

# Land Use Conflict Risk Assessment

Planning Proposal Large Lot Residential rezoning  
Lot 21 DP601461 No 70 Manifold Road  
North Casino

HEALTH SCIENCE ENVIROMENTAL EDUCATION  
ENVIRONMENTAL AUDITOR

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Lot 21 DP601461 No 70 Manifold Road  
North Casino

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# 1. Introduction

*Tim Fitzroy & Associates* (TFA) has been engaged by Simon Dougherty to undertake a Land Use Conflict Risk Assessment (LUCRA) for land described in real property terms as Lot 21 DP601461 Manifold Road North Casino (see Site Locality Plan **Illustration 1**). This report has been prepared to accompany a planning proposal to Richmond Valley Council for a large lot rural residential development at the subject site. The site is currently zoned RU1 Primary Production under the Richmond Valley Local Environment Plan (LEP) 2012.

The purpose of the Planning Proposal is to change the town planning provisions applying to Lot 21 DP601461 to rezone the site presently zoned RU1 – Primary Production to R5 – Large Lot Residential in accordance with the provisions of the Richmond Valley Local Environmental Plan 2012 and to replace the 40ha minimum lot size with a 7500m<sup>2</sup> minimum lot size. The R5 zoning will allow future subdivision and construction of dwelling houses on the subject site. The subject site was identified within Richmond River Rural Residential Development Strategy 1999 and Draft Richmond Valley Growth Management Strategy 2022 which has now been adopted.

The property is located on the northern side of Manifold Rd approximately 4km north of Casino township. The land to which this LUCRA relates has an area of approximately 9.68 hectares and is located 70 Manifold Rd, North Casino.

An existing dwelling and garage/carport were identified on the southern end of the subject property with access from Manifold Rd. The dwelling is of timber construction with metal roofing and is likely to have been constructed between 1920-1950. The garage/carport was constructed in the 1970s with timber frame and metal sheet cladding. Other structures including a shed, cattle yards and stables/chicken coops previously located north of the dwelling have recently been demolished. These structures appear to have been constructed in the 1960s and 1970s.

The bulk of the land is under beef cattle grazing. The subject land are adjoined by beef cattle and heavily vegetated land to the north; beef cattle grazing to the east and thereafter a former quarry; beef cattle grazing to the west, and to the south Manifold Road, and then the Casino Christian School and rural residential holdings.

The *Living and Working in Rural Areas Handbook* (Department of Primary Industries et.al 2007) denotes a number of recommended buffer distances to *residential areas and urban development* and to *rural dwellings*. The planning proposal comprises rural residential allotments range in size from 0.75 to 2.72 hectares. Default buffer to rural residential settings are not specified.

It is our considered view that given the relative size of the proposed allotments that the buffer distances more are akin to a *rural dwelling* than a *residential/urban development*. The relevant default buffers applicable to this proposal are therefore as follows:

- 50 metres to grazing of stock
- 200 metres to cattle yards
- 200m from Cattle Dip Sites

*Onsite wastewater Management Systems are to be:*

- *>250m from Groundwater well/s*
- *>6m up-gradient and >12m down-gradient from property boundaries*
- *>40m from intermittent watercourses/gullies*

Whilst various default buffer are recommended between various primary land uses and rural dwellings the actual width of the buffer should in practice be dependent on the most limiting factor involved (i.e. the factor that will require the widest buffer). In theory, this would lead to all other factors being adequately addressed.

The proposed development should be designed to minimise instances of incompatibility such that normal farming practice are not inhibited. Where such instances do arise, measures to ameliorate potential conflicts should be devised wherever possible.

Conflict between rural dwellings and agricultural land uses is likely to occur where residential land uses directly abut, or are sufficiently close to, farmland such that they are likely to be affected by agricultural activities. Such conflict can arise from the use of agricultural chemicals noise, dust and odour generating activities. Adverse impacts of rural residential development on farmland include sediment and stormwater run-off.

When considering potential land use conflict between residential and agricultural activities it is important to recognise that all agricultural activities:

- should incorporate reasonable and practicable measures to protect the environment in accord with the Protection of the Environment Operations Act (POEO) and associated industry specific guidelines; and
- are legally conducted as required by other legislation covering workplace health and safety, and the use and handling of agricultural chemicals.

Nevertheless, certain activities practised by even the most careful and responsible farmer may result in a nuisance to adjacent residential areas through, for example, unavoidable odour drift and noise impacts.

Typical conflicts between agricultural enterprises and residential development as provided in Table 1 below:

**Table 1      Typical Conflicts between agriculture and adjoining rural residential areas**

<b>Noise</b>	<ul style="list-style-type: none"><li>• Dogs, livestock.</li><li>• Farming equipment, pumps, spray machines, transport.</li><li>• Ancillary equipment associated with on-farm processing.</li></ul>
<b>Odour</b>	<ul style="list-style-type: none"><li>• Agricultural fertilisers and chemicals.</li><li>• Intensive animal industries.</li><li>• Application of effluent to pasture</li></ul>
<b>Health concerns</b>	<ul style="list-style-type: none"><li>• Chemicals.</li><li>• Spray drift.</li></ul>

	<ul style="list-style-type: none"> <li>• Smoke.</li> </ul>
<b>Water</b>	<ul style="list-style-type: none"> <li>• Access.</li> <li>• Pumping.</li> <li>• Quantity.</li> </ul>
<b>Smoke and ash</b>	<ul style="list-style-type: none"> <li>• Burning of pasture, stubble or 'rubbish'.</li> <li>• Cane fires.</li> </ul>
<b>Visual intrusion</b>	<ul style="list-style-type: none"> <li>• Hail netting.</li> <li>• Polyhouses.</li> </ul>
<b>Nuisance</b>	<ul style="list-style-type: none"> <li>• Stray dogs.</li> <li>• Vandalism.</li> <li>• Trespass.</li> <li>• Noxious and environmental weeds.</li> </ul>

The Living and Working in Rural Areas Handbook (NSW DPI et. al 2007), in particular Chapter 6 Development Control, provides guidance in the assessment and mitigation of potential land use conflict matters and has been used as a resource for this Land Use Conflict Risk Assessment (LUCRA).

This LUCRA has been prepared to assist Council in assessing potential land use conflicts between the proposed development at the subject site and the neighbouring agricultural uses.

**Illustration 1.1      Site Locality Plan**



**Source:      Six Maps February 2024**

## 1.1 Scope of Works

This assessment has been undertaken to determine the potential land use conflicts between the proposed rural residential development and the neighbouring agricultural enterprises. The proposed development comprises 9 rural residential allotments ranging in size from 0.75 to 2.72 hectares.

The bulk of the subject site is under beef cattle production. An existing dwelling and garage/carport were identified on the southern end of the subject property access from Manifold Rd.

The tasks involved in undertaking this assessment were to:

### **Step 1: Gather information**

- Determine the nature of the land use change and development proposed.
- Assess the nature of the precinct where the land use change and development is proposed.
- Appraise the topography, climate and natural features of the site and broader locality
- Conduct a site inspection
- Describe and record the main activities of the surrounding agricultural land use and their regularity, including periodic and seasonal activities that have the potential to be a source of complaint or conflict.

### **Step 2: Evaluate the risk level of each activity**

- Record each activity on the risk assessment matrix, and identify the level of risk of a land use conflict arising from the activity.

