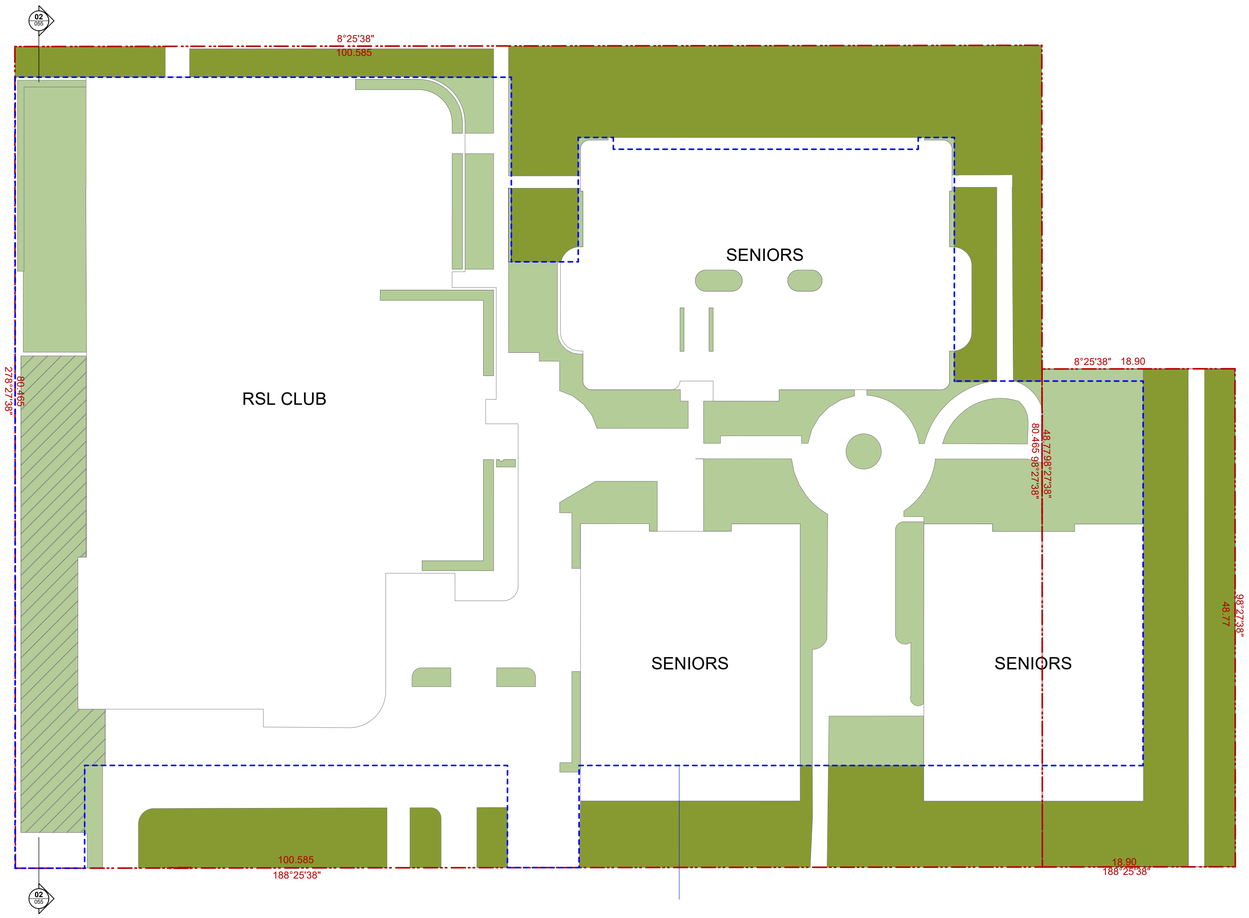


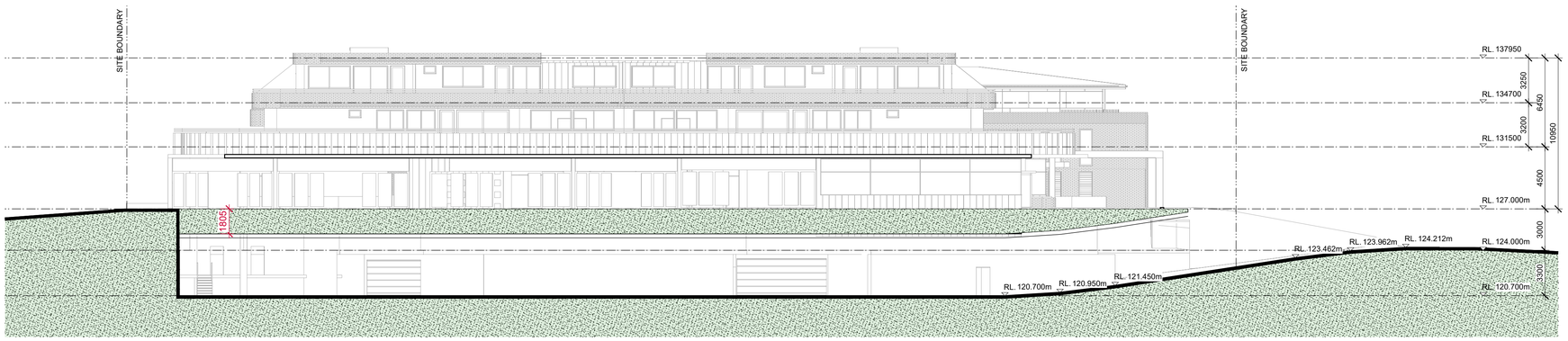
01 SITE PLAN - LANDSCAPING
scale 1:300

SITE AREA
9014sqm

DEEP SOIL
(3m) 1740sqm

PLANTING
1617sqm

TOTAL
3357sqm



02 CLUB SECTION - LANDSCAPING
scale 1:200

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DRAWING
SITE ANALYSIS - LANDSCAPING

Scale at A1 1:200
Scale at A3 1:400
0m 2.5 5 10 15 16

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MASTERPLAN SET

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22-0716	DA_A_055	G

N

SP 68546
No.17-19 FORESTVILLE AVE

LOT 31
DP 366454

LOT 30
DP 36645

LOT 2589
DP 752038

LOT 11
DP 626916

EXISTING RSL CLUB BUILIDNG

2 STOREY CONCRETE BUILDING "FORESTVILLE RSL CLUB"

2 STOREY BRICK TOWNHOUSES TILED ROOF

WEATHERBOARD COTTAGE TILED ROOF No.18

BOWLING GREEN

BOWLING GREEN

CONCRETE PATH

GROUNDS KEEPERS SHED

ANZAC MEMORIAL

OUTDOOR SEATING

BITUMEN CARPARK

BITUMEN CARPARK

BITUMEN CARPARK

LOADING DOCK

TILED ROOF
TOW 133.35
BOW 132.39
TOW 133.36
BOW 132.72
RIDGE RL 130.22

RIDGE RL 136.36
RIDGE RL 136.36
RIDGE RL 132.64

PARAPET RL 136.50
PARAPET RL 136.50
PARAPET RL 136.50
PARAPET RL 136.55
PARAPET RL 136.55
GLASS WALL RL 136.55

EAVE RL 135.18
EAVE RL 135.18
EAVE RL 135.18

GUTTER RL 129.33
GUTTER RL 135.08
GUTTER RL 133.42
GUTTER RL 130.96

RIDGE 129.03
RIDGE 129.03

AWNING LINE
TERRACE
BALCONY

PPT 132.48
PPT 136.51
PPT RL 136.51

RAMP
GRATE RL 126.49
PLANTER RL 127.01

SSM 489
RL 126.683 (AHD)

BM NAIL IN GUTTER
RL 126.79 (AHD)

278°27'38" 80.465
8°25'38" 100.585
188°25'38" 100.585
98°27'38" 48.779
188°25'38" 18.90
80.465 98°27'38"
48.779 98°27'38"

SITE PLAN -ROOF
scale 1:200

DA

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DRAWING
SITE PLAN - EXISTING

MASTERPLAN SET

Scale at A1 1:200
Scale at A3 1:400
0m 2.5 5 10 15 16

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DRAWN	DATE	CHKD
AL	20/04/2023	PH
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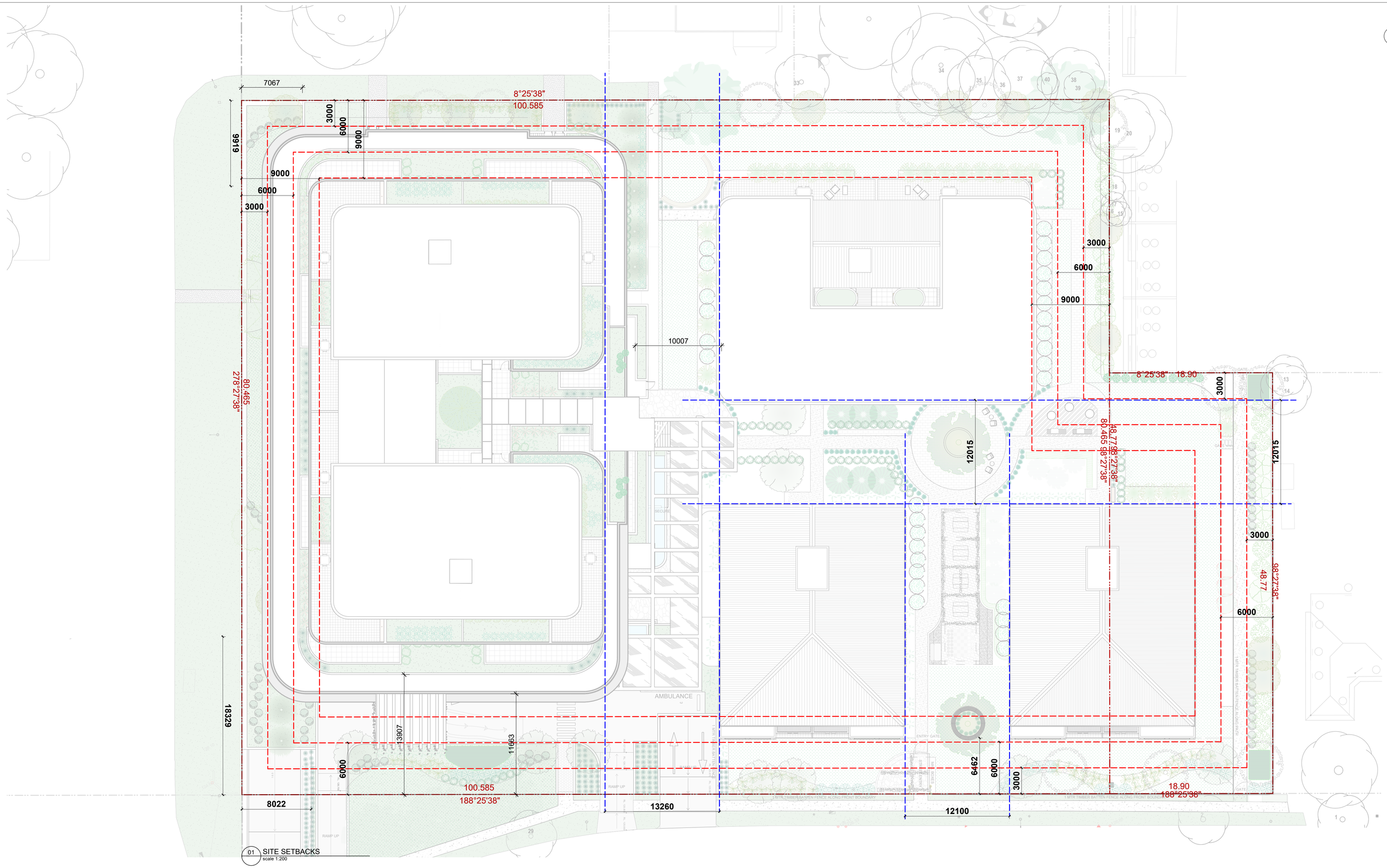
22-0716	DA_A_056	G



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DRAWING
SITE PLAN - SETBACKS

MASTERPLAN SET

Scale at A1 1:200
Scale at A3 1:400
0m 2.5 5 10 15 16

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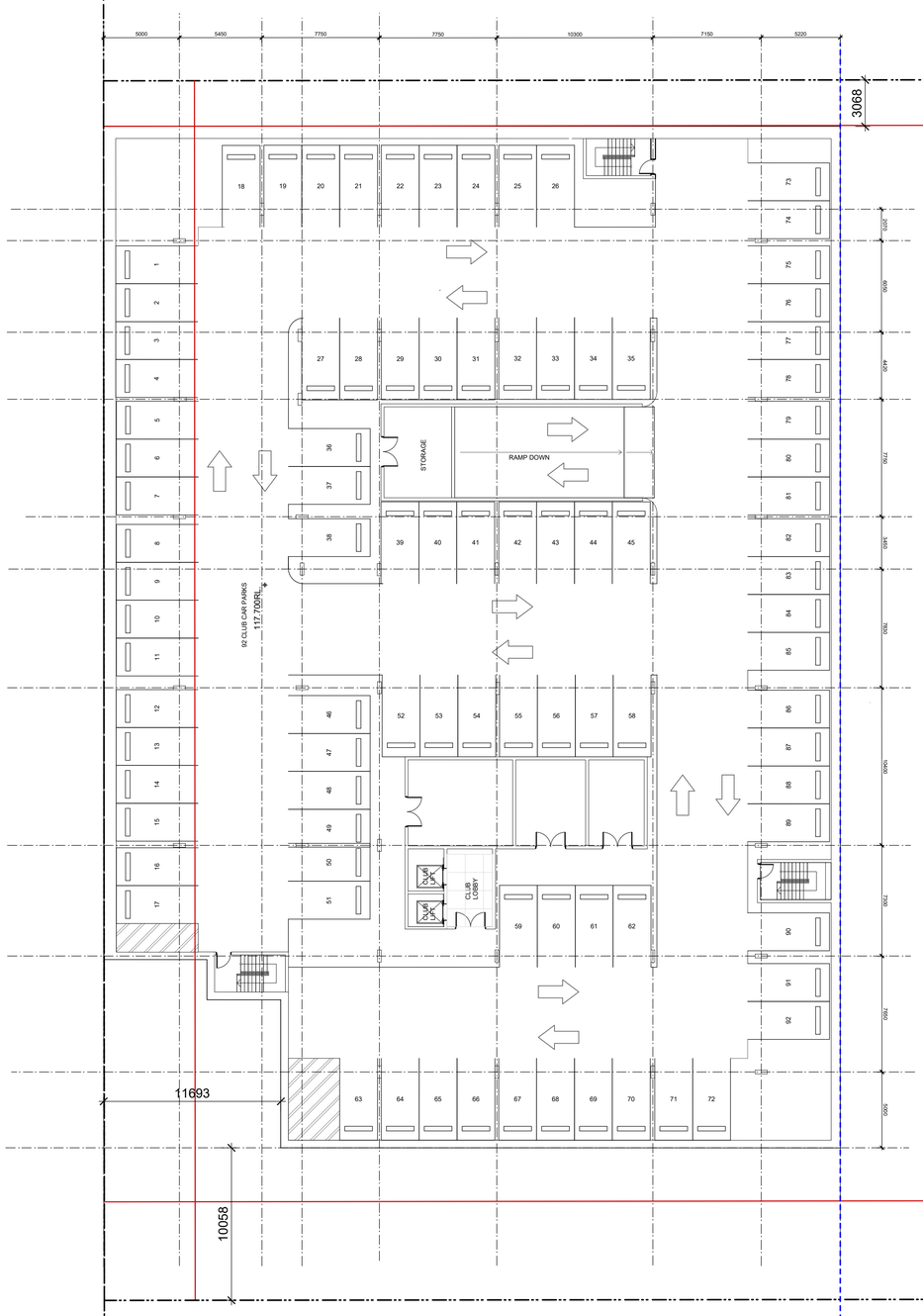

01 SITE PLAN - BASEMENT 3
scale 1:200

N

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DRAWING
SITE PLAN - BASEMENT 3

MASTERPLAN SET

Scale at A1 1:200
Scale at A3 1:400
0m 2.5 5 10 15 16

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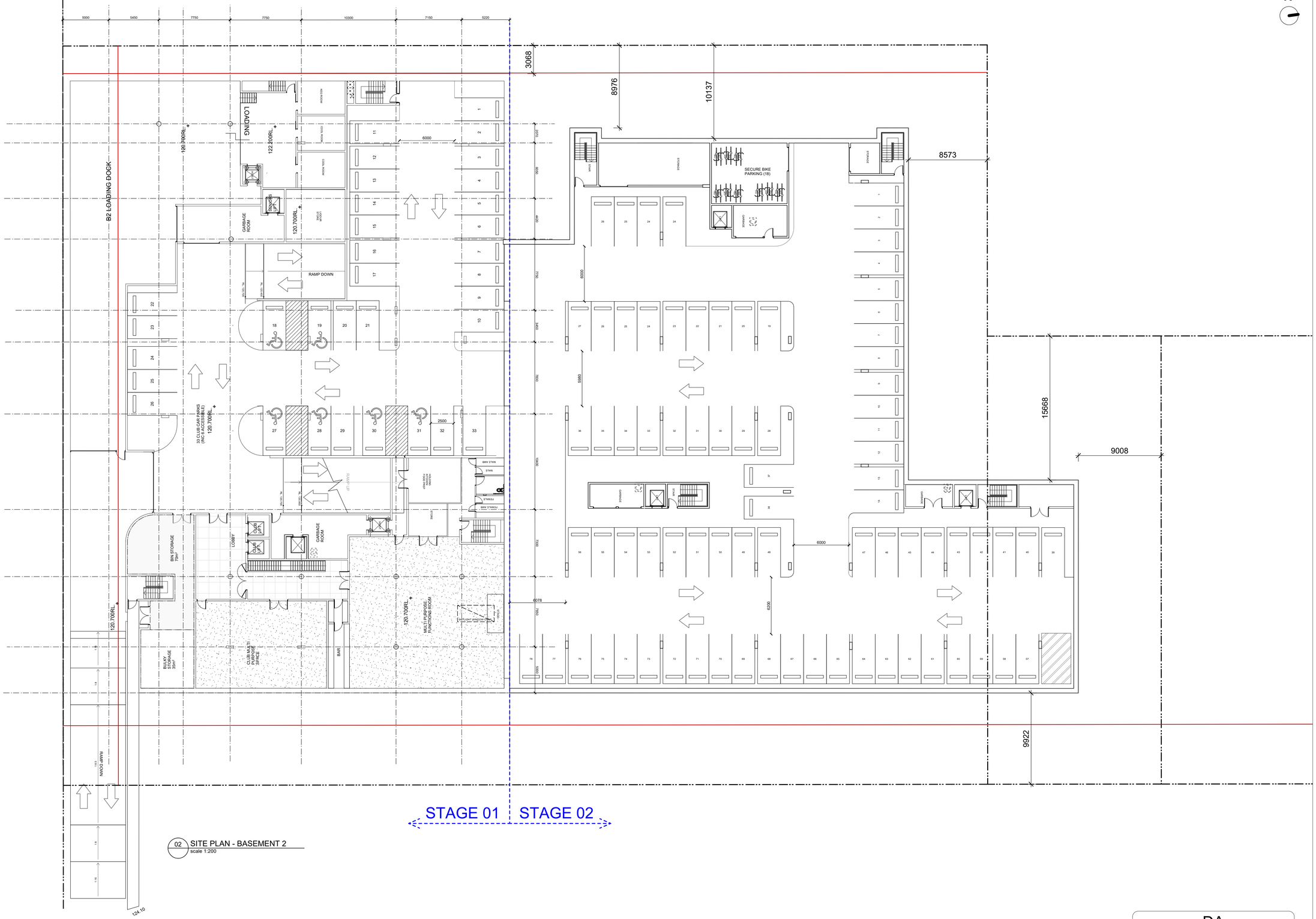

02 SITE PLAN - BASEMENT 2
scale 1:200

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DRAWING
SITE PLAN - BASEMENT 2

Scale at A1 1:200
Scale at A3 1:400
0m 2.5 5 10 15 16

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MASTERPLAN SET

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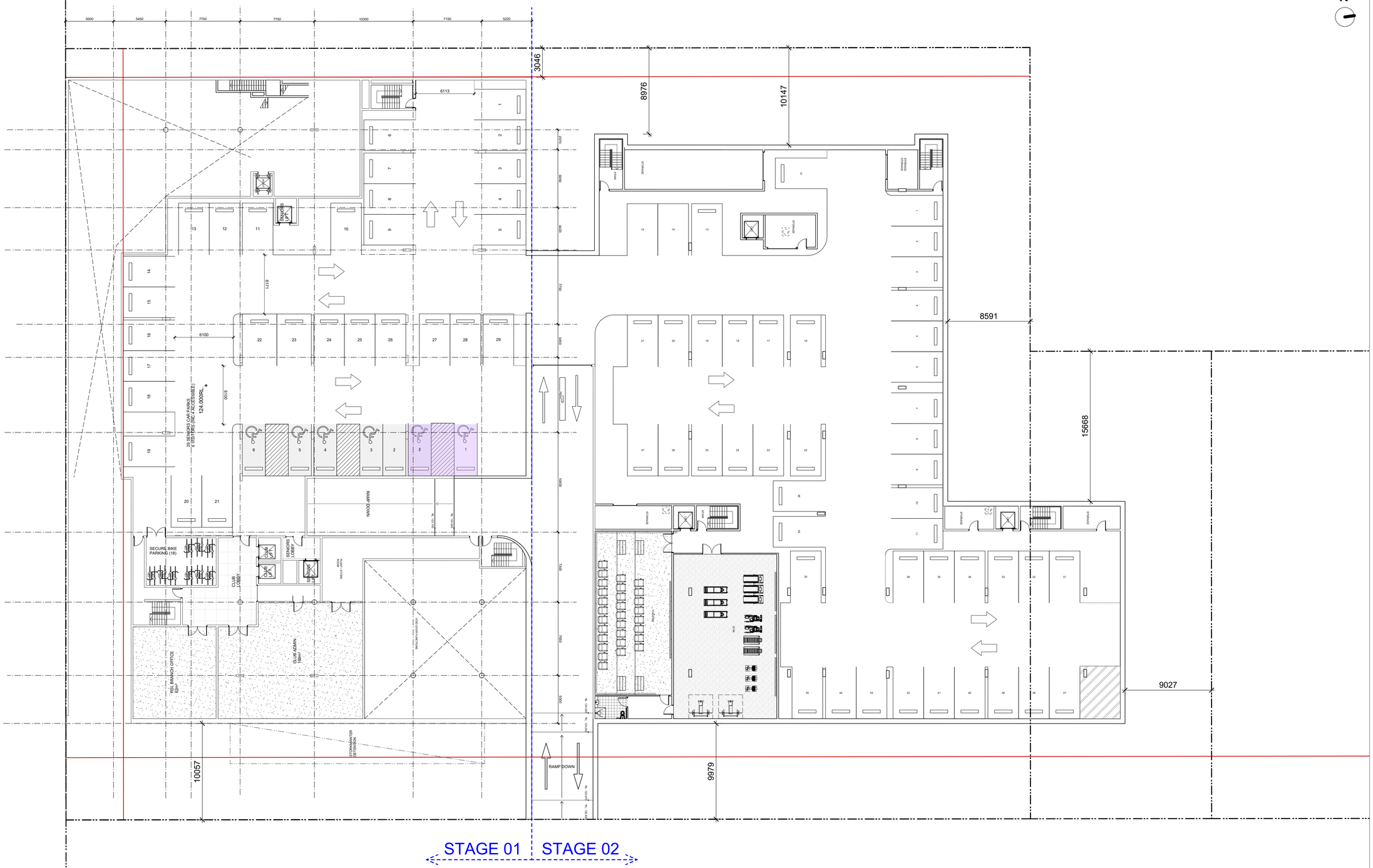
22-0716	**DA_A_098**	**G**



02 SITE PLAN - BASEMENT 1
scale 1:200

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SITE PLAN - BASEMENT 1

Scale at A1 1:200
Scale at A3 1:400
0m 2.5 5 10 15 16

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MASTERPLAN SET

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22-0716	**DA_A_099**	**G**

CLUB BUILDING

BUILDING 3

BUILDING 1

BUILDING 2

N

8°25'38"
100.585

278°27'38"
80.465

188°25'38"
100.585

98°27'38"
48.77

188°25'38"
18.90

SENIORS BUILDING 3 GROUND
RL127.000

SENIORS BUILDING 1 GROUND
RL127.000

SENIORS BUILDING 2 GROUND
RL127.000

CLUB GROUND
RL127.000

TOILETS
ACC.
KITCHEN
BAR
LIFT
PIZZA OVEN
COCKTAIL / WHISKEY BAR
SPORTS BAR
OUTDOOR EATING
SPORTS WALL
LOUNGE
INDOOR GAMING
ALFRESCO GAMING
STAIR TO SENIORS
SECURE ENTRY POINT
GREEN ROOM
CASHIERS
DUTY MANAGER
TOILETS
OFFICE
RECEPTION
FOYER
KITCHEN
BAR
COFFEE BAR
RESTAURANT / CAFE / FUNCTIONS
TAKE AWAY
OUTDOOR PUBLIC CAFE AREA
CLUB ENTRY
VISITOR BIKE PARKING
AMBULANCE
RAMP UP
1 MTR TIMBER BATTEN FENCE ALONG FRONT BOUNDARY
MEETING ROOM
FITNESS LOUNGE
RECEPTION
KITCHENETTE
CABBY
ENTRY GATE
GATE
1 MTR TIMBER BATTEN FENCE ALONG PATH
2 BEDROOM UNIT TYPE A - 150M²
2 BEDROOM UNIT TYPE A - 116m²
3 BEDROOM UNIT TYPE B - 150M²
3 BEDROOM UNIT TYPE B - 116m²
LIVING
KITCHEN
ENTRY
STUDY
LAUNDRY
MASTER BED
BEDROOM 2
BEDROOM 3
ENSUITE
WIR
W

9919
18329
8022
13260
12100
6462
12015
6000
9000
3000
29
27

01 SITE PLAN - GROUND FLOOR
scale 1:200

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Quattro ARCHITECTURE

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Tim Zuber Registered Architect - 2384

ACN 150 198 842 **W:** www.qarch.com.au

Rev. No.	Date	Revision	By
A	16/11/2022	CLIENT MEETING	PJH
B	01/12/2023	CONCEPT UPDATE	PJH
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G	5/05/2025	DA RESUBMISSION	pjh

CLIENT
FORESTVILLE RSL

PROJECT
CLUB REDEVELOPMENT
22 MELWOOD AVE
LOT 2589 & LOT 31
DP752038 & DP 366454

FROM OUR FAMILY TO YOURS · SINCE 1959 ·

DRAWING
SITE PLAN - GROUND

Scale at A1 1:200
Scale at A3 1:400
0m 2.5 5 10 15 16

Figured dimensions shall take precedence over scale. Contractors must verify all dimensions on job before commencing any work or making shop drawings.

MASTERPLAN SET

DRAWN	DATE	CHKD
AL	20/04/2023	PH
PROJECT #	SHEET #	REVISION #
22-0716	DA_A_100	G

N

02 WD-A-200

CLUB BUILDING

BUILDING 3

BUILDING 1

BUILDING 2

8°25'38"
100.585

3000
6000
9000
9916

9000
6000
3000

80.465
278°27'38"

13500

11724

CLUB RESI - LEVEL 1
RL131.500

SENIORS BUILDING 3 LEVEL 1
RL 130.100

3000
6000
9000

8°25'38"
18.90

12015

80.465
98°27'38"

15179

3000

12015

8053
9709

SENIORS BUILDING 1 LEVEL 1
RL 130.100

SENIORS BUILDING 2 LEVEL 1
RL 130.100

3000
6000
9000

98°27'38"
48.77

18329

18288

6000

100.585
188°25'38"

6462
6000
3000

18.90
188°25'38"

8022

13260

12100

01 SITE PLAN - LEVEL 1
scale 1:200

01 WD-A-200

DA

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DRAWING
SITE PLAN - LEVEL 1

Scale at A1 1:200
Scale at A3 1:400
0m 2.5 5 10 15 16

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MASTERPLAN SET

DRAWN	DATE	CHKD
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PROJECT #	SHEET #	REVISION #
22-0716	DA_A_101	G

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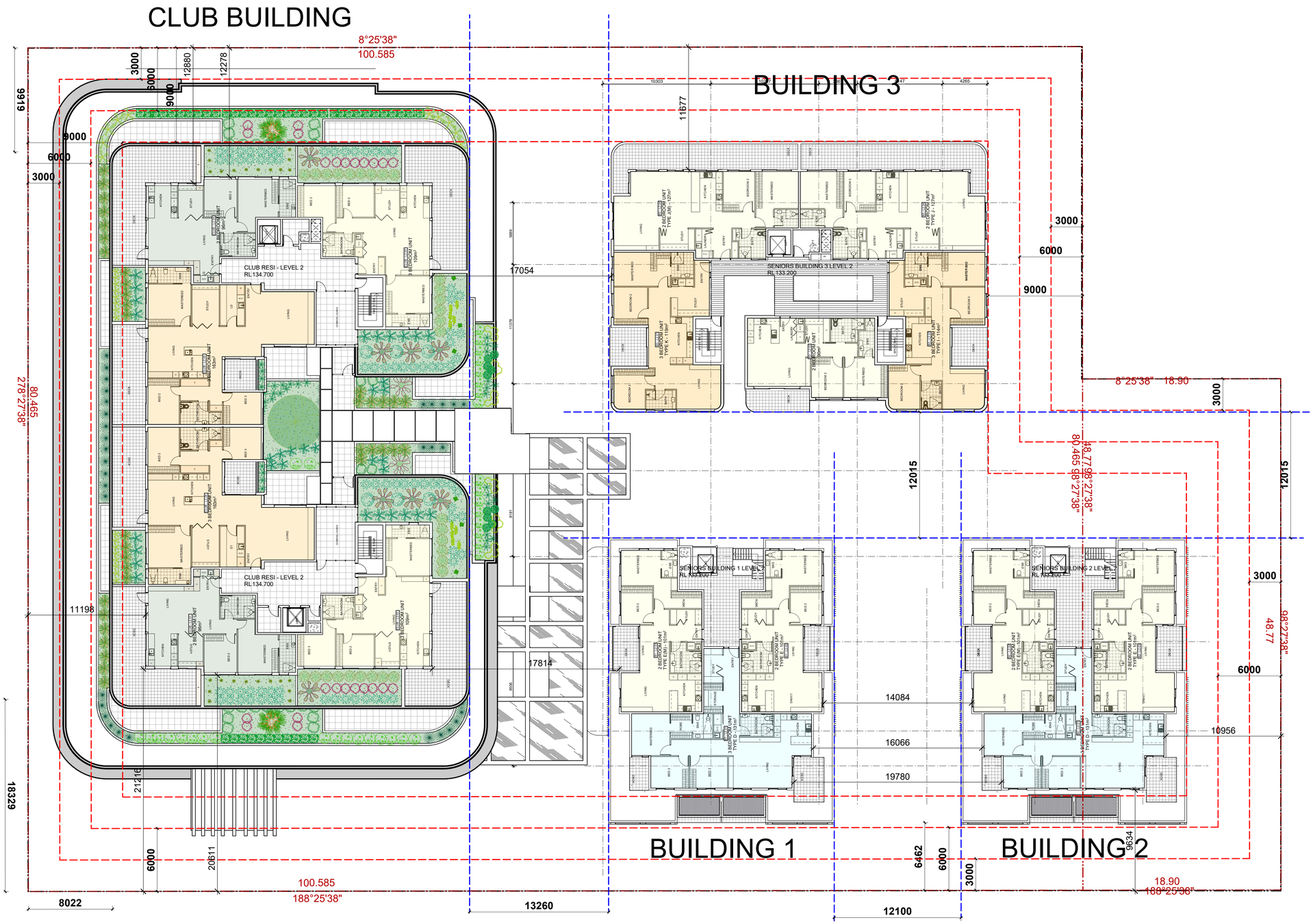

01 SITE PLAN - LEVEL 2
scale 1:200

DA

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DRAWING
SITE PLAN - LEVEL 2

Scale at A1 1:200
Scale at A3 1:400
0m 2.5 5 10 15 16

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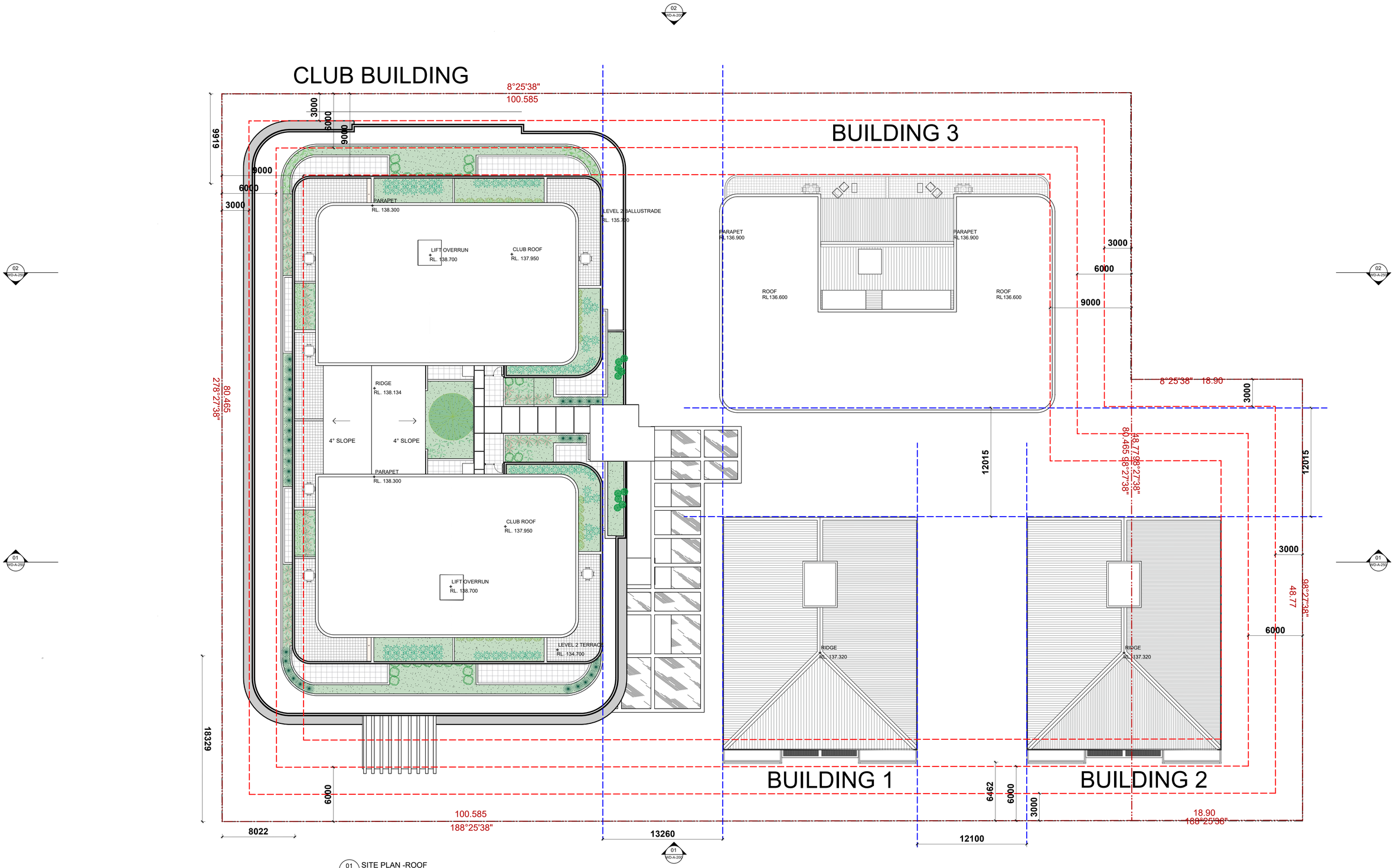
MASTERPLAN SET

DRAWN	DATE	CHKD
AL	20/04/2023	PH
PROJECT #	SHEET #	REVISION #
22-0716	DA_A_102	G

N



01 SITE PLAN -ROOF
scale 1:200

DA

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CLUB REDEVELOPMENT
22 MELWOOD AVE
LOT 2589 & LOT 31
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DRAWING
SITE PLAN - ROOF

Scale at A1 1:200
Scale at A3 1:400
0m 2.5 5 10 15 16

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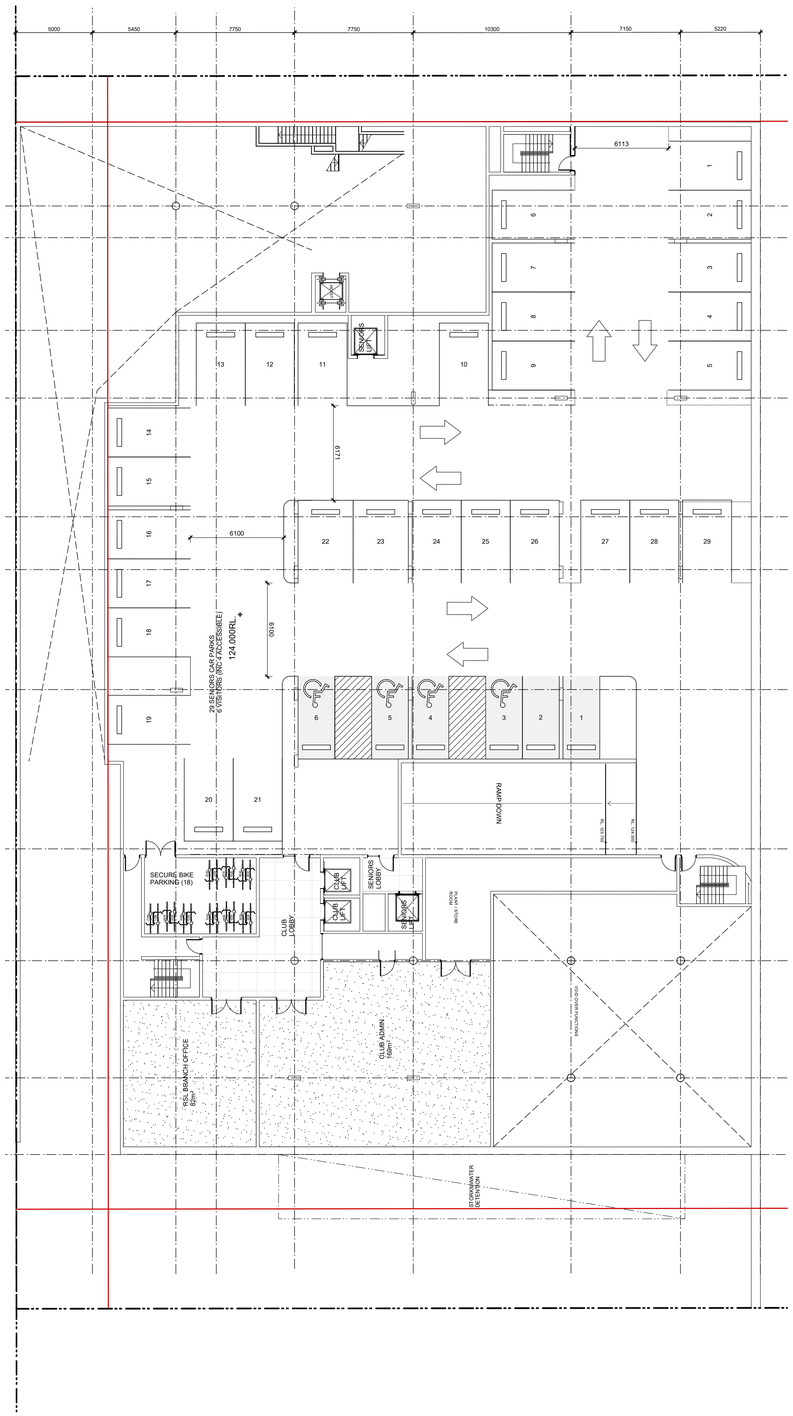
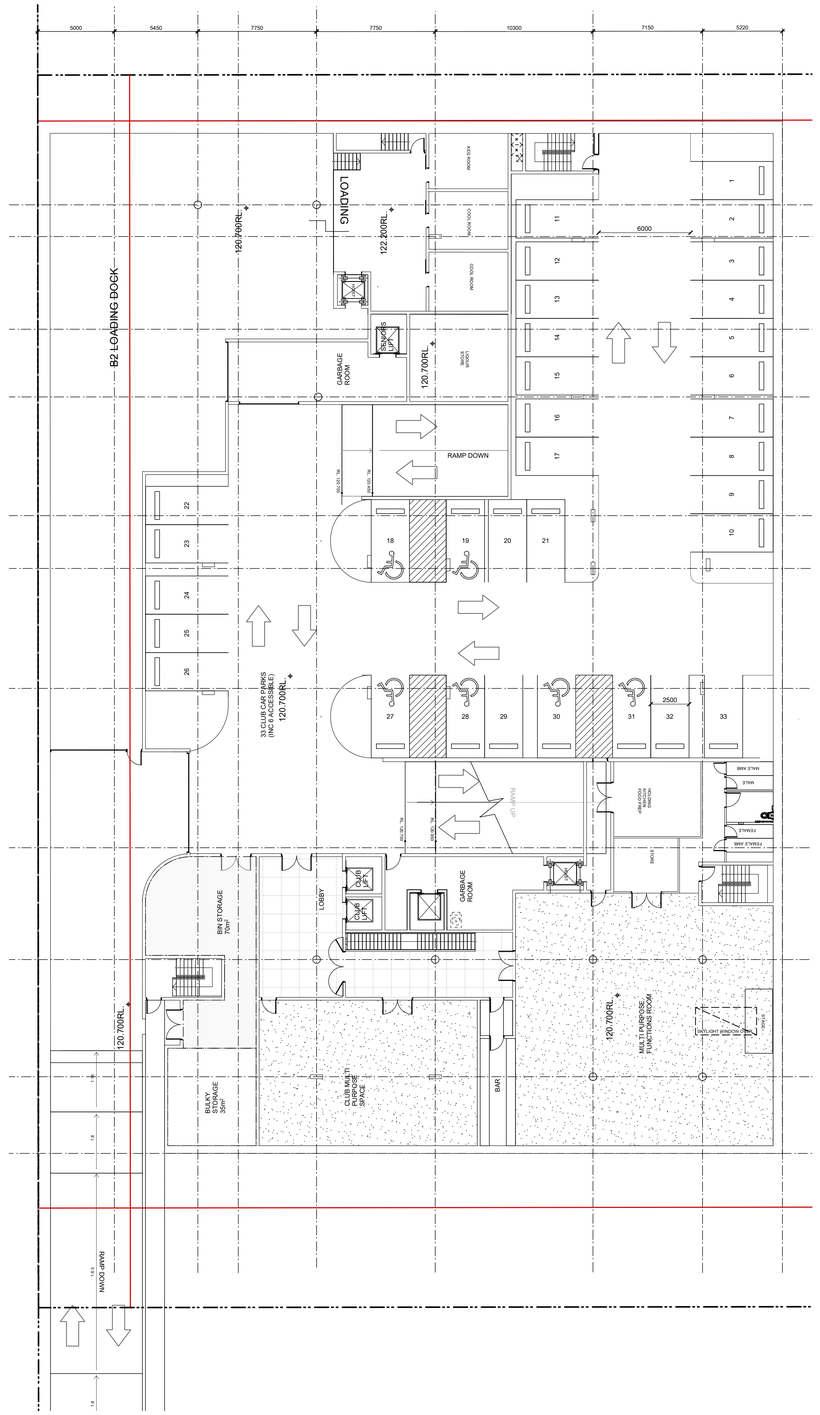
MASTERPLAN SET

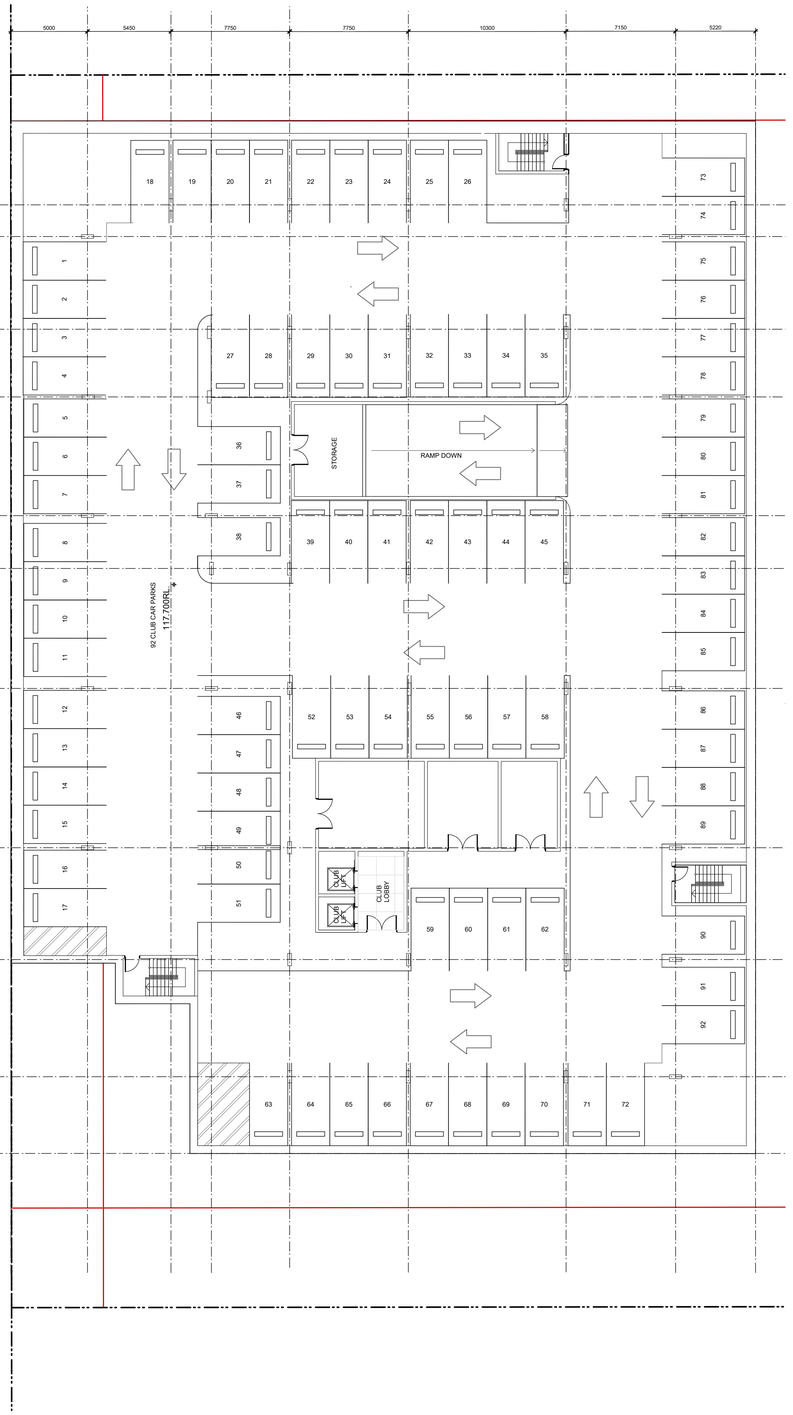
DRAWN	DATE	CHKD
AL	20/04/2023	PH
PROJECT #	SHEET #	REVISION #
22-0716	DA_A_103	G



01 STAGE 1 - BASEMENT 1 - SENIORS PARKING
scale 1:200



02 STAGE 1 - BASEMENT 2 - CLUB PARKING
scale 1:200



02 STAGE 1 - BASEMENT 3 - CLUB PARKING
scale 1:200

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22 MELWOOD AVE
LOT 2589 & LOT 31
DP752038 & DP 366454

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DRAWING
STAGE 1 CAR PARKING

Scale at A1 1:200
Scale at A3 1:400
0m 2.5 5 10 15 16

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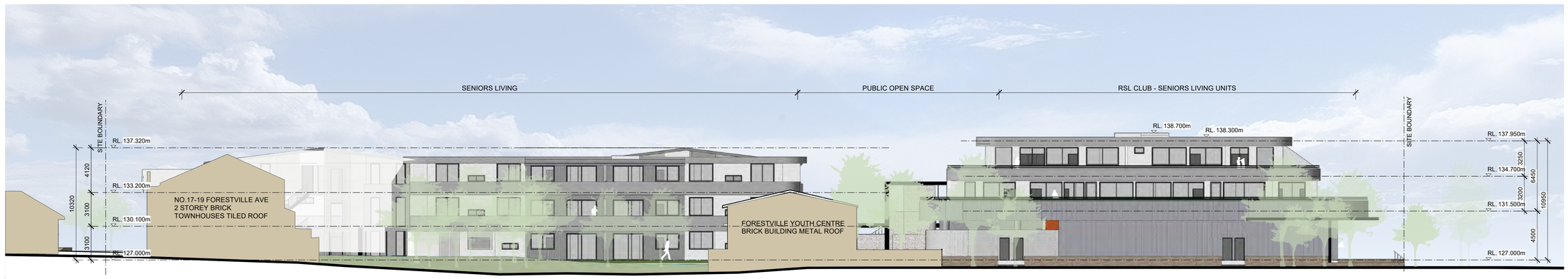
DRAWN	DATE	CHKD
AL	20/04/2023	PH
PROJECT #	SHEET #	REVISION #
22-0716	**DA_A_104**	**G**

N

01 EASTERN BUILDING ELEVATION - MELWOOD AVENUE
scale 1:200



03 WESTERN BUILDING ELEVATION - BACK
scale 1:200

05 PRE-DA CHECKLIST
scale 1:-

Documentation	Required information	Provided	
		Yes (✓)	No (x)
Streetscape elevations and sections	Photographs or drawings of the site in relation to the streetscape and along both sides of any street that the development fronts, that show:		
	• overall height (storeys, metres) and important parapet/datum lines of adjacent buildings	✓	
	• patterns of building frontage, street setbacks and side setbacks	✓	
	• planned heights	✓	

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CLUB REDEVELOPMENT
22 MELWOOD AVE
LOT 2589 & LOT 31
DP752038 & DP 366454

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DRAWING
ELEVATIONS

Scale at A1 1:200
Scale at A3 1:400
0m 2.5 5 10 15 16

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MASTERPLAN SET

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PROJECT
CLUB REDEVELOPMENT
22 MELWOOD AVE
LOT 2589 & LOT 31
DP752038 & DP 366454

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DRAWING
3D MONTAGE

Scale at A1 1:200
Scale at A3 1:400
0m 2.5 5 10 15 16

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MASTERPLAN SET

DRAWN	DATE	CHKD
AL	20/04/2023	PH
PROJECT #	SHEET #	REVISION #
22-0716	DA_A_201	G

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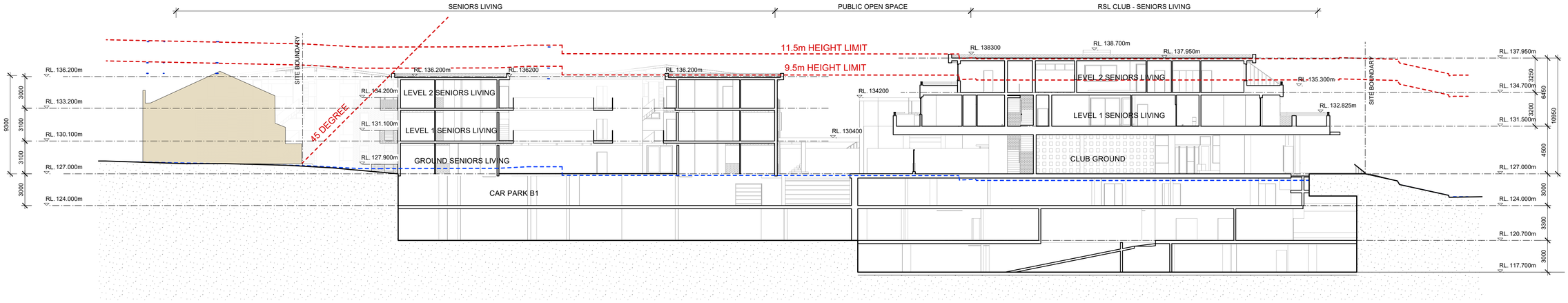
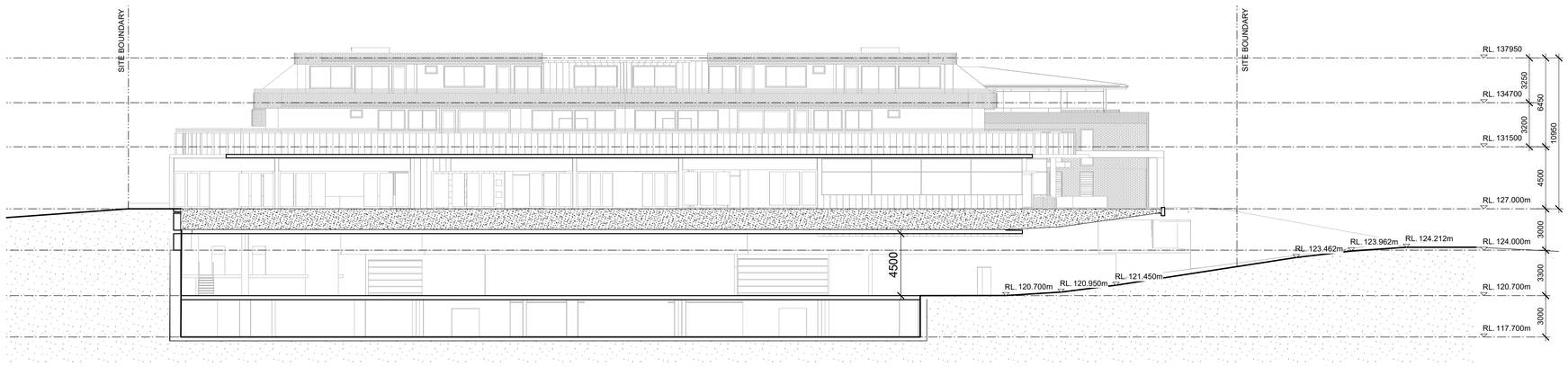


01 SITE SECTION
scale 1:200



02 SITE SECTION
scale 1:200

DA

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PROJECT
CLUB REDEVELOPMENT
22 MELWOOD AVE
LOT 2589 & LOT 31
DP752038 & DP 366454

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DRAWING
SECTIONS

Scale at A1 1:200
Scale at A3 1:400
0m 2.5 5 10 15 16

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MASTERPLAN SET

DRAWN	DATE	CHKD
AL	20/04/2023	PH
PROJECT #	SHEET #	REVISION #
22-0716	DA_A_250	G

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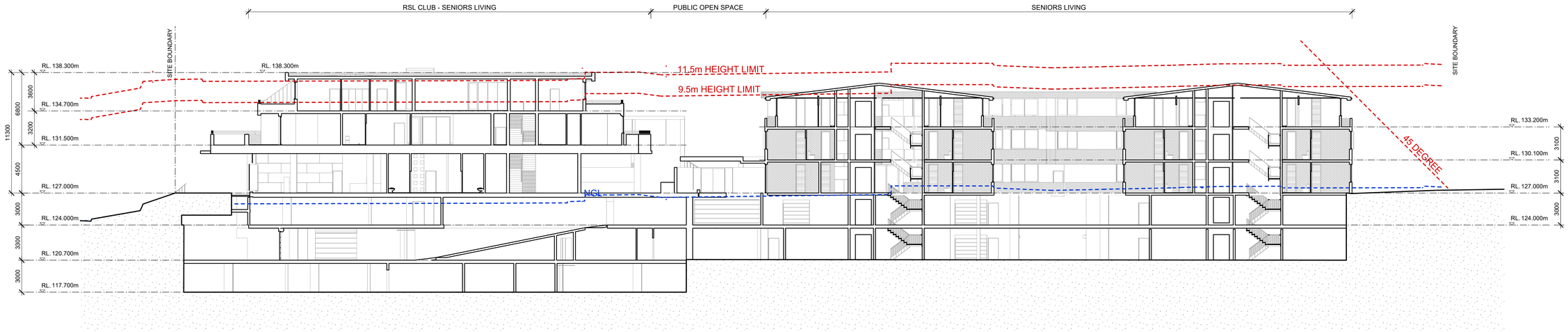
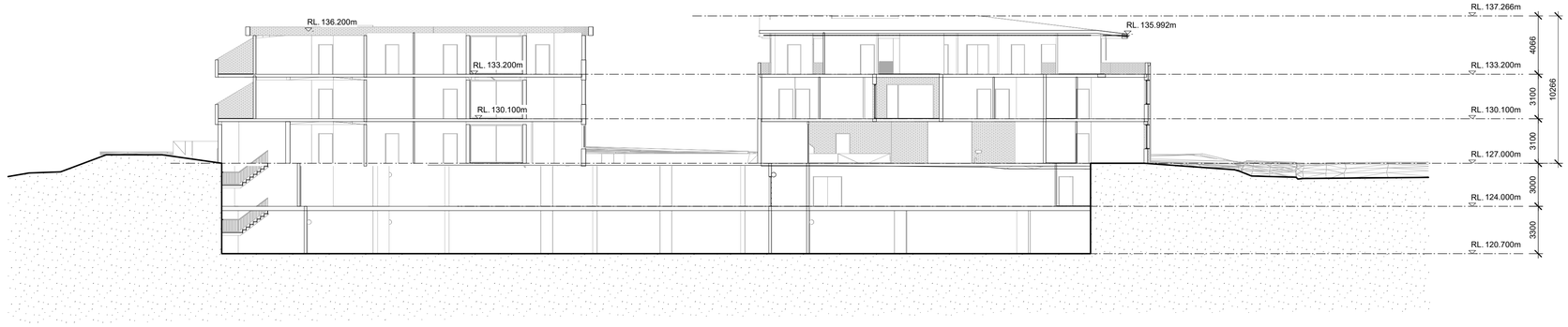


