

Warra Warra Road, South Nowra NSW
Preliminary Site Investigation with Soil Sampling

Prepared for:

Jervis Bay Town Planning

Our Ref: TERRA25-1425.Rep1.Rev0

23 October 2025

Prepared for:
Jervis Bay Town Planning

RE: Warra Warra Road, South Nowra NSW
Preliminary Site Investigation with Soil Sampling

Dear Lee,

Please find enclosed our Preliminary Site Investigation ('PSI') with soil sampling report for the above site in relation to its proposed redevelopment.

This report should be read in conjunction with the attached document 'About Your Report' in Appendix A.

This report has been documented by a CEnvP.

For and on behalf of Terra Insight



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EXECUTIVE SUMMARY

The objectives of the PSI were to assess whether site contamination exists at levels which may impact the proposed redevelopment of the Site (where site contamination is defined within Section 5 of the *Contaminated Land Management Act 1997* (CLM Act)) and, if present, to assess the requirements for remediation to facilitate the proposed development.

The Site is in South Nowra, NSW and is proposed to be subdivided from a larger block of land (the Property) and then redeveloped into residential land. The Site is currently vacant and undeveloped, but is unfenced, causing unauthorised access for fly tipping and use by 4WD vehicles/motorbikes.

Historical information for the Site and observations of the Site indicate that it has been historically undeveloped. The Property may have been used for grazing of livestock prior to the 1990s but has since remained undeveloped. Unauthorised 4WD/motorbike access on the southern part of the Site began in the early 1990s and persists to present day. As part of these activities, fill may have been brought onto the Site for earthworks.

Historical information for the Site and observations of the Site indicate that potential sources of contamination may exist on the Site, predominantly due to possible importation of fill and a burning area.

There are several sources of potential contamination on the Site. These include:

- Accidental spillages/leakages of fuel/oil from vehicles that access the Site, or are stored on the Site;
- Fly tipping of material across the Site, particular along the southern and eastern boundaries;
- Weathering of fly tipped material, affecting the underlying topsoil;
- Legacy contaminants from burning of stockpiled/fly tipped material; and
- Legacy contaminants contained within topsoil or fill (if imported onto the Site).

Based on the list of activities above, three (3) areas of environmental concern (AEC) have been identified for the Site, which include the part of the Site used for recreational 4WD/motorbikes, areas subjected to fly tipping and the residual of the Site, which has also been subjected to fly tipping.

A targeted/judgemental sampling methodology was adopted, sampling at locations deemed to present the highest contamination risk (based on surface observations and findings of the desktop study).

To assess the potential impact of these activities, a total of ten (10) soil samples were taken and tested for potential contaminants including heavy metals, total recoverable hydrocarbons (TRH), BTEX (benzene, toluene, ethylbenzene, xylenes) compounds, polycyclic aromatic hydrocarbons (PAH), and asbestos, in accordance with the current NSW EPA Design Sampling Guidelines.

Analyte concentrations in the ten (10) samples were generally found to be below the Tier 1 criteria, except for samples BH04 D1 and TP04 D1, which both detected EIL exceedances for zinc and copper. Zinc in BH04 D1 exceeded the HIL A criteria and nickel was also above the EIL in TP04 D1. No asbestos fines or fibres were detected in any of the submitted samples.

In terms of Chapter 4 of SEPP (Resilience & Hazards) 2021, the investigation has identified that the Site is suitable for the proposed development, provided that the recommendations made in Section 13 of this report are adhered to.

It is considered that Shoalhaven Council can be satisfied that the Site is suitable (subject to the recommendations within this report being adhered to) for the purpose for which the development is proposed to be carried out, consistent with the requirements under Clause 4.6 of Chapter 4 Remediation of Land within SEPP (Resilience and Hazards) 2021. Our recommendations include the development of a Construction Environmental Management Plan (CEMP) and the importation of V/ENM onto the Site as part of the proposed works.

Contents

1	Introduction.....	5
2	Objectives - Chapter 4 of SEPP (Resilience & Hazards) 2021	5
3	Scope of work.....	6
4	Desktop Study Findings	6
4.1	Site description.....	6
4.2	General Geology	7
4.3	Surface Topography.....	7
4.4	Surface Hydrology and Subsurface Hydrogeology	7
4.5	Groundwater Boreholes	7
4.6	Site history data sources.....	8
5	Summary of desktop Site history review.....	14
6	Site walkover	15
7	Preliminary Assessment Findings.....	16
7.1	Potential areas of environmental concern (AEC)	16
7.2	Potential Contaminants of Concern (COPC).....	16
7.3	Potential receptors of concern	17
7.4	Conceptual Site model.....	17
8	Preliminary Soil Sampling Investigation	19
8.1	Field Investigation Methodology.....	19
8.2	Subsurface Conditions	19
8.3	Laboratory Testing.....	19
9	Review of Investigation Findings.....	21
9.1	Published guidelines and framework for contamination assessment.....	21
9.2	Derivation of Investigation levels for further assessment.....	21
9.3	Review of Laboratory Findings	24
9.4	Data Quality Objectives	25
10	Chapter 4 SEPP (Resilience & Hazards) 2021 Review.....	27
11	Preliminary Waste Classification	28
12	Conclusions.....	29
13	Recommendations.....	31
13.1	General	31
13.2	Construction Environmental Management Plan	31
14	Limitations.....	32
15	References.....	32
Figures	33	

Tables

Table 4-1: Summary of Site identification and use information	6
Table 4-5: Summary of Site owners from InfoTrack.....	10
Table 4-6: Observations during review of historical aerial imagery.....	13
Table 5-1: Summary of desktop review findings	14
Table 6-1: Summary of observations made during the Site walkover	15
Table 7-1: Potential contamination-based pathways and receptors	17
Table 7-2: Conceptual Site Model	18
Table 9-1: Health investigation levels for soil contaminants.....	22
Table 9-2: Summary of adopted HSL (A) values for vapour intrusion	22
Table 9-3: Summary of HSL (A) for direct contact	22
Table 9-4: Summary of ESL guidelines for urban residential sites	24
Table 9-5: Relative percent difference for TP01.....	26
Table 9-6: Relative percent difference for TP05.....	26
Table 10-1: Checklist for initial site evaluation.....	27

Figures

- Figure 1: Site Location and Site Geology
- Figure 2: Historical Aerial Images
- Figure 3: Site Plan and Test Locations
- Figure 4: Areas of Environmental Concern

Appendices

- Appendix A: Your Report
- Appendix B: Proposed Development Plans
- Appendix C: Title Search Documents (InfoTrack)
- Appendix D: LotSearch GIS Report
- Appendix E: Site Images
- Appendix F: Engineering Logs
- Appendix G: Laboratory Test Certificates
- Appendix H: EIL Derivation Worksheets

1 Introduction

At the request of Jervis Bay Town Planning on behalf of the Site owner (the Client), Terra Insight Pty Ltd (Terra) has carried out a Preliminary Site (Contamination) Investigation (PSI) at Warra Warra Road, South Nowra NSW (hereafter referred to as the Property). It is understood that the land east of the Property's creek (Browns Creek) is to be subdivided and residentially developed. The plans provided are in Appendix B. The part of the Property to be subdivided is hereafter referred to as the Site as located in Figure 1.

2 Objectives - Chapter 4 of SEPP (Resilience & Hazards) 2021

The objective of this investigation was to:

- Provide advice on the potential for contamination (as defined in Section 5 of the *Contaminated Land Management Act 1997*) to be present on the Site due to historical and current Site use;
- Provide advice on whether the considerations of Chapter 4 of SEPP (Resilience & Hazards) 2021 have been satisfied; and
- Assess whether this contamination will impact on the proposed use of the Site and whether further investigation or remediation of the Site is required.

We note that the *Contaminated Land Management Act 1997*, defines the contamination of land as the presence (in, on, or under the land) of a substance at a concentration above the concentration at which the substance is normally present (in, on, or under the land respectively in the same locality), being a presence that presents a risk of harm to human health or any other aspects of the environment. However, land is not, for the purposes of this Act, contaminated land:

- Merely because in any surface water standing or running through the land, a substance is present in such concentration, or
- Merely because of the presence of a substance prescribed by the regulations, or
- In circumstances prescribed by regulations.

In terms of Chapter 4 of SEPP (Resilience & Hazards) 2021, a local authority must, when carrying out planning functions under the *Environmental Planning and Assessment Act 1979*, consider the possibility that a previous land use has caused contamination of the Site as well as the potential risk to health or the environment from that contamination. It should be noted that contamination is likely to be present on most sites as, by definition, a contaminant is a substance present at a concentration above which it would not normally be present on a site. This contamination only becomes an issue when it is at a level where it becomes a potential risk to health or the environment. For this to occur the following is required:

- A contaminant must be present on a site above a given guidelines value. These guidelines values have been derived to allow a first-tier assessment to be made in terms of the potential for a health or environmental risk to exist. As the Site is a residential site with access to the soils, guidelines for Class (A) residential with access to soil, were deemed applicable for the assessment;
- There must be a receptor that can be impacted by that contaminant. The receptor can be on and/or off the site; and
- There must be a pathway between the contaminant and the receptor.

For a contaminant to be considered a risk to health or environment, all the above must be present. Where they are present, decisions must then be made as to whether the land needs further assessment, should be remediated, or have its use restricted, to reduce the risk. It is understood that the findings and conclusions of this PSI assessment will be used by Council to determine the need for any site management to occur. It is noted that if land is contaminated but this contamination is not determined to be 'significant enough to warrant regulation' then the *Contaminated Land Management Act 1997* does not apply. In such cases, the provisions within the planning legislation and/or the *Protection of the Environment Operations Act 1997* may be the appropriate mechanism for management of such contamination. This means that contamination can be present on a site, but at levels deemed to not require further assessment or remediation.

3 Scope of work

The proposed scope of work for a PSI with soil sampling is typically comprised of a desk study, a Site walkover and sampling and laboratory testing of the soils underlying the Site.

For the Site this included the following:

- Review of the following:
 - Information available for the Site including topography and geology;
 - Historical aerial photography; and
 - Specific historical information for assessing the likelihood of potential contamination to exist at the Site including publicly available information maintained by council, the Department of Land registry, and the New South Wales Environment Protection Authority (NSW EPA).
- A Site walkover by a geo-environmental engineer who is experienced in contamination assessment to visually identify and observe:
 - Topography, noting visual evidence of filling
 - Nearby sensitive environments
 - Potential areas of environmental concern (AEC) and chemicals of potential concern (COPC) associated with potentially contaminating activities on or near the Site
- A sampling regime on the Site including:
 - A targeted subsurface investigation comprising ten (10) test locations with samples at distinct changes in material or at 0.5m intervals; and
 - Sieving of near-surface soils to screen for any potential asbestos fragments.
- Report on activities above in relation to the objective outlined in Section 2.

The works completed were generally in accordance with the above scope. The assessment was undertaken in accordance with consultants' guide/requirements 2011 (NSW) and ASC NEPM Schedule B2 and the NSW EPA 'Consultants Reporting on Contaminated Land' guidelines 2020.

4 Desktop Study Findings

4.1 Site description

A summary of key Site details is provided in Table 4-1.

Table 4-1: Summary of Site identification and use information

Road Address	Warra Warra Road, South Nowra NSW	
Title Identifiers	Lot 2 DP 1126288 & Lot 224 DP 755952	
Site Description	The Property is a vacant lot in South Nowra. The Property comprises two cadastral lots, with a combined approximate area of 33ha. The Site comprises the part of the Property to the east of Browns Creek, with an approximate area of 16ha. The Site is accessed from Warra Warra Road (which forms the southern boundary). Numerous dirt tracks traverse the Site, but are predominantly found in the south eastern corner. Most of the Site's surface is vegetated, comprising grasses with clumps of trees.	
Current Zoning	E3 Productivity Support.	
Current Site Use	Vacant land. Unauthorised use by recreational vehicles and campers.	
Proposed Site Use	It is proposed to subdivide and residentially develop the Site. It is understood that the remainder of the Property may also be rezoned to permit future commercial development. The proposed Site usage is consistent with HIL A land usage.	
Surrounding Land Use	North	E3 Productivity Support, C2 Environmental Conservation and R1 General Residential
	South	RU2 Rural Landscape
	East	C1 National Parks and Nature Reserves, RU2 Rural Landscape

	West	SP2 Road, RU2 Rural Landscape, E3 Productivity Support
Council	Shoalhaven Council	

4.2 General Geology

Online Geological Mapping accessed using Minview (refer Figure 1) indicates that the Site is underlain by the Berry Siltstone unit of the Shoalhaven Group. This unit's lithology is described as mid to dark grey siltstone, grades up sequence to very fine-grained sandstone, highly fossiliferous, sporadic dropped pebbles.

4.3 Surface Topography

Slopes across the Property fall towards Browns Creek, which flows towards the Shoalhaven River (to the north). Slopes on the Site are gentle, generally falling to the north west. Elevations on the Site are approximately 44.5m AHD along the southern boundary, falling to approximately 40.7m AHD along the northern boundary. Browns Creek is at approximately 40.7m AHD along the southern site boundary, and approximately 37.4m AHD along the northern boundary.

4.4 Surface Hydrology and Subsurface Hydrogeology

The water that falls on the Property will naturally flow to the lowest point, which is towards Browns Creek. On the Site, slopes fall gently to the north west. As the slopes on the Site are gentle, runoff velocities are expected to be slow.

When the topsoils are saturated, flows are expected to travel downgradient to the north west and then enter Browns Creek. Based on the Site's geology, infiltration of rainfall into the clayey soils is expected to be slow.

4.5 Groundwater Boreholes

Groundwater borehole records were accessed using MinView. This search found the nearest groundwater bores are to the north west of the Site, most of which are situated within the South Coast Correctional Centre. The location of these wells is shown in Image 1.

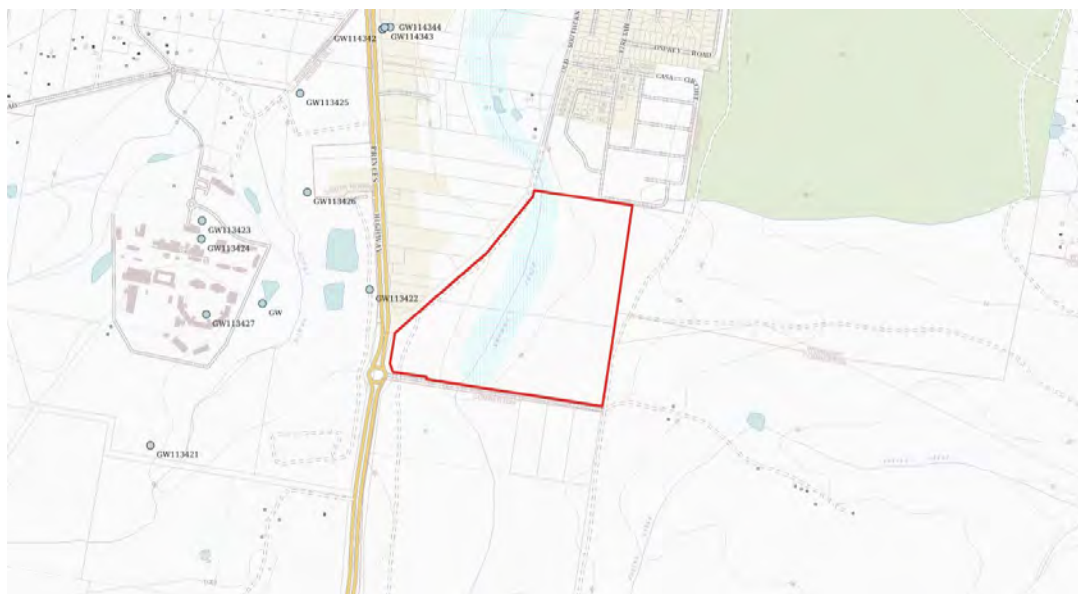


Image 1: Groundwater bores near the Site

Summary data for these groundwater wells is as follows:

- GW113422: 150m west, for domestic/stock purposes, final depth 28m
- GW113428: 430m west, monitoring bore, final depth 33.4m
- GW113426: 550m north west, monitoring bore, final depth 23m

The wells identified above did not contain any drillers logs pertaining to potential subsurface conditions near the Site.

4.6 Site history data sources

Information on the Site's history was obtained from:

- A search of NSW EPA register for listings of the Site and nearby sites;
- A review of council records;
- Title search records from InfoTrack (refer Appendix C);
- A LotSearch database search report (refer Appendix D); and
- Review of historical aerial imagery (Figure 2).

The Site history documentation is summarized in the following sections.

4.6.1 Review of council records

Online searches of Shoalhaven Council development applications (DAs) for the Site were conducted on the 13th of October 2025.

A search for Warra Warra Road did not find any results. Searching by cadastral identifier did not find any results for Lot 224 DP 755952 (northern part of the Property). The following record was found for Lot 2 DP 1126288 (southern part of the Property):

DA16/2231: Proposed bulky goods retail/commercial centre comprising four (4) main buildings and associated car parking. Withdrawn.

The review of online council records did not suggest any former structures on the Property, or any potentially contaminating developments and therefore, no further investigation was deemed necessary.

4.6.2 NSW EPA Contaminated Land and POEO Records

Based on an updated online search conducted on the 14th of October 2025, there are no records on the NSW Contaminated Land register for the suburb of South Nowra, as shown in Image 2.

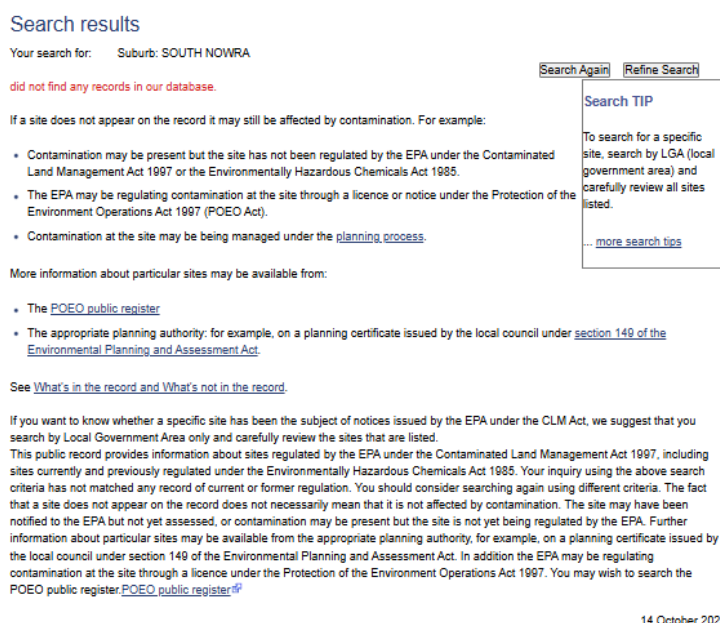


Image 2: NSW CLR results for Bomaderry

Twenty-four (24) results were found on the *Protection of the Environment Operations Act 1997* public register for the suburb of Bomaderry. The results of this search nearby the Site are summarised as follows:

- Shoalhaven Excavation and Plant Hire, 1km north west. License issued 2019 for recovery of general waste, surrendered 2022.
 - o Penalty Notice issued May 2014 for failure to comply with prevention notice (corporation).

Relevant title documents have been included in Appendix C, with a summary of the Property's owners provided in Table 4-5. A review of these documents found that the Property was owned by farmers prior to the 1980s. The Property has since been owned by corporations but does not appear to have been subject to any development related to the Property owner.

Table 4-2: Summary of Site owners from InfoTrack

Date of Acquisition	Registered Proprietor(s)	Reference to Title at Acquisition and sale	Notes
Lot 224/755952 (northern)			
24/1/1973	Gregory Herbert Watson (farmer) & Edward Christopher Watson (farmer)	12023-153 Then 14605-145	
3/3/1982	Ison & Co Pty Ltd (timber/hardware company)	14605-145 Then Lot 224 DP 755952	
15/4/2024	Lyrock Nominees (current owners)	Lot 224 DP 755952	
Lot 2/1126288 (southern)			
23/12/1981	Gregory Herbert Watson (farmer) & Edward Christopher Watson (farmer)	12023-153 Then 14605-148	
24/12/1981	Maconachie Datsun Nowra Pty Ltd		
30/5/2016	Lyrock Nominees (current owners)	Lot 225/755952 Now Lot 2/1126288	

In October of 2008, part of the Property was transferred to the Roads and Traffic Authority of NSW. The part subdivided was situated in the south western corner and was likely acquired for the purpose of future roadworks. The documentation for this transfer showed that, at the time, the southern part of the Site had changed ownership from Maconachie Datsun to Lysand Pty Ltd.

4.6.4 Lotsearch data base report

A Lotsearch Detailed Database search was requested for the Property, and is provided in Appendix D. This report indicates the following:

- There are no sites on the Contaminated Land registry on or near the Property.
- No Contaminated Land: Records of Notice have been issued on or near the Property.
- No former gasworks are located on or near the Property.
- No EPA Notices have been issued on the Property. The nearest record is 457m north of the Property.
- No National Waste Management locations are located on the Property. The following are mapped nearby:
 - South Coast Concrete Crushing & Recycling Pty Ltd, 62m west.
 - Shoalhaven Excavations & Plant Hire 803m north west.
- No National Liquid Fuel Facilities are located on the Property. The nearest is 496m north west.
- Neither the Property nor the surrounding area is the subject of any publicly known PFAS investigation programmes or defence contamination investigation programs. The area of Nowra (1.3km north) is on the National Unexploded Ordnance (UXO) list as records indicate a large number of troops camped nearby during WW2.
- There are no currently licenced activities under the *Protection of the Environment Operations Act 1997* registered on the Property. There are three (3) records for South Coast Concrete Crushing and Recycling Pty Ltd, 62m west, for land-based extractive activity; recovery of general waste and crushing/grinding/separating.
- There are no delicensed activities still regulated by the EPA on the Property. The nearest record is 20m north west for Hanson Construction Materials, licensed for concrete works.

- There are four (4) former licensed activities under the *Protection of the Environment Operations Act 1997* now revoked/surrendered on the Property:
 - Luhrmann Environment Management Pty Ltd – application of herbicides on waterways throughout NSW (along Browns Creek)
 - Robert Orchard – application of herbicides on waterways throughout NSW (along Browns Creek)
 - Sydney Weed & Pest Management Pty Ltd – application of herbicides on waterways throughout NSW (along Browns Creek)
- Nearby the Property (6m west), Nace Civil Engineering Pty Ltd was formerly licensed for road construction (of the Princes Highway).
- Business directory records do not show that any businesses have historically operated on the Property. Nearby former businesses are as follows, all of which are mapped as being 20m west/north west of the Property:
 - 290 Princes Highway
 - Crane and/or travel tower hirers (1991)
 - Tree felling and/or lopping contractors (1991)
 - 292 Princes Highway
 - Furniture manufacturers and/or sales (1991)
 - Garage/carport manufacturers and/or distributors and/or installers (1991)
 - 286 Princes Highway
 - Cattle troughing manufactures and/or distributors (1991)
 - Septic tank manufacturers and/or installers (1991)
 - 282 Princes Highway
 - Motor accessories (retail) (1991)
 - Motor car dealers – new and/or used (1991)
 - Motor wreckers (1991)
 - 250 Princes Highway
 - Concrete – ready mixed (1991)
 - 274 Princes Highway
 - Concrete block and/or brick manufacturers and/or distributors (1991)
 - 288 Princes Highway
 - Signwriters (1991)
 - 262 Princes Highway
 - Fence and/or gate manufacturers (1991)
 - 294 Princes Highway
 - Plastic fabricators (
 - Rubber stamp manufacturers and/or distributors
 - Motor towing services
 - Trailer and/or trailer equipment manufacturers and/or distributors
 - Motor steam cleaners (1991)
- As the Site is situated near a major road (the Princes Highway), numerous businesses are listed along the Princes Highway with no specific address. As approximately 100 records were identified, these have not been detailed.
- No dry cleaners, motor garages or service stations were identified on or near the Property. Several records were identified as being on the Princes Highway.
- The 1998 historical map shows a rifle range to the south east of the Property, and a gravel pit to the west of the Property.
- The 1929 historical map shows a saw mill to the west of the Property.
- No significant topographical features are mapped as being on the Property. Several features were identified nearby, such as:
 - Roadside rest area, 53m west

- o Open cut quarry, 143m west
 - o Basketball court, 533m west
 - o Tennis court, 535m west
 - o Nowra rifle club, 66m south east
- No storage tanks were identified on or near the Site.
- There is one (1) primary easement located on the Property, but it is undefined.
- Aquifers on Site and nearby are described as fractured or fissured, extensive aquifers of low to moderate productivity.
- No groundwater bores are mapped on the Property, but several were identified nearby. The details of these bores are described in Section 4.5.
- The geological unit on the Property is Berry Siltstone, as shown in Figure 1.
- No potential for naturally occurring asbestos is mapped within or near the Property.
- The soils on the Site are mapped as Kurosol with map unit code of Tb38. These soils are described as flat to undulating; chief soils are hard acidic yellow and yellow mottled soils and sometimes containing ironstone gravel. Associated are hard acidic red soils and small areas of other soils.
- The Property's soil landscape is Nowra (9028no). This unit is described as generally having low limitations for urban development.
- The probability of acid sulfate soils occurring on the Site is classified as Class 5. Works within 500m of adjacent Class 1-4 land that is below 5m AHD and by which the water table is likely to be lowered below 1m AHD on adjacent Class 1-4 land, present an environmental risk.
- The Atlas of Australian Acid Sulfate Soils maps the Site as Class C with an extremely low probability of ASS occurrences (1-5% chance, in small localised areas).
- The Site is not mapped within an area of dryland salinity.
- The Site is not mapped within a mining subsidence district.
- There are no current mining & exploration titles on the Property. There are two (2) records 62m west/south west for mining of structural clay/shale.
- There are no applications for mining & exploration titles on or near the Property.
- Seven (7) historical mining & exploration titles are mapped on the Property:
 - o L H Smart Oil Exploration Co Ltd: petroleum, not dated
 - o Leichhardt Resources Pty Ltd: petroleum, 2009-2010 and 2011-2015
 - o Leichhardt Resources Pty Ltd: minerals, 2013-3000
 - o Electricity Commission of NSW: coal, 1981-1983
 - o C Downes: minerals (brick clay), 1972-1976
 - o Genoa Oil NL: petroleum, not dated
- No State Significant Precincts are mapped on or near the Property.
- There are no heritage items mapped on or near the Property.
- Ecological constraints are mapped on the Site for native vegetation and inflow and groundwater dependent ecosystems.
- Numerous species with conservation status are mapped on the Property.

4.6.5 Historical Aerial Imagery

Aerial imagery from 1949 to 2024 was sourced and reviewed by Terra, as shown in Figure 2. Table 4-6 presents a summary of observations made from reviewing these images.

Table 4-3: Observations during review of historical aerial imagery

Date	Observations of the Site	Off-Site Observations
1949	The Site appear grassed and undeveloped.	Warra Warra Road appears to be a dirt track along the southern Property boundary. Browns Creek is visible to the west of the Site.
1961	No major changes.	The Princes Highway, west of the Property, has been widened. Most of the land to the north west and south of the Property appears to be in rural residential use.
1969	No major changes.	The Princes Highway appear to have been sealed.
1970	No major changes.	No major changes.
1974	Most trees appear to have been removed.	Most trees appear to have been removed across the Property.
1979	No major changes.	Industrial developments are visible to the north west of the Property, along the Princes Highway.
1984	Small dirt tracks are visible on the south eastern part of the Site.	No major changes other than continuing industrial development to the north west of the Property.
1993	The tracks in the south eastern corner of the Site are more distinctive, indicating more usage.	No major changes other than continuing industrial development to the north west of the Property.
1997	Potential filling has occurred among the tracks in the south eastern corner, with several distinctive soil colours visible.	No major changes.
2001	No major changes.	No major changes. The rifle club building is visible to the south east of the Property.
2002	Dirt access tracks are now visible on the northern part of the Site.	No major changes.
2009	No major changes.	No major changes.
2013	No major changes.	No major changes.
2016	No major changes.	No major changes.
2024	No major changes.	Residential subdivision is visible to the north east. Bulk earthworks appear to have been mostly completed, and several roads are visible.

5 Summary of desktop Site history review

Table 5-1 summarises the significant activities undertaken on the Site from pre-1950 to the present.

Table 5-1: Summary of desktop review findings

Time Period	On Site	Off Site
Prior to 1980	The Site was vegetated and likely unused land.	Land to the east of the Property was heavily forested. South of the Property, land appears to have been used for rural residential purposes. Throughout the 1970s, land to the north west (along the Princes Highway) transitioned from rural residential to industrial/commercial
1980-2000	Numerous trees were cleared in the late 1970s/early 1980s. This clearing is likely due to farmers purchasing the Property. The 4WD/motorbike track first appeared in 1984 imagery. Earthworks appear to have occurred in the area in the mid/late-1990s.	No major changes other than gradual increasing commercial/industrial development to the north west of the Property. The rifle clubhouse was constructed in the late 1990s/early 2000s.
2000-2024	4WD/motorbike tracks appeared on the northern part of the Site in the early 2000s.	From the 2010s, industrial/commercial development on the western side of the Princes Highway has continued to grow southward. In 2023/2024, bulk earthworks for residential development directly north of the Property began.

6 Site walkover

A Site walkover by an environmental engineer was undertaken of the Site on the 8th of October 2025 to visually identify and observe surface conditions with respect to:

- potential sources of contamination on the Site;
- surrounding land uses and topography including noting visual evidence of filling;
- nearby sensitive environments; and
- potential AEC and COPC.

Several observations were made during the Site walkover with photographs of these observations provided in Appendix E. The observations made are summarised in Table 6-1.

Table 6-1: Summary of observations made during the Site walkover

Area	Observations
Southern boundary	Warra Warra Road is a gravelled road along the southern Property boundary. The southern Property boundary is unfenced, and in several locations, vehicle access points were observed.
4WD/motorbike area	Most of the Site surface in the south eastern corner is bare dirt with sparse clusters of trees. Numerous drainage depressions exist, with visible signs of wheel tracks from formerly bogged vehicles. There are also minor filled areas, used for jumps/berms, which may have been made from Site-won fill out of these drainage features. Small fly tipped items were spread throughout the area, including the following: • Whitegoods (fridge and freezer) • Tyres • Mattresses • Domestic waste • Scrap metal Several burnt stockpiles were observed across this part of the Site. Some of the fires appeared to be camping/cooking fires, whereas others contained coils of wire. This indicates that Site users may have burnt metal items to gather semi-precious metals.
Eastern part of the Site	This part of the Site appears to be accessible by Western Road, which is a minor trail running along the eastern part of the Property towards the north east. The eastern Property boundary is unfenced. A range of fly tipped material was observed near the eastern Property boundary, as follows: • Bricks • Concrete • Domestic waste • Scrap metal • Waste tyres Generally, fly tipping was sporadic and the stockpiles were minor. The largest collection of material was along the northern Property boundary.
Remainder of the Site	The remainder of the Site is difficult to access by vehicles with the surface covered in grass and trees. In several locations, deep wheel tracks were visible and two (2) abandoned vehicles were observed, indicating that they may have become stuck and abandoned on the Site. Fly tipping was less frequent away from the Property boundaries.

7 Preliminary Assessment Findings

7.1 Potential areas of environmental concern (AEC)

Historical information for the Site and observations of the Site indicate that potential sources of contamination may exist on the Site, predominantly due fly tipping of material and unauthorised Site access.

The proposed development includes subdivision of the Site and residential development, which is consistent with a Class A land use. The potential sources of contaminants include the following:

- Accidental spillages/leakages of fuel/oil from vehicles that access the Site, or are stored on the Site;
- Fly tipping of material across the Site, particular along the southern and eastern boundaries;
- Weathering of fly tipped material, affecting the underlying topsoil;
- Legacy contaminants from burning of stockpiled/fly tipped material; and
- Legacy contaminants contained within topsoil or fill (if imported onto the Site).

7.2 Potential Contaminants of Concern (COPC)

The COPC associated with the Site activities detailed in Section 7.1 include the following:

- **TRH (total recoverable hydrocarbons), BTEX (benzene, toluene, ethylbenzene, xylenes) and PAH (polycyclic aromatic hydrocarbons):**

These contaminants may potentially exist if fuel or oil was spilled accidentally onto the Site from parked vehicles or containers of fuel/oil. Light fraction TRH and BTEXN are generally not considered to be persistent in the environment due to their volatile nature. Heavier chain hydrocarbons are generally found in more viscous hydrocarbons, such as oils or lubricants. Hot spots may occur from spills or leaks.

It is possible that vehicles or motorised equipment dumped on the Site or accessing the Site may have caused spills, especially if they were stored exposed to the elements for extended periods of time. BTEX and PAH are often found in processes where there is incomplete combustion. PAH are relatively persistent in the environment, due to their chemical composition, however in aerobic environments, bacteria can degrade PAH. The Site is not easily accessible by heavy vehicles thus it is unlikely that large spills/leaks from heavy vehicles have occurred. Minor spills/leaks may have occurred from vehicles accessing the Site for 4WD or recreational biking, but these are likely only on the southern and eastern parts of the Site.

Elevated BTEXN and TRH may be found where burning has been undertaken, if TRH was used as an accelerant and BTEXN residue where combustion was incomplete.

- **Heavy Metals:**

Heavy metals are likely to be associated with leaks of leaded fuel and from old paints which are known to contain lead. Galvanised components and tyres may also be associated with elevated levels of zinc. Such contaminants may also be associated with the historical importation of topsoil/fill (if this occurred) onto the Site. Stockpiles containing heavy metals may cause local hotspots beneath the stockpiles.

The most likely origins for heavy metals on the Site are from weathering of vehicles or stockpiled waste/burnt material. Metals may also be contained within any topsoil/fill imported onto the Site.

- **Asbestos:**

This material was used in construction of buildings in the 20th century (prior to its ban in Australia in 2003) however, such material can also be associated with historical illegal dumping or entrapment within topsoil/fill. Although asbestos can enter the environment through the breakdown of natural deposits, the presence of asbestos on sites is mainly via the deterioration of manufactured asbestos products. Asbestos fibres do not breakdown in air or dissolve in water, and so they have the potential to be suspended or re-suspended and to travel large distances (by air and/or water) before settling. The larger fibres tend to settle more readily. Asbestos fibres do not readily move through the soil, and in general do not breakdown to other compounds, and therefore persist in the environment.

No former structures were seen on the Site during the review of aerial imagery, meaning there is unlikely legacy asbestos from former structures. The most likely pathway for asbestos to enter the Site is through dumping of waste, including uncontrolled fill.

7.3 Potential receptors of concern

A review of historical aerial photographs and surrounding land uses has identified the potential receptors and pathways of concern detailed in Table 7-1.

Table 7-1: Potential contamination-based pathways and receptors

Source	Pathway	Receptor
Asbestos impacted soils	Inhalation of fugitive dust / airborne fibres	Construction/maintenance workers on the Site
		Current Site users
		Future Site occupiers
		Current and future fauna
TRH, PAH, heavy metals and BTEX	Inhalation of vapours	Construction/maintenance workers on the Site
		Current Site users
		Future Site occupiers
		Current and future fauna
	Ingestion and absorption by direct contact	Construction/maintenance workers on the Site
		Current Site users
		Future Site occupiers
		Current and future fauna
	Migration by surface run-off	Surface waters (Browns Creek)
	Migration by liquid flow	Surface waters (Browns Creek)
	Plant uptake	Local flora

7.4 Conceptual Site model

The conceptual Site Model (CSM) detailed herein defines:

- the potential contaminants which may be present on the Site from current and historical Site uses,
- the potential contaminants which may be present on nearby sites, that may be transported onto the Site;
- the potential areas these contaminants may be present;
- the receptors that may be impacted by these contaminants; and
- the potential pathways through which these receptors may be impacted.

In this Conceptual Site model (CSM), a contaminant can be any substance, which is in, on or under the land and which has the potential to cause harm or to cause pollution. A pathway is defined as one or more routes or means by, or through, which a receptor is being or can be exposed to, or affected by, a contaminant.

The CSM also provides an assessment of the risk associated with these potential contaminants on the Site to allow for the identification and prioritisation of areas for further assessment. Locations of Areas of Potential Environmental Concern are given in Figure 4. Table 7-2 summarises the following in a conceptual Site model (CSM) for the Site, specifically:

- The AEC identified on the Site,
- The potential contaminating activities which are associated with the AEC identified on the Site;
- The potential contaminants of concern associated with the AEC identified on the Site; and
- The likelihood of contamination.

Generally, the potentially contaminating activities occurring on the Site were deemed to present a low risk to the proposed development other than possible fly tipping of hazardous material.

Table 7-2: Conceptual Site Model

AEC	Potential AEC (Figure 4)	Potentially Contaminating Activity /Source	Subcomponent / Description	Likelihood of Contamination impacting on proposed Site use	COPC				
					Asbestos	Heavy metals	BTEXN	PAH	TRH
1	Southern part of the Site	Importation of fill	The 4WD/motorbike tracks contain jumps/berms, which may have used fill from an off-Site source.	HIGH – uncontrolled fill may contain legacy contaminants from its source. If the fill has been commercially sourced (i.e. it can be validated that the fill is not contaminated) or the fill was Site-won from natural material, then this risk can be reduced to low.	✓	✓	✓	✓	✓
		Use of vehicles	Motorbikes and 4WD vehicles access the Site. Hotspots may be found where vehicles are refuelled or maintained.	LOW – any hotspots will likely be minor, as there is limited access to the Site by heavy vehicles. It is also reasonable to expect that most of the Site's topsoils will be stripped as part of development works, which should remove most of the affected soils.		✓	✓	✓	✓
		Legacy contaminant from burning	Several burn piles were observed, some of which appeared to be campfires, others for stripping insulation from copper wiring or incinerating waste.	MODERATE – the level of risk is dependent on the material burnt. Hotspots are expected beneath affected areas, which should be removed during the expected Site development works. The largest burnt piles appeared to comprise mostly scrap metal. Hydrocarbons may be present if used as an accelerant.		✓	✓	✓	✓
		Fly tipping	The southern part of the Site is unfenced and accessible by Warra Warra Road.	LOW – most of the observed fly tipped material was inert and should be easily removed as part of expected Site development works. It is also reasonable to expect that most of the Site's topsoils will be stripped as part of development works, which should remove most of the affected soils.	✓	✓	✓	✓	✓
2	Eastern part of the Site	Fly tipping	The eastern part of the Site is unfenced and accessible by a fire trail to the east.	LOW – most of the observed fly tipped material was inert and should be easily removed as part of expected Site development works. It is also reasonable to expect that most of the Site's topsoils will be stripped as part of development works, which should remove most of the affected soils. No potential ACM was observed in fly tipped building material.	✓	✓	✓	✓	✓
3	Remainder of the Site	Fly tipping	A range of fly tipped material was observed sporadically across the remainder of the Site. No potential ACM fragments were observed, nor were any items showing signs of heavy metal paint. Several car bodies were observed.	LOW – most of the fly tipped material observed was inert, and unlikely to generate an unacceptable level of contamination on the Site. These items should be easily removable during clearing of the Site. Minor hotspots may occur depending on the nature of the fly tipped material (for example, beneath abandoned cars there may be fuel/oil and weathered metals).	✓	✓	✓	✓	✓

8 Preliminary Soil Sampling Investigation

8.1 Field Investigation Methodology

The field investigations conducted on the 8th of October 2025 followed the guidelines outlined by Schedule B2 of NEPM. The Property comprises an approximately 32ha block of land, of which approximately 16ha is to be residentially rezoned and developed (referred to as the Site). The Property has historically been vacant but may have been used for grazing of livestock prior to 1990. From the 1990s, the Site (particularly to southern and eastern parts) have been subject to trespassing, resulting in fly tipping of waste and unauthorised use for 4WD and motorbike riding.

The Site was sampled using targeted sampling within areas of environmental concern. The sample locations were chosen based on key areas identified during the historical desk study and Site walkover findings. Target areas included burn piles, material stockpiles and earth worked areas.

Reference to the NSW EPA design sampling guidelines suggests that for sites over 5ha in area, the site should be subdivided into smaller areas for grid sampling. For a 5ha site, a minimum of 55 sample locations is required using a grid size of 30m to detect a hotspot with a 35.6m diameter. As the Site is over 15ha, this means that the likely maximum required number of samples for grid sampling would exceed 150. This level of testing would be required as part of a detailed site assessment.

As this is a preliminary assessment, Terra has adopted a targeted/judgemental sampling pattern. The investigation included the following:

- Boreholes at locations of interest using a mechanical auger to target depths of 1.0m or refusal on rock.
- Test pits using a hand trowel to natural/residual soils in accordance with Section 6 of NEPM Schedule B2.
- The excavation of the test pits, supervision of the borehole drilling, logging and sampling of the materials encountered was undertaken by a Geo-Environmental engineer.
- Discrete samples were collected and placed in glass jars, then stored in a chilled, insulated container. Discrete samples were also taken and placed in plastic bags for testing of asbestos fines and fibres.
- To prevent cross-contamination of soil samples, nitrile gloves were worn and changed between each sample.
- The jars were filled to ensure minimum head space.
- The auger and hand trowel were dry brushed between each borehole using a wire brush to prevent cross contamination between boreholes.
- Samples were submitted to Eurofins Environmental Testing Wollongong and Lab 24/7 Unanderra, both National Association of Testing Authorities (NATA) registered laboratories for testing for COPC, including heavy metals, asbestos, PAH, BTEXN and TRH. The samples were accompanied by a chain of custody (CoC) form identifying the analyses required for each sample.
- Quality control testing was requested from the laboratory to ensure that quality assurances standards were met.

8.2 Subsurface Conditions

A total of four (4) boreholes were excavated across the Site using a mechanical auger fitted to a 1.8t excavator. The locations of these boreholes are provided in Figure 4, and engineering logs of the materials encountered have been provided in Appendix F. Photographs of the materials encountered in the boreholes and test pits are shown in Appendix E.

No noticeable olfactory signs of contamination (such as hydrocarbon smells) were observed during the subsurface investigation.

8.3 Laboratory Testing

It should be noted that many of the tests undertaken by the laboratory are implemented on a small sub-sample of the original sample provided by Terra. For some tests, the whole sample is screened for the potential contaminant. For the purposes of this investigation, only discrete samples were submitted for testing.

The following samples were collected and submitted for analysis (refer Appendix G for test certificates):

- Discrete samples: ten (10) samples were taken across the Site. These samples were assessed for heavy metals, TRH, PAH and BTEXN contamination.
- Duplicate samples: two (2) were taken across the Site for quality assurance purposes. These samples were subject analysis for heavy metals, TRH, PAH and BTEXN contamination.
- Asbestos samples: eight (8) samples were taken across the Site, one from each test location, and subject to analysis for the presence of asbestos.

All samples were sent to NATA registered laboratories.

9 Review of Investigation Findings.

9.1 Published guidelines and framework for contamination assessment

This contamination assessment detailed within has been prepared with reference to the following:

- DECC NSW Contaminated Sites Guidelines on the Duty to Report Contamination under the *Contaminated Land Management Act 1997* (2015);
- DEC NSW Contaminated Sites Guidelines for the NSW Auditor Scheme (3rd Ed. – 2017);
- NEPC National Environmental Protection (Assessment of Site Contamination) Measure, Schedule B (1) Guidelines on Investigation Levels for Soil and Groundwater (1999, revised 2013);
- NEPC National Environmental Protection (Assessment of Site Contamination) Measure, Schedule B (2) Guidance on Site Investigation (1999, revised 2013);
- NSW EPA Sampling Design Guidelines for Contaminated Land (2022);
- NSW EPA Contaminated Sites Guidelines for Consultants Reporting on Contaminated Sites (2020); and

These guidelines are used to identify levels of contamination that may pose ecological or health risks to future users of the Site. These documents provide guidelines for the derivation of levels (for various contaminants), above which further assessment is required to assess the potential impact on human health and the environment.

9.2 Derivation of Investigation levels for further assessment

9.2.1 Health Investigation Levels

For assessments, Health Investigation Levels (HILs) are derived for four (4) generic land-use categories as follows:

- HIL A: Standard residential with garden/ accessible soils (home produced < 10%), no poultry, includes childcare centres, preschools, and primary schools;
- HIL B: Residential with minimal opportunities for soil access, includes dwellings with full and permanently paved yard space such as high rise buildings;
- HIL C: Includes developed open spaces such as parks, playgrounds, playing fields, secondary schools, and footpaths. Does not include undeveloped public open spaces which should be site-specific assessment.
- HIL D: Commercial / Industrial includes premises such as shows, offices, factories and industrial sites.

The Site is proposed to be subdivided from the Property and residentially developed, which is consistent with land use criteria HIL A (residential with accessible soils). HIL A sites generally have the lowest allowable contaminant concentrations, as they are deemed to be a sensitive land use. The appropriate Tier 1 soil screening criteria for HIL (A), as per Table 1A (1) of Schedule B1 of the *National Environment Protection (Assessment of Site Contamination) Measure 1999* as amended 2013 (ASC NEPM), have been adopted as indicated in blue shading in Table 9-1.

Table 9-1: Health investigation levels for soil contaminants

Analyte	HIL A	HIL B	HIL C	HIL D
Metals and inorganics				
Arsenic	100	500	300	3,000
Cadmium	20	150	90	900
Chromium (VI)	100	500	300	3,600
Copper	6,000	30,000	17,000	240,000
Lead	300	1,200	600	1,500
Mercury (inorganic)	40	120	80	730
Nickel	400	1,200	1,200	6,000
Zinc	7,400	60,000	30,000	400,000
Polycyclic Aromatic Hydrocarbons (PAHs)				
Carcinogenic PAHs (BaP TEQ)	3	4	3	40
Total PAHs	300	400	300	4,000

9.2.2 Health Screening Levels

The appropriate Tier 1 soil screening criteria for HSL A have been adopted. Health screening levels (HSLs) for vapour intrusion were adopted from Table 1A(3) of Schedule B1 of the ASC NEPM. A shallow depth (<1m) was considered, as it was deemed that this was the depth where the bases of the proposed structures are likely to be founded. The guidelines were derived for silty soils, based on the subsurface investigation and to provide a more conservative assessment than for clays (which were also encountered on the Site). The adopted guidelines are provided in Table 9-2.

Table 9-2: Summary of adopted HSL (A) values for vapour intrusion

Analyte	HSL for VI in silts (mg/kg), (0-1m) ASC NEPM Table 1A(3)
C6-C10 less BTEX (F1)	40
>C10-C16 TRH minus naphthalene (F2)	230
Toluene	390
Xylenes	95
Benzene	0.6
Ethylbenzene	No Limit
Naphthalene	4

Direct contact HSLs for a HIL A site have been derived from Table A4 of CRC Care Technical Report 10 and are reproduced in Table 9-3.

Table 9-3: Summary of HSL (A) for direct contact

Chemical	HSL A for direct contact (mg/kg)
C6-C10	4,400
>C10-C16 minus naphthalene (F2)	3,300
>C16-C34	4,500

>C34-C40	6,300
Toluene	14,000
Ethylbenzene	4,500
Xylenes	12,000
Naphthalene	1,400
Benzene	100

9.2.3 Additional Health-Based Criteria

The following additional screening criteria have also been considered:

- **Asbestos:** WA Department of Health (2009) Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia (referred to herein as the WA Guidelines) and Table 7 Schedule B(1) NEPM 1999. These guidelines provide the following soil asbestos investigation criteria for residential sites with soil access:
 - o 0.01% weight by weight of bonded asbestos containing materials (ACM);
 - o No visible asbestos material on the ground surface; and
 - o 0.001% weight by weight of asbestos fibres (including friable ACM) or asbestos fines (including pieces of ACM less than 7 mm x 7 mm in size) for all site uses.

9.2.4 Ecological Investigation Levels

Analytical results were compared with the generic Ecological Investigation Levels (EILs) presented in Schedule B1 of the ASC NEPM, where available (i.e. for arsenic, naphthalene and the pesticide DDT), to determine potential risks to current and future ecological receptors at the Site or near the Site.

Site specific inputs are required for calculating additional ASC NEPM EILs for copper, chromium (III), nickel and zinc in accordance with the ASC NEPM guidelines. These are used to derive the added contaminant limit (ACL). The ambient background concentration (ABC) is also required for each metal. The sum of the ACL and the ABC provides the EIL. An incomplete value is provided in the ASC NEPM for lead (i.e. just the ACL), where ABC must be added.

Having considerations for Site-specific EIL calculation factors, any metals in the soils on the Site were considered 'aged', i.e. have been present for >2 years in current landform.

Soil properties were derived from online eSPADE modelled soil property layers, as follows:

- Cation exchange capacity: 5-10meq/100g
- Clay content: 20-25%
- pH: 4.0-4.5
- Traffic volume: low
- Organic content: 0.5-1.0%
- Iron content: 5.0%

The following EILs were derived for a Class A site (refer Appendix H for EIL Derivation Sheets):

- Arsenic: 100 mg/kg
- Lead: 1,100 mg/kg
- Copper: 75 mg/kg
- Naphthalene: 170mg/kg
- Nickel: 35 mg/kg
- Chromium (III): 510 mg/kg
- Zinc: 150 mg /kg

The ASC NEPM also provides ecological screening levels (ESL) for petroleum hydrocarbons and associated compounds, as produced in Table 1B (6) of Schedule B1. These criteria are provided for fine- and coarse-grained soils, as well as various land uses. The Site usage is consistent with 'urban residential' and as clayey soils were encountered on the Site, the fine-grained criteria have been adopted. The adopted criteria are shown in Table 9-4.

Table 9-4: Summary of ESL guidelines for urban residential sites

Analyte	Coarse	Fine
F1 C6-C10 (minus BTEX)	180	
F2 C10-C16	120	
F3 C16-C34	300	1,300
F4 >C34	2,800	5,600
Benzene	50	65
Ethylbenzene	70	125
Toluene	85	105
Xylenes	105	45
Benzo(a)pyrene	0.7	0.7

9.3 Review of Laboratory Findings

Laboratory test certificates are provided in Appendix F. The laboratory testing identified some analyte concentrations above the laboratory limits of reporting (LOR). Several EIL exceedances were detected, but none of the HIL/HSL or ESL criteria were exceeded. A detailed review of the laboratory results is provided in the following sections. It is noted that commentary on the exceedances of waste criteria has been provided in Section 11, as these results do not form part of the land use assessment.

9.3.1 Heavy Metals

Heavy metals above the laboratory LOR were detected in all samples from the Site, most of which were within expected background concentrations.

Elevated copper and zinc were detected in BH04 D1 and TP04 D1, exceeding the EILs. Nickel was also above the EIL in TP04 D1. These elevated concentrations are likely associated with the burning of metal components at the test locations. These locations can be classified as hotspots, as none of the other test locations detected Tier 1 exceedances.

9.3.2 TRH, PAH and BTEXN

No BTEXN above the LOR was detected in any of the samples. PAH was below the LOR in all samples except for TP06 D1, which was only marginally elevated. None of the Tier 1 criteria were exceeded.

TRH was below the LOR in all samples except for TP04 D1 and TP05 D1.1 (as well as TP05 D1.2, its duplicate). None of the concentrations detected were above the Tier 1 criteria and thus, no further investigation was deemed necessary.

9.3.3 Asbestos

Samples were taken of the Site's topsoil and near-surface soils and analysed for asbestos fines and fibres, as well as trace asbestos at a reporting limit of 0.001%. No asbestos was detected in any of the submitted samples nor was any potential ACM observed on the Site, and thus no further asbestos investigation was deemed necessary.