### **Step 3: Identify the management strategies and responses that could help lower the risk of the issue resulting in a dispute and conflict**

- Identify management strategies for each activity
- Prioritise Strategies
- Provide Performance targets for each activity

### **Step 4: Record the results of the LUCRA**

- Summarise the key issues, their risk level, and the recommended management strategies



## 2. Gather Information

### 2.1 Nature of the land use change and development proposed

Newton Denny Chapelle (NDC) on behalf of Simon Dougherty are in the process of preparing a Planning Proposal to Richmond Valley Council for a 9-lot rural residential development at the subject site (see Site Layout Plan **Appendix A**).

The subject site is legally described as Lot 21 DP601461 Manifold Road North Casino. The site has a total of 9.68 hectares in area and has access to Manifold Road. The bulk of the subject site is under beef cattle production. Site improvements include a dwelling, carport, sheds and fencing.

According to Melaleuca Group (2023) (see **Appendix B**):

*North Coast Agricultural Land Classification shows the majority of the Subject Site:*

- *Class 4 - Suitable for grazing, but not for cultivation. Pasture improvement relies on minimum tillage techniques. Productivity may be seasonally high but overall is low as a result of major environmental constraints.*

*The remaining (small northern) portion of the Site is mapped as:*

- *.Class 5 - Land unsuitable for agriculture, or at best suited only to light grazing. Agricultural production is very low or zero as a result of severe constraints, including economic factors which prevent land improvement.*

*The site is not mapped under the Farmland of State and Regional Significance.*

*The geology and soils of the Site (Nammoona Soil landscape) indicate low fertility. Acid Sulphate soils are considered unlikely. The natural vegetation of the area is likely to be Open Dry Sclerophyll Forests. The mapped Plant Community Type (PCT) is Northern Hinterland Hills Bloodwood-Red Gum Grassy Forest whereby the main species include a range of Eucalyptus species with Bloodwood (Corymbia spp.), Forest Oak (Allocasuarina torulosa) and Broad-leaf apple (Angophora subvelutina).*

*A review of climate of the area (including My Climate View by CSIRO and BOM) indicate non-significant variability in future climate. However, the area is considered hot during Summer (mean max. temperature of 30.9°C) and dry Winters (<50mm per month). Agricultural enterprises in the locality are dominantly cattle grazing. The agricultural potential of the Site is considered limited due to its size, low soil fertility, limited water (single dam, no groundwater bore) and climatic conditions. Further, the location of the Site near a School (Casino Christian School) and rural residential properties would negate the ability for intensive animal industries to be developed on the Site. While some intensive plant opportunities may be possible, the need for large inputs (fertilisers and water) would deem these unlikely. Protected enterprises (such as Mushrooms, Spirulina, Snails) may also be probable. However, such enterprises need very small areas (e.g., often <200m<sup>2</sup> shed).*

*Agricultural enterprises in the locality are similarly limited. Forestry is an additional consideration; however, this type of enterprise in the locality is on very large properties*

*to allow for the economies of scale given the low soil fertility (equates to slow tree growth) and climatic conditions of the area.*

## **2.2 Nature of the precinct where the land use change and development is proposed**

The site is zoned RU1 Primary Production under the Richmond Valley Local Environment Plan (LEP) 2012.

The relevant buffer applicable to this proposal are as follows:

- *50 metres to grazing of stock*
- *200 metres to cattle yards*
- *200m from Cattle Dip Sites*

*Onsite wastewater Management Systems are:*

- *>40 metres intermittent watercourses, gullies*
- *>250m from Groundwater well/s*
- *>6m up-gradient and >12m down-gradient from property boundaries*

The bulk of the subject site is under beef cattle production. The surrounding land use includes: beef cattle and heavily vegetated land to the north; beef cattle grazing to the east and thereafter a former quarry; beef cattle grazing to the west, and to the south Manifold Road, and then the Casino Christian School and rural residential holdings (see **Illustration 2.1**).



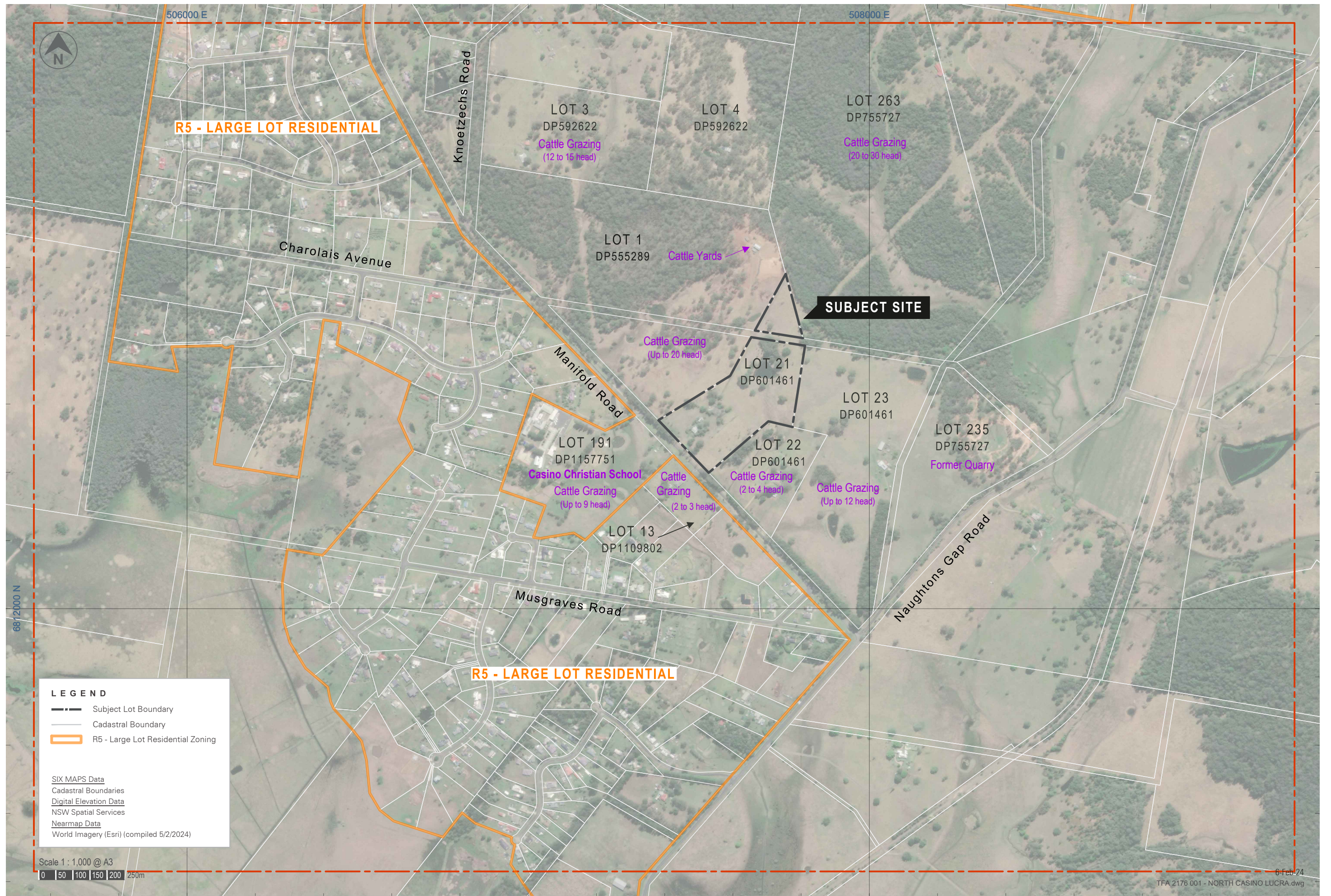


Illustration 2.1

## Land Use Conflict to Support Planning Proposal

Rural Residential Subdivision Large Lot Residential Rezoning | Lot 21 DP601461  
70 Manifold Road, North Casino, NSW