01 SITE SECTION
scale 1:200



02 SITE SECTION
scale 1:200

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PROJECT
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22 MELWOOD AVE
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DRAWING
SECTIONS

Scale at A1 1:200
Scale at A3 1:400
0m 2.5 5 10 15 16

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MASTERPLAN SET

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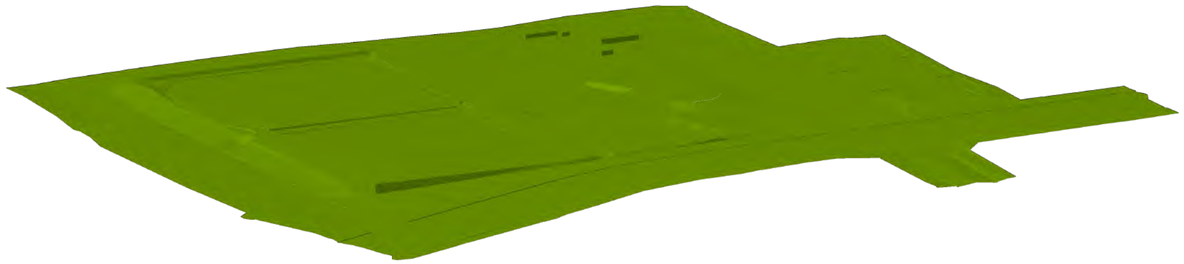
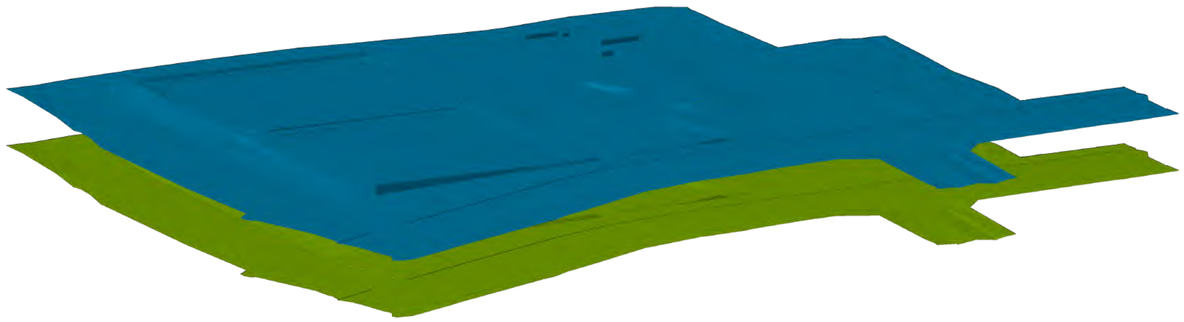
AL	20/04/2023	PH
PROJECT #	SHEET #	REVISION #
22-0716	**DA_A_251**	**G**

N

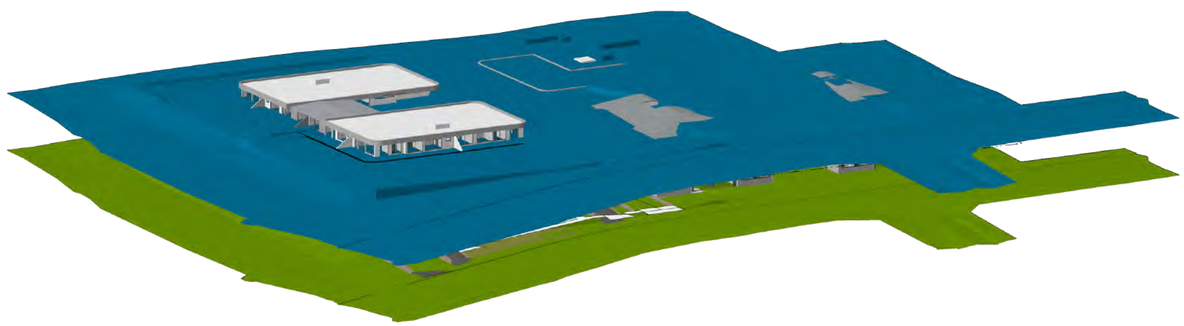


3D SITE SURVEY -REFERENCE LTS SURVEY: 52165002DT (GREEN)

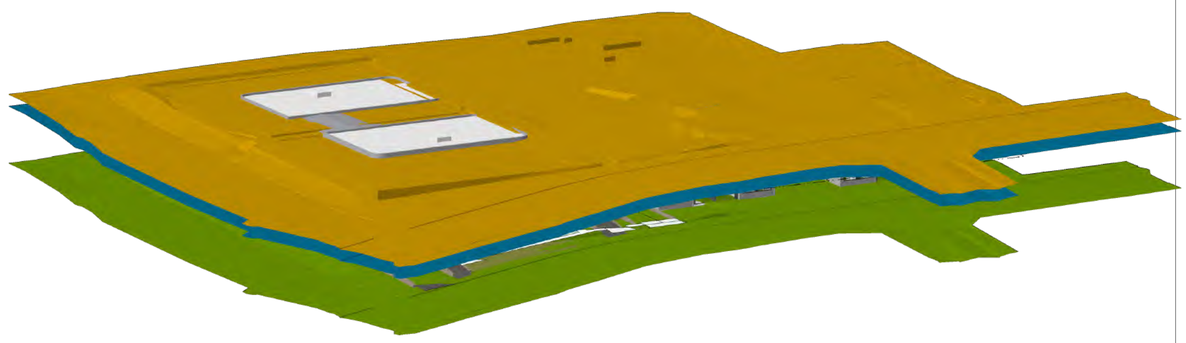
PROJECT OVERLAY - 3D SITE SURVEY -REFERENCE LTS SURVEY: 52165002DT



SENIORS HEIGHT LIMIT (9.5) - 3D SITE SURVEY -REFERENCE LTS SURVEY: 52165002DT



PROJECT OVERLAY WITH 9.5MTR HEIGHT PLANE



PROJECT OVERLAY WITH 11.5MTR HEIGHT PLANE

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DRAWING
HEIGHT ENVELOPE STUDY

Scale at A1 1:200
Scale at A3 1:400
0m 2.5 5 10 15 16

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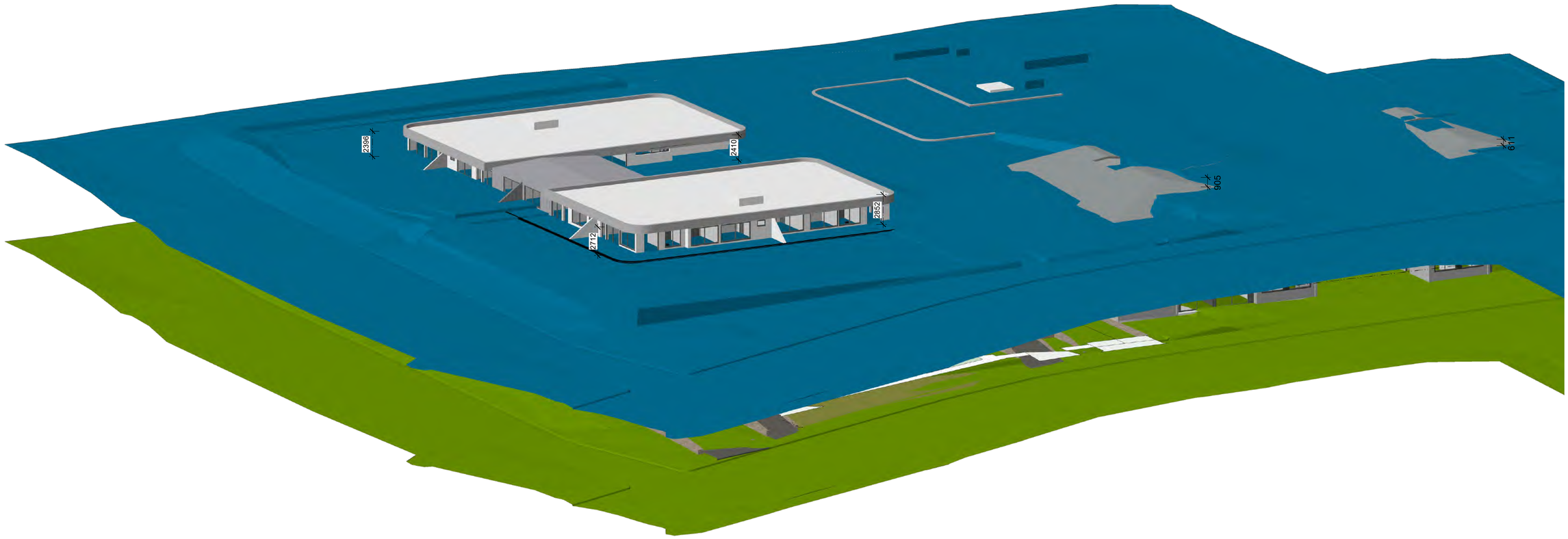
MASTERPLAN SET

DRAWN	DATE	CHKD
AL	20/04/2023	PH
PROJECT #	SHEET #	REVISION #
22-0716	**DA_A_300**	**G**

N



PROJECT OVERLAY WITH 9.5MTR HEIGHT PLANE

01 9.5 mtr HEIGHT LIMIT
scale 1:200

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PROJECT
CLUB REDEVELOPMENT
22 MELWOOD AVE
LOT 2589 & LOT 31
DP752038 & DP 366454

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DRAWING
HEIGHT ENVELOPE STUDY 9.5m

MASTERPLAN SET

Scale at A1 1:200
Scale at A3 1:400
0m 2.5 5 10 15 16

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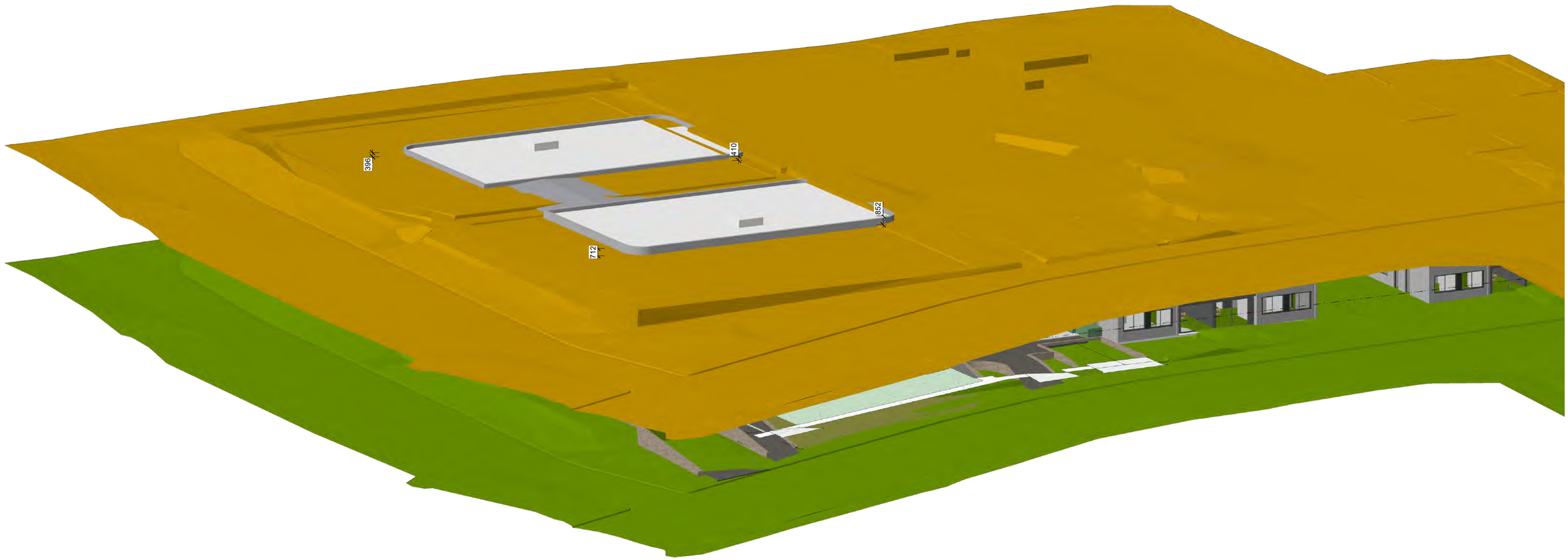
DRAWN	DATE	CHKD
AL	20/04/2023	PH

PROJECT #	SHEET #	REVISION #
22-0716	**DA_A_301**	**G**

N



PROJECT OVERLAY WITH 11.5MTR HEIGHT PLANE

01 11.5 mtr HEIGHT LIMIT
scale 1:200

DA

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Quattro ARCHITECTURE

ACN 150 198 842 **W:** www.qarch.com.au

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Peter Hosking (Director) Registered Architect - 6854

Canberra F: 61 2 6239 4044
Unit 5, 71 Leichhardt Street
Kingston ACT 2604
Tim Zuber Registered Architect - 2384

Rev. No.	Date	Revision	By
A	16/11/2022	CLIENT MEETING	PJH
B	01/12/2023	CONCEPT UPDATE	PJH
C	12/04/2024	B5 ADDED	PJH
D	30/08/2024	DA	PH
E	14/02/2025	DA UPDATE	PH
F	11/04/2025	ISSUE TO CONSULTANTS	PJH
G	5/05/2025	DA RESUBMISSION	pjh

CLIENT
FORESTVILLE RSL

PROJECT
CLUB REDEVELOPMENT
22 MELWOOD AVE
LOT 2589 & LOT 31
DP752038 & DP 366454

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DRAWING
HEIGHT ENVELOPE STUDY 11.5m

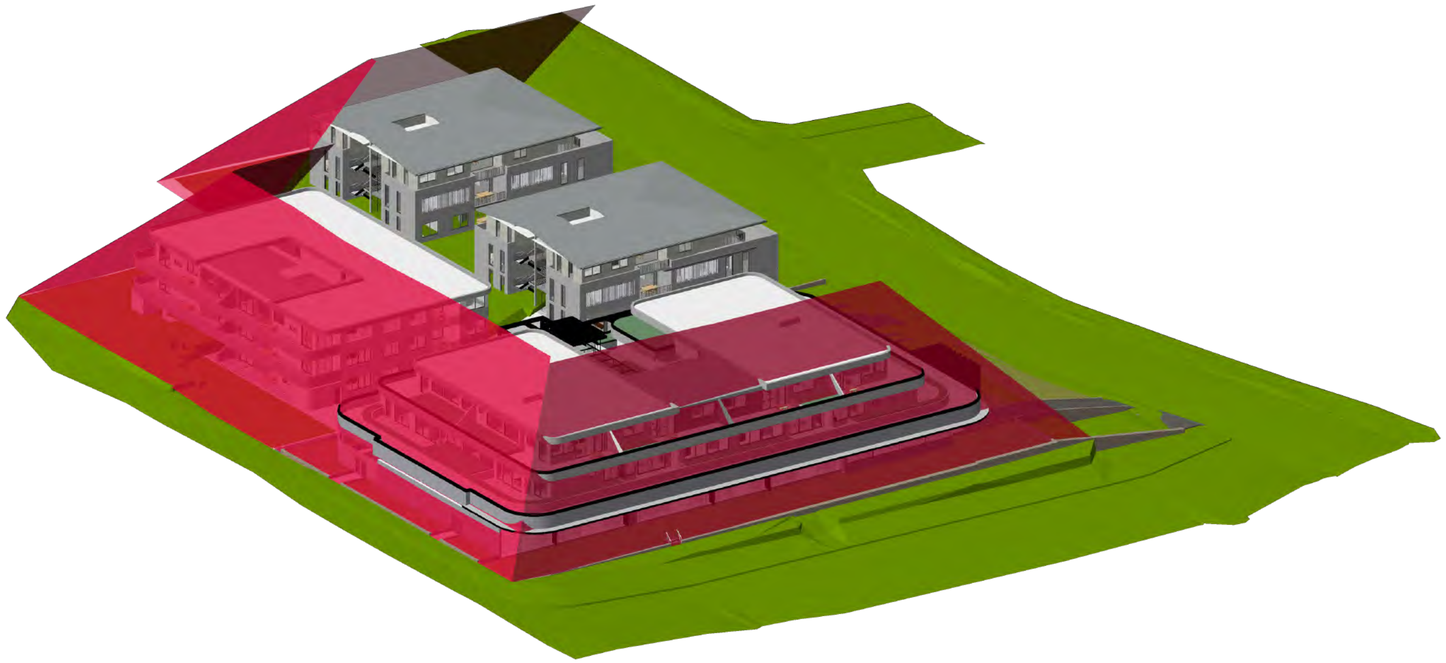
Scale at A1 1:200
Scale at A3 1:400
0m 2.5 5 10 15 16

Figured dimensions shall take precedence over scale. Contractors must verify all dimensions on job before commencing any work or making shop drawings.

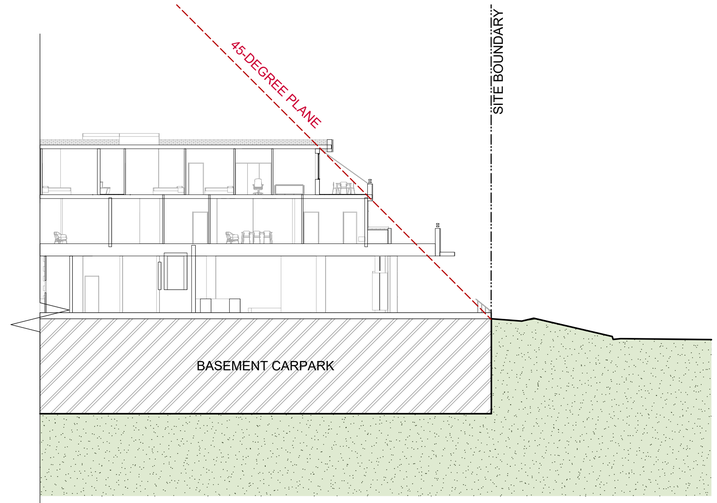
MASTERPLAN SET

DRAWN	DATE	CHKD
AL	20/04/2023	PH
PROJECT #	SHEET #	REVISION #
22-0716	DA_A_302	G

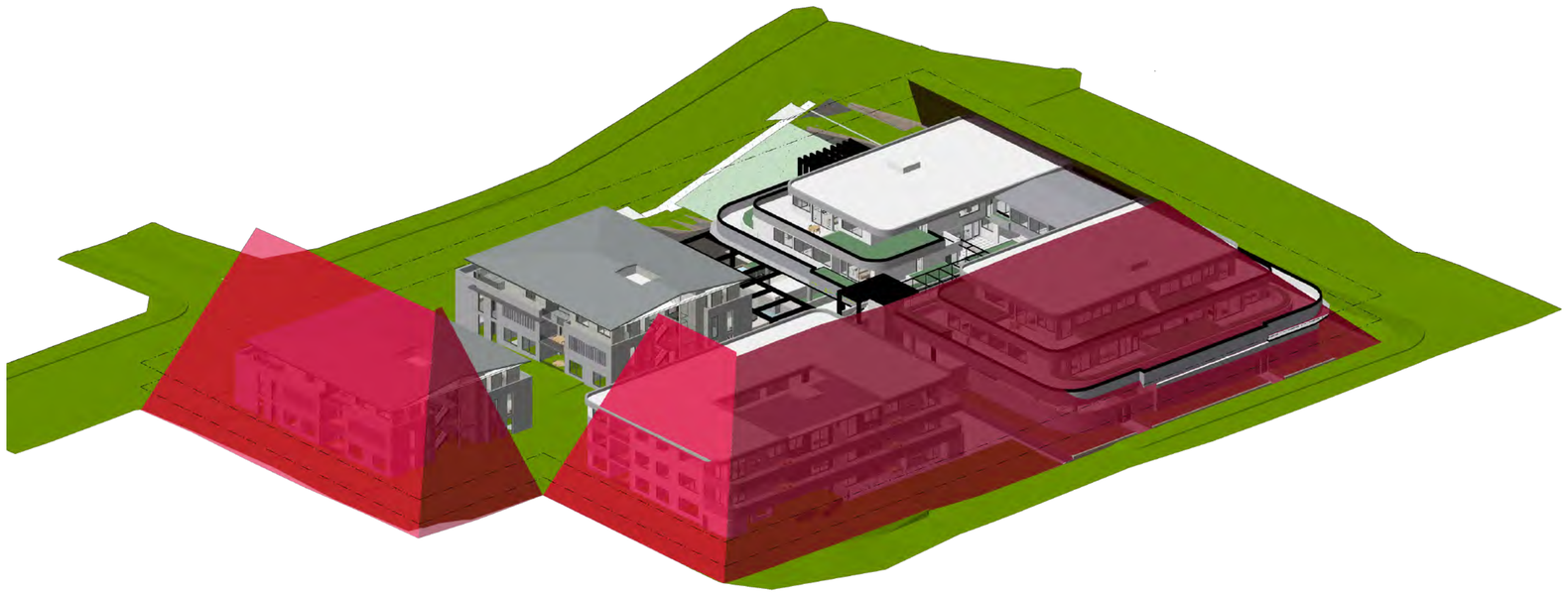
N



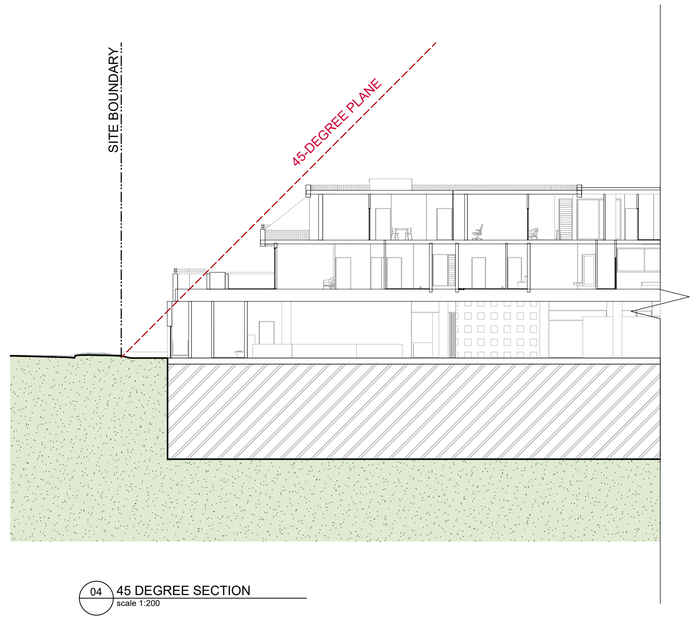
01 45 DEGREE STUDY
scale 1:350



03 45 DEGREE SECTION
scale 1:200



02 45 DEGREE STUDY
scale 1:350



04 45 DEGREE SECTION
scale 1:200

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E	14/02/2025	DA UPDATE	PH
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DRAWING
3D 45-DEGREE PLANE STUDY

Scale at A1 1:200
Scale at A3 1:400
0m 2.5 5 10 15 16

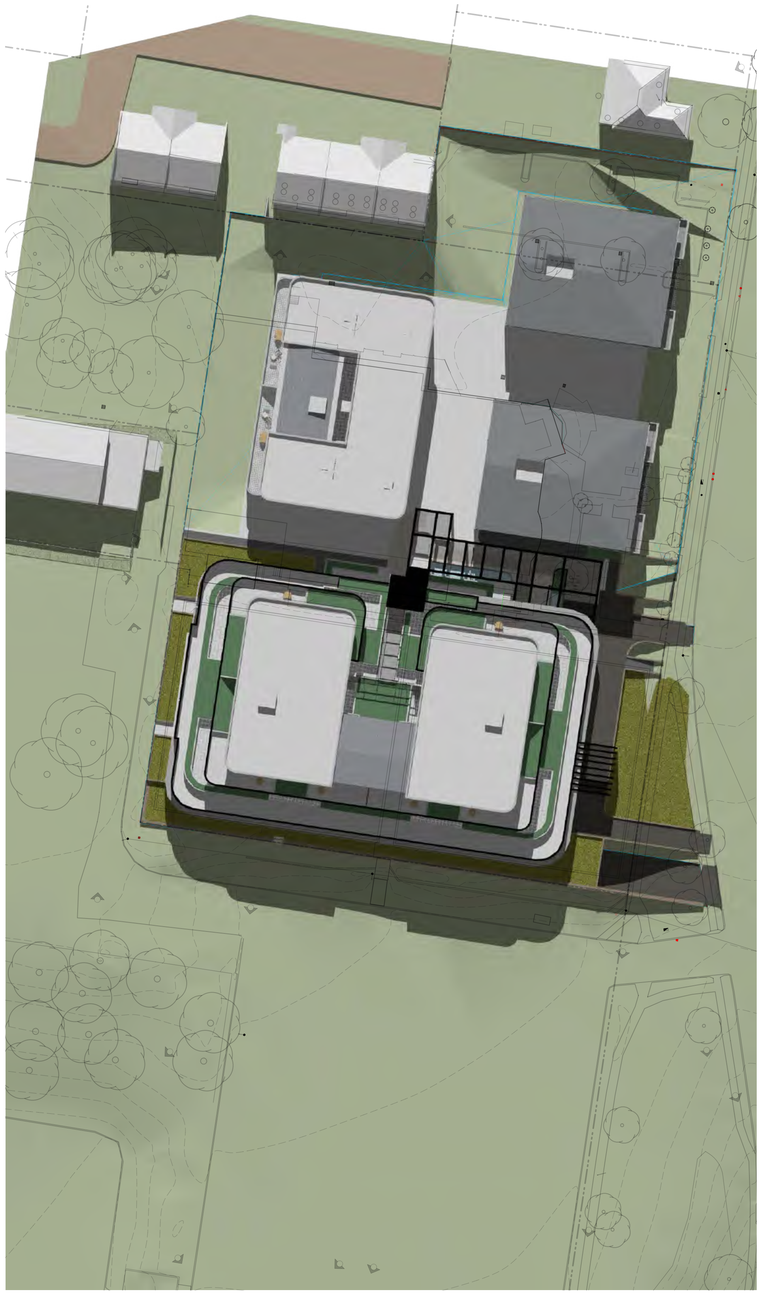
Figured dimensions shall take precedence over scale. Contractors must verify all dimensions on job before commencing any work or making shop drawings.

MASTERPLAN SET

DRAWN	DATE	CHKD
AL	20/04/2023	PH
PROJECT #	SHEET #	REVISION #
22-0716	**DA_A_303**	**G**

N

01 SHADOWS - JUNE 21 - 9AM
scale 1:500



02 SHADOWS - JUNE 21 - 12PM
scale 1:500

03 SHADOWS - JUNE 21 - 3PM
scale 1:500

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Rev. No.	Date	Revision	By
A	16/11/2022	CLIENT MEETING	PJH
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C	12/04/2024	B5 ADDED	PJH
D	30/08/2024	DA	PH
E	14/02/2025	DA UPDATE	PH
F	11/04/2025	ISSUE TO CONSULTANTS	PJH
G	5/05/2025	DA RESUBMISSION	pjh

CLIENT
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PROJECT
CLUB REDEVELOPMENT
22 MELWOOD AVE
LOT 2589 & LOT 31
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DRAWING
SHADOW DIAGRAMS

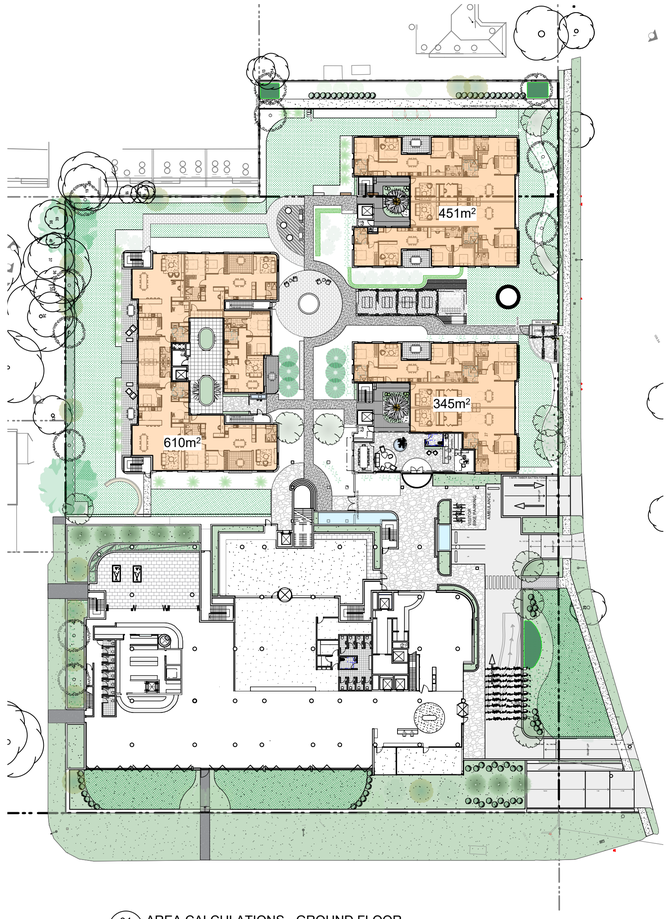
Scale at A1 1:500
Scale at A3 1:1000
0m 5 10 25 40

Figured dimensions shall take precedence over scale. Contractors must verify all dimensions on job before commencing any work or making shop drawings.

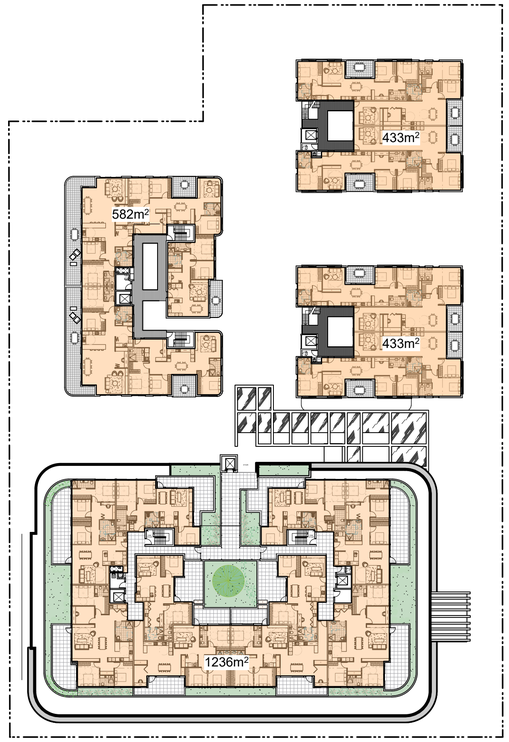
MASTERPLAN SET

DRAWN	DATE	CHKD
AL	20/04/2023	PH
PROJECT #	SHEET #	REVISION #
22-0716	**DA_A_400**	**G**

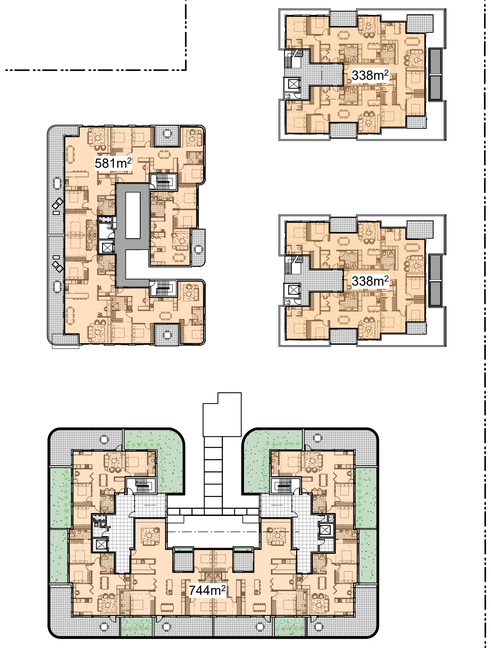
N



04 AREA CALCULATIONS - GROUND FLOOR
scale 1:500



05 AREA CALCULATIONS - LEVEL 1
scale 1:500



06 AREA CALCULATIONS - LEVEL 2
scale 1:500

Retirement Living - Club Building	
1	1236
2	744
	1980
Retirement Living - Building 1	
G	345
1	433
2	338
	1116
Retirement Living - Building 2	
G	451
1	433
2	338
	1222
Retirement Living - Building 3	
G	610
1	582
2	581
	1773
SENIOR TOTAL NSA	6091

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Rev. No.	Date	Revision	By
F	11/04/2025	ISSUE TO CONSULTANTS	PJH
G	5/05/2025	DA RESUBMISSION	pjh

CLIENT
FORESTVILLE RSL

PROJECT
CLUB REDEVELOPMENT
22 MELWOOD AVE
LOT 2589 & LOT 31
DP752038 & DP 366454

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DRAWING
AREA CALCS - NET SALEALBE AREA

Scale at A1 1:500
Scale at A3 1:1000
0m 5 10 25 40

Figured dimensions shall take precedence over scale. Contractors must verify all dimensions on job before commencing any work or making shop drawings.

MASTERPLAN SET

DRAWN	DATE	CHKD
AL	20/04/2023	PH
PROJECT #	SHEET #	REVISION #
22-0716	**DA_A_800**	

APPENDIX B

FORMER GEOTECHNICAL BOREHOLE LOGS

APPENDIX C

LOTSEARCH REPORT

LOTSEARCH

LOTSEARCH ENVIRO PROFESSIONAL

Date: 21 Aug 2024 09:36:14

Reference: LS060323 EP

Address: 20-22 Melwood Avenue, Forestville, NSW 2087

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

Dataset Listing

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

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features On-site	No. Features within 100m	No. Features within Buffer
Cadastre Boundaries	NSW Department of Customer Service - Spatial Services	24/07/2024	24/07/2024	Quarterly	-	-	-	-
Topographic Data	NSW Department of Customer Service - Spatial Services	21/05/2024	21/05/2024	Annually	-	-	-	-
List of NSW contaminated sites notified to EPA	Environment Protection Authority NSW	30/07/2024	10/07/2024	Monthly	1000m	0	0	2
Contaminated Land Records of Notice	Environment Protection Authority NSW	30/07/2024	30/07/2024	Monthly	1000m	0	0	2
Former Gasworks	Environment Protection Authority NSW	06/08/2024	14/07/2021	Quarterly	1000m	0	0	0
Notices under the POEO Act 1997	Environment Protection Authority NSW	30/07/2024	30/07/2024	Monthly	1000m	0	0	1
National Waste Management Facilities Database	Geoscience Australia	29/04/2024	29/11/2022	Annually	1000m	0	0	1
National Liquid Fuel Facilities	Geoscience Australia	20/09/2023	07/09/2020	Annually	1000m	0	0	6
EPA PFAS Investigation Program	Environment Protection Authority NSW	19/08/2024	14/06/2024	Monthly	2000m	0	0	0
Defence PFAS Investigation & Management Program - Investigation Sites	Australian Department of Defence	19/08/2024	19/08/2024	Monthly	2000m	0	0	0
Defence PFAS Investigation & Management Program - Management Sites	Australian Department of Defence	19/08/2024	19/08/2024	Monthly	2000m	0	0	0
Airservices Australia National PFAS Management Program	Airservices Australia	19/08/2024	19/08/2024	Monthly	2000m	0	0	0
Defence Controlled Areas	Australian Department of Defence	17/07/2024	17/07/2024	Quarterly	2000m	0	0	0
Defence 3 Year Regional Contamination Investigation Program	Australian Department of Defence	05/08/2024	02/09/2022	Quarterly	2000m	0	0	0
National Unexploded Ordnance (UXO)	Australian Department of Defence	17/07/2024	17/07/2024	Quarterly	2000m	0	0	0
EPA Other Sites with Contamination Issues	Environment Protection Authority NSW	13/11/2023	15/12/2022	Annually	1000m	0	0	0
Licensed Activities under the POEO Act 1997	Environment Protection Authority NSW	22/07/2024	22/07/2024	Monthly	1000m	0	0	0
Delicensed POEO Activities still regulated by the EPA	Environment Protection Authority NSW	22/07/2024	22/07/2024	Monthly	1000m	0	0	0
Former POEO Licensed Activities now revoked or surrendered	Environment Protection Authority NSW	22/07/2024	22/07/2024	Monthly	1000m	0	0	3
UBD Business Directories (Premise & Intersection Matches)	Hardie Grant			Not required	150m	0	1	4
UBD Business Directories (Road & Area Matches)	Hardie Grant			Not required	150m	-	6	6
UBD Business Directory Dry Cleaners & Motor Garages/Service Stations (Premise & Intersection Matches)	Hardie Grant			Not required	500m	0	0	103
UBD Business Directory Dry Cleaners & Motor Garages/Service Stations (Road & Area Matches)	Hardie Grant			Not required	500m	-	0	44
Points of Interest	NSW Department of Customer Service - Spatial Services	18/07/2024	18/07/2024	Quarterly	1000m	2	4	47
Tanks (Areas)	NSW Department of Customer Service - Spatial Services	18/07/2024	18/07/2024	Quarterly	1000m	0	0	0
Tanks (Points)	NSW Department of Customer Service - Spatial Services	18/07/2024	18/07/2024	Quarterly	1000m	0	0	0
Major Easements	NSW Department of Customer Service - Spatial Services	09/08/2024	09/08/2024	Quarterly	1000m	1	1	30
State Forest	Forestry Corporation of NSW	12/12/2023	11/12/2023	Annually	1000m	0	0	0
Hydrogeology Map of Australia	Geoscience Australia	17/04/2024	19/08/2019	Annually	1000m	1	1	1

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features On-site	No. Features within 100m	No. Features within Buffer
Temporary Water Restriction (Botany Sands Groundwater Source) Order 2018	NSW Department of Climate Change, Energy, the Environment and Water	28/05/2024	23/02/2018	Quarterly	1000m	0	0	0
National Groundwater Information System (NGIS) Boreholes	Bureau of Meteorology; Water NSW	28/05/2024	20/06/2023	Annually	2000m	0	0	31
NSW Seamless Geology Single Layer: Rock Units	NSW Department of Regional NSW	06/12/2023	31/05/2023	Annually	1000m	1	1	3
NSW Seamless Geology Single Layer: Trendlines	NSW Department of Regional NSW	06/12/2023	31/05/2023	Annually	1000m	0	0	0
NSW Seamless Geology Single Layer: Geological Boundaries and Faults	NSW Department of Regional NSW	06/12/2023	31/05/2023	Annually	1000m	0	0	0
Naturally Occurring Asbestos Potential	NSW Department of Regional NSW	26/04/2024	14/03/2024	Annually	1000m	0	0	0
Atlas of Australian Soils	Australian Bureau of Agriculture and Resource Economics and Sciences (ABARES)	12/01/2024	17/02/2011	Annually	1000m	1	1	1
Soil Landscapes of Central and Eastern NSW	NSW Department of Climate Change, Energy, the Environment and Water	12/12/2023	27/07/2020	Annually	1000m	3	3	5
Environmental Planning Instrument Acid Sulfate Soils	NSW Department of Planning, Housing and Infrastructure	12/08/2024	12/07/2024	Monthly	500m	0	-	-
Atlas of Australian Acid Sulfate Soils	CSIRO	12/01/2024	21/02/2013	Annually	1000m	1	1	3
Dryland Salinity - National Assessment	Australian Bureau of Agricultural and Resource Economics and Sciences	03/06/2024	24/05/2024	Annually	1000m	0	0	0
Mining Subsidence Districts	NSW Department of Customer Service	06/08/2024	06/08/2024	Quarterly	1000m	0	0	0
Current Mining Titles	NSW Department of Regional NSW	22/07/2024	22/07/2024	Monthly	1000m	0	0	0
Mining Title Applications	NSW Department of Regional NSW	22/07/2024	22/07/2024	Monthly	1000m	0	0	0
Historic Mining Titles	NSW Department of Regional NSW	22/07/2024	22/07/2024	Monthly	1000m	12	12	12
Environmental Planning Instrument SEPP State Significant Precincts	NSW Department of Planning, Housing and Infrastructure	12/08/2024	08/09/2023	Monthly	1000m	0	0	0
Environmental Planning Instrument Land Zoning	NSW Department of Planning, Housing and Infrastructure	12/08/2024	26/07/2024	Monthly	1000m	1	2	37
Commonwealth Heritage List	Australian Department of Climate Change, Energy, the Environment and Water	20/10/2023	13/04/2022	Annually	1000m	0	0	0
National Heritage List	Australian Department of Climate Change, Energy, the Environment and Water	20/10/2023	13/04/2022	Annually	1000m	0	0	0
State Heritage Register - Curtilages	NSW Department of Planning, Industry and Environment	29/07/2024	05/07/2024	Quarterly	1000m	0	0	0
Environmental Planning Instrument Local Heritage	NSW Department of Planning, Housing and Infrastructure	12/08/2024	26/07/2024	Monthly	1000m	0	0	3
Bush Fire Prone Land	NSW Rural Fire Service	22/07/2024	12/03/2024	Monthly	1000m	0	2	3
NSW Native Vegetation Type Map	NSW Department of Climate Change, Energy, the Environment and Water	28/05/2024	30/11/2023	Quarterly	1000m	1	3	116
Ramsar Wetlands of Australia	Australian Department of Climate Change, Energy, the Environment and Water	16/05/2024	11/04/2024	Annually	1000m	0	0	0
Collaborative Australian Protected Areas Database (CAPAD) 2022 - Terrestrial	Australian Department of Climate Change, Energy, The Environment and Water	04/03/2024	30/06/2022	Annually	1000m	0	0	1
Collaborative Australian Protected Areas Database (CAPAD) 2022 - Marine	Australian Department of Climate Change, Energy, The Environment and Water	04/03/2024	30/06/2022	Annually	1000m	0	0	0
Groundwater Dependent Ecosystems	Bureau of Meteorology	28/05/2024	28/05/2024	Annually	1000m	0	0	3
Inflow Dependent Ecosystems Likelihood	Bureau of Meteorology	28/05/2024	28/05/2024	Annually	1000m	0	0	3
NSW BioNet Species Sightings	NSW Department of Climate Change, Energy, the Environment and Water	16/08/2024	16/08/2024	Monthly	10000m	-	-	-

Site Diagram

20-22 Melwood Avenue, Forestville, NSW 2087

Legend

- Site Boundary
- Internal Parcel Boundaries

Total Area: 9002m²

Total Perimeter: 400m

Disclaimers:

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

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

Scale: 0 15 30 Meters

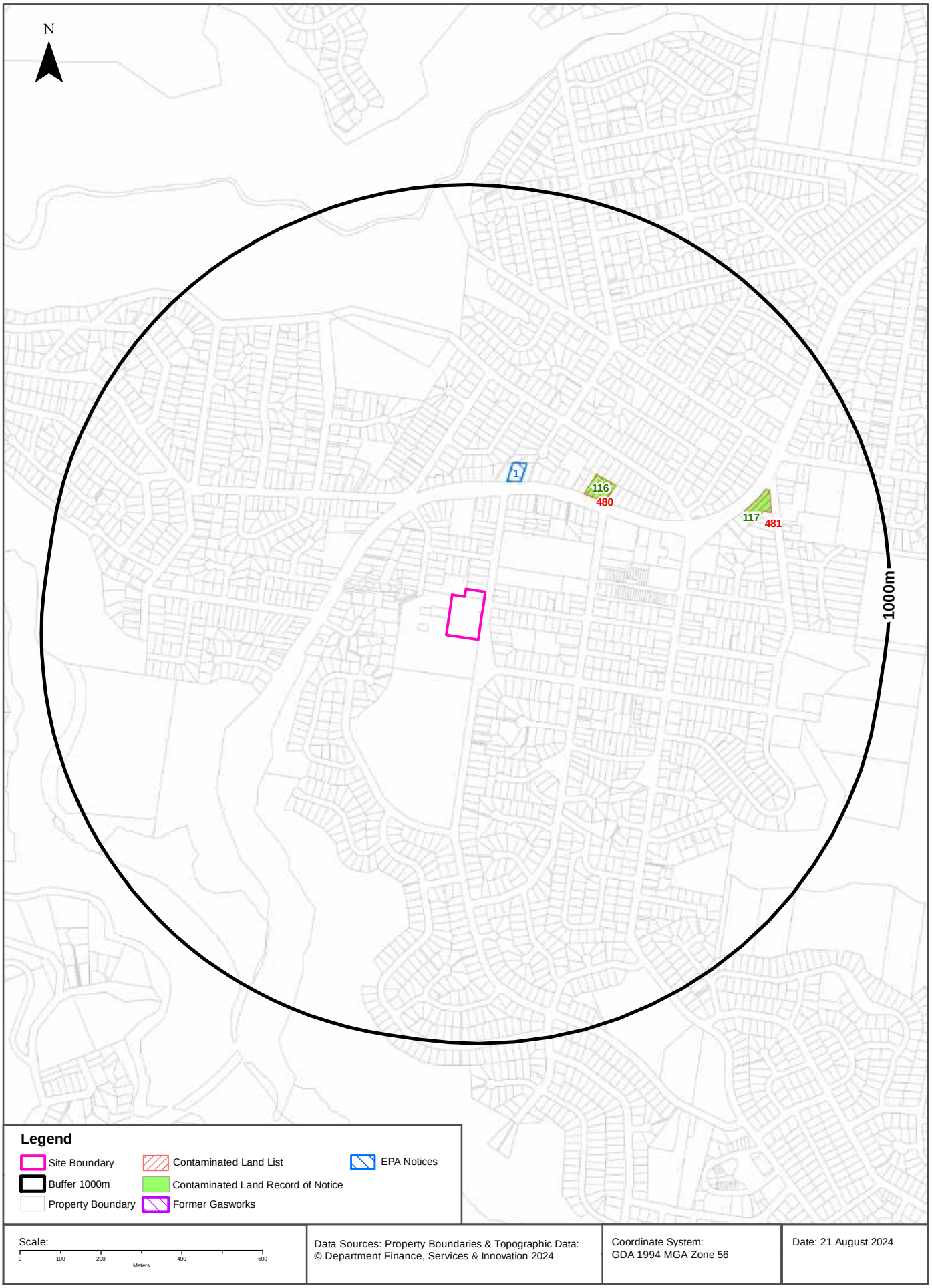
Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2024

Coordinate System: GDA 1994 MGA Zone 56

Date: 20 August 2024

Contaminated Land

20-22 Melwood Avenue, Forestville, NSW 2087



Contaminated Land

20-22 Melwood Avenue, Forestville, NSW 2087

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	Direction
480	BP Service Station, Forestville	632 Warringah Road	Forestville	Service Station	Contamination formerly regulated under the CLM Act	Current EPA List	Premise Match	342m	North East
481	Shell Service Station	667 Warringah Road	Forestville	Service Station	Contamination formerly regulated under the CLM Act	Current EPA List	Premise Match	669m	East

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.
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

20-22 Melwood Avenue, Forestville, NSW 2087

Contaminated Land: Records of Notice

Record of Notices within the dataset buffer:

Map Id	Name	Address	Suburb	Notices	Area No	Location Confidence	Distance	Direction
116	BP Service Station, Forestville	632 Warringah Road	Forestville	7 former	3298	Premise Match	342m	North East
117	Shell Service Station	667 Warringah Road	Forestville	4 former	3186	Premise Match	669m	East

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

Contaminated Land

20-22 Melwood Avenue, Forestville, NSW 2087

EPA Notices

Penalty Notices, s.91 & s.92 Clean up Notices and s.96 Prevention Notices within the dataset buffer:

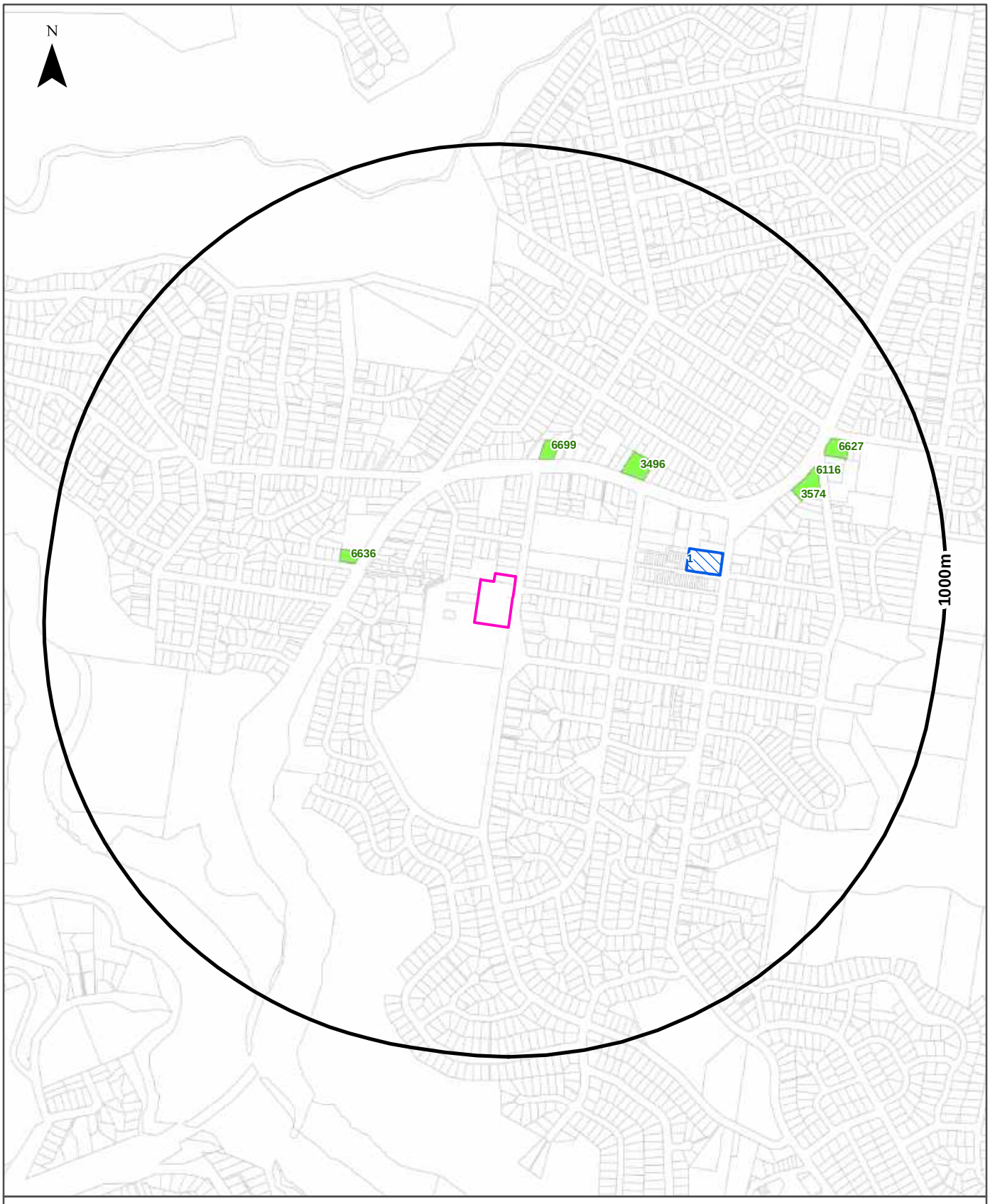
Map ID	Number	Type	Name	Address	Status	Issued Date	Act	Offence	Offence Date	Loc Conf	Dist	Dir
1	1554224	s.91 Clean Up Notice	RICHARD DONG	656 Warringah Road, FORESTVILLE, NSW 2087	Issued	17/07/2017				Premise Match	277m	North

NSW EPA Notice Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

Waste Management & Liquid Fuel Facilities

20-22 Melwood Avenue, Forestville, NSW 2087



Legend

- Site Boundary
- Buffer 1000m
- Property Boundary
- Waste Management Facilities
- National Liquid Fuel Facilities

Scale:	Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2024	Coordinate System: GDA 1994 MGA Zone 56	Date: 21 August 2024

Scale: 0 100 200 400 600 Meters

Waste Management & Liquid Fuel Facilities

20-22 Melwood Avenue, Forestville, NSW 2087

National Waste Management Facilities Database

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

Map ID	Owner	Name	Address	Management Type	Facility Type	Status	Loc Conf	Dist	Dir
1	COLES	COLES SUPERMARKET	6 STARKEY STREET, FORESTVILLE	DROP-OFF	SOFT PLASTICS DROP-OFF FACILITY	OPERATIONAL	Premise Match	396m	East

Source: Waste Management Facilities Database
Creative Commons 4.0 © Commonwealth of Australia (Geoscience Australia) 2022

National Liquid Fuel Facilities

National Liquid Fuel Facilties within the dataset buffer:

Map Id	Owner	Name	Address	Suburb	Class	Operational Status	Operator	Revision Date	Loc Conf	Dist	Direction
6699	METRO FUEL	METRO PETROLEUM FORESTVILLE	656 WARRINGAH ROAD	FORESTVILLE	PETROL STATION	OPERATIONAL			Premise Match	277m	North
6636	METRO FUEL	METRO FUEL KILLARNEY HEIGHTS	702-704 WARRINGAH ROAD	FORESTVILLE	PETROL STATION	OPERATIONAL			Premise Match	285m	West
3496	BP	BP Forestville	632 Warringah Road	Forestville	Petrol Station	Operational		25/07/2011	Premise Match	342m	North East
3574	Shell	Coles Express Forestville	665-667 Warringah Road	Forestville	Petrol Station	Operational		25/07/2011	Premise Match	669m	East
6116	COLES EXPRESS	COLES EXPRESS FORESTVILLE	665-671 WARRINGAH ROAD	FORESTVILLE	PETROL STATION	OPERATIONAL			Premise Match	669m	East
6627	METRO FUEL	METRO FUEL FRENCHS FOREST	663 WARRINGAH ROAD	FORESTVILLE	PETROL STATION	OPERATIONAL			Premise Match	769m	North East

National Liquid Fuel Facilities Data Source: Geoscience Australia
Creative Commons 4.0 © Commonwealth of Australia

PFAS Investigation & Management Programs

20-22 Melwood Avenue, Forestville, NSW 2087

EPA PFAS Investigation Program

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

Map 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 Program

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

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

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

Defence PFAS Management Program

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

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

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

Airservices Australia National PFAS Management Program

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

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

Airservices Australia National PFAS Management Program Data Custodian: Airservices Australia

Defence Sites and Unexploded Ordnance

20-22 Melwood Avenue, Forestville, NSW 2087

Defence Controlled Areas (DCA)

Defence Controlled Areas provided by the Department of Defence within the dataset buffer:

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

Defence Controlled Areas, Data Custodian: Department of Defence, Australian Government

Defence 3 Year Regional Contamination Investigation Program (RCIP)

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
N/A	No records in buffer					

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

National Unexploded Ordnance (UXO)

Sites which have been assessed by the Department of Defence for the potential presence of unexploded ordnance within the dataset buffer:

Site ID	Location Name	Category	Area Description	Additional Information	Commonwealth	Loc Conf	Dist	Dir
N/A	No records in buffer							

National Unexploded Ordnance (UXO), Data Custodian: Department of Defence, Australian Government