9.4 Data Quality Objectives

The NSW EPA requires that a systematic planning process be adopted to define the objectives of all site assessments and remediation programmes and to develop sampling and validation plans for the collection and evaluation of representative data to achieve those objectives. The requirements of the data quality objective (DQO) process for investigation programmes are defined in NEPM Schedule B2.

To ensure that the soils sampled and tested were representative of the site conditions, quality control (QC) procedures were integrated into the sampling and laboratory analytical program. These procedures included:

- Appropriate sample preparation, handling and decontamination, in accordance with best practice and relevant guidelines;
- Use of experienced personnel and supervision by senior staff; and
- Use of NATA accredited laboratories and methods for analyses undertaken.

The samples were transported to the laboratories with relevant CoC documentation. The CoC detailed the following information:

- Site identification;
- Name of the sampler;
- Nature of the sample – soil or water;
- Collection time and date;
- Analyses to be performed; and
- Sample preservation method.

The soil samples were placed in laboratory-supplied bags and preserved (as required) jars, before being placed in chilled insulated containers, for transport to the laboratories with accompanying CoC documentation. All samples were submitted to a NATA accredited laboratory (Eurofins) for testing. A CoC document was signed and dated by Eurofins stating that samples:

- Were received cool and in good order;
- Were presented in adequate sample containers; and
- Were labelled appropriately according to current quality field sampling protocols.

The time between the field sampling and analyte result was as short as possible to prevent any biological, chemical or physical alteration of the analyte, i.e., samples were submitted to laboratory within 24 hours of sampling and at a temperature below 4 degrees Celsius.

Samples were analysed within the prescribed holding time for each analyte (samples were analysed using analytical methods based on USEPA and APHA methods, to ensure compliance with Schedule B3 ASC NEPM recommendations).

Laboratory non-detectable levels are considered acceptable where the LOR is higher than the adopted assessment criteria. Terra considers the LOR of the nominated laboratories to be sufficient to detect the presence of contaminants on the Site.

An assessment of the quality of the laboratory analytical data generated during these works was undertaken. This assessment indicated that:

- laboratory analysis of samples was undertaken by a NATA accredited environmental testing laboratory;
- the laboratory LOR were below the adopted assessment criteria;
- samples were extracted and analysed within holding times; and
- analyte percentage recoveries of surrogates were within acceptance limits.

Samples were taken either from manually excavated test pits, or from the recovered material of augered boreholes. Both the auger and hand trowel were dry brushed between sample locations, which was deemed adequate as the Site's soils were mostly dry of moist. Nitrile gloves were worn and changed between samples.

Two duplicate samples were submitted from the field investigation. Relative percent differences for these duplicate samples were calculated using the heavy metal concentrations and these results have been represented in Table 9-2 and Table 9-3.

The acceptable range depended on the average concentration of the sample results, and is described as follows:

- 0-100% RPD when average concentration is <4 times the LOR
- 0-50% RPD when average concentration is 4-10 times the LOR
- 0-30% RPD when the average concentration is >10 times the LOR

Where the RPD has been deemed acceptable, the cells have been indicated in green. Where the RPD is not acceptable, this has been indicated in orange. As two different laboratories were used to conduct the duplicate sampling, the lower LOR was adopted to provide a more conservative assessment of RPD.

Table 9-5: Relative percent difference for TP01

Analyte	TP01 D1.1 (mg/kg)	TP01 D1.2 (mg/kg)	Average (mg/kg)	LOR (mg/kg)	Average/LOR	RPD (%)
Arsenic	3.1	3.8	3.45	2	1.7	20.3
Cadmium	<0.2	<0.2	-	0.2	-	-
Chromium (total)	12.0	12.0	12.0	2	6	0
Copper	7.6	7.9	7.75	2	3.9	3.9
Lead	10.0	12.0	11.0	0.2	55	18.2
Mercury	<0.2	<0.2	-	0.1	-	-
Nickel	2.9	2.7	2.8	2	1.4	7.1
Zinc	7.0	4.8	5.9	2	3.0	37.3

All RPDs were within the acceptable range for the samples taken at TP01.

Table 9-6: Relative percent difference for TP05

Analyte	TP05 D1.1 (mg/kg)	TP05 D1.2 (mg/kg)	Average (mg/kg)	LOR (mg/kg)	Average/LOR	RPD (%)
Arsenic	4.9	4.2	4.55	2	2.3	15.4
Cadmium	<0.2	<0.4	-	0.2	-	-
Chromium (total)	11.0	10.0	10.5	2	5.3	9.5
Copper	8.8	12.0	10.4	2	5.2	30.8
Lead	11.0	14.0	12.5	0.2	62.5	24
Mercury	<0.2	<0.1	-	0.1	-	-
Nickel	<2	<5	-	2	-	-
Zinc	7.4	16.0	11.7	2	5.9	73.5

All RPDs were within the acceptable range for TP05 except for zinc. Where the Eurofins LOR is used in the RPD acceptance criteria, the RPD falls within an acceptable range. This was deemed appropriate as the duplicate sample from TP05 was tested by Eurofins. In-house quality assurance testing by Eurofins did not find unacceptable variances in zinc testing. No further assessment of laboratory accuracy was deemed necessary.

10 Chapter 4 SEPP (Resilience & Hazards) 2021 Review

Chapter 4 of the SEPP (Resilience & Hazards) 2021 notes that the potential for contamination is often linked to past uses of land and a good early indicator of possible uses is land zoning. The following is a brief checklist for guidance on conducting an initial investigation by Councils and whether there is need for further assessment by consultants. The conclusions in relation to this checklist are provided in Table 10-1.

Table 10-1: Checklist for initial site evaluation

Checklist	PSI findings
Is the planning authority aware of any previous investigations about contamination on the land? What were the results, including any previous initial evaluations	No previous contamination investigations for the Site could be found.
Do existing records held by the planning authority show that an activity listed in Table 1 (refer to Section 5) has ever been approved on the subject land? (The use of records held by other authorities or libraries is not required for an initial evaluation.)	No records indicate that the activities from Table 1 have been conducted on the Site other than potentially grazing of livestock pre-1980. There are no signs of intensive agriculture having occurred on the Property.
Contamination is more likely to have occurred if the land is currently, or was previously, zoned for industrial, agricultural or for defence purposes. Was the subject land at any time zoned for industrial, agricultural or defence purposes	There is no evidence of agriculture, industrial or defence works currently occurring on the Site. The zoning history of the Property is unknown, but based on nearby land use, it was likely zoned for rural residential use or as undeveloped bushland.
To the planning authority's knowledge was, or is, the subject land regulated through licensing or other mechanisms in relation to any activity listed in Table 1? Does a site inspection conducted by the planning authority [optional] suggest that the site may have been associated with any activities listed in Table 1	There are no publicly available records with council. The Site walkover did not show any evidence of activities from SEPP Table 1 being currently performed on the Site.
Are there any land use restrictions on the subject land relating to possible contamination, such as notices issued by the EPA or other regulatory authority?	No – there are no records for the Site with the NSW EPA and there are currently no EPA restrictions on the Site.
Is the planning authority aware of information concerning contamination impacts on land immediately adjacent to the subject land which could affect the subject land?	No – there are no known contaminated sites immediately adjacent to the Site.

11 Preliminary Waste Classification

In addition to the human health and environmental (Tier 1) criteria, a preliminary investigation of waste disposal options for material to be excavated from the site was undertaken. The purpose of this was to identify potential sources of V/ENM on the Site that may be used to cap areas with elevated contaminants.

Soil sampling results were compared with the Excavated Natural Material (ENM) guidelines (as published in the Resource Recovery Order under Part 9, Clause 93 of the *Protection of the Environment Operations (Waste) Regulations (2014)*).

It is emphasised that while the ENM classification guidelines cannot be used to inform the human health and environmental assessment of contamination on the Site, the identification of potential V/ENM on the Site may assist in guiding the recommendations made at the end of the PSI.

Across most of the Site, the level of contaminants detected did not exceed the ENM criteria. This indicates that V/ENM may be able to be sourced from the Site, at locations not affected by hotspots or fly tipped material, as well as locations with elevated contaminant concentrations.

Exceedances were detected at both TP04 and BH04 for copper and zinc, as well as for nickel at TP04. These metals exceeded the absolute maximum permissible for ENM concentration. Nickel in TP04 was marginally above the GSW (CP) CCT1 criteria, meaning that further testing is required to determine whether this material would need to be disposed of as Restricted Solid Waste (RSW).

12 Conclusions

The Site is in South Nowra, NSW and is proposed to be subdivided from a larger block of land (the Property) and then redeveloped. The Site is currently vacant and undeveloped, but is unfenced, causing unauthorised access for fly tipping and use by 4WD vehicles/motorbikes.

Historical information for the Site and observations of the Site indicate that it has been historically undeveloped. The Property may have been used for grazing of livestock prior to the 1990s but has since remained undeveloped. Unauthorised 4WD/motorbike access on the southern part of the Site began in the early 1990s and persists to present day. As part of these activities, fill may have been brought onto the Site for earthworks.

There are several sources of potential contamination on the Site. These include:

- Accidental spillages/leakages of fuel/oil from vehicles that access the Site, or are stored on the Site;
- Fly tipping of material across the Site, particular along the southern and eastern boundaries;
- Weathering of fly tipped material, affecting the underlying topsoil;
- Legacy contaminants from burning of stockpiled/fly tipped material; and
- Legacy contaminants contained within topsoil or fill (if imported onto the Site).

Based on the list of activities above, three (3) AEC have been identified for the Site, as follows:

- AEC1: The southern part of the Site, which has been used for recreational 4WD and motorbike use since approximately the 1990s, has been subject to fly tipping and may have imported fill within earthworks;
- AEC2: The eastern part of the Site which has been subjected to fly tipping of waste material;
- AEC4: The residual of the Site not covered by the other AEC, which has been subject to fly tipping.

To assess the potential impact of these activities, a total of ten (10) soil samples were taken and tested for potential contaminants including heavy metals, total recoverable hydrocarbons (TRH), BTEX (benzene, toluene, ethylbenzene, xylenes) compounds, polycyclic aromatic hydrocarbons (PAH) and asbestos, in accordance with the current NSW EPA Design Sampling Guidelines. Analyte concentrations in the ten (10) samples were generally found to be below the Tier 1 criteria, except for samples BH04 D1 and TP04 D1, which both detected EIL exceedances for zinc and copper. Zinc in BH04 D1 exceeded the HIL A criteria and nickel was also above the EIL in TP04 D1. No asbestos fines or fibres were detected in any of the submitted samples.

In terms of Chapter 4 of SEPP (Resilience & Hazards) 2021, the investigation has identified that:

- The Property has not been subject to a previous contamination investigation.
- There are no records that indicate any of the potentially contaminating activities from Table 1 of Chapter 4 of SEPP (Resilience and Hazards, 2021) have been conducted on the Property, other than potential grazing of livestock prior to the 1990s.
- The Property's past zoning is unknown; however, it appears to have been undeveloped bushland or grazing land since the late 1940s.
- There are no records to suggest that the Property is regulated through licensing or other mechanisms in relation to any activity listed in Table 1.
- There are no known land use restrictions on the Property.
- No sites immediately adjacent to the Property have been identified as contaminated land.

In accordance with the objectives of Chapter 4 of SEPP (Resilience & Hazards) 2021, the investigation deems the Site suitable for the proposed development, provided that the recommendations made within this report are adhered to. Additionally, the risk of any contamination being present within Site soils and not detected by the PSI is deemed to represent a minimal risk for the proposed development, given that:

- Topsoil and near-surface soils will likely be removed as part of development works, which will remove any elevated surficial contaminants. Fill may also need to be imported for site levelling/landscaping, which will further distance future Site occupiers from any residual contaminants.

- Only two (2) exceedances of the Tier 1 criteria were detected, and these were both directly adjacent to burnt stockpiles. The EIL exceedances are deemed acceptable as the proposed Site use is urban residential, which has a reduced ecological value.
- The proposed development presents an opportunity to reduce the number of pathways between contaminants and receptors. Soils will be inaccessible beneath the proposed building footprints and roads, which removes the pathway between contaminant and receptor. Following removal of topsoil from the Site, clean fill can be imported to replace any soils with elevated contaminants.
- The Site has historically been vacant and undeveloped, which reduces the risk of legacy hazardous building materials being present on the Site. Vacant bushland has a low risk of generating contamination.
- Due to the condition of Warra Warra Road and the thick vegetation on the Site, it is unlikely that major fly tipping (such as large volumes of construction waste) can occur on the Site, as large vehicle access is limited.

It is considered that the Shoalhaven Council can be satisfied that the Site is suitable (subject to the recommendations within this report being adhered to) for the purpose for which the development is proposed to be carried out, consistent with the requirements under Clause 4.6 of Chapter 4 Remediation of Land within SEPP (Resilience and Hazards) 2021.

13 Recommendations

13.1 General

Based on the findings of this PSI, Terra recommends that a Remedial Action Plan (RAP) is not required, nor is any further investigation to permit the proposed development. The actions required for the proposed development will effectively act as remediation, with removal of near-surface soils expected to be undertaken on the Site to facilitate the proposed works.

Terra's recommendations are as follows:

1. Soils excavated from the Site (excluding those near fly tipped material or burnt stockpiles) are likely to meet the ENM criteria and are thus likely suitable for on-Site reuse. Soils should be waste classified prior to off-Site disposal. Terra notes that most of the near-surface soils on the Site will meet the GSW (NP) category. This is to be confirmed prior to disposal and may require validation testing.
2. To prevent fly tipping and unauthorised access by vehicles on the Site prior to and during development, the Site should remain fenced.
3. Immediately prior to development, the Site will require a general clean up to remove any inert material.
4. ENM could be spread over the Site to cap any slight elevated contaminants, blocking the pathway to the Site receptors. Filling will likely be required to level the Site, as well as to landscape the Site. Where clean fill (i.e. V/ENM) is used, this is an acceptable solution to ensure that the Site's accessible soils do not exceed the Tier 1 criteria.
5. A construction environmental management plan (CEMP) is to be developed prior to the commencement of works. Reference should be based to Section 13.2 for further detail on the required contents of the CEMP.

13.2 Construction Environmental Management Plan

The CEMP shall address the following:

- a) Off-Site disposal of excavated material including waste certification;
- b) Off-Site disposal or on-Site reuse of ENM material generated by Site earthworks;
- c) Management of any unexpected finds of contaminated material (including ACM, hydrocarbons etc.); and
- d) Importation of VENM, if required.

The main objectives of the CEMP would be to:

- Provide appropriate management measures for the handling and disturbance of unexpected finds;
- Discuss potential development and construction issues should soil and/or groundwater contamination be found on the Site;
- Provide environmental management procedures and advice regarding the development of the Site during the construction phase; and
- Detail regulatory requirements to manage, amongst other aspects, the excavation, stockpiling and transport of materials/wastes.

It should be noted that general environmental protection measures (related to issues such as water quality, dust, sediment and erosion), are to be implemented in accordance with the Contractor's Environmental Management Plan (CEMP).

14 Limitations

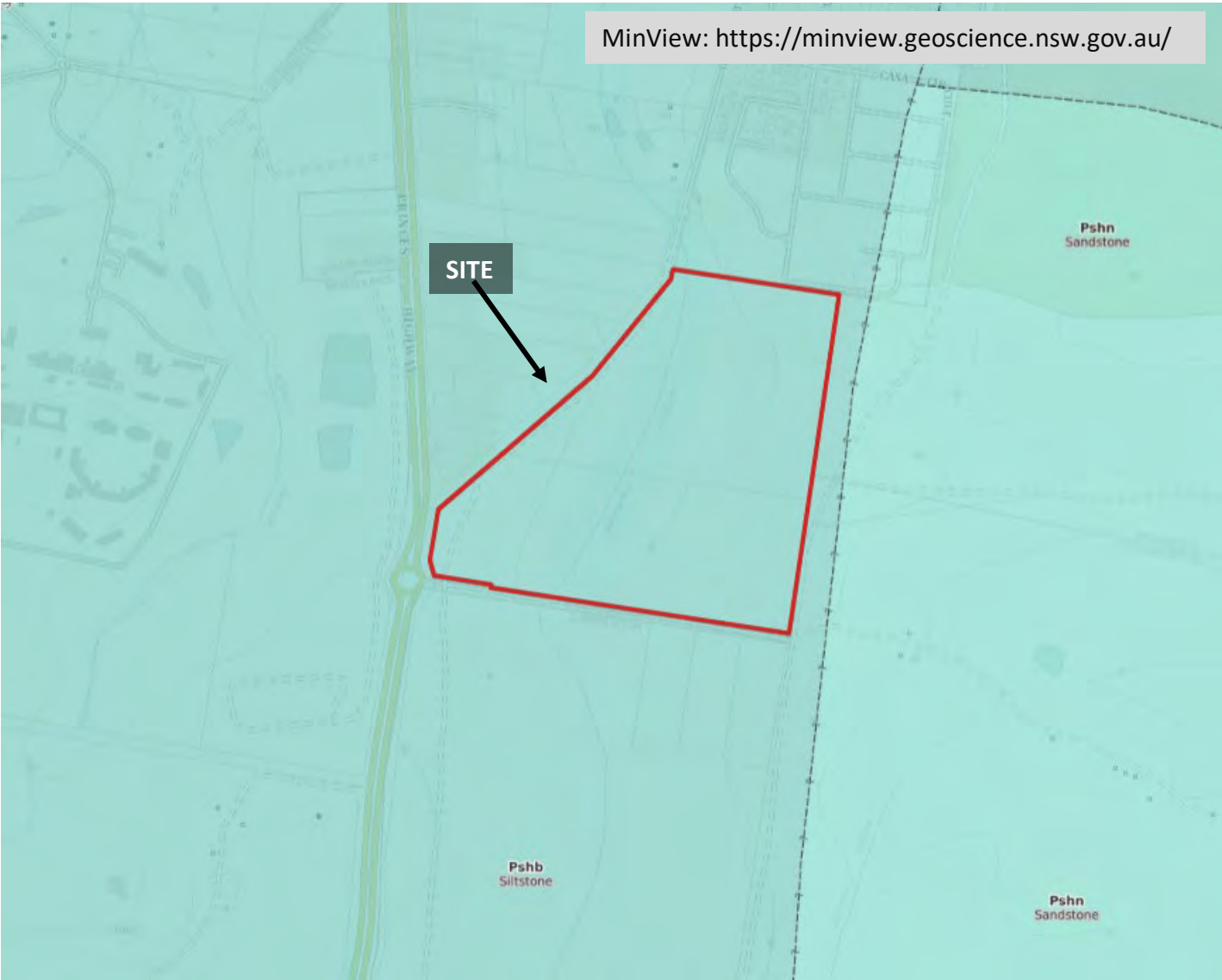
The findings contained in this report are the result of discrete/ specific methodologies used in accordance with normal practices and standards and in accordance with the agreed scope of works. Under no circumstances can it be considered that these findings represent the actual state of the Site at all points. The subsurface conditions may vary significantly across the Site, particularly where no nearby sampling and testing work has been carried out. This report has been prepared based on the understanding that following the design and construction of the proposed subdivision, this document is passed onto the owner of the Property (or parts thereof), and that it is that person's obligation to ensure that the document is passed onto future owners.

This investigation undertook targeted testing for the proposed developments. Should the proposed works change, further investigation should be undertaken.

15 References

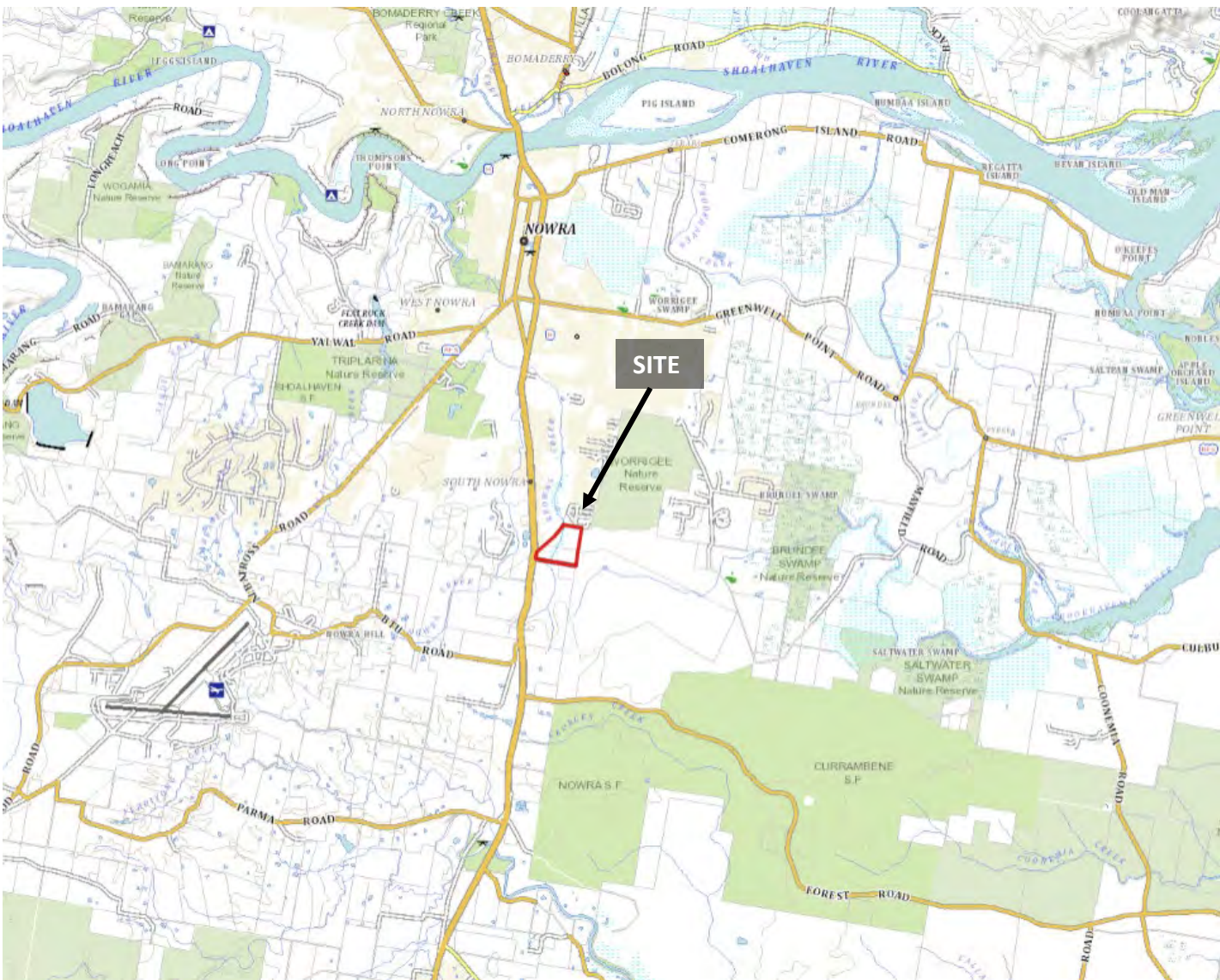
- *Protection of the Environment Operations Regulation* (2008);
- *Contaminated Land Management Act* (1998).
- *Contaminated Land Management - Guidelines for the NSW Site Auditor Scheme (3rd Edition, 2017).*
- *Chapter 4 of SEPP (Resilience & Hazards) 2021*
- *NSW EPA Guidelines for Consultants Reporting on Contaminated Sites (2011).*
- *NSW EPA Sampling Design Guidelines for Contaminated Land (2022).*
- *NSW EPA Waste Classification Guidelines Part 1: Classifying Waste (2014).*
- *Guidelines on the Investigation Levels for Soil and Groundwater, National Environmental Protection Measure 1999, 2013 Amendment (NEPC, 2013).*
- *Guidelines for the Assessment, Remediation & Management of Asbestos - Contaminated Sites (DOH, 2009).*
- *NSW Spatial Information Exchange (<http://maps.six.nsw.gov.au/>)" (2014).*
- *National Environmental Protection (assessment of Site Contamination) Measure (NEPC 1999)*
- *Freibel and Nadebaum (2011) Health screening levels for petroleum hydrocarbons in soil and groundwater*

Figures



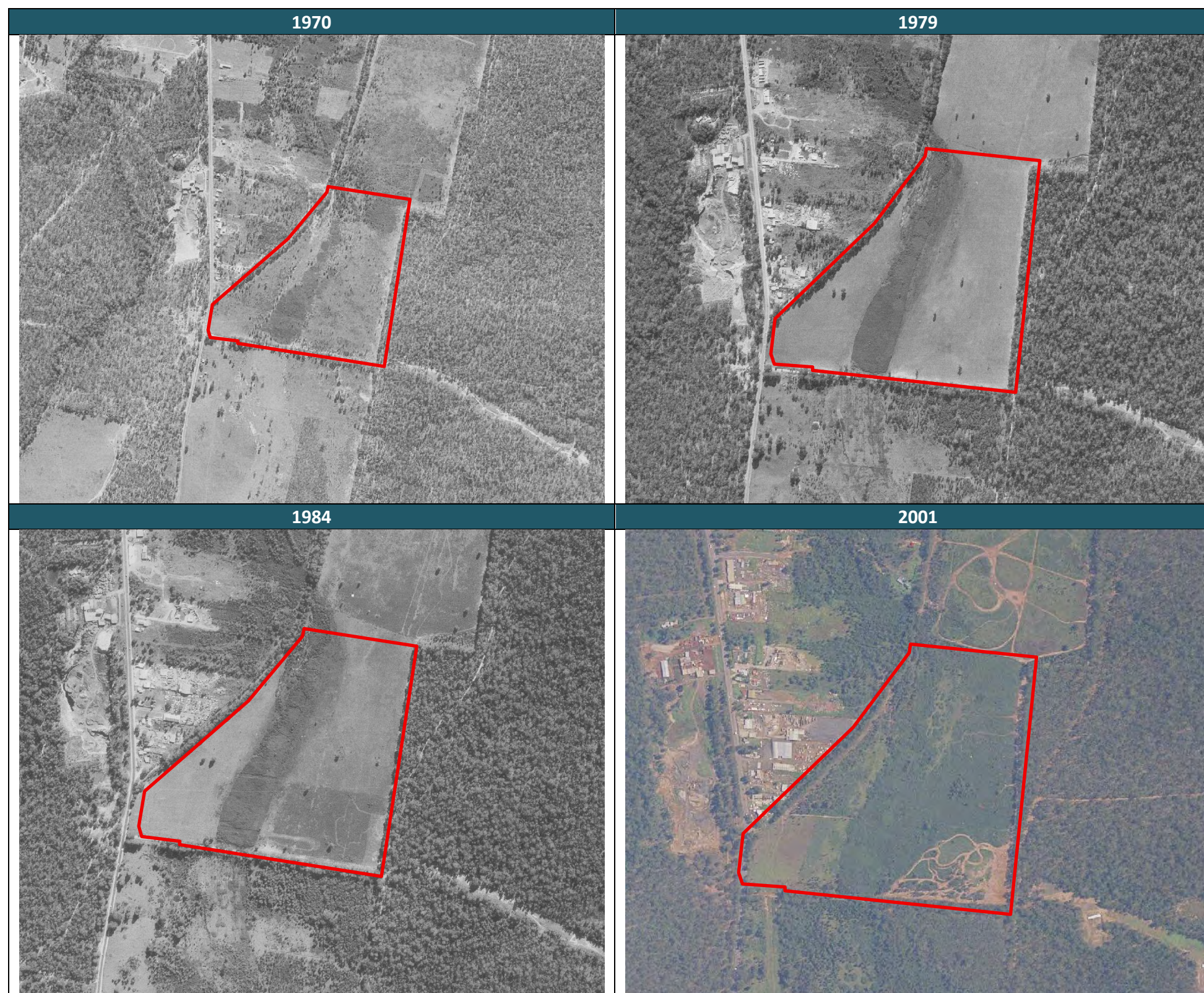
Site Geology

Symbol	Group	Subgroup	Unit	Lithology
Pshb	Shoalhaven Group	-	Berry Siltstone	Mid to dark grey siltstone, grades up sequence to very fine-grained sandstone, highly fossiliferous, sporadic dropped pebbles.



Site Location

revision	description		drawn	approved	date				client: Jervis Bay Town Planning	
	Site location and geology		JH	KEG	23/10/2025				project: Warra Warra Road, South Nowra NSW Lot 2 DP 1126288 & Lot 224 DP 755952 Preliminary Site Investigation	
							scale original size	NTS A3	title: Site Location and Geology	
									project no: TERRA25-1425	figure no: FIGURE 1



Historical Aerial Imagery

revision	description	drawn	approved	date				client: Jervis Bay Town Planning	
	Historical Aerial Imagery	JH	KEG	23/10/2025				project: Warra Warra Road, South Nowra NSW Lot 2 DP 1126288 & Lot 224 DP 755952 Preliminary Site Investigation	
						title: Historical Aerial Imagery			
						scale	NTS	project no: TERRA25-1425	
				original size	A3				



Historical Aerial Imagery

revision	description	drawn	approved	date	N 			client: Jervis Bay Town Planning	
	Historical Aerial Imagery	JH	KEG	23/10/2025				project: Warra Warra Road, South Nowra NSW Lot 2 DP 1126288 & Lot 224 DP 755952 Preliminary Site Investigation	
						title: Historical Aerial Imagery			
						scale	NTS	project no: TERRA25-1425	
				original size	A3				



Areas of Environmental Concern

revision	description	drawn	approved	date	N	TERRA INSIGHT		client:	Jervis Bay Town Planning	
	Areas of Environmental Concern	JH	KEG	3/07/2025				project:	Warra Warra Road, South Nowra NSW Lot 2 DP 1126288 & Lot 224 DP 755952 Preliminary Site Investigation	
						scale	NTS	title:	Areas of Environmental Concern	
						original size	A3	project no:	TERRA25-1425	figure no: FIGURE 3



Legend

-  Terra Test site (borehole)
-  Terra Test site (test pit)

Test Site Locations

revision	description	drawn	approved	date				client:	Jervis Bay Town Planning	
	Test Site Locations	JH	KEG	23/10/2025				project:	Warra Warra Road, South Nowra NSW Lot 2 DP 1126288 & Lot 224 DP 755952 Preliminary Site Investigation	
						scale	NTS	title:	Site Plan and Test Locations	
						original size	A3	project no:	TERRA25-1425	figure no: FIGURE 4

Appendix A: Your Report

These notes have been prepared to help you understand the advice provided in Your Report and its limitations.

Your Report is based on what you tell us

Your Report has been developed based on the information you have provided such as the scope and size of your project. It applies only to the site investigated. If there are changes to the proposed works, then the advice provided within Your Report may need to be reviewed.

Your Report is written with your needs in mind

The advice provided within Your Report is also not relevant to another purpose other than that originally specified at the time the report was issued. Please seek advice from Terra Insight before you share Your Report with another third party – except for the purpose for which the report was written.

Terra Insight assumes no responsibility and will not be liable to any other person or organisation for, or in relation to, any matter dealt with or conclusions expressed in the report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in Your Report.

Your Report is based on what we observed

The advice provided within Your Report assumes that the site conditions, revealed through selective point sampling (undertaken in accordance with normal practices and standards) at a particular point in time, are indicative of the actual conditions on your site. However, the nature of the materials underlying your site is affected by natural processes and the activity of man. Under no circumstances can it be considered that these findings represent the actual state at all points. The subsurface conditions may vary significantly on the other parts of the site, particularly where no nearby sampling and testing work has been carried out.

As a result conditions on your site can change with time; they can also vary spatially. As a result, the actual conditions encountered may differ from those detailed within Your Report. Although nothing can be done to change the actual site conditions which exist, steps can be taken to gain a better understanding of the subsurface conditions underlying your site and reduce the potential for unexpected conditions to be encountered.

The advice within Your Report also relies on interpretation of factual information based on judgement and opinion and has a level of uncertainty attached to it. Only Terra Insight is fully familiar with the background information needed to assess whether or not the report's recommendations are valid and whether or not changes should be considered as the project develops. If the details of your project have changed, the site conditions have changed or a significant amount of time has elapsed since our report was written, the advice provided within Your Report may need to be reviewed.

Your Report has been written by a Professional

The report has been prepared using accepted procedures and practices of the consulting profession at the time it was prepared, and the opinions, recommendations and conclusions set out in the report are made in accordance with generally accepted principles and practices of that profession.

Your Report is better when it is kept together

Your Report presents all the findings of the site assessment and should not be copied in part or altered in any way. Keeping Your Report intact reduces the potential for yourself or other design professionals to misinterpret the report.

Your Geo-Environmental Report

If Your Report is for geotechnical purposes only, it will not relate any findings, conclusions, or recommendations about the potential for hazardous materials to exist at the site unless you have specifically asked us to do so. If your report is written for Geo-Environmental purposes the following should be noted in addition to the above:

- Advancements in professional practice regarding contaminated land and changes in applicable statutes and/or guidelines may affect the validity of this report. Consequently, the currency of conclusions and recommendations in Your Report should be verified if you propose to use this report more than 6 months after its date of issue;
- Your Report is based on information gained from environmental conditions (including assessment of some or all of soil, groundwater, vapour and surface water) and supplemented by reported data of the local area and professional experience. The assessment has been scoped with consideration to industry standards, regulations, guidelines and your specific requirements, which includes budget and timing;
- The characterisation of site conditions is an interpretation of information collected during assessment, in accordance with industry practice. Any interpretation in Your Report is not a complete description of all material on or in the vicinity of the site, due to the inherent variation in spatial and temporal patterns of contaminant presence and impact in the natural environment.
- We may have relied on data and other information provided by you and other qualified individuals in preparing Your Report. We have not verified the accuracy or completeness of such data or information except as otherwise stated in Your Report. For these reasons Your Report must be regarded as interpretative, in accordance with industry standards and practice, rather than being a definitive record.
- For each purpose, a tailored approach to the assessment of potential soil and groundwater contamination is required. In most cases, a key objective is to identify, and if possible quantify, risks that both recognised and potential contamination posed in the context of the agreed purpose. If the proposed use of the site changes, the assessment may no longer be valid and will need to be reviewed.

* For further information on this aspect reference should be made to "Guidelines for the Provision of Geotechnical information in Construction Contracts" published by the Institution of Engineers Australia, National headquarters, Canberra, 1987.

Appendix B: Proposed Development Plans



Scoping Proposal

Warra Warra Road South Nowra
Reference: Lysand Pty Ltd
28 March 2024



Table of Contents

Introduction	2
The Proposal	8
Strategic Merit & Site Specific	13
Shoalhaven Character Assessments 2020	14
Illawarra Shoalhaven Regional Plan 2041	15
Nowra Bomaderry Structure Plan (NBSP)	17
Shoalhaven Local Strategic Planning Statement	18
Shoalhaven Growth Management Strategy	18
Shoalhaven 2032 Community Strategic Plan	19
Shoalhaven Affordable Housing Strategy 2024	20
SEPP Resilience & Hazards	20
S9.1 Ministerial Directions	20
Shoalhaven Development Control Plan 2014	24
Site Specific Merit	25
Site-Specific Considerations	26
Future Development	26
Preliminary Environmental Considerations	27
Flora and Fauna	27
Bushfire Threat	27
Flooding	27
Aboriginal Heritage	29
Other Considerations	31
Economic Impacts	31
Services	31
Traffic Considerations	32
Civil Engineering	32
Discussion Points	33

Attachments:

- 1) Strategic Bushfire Study
- 2) Biodiversity Assessment Report
- 3) Aboriginal Cultural Heritage Assessment
- 4) Flood Study
- 5) Traffic Impact Assessment
- 6) Water and Sewer Strategy
- 7) Water Cycle Management Plan
- 8) Infrastructure Assessment
- 9) Acoustic Report
- 10) Preliminary Civil Design Plans
- 11) Economic Impact Assessment
- 12) Zone Maps and Preliminary Masterplan

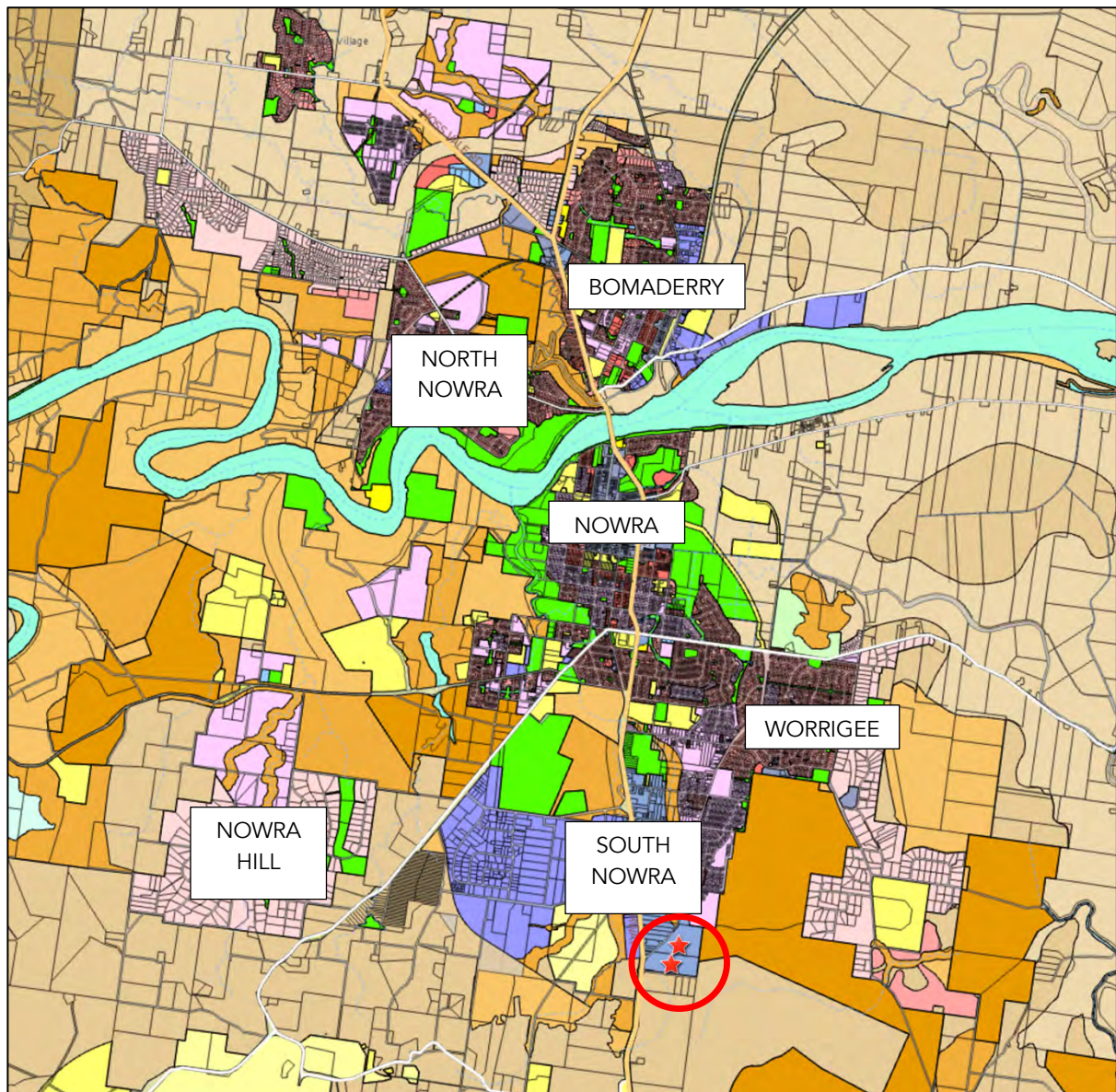


Scoping Proposal
Warra Warra Road South Nowra
Proposed Alterations to Existing Employment Land

Introduction

The proponent for this proposal is Jervis Bay Town Planning who are acting on behalf of the owners of the land, Lysand Pty Ltd and Lyrock Pty Ltd.

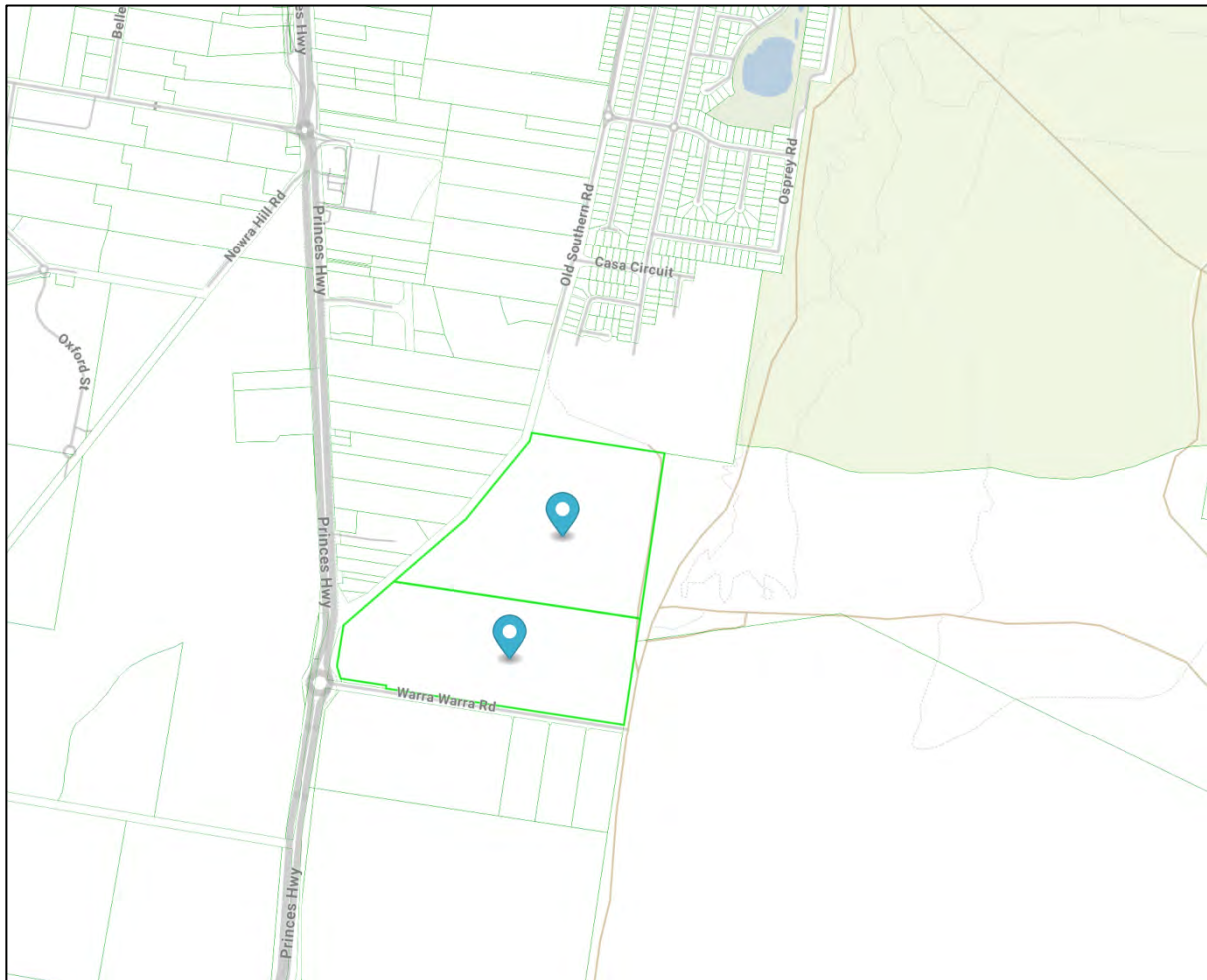
The site comprises two parcels of land as shown in the diagram below all of which is zoned E3 – Productivity Support.



Above: Location



Scoping Proposal
Warra Warra Road South Nowra
Proposed Alterations to Existing Employment Land



Above: Site sketch

Key site features are summarised below:

Address: Warra Warra Road and Old Southern Road South Nowra

Legal Description: Lot 224 DP 755952 & Lot 2 DP1126288

Area: 32.39HA.

Existing Structures on Site: Nil

Bushfire Prone?: Yes

Flood Prone?: Yes

Heritage Status: Nil

Easements / Restrictions on Title?: No

Surrounding Development: Residential subdivision adjoins the site to the north. Industrial development adjoins to the northwest. State forest adjoins to the east. Privately owned bushland is to the south side of Warra Warra Road.

Vegetation on Site: Yes

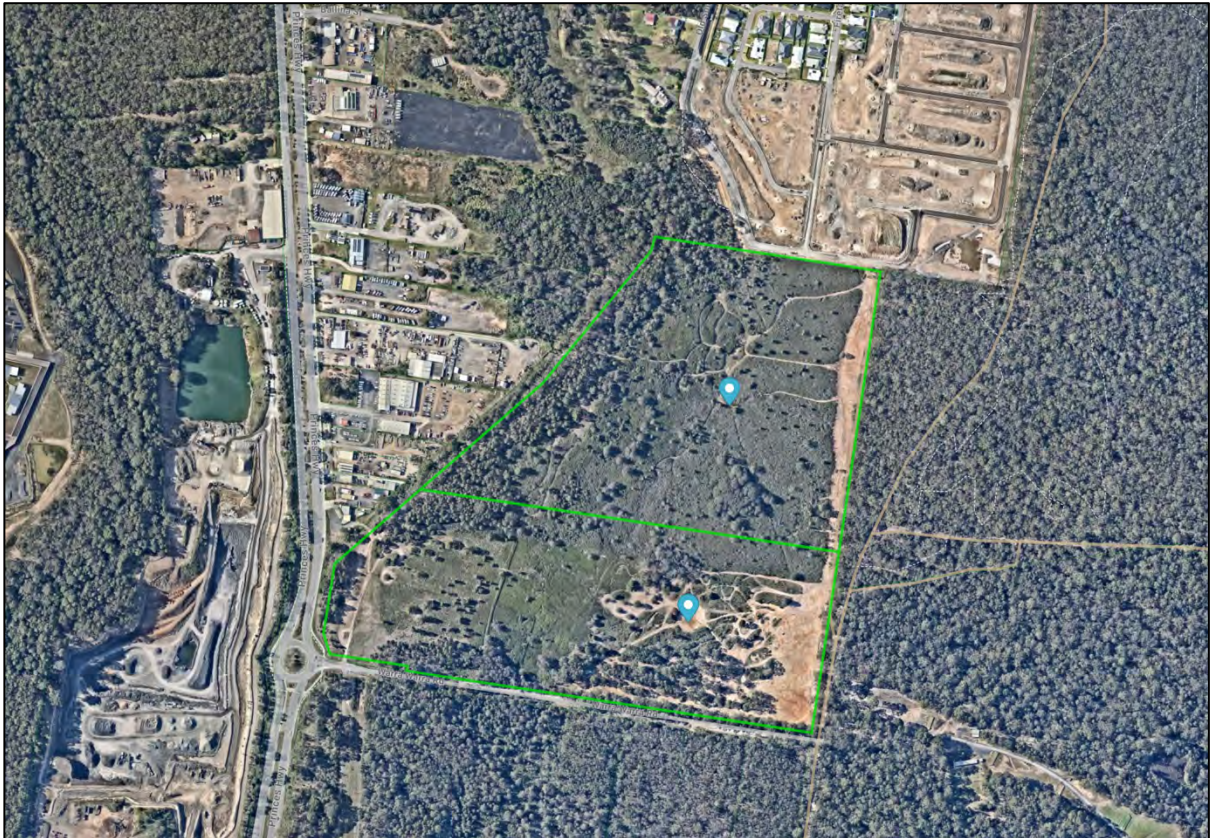


Scoping Proposal
Warra Warra Road South Nowra
Proposed Alterations to Existing Employment Land

Topography:

Access: Available directly off Warra Warra Road.

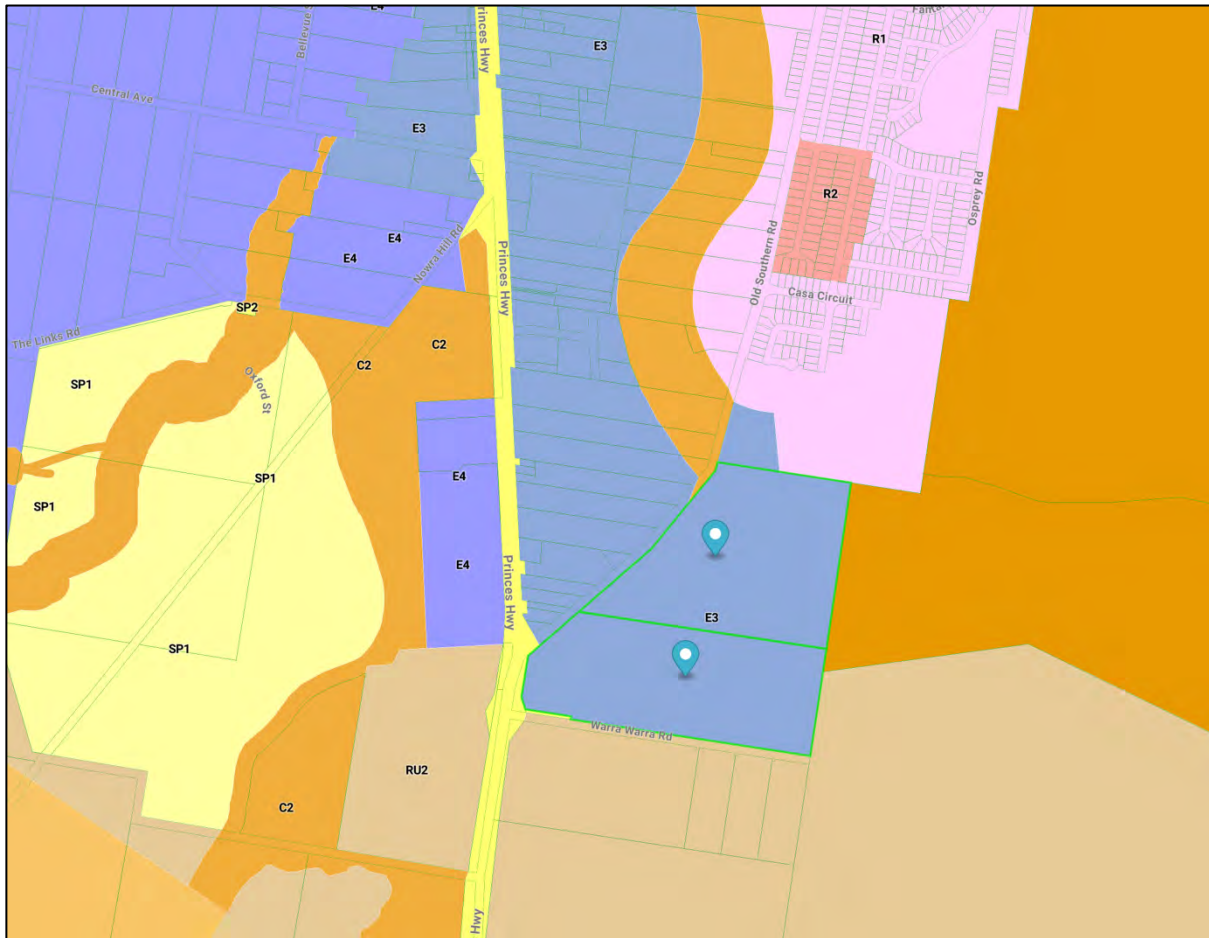
Land Use Zone: E3 - Productivity Support



Above: Aerial photo of site.