PREPARED BY:

**tim fitzroy & associates**



## 2.3 Topography, Climate and Natural Features

The subject property has elevations ranging from 30-65mAHD with general slopes toward the south and southeast. The topography includes a gentle ridgeline and side slopes. The property is characterised by relatively mild slopes up to 10-15%. A drainage depression is located on the northern end of the property with more pronounced slope and convergent landform.

Stormwater run-on from upslope properties is possible. The property in the upslope catchment is semi-cleared and used for extensive livestock grazing.

The geological formation is the Grafton Formation. The geology is characterised by sandstone (lithic and quartz) with siltstone, claystone, coal. Soil types are generally sands and sandy clay loams overlying clays and claystone bedrock. The soils have low fertility, low water holding capacity and can be hard-setting and acidic.

The site is situated with the sub-tropical climatic zone and the climate can be described as humid sub-tropical, characterised by hot, humid summers and mild winters. Rainfall is seasonally distributed, being concentrated mainly in the summer months.

Due to its latitude and proximity to the coast, Richmond Shire has a coastal sub-tropical climate. As a result, daily temperatures are in the warm to very warm range during summer months (19.1 – 30.6°C) and are cooler during winter months (6.6 - 20.7°C). Rainfall is mainly distributed throughout November to March with 684 mm (64%) of the mean annual rainfall of 1053 mm falling during this period. The highest monthly rainfall occurs in February/March while the months June-October are much drier, generally receiving less than 100 mm each.

Evaporation levels between September and January often exceed rainfall levels. However, as evaporation rates are low during the winter months, rainfall exceeds evaporation on an annual basis (see **Table 2.1**).

### 2.3.1 Wind Regime

The wind regime for the site is based on annual wind roses for Casino Airport AWS.

Annual wind roses for the times of 9am and 3pm are shown in **Illustration 2.1**. The wind roses are based on records from January 1995 to August 2021. The wind roses also indicate the following:

- winds in the mornings are typically light to moderate from the north west and south-west and to a lesser extent from the south;
- winds in the afternoon are typically more moderate winds from the south-east and east; and
- Calm conditions are experienced 2% of the time in the morning and only 1% of the time in the afternoons.

**Table 2.1 Monthly Climate Statistics –CASINO AIRPORT AWS)**

[Bureau Home](#) > [Climate](#) > [Climate Data Online](#) > Monthly Statistics

## Climate statistics for Australian locations

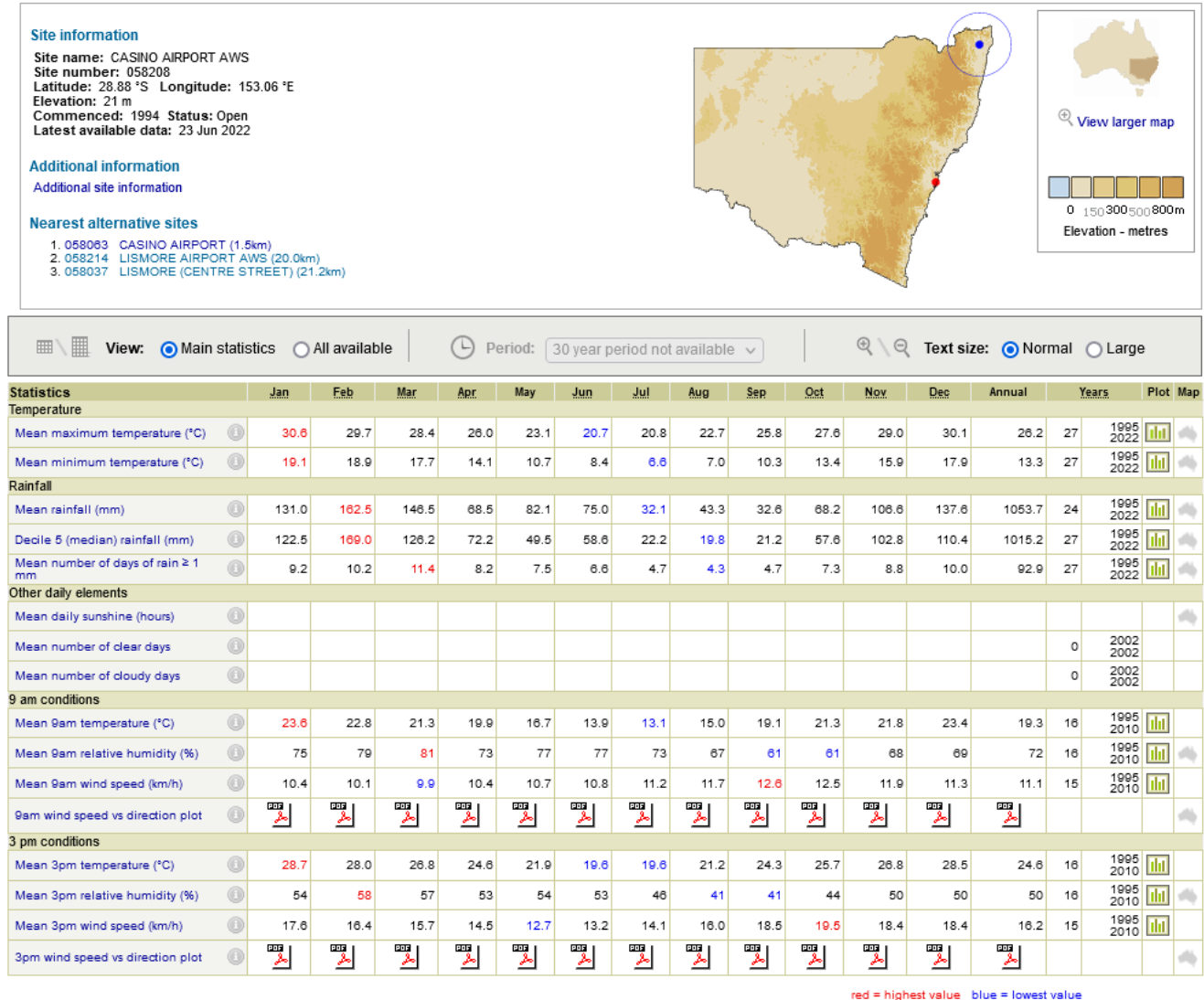
### Monthly climate statistics

#### All years of record

[About Climate statistics](#) | [Data file of statistics for this site \(csv\)](#) | [Site selection menu](#)

#### Summary statistics CASINO AIRPORT AWS

A summary of the major climate statistics recorded at this site is provided below. There is also an extended table with more statistics available. More [detailed data for individual sites](#) is available.