EPA Other Sites with Contamination Issues

20-22 Melwood Avenue, Forestville, NSW 2087

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

20-22 Melwood Avenue, Forestville, NSW 2087

Licensed Activities under the POEO Act 1997

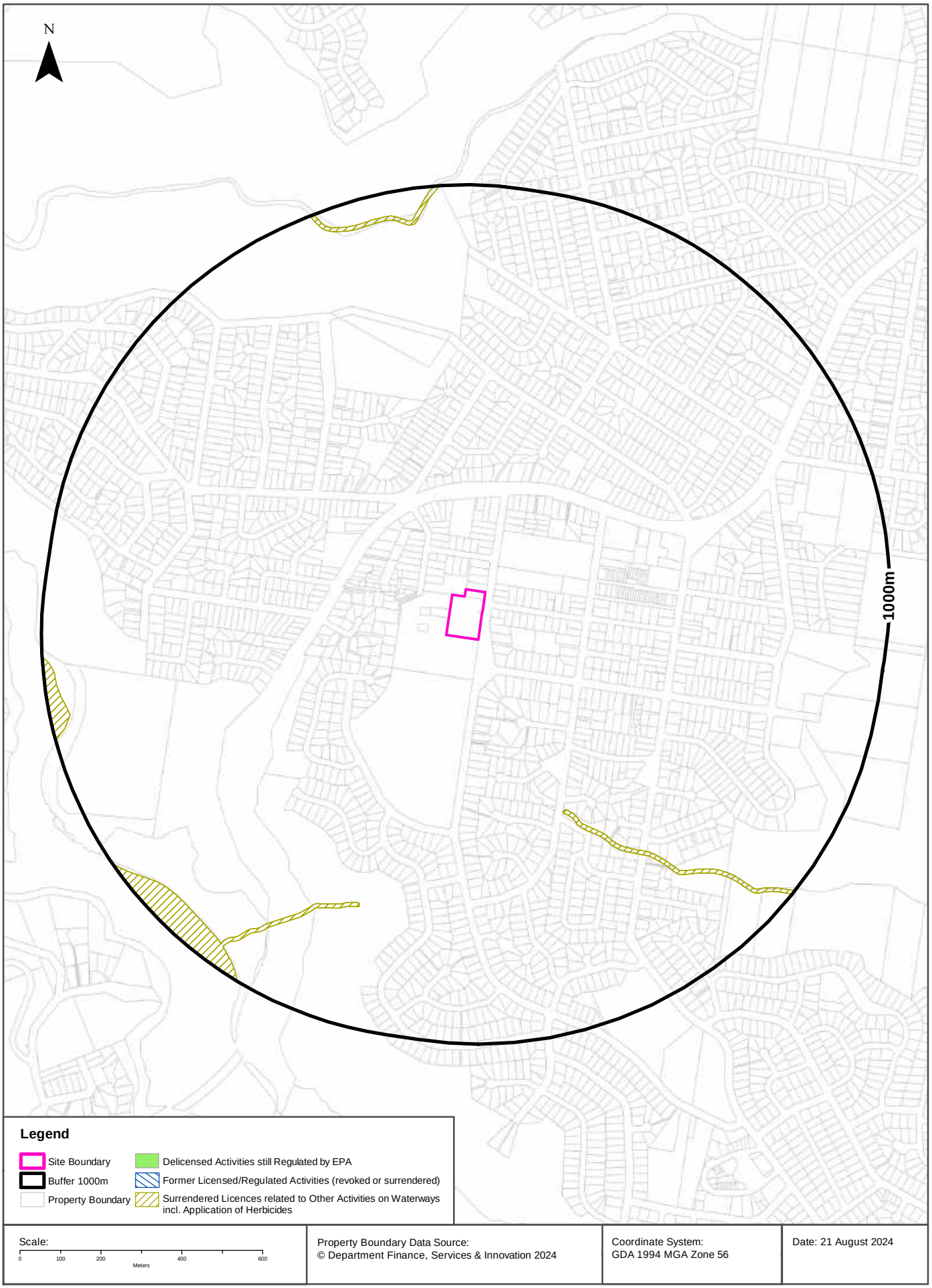
Licensed activities under the Protection of the Environment Operations Act 1997, within the dataset buffer:

EPL	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
N/A	No records in buffer							

POEO Licence Data Source: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

Delicensed & Former Licensed EPA Activities

20-22 Melwood Avenue, Forestville, NSW 2087



EPA Activities

20-22 Melwood Avenue, Forestville, NSW 2087

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
N/A	No records in buffer							

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

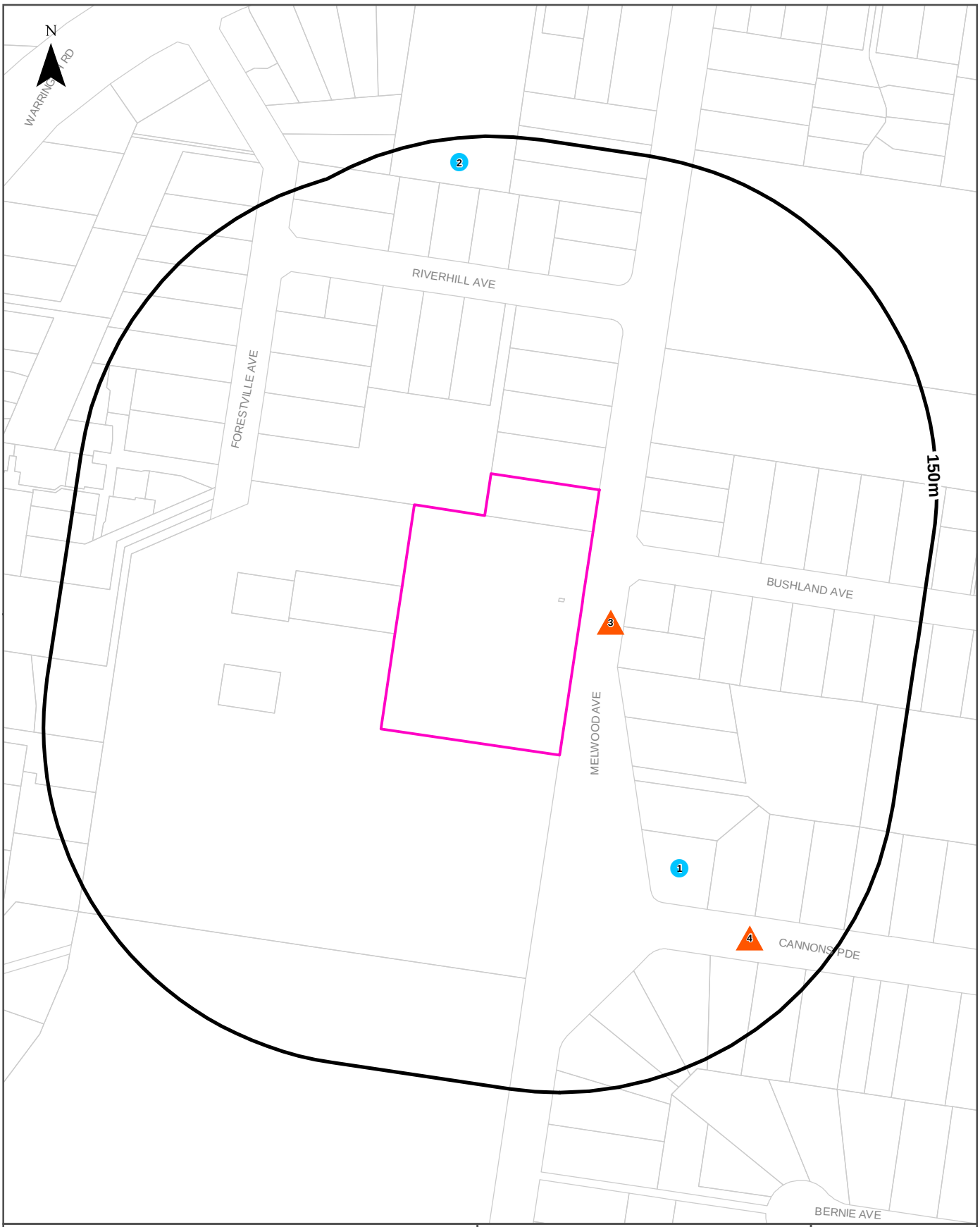
Former Licensed activities under the Protection of the Environment Operations Act 1997, now revoked or surrendered, within the dataset buffer:

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	473m	South West
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	473m	South West
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	473m	South West

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

Historical Business Directories

20-22 Melwood Avenue, Forestville, NSW 2087



Legend

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

Scale: 0 30 60 90 120 Meters

Coordinate System: GDA 1994 MGA Zone 56

Date: 21 August 2024

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

Historical Business Directories

20-22 Melwood Avenue, Forestville, NSW 2087

Business Directory Records 1950-1991
Premise or Road Intersection Matches

Potentially contaminative business activities extracted from Universal Business Directories from years 1991, 1986, 1982, 1978, 1975, 1970, 1965, 1961 & 1950, mapped to a premise or road intersection within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	ELECTRICAL CONTRACTORS-LICENSED	Partridge, R. K., 2 Cannons Pde., Forestville	302367	1961	Premise Match	49m	South East
2	BUILDERS &/OR BUILDING CONTRACTORS.	Albers, O. Pty. Ltd., 757 Warringah Rd., Forestville. 2087.	8324	1975	Premise Match	125m	North
	BUILDERS & CONTRACTORS (B800)	Albers, O., 757 Warringah Rd., Forestville	269909	1970	Premise Match	125m	North
	BUILDERS & CONTRACTORS (B800)	O'Albers., 757 Warringah Rd., Forestville	270298	1970	Premise Match	125m	North

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Business Directory Records 1950-1991
Road or Area Matches

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

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
3	ELECTRICAL CONTRACTORS-LICENSED	Murphy, S. G., Lot 4, Melwood Ave., Forestville	302315	1961	Road Match	0m
	GRAVEL, SAND/SOIL SUPPLIES	Silverthorne, W., Melwood Ave., Forestville	319959	1961	Road Match	0m
	LANDSCAPE GARDENERS	Silverthorne, W., Melwood Ave., Forestville	330561	1961	Road Match	0m
4	FUEL MERCHANTS-COAL, COKE & WOOD	Silverthorne, W., Cannons Pde., Frenchs Forest	51873	1950	Road Match	80m
	GRAVEL, SAND & SOIL SUPPLIES	Silverthorpe, W., Cannons Pde., Frenchs Forest	55196	1950	Road Match	80m
	LANDSCAPE GARDENERS	Silverthorpe, W., Cannons Pde., Frenchs Forest	67495	1950	Road Match	80m

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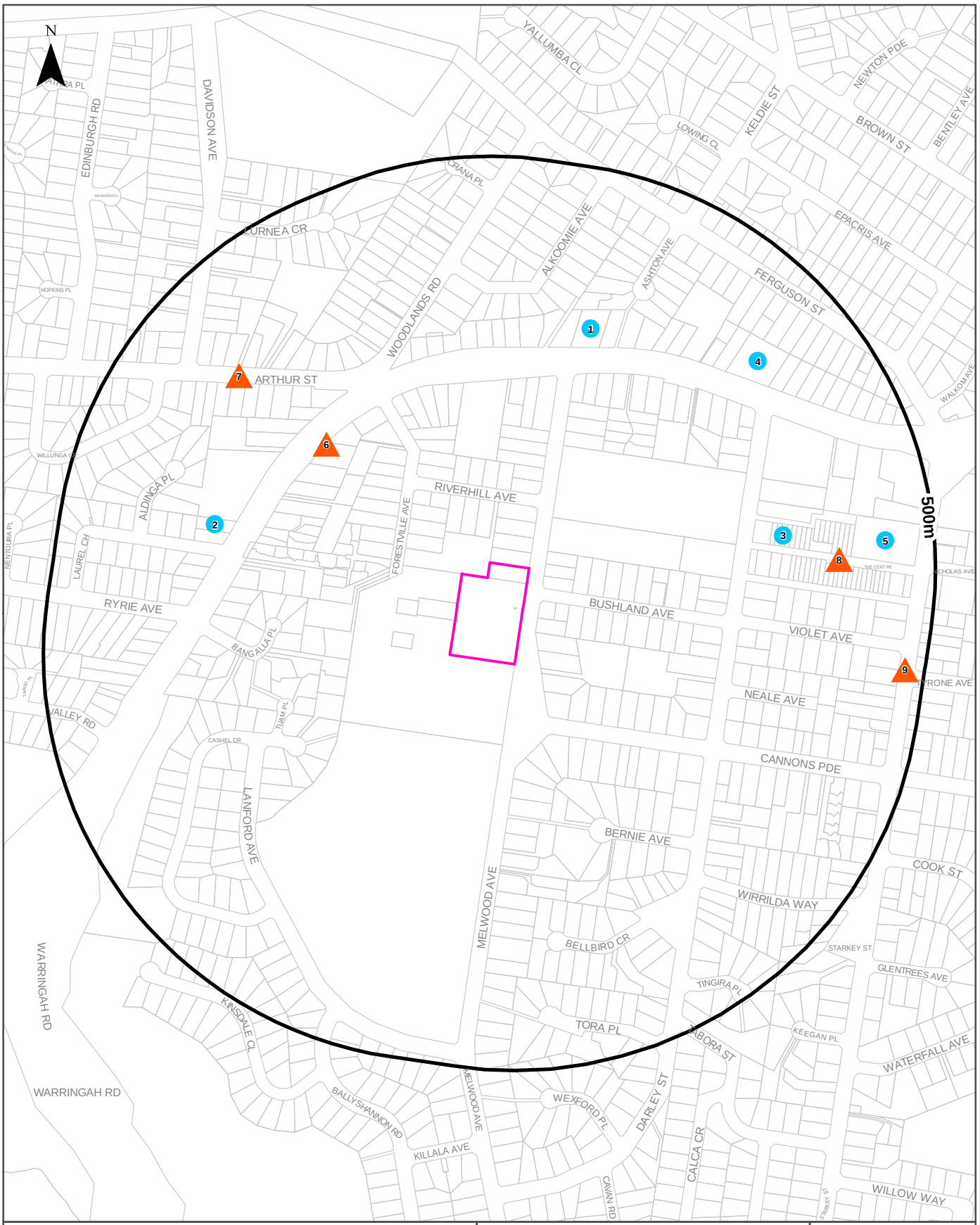
Dry Cleaners, Motor Garages & Service Stations

20-22 Melwood Avenue, Forestville, NSW 2087



Legend

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

Scale: 0 90 180 270 360 Meters

Coordinate System: GDA 1994 MGA Zone 56

Date: 21 August 2024

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

Historical Business Directories

20-22 Melwood Avenue, Forestville, NSW 2087

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

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

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

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	MOTOR GARAGES & SERVICE STATIONS.	Caltex Forrestville Service Station, 656 Warringah Rd., Forestville. 2087	11307	1990	Premise Match	277m	North
	MOTOR GARAGE & SERVICE STATIONS.	Caltex Forrestville Service Station, 656 Warringah Rd., Forestville. 2087	64748	1989	Premise Match	277m	North
	MOTOR GARAGES & SERVICE STATIONS.	Caltex Forrestville Service Station, 656 Warringah Rd., Forestville. 2087	53868	1988	Premise Match	277m	North
	MOTOR GARAGES & SERVICE STATIONS.	Caltex Forrestville Service Station, 656 Warringah Rd., Forestville. 2087	64339	1986	Premise Match	277m	North
	MOTOR GARAGES & SERVICE STATIONS.	Caltex Forrestville Service Station, 656 Warringah Rd., Forestville. 2087	39338	1985	Premise Match	277m	North
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Caltex Forrestvine Service Station, 656 Warringah Rd., Forestville. 2087	27946	1984	Premise Match	277m	North
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Caltex Forrestville Service Station., 656 Warringah Rd., Forestville 2087	14363	1983	Premise Match	277m	North
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Caltex Forrestville Service Station, 656 Warringah Rd., Forestville. 2087.	56416	1982	Premise Match	277m	North
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Caltex Forrestville Service Station., 656 Warringah Rd., Forrestville. 2087	64089	1981	Premise Match	277m	North
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Caltex Forrest Ville Service Station., 656 Warringah Rd., Forestville 2087	51596	1980	Premise Match	277m	North
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Caltex Service Station., 656 Warringah Rd., Forestville. 2087.	41185	1979	Premise Match	277m	North
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Caltex Service Station, 656 Warringah Rd., Forestville. 2087	49717	1978	Premise Match	277m	North
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Caltex Service Station., 656 Warringah Rd., Forestville 2087	29628	1976	Premise Match	277m	North
	MOTOR GARAGES &/OR ENGINEERS.	Vidler's Service Station., 656 Warringah Rd., Forestville. 2087	59722	1975	Premise Match	277m	North
	MOTOR GARAGES &/OR ENGINEERS.	Vldler's Service Station., 656 Warringah Rd Forestville	12194	1972	Premise Match	277m	North
	MOTOR GARAGES &/OR ENGINEERS.	Vidler's Service Station., 656 Warringah Rd Forestville	56807	1971	Premise Match	277m	North
	MOTOR GARAGES & ENGINEERS(M6S6)	Swans Service Station., 656 Warringah Rd., FORESTVILLE	338699	1970	Premise Match	277m	North

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	MOTOR SERVICE STATIONS-PETROL,OIL,Etc.	Swans Service Station., 656 Warringah Rd., FORESTVILLE	341523	1970	Premise Match	277m	North
	MOTOR GARAGES & ENGINEERS.	Swans Service Station., 656 Warringah Rd Forestville	42218	1969	Premise Match	277m	North
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Swans Service Station., 656 Warringah Rd Forestville	47814	1969	Premise Match	277m	North
	MOTOR GARAGES & ENGINEERS	Swans Service Station., 656 Warringah Rd Forestville	25745	1968	Premise Match	277m	North
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Swans Service Station., 656 Warringah Rd Forestville	31247	1968	Premise Match	277m	North
	MOTOR GARAGES & ENGINEERS.	Forestville Service Station., 656 Warringah Rd Forestville	10246	1967	Premise Match	277m	North
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Forestville Service Station., 656 Warringah Rd Forestville	15721	1967	Premise Match	277m	North
	MOTOR GARAGES & ENGINEERS.	Forestville Service Station., 656 Warringah Rd Forestville	56136	1966	Premise Match	277m	North
	Motor Garages & Engineers	Forestville Service Station, 656 Warringah Rd. Forestville	122671	1965	Premise Match	277m	North
2	MOTOR GARAGES & SERVICE STATIONS.	Roseville Bndge Service Centre & Discount Tyres Pty Ltd., 702 Warringah Rd., Forestville. 2087	20293	1993	Premise Match	285m	West
	Motor Garages & Service Stations	Roseville Bridge Service Centre Pty. Ltd., 702 Warringah Rd., Forestville 2087	53825	1991	Premise Match	285m	West
	MOTOR GARAGES & SERVICE STATIONS.	Roseville Bridge Service Centre Pty. Ltd., 702 Warringah Rd., Forestville. 2087	12060	1990	Premise Match	285m	West
	MOTOR GARAGE & SERVICE STATIONS.	Roseville Bridge Service Centre Pty. Ltd., 702 Warringah Rd., Forestville. 2087	5482	1989	Premise Match	285m	West
	MOTOR GARAGES & SERVICE STATIONS.	Roseville Bridge Service Centre Pty. Ltd., 702 Warringah Rd., Forestville. 2087	59870	1988	Premise Match	285m	West
	MOTOR GARAGES & SERVICE STATIONS.	Roseville Bridge Service Centre Pty. Ltd., 702 Warringah Rd., Forestville. 2087	65369	1986	Premise Match	285m	West
	MOTOR GARAGES & SERVICE STATIONS.	Roseville Bridge Service Centre Pty. Ltd., 702 Warringah Rd., Forestville. 2087	45486	1985	Premise Match	285m	West
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Roseville Bridge Service Centre Pty. Ltd., 702 Warringah Rd., Forestville. 2087	34055	1984	Premise Match	285m	West
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Roseville Bridge Service Centre Pty. Ltd., 702 Warringah Rd., Forestville 2087	21506	1983	Premise Match	285m	West
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Roseville Bridge Service Centre Pty. Ltd., 702 Warringah Rd., Forestville. 2087.	57497	1982	Premise Match	285m	West
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Roseville Bridge Service Centre Pty. Ltd., 702 Warringah Rd., Forestville 2087	4035	1981	Premise Match	285m	West
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Roseville Bridge Service Centre Pty. Ltd., 702 Warringah Rd., Forestville. 2087	58772	1980	Premise Match	285m	West
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Roseville & Bridge Service Centre Pty. Ltd., 702 Warringah Rd., Forestville. 2087.	46274	1979	Premise Match	285m	West
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Roseville Bridge Service Centre Pty. Ltd., 702 Warringah Rd., Forestville. 2087	50774	1978	Premise Match	285m	West
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Roseville Bridge Service Centre Pty. Ltd., 702 Warringah Rd., Forestville 2087	34841	1976	Premise Match	285m	West

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
2	MOTOR GARAGES &/OR ENGINEERS.	Roseville Bridge Service Centre Pty. Ltd., 702 Warringah Rd., Forestville. 2087	59488	1975	Premise Match	285m	West
	MOTOR GARAGES &/OR ENGINEERS.	Roseville Bridge Service Centre Pty. Ltd., 702 Warringah Rd Forestville	8127	1972	Premise Match	285m	West
	MOTOR GARAGES &/OR ENGINEERS.	Roseville Bridge Service Centre Pty. Ltd., 702 Warringah Rd Forestville	56804	1971	Premise Match	285m	West
3	DRY CLEANERS & PRESSERS.	Lloyd Jones Dry Cleaners, 28 Mall Centre Darley St., Forestville. 2087	53188	1988	Premise Match	309m	East
	DRY CLEANERS & PRESSERS.	Lloyd Jones Dry Cleaners, 28 Mall Centre, Forestville. 2087	25416	1986	Premise Match	309m	East
	DRY CLEANERS & PRESSERS.	Lloyd Jones Dry Cleaners, 28 Mall Centre, Forestville. 2087	34634	1985	Premise Match	309m	East
	DRY CLEANERS & PRESSERS.	Lloyd Jones Dry Cleaners, 28 Mall Centre, Forestville. 2087	22080	1984	Premise Match	309m	East
	DRY CLEANERS & PRESSERS.	Lloyd Jones Dry Cleaners., 28 Mall Centre, Forestville 2087	8672	1983	Premise Match	309m	East
	DRY CLEANERS & PRESSERS.(D8500)	Lloyd Jones Dry Cleaners, 28 Mall Centre, Forestville. 2087.	23943	1982	Premise Match	309m	East
	DRY CLEANERS & PRESSERS.	Lloyd Jones Dry Cleaners., 28 Mall Centre., Forestville. 2087	63431	1981	Premise Match	309m	East
	DRY CLEANERS, PRESSERS &/OR DYERS.	Ridgeways Dry Cleaners., 28 Mall Centre., Forestville. 2087	49996	1980	Premise Match	309m	East
	DRY CLEANERS, PRESSERS &/OR DYERS.	Ridgeways Dry Cleaners., 28 Mall Centre., Forestville. 2087.	35533	1979	Premise Match	309m	East
	DRY CLEANERS, PRESSERS &/OR DYERS	Ridgeways Dry Cleaners, 28 Mall Centre Forestville. 2087	20934	1978	Premise Match	309m	East
	DRY CLEANERS, PRESSERS &/OR DYERS.	Ninety Minute-Ridgeways Dry Cleaners., 28 Pedestrian Mall Centre, Forestville 2087	23718	1976	Premise Match	309m	East
	DRY CLEANERS, PRESSERS &/OR DYERS.	Ninety Minute-Ridgeways Dry Cleaners, 28 Pedestrian Mall Centre, Forestville. 2087	24242	1975	Premise Match	309m	East
	DRY CLEANERS, PRESSERS &/OR DYERS.	Ridgeways Dry Cleaners., 28 Pedestrian Mall Forestville	7213	1972	Premise Match	309m	East
	DRY CLEANERS, PRESSERS &/OR DYERS	Ridgeways Dry Cleaners., 28 Pedestrian Mall Forestville	51289	1971	Premise Match	309m	East
	DRY CLEANERS,PRESSERS /DYERS (D710)	Ridgeways Dry Cleaners., 28 Pedestrian Mall., Forestville	292476	1970	Premise Match	309m	East
	DRY CLEANERS, PRESSERS/ DYERS	Centre Dry Cleaners., 28 Pedestrian Mall Forestville	37048	1969	Premise Match	309m	East
	DRY CLEANERS, PRESSERS/DYERS	Centre Dry Cleaners., 28 Pedestrian Mall Forestville	20513	1968	Premise Match	309m	East
	DRY CLEANERS, PRESSERS/ DYERS	Centre Dry Cleaners., 28 Pedestrian Mall Forestville	2018	1967	Premise Match	309m	East
4	MOTOR GARAGES & SERVICE STATIONS.	BP Forestville Service Station, 632 Warringah Rd., Forestville. 2087	18643	1993	Premise Match	342m	North East
	Motor Garages & Service Stations	BP Forestville Service Station, 632 Warringah Rd, Forestville 2087	66552	1991	Premise Match	342m	North East
	MOTOR GARAGES & SERVICE STATIONS.	BP Forestville Service Station, 632 Warringah Rd., Forestville. 2087	6065	1990	Premise Match	342m	North East
	MOTOR GARAGE & SERVICE STATIONS.	BP Forestville Service Station, 632 Warringah Rd., Forestville. 2087	64574	1989	Premise Match	342m	North East
	MOTOR GARAGES & SERVICE STATIONS.	BP Forestville Service Station, 632 Warringah Rd., Forestville. 2087	53685	1988	Premise Match	342m	North East
	MOTOR GARAGES & SERVICE STATIONS.	BP Forestville Service Station, 632 Warringah Rd., Forestville. 2087	64146	1986	Premise Match	342m	North East
	MOTOR GARAGES & SERVICE STATIONS.	BP Forestville Service Station, 632 Warringah Rd., Forestville. 2087	39156	1985	Premise Match	342m	North East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	BP Forest Ville Service Station, 632 Warringah Rd., Forestville. 2087	27760	1984	Premise Match	342m	North East

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
4	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	BP Forestville Service Station., 632 Warringah Rd., Forestville 2087	9116	1983	Premise Match	342m	North East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	BP Forestville Service Station, 632 Warringah Rd., Forestville. 2087.	56217	1982	Premise Match	342m	North East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	BP Forestville Service Station., 632 Warringah Rd., Forestville. 2087	63894	1981	Premise Match	342m	North East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	BP Forestville Service Station., 632 Warringah Rd., Forestville. 2087	51392	1980	Premise Match	342m	North East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	BP Forestville Service Station., 632 Warringah Rd., Forestville. 2087.	40832	1979	Premise Match	342m	North East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	BP Forestville Service Station, 632 Warringah Rd., Forestville. 2087	49349	1978	Premise Match	342m	North East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	BP Forestville Service Station., 632 Warringah Rd., Forestville 2087	25061	1976	Premise Match	342m	North East
	MOTOR SERVICE STATIONS - PETROL, OIL	BP Forestville Service Station., 632 Warringah Rd., Forestville. 2087	61410	1975	Premise Match	342m	North East
	MOTOR GARAGES &/OR ENGINEERS.	BP Forestville Service Station., 632 Warringah Rd Forestville	8124	1972	Premise Match	342m	North East
	MOTOR GARAGES &/OR ENGINEERS.	BP Forestville Service Station., 632 Warringah Rd Forestville	56801	1971	Premise Match	342m	North East
	MOTOR SERVICE STATIONS-PETROL,OIL,Etc.	B. P. Forestville Service Station., 632 Warringah Rd., FORESTVILLE	340800	1970	Premise Match	342m	North East
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	B.P. Forestville Service Station., 632 Warringah Rd Forestville	47812	1969	Premise Match	342m	North East
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	B.P. Forestville Service Station., 632 Warringah Rd Forestville	31245	1968	Premise Match	342m	North East
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	B.P. Forestville Service Station., 632 Warringah Rd Forestville	15720	1967	Premise Match	342m	North East
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	B.P. Forestville Service Station., 632 Warringah Rd Forestville	1293	1966	Premise Match	342m	North East
	Motor Service Stations - Petrol, Oil, Etc.	B.P. Forestville Service Station, 632 Warringah Rd. Forestville	125711	1965	Premise Match	342m	North East
5	MOTOR GARAGES & SERVICE STATIONS.	Ampol Forestville Service Station, 8 Starkey St., Forestville. 2087	5844	1990	Premise Match	396m	East
	MOTOR GARAGE & SERVICE STATIONS.	Ampol Forestville Service Station, 8 Starkey St., Forestville. 2087	64332	1989	Premise Match	396m	East
	MOTOR GARAGES & SERVICE STATIONS.	Ampol Exchange Service Station, 8 Starkey St., Forestville.2087	65826	1988	Premise Match	396m	East
	MOTOR GARAGES & SERVICE STATIONS.	Total Forestville Service Station, 8 Starkey St., Forestville. 2087	65602	1986	Premise Match	396m	East
	MOTOR GARAGES & SERVICE STATIONS.	Total Forester Service Station, 8 Starkey St., Forestville. 2087	45722	1985	Premise Match	396m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Total Forestville Service Station, 8 Starkey St., Forestville. 2087	34282	1984	Premise Match	396m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Total Forestville Service Station., 8 Starkey St., Forestville 2087	21724	1983	Premise Match	396m	East

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
5	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Total Forestville Service Station, 8 Starkey St., Forestville. 2087.	57721	1982	Premise Match	396m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Total Forestville Service Station., 8 Starkey St., Forestville 2087	8308	1981	Premise Match	396m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Total Forestville Service Station., 8 Starkey St., Forestville. 2087	58993	1980	Premise Match	396m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Total Service Station Forestville., 8 Starkey St., Forestville. 2087.	46498	1979	Premise Match	396m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Total Service Station Forestville, 8 Starkey St., Forestville. 2087	50976	1978	Premise Match	396m	East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Total Service Station., Forestville 8 Starkey St., Forestville 2087	35060	1976	Premise Match	396m	East
	MOTOR GARAGES &/OR ENGINEERS.	Total Service Station Forestville., 8 Starkey St., Forestville. 2087	59668	1975	Premise Match	396m	East
	MOTOR GARAGES &/OR ENGINEERS.	Total Service Station Forestville, 8 Starkey St., Forestville 2087	12193	1972	Premise Match	396m	East
	MOTOR GARAGES &/OR ENGINEERS.	Total Service Station Forestville, 8 Starkey St., Forestville 2087	56806	1971	Premise Match	396m	East
	MOTOR GARAGES & ENGINEERS(M6S6)	Total Service Station Forestville., 8 Starkey St., Forestville	338749	1970	Premise Match	396m	East

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

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

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

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
6	MOTOR GARAGES & ENGINEERS.	Forestville Auto- Port., Warringah Rd Forestville	42216	1969	Road Match	223m
	MOTOR GARAGES & ENGINEERS	Forestville Auto Port., Warringah Rd Forestville	25743	1968	Road Match	223m
	MOTOR GARAGES & ENGINEERS.	Forestville Auto Port., Warringah Rd Forestville	10245	1967	Road Match	223m
	MOTOR GARAGES & ENGINEERS.	Forestville Auto Port., Warringah Rd Forestville	56135	1966	Road Match	223m
	Motor Garages & Engineers	Forestville Auto Port, Warringah Rd. Forestville	122670	1965	Road Match	223m
	MOTOR GARAGES & ENGINEERS	Forestville Auto Port., Warringah Rd Forestville	47937	1964	Road Match	223m
	MOTOR GARAGES & ENGINEERS	Forestville Service Station., Warringah Rd Forestville	47938	1964	Road Match	223m
	MOTOR GARAGES & ENGINEERS	Sheppard's Service Station., Warringah Rd Forestville	47940	1964	Road Match	223m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Sheppard's Service Station., Warringah Rd Forestville	52000	1964	Road Match	223m
	MOTOR GARAGES & ENGINEERS.	Forestville Auto Port., Warringah Rd Forest Lodge	29457	1962	Road Match	223m
	MOTOR GARAGES & ENGINEERS.	Forestville Safety Drive Service Station., Warringah Rd Forest Lodge	29456	1962	Road Match	223m
	MOTOR GARAGES & ENGINEERS.	Forestville Service Station., Warringah Rd Forest Lodge	29458	1962	Road Match	223m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Sheppard's Service Station., Warringah Rd Forestville	38200	1962	Road Match	223m
	MOTOR GARAGES & ENGINEERS.	Sheppard's Service Station., Warringah Rd, Forestville	29460	1962	Road Match	223m
	MOTOR GARAGES & ENGINEERS	Forestville Auto Port, Warringah Rd., FORESTVILLE	347154	1961	Road Match	223m
	MOTOR GARAGES & ENGINEERS	Forestville Service Station, Warringah Rd. FORESTVILLE	347155	1961	Road Match	223m
	MOTOR GARAGES & ENGINEERS	Safety Drive Service Station Warringah Rd. FORESTVILLE	348088	1961	Road Match	223m
	MOTOR GARAGES & ENGINEERS	Safety Drive Service Station, Warringah Rd. FORESTVILLE	348089	1961	Road Match	223m
	MOTOR GARAGES & ENGINEERS	Sheppard’s Service Station, Warringah Rd., FORESTVILLE	348125	1961	Road Match	223m
	MOTOR SERVICE STATIONS—PETROL, OIL, Etc.	Sheppard’s Service Station, Warringah Rd., FORESTVILLE	351078	1961	Road Match	223m
	MOTOR GARAGES & ENGINEERS.	Forestville Service Station., Warringah Rd Forestville	14121	1959	Road Match	223m
	MOTOR GARAGES & ENGINEERS.	Safety Drive Service Station., Warringah Rd Forestville	14122	1959	Road Match	223m
	MOTOR GARAGES & ENGINEERS.	Safety Drive Service Station., Warringah Rd Forestville	14120	1959	Road Match	223m
	MOTOR GARAGES & ENGINEERS.	Sheppard's Service Station., Warringah Rd Forestville	14123	1959	Road Match	223m

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
6	MOTOR SERVICE STATIONS-PETROL,. OIL, ETC.	Sheppard's Service Station., Warringah Rd Forestville	24191	1959	Road Match	223m
	MOTOR GARAGE/ENGINEERS.	Safety Drive Service Station., Warringah Rd Forestville	477	1958	Road Match	223m
	MOTOR GARAGE/ENGINEERS.	Safety Drive Service Station., Warringah Rd Forestville	4920	1958	Road Match	223m
	MOTOR GARAGE/ENGINEERS.	Sheppards Service Station., Warringah Rd Forestville	4951	1958	Road Match	223m
	MOTOR SERVICE STATIONS-PETROL, ETC.	Sheppard's Service Station., Warringah Rd Forestville	9818	1958	Road Match	223m
	MOTOR SERVICE STATIONS-PETROL, ETC.	Safety Drive Service Station., Warringah Rd., Forestville	22	1956	Road Match	223m
	MOTOR SERVICE STATIONS-PETROL, ETC.	Sheppard'S Service Station., Warringah Rd Forestville	34	1956	Road Match	223m
7	DRY CLEANERS, PRESSERS &/OR DYERS.	Forest Coin Laundry, The, Arthur St., West Forestville. 2087	24043	1975	Road Match	266m
8	DRY CLEANERS, PRESSERS &/OR DYERS.	Mackellar Dri-Cleaners., 7 Mall Centre., Forestville. 2087.	35457	1979	Road Match	274m
	DRY CLEANERS, PRESSERS &/OR DYERS	Mackellar Dri-Cleaners, 7 Mall Centre Forestville. 2087	20867	1978	Road Match	274m
	DRY CLEANERS, PRESSERS &/OR DYERS.	Littles Dry Cleaners, Pedestrian Mall Centre., Forestville 2087	23656	1976	Road Match	274m
	DRY CLEANERS, PRESSERS &/OR DYERS.	Littles Dry Cleaners, Pedestrian Mall Centre, Forestville. 2087	24181	1975	Road Match	274m
	DRY CLEANERS, PRESSERS &/OR DYERS.	Grosvenor Valet Service., 7 Pedestrian Mall Forestville	2925	1972	Road Match	274m
	DRY CLEANERS, PRESSERS &/OR DYERS	Grosvenor Valet Service., 7 Pedestrian Mall Forestville	51075	1971	Road Match	274m
	DRY CLEANERS,PRESSERS/DYERS (D710)	Grosvenor Valet Service., 7 Pedestrian Mall., Forestville	292326	1970	Road Match	274m
9	MOTOR GARAGES & ENGINEERS.	Total Service Station., Forestville Starkey St Forestville	42219	1969	Road Match	469m
	MOTOR GARAGES & ENGINEERS	Total Service Station., Forestville Starkey St Forestville	25746	1968	Road Match	469m
	MOTOR GARAGES & ENGINEERS.	Total Service Station., Forestville Starkey St Forestville	10248	1967	Road Match	469m
	MOTOR GARAGES & ENGINEERS.	Total Service Station., Forestville Starkey St Forestville	56138	1966	Road Match	469m
	Motor Garages & Engineers	Total Service Station Forestville, Starkey St. Forestville	122673	1965	Road Match	469m

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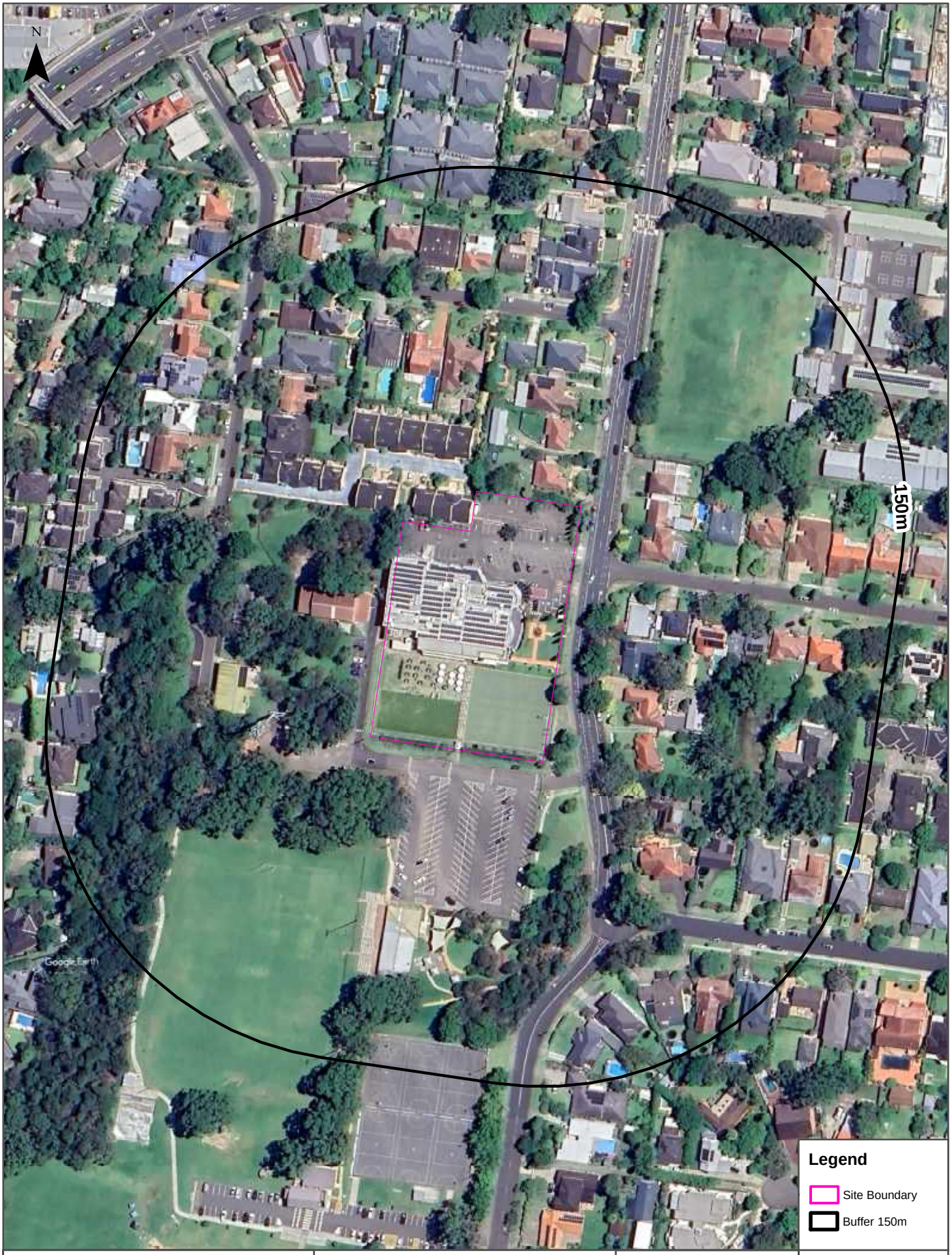
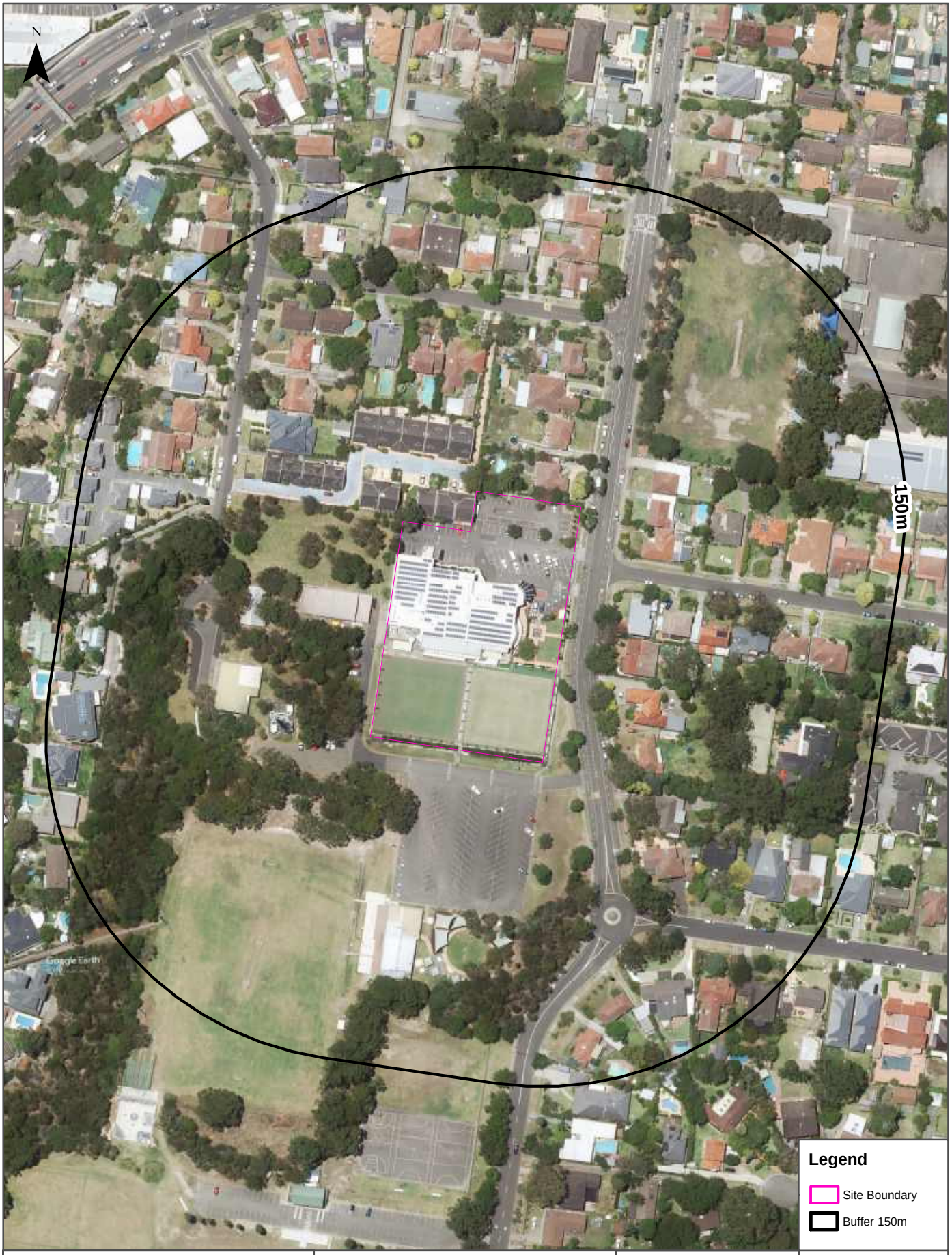
Aerial Imagery 2024

20-22 Melwood Avenue, Forestville, NSW 2087



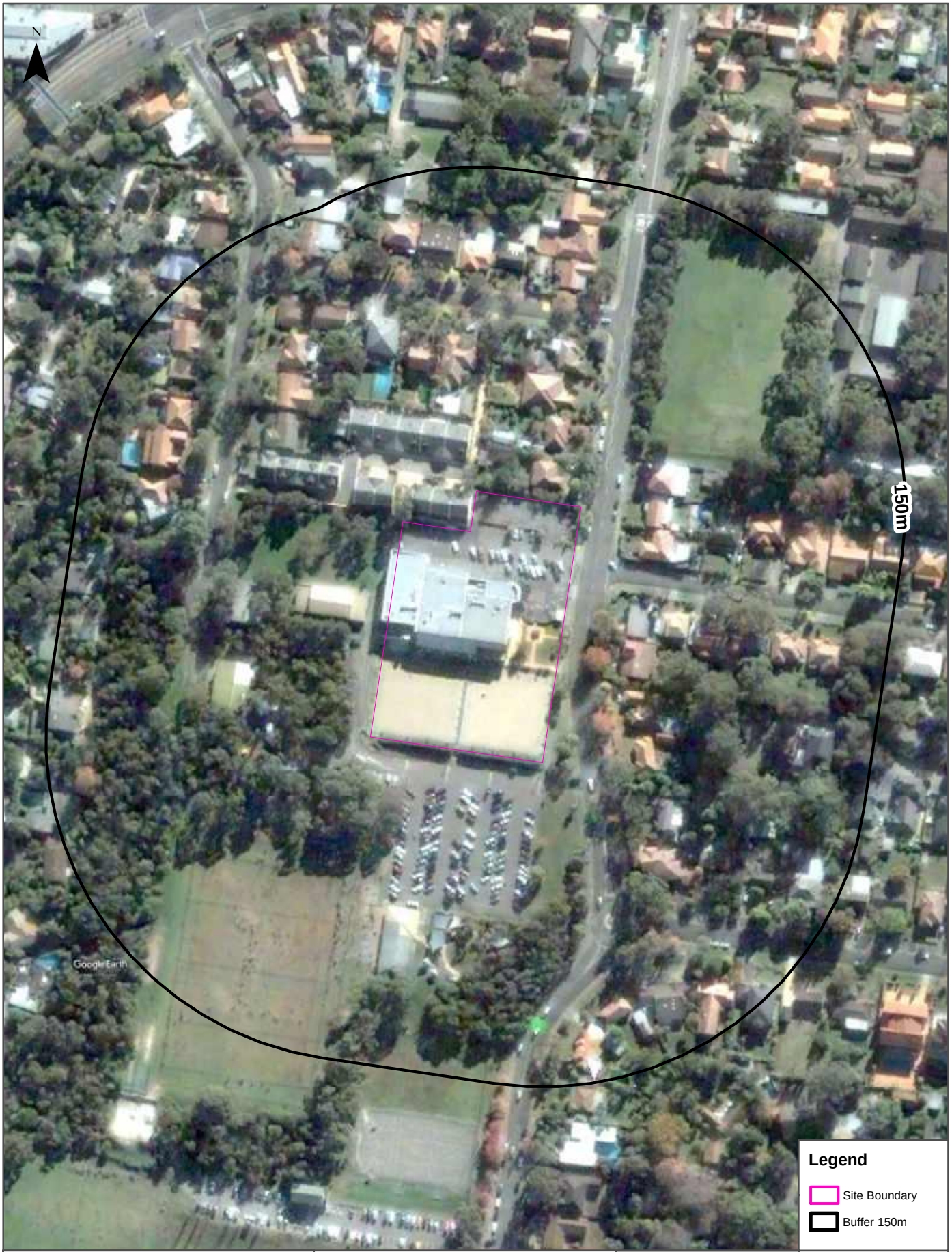
Aerial Imagery 2014

20-22 Melwood Avenue, Forestville, NSW 2087



Aerial Imagery 2005

20-22 Melwood Avenue, Forestville, NSW 2087



Scale:
0 25 50 75 100
Meters

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Coordinate System:
GDA 1994 MGA Zone 56

Date: 21 August 2024

Aerial Imagery 1994

20-22 Melwood Avenue, Forestville, NSW 2087

Scale:
0 25 50 75 100
Meters

Data Sources: Aerial Imagery:
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Coordinate System:
GDA 1994 MGA Zone 56

Date: 20 August 2024

Aerial Imagery 1991

20-22 Melwood Avenue, Forestville, NSW 2087

Scale:	Data Sources: Aerial Imagery:	Coordinate System:	Date: 20 August 2024
0 25 50 75 100 Meters	© NSW Department of Customer Service	GDA 1994 MGA Zone 56	

Aerial Imagery 1986

20-22 Melwood Avenue, Forestville, NSW 2087

Scale:	Data Sources: Aerial Imagery:	Coordinate System:	Date: 20 August 2024
0 25 50 75 100 Meters	© NSW Department of Customer Service	GDA 1994 MGA Zone 56	

Aerial Imagery 1982

20-22 Melwood Avenue, Forestville, NSW 2087

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Aerial Imagery 1978

20-22 Melwood Avenue, Forestville, NSW 2087

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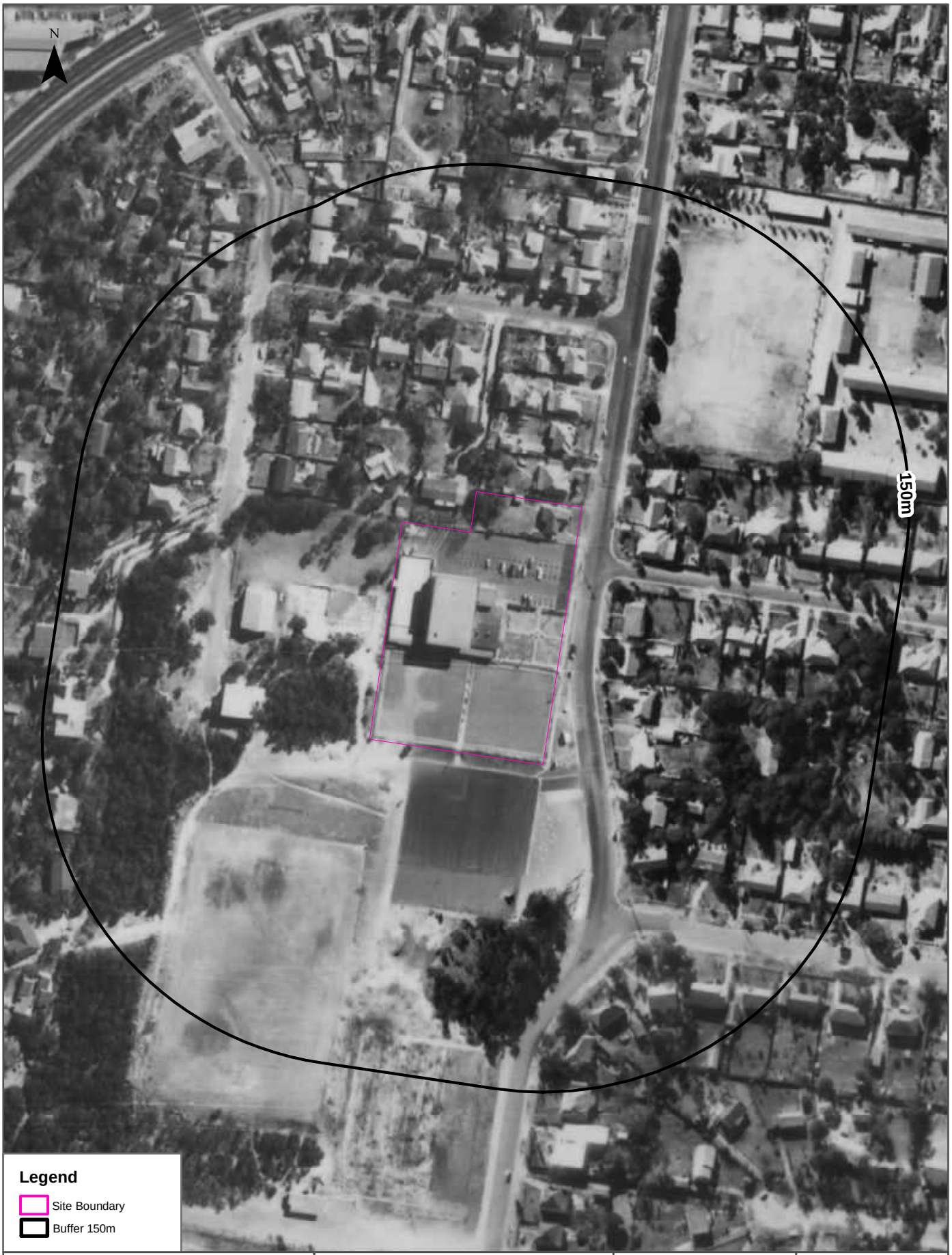
0 25 50 75 100 Meters	© NSW Department of Customer Service	GDA 1994 MGA Zone 56	

Aerial Imagery 1970

20-22 Melwood Avenue, Forestville, NSW 2087



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0 25 50 75 100 Meters	© NSW Department of Customer Service	GDA 1994 MGA Zone 56	

Aerial Imagery 1965

20-22 Melwood Avenue, Forestville, NSW 2087

Scale:
0 25 50 75 100
Meters

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Aerial Imagery 1961

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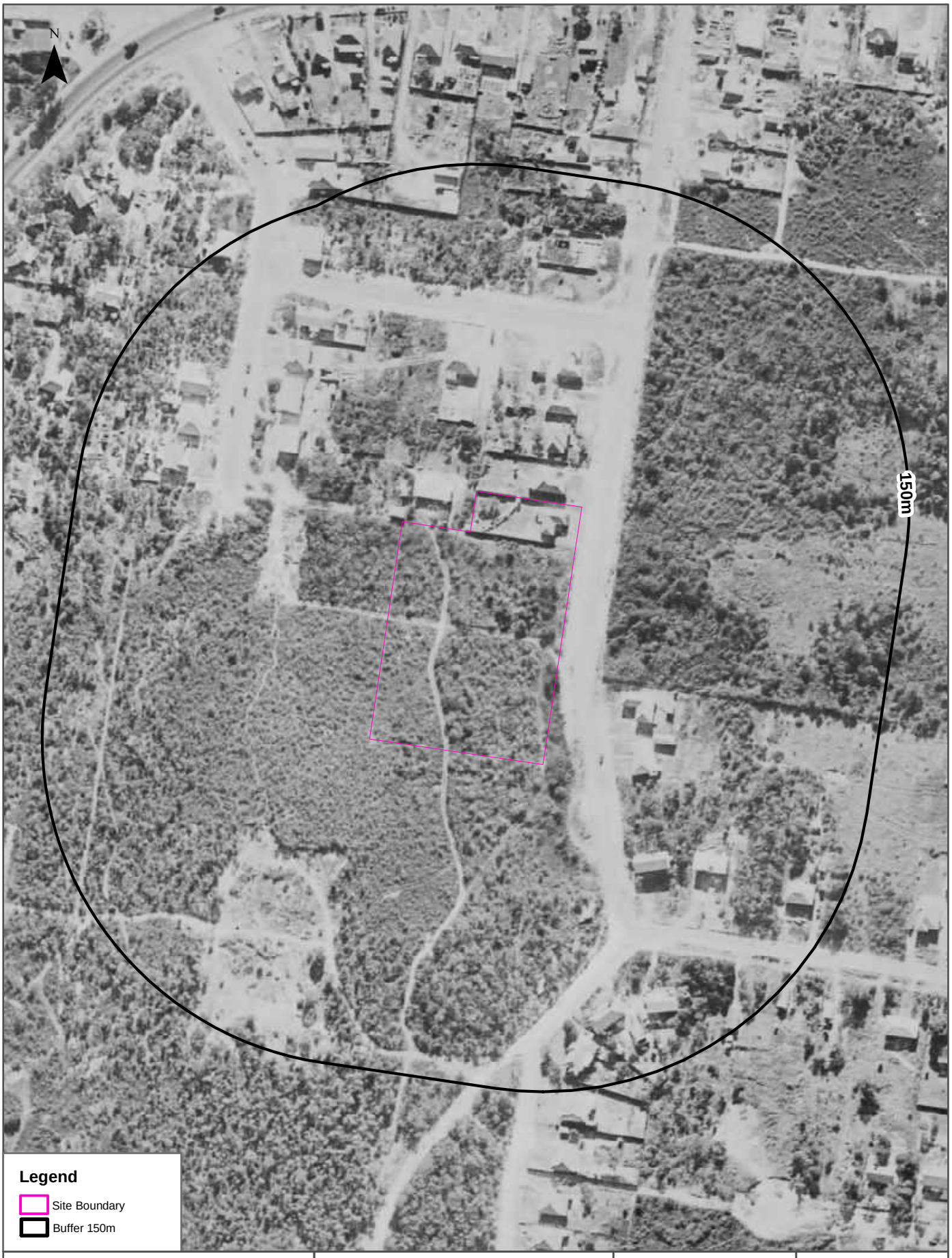
Aerial Imagery 1955, 1956