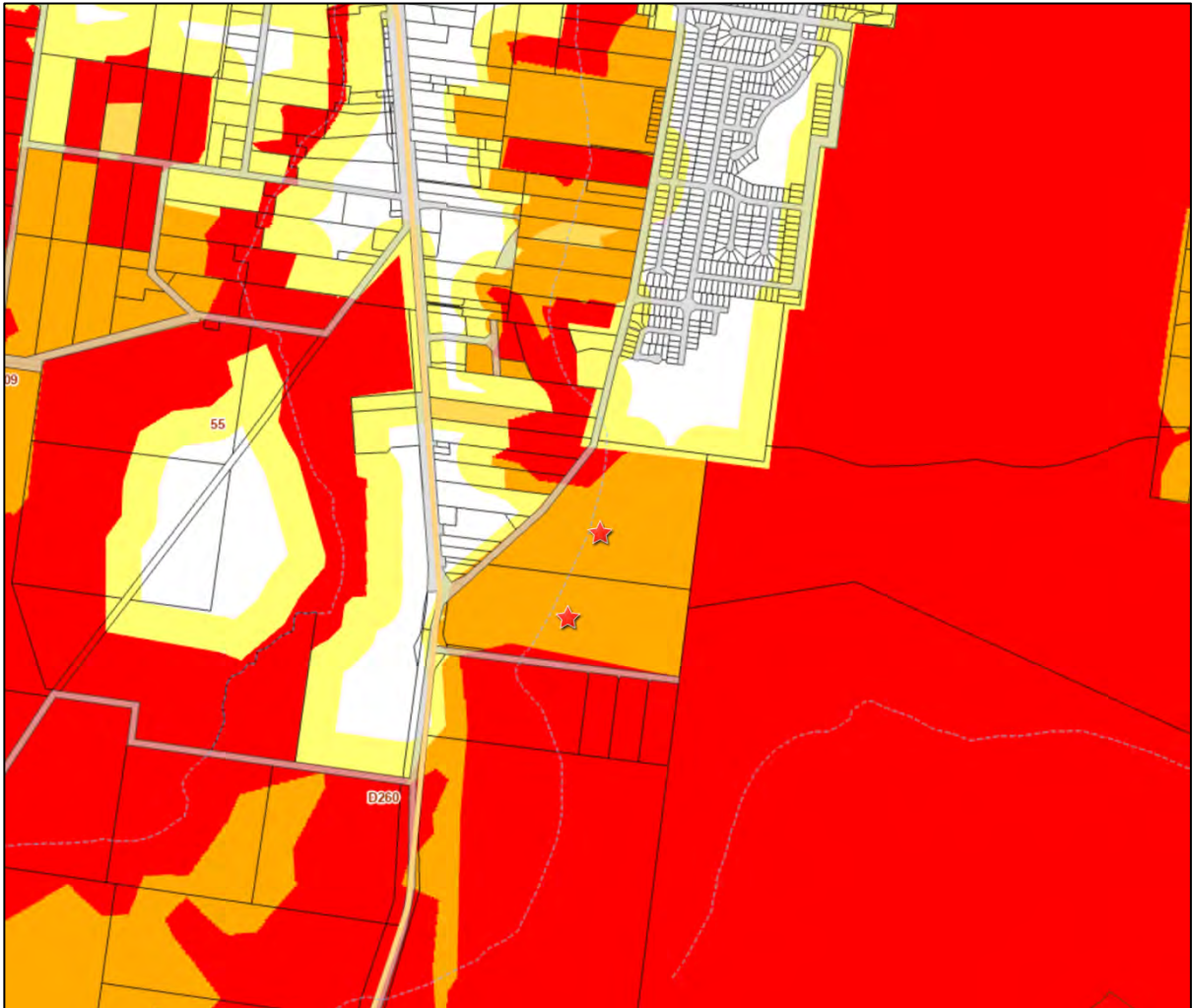
Scoping Proposal
Warra Warra Road South Nowra
Proposed Alterations to Existing Employment Land



Above: Land use zones



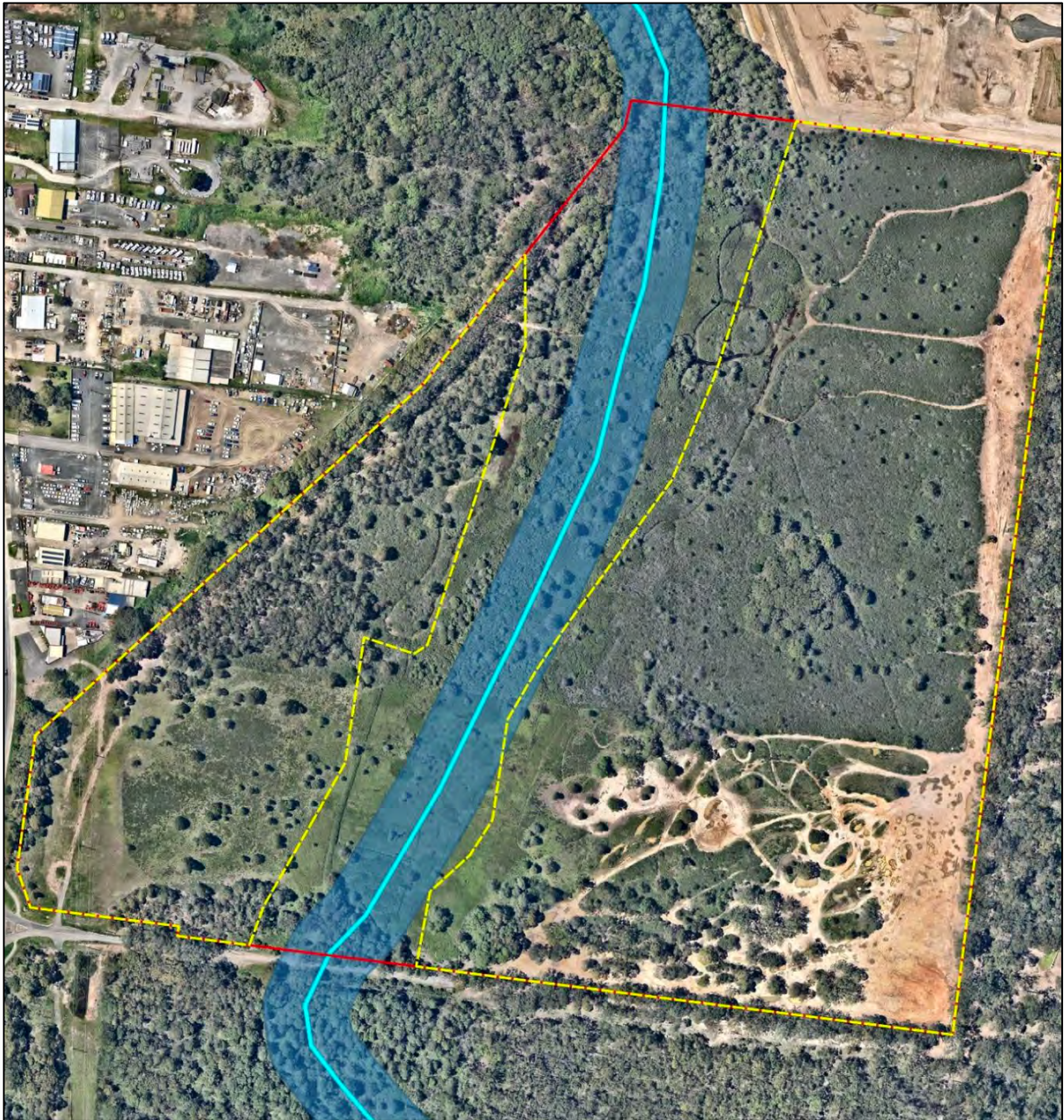
Scoping Proposal
Warra Warra Road South Nowra
Proposed Alterations to Existing Employment Land



Above: Bushfire Prone Land Mapping



Scoping Proposal
Warra Warra Road South Nowra
Proposed Alterations to Existing Employment Land



Above: Water Courses – Browns Creek (3rd Order Watercourse)



Above: 1% AEP Flood Extend and Depths

The Proposal

The planning proposal will outline the justification for an amendment to the Shoalhaven Local Environmental Plan 2014 land use zoning maps.

Specifically, this report seeks to justify an amendment to the maps which would propose residential land for a portion of the site adjacent to existing residential land, a mixed use business zone for the part of the site, an environmental conservation zone and the retention of the E3 zone. Currently, the entire site is zoned E3.



Scoping Proposal
Warra Warra Road South Nowra
Proposed Alterations to Existing Employment Land



Above: Current zone map



Scoping Proposal
Warra Warra Road South Nowra
Proposed Alterations to Existing Employment Land



Above: Proposed zone map

The aim of the proposal is to:

- 1) Retain E3 Land to the western side of the site.
- 2) Introduce a Mixed Use Business zone (MU1) to the site.
- 3) Introduce a portion of Residential R1 land to the site.
- 4) Introduce a C2 Environmental Conservation zone over Browns Creek and its associated riparian land consistent with protections the same watercourse has been provided north of the subject land.



- 5) Protect existing residential land in the locality from the potential for heavy industrial activities which are permissible in the current E3 zone.
- 6) Provide for additional diverse housing in the locality including terrace houses, multi-dwelling housing and residential apartment buildings which are not permitted in the E3 zone.
- 7) Provide additional diverse housing per 6) above without impacting on the primacy of the Nowra CBD.

The existing 32HA of E3 zoned land allows for the site to be developed by way of 'Shop top housing' (commercial development at ground floor with residential housing located above). Developing the site in this manner is not considered appropriate as it would result in an excessive quantity of commercial / retail floor space for a site which is not located within the commercial core of Nowra. If the site were developed in this manner, there is potential to impact upon the viability of the Nowra central business district (CBD) through fragmentation and decentralisation of commercial land uses within Nowra.

By adopting the MU1 zone for the site, this allows for a mix of uses at ground floor without the need for all residential uses to be located above commercial floor space. Too much commercial floor space in the location would have negative effects on the Nowra CBD.

The reasons for the proposal are to:

- 1) Maintain the ability to pursue the construction of a specialized retail (bulky goods) and supermarket development on E3 zoned to the western portion of the land with high visibility and excellent access to the Princes Highway.
- 2) Facilitate the establishment of a diverse housing precinct together with commercial premises on MU1 zoned land providing a convenient, attractive, well serviced living and working environment for with upto 180 residential diverse homes.
- 3) Facilitate the creation of 60 general residential allotments of land to the north east of the site.



- 4) Facilitate the construction of new public roads and the upgrading of Warra Warra Road which will significantly improve access to and from the Princes highway for South Nowra residents.

What is wrong with the current zoning of the site and why does it need to change?

The 32HA is zoned E3 Productivity Support. Changes to this (per the proposal) need to occur for the following reasons:

- 1) The western part of the site will retain its E3 zone. This is appropriate, in the main due to the extent of exposure to the Princes Highway of which the success of large format retail depends.
- 2) Browns Creek and its associated riparian land ought to be protected and zoned C2 Environmental Conservation consistent with the upper reaches of the water course north of the subject land. The current E3 zone for this land is inappropriate.
- 3) The E3 zone as it is currently located immediately adjacent to existing R1 zoned land is inappropriate and poses a risk to the amenity of established living environments. Within the E3 zone, uses such as heavy industrial storage establishments (liquid fuel depots, offensive storage establishments, hazardous storage establishments, depots, warehouses and distribution centers are permissible.

The proposal aims to buffer existing residential living environments from the E3 zone by proposing the same R1 zone adjacent to established residential areas and then proposing the MU1 zone adjacent to the extended R1 living area.

Within the MU1 zone, the potentially offensive land uses as listed above are not permissible.

- 4) The MU1 zone proposed allows for the establishment of a high quality proposed mixed use living and working environment. The current E3 zone does not. This is envisaged to consist of a mix of commercial land uses supplemented and supported by proposed diverse housing which would



include shop top housing, residential apartment buildings, multi-dwelling housing, and terraces. The MU1 zoned land proposed is employment land in the same way the current E3 zone is. In this instance however, the MU1 zone is proposed as a way of ensuring:

- a. the future amenity of adjoining residential uses is improved;
- b. the primacy of the Nowra CBD is respected
- c. much needed additional diverse housing is supplied without impacting on established residential areas
- d. additional services (like child care, are provided to the South Nowra area)
- e. Ensuring impacts from heavy traffic are kept away from residential areas.

The proposed timeframe is as follows:

- Submission of Scoping Study: March 2025
- Preparation of Planning Proposal: May 2025
- Submission of Planning Proposal: May 2025
- Commencement date (date of Gateway determination) – August 2025
- Completion of Gateway determination requirements – October 2025
- Report outcomes of studies to Council to confirm details of the PP – June November 2025
- Public exhibition – December 2025
- Consideration of submissions – January 2026
- Post exhibition consideration of PP – March 2026
- Finalisation and notification of Plan – May 2026

Strategic Merit & Site Specific

The proposal has strategic and site-specific merit for the following reasons:

Strategic merit:

- 1) Future development of the land would be able to occur in line with the vision for South Nowra described within the Shoalhaven Character Assessments 2020.
- 2) It is not inconsistent with the Illawarra Shoalhaven Regional Plan 2041.



- 3) It is consistent with the Nowra Bomaderry Structure Plan.
- 4) It is consistent with the Shoalhaven 2040 Our Strategic Land-use Planning Statement.
- 5) It is consistent with the Shoalhaven 2032 Community Strategic Plan.
- 6) It is consistent with the Shoalhaven Growth Management Strategy (GMS).
- 7) It is consistent with the Shoalhaven Affordable Housing Strategy 2024.
- 8) It is consistent with relevant State Environmental Planning Policies.
- 9) It is consistent with relevant Section 9.1 Ministerial Directions.
- 10) It is consistent with the Shoalhaven Development Control Plan 2014.

Shoalhaven Character Assessments 2020

The Shoalhaven Local Character Assessment prepared by Roberts Day for the Shoalhaven City Council sets out the future desired character of South Nowra as follows:

South Nowra, West Nowra and Worrigea will become inspiring, attractive and well established neighbourhoods with a local flair. Continuing to provide residential support to central Nowra, they will maintain their suburban character and provide affordable and diverse housing options for residents in close proximity to retail and services. Improved connections will bring together what is currently fragmented parts, including improved cycling and walking connections to encourage greater uptake of active travel to Nowra CBD. The introduction of small local hubs, increased street tree planting, greater diversity of accessible open spaces, and more community services will help to define a stronger, more localised character and support a growing community. The neighbourhoods will continue to offer residents what they need, while also improving lifestyle opportunities and connection to place.

The proposal to rezone part of the site from E3 to R1 (General Residential) & MU1 (Mixed Use Business) is consistent with the future character of South Nowra for the following reasons:

- 1) The proposal facilitates additional residential support for central nowra.
- 2) A key aim of the proposal is to provide for a greater diversity of housing and thus more affordable housing.
- 3) The housing proposed will be in close proximity to retail and other services.



- 4) The proposal will facilitate improved pedestrian and road linkages to the Princes Highway and thus encourage active travel to Nowra.

Illawarra Shoalhaven Regional Plan 2041

Objective 18 of the *The Illawarra Shoalhaven Region Plan 2041* is to provide housing supply in the right locations.

The *Illawarra Shoalhaven Regional Plan 2041* identifies Nowra-Bomaderry as a growth area, and opportunities to increase housing supply that are in keeping with Council's long-term vision should be considered. The subject land is both a valuable and untapped resource that can accommodate additional much needed well placed development. Nowra is identified for urban growth by the Regional plan, the proposal is not inconsistent with it.

Strategy 18.2 of the Regional Plan aims to facilitate housing opportunities in existing urban areas, particularly within strategic centres.

The strategy states that:

Strategic planning and local plans should consider opportunities to:

- *review planning controls so that they are creating flexible and feasible conditions for housing supply*
- *align infrastructure and service delivery to match housing supply needs*
- *explore public domain improvements that would increase capacity for growth*
- *identify policies and processes that could be reviewed to improve certainty and streamline development processes*
- *promote urban design outcomes to support healthy and vibrant communities.*

The proposal is consistent with strategy 18.2 for the following reasons:

- 1) The PP seeks to review planning controls to increase the supply of housing for a site within a mixed use environment.
- 2) The locality is one that has good levels infrastructure and services.
- 3) The ultimate urban design outcome would support a healthy community.

Strategy 19.1 aims to continue to provide for and encourage a range of housing



choices.

Strategic planning and local plans should consider opportunities to:

- provide a mix of housing types and lot sizes including small lots in urban release areas
- provide a mix of housing sizes including studios and one-bedroom dwellings
- consider incentives to increase the supply of housing that is appropriate for seniors, including low-care accommodation
- consider whether development standards, including minimum lot sizes, minimum frontage and floor space ratio are inadvertently inhibiting opportunities for diverse housing options
- explore innovative solutions in housing to cater for a range of community needs, including those of older people, multi- generation families, people living in group housing, people with special needs or people from different cultural backgrounds.

The proposal is consistent with Strategy 19.1 as the proposed new land use zones are R1 – General Residential and MU1 – Mixed Use Business which allows all forms of residential development including medium density housing.

Strategy 12.2 aims to reduce exposure to bushfire and natural hazards.

Strategic planning and local plans should consider:

- the proximity of new development, including urban release areas, in relation to areas of high bushfire risk, flooding hazards or coastal erosion/inundation to protect the community from natural hazards
- preparing, reviewing and implementing floodplain risk management plans in existing and new growth areas to improve community resilience to the impacts of flooding and to enable flood constraints to be incorporated into planning processes early for new development.

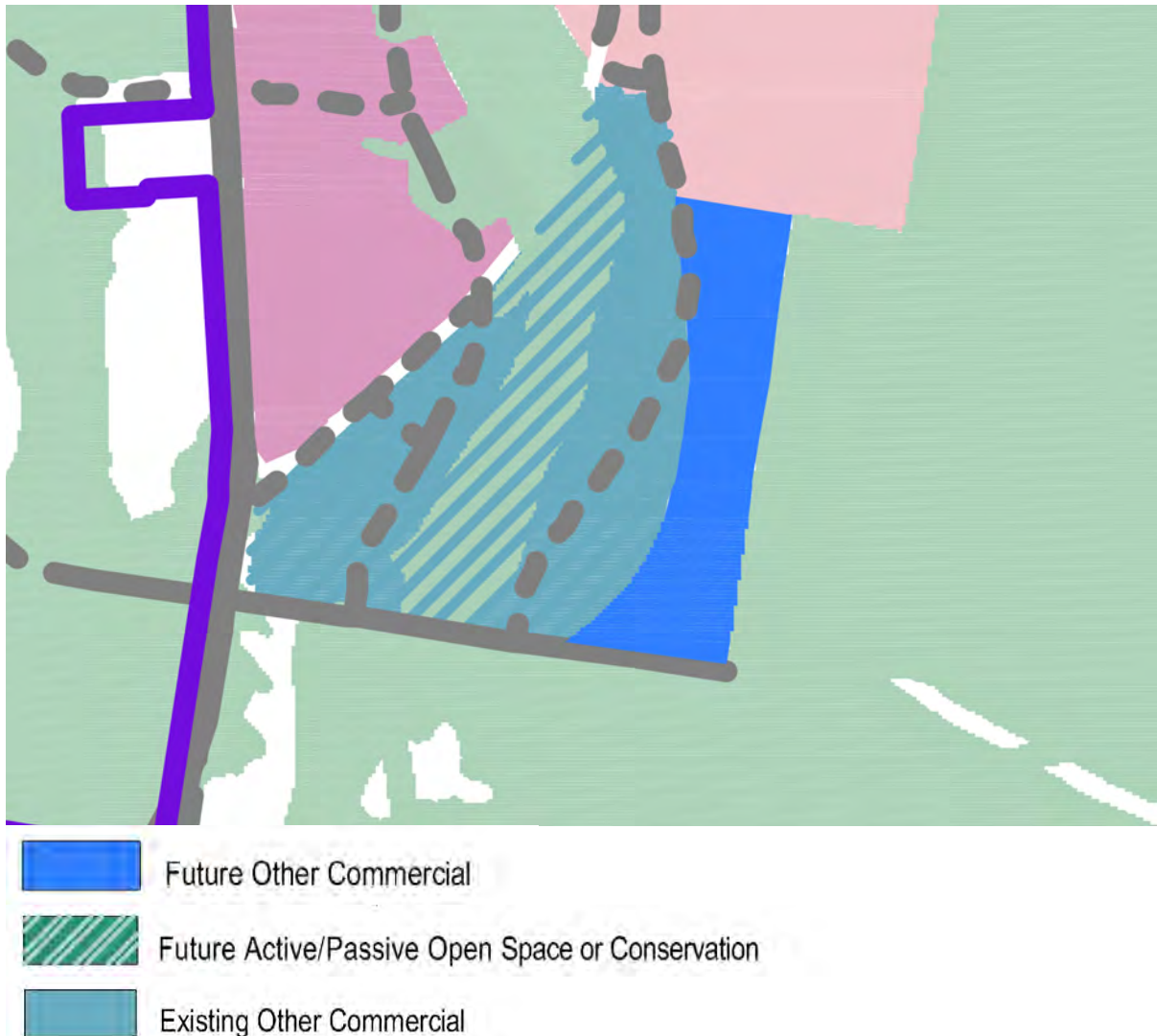
Bushfire threat has been assessed and the level of risk posed is acceptable. Refer to the Strategic Bushfire Study prepared by Harris Environmental.

Flood risk has been addressed in detail per the submitted report prepared by Rienco. The report concludes that flooding is not a major constraint for the site.



Nowra Bomaderry Structure Plan (NBSP)

The NBSP applies to the Nowra Bomaderry area and establishes a set of principles to manage growth in the area. The NBSP identifies Nowra as the primary commercial and administrative centre and supports an increase in people living, in close proximity to Nowra.



The PP is not inconsistent with the NBSP. The map above supports the proposed future conservation area, future other commercial is consistent with the proposed MU1 zone, and the minor extension of the residential area to the north of the site is of no real consequence to the aims of the plan being achieved noting the localised amenity reasons as to why this is proposed.



Shoalhaven Local Strategic Planning Statement

The *Shoalhaven 2040 Our Strategic Land-use Planning Statement*, published in September 2020, notes the following as part of Planning Priority 1:

- The Shoalhaven's population is expected to increase by over 23,000 people by 2041
- The average household or family size is expected to get smaller
- Over 14,600 new dwellings need to be delivered by 2041 to meet the demand for new homes

Shoalhaven Council plans to meet the increased demand for house by delivering a sustainable housing supply of all housing types while ensuring development contributes to neighborhood character.

This proposal would not be inconsistent with Council's plan. The character of the existing residential area north of the land would be maintained as future development would be similar to that existing in the locality. Deeper into the site and away from places with established character, the proposal would create additional housing and housing options in the area on an underutilised and otherwise development ready site.

Planning Priority 3 - Providing jobs close to home

New urban land releases also have an important role in providing links to employment and education uses and employment opportunities.

The site, being located so close to the South Nowra commercial area and adjacent to a major residential settlement is consistent with Planning Priority 3. It seeks to provide homes close to jobs.

Shoalhaven Growth Management Strategy

The Shoalhaven Growth Management Strategy (GMS)

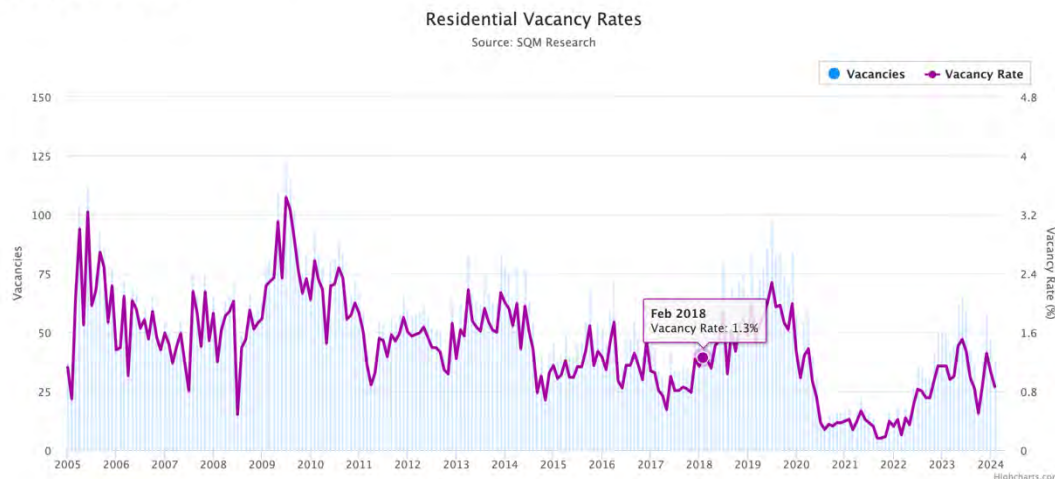
Opportunities identified by the GMS include:

Enable new urban lands to be identified that can deliver sustainable development outcomes where local housing demand is demonstrated.



There is demand for additional housing in Nowra. The current residential vacancy rates for postcode 2541 are 0.9%. This effectively demonstrates that the area has a housing crisis.

RESIDENTIAL VACANCY RATES POSTCODE 2541



Shoalhaven 2032 Community Strategic Plan

One of the priorities for Theme 2 (Sustainable, Livable Environments) of the *Shoalhaven 2032 Community Strategic Plan* is to plan and manage appropriate and sustainable development to provide for population growth. Some of the community's concerns include protection of the natural environment, restriction of over-development in the coastal villages, preserving the Shoalhaven's unique environment and development that is in keeping with the Shoalhaven's unique environment.

A key challenge identified in the community plan relates to housing affordability and diversity.

"Ever increasing price of housing and lack of affordable stock and housing options, particularly for people on low incomes, people with a disability and young people."

The proposal which seeks to:

- increase the amount of housing on a site without significant environmental constraints,
- increase opportunities to live within close proximity to the employment areas



- of the Nowra CBD and South Nowra.
- provide diverse housing opportunities

is consistent with the Shoalhaven 2032 Community Strategic Plan.

Shoalhaven Affordable Housing Strategy 2024.

The proposal, if supported, will provide a means by which much needed diverse and affordable homes can be constructed. The Shoalhaven Affordable Housing Strategy makes it clear that there is a significant short supply of diverse housing throughout the LGA. The proposal aims to supply more of the housing that is needed in the area. Not only is the proposal consistent with the affordable housing strategy, it will greatly assist in addressing the needs of the community which are clearly outlined within it.

SEPP Resilience & Hazards

The provisions of this SEPP have been reviewed, and no provisions would reasonably impact on the ability of the site to be developed in the future.

S9.1 Ministerial Directions

The following Ministerial Directions would be of relevance to any future Planning Proposal:

Consistency with relevant section 9.1 Directions by the Minister for Planning		
Focus Area 1: Planning Systems		
1.1 Implementation of Regional Plans		
Application:	Objective:	Consistency:
This direction applies to land to which a Regional Plan has been released by the Minister for Planning.	The objective of this direction is to give legal effect to the vision, land use strategy, goals, directions and actions contained in Regional Plans.	The PP does not undermine the vision, land use strategy, goals or directions of the relevant regional plan. It, in a small way, contributes towards the overall goals of relevant strategy plans.
1.3 Approval and Referral Requirements		



Scoping Proposal
Warra Warra Road South Nowra
Proposed Alterations to Existing Employment Land

Application: This Direction provides that a LEP shall minimise the inclusion of provisions that require the concurrence, consultation or referral of development applications to a Minister or Public Authority, not contain these provisions unless Council has obtained approval from the relevant Authority and not identify development as designated development unless certain prerequisites can be met.	Objective: The objective of this direction is to ensure that LEP provisions encourage the efficient and appropriate assessment of development.	Consistency: This PP does not include provisions that require the concurrence, consultation or referral of development applications to a Minister or public authority.
1.4 Site Specific Provisions		
Application: A LEP that amends another environmental planning instrument in order to allow a particular development proposal shall either allow that land use to be carried out in the zone that the land is situated on or rezone the site to an existing zone already applying in the environmental planning instrument that allows that land use without imposing any development standards or requirements in addition to those already existing or allow that land use on the relevant land without imposing any development standards or requirements in addition to those already contained in the principal planning instrument being amended.	Objective: The objective of this direction is to discourage unnecessarily restrictive site-specific planning controls.	Consistency: There is no reason for any site-specific planning controls to be applied to the subject site.
Focus Area 3: Biodiversity and Conservation		
3.2 Heritage Conservation		
Application: A planning proposal must contain provisions that facilitate the conservation of items, places, buildings, works, relics, moveable objects or precincts of environmental heritage significance to an area. Including the protection of Aboriginal objects and Aboriginal places that are protected under the National Parks and Wildlife Act 1974 (NSW).	Objective: The objective of this direction is to conserve items, areas, objects and places of environmental heritage significance and Indigenous heritage significance.	Consistency: An Aboriginal Cultural Heritage Assessment Report has been completed by Apex Archaeology. The report concludes that the proposal is acceptable with respect to aboriginal cultural heritage considerations.
3.6 Strategic Conservation Planning		



Scoping Proposal
Warra Warra Road South Nowra
Proposed Alterations to Existing Employment Land

Application:	Objective:	Consistency:
This direction applies to all relevant planning authorities when preparing a PP that relates to land the, under the <i>State Environmental Planning Policy (Biodiversity and Conservation) 2021</i> , is identified as avoided land or a strategic conservation area.	The objective of this directive is to protect, conserve or enhance areas with high biodiversity value.	The land is not within an area identified by the SEPP as avoided land or a strategic conservation area.
Focus area 4: Resilience and Hazards		
4.1 Flooding		
Application:	Objective:	Consistency:
This direction applies to all relevant planning authorities that are responsible for flood prone land when preparing a planning proposal that creates, removes or alters a zone or a provision that affects flood prone land.	The objectives of this direction are to: (a) ensure that development of flood prone land is consistent with the NSW Government's Flood Prone Land Policy and the principles of the Floodplain Development Manual 2005, and (b) ensure that the provisions of an LEP that apply to flood prone land are commensurate with flood behaviour and includes consideration of the potential flood impacts both on and off the subject land.	The direction has been addressed by Rienco Consulting who conclude that the proposal meets all requirements of the direction.
4.3 Planning for Bushfire Protection		
Application:	Objective:	Consistency:
This direction applies to all local government areas when a relevant planning authority prepares a planning proposal that will affect, or is in proximity to, land mapped as bushfire prone land.	The objectives of this direction are: (a) protect life, property and the environment for bushfire hazards, by discouraging the establishment of incompatible land uses in bushfire prone areas, and encourage sound management of bushfire prone areas.	A strategic bushfire assessment has been prepared by Harris Environmental that concludes the PP meets the requirements of the ministerial direction. The RFS will be consulted prior to public exhibition.
Focus area 5: Transport and Infrastructure		
5.1 Integrating Land Use and Transport		
Application:	Objective:	Consistency:
This direction applies to all relevant planning authorities when preparing a planning proposal that will create, alter or	The objective of this direction is to ensure that urban structures, building forms, land use	The proposal is consistent with the direction



Scoping Proposal
Warra Warra Road South Nowra
Proposed Alterations to Existing Employment Land

remove a zone or a provision relating to urban land, including land zoned for residential, employment, village or tourist purposes.	locations, development designs, subdivision and street layouts achieve the following planning objectives: (a) improving access to housing, jobs and services by walking, cycling and public transport, and (b) increasing the choice of available transport and reducing dependence on cars, and (c) reducing travel demand including the number of trips generated by development and the distances travelled, especially by car, and (d) supporting the efficient and viable operation of public transport services, and (e) providing for the efficient movement of freight.	because: 1) The proposal improves connectivity and encourages active travel. 2) Increased residential density in the area will facilitate the provision of improved public transport services.
5.4 Shooting Ranges		
Application: This direction applies to all relevant planning authorities when preparing a planning proposal that will affect, create, alter or remove a zone or a provision relating to land adjacent to and/ or adjoining an existing shooting range.	Objective: The objectives are to: (a) maintain appropriate levels of public safety and amenity when rezoning land adjacent to an existing shooting range, (b) reduce land use conflict arising between existing shooting ranges and rezoning of adjacent land, (c) identify issues that must be addressed when giving consideration to rezoning land adjacent to an existing shooting range.	Consistency: There is a shooting range located nearby to the site. The proposal is consistent with the direction as: 1) There is a significant distance between the subject land and the part of the adjoining site where shooting activities occur. 2) Acoustic reporting confirms no unacceptable noise impacts from the shooting range. 3) The site already has an urban zone that allows for employment uses and residential living.
Focus area 6: Housing		
6.1 Residential Zones		



Scoping Proposal
Warra Warra Road South Nowra
Proposed Alterations to Existing Employment Land

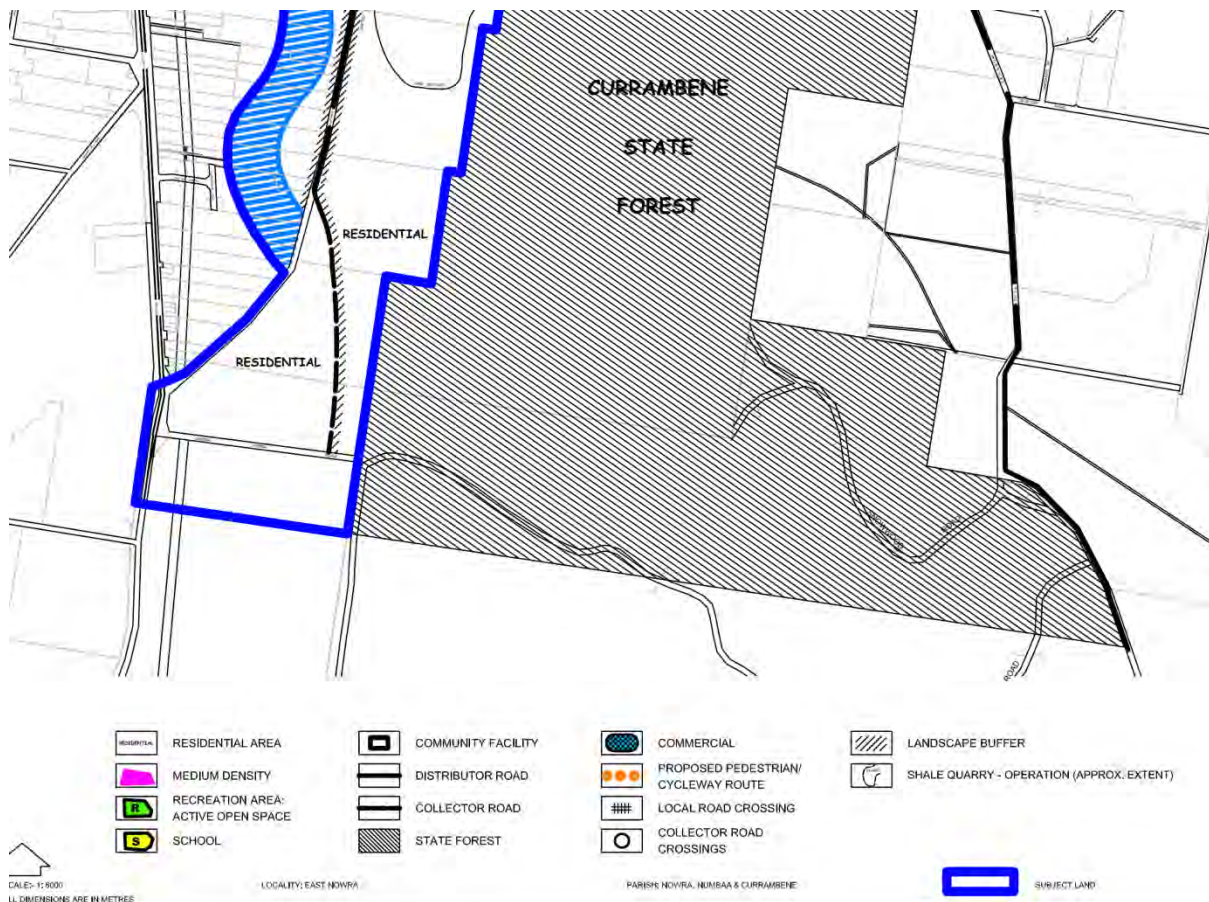
Application: This direction applies to all relevant authorities when preparing a PP that will affect land within an existing or proposed residential zone (including the alteration of any existing residential zone boundary), or any other zone in which significant residential development is permitted or proposed to be permitted.	Objective: The objectives of this direction are to: (a) encourage a variety and choice of housing types to provide for existing and future housing needs, (b) make efficient use of existing infrastructure and services and ensure that new housing has appropriate access to infrastructure and services, and (c) minimize the impact of residential development on the environment and resource lands.	Consistency: The PP achieves consistency with this Ministerial Direction as it makes use of existing infrastructure and services and provides for existing and future housing needs without negatively impacting on the environment.
Focus area 7: Industry and Employment		
7.1 Employment Zones		
Application: This direction applies to all relevant planning authorities when preparing a planning proposal that will affect land within an existing or proposed Employment zone (including the alteration of any existing Employment zone boundary). For the purpose of this Direction, Employment zones means the following zones • Employment • Mixed Use • W4 Working Waterfront • SP4 Enterprise • SP5 Metropolitan Centre	Objective: The objectives of this direction are to: (a) encourage employment growth in suitable locations, (b) protect employment land in employment zones, and (c) support the viability of identified centres.	Consistency: The proposal affects existing employment land. The type of employment land is proposed to be altered by the Planning Proposal in addition to the introduction of a relatively small portion of residential land to 16% of the 32 HA site. The Planning Proposal is justified by a study prepared in support of the planning proposal which gives consideration to the objective of this direction.

Shoalhaven Development Control Plan 2014

Chapter N10 of the Shoalhaven Development Control Plan 2014 identifies the land for residential purposes.



Scoping Proposal
Warra Warra Road South Nowra
Proposed Alterations to Existing Employment Land



CITY OF SHOALHAVEN
DEVELOPMENT CONTROL PLAN 2014

The extent to which the proposal seeks to utilise part of the land for residential purposes, and for mixed use purposes is consistent with the Shoalhaven DCP 2014.

Site Specific Merit

The proposal has site specific merit because:

- 1) Traffic studies confirm the proposal is acceptable. Further to this, progressing the development of the site in the manner envisaged will significantly improve the road and pedestrian network for South Nowra.
- 2) A comprehensive flora and fauna study confirms the proposal is acceptable.
- 3) A completed Aboriginal cultural heritage assessment confirms the proposal is acceptable.
- 4) The completed strategic bushfire study confirms the proposal is acceptable.
- 5) The site is not materially impacted by flooding to the extent that this would



represent any threat to life, additional burdens on emergency services, or risks to the structural integrity of any future buildings.

- 6) There is a demonstrated need for additional housing in the area. The proposal achieves the delivery of additional housing without materially reducing the quality and extent of employment land.
- 7) The proposal effectively protects adjoining residential development from potentially inappropriate development.
- 8) The Nowra Rifle Range is located nearby to the site, however this does not produce any unacceptable risks to future occupants of the site or the ongoing operation of the Rifle Range.
- 9) The economic benefits of the proposal are significant and favorable especially in relation to the ongoing success of the Nowra CBD.

Site-Specific Considerations

Future Development

Future development of the site is to include the following:

- 1) A specialised retail and general retail "Southern Gateway" shopping centre to the western portion of the site where maximum highway visibility benefits the land in addition to safe and effective vehicular access.
- 2) A rehabilitated wetland over Browns Creek and its associated riparian land.
- 3) The construction and upgrading of Warra Warra Road together with the extension of Old Southern Road south connecting to it. This will significantly improve accessibility to the Princes Highway for residents of South Nowra.
- 4) The establishment of a vibrant mixed use business and residential precinct to the eastern portion of the site which will serve a number of purposes, the two most important being:
 - a. Providing a level of protection to adjoining residential land from land uses that could have the potential to severely affect the amenity of the South Nowra residential area.
 - b. Providing a new living environment that benefits from co-location with



suitable business uses designed to complement and enrich the experiences of the people who live there by providing conveniences such as food and beverage, child care, medical services, convenience stores and the like in the same area as a collection of modern diverse and affordable housing.

- 5) The creation of around 60 general residential allotments to the northern portion of the site to further buffer existing living areas from the proposed mixed use business zone that will feature commercial land uses and diverse housing including residential apartment buildings.

Preliminary Environmental Considerations

Flora and Fauna

Bearing in mind that the site is already zoned for development, the project team engaged Narla Environmental to complete a Biodiversity Development Assessment Report that assesses potential impacts of development of the site.

The report confirms the proposal is acceptable.

Bushfire Threat

Harris Environmental have prepared a comprehensive Strategic Bushfire Constraints Assessment.

The report concludes that:

"..... development is considered to provide appropriate locations to minimise the risk to life and property from bush fire attack. Furthermore, any bushfire risk can be met by complying with the requirements of APZ and BAL setbacks as identified by the PBP 2019."

Flooding

Rienco Consulting have prepared a Floodplain Risk Management Plan which provides an assessment of the suitability of the planning proposal.

Rienco Consulting:



- a) Reviewed the flood-related information currently available for the site, including any assessment notes from Shoalhaven City Council (SCC).
- b) Prepared a detailed hydrologic and hydraulic model that determines peak flood levels at the subject site for a range of events up to and including the Probable Maximum Flood (PMF).
- c) Determined the potential impacts of the proposed development, and the associated flood hazard and risk precinct categorisation.
- d) Reviewed the proposed development, together with the hydraulic model results, and assess it against:
 - i. The Section 9.1 Direction Clause 4.3 in relation to flooding.
 - ii. Clause 5.21 of the Shoalhaven LEP (2014, as amended). ;
- e) Prepared a report summarising the above suitable for lodgement with SCC with the application.

The report concludes that:

- *The subject site is located at Warra Warra Road, South Nowra and the site is partially inundated in major design flood scenarios.*
- *SCC adopted its catchment-wide flood study titled Nowra and Browns Creek Floodplain Risk Management Study (2016). Its results are not applicable to the subject site for quantifying flood behaviour in the pre-development scenario, for the reasons stated in this report.*
- *A WBNM hydrologic model has been used to determine design flood estimates at the subject site and surrounds.*
- *A detailed 2D TUFLOW model has been prepared for the subject site and surrounds. Flood behaviour for a range of design floods has been determined for the subject site and surrounds.*
- *Design flood behaviour has been determined for both the pre- and post-development scenarios, and is quantified in detail in this report.*
- *The Flood Planning Level for the site is difficult to specify as one level, given the flood gradient across the site. In any case, the Flood Planning Level is determined by the 1% AEP peak flood surface levels in this report plus 500 mm.*
- *The proposal meets the requirement of the NSW Governments Section 9.1 Direction Clause 4.3.*
- *The proposal meets the requirements of the Shoalhaven City Council's LEP*



(2014) Clause 5.21.

- *The investigation carried out in this report specifically includes: o An assessment of climate change on flood behaviour. o Evacuation and safe egress from the subject site.*

Based on the information contained within this report, it is recommended this report is included in the submission to SCC for the Planning Proposal.

Aboriginal Heritage

Apex Archaeology have prepared an Aboriginal Cultural Heritage Assessment Report.

Apex have, upon completion of their work make the following recommendations on the basis of:

- The statutory requirements of the NP&W Act 1974;
- The requirements of Heritage NSW;
- The results of the cultural and archaeological assessment;
- An assessment of the likely impacts of the proposed development; and
- The interests of the registered Aboriginal stakeholders and the cultural heritage record.

Apex state:

It was found that:

- *There were no previously registered sites within the study area.*
- *No surface artefacts were identified during the survey.*
- *No areas considered to have potential for subsurface archaeological deposits were identified within the study area.*
- *The area was considered to be disturbed throughout due to historical clearance, land use practices and ongoing disturbance factors.*
- *The site is not considered to contain potential for Aboriginal cultural material to be present.*

Based on the results of the cultural heritage and archaeological assessments, the following recommendations have been made for the project:



Recommendation 1: No further archaeological assessment required

This report details the Aboriginal archaeological potential of the Warra Warra Road study area which has been assessed as negligible. No further archaeological assessment is required for the site prior to the commencement of proposed development activities. No application for an Aboriginal Heritage Impact Permit (AHIP) is necessary for the project.

Recommendation 2: Development boundaries

The proposed development works must be contained within the assessed boundaries for this project. If there is any alteration to the boundaries of the proposed development to include areas not assessed as part of this archaeological investigation, further investigation of those areas should be completed to assist in managing Aboriginal objects and places which may be present in an appropriate manner.

Recommendation 3: Stop work provision

Should unanticipated Aboriginal archaeological material be encountered during site works, all work must cease in the vicinity of the find and an archaeologist contacted to make an assessment of the find and to advise on the course of action to be taken. Further archaeological assessment and Aboriginal community consultation may be required prior to the recommencement of works. Any objects confirmed to be Aboriginal in origin must be reported to Heritage NSW.

In the unlikely event that suspected human remains are identified during construction works, all activity in the vicinity of the find must cease immediately and the find protected from harm or damage. The NSW Police and the Coroner's Office must be notified immediately. If the finds are confirmed to be human and of Aboriginal origin, further assessment by an archaeologist experienced in the assessment of human remains and consultation with both Heritage NSW and the RAPs for the project would be required.

This recommendation should be included in any Construction Environmental Management Plan (CEMP) developed for the site.

Recommendation 4: Reporting



One digital copy of this report should be forwarded to Heritage NSW for inclusion on the Aboriginal Heritage Information Management System (AHIMS).

One copy of this report should be forwarded to each of the registered Aboriginal stakeholders for the project.

Other Considerations

Economic Impacts

The proposal will have positive economic impacts, and this has been verified by Gap Advisory who have completed an economic impact assessment in support of the proposal. The report concludes that the proposal is acceptable as it:

- 1) Diversifies existing employment land
- 2) Provides for additional diverse housing
- 3) Maintains the primacy of the Nowra CBD
- 4) Will have positive employment impacts.

The report indicates that there is a greater need for more diverse housing than there is a need for the quantum of E3 land to be maintained over the eastern part of the site.

There is sufficient supply of E3 & E4 zoned land to meet future demand and the proposal to rezone part of the E3 zoned site will help address the fact that there is a clear lack of affordable diverse residential housing in Nowra.

Services

Civplan were engaged by the project team to assess feasibility of the proposal in relation to the provision of all essential services to service future development.

This Services Infrastructure Report (SIR) concludes the following in relation to the study area of Warra Warra Rd, South Nowra:

- Water supply, capacity, and pressure are adequate to service the proposed development, with local interconnection locations available.
- Wastewater servicing for the planning proposal can be achieved by installation of a commercial pump arrangement in the Western Precinct and



SPS in the Eastern Precinct.

- Gravity sewer servicing to the SPS can be achieved based on the anticipated ET's and grades from the Shoalhaven Supplement to the WSA.
- The pressure sewer rising main outlet from a SPS within the planning proposal site may need to be extended to a point in the existing network with capacity. This location will be determined in conjunction with Shoalhaven Water.
- It will be necessary to tie into the approved development north of the planning proposal site regarding roads, drainage, water and sewer servicing.
- There are no requirements or provisions for reclaimed/recycled water.
- Electrical supply and capacity are currently available for the site; and extents of the requirements and anticipated load have been determined.
- The existing electrical easement 30m wide contained to the western side of the site restricts construction to only roads, carparks, and landscaping. No buildings can be constructed within the easement.
- The 3D geometry of the conductors will need to be analysed during the detailed design phase to ensure clearances (horizontally and vertically) comply with Endeavour Energy standards.
- NBN fibre communications supply is available to service the proposed development with local reticulation locations available.
- There are no gas reticulation assets available in the local area, nor is there a requirement to provide it to the proposed development.

Traffic Considerations

Traffic engineering assessments have been completed by McLaren Traffic Engineering. A copy of the report is attached. The report concludes That the planning proposal is fully supportable in terms of its traffic and parking impacts.

For detailed conclusions and recommendations, refer to a copy of the completed report.

Civil Engineering

Civil engineering expertise has been sought from Civplan to support the scheme and to assess the suitability of future development as planned. The work completed by Civplan includes:

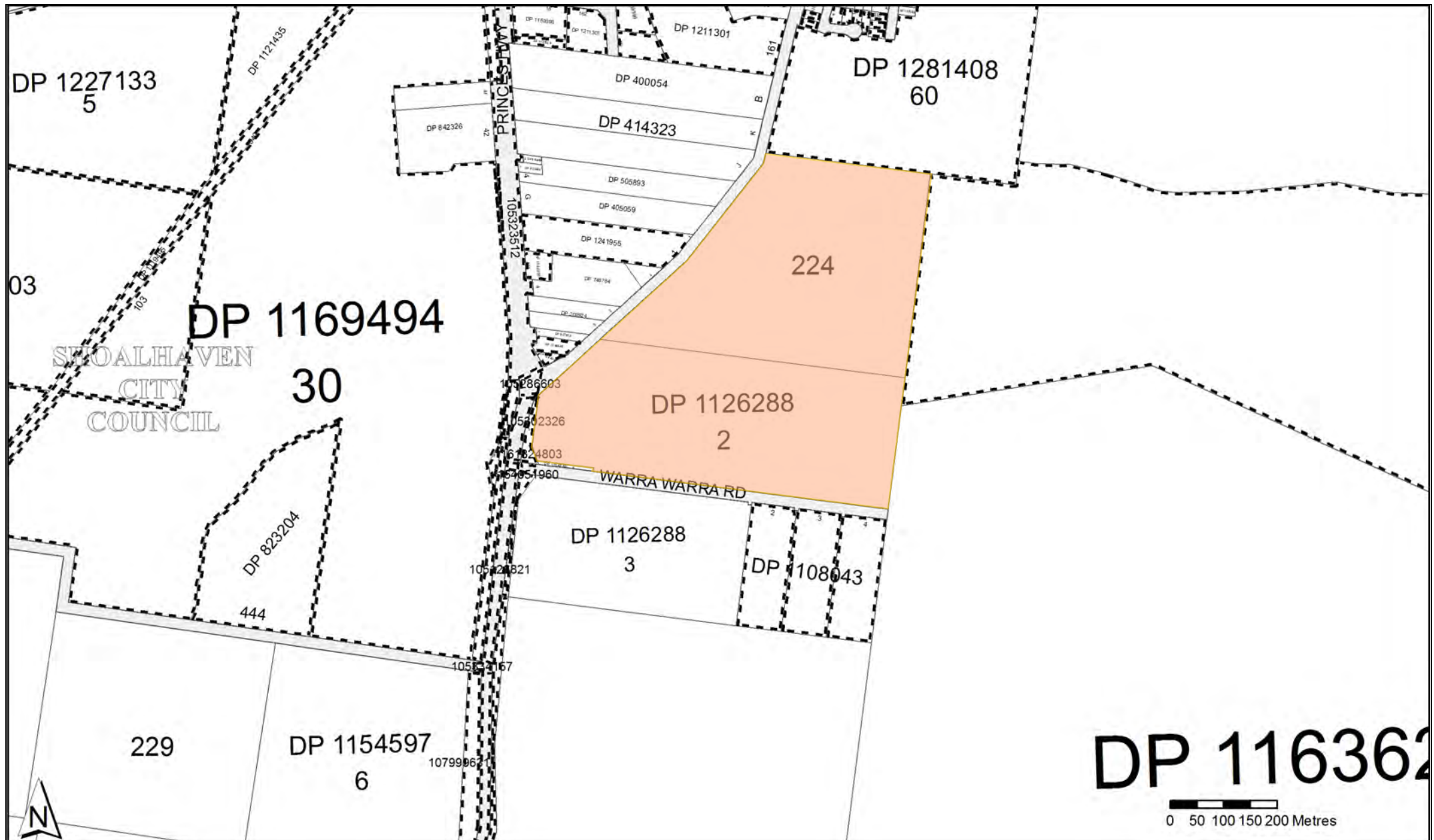


- 1) Soil and water management
- 2) Bulk earthworks
- 3) Road design plans
- 4) Drainage layout plans
- 5) Bridge deck details (Warra Warra Road)
- 6) Stormwater quality modelling
- 7) Sewer and water layout plans.