Product IDCJCM0028 Prepared at Thu 23 Jun 2022 02:16:55 AM EST

## Rose of Wind direction versus Wind speed in km/h (10 Jan 1995 to 10 Aug 2021)

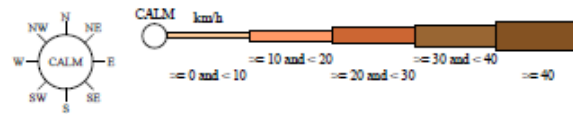
Custom times selected, refer to attached note for details

### CASINO AIRPORT AWS

Site No: 058208 • Opened Dec 1994 • Still Open • Latitude: -28.8824\* • Longitude: 153.0618\* • Elevation 20.m

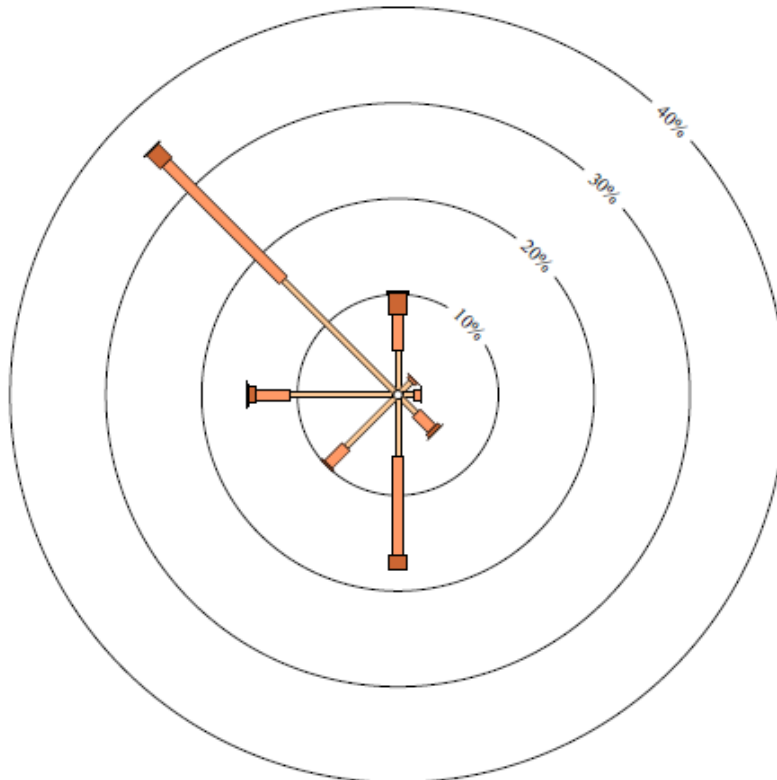
An asterisk (\*) indicates that calm is less than 0.5%.

Other important info about this analysis is available in the accompanying notes.



9 am  
9486 Total Observations

Calm 2%



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Prepared by the Bureau of Meteorology.  
Contact us by phone on (03) 9669 4082, by fax on (03) 9669 4515, or by email on [climatedata@bom.gov.au](mailto:climatedata@bom.gov.au)  
We have taken all due care but cannot provide any warranty nor accept any liability for this information.

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Source: Bureau of Meteorology

**Illustration 2.2 Annual Wind Roses (9am) for CASINO Airport**

## Rose of Wind direction versus Wind speed in km/h (10 Jan 1995 to 10 Aug 2021)

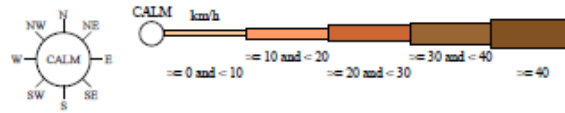
Custom times selected, refer to attached note for details

### CASINO AIRPORT AWS

Site No: 058208 • Opened Dec 1994 • Still Open • Latitude: -28.8824° • Longitude: 153.0618° • Elevation 20.m

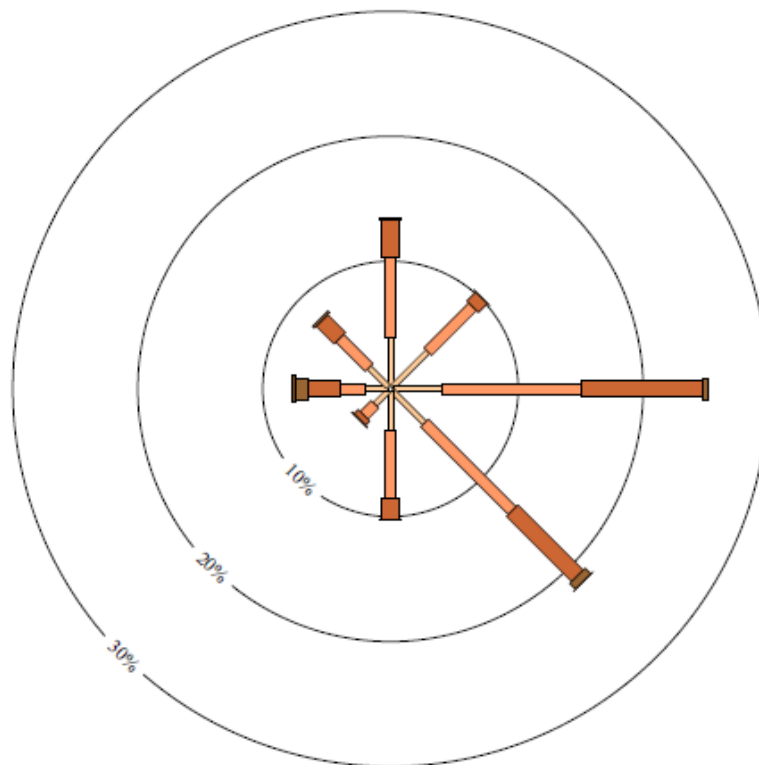
An asterisk (\*) indicates that calm is less than 0.5%.

Other important info about this analysis is available in the accompanying notes.



3 pm  
9451 Total Observations

Calm 1%



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Source: Bureau of Meteorology

Illustration 2.3 Annual Wind Roses (3Pm) for CASINO Airport

## 2.4 Local Geology and Soil Description

The geological formation is the Grafton Formation. The geology is characterised by sandstone (lithic and quartz) with siltstone, claystone, coal. Soil types are generally sands and sandy clay loams overlying clays and claystone bedrock. The soils have low fertility, low water holding capacity and can be hard-setting and acidic

The soils are within the Nammoona Soil Landscape comprising deep (100–150 cm), well-drained Red Earths and Red Podzolic Soils (Gn2.11) and moderately deep (70–100 cm), moderately well-drained brownish Red Podzolic Soils (Db3.11, Db4.11) on crests and slopes. Shallow to moderately deep (<100 m), imperfectly drained Yellow Podzolic Soils (Dy3.11, Dy3.21), Soloths (Db4.11, Db4.21) and some Lateritic Podzolic Soils (Dy3.84, Dy5.84) in lower relief areas (see **Appendix C**).

## 2.5 Surface Water

Stormwater runoff generally flows south or southeast across the subject property into drainage gullies and dams. The upslope catchment includes part of the neighbouring property at 90 Manifold Rd, North Casino that is used for extensive livestock grazing and residential purposes. Minor stormwater run-on from upslope livestock grazing areas and previous sheds/cattle yards has potential to be transported across the subject property and there is minor potential for contaminant transfer to occur if contaminants are present.