20-22 Melwood Avenue, Forestville, NSW 2087



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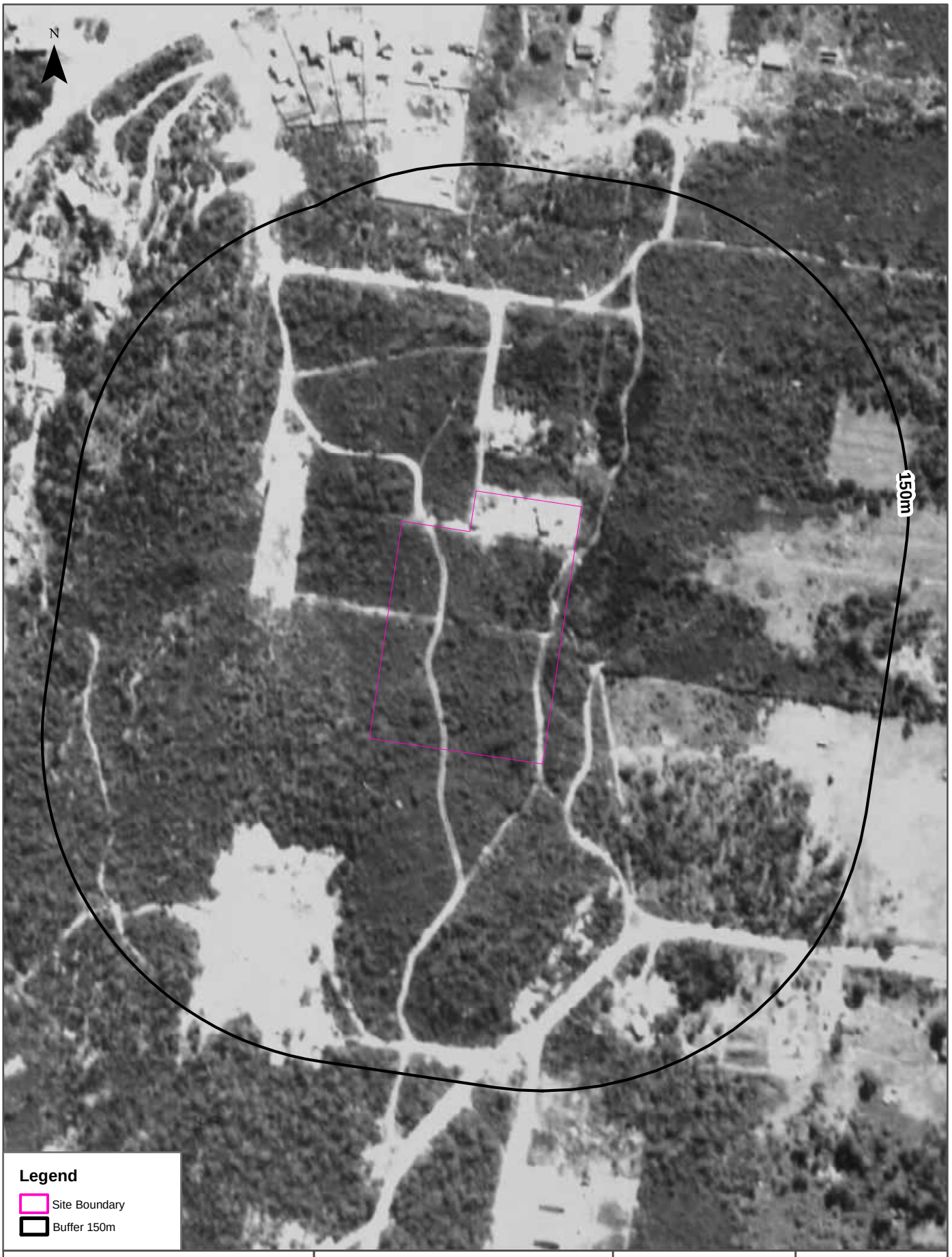
Aerial Imagery 1951

20-22 Melwood Avenue, Forestville, NSW 2087



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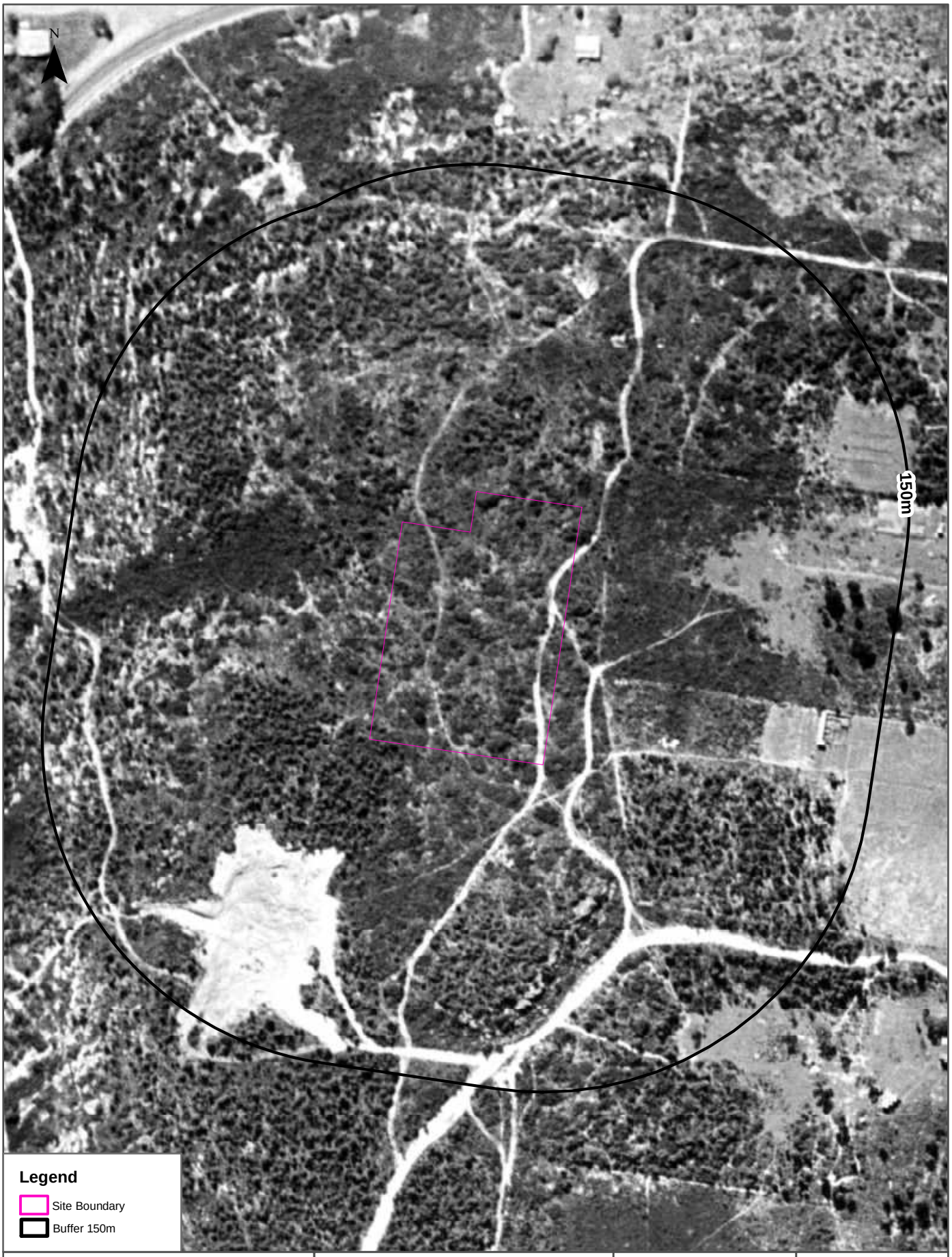
Aerial Imagery 1943

20-22 Melwood Avenue, Forestville, NSW 2087



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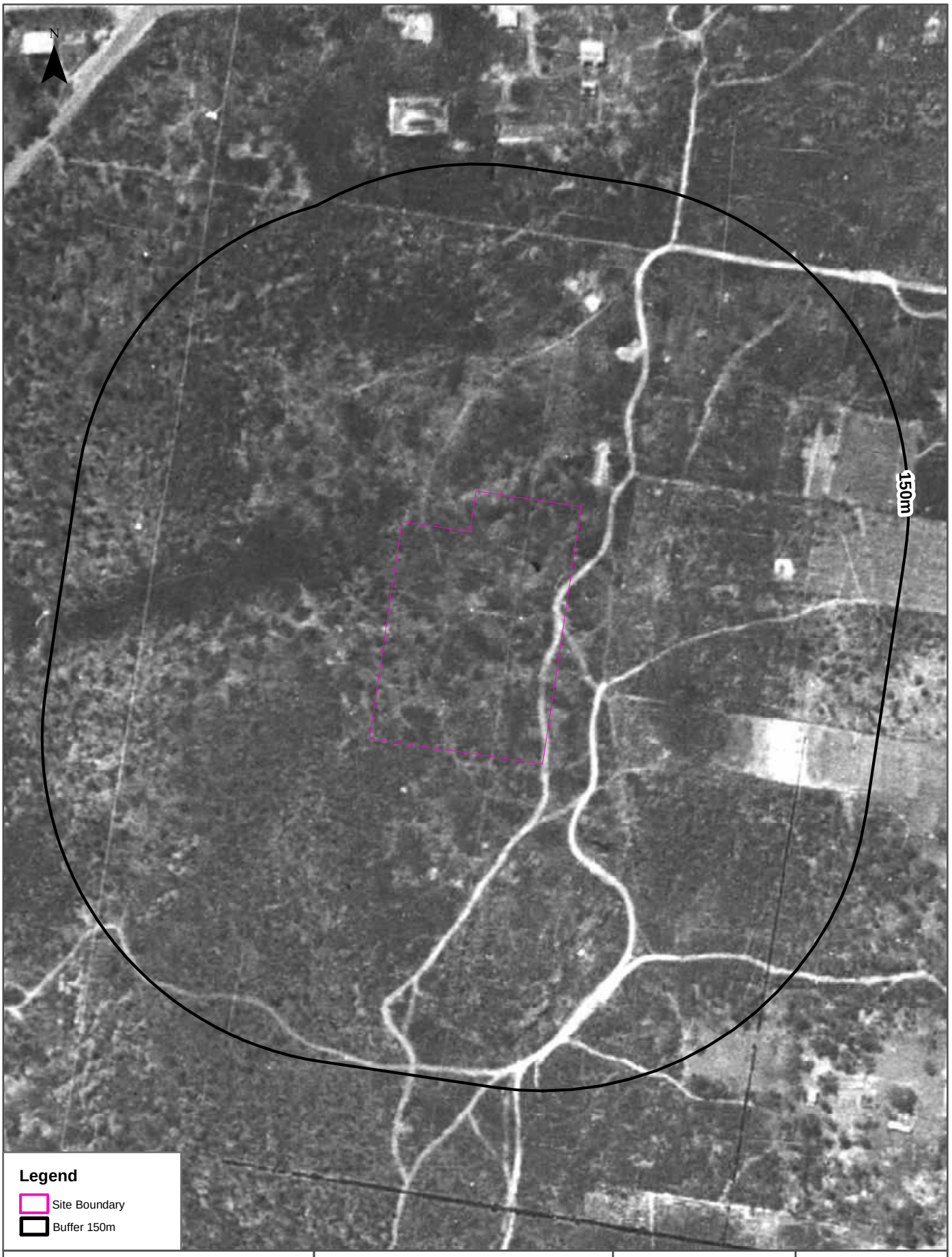
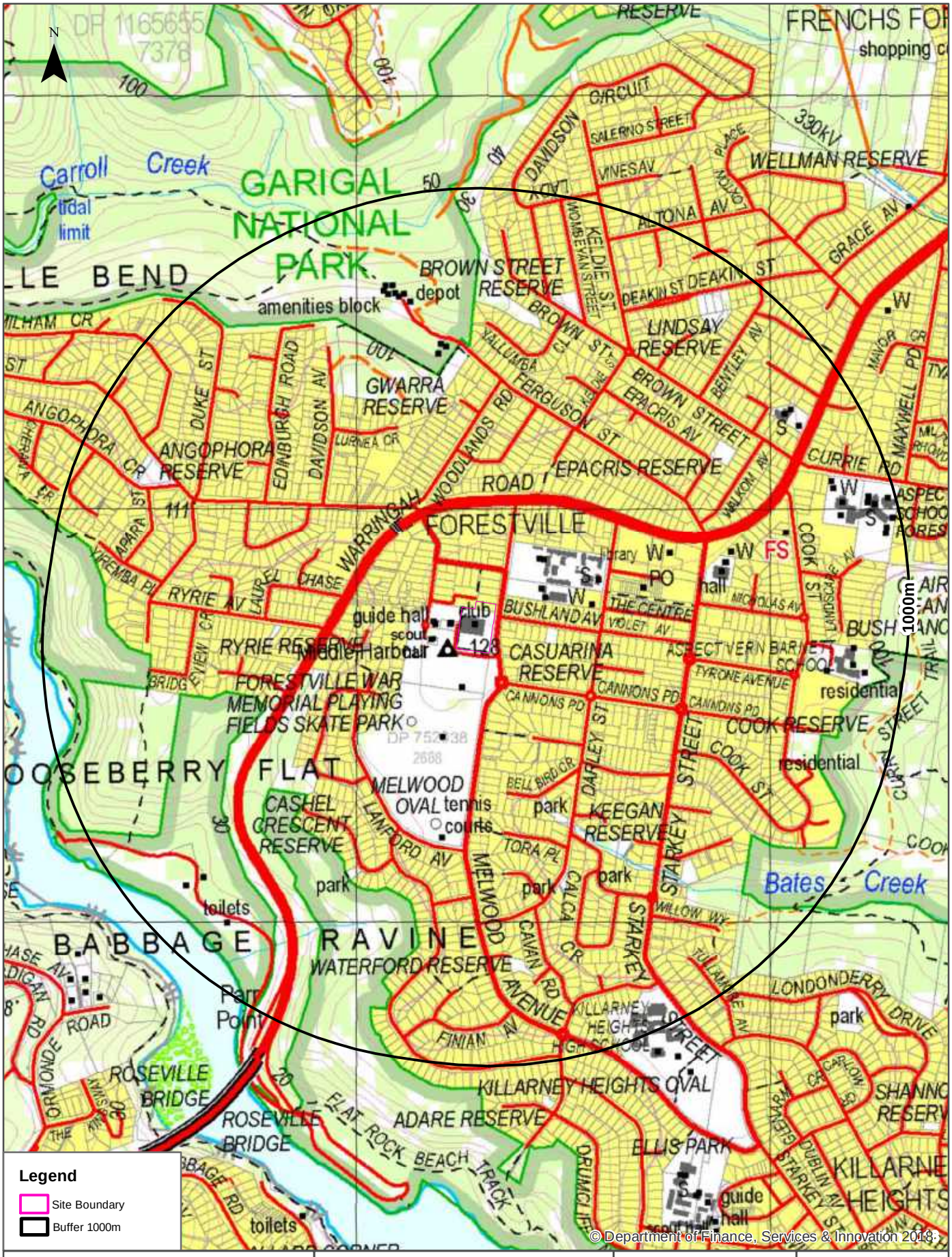
Aerial Imagery 1930

20-22 Melwood Avenue, Forestville, NSW 2087



Topographic Map 2015

20-22 Melwood Avenue, Forestville, NSW 2087



Scale: 0 140 280 420 560 Meters

Data Sources: Topographic Map Data
© NSW Land and Property Information

Coordinate System:
GDA 1994 MGA Zone 56

Date: 21 August 2024

Historical Map 1975

20-22 Melwood Avenue, Forestville, NSW 2087

Scale:
0 290 580 870 1,160
Meters

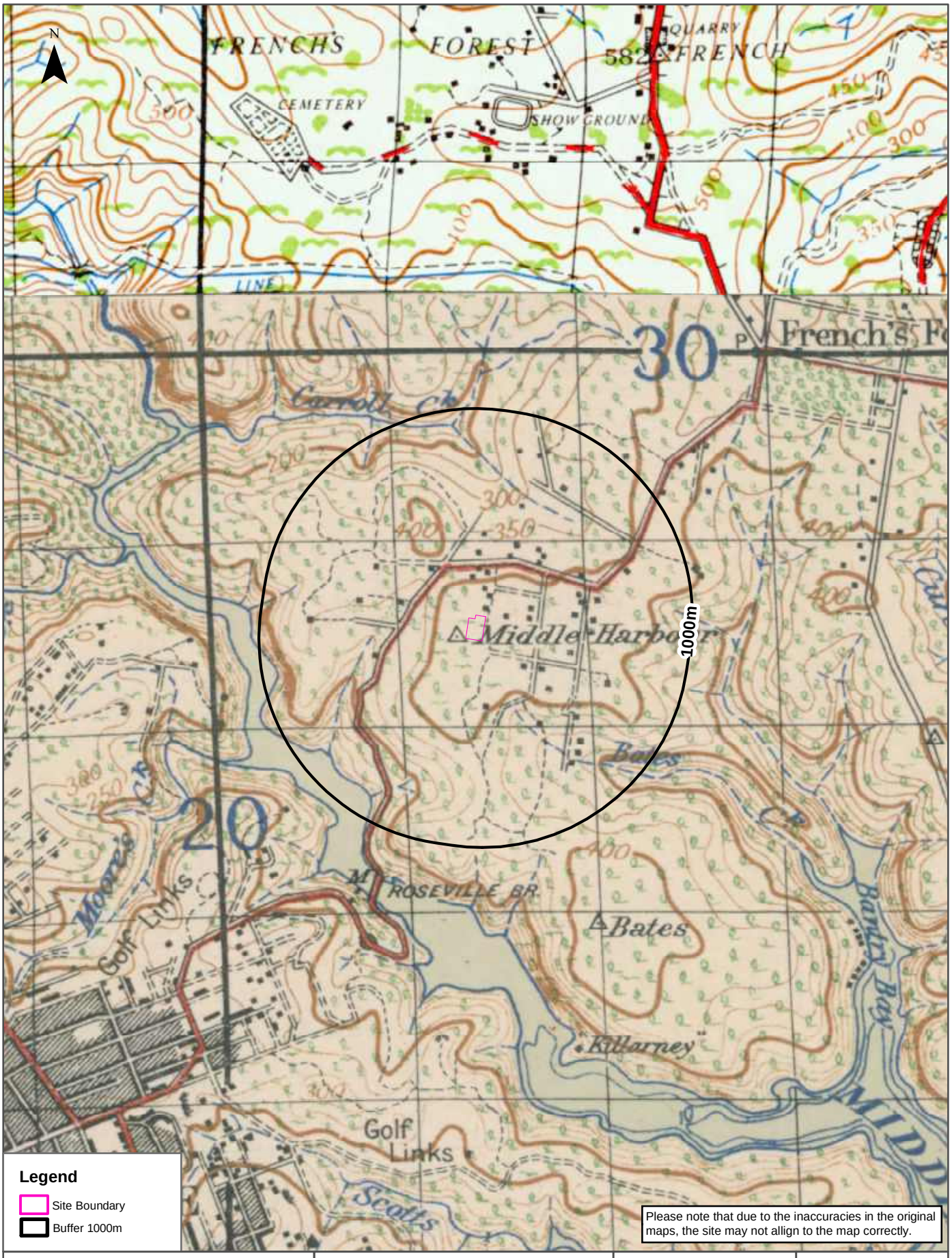
Data Sources: NATMAP 1:100,000
Topographic Maps Geoscience Australia

Coordinate System:
GDA 1994 MGA Zone 56

Date: 21 August 2024

Historical Map 1936 - 1942

20-22 Melwood Avenue, Forestville, NSW 2087



Scale: 0 290 580 870 1,160 Meters

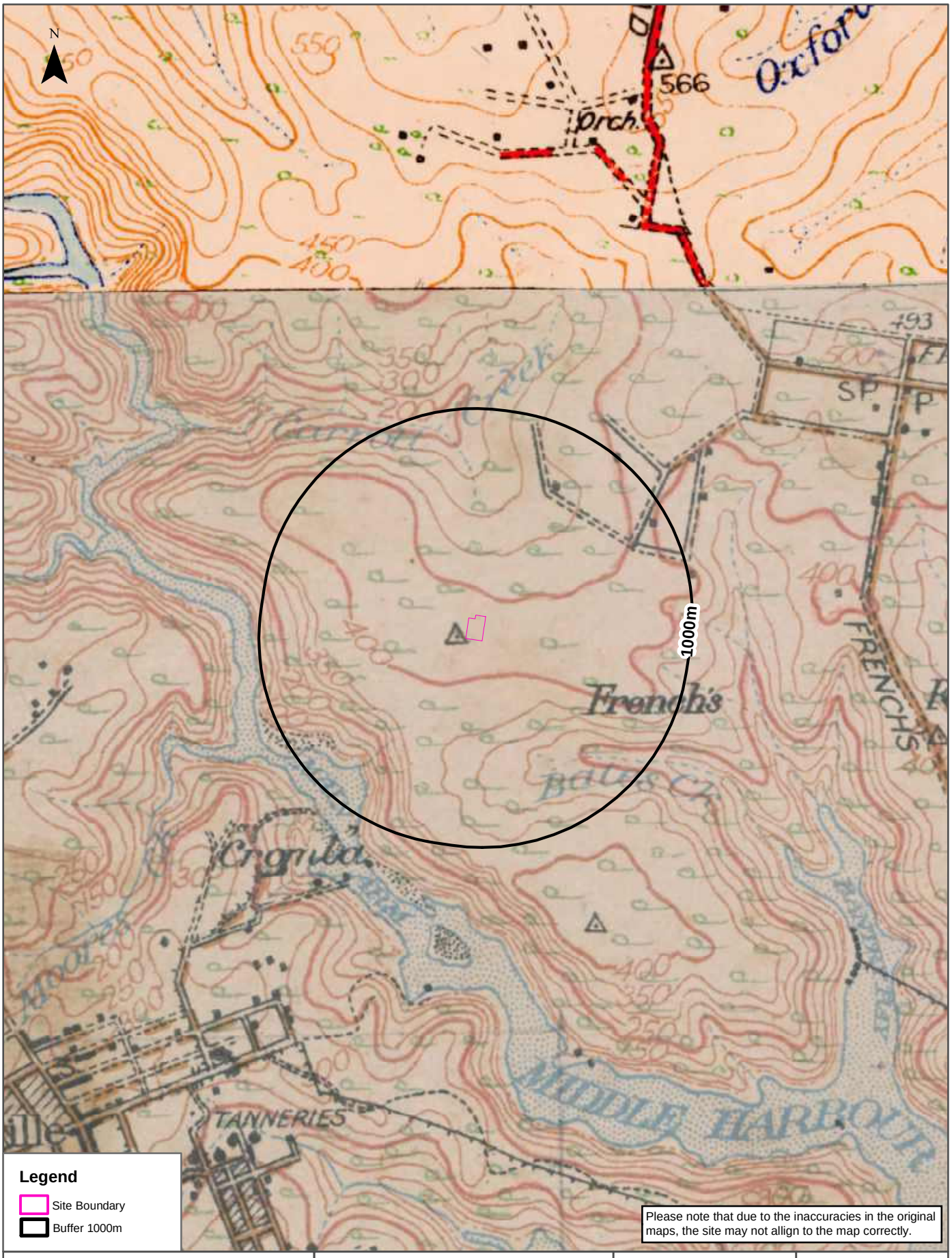
Data Sources: Australia 1:63360
Produced by Australian Section Imperial General Staff

Coordinate System:
GDA 1994 MGA Zone 56

Date: 21 August 2024

Historical Map 1917 - 1920

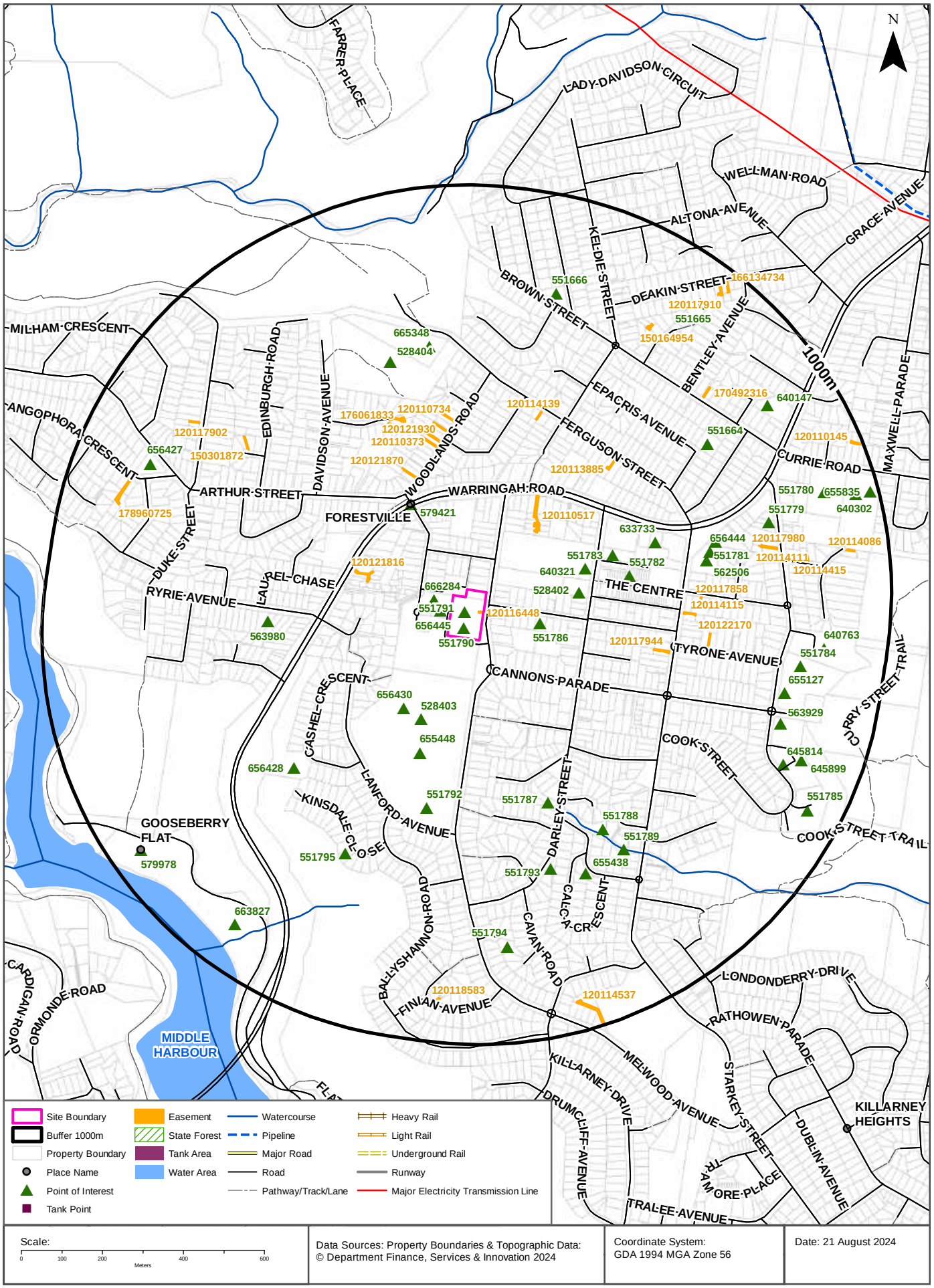
20-22 Melwood Avenue, Forestville, NSW 2087



Scale:	Data Sources:	Coordinate System:	Date:
0 290 580 870 1,160 Meters	Australia 1:63360 Produced by Australian Section Imperial General Staff	GDA 1994 MGA Zone 56	21 August 2024

Topographic Features

20-22 Melwood Avenue, Forestville, NSW 2087



Topographic Features

20-22 Melwood Avenue, Forestville, NSW 2087

Points of Interest

What Points of Interest exist within the dataset buffer?

Map Id	Feature Type	Label	Distance	Direction
551791	Club	FORESTVILLE RSL CLUB	0m	On-site
551790	Sports Field	BOWLING GREENS	0m	On-site
656445	Community Facility	FORESTVILLE YOUTH CENTRE	26m	West
666284	Park	PURPLE POPPY DOG PARK	45m	North West
551786	Park	CASUARINA RESERVE	142m	East
656430	Sports Court	SKATE PARK	209m	South West
528403	Sports Field	FORESTVILLE WAR MEMORIAL PLAYING FIELDS	217m	South West
528402	Place Of Worship	UNITING CHURCH	228m	East
579421	Suburb	FORESTVILLE	248m	North West
640321	Primary School	FORESTVILLE PUBLIC SCHOOL	251m	East
655448	Sports Field	MELWOOD OVAL	298m	South
551783	Library	FORESTVILLE LIBRARY	325m	North East
551782	Post Office	FORESTVILLE POST OFFICE	355m	East
551792	Sports Court	TENNIS COURTS	429m	South
551787	Park	Park	435m	South East
633733	Place Of Worship	ANGLICAN CHURCH	435m	East
563980	Park	RYRIE RESERVE	444m	West
656428	Park	CASHEL CRESCENT RESERVE	500m	South West
562506	Community Facility	FORESTVILLE MEMORIAL HALL	549m	East
551788	Park	KEEGAN RESERVE	558m	South East
656444	Community Facility	FORESTVILLE SENIOR CITIZENS CENTRE	561m	East
551781	Place Of Worship	PRESBYTERIAN CHURCH	579m	East
551793	Park	Park	591m	South
528404	Park	GWARRA RESERVE	594m	North
551795	Park	Park	595m	South West
665348	Community Facility	NPWS FORESTVILLE	608m	North
551789	Park	Park	629m	South East
655438	Park	CALCA RESERVE	633m	South East
551664	Park	EPACRIS RESERVE	657m	North East
551779	Fire Station	FORESTVILLE FIRE STATION	718m	East
551666	Park	BROWN STREET RESERVE	759m	North

Map Id	Feature Type	Label	Distance	Direction
551794	Park	WATERFORD RESERVE	761m	South
655127	Retirement Village	ST DAVID'S VILLAGE	765m	East
563929	Park	COOK RESERVE	772m	East
551784	Nursing Home	ST DAVIDS VILLAGE	793m	East
645814	Retirement Village	FORESTVILLE RETIREMENT VILLAGE	811m	South East
656427	Park	ANGOPHORA RESERVE	815m	North West
640147	Primary School	FORESTVILLE MONTESSORI SCHOOL	834m	North East
640763	Special School	ASPECT VERN BARNETT SCHOOL	844m	East
645899	Nursing Home	ALEXANDER CAMPBELL HOUSE	849m	South East
551780	Place Of Worship	CATHOLIC CHURCH	869m	East
551665	Park	LINDSAY RESERVE	887m	North East
663827	Picnic Area	DAVIDSON PARK PICNIC AREA AND BOAT RAMP	887m	South West
551785	Retirement Village	TREDINNICK VILLAGE	912m	South East
579978	Urban Place	GOOSEBERRY FLAT	923m	South West
640302	Primary School	OUR LADY OF GOOD COUNSEL CATHOLIC PRIMARY SCHOOL	944m	East
655835	Special School	ASPECT VERN BARNETT SCHOOL FORESTVILLE	979m	East

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Topographic Features

20-22 Melwood Avenue, Forestville, NSW 2087

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
N/A	No records in buffer					

Tanks (Points)

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

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

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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
120116448	Primary	Undefined		0m	On-site
120110517	Primary	Undefined		191m	North East
120121816	Primary	Undefined		205m	West
120121870	Primary	Undefined		300m	North
120121930	Primary	Undefined		358m	North
120110373	Primary	Undefined		369m	North
120110555	Primary	Undefined		392m	North
120114057	Primary	Undefined		416m	North
120113885	Primary	Undefined		426m	North East
120117944	Primary	Undefined		429m	East
176061833	Primary	Right of way	3.5m	440m	North
120110734	Primary	Undefined		441m	North
120114139	Primary	Undefined		444m	North
120114115	Primary	Undefined		489m	East

Map Id	Easement Class	Easement Type	Easement Width	Distance	Direction
120117858	Primary	Undefined		525m	East
120122170	Primary	Undefined		559m	East
150301872	Primary	Right of way	4	619m	North West
120117980	Primary	Undefined		683m	East
120114111	Primary	Undefined		688m	East
170492316	Primary	Right of way	3.8m	720m	North East
120117902	Primary	Undefined		757m	North West
150164954	Primary	Right of way	variable	763m	North East
120114415	Primary	Undefined		793m	East
178960725	Primary	Right of way	Variable	842m	West
120118583	Primary	Undefined		889m	South
120114086	Primary	Undefined		894m	East
120114537	Primary	Undefined		924m	South
120117910	Primary	Undefined		929m	North East
166134734	Primary	Right of way	3.87m	949m	North East
120110145	Primary	Undefined		971m	North East

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

20-22 Melwood Avenue, Forestville, NSW 2087

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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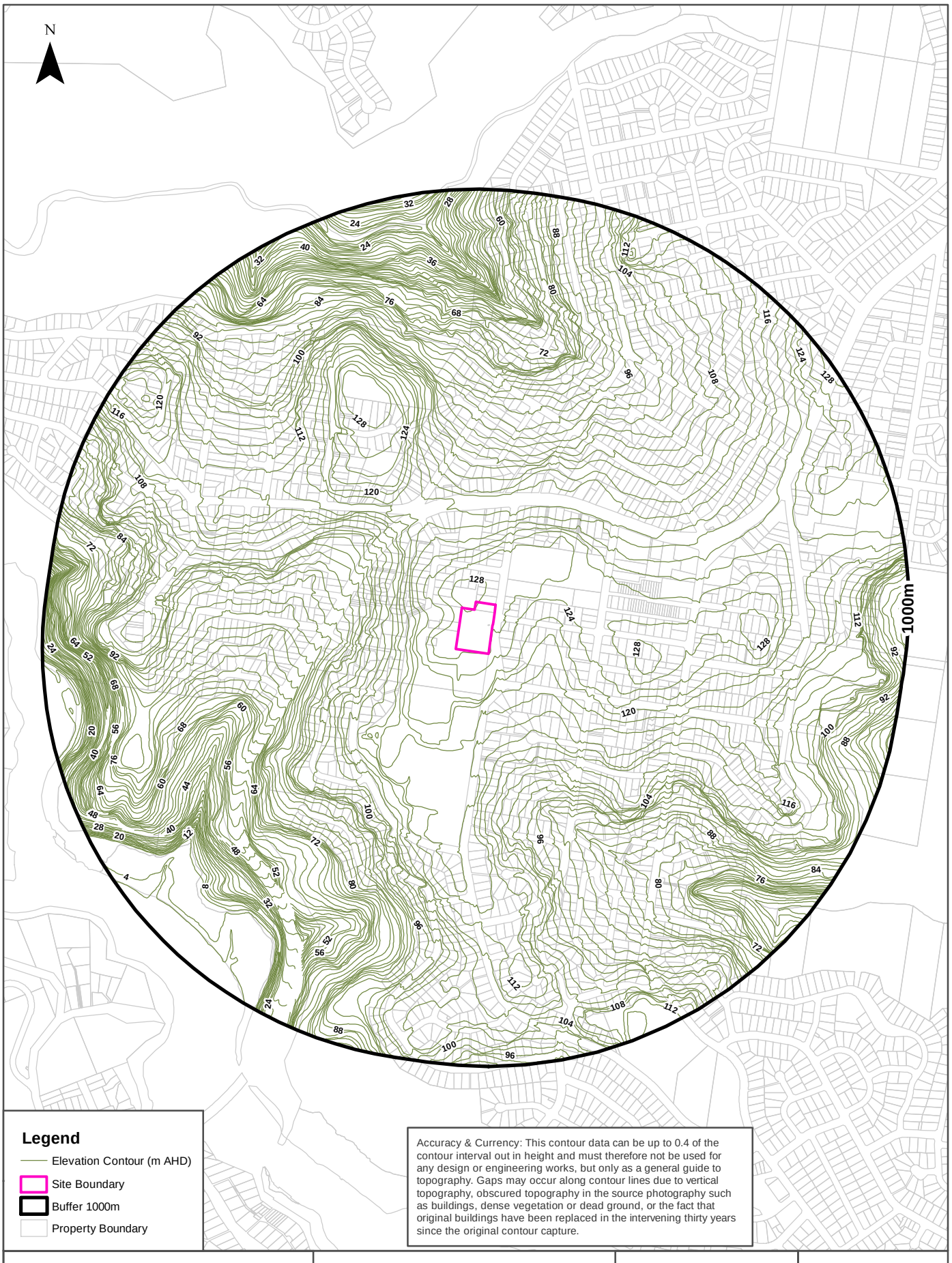
Elevation Contours (m AHD)

20-22 Melwood Avenue, Forestville, NSW 2087



Hydrogeology & Groundwater

20-22 Melwood Avenue, Forestville, NSW 2087

Hydrogeology

Description of aquifers within the dataset buffer:

Description	Distance	Direction
Porous, extensive aquifers of low to moderate productivity	0m	On-site

Hydrogeology Map of Australia : Commonwealth of Australia (Geoscience Australia)
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Temporary Water Restriction (Botany Sands Groundwater Source) Order 2018

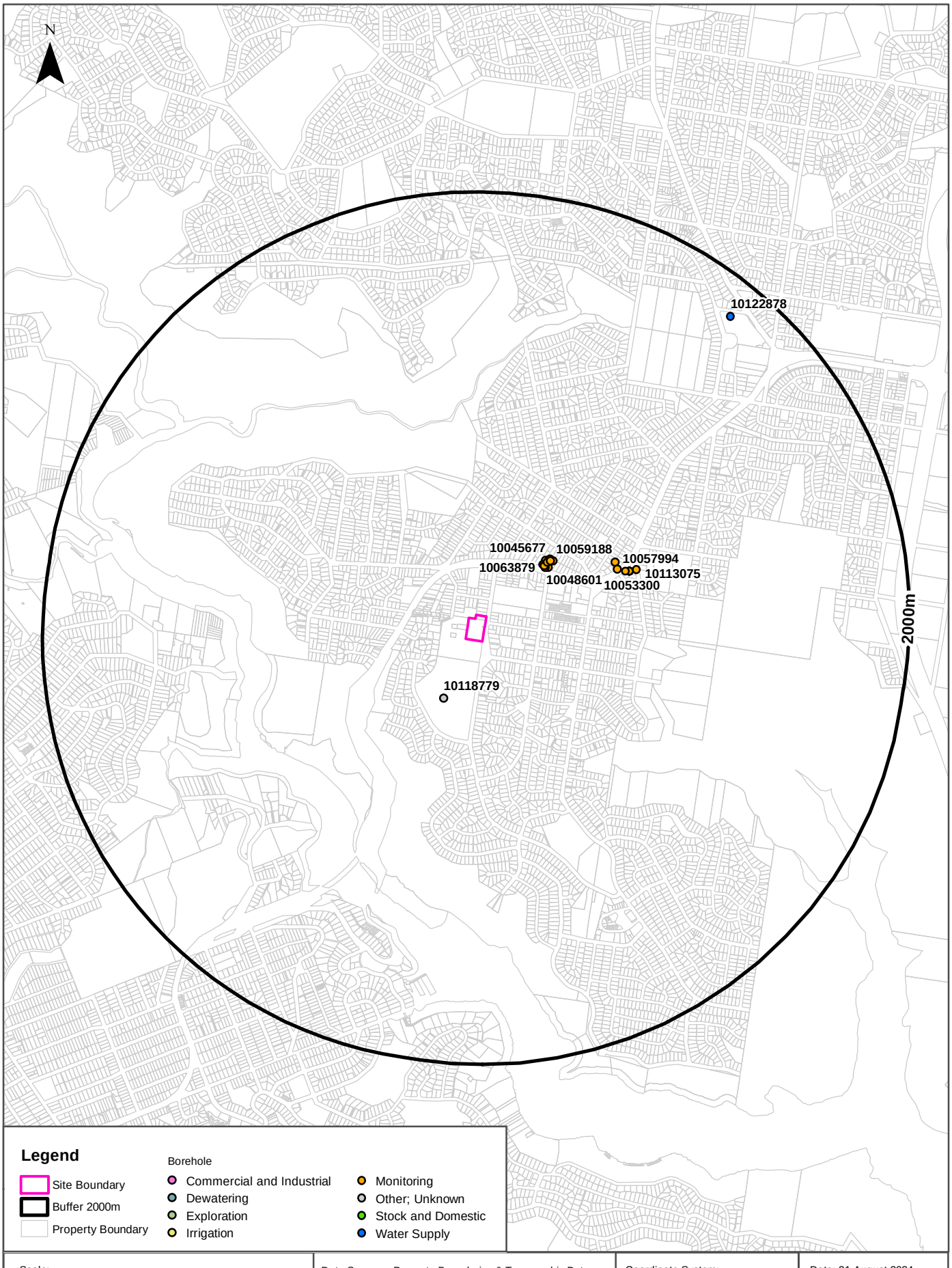
Temporary water restrictions relating to the Botany Sands aquifer within the dataset buffer:

Prohibition Area No.	Prohibition	Distance	Direction
N/A	No records in buffer		

Temporary Water Restriction (Botany Sands Groundwater Source) Order 2018 Data Source : NSW Department of Primary Industries

Groundwater Boreholes

20-22 Melwood Avenue, Forestville, NSW 2087



Hydrogeology & Groundwater

20-22 Melwood Avenue, Forestville, NSW 2087

Groundwater Boreholes

Boreholes within the dataset buffer:

NGIS Bore ID	NSW Bore ID	Bore Type	Status	Drill Date	Bore Depth (m)	Reference Elevation	Height Datum	Salinity (mg/L)	Yield (L/s)	SWL (mbgl)	Distance	Direction
10118779	GW109140	Other	Unknown	04/08/2008	210.00		AHD	340	0.300	108.00	299m	South West
10063665	GW113642	Monitoring	Functional	06/04/2011	6.00		AHD				362m	North East
10063879	GW113646	Monitoring	Functional	07/04/2011	6.00		AHD				363m	North East
10064463	GW113635	Monitoring	Functional	13/01/2011	3.00		AHD				363m	North East
10048601	GW113634	Monitoring	Functional	16/08/2010	6.00		AHD				369m	North East
10054410	GW113630	Monitoring	Functional	16/08/2010	3.50		AHD				372m	North East
10063524	GW113643	Monitoring	Functional	06/04/2011	6.00		AHD				374m	North East
10046792	GW113632	Monitoring	Functional	16/08/2010	4.17		AHD				377m	North East
10046880	GW113633	Monitoring	Functional	16/08/2010	3.00		AHD				381m	North East
10057927	GW113645	Monitoring	Functional	07/04/2011	6.00		AHD				384m	North East
10060517	GW113637	Monitoring	Functional	13/01/2011	5.00		AHD				384m	North East
10045677	GW113631	Monitoring	Functional	17/08/2010	5.50		AHD				386m	North East
10065422	GW113636	Monitoring	Functional	13/01/2011	5.00		AHD				386m	North East
10058253	GW113641	Monitoring	Functional	14/01/2011	5.00		AHD				389m	North East
10058273	GW113644	Monitoring	Functional	07/04/2011	6.00		AHD				389m	North East
10068398	GW113640	Monitoring	Functional	14/01/2011	5.00		AHD				402m	North East
10059858	GW113638	Monitoring	Functional	14/01/2011	5.00		AHD				404m	North East
10059188	GW113639	Monitoring	Functional	14/01/2011	5.00		AHD				410m	North East
10129345	GW106514	Monitoring	Unknown	16/06/2004	15.00		AHD				659m	North East
10125485	GW106512	Monitoring	Unknown	20/07/2004	15.00		AHD				661m	North East
10133457	GW106513	Monitoring	Unknown	20/07/2004	15.00		AHD				693m	East
10053300	GW104003	Monitoring	Unknown	21/10/1998	2.50		AHD				710m	East
10057994	GW104001	Monitoring	Unknown	21/10/1998	2.50		AHD				710m	East
10058733	GW104007	Monitoring	Unknown	21/10/1998	2.50		AHD				710m	East
10059710	GW104004	Monitoring	Unknown	21/10/1998	2.50		AHD				710m	East
10062095	GW104006	Monitoring	Unknown	21/10/1998	2.50		AHD				710m	East
10062432	GW104002	Monitoring	Unknown	21/10/1998	2.50		AHD				710m	East
10066621	GW104000	Monitoring	Unknown	21/10/1998	2.50		AHD				710m	East
10071356	GW104005	Monitoring	Unknown	21/10/1998	2.50		AHD				710m	East

NGIS Bore ID	NSW Bore ID	Bore Type	Status	Drill Date	Bore Depth (m)	Reference Elevation	Height Datum	Salinity (mg/L)	Yield (L/s)	SWL (mbgl)	Distance	Direction
10113075	GW101513	Monitoring	Unknown	24/10/1997	4.30		AHD				745m	East
10122878	GW106757	Water Supply	Unknown	25/11/2004	7.00		AHD	Good	0.500	2.00	1829m	North East

Borehole Data Source: Bureau of Meteorology; Water NSW. Creative Commons 3.0 © Commonwealth of Australia http://creativecommons.org/licenses/by/3.0/au/deed.en

Hydrogeology & Groundwater

20-22 Melwood Avenue, Forestville, NSW 2087

Driller's Logs

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

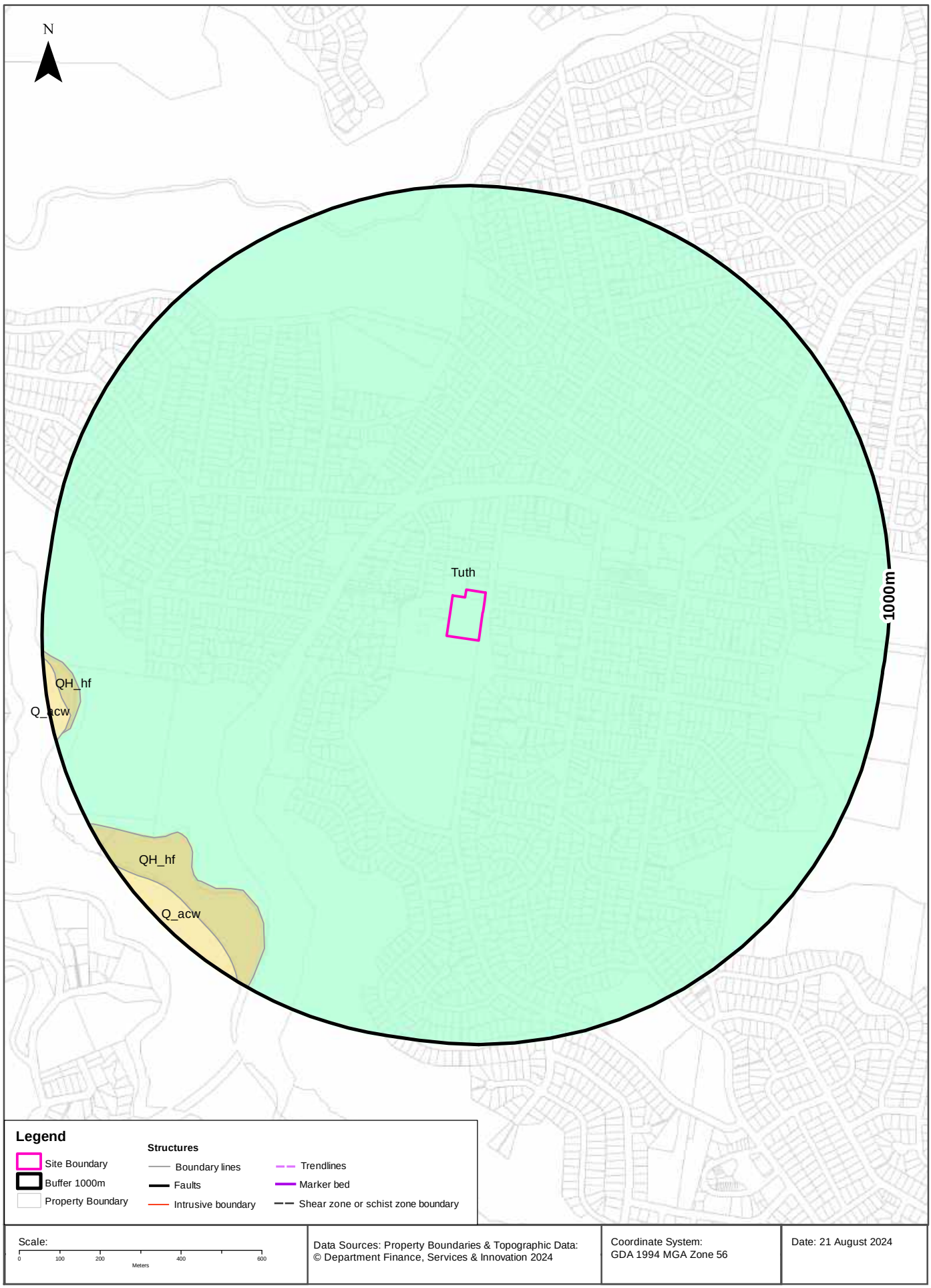
NGIS Bore ID	Drillers Log	Distance	Direction
10118779	0.00m-3.00m FILL CRUSH SANDSTONE 3.00m-20.00m SANDSTONE YELLOW 20.00m-22.00m SHALE 22.00m-48.00m SANDSTONE GREY 48.00m-52.00m SANDSTONE QUARTZ 52.00m-68.00m SANDSTONE GREY 68.00m-71.00m SILTSTONE 71.00m-88.00m SANDSTONE GREY 88.00m-92.00m SANDSTONE QUARTZ 92.00m-122.00m SANDSTONE GREY 122.00m-124.50m SANDSTONE QUARTZ 124.50m-146.00m SANDSTONE GREY 146.00m-156.00m SANDSTONE QUARTZ 156.00m-159.00m SILTSTONE 159.00m-167.00m SANDSTONE GREY 167.00m-169.00m SANDSTONE QUARTZ,SILTSTONE 169.00m-174.00m SANDSTONE GREY 174.00m-176.00m SANDSTONE QUARTZ 176.00m-189.00m SANDSTONE GREY 189.00m-191.00m SANDSTONE QUARTZ 191.00m-204.00m SANDSTONE GREY 204.00m-205.50m SANDSTONE QUARTZ 205.50m-210.00m SANDSTONE GREY	299m	South West
10129345	0.00m-0.40m LIGHT BROWN SANDY LOAM 0.40m-1.00m DARK BROWN SANDY LOAM WITH SHELLS 1.00m-1.60m CREAM YELLOW,SANDY CLAY 1.60m-2.70m BLUE/GREY,FINE SANDY CLAY 2.70m-4.00m SANDY CLAY/RED STONES 4.00m-4.70m YELLOW SANDSTONES/SOME STONES 4.70m-5.20m PURPLE SANDSTONE 5.20m-5.30m WHITE SANDSTONE 5.30m-8.00m YELLOW WHITE/PURPLE SANDSTONE 8.00m-9.00m PURPLE/YELLOW/ SANDSTONE 9.00m-9.90m PURPLE WHITE SANDSTONE 9.90m-10.20m YELLOW /PURPLE WHITE SANDSTONE 10.20m-11.10m PURPLE WHITE SANDSTONE 11.10m-12.00m PURPLE WHITE BANDED SANDSTONE 12.00m-13.10m WHITE WEATHERED SANDSTONE 13.10m-15.00m WHITE SANDSTONE/PURPLE BANDED	659m	North East
10125485	0.00m-5.20m PURPLE BANDED SANDSTONE 5.20m-5.40m WHITE FRACTURED SANDSTONE 5.40m-5.90m PURPLE,WHITE SANDSTONE 5.90m-6.30m WHITE,YELLOW PURPLE SANDSTONE 6.30m-6.50m FRACTURED ZONE 6.50m-8.90m WHITE,YELLOW PURPLE SANDSTONE 8.90m-9.60m PURPLE,WHITE SANDSTONE 9.60m-9.90m PURPLE SANDSTONE 9.90m-10.90m PURPLE SANDSTONE/WHITE INCLUSIONS 10.90m-12.00m PURPLE SANDSTONE/YELLOW/WHITE 12.00m-13.80m WHITE,PURPLE BANDED SANDSTONE 13.80m-14.20m PURPLE,WHITE SANDSTONE 14.20m-15.00m WHITE,PURPLE BANDED SANDSTONE	661m	North East
10133457	0.00m-0.40m BROWN,MEDIUM GR. SAND/STONES 0.40m-1.20m BROWN SANDY CLAY 1.20m-2.30m RED/BROWN MOTTLED M/CLAY 2.30m-5.80m GREY/ORANGE/BROWN M/GR.CLAY 5.80m-6.00m WHITE WEATHERED SANDSTONE 6.00m-6.50m HARD, MEDIUM SANDSTONE 6.50m-7.10m RED,PINK, M/SANDSTONE 7.10m-7.20m HAEMATITE 7.20m-8.20m HARD,RED SANDSTONE,SOME HAEMATITE 8.20m-8.30m COARSE, RED CLAYEY SAND BANDS 8.30m-9.50m MEDIUM RED BROWN SANDSTONE 9.50m-9.80m CLAY LAYER 9.60m-11.50m CLAY LAYER,,RED, PINK,GR. SANDSTONES 11.50m-15.00m INFILLED WITH HAEMATITE,PINK TO YELLOW	693m	East
10053300	0.00m-0.10m FILL:SANDY CLAY 0.10m-2.40m SANDY CLAY:LOW PLASTICITY 2.40m-2.50m IRONSTONE	710m	East

NGIS Bore ID	Drillers Log	Distance	Direction
10057994	0.00m-0.10m FILL:SANDY CLAY 0.10m-2.40m SANDY CLAY:LOW PLASTICITY,MOIST 2.40m-2.50m IRONSTONE	710m	East
10058733	0.00m-0.10m FILL:SANDY CLAY 0.10m-2.40m SANDY CLAY:LOW PLASTICITY 2.40m-2.50m IRONSTONE	710m	East
10059710	0.00m-0.10m FILL:SANDY CLAY 0.10m-2.40m SANDY CLAY:LOW PLASTICITY,MOIST 2.40m-2.50m IRONSTONE	710m	East
10062095	0.00m-0.10m FILL:SANDY CLAY 0.10m-2.40m SANDY CLAY:LOW PLASTICITY 2.40m-2.50m IRONSTONE	710m	East
10062432	0.00m-0.10m FILL:SANDY CLAY 0.10m-2.40m SANDY CLAY:LOW PLASTICITY,SL.WET 2.40m-2.50m IRONSTONE	710m	East
10066621	0.00m-0.10m FILL:SANDY CLAY 0.10m-2.50m SANDY CLAY,LOW PLASTICITY,IRONSTONE	710m	East
10071356	0.00m-0.10m FILL:SANDY CLAY 0.10m-2.40m SANDY CLAY:LOW PLASTICITY 2.40m-2.50m IRONSTONE	710m	East
10113075	0.00m-1.50m CLAYEY SAND 1.50m-2.50m IRON INDURATED CLAYEY SANDS AND SANDSTONE 2.50m-4.30m SANDSTONE	745m	East
10122878	0.00m-0.30m TOPSOIL 0.30m-2.50m BROWN SAND 2.50m-3.00m BLACK SAND 3.00m-5.00m DARK BROWN SILTY SAND 5.00m-7.00m BROWN SAND	1829m	North East

Drill Log Data Source: Bureau of Meteorology; Water NSW. Creative Commons 3.0 © Commonwealth of Australia http://creativecommons.org/licenses/by/3.0/au/deed.en

Geology

20-22 Melwood Avenue, Forestville, NSW 2087



Geology

20-22 Melwood Avenue, Forestville, NSW 2087

Geological Units

What are the Geological Units within the dataset buffer?

Unit Code	Unit Name	Description	Unit Stratigraphy	Age	Dominant Lithology	Distance
Tuth	Hawkesbury Sandstone	Medium- to coarse-grained quartz sandstone with minor shale and laminite lenses.	\Ungrouped Triassic units\\Hawkesbury Sandstone\\	Anisian (base) to Anisian (top)	Sandstone	0m
QH_hf	Anthropogenic deposits - fill on Quaternary deposits	Land surface raised >1m above natural level by placement of fill on undifferentiated Quaternary deposits over an extensive area.	\Anthropogenic deposits\ \Anthropogenic deposits - fill on Quaternary deposits\\	Holocene (base) to Now (top)	Anthropogenic material	807m
Q_acw	Alluvial channel deposits - subaqueous	Fluvially deposited sand, gravel, silt, clay.	\Alluvium\\Alluvial channel deposits\Alluvial channel deposits - subaqueous\	Quaternary (base) to Now (top)	Clastic sediment	926m

Linear Geological Structures

What are the Dyke, Sill, Fracture, Lineament and Vein trendlines within the dataset buffer?

Map ID	Feature Description	Map Sheet Name	Distance
No Features			

What are the Faults, Shear zones or Schist zones, Intrusive boundaries & Marker beds within the dataset buffer?