Discussion Points

- 1) Consistency with strategic planning documents of relevance to the site;
- 2) Shoalhaven Water – Sewer servicing;
- 3) Environmental Considerations;
- 4) Proximity to Rifle Range;
- 5) Section 9.1 ministerial direction relating to employment land;
- 6) The need for more diverse housing in Nowra.

Appendix C: Title Search Documents (InfoTrack)



	Status	Surv/Comp	Purpose
DP238974			
Lot(s): 7, 9			
	NSW GAZ.	03-10-2008	Folio : 9714
	ACQUIRED FOR THE PURPOSES OF THE ROADS ACT, 1993 LOTS 7, 9-10 DP238974		
Lot(s): 7, 9, 10			
	DP1224485	REGISTERED	SURVEY
	SURVEY INFORMATION ONLY		
	PA82582 - LOT 7 DP238974 AND LOTS 9-10 DP238974		
DP755952			
Lot(s): 103			
	DP1158359	REGISTERED	SURVEY
	RESUMPTION OR ACQUISITION		
	DP1227133	REGISTERED	COMPILATION
	RESUMPTION OR ACQUISITION		
	DP1246706	REGISTERED	SURVEY
	EASEMENT		
	DP1255906	REGISTERED	SURVEY
	EASEMENT		
	NSW GAZ.	18-04-2008	Folio : 2729
	ACQUIRED FOR PUBLIC PURPOSES - LOTS 102, 103 AND 7041 DP755952 AND LOT 464 DP1058778. LOT 4 DP1227133 IS REQUIRED FOR ROAD PURPOSES		
	NSW GAZ.	24-04-2008	Folio : 2913
	AFFECTED BY SECTION 138 CROWN LANDS ACT, 1989. ADDITION TO RESERVED CROWN LAND RESERVE NO. 1014289 - LOTS 102 AND 103 DP755952, LOT 7041 DP1121435 AND LOT 464 DP1058778 EXCLUDING LAND WITHIN MINING LEASES 5087 AND 6322		
DP823204			
Lot(s): 444			
	DP1123828	REGISTERED	SURVEY
	RESUMPTION OR ACQUISITION		
	DP1158359	REGISTERED	SURVEY
	RESUMPTION OR ACQUISITION		
DP1108043			
Lot(s): 2, 3, 4			
	DP755952	HISTORICAL	COMPILATION
	CROWN ADMIN NO.		
DP1112040			
Lot(s): 2			
	DP606455	HISTORICAL	SURVEY
	SUBDIVISION		
	DP1123828	REGISTERED	SURVEY
	RESUMPTION OR ACQUISITION		
	DP1158359	REGISTERED	SURVEY
	RESUMPTION OR ACQUISITION		
DP1119495			
Lot(s): 7040			
	DP1123828	REGISTERED	SURVEY
	RESUMPTION OR ACQUISITION		
	DP1158359	REGISTERED	SURVEY
	RESUMPTION OR ACQUISITION		
	DP1246706	REGISTERED	SURVEY
	EASEMENT		
	NSW GAZ.	16-11-2007	Folio : 8517
	CLOSED ROAD LOT 7040 DP1119495		
	NSW GAZ.	14-12-2007	Folio : 9626
	RESERVATION OF CROWN LAND RESERVE NO. 1014289 - AFFECTING LOT 7040 DP1119495		

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

	Status	Surv/Comp	Purpose
DP1121435			
Lot(s): 7041			
	DP1158359	REGISTERED	SURVEY
	DP1246706	REGISTERED	SURVEY
	NSW GAZ.	18-04-2008	Folio : 2729
ACQUIRED FOR PUBLIC PURPOSES - LOTS 102, 103 AND 7041 DP755952 AND LOT 464 DP1058778. LOT 4 DP1227133 IS REQUIRED FOR ROAD PURPOSES			
	NSW GAZ.	24-04-2008	Folio : 2913
AFFECTED BY SECTION 138 CROWN LANDS ACT, 1989. ADDITION TO RESERVED CROWN LAND RESERVE NO. 1014289 - LOTS 102 AND 103 DP755952, LOT 7041 DP1121435 AND LOT 464 DP1058778 EXCLUDING LAND WITHIN MINING LEASES 5087 AND 6322			
	NSW GAZ.	18-04-2008	Folio : 2729
ACQUIRED FOR THE PURPOSES OF THE PUBLIC PURPOSE. AFFECTED BY SECTION 138 CROWN LANDS ACT, 1989. ADDITION TO CROWN LAND RESERVE NO. 1014289 - LOT 7041 DP1121435			
	NSW GAZ.	18-04-2008	Folio : 2729
LOT 7041 DP755952 ACQUIRED FOR GOVERNMENT PURPOSES			
DP1126288			
Lot(s): 6			
	DP238974	HISTORICAL	SURVEY
	DP823204	HISTORICAL	SURVEY
	DP1058778	HISTORICAL	SURVEY
	NSW GAZ.	18-04-2008	Folio : 2729
ACQUIRED FOR PUBLIC PURPOSES - LOTS 102, 103 AND 7041 DP755952 AND LOT 464 DP1058778			
	NSW GAZ.	24-04-2008	Folio : 2913
AFFECTED BY SECTION 138 CROWN LANDS ACT, 1989. ADDITION TO RESERVED CROWN LAND RESERVE NO. 1014289 - LOTS 102 AND 103 DP755952, LOT 7041 DP1121435 AND LOT 464 DP1058778 EXCLUDING LAND WITHIN MINING LEASES 5087 AND 6322			
	NSW GAZ.	03-10-2008	Folio : 9714
ACQUIRED FOR THE PURPOSES OF THE ROADS ACT, 1993 LOT 6 DP1126288			
Lot(s): 4, 5, 6			
	DP1224485	REGISTERED	SURVEY
SURVEY INFORMATION ONLY			
DP1137829			
Lot(s): 17			
	DP857796	HISTORICAL	SURVEY
	DP1036585	HISTORICAL	SURVEY
	DP1053869	HISTORICAL	SURVEY
SUBDIVISION			
DP1144956			
Lot(s): 123			
	DP503544	HISTORICAL	COMPILATION
SUBDIVISION			
DP1154597			
Lot(s): 9, 10			
	DP1224485	REGISTERED	SURVEY
SURVEY INFORMATION ONLY			
DP1159398			
Lot(s): 18, 19			
	DP857796	HISTORICAL	SURVEY
	DP1036585	HISTORICAL	SURVEY
	DP1053869	HISTORICAL	SURVEY
	DP1137829	HISTORICAL	SURVEY
SUBDIVISION			
DP1169494			
Lot(s): 30			
	DP1246706	REGISTERED	SURVEY
EASEMENT			

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

	Status	Surv/Comp	Purpose
Lot(s): 30, 31			
 DP238974	HISTORICAL	SURVEY	ROAD OR MOTORWAY
 DP823204	HISTORICAL	SURVEY	SUBDIVISION
 DP1058778	HISTORICAL	SURVEY	SUBDIVISION
 DP1126288	HISTORICAL	SURVEY	ROADS ACT, 1993
 NSW GAZ.	18-04-2008		Folio : 2729
ACQUIRED FOR PUBLIC PURPOSES - LOTS 102, 103 AND 7041 DP755952 AND LOT 464 DP1058778			
 NSW GAZ.	24-04-2008		Folio : 2913
AFFECTED BY SECTION 138 CROWN LANDS ACT, 1989. ADDITION TO RESERVED CROWN LAND RESERVE NO. 1014289 - LOTS 102 AND 103 DP755952, LOT 7041 DP1121435 AND LOT 464 DP1058778 EXCLUDING LAND WITHIN MINING LEASES 5087 AND 6322			
Lot(s): 31			
 NSW GAZ.	23-03-2012		Folio : 750
ACQUIRED FOR THE PURPOSES OF THE ROADS ACT, 1993 LOT 31 DP1169494			
DP1189122			
Lot(s): 1481			
 VESTED IN THE MINISTER ADMINISTERING THE NATIONAL PARKS AND WILDLIFE ACT 1974 UNDER SCHEDULE 3 NATIONAL PARK ESTATE (RESERVATIONS) ACT 2005 NO 84			
 CA167375 - LOT 1481 DP1189122			
DP1211301			
Lot(s): 161, 162			
 DP857796	HISTORICAL	SURVEY	SUBDIVISION
 DP1036585	HISTORICAL	SURVEY	SUBDIVISION
 DP1053869	HISTORICAL	SURVEY	SUBDIVISION
 DP1137829	HISTORICAL	SURVEY	SUBDIVISION
 DP1159398	HISTORICAL	SURVEY	SUBDIVISION
DP1224995			
Lot(s): 1			
 DP504262	HISTORICAL	SURVEY	SUBDIVISION
 DP830546	HISTORICAL	COMPILATION	RESUMPTION OR ACQUISITION
DP1227133			
Lot(s): 5			
 DP1246706	REGISTERED	SURVEY	EASEMENT
 NSW GAZ.	18-04-2008		Folio : 2729
ACQUIRED FOR PUBLIC PURPOSES - LOTS 102, 103 AND 7041 DP755952 AND LOT 464 DP1058778. LOT 4 DP1227133 IS REQUIRED FOR ROAD PURPOSES			
 NSW GAZ.	24-04-2008		Folio : 2913
AFFECTED BY SECTION 138 CROWN LANDS ACT, 1989. ADDITION TO RESERVED CROWN LAND RESERVE NO. 1014289 - LOTS 102 AND 103 DP755952, LOT 7041 DP1121435 AND LOT 464 DP1058778 EXCLUDING LAND WITHIN MINING LEASES 5087 AND 6322			
DP1241955			
Lot(s): 1			
 DP505147	HISTORICAL	SURVEY	SUBDIVISION
 DP652361	HISTORICAL	COMPILATION	DEPARTMENTAL
DP1281408			
Lot(s): 60			
 DP1320064	PRE-ALLOCATED	UNAVAILABLE	SUBDIVISION
Lot(s): 25, 26, 27, 34, 35, 36, 37, 38, 39, 60			
 DP755952	HISTORICAL	COMPILATION	CROWN ADMIN NO.
DP1296848			
Lot(s): 1			
 DP504262	HISTORICAL	SURVEY	SUBDIVISION
 DP815141	HISTORICAL	SURVEY	SUBDIVISION
Road			
Polygon Id(s): 105334157			
 DP1154597	REGISTERED	SURVEY	ROADS ACT, 1993

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

	Status	Surv/Comp	Purpose
Polygon Id(s): 105126821, 105286603, 105302326, 105323512, 105334157, 107999631, 161824803, 164051960			
 DP1224485	REGISTERED	SURVEY	SURVEY INFORMATION ONLY

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

Plan	Surv/Comp	Purpose
DP203508	SURVEY	SUBDIVISION
DP209924	SURVEY	SUBDIVISION
DP238974	SURVEY	ROAD OR MOTORWAY
DP400054	SURVEY	UNRESEARCHED
DP405059	SURVEY	UNRESEARCHED
DP414323	SURVEY	UNRESEARCHED
DP505893	COMPILATION	SUBDIVISION
DP607503	SURVEY	SUBDIVISION
DP618882	SURVEY	SUBDIVISION
DP746784	SURVEY	SUBDIVISION
DP755952	COMPILATION	CROWN ADMIN NO.
DP823204	SURVEY	SUBDIVISION
DP842326	SURVEY	SUBDIVISION
DP1108043	SURVEY	SUBDIVISION
DP1112040	SURVEY	RESUMPTION OR ACQUISITION
DP1119495	COMPILATION	CROWN LAND CONVERSION
DP1121435	COMPILATION	CROWN LAND CONVERSION
DP1126288	SURVEY	ROADS ACT, 1993
DP1137829	SURVEY	SUBDIVISION
DP1144956	COMPILATION	CONSOLIDATION
DP1154597	SURVEY	ROADS ACT, 1993
DP1159398	UNRESEARCHED	SUBDIVISION
DP1159398	SURVEY	SUBDIVISION
DP1163622	COMPILATION	CROWN LAND CONVERSION
DP1169494	SURVEY	ROADS ACT, 1993
DP1189122	COMPILATION	LIMITED FOLIO CREATION
DP1196255	COMPILATION	CROWN LAND CONVERSION
DP1211301	SURVEY	SUBDIVISION
DP1224995	COMPILATION	CONSOLIDATION
DP1227133	COMPILATION	RESUMPTION OR ACQUISITION
DP1241955	COMPILATION	CONSOLIDATION
DP1281408	SURVEY	SUBDIVISION
DP1281408	SURVEY	SUBDIVISION
DP1296848	SURVEY	CONSOLIDATION

Caution: This information is provided as a searching aid only. Whilst every endeavour is made to ensure that current map, plan and titling information is accurately reflected, the Registrar General cannot guarantee the information provided. For **ALL**

ACTIVITY PRIOR TO SEPTEMBER 2002 you must refer to the RGs Charting and Reference Maps.



SEARCH DATE

16/10/2025 12:04PM

FOLIO: 224/755952

First Title(s): SEE PRIOR TITLE(S)

Prior Title(s): VOL 14605 FOL 145

Recorded -----	Number -----	Type of Instrument -----	C.T. Issue -----
14/12/1988		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
2/2/1989		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
26/4/1991		AMENDMENT: TITLE DIAGRAM	
15/4/2024	AT983856	TRANSFER	EDITION 1

*** END OF SEARCH ***



SEARCH DATE

14/10/2025 3:57PM

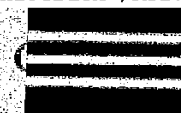
FOLIO: 2/1126288

First Title(s): VOL 1927 FOL 172

Prior Title(s): 225/755952

Recorded -----	Number -----	Type of Instrument -----	C.T. Issue -----
23/5/2008	DP1126288	DEPOSITED PLAN	LOT RECORDED FOLIO NOT CREATED
2/10/2008	AE171948	TRANSFER	FOLIO CREATED EDITION 1
4/3/2014	AI417844	DEPARTMENTAL DEALING	
30/5/2016	AK475845	TRANSFER	EDITION 2

*** END OF SEARCH ***



CERTIFICATE OF TITLE

PROPERTY ACT, 1900



12023153

NEW SOUTH WALES

Crown Grant Vol. 1927 Fol. 172
Prior Title Vol. 11392 Fol. 26

Vol. 12023 Fol. 153

Edition issued 24-1-1973

M989564



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

Jawatson

Registrar General.



CANCELLED

ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Portions 188, 189, 219, 224 and 225 in the Shire of Shoalhaven Parish of Nowra and County of St. Vincent. EXCEPTING THEREOUT the minerals reserved by the Crown Grant.

FIRST SCHEDULE

~~HERBERT WATSON and EDWARD CHRISTOPHER WATSON, both of Terara, near Nowra, Farmers, as Tenants in Common in equal shares.~~

Jawatson

Registrar General.

SECOND SCHEDULE

1. Reservations and conditions, if any, contained in the Crown Grant above referred to.
2. Easement for Transmission Line created by notification in Government Gazette dated 28-2-1941 Folios 857 and 859 affecting the part of the land above described shown as "30.48 Wide" in the plan hereon.

Jawatson

Registrar General.

12023 153

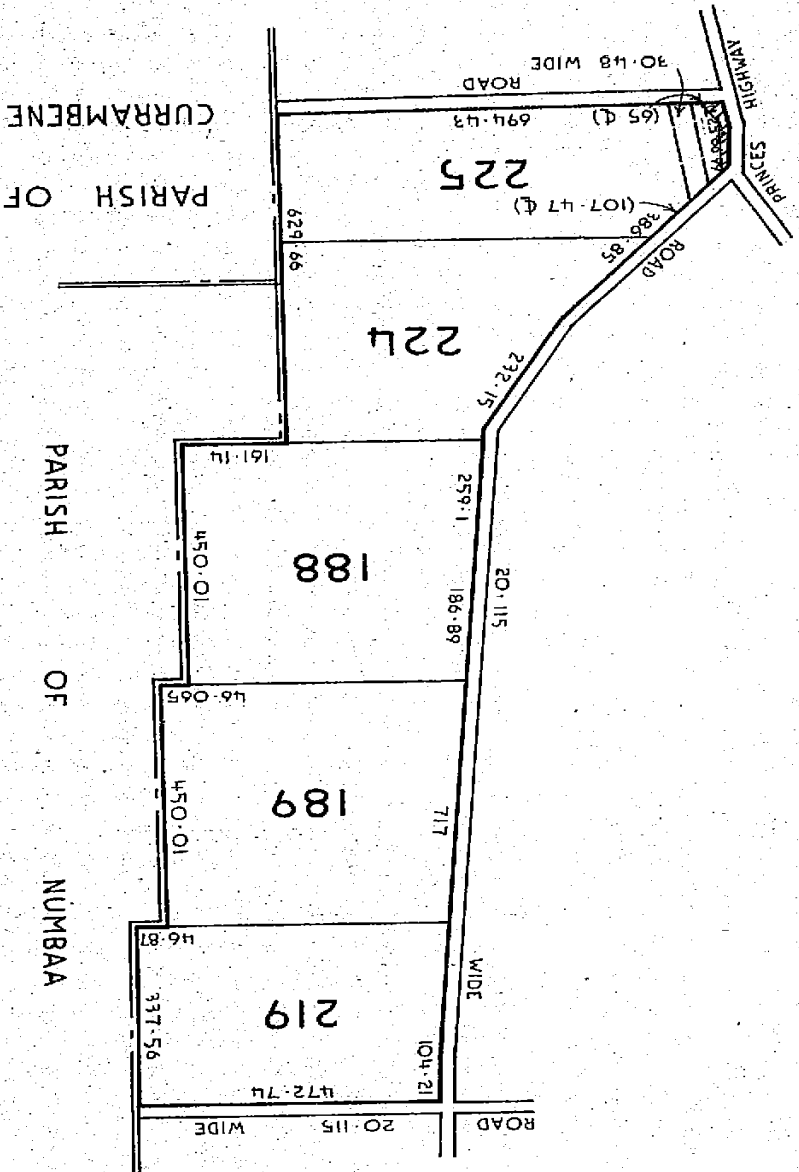
(Page 1) Vol.

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

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

PLAN SHOWING LOCATION OF LAND

LENGTHS ARE IN METRES



AREA : 89.03 ha

REDUCTION RATIO 1:10000

795686W

FIRST SCHEDULE (continued)

SECOND SCHEDULE (continued)

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

REGISTERED PROPRIETOR

[illegible]

PARTICULARS

[illegible]

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

NEW SOUTH WALES



CERTIFICATE OF TITLE

LAND PROPERTY ACT, 1900



14605145

Crown Grant Vol. 1927 Fol.172

Prior Title Vol.12023 Fol.153

Vol. 14605 Fol. 145

EDITION ISSUED

23 12 1981



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

CANCELLED

[Signature]

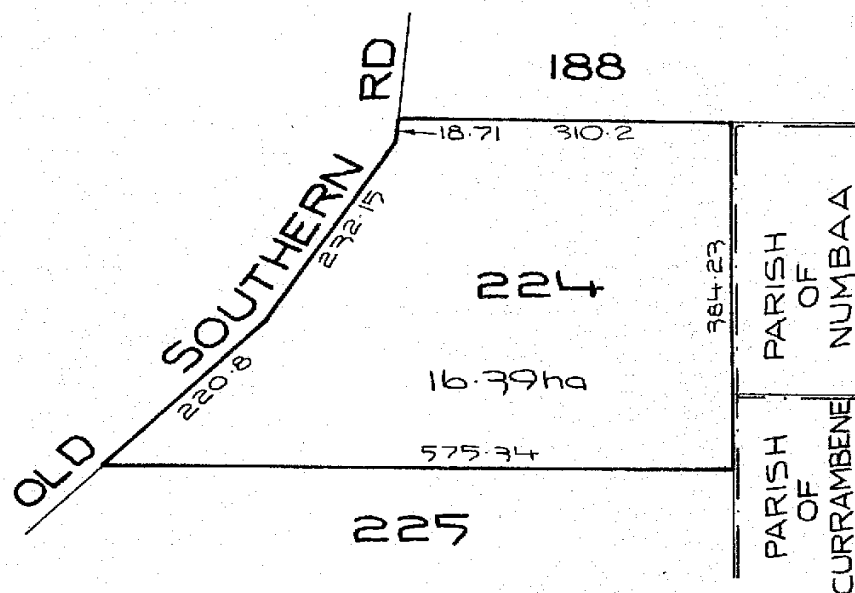
Registrar General.

SEE AUTO FOLIO



PLAN SHOWING LOCATION OF LAND

LENGTHS ARE IN METRES



5463143 *for* *wn*

ESTATE AND LAND REFERRED TO

P
 Estate in Fee Simple in Portion 224 in the City of Shoalhaven Parish of Nowra and County of St.Vincent.
 EXCEPTING THEREOUT the minerals reserved by the Crown Grant.

FIRST SCHEDULE

~~GREGORY HERBERT WATSON in 1/2 share and EDWARD CHRISTOPHER WATSON in 1/2 share as Tenants in Common~~

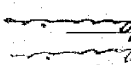
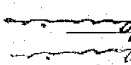
SECOND SCHEDULE

GRM 1. Reservations and conditions, if any, contained in the Crown Grant above referred to.

NOTE: ENTRIES RULED THROUGH AND AUTHENTIC

5761813
14 M
18
7830234014

NOTATIONS AND UNREGISTERED DEALINGS

1880234	 	 CV S761813 P Covenant. Registered 3-3-1982 S761814 Mortgage to Edward Christopher Watson. Registered 3-3-1982
---------	--	--

PARTICULARS
SECOND SCHEDULE (continued)
Registrar General
CANCELLATION

	FIRST SCHEDULE (continued) REGISTERED PROPRIETOR Ison & Co. Pty. Ltd by Transfer S761813. Registered 3-3-1982 CANCELLED SEE AUTO FOLIO
--	--

NEW SOUTH WALES

CERTIFICATE OF TITLE

REAL PROPERTY ACT, 1900



14605148

Crown Grant Vol. 1927 Fol.172

Prior Title Vol.12023 Fol.153

Vol. **14605** Fol. **148**

EDITION ISSUED

23 12 1981



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

CANCELLED
Registrar General.

SEE AUTO FOLIO

ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Portion 225 in the City of Shoalhaven Parish of Nowra and County of St.Vincent. EXCEPTING THEREOUT the minerals reserved by the Crown Grant.

FIRST SCHEDULE

GREGORY HERBERT WATSON in 1/2 share and EDWARD CHRISTOPHER WATSON in 1/2 share as Tenants in Common.

SECOND SCHEDULE

- GRM
AA
RT(SB)
1. Reservations and conditions, if any, contained in the Crown Grant above referred to.
 2. Notification in Government Gazette dated 28-2-1941 Folios 857 and 859: Easement for Transmission Line affecting the land shown so burdneed in the plan hereon.
 3. P222261P Restriction on user (section 27E(6) Main Roads Act, 1924) affecting the land shown so burdened in the plan hereon.

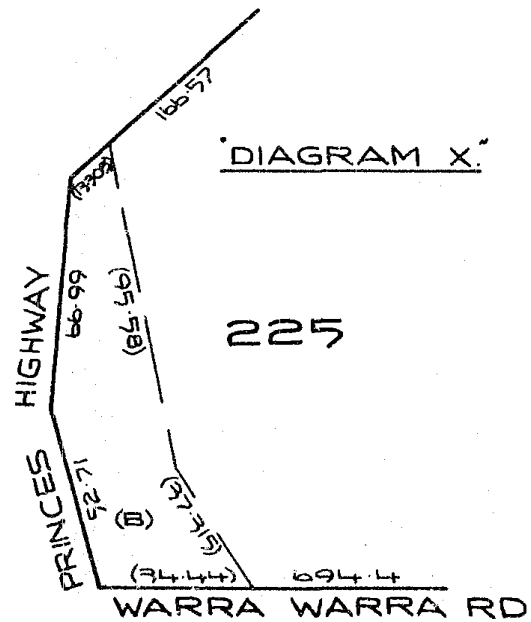
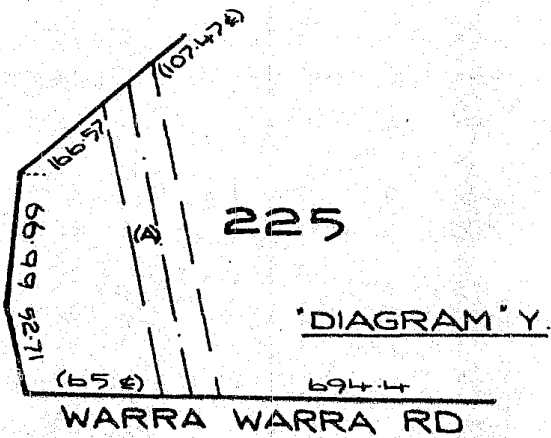
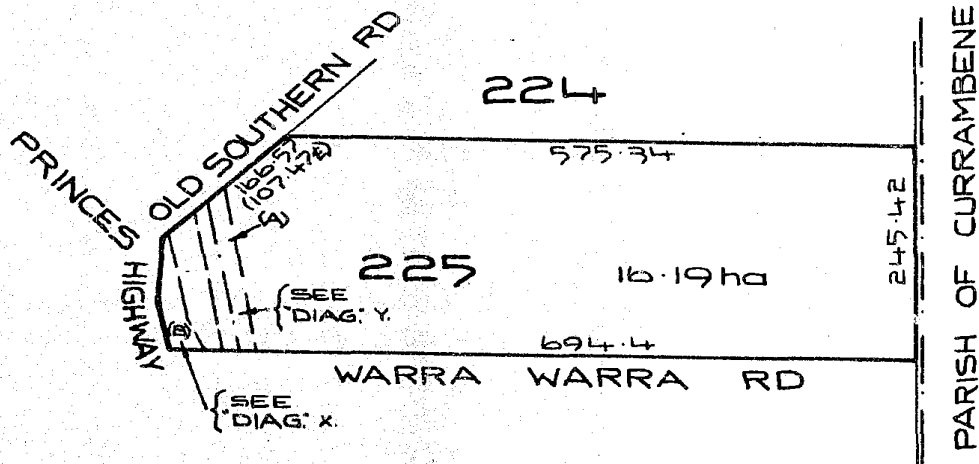
PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

WARNING: THIS DOCUMENT MUST NOT BE REMOVED FROM THE REGISTRAR GENERAL'S OFFICE.



PLAN SHOWING LOCATION OF LAND

LENGTHS ARE IN METRES



(A) EASEMENT FOR TRANS-
MISSION LINE 30.48
WIDE - GOV. GAZ. 282-1941
FOL. 857 & 850

(B) RESTRICTION ON USER
SEC. 27E (b) MAIN ROADS
ACT, 1924 - P222261

5463143 J.H. Wn

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR

Registrar General

Maconachie Datsun Nowra Pty Limited by Transfer S586170. Registered 24-12-1981



CANCELLED

SEE AUTO FOLIO

SECOND SCHEDULE (continued)

PARTICULARS

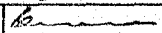
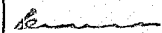
Registrar General

CANCELLATION

~~C~~ S586170P Covenant Registered 24-12-1981

~~S586171 Mortgage to Davis & Herbert Pty Limited Registered 24-12-1981~~

M T515071P Mortgage to Esanda Limited. Registered 4-5-1983


T515070

NOTATIONS AND UNREGISTERED DEALINGS

S586170 T515070
" 71 6/12/83
T515070 0/1/84
— 1/1/84

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

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR

Registrar General

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

Form: 011
Licence: 05-11-638
Licensee: Softdocs
HEARD McEWAN LEGAL

TRANSFER
New South Wales
Real Property Act 1900



AE171948V

PRIVACY NOTE: Section 31B of the Real Property Act 1900 (RP Act) authorises the Registrar to use the information provided by this form for the establishment and maintenance of the Real Property Act Register. Section 90B RP Act requires that the Register is made available to any person for search upon payment of a fee, if any.

STAMP DUTY

Office of State Revenue use only

Office of State Revenue NSW Treasury	
Client No: 110442310	2822
Duty: EXEMPT	Trans No: 4952407
Asst details: S308	

(A) FOLIO OF THE REGISTER

Part 225/755952 now being 5/1126288 and 8/1126288

(B) LODGED BY

Document Collection Box 285D	Name, Address or DX, Telephone, and LLPN if any 285D M J ARMSTRONG LLP: 127955Y REF: HEARD. M. Reference (optional):	CODE T TW (Sheriff)
-------------------------------------	---	--

(C) TRANSFEROR

LYSAND PTY LIMITED (A.C.N. 001 032 579)

(D) CONSIDERATION The transferor acknowledges receipt of the consideration of \$ 57,500.00 and as regards the folio
(E) ESTATE of the Register specified above transfers to the transferee an estate in fee simple.

(F) SHARE TRANSFERRED

(G) Encumbrances (if applicable):

(H) TRANSFEE

ROADS AND TRAFFIC AUTHORITY OF NEW SOUTH WALES

(I) TENANCY: Joint Tenants

DATE 12/11/2008

(J) Certified correct for the purposes of the Real Property Act 1900 and executed on behalf of the corporation named below by the authorised person(s) whose signature(s) appear(s) below pursuant to the authority specified.
Corporation: LYSAND PTY LIMITED (A.C.N. 001 032 579)
Authority: Section 127 of the Corporations Act 2001

Signature of authorised person: *[Signature]*

Name of authorised person: *X JOHN LAWRENCE*

Office held: *X DIRECTOR*

Signature of authorised person: *X [Signature]*

Name of authorised person: *X VERONICA LAWRENCE*

Office held: *X DIRECTOR*

Certified correct for the purposes of the Real Property Act 1900 by the person whose signature appears below.

Signature: *[Signature]*

Signatory's name: MALCOLM JOHN HEARD

Signatory's capacity: Solicitor for the transferee

(2)

Appendix D: LotSearch GIS Report



LOTSEARCH

LOTSEARCH ENVIRO PROFESSIONAL

Date: 07 Oct 2025 14:57:19

Reference: LS101585 EP

Address: Warra Warra Road, South Nowra, NSW 2541

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:

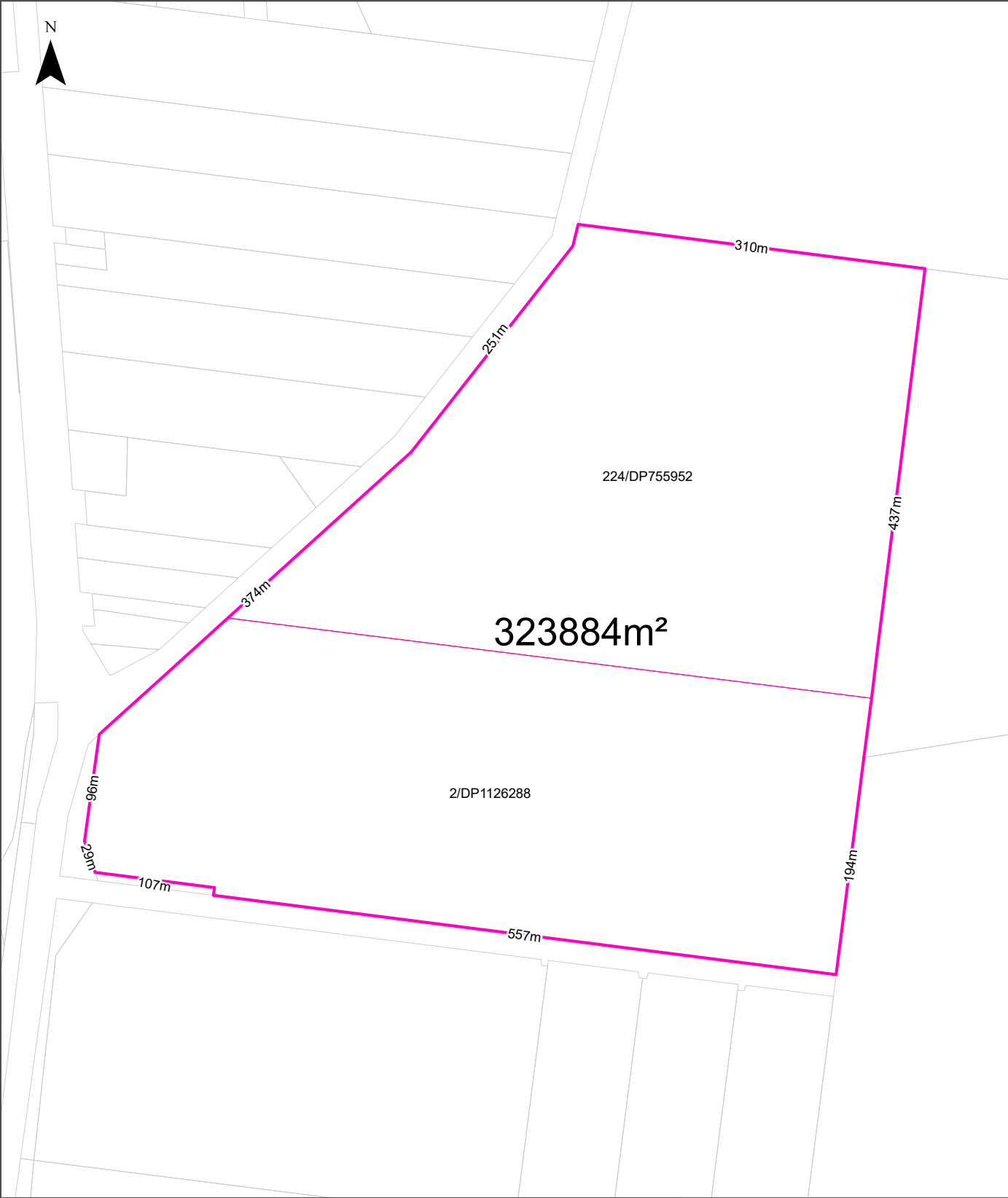
Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features On-site	No. Features within 100m	No. Features within Buffer
Cadastre Boundaries	NSW Department of Customer Service - Spatial Services	04/09/2025	04/09/2025	Monthly	-	-	-	-
Topographic Data	NSW Department of Customer Service - Spatial Services	20/05/2025	20/05/2025	Annually	-	-	-	-
List of NSW contaminated sites notified to EPA	Environment Protection Authority NSW	15/09/2025	09/09/2025	Monthly	1000m	0	0	0
Contaminated Land Records of Notice	Environment Protection Authority NSW	15/09/2025	15/09/2025	Monthly	1000m	0	0	0
Former Gasworks	Environment Protection Authority NSW	14/08/2025	23/06/2025	Quarterly	1000m	0	0	0
Notices under the POEO Act 1997	Environment Protection Authority NSW	12/09/2025	12/09/2025	Monthly	1000m	0	0	4
National Waste Management Facilities Database	Geoscience Australia	30/05/2025	19/01/2023	Annually	1000m	0	1	2
National Liquid Fuel Facilities	Geoscience Australia	16/10/2024	19/01/2023	Annually	1000m	0	0	2
EPA PFAS Investigation Program	Environment Protection Authority NSW	01/08/2025	05/02/2025	Monthly	2000m	0	0	0
Defence PFAS Investigation & Management Program - Investigation Sites	Australian Department of Defence	17/09/2025	17/09/2025	Monthly	2000m	0	0	0
Defence PFAS Investigation & Management Program - Management Sites	Australian Department of Defence	17/09/2025	17/09/2025	Monthly	2000m	0	0	0
Airservices Australia National PFAS Management Program	Airservices Australia	15/09/2025	15/09/2025	Monthly	2000m	0	0	0
Defence Controlled Areas	Australian Department of Defence	15/07/2025	15/07/2025	Quarterly	2000m	0	0	0
Defence 3 Year Regional Contamination Investigation Program	Australian Department of Defence	14/08/2025	02/09/2022	Quarterly	2000m	0	0	0
National Unexploded Ordnance (UXO)	Australian Department of Defence	15/07/2025	15/07/2025	Quarterly	2000m	0	0	1
EPA Other Sites with Contamination Issues	Environment Protection Authority NSW	28/11/2024	15/12/2022	Annually	1000m	0	0	0
Licensed Activities under the POEO Act 1997	Environment Protection Authority NSW	26/09/2025	26/09/2025	Monthly	1000m	0	3	3
Delicensed POEO Activities still regulated by the EPA	Environment Protection Authority NSW	26/09/2025	26/09/2025	Monthly	1000m	0	1	1
Former POEO Licensed Activities now revoked or surrendered	Environment Protection Authority NSW	26/09/2025	26/09/2025	Monthly	1000m	3	4	6
UBD Business Directories (Premise & Intersection Matches)	Hardie Grant			Not required	150m	0	24	24
UBD Business Directories (Road & Area Matches)	Hardie Grant			Not required	150m	-	112	112
UBD Business Directory Dry Cleaners & Motor Garages/Service Stations (Premise & Intersection Matches)	Hardie Grant			Not required	500m	0	0	0
UBD Business Directory Dry Cleaners & Motor Garages/Service Stations (Road & Area Matches)	Hardie Grant			Not required	500m	-	6	6
Points of Interest	NSW Department of Customer Service - Spatial Services	18/08/2025	18/08/2025	Quarterly	1000m	0	1	12
Tanks (Areas)	NSW Department of Customer Service - Spatial Services	18/08/2025	18/08/2025	Quarterly	1000m	0	0	0
Tanks (Points)	NSW Department of Customer Service - Spatial Services	18/08/2025	18/08/2025	Quarterly	1000m	0	0	0
Major Easements	NSW Department of Customer Service - Spatial Services	18/08/2025	18/08/2025	Quarterly	1000m	1	1	2
State Forest	Forestry Corporation of NSW	18/12/2024	11/11/2024	Annually	1000m	0	0	0
Hydrogeology Map of Australia	Geoscience Australia	22/04/2025	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 2024	NSW Department of Climate Change, Energy, the Environment and Water	08/08/2025	28/06/2024	Quarterly	1000m	0	0	0
National Groundwater Information System (NGIS) Boreholes	Bureau of Meteorology; Water NSW	30/05/2025	04/03/2025	Annually	2000m	0	0	11
NSW Seamless Geology Single Layer: Rock Units	NSW Department of Primary Industries and Regional Development	19/05/2025	16/04/2024	Annually	1000m	1	2	2
NSW Seamless Geology Single Layer: Geological Boundaries and Faults	NSW Department of Primary Industries and Regional Development	19/05/2025	16/04/2024	Annually	1000m	0	1	3
NSW Seamless Geology Single Layer: Trendlines	NSW Department of Primary Industries and Regional Development	19/05/2025	16/04/2024	Annually	1000m	0	0	0
NSW Seamless Geology Single Layer: Fold Axes	NSW Department of Primary Industries and Regional Development	19/05/2025	16/04/2024	Annually	1000m	0	0	0
Naturally Occurring Asbestos Potential	NSW Department of Primary Industries and Regional Development	05/05/2025	30/09/2015	Annually	1000m	0	0	0
Atlas of Australian Soils	Australian Bureau of Agriculture and Resource Economics and Sciences (ABARES)	15/01/2025	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	18/12/2024	27/07/2020	Annually	1000m	1	1	2
Environmental Planning Instrument Acid Sulfate Soils	NSW Department of Planning, Housing and Infrastructure	11/09/2025	09/05/2025	Monthly	500m	1	-	-
Atlas of Australian Acid Sulfate Soils	CSIRO	15/01/2025	21/02/2013	Annually	1000m	1	1	1
Dryland Salinity - National Assessment	Australian Bureau of Agricultural and Resource Economics and Sciences	03/06/2025	15/04/2025	Annually	1000m	0	0	0
Mining Subsidence Districts	NSW Department of Customer Service	18/08/2025	18/08/2025	Quarterly	1000m	0	0	0
Current Mining Titles	NSW Department of Primary Industries and Regional Development	11/09/2025	11/09/2025	Monthly	1000m	0	2	2
Mining Title Applications	NSW Department of Primary Industries and Regional Development	11/09/2025	11/09/2025	Monthly	1000m	0	0	0
Historic Mining Titles	NSW Department of Primary Industries and Regional Development	11/09/2025	11/09/2025	Monthly	1000m	7	7	9
Environmental Planning Instrument SEPP State Significant Precincts	NSW Department of Planning, Housing and Infrastructure	11/09/2025	08/09/2023	Monthly	1000m	0	0	0
Environmental Planning Instrument Land Zoning	NSW Department of Planning, Housing and Infrastructure	11/09/2025	25/07/2025	Monthly	1000m	1	8	19
Commonwealth Heritage List	Australian Department of Climate Change, Energy, the Environment and Water	23/10/2024	13/04/2022	Annually	1000m	0	0	0
National Heritage List	Australian Department of Climate Change, Energy, the Environment and Water	23/10/2024	13/04/2022	Annually	1000m	0	0	0
State Heritage Register - Curtilages	NSW Department of Planning, Industry and Environment	18/08/2025	25/07/2025	Quarterly	1000m	0	0	0
Environmental Planning Instrument Local Heritage	NSW Department of Planning, Housing and Infrastructure	11/09/2025	25/07/2025	Monthly	1000m	0	0	0
Bush Fire Prone Land	NSW Rural Fire Service	03/10/2025	02/10/2025	Monthly	1000m	3	3	4
NSW Native Vegetation Type Map	NSW Department of Climate Change, Energy, the Environment and Water	11/09/2025	08/11/2024	Quarterly	1000m	9	14	57
Ramsar Wetlands of Australia	Australian Department of Climate Change, Energy, the Environment and Water	19/05/2025	05/03/2025	Annually	1000m	0	0	0
Collaborative Australian Protected Areas Database (CAPAD) 2022 - Terrestrial	Australian Department of Climate Change, Energy, The Environment and Water	20/03/2025	19/06/2024	Annually	1000m	0	0	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
Collaborative Australian Protected Areas Database (CAPAD) 2022 - Marine	Australian Department of Climate Change, Energy, The Environment and Water	20/03/2025	30/06/2022	Annually	1000m	0	0	0
Groundwater Dependent Ecosystems	Bureau of Meteorology	30/05/2025	07/05/2020	Annually	1000m	3	5	6
Inflow Dependent Ecosystems Likelihood	Bureau of Meteorology	30/05/2025	07/05/2020	Annually	1000m	6	7	11
NSW BioNet Species Sightings	NSW Department of Climate Change, Energy, the Environment and Water	25/09/2025	25/09/2025	Monthly	10000m	-	-	-

Site Diagram

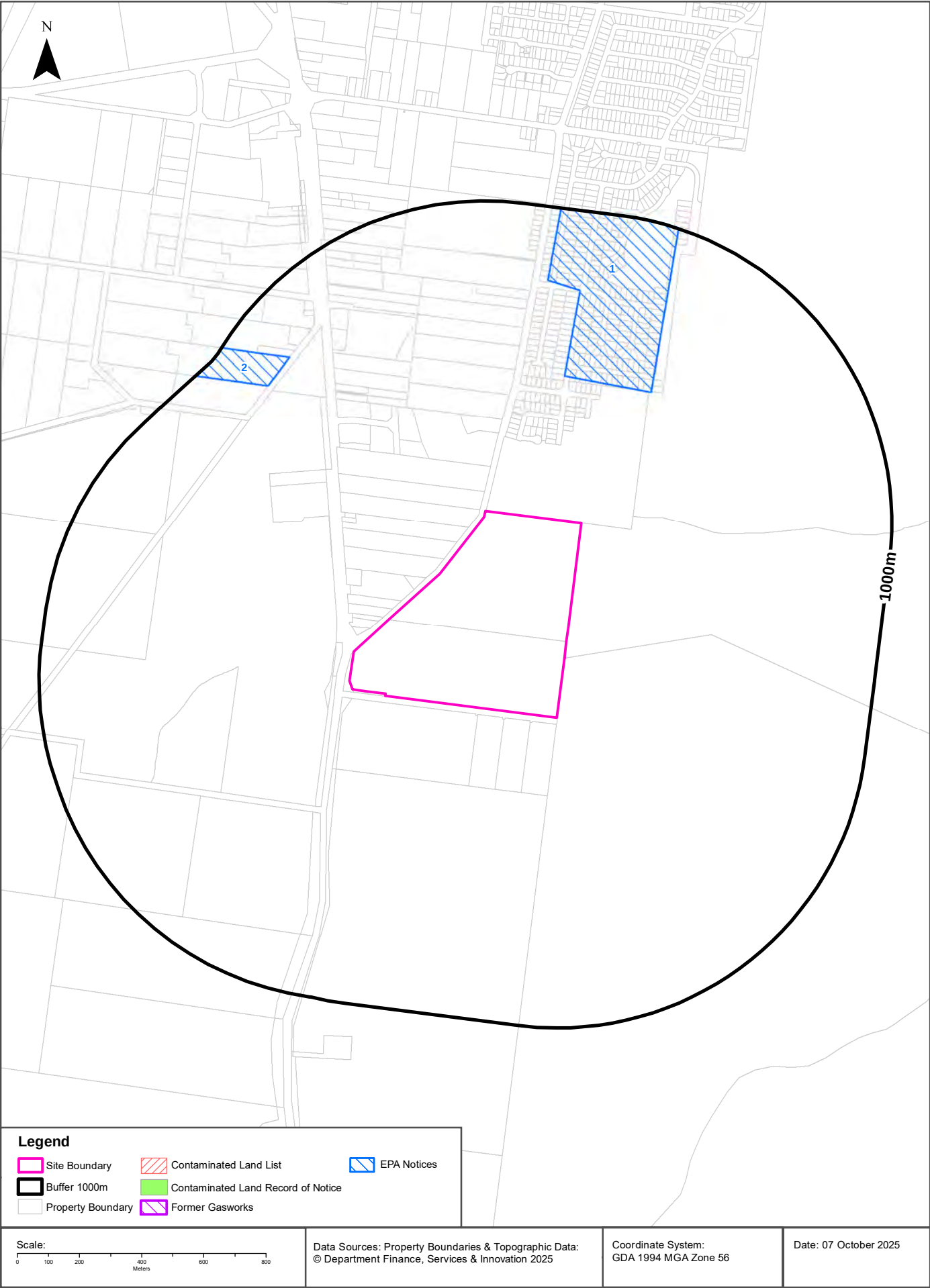
Warra Warra Road, South Nowra, NSW 2541



Legend Site Boundary Internal Parcel Boundaries	Total Area: 323884m ² Total Perimeter: 2.36km	
	Scale: 0 25 50 100 150 200 250 Meters	
	Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2025	
Disclaimers: Measurements are approximate only and may have been simplified or smaller lengths removed for readability. Parcels that make up a small percentage of the total site area have not been labelled for increased legibility.	Coordinate System: GDA 1994 MGA Zone 56	
	Date: 07 October 2025	

Contaminated Land

Warra Warra Road, South Nowra, NSW 2541



Contaminated Land

Warra Warra Road, South Nowra, NSW 2541

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
N/A	No records in buffer								

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: Records of Notice

Record of Notices within the dataset buffer:

Map Id	Name	Address	Suburb	Notices	Area No	Location Confidence	Distance	Direction
N/A	No records in buffer							

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

EPA Notices

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

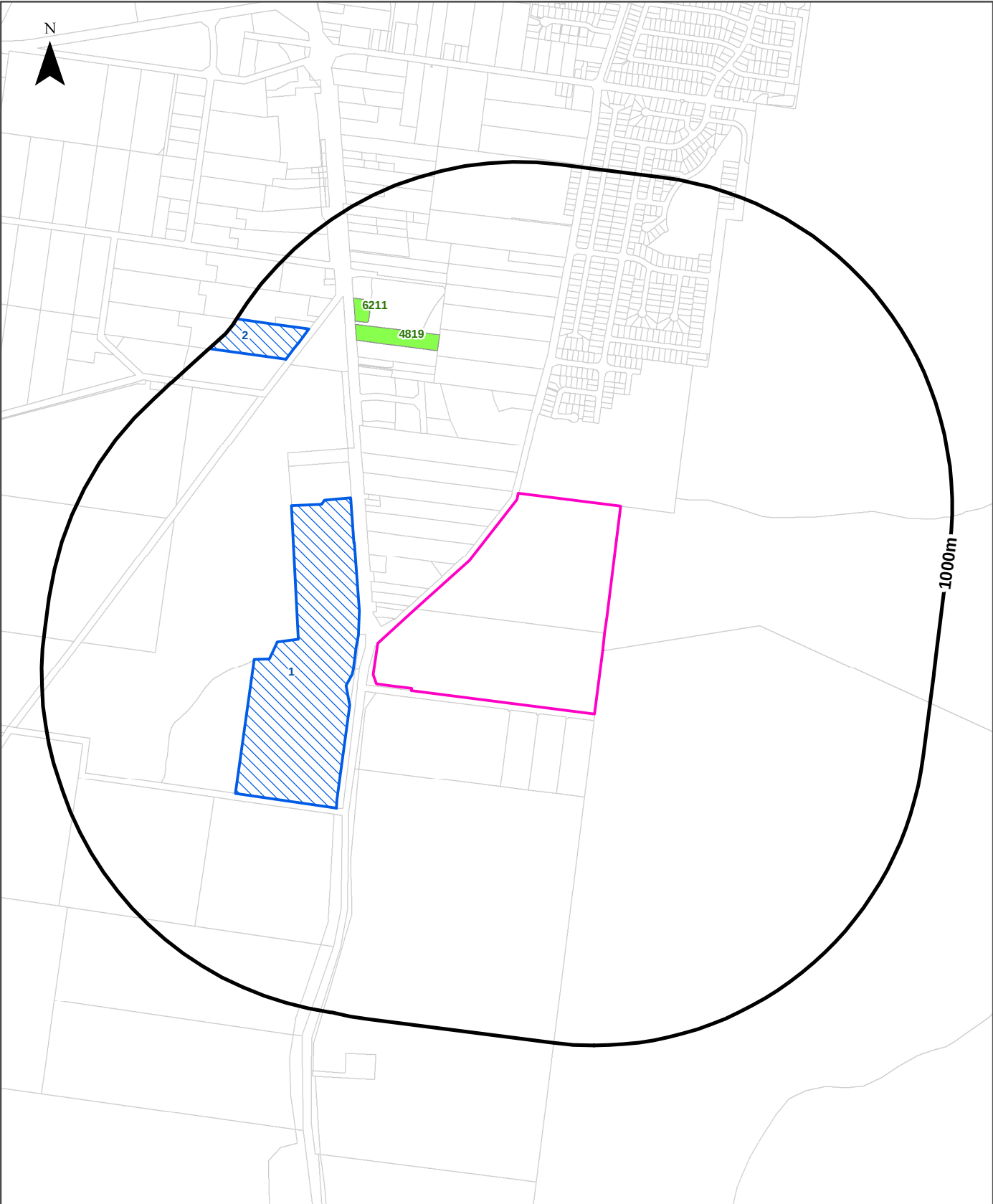
Map ID	Number	Type	Name	Address	Status	Issued Date	Act	Offence	Offence Date	Loc Conf	Dist	Dir
1	1123442	s.91 Clean Up Notice	RIVERSIDE LODGE PTY LTD		Issued	11/02/2011				Premise Match	457m	North
2	3085773763	Penalty Notice	SHOALHAVEN EXCAVATION & PLANT HIRE PTY LTD	7 Nowra Hill Road, SOUTH NOWRA, NSW 2541	Issued	06/05/2014	Protection of the Environment Operations Act 1997 - 97	Fail to comply with prevention notice - Corporation	28/02/2014	Premise Match	803m	North West
	1518311	s.96 Prevention Notice	SHOALHAVEN EXCAVATION & PLANT HIRE PTY LTD		Issued	20/12/2013				Premise Match	803m	North West
	1521536	s.96 Prevention Notice	SHOALHAVEN EXCAVATION & PLANT HIRE PTY LTD		Issued	06/05/2014				Premise Match	803m	North West