## 2.6 Groundwater

A search of the Bureau of Meteorology; Water NSW (November 2023) located 22 licenced groundwater bores with 2km of the subject site (see **Appendix C**). The closest groundwater bore (GW305392) is located 444m west of the subject site. GW305392 is used for water supply, having a bore depth of 22m and a standing water level of 10.40m bgl.

Subsurface conditions for GW305392 as described in the drillers log are provided below:

0.00m-1.00m sandy top soil  
1.00m-5.00m clay  
5.00m-6.00m shale  
6.00m-12.00m weathered sandstone  
12.00m-24.00m fractured sandstone

## 2.7 Site Inspection

A site assessment was undertaken on 15 November 2023 by Tim Fitzroy. On the day of the site assessment the weather was overcast.

The site slopes generally from north to south. The property is characterised by relatively mild slopes up to 10-15%. A drainage depression is located on the northern end of the property.

Site improvements include a dwelling and a detached carport, dam and fencing. Photographs of the site subject and surrounds were taken (see **Appendix D**). Wind conditions at the time of inspection were south east approximately 10 to 15 km/hr. Observations recorded during our site inspections did not reveal any

distinguishable impacts (noise, odour, dust) from any adjoining operations on the subject site. The owner of the adjoining property (90 Manifold Road) Charles Lowe agists a small number of beef cattle on the subject site.

## 2.8 Agricultural Uses

Melaleuca Group (2023) offers the following advice with regard to potential agricultural use/s at the subject site and adjoining site:

*Available historical information indicates that the site has been predominantly used for non-intensive agricultural enterprises such as grazing. Imagery between 1958 and 1987 does indicate some cropping in paddocks in the south-western portion of the site. The type of crop is unknown and no recent (30 years) evidence of cropping is available.*

*The site was predominantly devoid of treed vegetation from 1958 onwards. While structures varied between 1958 to 1979, since this time no apparent change in use has occurred. A large farm dam was constructed between 1967 and 1979. Historical mapping indicates the site was once part of a larger holding.*

*It is considered likely that the Site has followed the generic history of the locality whereby original allotments (i.e., early 1900s) were gradually subdivided by the 1950s. In addition, the Site was likely to have been cleared in the late 1800s or early 1900s as evidenced by the aerial image from 1958. Agricultural pursuits during the Site's history are likely to be subsistence farming followed by Dairy Cattle until the 1950s whereby conversion to beef grazing occurred. While some cropping is indicated in historical aerials, it is considered that given this is not an ongoing activity due to environmental conditions of the site along with costs involved to crop a small area.*

*The BSAL (2013) mapping is considered contemporary. This mapping does not indicate any of the Subject Site being within the bounds of strategic agricultural land.*

*North Coast Agricultural Land Classification shows the majority of the Subject Site:*

- *Class 4 - Suitable for grazing, but not for cultivation. Pasture improvement relies on minimum tillage techniques. Productivity may be seasonally high but overall is low as a result of major environmental constraints.*

*The remaining (small northern) portion of the Site is mapped as:*

- *.Class 5 - Land unsuitable for agriculture, or at best suited only to light grazing. Agricultural production is very low or zero as a result of severe constraints, including economic factors which prevent land improvement.*

*The site is not mapped under the Farmland of State and Regional Significance.*

*The geology and soils of the Site (Nammoona Soil landscape) indicate low fertility. Acid Sulphate soils are considered unlikely. The natural vegetation of the area is likely to be Open Dry Sclerophyll Forests. The mapped Plant Community Type (PCT) is Northern Hinterland Hills Bloodwood-Red Gum Grassy Forest whereby the main species include a range of Eucalyptus species with Bloodwood (Corymbia spp.), Forest Oak (Allocasuarina torulosa) and Broad-leaf apple (Angophora subvelutina).*

*A review of climate of the area (including My Climate View by CSIRO and BOM) indicate non-significant variability in future climate. However, the area is considered hot during Summer (mean max. temperature of 30.9°C) and dry Winters (<50mm per month). Agricultural enterprises in the locality are dominantly cattle grazing. The agricultural potential of the Site is considered limited due to its size, low soil fertility, limited water (single dam, no groundwater bore) and climatic conditions. Further, the location of the*



*Site near a School (Casino Christian School) and rural residential properties would negate the ability for intensive animal industries to be developed on the Site. While some intensive plant opportunities may be possible, the need for large inputs (fertilisers and water) would deem these unlikely. Protected enterprises (such as Mushrooms, Spirulina, Snails) may also be probable. However, such enterprises need very small areas (e.g., often <200m<sup>2</sup> shed).*

*Agricultural enterprises in the locality are similarly limited. Forestry is an additional consideration; however, this type of enterprise in the locality is on very large properties to allow for the economies of scale given the low soil fertility (equates to slow tree growth) and climatic conditions of the area.*

## 2.9 Casino Christian School

The Casino Christian School (CCS) is situated to the south of the subject site across Manifold Road. CCS is a K-12 school that commenced as a K-6 Primary School in 1995. It was extended to Year 7 in 2000, and again extended to Year 11 and 12 in 2014. The school is a registered and accredited, co-educational, K-12 school. The CCS is located on 12.3ha. The closest school building is located about 330 metres from the southern boundary of 70 Manifold Road.

As part of the preparation of this LUCRA discussions were held with Mr Ari Bongers, Business Manager at the CCS. Mr Bongers advised that:

- There are currently about 300 kids enrolled;
- 2024 expected to be 320 kids;
- Growth over time is 4-5%;
- He anticipates that the school population will plateau in the mid 600's due to catchment and demands.
- The State government has a policy that by 2032 all schools will have Pre-School enrollments which will add to student numbers;
- School expansion is constrained by area, flood prone land and existing residential development; and
- A Strategic plan for the school ought to be available on the school's website by the end of Term 1 2024. The strategic plan will inform a Masterplan for the school.
- In terms of actual of conflicts with neighbours:
  - One neighbour did not like the bright colour of one of the school buildings (so they changed the colour);
  - One neighbour was concerned about external lighting affecting his ability to star gaze at tonight. This was attended to;
  - There has been an odd phone call if alarm goes off at night.
  - Music which plays before and end of lunch/recess to alert kids to go to toilet and get ready for end of break to return to class. Now that residents are aware of the purpose of the music there have been no further complaints/concerns;
- There have been no complaints about the Public Address system as far as Mr. Bongers is aware.



The School Management:

- utilises Facebook to inform neighbours of upcoming events and atypical activities e.g. Fire drills, large outdoor activities;
- is supportive of the proposed rezoning of No 70 Manifold to large lot residential; and
- does not envisage any significant land use conflicts and in fact sees benefits to rezoning with potential enrollments from families moving to the area.

## 3. Land Use Conflict Risk Assessment

### 3.1 Introduction

In this report, a risk assessment matrix is used to rank the potential Land Use Conflicts in terms of significance. The matrix assesses the environmental/public health and amenity impacts according to the:

- Probability of occurrence; and
- Severity of impact.

The procedure of environmental/public health & amenity hazard identification and risk control is performed in three stages.