Map ID	Boundary Type	Description	Map Sheet Name	Distance
No Features				

Geological Data Source: Statewide Seamless Geology v2.1, Department of Regional NSW
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Naturally Occurring Asbestos Potential

20-22 Melwood Avenue, Forestville, NSW 2087

Naturally Occurring Asbestos Potential

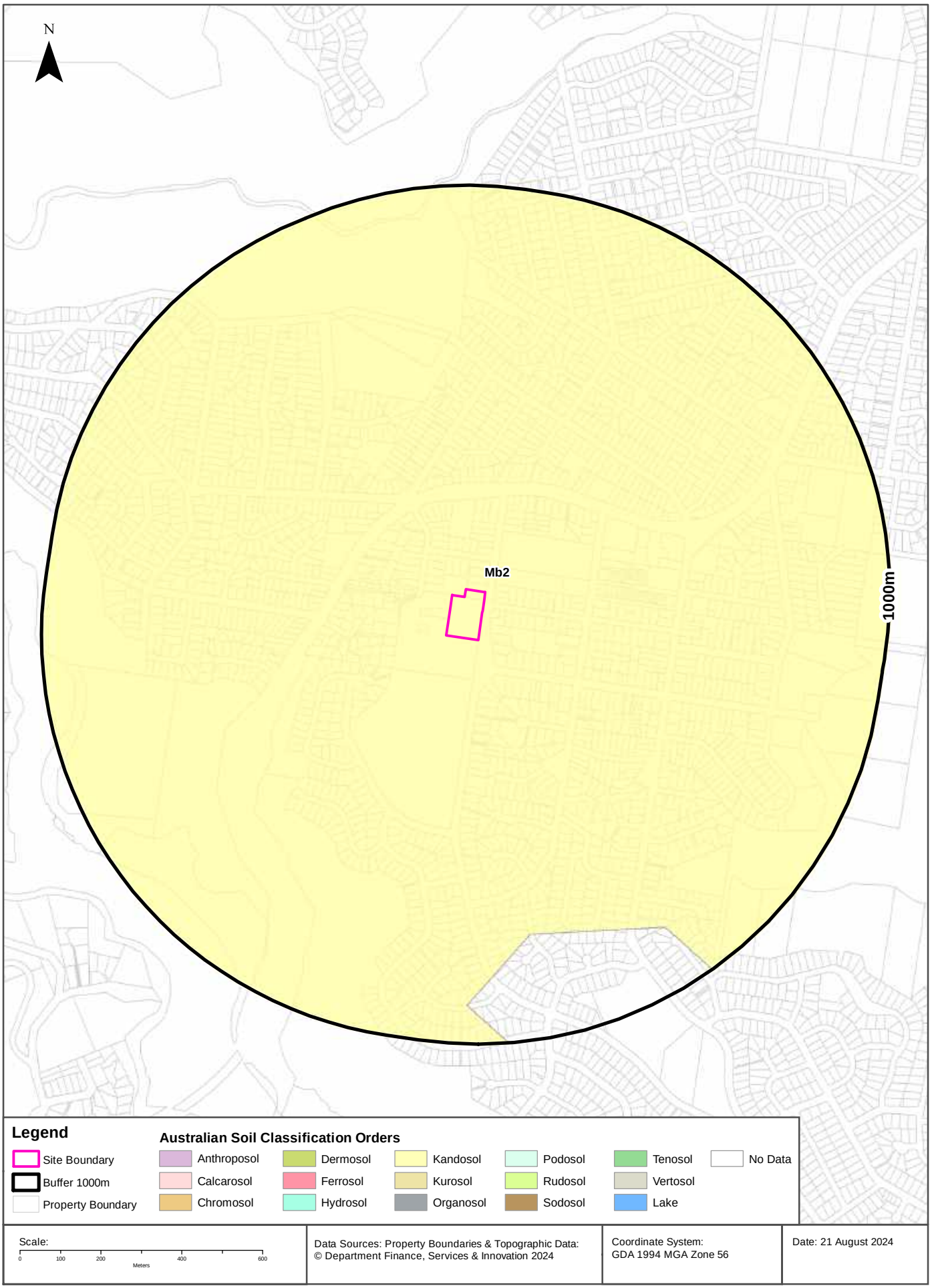
Naturally Occurring Asbestos Potential within the dataset buffer:

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

Naturally Occurring Asbestos Potential Data Source: © State of New South Wales through NSW Department of Industry, Resources & Energy

Atlas of Australian Soils

20-22 Melwood Avenue, Forestville, NSW 2087



Soils

20-22 Melwood Avenue, Forestville, NSW 2087

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	Direction
Mb2	Kandosol	Dissected sandstone plateau of moderate to strong relief with sandstone pillars, ledges, and slabs-- level to undulating ridges, irregularly benched slopes, steep ridges, cliffs, canyons, narrow sandy valleys: chief soils are (i) on areas of gentle to moderate relief, acid yellow leached earths (Gn2.74) and (Gn2.34) and acid leached yellow earths (Gn2.24)- sometimes these soils contain ironstone gravel; and (ii) on, or adjacent to, areas of strong relief, siliceous sands (Uc1.2), leached sands (Uc2.12) and (Uc2.2), and shallow forms of the above (Gn2) soils. Associated are: (i) on flat to gently undulating remnants of the original plateau surface, leached sands (Uc2.3), siliceous sands (Uc1.2), sandy earths (Uc5.22), and (Gn2) soils as for (i) above (these areas are in part comparable with unit Cb29); (ii) on flat ironstone gravelly remnants of the original plateau surface, (Gn2) soils as for unit Mb5(i); (iii) on gently undulating ridges where interbedded shales are exposed, shallow, often stony (Dy3.41), (Dr2.21), and related soils similar to unit Tb35; (iv) narrow valleys of (Uc2.3) soils flanked by moderate slopes of (Dy3.41) soils; (v) escarpments of steep hills with shallow (Dy) and (Dr) soils between sandstone pillars; and (vi) shallow (Um) soils, such as (Um6.21) on steep hills of basic rocks. As mapped, minor areas of units Mg20, Mm1, and Mw8 are included. Data are limited.	0m	On-site

Atlas of Australian Soils Data Source: CSIRO

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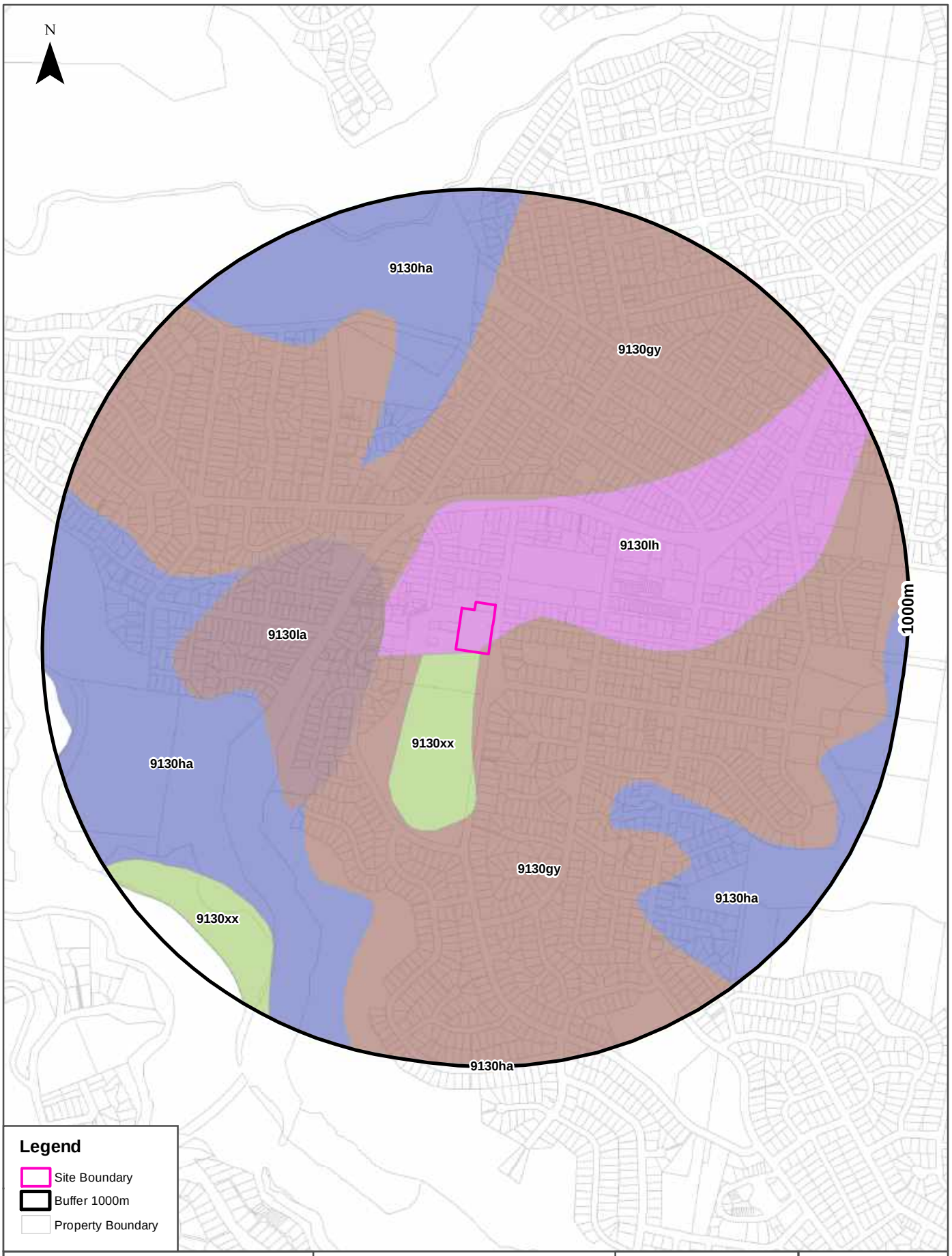
Soil Landscapes of Central and Eastern NSW

20-22 Melwood Avenue, Forestville, NSW 2087



Soils

20-22 Melwood Avenue, Forestville, NSW 2087

Soil Landscapes of Central and Eastern NSW

Soil Landscapes of Central and Eastern NSW within the dataset buffer:

Soil Code	Name	Distance	Direction
9130lh	Lucas Heights	0m	On-site
9130gy	Gymea	0m	On-site
9130xx	Disturbed Terrain	0m	On-site
9130la	Lambert	181m	West
9130ha	Hawkesbury	415m	West

Soil Landscapes of Central and Eastern NSW: NSW Department of Planning, Industry and Environment
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Acid Sulfate Soils

20-22 Melwood Avenue, Forestville, NSW 2087

Environmental Planning Instrument - Acid Sulfate Soils

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

Soil Class	Description	EPI Name
N/A		

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

Soil Class	Description	EPI Name	Distance	Direction
N/A				

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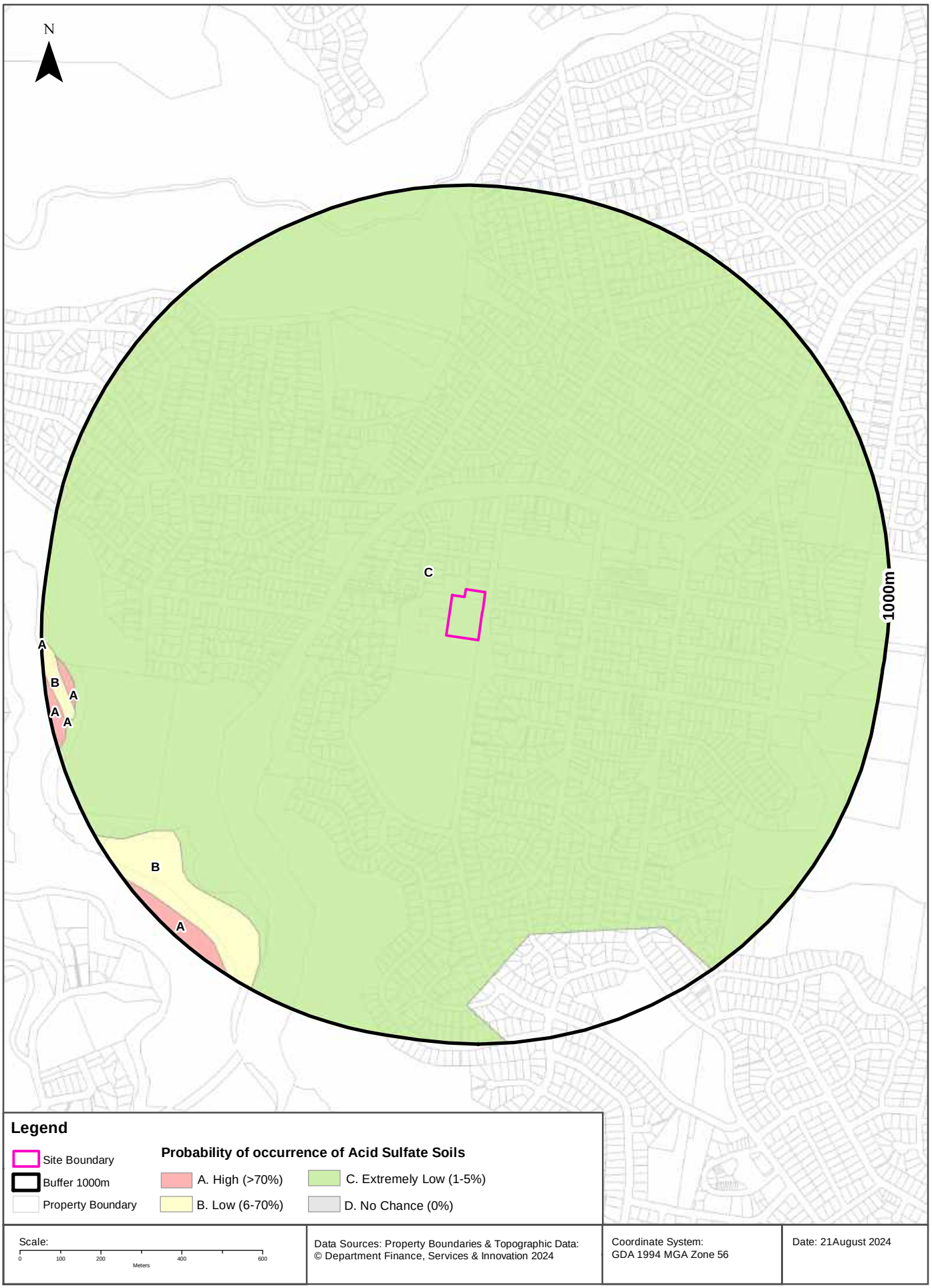
Atlas of Australian Acid Sulfate Soils

20-22 Melwood Avenue, Forestville, NSW 2087



Acid Sulfate Soils

20-22 Melwood Avenue, Forestville, NSW 2087

Atlas of Australian Acid Sulfate Soils

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

Class	Description	Distance	Direction
C	Extremely low probability of occurrence. 1-5% chance of occurrence with occurrences in small localised areas.	0m	On-site
B	Low Probability of occurrence. 6-70% chance of occurrence.	832m	South West
A	High Probability of occurrence. >70% chance of occurrence.	929m	West

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

20-22 Melwood Avenue, Forestville, NSW 2087

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		

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.

Mining

20-22 Melwood Avenue, Forestville, NSW 2087

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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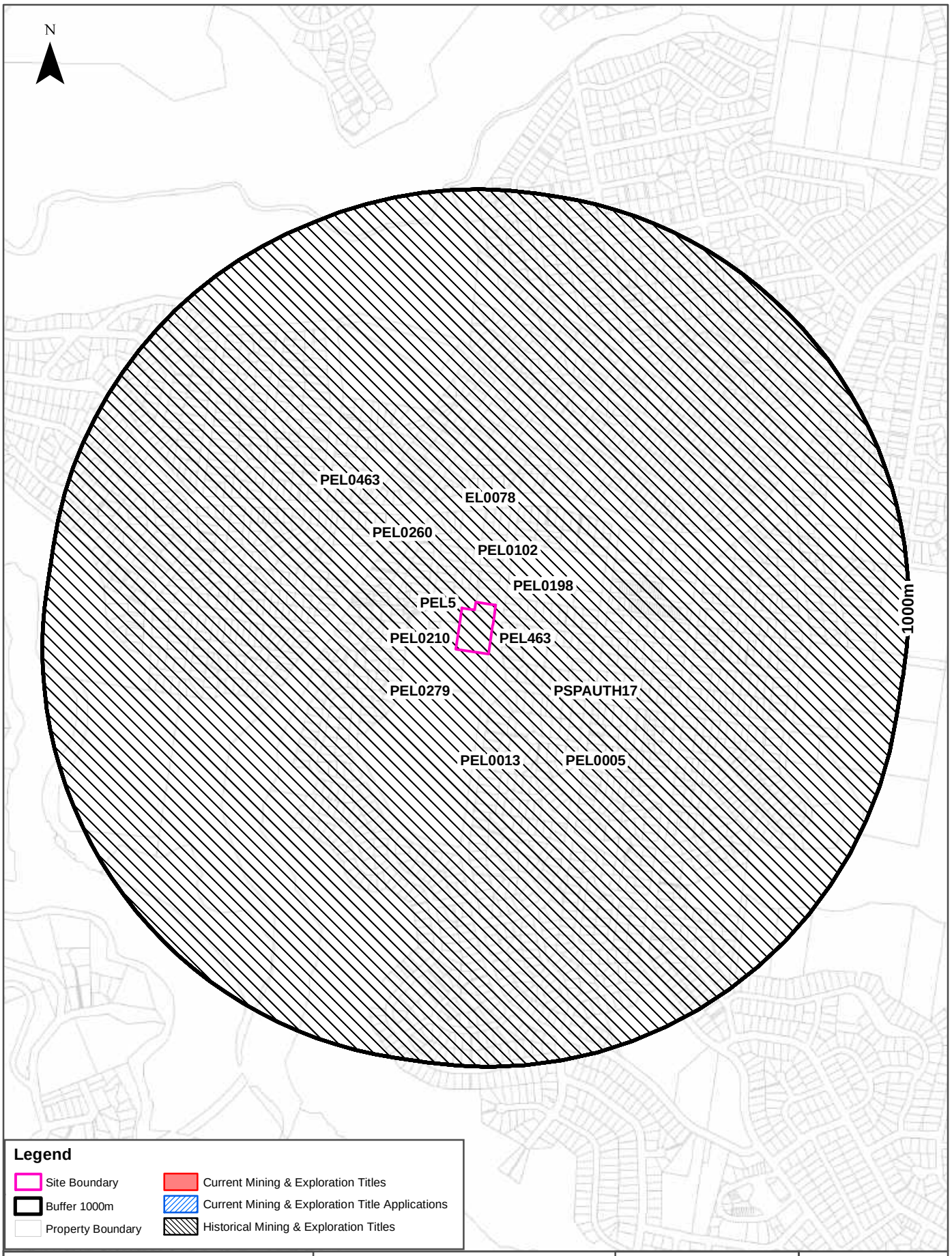
Mining & Exploration Titles

20-22 Melwood Avenue, Forestville, NSW 2087



Mining

20-22 Melwood Avenue, Forestville, NSW 2087

Current Mining & Exploration Titles

Current Mining & Exploration Titles within the dataset buffer:

Title Ref	Holder	Grant Date	Expiry Date	Last Renewed	Operation	Resource	Minerals	Dist	Dir
N/A	No records in buffer								

Current Mining & Exploration Titles Data Source: © State of New South Wales through NSW Department of Industry

Current Mining & Exploration Title Applications

Current Mining & Exploration Title Applications within the dataset buffer:

Application Ref	Applicant	Application Date	Operation	Resource	Minerals	Dist	Dir
N/A	No records in buffer						

Current Mining & Exploration Title Applications Data Source: © State of New South Wales through NSW Department of Industry

Mining

20-22 Melwood Avenue, Forestville, NSW 2087

Historical Mining & Exploration Titles

Historical Mining & Exploration Titles within the dataset buffer:

Title Ref	Holder	Start Date	End Date	Resource	Minerals	Dist	Dir
PEL0102	AUSTRALIAN OIL AND GAS CORPORATION LTD			PETROLEUM	Petroleum	0m	On-site
PEL0279	THE ELECTRICITY COMMISSION OF NSW (TRADING AS PACIFIC POWER)	19910504	19931111	PETROLEUM	Petroleum	0m	On-site
PSPAUTH17	MACQUARIE ENERGY PTY LTD	20070803	20080703	PETROLEUM	Petroleum	0m	On-site
EL0078	CONTINENTAL OIL CO OF AUSTRALIA LIMITED	19670201	19680201	MINERALS		0m	On-site
PEL0210	THE AUSTRALIAN GAS LIGHT COMPANY (AGL), NORTH BULLI COLLIERIES PTY LTD			PETROLEUM	Petroleum	0m	On-site
PEL463	DART ENERGY (APOLLO) PTY LTD	20081022	20130227	MINERALS		0m	On-site
PEL5	AGL UPSTREAM INVESTMENTS PTY LIMITED	19931111	20011210	MINERALS		0m	On-site
PEL0463	DART ENERGY (APOLLO) PTY LTD	20091010	20150603	PETROLEUM	Petroleum	0m	On-site
PEL0198	JOHN STREVENS (TERRIGAL) NL			PETROLEUM	Petroleum	0m	On-site
PEL0013	AUSTRALIAN OIL AND GAS CORPORATION LTD			PETROLEUM	Petroleum	0m	On-site
PEL0260	NORTH BULLI COLLIERIES PTY LTD, AGL PETROLEUM OPERATIONS PTY LTD, THE AUSTRALIAN GAS LIGHT CO.	19810909	19930803	PETROLEUM	Petroleum	0m	On-site
PEL0005	AGL UPSTREAM INVESTMENTS PTY LIMITED	19931111	20150403	PETROLEUM	Petroleum	0m	On-site

Historical Mining & Exploration Titles Data Source: © State of New South Wales through NSW Department of Industry

State Environmental Planning Policy

20-22 Melwood Avenue, Forestville, NSW 2087

State Significant Precincts

What SEPP State Significant Precincts exist within the dataset buffer?

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

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EPI Planning Zones

20-22 Melwood Avenue, Forestville, NSW 2087

Environmental Planning Instrument

20-22 Melwood Avenue, Forestville, NSW 2087

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
R2	Low Density Residential		Warringah Local Environmental Plan 2011	21/04/2023	26/04/2023	24/05/2024	Map Amendment No 3	0m	On-site
RE1	Public Recreation		Warringah Local Environmental Plan 2011	21/04/2023	26/04/2023	24/05/2024	Map Amendment No 3	0m	South West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	21/04/2023	26/04/2023	24/05/2024	Map Amendment No 3	129m	East
RE1	Public Recreation		Warringah Local Environmental Plan 2011	21/04/2023	26/04/2023	24/05/2024	Map Amendment No 3	213m	West
SP2	Infrastructure		Warringah Local Environmental Plan 2011	21/04/2023	26/04/2023	24/05/2024	Map Amendment No 3	223m	West
R2	Low Density Residential		Warringah Local Environmental Plan 2011	21/04/2023	26/04/2023	24/05/2024	Map Amendment No 3	263m	North
E1	Local Centre		Warringah Local Environmental Plan 2011	21/04/2023	26/04/2023	24/05/2024	Map Amendment No 3	269m	East
RE1	Public Recreation		Warringah Local Environmental Plan 2011	21/04/2023	26/04/2023	24/05/2024	Map Amendment No 3	316m	South West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	21/04/2023	26/04/2023	24/05/2024	Map Amendment No 3	370m	South East
RE1	Public Recreation		Warringah Local Environmental Plan 2011	21/04/2023	26/04/2023	24/05/2024	Map Amendment No 3	424m	West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	21/04/2023	26/04/2023	24/05/2024	Map Amendment No 3	477m	North
C1	National Parks and Nature Reserves		Warringah Local Environmental Plan 2011	21/04/2023	26/04/2023	24/05/2024	Map Amendment No 3	484m	West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	21/04/2023	26/04/2023	24/05/2024	Map Amendment No 3	503m	West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	21/04/2023	26/04/2023	24/05/2024	Map Amendment No 3	505m	East
C1	National Parks and Nature Reserves		Warringah Local Environmental Plan 2011	21/04/2023	26/04/2023	24/05/2024	Map Amendment No 3	507m	South
RE1	Public Recreation		Warringah Local Environmental Plan 2011	21/04/2023	26/04/2023	24/05/2024	Map Amendment No 3	555m	South
RE1	Public Recreation		Warringah Local Environmental Plan 2011	21/04/2023	26/04/2023	24/05/2024	Map Amendment No 3	578m	South West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	21/04/2023	26/04/2023	24/05/2024	Map Amendment No 3	585m	North East
RE1	Public Recreation		Warringah Local Environmental Plan 2011	21/04/2023	26/04/2023	24/05/2024	Map Amendment No 3	595m	South East
RE1	Public Recreation		Warringah Local Environmental Plan 2011	21/04/2023	26/04/2023	24/05/2024	Map Amendment No 3	596m	South East

Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
RE1	Public Recreation		Warringah Local Environmental Plan 2011	21/04/2023	26/04/2023	24/05/2024	Map Amendment No 3	628m	North East
E1	Local Centre		Warringah Local Environmental Plan 2011	21/04/2023	26/04/2023	24/05/2024	Map Amendment No 3	652m	North West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	21/04/2023	26/04/2023	24/05/2024	Map Amendment No 3	653m	West
E4	General Industrial		Warringah Local Environmental Plan 2011	21/04/2023	26/04/2023	24/05/2024	Map Amendment No 3	655m	East
RE1	Public Recreation		Warringah Local Environmental Plan 2011	21/04/2023	26/04/2023	24/05/2024	Map Amendment No 3	671m	North
RE1	Public Recreation		Warringah Local Environmental Plan 2011	21/04/2023	26/04/2023	24/05/2024	Map Amendment No 3	676m	West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	21/04/2023	26/04/2023	24/05/2024	Map Amendment No 3	727m	North
RE1	Public Recreation		Warringah Local Environmental Plan 2011	21/04/2023	26/04/2023	24/05/2024	Map Amendment No 3	738m	South
RE1	Public Recreation		Warringah Local Environmental Plan 2011	21/04/2023	26/04/2023	24/05/2024	Map Amendment No 3	752m	East
RE1	Public Recreation		Warringah Local Environmental Plan 2011	21/04/2023	26/04/2023	24/05/2024	Map Amendment No 3	771m	North West
RE1	Public Recreation		Warringah Local Environmental Plan 2011	21/04/2023	26/04/2023	24/05/2024	Map Amendment No 3	832m	South East
RE1	Public Recreation		Warringah Local Environmental Plan 2011	21/04/2023	26/04/2023	24/05/2024	Map Amendment No 3	834m	North
RE1	Public Recreation		Warringah Local Environmental Plan 2011	21/04/2023	26/04/2023	24/05/2024	Map Amendment No 3	838m	North East
RE1	Public Recreation		Warringah Local Environmental Plan 2011	21/04/2023	26/04/2023	24/05/2024	Map Amendment No 3	844m	South East
RE1	Public Recreation		Warringah Local Environmental Plan 2011	21/04/2023	26/04/2023	24/05/2024	Map Amendment No 3	872m	South
RE1	Public Recreation		Warringah Local Environmental Plan 2011	21/04/2023	26/04/2023	24/05/2024	Map Amendment No 3	919m	East
W1	Natural Waterways		Warringah Local Environmental Plan 2011	21/04/2023	26/04/2023	24/05/2024	Map Amendment No 3	925m	South West

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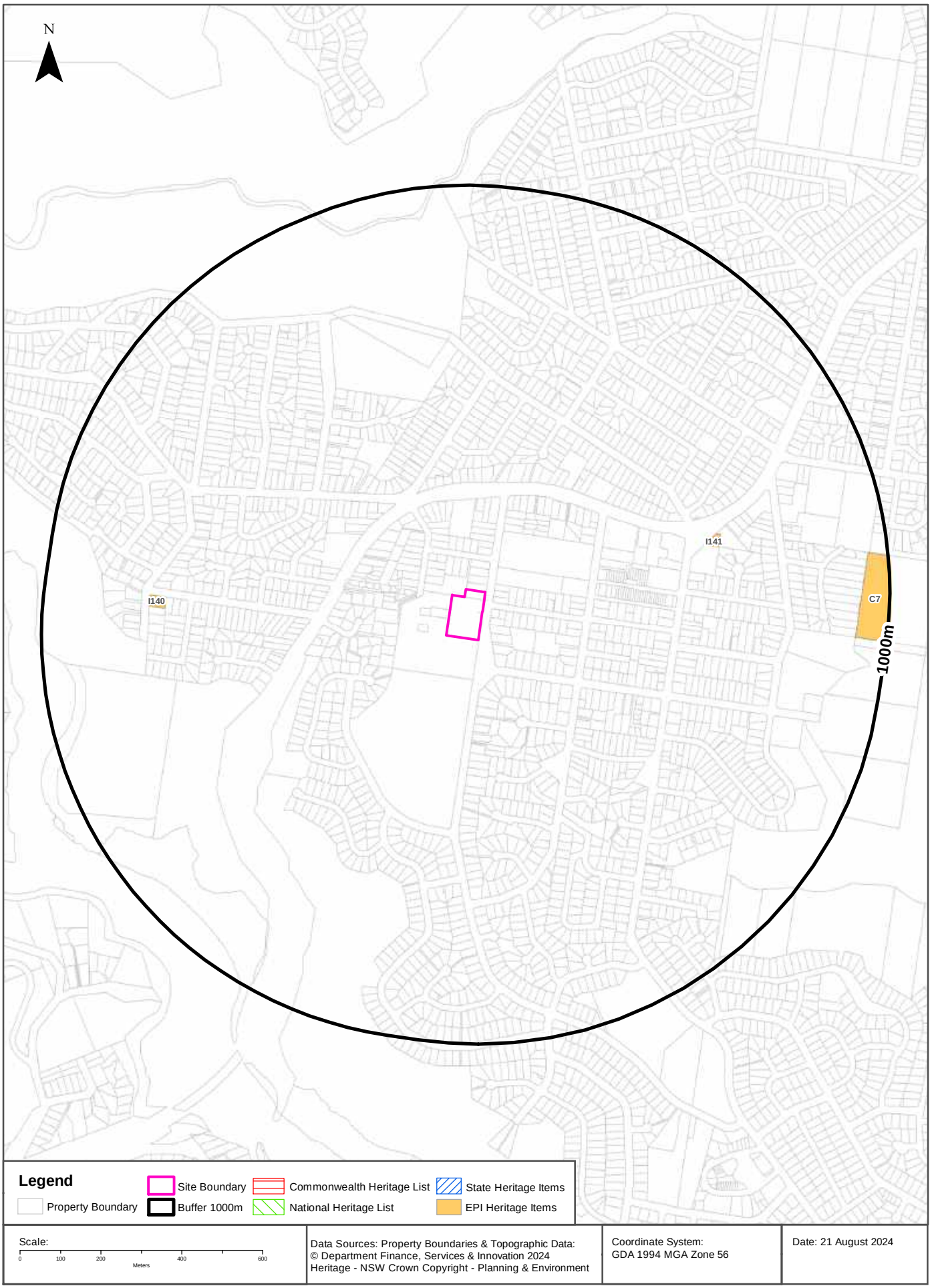
Heritage Items

20-22 Melwood Avenue, Forestville, NSW 2087



Heritage

20-22 Melwood Avenue, Forestville, NSW 2087

Commonwealth Heritage List

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

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

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

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

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

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

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

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

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

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

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
I141	Presbyterian Church of St Columba	Item - General	Local	Warringah Local Environmental Plan 2011	30/05/2014	30/05/2014	30/06/2017	553m	East
I140	Soldiers Settlement Dwelling	Item - General	Local	Warringah Local Environmental Plan 2011	30/05/2014	30/05/2014	30/06/2017	699m	West
C7	Forestville Park	Conservation Area - Landscape	Local	Warringah Local Environmental Plan 2011	30/05/2014	30/05/2014	30/06/2017	919m	East

Heritage Data Source: NSW Crown Copyright - Planning & Environment
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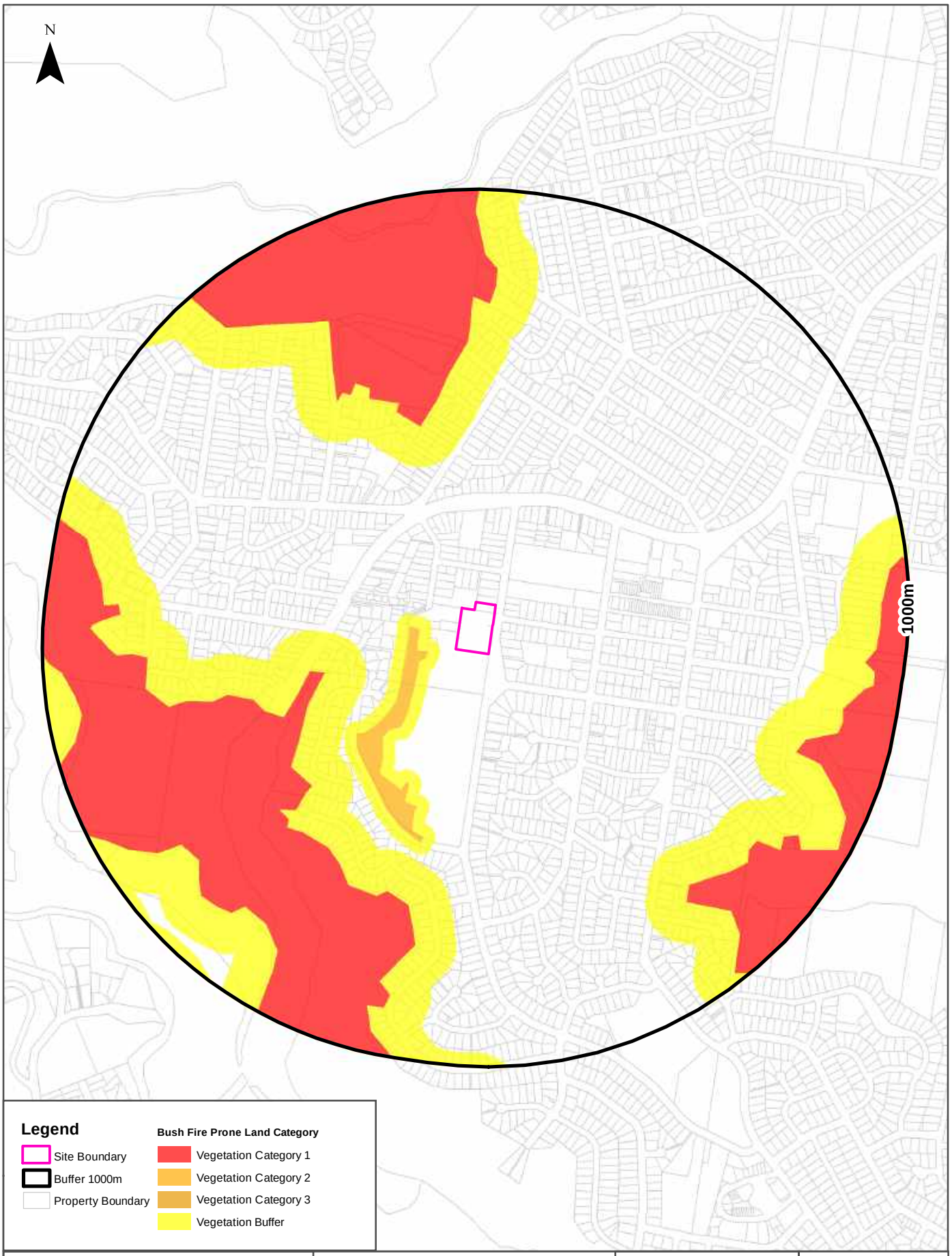
Natural Hazards - Bush Fire Prone Land

20-22 Melwood Avenue, Forestville, NSW 2087



Data Sources: Bush Fire Prone Land: © NSW Rural Fire Service 2024. Property Boundaries: © Department Finance, Services & Innovation 2024

Coordinate System: GDA 1994 MGA Zone 56

Date: 21 August 2024

Natural Hazards

20-22 Melwood Avenue, Forestville, NSW 2087

Bush Fire Prone Land

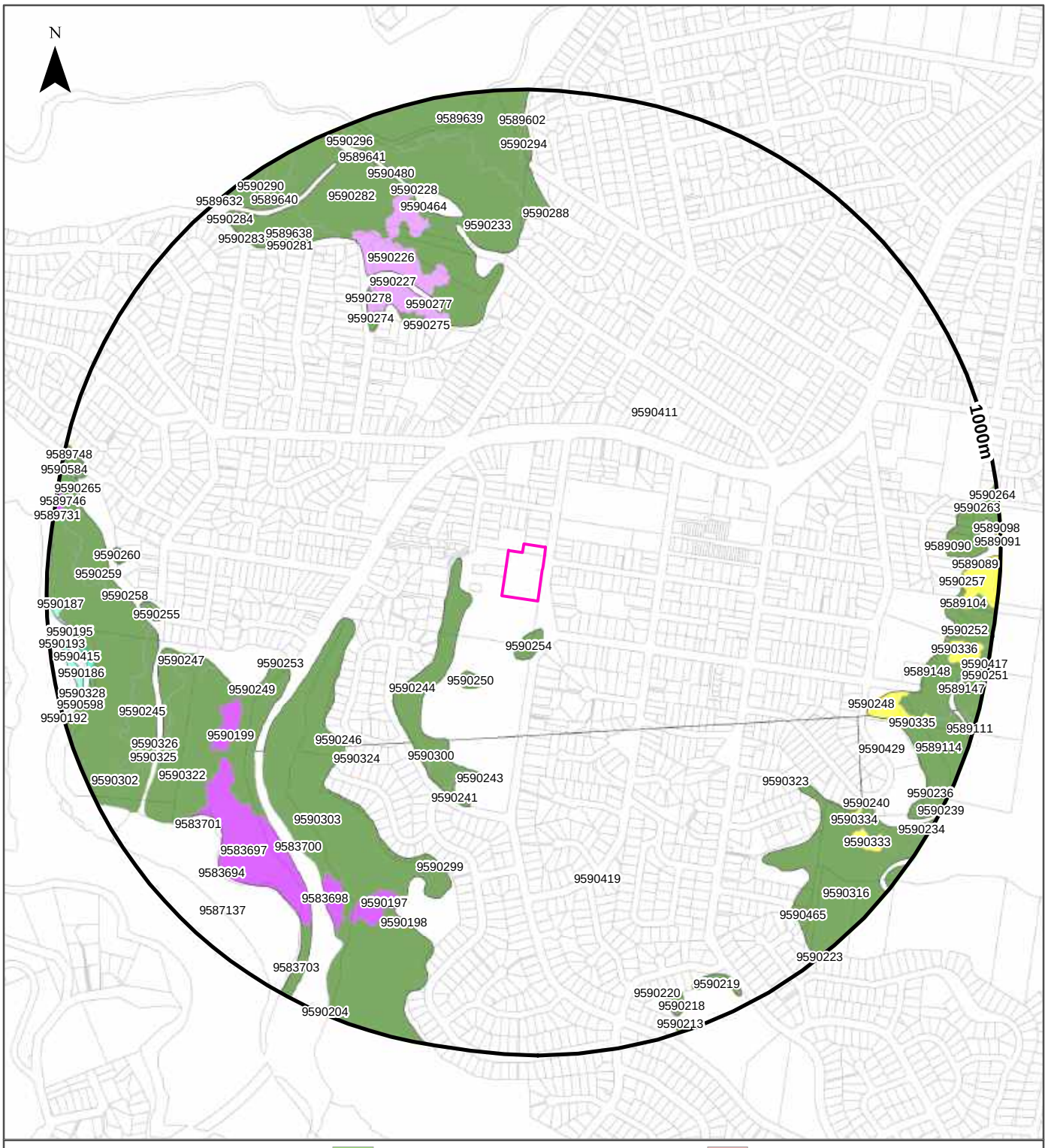
What are the nearest Bush Fire Prone Land Categories that exist within the dataset buffer?

Bush Fire Prone Land Category	Distance	Direction
Vegetation Buffer	39m	South West
Vegetation Category 2	69m	South West
Vegetation Category 1	323m	West

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

Ecological Constraints - Vegetation & Ramsar Wetlands

20-22 Melwood Avenue, Forestville, NSW 2087



Site Boundary
ReportBuffer
Property Boundary
Ramsar Wetland

Native Vegetation

Alpine Complex
Arid Shrublands (Acacia sub-formation)
Arid Shrublands (Chenopod sub-formation)
Dry Sclerophyll Forests (Shrub/grass sub-formation)
Dry Sclerophyll Forests (Shrubby sub-formation)
Forested Wetlands
Freshwater Wetlands
Grasslands
Grassy Woodlands
Heathlands
Rainforests
Saline Wetlands
Semi-arid Woodlands (Grassy sub-formation)
Semi-arid Woodlands (Shrubby sub-formation)
Wet Sclerophyll Forests (Grassy sub-formation)
Wet Sclerophyll Forests (Shrubby sub-formation)
Non vegetated
Unattributed
Not classified
Other

Scale: 0 100 200 400 600 Meters

Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2024

Coordinate System: GDA 1994 MGA Zone 56

Date: 21 August 2024

Ecological Constraints

20-22 Melwood Avenue, Forestville, NSW 2087

Native Vegetation

What native vegetation exists within the dataset buffer?

Map ID	Vegetation Formation	Plant Community Type and Vegetation Formation	Vegetation Class	Dist	Dir
9590411	Not classified	(Not classified) Not classified	Not classified	0m	On-site
9590254	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	62m	South
9590244	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	67m	South West
9590250	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	182m	South West
9590419	Not classified	(Not classified) Not classified	Not classified	295m	South
9590303	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Sandstone Gully Forest	Sydney Coastal Dry Sclerophyll Forests	330m	South West
9590300	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Sandstone Foreshores Forest	Sydney Coastal Dry Sclerophyll Forests	368m	South
9590243	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	389m	South
9590241	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	411m	South
9590324	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Sandstone Gully Forest	Sydney Coastal Dry Sclerophyll Forests	470m	South West
9590246	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	476m	South West
9590233	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	494m	North
9590253	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	495m	West
9590322	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Sandstone Gully Forest	Sydney Coastal Dry Sclerophyll Forests	495m	South West
9590227	Wet Sclerophyll Forests (Grassy sub-formation)	(Wet Sclerophyll Forests (Grassy sub-formation)) Sydney Coastal Shale-Sandstone Forest	Northern Hinterland Wet Sclerophyll Forests	505m	North West
9590275	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	523m	North West
9590249	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	551m	South West
9590274	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	567m	North West
9590277	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	567m	North
9590226	Wet Sclerophyll Forests (Grassy sub-formation)	(Wet Sclerophyll Forests (Grassy sub-formation)) Sydney Coastal Shale-Sandstone Forest	Northern Hinterland Wet Sclerophyll Forests	583m	North
9590276	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	600m	North West

Map ID	Vegetation Formation	Plant Community Type and Vegetation Formation	Vegetation Class	Dist	Dir
9590299	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Sandstone Foreshores Forest	Sydney Coastal Dry Sclerophyll Forests	603m	South
9590199	Wet Sclerophyll Forests (Shrubby sub-formation)	(Wet Sclerophyll Forests (Shrubby sub-formation)) Sydney Enriched Sandstone Moist Forest	North Coast Wet Sclerophyll Forests	620m	South West
9587137	Not classified	(Not classified) Not classified	Not classified	625m	South West
9590278	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	627m	North West
9590247	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	647m	West
9590323	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Sandstone Gully Forest	Sydney Coastal Dry Sclerophyll Forests	664m	South East
9590197	Wet Sclerophyll Forests (Shrubby sub-formation)	(Wet Sclerophyll Forests (Shrubby sub-formation)) Sydney Enriched Sandstone Moist Forest	North Coast Wet Sclerophyll Forests	695m	South West
9589639	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Sandstone Gully Forest	Sydney Coastal Dry Sclerophyll Forests	700m	North
9583697	Wet Sclerophyll Forests (Shrubby sub-formation)	(Wet Sclerophyll Forests (Shrubby sub-formation)) Sydney Enriched Sandstone Moist Forest	North Coast Wet Sclerophyll Forests	702m	South West
9590242	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	702m	South East
9590316	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Sandstone Gully Forest	Sydney Coastal Dry Sclerophyll Forests	706m	South East
9583700	Wet Sclerophyll Forests (Shrubby sub-formation)	(Wet Sclerophyll Forests (Shrubby sub-formation)) Sydney Enriched Sandstone Moist Forest	North Coast Wet Sclerophyll Forests	709m	South West
9583699	Wet Sclerophyll Forests (Shrubby sub-formation)	(Wet Sclerophyll Forests (Shrubby sub-formation)) Sydney Enriched Sandstone Moist Forest	North Coast Wet Sclerophyll Forests	713m	South West
9583698	Wet Sclerophyll Forests (Shrubby sub-formation)	(Wet Sclerophyll Forests (Shrubby sub-formation)) Sydney Enriched Sandstone Moist Forest	North Coast Wet Sclerophyll Forests	719m	South West
9590288	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	723m	North
9590464	Not classified	(Not classified) Not classified	Not classified	732m	North
9590282	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	736m	North West
9590198	Wet Sclerophyll Forests (Shrubby sub-formation)	(Wet Sclerophyll Forests (Shrubby sub-formation)) Sydney Enriched Sandstone Moist Forest	North Coast Wet Sclerophyll Forests	743m	South
9590429	Not classified	(Not classified) Not classified	Not classified	745m	South East
9590255	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	747m	West
9590245	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	761m	West
9590335	Heathlands	(Heathlands) Woronora Plateau Heath-Mallee	Sydney Coastal Heaths	761m	East
9590248	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	762m	East
9590329	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Sandstone Gully Forest	Sydney Coastal Dry Sclerophyll Forests	765m	West
9590256	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	773m	West

Map ID	Vegetation Formation	Plant Community Type and Vegetation Formation	Vegetation Class	Dist	Dir
9590302	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Sandstone Gully Forest	Sydney Coastal Dry Sclerophyll Forests	774m	West
9589638	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Sandstone Gully Forest	Sydney Coastal Dry Sclerophyll Forests	785m	North West
9590228	Wet Sclerophyll Forests (Grassy sub-formation)	(Wet Sclerophyll Forests (Grassy sub-formation)) Sydney Coastal Shale-Sandstone Forest	Northern Hinterland Wet Sclerophyll Forests	815m	North
9590480	Not classified	(Not classified) Not classified	Not classified	816m	North
9590281	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	822m	North West
9583701	Wet Sclerophyll Forests (Shrubby sub-formation)	(Wet Sclerophyll Forests (Shrubby sub-formation)) Sydney Enriched Sandstone Moist Forest	North Coast Wet Sclerophyll Forests	823m	South West
9589148	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Sandstone Gully Forest	Sydney Coastal Dry Sclerophyll Forests	823m	East
9590258	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	823m	West
9590326	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Sandstone Gully Forest	Sydney Coastal Dry Sclerophyll Forests	825m	South West
9590294	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	826m	North
9590238	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	828m	South East
9590334	Heathlands	(Heathlands) Woronora Plateau Heath-Mallee	Sydney Coastal Heaths	829m	South East
9590260	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	831m	West
9583703	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Sandstone Gully Forest	Sydney Coastal Dry Sclerophyll Forests	836m	South West
9590259	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	840m	West
9590240	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	841m	South East
9590325	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Sandstone Gully Forest	Sydney Coastal Dry Sclerophyll Forests	842m	South West
9589114	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Sandstone Bloodwood Shrub Forest	Sydney Coastal Dry Sclerophyll Forests	844m	South East
9590333	Heathlands	(Heathlands) Woronora Plateau Heath-Mallee	Sydney Coastal Heaths	859m	South East
9583694	Saline Wetlands	(Saline Wetlands) Grey Mangrove-River Mangrove Forest	Mangrove Swamps	865m	South West
9589090	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Sandstone Gully Forest	Sydney Coastal Dry Sclerophyll Forests	879m	East
9590252	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	887m	East
9590465	Not classified	(Not classified) Not classified	Not classified	889m	South East
9590220	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Sandstone Bloodwood Shrub Forest	Sydney Coastal Dry Sclerophyll Forests	898m	South
9590283	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	902m	North West
9590218	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Sandstone Bloodwood Shrub Forest	Sydney Coastal Dry Sclerophyll Forests	903m	South

Map ID	Vegetation Formation	Plant Community Type and Vegetation Formation	Vegetation Class	Dist	Dir
9590219	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Sandstone Bloodwood Shrub Forest	Sydney Coastal Dry Sclerophyll Forests	903m	South East
9589640	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Sandstone Gully Forest	Sydney Coastal Dry Sclerophyll Forests	905m	North West
9590336	Heathlands	(Heathlands) Woronora Plateau Heath-Mallee	Sydney Coastal Heaths	905m	East
9590185	Forested Wetlands	(Forested Wetlands) Estuarine Swamp Oak Twig-rush Forest	Coastal Floodplain Wetlands	907m	West
9590284	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	909m	North West
9590257	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	914m	East
9589104	Heathlands	(Heathlands) Woronora Plateau Heath-Mallee	Sydney Coastal Heaths	915m	East
9589602	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Sandstone Bloodwood Shrub Forest	Sydney Coastal Dry Sclerophyll Forests	916m	North
9589641	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Sandstone Gully Forest	Sydney Coastal Dry Sclerophyll Forests	920m	North
9590415	Not classified	(Not classified) Not classified	Not classified	924m	West
9590194	Saline Wetlands	(Saline Wetlands) Grey Mangrove-River Mangrove Forest	Mangrove Swamps	926m	West
9590417	Not classified	(Not classified) Not classified	Not classified	926m	East
9590236	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	935m	South East
9589089	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Sandstone Gully Forest	Sydney Coastal Dry Sclerophyll Forests	937m	East
9589147	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Sandstone Gully Forest	Sydney Coastal Dry Sclerophyll Forests	937m	East
9590296	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	937m	North West
9590186	Forested Wetlands	(Forested Wetlands) Estuarine Swamp Oak Twig-rush Forest	Coastal Floodplain Wetlands	938m	West
9590193	Saline Wetlands	(Saline Wetlands) Grey Mangrove-River Mangrove Forest	Mangrove Swamps	938m	West
9590195	Saline Wetlands	(Saline Wetlands) Grey Mangrove-River Mangrove Forest	Mangrove Swamps	940m	West
9589748	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Sandstone Gully Forest	Sydney Coastal Dry Sclerophyll Forests	943m	West
9590328	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Sandstone Gully Forest	Sydney Coastal Dry Sclerophyll Forests	944m	West
9589746	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Sandstone Gully Forest	Sydney Coastal Dry Sclerophyll Forests	946m	West
9590234	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	949m	South East
9590263	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	950m	East
9590598	Not classified	(Not classified) Not classified	Not classified	950m	West
9590265	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	952m	West
9590290	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	956m	North West

Map ID	Vegetation Formation	Plant Community Type and Vegetation Formation	Vegetation Class	Dist	Dir
9589111	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Sandstone Bloodwood Shrub Forest	Sydney Coastal Dry Sclerophyll Forests	959m	East
9590187	Saline Wetlands	(Saline Wetlands) Grey Mangrove-River Mangrove Forest	Mangrove Swamps	959m	West
9590327	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Sandstone Gully Forest	Sydney Coastal Dry Sclerophyll Forests	962m	West
9590584	Not classified	(Not classified) Not classified	Not classified	964m	West
9590264	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	972m	East
9589731	Wet Sclerophyll Forests (Shrubby sub-formation)	(Wet Sclerophyll Forests (Shrubby sub-formation)) Sydney Enriched Sandstone Moist Forest	North Coast Wet Sclerophyll Forests	977m	West
9590213	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Sandstone Bloodwood Shrub Forest	Sydney Coastal Dry Sclerophyll Forests	977m	South
9590205	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	983m	South West
9589098	Heathlands	(Heathlands) Woronora Plateau Heath-Mallee	Sydney Coastal Heaths	984m	East
9589092	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Sandstone Gully Forest	Sydney Coastal Dry Sclerophyll Forests	985m	East
9590251	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	985m	East
9589632	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Sandstone Gully Forest	Sydney Coastal Dry Sclerophyll Forests	987m	North West
9590204	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	991m	South West
9589091	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Sandstone Gully Forest	Sydney Coastal Dry Sclerophyll Forests	993m	East
9590192	Saline Wetlands	(Saline Wetlands) Grey Mangrove-River Mangrove Forest	Mangrove Swamps	997m	West
9590223	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Sandstone Bloodwood Shrub Forest	Sydney Coastal Dry Sclerophyll Forests	999m	South East
9590239	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Sydney Coastal Enriched Sandstone Forest	Sydney Coastal Dry Sclerophyll Forests	999m	South East

Native Vegetation Type Map : NSW Department of Planning and Environment 2022
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Ecological Constraints

20-22 Melwood Avenue, Forestville, NSW 2087

Ramsar Wetlands

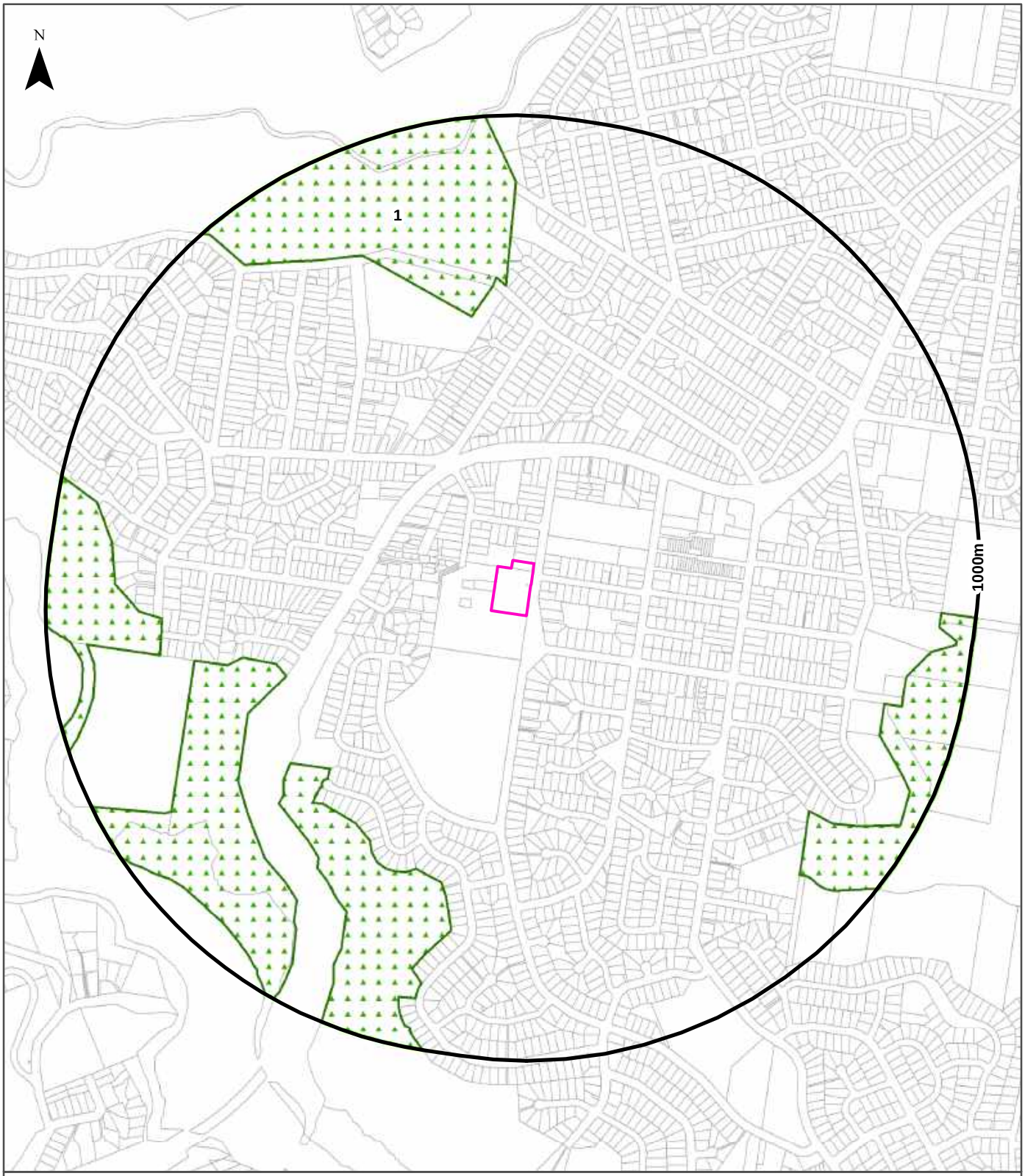
What Ramsar Wetland areas exist within the dataset buffer?