NSW EPA Notice Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

Waste Management & Liquid Fuel Facilities

Warra Warra Road, South Nowra, NSW 2541



Legend			
Site Boundary	Waste Management Facilities		
Buffer 1000m	National Liquid Fuel Facilities		
Property Boundary			
Scale: 		Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2025	Coordinate System: GDA 1994 MGA Zone 56
		Date: 07 October 2025	

Waste Management & Liquid Fuel Facilities

Warra Warra Road, South Nowra, NSW 2541

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	SOUTH COAST CONCRETE CRUSHING & RECYCLING PTY LTD	SOUTH COAST CONCRETE CRUSHING & RECYCLING	245 PRINCES HIGHWAY, NOWRA HILL	RECYCLING	C&D WASTE RECYCLING FACILITY	OPERATIONAL	Premise Match	62m	West
2	SHOALHAVEN EXCAVATIONS & PLANT HIRE	SHOALHAVEN EXCAVATIONS & PLANT HIRE	LOT 14, 7 NOWRA HILL ROAD, SOUTH NOWRA	NOT CLASSIFIED	OTHER WASTE FACILITY	OPERATIONAL	Premise Match	803m	North West

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

National Liquid Fuel Facilities

National Liquid Fuel Facilities within the dataset buffer:

Map Id	Owner	Name	Address	Suburb	Class	Operational Status	Operator	Revision Date	Loc Conf	Dist	Direction
4819	BP	BP SOUTH NOWRA	202 PRINCES HIGHWAY	SOUTH NOWRA	PETROL STATION	Operational		13/07/2012	Premise Match	496m	North West
6211	COLES EXPRESS	COLES EXPRESS SOUTH NOWRA	198 PRINCES HIGHWAY	SOUTH NOWRA	PETROL STATION	OPERATIONAL			Premise Match	690m	North West

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

PFAS Investigation & Management Programs

Warra Warra Road, South Nowra, NSW 2541

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				

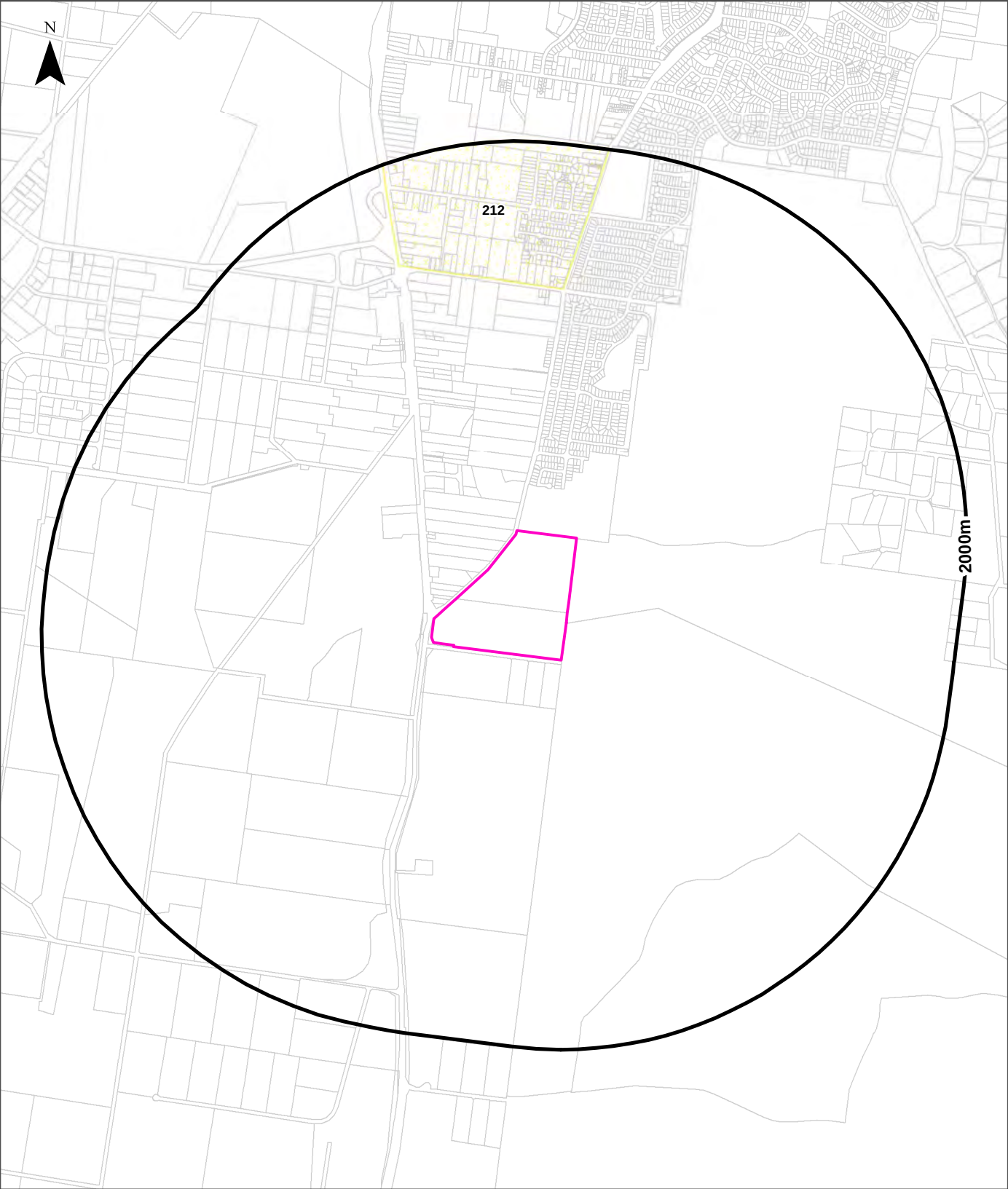
Defence PFAS Management Program Data Custodian: Department of Defence, Australian Government

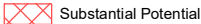
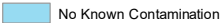
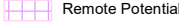
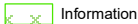
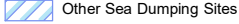
Airservices Australia National PFAS Management Program

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

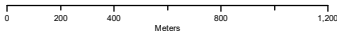
Map ID	Site Name	Impacts	Loc Conf	Dist	Dir
N/A	No records in buffer				

Airservices Australia National PFAS Management Program Data Custodian: Airservices Australia



Legend			
 Site Boundary	 DCA	 Defence 3 Year RCIP	 UXO
 Buffer 2000m	Defence Controlled Area	 Known Contamination	 Substantial Potential
 Property Boundaries		 No Known Contamination	 Slight Potential
			 Remote Potential
			 Sea Dumping of Depth Charges
			 Information
			 Other
			 Other Sea Dumping Sites

Scale:



0 200 400 800 1,200
Meters

Data Sources: Property Boundaries & Topographic Data:
© Department Finance, Services & Innovation 2025

Coordinate System:
GDA 1994 MGA Zone 56

Date: 07 October 2025

Defence Sites and Unexploded Ordnance

Warra Warra Road, South Nowra, NSW 2541

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
212	Nowra	Other	Records indicate that large numbers of Troops Camped and Trained in the vicinity of Nowra during WW2.		Not Commonwealth Land	As Supplied	1260m	North

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

EPA Other Sites with Contamination Issues

Warra Warra Road, South Nowra, NSW 2541

EPA Other Sites with Contamination Issues

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

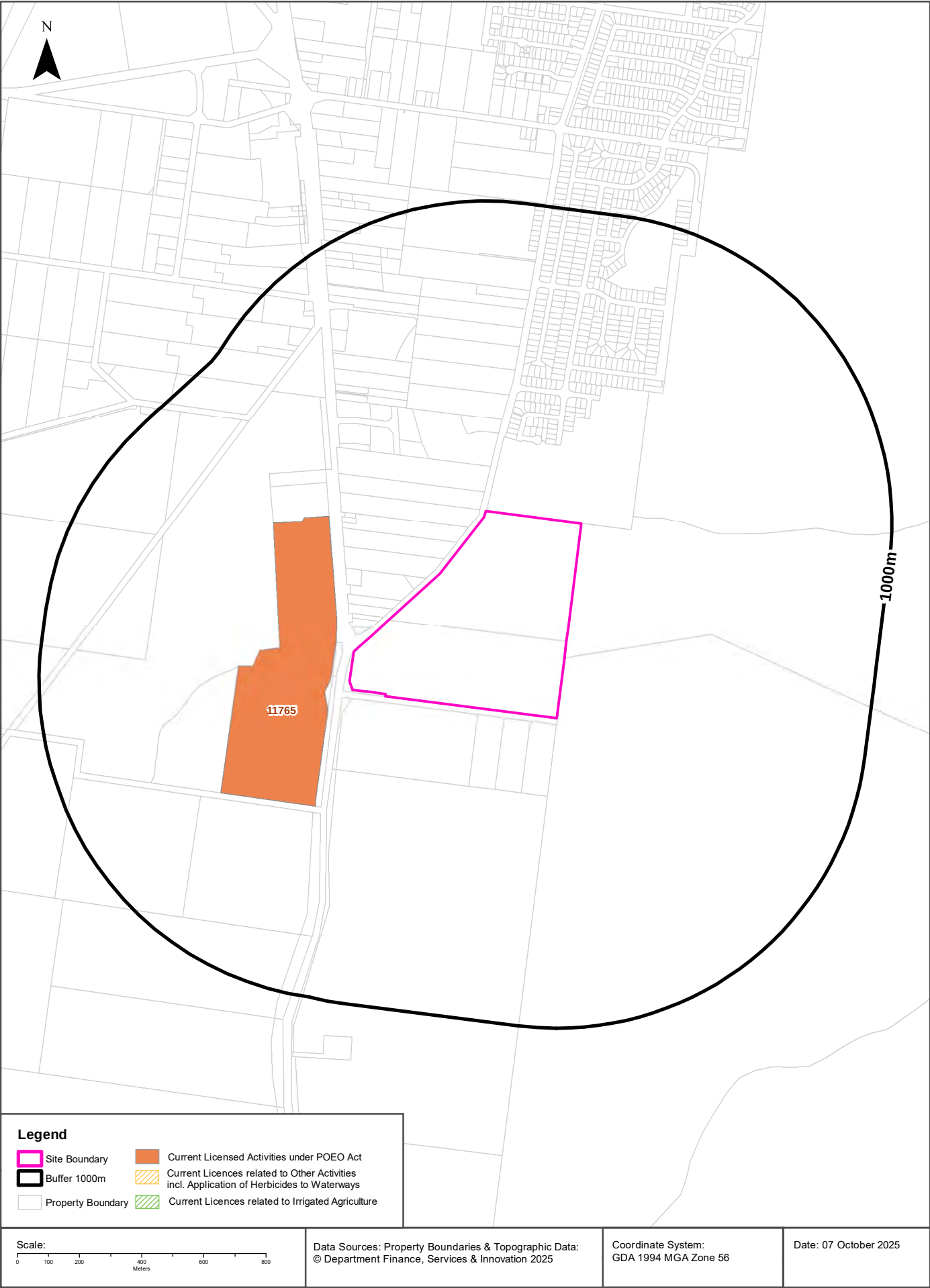
- James Hardie asbestos manufacturing and waste disposal sites
- Radiological investigation sites in Hunter's Hill
- Pasminco Lead Abatement Strategy Area

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

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EPA Activities

Warra Warra Road, South Nowra, NSW 2541

Licensed Activities under the POEO Act 1997

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

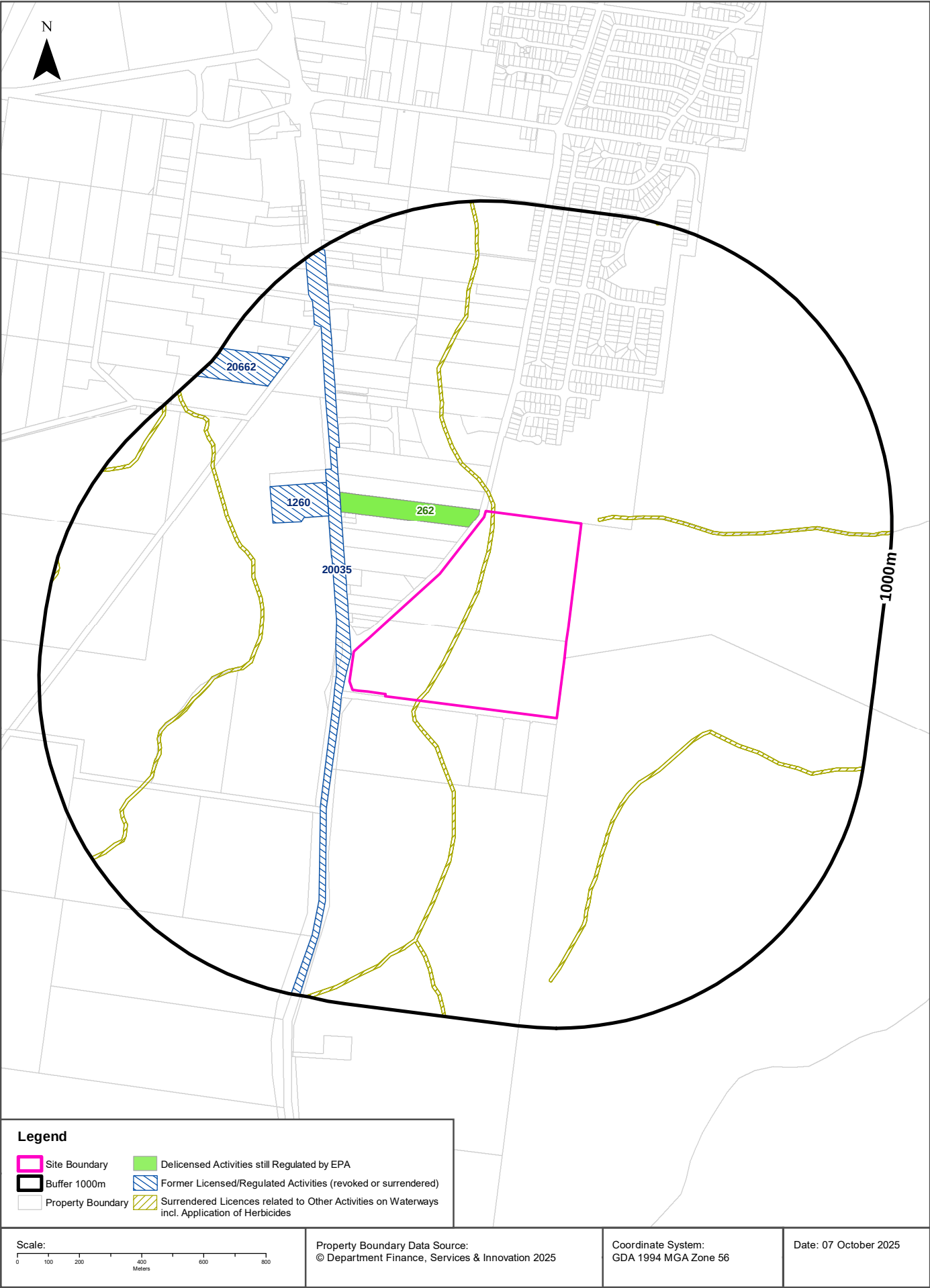
EPL	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
11765	SOUTH COAST CONCRETE CRUSHING AND RECYCLING PTY LIMITED	SOUTH COAST CONCRETE CRUSHING & RECYCLING	PRINCES HIGHWAY	NOWRA	Land-based extractive activity	Premise Match	62m	West
11765	SOUTH COAST CONCRETE CRUSHING AND RECYCLING PTY LIMITED	SOUTH COAST CONCRETE CRUSHING & RECYCLING	PRINCES HIGHWAY	NOWRA	Recovery of general waste	Premise Match	62m	West
11765	SOUTH COAST CONCRETE CRUSHING AND RECYCLING PTY LIMITED	SOUTH COAST CONCRETE CRUSHING & RECYCLING	PRINCES HIGHWAY	NOWRA	Crushing, grinding or separating	Premise Match	62m	West

POEO Licence Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

Delicensed & Former Licensed EPA Activities

Warra Warra Road, South Nowra, NSW 2541



EPA Activities

Warra Warra Road, South Nowra, NSW 2541

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
262	HEIDELBERG MATERIALS AUSTRALIA PTY LTD	HANSON CONSTRUCTION MATERIALS PTY LTD	250 PRINCES HIGHWAY	NOWRA	Concrete works	Premise Match	20m	North West

Delicensed Activities Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

Former Licensed Activities under the POEO Act 1997, now revoked or surrendered

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

Licence No	Organisation	Location	Status	Issued Date	Activity	Loc Conf	Distance	Direction
4653	LUHRMANN ENVIRONMENT MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW	Surrendered	06/09/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	0m	On-site
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	0m	On-site
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	0m	On-site
20035	NACE CIVIL ENGINEERING PTY. LIMITED	HW1 Princes Highway South Nowra Duplication, Princes Highway between Kinghorn Street and Forest Road, SOUTH NOWRA	Surrendered	03/11/2011	Road construction	Road Match	6m	West
1260	NOWRA BRICKWORKS (NSW) PTY LTD	245 PRINCES HIGHWAY, NOWRA, NSW 2541	Surrendered	14/03/2001	Ceramics production	Premise Match	379m	North West
20662	SHOALHAVEN EXCAVATION & PLANT HIRE PTY LTD	7 Nowra Hill Road, SOUTH NOWRA, NSW 2541	Surrendered	19/02/2016	Recovery of General Waste	Premise Match	803m	North West

Former Licensed Activities Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

Historical Business Directories

Warra Warra Road, South Nowra, NSW 2541



Legend		Scale: 0 80 160 240 320 Meters	Coordinate System: GDA 1994 MGA Zone 56
Site Boundary	Business directory records mapped to a specific premise		Date: 07 October 2025
Buffer 150m	Business directory records mapped to a road intersection	Data Sources: Reproduced with permission of UBD and Hardie Grant Media Pty Ltd DD 01/08/2018 Property Boundaries © NSW Department Finance, Services & Innovation 2025	
Property Boundary	Business directory records mapped to a road corridor		
Business directory records mapped to a general area			

Historical Business Directories

Warra Warra Road, South Nowra, NSW 2541

Business Directory Records 1950-1991 Premise or Road Intersection Matches

Potentially contaminative business activities extracted from Universal Business Directories from years 1991, 1982, 1970, 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	CRANE &/OR TRAVEL TOWER PROPRIETORS &/OR HIRERS.	A & D Tree Lopping., 290 Princess Hwy South Nowra	100086	1991	Premise Match	20m	West
	TREE FELLING &/OR LOPPING CONTRACTORS.	A & D Tree Lopping., 290 Princess Hwy South Nowra	99345	1991	Premise Match	20m	West
	FURNITURE MFRS. &/OR W/SALERS. OUTDOORS.	Gateway Leisure Products., 292 Princes Hwy South Nowra	100515	1991	Premise Match	20m	West
	GARAGE MFRS. &/OR DIST. &/OR INSTALLERS.	Gateway Leisure Products., 292 Princes Hwy South Nowra	98744	1991	Premise Match	20m	West
	FURNITURE MFRS. &/OR W/SALERS. -BUILT-IN.	Gateway Leisure Products., 292 Princss Hwy South Nowra	103802	1991	Premise Match	20m	West
	CARPORT &/OR AWNING MFRS. &/OR ERECTORS.	Tru-Blu Garages., 292 Princes Hwy South Nowra	100753	1991	Premise Match	20m	West
	GARAGE MFRS. &/OR DIST. &/OR INSTALLERS.	Tru-Blu Garages., 292 Princes Hwy South Nowra	98748	1991	Premise Match	20m	West
2	CATTLE TROUGHING MFRS. &/OR DIST. CONCRETE	Bennett's Concrete Products., 286 Princes Hwy South Nowra	99506	1991	Premise Match	20m	West
	SEPTIC TANK MFRS. &/OR INSTALLERS &/OR SPECIALISTS.	Bennett's Concrete Products., 286 Princes Hwy South Nowra	103945	1991	Premise Match	20m	West
3	MOTOR ACCESSORIES-RETAIL.	Bustom Car Striping., 282 Princes Hwy South Nowra	105311	1991	Premise Match	20m	West
	MOTOR CAR DEALERS - NEW &/OR USED.	Custom Auto Wreckers., 282 Princes Hwy South Nowra	105637	1991	Premise Match	20m	West
	MOTOR WRECKERS.	Custom Auto Wreckers., 282 Princes Hwy South Nowra	103492	1991	Premise Match	20m	West
4	CONCRETE - READY MIXED.	Pioneer Concrete Pty Ltd., 250 Princes Hwy South Nowra	99587	1991	Premise Match	20m	North
5	CONCRETE BLOCK &/OR BRICK MFRS. &/OR DIST.	Shoalhaven Masomy., 274 Princes Hwy South Nowra	100181	1991	Premise Match	20m	North West
	CONCRETE PRODUCTS MFRS. &/OR DIST. &/OR W/SALERS.	Shoalhaven Masonry., 274 Princes Hwy South Nowra	102226	1991	Premise Match	20m	North West
6	SIGNWRITERS.	Shoalhaven Signs., 288 Princes Hwy South Nowra	103549	1991	Premise Match	20m	West
	SIGNS GENERAL	Shoatiaven Signs., 288 Princes Hwy South Nowra	105831	1991	Premise Match	20m	West
7	FENCE &/OR GATE MFRS. &/OR DIST.	Smorgon Arc Fencing., 262 Princes Hwy South Nowra	99694	1991	Premise Match	20m	North West
8	PLASTIC FABRICATORS.	Soulhcoatl Trailer & Tow Banrs., 294 Princes Hay South Nowra	99052	1991	Premise Match	20m	West
	RUBBER STAMP MFRS. &/OR DIST.	Southcoast Trailer & Tow Bars., 294 Princes Hwy South Nowra	104496	1991	Premise Match	20m	West
	MOTOR TOWING SERVICES.	Southcoast Trailer & Tow Bars., 294 Princes Hwy South Nowra	102567	1991	Premise Match	20m	West
	TRAILER &/OR TRAILER EQUIPMENT MFRS. &/OR DIST.	Southcoast Trailer & Tow Bart., 294 Priaces Hwy South Nowra	105032	1991	Premise Match	20m	West
	MOTOR STEAM CLEANERS.	Southcoast Trailer. & Tow Ban., 294 Princes Hwy South Nowra	104144	1991	Premise Match	20m	West
	NOT LISTED	Towbars Supplied & Fitted., 294 Princess Hwy South Nowra	103245	1991	Premise Match	20m	West

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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, 1982, 1970, 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
9	BRICK MFRS. &/OR DISTS.	Aljebic Pty Ltd., Princes Hwy South Nowra	98858	1991	Road Match	2m
	CONCRETE BLOCK &/OR BRICK MFRS. &/OR DISTS.	Aljebic Pty Ltd., Princes Hwy South Nowra	100179	1991	Road Match	2m
	MOTOR OIL SPIRIT & GREASE MFRS. &/OR IMPS. &/OR DISTS.	Ampol Service Station., Princes Hwy South Nowra	103988	1991	Road Match	2m
	MOTOR GARAGES & SERVICE STATIONS.	Caltex Service Station., Princes Hwy South Nowra	102422	1991	Road Match	2m
	WINDOW FRAME MFRS &/OR DISTS ALUMINIUM	Dowell Windows & Sliding Doors., Lot 8 Princes Hwy South Nowra	105107	1991	Road Match	2m
	WINDOW FRAME MFRS. &/OR DISTS. -WOOD.	Dowell Windows & Sliding Doors., Lot 8 Princes Hwy South Nowra	104774	1991	Road Match	2m
	STORAGE &/OR DISTRIBUTION CENTRES.	Eveready Mini Storage., Lot 9 Princes Hwy South Nowra	105838	1991	Road Match	2m
	HEATING EQUIPMENT &/OR SYSTEMS MFRS. &/OR DISTS. &/OR INSTALLERS.	Fire King Heating Centre., Princes Hwy South Nowra	101453	1991	Road Match	2m
	KITCHEN UNITS MFRS. &/OR DISTS. &/OR INSTALLERS.	Forest Laminates & Kitchens., Unit 7 Princes Hwy South Nowra	103204	1991	Road Match	2m
	BUILDERS SUPPLIES.	Ison & Co Pty Ltd., Lot 5 Princes Hwy South Nowra	98524	1991	Road Match	2m
	CRANE &/OR TRAVEL TOWER PROPRIETORS &/OR HIRERS.	Ison & Co Pty Ltd., Lot 5 Princes Hwy South Nowra	100157	1991	Road Match	2m
	SHOP &/OR OFFICE FITTERS	Morrissey John & Narissa., Princes Hwy South Nowra	99110	1991	Road Match	2m
	SHOP &/OR OFFICE FITTINGS MFRS. &/OR DISTS.	Morrissey John & Narissa., Princes Hwy South Nowra	104977	1991	Road Match	2m
	BRICK MFRS. &/OR DISTS.	Nowra Brickworks Pty Ltd., Princes Hwy South Nowra	98958	1991	Road Match	2m
	GENERATOR MFRS. &/OR DISTS.	Nowra Power Equipment., Princes Hwy South Nowra	102305	1991	Road Match	2m
	TYRE DEALERS	Nowra Power Equipment., Princes Hwy South Nowra	100128	1991	Road Match	2m
	BICYCLE &/OR ACCESSORY DEALERS &/OR REPAIRERS.	Regans Motor Bi-Cycles., Shop 8 Lot 1 Princes Hwy South Nowra	97902	1991	Road Match	2m
	MOTOR GARAGES & SERVICE STATIONS.	Shellshop Service Station., Princes Hwy South Nowra	102525	1991	Road Match	2m
	MOTOR OIL SPIRIT & GREASE MFRS. &/OR IMPS. &/OR DISTS.	Shellshop Service Station., Princes Hwy South Nowra	103928	1991	Road Match	2m
	MOTOR CAR DEALERS - NEW &/OR USED.	Solomon Motors Cily., Pacific Hwy South Nowra	105676	1991	Road Match	2m
	WINDOW FRAME MFRS &/OR DISTS ALUMINIUM	Space Aluminium Products Pty Ltd., Unit 4 Princes Hwy South Nowra	105118	1991	Road Match	2m
	GENERATOR MFRS. &/OR DISTS.	Two Wheels N Tyres., Princes Hwy South Nowra	102306	1991	Road Match	2m
	TYRE DEALERS	Two Wheels N Tyres., Princes Hwy South Nowra	100168	1991	Road Match	2m
	BATHROOM EQUIPMENT &/OR FITTINGS MFRS. &/OR DISTS.	Watson & Crane., Lot 5 Princes Hwy South Nowra	98597	1991	Road Match	2m
	PLUMBERS SUPPLIES	Watson & Crane., Lot 5 Princes Hwy South Nowra	104904	1991	Road Match	2m
	ROOF TRUSSES MFRS. &/OR DISTS	ACE Building Components, Princes Highway., South Nowra 2541	138072	1982	Road Match	2m
	EARTH MOVING MACHINERY HIRERS	Bennett, Mervyn, Princes Highway., South Nowra 2541	137581	1982	Road Match	2m

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
9	SEPTIC TANK MFRS. &/ OR INSTALLERS &/ OR SPECIALISTS	Bennett, Mervyn, Princes Highway., South Nowra 2541	138089	1982	Road Match	2m
	WASTE COLLECTION & DISPOSAL	Cleanaway, Princes Highway., South Nowra 2541	138198	1982	Road Match	2m
	ENGINEERS - GENERAL &/ OR MANUFACTURING &/ OR MECHANICAL	Deys Engineering, Princes Highway., South Nowra 2541	137614	1982	Road Match	2m
	WELDERS - ELECTRIC &/OR OXY	Deys Engineering, Princes Highway., South Nowra 2541	138204	1982	Road Match	2m
	ALUMINIUM WINDOW FRAME MFRS. &/ OR DIST	Dowell Aluminium Windows (NSW), Lot 8 Princes Highway., South Nowra 2541	137334	1982	Road Match	2m
	ALUMINIUM WINDOW FRAME MFRS. &/ OR DIST	FIN Aluminium Windows, Princes H'way. South Nowra 2541	137336	1982	Road Match	2m
	MOTOR GARAGES & / OR ENGINEERS &/OR SERVICE STATIONS	Golden Fleece Service Station, Princes Highway, South Nowra 2541	137905	1982	Road Match	2m
	BUILDERS SUPPLIERS	Ison & Co. Pty. Ltd., Princes Highway., South Nowra 2541	137442	1982	Road Match	2m
	TIMBER MERCHANTS &/ OR SAWMILLERS	Miltrac Timbers Princes Highway, South Nowra 2541	138159	1982	Road Match	2m
	AMMUNITION & EXPLOSIVES DIST	Miltrac Timbers, Princes Highway., South Nowra 2541	137343	1982	Road Match	2m
	DOOR MFRS. &/ OR DIST. &/OR INSTALLERS	Miltrac Timbers, Princes Highway., South Nowra 2541	137569	1982	Road Match	2m
	STEEL REINFORCEMENTS.	Miltrac Timbers, Princes Highway., South Nowra 2541	138134	1982	Road Match	2m
	TIMBER MERCHANTS &/ OR SAWMILLERS	Miltrac Timbers, Princes Highway., South Nowra 2541	138163	1982	Road Match	2m
	ELECTRIC MOTOR DEALERS &/ OR W/SALERS	Norris, Keith Electrical Engineers, Princes Highway., South Nowra 2541	137586	1982	Road Match	2m
	ELECTRIC MOTOR REPAIRERS &/ OR HIRERS	Norris, Keith Electrical Engineers, Princes Highway., South Nowra 2541	137587	1982	Road Match	2m
	ELECTRIC MOTOR WINDING &/ OR REWINDING SPECIALISTS	Norris, Keith Electrical Engineers, Princes Highway., South Nowra 2541	137588	1982	Road Match	2m
	ELECTRIC TOOLS - PORTABLE - MFRS. &/ OR DIST	Norris, Keith Electrical Engineers, Princes Highway., South Nowra 2541	137590	1982	Road Match	2m
	ENGINEERS - ELECTRICAL	Norris, Keith Electrical Engineers, Princes Highway., South Nowra 2541	137610	1982	Road Match	2m
	MOTOR TOWING SERVICES	Nowra Auto Wreckers & Towing Service, Lot 2, Princes Highway., South Nowra 2541	137951	1982	Road Match	2m
	MOTOR WRECKERS	Nowra Auto Wreckers & Towing Service, Lot 2, Princes Highway., South Nowra 2541	137960	1982	Road Match	2m
	BRICK MFRS. &/OR DIST	Nowra Brickworks Pty. Ltd., Princes Highway, South Nowra 2541	137424	1982	Road Match	2m
	DATA PROCESSING EQUIPMENT MFRS &/OR DIST. &/OR HIRERS.	Parry, Brian, Princes Highway., South Nowra 2541	137554	1982	Road Match	2m
	TELEPHONE ANSWERING EQUIPMENT	Parry, Brian, Princes Highway., South Nowra 2541	138148	1982	Road Match	2m
	TELEVISION ANTENNAE MFRS. &/ OR INSTALLERS	Parry, Brian, Princes Highway., South Nowra 2541	138150	1982	Road Match	2m
	TELEVISION SALES &/ OR SERVICE	Parry, Brian, Princes Highway., South Nowra 2541	138153	1982	Road Match	2m
	CONCRETE - READY MIXED - SUPPLIERS	Pioneer Concrete (N.S.W.) Pty. Ltd., Princes Highway., South Nowra 2541	137545	1982	Road Match	2m
	SHEET METAL WORKERS	R. & M. Sheetmetal Princes Highway., South Nowra 2541	138095	1982	Road Match	2m
	MOTOR CAR &/OR TRUCK DEALERS - NEW &/OR USED	Scott, M. L. & E., Princes Highway., South Nowra 2541	137870	1982	Road Match	2m
	MOTOR TRUCK REPAIRS & MAINTENANCE	Scott, M. L. & E., Princes Highway., South Nowra 2541	137956	1982	Road Match	2m
	GARDEN SUPPLIES	Shoalhaven Garden Centre, Princes Highway., South Nowra 2541	137678	1982	Road Match	2m
	NURSERYMEN	Shoalhaven Garden Centre, Princes Highway., South Nowra 2541	137976	1982	Road Match	2m

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
9	CONCRETE BLOCK &/OR BRICK MFRS. &/OR DIST	Shoalhaven Masonry & Septics Works Pty. Ltd., Princes Highway, South Nowra 2541	137541	1982	Road Match	2m
	CONCRETE PRODUCTS MFRS. &/ OR DIST. &/ OR W/SALERS	Shoalhaven Masonry & Septics Works Pty. Ltd., Princes Highway, South Nowra 2541	137542	1982	Road Match	2m
	MONUMENTAL MASONS	Shoalhaven Masonry & Septics Works Pty. Ltd., Princes Highway, South Nowra 2541	137811	1982	Road Match	2m
	SEPTIC TANK MFRS. &/ OR INSTALLERS &/ OR SPECIALISTS	Shoalhaven Masonry & Septics Works Pty. Ltd., Princes Highway, South Nowra 2541	138090	1982	Road Match	2m
	KITCHEN UNIT MANUFACTURERS	Shoalhaven New Image Kitchens Pty. Ltd., Lot 6A Princes Highway., South Nowra 2541	137775	1982	Road Match	2m
	AIR CONDITIONING SALES &/OR SERVICE	Shoalhaven Refrigeration & Air Conditioning Pty. Ltd., Princes Highway., South Nowra 2541	137332	1982	Road Match	2m
	ENGINEERS - GENERAL &/ OR MANUFACTURING &/ OR MECHANICAL	Shoalhaven Refrigeration & Air Conditioning Pty. Ltd., Princes Highway., South Nowra 2541	137618	1982	Road Match	2m
	REFRIGERATOR SALES &/OR SERVICE	Shoalhaven Refrigeration & Air Conditioning Pty. Ltd., Princes Highway., South Nowra 2541	138060	1982	Road Match	2m
	SIGNWRITERS	Shoalhaven Signs, Princes Highway, South Nowra 2541	138104	1982	Road Match	2m
	SHOWER SCREENS	South Coast Glass Pty. Ltd. Princes Highway, South Nowra 2541	138096	1982	Road Match	2m
	MIRROR MFRS. &/OR DIST	South Coast Glass Pty. Ltd., Princes Highway., South Nowra 2541	137806	1982	Road Match	2m
	SHOWER SCREENS	South Coast Glass Pty. Ltd., Princes Highway., South Nowra 2541	138102	1982	Road Match	2m
	BRICK MFRS. &/OR DIST	South Coast Monumental & Terrazzo Works, Princes Highway, South Nowra 2541	137425	1982	Road Match	2m
	MONUMENTAL MASONS	South Coast Monumental & Terrazzo Works, Princes Highway, South Nowra 2541	137812	1982	Road Match	2m
	TERRAZZO SPECIALISTS	South Coast Monumental & Terrazzo Works, Princes Highway, South Nowra 2541	138154	1982	Road Match	2m
	ALUMINIUM WINDOW FRAME MFRS. &/ OR DIST	Space Aluminium Products Pty. Ltd., (Nowra), Unit 4 Princes Highway. South Nowra 2541	137341	1982	Road Match	2m
	SURFING EQUIPMENT MFRS	Taylor, Barry Surf Boards, Princes Highway., South Nowra 2541	138136	1982	Road Match	2m
	WELDERS - ELECTRIC &/OR OXY	Taylor, Max Mobile Welding Princes Highway., South Nowra 2541	138207	1982	Road Match	2m
	ENGINEERS - FABRICATING	Taylor, Max Mobile Welding, Princes Highway., South Nowra 2541	137612	1982	Road Match	2m
	ENGINEERS - GENERAL &/ OR MANUFACTURING &/ OR MECHANICAL	Taylor, Max Mobile Welding, Princes Highway., South Nowra 2541	137621	1982	Road Match	2m
	STEEL FABRICATORS	Taylor, Max Mobile Welding, Princes Highway., South Nowra 2541	138131	1982	Road Match	2m
	BAKERS	Vandenberg, J. W., Princes Highway, South Nowra 2541	137388	1982	Road Match	2m
	PASTRYCOOKS &/OR CAKE SHOPS	Vandenberg, J. W., Princes Highway, South Nowra 2541	137995	1982	Road Match	2m
	PLUMBERS SUPPLIES	Watson & Crane (N.S.W.), Princes Highway., South Nowra 2541	138012	1982	Road Match	2m
	MOTOR PAINTERS & PANEL BEATERS	Gardner, J., Princes Hghwy., South Nowra	569931	1970	Road Match	2m
	MOTOR SERVICE STATIONS- PETROL, OILS, Etc.	Golden Fleece Service Station, Princes Hghwy Nowra South	569944	1970	Road Match	2m
	TIMBER MERCHANTS & SAWMILLERS	Golding, F. & T. J., Princes Hghwy., South Nowra	570128	1970	Road Match	2m
	TIMBER MERCHANTS & SAWMILLERS	Mann, H. & Davies, B., Princes Hghwy., South Nowra	570130	1970	Road Match	2m
	Brick Mfrs.	Nowra Brickworks Pty. Ltd. Princes Highway, South Nowra	577256	1970	Road Match	2m
	BRICK MANUFACTURERS	Nowra Brickworks Pty. Ltd., Princes Hghwy., Nowra South	569404	1970	Road Match	2m
	BRICK MANUFACTURERS	Nowra Brickworks Pty. Ltd., Princes Highway, South Nowra	569378	1970	Road Match	2m
	CAMPING GROUNDS & CARAVAN PARKS	Rouarna Caravan Park, Princes Hghwy Sth., Nowra 2540	569462	1970	Road Match	2m

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
9	MOTOR SERVICE STATIONS- PETROL, OILS, Etc.	Rouarna Caravan Park, Princess Hghwy., South Nowra	569950	1970	Road Match	2m
	SEPTIC TANK MFRS. INSTALLERS &/OR SPECIALISTS	Shoalhaven Septics, Princes Hghwy., South Nowra	570080	1970	Road Match	2m
	SILO MANUFACTURERS	Shoalhaven Septics, Princes Hghwy., South Nowra	570091	1970	Road Match	2m
	TANK & TANK STAND MFRS./DISTRIBUTORS	Shoalhaven Septics, Princes Hghwy., South Nowra	570117	1970	Road Match	2m
	MONUMENTAL MASONS	South Coast Monumental & Terrazzo Works, Princes Hghwy., South Nowra	569842	1970	Road Match	2m
	TERRAZZO SPECIALISTS	South Coast Monumental & Terrazzo Works, Princes Hghwy., South Nowra	570124	1970	Road Match	2m
	BAKERS	South Nowra Bakery, Princes Hghwy., South Nowra	569357	1970	Road Match	2m
	CAKE SHOPS &/OR PASTRYCOOKS	South Nowra Bakery, Princes Hghwy., South Nowra	569458	1970	Road Match	2m
	MOTOR ACCESSORIES & SPARE PARTS DEALERS	South Nowra Service Station, Princes Hghwy., South Nowra	569865	1970	Road Match	2m
	MOTOR GARAGES & ENGINEERS	South Nowra Service Station, Princes Hghwy., South Nowra	569917	1970	Road Match	2m
	TIMBER MERCHANTS & SAWMILLERS	C. W. & R. H. Weir., Princes Highway, South Nowra	218588	1961	Road Match	2m
	BRICKS MANUFACTURERS	Nowra Brick Works Princes Highway South Nowra	179401	1961	Road Match	2m
	BRICK MANUFACTURERS	Nowra Brick Works, Princes Highway., South Nowra	217895	1961	Road Match	2m
	BRICK MANUFACTURERS	Nowra Bricks Works Princes Highway, South Nowra	217882	1961	Road Match	2m
	BUILDERS' SUPPLIERS	Weir, C. W. & R. H., Princes Highway., South Nowra	217924	1961	Road Match	2m
	TIMBER MERCHANTS & SAWMILLERS	Weir, C. W. & R. H., Princes Highway., South Nowra	218587	1961	Road Match	2m
	FLORISTS	McMillan, O., Princes Highway., Nowra	143366	1950	Road Match	2m
	MARKET GARDENERS	Monaghan,L. O., Princes Highway. Nowra	143492	1950	Road Match	2m
	BRICK MANUFACTURERS	Nowra Brick Works, Princes Highway. Nowra	141971	1950	Road Match	2m
10	MOTOR SPARE PARTS DEALERS - RETAIL.	Custom Car Striping., 232 Princes Hway South Nowra	101846	1991	Road Match	2m
	PAINT &/OR ACCESSORIES - RETAIL	South Coast Paint Discount., 232 Princes Hway South Nowra	104192	1991	Road Match	2m
	PAINT ENAMEL VARNISH &/OR STAIN MFRS. &/OR IMPS. &/OR DIST.	South Coast Paint Discount., 232 Princes Hway South Nowra	104216	1991	Road Match	2m

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Dry Cleaners, Motor Garages & Service Stations

Warra Warra Road, South Nowra, NSW 2541



Legend		Scale: 0 140 280 420 560 Meters	Coordinate System: GDA 1994 MGA Zone 56
Site Boundary	Business directory records mapped to a specific premise		Date: 07 October 2025
Buffer 500m	Business directory records mapped to a road intersection	Data Sources: Reproduced with permission of UBD and Hardie Grant Media Pty Ltd DD 01/08/2018 Property Boundaries © NSW Department Finance, Services & Innovation 2025	
Property Boundary	Business directory records mapped to a road corridor		
Business directory records mapped to a general area			

Historical Business Directories

Warra Warra Road, South Nowra, NSW 2541

Dry Cleaners, Motor Garages & Service Stations 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.

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

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Dry Cleaners, Motor Garages & Service Stations 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.

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
1	MOTOR GARAGES & SERVICE STATIONS.	Caltex Service Station., Princes Hway South Nowra	102422	1991	Road Match	2m
	MOTOR GARAGES & SERVICE STATIONS.	Shellshop Service Station., Princes Hway South Nowra	102525	1991	Road Match	2m
	MOTOR GARAGES & / OR ENGINEERS &/OR SERVICE STATIONS	Golden Fleece Service Station, Princes Highway, South Nowra 2541	137905	1982	Road Match	2m
	MOTOR SERVICE STATIONS-PETROL, OILS, Etc.	Golden Fleece Service Station, Princes Hghwy Nowra South	569944	1970	Road Match	2m
	MOTOR SERVICE STATIONS-PETROL, OILS, Etc.	Rouarna Caravan Park, Princess Hghwy., South Nowra	569950	1970	Road Match	2m
	MOTOR GARAGES & ENGINEERS	South Nowra Service Station, Princes Hghwy., South Nowra	569917	1970	Road Match	2m

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Aerial Imagery 2024

Warra Warra Road, South Nowra, NSW 2541



Scale: 0 75 150 225 300 Meters	Data Source Aerial Imagery: © 2025 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.	Coordinate System: GDA 1994 MGA Zone 56	Date: 07 October 2025
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Aerial Imagery 2013

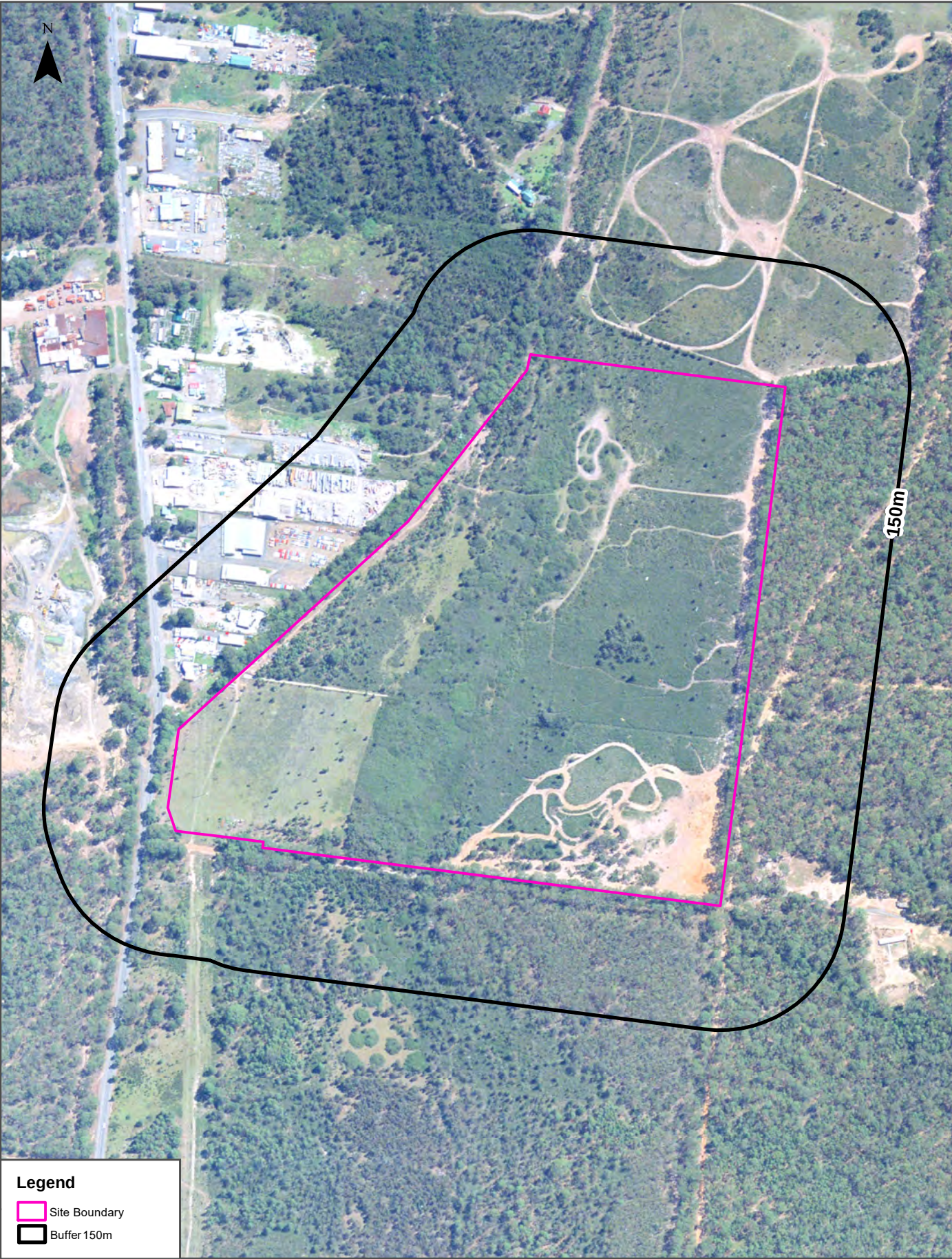
Warra Warra Road, South Nowra, NSW 2541



Scale: 0 75 150 225 300 Meters	Data Source Aerial Imagery: © 2025 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.	Coordinate System: GDA 1994 MGA Zone 56	Date: 07 October 2025
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Aerial Imagery 2002

Warra Warra Road, South Nowra, NSW 2541



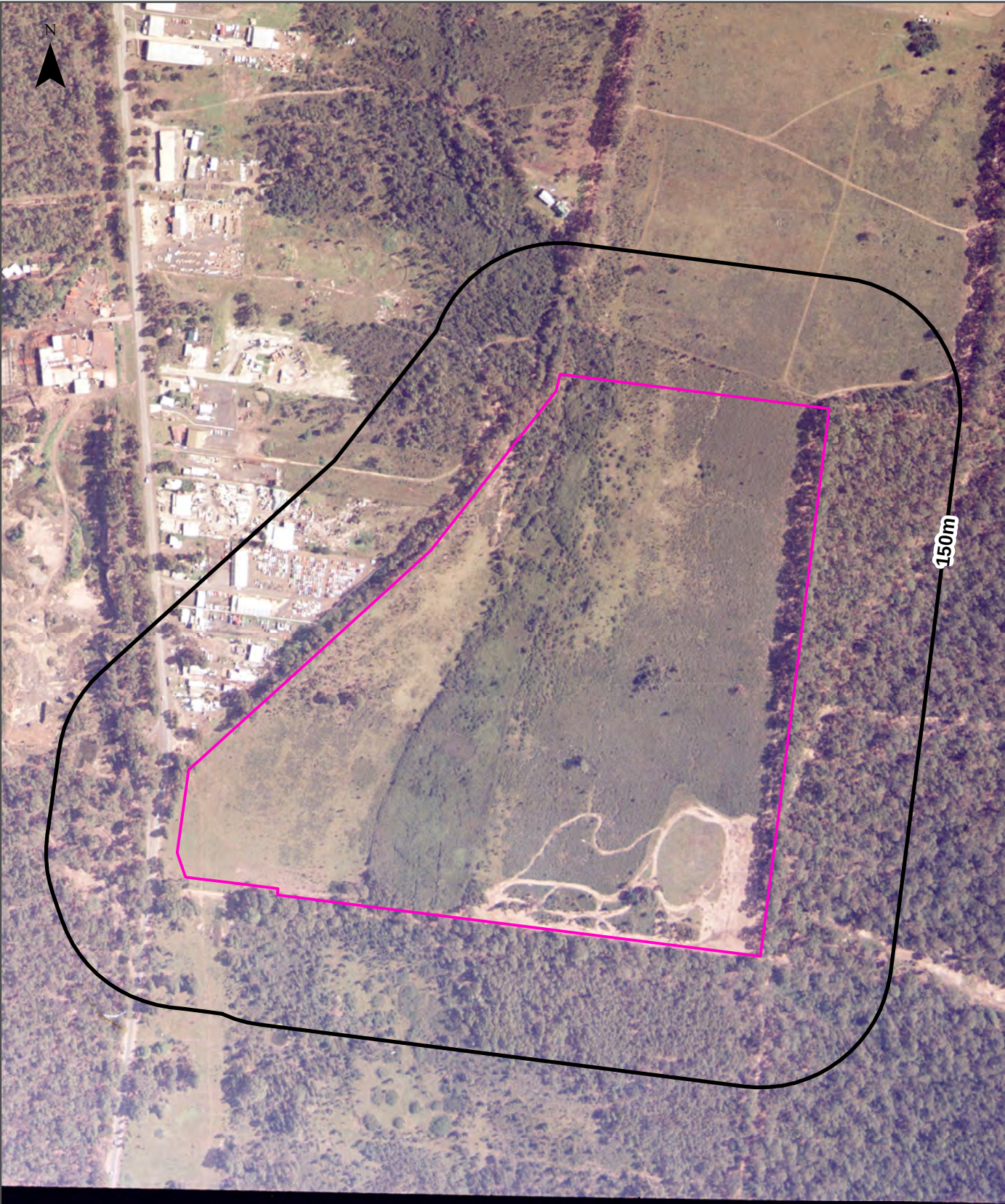
Aerial Imagery 1997

Warra Warra Road, South Nowra, NSW 2541



Aerial Imagery 1993

Warra Warra Road, South Nowra, NSW 2541



Legend

Site Boundary

Buffer 150m

Scale: 0 70 140 210 280 Meters	Data Source Aerial Imagery: © NSW Department of Customer Service	Coordinate System: GDA 1994 MGA Zone 56	Date: 07 October 2025
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Aerial Imagery 1984

Warra Warra Road, South Nowra, NSW 2541



Aerial Imagery 1974

Warra Warra Road, South Nowra, NSW 2541



Aerial Imagery 1969

Warra Warra Road, South Nowra, NSW 2541



Scale: 0 70 140 210 280 Meters	Data Source Aerial Imagery: © NSW Department of Customer Service	Coordinate System: GDA 1994 MGA Zone 56	Date: 07 October 2025
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Aerial Imagery 1961