1. Environmental/public health & amenity hazard identification,
2. Risk assessment and ranking,
3. Risk control development.

**Procedure:**

1. Prepare LUCRA Hazard Identification and Risk Control form.
2. List all hazards associated with each activity.
3. Assess and rank the risk arising from each hazard before “controls” are applied on the LUCRA form.
4. Develop controls that minimise the probability and consequence of each risk using the five level methods. Record these controls on the form.
5. Re-rank each risk with the control in place to ensure that the risk has been reduced to an acceptable level. If the risk ranking is not deemed to be acceptable consideration should be given to whether the proposed activity should be allowed to proceed.

### 3.2 Risk Assessment and Risk Ranking

It is necessary to differentiate between an 'environmental hazard' and an 'environmental risk'. 'Hazard' indicates the potential for harm, while 'risk' refers to the probability of that harm occurring. For example, the presence of chemicals stored in a building is a hazard, but while the chemicals are stored appropriately, the risk is negligible. **Table 3.1** defines the hazard risks used in this report.

The Risk Ratings (severity of the risks) have been established by assessing the consequences of the risks and the likelihood of the risks occurring.

**Table 3.1 Measure of Consequence**

Level	Descriptor	Description	Examples/Implications
1	Severe	<ul style="list-style-type: none"> <li>Severe and/or permanent damage to the environment</li> <li>Irreversible with management</li> </ul>	<ul style="list-style-type: none"> <li>Damage or death to animals, fish, birds or plants</li> <li>Long term damage to soil or water</li> <li>Odours so offensive some people are evacuated or leave voluntarily</li> <li>Many public complaints and serious damage to Council's reputation</li> <li>Contravenes Protection of the Environment &amp; Operations Act and the conditions of Council's licences and permits. Almost certain prosecution under the POEO Act</li> </ul>
2	Major	<ul style="list-style-type: none"> <li>Serious and/or long-term impact to the environment</li> <li>Long-term management implications</li> </ul>	<ul style="list-style-type: none"> <li>Water, soil or air impacted badly, possibly in the long term.</li> <li>Limited damage to animals, fish or birds or plants</li> <li>Some public complaints</li> <li>Impacts pass quickly</li> <li>Contravenes the conditions of Council's licences, permits and the POEO Act</li> <li>Likely prosecution</li> </ul>
3	Moderate	<ul style="list-style-type: none"> <li>Moderate and/or medium-term impact to the environment</li> <li>Some ongoing management implications</li> </ul>	<ul style="list-style-type: none"> <li>Water, soil or air known to be affected, probably in the short term</li> <li>No damage to plants or animals</li> <li>Public unaware and no complaints to Council</li> <li>May contravene the conditions of Council's Licences and the POEO Act</li> <li>Unlikely to result in prosecution</li> </ul>
4	Minor	<ul style="list-style-type: none"> <li>Minor and/or short-term impact to the environment</li> <li>Can be effectively managed as part of normal operations</li> </ul>	<ul style="list-style-type: none"> <li>Theoretically could affect the environment or people but no impacts noticed</li> <li>No complaints to Council</li> <li>Does not affect the legal compliance status of Council</li> </ul>

Level	Descriptor	Description	Examples/Implications
5	Negligible	<ul style="list-style-type: none"> <li>• Very minor impact to the environment</li> <li>• Can be effectively managed as part of normal operations</li> </ul>	<ul style="list-style-type: none"> <li>• No measurable or identifiable impact on the environment</li> </ul>

This report utilises an enhanced measure of likelihood of risk approach which provides for 5 levels of probability (A-E). The 5 levels of probability are set out below in **Table 3.2**.

**Table 3.2 Probability Table**

Level	Descriptor	Description
A	Almost certain	Common or repeating occurrence
B	Likely	Known to occur, or 'it has happened'
C	Possible	Could occur, or 'I've heard of it happening'
D	Unlikely	Could occur in some circumstances, but not likely to occur
E	Rare	Practically impossible

### 3.3 Risk Ranking Method

For each event, the appropriate 'probability' (i.e. a letter A to E) and 'consequence' (i.e. a number 1 to 5) is selected.

The consequences (environmental impacts) are combined with a 'probability' (of those outcomes) in the Risk Ranking Table (Table 3.3) to identify the risk rank of each environmental impact (e.g. a 'consequence' 3 with 'probability' D yields a risk rank 9).

The table yields a risk rank from 25 to 1 for each set of 'probabilities' and 'consequences'. A rank of 25 is the highest magnitude of risk that is a highly likely, very serious event.

A rank of 1 represents the lowest magnitude or risk, an almost impossible, very low consequence event.

**Table 3.3 Risk Ranking Table**

PROBABILITY	A	B	C	D	E
Consequence					
1	25	24	22	19	15
2	23	21	18	14	10
3	20	17	13	9	6
4	16	12	8	5	3
5	11	7	4	2	1

**NOTE**

A risk ranking of 25-11 is deemed as an unacceptable risk.

A risk ranking of 10-1 is deemed as an acceptable risk.

Thus, the objective is to endeavour to identify and define controls to lower risk to a ranking of 10 or below.

### 3.4 Potential Land Use Conflicts

The following key items have been identified as potential land use conflicts as a result of the proposed development on existing agricultural practices at the adjoining beef cattle farms. The owner of the subject site, Mr Dougherty referred TFA to Mr Charles Lowe, the owner of the adjoining property (No 90 Manifold Road) who has lived in the Casino area for an extended period and is familiar with operations on his and the adjoining rural properties in the locale. The information included below has been garnered, in part, following discussions with Mr Lowe.

#### 3.4.1 Noise

Noise from general farming operations (tractor use, spraying, fertilising), vehicle movements and general farm activities is a normal part of farming.

Noise from adjoining beef cattle farming activities, will be limited to:

1. Tractor mounted spreader for annual application of fertiliser;
2. Tractor for general farm activities;
3. Freight movement of cattle, once or twice a year;
4. Repairs to farm equipment;
5. General farm activities; and
6. Calves/cows bellowing.

Noise impacts on neighbouring residential land users, given the scale:

- Up to 20 head of beef cattle on Lot 1 DP 555289, No 90 Manifold Road , located across 40ha;
- 2 to 4 head of cattle at Lot 22 DP601461, No 50 Manifold Road, located across 6ha;
- Up to 12 head of cattle at Lot 23 DP601461, No 465 Naughtons Gap Road, located across 22ha; and
- 20 to 30 head of cattle at Lot 263 DP755727, No 45 Stones Road, located across 55ha;
- coupled with the limited and infrequent noise generating activities is considered to have a low impact on future residential land use.

### **3.4.2 Odour**

Odour from agriculture can arise from use of chemical sprays, fertilisers (inorganic and organic), effluent disposal and composting. Such detrimental odours can impact on residential amenity and have the potential to affect public health.

Odour is often a major factor in many complaints about off-site chemical spray drift where there is sometimes no objective evidence of toxic exposure. Some agricultural chemicals contain 'markers' (strong odours) to allow easy identification and these markers or mixing agents are sometimes detected at a distance from the target area and cause concern even though in some circumstances extremely low levels of the active ingredients may be present.

Residents' association of the odour with the chemical is sufficient to raise fears of exposure. In addition, perceptions of an odour's acceptability and individual capacity to detect particular odours can vary greatly.