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 Agriculture, Water and the Environment

Ecological Constraints - Protected Areas

20-22 Melwood Avenue, Forestville, NSW 2087



Legend

IUCN category

- Site Boundary
- Buffer 1000m
- Property Boundary
- Strict Nature Reserve
- Wilderness Area
- National Park
- Natural Monument or Feature
- Habitat/Species Management Area
- Protected Landscape/Seascape
- Protected area sustainable use of natural resources
- Uncategorised Protected Area

Scale: 0 100 200 400 Meters

Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2024

Coordinate System: GDA 1994 MGA Zone 56

Date: 21 August 2024

Ecological Constraints

20-22 Melwood Avenue, Forestville, NSW 2087

Collaborative Australian Protected Areas Database - Terrestrial

Protected areas in terrestrial environments identified by the CAPAD within the dataset buffer:

Map ID	Area Name	Area Details	Management Category	Authority	Jurisdiction	Dist	Dir
1	Garigal	National Park	National Park	NSW Department of Planning and Environment	State	484m	West

Collaborative Australian Protected Areas Database - Marine

Protected areas in marine environments identified by the CAPAD within the dataset buffer:

Map ID	Area Name	Area Details	Management Category	Authority	Jurisdiction	Dist	Dir
N/A	No records in buffer						

Source: Collaborative Australian Protected Areas Database (CAPAD) 2022
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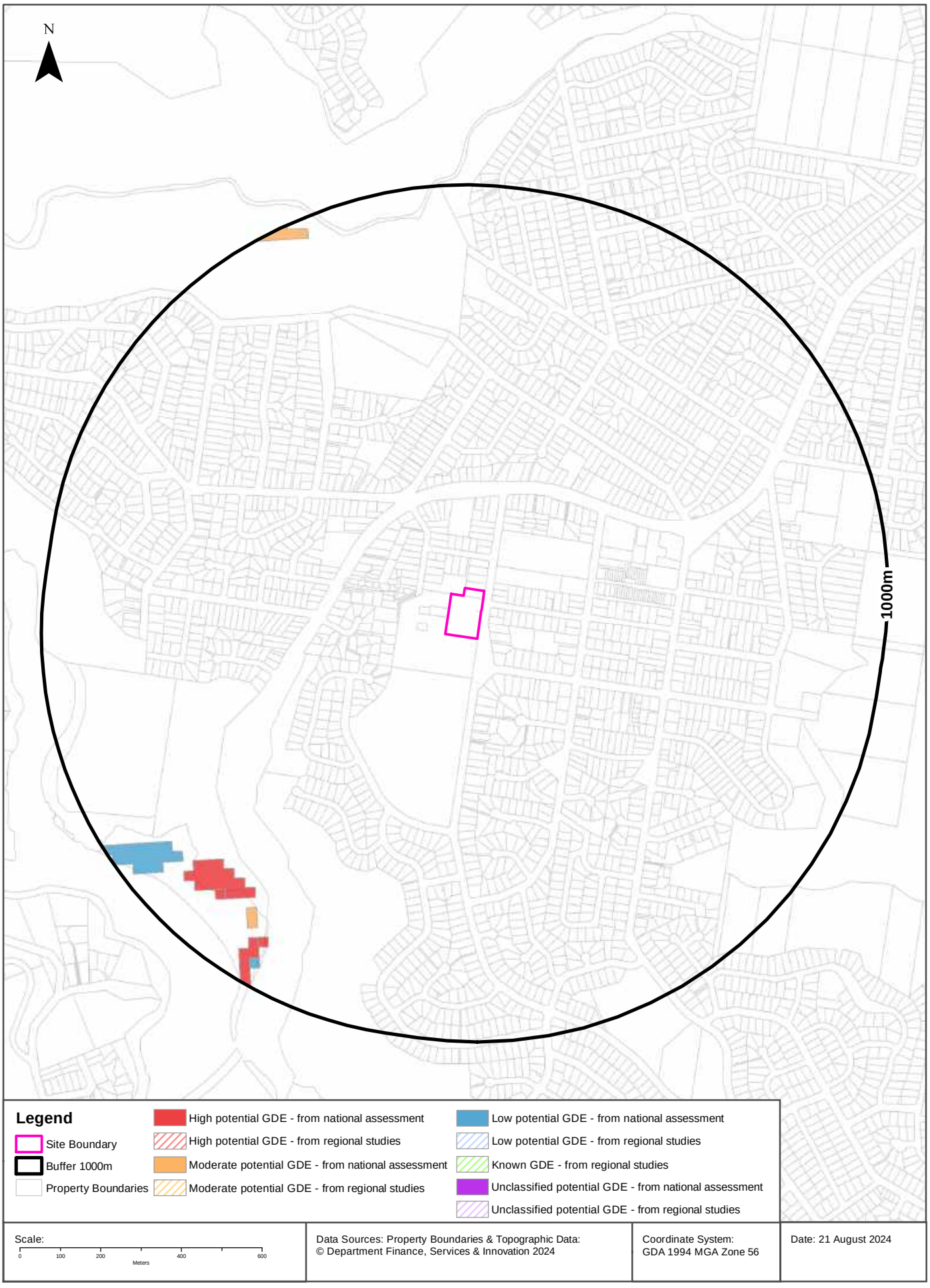
Ecological Constraints - Groundwater Dependent Ecosystems Atlas

20-22 Melwood Avenue, Forestville, NSW 2087



Ecological Constraints

20-22 Melwood Avenue, Forestville, NSW 2087

Groundwater Dependent Ecosystems Atlas

Type	GDE Potential	Geomorphology	Ecosystem Type	Aquifer Geology	Distance	Direction
Terrestrial	High potential GDE - from national assessment	Deeply dissected sandstone plateaus.	Vegetation	Consolidated sedimentary	783m	South West
Terrestrial	Moderate potential GDE - from national assessment	Deeply dissected sandstone plateaus.	Vegetation	Consolidated sedimentary	824m	South West
Terrestrial	Low potential GDE - from national assessment	Deeply dissected sandstone plateaus.	Vegetation	Consolidated sedimentary	846m	South West

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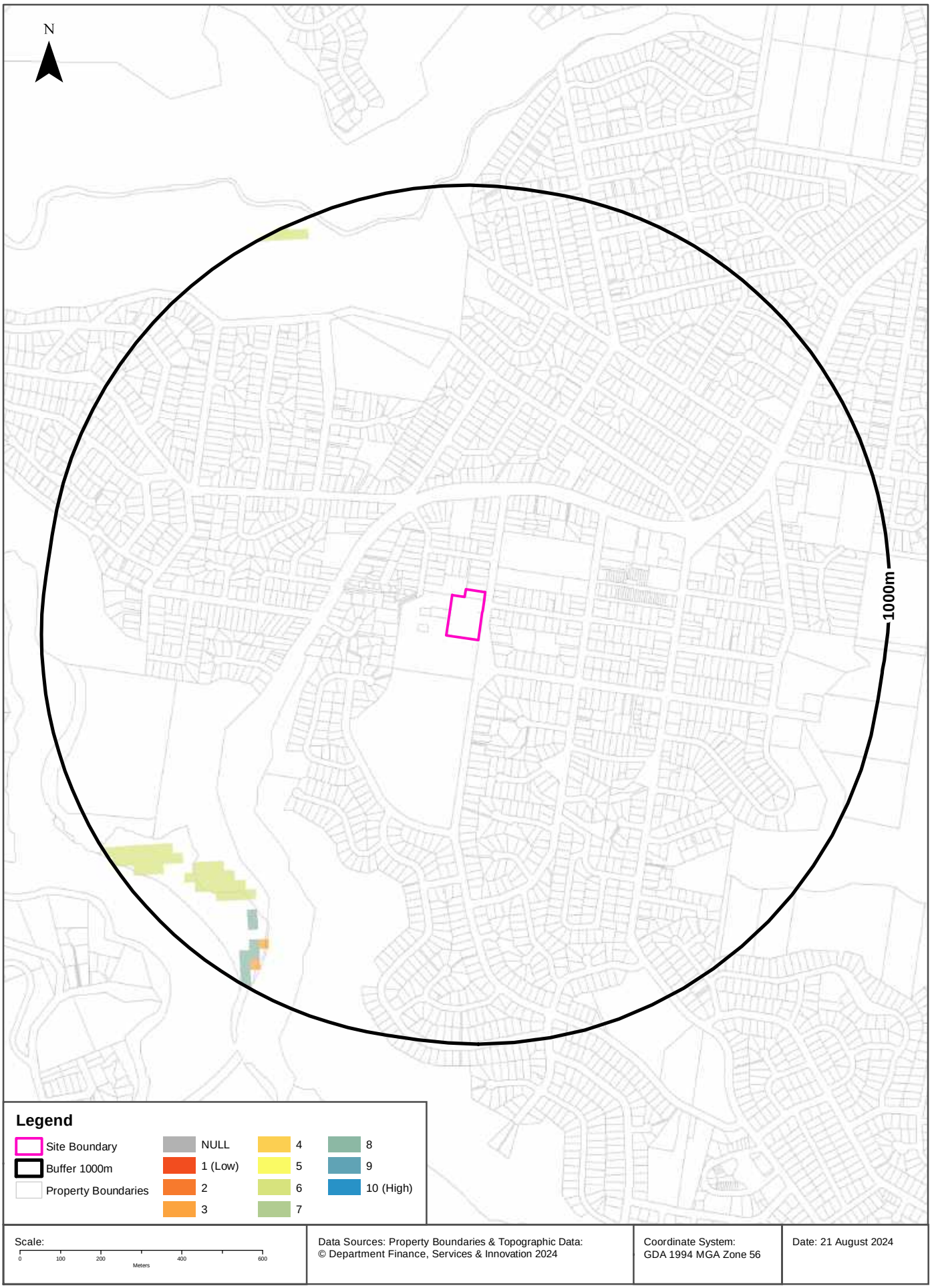
Ecological Constraints - Inflow Dependent Ecosystems Likelihood

20-22 Melwood Avenue, Forestville, NSW 2087



Ecological Constraints

20-22 Melwood Avenue, Forestville, NSW 2087

Inflow Dependent Ecosystems Likelihood

Type	IDE Likelihood	Geomorphology	Ecosystem Type	Aquifer Geology	Distance	Direction
Terrestrial	6	Deeply dissected sandstone plateaus.	Vegetation	Consolidated sedimentary	783m	South West
Terrestrial	8	Deeply dissected sandstone plateaus.	Vegetation	Consolidated sedimentary	824m	South West
Terrestrial	3	Deeply dissected sandstone plateaus.	Vegetation	Consolidated sedimentary	870m	South West

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

20-22 Melwood Avenue, Forestville, NSW 2087

NSW BioNet Species Sightings

Species sightings from the NSW BioNet Repository that have either a state or federal conservation status, or a sensitivity status, and are within 10 km of the site:
Note: This data does not include NSW Category 1 sensitive species.

Kingdom	Class	Scientific	Common	Sensitivity Class	State Conservation Status	Federal Conservation Status	Migratory Species Agreements
Animalia	Amphibia	Heleioporus australiacus	Giant Burrowing Frog	Not Sensitive	Vulnerable	Vulnerable	
Animalia	Amphibia	Litoria aurea	Green and Golden Bell Frog	Not Sensitive	Endangered	Vulnerable	
Animalia	Amphibia	Pseudophryne australis	Red-crowned Toadlet	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Actitis hypoleucos	Common Sandpiper	Not Sensitive	Not Listed	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Amaurornis moluccana	Pale-vented Bush-hen	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Anous stolidus	Common Noddy	Not Sensitive	Not Listed	Not Listed	CAMBA;JAMBA
Animalia	Aves	Anthochaera phrygia	Regent Honeyeater	Category 2	Critically Endangered	Critically Endangered	
Animalia	Aves	Apus pacificus	Fork-tailed Swift	Not Sensitive	Not Listed	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Ardenna carneipes	Flesh-footed Shearwater	Not Sensitive	Vulnerable	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Ardenna grisea	Sooty Shearwater	Not Sensitive	Not Listed	Not Listed	JAMBA
Animalia	Aves	Ardenna pacifica	Wedge-tailed Shearwater	Not Sensitive	Not Listed	Not Listed	JAMBA
Animalia	Aves	Ardenna tenuirostris	Short-tailed Shearwater	Not Sensitive	Not Listed	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Arenaria interpres	Ruddy Turnstone	Not Sensitive	Not Listed	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Artamus cyanopterus cyanopterus	Dusky Woodswallow	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Botaurus poiciloptilus	Australasian Bittern	Not Sensitive	Endangered	Endangered	
Animalia	Aves	Burhinus grallarius	Bush Stone-curlew	Not Sensitive	Endangered	Not Listed	
Animalia	Aves	Calidris acuminata	Sharp-tailed Sandpiper	Not Sensitive	Not Listed	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris alba	Sanderling	Not Sensitive	Vulnerable	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris ferruginea	Curlew Sandpiper	Not Sensitive	Critically Endangered	Critically Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris ruficollis	Red-necked Stint	Not Sensitive	Not Listed	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris tenuirostris	Great Knot	Not Sensitive	Vulnerable	Vulnerable	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Callocephalon fimbriatum	Gang-gang Cockatoo	Category 3	Endangered	Endangered	
Animalia	Aves	Calonectris leucomelas	Streaked Shearwater	Not Sensitive	Not Listed	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calyptorhynchus banksii banksii	Red-tailed Black-Cockatoo (coastal subspecies)	Category 2	Critically Endangered	Not Listed	
Animalia	Aves	Calyptorhynchus banksii samueli	Red-tailed Black-Cockatoo (inland subspecies)	Category 2	Vulnerable	Not Listed	
Animalia	Aves	Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo	Category 2	Vulnerable	Vulnerable	

Kingdom	Class	Scientific	Common	Sensitivity Class	State Conservation Status	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Cecropis daurica	Red-rumped Swallow	Not Sensitive	Not Listed	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Certhionyx variegatus	Pied Honeyeater	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Charadrius mongolus	Lesser Sand-plover	Not Sensitive	Vulnerable	Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Chthonicola sagittata	Speckled Warbler	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Cinclosoma castanotum	Chestnut Quail-thrush	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	Not Sensitive	Vulnerable	Vulnerable	
Animalia	Aves	Cuculus optatus	Oriental Cuckoo	Not Sensitive	Not Listed	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Daphoenositta chrysoptera	Varied Sittella	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Diomedea exulans	Wandering Albatross	Not Sensitive	Endangered	Vulnerable	
Animalia	Aves	Ephippiorhynchus asiaticus	Black-necked Stork	Not Sensitive	Endangered	Not Listed	
Animalia	Aves	Esacus magnirostris	Beach Stone-curlew	Not Sensitive	Critically Endangered	Not Listed	
Animalia	Aves	Eudyptula minor	Little Penguin	Not Sensitive	Endangered Population	Not Listed	
Animalia	Aves	Falco subniger	Black Falcon	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Gallinago hardwickii	Latham's Snipe	Not Sensitive	Vulnerable	Vulnerable	ROKAMBA;JAMBA
Animalia	Aves	Glossopsitta pusilla	Little Lorikeet	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Grantiella picta	Painted Honeyeater	Not Sensitive	Vulnerable	Vulnerable	
Animalia	Aves	Haematopus fuliginosus	Sooty Oystercatcher	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Haematopus longirostris	Pied Oystercatcher	Not Sensitive	Endangered	Not Listed	
Animalia	Aves	Haliaeetus leucogaster	White-bellied Sea-Eagle	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Hieraaetus morphnoides	Little Eagle	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Hirundapus caudacutus	White-throated Needletail	Not Sensitive	Vulnerable	Vulnerable	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Hydroprogne caspia	Caspian Tern	Not Sensitive	Not Listed	Not Listed	JAMBA
Animalia	Aves	Ixobrychus flavicollis	Black Bittern	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Lathamus discolor	Swift Parrot	Not Sensitive	Endangered	Critically Endangered	
Animalia	Aves	Limosa lapponica	Bar-tailed Godwit	Not Sensitive	Not Listed	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Lophoictinia isura	Square-tailed Kite	Category 3	Vulnerable	Not Listed	
Animalia	Aves	Macronectes giganteus	Southern Giant Petrel	Not Sensitive	Endangered	Endangered	
Animalia	Aves	Menura alberti	Albert's Lyrebird	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Neophema pulchella	Turquoise Parrot	Category 3	Vulnerable	Not Listed	
Animalia	Aves	Nettapus coromandelianus	Cotton Pygmy-Goose	Not Sensitive	Endangered	Not Listed	
Animalia	Aves	Ninox connivens	Barking Owl	Category 3	Vulnerable	Not Listed	
Animalia	Aves	Ninox strenua	Powerful Owl	Category 3	Vulnerable	Not Listed	
Animalia	Aves	Numenius madagascariensis	Eastern Curlew	Not Sensitive	Not Listed	Critically Endangered	ROKAMBA;CAMBA; JAMBA

Kingdom	Class	Scientific	Common	Sensitivity Class	State Conservation Status	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Numenius minutus	Little Curlew	Not Sensitive	Not Listed	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Onychoprion fuscata	Sooty Tern	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Oxyura australis	Blue-billed Duck	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Pachycephala olivacea	Olive Whistler	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Pandion cristatus	Eastern Osprey	Category 3	Vulnerable	Not Listed	
Animalia	Aves	Petroica boodang	Scarlet Robin	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Petroica phoenicea	Flame Robin	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Phaethon lepturus	White-tailed Tropicbird	Not Sensitive	Not Listed	Not Listed	CAMBA;JAMBA
Animalia	Aves	Phaethon rubricauda	Red-tailed Tropicbird	Not Sensitive	Vulnerable	Not Listed	CAMBA;JAMBA
Animalia	Aves	Philomachus pugnax	Ruff	Not Sensitive	Not Listed	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Pluvialis fulva	Pacific Golden Plover	Not Sensitive	Not Listed	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Pluvialis squatarola	Grey Plover	Not Sensitive	Not Listed	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Polytelis anthopeplus monarchoides	Regent Parrot (eastern subspecies)	Category 3	Endangered	Vulnerable	
Animalia	Aves	Polytelis swainsonii	Superb Parrot	Category 3	Vulnerable	Vulnerable	
Animalia	Aves	Pterodroma leucoptera leucoptera	Gould's Petrel	Not Sensitive	Vulnerable	Endangered	
Animalia	Aves	Pterodroma nigripennis	Black-winged Petrel	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Pterodroma solandri	Providence Petrel	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Ptilinopus magnificus	Wompoo Fruit-Dove	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Ptilinopus regina	Rose-crowned Fruit-Dove	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Ptilinopus superbus	Superb Fruit-Dove	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Puffinus assimilis	Little Shearwater	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Stercorarius longicaudus	Long-tailed Jaeger	Not Sensitive	Not Listed	Not Listed	CAMBA;JAMBA
Animalia	Aves	Stercorarius parasiticus	Arctic Jaeger	Not Sensitive	Not Listed	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Stercorarius pomarinus	Pomarine Jaeger	Not Sensitive	Not Listed	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Sterna hirundo	Common Tern	Not Sensitive	Not Listed	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Sternula albifrons	Little Tern	Not Sensitive	Endangered	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Sula dactylatra	Masked Booby	Not Sensitive	Vulnerable	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Sula leucogaster	Brown Booby	Not Sensitive	Not Listed	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Thalassarche cauta	Shy Albatross	Not Sensitive	Endangered	Endangered	
Animalia	Aves	Thalassarche melanophris	Black-browed Albatross	Not Sensitive	Vulnerable	Vulnerable	
Animalia	Aves	Thalasseus bergii	Crested Tern	Not Sensitive	Not Listed	Not Listed	JAMBA
Animalia	Aves	Thinornis cucullatus cucullatus	Eastern Hooded Dotterel	Not Sensitive	Critically Endangered	Vulnerable	
Animalia	Aves	Todiramphus chloris	Collared Kingfisher	Not Sensitive	Vulnerable	Not Listed	

Kingdom	Class	Scientific	Common	Sensitivity Class	State Conservation Status	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Tringa brevipes	Grey-tailed Tattler	Not Sensitive	Not Listed	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Tringa incana	Wandering Tattler	Not Sensitive	Not Listed	Not Listed	JAMBA
Animalia	Aves	Tringa nebularia	Common Greenshank	Not Sensitive	Not Listed	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Tringa stagnatilis	Marsh Sandpiper	Not Sensitive	Not Listed	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Tyto novaehollandiae	Masked Owl	Category 3	Vulnerable	Not Listed	
Animalia	Aves	Tyto tenebricosa	Sooty Owl	Category 3	Vulnerable	Not Listed	
Animalia	Gastropoda	Pommerhelix duralensis	Dural Land Snail	Not Sensitive	Endangered	Endangered	
Animalia	Mammalia	Arctocephalus forsteri	New Zealand Fur-seal	Not Sensitive	Vulnerable	Not Listed	
Animalia	Mammalia	Arctocephalus pusillus doriferus	Australian Fur-seal	Not Sensitive	Vulnerable	Not Listed	
Animalia	Mammalia	Balaenoptera musculus	Blue Whale	Not Sensitive	Endangered	Endangered	
Animalia	Mammalia	Cercartetus nanus	Eastern Pygmy-possum	Not Sensitive	Vulnerable	Not Listed	
Animalia	Mammalia	Chalinolobus dwyeri	Large-eared Pied Bat	Not Sensitive	Endangered	Endangered	
Animalia	Mammalia	Dasyurus maculatus	Spotted-tailed Quoll	Not Sensitive	Vulnerable	Endangered	
Animalia	Mammalia	Dugong dugon	Dugong	Not Sensitive	Endangered	Not Listed	
Animalia	Mammalia	Eubalaena australis	Southern Right Whale	Not Sensitive	Endangered	Endangered	
Animalia	Mammalia	Falsistrellus tasmaniensis	Eastern False Pipistrelle	Not Sensitive	Vulnerable	Not Listed	
Animalia	Mammalia	Isoodon obesulus obesulus	Southern Brown Bandicoot (eastern)	Not Sensitive	Endangered	Endangered	
Animalia	Mammalia	Macrotis lagotis	Bilby	Not Sensitive	Extinct	Vulnerable	
Animalia	Mammalia	Micronomus norfolkensis	Eastern Coastal Free-tailed Bat	Not Sensitive	Vulnerable	Not Listed	
Animalia	Mammalia	Miniopterus australis	Little Bent-winged Bat	Not Sensitive	Vulnerable	Not Listed	
Animalia	Mammalia	Miniopterus orianae oceanensis	Large Bent-winged Bat	Not Sensitive	Vulnerable	Not Listed	
Animalia	Mammalia	Myotis macropus	Southern Myotis	Not Sensitive	Vulnerable	Not Listed	
Animalia	Mammalia	Notamacropus parma	Parma Wallaby	Not Sensitive	Vulnerable	Vulnerable	
Animalia	Mammalia	Perameles nasuta	Long-nosed Bandicoot	Not Sensitive	Endangered Population	Not Listed	
Animalia	Mammalia	Petauroides volans	Southern Greater Glider	Not Sensitive	Endangered	Endangered	
Animalia	Mammalia	Petaurus australis	Yellow-bellied Glider	Not Sensitive	Vulnerable	Vulnerable	
Animalia	Mammalia	Petaurus norfolcensis	Squirrel Glider	Not Sensitive	Vulnerable	Not Listed	
Animalia	Mammalia	Petrogale penicillata	Brush-tailed Rock-wallaby	Not Sensitive	Endangered	Vulnerable	
Animalia	Mammalia	Petrogale xanthopus	Yellow-footed Rock-wallaby	Not Sensitive	Endangered	Vulnerable	
Animalia	Mammalia	Phascolarctos cinereus	Koala	Not Sensitive	Endangered	Endangered	
Animalia	Mammalia	Phoniscus papuensis	Golden-tipped Bat	Not Sensitive	Vulnerable	Not Listed	
Animalia	Mammalia	Physeter macrocephalus	Sperm Whale	Not Sensitive	Vulnerable	Not Listed	
Animalia	Mammalia	Pseudomys gracilicaudatus	Eastern Chestnut Mouse	Not Sensitive	Vulnerable	Not Listed	

Kingdom	Class	Scientific	Common	Sensitivity Class	State Conservation Status	Federal Conservation Status	Migratory Species Agreements
Animalia	Mammalia	Pseudomys hermannsburgensis	Sandy Inland Mouse	Not Sensitive	Vulnerable	Not Listed	
Animalia	Mammalia	Pseudomys novaehollandiae	New Holland Mouse	Not Sensitive	Not Listed	Vulnerable	
Animalia	Mammalia	Pteropus poliocephalus	Grey-headed Flying-fox	Not Sensitive	Vulnerable	Vulnerable	
Animalia	Mammalia	Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	Not Sensitive	Vulnerable	Not Listed	
Animalia	Mammalia	Scoteanax rueppellii	Greater Broad-nosed Bat	Not Sensitive	Vulnerable	Not Listed	
Animalia	Mammalia	Vespadelus troughtoni	Eastern Cave Bat	Not Sensitive	Vulnerable	Not Listed	
Animalia	Reptilia	Aspidites ramsayi	Woma	Not Sensitive	Vulnerable	Not Listed	
Animalia	Reptilia	Caretta caretta	Loggerhead Turtle	Not Sensitive	Endangered	Endangered	
Animalia	Reptilia	Chelonia mydas	Green Turtle	Not Sensitive	Vulnerable	Vulnerable	
Animalia	Reptilia	Dermochelys coriacea	Leatherback Turtle	Not Sensitive	Endangered	Endangered	
Animalia	Reptilia	Diplodactylus platyurus	Eastern Fat-tailed Gecko	Not Sensitive	Endangered	Not Listed	
Animalia	Reptilia	Eretmochelys imbricata	Hawksbill Turtle	Not Sensitive	Not Listed	Vulnerable	
Animalia	Reptilia	Hemiaspis damelii	Grey Snake	Not Sensitive	Endangered	Endangered	
Animalia	Reptilia	Myuchelys bellii	Western Sawshelled Turtle, Bell's Turtle	Not Sensitive	Endangered	Endangered	
Animalia	Reptilia	Pseudonaja modesta	Ringed Brown Snake	Not Sensitive	Endangered	Not Listed	
Animalia	Reptilia	Tiliqua occipitalis	Western Blue-tongued Lizard	Not Sensitive	Vulnerable	Not Listed	
Animalia	Reptilia	Uvidicolus sphyrurus	Border Thick-tailed Gecko	Not Sensitive	Vulnerable	Vulnerable	
Animalia	Reptilia	Varanus rosenbergi	Rosenberg's Goanna	Not Sensitive	Vulnerable	Not Listed	
Fungi	Flora	Camarophyllopsis kearneyi		Not Sensitive	Endangered	Not Listed	
Fungi	Flora	Hygrocybe anomala var. ianthinomarginata		Not Sensitive	Vulnerable	Not Listed	
Fungi	Flora	Hygrocybe aurantipes		Not Sensitive	Vulnerable	Not Listed	
Fungi	Flora	Hygrocybe austropratensis		Not Sensitive	Endangered	Not Listed	
Fungi	Flora	Hygrocybe collucera		Not Sensitive	Endangered	Not Listed	
Fungi	Flora	Hygrocybe griseoramosa		Not Sensitive	Endangered	Not Listed	
Fungi	Flora	Hygrocybe lanecovensis		Not Sensitive	Endangered	Not Listed	
Fungi	Flora	Hygrocybe reesiae		Not Sensitive	Vulnerable	Not Listed	
Fungi	Flora	Hygrocybe rubronivea		Not Sensitive	Vulnerable	Not Listed	
Plantae	Flora	Acacia bynoeana	Bynoe's Wattle	Not Sensitive	Endangered	Vulnerable	
Plantae	Flora	Acacia pubescens	Downy Wattle	Not Sensitive	Vulnerable	Vulnerable	
Plantae	Flora	Acacia terminalis subsp. Eastern Sydney	Sunshine wattle	Not Sensitive	Endangered	Endangered	
Plantae	Flora	Allocasuarina portuensis	Nielsen Park She-oak	Category 3	Endangered	Endangered	
Plantae	Flora	Baeckea kandos		Category 3	Endangered	Endangered	

Kingdom	Class	Scientific	Common	Sensitivity Class	State Conservation Status	Federal Conservation Status	Migratory Species Agreements
Plantae	Flora	Caladenia tessellata	Thick Lip Spider Orchid	Category 2	Vulnerable	Vulnerable	
Plantae	Flora	Callistemon linearifolius	Netted Bottle Brush	Category 3	Vulnerable	Not Listed	
Plantae	Flora	Chamaesyce psammogeton	Sand Spurge	Not Sensitive	Endangered	Not Listed	
Plantae	Flora	Cryptostylis hunteriana	Leafless Tongue Orchid	Category 2	Vulnerable	Vulnerable	
Plantae	Flora	Darwinia biflora		Not Sensitive	Vulnerable	Vulnerable	
Plantae	Flora	Davidsonia jerseyana	Davidson's Plum	Category 2	Endangered	Endangered	
Plantae	Flora	Deyeuxia appressa		Not Sensitive	Endangered	Endangered	
Plantae	Flora	Epacris purpurascens var. purpurascens		Not Sensitive	Vulnerable	Not Listed	
Plantae	Flora	Epacris sparsa	Sparse Heath	Not Sensitive	Vulnerable	Vulnerable	
Plantae	Flora	Eucalyptus camfieldii	Camfield's Stringybark	Not Sensitive	Vulnerable	Vulnerable	
Plantae	Flora	Eucalyptus leucoxylon subsp. pruinosa	Yellow Gum	Not Sensitive	Vulnerable	Not Listed	
Plantae	Flora	Eucalyptus nicholii	Narrow-leaved Black Peppermint	Not Sensitive	Vulnerable	Vulnerable	
Plantae	Flora	Eucalyptus scoparia	Wallangarra White Gum	Not Sensitive	Endangered	Vulnerable	
Plantae	Flora	Euphrasia collina subsp. muelleri	Mueller's Eyebright	Not Sensitive	Endangered	Endangered	
Plantae	Flora	Genoplesium baueri	Bauer's Midge Orchid	Category 2	Endangered	Endangered	
Plantae	Flora	Genoplesium plumosum	Tallong Midge Orchid	Category 2	Critically Endangered	Endangered	
Plantae	Flora	Grammitis stenophylla	Narrow-leaf Finger Fern	Category 3	Endangered	Not Listed	
Plantae	Flora	Grevillea caleyi	Caley's Grevillea	Category 3	Critically Endangered	Critically Endangered	
Plantae	Flora	Grevillea hilliana	White Yiel Yiel	Not Sensitive	Endangered	Not Listed	
Plantae	Flora	Grevillea juniperina subsp. juniperina	Juniper-leaved Grevillea	Not Sensitive	Vulnerable	Not Listed	
Plantae	Flora	Haloragodendron lucasii		Not Sensitive	Endangered	Endangered	
Plantae	Flora	Hibbertia puberula		Not Sensitive	Endangered	Not Listed	
Plantae	Flora	Hibbertia spanantha	Julian's Hibbertia	Category 2	Critically Endangered	Critically Endangered	
Plantae	Flora	Hibbertia superans		Not Sensitive	Endangered	Not Listed	
Plantae	Flora	Isotoma fluviatilis subsp. fluviatilis		Category 3	Not Listed	Extinct	
Plantae	Flora	Lasiopetalum joyceae		Not Sensitive	Vulnerable	Vulnerable	
Plantae	Flora	Leptospermum deanei		Not Sensitive	Vulnerable	Vulnerable	
Plantae	Flora	Macadamia integrifolia	Macadamia Nut	Not Sensitive	Not Listed	Vulnerable	
Plantae	Flora	Macadamia tetraphylla	Rough-shelled Bush Nut	Not Sensitive	Vulnerable	Vulnerable	
Plantae	Flora	Melaleuca biconvexa	Biconvex Paperbark	Not Sensitive	Vulnerable	Vulnerable	
Plantae	Flora	Melaleuca deanei	Deane's Paperbark	Not Sensitive	Vulnerable	Vulnerable	
Plantae	Flora	Microtis angusii	Angus's Onion Orchid	Category 2	Endangered	Endangered	
Plantae	Flora	Persoonia hirsuta	Hairy Geebung	Category 3	Endangered	Endangered	

Kingdom	Class	Scientific	Common	Sensitivity Class	State Conservation Status	Federal Conservation Status	Migratory Species Agreements
Plantae	Flora	Persoonia laxa		Not Sensitive	Extinct	Extinct	
Plantae	Flora	Persoonia pauciflora	North Rothbury Persoonia	Category 3	Critically Endangered	Critically Endangered	
Plantae	Flora	Pimelea curviflora var. curviflora		Not Sensitive	Vulnerable	Vulnerable	
Plantae	Flora	Prostanthera densa	Villous Mint-bush	Not Sensitive	Vulnerable	Vulnerable	
Plantae	Flora	Prostanthera marifolia	Seaforth Mintbush	Category 3	Critically Endangered	Critically Endangered	
Plantae	Flora	Rhizanthella slateri	Eastern Australian Underground Orchid	Category 2	Vulnerable	Endangered	
Plantae	Flora	Rhodamnia rubescens	Scrub Turpentine	Not Sensitive	Critically Endangered	Critically Endangered	
Plantae	Flora	Sarcochilus hartmannii	Hartman's Sarcochilus	Category 2	Vulnerable	Vulnerable	
Plantae	Flora	Senecio spathulatus	Coast Groundsel	Not Sensitive	Endangered	Not Listed	
Plantae	Flora	Syzygium paniculatum	Magenta Lilly Pilly	Not Sensitive	Endangered	Vulnerable	
Plantae	Flora	Tetratheca glandulosa		Not Sensitive	Vulnerable	Not Listed	
Plantae	Flora	Tetratheca juncea	Black-eyed Susan	Not Sensitive	Vulnerable	Vulnerable	
Plantae	Flora	Thesium australe	Austral Toadflax	Not Sensitive	Vulnerable	Vulnerable	

Source: NSW BioNet Species Sightings

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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
Area Match	Georeferenced to an approximate or general area
Road Match	Georeferenced to a road or rail corridor
Road Intersection	Georeferenced to a road intersection
Buffered Point	A point feature buffered to x metres
Adjacent Match	Land adjacent to a georeferenced feature
Network of Features	Georeferenced to a network of features
Suburb Match	Georeferenced to a suburb boundary
As Supplied	Spatial data supplied by provider

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APPENDIX D

HISTORICAL TITLE SEARCH RESULTS

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

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

Report

Re: - 20 to 22 Melwood Avenue, Forestville, NSW 2087

Description: - Lot 31 D.P. 366454

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
09.10.1925 (1925 to 1928)	William Stephens (Fire Brigade Employee)	Volume 3789 Folio 24 (Grant)
02.03.1928 (1928 to 1949)	Jeremiah Joseph Walsh (School Teacher)	Volume 3789 Folio 24 (Grant)
09.08.1949 (1949 to 1950)	Julia Walsh (Married Woman)	Volume 3789 Folio 24 (Grant)
08.03.1950 (1950 to 1956)	Aubrey Edward Gilon (Carpenter)	Volume 3789 Folio 24 (Grant) Now Volume 6144 Folio 31
12.09.1956 (1956 to 1959)	John McNaughton Williams (Carpenter)	Volume 6144 Folio 31
14.07.1959 (1959 to 1979)	Keith Eden Crowe (Sales Supervisor) Joan Mable Crowe (Married Woman)	Volume 6144 Folio 31
02.07.1979 (1979 to 1980)	Minas Minassian (Manager) Arpine Minassian (Married Woman)	Volume 6144 Folio 31
22.09.1980 (1980 to 1982)	Christian Wong (Accounts Clerk)	Volume 6144 Folio 31
15.10.1982 (1982 to 1986)	Justin Hong Szeto Helen King Hong Szeto David Chey Yen Szeto Patrick Chey Yu Szeto Christopher Chey Nam Szeto Arthur Chey Ho Szeto Alexander Chey Ming Szeto	Volume 6144 Folio 31
18.07.1986 (1986 to 1986)	Kit Mui Luk	Volume 6144 Folio 31
18.08.1986 (1986 to date)	# Forestville R.S.L. Club Limited	Volume 6144 Folio 31 Now 31/366454

 # Denotes current registered proprietor

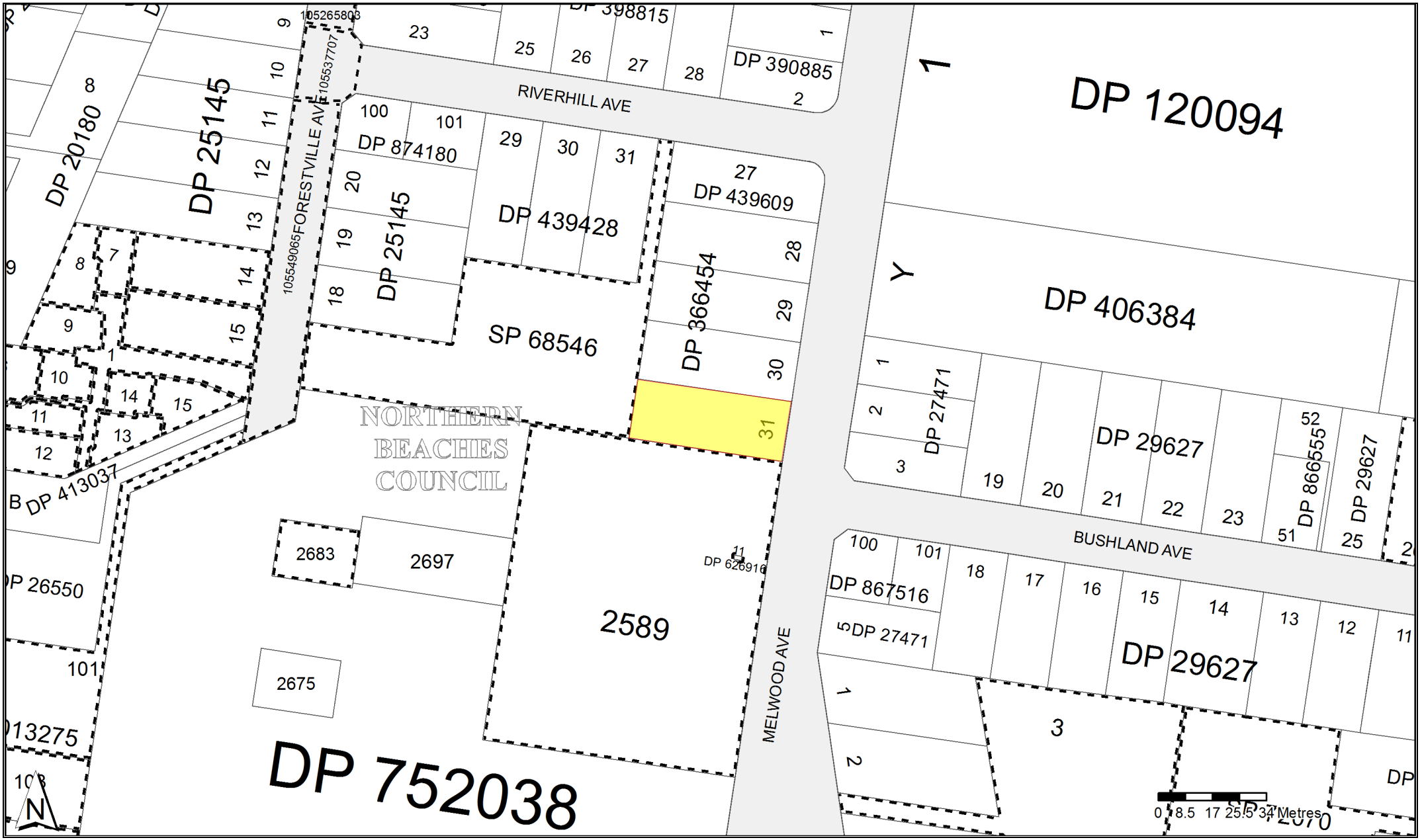
Easements 7 Leases: - NIL

Yours Sincerely
Mark Groll
26 August 2024

Cadastral Records Enquiry Report : Lot 31 DP 366454

Ref : LS060323_EP - 20-22 Melwood

Locality : FORESTVILLE
Parish : MANLY COVE
LGA : NORTHERN BEACHES
County : CUMBERLAND



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InfoTrack

F117074 #

F.P.366454

F117074

Plan Form N°7(for compilations) M. L. M.

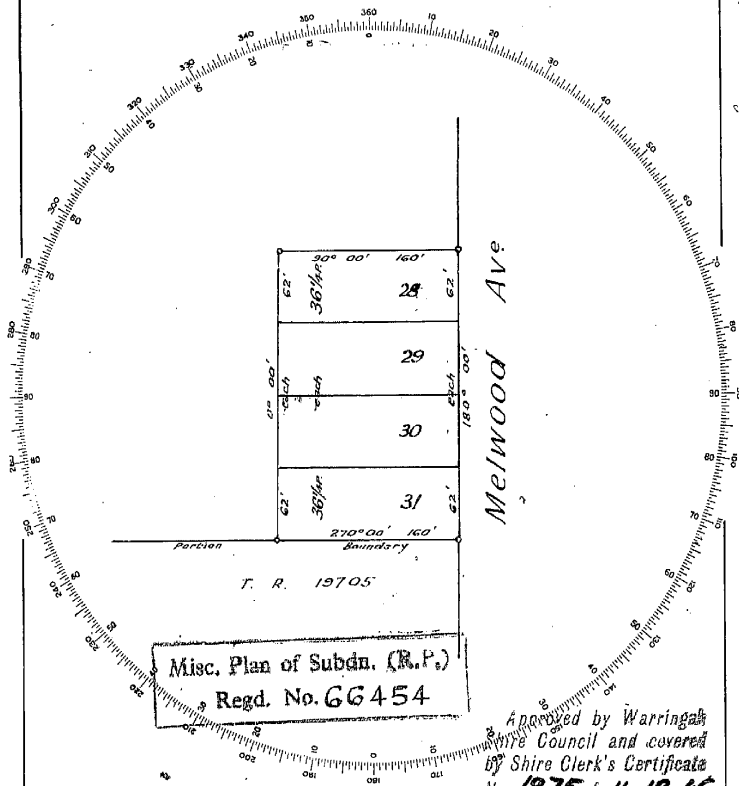
Municipality of
Shire of Warringah

PLAN

of subdn. of part of Por. 1287

Parish of Manly Cove County of Cumberland

Scale : 80 feet to an Inch.



Misc. Plan of Subdn. (R.P.)
Regd. No. 66454

Approved by Warringah Shire Council and covered by Shire Clerk's Certificate No. 1875 of 11-12-46

Shire Clerk.

I certify that this plan has been compiled from the information in plan catalogued C.1143.1940 and is correct

Surveyor registered under Surveyors Act, 1929.

This is the plan marked "A." referred to in the annexed Memo. of Transfer from Julia Walsh to Donald Elliott Thomas.

Dated ..... 19 .

Signatures of parties to be made in this margin.

CONVERSION TABLE ADDED IN DEPARTMENT OF LANDS

DP 366454

FEET	INCHES	METRES
62	-	18.898
160	-	48.768

AC	RD	P	SQ M
-	-	36 1/4	916.9

PX

I, Bruce Richard Davies, Registrar General for New South Wales, certify that this negative is a photograph made as a permanent record of a document in my custody this 18th day of September, 1978

1

Req:R962054 /Doc:DP 0366454 P /Rev:06-Nov-1992 /NSW LRS /Pgs:ALL /Prt:26-Aug-2024 11:20 /Seq:1 of 1
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NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE

26/8/2024 11:19AM

FOLIO: 31/366454

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 6144 FOL 31

Recorded	Number	Type of Instrument	C.T. Issue
5/11/1988		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
14/7/1989		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
26/8/1997		AMENDMENT: LOCAL GOVT AREA	
2/4/1998	3892622	APPLICATION FOR REPLACEMENT CERTIFICATE OF TITLE	EDITION 1
22/4/1998	3933586	REQUEST	EDITION 2
19/5/2000	6795670	REQUEST	EDITION 3

*** END OF SEARCH ***

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Received: 26/08/2024 11:19:16

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 31/366454

SEARCH DATE	TIME	EDITION NO	DATE
26/8/2024	11:18 AM	3	19/5/2000

LAND

LOT 31 IN DEPOSITED PLAN 366454
LOCAL GOVERNMENT AREA NORTHERN BEACHES
PARISH OF MANLY COVE COUNTY OF CUMBERLAND
TITLE DIAGRAM DP366454

FIRST SCHEDULE

FORESTVILLE R. S. L. CLUB LIMITED (T W448715)

SECOND SCHEDULE (3 NOTIFICATIONS)

---

1 LAND EXCLUDES MINERALS AND IS SUBJECT TO RESERVATIONS AND CONDITIONS IN FAVOUR OF THE CROWN - SEE CROWN GRANT(S)
2 3933586 POSITIVE COVENANT
3 6795670 POSITIVE COVENANT

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

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

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Received: 26/08/2024 11:18:31

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

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

Report

Re: - 22 Melwood Avenue, Forestville, NSW 2087

Description: - Lot 2589 D.P. 752038
(Limited to a depth of 15.24 metres)

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
22nd April 1886	Within Sydney Population Area	
3rd March 1894	Within Crown Reserve No. 19705 from Sale for Trigonometrical Purposes Revoked 3rd August 1956	Gazette 3rd March 1894 Folio 1450
1955 (1955 to 2001)	Crown Tenure Special Lease 1955/179 Metropolitan Forestville Sub -Branch Returned Sailors Soldiers & Airmen's Imperial League of Australia (N.S.W. Branch) Forestville Sub-Branch	Crown Tenure Special Lease 1955/179 Metropolitan Now Volume 15243 Folio 219
	Intervening Trustees (1955 to 2001)	
	Trustees Allan Chave George McIntosh Holland Edric Gee Clive Frederick Benjamin Burridge	Crown Tenure Special Lease 1955/179 Metropolitan
	Allan Chave George McIntosh Holland Clive Frederick Benjamin Burridge (Trustees)	Crown Tenure Special Lease 1955/179 Metropolitan Now Crown Tenure Conditional Purchase 1977/56 Metropolitan
	Clive Frederick Benjamin Burridge George McIntosh Holland Roderick Angus McDonald (Trustees)	Crown Tenure Conditional Purchase 1977/56 Metropolitan
	George McIntosh Holland Roderick Angus McDonald David Hurt (Trustees)	Crown Tenure Conditional Purchase 1977/56 Metropolitan Then Volume 15243 Folio 219 Now 2589/752038
13.03.2001 (2001 to date)	# Forestville RSL Club Limited	2589/752038

 # Denotes current registered proprietor

Continued over.

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

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

Leases: -

- 06.03.1987 to Forestville R.S.L. Club Limited – expires 11.02.1990.
- Various leases were found registered on 13th March 2001 that have now surrendered on 20th November 2003 – These have not been investigated.

Easements: -

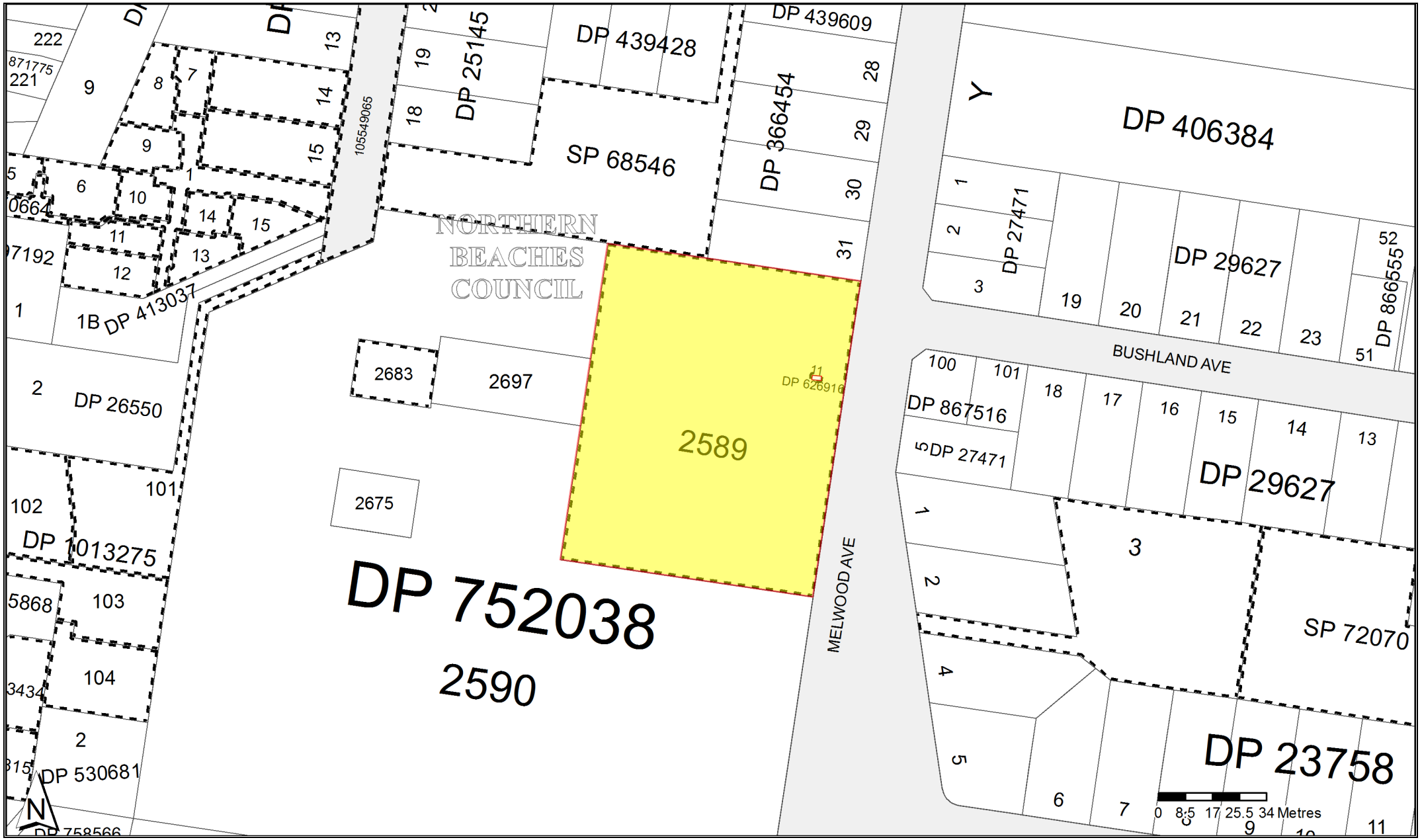
- 24.06.1983 (D.P. 626916 and Gazette) Easement for Electricity purposes.
- 24.06.1983 (D.P. 626916 and Gazette) Right of Way.

Yours Sincerely
Mark Groll
16 July 2024

Cadastral Records Enquiry Report : Lot 2589 DP 752038

Ref : LS058454_EP - 22 Melwood Avenue

Locality : FORESTVILLE
Parish : MANLY COVE
LGA : NORTHERN BEACHES
County : CUMBERLAND



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PLAN OF PORTIONS 2589 & 2590 PAPERS L.B. 1955/1880

PARISH MANLY COVE COUNTY CUMBERLAND Ten. 55-9472

LAND DISTRICT METROPOLITAN LAND BOARD DISTRICT SYDNEY

SHIRE WARRINGAH

Por^s 2589 & 2590

Por 2589 Applied for under the 75.B Section of the Crown Lands Consolidation Act. 1913 as

Within Sydney Population Area Proclaimed 22nd April 1886

Within R.1986 from Occupation under M.R. or B.L. Notified 9th August 1935

Within * R. 19705 from Sale for Trigonometrical Purposes Notified 3rd March 1894 Por 2589 Rev 3-8-28

Por 2589 Sp.L. 55179 Forestville Sub-Branch of R.S.S.& A.I.L.A.

Title limited to surface and to a depth of 50 ft.

POR 2589 APPD. FOR 1a. 3r. 39¾p. inc. east, right of way ex. Lot 11 D.P. 626916. AUTH. OFFICER 23/5/84.

Portion 2590 M.fd. Peg & R.M. 269°59' 2·27 Rev^d 14·3·69.

Pt Por. 2590 Sp.L. 62/58 United Grand Lodge of N.S.W. Withdrawn

Pt. Por. 2590 Sp.L. 63/58 Boy Scouts Assn.

Pt. Por. 2590 Area added to Sp.L. 55179 R.S.S. & A.I.L.A. Withdrawn

Sub Branch (Tot. area abt 3a.)

1308 C.3143 2036

ROAD 50' wide)

F. M. Stein

Por 2590 Added Gaz. 14-6-69 to R 86282 for Public Rec^n Not^d C.3143 2030 26th May. 1967

Ø Lot 11 (2·7m²) D.P. 626916 Gaz. 24-6-83 fol. 2923. Area amended.

* T.R. 19705 to be retained L.B. 55-1880 Ø Easement for electricity purposes & Right of Way D.P. 626916 Gaz. 24-6-83 fol. 2925.

Wm Stephens

1287

1248 C.2986 2030

F. M. Stein

POR. 2590 APPROVED FOR 7A OR 25¾P BY DED^N

AUTHORISED OFFICER

6a. 3r. 19p.

D.P. 25145

4 acres

2507 M. A. Bergelin Sp. Pur. 53.13 0.038a

1281 C.3567 2030

2589

2590

2683 C8909

2697 C9280

2675 C8697

Ø Lot 11 D.P. 626916

1a. 3r. 39¾p. inc. east & right of way, ex Lot 11 D.P. 626916 ~~2 acres~~

5a. 2r. 23p.

CANCELLED BY C 10432-2030

1249 C.2986 2030

J. W. Cannon

5a. 1r.

CANNONS PDA

T.S. "Middle Harbor"

Wm Stephens

9a. 1r. 9p.

~~7ac. 2r. 13¾p. by ded^n~~

(7ac. 2r. 32p.)

~~7ac. 1r. 35½p. by ded^n~~

~~7ac. Or 35p.~~ 7ac Or 25¾p by ded^n

Light to thick Undergrowth

YELLOW LOAM

GENTLY GRAVELLY

EXCAVATION

FORESTVILLE AVENUE (50' wide)

MELWOOD AVENUE (Variable width)

(1 Ch^n wide)

Por. 2590 approved for an area of 7a. 1r. 35½p. (by ded^n)

R. J. Leisner Authorised Officer. 23rd June 1965

All marks re por 2590 were found by Sur. G. W. Anderson in Oct 1962 LB 61-2073

R. 59984 f^m Sale 59985 f^m Lease Generally for Public Recreation

Surround Area Por. 2590 ~~7·709414 ac~~ ~~7·589610 ac~~ 7·224112 ac

Not^d 16. 9 '27

Por. 2590 approved for an area of 7a. 2r. 13¾p. by ded^n

R. J. Leisner Authorised Officer 22nd May 1964

William Griffiths Toft of LINDFIELD

A Surveyor registered under the Surveyors Act, 1929 hereby certify that the survey represented in this plan is accurate and has been made by me in accordance with the Survey Practice Regulations 1933 and the special requirements of the Department of Lands was completed on the 25th January 1956 and the reference marks have been placed as shown hereon

Surveyor registered under the Surveyors Act 1929

Por. 2590 approved for an area of 7a. Or. 35p by deduction. L.B 65-1492

A. B. Sherlock Authorised Officer 12-12-1966

Transcribed to the District Surveyor with my letter of 3/2/1956

CHECKED & CHARTED John Burton 9. 2. 1956.

EXAMINED Ellerton 15. 2. 1956.

PLAN APPROVED A. B. Sherlock Authorised Officer 16 July 56

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

REFERENCE MARKS 7·224112 ac

CORNER	BEARING	FROM	LINKS	No ON TREE
A	Numbd peg on	Cor.		2590-4
	89°59'	G.I. Pipe	2·27	(fd.)
B	Numbd peg on	Cor.		2590-3
	180°0'	G.I. Pipe	2·27	(fd.)
C	Numbd peg on	Cor.		2590
	149°38'	Conc. Bk	4·48	(fd.)
D	Numbd peg on	Cor.		2590-32
E	Numbd peg on	Cor.		2589-2590
F	Numbd peg on	Cor.		2589
	269°59'	G.I. Pipe	2·27	
G	Numbd peg on	Cor.		2589-2590
H	Numbd peg on	Cor.		2589-2590
J	Rock Mark on	Cor.		2590
	269°59'	D.H. & wing	13·40	

REFERENCE MARKS CONT

K	NUMBERED PEG ON CORNER			
	89° 59'	G.I. PIPE	2·27	2675

AZIMUTH TAKEN FROM A-B

FIELD BOOK L.D. 3553 PAGES 8 & 9

SCALE 2 CHAINS TO AN INCH

NOTATION PLAN

CAT. Nº C 7642 2030

FILMED — NO ADDITIONS OR AMENDMENTS TO BE MADE

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Req:R743036 /Doc:DP 0626916 P /Rev:04-Jan-1993 /NSW LRS /Pgs:ALL /Prt:16-Jul-2024 12:24 /Seq:1 of 1

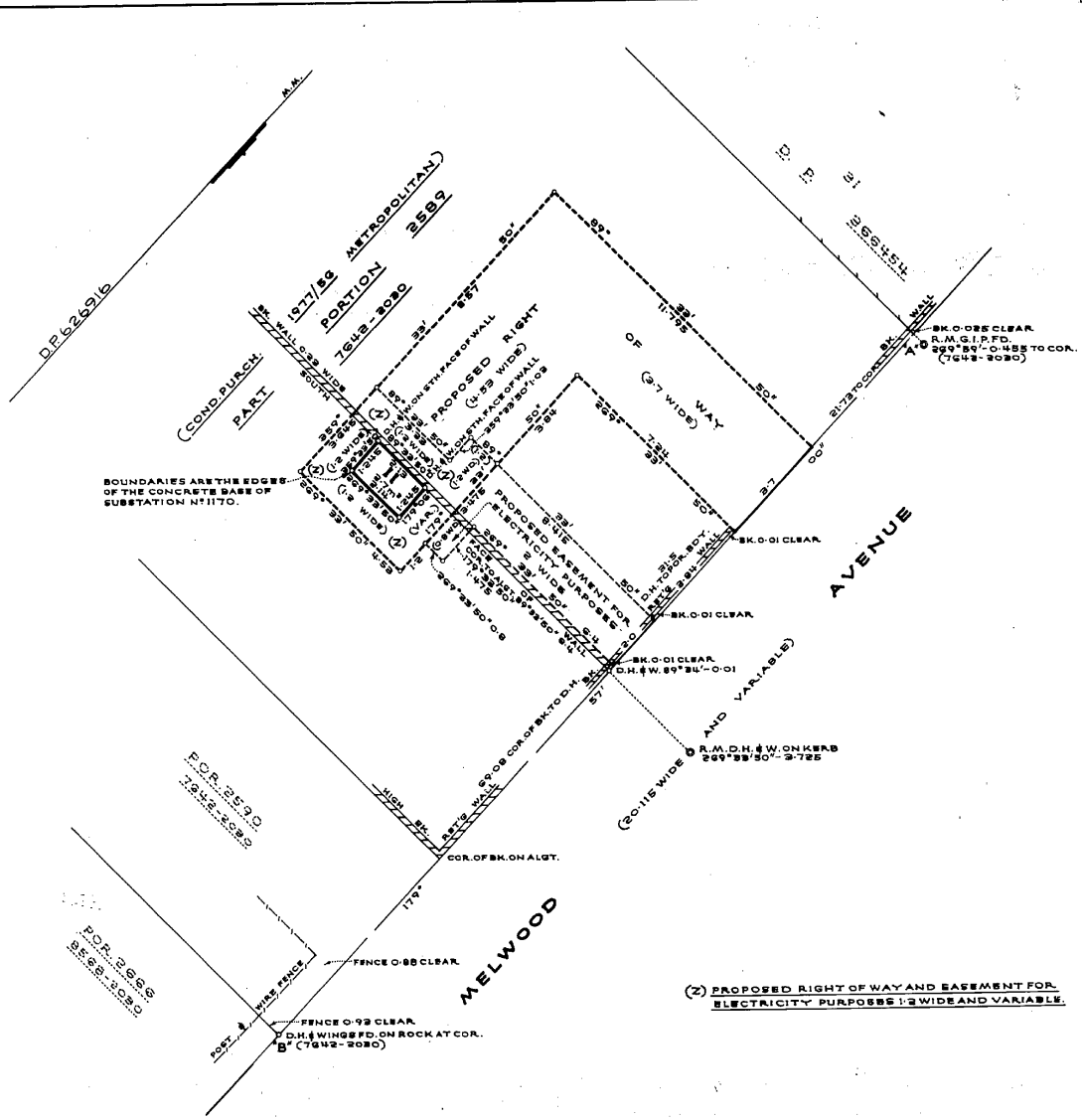
Plan Form 2

Plan Drawing only to appear in this space.