Warra Warra Road, South Nowra, NSW 2541



Data Source Aerial Imagery: © NSW Department of Customer Service	Coordinate System: GDA 1994 MGA Zone 56	Date: 07 October 2025
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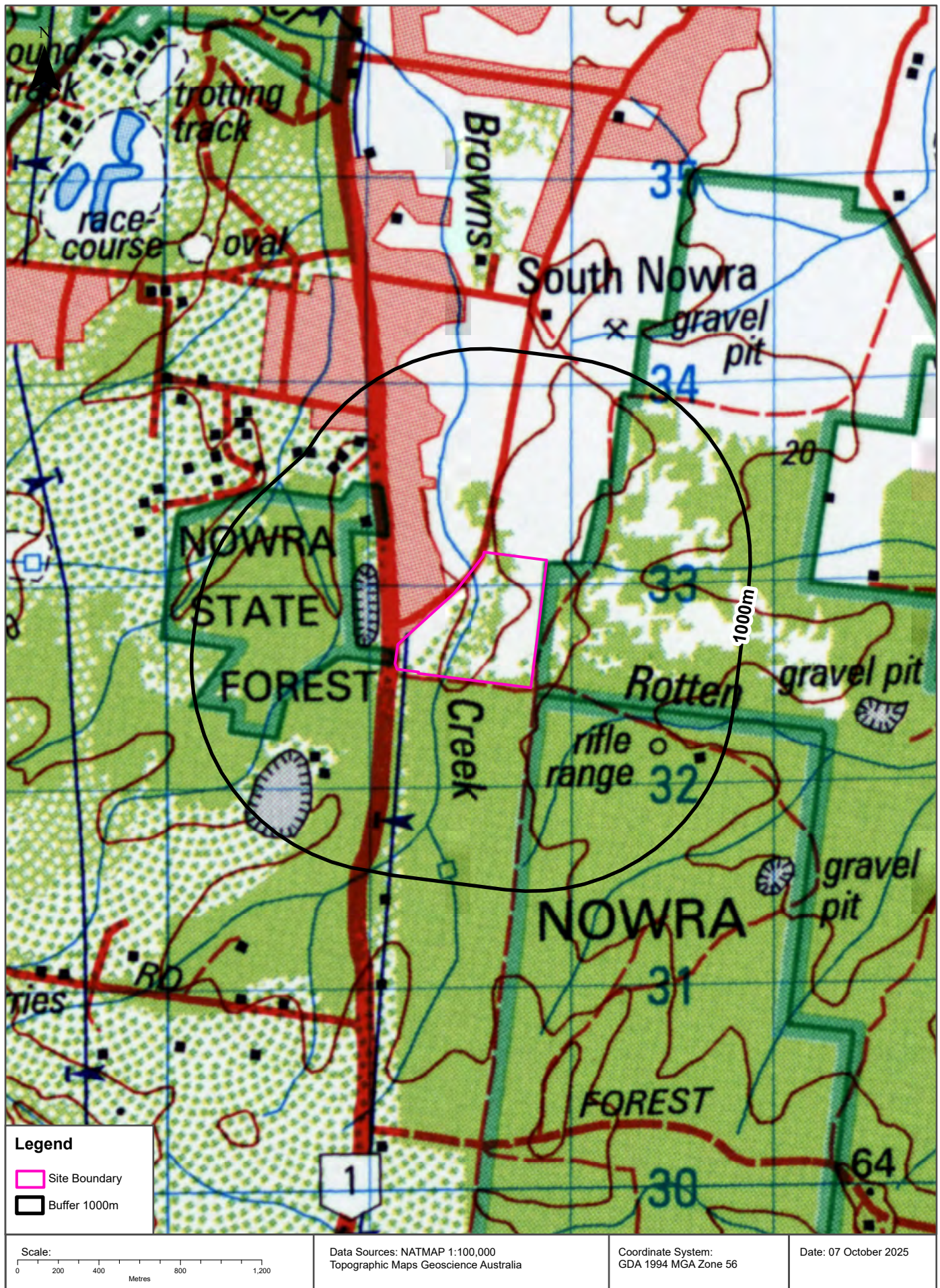
Aerial Imagery 1949

Warra Warra Road, South Nowra, NSW 2541



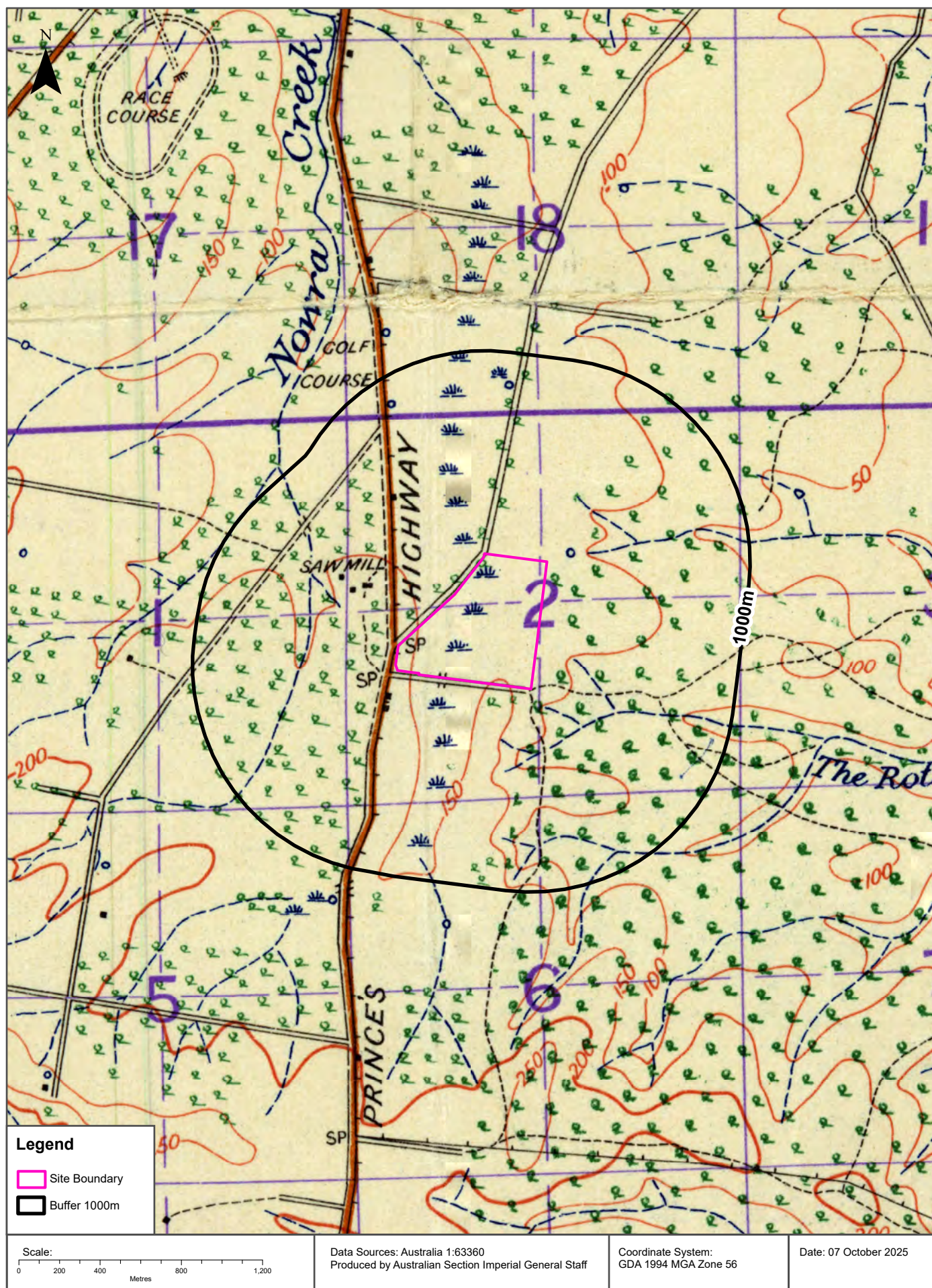
Historical Map 1998

Warra Warra Road, South Nowra, NSW 2541



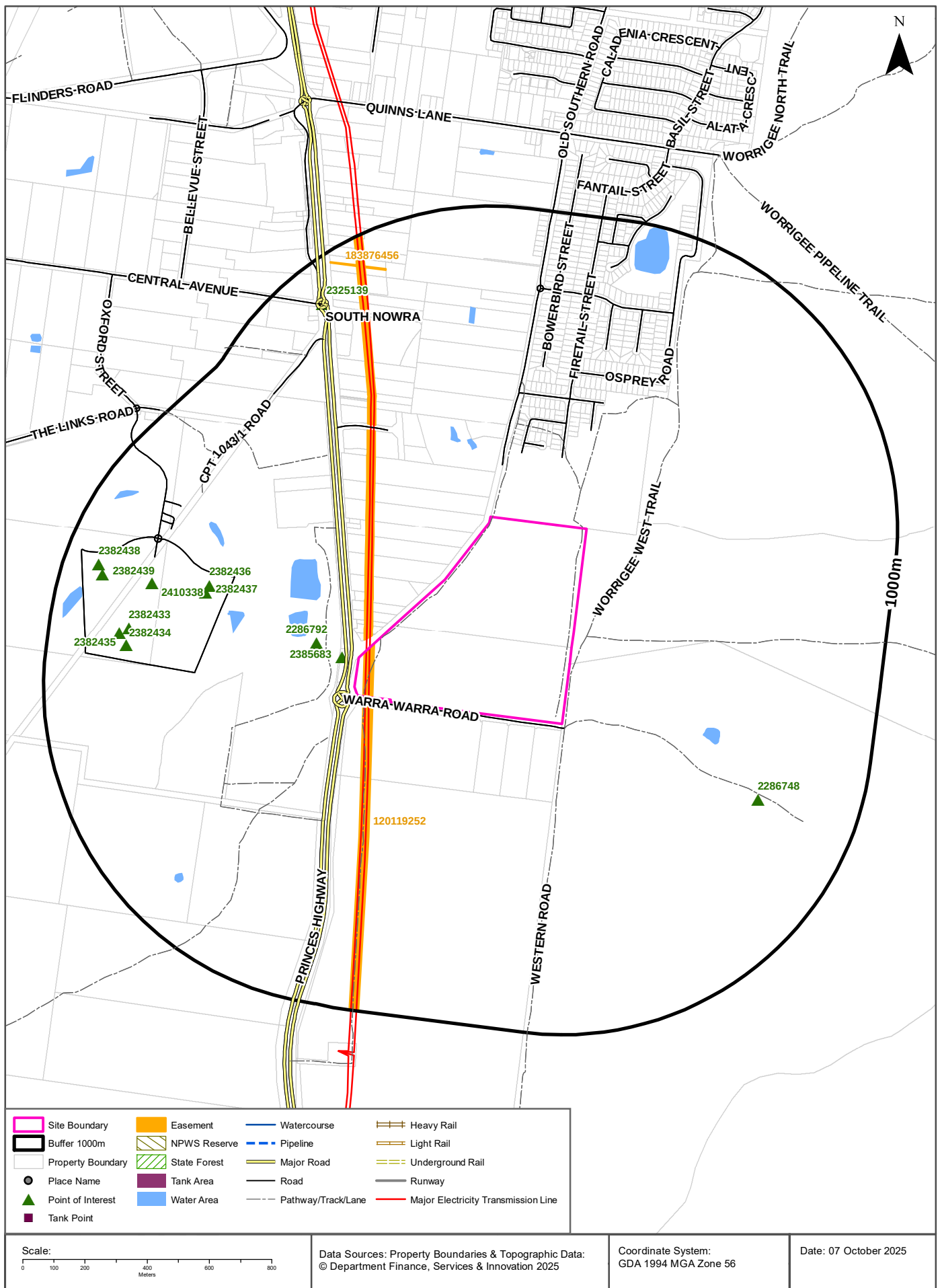
Historical Map c.1929

Warra Warra Road, South Nowra, NSW 2541



Topographic Features

Warra Warra Road, South Nowra, NSW 2541



Topographic Features

Warra Warra Road, South Nowra, NSW 2541

Points of Interest

What Points of Interest exist within the dataset buffer?

Map Id	Feature Type	Label	Distance	Direction
2385683	Roadside Rest Area	REST AREA	53m	West
2286792	Quarry - Open Cut	Quarry - Open Cut	143m	West
2382436	Sports Court	BASKETBALL COURT	533m	West
2382437	Sports Court	TENNIS COURT	535m	West
2286748	Community Facility	NOWRA RIFLE CLUB	676m	South East
2410338	Gaol	SOUTH COAST CORRECTIONAL CENTRE	706m	West
2382435	Sports Court	BASKETBALL COURTS	746m	West
2382433	Sports Court	TENNIS COURT	746m	West
2382434	Sports Court	TENNIS COURT	774m	West
2382439	Sports Court	TENNIS COURT	866m	West
2325139	Town	SOUTH NOWRA	873m	North West
2382438	Sports Court	BASKETBALL COURT	888m	West

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

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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					

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

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Major Easements

What Major Easements exist within the dataset buffer?

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

Map Id	Easement Class	Easement Type	Easement Width	Distance	Direction
120119252	Primary	Undefined		0m	On-site
183876456	Primary	Right of way	4m	862m	North

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

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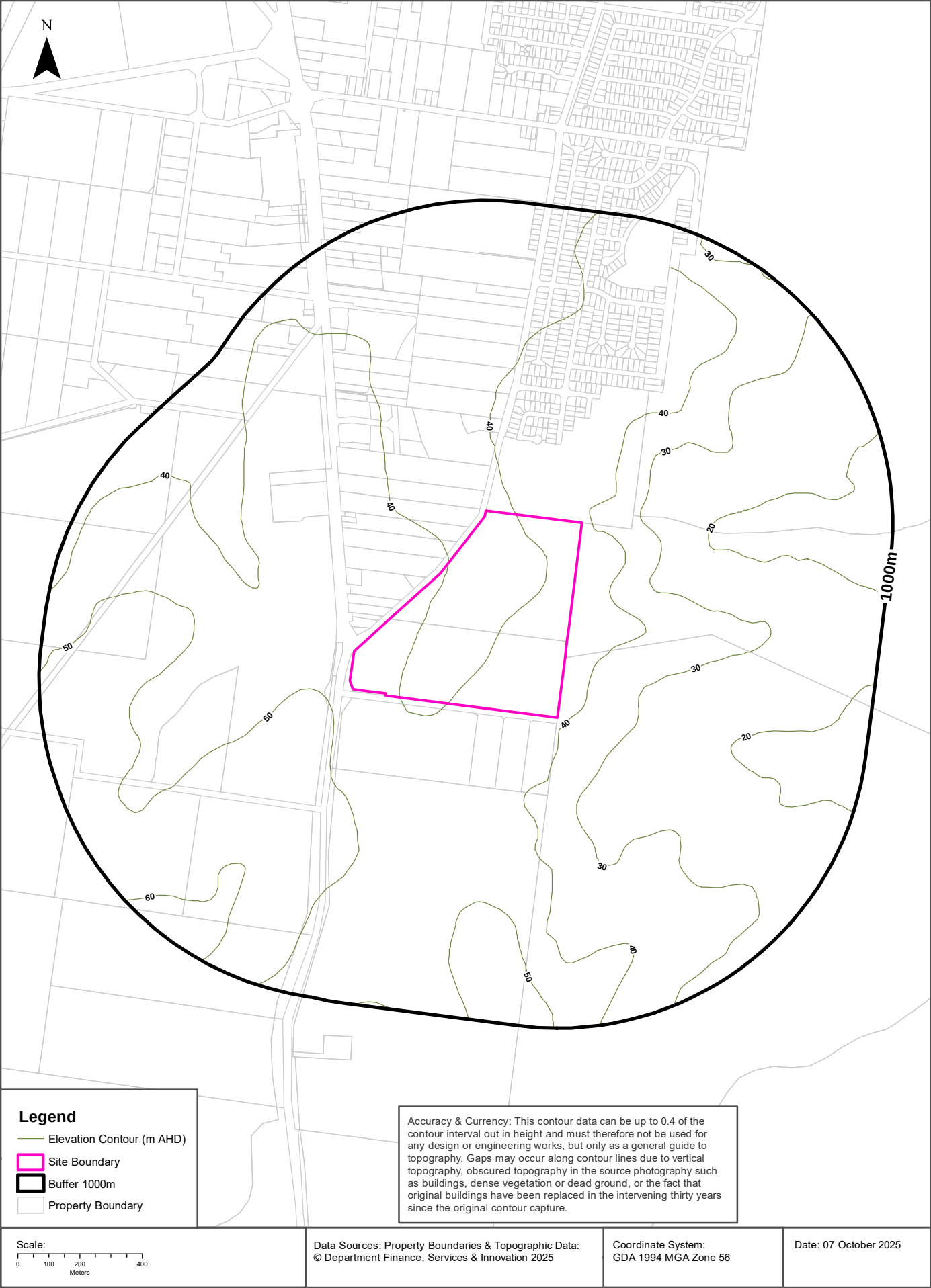
State Forest

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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Hydrogeology & Groundwater

Warra Warra Road, South Nowra, NSW 2541

Hydrogeology

Description of aquifers within the dataset buffer:

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

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

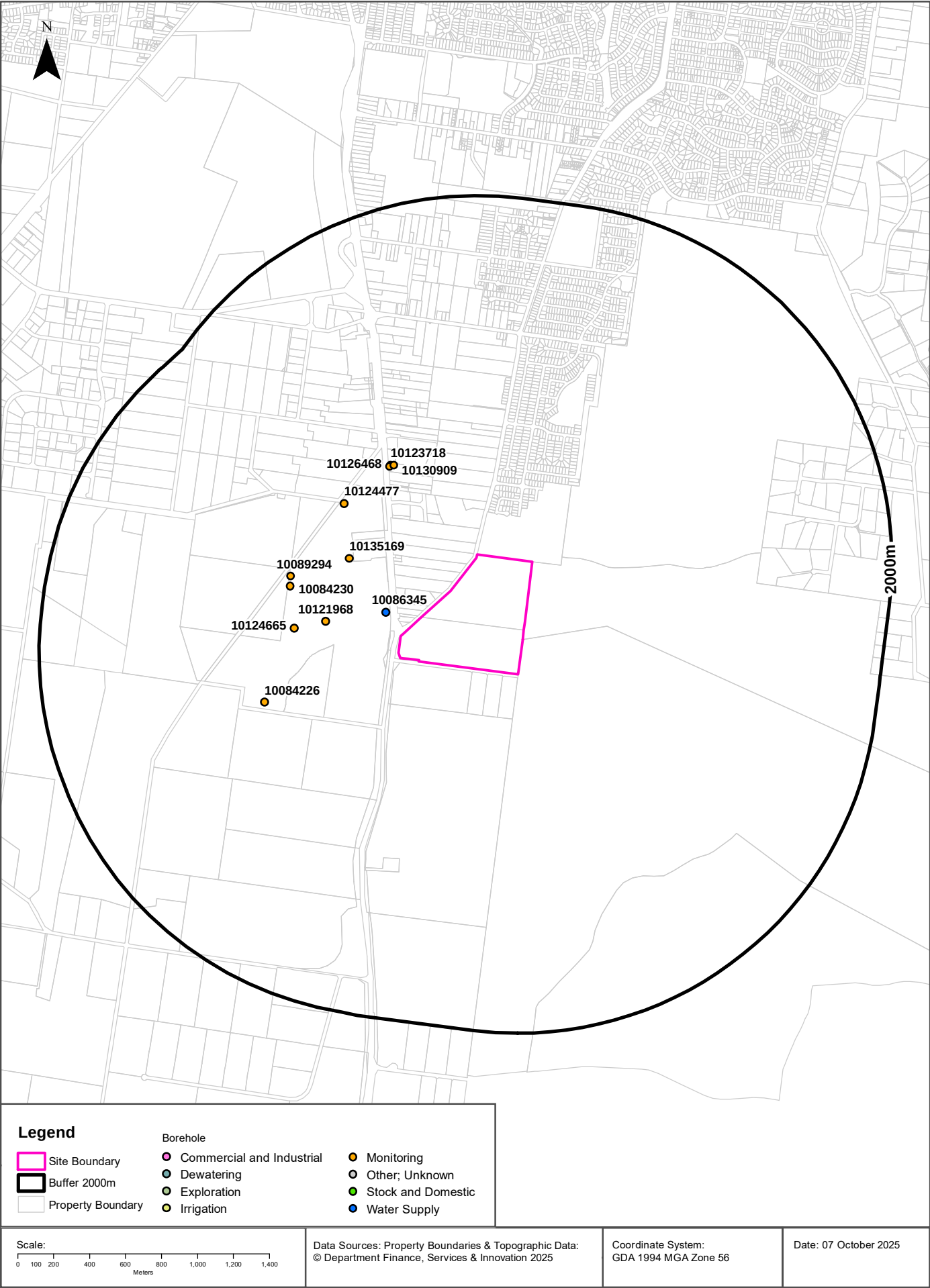
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Temporary Water Restriction (Botany Sands Groundwater Source) Order 2024

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 2024 Data Source : NSW Department of Primary Industries



Hydrogeology & Groundwater

Warra Warra Road, South Nowra, NSW 2541

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
10086345	GW113422	Water Supply	Functioning	01/01/2007	28.00		AHD				153m	West
10121968	GW113428	Monitoring	Functional	01/01/2007	33.40		AHD				424m	West
10135169	GW113426	Monitoring	Functional	01/01/2007	23.00		AHD				509m	North West
10124665	GW113427	Monitoring	Functional	01/01/2007	35.00		AHD				592m	West
10084230	GW113424	Monitoring	Functional	01/01/2007	29.00		AHD				672m	West
10130909	GW114344	Monitoring	Functional	28/09/2011	7.20		AHD			6.00	679m	North West
10123718	GW114343	Monitoring	Functional	28/09/2011	7.50		AHD			6.00	689m	North West
10126468	GW114342	Monitoring	Functional	28/09/2011	7.10		AHD			6.00	690m	North West
10089294	GW113423	Monitoring	Functional	01/01/2007	29.00		AHD				696m	West
10124477	GW113425	Monitoring	Functional	01/01/2007	29.00		AHD				757m	North West
10084226	GW113421	Monitoring	Functional	01/01/2007	28.00		AHD				793m	West

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>

Driller's Logs

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

NGIS Bore ID	Drillers Log	Distance	Direction
10130909	0.00m-0.30m GRAVELLY SAND,DARK BROWN,MG 0.30m-1.00m SANDY CLAY, BROWN SOFT 1.00m-1.30m CLAY RED/BROWN,VERY HARD 1.30m-4.00m CLAYEY SHALE FRAGMENTS,BROWN 4.00m-5.50m CLAYEY SHALE BROWN 5.50m-7.20m SILTY CLAY, RED/ GREY	679m	North West
10123718	0.00m-0.50m GRAVELLY SAND 0.50m-1.70m FILL, CLAY,RED BROWN 1.70m-5.50m CLAYEY SHALE FRAGMENTS 5.50m-7.50m SILTY CLAY,GREY , BROWN	689m	North West
10126468	0.00m-0.30m GRAVELLY SAND FILL,DARK BROWN MG 0.30m-0.50m SILTY CLAY,BROWN SOFT 0.50m-1.30m CLAY RED,BROWN, VERY HARD 1.30m-4.00m CLAYEY SHALE FRAGMENTS BROWN 4.00m-5.50m SILTY CLAY AND ROCKS ORANGE 5.50m-7.10m SILTY CLAY AND ROCKS SOFTER	690m	North West

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>



Legend

Site Boundary

Report Buffer

Property Boundary

Trendline

Fold Axis

Geological Boundary

Marker Bed

Faulted Boundary

Shear Zone or Schist Zone Boundary

Miscellaneous Boundary

Water/Coastline Boundary

State/Territory Border

Linear Geological Structures and Boundaries

Scale:

0

100

200

400

600

800

Meters

Data Sources: Property Boundaries & Topographic Data:
© Department Finance, Services & Innovation 2025

Coordinate System:
GDA 1994 MGA Zone 56

Date: 07 October 2025

Geology

Warra Warra Road, South Nowra, NSW 2541

Geological Units

Geological units within the dataset buffer:

Code	Unit Name	Description	Stratigraphy	Age Range	Dominant Lithology	Dist	Dir
Pshb	Berry Siltstone	Mid to dark grey siltstone, grades up sequence to very fine-grained sandstone, highly fossiliferous, sporadic dropped pebbles.	/Shoalhaven Group//Berry Siltstone//	Roadian (base) to Wordian (top)	Siltstone	0m	On-site
Pshn	Nowra Sandstone	Fine- to very coarse-grained quartzose sandstone, with a three-fold subdivision: a very coarse-grained base with minor pebbly lenses, a central siltstone zone and a cross-bedded medium-grained quartz sandstone up-sequence.	/Shoalhaven Group//Nowra Sandstone//	Roadian (base) to Wordian (top)	Sandstone	51m	East

Linear Geological Structures

Fault and shear or schist zone boundaries within the dataset buffer:

Map ID	Boundary Type	Feature Description	Fault Dip Angle	Fault Dip Direction	Dist	Dir
87856	Faulted boundary	Fault, inferred			51m	North East
87868	Faulted boundary	Fault, position approximate			411m	North East
92048	Faulted boundary	Fault, inferred			411m	North East

Trendlines within the dataset buffer:

Map ID	Feature Description	Observation Method	Structure Name	Dist	Dir
NA	No records in buffer				

Fold axes within the dataset buffer:

Map ID	Feature Description	Observation Method	Structure Name	Dist	Dir
NA	No records in buffer				

Marker beds within the dataset buffer:

Map ID	Feature Description	Rock Unit Description	Dist	Dir
NA	No records in buffer			

Geological Data Source: Statewide Seamless Geology v2.4, NSW Department of Primary Industries and Regional Development
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Naturally Occurring Asbestos Potential

Warra Warra Road, South Nowra, NSW 2541

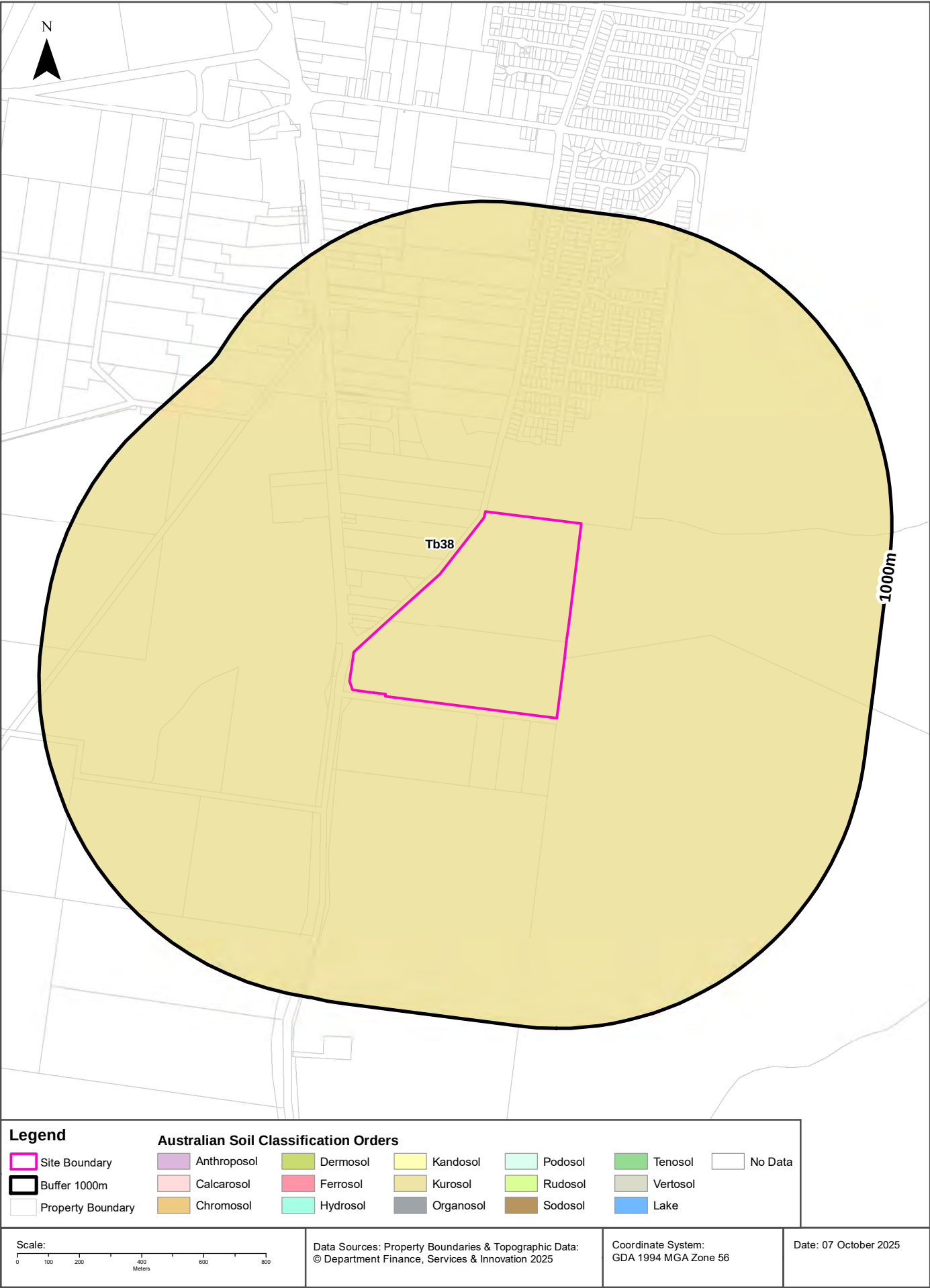
Naturally Occurring Asbestos Potential

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: Statewide Seamless Geology v2.4, NSW Department of Primary Industries and Regional Development

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Soils

Warra Warra Road, South Nowra, NSW 2541

Atlas of Australian Soils

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

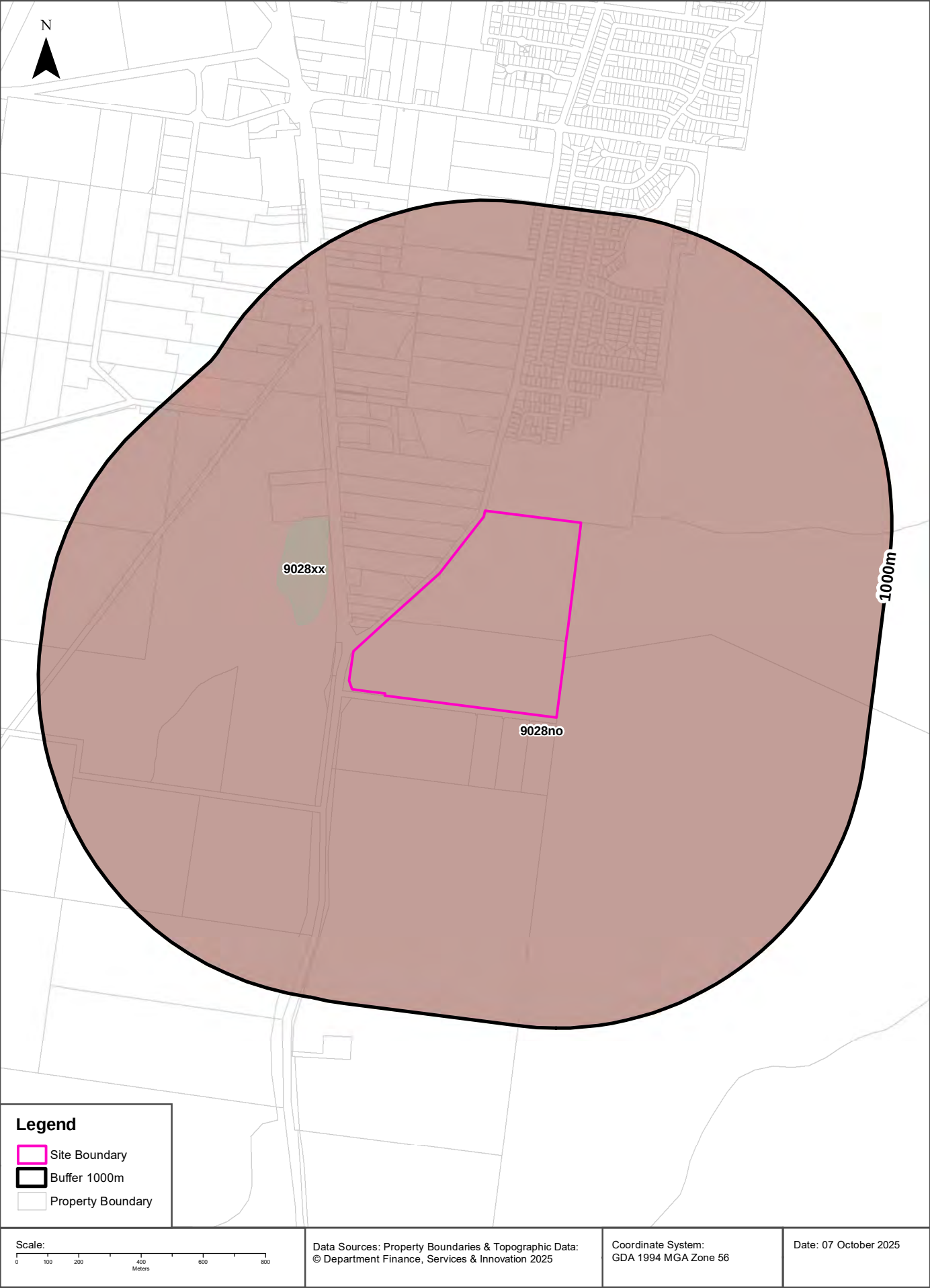
Map Unit Code	Soil Order	Map Unit Description	Distance	Direction
Tb38	Kurosol	Flat to undulating: chief soils are hard acidic yellow and yellow mottled soils (Dy2.41) and (Dy3.41) sometimes containing ironstone gravel. Associated are hard acidic red soils (Dr2.21, Dr2.41), and small areas of other soils, including (Gn2) and (Gn3.54).	0m	On-site

Atlas of Australian Soils Data Source: CSIRO

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Soil Landscapes of Central and Eastern NSW

Warra Warra Road, South Nowra, NSW 2541



Soil Landscapes of Central and Eastern NSW

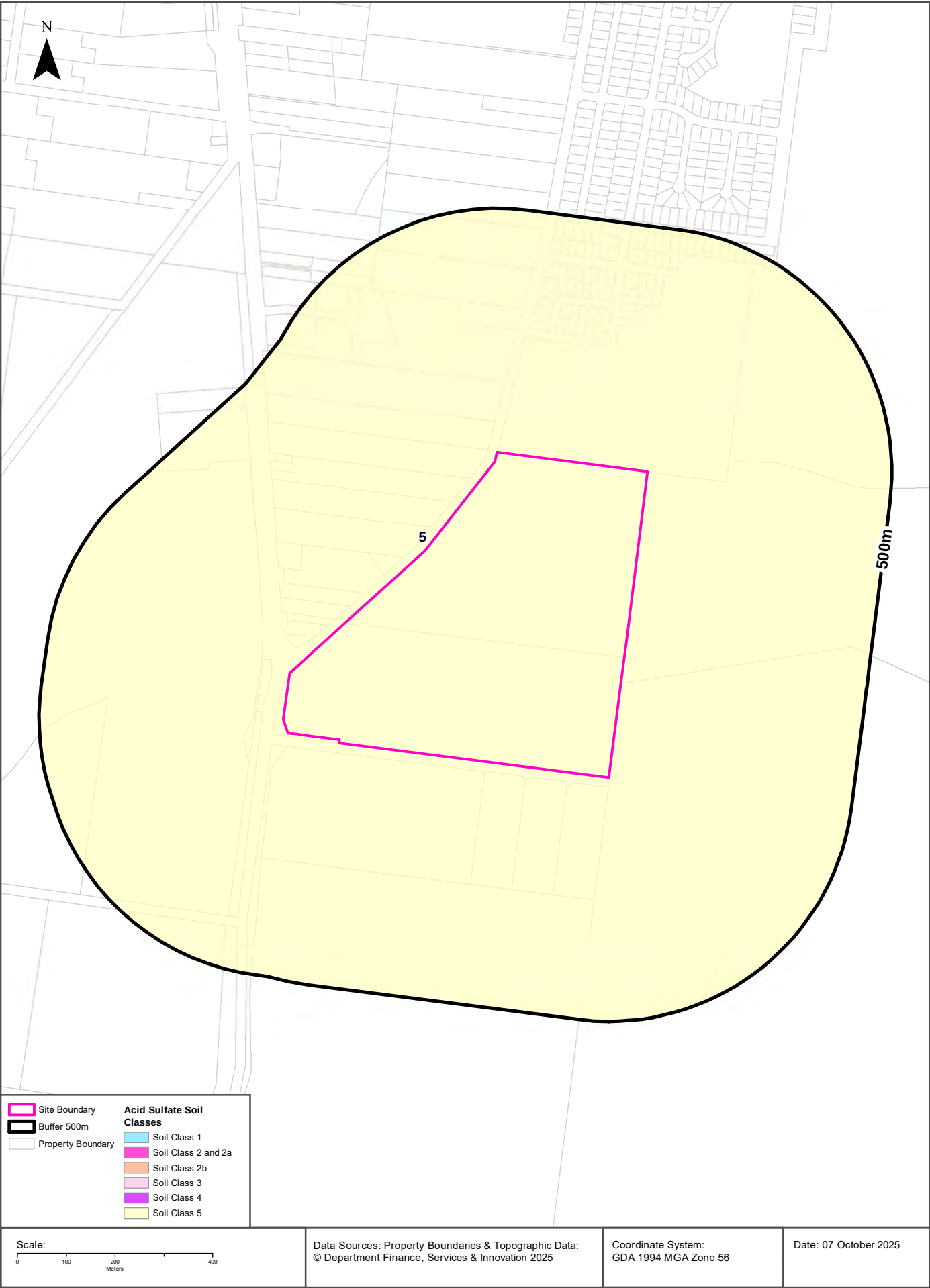
Soil Landscapes of Central and Eastern NSW within the dataset buffer:

Soil Code	Name	Distance	Direction
9028no	Nowra	0m	On-site
9028xx	Disturbed Terrain	168m	West

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

Warra Warra Road, South Nowra, NSW 2541



Acid Sulfate Soils

Warra Warra Road, South Nowra, NSW 2541

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
5	Works within 500 metres of adjacent Class 1, 2, 3, or 4 land that is below 5 metres AHD and by which the watertable is likely to be lowered below 1 metre AHD on adjacent Class 1, 2, 3 or 4 land, present an environmental risk	Shoalhaven Local Environmental Plan 2014

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

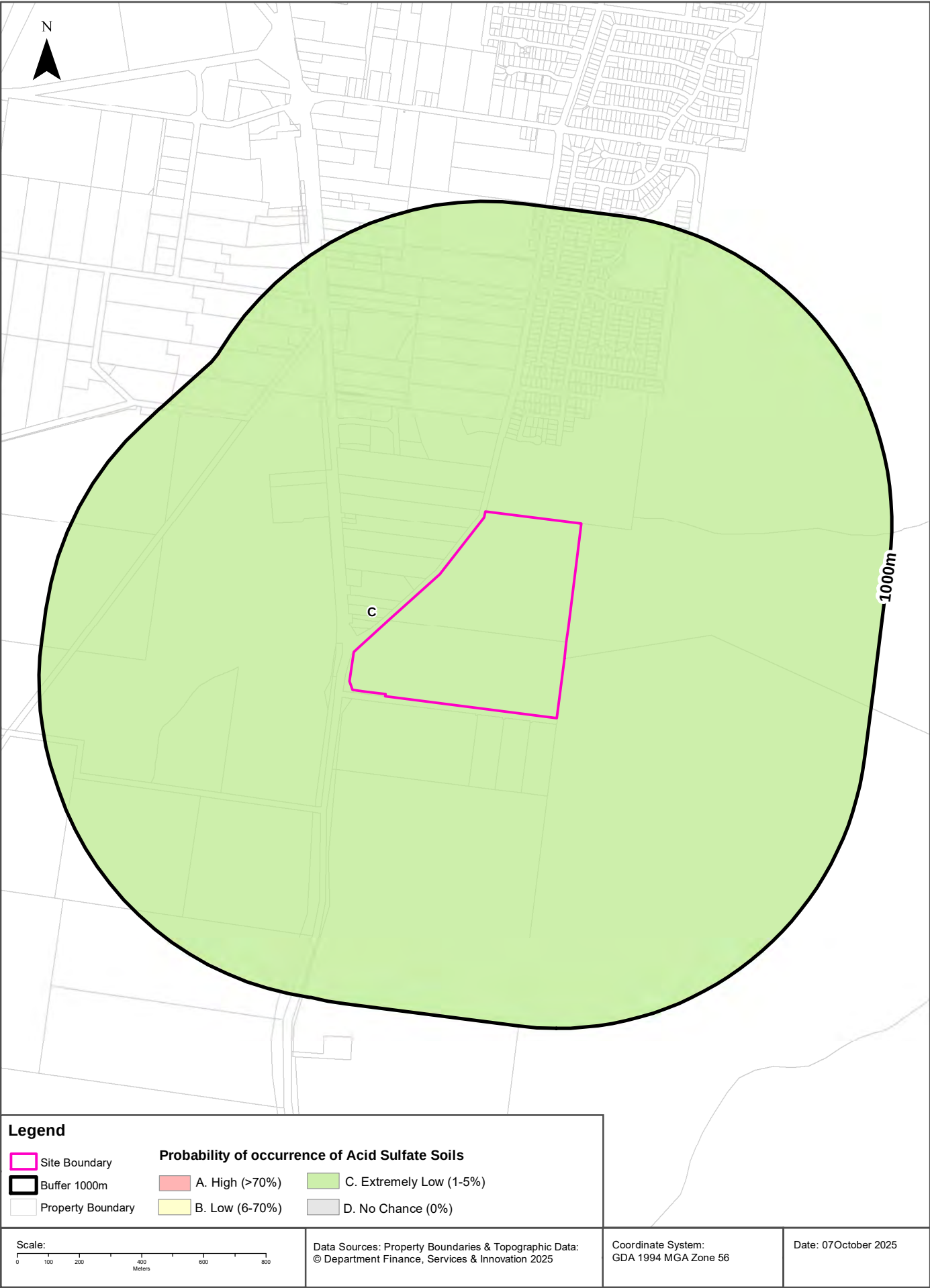
Soil Class	Description	EPI Name	Distance	Direction
None				

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Atlas of Australian Acid Sulfate Soils

Warra Warra Road, South Nowra, NSW 2541



Acid Sulfate Soils

Warra Warra Road, South Nowra, NSW 2541

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

Atlas of Australian Acid Sulfate Soils Data Source: CSIRO

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Dryland Salinity

Warra Warra Road, South Nowra, NSW 2541

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

Warra Warra Road, South Nowra, NSW 2541

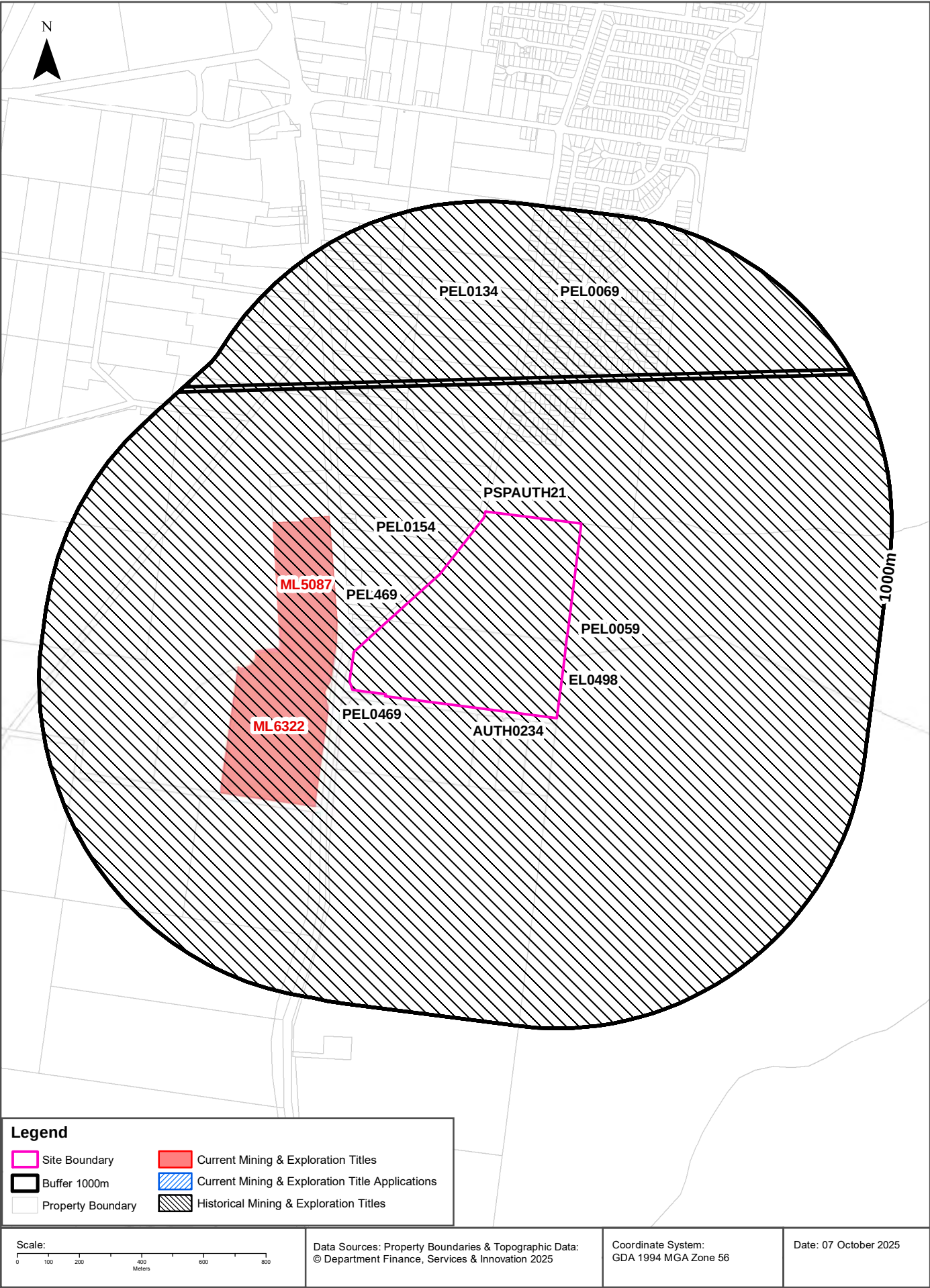
Mining Subsidence Districts

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

Warra Warra Road, South Nowra, NSW 2541

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
ML6322	ABIB PTY LIMITED	08/03/1972	08/03/2041	20200309	MINING	MINERALS	Structural Clay	62m	South West
ML5087	ABIB PTY LIMITED	08/01/1948	08/01/2040	20190109	MINING	MINERALS	Clay/Shale, Structural Clay	64m	West

Current Mining & Exploration Titles Data Source: Statewide Seamless Geology v2.4, NSW Department of Primary Industries and Regional Development

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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: Statewide Seamless Geology v2.4, NSW Department of Primary Industries and Regional Development

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Historical Mining & Exploration Titles

Historical Mining & Exploration Titles within the dataset buffer:

Title Ref	Holder	Start Date	End Date	Resource	Minerals	Dist	Dir
PEL0059	L H SMART OIL EXPLORATION CO. LTD			PETROLEUM	Petroleum	0m	On-site
PSPAUTH21	LEICHHARDT RESOURCES PTY LTD	20090602	20100602	PETROLEUM	Petroleum	0m	On-site
AUTH0234	ELECTRICITY COMMISSION OF NSW	19810507	19830507	COAL	Coal	0m	On-site
PEL0154	GENOA OIL NL, HARTOG OIL NL			PETROLEUM	Petroleum	0m	On-site
EL0498	DOWNES, C	19720201	19761001	MINERALS	Brick clay	0m	On-site
PEL0469	LEICHHARDT RESOURCES PTY LTD	20110604	20150110	PETROLEUM	Petroleum	0m	On-site
PEL469	LEICHHARDT RESOURCES PTY LTD	20130208	30000101	MINERALS		0m	On-site
PEL0069	ALLIANCE OIL DEVELOPMENT AUSTRALIA NL, OIL DEVELOPMENT NL			PETROLEUM	Petroleum	410m	North
PEL0134	CANADIAN AUSTRALIAN PETROLEUM NL			PETROLEUM	Petroleum	410m	North

Historical Mining & Exploration Titles Data Source: Statewide Seamless Geology v2.4, NSW Department of Primary Industries and Regional Development

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State Environmental Planning Policy

Warra Warra Road, South Nowra, NSW 2541

State Significant Precincts

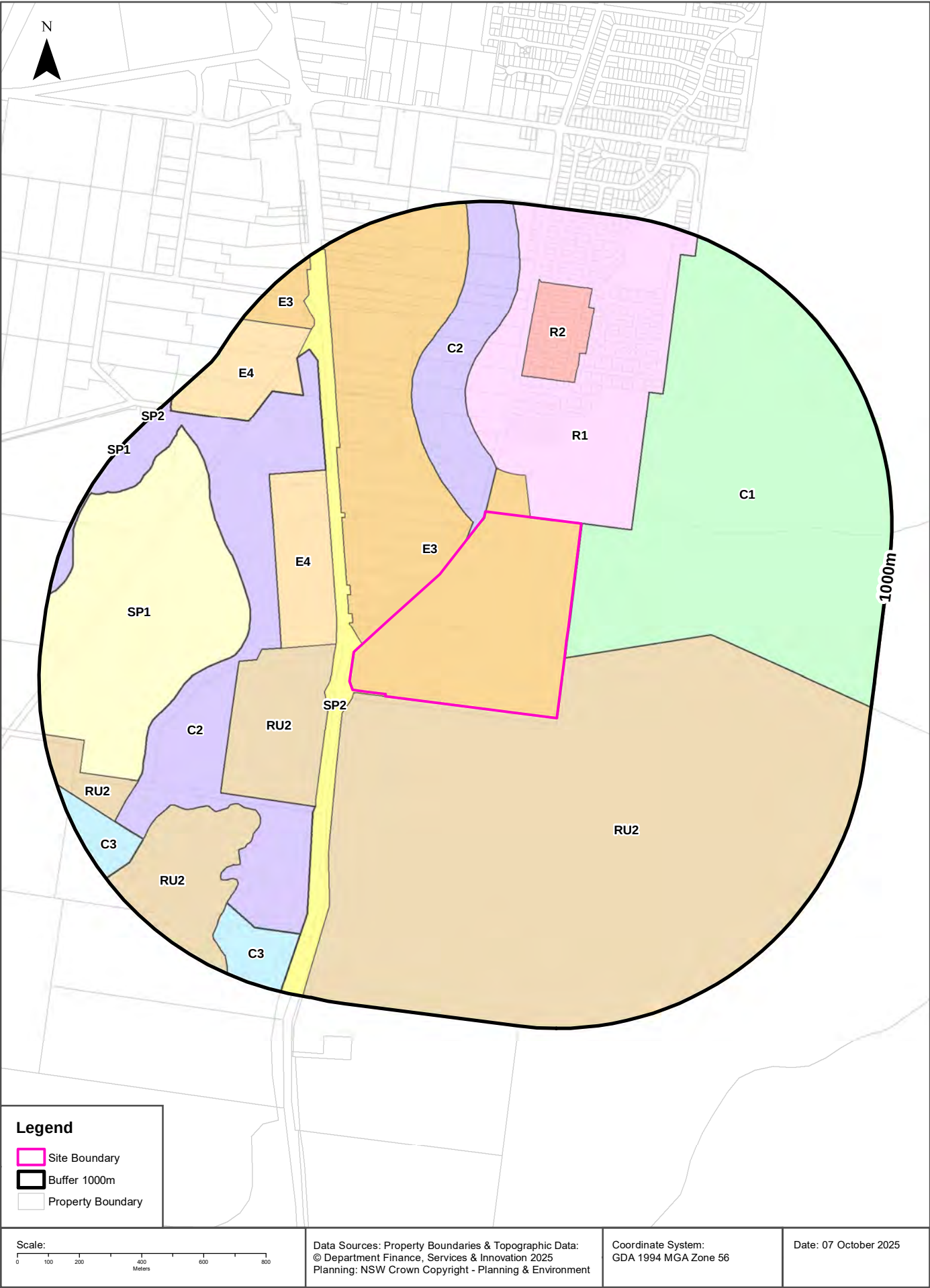
What SEPP State Significant Precincts exist within the dataset buffer?