Factors affecting complaints from odour are influenced by the frequency, intensity, duration and offensiveness of the odour. An objectionable odour may be tolerated if it occurs infrequently at a high intensity, however a similar odour may not be tolerated at lower levels if it persists for a longer duration.

Odour impacts from free range cattle grazing have generally low odour impacts on non-agricultural receivers. When cattle aggregate in large numbers for extended periods of time, odour from an accumulation of manure can be problematic if within close proximity to sensitive receptors. The location of cattle yards a suitable distance from the proposed residential subdivision is recommended.

### **3.4.3 Dust**

Background dust is generated from surrounding roads and neighbouring farms when paddocks are cultivated or harvested and animal movements. The potential for dust on adjoining land will increase during the dry season from normal vehicle access to the paddocks and, to a lesser extent, from the grazed paddocks. The main sources of dust from cattle grazing include fallow (bare) ground, livestock yards and fertiliser spreading, tractor and transport movements. Contemporary farming practices incorporate measures to minimise loss of soil. Local conditions, including wind strength and direction, rainfall, humidity and ambient temperatures, soil type, vegetative cover and type of onsite activity determine the extent of the nuisance.

Dust impacts from free range cattle grazing have generally low dust impacts on non-agricultural receivers. When cattle aggregate in large numbers for extended periods of time, in a restricted area, dust generation can be problematic if within close proximity to sensitive receptors. The location of cattle yards a suitable distance from the proposed residential subdivision is recommended.

### **3.4.4 Pests**

Pests primarily include flies and rodents. Practices that minimise breeding on farm are necessary since pest's impact directly on community amenity and increase the risk of disease transfer. Farmers are obliged by law to ensure that all pest control materials are used in strict adherence with labelling directions. They must be correctly stored away from children and domestic animals. Records of pesticide use should also be maintained.

Flies from free range cattle grazing have generally low impacts on non-agricultural receivers. When cattle aggregate in large numbers for extended periods of time, in a

restricted area, flies can be problematic if within close proximity to sensitive receptors. The location of cattle yards a suitable distance from the proposed residential subdivision is recommended.

### 3.4.5 Operating Times

General farm operations are during daylight hours for safety and practical reasons.

### 3.4.6 Chemical Use

Volatile components of chemicals sprayed may affect neighbours if not used in accordance with manufacturer and workplace health and safety requirements. As per established environmental guidelines spraying should also be avoided during adverse weather conditions that may impact on neighbours.

General Chemicals that may be applied to adjacent beef cattle farms include:

1. Herbicides: Round up , applied using hand spray to control weeds,
2. Fertilisers: Forage Starter fertiliser to entire farm to address soil deficiencies and to boost feed production.

It is not anticipated that insecticides or pesticides would be utilised on the adjacent beef cattle farms.

A Stage 1 Preliminary Contaminated Site Investigation was undertaken by North Coast Wastewater Solutions, November 2023 to support the Planning Proposal.

The investigations consisted of a site history review and site condition assessment to assess historical and current land uses.

The report concluded that:

- the likelihood of contamination and risk of harm to end users in terms of land contamination across the subject property is considered **low**, however individual sampling will be required from within each future building envelope to confirm contaminant levels are below the NEPM health investigation guidelines.
- The recommended sampling and analysis for individual lots and building envelopes is a health investigation level soil assessment for **metals and pesticides (organochlorines and organophosphates)**. Future building envelopes located in areas where previous buildings had been demolished or material from these buildings has been spread should also be comprehensively visually assessed for traces of asbestos. If asbestos is observed the soil may also need to be tested for asbestos contamination.
- The subject property is considered suitable for the proposed rezoning to R5 Large Lot Residential with soil sampling of individual lots to be undertaken at subdivision stage to confirm the land within the building envelopes has contaminant levels below the NEPM health investigation levels.

### 3.4.7 Surface Water and Sediment Runoff

Given the relatively small size of any future development footprint compared to the total site area (9.8ha) there is sufficient land available to adequately assimilate surface water onsite without impacting on adjoining farmland.

### 3.4.8 Flooding

The 'proposal' area itself is not impacted by the mapped flood prone areas and all development sought is outside of the inundation area.

### **3.4.9 Traffic and Access**

The site has frontage to, and is accessed from Manifold Road. A Traffic Impact Assessment has been prepared by ABTT Consulting to support the Planning Proposal. It is proposed that access to the subdivision will be gained via a new intersection off Manifold Road, at an approximate location of the current access.

The access will be designed as a public road in accordance with the New South Wales Development Design Specifications – D1: Geometric Road Design.

The proposed access will have no significant impacts on primary rural land uses activities in the locality.

#### **3.4.10 Onsite Sewer Management**

An On-site Wastewater assessment was undertaken North Coast Wastewater Solutions to assess the feasibility of on-site wastewater management for a proposed rezoning of 70 Manifold Rd, North Casino (Lot 21 DP601461) to R5 Large Lot Residential. Investigations of the site and soil characteristics across the subject property and preliminary OSSM system design has identified the property has suitable characteristics for on-site wastewater disposal for future residential purposes. The topography and soils found across the site are suitable for passive low-tech wastewater management systems.

A 40m setback for future effluent land application envelopes from the drainage gully and farm dams will need to be considered in the development of lot layouts at the subdivision stage of the development.

For the purposes of rezoning assessment, and to maintain the most available options for wastewater management at this stage of the development, it is recommended an area of 300m<sup>2</sup> is required effluent disposal. A further 300m<sup>2</sup> is required to provide a reserve area for future replacement, upgrade or expansion of the wastewater management system.

Adopting the proposed 7500m<sup>2</sup> minimum lot size will ensure sufficient land is available on each future lot for on-site wastewater management and adverse impacts to existing environmental conditions at the site are not expected.

## **3.5 Risk Reduction Controls**

The process of risk reduction is one of looking at controls that have an effect on probability such as the implementation of certain procedures; new technology or scientific controls that might lower the risk probability values.

It is also appropriate to look at controls which affect consequences e.g., staff supply with a mechanism to change impacts or better communications established. Such matters can sometimes lead to the lowering of the consequences.



**Table 3.4 LUCRA Site Assessment**

Site Feature	Condition/Comments	Potential Conflict
Cattle Yards	<p>The closest point of the nearest building envelope of a future residential subdivision will be about 330m from the cattle yards on adjoining No 90 Manifold Road</p> <p>Default Buffer distances:</p> <ul style="list-style-type: none"> <li>• 200 metres to stock yards including cattle yards</li> </ul>	Negligible
Cattle Grazing	<p>The closest point of the nearest building envelope of a future residential subdivision is currently about 20m from the cattle grazing on adjoining No 90 Manifold Road</p> <p>Default Buffer distances:</p> <ul style="list-style-type: none"> <li>• 50 metres to grazing of stock</li> </ul> <p>A Planning Propsoal is currently being prepared to rezone a 14ha portion of Lot 1 DP555289, No 90 Manifold Rd to R5 Large Lot Residential. Should the planning proposal of Lot 1 DP555289 be approved the closest point of the nearest building envelope of the future residential subdivision of 70 Manifold Road will be about 35m from the cattle grazing on adjoining Lot 22 DP601461, No 50 Manifold Road and Lot 23 DP601461, No 465 Naughtons Gap Road.</p> <p>There are 2 to 4 head of cattle at 50 Manifold Road, located across 6ha; and Up to 12 head of cattle at 465 Naughtons Gap Road, located across 22ha.</p> <p>Given the very low intensity (see ratios below) of cattle, the likelihood of land use conflict with future rural residential within the subject planning proposal is deemed to be minor:</p> <ul style="list-style-type: none"> <li>• 1/15,000m<sup>2</sup> at 50 Manifold Road and</li> <li>• 1/18,333m<sup>2</sup> at 465 Naughtons Gap Road</li> </ul>	Minor
Site Location: Vehicular Access	<p>A Traffic Impact Assessment has been prepared by ABTT Consulting. It is proposed that access to the subdivision will be gained via a new intersection off Manifold Road, at an approximate location of the current access. The access will be designed as a public road in accordance with the New South Wales</p>	Negligible