DP626916

*OFFICE USE ONLY

SIGNATURES AND SEALS ONLY



Council Clerk's Certificate.

I hereby certify that—

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

*(b) the requirements of section 348 of the Hunter Metropolitan Water, Sewerage, and Drainage Act, 1924, as amended, †Hunter District Water, Sewerage, and Drainage Act, 1938, as amended,

have been complied with by the applicant in relation to the proposed

.....

(insert "new road", "subdivision" or "consolidated lot") set out herein.

Subdivision No .....

Date .....

(Signature) .....

Council Clerk.

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

†Delete if inapplicable.

M.P.D.

W.R.S./PR.POR.4/MAC.87/088/T16-92/1170/

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

Registered: 25-8-1982

C.A.: 4

Title System: CROWN LAND

Purpose: RESUMPTION

Ref. Map: 1:1860-43*

Last Plan:

PLAN SHOWING LAND PROPOSED TO BE RESUMED FOR ELECTRICITY PURPOSES TOGETHER WITH RIGHT OF WAY AND EASEMENT FOR ELECTRICITY PURPOSES. (BEING PART OF PORTION 2589 IN 7642-2030)

Reduction Ratio 1: 100

Lengths are in metres.

Mun./Shire/City: WARRINGAH

Locality: FORESTVILLE

Parish: MANLY COVE

County: CUMBERLAND

This is sheet 1 of my plan in sheets.

(delete if inapplicable.)

I, RAYMOND FRANCIS SMITH

of THE SYDNEY COUNTY COUNCIL

a surveyor registered under the Surveyors Act, 1929, as amended, hereby certify that the survey represented in this plan is accurate and has been made *(I) by me (2) under my immediate supervision. In accordance with the Survey Practice Regulations, 1933, and was completed on 15-3-1981

Signature R. F. Smith

Surveyor registered under Surveyors Act, 1929, as amended.

Datum Line of Azimuth "A-B"

*Strike out either (1) or (2). †Insert date of survey.

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

IT IS INTENDED TO RESUME LOT 11 TOGETHER WITH APPURTENANT RIGHT OF WAY AND EASEMENT FOR ELECTRICITY PURPOSES.

SURVEYOR'S REFERENCE: 8.6783

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

26th August, 1982

Req:R743063 /Doc:CT 15243-219 CT /Rev:12-Jan-2011 /NSW LRS /Pgs:ALL /Prt:16-Jul-2024 12:26 /Seq:1 of 4
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[redacted]ICATE OF TITLE

15243219

NEW SOUTH WALES [redacted] PROPERTY ACT, 1900

First Title This Folio

Prior Title Crown Land (FI 105675)

Vol. 15243 Fol. 219

EDITION ISSUED

26 7 1984

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

CANCELLED

Registrar General.

SEE AUTO FOLIO

(Page 1) Vol. 15243 Fol. 219

LAND REFERRED TO

Portion 2589 in the Shire of Warringah Parish of Manly Cove County of Cumberland.

FIRST SCHEDULE

ALLAN GEORGE CHAVE, CLIVE FREDERICK BENJAMIN BURRIDGE and GEORGE MCINTOSH HOLLAND as Joint Tenants.

SECOND SCHEDULE

1. Excepting Lot 11 in Deposited Plan 626916 shown in the plan hereon.
2. Excepting land below a depth from the surface of 15.24 metres.
3. Land excludes minerals and is subject to reservations and conditions in favour of the Crown - see Memorandum S700000B.
4. Notification in Government Gazette dated 24-6-1983 Folio 2925: Easement for electricity purposes affecting the land shown so burdened in Deposited Plan 626916.
5. Notification in Government Gazette dated 24-6-1983 Folio 2925: Right of Way affecting the land shown so burdened in Deposited Plan 626916.
6. Conditional Purchase 1977/56 Metropolitan - subject to the provisions of the Crown Lands Consolidation Act, 1913, particularly as regards -
   (a) PAYMENT OF BALANCE OF PURCHASE AND OTHER MONEYS;
   (b) forfeiture provisions;
   (c) restrictions on dealings, see s.272
   (d) restrictions on subdivision, see s.257.

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

Req:R743063 /Doc:CT 15243-219 CT /Rev:12-Jan-2011 /NSW LRS /Pgs:ALL /Prt:16-Jul-2024 12:26 /Seq:2 of 4
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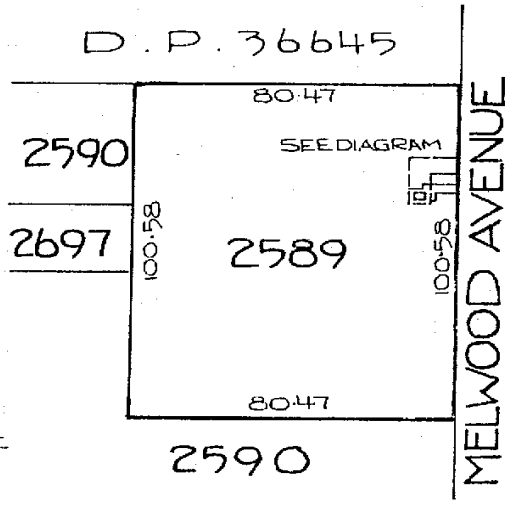
Vol. 13643 Fol. 219

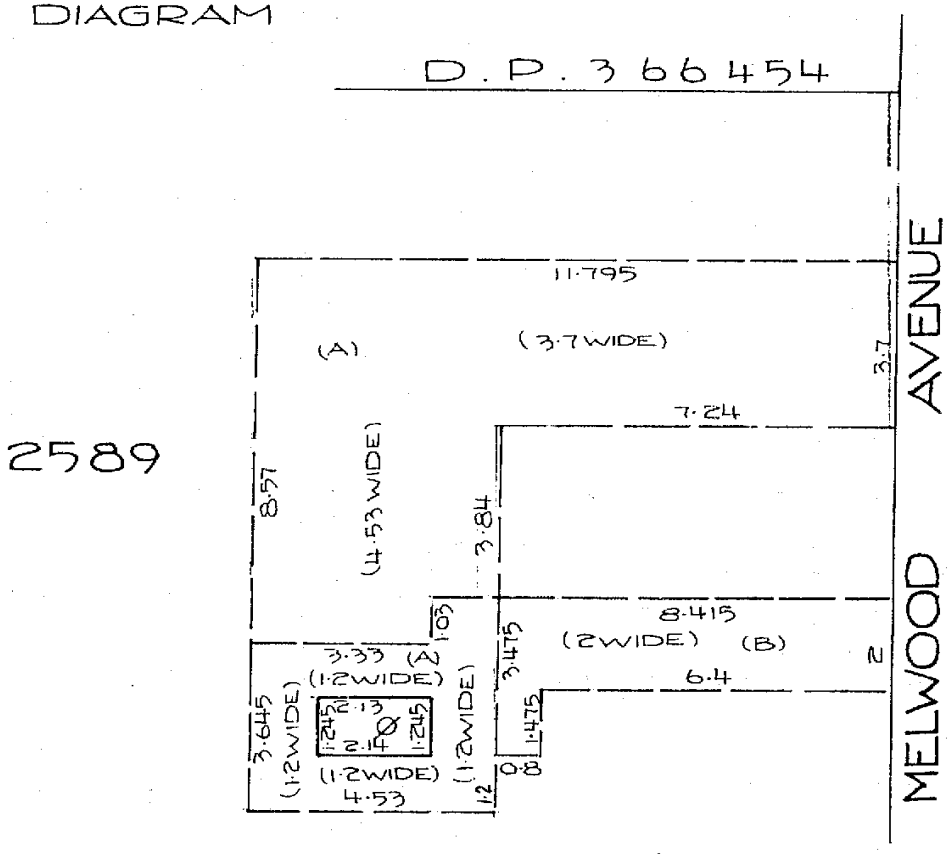
PLAN SHOWING LOCATION OF LAND

LENGTHS ARE IN METRES



AREA 8091 m²
THIS AREA DOES NOT INCLUDE
THE AREA OF LOT 11 D.P.626916

DIAGRAM



ØLOT 11 D.P.626916

(A) RIGHT OF WAY GOV. GAZ 24.6.1983 FOL 2925
(B) EASEMENT FOR ELECTRICITY PURPOSES GOV GAZ 24.6.1983 FOL 2925

Req:R743063 /Doc:CT 15243-219 CT /Rev:12-Jan-2011 /NSW LRS /Pgs:ALL /Prt:16-Jul-2024 12:26 /Seq:3 of 4
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FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR

Registrar General

~~Clive Frederick Benjamin Burridge, George McIntosh Holland and Roderick Angus McDonald as joint tenants by Application V928617. Registered 26-9-1985~~

George McIntosh Holland, Roderick Angus McDonald and David Hurt as joint tenants by Application X730472. Registered 4-8-1988.

CANCELLED

SEE AUTO FOLIO

SECOND SCHEDULE (continued)

PARTICULARS	Registrar General	CANCELLATION
L W768428 P Lease to Forestville R.S.L. Club Limited. Expires 11.2.1990. Registered 6.3.1987.		

NOTATIONS AND UNREGISTERED DEALINGS

V782018 Disc
Does not affect
V928617 AP 2
Registered 31.10.86
W768428 L
429 cu/R
X730472 AP

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

Req:R743063 /Doc:CT 15243-219 CT /Rev:12-Jan-2011 /NSW LRS /Pgs:ALL /Prt:16-Jul-2024 12:26 /Seq:4 of 4
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Vol. 15243 Fol. 219

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR | Registrar General

CANCELLED

SEE AUTO FOLIO

SECOND SCHEDULE (continued)

PARTICULARS | Registrar General | CANCELLATION

NOTATIONS AND UNREGISTERED DEALINGS

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

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE

16/7/2024 12:25PM

FOLIO: 2589/752038

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 15243 FOL 219

Recorded	Number	Type of Instrument	C.T. Issue
14/12/1988		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
8/2/1989		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
12/4/1990	Y931950	CAVEAT	
19/2/1991	Z471034	LEASE	EDITION 1
24/9/1993	I650977	LEASE	EDITION 2
25/8/1994	U562070	APPLICATION FOR RECORDING OF ACTION AFFECTING CROWN HOLDING	EDITION 3
24/10/1994		AMENDMENT: TITLE DIAGRAM	
6/2/1996	O892575	CAVEAT	
5/7/1996	2212143	REQUEST	
27/8/1997		AMENDMENT: LOCAL GOVT AREA	
10/1/1998	3721792	DEPARTMENTAL DEALING	
10/3/1999	5668986	DEPARTMENTAL DEALING	
6/2/2001	DP1023000	DEPOSITED PLAN	
13/3/2001	7181613	WITHDRAWAL OF CAVEAT	
13/3/2001	7181614	LEASE	
13/3/2001	7181615	LEASE	
13/3/2001	7181616	LEASE	
13/3/2001	7181617	TRANSFER	
13/3/2001	7181618	MORTGAGE	EDITION 4
20/11/2003	AA154793	SURRENDER OF LEASE	EDITION 5
15/11/2012	AH369554	DEPARTMENTAL DEALING	

END OF PAGE 1 - CONTINUED OVER

SEARCH DATE
16/7/2024 12:25PM

FOLIO: 2589/752038 PAGE 2

Recorded	Number	Type of Instrument	C.T. Issue
2/9/2018	AN678864	DEPARTMENTAL DEALING	EDITION 6 CORD ISSUED

*** END OF SEARCH ***

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Received: 16/07/2024 12:25:47

Req:R743064 /Doc:DL 7181617 /Rev:15-Mar-2001 /NSW LRS /Pgs:ALL /Prt:16-Jul-2024 12:26 /Seq:1 of 1
© Office of the Registrar-General /Src:InfoTrack /Ref:LS058454_EP - 22 Melwood Avenue

7181617P

Form: 97-01T
Licence: 026CN/0526/96

TRANSFER

New South Wales

Real Property Act 1900

Instructions for filling out this form are available from the Land Titles Office

Office of State Revenue use only

NEW SOUTH WALES DUTY
20-06-2000 0000338293-001
SECTION 18(2)
DUTY $ **********2.00

(A) **LAND TRANSFERRED**
Show no more than 20 titles. If appropriate, specify the share or part transferred.

Folio Identifier 2589/752038

(B) **LODGED BY**

LTO Box	Name, Address or DX and Telephone
42G 245	**MIDDLETONS MOORE & BEVINS** **DX 10263 SSE** **TEL: 9390 8100** CTB REFERENCE (15 character maximum): 014580-TE93

(C) **TRANSFEROR** **GEORGE MCINTOSH HOLLAND, RODERICK ANGUS MCDONALD and DAVID HURT**

(D) acknowledges receipt of the consideration of $3,850,000.00
and as regards the land specified above transfers to the transferee an estate in fee simple.

(E) Encumbrances (if applicable) 1. Lease 2. 3.

(F) **TRANSFEREE**

T **TS** (s713 LGA) **TW** (Sheriff)	**FORESTVILLE RSL CLUB LIMITED ACN 000 970 132**

(G) **TENANCY:**

(H) We certify this dealing correct for the purposes of the Real Property Act 1900. **DATE** 28th June 2000
Signed in my presence by the transferor who is personally known to me.

.....
Signature of Witness

CYRIL JACK
.....
Name of Witness (BLOCK LETTERS)

3 DAKARA PLACE FRENCHS FOREST
.....
Address of Witness

.....
Signature of Transferor

Signed in my presence by the transferee who is personally known to me.

.....
Signature of Witness

.....
Name of Witness (BLOCK LETTERS)

.....
Address of Witness

.....
Signature of Transferee's Solicitor
LEON GEORGE SAKARIS
NB: if signed on the transferee's behalf by a solicitor or licensed conveyancer, show the signatory's full name in block letters.

CHECKED BY (LTO use).....

OFF-(L) I650977

#425574 v1: 19.6.2000

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 2589/752038

SEARCH DATE	TIME	EDITION NO	DATE
16/7/2024	12:24 PM	6	2/9/2018

LAND

LOT 2589 IN DEPOSITED PLAN 752038
LOCAL GOVERNMENT AREA NORTHERN BEACHES
PARISH OF MANLY COVE COUNTY OF CUMBERLAND
(FORMERLY KNOWN AS PORTION 2589)
TITLE DIAGRAM CROWN PLAN 7642.2030

FIRST SCHEDULE

FORESTVILLE RSL CLUB LIMITED (T 7181617)

SECOND SCHEDULE (6 NOTIFICATIONS)

---

1 LAND EXCLUDES MINERALS AND IS SUBJECT TO RESERVATIONS AND CONDITIONS IN FAVOUR OF THE CROWN - SEE MEMORANDUM S700000B
2 LAND EXCLUDES LOT 11 IN DP626916
3 EXCEPTING LAND BELOW A DEPTH FROM THE SURFACE OF 15.24 METRES
4 NOTIFICATION IN GOVERNMENT GAZETTE DATED 24-6-1983 FOL 2925: EASEMENT FOR ELECTRICITY PURPOSES AFFECTING THE LAND SHOWN SO BURDENED IN DP626916
5 NOTIFICATION IN GOVERNMENT GAZETTE DATED 24-6-1983 FOL 2925: RIGHT OF WAY AFFECTING THE LAND SHOWN SO BURDENED IN DP626916
6 7181618 MORTGAGE TO COMMONWEALTH BANK OF AUSTRALIA

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

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

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Received: 16/07/2024 12:24:33

APPENDIX E

DATA QUALITY OBJECTIVES

INTRODUCTION

The Data Quality Objectives (DQOs) process was used to define the type, quantity and quality of the data needed to support decisions relating to the environmental condition of a site (reference 1). The process consists of seven steps, with the output from each step influencing the choices that will be made later in the process.

According to USEPA (reference 2), DQOs are qualitative and quantitative statements, derived from the first six steps of the process, that:

- ◊ Clarify the study objective,
- ◊ Define the most appropriate type of data to collect,
- ◊ Determine the most appropriate conditions from which to collect the data, and
- ◊ Specify tolerable limits on decision errors which will be used as the basis for establishing the quantity and quality of data needed to support the decision.

The DQOs are then used to develop a scientific and resource-effective data collection design.

STEP 1 - STATE THE PROBLEM

The problem is the potential for the site to be impacted by contamination caused by past activities undertaken on or adjacent to the site, at levels in excess of those permissible for the proposed land-use, and which could impact upon anticipated receiving environments and the future users of the site (both short term during redevelopment works and long-term during occupation of the site). Further detail is provided in the Conceptual Site Model.

STEP 2 - IDENTIFY THE DECISION STATEMENT

The following decision were required to be made:

- ◊ Is there sufficient information on the distribution and characteristics of soil, fill and groundwater to properly characterise soil and groundwater at the site?
- ◊ Does the dataset adequately characterise the site for the purpose of assessing the suitability of the site for the proposed land uses and (if required) remedial options?

- ◊ Is the dataset sufficient to enable the preparation of defensible RAP for the site (if required)?
- ◊ Have potential off-site sources of potential contamination been investigated sufficiently?
- ◊ Do the concentrations of potential contaminants in the fill and/or natural soil exceed acceptable levels for the existing land-use?
- ◊ Are there any aesthetic issues relating to the fill and natural soils at the site?
- ◊ Do the concentrations of potential contaminants in groundwater exceed acceptable levels for the existing land-use?
- ◊ Is the data reliable?

STEP 3 - IDENTIFY INPUTS TO THE DECISION

The following information inputs are required to resolve the decision statement:

- ◊ Proposed land use,
- ◊ Detailed site inspection for sources of potential contamination,
- ◊ A review of the environmental and physical setting in which the site lies, including geology, hydrogeology, and topography,
- ◊ Review of the history of the site and surrounding land to research potential contaminating activities on the site or on nearby sites,
- ◊ The drilling and logging of two boreholes drilled as part of a separate geotechnical investigation,
- ◊ The installation of a groundwater monitoring well within the two boreholes, which complement an existing well instralled as part of a former geotechnical investigation,
- ◊ Collection of environmental soil samples from the two boreholes using appropriate methods,
- ◊ Collection of environmental groundwater samples from all three wells using appropriate methods,
- ◊ Analysis of selective soil samples for the contaminants of concern identified by the history search and site inspection,
- ◊ Analysis of groundwater samples from three wells for the contaminants of concern identified by the history search and site inspection,

- Analysis of any surface or buried fibro samples (if present) to confirm the presence of asbestos fibres,
- Comparison of the results with appropriate Site Assessment Criteria (SAC) and Groundwater Acceptance Criteria (GAC) as defined in the main body of the report, and
- Accurate measurements of sample locations to allow for accurate mapping and contouring of contamination (if identified).

STEP 4 - DEFINE THE BOUNDARIES OF THE STUDY

The site covers an area of approximately 8,970m^2 (by calculation) and encompasses the following legal allotments:

- Lot 31 Deposited Plan (DP) 366454 (No. 20 Melwood Ave)
- No. 22: Lot 2589 DP 752038 (No. 22 Melwood Ave)

The site boundaries are shown on the survey plan provided as Appendix A.

The vertical extent of the study is defined as follows:

- Soil/fill characterisation: Base of fill (if present) and one (1) m into natural material (or refusal on bedrock),
- Groundwater characterisation: Shallow groundwater where encountered.

The temporal boundary of the assessment is defined as the time between commencement and final sample collection.

STEP 5 - DEVELOP A DECISION RULE

The decision rules for this investigation are as follows:

- If it is determined that the data generated through this investigation are reliable and adequately characterise soil and groundwater conditions at the site, the data will be compared against the adopted SAC and GAC,
- If all the data meets the adopted SAC and GAC, then the site may be considered suitable for the proposed development, although further investigations are expected to ensure adequate site coverage and sampling density,

- ◊ If the data do not meet the adopted SAC and/or GAC, then further investigations will be recommended as a basis for making the site suitable for the proposed development. Further investigations may include:
  - Additional soil or groundwater sampling points to delineate impacts,
  - Analysis of soil and/or groundwater for additional analytes/CoPC,
  - Undertaking soil vapour investigations, and/or
  - Undertaking a human health and/or ecological risk assessment to assess site suitability and, if not suitable, assess the requirement for remediation and/or management.

If it is determined that the data generated through this investigation are not reliable and/or do not suitably characterise the site, then further investigations may be recommended prior to comparison against the SAC and GAC.

STEP 6 - SPECIFY ACCEPTABLE LIMITS ON DECISION ERRORS

Acceptable limits on decision errors must be applied based on the Data Quality Indicators (DQIs) pertaining to precision, accuracy, representativeness, comparability and completeness. The limits on decision errors for the study are as follows:

1. Incorrectly deciding that levels are below an assessment criterion (Type I error). The consequence of this error is that there may be a conclusion that material conforms to a lower waste classification than is actually the case. A Type I error rate of 5% is nominated for the study;
2. In applying statistical analysis of a data set (where applicable/sufficient data set exists):
   - Exclude any individual sample with a concentration that exceeds 250% of SAC. This data point is to be regarded as an 'outlier';
   - Tests that assume a normal distribution will only be used if the coefficient of variance is less than 1.2;
   - The standard deviation of a sample population will not exceed 50% of the Alignment assessment criteria.

3. A robust quality assurance and quality control (QA/QC) program will be implemented with appropriate sampling and analytical density to satisfy the objective of the study.

Decision errors may result in:

1. Basing decisions on unreliable data and consequently making incorrect decisions regarding land use suitability;
2. Basing decisions on unreliable data and inappropriately defining a remedial or management strategy.

The Data Quality Indicators (DQIs) are described in the main report, while the adopted SAC and GAC are described in Section 8 of the main report.

STEP 7 - OPTIMISING THE DESIGN FOR OBTAINING DATA

The purpose of this step is to identify a resource-effective data collection design for generating data that are expected to satisfy the DQOs. To ensure that the design satisfies the DQOs, a comprehensive Quality Assurance and Quality Control (QA/QC) plan will be implemented as described in the main report.

References

1. NSW EPA, 2017: New South Wales Environment Protection Authority (2017): Contaminated Sites: Guidelines for the NSW Site Auditor Scheme (3rd edition).
2. USEPA, 2000: *Guidance for Data Quality Objectives Process*. EPA QA/G-4.

APPENDIX F

GEE BOREHOLE LOGS

Borehole Log Report

Geo Environmental Engineering
2 / 5-7 Malta Street
Fairfield East NSW 2165
T +61 2 9420 3361

Hole ID. **BH101**
Hole Depth: **10.23 m**
Sheet: **1 of**

Project Name: **PSI / Geotechnical Investigation** Project Number: **E24016FOR**
Location / Site: **20 - 22 Melwood Avenue, Forestville NSW** Client: **Forestville RSL Club Ltd**

Drilling Company: **Geo Environmental Engineering** Date Started: **25/07/2024** Ground Level: **RL127.6m** (approx)
Drill Method: **SFA / NMLC** Date Completed: **25/07/2024** Easting: ----------
Equipment: **Hanjin D&B 8D** Northing: ----------

Method	Depth (m)	RL (m)	USCS Symbol	Material Type	Material Description	Consistency / Density	Moisture	Samples / Tests: ID No.	Samples / Tests: SPT	Observations / Comments	Well Details	Well Construction
SFA	0	127.5	SC	Fill	**ASPHALT (80mm).**						0.00 0.05 0.15	
					FILL / DISTURBED- Clayey Sand, orange/red/brown, with Silt.	medium dense to dense	m	ZZ250724-01 0.2 -0.3m				
	1	127.0	SP	Residual Soil	**SAND (extremely weathered sandstone)**- red/orange/grey, fine to medium grained, trace clay, with bands of highly weathered sandstone.			BH101-0.5 0.5 -0.6m	5 30 Ref. blows 30+		1.00 Bentonite	
		126.5										
		126.0										
	2	125.5			*BH101 continued as cored hole from 1.72m*							
		125.0										
	3	124.5										
		124.0										
	4	123.5										
		123.0										
	5	122.5										
		122.0										
	6											

Moisture

D	Dry
Dp	Damp
SM	Slightly Moist
M	Moist
VM	Very Moist
W	Wet
Sd	Saturated

Additional Comments

Logged By: **Zachary Ziesel** Date: **25/07/2024** Checked By: **Stephen McCormack** Date: **19/08/2024**

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GEE BH LOG 2 E24016FOR.GPJ GEE.GDT 20/8/24 7:19:09 PM

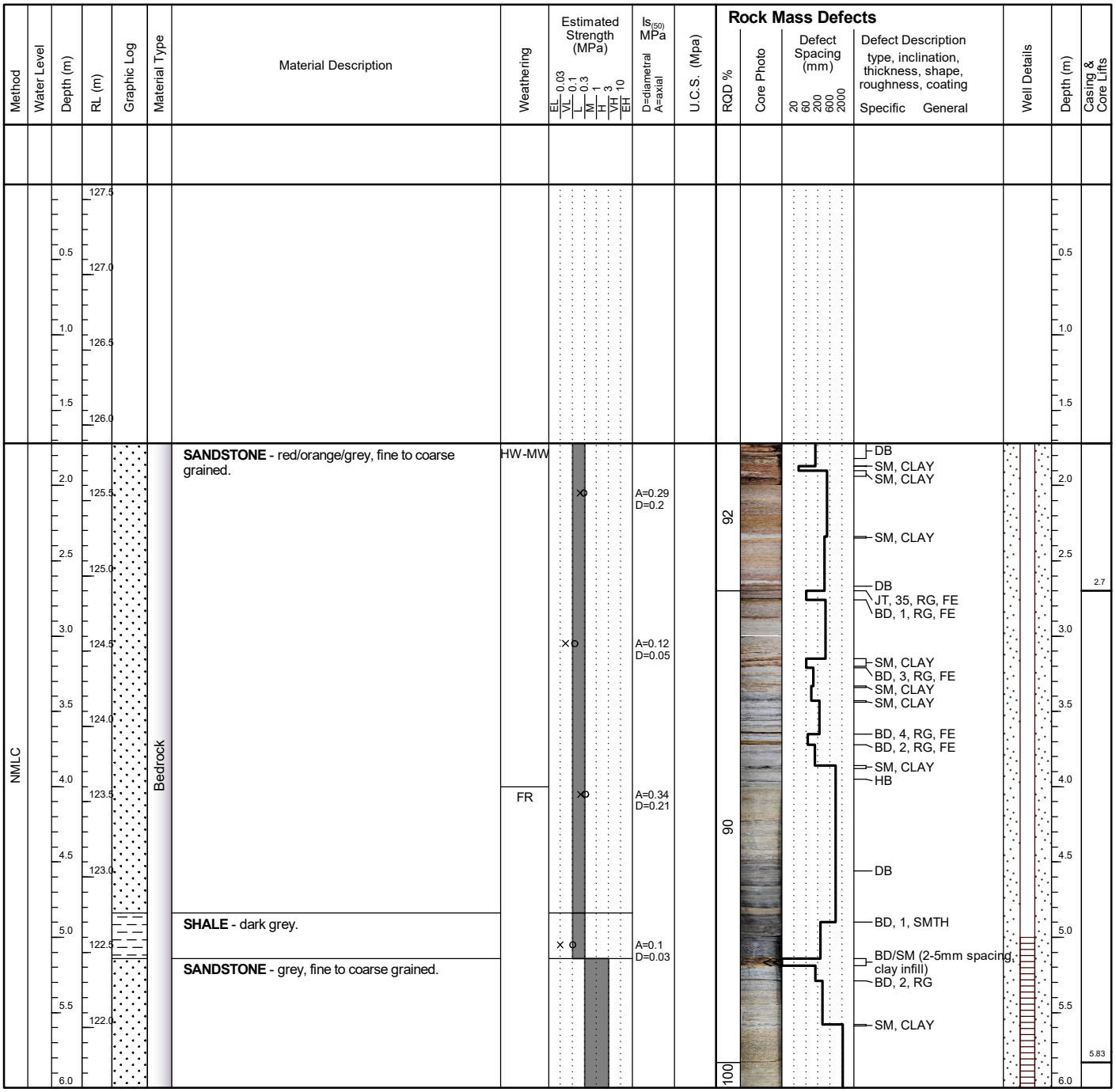
Borehole Log Report

Geo Environmental Engineering
82 Bridge Street
Lane Cove NSW 2066
T +61 2 9420 3361

Hole ID.	**BH101**
Hole Depth:	**10.23 m**
Sheet:	**3 of 4**

Project Name:	**PSI / Geotechnical Investigation**	Project Number:	**E24016FOR**
Location / Site:	**22 Melwood Avenue, Forestville NSW**	Client:	**Forestville RSL**

Drilling Company:	**Geo Environmental Engineering**	Date Started:	**25/07/2024**	Ground Level:	**RL127.6m** approx
Drill Method:	**SFA / NMLC**	Date Completed:	**25/07/2024**	Easting:	----------
Equipment:	**Hanjin D&B 8D**			Northing:	----------



Additional Comments

Logged By:	**Zachary Ziesel**	Date:	**25/07/2024**	Checked By:	**Stephen McCormack** Date: **19/08/2024**

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GEE CORE LOG E24016FOR.GPJ GEE.GDT 19/8/24 9:01:32 PM

Borehole Log Report

Geo Environmental Engineering
82 Bridge Street
Lane Cove NSW 2066
T +61 2 9420 3361

Hole ID. **BH101**
Hole Depth: **10.23 m**
Sheet: **4 of 4**

Project Name: **PSI / Geotechnical Investigation**
Project Number: **E24016FOR**
Location / Site: **22 Melwood Avenue, Forestville NSW**
Client: **Forestville RSL**

Drilling Company: **Geo Environmental Engineering**
Date Started: **25/07/2024**
Ground Level: **RL127.6m** approx
Drill Method: **SFA / NMLC**
Date Completed: **25/07/2024**
Easting: ----------
Equipment: **Hanjin D&B 8D**
Northing: ----------

Method	Depth (m)	RL (m)	Material Type	Material Description	Weathering	Estimated Strength (MPa)	$Is_{(50)}$ MPa	U.C.S. (Mpa)	RQD %	Core Photo	Defect Spacing (mm)	Defect Description (type, inclination, thickness, shape, roughness, coating)	Well Details	Depth (m)	Casing & Core Lifts
NMLC	6.5	121.5	Bedrock	**SANDSTONE** - grey, fine to coarse grained.	FR		A=1.05 D=0.67		100					6.5	
	7.0	121.0					A=1.19 D=1.37							7.0	
	7.5	120.5										BD, 10, RG		7.5	
	8.0	120.0					A=1.11 D=1.26							8.0	
	8.5	119.5										BD, 10, RG		8.5	
	9.0	119.0					A=1.22 D=0.91		100					9.0	8.8
	9.5	118.5												9.5	
	10.0	118.0					A=1.08 D=0.87							10.0	10.23
	10.5	117.5		**Hole Terminated at 10.23 m** target depth reached										10.5	
	11.0	117.0												11.0	
	11.5	116.5												11.5	
	12.0	116.0												12.0	

Additional Comments

Logged By: **Zachary Ziesel** Date: **25/07/2024**
Checked By: **Stephen McCormack** Date: **19/08/2024**

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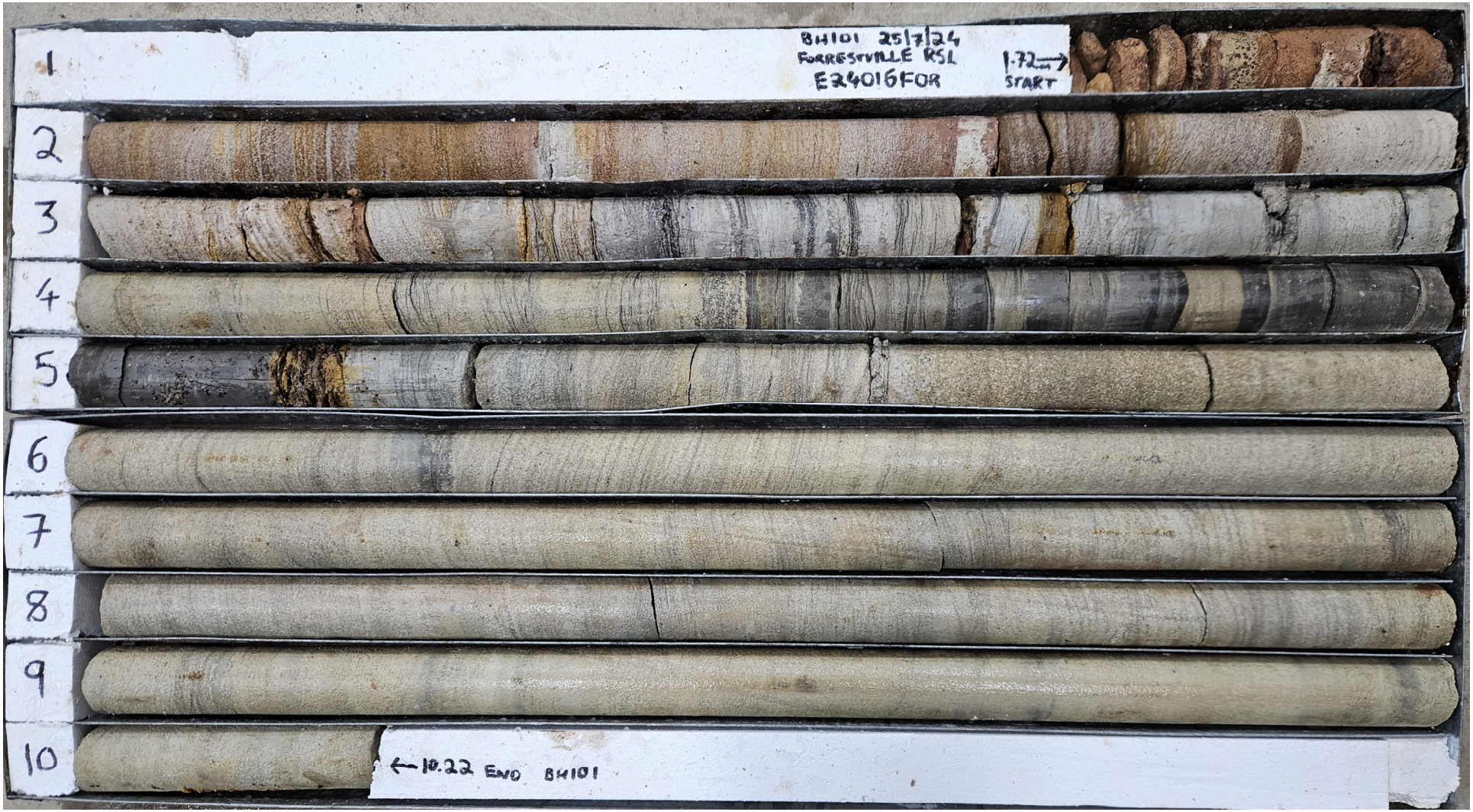
BH101 25/7/24
FORRESTVILLE RSL
E24016FOR
1.72m
START
1
2
3
4
5
6
7
8
9
10
←10.22 END BH101

Borehole Log Report

Geo Environmental Engineering
2 / 5-7 Malta Street
Fairfield East NSW 2165
T +61 2 9420 3361

Hole ID. **BH102**
Hole Depth: **5.70 m**
Sheet: **1 of**

Project Name: **PSI / Geotechnical Investigation** Project Number: **E24016FOR**
Location / Site: **20 - 22 Melwood Avenue, Forestville NSW** Client: **Forestville RSL Club Ltd**

Drilling Company: **Geo Environmental Engineering** Date Started: **25/07/2024** Ground Level: **RL127.5m** (approx)
Drill Method: **SFA / NMLC** Date Completed: **25/07/2024** Easting: **----------**
Equipment: **Hanjin D&B 8D** Northing: **----------**

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Consistency / Density	Moisture	Samples / Tests ID No.	Samples / Tests SPT	Observations / Comments	Well Details	Well Construction
Solid Flight Auger		0	127.5		SP	Fill	**ASPHALT (80mm).**						0.00 0.05 0.15	
							FILL- Gravelly Sand, dark grey/grey, fine to coarse grained, fine to coarse sand and gravel, with silt.	loose	m	ZZ250724-02/ 100 0.1 -0.2m			
			127.0					medium dense to dense	m	ZZ250724-03 0.4 -0.5m	6 5 15 N=20			
		1	126.5		SP		**SAND**- red/grey, fine to medium grained, trace clay/silt. bands of extremely weathered to highly weathered sandstone with depth. predominately grey from 1.0m.			BH102-0.5 0.5 -0.6m			
			126.0							ZZ250724-04 1.0 -1.1m			1.00	Bentonite
		2	125.5				**SANDSTONE**- grey/red, fine to coarse grained, extremely to highly weathered.							
			125.0											
		3	124.5			Natural	*BH102 continued as cored hole from 2.58m*							
			124.0											
		4	123.5											
			123.0											
		5	122.5											
			122.0											
		6	121.5											

Moisture

D	Dry
Dp	Damp
SM	Slightly Moist
M	Moist
VM	Very Moist
W	Wet
Sd	Saturated

Additional Comments

Logged By: **Zachary Ziesel** Date: **25/07/2024** Checked By: **Stephen McCormack** Date: **19/08/2024**

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GEE BH LOG 2 E24016FOR.GPJ GEE.GDT 20/8/24 7:19:09 PM

Borehole Log Report

Geo Environmental Engineering
82 Bridge Street
Lane Cove NSW 2066
T +61 2 9420 3361

Hole ID. **BH102**
Hole Depth: **5.70 m**
Sheet: **3 of 3**

Project Name: **PSI / Geotechnical Investigation**
Project Number: **E24016FOR**
Location / Site: **22 Melwood Avenue, Forestville NSW**
Client: **Forestville RSL**

Drilling Company: **Geo Environmental Engineering**
Date Started: **25/07/2024**
Ground Level: **RL127.5m** approx
Drill Method: **SFA / NMLC**
Date Completed: **25/07/2024**
Easting: ----------
Equipment: **Hanjin D&B 8D**
Northing: ----------

Method	Depth (m)	RL (m)	Material Description	Weathering	Estimated Strength (MPa)	$Is_{(50)}$ MPa	U.C.S. (Mpa)	RQD %	Defect Spacing (mm)	Defect Description (type, inclination, thickness, shape, roughness, coating)	Well Details	Depth (m)	Casing & Core Lifts
NMLC	0.5	127.0										0.5	
	1.0	126.5										1.0	
	1.5	126.0										1.5	
	2.0	125.5										2.0	
	2.5	125.0										2.5	
	3.0	124.5	**SANDSTONE** - grey some red, orange, fine to coarse grained.	HW-MW		A=0.08 D=0.04		83		BD, 10, RG SM, CLAY BD, 10, RG, FE JT, 20, RG, FE		3.0	
	3.5	124.0				A=0.13 D=0.03				SM, CLAY		3.5	
	4.0	123.5								SM, CLAY BD, 3, RG, FE		4.0	
	4.5	123.0	**SHALE** - dark grey, grey, with interbedded sandstone.	FR		A=0.17				SM, CLAY BD, 15, RG, FE BD, 1, RG		4.5	
	5.0	122.5				A=0.54 D=0.14				SM, CLAY BD, 1,SMTH BD, 1,SMTH BD, 1,SMTH BD, 1,SMTH DB BD, 3, SMTH		5.0	
	5.5	122.0	**SANDSTONE** - grey, fine to coarse grained.			A=0.71 D=0.57				BD, 1, SMTH SM, CLAY SM, CLAY BD, 3, RG BD, 3, RG		5.5	
	6.0	121.5	**Hole Terminated at 5.70 m** target depth reached			A=2.3 D=0.92				BD, 10. RG		6.0	5.7

Additional Comments

Logged By: **Zachary Ziesel** Date: **25/07/2024**
Checked By: **Stephen McCormack** Date: **19/08/2024**

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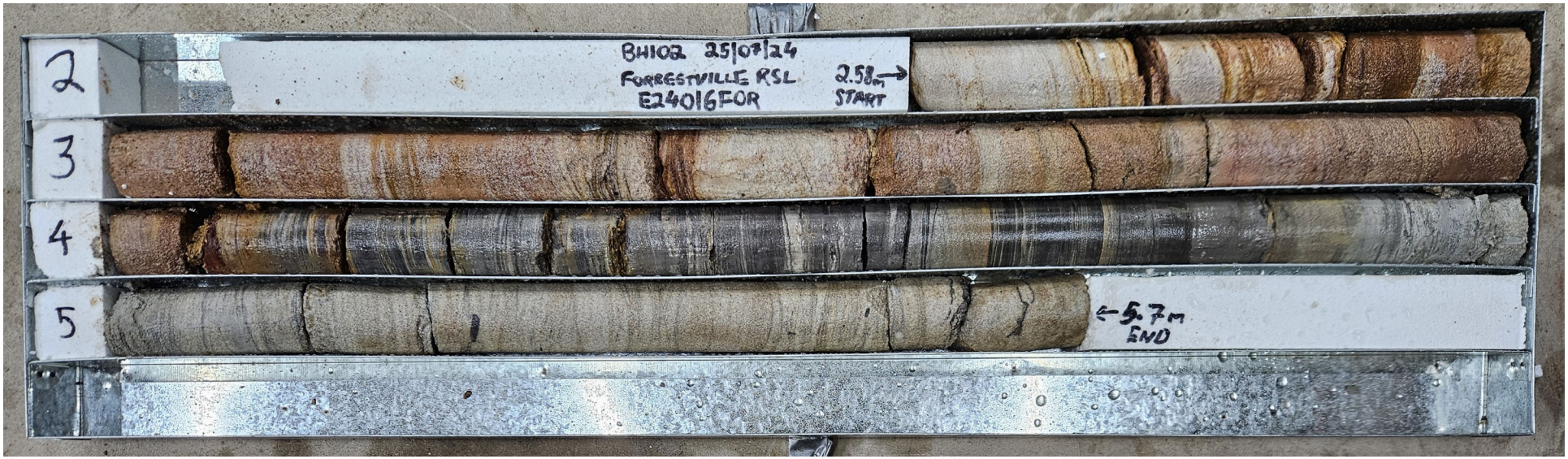
2
3
4
5
BH102 25/07/24
FORRESTVILLE RSL
E24016FOR
2.58m
START
5.7m
END

Geo Environmental Engineering
82 Bridge Street
Lane Cove NSW 2066
E info@geoenvironmental.com.au

Log Report Legend

MATERIAL SYMBOL

FILL

CONCRETE

ASPHALT

TOPSOIL

ORGANICS

ESTUARINE MUD

CLAY

SAND

SILT

GRAVEL

Sandy CLAY

Clayey SAND

Clayey SILT

Clayey GRAVEL

Silty CLAY

Silty SAND

Sandy SILT

Sandy GRAVEL

Gravelly CLAY

Gravelly SAND

Gravelly SILT

Silty GRAVEL

CLAY & SAND

SAND & CLAY

SILT & CLAY

GRAVEL & CLAY

CLAY & SILT

SAND & SILT

SILT & SAND

GRAVEL & SAND

CLAY & GRAVEL

SAND & GRAVEL

SILT & GRAVEL

GRAVEL & SILT

Sandy Silty CLAY

Clayey Silty SAND

Sandy Clayey SILT

Sandy Clayey GRAVEL

Silty Sandy CLAY

Silty Clayey SAND

Clayey Sandy SILT

Clayey Sandy GRAVEL

Sandy Gravelly CLAY

Clayey Gravelly SAND

Sandy Gravelly SILT

Silty Clayey GRAVEL

Silty Gravelly CLAY

Silty Gravelly SAND

Clayey Gravelly SILT

Clayey Silty GRAVEL

Gravelly Silty CLAY

Gravelly Silty SAND

Gravelly Clayey SILT

Sandy Silty GRAVEL

Gravelly Sandy CLAY

Gravelly Clayey SAND

Gravelly Sandy SILT

Silty Sandy GRAVEL

SANDSTONE

SHALE

GRANITE

BASALT

SHALE / SANDSTONE

PORCELLANITE

GNEISS

SHALE / CLAYSTONE

MUDSTONE

CLAYSTONE

MUDSTONE / CLAYSTONE

SHALE / SILTSTONE

IRONSTONE

WATER LEVELS

Encountered Water

Standing Water

ABBREVIATIONS

PT	Pushtube
SFA	Solid Flight Auger
PWS	Percussion Window Sampler
HA	Hand Auger
HFA	Hollow Flight Auger

WELL GRAPHICS

Cuttings

Bentonite

Screen

Gravel Pack

Grout

Cave-in

GEE LEGEND * * 29/10/09 5:04:07 PM

APPENDIX G

GEE GROUNDWATER FIELD DATA SHEETS

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FAIRFIELD EAST NSW 2165
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E: info@geoenvironmental.com.au
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GROUNDWATER SAMPLING FIELD DATA

WELL ID: BH101

PROJECT INFORMATION

PROJECT NAME: Groundwater Monitoring
PROJECT NUMBER: E24016FOR
LOCATION / SITE: Forestville RSL Club
CLIENT:

WELL DETAILS

WELL DIAMETER (mm): 50
WELL SCREEN INTERVAL (m): Not Known
CASING STICK UP (+) / DOWN (-) m:

CONDITION (Comments Below): Damage: YES / (NO) Well Locked: (YES) / NO Water Around Well: YES / (NO)
Well ID Visible: (YES) / NO Cap on PVC: (YES) / NO Water Between PVC and Gatic/ Monument: YES / (NO)

WELL MEASUREMENTS

STATIC WATER LEVEL (SWL): 3.16 — (m BTOC) or m BGL or m BTOM
FREE PRODUCT: Yes or (No) Thickness (m):
TOTAL DEPTH OF WELL (TD): 7.98 — (m BTOC) or (m BGL) or m BTOM

PURGING DETAILS / OBSERVATIONS

METHOD: Bladder Pump (Peristaltic) High Volume Pump Foot Valve Bailer Other:
DATE: 6/8/24 WATER LEVEL AFTER PURGE: 6.81 (mBTOC) / mBGL / mBTOM
MAX. DRAWDOWN (m) INTAKE DEPTH: mBTOC / mBGL / mBTOM

TIME	CUMUL. VOLUME PURGED (Litres)	PURGE RATE	DO (mg/L)	E.C. mS/cm or µS/cm	pH (standard units)	Redox (mV)	TEMP. (°C)	TURB, (NTUs)
Equilibrium Requirements			± 10 %	± 3 %	± 0.05	± 10	± 0.2	--
10:41	1		4.83	411	6.22	35.6	19.37	
10:52	5		0.69	397	5.85	55.1	19.32	
11:12	10		0.77	396	5.83	57.0	19.77	
11:18	13		0.69	392	5.76	59.9	19.81	
11:23	14		0.73	392	5.80	58.4	20.59	
11:31	15		0.86	390	5.95	50.3	20.50	

RECHARGE OBSERVATIONS

Slow (80% recharge > 2 Hours) (Fast (80% recharge < 2 Hours))

SAMPLING DETAILS

METHOD: Bladder Pump (Peristaltic) High Volume Pump Foot Valve Bailer Other:
DATE & TIME: 6/8/24 WATER LEVEL (m) 7.00m (mBTOC) / mBGL / mBTOM
SAMPLE ID: ZZ060824-01 Blind Replicate ID: ZZ060824-101
Split Duplicate ID:

FINAL WATER QUALITY READINGS:	DO (mg/L)	E.C. mS/cm or µS/cm	pH (standard units)	Redox (mV)	TEMP. (°C)	TURB, (NTUs)
	0.86	390	5.95	50.3	20.50	

DESCRIPTION: Colour Clear Turbidity: No Odour: No Other

PURGE VOLUME CALCULATOR: Length of Water Column (m) = TD (m) – SWL (m) = _____
One Well Volumes (L) = Length of Water Column x 2 (50mm Dia.) or 7.8 (100mm Dia.) = _____
Three Well Volumes (L) = _____

NOTES: m BTOC = metres Below Top of Casing / m BGS = metres Below Ground Surface / m BTOM = metres Below Top of Monument

- Casing to ground level = 7cm
- Not Stable.

GEE PERSONNEL: SIGNATURE:

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UNIT 2 / 5-7 MALTA STREET
FAIRFIELD EAST NSW 2165
P: 02 9420 3361
E: info@geoenvironmental.com.au
www.geoenvironmental.com.au

GROUNDWATER SAMPLING FIELD DATA

WELL ID: BH102

PROJECT INFORMATION

PROJECT NAME: Groundwater Monitoring
PROJECT NUMBER: E24016FOR
LOCATION / SITE: Forestville RSL Club
CLIENT:

WELL DETAILS

WELL DIAMETER (mm): 50
WELL SCREEN INTERVAL (m): Not Known
CASING STICK UP (+) / DOWN (-) m:

CONDITION (Comments Below): Damage: YES / (NO) — Well Locked: (YES) / NO — Water Around Well: YES / (NO)
Well ID Visible: (YES) / NO — Cap on PVC: (YES) / NO — Water Between PVC and Gatic/ Monument: YES / (NO)

WELL MEASUREMENTS

STATIC WATER LEVEL (SWL): 2.73 — m BTOC or (m BGL) or m BTOM
FREE PRODUCT: Yes or (No) — Thickness (m):
TOTAL DEPTH OF WELL (TD): 5.50 — m BTOC or (m BGL) or m BTOM

PURGING DETAILS / OBSERVATIONS

METHOD: Bladder Pump (Peristaltic) High Volume Pump Foot Valve Bailer Other:
DATE: 6/8/24 — WATER LEVEL AFTER PURGE: Dry — mBTOC / mBGL / mBTOM
MAX. DRAWDOWN (m) — INTAKE DEPTH: — mBTOC / mBGL / mBTOM

TIME	CUMUL. VOLUME PURGED (Litres)	PURGE RATE	DO (mg/L)	E.C. mS/cm or µS/cm	pH (standard units)	Redox (mV)	TEMP. (°C)	TURB, (NTUs)
Equilibrium Requirements			± 10 %	± 3 %	± 0.05	± 10	± 0.2	--

RECHARGE OBSERVATIONS

(Slow (80% recharge > 2 Hours)) — Fast (80% recharge < 2 Hours)

SAMPLING DETAILS

METHOD: Bladder Pump Peristaltic High Volume Pump Foot Valve (Bailer) Other:
DATE & TIME: 6/8/24 — WATER LEVEL (m): 2.84 — mBTOC / mBGL / mBTOM
SAMPLE ID: ZZ060824-02 — Blind Replicate ID: — Split Duplicate ID:

FINAL WATER QUALITY READINGS:	DO (mg/L)	E.C. mS/cm or µS/cm	pH (standard units)	Redox (mV)	TEMP. (°C)	TURB, (NTUs)
	2.36	294	6.11	43.5	17.57	

DESCRIPTION: Colour Clear — Turbidity: No — Odour: No — Other

PURGE VOLUME CALCULATOR: Length of Water Column (m) = TD (m) – SWL (m) = _____
One Well Volumes (L) = Length of Water Column x 2 (50mm Dia.) or 7.8 (100mm Dia.) = _____
Three Well Volumes (L) = _____

NOTES: m BTOC = metres Below Top of Casing / m BGS = metres Below Ground Surface / m BTOM = metres Below Top of Monument
7cm casing to ground level

GEE PERSONNEL: SIGNATURE:

geo-environmental ENGINEERING
UNIT 2 / 5-7 MALTA STREET
FAIRFIELD EAST NSW 2165
P: 02 9420 3361
E: info@geoenvironmental.com.au
www.geoenvironmental.com.au

GROUNDWATER SAMPLING FIELD DATA

WELL ID: BH1

PROJECT INFORMATION

PROJECT NAME: Groundwater Monitoring
PROJECT NUMBER: E24016FOR
LOCATION / SITE: Forestville RSL Club
CLIENT:

WELL DETAILS

WELL DIAMETER (mm): 50	WELL SCREEN INTERVAL (m): Not Known	CASING STICK UP (+) / DOWN (-) m:

CONDITION (Comments Below): Damage: YES / (NO) Well Locked: (YES) / NO Water Around Well: YES / (NO)
Well ID Visible: (YES) / NO Cap on PVC: (YES) / NO Water Between PVC and Gatic/ Monument: YES / (NO)

WELL MEASUREMENTS

STATIC WATER LEVEL (SWL): 2.19 — **m BTOC** or (m BGL) or m BTOM
FREE PRODUCT: Yes or (No) Thickness (m):
TOTAL DEPTH OF WELL (TD): — **m BTOC** or **m BGL** or m BTOM

PURGING DETAILS / OBSERVATIONS

METHOD: Bladder Pump (Peristaltic) High Volume Pump Foot Valve Bailer Other:
DATE: 6/8/24 WATER LEVEL AFTER PURGE: Dry mBTOC / mBGL / mBTOM
MAX. DRAWDOWN (m) INTAKE DEPTH: mBTOC / mBGL / mBTOM

TIME	CUMUL. VOLUME PURGED (Litres)	PURGE RATE	DO (mg/L)	E.C. mS/cm or µS/cm	pH (standard units)	Redox (mV)	TEMP. (°C)	TURB, (NTUs)
Equilibrium Requirements			± 10 %	± 3 %	± 0.05	± 10	± 0.2	--

RECHARGE OBSERVATIONS

(Slow (80% recharge > 2 Hours)) Fast (80% recharge < 2 Hours)

SAMPLING DETAILS

METHOD: Bladder Pump Peristaltic High Volume Pump Foot Valve (Bailer) Other:
DATE & TIME: 6/8/24 WATER LEVEL (m): mBTOC / mBGL / mBTOM
SAMPLE ID: ZZ060824-03 Blind Replicate ID:
Split Duplicate ID:

FINAL WATER QUALITY READINGS:	DO (mg/L)	E.C. mS/cm or µS/cm	pH (standard units)	Redox (mV)	TEMP. (°C)	TURB, (NTUs)
	2.05	231	5.63	72.4	16.53	

DESCRIPTION: Colour Clear Turbidity: No Odour: No Other

PURGE VOLUME CALCULATOR: Length of Water Column (m) = TD (m) – SWL (m) = _____
One Well Volumes (L) = Length of Water Column x 2 (50mm Dia.) or 7.8 (100mm Dia.) = _____
Three Well Volumes (L) = _____

NOTES: m BTOC = metres Below Top of Casing / m BGS = metres Below Ground Surface / m BTOM = metres Below Top of Monument
• 13cm Casing to ground level.

GEE PERSONNEL: SIGNATURE:

APPENDIX H

QUALITY ASSURANCE ASSESSMENT REPORT

H1. INTRODUCTION

A detailed Quality Assurance (QA) assessment, including the analysis of Quality Control (QC) samples, was carried out by GEE to determine the reliability of field procedures and analytical results.

H2. QUALITY ASSURANCE

Quality Assurance (QA) involves all of the actions, procedures, checks and decisions undertaken to ensure the representativeness and integrity of samples and accuracy and reliability of analysis results (reference 1).

In accordance with AS4482.1 (reference 2), a series of QA procedures were integrated within the sampling and analysis plan and included:

- ◊ The collection of Quality Control (QC) samples.
- ◊ The use of standardised field sampling forms developed by GEE.
- ◊ Documentation of calibration and use of field instruments.

To ensure QA in the field, samples were collected by experienced and trained personnel using appropriate methods detailed herein, including appropriate sample handling, containment and transport, and calibrated equipment. Additionally, QC samples were collected and analysed as discussed in Section H3.

To ensure QA in the laboratory, GEE used laboratories that are NATA accredited for the analytical tests carried out, therefore it is reasonable for GEE to rely on the laboratories to be proficient in all tests conducted. This encompasses all actions, procedures, checks and decisions undertaken, to ensure the accuracy and reliability of the analysis results. As part of the laboratory QA, QC samples were analysed with each batch of samples as part of this investigation as required by NATA. A discussion of the laboratory QC samples analysed as part of this investigation is provided in Section H3.3.2.