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

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

Warra Warra Road, South Nowra, NSW 2541



Environmental Planning Instrument

Warra Warra Road, South Nowra, NSW 2541

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
E3	Productivity Support		Shoalhaven Local Environmental Plan 2014	15/09/2023	15/09/2023	20/06/2025	Amendment No 50	0m	On-site
R1	General Residential		Shoalhaven Local Environmental Plan 2014	15/09/2023	15/09/2023	20/06/2025	Amendment No 50	0m	North
C2	Environmental Conservation		Shoalhaven Local Environmental Plan 2014	15/09/2023	15/09/2023	20/06/2025	Amendment No 50	0m	North
C1	National Parks and Nature Reserves		Shoalhaven Local Environmental Plan 2014	05/11/2021	01/12/2021	20/06/2025	Standard Instrument (Local Environmental Plans) Amendment (Land Use Zones) Order 2021	0m	North East
RU2	Rural Landscape		Shoalhaven Local Environmental Plan 2014	08/04/2014	22/04/2014	20/06/2025		0m	South East
SP2	Infrastructure	Road	Shoalhaven Local Environmental Plan 2014	15/12/2023	15/12/2023	20/06/2025	Map Amendment No 11	0m	West
RU2	Rural Landscape		Shoalhaven Local Environmental Plan 2014	08/04/2014	22/04/2014	20/06/2025		62m	South West
E4	General Industrial		Shoalhaven Local Environmental Plan 2014	24/02/2023	26/04/2023	20/06/2025	State Environmental Planning Policy Amendment (Land Use Zones) 2023	63m	West
C2	Environmental Conservation		Shoalhaven Local Environmental Plan 2014	15/09/2023	15/09/2023	20/06/2025	Amendment No 50	232m	West
SP1	Special Activities	Correctional Centre	Shoalhaven Local Environmental Plan 2014	08/04/2014	22/04/2014	20/06/2025		345m	West
R2	Low Density Residential		Shoalhaven Local Environmental Plan 2014	08/04/2014	22/04/2014	20/06/2025		449m	North
RU2	Rural Landscape		Shoalhaven Local Environmental Plan 2014	17/06/2022	17/06/2022	20/06/2025	Amendment No 44	498m	South West
E4	General Industrial		Shoalhaven Local Environmental Plan 2014	24/02/2023	26/04/2023	20/06/2025	State Environmental Planning Policy Amendment (Land Use Zones) 2023	698m	North West
RU2	Rural Landscape		Shoalhaven Local Environmental Plan 2014	08/04/2014	22/04/2014	20/06/2025		751m	West
C3	Environmental Management		Shoalhaven Local Environmental Plan 2014	05/11/2021	01/12/2021	20/06/2025	Standard Instrument (Local Environmental Plans) Amendment (Land Use Zones) Order 2021	796m	South West
E3	Productivity Support		Shoalhaven Local Environmental Plan 2014	24/02/2023	26/04/2023	20/06/2025	State Environmental Planning Policy Amendment (Land Use Zones) 2023	813m	North West

Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
C3	Environmental Management		Shoalhaven Local Environmental Plan 2014	05/11/2021	01/12/2021	20/06/2025	Standard Instrument (Local Environmental Plans) Amendment (Land Use Zones) Order 2021	828m	South West
SP1	Special Activities	Correctional Centre	Shoalhaven Local Environmental Plan 2014	15/09/2023	15/09/2023	20/06/2025	Amendment No 50	999m	North West
SP2	Infrastructure	Sewerage System	Shoalhaven Local Environmental Plan 2014	15/09/2023	15/09/2023	20/06/2025	Amendment No 50	999m	North West

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

Warra Warra Road, South Nowra, NSW 2541

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							

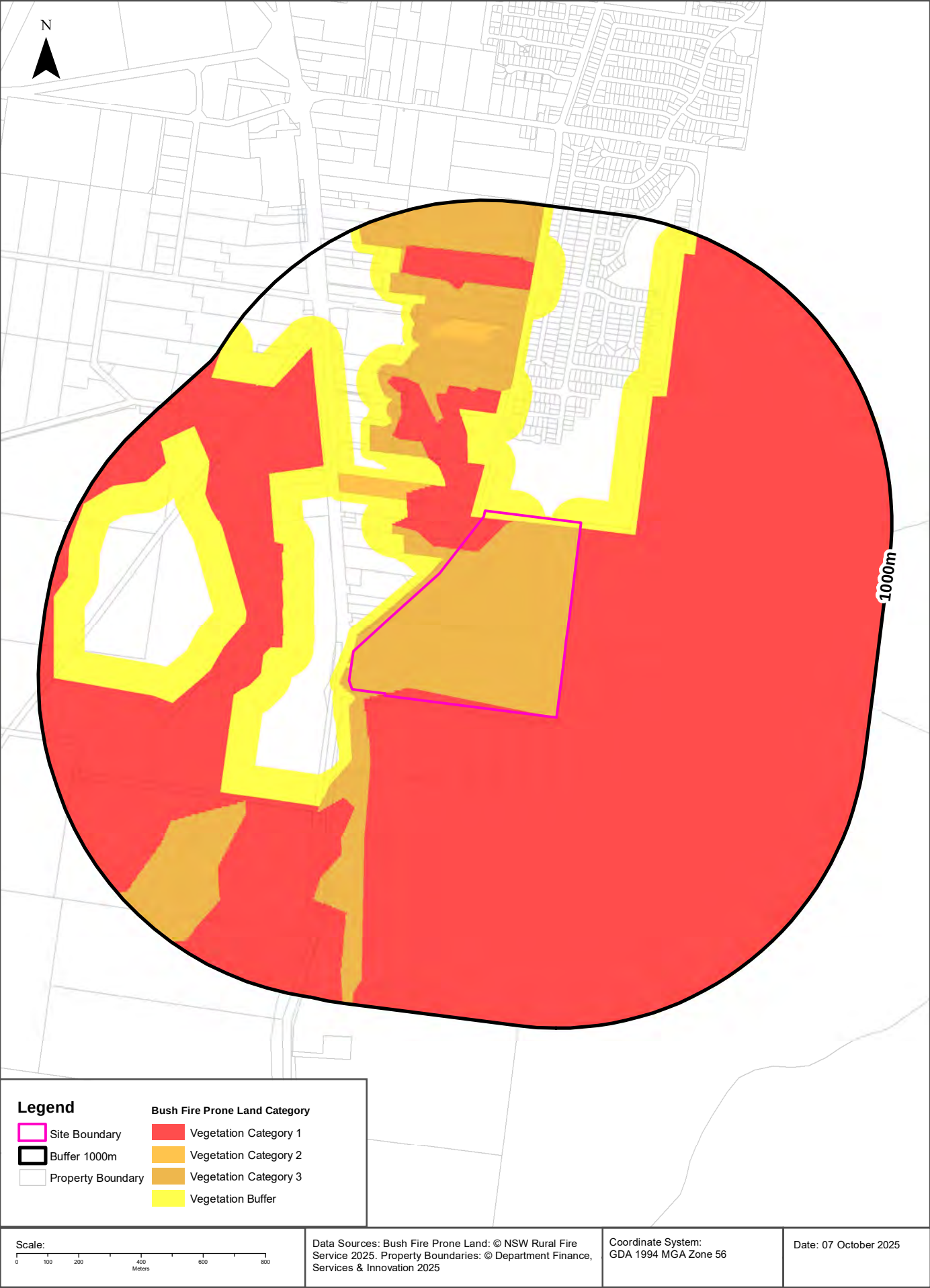
Heritage Data Source: NSW Crown Copyright - Office of Environment & Heritage
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Environmental Planning Instrument - Heritage

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
N/A	No records in buffer								

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Natural Hazards

Warra Warra Road, South Nowra, NSW 2541

Bush Fire Prone Land

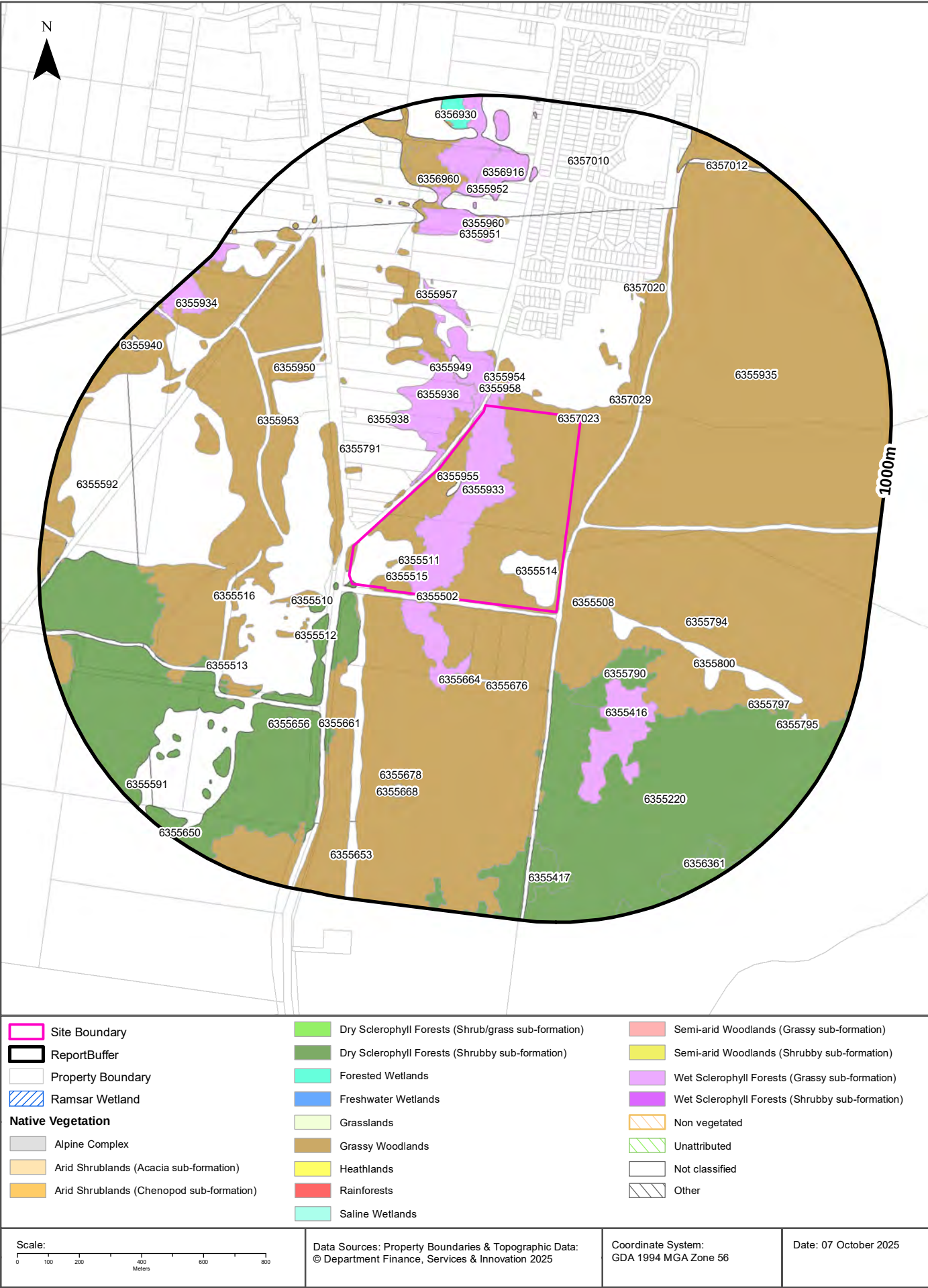
What are the nearest Bush Fire Prone Land Categories that exist within the dataset buffer?

Bush Fire Prone Land Category	Distance	Direction
Vegetation Category 1	0m	On-site
Vegetation Category 3	0m	On-site
Vegetation Buffer	0m	On-site
Vegetation Category 2	194m	North West

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

Ecological Constraints - Vegetation & Ramsar Wetlands

Warra Warra Road, South Nowra, NSW 2541



Ecological Constraints

Warra Warra Road, South Nowra, NSW 2541

Native Vegetation

What native vegetation exists within the dataset buffer?

Map ID	Vegetation Formation	Plant Community Type and Vegetation Formation	Vegetation Class	Dist	Dir
6355502	Wet Sclerophyll Forests (Grassy sub-formation)	(Wet Sclerophyll Forests (Grassy sub-formation)) Sydney Basin Creekflat Blue Gum-Apple Forest	Northern Hinterland Wet Sclerophyll Forests	0m	On-site
6355511	Not classified	(Not classified) Not classified	Not classified	0m	On-site
6355514	Not classified	(Not classified) Not classified	Not classified	0m	On-site
6355515	Not classified	(Not classified) Not classified	Not classified	0m	On-site
6355791	Not classified	(Not classified) Not classified	Not classified	0m	On-site
6355933	Wet Sclerophyll Forests (Grassy sub-formation)	(Wet Sclerophyll Forests (Grassy sub-formation)) Sydney Basin Creekflat Blue Gum-Apple Forest	Northern Hinterland Wet Sclerophyll Forests	0m	On-site
6355935	Grassy Woodlands	(Grassy Woodlands) Shoalhaven Lowland Spotted Gum-Paperbark Forest	Coastal Valley Grassy Woodlands	0m	On-site
6355955	Not classified	(Not classified) Not classified	Not classified	0m	On-site
6357023	Not classified	(Not classified) Not classified	Not classified	0m	On-site
6355220	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Shoalhaven Foothills Bloodwood Heathy Forest	Sydney Coastal Dry Sclerophyll Forests	0m	South
6355936	Wet Sclerophyll Forests (Grassy sub-formation)	(Wet Sclerophyll Forests (Grassy sub-formation)) South Coast Lowland Shrub-Grass Forest	Southern Lowland Wet Sclerophyll Forests	0m	North West
6355958	Not classified	(Not classified) Not classified	Not classified	58m	North
6355508	Not classified	(Not classified) Not classified	Not classified	79m	South East
6355954	Not classified	(Not classified) Not classified	Not classified	92m	North
6355949	Not classified	(Not classified) Not classified	Not classified	110m	North
6355510	Not classified	(Not classified) Not classified	Not classified	133m	South West
6355800	Not classified	(Not classified) Not classified	Not classified	159m	South East
6357029	Not classified	(Not classified) Not classified	Not classified	164m	North East
6355938	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Shoalhaven Lowland Bloodwood Shrub Forest	South East Dry Sclerophyll Forests	183m	North West
6355512	Not classified	(Not classified) Not classified	Not classified	196m	South West
6355507	Not classified	(Not classified) Not classified	Not classified	199m	South West
6355790	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Shoalhaven Lowland Bloodwood Shrub Forest	South East Dry Sclerophyll Forests	234m	South East
6355664	Not classified	(Not classified) Not classified	Not classified	244m	South
6355676	Not classified	(Not classified) Not classified	Not classified	248m	South
6355416	Wet Sclerophyll Forests (Grassy sub-formation)	(Wet Sclerophyll Forests (Grassy sub-formation)) South Coast Lowland Shrub-Grass Forest	Southern Lowland Wet Sclerophyll Forests	280m	South East
6355509	Not classified	(Not classified) Not classified	Not classified	369m	West
6355516	Not classified	(Not classified) Not classified	Not classified	370m	West
6355948	Not classified	(Not classified) Not classified	Not classified	378m	North
6355957	Not classified	(Not classified) Not classified	Not classified	383m	North

Map ID	Vegetation Formation	Plant Community Type and Vegetation Formation	Vegetation Class	Dist	Dir
6355661	Not classified	(Not classified) Not classified	Not classified	438m	South West
6357020	Not classified	(Not classified) Not classified	Not classified	456m	North East
6355794	Not classified	(Not classified) Not classified	Not classified	459m	South East
6355953	Not classified	(Not classified) Not classified	Not classified	459m	North West
6355656	Not classified	(Not classified) Not classified	Not classified	473m	South West
6355513	Not classified	(Not classified) Not classified	Not classified	477m	South West
6355950	Not classified	(Not classified) Not classified	Not classified	531m	North West
6355951	Not classified	(Not classified) Not classified	Not classified	551m	North
6355678	Not classified	(Not classified) Not classified	Not classified	576m	South
6355960	Not classified	(Not classified) Not classified	Not classified	582m	North
6356916	Wet Sclerophyll Forests (Grassy sub-formation)	(Wet Sclerophyll Forests (Grassy sub-formation)) South Coast Lowland Shrub-Grass Forest	Southern Lowland Wet Sclerophyll Forests	601m	North
6357010	Not classified	(Not classified) Not classified	Not classified	608m	North
6355668	Not classified	(Not classified) Not classified	Not classified	614m	South
6355653	Not classified	(Not classified) Not classified	Not classified	642m	South
6356960	Grassy Woodlands	(Grassy Woodlands) South Coast Lowland Woollybutt Grassy Forest	Coastal Valley Grassy Woodlands	644m	North
6355592	Not classified	(Not classified) Not classified	Not classified	680m	West
6355952	Not classified	(Not classified) Not classified	Not classified	693m	North
6355797	Not classified	(Not classified) Not classified	Not classified	723m	South East
6355417	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Shoalhaven Lowland Bloodwood Shrub Forest	South East Dry Sclerophyll Forests	738m	South
6355795	Not classified	(Not classified) Not classified	Not classified	840m	South East
6355591	Not classified	(Not classified) Not classified	Not classified	851m	South West
6355799	Not classified	(Not classified) Not classified	Not classified	857m	South East
6355934	Wet Sclerophyll Forests (Grassy sub-formation)	(Wet Sclerophyll Forests (Grassy sub-formation)) Sydney Basin Creekflat Blue Gum-Apple Forest	Northern Hinterland Wet Sclerophyll Forests	877m	North West
6356361	Dry Sclerophyll Forests (Shrubby sub-formation)	(Dry Sclerophyll Forests (Shrubby sub-formation)) Shoalhaven Lowland Bloodwood Shrub Forest	South East Dry Sclerophyll Forests	883m	South East
6357012	Not classified	(Not classified) Not classified	Not classified	888m	North East
6356930	Forested Wetlands	(Forested Wetlands) Coastal Alluvial Bangalay Forest	Coastal Floodplain Wetlands	892m	North
6355940	Not classified	(Not classified) Not classified	Not classified	930m	North West
6355650	Not classified	(Not classified) Not classified	Not classified	967m	South West

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

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Ramsar Wetlands

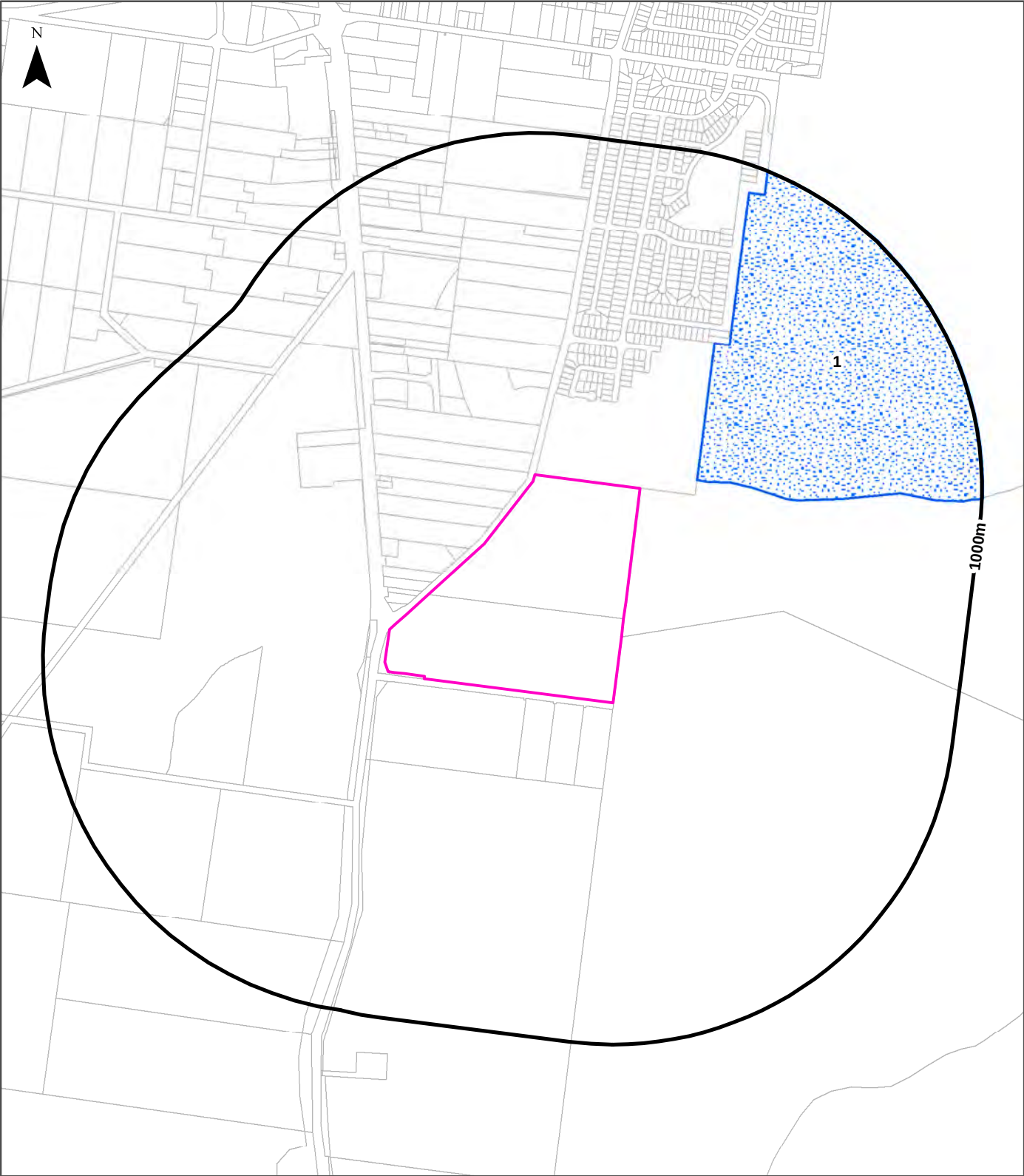
What Ramsar Wetland areas exist within the dataset buffer?

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

Ramsar Wetlands Data Source: © Commonwealth of Australia - Department of Agriculture, Water and the Environment

Ecological Constraints - Protected Areas

Warra Warra Road, South Nowra, NSW 2541



Legend

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

600

Meters

Data Sources: Property Boundaries & Topographic Data:
© Department Finance, Services & Innovation 2025

Coordinate System:
GDA 1994 MGA Zone 56

Date: 07 October 2025

Ecological Constraints

Warra Warra Road, South Nowra, NSW 2541

Collaborative Australian Protected Areas Database - Terrestrial

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

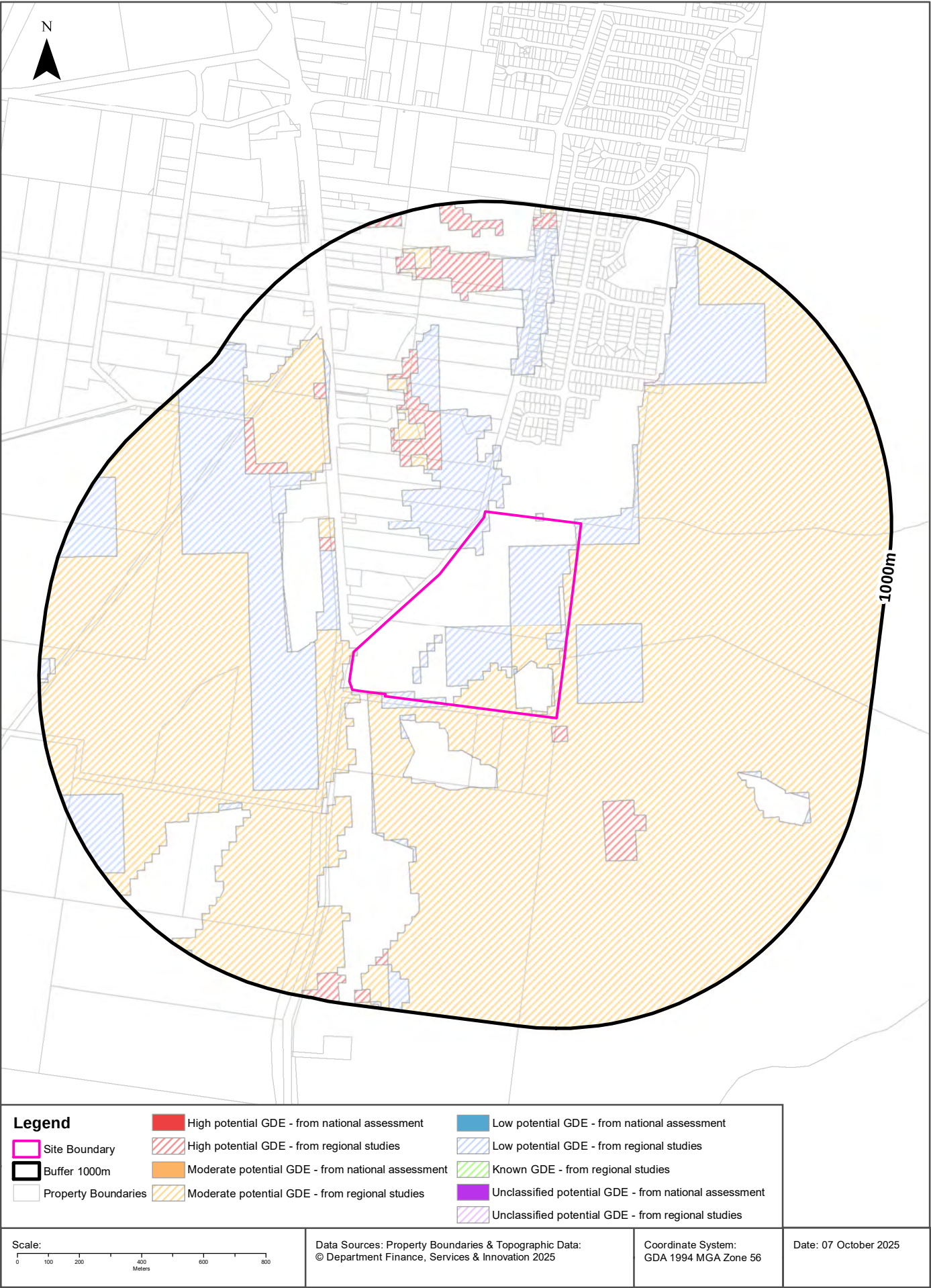
Map ID	Area Name	Area Details	Management Category	Authority	Jurisdiction	Dist	Dir
1	Worrigeer	Nature Reserve	Strict Nature Reserve	NSW Department of Planning and Environment	State	167m	North East

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

Warra Warra Road, South Nowra, NSW 2541

Groundwater Dependent Ecosystems Atlas

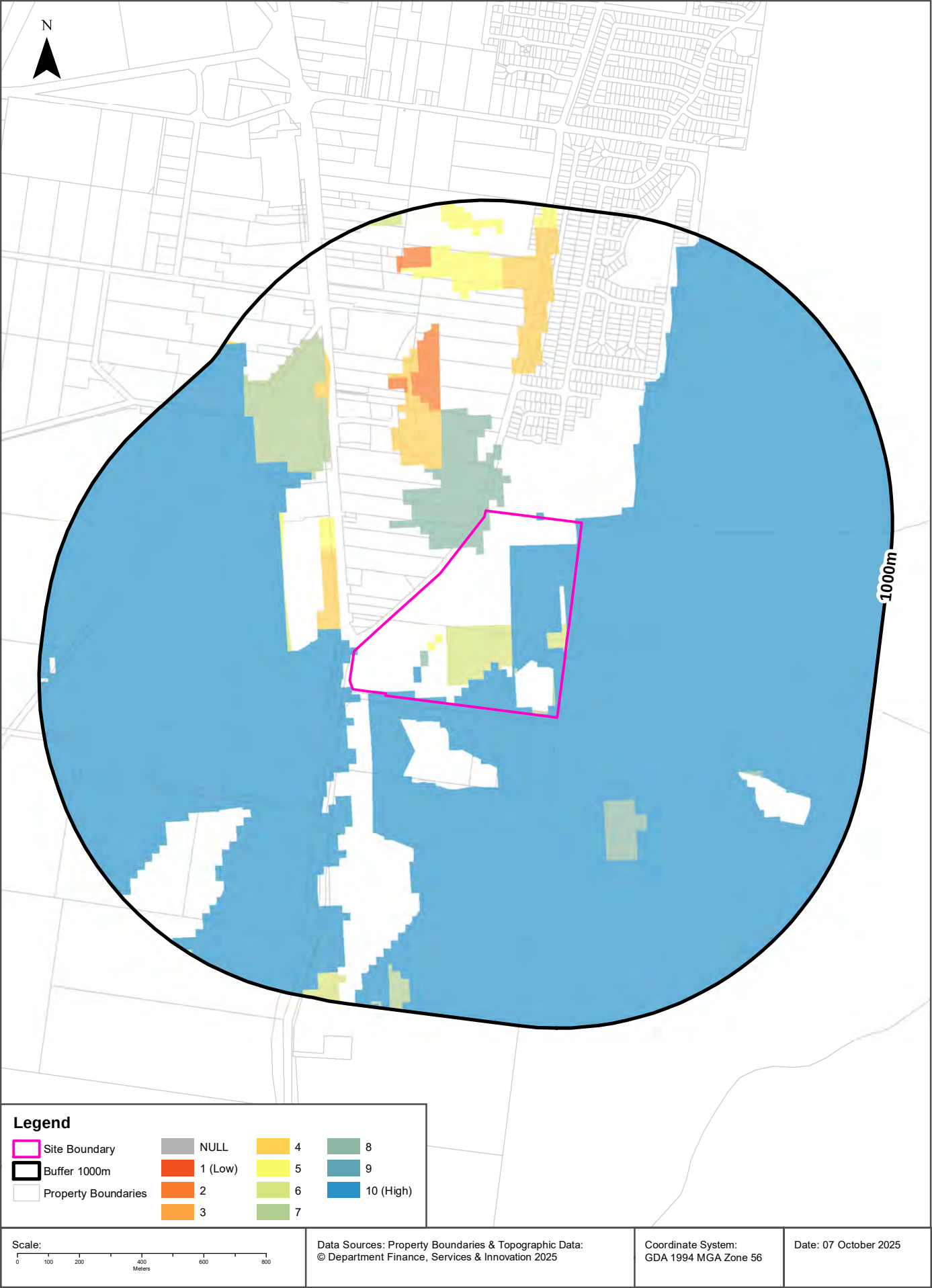
Type	GDE Potential	Geomorphology	Ecosystem Type	Aquifer Geology	Distance	Direction
Terrestrial	Low potential GDE - from regional studies	Deeply dissected sandstone plateaus.	Vegetation		0m	On-site
Terrestrial	Moderate potential GDE - from regional studies	Deeply dissected sandstone plateaus.	Vegetation		0m	On-site
Terrestrial	Moderate potential GDE - from regional studies	Deeply dissected steeply sloping plateau margin in metamorphics and granite. Bounded in the west by the Great Escarpment.	Vegetation		0m	On-site
Terrestrial	High potential GDE - from regional studies	Deeply dissected sandstone plateaus.	Vegetation		27m	South East
Terrestrial	Low potential GDE - from regional studies	Deeply dissected steeply sloping plateau margin in metamorphics and granite. Bounded in the west by the Great Escarpment.	Vegetation		71m	South West
Terrestrial	High potential GDE - from regional studies	Deeply dissected steeply sloping plateau margin in metamorphics and granite. Bounded in the west by the Great Escarpment.	Vegetation		306m	South East

Groundwater Dependent Ecosystems Atlas Data Source: The Bureau of Meteorology

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Ecological Constraints - Inflow Dependent Ecosystems Likelihood

Warra Warra Road, South Nowra, NSW 2541



Ecological Constraints

Warra Warra Road, South Nowra, NSW 2541

Inflow Dependent Ecosystems Likelihood

Type	IDE Likelihood	Geomorphology	Ecosystem Type	Aquifer Geology	Distance	Direction
Terrestrial	6	Deeply dissected sandstone plateaus.	Vegetation		0m	On-site
Terrestrial	10	Deeply dissected steeply sloping plateau margin in metamorphics and granite. Bounded in the west by the Great Escarpment.	Vegetation		0m	On-site
Terrestrial	10	Deeply dissected sandstone plateaus.	Vegetation		0m	On-site
Terrestrial	8	Deeply dissected sandstone plateaus.	Vegetation		0m	On-site
Terrestrial	5	Deeply dissected sandstone plateaus.	Vegetation		0m	On-site
Terrestrial	7	Deeply dissected sandstone plateaus.	Vegetation		0m	On-site
Terrestrial	4	Deeply dissected sandstone plateaus.	Vegetation		82m	West
Terrestrial	8	Deeply dissected steeply sloping plateau margin in metamorphics and granite. Bounded in the west by the Great Escarpment.	Vegetation		306m	South East
Terrestrial	2	Deeply dissected sandstone plateaus.	Vegetation		358m	North
Terrestrial	7	Deeply dissected steeply sloping plateau margin in metamorphics and granite. Bounded in the west by the Great Escarpment.	Vegetation		855m	South
Terrestrial	6	Deeply dissected steeply sloping plateau margin in metamorphics and granite. Bounded in the west by the Great Escarpment.	Vegetation		904m	South West

Inflow Dependent Ecosystems Likelihood Data Source: The Bureau of Meteorology

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Ecological Constraints

Warra Warra Road, South Nowra, NSW 2541

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	Litoria watsoni	Watson's Tree Frog	Not Sensitive	Endangered	Endangered	
Animalia	Aves	Anseranas semipalmata	Magpie Goose	Not Sensitive	Vulnerable	Not Listed	
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 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	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	Vulnerable	Vulnerable	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris canutus	Red Knot	Not Sensitive	Vulnerable	Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris melanotos	Pectoral Sandpiper	Not Sensitive	Not Listed	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Calidris ruficollis	Red-necked Stint	Not Sensitive	Not Listed	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Callocephalon fimbriatum	Gang-gang Cockatoo	Category 3	Endangered	Endangered	
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	
Animalia	Aves	Circus assimilis	Spotted Harrier	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	Dasyornis brachypterus	Eastern Bristlebird	Category 2	Endangered	Endangered	
Animalia	Aves	Ephippiorhynchus asiaticus	Black-necked Stork	Not Sensitive	Endangered	Not Listed	
Animalia	Aves	Epthianura albifrons	White-fronted Chat	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Falco subniger	Black Falcon	Not Sensitive	Vulnerable	Not Listed	

Kingdom	Class	Scientific	Common	Sensitivity Class	State Conservation Status	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Gallinago hardwickii	Latham's Snipe	Not Sensitive	Vulnerable	Vulnerable	ROKAMBA;JAMBA
Animalia	Aves	Gelochelidon nilotica	Gull-billed Tern	Not Sensitive	Not Listed	Not Listed	CAMBA
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	Limnodromus semipalmatus	Asian Dowitcher	Not Sensitive	Vulnerable	Vulnerable	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Limosa lapponica	Bar-tailed Godwit	Not Sensitive	Not Listed	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Limosa limosa	Black-tailed Godwit	Not Sensitive	Endangered	Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Lophochroa leadbeateri	Pink Cockatoo	Category 2	Vulnerable	Endangered	
Animalia	Aves	Lophoictinia isura	Square-tailed Kite	Category 3	Vulnerable	Not Listed	
Animalia	Aves	Neophema pulchella	Turquoise Parrot	Category 3	Vulnerable	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	Critically Endangered	Critically Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Numenius phaeopus	Whimbrel	Not Sensitive	Not Listed	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Onychoprion fuscatus	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	Parvipsitta pusilla	Little Lorikeet	Not Sensitive	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	Petroica rodinogaster	Pink Robin	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Pezoporus wallicus wallicus	Eastern Ground Parrot	Category 3	Vulnerable	Not Listed	
Animalia	Aves	Pluvialis squatarola	Grey Plover	Not Sensitive	Vulnerable	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Poephila cincta cincta	Black-throated Finch (southern subspecies)	Not Sensitive	Extinct	Endangered	
Animalia	Aves	Ptilinopus superbus	Superb Fruit-Dove	Not Sensitive	Vulnerable	Not Listed	
Animalia	Aves	Pycnophilus floccosus	Pilotbird	Not Sensitive	Vulnerable	Vulnerable	
Animalia	Aves	Rostratula australis	Australian Painted Snipe	Not Sensitive	Endangered	Endangered	

Kingdom	Class	Scientific	Common	Sensitivity Class	State Conservation Status	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Stagonopleura guttata	Diamond Firetail	Not Sensitive	Vulnerable	Vulnerable	
Animalia	Aves	Sternula albifrons	Little Tern	Not Sensitive	Endangered	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Stictonetta naevosa	Freckled Duck	Not Sensitive	Vulnerable	Not Listed	
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	Tringa nebularia	Common Greenshank	Not Sensitive	Endangered	Endangered	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	Insecta	Petalura gigantea	Giant Dragonfly	Not Sensitive	Endangered	Not Listed	
Animalia	Mammalia	Arctocephalus pusillus doriferus	Australian Fur-seal	Not Sensitive	Vulnerable	Not Listed	
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	Dasyurus viverrinus	Eastern Quoll	Not Sensitive	Endangered	Endangered	
Animalia	Mammalia	Dugong dugon	Dugong	Not Sensitive	Endangered	Not Listed	
Animalia	Mammalia	Falsistrellus tasmaniensis	Eastern False Pipistrelle	Not Sensitive	Vulnerable	Not Listed	
Animalia	Mammalia	Isodon obesulus obesulus	Southern Brown Bandicoot (eastern)	Not Sensitive	Endangered	Endangered	
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	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	Phascolarctos cinereus	Koala	Not Sensitive	Endangered	Endangered	
Animalia	Mammalia	Pseudomys novaehollandiae	New Holland Mouse	Not Sensitive	Vulnerable	Vulnerable	
Animalia	Mammalia	Pteropus poliocephalus	Grey-headed Flying-fox	Not Sensitive	Vulnerable	Vulnerable	
Animalia	Mammalia	Saccolaimus flaviventris	Yellow-bellied Sheath-tail-bat	Not Sensitive	Vulnerable	Not Listed	
Animalia	Mammalia	Scoteanax rueppellii	Greater Broad-nosed Bat	Not Sensitive	Vulnerable	Not Listed	
Animalia	Mammalia	Sminthopsis leucopus	White-footed Dunnart	Not Sensitive	Vulnerable	Not Listed	
Animalia	Mammalia	Vespadelus baverstocki	Inland Forest Bat	Not Sensitive	Vulnerable	Not Listed	
Animalia	Mammalia	Vespadelus troungtoni	Eastern Cave Bat	Not Sensitive	Vulnerable	Not Listed	

Kingdom	Class	Scientific	Common	Sensitivity Class	State Conservation Status	Federal Conservation Status	Migratory Species Agreements
Animalia	Reptilia	Antaresia childreni	Children's Python	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	Hoplocephalus bungaroides	Broad-headed Snake	Category 2	Endangered	Endangered	
Animalia	Reptilia	Varanus rosenbergi	Rosenberg's Goanna	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	Cryptostylis hunteriana	Leafless Tongue Orchid	Category 2	Vulnerable	Vulnerable	
Plantae	Flora	Dampiera fusca	Kydra Dampiera	Not Sensitive	Endangered	Not Listed	
Plantae	Flora	Eucalyptus langleyi	Albatross Mallee	Not Sensitive	Endangered Population, Vulnerable	Vulnerable	
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	Eucalyptus sturgisiana	Ettrema Mallee	Not Sensitive	Vulnerable	Not Listed	
Plantae	Flora	Genoplesium baueri	Bauer's Midge Orchid	Category 2	Endangered	Endangered	
Plantae	Flora	Hibbertia puberula		Not Sensitive	Endangered	Not Listed	
Plantae	Flora	Hibbertia stricta subsp. furcatula		Not Sensitive	Endangered	Not Listed	
Plantae	Flora	Macadamia integrifolia	Macadamia Nut	Not Sensitive	Not Listed	Vulnerable	
Plantae	Flora	Melaleuca biconvexa	Biconvex Paperbark	Not Sensitive	Vulnerable	Vulnerable	
Plantae	Flora	Melaleuca deanei	Deane's Paperbark	Not Sensitive	Vulnerable	Vulnerable	
Plantae	Flora	Pomaderris cotoneaster	Cotoneaster Pomaderris	Not Sensitive	Endangered	Endangered	
Plantae	Flora	Pterostylis gibbosa	Illawarra Greenhood	Category 2	Endangered	Endangered	
Plantae	Flora	Pterostylis ventricosa		Category 2	Critically Endangered	Not Listed	
Plantae	Flora	Pterostylis vernalis		Category 2	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	Solanum celatum		Not Sensitive	Endangered	Not Listed	
Plantae	Flora	Syzygium paniculatum	Magenta Lilly Pilly	Not Sensitive	Vulnerable	Vulnerable	
Plantae	Flora	Triplarina nowraensis	Nowra Heath Myrtle	Not Sensitive	Endangered	Endangered	
Plantae	Flora	Zieria baeuerlenii	Bomaderry Zieria	Not Sensitive	Endangered	Endangered	

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 E: Site Images



Photograph 1: Fly tipped material along the northern Site boundary (AEC3).



Photograph 2: View looking south along the eastern boundary showing deep wheel ruts.



Photograph 3: View looking south west from AEC2.



Photograph 4: Fly tipped material near BH02.



Photograph 5: View looking west from the southern part of AEC2.



Photograph 6: View looking north west from the southern part of AEC2 showing abandoned car in background.

revision	description	drawn	approved	date				client: Jervis Bay Town Planning	
	Plate 1 – Lot 224 (north)	JH	KEG	23/10/2025				project: Warra Warra Road, South Nowra NSW Lot 2 DP 1126288 & Lot 224 DP 755952 Preliminary Site Investigation	
						scale	NTS	Title Images of the Site	
						original size	A3	project no: TERRA25-1425	Plate no: 1



Photograph 7: Unfenced boundary near the south eastern corner of Lot 224.



Photograph 8: Material from BH01.



Photograph 9: Material recovered from BH02.



Photograph 10: Material recovered from TP01.



Photograph 11: Material recovered from TP02.



Photograph 12: Material recovered from TP03.

revision	description	drawn	approved	date				client:	Jervis Bay Town Planning	
	Plate 2 – Lot 224 (north)	JH	KEG	23/10/2025				project:	Warra Warra Road, South Nowra NSW Lot 2 DP 1126288 & Lot 224 DP 755952 Preliminary Site Investigation	
						scale	NTS	Title	Images of the Site	
						original size	A3	project no:	TERRA25-1425	Plate no: 2



Photograph 13: View looking south along the eastern boundary of Lot 2.



Photograph 14: View looking west across the northern part of AEC1.



Photograph 15: Filled berm along the northern side of AEC1, where BH03 was drilled.



Photograph 16: Abandoned car to the north of the filled berm.



Photograph 17: Campfire adjacent to TP04.



Photograph 18: Fly tipped waste around the motorbike tracks in AEC1.

revision	description	drawn	approved	date			client:	Jervis Bay Town Planning	
	Plate 3 – Lot 2 (south)	JH	KEG	23/10/2025			project:	Warra Warra Road, South Nowra NSW Lot 2 DP 1126288 & Lot 224 DP 755952 Preliminary Site Investigation	
							Title	Images of the Site	
							project no:	TERRA25-1425	Plate no: 3
					scale	NTS			
					original size	A3			



Photograph 19: Burnt stockpile where BH04 was drilled showing legacy scrap metal wire.



Photograph 20: Material recovered from BH03.



Photograph 21: Material recovered from BH04.



Photograph 22: Material recovered from TP04.



Photograph 23: Material recovered from TP05.



Photograph 24: Material recovered from TP06.

revision	description	drawn	approved	date				client:	Jervis Bay Town Planning	
	Plate 4 – Lot 2 (south)	JH	KEG	23/10/2025				project:	Warra Warra Road, South Nowra NSW Lot 2 DP 1126288 & Lot 224 DP 755952 Preliminary Site Investigation	
						scale	NTS	Title	Images of the Site	
						original size	A3	project no:	TERRA25-1425	Plate no: 4

Appendix F: Engineering Logs



FIELD DESCRIPTIONS OF SOILS

FIELD IDENTIFICATION PROCEDURES (Excluding particles larger than 60 mm and basing fractions on estimated mass)				USC	PRIMARY NAME	
COARSE GRAINED SOILS More than 65% of materials less than 63 mm is larger than 0.075 mm	GRAVELS More than half of coarse fraction is larger than 2.36 mm	CLEAN GRAVELS (Little or no fines)	Wide range in grain size and substantial amounts of all intermediate particle sizes	GW	GRAVEL	
			Predominantly one size or a range of sizes with more intermediate sizes missing.	GP	GRAVEL	
		GRAVELS WITH FINES (Appreciable amount of fines)	Non-plastic fines (for identification procedures see ML below)	GM	SILTY GRAVEL	
			Plastic fines (for identification procedures see CL below)	GC	CLAYEY GRAVEL	
	SANDS More than half of coarse fraction is smaller than 2.36 mm	CLEAN SANDS (Little or no fines)	Wide range in grain sizes and substantial amounts of all intermediate sizes	SW	SAND	
			Predominantly one size or a range of sizes with some intermediate sizes missing.	SP	SAND	
		SANDS WITH FINES (Appreciable amount of fines)	Non-plastic fines (for identification procedures see ML below).	SM	SILTY SAND	
			Plastic fines (for identification procedures see CL below).	SC	CLAYEY SAND	
FINE GRAINED SOILS More than 35% of material less than 63 mm is smaller than 0.075 mm	IDENTIFICATION PROCEDURES ON FRACTIONS <0.2 mm (Note a 75Um particle is about the smallest particle that is visible to the naked eye.)					
	SILTS & CLAYS Liquid limit less than 50	DRY STRENGTH	DILATANCY	TOUGHNESS	USC	PRIMARY NAME
		None to Low	Quick to slow	None	ML	SILT
		Medium to High	None	Medium	CL	CLAY
		Low to medium	Slow to very slow	Low	CL	ORGANIC SILT
	SILTS & CLAYS Liquid limit greater than 50	Low to medium	Slow to very slow	Low to medium	MH	SILT
		High	None	High	CH	CLAY
		Medium to High	None	Low to medium	OH	ORGANIC CLAY
	HIGHLY ORGANIC		Readily identified by colour, odour, spongy feel and frequently by fibrous texture by fibrous texture.		PT	PEAT
	● Low plasticity – Liquid Limit w _L less than 35%. ● Medium plasticity – w _L between 35% and 50%. ● High plasticity – w _L greater than 50%.					

● Low plasticity – Liquid Limit w_L less than 35%. ● Medium plasticity – w_L between 35% and 50%. ● High plasticity – w_L greater than 50%.

Particle size descriptive terms

NAME	SUBDIVISION	SIZE
Boulders		>200 mm
Cobbles		63 mm to 200 mm
Gravel	coarse medium fine	20 mm to 63 mm 6 mm to 20 mm 2.36 mm to 6 mm
Sand	coarse medium fine	600 µm to 2.36 mm 200 µm to 600 µm 75 µm to 200 µm

Minor components

TERM	ASSESSMENT GUIDE	PROPORTION OF MINOR COMPONENT IN:
Trace of	Presence just detectable by feel or eye, but soil properties little or no different to general properties of primary component.	Coarse grained soils: <5% Fine grained soils: <15%
With some	Presence easily detected by feel or eye, soil properties little different to general properties of primary component.	Coarse grained soils: 5 - 12% Fine grained soils: 15 - 30%



TERRA INSIGHT

How to interpret the engineering logs in Your Report

Moisture condition

TERM	DEFINITION
Dry	Looks and feels dry. Cohesive and cemented soils are hard, friable or powdery. Uncemented granular soils run freely through hands.
Moist	Soil feels cool and darkened in colour. Cohesive soils can be moulded. Granular soils tend to cohere.
Wet	As for moist but with free water forming on hands when handled.

Soil structure

	ZONING	CEMENTING
Layers	Continuous across exposure or sample.	Weakly cemented Easily broken up by hand in air or water.
Lenses	Discontinuous shape.	Moderately cemented Effort is required to break up the soil by hand in air or water.
Pockets	Irregular inclusions of different material.	

Consistency of cohesive soils

TERM	UNDRAINED STRENGTH s_u (kPa)	VISUAL OBSERVATION IN FIELD
Very Soft	<12	A finger can be pushed well into the soil with little effort.
Soft	12 – 25	A finger can be pushed into the soil to about 25mm depth.
Firm	25 – 50	The soil can be indented about 5mm with the thumb, but not penetrated.
Stiff	50 – 100	The surface of the soil can be indented with the thumb, but not penetrated.
Very Stiff	100 – 200	The surface of the soil can be marked, but not indented with thumb pressure.
Hard	>200	The surface of the soil can be marked only with the thumbnail.
Friable	–	Crumbles or powders when scraped by thumbnail.

Density of granular soils

TERM	DENSITY INDEX (%)
Very loose	Less than 15
Loose	15 – 35
Medium Dense	35 – 65
Dense	65 – 85
Very Dense	Greater than 85

Geological origin

TRANSPORTED SOILS

Fill	Man made deposit. Fill may be significantly more variable between tested locations than naturally occurring soils.
Aeolian soil	Deposited by wind.
Alluvial soil	Deposited by streams and rivers.
Colluvial soil	Deposited on slopes (transported downslope by gravity).
Lacustrine soil	Deposited by lakes.
Marine soil	Deposited in ocean basins, bays, beaches and estuaries.

WEATHERED IN PLACE SOILS

Extremely weathered material	Structure and fabric of parent rock visible.
Residual soil	Structure and fabric of parent rock not visible.



TERRA INSIGHT

How to interpret the engineering logs in Your Report

FIELD DESCRIPTIONS OF ROCK

The descriptive terms used by Terra Insight are given below. They are broadly consistent with Australian Standard AS1726-1993.

Rock Substance	In engineering terms rock substance is any naturally occurring aggregate of minerals and organic material which cannot be disintegrated or remoulded by hand in air or water. Other material is described using soil descriptive terms. Effectively homogenous material, may be isotropic or anisotropic.
Defect	Discontinuity or break in the continuity of a substance or substances.
Mass	Any body of material which is not effectively homogeneous. It can consist of two or more substances without defects, or one or more substances with one or more defects.

Classification of weathering products

Term	Abbreviation	Definition
Residual Soil	RS	Soil derived from the weathering of rock; the mass structure and substance fabric are no longer evident; there is a large change in volume but the soil has not been significantly transported.
Extremely Weathered Material	XW	Material is weathered to such an extent that it has soil properties, ie, it either disintegrates or can be remoulded in water. Original rock fabric still visible.
Highly Weathered Rock	HW	Rock strength is changed by weathering. The whole of the rock substance is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable. Some minerals are decomposed to clay minerals. Porosity may be increased by leaching or may be decreased due to the deposition of minerals in pores.
Moderately Weathered Rock	MW	The whole of the rock substance is discoloured, usually by iron staining or bleaching, to the extent that the colour of the fresh rock is no longer recognisable.
Slightly Weathered Rock	SW	Rock substance affected by weathering to the extent that partial staining or partial discolouration of the rock substance (usually by limonite) has taken place. The colour and texture of the fresh rock is recognisable; strength properties are essentially those of the fresh rock substance.
Fresh Rock	FR	Rock substance unaffected by weathering.

Notes on Weathering:

AS1726 suggests the term "Distinctly Weathered" (DW) to cover the range of substance weathering conditions between XW and SW. For projects where it is not practical to delineate between HW and MW or it is judged that there is no advantage in making such a distinction. DW may be used with the definition given in AS1726.

Where physical and chemical changes were caused by hot gasses and liquids associated with igneous rocks, the term "altered" may be substituted for "weathering" to give the abbreviations XA, HA, MA, SA and DA.

Rock substance strength terms

Term	Abbreviation	UCS (MPa)	Point Load Index, $I_{s(50)}$ (MPa)	Field Guide
Very Low	VL	<2	Less than 0.1	Material crumbles under firm blows with sharp end of pick; can be peeled with a knife; pieces up to 30mm thick can be broken by finger pressure.
Low	L	2 to 6	0.1 to 0.3	Easily scored with a knife; indentations 1mm to 3mm show with firm bows of a pick point; has a dull sound under hammer. Pieces of core 150mm long by 50mm diameter may be broken by hand. Sharp edges of core may be friable and break during handling.
Medium	M	6 to 20	0.3 to 1.0	Readily scored with a knife; a piece of core 150mm long by 50mm diameter can be broken by hand with difficulty.
High	H	20 to 60	1 to 3	A piece of core 150mm long by 50mm can not be broken by hand but can be broken by a pick with a single firm blow; rock rings under hammer.
Very High	VH	60 to 200	3 to 10	Hand specimen breaks after more than one blow of a pick; rock rings under hammer.
Extremely High	EH	>200	More than 10	Specimen requires many blows with geological pick to break; rock rings under hammer.

Notes on Rock Substance Strength:

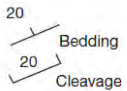
In anisotropic rocks the field guide to strength applies to the strength perpendicular to the anisotropy. High strength anisotropic rocks may break readily parallel to the planar anisotropy. The term "extremely low" is not used as a rock substance strength term. While the term is used in AS1726-1993, the field guide therein makes it clear that materials in that strength range are soils in engineering terms. The unconfined compressive strength for isotropic rocks (and anisotropic rocks which fall across the planar anisotropy) is typically 10 to 25 times the point load index $I_{s(50)}$. The ratio may vary for different rock types. Lower strength rocks often have lower ratios than higher strength rocks.

SUBSTANCE DESCRIPTIVE TERMS:

ROCK NAME	Simple rock names are used rather than precise geological classification.
PARTICLE SIZE	Grain size terms for sandstone are:
Coarse grained	Mainly 0.6mm to 2mm
Medium grained	Mainly 0.2mm to 0.6mm
Fine grained	Mainly 0.06mm (just visible) to 0.2mm
FABRIC	Terms for layering of penetrative fabric (eg. bedding, cleavage etc.) are:
Massive	No layering or penetrative fabric.
Indistinct	Layering or fabric just visible. Little effect on properties.
Distinct	Layering or fabric is easily visible. Rock breaks more easily parallel to layering of fabric.

How to interpret the engineering logs in Your Report

Common defects observed in rock

Term	Definition	Diagram	Map Symbol	Graphic Log (Note 1)	DEFECT SHAPE TERMS
Parting	A surface or crack across which the rock has little or no tensile strength, but which is not parallel or sub parallel to layering or planar anisotropy in the rock substance. May be open or closed.			 (Note 2)	Planar The defect does not vary in orientation
Joint	A surface or crack across which the rock has little or no tensile strength, but which is not parallel or sub parallel to layering or planar anisotropy in the rock substance. May be open or closed.			 (Note 2)	Curved The defect has a gradual change in orientation
Sheared Zone (Note 3)	Zone of rock substance with roughly parallel near planar, curved or undulating boundaries cut by closely spaced joints, sheared surfaces or other defects. Some of the defects are usually curved and intersect to divide the mass into lenticular or wedge shaped blocks.				Undulating The defect has a wavy surface
Sheared Surface (Note 3)	A near planar, curved or undulating surface which is usually smooth, polished or slickensided.				Stepped The defect has one or more well defined steps
Crushed Seam (Note 3)	Seam with roughly parallel almost planar boundaries, composed of disoriented, usually angular fragments of the host rock substance which may be more weathered than the host rock. The seam has soil properties				Irregular The defect has many sharp changes of orientation
Infilled Seam	Seam of soil substance usually with distinct roughly parallel boundaries formed by the migration of soil into an open cavity or joint, infilled seams less than 1mm thick may be described as veneer or coating on joint surface.				Note: The assessment of defect shape is partly influenced by the scale of the observation. ROUGHNESS TERMS Slickensided Grooved or striated surface, usually polished Polished Shiny smooth surface Smooth Smooth to touch. Few or no surface irregularities Rough Many small surface irregularities (amplitude generally less than 1mm). Feels like fine to coarse sand paper. Very Rough Many large surface irregularities (amplitude generally more than 1mm). Feels like, or coarser than very coarse sand paper.
Extremely Weathered Seam	Seam of soil substance, often with gradational boundaries. Formed by weathering of the rock substance in place.				
Notes on Defects: 1. Usually borehole logs show the true dip of defects and face sketches and sections the apparent dip. 2. Partings and joints are not usually shown on the graphic log unless considered significant. Sheared zones, sheared surfaces and crushed seams are faults in geological terms.					COATING TERMS Clean No visible coating Stained No visible coating but surfaces are discoloured Veneer A visible coating of soil or mineral, too thin to measure; may be patchy Veneer A visible coating up to 1mm thick. Thicker soil material is usually described using appropriate defect terms (eg, infilled seam). Thicker rock strength material is usually described as a vein.

Engineering Log - Borehole

Project No.: TERRA25-1425

Client:	Jervis Bay Town Planning	Commenced:	08/10/2025
Project Name:	Preliminary Site Investigation	Completed:	08/10/2025
Hole Location:	Warra Warra Rd, Sth Nowra	Logged By:	JH
Hole Position:	281903.8 m E 6133082.8 m N MGA94 Zone 56	Checked By:	KG

Drill Model and Mounting:	1.8t excavator	Inclination:	-90°	RL Surface:	39.60 m		
Hole Diameter:		Bearing:		Datum:	AHD	Operator:	GF

Drilling Information							Soil Description						Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Soil name, plasticity/grainsize characteristics, colour, description of secondary component. Minor components, i.e., some/trace . . . other soil substance observations	Moisture Condition	Consistency	Relative Density	DCP NO OF BLOWS PER 100 mm	Structure and Additional Observations
AD/T						39.4	0.2		CL-CI	Silty CLAY: low to medium plasticity, brown, some orange brown	D - M				TOPSOIL possibly FILL
						39.2	0.4		CI	Silty CLAY: medium plasticity, grey and orange brown	D		RESIDUAL SOIL		
						39.0	0.6		GP	Silty Clayey GRAVEL: fine to medium subangular gravel, light grey and light orange, some very low strength gravels, low plasticity	D		RESIDUAL SOIL / EXTREMELY WEATHERED MATERIAL		
						38.8	0.8								
						38.6	1.0								
						38.4	1.2								
						38.2	1.4								
											38.0	1.6			Hole Terminated at 1.50 m Target

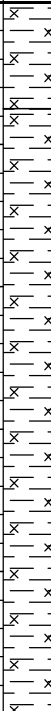
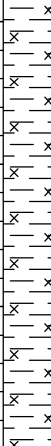
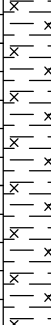
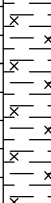
Method AS - Auger Screwing RR - Rock Roller WB - Washbore	Penetration  No resistance ranging to refusal	Water  Level (Date)  Inflow  Partial Loss  Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support C - Casing	Graphic Log/Core Loss  Core recovered (hatching indicates material)  Core loss	Classification Symbols and Soil Descriptions Based on Unified Soil Classification System	Plastic Limit < PL = PL < PL		

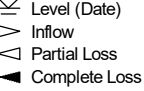
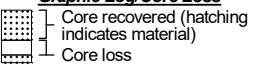
Engineering Log - Borehole

Project No.: TERRA25-1425

Client:	Jervis Bay Town Planning	Commenced:	08/10/2025
Project Name:	Preliminary Site Investigation	Completed:	08/10/2025
Hole Location:	Warra Warra Rd, Sth Nowra	Logged By:	JH
Hole Position:	281736.7 m E 6132997.5 m N MGA94 Zone 56	Checked By:	KG

Drill Model and Mounting:	1.8t excavator	Inclination:	-90°	RL Surface:	38.20 m		
Hole Diameter:		Bearing:		Datum:	AHD	Operator:	GF

Drilling Information							Soil Description						Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Soil name, plasticity/grainsize characteristics, colour, description of secondary component. Minor components, i.e., some/trace . . . other soil substance observations	Moisture Condition	Consistency	Relative Density	DCP NO OF BLOWS PER 100 mm	Structure and Additional Observations
AD/T						38.0	0.2		CL	Silty CLAY: low plasticity, dark grey brown, some orange mottling	M				ALLUVIAL SOIL
									CI-CH	Silty CLAY: medium to high plasticity, dull orange/yellow brown, some grey and red mottling			RESIDUAL SOIL		
			Not encountered			37.8	0.4								
						37.6	0.6				M				
						37.4	0.8								
						37.2	1.0								
						37.0	1.2			Hole Terminated at 1.00 m Target					
						36.8	1.4								
						36.6	1.6								

Method AS - Auger Screwing RR - Rock Roller WB - Washbore	Penetration 	Water 	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support C - Casing	Graphic Log/Core Loss 	Classification Symbols and Soil Descriptions Based on Unified Soil Classification System	Plastic Limit < PL = PL < PL		

Engineering Log - Borehole

Project No.: TERRA25-1425

Client:						Jervis Bay Town Planning									
Project Name:						Preliminary Site Investigation	Commenced:								08/10/2025
Hole Location:						Warra Warra Rd, Sth Nowra	Completed:								08/10/2025
Hole Position:						281774.6 m E 6132677.2 m N MGA94 Zone 56	Logged By:								JH
							Checked By:								KG
Drill Model and Mounting:						1.8t excavator	Inclination:	-90°	RL Surface:		42.70 m				
Hole Diameter:							Bearing:		Datum:	AHD	Operator: GF				
Drilling Information						Soil Description								Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Soil name, plasticity/grainsize characteristics, colour, description of secondary component. Minor components, i.e., some/trace . . . other soil substance observations	Moisture Condition	Consistency Relative Density	DCP NO OF BLOWS PER 100 mm	Structure and Additional Observations	
				Not encountered		42.5	0.2		ML	Sandy SILT: low plasticity, grey, fine sand, trace fine gravel	D			FILL	
						42.3	0.4		CL-CI	Silty CLAY: low to medium plasticity, dark brown				D - M	OLD TOPSOIL
						42.1	0.6		CI-CH	Silty CLAY: medium to high plasticity, orange brown grading to light grey				M	RESIDUAL SOIL
						41.9	0.8	Hole Terminated at 1.00 m Target							
						41.7	1.0								
						41.5	1.2								
						41.3	1.4								
						41.1	1.6								
Method AS - Auger Screwing RR - Rock Roller WB - Washbore		Penetration No resistance ranging to refusal		Water Level (Date) Inflow Partial Loss Complete Loss		Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test					Moisture Condition D - Dry M - Moist W - Wet		Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense		
Support C - Casing		Graphic Log/Core Loss Core recovered (hatching indicates material) Core loss		Classification Symbols and Soil Descriptions Based on Unified Soil Classification System					Plastic Limit < PL = PL > PL						

Engineering Log - Borehole

Project No.: TERRA25-1425

Client:	Jervis Bay Town Planning	Commenced:	08/10/2025
Project Name:	Preliminary Site Investigation	Completed:	08/10/2025
Hole Location:	Warra Warra Rd, Sth Nowra	Logged By:	JH
Hole Position:	281797.9 m E 6132599.7 m N MGA94 Zone 56	Checked By:	KG

Drill Model and Mounting:	1.8t excavator	Inclination:	-90°	RL Surface:	43.60 m		
Hole Diameter:		Bearing:		Datum:	AHD	Operator:	GF

Drilling Information							Soil Description						Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Soil name, plasticity/grainsize characteristics, colour, description of secondary component. Minor components, i.e., some/trace . . . other soil substance observations	Moisture Condition	Consistency	Relative Density	DCP NO OF BLOWS PER 100 mm	Structure and Additional Observations
AD/T			Not encountered			43.4	0.2		ML	Sandy SILT: low plasticity, grey to white, fine sand, trace fine gravel (charcoal)	D				FILL
									CI-CH	Silty CLAY: medium to high plasticity, orange brown	M				RESIDUAL SOIL
						43.2	0.4								
						43.0	0.6			Hole Terminated at 0.50 m Target					
						42.8	0.8								
						42.6	1.0								
						42.4	1.2								
						42.2	1.4								
						42.0	1.6								

Method AS - Auger Screwing RR - Rock Roller WB - Washbore	Penetration  No resistance ranging to refusal	Water  Level (Date)  Inflow  Partial Loss  Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support C - Casing	Graphic Log/Core Loss  Core recovered (hatching indicates material)  Core loss	Classification Symbols and Soil Descriptions Based on Unified Soil Classification System	Plastic Limit < PL = PL < PL		

Engineering Log - Borehole

Project No.: TERRA25-1425

Client:	Jervis Bay Town Planning	Commenced:	08/10/2025
Project Name:	Preliminary Site Investigation	Completed:	08/10/2025
Hole Location:	Warra Warra Rd, Sth Nowra	Logged By:	JH
Hole Position:	281695.4 m E 6133046.6 m N MGA94 Zone 56	Checked By:	KG

Drill Model and Mounting:	Manual	Inclination:	-90°	RL Surface:	37.80 m		
Hole Diameter:		Bearing:		Datum:	AHD	Operator:	JH

Drilling Information							Soil Description						Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Soil name, plasticity/grainsize characteristics, colour, description of secondary component. Minor components, i.e., some/trace . . . other soil substance observations	Moisture Condition	Consistency	Relative Density	DCP NO OF BLOWS PER 100 mm	Structure and Additional Observations
AD/T	</														

Method AS - Auger Screwing RR - Rock Roller WB - Washbore	Penetration 	Water Level (Date) Inflow Partial Loss Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support C - Casing	Graphic Log/Core Loss 		Classification Symbols and Soil Descriptions Based on Unified Soil Classification System	Plastic Limit < PL = PL < PL	

Engineering Log - Borehole

Project No.: TERRA25-1425

Client:	Jervis Bay Town Planning	Commenced:	08/10/2025
Project Name:	Preliminary Site Investigation	Completed:	08/10/2025
Hole Location:	Warra Warra Rd, Sth Nowra	Logged By:	JH
Hole Position:	281752.2 m E 6132863.2 m N MGA94 Zone 56	Checked By:	KG

Drill Model and Mounting:	Manual	Inclination:	-90°	RL Surface:	39.90 m		
Hole Diameter:		Bearing:		Datum:	AHD	Operator:	JH

Drilling Information							Soil Description						Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Soil name, plasticity/grainsize characteristics, colour, description of secondary component. Minor components, i.e., some/trace . . . other soil substance observations	Moisture Condition	Consistency	Relative Density	DCP NO OF BLOWS PER 100 mm	Structure and Additional Observations
AD/T	<														

Method AS - Auger Screwing RR - Rock Roller WB - Washbore	Penetration 	Water Level (Date) Inflow Partial Loss Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support C - Casing	Graphic Log/Core Loss 	Classification Symbols and Soil Descriptions Based on Unified Soil Classification System	Plastic Limit < PL = PL < PL		

Engineering Log - Borehole

Project No.: TERRA25-1425

Client: Jervis Bay Town Planning		Commenced: 08/10/2025	
Project Name: Preliminary Site Investigation		Completed: 08/10/2025	
Hole Location: Warra Warra Rd, Sth Nowra		Logged By: JH	
Hole Position: 281825.4 m E 6132774.5 m N MGA94 Zone 56		Checked By: KG	

Drill Model and Mounting: Manual	Inclination: -90°	RL Surface: 42.20 m
Hole Diameter:	Bearing:	Datum: AHD Operator: JH

Drilling Information				Soil Description				Observations						
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Soil name, plasticity/grainsize characteristics, colour, description of secondary component. Minor components, i.e., some/trace . . . other soil substance observations	Moisture Condition	Consistency Relative Density	DCP NO OF BLOWS PER 100 mm	Structure and Additional Observations
ADT			Not encountered			42.0	0.2		SM	Silty SAND: fine to coarse sand, light grey/light brown, low plasticity, with coarse subangular gravels	D - M			FILL
						41.8	0.4							
						41.6	0.6							
						41.4	0.8							
						41.2	1.0							
						41.0	1.2							
						40.8	1.4							
						40.6	1.6							
Hole Terminated at 0.10 m Target														

Method AS - Auger Screwing RR - Rock Roller WB - Washbore	Penetration 	Water 	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support C - Casing	Graphic Log/Core Loss 	Classification Symbols and Soil Descriptions Based on Unified Soil Classification System			

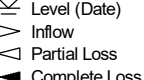
Engineering Log - Borehole

Project No.: TERRA25-1425

Client:	Jervis Bay Town Planning	Commenced:	08/10/2025
Project Name:	Preliminary Site Investigation	Completed:	08/10/2025
Hole Location:	Warra Warra Rd, Sth Nowra	Logged By:	JH
Hole Position:	281688.1 m E 6132569.5 m N MGA94 Zone 56	Checked By:	KG

Drill Model and Mounting:	Manual	Inclination:	-90°	RL Surface:	43.20 m		
Hole Diameter:		Bearing:		Datum:	AHD	Operator:	JH

Drilling Information							Soil Description						Observations		
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Soil name, plasticity/grainsize characteristics, colour, description of secondary component. Minor components, i.e., some/trace . . . other soil substance observations	Moisture Condition	Consistency	Relative Density	DCP NO OF BLOWS PER 100 mm	Structure and Additional Observations
AD/T			Not encountered			43.0	0.2		GP	Silty Sandy GRAVEL: fine to medium subangular gravel, grey brown to black, fine to medium sand, low plasticity, with organics	D				TOPSOIL
						42.8	0.4			Hole Terminated at 0.10 m Target					
						42.6	0.6								
						42.4	0.8								
						42.2	1.0								
						42.0	1.2								
						41.8	1.4								
						41.6	1.6								

Method AS - Auger Screwing RR - Rock Roller WB - Washbore	Penetration 	Water 	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support C - Casing	Graphic Log/Core Loss 	Classification Symbols and Soil Descriptions Based on Unified Soil Classification System	Plastic Limit < PL = PL < PL		

Engineering Log - Borehole

Project No.: TERRA25-1425

Client:	Jervis Bay Town Planning	Commenced:	08/10/2025
Project Name:	Preliminary Site Investigation	Completed:	08/10/2025
Hole Location:	Warra Warra Rd, Sth Nowra	Logged By:	JH
Hole Position:	281715.6 m E 6132512.7 m N MGA94 Zone 56	Checked By:	KG

Drill Model and Mounting:	Manual	Inclination:	-90°	RL Surface:	43.90 m		
Hole Diameter:		Bearing:		Datum:	AHD	Operator:	JH

Drilling Information							Soil Description						Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Soil name, plasticity/grainsize characteristics, colour, description of secondary component. Minor components, i.e., some/trace . . . other soil substance observations	Moisture Condition	Consistency Relative Density	DCP NO OF BLOWS PER 100 mm	Structure and Additional Observations
AD/T														

Method AS - Auger Screwing RR - Rock Roller WB - Washbore	Penetration 	Water Level (Date) Inflow Partial Loss Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support C - Casing	Graphic Log/Core Loss 	Classification Symbols and Soil Descriptions Based on Unified Soil Classification System	Plastic Limit < PL = PL < PL		

Engineering Log - Borehole

Project No.: TERRA25-1425

Client:	Jervis Bay Town Planning	Commenced:	08/10/2025
Project Name:	Preliminary Site Investigation	Completed:	08/10/2025
Hole Location:	Warra Warra Rd, Sth Nowra	Logged By:	JH
Hole Position:	281644.2 m E 6132519.6 m N MGA94 Zone 56	Checked By:	KG

Drill Model and Mounting:	Manual	Inclination:	-90°	RL Surface:	43.40 m		
Hole Diameter:		Bearing:		Datum:	AHD	Operator:	JH

Drilling Information							Soil Description							Observations	
Method	Penetration	Support	Water	Samples Tests Remarks	Recovery	RL (m)	Depth (m)	Graphic Log	Group Symbol	Material Description Soil name, plasticity/grainsize characteristics, colour, description of secondary component. Minor components, i.e., some/trace . . . other soil substance observations	Moisture Condition	Consistency	Relative Density	DCP NO OF BLOWS PER 100 mm	Structure and Additional Observations
AD/T	<														

Method AS - Auger Screwing RR - Rock Roller WB - Washbore	Penetration 	Water Level (Date) Inflow Partial Loss Complete Loss	Samples and Tests U - Undisturbed Sample D - Disturbed Sample SPT - Standard Penetration Test	Moisture Condition D - Dry M - Moist W - Wet	Consistency/Relative Density VS - Very Soft S - Soft F - Firm VSt - Very Stiff H - Hard Fr - Friable VL - Very Loose L - Loose MD - Medium Dense D - Dense VD - Very Dense
Support C - Casing	Graphic Log/Core Loss 		Classification Symbols and Soil Descriptions Based on Unified Soil Classification System	Plastic Limit < PL = PL < PL	

Appendix G: Laboratory Test Certificates

Terrainsight Pty Ltd
U34 no 10-12 Sylvester Ave
Unanderra
NSW 2626



NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition
Arrangement for the mutual recognition of the
equivalence of testing, medical testing, calibration,
inspection, proficiency testing scheme providers and
reference materials producers reports and certificates.

Attention: Karen Gates (cc results/SRAs)

Report 1278367-S
Project name WARRA WARRA RD SOUTH NOWRA
Project ID TERRA25-1425
Received Date Oct 08, 2025

Client Sample ID			TP05 D1.2 (0.0-0.05m)
Sample Matrix			Soil
Eurofins Sample No.			S25-Oc0028894
Date Sampled			Oct 08, 2025
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons			
TRH C6-C9	20	mg/kg	< 20
TRH C10-C14	20	mg/kg	34
TRH C15-C28	50	mg/kg	330
TRH C29-C36	50	mg/kg	300
TRH C10-C36 (Total)	50	mg/kg	664
TRH C6-C10	20	mg/kg	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20
TRH >C10-C16	50	mg/kg	95
TRH >C10-C16 less Naphthalene (F2) ^{*N01}	50	mg/kg	95
Naphthalene ^{N02}	0.5	mg/kg	< 0.5
TRH >C16-C34	100	mg/kg	450
TRH >C34-C40	100	mg/kg	240
TRH >C10-C40 (total)*	100	mg/kg	785
BTEX			
Benzene	0.1	mg/kg	< 0.1
Toluene	0.1	mg/kg	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2
o-Xylene	0.1	mg/kg	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3
4-Bromofluorobenzene (surr.)	1	%	113
Polycyclic Aromatic Hydrocarbons			
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2
Acenaphthene	0.5	mg/kg	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5
Anthracene	0.5	mg/kg	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5
Chrysene	0.5	mg/kg	< 0.5

Client Sample ID			TP05 D1.2 (0.0-0.05m)
Sample Matrix			Soil
Eurofins Sample No.			S25-Oc0028894
Date Sampled			Oct 08, 2025
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5
Fluorene	0.5	mg/kg	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5
Naphthalene	0.5	mg/kg	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5
Pyrene	0.5	mg/kg	< 0.5
Total PAH*	0.5	mg/kg	< 0.5
2-Fluorobiphenyl (surr.)	1	%	94
p-Terphenyl-d14 (surr.)	1	%	85
Heavy Metals			
Arsenic	2	mg/kg	4.2
Cadmium	0.4	mg/kg	< 0.4
Chromium	5	mg/kg	10
Copper	5	mg/kg	12
Lead	5	mg/kg	14
Mercury	0.1	mg/kg	< 0.1
Nickel	5	mg/kg	< 5
Zinc	5	mg/kg	16
Sample Properties			
% Moisture	1	%	24

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Oct 13, 2025	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Oct 13, 2025	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Oct 13, 2025	14 Days
BTEX - Method: LTM-ORG-2010 BTEX and Volatile TRH	Sydney	Oct 13, 2025	14 Days
Polycyclic Aromatic Hydrocarbons - Method: LTM-ORG-2130 PAH and Phenols in Soil and Water	Sydney	Oct 13, 2025	14 Days
Metals M8 - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Sydney	Oct 13, 2025	28 Days
% Moisture - Method: LTM-GEN-7080 Moisture	Sydney	Oct 10, 2025	14 Days



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NATA# 1261
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NATA# 1261
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Canberra
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Brisbane
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NATA# 1261
Site# 20794 & 2780

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NSW 2304
+61 2 4968 8448
NATA# 1261
Site# 25079

Perth
46-48 Banksia Road
Welshpool
WA 6106
+61 8 6253 4444
NATA# 2377
Site# 2370 & 2554

Company Name: TerraInsight Pty Ltd
Address: U34 no 10-12 Sylvester Ave
Unanderra
NSW 2626

Order No.:
Report #: 1278367
Phone: 0458 008 030
Fax:

Received: Oct 8, 2025 3:18 PM
Due: Oct 15, 2025
Priority: 5 Day
Contact Name: Karen Gates (cc results/SRAs)

Project Name: WARRA WARRA RD SOUTH NOWRA
Project ID: TERRA25-1425

Eurofins Analytical Services Manager : Adam Bateup

Sample Detail						Moisture Set	Eurofins Suite B7
Sydney Laboratory - NATA # 1261 Site # 18217						X	X
External Laboratory							
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID		
1	TP05 D1.2 (0.0-0.05m)	Oct 08, 2025		Soil	S25-Oc0028894	X	X
Test Counts						1	1

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follow guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013. They are included in this QC report where applicable. Additional QC data may be available on request.
2. Unless otherwise stated, all soil/sediment/solid results are reported on a dry weight basis.
3. Unless otherwise stated, all biota/food results are reported on a wet weight basis on the edible portion.
4. For CEC results where the sample's origin is unknown or environmentally contaminated, the results should be used advisedly.
5. Actual LORs are matrix dependent. Quoted LORs may be raised where sample extracts are diluted due to interferences.
6. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds where annotated.
7. SVOC analysis on waters is performed on homogenised, unfiltered samples unless noted otherwise.
8. Samples were analysed on an 'as received' basis.
9. Information identified in this report with **blue** colour indicates data provided by customers that may have an impact on the results.
10. This report replaces any interim results previously issued.

Holding Times

Please refer to the 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours before sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and despite any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the sampling date; therefore, compliance with these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether, the holding time is seven days; however, for all other VOCs, such as BTEX or C6-10 TRH, the holding time is 14 days.

Units

mg/kg: milligrams per kilogram	mg/L: milligrams per litre	ppm: parts per million
µg/L: micrograms per litre	ppb: parts per billion	%: Percentage
org/100 mL: Organisms per 100 millilitres	NTU: Nephelometric Turbidity Units	MPN/100 mL: Most Probable Number of organisms per 100 millilitres
CFU: Colony Forming Unit	Colour: Pt-Co Units (CU)	

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a similar compound to the analyte target is reported as percentage recovery. See below for acceptance criteria.
TBTO	Tributyltin oxide (<i>bis</i> -tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however, free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 6.0
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should only be used as a guide and may be different when site-specific Sampling Analysis and Quality Plan (SAQP) have been implemented.

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is ≤30%; however, the following acceptance guidelines are equally applicable:

Results <10 times the LOR:	No Limit
Results between 10-20 times the LOR:	RPD must lie between 0-50%
Results >20 times the LOR:	RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range, not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%, VOC recoveries 50 – 150%

PFAS field samples containing surrogate recoveries above the QC limit designated in QSM 6.0, where no positive PFAS results have been reported or reviewed, and no data was affected.

QC Data General Comments

1. Where a result is reported as less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown are not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery, the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results, a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data; thus, it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total*	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g,h,i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a,h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons							
TRH C6-C9	%	96			70-130	Pass	
TRH C10-C14	%	107			70-130	Pass	
TRH C6-C10	%	94			70-130	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
TRH >C10-C16			%	108			70-130	Pass	
Naphthalene			%	105			70-130	Pass	
LCS - % Recovery									
BTEX									
Benzene			%	97			70-130	Pass	
Toluene			%	87			70-130	Pass	
Ethylbenzene			%	106			70-130	Pass	
m&p-Xylenes			%	102			70-130	Pass	
o-Xylene			%	109			70-130	Pass	
Xylenes - Total*			%	104			70-130	Pass	
LCS - % Recovery									
Polycyclic Aromatic Hydrocarbons									
Acenaphthene			%	101			70-130	Pass	
Acenaphthylene			%	103			70-130	Pass	
Anthracene			%	105			70-130	Pass	
Benz(a)anthracene			%	91			70-130	Pass	
Benzo(a)pyrene			%	97			70-130	Pass	
Benzo(b&j)fluoranthene			%	94			70-130	Pass	
Benzo(g,h,i)perylene			%	93			70-130	Pass	
Benzo(k)fluoranthene			%	99			70-130	Pass	
Chrysene			%	102			70-130	Pass	
Dibenz(a,h)anthracene			%	95			70-130	Pass	
Fluoranthene			%	98			70-130	Pass	
Fluorene			%	100			70-130	Pass	
Indeno(1,2,3-cd)pyrene			%	94			70-130	Pass	
Naphthalene			%	100			70-130	Pass	
Phenanthrene			%	94			70-130	Pass	
Pyrene			%	98			70-130	Pass	
LCS - % Recovery									
Heavy Metals									
Arsenic			%	98			80-120	Pass	
Cadmium			%	105			80-120	Pass	
Chromium			%	104			80-120	Pass	
Copper			%	102			80-120	Pass	
Lead			%	103			80-120	Pass	
Mercury			%	102			80-120	Pass	
Nickel			%	101			80-120	Pass	
Zinc			%	103			80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons				Result 1					
TRH C6-C9	S25-Oc0038510	NCP	%	104			70-130	Pass	
TRH C10-C14	S25-Oc0005820	NCP	%	86			70-130	Pass	
TRH C6-C10	S25-Oc0038510	NCP	%	103			70-130	Pass	
TRH >C10-C16	S25-Oc0005820	NCP	%	86			70-130	Pass	
Naphthalene	S25-Oc0038510	NCP	%	98			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S25-Oc0038510	NCP	%	73			70-130	Pass	
Toluene	S25-Oc0038510	NCP	%	108			70-130	Pass	
Ethylbenzene	S25-Oc0038510	NCP	%	111			70-130	Pass	
m&p-Xylenes	S25-Oc0038510	NCP	%	105			70-130	Pass	
o-Xylene	S25-Oc0038510	NCP	%	109			70-130	Pass	
Xylenes - Total*	S25-Oc0038510	NCP	%	107			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S25-Oc0037895	NCP	%	122			70-130	Pass	
Acenaphthylene	S25-Oc0033144	NCP	%	100			70-130	Pass	
Anthracene	S25-Oc0037895	NCP	%	121			70-130	Pass	
Benz(a)anthracene	S25-Oc0037895	NCP	%	105			70-130	Pass	
Benzo(a)pyrene	S25-Oc0037895	NCP	%	121			70-130	Pass	
Benzo(b&j)fluoranthene	S25-Oc0037895	NCP	%	99			70-130	Pass	
Benzo(g,h,i)perylene	S25-Oc0037895	NCP	%	106			70-130	Pass	
Benzo(k)fluoranthene	S25-Oc0037895	NCP	%	124			70-130	Pass	
Chrysene	S25-Oc0037895	NCP	%	125			70-130	Pass	
Dibenz(a,h)anthracene	S25-Oc0037895	NCP	%	106			70-130	Pass	
Fluoranthene	S25-Oc0037895	NCP	%	119			70-130	Pass	
Fluorene	S25-Oc0037895	NCP	%	118			70-130	Pass	
Indeno(1,2,3-cd)pyrene	S25-Oc0037895	NCP	%	107			70-130	Pass	
Naphthalene	S25-Oc0037895	NCP	%	128			70-130	Pass	
Phenanthrene	S25-Oc0037895	NCP	%	107			70-130	Pass	
Pyrene	S25-Oc0037895	NCP	%	122			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S25-Oc0028846	NCP	%	101			75-125	Pass	
Cadmium	S25-Oc0028846	NCP	%	102			75-125	Pass	
Chromium	S25-Oc0028846	NCP	%	103			75-125	Pass	
Copper	S25-Oc0028846	NCP	%	110			75-125	Pass	
Lead	S25-Oc0028846	NCP	%	106			75-125	Pass	
Mercury	S25-Oc0028846	NCP	%	103			75-125	Pass	
Nickel	S25-Oc0028846	NCP	%	104			75-125	Pass	
Zinc	S25-Oc0028846	NCP	%	119			75-125	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons				Result 1	Result 2	RPD			
TRH C6-C9	S25-Oc0038330	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S25-Oc0034635	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S25-Oc0034635	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S25-Oc0034635	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C6-C10	S25-Oc0038330	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	S25-Oc0034635	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
Naphthalene	S25-Oc0038330	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH >C16-C34	S25-Oc0034635	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S25-Oc0034635	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S25-Oc0038330	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S25-Oc0038330	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S25-Oc0038330	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S25-Oc0038330	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S25-Oc0038330	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	S25-Oc0038330	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S25-Oc0037899	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S25-Oc0037899	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S25-Oc0037899	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S25-Oc0037899	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Benzo(a)pyrene	S25-Oc0037899	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(b&j)fluoranthene	S25-Oc0037899	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(g,h,i)perylene	S25-Oc0037899	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(k)fluoranthene	S25-Oc0037899	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chrysene	S25-Oc0037899	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibenz(a,h)anthracene	S25-Oc0037899	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluoranthene	S25-Oc0037899	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluorene	S25-Oc0037899	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	S25-Oc0037899	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Naphthalene	S25-Oc0037899	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Phenanthrene	S25-Oc0037899	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Pyrene	S25-Oc0037899	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	S25-Oc0034631	NCP	mg/kg	5.5	7.0	23	30%	Pass
Cadmium	S25-Oc0034631	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	S25-Oc0034631	NCP	mg/kg	17	19	13	30%	Pass
Copper	S25-Oc0034631	NCP	mg/kg	36	36	1.0	30%	Pass
Lead	S25-Oc0034631	NCP	mg/kg	12	15	16	30%	Pass
Mercury	S25-Oc0034631	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Nickel	S25-Oc0034631	NCP	mg/kg	34	37	7.0	30%	Pass
Zinc	S25-Oc0034631	NCP	mg/kg	66	73	9.0	30%	Pass
Duplicate								
Sample Properties				Result 1	Result 2	RPD		
% Moisture	N25-Oc0028936	NCP	%	5.3	7.2	30	30%	Pass

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	No
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

Authorised by:

Adam Bateup	Analytical Services Manager
Mickael Ros	Senior Analyst-Metal
Ryan Phillips	Senior Analyst-Sample Properties
Roopesh Rangarajan	Senior Analyst-Organic
Roopesh Rangarajan	Senior Analyst-Volatile



Glenn Jackson
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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CERTIFICATE OF ANALYSIS



Report Number: E2914
Report Date: 10/10/2025
Received Date: 8/10/2025
Job Number: 1039
Approved By: Manan Ahmed
Client Ref.: TERRA25-1425
Client: Terrainsight Pty Ltd
Unit 34/10-12 Sylvester Avenue, Unanderra NSW



Accreditation Number: 18542

Accredited for compliance with
ISO / IEC 17025 - Testing. Site
Number: 20468

Report Notes:

- All samples are analysed on an as-received basis.
- It is the responsibility of the client to ensure that samples are received by the laboratory in a satisfactory condition and within respective holding times.
- The report may not be reproduced or copied except in full.
- This report is issued without amendment.
- All services undertaken in accordance with our Terms and Conditions available from www.lab247.au.

CERTIFICATE OF ANALYSIS



Analyte	LOR	Units	8327	8328	8329	8330	8331	8332	8333
Moisture Content			BH01 D1 (0.0-0.4m)	BH02 D1 (0.0-0.15m)	BH03 D1 (0.0-0.6m)	BH04 D1 (0.0-0.1m)	TP01 D1.1 (0.0-0.1m)	TP01 D1.2 (0.0-0.1m)	TP02 D1 (0.0-0.05m)
Moisture Content		%	18.4	15.4	16.2	8.4	18.7	18.4	15.0

CERTIFICATE OF ANALYSIS



Analyte	LOR	Units	8339	8340	8341	8342
Moisture Content			TP03 D1 (0.0-0.05m)	TP04 D1 (0.0-0.05m)	TP05 D1 (0.0-0.05m)	TP06 D1 (0.0-0.05m)
Moisture Content		%	8.4	2.7	23.4	23.4

CERTIFICATE OF ANALYSIS



Analyte	LOR	Units	8327	8328	8329	8330	8331	8332	8333
8 Metals by ICP-MS (As, Cd, Cr, Cu, Hg, Ni, Pb, Zn)			BH01 D1 (0.0-0.4m)	BH02 D1 (0.0-0.15m)	BH03 D1 (0.0-0.6m)	BH04 D1 (0.0-0.1m)	TP01 D1.1 (0.0-0.1m)	TP01 D1.2 (0.0-0.1m)	TP02 D1 (0.0-0.05m)
Arsenic (As)	2	mg/kg	5.8	4.2	6.1	9.2	3.1	3.8	5
Cadmium (Cd)	0.2	mg/kg	<0.2	<0.2	<0.2	0.21	<0.2	<0.2	<0.2
Chromium (Cr)	2	mg/kg	11	9.4	16	42	12	12	12
Copper (Cu)	2	mg/kg	19	12	3.4	352	7.6	7.9	77
Mercury (Hg)	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Nickel (Ni)	2	mg/kg	9.3	<2	<2	12	2.9	2.7	19
Lead (Pb)	2	mg/kg	14	13	10	22	10	12	12
Zinc (Zn)	2	mg/kg	23	12	<2	13493	7	4.8	20

CERTIFICATE OF ANALYSIS



Analyte	LOR	Units	8339	8340	8341	8342
8 Metals by ICP-MS (As, Cd, Cr, Cu, Hg, Ni, Pb, Zn)			TP03 D1 (0.0-0.05m)	TP04 D1 (0.0-0.05m)	TP05 D1 (0.0-0.05m)	TP06 D1 (0.0-0.05m)
Arsenic (As)	2	mg/kg	<2	14	4.9	5.6
Cadmium (Cd)	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2
Chromium (Cr)	2	mg/kg	38	15	11	12
Copper (Cu)	2	mg/kg	8.8	132	8.8	11
Mercury (Hg)	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2
Nickel (Ni)	2	mg/kg	7.3	49	<2	<2
Lead (Pb)	2	mg/kg	6.1	15	11	11
Zinc (Zn)	2	mg/kg	15	1664	7.4	10

CERTIFICATE OF ANALYSIS



Analyte	LOR	Units	8327	8328	8329	8330	8331	8332	8333
C10-C40 TRH (Total Recoverable Hydrocarbons) by GC-FID			BH01 D1 (0.0-0.4m)	BH02 D1 (0.0-0.15m)	BH03 D1 (0.0-0.6m)	BH04 D1 (0.0-0.1m)	TP01 D1.1 (0.0-0.1m)	TP01 D1.2 (0.0-0.1m)	TP02 D1 (0.0-0.05m)
TRH >C10-C16	50	mg/kg	<50	<50	<50	<50	<50	<50	<50
TRH >C16-C34	100	mg/kg	<100	<100	<100	<100	<100	<100	<100
TRH >C34-C40	100	mg/kg	<100	<100	<100	<100	<100	<100	<100
TRH >C10-C40	100	mg/Kg	<100	<100	<100	<100	<100	<100	<100
TRH C10-C14	50	mg/kg	<50	<50	<50	<50	<50	<50	<50
TRH C15-C28	100	mg/kg	<100	<100	<100	<100	<100	<100	<100
TRH C29-C36	100	mg/kg	<100	<100	<100	<100	<100	<100	<100
TRH C10-C36	100	mg/kg	<100	<100	<100	<100	<100	<100	<100
>C10-C16 less naphthalene (F2)*	50	mg/kg	<50	<50	<50	<50	<50	<50	<50

CERTIFICATE OF ANALYSIS



Analyte	LOR	Units	8339	8340	8341	8342
C10-C40 TRH (Total Recoverable Hydrocarbons) by GC-FID			TP03 D1 (0.0-0.05m)	TP04 D1 (0.0-0.05m)	TP05 D1 (0.0-0.05m)	TP06 D1 (0.0-0.05m)
TRH >C10-C16	50	mg/kg	<50	<50	61	<50
TRH >C16-C34	100	mg/kg	<100	243	140	<100
TRH >C34-C40	100	mg/kg	<100	103	127	<100
TRH >C10-C40	100	mg/Kg	<100	347	329	<100
TRH C10-C14	50	mg/kg	<50	<50	<50	<50
TRH C15-C28	100	mg/kg	<100	<100	165	<100
TRH C29-C36	100	mg/kg	<100	239	112	<100
TRH C10-C36	100	mg/kg	<100	333	285	<100
>C10-C16 less naphthalene (F2)*	50	mg/kg	<50	<50	61	<50

CERTIFICATE OF ANALYSIS



Analyte	LOR	Units	8327	8328	8329	8330	8331	8332	8333
C6-C9/BTEXN by Purge and Trap (P&T) GC-MS			BH01 D1 (0.0-0.4m)	BH02 D1 (0.0-0.15m)	BH03 D1 (0.0-0.6m)	BH04 D1 (0.0-0.1m)	TP01 D1.1 (0.0-0.1m)	TP01 D1.2 (0.0-0.1m)	TP02 D1 (0.0-0.05m)
TRH C6-C9	20	mg/kg	<20	<20	<20	<20	<20	<20	<20
TRH C6-C10	20	mg/kg	<20	<20	<20	<20	<20	<20	<20
Benzene	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
m/p-Xylene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
o-Xylene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Xylenes (Total)*	1	mg/kg	<1	<1	<1	<1	<1	<1	<1
Naphthalene	1	mg/kg	<1	<1	<1	<1	<1	<1	<1
BTEX (Total)*	1	mg/kg	<1	<1	<1	<1	<1	<1	<1
C6-C10 less BTEX (F1)*	20	mg/kg	<20	<20	<20	<20	<20	<20	<20
1,2-Dichloroethane-d4 (sur.)	1	%	11	10	12	15	8.8	9.8	12
Toluene-d8 (sur.)	1	%	13	11	13	18	9.1	9.8	14
p-Bromofluorobenzene (sur.)	1	%	13	13	14	11	12	12	14

CERTIFICATE OF ANALYSIS



Analyte	LOR	Units	8339	8340	8341	8342
C6-C9/BTEXN by Purge and Trap (P&T) GC-MS			TP03 D1 (0.0-0.05m)	TP04 D1 (0.0-0.05m)	TP05 D1 (0.0-0.05m)	TP06 D1 (0.0-0.05m)
TRH C6-C9	20	mg/kg	<20	<20	<20	<20
TRH C6-C10	20	mg/kg	<20	<20	<20	<20
Benzene	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2
Toluene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5
m/p-Xylene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5
o-Xylene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5
Xylenes (Total)*	1	mg/kg	<1	<1	<1	<1
Naphthalene	1	mg/kg	<1	<1	<1	<1
BTEX (Total)*	1	mg/kg	<1	<1	<1	<1
C6-C10 less BTEX (F1)*	20	mg/kg	<20	<20	<20	<20
1,2-Dichloroethane-d4 (sur.)	1	%	11	15	11	11
Toluene-d8 (sur.)	1	%	14	20	11	12
p-Bromofluorobenzene (sur.)	1	%	15	15	12	12

CERTIFICATE OF ANALYSIS



Analyte	LOR	Units	8327	8328	8329	8330	8331	8332	8333
Polycyclic Aromatic Hydrocarbons (PAH) by GC-MS/MS			BH01 D1 (0.0-0.4m)	BH02 D1 (0.0-0.15m)	BH03 D1 (0.0-0.6m)	BH04 D1 (0.0-0.1m)	TP01 D1.1 (0.0-0.1m)	TP01 D1.2 (0.0-0.1m)	TP02 D1 (0.0-0.05m)
Acenaphthene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PAHs (Total)*	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ (Lower)*	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ (Median)*	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (Upper)*	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Nitrobenzene-d5	1	%	30	27	27	41	41	33	35
2-Fluorobiphenyl	1	%	43	40	43	42	44	42	42

CERTIFICATE OF ANALYSIS



Analyte	LOR	Units	8339	8340	8341	8342
Polycyclic Aromatic Hydrocarbons (PAH) by GC-MS/MS			TP03 D1 (0.0-0.05m)	TP04 D1 (0.0-0.05m)	TP05 D1 (0.0-0.05m)	TP06 D1 (0.0-0.05m)
Acenaphthene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5
Anthracene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5
Chrysene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5
Fluoranthene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5
Fluorene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5
Naphthalene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5
Phenanthrene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5
Pyrene	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5
PAHs (Total)*	0.5	mg/kg	<0.5	<0.5	<0.5	0.61
Benzo(a)pyrene TEQ (Lower)*	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ (Median)*	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (Upper)*	0.5	mg/kg	1.2	1.2	1.2	1.2
Nitrobenzene-d5	1	%	41	39	50	37
2-Fluorobiphenyl	1	%	43	44	47	45

CERTIFICATE OF ANALYSIS



Analyte	LOR	Units	8327	8328	8329	8330	8331	8332	8333
p-Terphenyl-d14	1	%	46	37	44	25	41	45	43

CERTIFICATE OF ANALYSIS



Analyte	LOR	Units	8339	8340	8341	8342
p-Terphenyl-d14	1	%	43	27	48	46

ASBESTOS TEST CERTIFICATE



Report No: E2916
Received Date: 9/10/2025
Analysis Date: 9/10/2025
Report Date: 10/10/2025

Sampled By: Manan Ahmed
Approved Identifier: Nathan Crouch
Approved Signatory: Luke Heckenberg

Job Details:

Submitted By: Terrainsight Pty Ltd
Unit 34/10-12 Sylvester Avenue, Unanderra NSW 2526

Test Method: Asbestos identification by polarised light microscopy and dispersion staining, in accordance with 'AS4964-2004 Method for the Qualitative Identification of Asbestos in Bulk Samples [Detection Limit - 0.1g/kg (AS4964)].'

Notes: The results contained within this report relate only to the samples tested on an as-received basis. This report should not be copied, presented or reviewed except in full.

Lab Ref.	Your Ref. / Location	Description	Result
1039/12	BH01 A1 (0.0-0.4m);	Soil / ore, ribbon-like fibres. Sample Size: 806.7g	No Asbestos Detected ⁶ < 0.001% AF/FA*
1039/13	BH02 A1 (0.0-0.15m);	Soil / ore, ribbon-like fibres. Sample Size: 912.1g	No Asbestos Detected ⁶ < 0.001% AF/FA*
1039/14	BH03 A1 (0.0-0.6m);	Soil / ore, ribbon-like fibres. Sample Size: 990.2g	No Asbestos Detected ⁶ < 0.001% AF/FA*
1039/15	BH04 A1 (0.0-0.1m);	Soil / ore, ribbon-like fibres. Sample Size: 911.7g	No Asbestos Detected ⁶ < 0.001% AF/FA*
1039/16	TP01 A1 (0.0-0.1m);	Soil / ore, ribbon-like fibres. Sample Size: 836.1g	No Asbestos Detected ⁶ < 0.001% AF/FA*
1039/17	TP03 A1 (0.0-0.05m);	Soil / ore, ribbon-like fibres. Sample Size: 761.3g	No Asbestos Detected ⁶ < 0.001% AF/FA*
1039/18	TP04 A1 (0.0-0.05m);	Soil / ore, ribbon-like fibres. Sample Size: 729.8g	No Asbestos Detected ⁶ < 0.001% AF/FA*
1039/19	TP06 A1 (0.0-0.05m);	Soil / ore, ribbon-like fibres. Sample Size: 830.2g	No Asbestos Detected ⁶ < 0.001% AF/FA*

* AF/FA result is not NATA accredited
An independent analytical technique is recommended for confirmation of vinyl and bituminous samples, or samples in which 'Unknown Mineral Fibre' is detected.

Result Codes:

- | | |
|--------------------------|-----------------------------|
| 1 - Chrysotile Asbestos | 4 - Unknown Mineral Fibre |
| 2 - Amosite Asbestos | 5 - Synthetic Mineral Fibre |
| 3 - Crocidolite Asbestos | 6 - Organic Fibres Present |



Accreditation Number: 18542

Accredited for compliance with ISO / IEC 17025 - Testing. Site Number: 20468
Analysis by Lab 247 Pty Ltd (2/9 Industrial Road, Unanderra) in accordance with method LP-ID-01.



Lab 247 Pty Ltd (Environmental Division) ABN: 27 669 303 799
2/9 Industrial Road, Unanderra NSW 2526
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Appendix H: EIL Derivation Worksheets

Inputs
Select contaminant from list below
Cr_III
Below needed to calculate fresh and aged ACLs
Enter % clay (values from 0 to 100%)
20
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
5
or for aged ABCs only
Enter State (or closest State)
NSW
Enter traffic volume (high or low)
low

Outputs		
Land use	Cr III soil-specific EILs	
	(mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	120	170
Urban residential and open public spaces	260	510
Commercial and industrial	390	840

Inputs
Select contaminant from list below Cu
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
5
Enter soil pH (calcium chloride method) (values from 1 to 14)
5
Enter organic carbon content (%OC) (values from 0 to 50%)
0.5
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method)
5
or for aged ABCs only
Enter State (or closest State)
NSW
Enter traffic volume (high or low)
low

Outputs		
Land use	Cu soil-specific EILs	
	(mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	30	35
Urban residential and open public spaces	40	65
Commercial and industrial	55	85

Inputs
Select contaminant from list below
Ni
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
5
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
5
or for aged ABCs only
Enter State (or closest State)
NSW
Enter traffic volume (high or low)
low

Outputs		
Land use	Ni soil-specific EILs	
	(mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	20	10
Urban residential and open public spaces	30	35
Commercial and industrial	40	60

Inputs
Select contaminant from list below Zn
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
5
Enter soil pH (calcium chloride method) (values from 1 to 14)
4
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
5
or for aged ABCs only
Enter State (or closest State)
NSW
Enter traffic volume (high or low)
low

Outputs		
Land use	Zn soil-specific EILs	
	(mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	35	95
Urban residential and open public spaces	55	150
Commercial and industrial	70	190