H3. QUALITY CONTROL

QC involves those parts of QA which serve to monitor and measure the effectiveness of QA procedures. QC samples assess sample integrity, accuracy and precision and can be separated into field and laboratory QC.

H3.1 DEFINITIONS

Table H1 provides a description and objective of each of the field and laboratory QC samples used during this investigation.

Table H1: QC Sample Types, Descriptions and Recommended Frequency of Analysis

Type	Description	Purpose	Recommended Frequency
	FIELD QC SAMPLES		
Blind Replicate	A sample collected at the same time and from the same sampling point as the corresponding primary sample[1], and analysed at the same laboratory. Blind replicates are collected, preserved, stored, transported and analysed in the same manner as the primary sample, with the laboratory having no knowledge of the source of the replicate sample. The assessment of blind replicates samples is undertaken by calculating the Relative Percent Difference (RPD) which is defined as: $RPD\ (\%) = 100 \times \frac{\text{Result No. 1} - \text{Result No. 2}}{\text{Mean Result}}$	Used to evaluate total sampling and analysis precision and, in the case of soil samples, sample variability.	In accordance with AS4482.1 (reference 2) and NEPM (reference 3) it is recommended that 1 blind replicate sample is collected for every 20 primary samples.
Trip Blank	Trip blanks are laboratory supplied test samples of analyte-free media (either washed sand or de-ionised water) which remain in the sample storage eskies during sampling activities and returned to the laboratory unopened. For soil sampling programmes, the trip blank consists of acid-washed quartz sand that has been heated to 400ºC. For water sampling programs trip blanks comprise pre-washed glass vials containing distilled or de-ionised water with appropriate preservatives. The USEPA has shown that cross-contamination only occurs with volatile organics (reference 4), therefore, trip blanks are only analysed for volatile organics.	Used to measure cross-contamination during sampling, transport, sample preparation and analysis.	Industry standard is 1 trip blank per batch of primary samples.
Trip Spike	Trip spikes, like trip blanks, are supplied by the primary laboratory using analyte-free media (either washed sand or de-ionised water) and remain in the sample storage eskies during sampling activities and returned to the laboratory unopened. The sample media, however, is spiked with BTEX. For water sampling programmes the BTEX concentration is known and standardised by each laboratory, while for soil sampling programmes the exact spike concentration is not known, rather two identical jars of sand are spiked the same concentration with one sample becoming the trip-spike and the other becoming a control sample, which remains in a refrigerator at the laboratory. The trip spike is analysed after returning from the field and the % recovery of the known spike (for water sampling programs), or of the control sample (for soil sampling programs), is calculated.	Used to monitor VOC losses during transit.	Industry standard is 1 trip spike per batch of primary samples where volatile concentrations are being measured.

[1] Primary samples are the original representative samples of soil or groundwater collected for analysis to determine aspects of their chemical composition. Primary samples are the original sample taken from a particular location and other samples from the same location are duplicates, replicates or splits.

Table H1 Continued

Type	Description	Purpose	Recommended Frequency
Rinsate	This is a sample of distilled or de-ionised water poured over the surface of a decontaminated piece of sampling equipment and collected in appropriate laboratory supplied sample containers. The sample is then analysed for contaminants of concern analysed as part of the investigation.	Provides an assessment of potential cross contamination of chemicals from sampling equipment caused by inadequate decontamination procedures.	In accordance with AS4482.1 – (reference 2) one rinsate sample should be collected each day per piece of sampling equipment and.

Table H1 Continued

Type	Description	Purpose	Recommended Frequency
	LABORATORY QC SAMPLES		
Laboratory Duplicate	Laboratory duplicates are field samples which are prepared and analysed in the same manner twice. The assessment of laboratory duplicates is undertaken by calculating the (RPD) which is defined as: $\text{RPD (\%)} = 100 \times \frac{\text{Result No. 1 – Result No. 2}}{\text{Mean Result}}$	Determines analytical precision for a sample batch	NATA specifies 1 per 10 samples for trace element and inorganic analysis
Laboratory Control Sample (LCS)	Laboratory Control Samples (LCS) are analyte-free matrices (de-ionised water or clean sand) spiked with a known concentration of target analytes and carried through the entire preparation and analysis. Assessment of LCS is undertaken by calculating the percent recovery (%R) of the spike which is defined as: $\text{Percent Recovery (\%R)} = 100 \times \frac{\text{Spikes Sample Result (SSR) – Sample Result (SR)}}{\text{Concentration of Spike Added (SA)}}$	Determines analytical accuracy and precision for a batch of samples	NATA specifies 1 per batch of up to 20 samples
Surrogates	Surrogates are organic compounds added to field samples and laboratory QC samples prior to preparation. They are similar in chemical behaviour to the target analytes and are not expected to be present in samples. form part of the laboratory QC for organic analyses and are used to indicate the presence of sample specific interferences. The surrogate is added at the extraction stage then analysed with the batch of samples. Like LCSs, surrogates are assessed by calculating the percent recovery (%R), although the definition is slightly different as shown below: $\text{Percent Recovery (\%R)} = 100 \times \frac{\text{Spiked Sample Result (SSR)}}{\text{Concentration of Spike Added (SA)}}$	Used to demonstrate that the surrogate does not interfere with the target analytes, therefore determines analytical accuracy for each sample	Added to every blank, field and laboratory QC sample
Matrix Spikes	Field samples spiked with a known concentration of a target analytes and carried through the entire preparation and analysis. Matrix spike samples are assessed by calculating the percent recovery (%R) of the spike which is defined as: $\text{Percent Recovery (\%R)} = 100 \times \frac{\text{Spikes Sample Result (SSR) – Sample Result (SR)}}{\text{Concentration of Spike Added (SA)}}$	Determine the effects of matrix interferences on analytical accuracy of a sample.	Performed at least 1 per batch of up to 20 samples.
Method Blank	Method blanks are an analyte-free matrices (reagent water or clean sand) that is carried through the entire preparation and analysis.	Establishes that laboratory contamination does not cause false positives.	Prepared with every batch of up to 20 samples for all organic and inorganic analyses.

H3.2 CRITERIA / ACCEPTABLE RANGE

The QC Acceptance Criteria adopted for this investigation is provided in Table H2 and is in general accordance with the Table 4 of AS4482.1 (reference H2) and NEPM (reference H3).

Table H2: QC Sample Acceptance Criteria

QC Sample	Criteria / Acceptable Range
FIELD QC SAMPLES	
Blind Replicate	RPD < 50 % When average concentration is > 10 x LOR/PQL[2] RPD < 75 % When average concentration is 5 to 10 x LOR/PQL RPD < 150 % When average concentration is < 5 x LOR/PQL
Trip Blank	Analytical Result < LOR/PQL
Trip Spike	± 30%
Rinsate	Analytical Result < LOR/PQL
LABORATORY QC SAMPLES	
Laboratory Duplicates	RPD < 30 % When average concentration is > 10 x LOR/PQL RPD < 50 % When average concentration is 4 to 10 x LOR/PQL RPD < 100 % When average concentration is< 4 x LOR/PQL
Laboratory Control Samples	%R of 70 – 130% (General analytes) %R of 50 – 130% (Phenols) %R of 60 – 130% (OCP/OPPs) %R of 62 – 130% (Chromium)
Surrogates	%R of 70 – 130% (General analytes) %R of 50 – 130% (Phenols) %R of 60 – 130% (OCP/OPPs)
Matrix Spikes	%R of 70 – 130% (General analytes) %R of 50 – 130% (Phenols) %R of 60 – 130% (OCP/OPPs) %R of 62 – 130% (Chromium)
Method Blanks	Analytical Results < LOR/PQL

If data do not meet the QC Acceptance Criteria, then a judgement is made as to whether the exceedance is critical in relation to the suitability of the data set. Otherwise, the following steps will be taken:

- ◊ Request that the laboratory re-check or even re-analyse the sample.
- ◊ Inspect the sample for anomalies which may be causing the failure.
- ◊ If necessary, undertake additional sampling and analyses.

[2] Both the LOR and PQL are interchangeable terms used by laboratories and is defined as the lowest concentration that can be reliably achieved within specific limits of precision and accuracy during routine laboratory operating conditions (reference 5).

H3.3 RESULTS

H3.3.1 Field QC Samples

Field QC samples collected and analysed as part of this investigation comprised:

Soil Sampling

- ◊ One blind replicate
- ◊ One trip blank per batch of samples (labelled 'TB')
- ◊ One trip spike per batch of samples (labelled 'TS')
- ◊ One rinsate sample from sampling equipment

Water Sampling

- ◊ One blind replicate
- ◊ One trip blank (labelled 'trip blank')
- ◊ One trip spike (labelled 'trip spike')

Tabulated results are presented at the conclusion of this Appendix. Table H3 and H4 provides a summary of the frequency of QC samples and lists results which do not meet the criteria established in Table H2.

Table H3: QC Sample Acceptance Criteria - Soil

Type	Frequency Conducted	Results Not Meeting the Criteria
Blind Replicates	Metals - 1 per 20 samples (5.0%)	Copper (RPD 60%), Nickel (RPD 110%)
	TRH/BTEXN/PAH - 1 per 13 samples (7.7%)	--
	OCPs/PCBs – 1 per 6 samples (16.7%)	--
Rinsate	Hand Auger	--
Trip Blank	1 per sample batch	--
Trip Spike	1 per sample batch	--

The soil program quality control results all conformed to the sample acceptance criteria except for some elevated RPDs for some metals in the blind replicate sample. The elevated RPDs is attributed to the heterogeneous nature of the samples rather than an error with the lab's precision. Regardless, GEE has adopted to highest concentrations when assessing contamination risk and when making conclusions about the site.

Table H4: QC Sample Acceptance Criteria - Water

Type	Frequency Conducted	Results Not Meeting the Criteria
Blind Replicates	All Analytes - 1 per 4 samples (25%)	--
Trip Blank	1 per sample batch	--
Trip Spike	1 per sample batch	--

The water sampling program quality control results all conformed to the sample acceptance criteria.

H3.3.2 Laboratory QC

Laboratory QC results are provided in the laboratory reports while a summary of the results which exceeded the acceptance criteria is provided in Table H5.

Table H5: QC Sample Acceptance Criteria

Type	Results Exceeding Criteria
Laboratory Duplicates	--
Laboratory Control Samples	--
Surrogates	--
Matrix Spikes	--
Method Blanks	--

H4. DATA QUALITY ASSESSMENT

In accordance with reference 1, Data Quality Indicators (DQIs), specifically, precision, accuracy, representativeness, completeness and comparability, were used to assess the reliability of field procedures and analytical results.

H4.1 PRECISION

This is the measure of the variability (or reproducibility) of the data. In the field precision is achieved by using standard operating procedures which were adopted by GEE during this investigation. For laboratory analysis precision is assessed using blind replicates and trip spikes. The measured RPDs for the blind replicate samples and split samples were considered acceptable as were the analytical results for the trip spike.

H4.2 ACCURACY

Accuracy is a measure of the closeness of a measurement to the true parameter value. In the field, accuracy is achieved by using standard operating procedures which were adopted by GEE. For laboratory analysis, accuracy is assessed using tip blanks, rinsate blanks, method blanks, matrix spikes, surrogates and laboratory control samples. Considering that these QC samples were of an acceptable standard, GEE considers the laboratory data set to be accurate.

H4.3 REPRESENTATIVENESS

This is the confidence (expressed qualitatively) that the data are representative of each media present on the site. This is achieved in the field and laboratory by using an adequate number of sampling points to characterise the site and ensuring that the samples collected were representative of the media from which they were collected. Additionally, samples should be analysed within necessary holding times depending on the analyte.

Environmental samples were collected from each borehole in general accordance with techniques described in Australian Standards AS4482.1 (reference 2) AS4482.2 (reference 6) and NEPM (reference 1), to maintain the representativeness and integrity of the samples. The number of sampling points did not meet the minimum required sampling density as defined by NSW EPA (reference 7), however, were considered sufficient for the purpose of this investigation.

Finally, all samples were analysed within holding times.

H4.4 COMPLETENESS

This is a measure of whether all the data necessary to meet the project objectives, were collected. In the field and laboratory, this is achieved by sampling all critical locations and depths using acceptable methods and ensuring samples are analysed for appropriate chemicals.

GEE selected a sufficient number of sample points for the purpose of the investigation as defined by the NSW EPA (reference 7). Additionally, samples were analysed for chemicals of concern based on appropriate field screening measures and logging of unusual aesthetics which may indicate contamination. Combined with the fact that standard operating procedures were adopted by GEE, the investigation is assessed as being complete.

H4.5 COMPARABILITY

This is a measure of confidence that data may be considered to be equivalent for each sampling and analysis event. Soil samples were collected by experienced GEE personnel using standard operating procedures and analysed in accordance with NATA accredited laboratory methods. The comparability of the data should be consistent as sampling protocols were employed throughout the duration of the fieldwork and analysis was undertaken by NATA registered laboratories using accredited analytical methods.

H5. CONCLUSION

A review of the DQIs indicates that the field procedures and analytical results adopted for this investigation are able to be relied upon for making conclusions and recommendations regarding the contamination status of the site.

References

1. *NEPC, 2013: National Environment Protection Council (1999). National Environment Protection (Assessment of Site Contamination) Measure, 1999. Schedule B(2) Site Characterisation.*

2. *Australian Standard AS4482.1 – 2005: Guide to the sampling and investigation of potentially contaminated soil Part 1: Non-volatile and semi-volatile compounds.*

3. *NEPC, 1999: National Environment Protection Council (1999). National Environment Protection (Assessment of Site Contamination) Measure. Schedule B(3) Guideline of Laboratory Analysis of Potentially contaminated Soils.*

4. *Keith, 1991: Environmental sampling and Analysis, A practical guide. Lewis Publishers.*

5. *Popek (2003). Sampling and Analysis of Environmental Chemical Pollutants. Academic Press.*

6. *Australian Standard AS4482.2 – 1999: Guide to the sampling and investigation of potentially contaminated soil Part 2: Volatile substances.*

7. *NSW EPA, 2022: Environment Protection Authority NSW, 2022: Contaminated Land Guidelines: Sampling Design – Part 1. August 2022.*

SOIL - Blind Replicate Results

Sample Date		25/07/2024	25/07/2024	RPD
Sample Identification		**ZZ250724-01**	**ZZ250724-100**	
Analyte	Units			
Total Metals				
Arsenic	mg/kg	12	8	40%
Cadmium	mg/kg	<0.4	<0.4	--
Chromium	mg/kg	16	17	6%
Copper	mg/kg	7	13	**60%**
Lead	mg/kg	24	19	23%
Mercury	mg/kg	<0.1	<0.1	--
Nickel	mg/kg	7	24	**110%**
Zinc	mg/kg	35	35	0%
BTEXN				
Benzene	mg/kg	<0.2	<0.2	--
Toluene	mg/kg	<0.5	<0.5	--
Ethylbenzene	mg/kg	<1	<1	--
Total Xylenes	mg/kg	<1	<1	--
Naphthalene	mg/kg	<1	<1	--
Total Petroleum Hydrocarbons				
F1 (C6-C10)	mg/kg	<25	<25	--
F2 (>C10-C16)	mg/kg	<50	<50	--
F3 (>C16-C34)	mg/kg	<100	<100	--
F4 (>C34-C40)	mg/kg	<100	<100	--
Polycyclic Aromatic Hydrocarbons				
Benzo(a)pyrene	mg/kg	<0.05	<0.05	--
Benzo(a)pyrene TEQ	mg/kg	<0.5	<0.5	--
Total PAHs	mg/kg	<0.05	<0.05	--
Organochlorine Pesticides (OCP)				
Heptachlor	mg/kg	<0.1	<0.1	--
Aldrin	mg/kg	<0.1	<0.1	--
Dieldrin	mg/kg	<0.1	<0.1	--
Endrin	mg/kg	<0.1	<0.1	--
gamma-Chlordane	mg/kg	<0.1	<0.1	--
alpha-chlordane	mg/kg	<0.1	<0.1	--
Endosulfan I	mg/kg	<0.1	<0.1	--
Endosulfan II	mg/kg	<0.1	<0.1	--
HCB	mg/kg	<0.1	<0.1	--
Methoxychlor	mg/kg	<0.1	<0.1	--
DDE + DDD + DDT	mg/kg	<0.1	<0.1	--
Remaining OCPs	mg/kg	<0.1	<0.1	--
PCBs				
Total PCBs	mg/kg	<0.1	<0.1	--

Values in Bold Indicate: RPD > 50 % When average concentration is > 10 x LOR
RPD > 75 % When average concentration is 5 to 10 x LOR
RPD > 150 % When average concentration is < 5 x LOR

SOIL - Trip Blank Results

Laboratory:		Envirolab
Laboratory Report Number:		357493
Sample ID		**Trip Blank**
Analyte	Units	
BTEXN		
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
meta- & para-Xylene	mg/kg	<2
ortho-Xylene	mg/kg	<1
Total Xylenes	mg/kg	<1
Naphthalene	mg/kg	<1
Total Petroleum Hydrocarbons		
TRH C_6 - C_{10} (F1)	mg/kg	<25

Values in Bold Indicate: Detection above Laboratory Limit Of Reporting

SOIL - Trip Spike Results

Laboratory:		Envirolab
Laboratory Report Number:		357493
Sample ID		**Trip Spike**
Analyte	Units	
BTEXN		
Benzene	mg/kg	82
Toluene	mg/kg	81
Ethylbenzene	mg/kg	81
meta- & para-Xylene	mg/kg	82
ortho-Xylene	mg/kg	82
Total Xylenes	mg/kg	-
Naphthalene	mg/kg	-

Values in Bold Indicate: Data Outside Acceptable Range of 70 - 130

SOIL - Rinsate Results

Laboratory Report Number:		357493
Sample ID		**ZZ250724-R**
Analyte	Units	
Total Metals		
Arsenic	mg/L	<0.05
Cadmium	mg/L	<0.01
Chromium	mg/L	<0.01
Copper	mg/L	<0.01
Lead	mg/L	<0.03
Mercury	mg/L	<0.0005
Nickel	mg/L	<0.02
Zinc	mg/L	<0.02
BTEXN		
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Naphthalene	µg/L	<1
Total Petroleum Hydrocarbons		
F1 (C6-C10)	µg/L	<10
F2 (>C10-C16)	µg/L	<50
F3 (>C16-C34)	µg/L	<100
F4 (>C34-C40)	µg/L	<100

Values in Bold Indicate: Detection above Laboratory Limit Of Reporting

WATER - Blind Replicate Results

Sample Date		6/08/2024	6/08/2024	RPD
Sample Identification		**ZZ060824-01**	**ZZ060824-101**	
Analyte	Units			
Total Metals				
Arsenic	µg/L	<1	<1	--
Cadmium	µg/L	<0.1	<0.1	--
Chromium	µg/L	<1	<1	--
Copper	µg/L	<1	<1	--
Lead	µg/L	<1	<1	--
Mercury	µg/L	<0.05	<0.05	--
Nickel	µg/L	20	19	5%
Zinc	µg/L	37	36	3%
BTEXN				
Benzene	µg/L	<1	<1	--
Toluene	µg/L	1	1	0%
Ethylbenzene	µg/L	<1	<1	--
m+p-xylene	µg/L	2	2	0%
o-xylene	µg/L	2	2	0%
Naphthalene	µg/L	<1	<1	--
Total Petroleum Hydrocarbons				
F1 (C6-C10)	µg/L	65	55	17%
F2 (>C10-C16)	µg/L	92	95	3%
F3 (>C16-C34)	µg/L	<100	<100	--
F4 (>C34-C40)	µg/L	<100	<100	--
Polycyclic Aromatic Hydrocarbons				
Anthracene	µg/L	<0.1	<0.1	--
Phenanthrene	µg/L	<0.1	<0.1	--
Fluoranthene	µg/L	<0.1	<0.1	--
Benzo(a)pyrene	µg/L	<0.1	<0.1	--
Remaining PAHs	µg/L	0.1	0.12	18%
VOCs				
Chloroform	µg/L	4	4	0%
1,3,5-trimethyl benzene	µg/L	10	11	10%
1,2,4-trimethyl benzene	µg/L	19	21	10%
Remaining VOCs	µg/L	<10	<10	--

Values in Bold Indicate: RPD > 50 % When average concentration is > 10 x LOR
RPD > 75 % When average concentration is 5 to 10 x LOR
RPD > 150 % When average concentration is < 5 x LOR

WATER - Trip Blank Results

Laboratory:		Envirolab
Laboratory Report Number:		358508
Sample ID		**Trip Blank**
Analyte	Units	
BTEXN		
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
meta- & para-Xylene	µg/L	<2
ortho-Xylene	µg/L	<1
Naphthalene	µg/L	<1
Total Petroleum Hydrocarbons		
TRH C_6 - C_{10} (F1)	µg/L	<10

Values in Bold Indicate: Detection above Laboratory Limit Of Reporting

WATER - Trip Spike Results

Laboratory:		Envirolab
Laboratory Report Number:		358508
Sample ID		**Trip Spike**
Analyte	Units	
BTEXN		
Benzene	µg/L	93%
Toluene	µg/L	105%
Ethylbenzene	µg/L	100%
meta- & para-Xylene	µg/L	101%
ortho-Xylene	µg/L	102%

Values in Bold Indicate: Data Outside Acceptable Range of 70 - 130

APPENDIX I

LABORATORY REPORTS

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

CERTIFICATE OF ANALYSIS 357493

Client Details

Client	Geo-Environmental Engineering
Attention	Stephen McCormack
Address	82 Bridge St, Lane Cove, NSW, 2066

Sample Details

Your Reference	**E24016FOR**
Number of Samples	5 Soil, 3 Water
Date samples received	25/07/2024
Date completed instructions received	25/07/2024

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	01/08/2024
Date of Issue	01/08/2024

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Asbestos Approved By
Analysed by Asbestos Approved Analyst: Lucy Zhu
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By
Dragana Tomas, Senior Chemist
Giovanni Agosti, Group Technical Manager
Lucy Zhu, Asbestos Supervisor
Timothy Toll, Senior Chemist

Authorised By
Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		357493-1	357493-2	357493-3	357493-5	357493-6
Your Reference	UNITS	ZZ250724-01	ZZ250724-02	ZZ250724-03	ZZ250724-100	Trip Blank
Date Sampled		25/07/2024	25/07/2024	25/07/2024	25/07/2024	25/07/2024
Type of sample		Soil	Soil	Soil	Soil	Water
Date extracted	-	29/07/2024	29/07/2024	29/07/2024	29/07/2024	29/07/2024
Date analysed	-	30/07/2024	30/07/2024	30/07/2024	30/07/2024	01/08/2024
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTRH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	63	72	67	77	98

vTRH(C6-C10)/BTEXN in Soil		
Our Reference		357493-7
Your Reference	UNITS	Trip Spike
Date Sampled		25/07/2024
Type of sample		Water
Date extracted	-	29/07/2024
Date analysed	-	01/08/2024
Benzene	mg/kg	82%
Toluene	mg/kg	81%
Ethylbenzene	mg/kg	81%
m+p-xylene	mg/kg	82%
o-Xylene	mg/kg	82%
Surrogate aaa-Trifluorotoluene	%	90

svTRH (C10-C40) in Soil					
Our Reference		357493-1	357493-2	357493-3	357493-5
Your Reference	UNITS	ZZ250724-01	ZZ250724-02	ZZ250724-03	ZZ250724-100
Date Sampled		25/07/2024	25/07/2024	25/07/2024	25/07/2024
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	29/07/2024	29/07/2024	29/07/2024	29/07/2024
Date analysed	-	30/07/2024	30/07/2024	30/07/2024	30/07/2024
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50	<50	<50
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50
TRH >C_{10} -C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50
Surrogate o-Terphenyl	%	81	77	78	77

PAHs in Soil					
Our Reference		357493-1	357493-2	357493-3	357493-5
Your Reference	UNITS	ZZ250724-01	ZZ250724-02	ZZ250724-03	ZZ250724-100
Date Sampled		25/07/2024	25/07/2024	25/07/2024	25/07/2024
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	29/07/2024	29/07/2024	29/07/2024	29/07/2024
Date analysed	-	30/07/2024	30/07/2024	30/07/2024	30/07/2024
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	97	95	76	99

Organochlorine Pesticides in soil				
Our Reference		357493-1	357493-2	357493-5
Your Reference	UNITS	ZZ250724-01	ZZ250724-02	ZZ250724-100
Date Sampled		25/07/2024	25/07/2024	25/07/2024
Type of sample		Soil	Soil	Soil
Date extracted	-	29/07/2024	29/07/2024	29/07/2024
Date analysed	-	30/07/2024	30/07/2024	30/07/2024
alpha-BHC	mg/kg	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1
Mirex	mg/kg	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1
Surrogate 4-Chloro-3-NBTF	%	97	92	100

PCBs in Soil				
Our Reference		357493-1	357493-2	357493-5
Your Reference	UNITS	ZZ250724-01	ZZ250724-02	ZZ250724-100
Date Sampled		25/07/2024	25/07/2024	25/07/2024
Type of sample		Soil	Soil	Soil
Date extracted	-	29/07/2024	29/07/2024	29/07/2024
Date analysed	-	30/07/2024	30/07/2024	30/07/2024
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1
Surrogate 2-Fluorobiphenyl	%	92	92	98

Acid Extractable metals in soil					
Our Reference		357493-1	357493-2	357493-3	357493-5
Your Reference	UNITS	ZZ250724-01	ZZ250724-02	ZZ250724-03	ZZ250724-100
Date Sampled		25/07/2024	25/07/2024	25/07/2024	25/07/2024
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	29/07/2024	29/07/2024	29/07/2024	29/07/2024
Date analysed	-	30/07/2024	30/07/2024	30/07/2024	30/07/2024
Arsenic	mg/kg	14	12	6	8
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	34	16	29	17
Copper	mg/kg	2	7	<1	13
Lead	mg/kg	13	24	9	19
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	2	7	1	24
Zinc	mg/kg	7	35	6	35

Moisture					
Our Reference		357493-1	357493-2	357493-3	357493-5
Your Reference	UNITS	ZZ250724-01	ZZ250724-02	ZZ250724-03	ZZ250724-100
Date Sampled		25/07/2024	25/07/2024	25/07/2024	25/07/2024
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	29/07/2024	29/07/2024	29/07/2024	29/07/2024
Date analysed	-	30/07/2024	30/07/2024	30/07/2024	30/07/2024
Moisture	%	6.1	9.9	7.9	4.7

Asbestos ID - soils			
Our Reference		357493-1	357493-2
Your Reference	UNITS	ZZ250724-01	ZZ250724-02
Date Sampled		25/07/2024	25/07/2024
Type of sample		Soil	Soil
Date analysed	-	31/07/2024	31/07/2024
Sample mass tested	g	Approx. 30g	Approx. 30g
Sample Description	-	Orange coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Asbestos comments	-	Nil	Nil
Trace Analysis	-	No asbestos detected	No asbestos detected

vTRH(C6-C10)/BTEXN in Water		
Our Reference	UNITS	357493-8
Your Reference		ZZ250724-R
Date Sampled		25/07/2024
Type of sample		Water
Date extracted	-	29/07/2024
Date analysed	-	30/07/2024
TRH C_6 - C_9	µg/L	<10
TRH C_6 - C_{10}	µg/L	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Naphthalene	µg/L	<1
Surrogate Dibromofluoromethane	%	102
Surrogate Toluene-d8	%	98
Surrogate 4-Bromofluorobenzene	%	94

svTRH (C10-C40) in Water		
Our Reference		357493-8
Your Reference	UNITS	ZZ250724-R
Date Sampled		25/07/2024
Type of sample		Water
Date extracted	-	29/07/2024
Date analysed	-	30/07/2024
TRH C_{10} - C_{14}	µg/L	<50
TRH C_{15} - C_{28}	µg/L	<100
TRH C_{29} - C_{36}	µg/L	<100
Total +ve TRH (C10-C36)	µg/L	<50
TRH >C_{10} - C_{16}	µg/L	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50
TRH >C_{16} - C_{34}	µg/L	<100
TRH >C_{34} - C_{40}	µg/L	<100
Total +ve TRH (>C10-C40)	µg/L	<50
Surrogate o-Terphenyl	%	78

Metals in Waters - Acid extractable		
Our Reference		357493-8
Your Reference	UNITS	ZZ250724-R
Date Sampled		25/07/2024
Type of sample		Water
Date prepared	-	29/07/2024
Date analysed	-	29/07/2024
Arsenic - Total	mg/L	<0.05
Cadmium - Total	mg/L	<0.01
Chromium - Total	mg/L	<0.01
Copper - Total	mg/L	<0.01
Lead - Total	mg/L	<0.03
Mercury - Total	mg/L	<0.0005
Nickel - Total	mg/L	<0.02
Zinc - Total	mg/L	<0.02

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-021/022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD and/or GC-MS/GC-MSMS. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS/GC-MSMS. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.

Method ID	Methodology Summary
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-9	[NT]
Date extracted	-			29/07/2024	1	29/07/2024	29/07/2024		29/07/2024	[NT]
Date analysed	-			30/07/2024	1	30/07/2024	30/07/2024		30/07/2024	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	<25	1	<25	<25	0	104	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	1	<25	<25	0	104	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	1	<0.2	<0.2	0	107	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	1	<0.5	<0.5	0	103	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	102	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	1	<2	<2	0	105	[NT]
o-Xylene	mg/kg	1	Org-023	<1	1	<1	<1	0	104	[NT]
Naphthalene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	115	1	63	105	50	109	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-9	[NT]
Date extracted	-			29/07/2024	1	29/07/2024	29/07/2024		29/07/2024	[NT]
Date analysed	-			30/07/2024	1	30/07/2024	30/07/2024		30/07/2024	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	1	<50	<50	0	90	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	1	<100	<100	0	86	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	1	<100	<100	0	86	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	1	<50	<50	0	90	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	1	<100	<100	0	86	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	1	<100	<100	0	86	[NT]
Surrogate o-Terphenyl	%		Org-020	79	1	81	79	2	105	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-9	[NT]
Date extracted	-			29/07/2024	1	29/07/2024	29/07/2024		29/07/2024	[NT]
Date analysed	-			30/07/2024	1	30/07/2024	30/07/2024		30/07/2024	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	82	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	82	[NT]
Fluorene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	90	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	84	[NT]
Anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	70	[NT]
Pyrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	74	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	76	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	1	<0.05	<0.05	0	70	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	84	1	97	100	3	87	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-9	[NT]
Date extracted	-			29/07/2024	1	29/07/2024	29/07/2024		29/07/2024	[NT]
Date analysed	-			30/07/2024	1	30/07/2024	30/07/2024		30/07/2024	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	84	[NT]
HCB	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	82	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	82	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	88	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	100	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	84	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	92	[NT]
Endrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	104	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	92	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	98	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Mirex	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	108	1	97	101	4	101	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-9	[NT]
Date extracted	-			29/07/2024	1	29/07/2024	29/07/2024		29/07/2024	[NT]
Date analysed	-			30/07/2024	1	30/07/2024	30/07/2024		30/07/2024	[NT]
Aroclor 1016	mg/kg	0.1	Org-021/022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021/022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021/022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021/022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021/022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021/022/025	<0.1	1	<0.1	<0.1	0	102	[NT]
Aroclor 1260	mg/kg	0.1	Org-021/022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate 2-Fluorobiphenyl	%		Org-021/022/025	105	1	92	99	7	96	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-9	[NT]
Date prepared	-			29/07/2024	1	29/07/2024	29/07/2024		29/07/2024	[NT]
Date analysed	-			30/07/2024	1	30/07/2024	30/07/2024		30/07/2024	[NT]
Arsenic	mg/kg	4	Metals-020	<4	1	14	15	7	101	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	94	[NT]
Chromium	mg/kg	1	Metals-020	<1	1	34	36	6	92	[NT]
Copper	mg/kg	1	Metals-020	<1	1	2	1	67	89	[NT]
Lead	mg/kg	1	Metals-020	<1	1	13	12	8	94	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	98	[NT]
Nickel	mg/kg	1	Metals-020	<1	1	2	2	0	94	[NT]
Zinc	mg/kg	1	Metals-020	<1	1	7	8	13	97	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			29/07/2024	[NT]	[NT]	[NT]	[NT]	29/07/2024	[NT]
Date analysed	-			30/07/2024	[NT]	[NT]	[NT]	[NT]	30/07/2024	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	88	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	88	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	91	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	86	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	87	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Naphthalene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	104	[NT]	[NT]	[NT]	[NT]	106	[NT]
Surrogate Toluene-d8	%		Org-023	99	[NT]	[NT]	[NT]	[NT]	101	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	96	[NT]	[NT]	[NT]	[NT]	98	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			29/07/2024	[NT]	[NT]	[NT]	[NT]	29/07/2024	[NT]
Date analysed	-			29/07/2024	[NT]	[NT]	[NT]	[NT]	29/07/2024	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	93	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	94	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	114	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	93	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	94	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	114	[NT]
Surrogate o-Terphenyl	%		Org-020	93	[NT]	[NT]	[NT]	[NT]	91	[NT]

QUALITY CONTROL: Metals in Waters - Acid extractable						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			29/07/2024	[NT]	[NT]	[NT]	[NT]	29/07/2024	[NT]
Date analysed	-			29/07/2024	[NT]	[NT]	[NT]	[NT]	29/07/2024	[NT]
Arsenic - Total	mg/L	0.05	Metals-020	<0.05	[NT]	[NT]	[NT]	[NT]	103	[NT]
Cadmium - Total	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	102	[NT]
Chromium - Total	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	96	[NT]
Copper - Total	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	99	[NT]
Lead - Total	mg/L	0.03	Metals-020	<0.03	[NT]	[NT]	[NT]	[NT]	96	[NT]
Mercury - Total	mg/L	0.0005	Metals-021	<0.0005	[NT]	[NT]	[NT]	[NT]	111	[NT]
Nickel - Total	mg/L	0.02	Metals-020	<0.02	[NT]	[NT]	[NT]	[NT]	94	[NT]
Zinc - Total	mg/L	0.02	Metals-020	<0.02	[NT]	[NT]	[NT]	[NT]	99	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Asbestos: A portion of the supplied sample was sub-sampled for asbestos according to ASB-001 asbestos subsampling procedure. We cannot guarantee that this sub-sample is indicative of the entire sample. Envirolab/MPL recommends supplying 40-60g or 500ml of sample in its own container.
Note: Samples 357493-1 & 2 were sub-sampled from jars provided by the client.

Updated COC 25/7/24. 1624.

CHAIN OF CUSTODY - Client

ENVIROLAB SERVICES

Client:	Geo-Environmental Engineering Pty Ltd	**Client Project Name and Number:**	**Envirolab Services**
Project Mgr:	Stephen McCormack	E24016FOR	12 Ashley St, Chatswood, NSW, 2067
Sampler:	Stephen Mccormack	**PO No.:**	
Address:	Unit 2, 5-7 Malta Street, Fairfield East	**Envirolab Services Quote No. :**	Phone: 02 9910 6200
Email:	stephen@geoenvironmental.com.au, zachary@geoenvironmental.com.au, chase@geoenvironmental.com.au, sally@geoenvironmental.com.au	**Date results required:**	Fax: 02 9910 6201
		Or choose: standard / 1 day / 2 day / 3 day / 5 day **Standard**	E-mail: ahie@envirolabservices.com.au
Phone:	0458 550 257 (Sally) / 0431 480 980 (Stephen)	*Note: Inform lab in advance if urgent turnaround is required - surcharge applies*	Contact: Aileen Hie / Simon Song

Sample information				Tests Required														Comments
Envirolab Sample ID	Client Sample ID	Date sampled	Type of sample	Combination 5a	Combination 5	Combination 3	TRH (vol)/BTEXN	BTEXN	Combo 1m								Hold	Provide as much information about the sample as you can
1	ZZ250724-01	25/07/2024	Soil	x														
2	ZZ250724-02	25/07/2024	Soil	x														
3	ZZ250724-03	25/07/2024	Soil			x												
4	ZZ250724-04	25/07/2024	Soil														x	
5	ZZ250724-100	25/07/2024	Soil		x													
6	Trip Blank	25/07/2024	Water				x											
7	Trip Spike	25/07/2024	Water					x										
8	ZZ250724-R	25/07/2024	Water						x									

Relinquished by (company):	Geo-Environmental Engineering	**Received by (company):**	ENVSYD
Print Name:	Sally Gartland	**Print Name:**	D.WU
Date & Time:	25-Jul-24	**Date & Time:**	25/7/24, 1300
Signature:		**Signature:**	DW

Samples Received: Cool or Ambient (circle one)
Temperature Recieved at: 2 (if applicable)
Transported by: Hand delivered / courier
#357493.

COC 25/7/24, 1547

CHAIN OF CUSTODY - Client

ENVIROLAB SERVICES

Client:	Geo-Environmental Engineering Pty Ltd	**Client Project Name and Number:**	**Envirolab Services**
Project Mgr:	Stephen McCormack	E24016FOR	12 Ashley St, Chatswood, NSW, 2067
Sampler:	Stephen Mccormack	**PO No.:**	Phone: 02 9910 6200
Address:	Unit 2, 5-7 Malta Street, Fairfield East	**Envirolab Services Quote No. :**	Fax: 02 9910 6201
Email:	stephen@geoenvironmental.com.au, zachary@geoenvironmental.com.au, chase@geoenvironmental.com.au, sally@geoenvironmental.com.au	**Date results required:**	E-mail: ahie@envirolabservices.com.au
		Or choose: standard / 1 day / 2 day / 3 day / 5 day **Standard**	Contact: Aileen Hie / Simon Song
Phone:	0458 550 257 (Sally) / 0431 480 980 (Stephen)	*Note: Inform lab in advance if urgent turnaround is required - surcharge applies*	

Sample information				Tests Required														Comments
Envirolab Sample ID	Client Sample ID	Date sampled	Type of sample	Combination 5a	Combination 5	Combination 3	TRH (vol)/BTEXN	BTEXN	8 Metals								Hold	Provide as much information about the sample as you can
1	ZZ250724-01	25/07/2024	Soil	x														
2	ZZ250724-02	25/07/2024	Soil	x														
3	ZZ250724-03	25/07/2024	Soil			x												
4	ZZ250724-04	25/07/2024	Soil														x	
5	ZZ250724-100	25/07/2024	Soil		x													
6	Trip Blank	25/07/2024	Water			x												
7	Trip Spike	25/07/2024	Water				x											
8	ZZ250724-R	25/07/2024	Water			x	x	x										

Relinquished by (company):	Geo-Environmental Engineering	**Received by (company):** EJ SYD	**Samples Received:** Cool or Ambient (circle one)
Print Name:	Sally Gartland	**Print Name:** O. Wilcox.	**Temperature Recieved at:** 2 . (if applicable)
Date & Time:	25-Jul-24	**Date & Time:** 25/7/24 1300	**Transported by:** Hand delivered / courier
Signature:		**Signature:**	#357493 **Page No: 1 of 1**

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

CERTIFICATE OF ANALYSIS 358508

Client Details

Client	Geo-Environmental Engineering
Attention	Stephen McCormack
Address	82 Bridge St, Lane Cove, NSW, 2066

Sample Details

Your Reference	**E24016FOR**
Number of Samples	6 Water
Date samples received	06/08/2024
Date completed instructions received	06/08/2024

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

Date results requested by	13/08/2024
Date of Issue	12/08/2024

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Results Approved By
Dragana Tomas, Senior Chemist
Giovanni Agosti, Group Technical Manager
Timothy Toll, Senior Chemist

Authorised By
Nancy Zhang, Laboratory Manager

VOCs in water					
Our Reference		358508-1	358508-2	358508-3	358508-4
Your Reference	UNITS	ZZ060824-01	ZZ060824-02	ZZ060824-03	ZZ060824-101
Date Sampled		06/08/2024	06/08/2024	06/08/2024	06/08/2024
Type of sample		Water	Water	Water	Water
Date Extracted	-	08/08/2024	08/08/2024	08/08/2024	08/08/2024
Date Analysed	-	09/08/2024	09/08/2024	09/08/2024	09/08/2024
Dichlorodifluoromethane	µg/L	<10	<10	<10	<10
Chloromethane	µg/L	<10	<10	<10	<10
Vinyl Chloride	µg/L	<10	<10	<10	<10
Bromomethane	µg/L	<10	<10	<10	<10
Chloroethane	µg/L	<10	<10	<10	<10
Trichlorofluoromethane	µg/L	<10	<10	<10	<10
1,1-Dichloroethene	µg/L	<1	<1	<1	<1
Trans-1,2-dichloroethene	µg/L	<1	<1	<1	<1
1,1-dichloroethane	µg/L	<1	<1	<1	<1
Cis-1,2-dichloroethene	µg/L	<1	<1	<1	<1
Bromochloromethane	µg/L	<1	<1	<1	<1
Chloroform	µg/L	4	2	<1	4
2,2-dichloropropane	µg/L	<1	<1	<1	<1
1,2-dichloroethane	µg/L	<1	<1	<1	<1
1,1,1-trichloroethane	µg/L	<1	<1	<1	<1
1,1-dichloropropene	µg/L	<1	<1	<1	<1
Cyclohexane	µg/L	<1	<1	<1	<1
Carbon tetrachloride	µg/L	<1	<1	<1	<1
Benzene	µg/L	<1	<1	<1	<1
Dibromomethane	µg/L	<1	<1	<1	<1
1,2-dichloropropane	µg/L	<1	<1	<1	<1
Trichloroethene	µg/L	<1	<1	<1	<1
Bromodichloromethane	µg/L	<1	<1	<1	<1
trans-1,3-dichloropropene	µg/L	<1	<1	<1	<1
cis-1,3-dichloropropene	µg/L	<1	<1	<1	<1
1,1,2-trichloroethane	µg/L	<1	<1	<1	<1
Toluene	µg/L	1	<1	<1	1
1,3-dichloropropane	µg/L	<1	<1	<1	<1
Dibromochloromethane	µg/L	<1	<1	<1	<1
1,2-dibromoethane	µg/L	<1	<1	<1	<1
Tetrachloroethene	µg/L	<1	<1	<1	<1
1,1,1,2-tetrachloroethane	µg/L	<1	<1	<1	<1
Chlorobenzene	µg/L	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1

VOCs in water					
Our Reference		358508-1	358508-2	358508-3	358508-4
Your Reference	UNITS	ZZ060824-01	ZZ060824-02	ZZ060824-03	ZZ060824-101
Date Sampled		06/08/2024	06/08/2024	06/08/2024	06/08/2024
Type of sample		Water	Water	Water	Water
Bromoform	µg/L	<1	<1	<1	<1
m+p-xylene	µg/L	2	<2	<2	2
Styrene	µg/L	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	µg/L	<1	<1	<1	<1
o-xylene	µg/L	2	<1	<1	2
1,2,3-trichloropropane	µg/L	<1	<1	<1	<1
Isopropylbenzene	µg/L	<1	<1	<1	<1
Bromobenzene	µg/L	<1	<1	<1	<1
n-propyl benzene	µg/L	<1	<1	<1	<1
2-chlorotoluene	µg/L	<1	<1	<1	<1
4-chlorotoluene	µg/L	<1	<1	<1	<1
1,3,5-trimethyl benzene	µg/L	10	<1	<1	11
Tert-butyl benzene	µg/L	<1	<1	<1	<1
1,2,4-trimethyl benzene	µg/L	19	<1	<1	21
1,3-dichlorobenzene	µg/L	<1	<1	<1	<1
Sec-butyl benzene	µg/L	<1	<1	<1	<1
1,4-dichlorobenzene	µg/L	<1	<1	<1	<1
4-isopropyl toluene	µg/L	<1	<1	<1	<1
1,2-dichlorobenzene	µg/L	<1	<1	<1	<1
n-butyl benzene	µg/L	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	µg/L	<1	<1	<1	<1
1,2,4-trichlorobenzene	µg/L	<1	<1	<1	<1
Hexachlorobutadiene	µg/L	<1	<1	<1	<1
1,2,3-trichlorobenzene	µg/L	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	97	100	80	97
Surrogate Toluene-d8	%	120	103	101	105
Surrogate 4-Bromofluorobenzene	%	99	99	92	112

vTRH(C6-C10)/BTEXN in Water						
Our Reference		358508-1	358508-2	358508-3	358508-4	358508-5
Your Reference	UNITS	ZZ060824-01	ZZ060824-02	ZZ060824-03	ZZ060824-101	Trip Blank
Date Sampled		06/08/2024	06/08/2024	06/08/2024	06/08/2024	06/08/2024
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	08/08/2024	08/08/2024	08/08/2024	08/08/2024	08/08/2024
Date analysed	-	09/08/2024	09/08/2024	09/08/2024	09/08/2024	09/08/2024
TRH C_6 - C_9	µg/L	15	<10	<10	13	<10
TRH C_6 - C_{10}	µg/L	70	<10	<10	61	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	65	<10	<10	55	<10
Benzene	µg/L	<1	<1	<1	<1	<1
Toluene	µg/L	1	<1	<1	1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1	<1
m+p-xylene	µg/L	2	<2	<2	2	<2
o-xylene	µg/L	2	<1	<1	2	<1
Naphthalene	µg/L	<1	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	97	100	80	97	96
Surrogate Toluene-d8	%	120	103	101	105	106
Surrogate 4-Bromofluorobenzene	%	99	99	92	112	97

vTRH(C6-C10)/BTEXN in Water		
Our Reference		358508-6
Your Reference	UNITS	Trip Spike
Date Sampled		06/08/2024
Type of sample		Water
Date extracted	-	08/08/2024
Date analysed	-	09/08/2024
Benzene	µg/L	93%
Toluene	µg/L	105%
Ethylbenzene	µg/L	100%
m+p-xylene	µg/L	101%
o-xylene	µg/L	102%
Surrogate Dibromofluoromethane	%	96
Surrogate Toluene-d8	%	104
Surrogate 4-Bromofluorobenzene	%	100

svTRH (C10-C40) in Water					
Our Reference		358508-1	358508-2	358508-3	358508-4
Your Reference	UNITS	ZZ060824-01	ZZ060824-02	ZZ060824-03	ZZ060824-101
Date Sampled		06/08/2024	06/08/2024	06/08/2024	06/08/2024
Type of sample		Water	Water	Water	Water
Date extracted	-	07/08/2024	07/08/2024	07/08/2024	07/08/2024
Date analysed	-	08/08/2024	08/08/2024	08/08/2024	08/08/2024
TRH C_{10} - C_{14}	µg/L	120	<50	<50	130
TRH C_{15} - C_{28}	µg/L	<100	<100	<100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	120	<50	<50	130
TRH >C_{10} - C_{16}	µg/L	92	<50	<50	95
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	92	<50	<50	95
TRH >C_{16} - C_{34}	µg/L	<100	<100	<100	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	90	<50	<50	100
Surrogate o-Terphenyl	%	80	75	88	83

PAHs in Water					
Our Reference		358508-1	358508-2	358508-3	358508-4
Your Reference	UNITS	ZZ060824-01	ZZ060824-02	ZZ060824-03	ZZ060824-101
Date Sampled		06/08/2024	06/08/2024	06/08/2024	06/08/2024
Type of sample		Water	Water	Water	Water
Date extracted	-	07/08/2024	07/08/2024	07/08/2024	07/08/2024
Date analysed	-	08/08/2024	08/08/2024	08/08/2024	08/08/2024
Naphthalene	µg/L	0.1	<0.1	<0.1	0.1
Acenaphthylene	µg/L	<0.1	<0.1	<0.1	<0.1
Acenaphthene	µg/L	<0.1	<0.1	<0.1	<0.1
Fluorene	µg/L	<0.1	<0.1	<0.1	<0.1
Phenanthrene	µg/L	<0.1	<0.1	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1	<0.1	<0.1
Fluoranthene	µg/L	<0.1	<0.1	<0.1	<0.1
Pyrene	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1
Chrysene	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	µg/L	0.1	<0.1	<0.1	0.12
Surrogate p-Terphenyl-d14	%	68	64	86	76

HM in water - dissolved					
Our Reference	UNITS	358508-1	358508-2	358508-3	358508-4
Your Reference		ZZ060824-01	ZZ060824-02	ZZ060824-03	ZZ060824-101
Date Sampled		06/08/2024	06/08/2024	06/08/2024	06/08/2024
Type of sample		Water	Water	Water	Water
Date prepared	-	07/08/2024	07/08/2024	07/08/2024	07/08/2024
Date analysed	-	07/08/2024	07/08/2024	07/08/2024	07/08/2024
Arsenic-Dissolved	µg/L	<1	<1	<1	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1	<1
Copper-Dissolved	µg/L	<1	3	2	<1
Lead-Dissolved	µg/L	<1	<1	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	20	8	2	19
Zinc-Dissolved	µg/L	37	31	7	36

Cations in water Dissolved					
Our Reference		358508-1	358508-2	358508-3	358508-4
Your Reference	UNITS	ZZ060824-01	ZZ060824-02	ZZ060824-03	ZZ060824-101
Date Sampled		06/08/2024	06/08/2024	06/08/2024	06/08/2024
Type of sample		Water	Water	Water	Water
Date digested	-	07/08/2024	07/08/2024	07/08/2024	07/08/2024
Date analysed	-	09/08/2024	09/08/2024	09/08/2024	09/08/2024
Magnesium - Dissolved	mg/L	12	5	5.3	13
Calcium - Dissolved	mg/L	11	1	3	11
Hardness (calc) equivalent $CaCO_3$	mg/L	79	22	29	80

Method ID	Methodology Summary
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS. Please note for Bromine and Iodine, any forms of these elements that are present are included together in the one result reported for each of these two elements. Salt forms (e.g. FeO, PbO, ZnO) are determined stoichiometrically from the base metal concentration.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date Extracted	-			08/08/2024	1	08/08/2024	09/08/2024		08/08/2024	[NT]
Date Analysed	-			09/08/2024	1	09/08/2024	09/08/2024		09/08/2024	[NT]
Dichlorodifluoromethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Chloromethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Vinyl Chloride	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Bromomethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Chloroethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Trichlorofluoromethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
1,1-Dichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Trans-1,2-dichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1-dichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	105	[NT]
Cis-1,2-dichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Bromochloromethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Chloroform	µg/L	1	Org-023	<1	1	4	4	0	108	[NT]
2,2-dichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	110	[NT]
1,1,1-trichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	113	[NT]
1,1-dichloropropene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Cyclohexane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Carbon tetrachloride	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Benzene	µg/L	1	Org-023	<1	1	<1	<1	0	106	[NT]
Dibromomethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Trichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	112	[NT]
Bromodichloromethane	µg/L	1	Org-023	<1	1	<1	<1	0	113	[NT]
trans-1,3-dichloropropene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
cis-1,3-dichloropropene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1,2-trichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Toluene	µg/L	1	Org-023	<1	1	1	1	0	118	[NT]
1,3-dichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Dibromochloromethane	µg/L	1	Org-023	<1	1	<1	<1	0	80	[NT]
1,2-dibromoethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Tetrachloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	82	[NT]
1,1,1,2-tetrachloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Chlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	109	[NT]
Bromoform	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
m+p-xylene	µg/L	2	Org-023	<2	1	2	2	0	111	[NT]
Styrene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1,2,2-tetrachloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
o-xylene	µg/L	1	Org-023	<1	1	2	2	0	110	[NT]
1,2,3-trichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Isopropylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Bromobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
n-propyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
2-chlorotoluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
4-chlorotoluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,3,5-trimethyl benzene	µg/L	1	Org-023	<1	1	10	9	11	[NT]	[NT]
Tert-butyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,4-trimethyl benzene	µg/L	1	Org-023	<1	1	19	19	0	[NT]	[NT]
1,3-dichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Sec-butyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,4-dichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
4-isopropyl toluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
n-butyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dibromo-3-chloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,4-trichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Hexachlorobutadiene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,3-trichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	92	1	97	107	10	102	[NT]
Surrogate Toluene-d8	%		Org-023	98	1	120	97	21	108	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	86	1	99	101	2	106	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			08/08/2024	1	08/08/2024	09/08/2024		08/08/2024	[NT]
Date analysed	-			09/08/2024	1	09/08/2024	09/08/2024		09/08/2024	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	1	15	14	7	111	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	1	70	67	4	111	[NT]
Benzene	µg/L	1	Org-023	<1	1	<1	<1	0	106	[NT]
Toluene	µg/L	1	Org-023	<1	1	1	1	0	118	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	109	[NT]
m+p-xylene	µg/L	2	Org-023	<2	1	2	2	0	111	[NT]
o-xylene	µg/L	1	Org-023	<1	1	2	2	0	110	[NT]
Naphthalene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	92	1	97	107	10	102	[NT]
Surrogate Toluene-d8	%		Org-023	98	1	120	97	21	108	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	86	1	99	101	2	106	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	358508-2
Date extracted	-			07/08/2024	1	07/08/2024	07/08/2024		07/08/2024	07/08/2024
Date analysed	-			07/08/2024	1	08/08/2024	08/08/2024		07/08/2024	08/08/2024
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	1	120	110	9	110	110
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	1	<100	<100	0	104	102
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	1	<100	<100	0	100	102
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	1	92	81	13	110	110
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	1	<100	<100	0	104	102
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	1	<100	<100	0	100	102
Surrogate o-Terphenyl	%		Org-020	106	1	80	67	18	106	117

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	358508-2
Date extracted	-			07/08/2024	1	07/08/2024	07/08/2024		07/08/2024	07/08/2024
Date analysed	-			08/08/2024	1	08/08/2024	08/08/2024		08/08/2024	08/08/2024
Naphthalene	µg/L	0.1	Org-022/025	<0.1	1	0.1	0.1	0	85	72
Acenaphthylene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	88	72
Fluorene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	81	73
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	90	71
Anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	89	69
Pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	89	71
Benzo(a)anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	86	72
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	93	62
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	85	1	68	68	0	85	78

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W7	[NT]
Date prepared	-			07/08/2024	2	07/08/2024	07/08/2024		07/08/2024	[NT]
Date analysed	-			07/08/2024	2	07/08/2024	07/08/2024		07/08/2024	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	2	<1	<1	0	97	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	2	<0.1	<0.1	0	102	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	2	<1	<1	0	109	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	2	3	4	29	107	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	2	<1	<1	0	107	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	2	<0.05	[NT]		116	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	2	8	9	12	108	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	2	31	33	6	107	[NT]

QUALITY CONTROL: Cations in water Dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date digested	-			07/08/2024	[NT]	[NT]	[NT]	[NT]	07/08/2024	[NT]
Date analysed	-			09/08/2024	[NT]	[NT]	[NT]	[NT]	09/08/2024	[NT]
Magnesium - Dissolved	mg/L	0.5	Metals-020	<0.5	[NT]	[NT]	[NT]	[NT]	89	[NT]
Calcium - Dissolved	mg/L	0.5	Metals-020	<0.5	[NT]	[NT]	[NT]	[NT]	92	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

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

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

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

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

CHAIN OF CUSTODY - Client

ENVIROLAB SERVICES

Client:	Geo-Environmental Engineering Pty Ltd	**Client Project Name and Number:** E24016FOR	**Envirolab Services** 12 Ashley St, Chatswood, NSW, 2067
Project Mgr:	Stephen McCormack	**PO No.:**	
Sampler:	Stephen Mccormack	**Envirolab Services Quote No. :**	**Phone: 02 9910 6200**
Address:	Unit 2, 5-7 Malta Street, Fairfield East	**Date results required:**	**Fax: 02 9910 6201**
Email:	stephen@geoenvironmental.com.au, zachary@geoenvironmental.com.au, chase@geoenvironmental.com.au, sally@geoenvironmental.com.au	Or choose: standard / 1 day / 2 day / 3 day / 5 day **Standard** *Note: Inform lab in advance if urgent turnaround is required - surcharge applies*	**E-mail: ahie@envirolabservices.com.au**
Phone:	0458 550 257 (Sally) / 0431 480 930 (Stephen)		**Contact: Aileen Hie / Simon Song**

Sample Information				Tests Required															Comments
Envirolab Sample ID	Client Sample ID	Date sampled	Type of sample	CW003_D	VOC's	Hardness		TRH (vol) / BTEXN	BTEXN								Hold	Provide as much information about the sample as you can
1	ZZ060824-01	6/08/2024	Water	X	X	X												
2	ZZ060824-02	6/08/2024	Water	X	X	X												
3	ZZ060824-03	6/08/2024	Water	X	X	X												
4	ZZ060824-101	6/08/2024	Water	X	X	X												
5	Trip Blank	6/08/2024	Water					X										
6	Trip Spike	6/08/2024	Water						X									

Relinquished by (company):	Geo-Environmental Engineering	**Received by (company):**	ELS
Print Name:	Sally Gartland	**Print Name:**	Tony Trinh
Date & Time:	05-Aug-24	**Date & Time:**	6-08-24 1430
Signature:		**Signature:**	T. Trinh

Samples Received: Cool or Ambient (circle one)
Temperature Recieved at: 4°C (if applicable)
Transported by: Hand delivered / courier
#358508