	<p>Development Design Specifications – D1: Geometric Road Design.</p> <p>There is no evidence that there will be a land use conflict between the existing adjoining agricultural activities and future traffic associated users with the planning proposal at 70 Manifold road</p>	
Operating Times	The operating times of the adjacent farm is between 7am and 5pm. The impacts on residents during out of hours activities would be limited.	Minor
Aspect	Parts of any future residential subdivision will look towards the adjoining cattle beef farm and rural land. There is nothing to suggest that the view of the open grassland and cattle grazing will be a source of conflict	Negligible
Exposure	<p>The wind roses indicate the following:</p> <ul style="list-style-type: none"> <li>• <b>9am in the morning</b></li> <li>• 35% of the time the wind is from the north west (70 Manifold Road) which is currently has low intensity cattle grazing and timbered country. NDC on behalf of Mr Lowe are also preparing a Planning Proposal to RVC to rezone 70 Manifold Road to large lot residential);</li> <li>• 18% of the time the wind is from the south (existing rural residential subdivision and the Casino Christian School)</li> <li>• 15% of the time the wind is from the west (70 Manifold Road)</li> <li>• 10% the wind is from the north (vegetated area and low density cattle grazing (45 Stones Road) and south west (70 Manifold Road) and rural residential</li> <li>• 5% the wind is from the south east (low density cattle, 50 Manifold Road) ;and</li> <li>• 2% of the time the conditions are calm.</li> <li>• <b>3pm in the afternoon</b></li> <li>• 26% of the time the wind is from the east low density cattle, 50 Manifold Road and 465 Naughtons Gap Road);</li> <li>• 22% of the time the wind is from the south east: low density cattle, 50 Manifold Road;</li> <li>• 13% of the time the wind is from the north ((vegetated area and low density cattle grazing (45 Stones Road);</li> <li>• 10% of the time the wind is from the north-east (low density cattle, 465 Naughtons Gap Road) and south (rural</li> </ul>	Minor

	<p>residential are and Casino Christian School);</p> <ul style="list-style-type: none"> <li>• 7% of the time the wind is from the west (70 Manifold Road);</li> <li>• 6% of the time the wind is from the north west (70 Manifold Road);</li> <li>• 3% of the time the wind is from the south west; and</li> <li>• 1% of the time the wind the conditions are calm.</li> </ul>	
Run-on and Upslope Seepage Site Drainage and Water pollution	Given the relatively small size of any future development footprint compared to the total site area (9.8ha) there is sufficient land available to adequately assimilate surface water onsite without impacting on adjoining farmland.	Negligible
Odour	<p>Odour from farming can arise from use of chemical sprays, fertilisers (inorganic and organic), effluent disposal and composting. Such detrimental odours can impact on residential amenity and have the potential to affect public health.</p> <p>Odour impacts from free range cattle grazing have generally low odour impacts on non-agricultural receivers. When cattle aggregate in large numbers for extended periods of time, odour from an accumulation of manure can be problematic if within close proximity to sensitive receptors. The location of cattle yards are a suitable distance from the proposed future residential subdivision. In addition due to relatively low soil fertility the stocking rates of beef cattle are small.</p>	Minor
Dust	<p>The main sources of dust from a cattle grazing include cultivation prior to planting, tractor and transport movements.</p> <p>Dust impacts from free range cattle grazing have generally low dust impacts on non-agricultural receivers. When cattle aggregate in large numbers for extended periods of time, in a restricted area, dust generation can be problematic if within close proximity to sensitive receptors. The location of cattle yards are a suitable distance from the proposed future residential subdivision. In addition due to relatively low soil fertility the stocking rates of beef cattle are small.</p>	Minor
Pests	Pests include rodents. Practices that minimise breeding on farm are necessary since pests impact directly on community amenity and increase the risk of disease transfer.	Minor

	Flies from free range cattle grazing have generally low impacts on non-agricultural receivers. When cattle aggregate in large numbers for extended periods of time, in a restricted area, flies can be problematic if within close proximity to sensitive receptors. The location of cattle yards are a suitable distance from the proposed future residential subdivision. In addition due to relatively low soil fertility the stocking rates of beef cattle are small.	
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The risks identified as either minor or negligible. No specific mitigation measures are proposed to mitigate potential land use conflicts

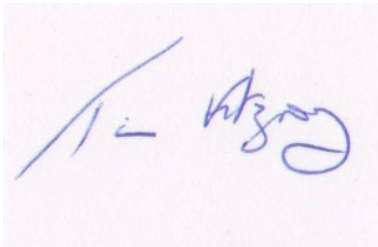
## 4. Conclusion

This Land Use Conflict Risk Assessment is based on:

- a review of:
  - Concept Site Plan, Newton Denny Chapelle;
  - Preliminary Site Contamination Assessment; North Coast Wastewater Solutions;
  - Onsite Wastewater Assessment; North Coast Wastewater Solutions;
  - Traffic Impact Assessment (ABTT Consulting); and
  - Agricultural Assessment (Melaleuca Group).
- discussions with:
  - Luke Fittock (NDC);
  - Simon Dougherty, site owner ;
  - Charles Lowe, adjoining site owner (90 Manifold Road); and
  - Ari Bongers, Business Manager, Casino Christian School;
- site inspection; and
- review of surrounding land uses.

This LUCRA has concluded that the risks associated with the subject Planning Proposal as depicted in **Appendix A**, are either minor or negligible. Based on the Planning Proposal for Lot 21 DP601461 no specific mitigation measures are proposed to mitigate potential land use conflicts

This report has been prepared by Tim Fitzroy of Tim Fitzroy & Associates.



Tim Fitzroy  
Environmental Health Scientist  
Environmental Auditor

## References

Department of Primary Industries et al 2007 Living and Working in Rural Areas-a handbook for managing land use conflicts on the NSW North Coast, NSW

Planning Guidelines Separating Agricultural and Residential Uses, Queensland Department of Natural Resources 1997

Personal Communication, Luke Fittock (NDC); 2023, 2024

Personal Communication, Simon Dougherty, 2023

Personal Communication Charles Lowe, 2023

A Personal Communication Ari Bongers, Business Manager, Casino Christian School; 2023

Preliminary Site Contamination Assessment; North Coast Wastewater Solutions.

Onsite Wastewater Assessment; North Coast Wastewater Solutions.

Traffic Impact Assessment (ABTT Consulting).

Agricultural Assessment (Melaleuca Group)

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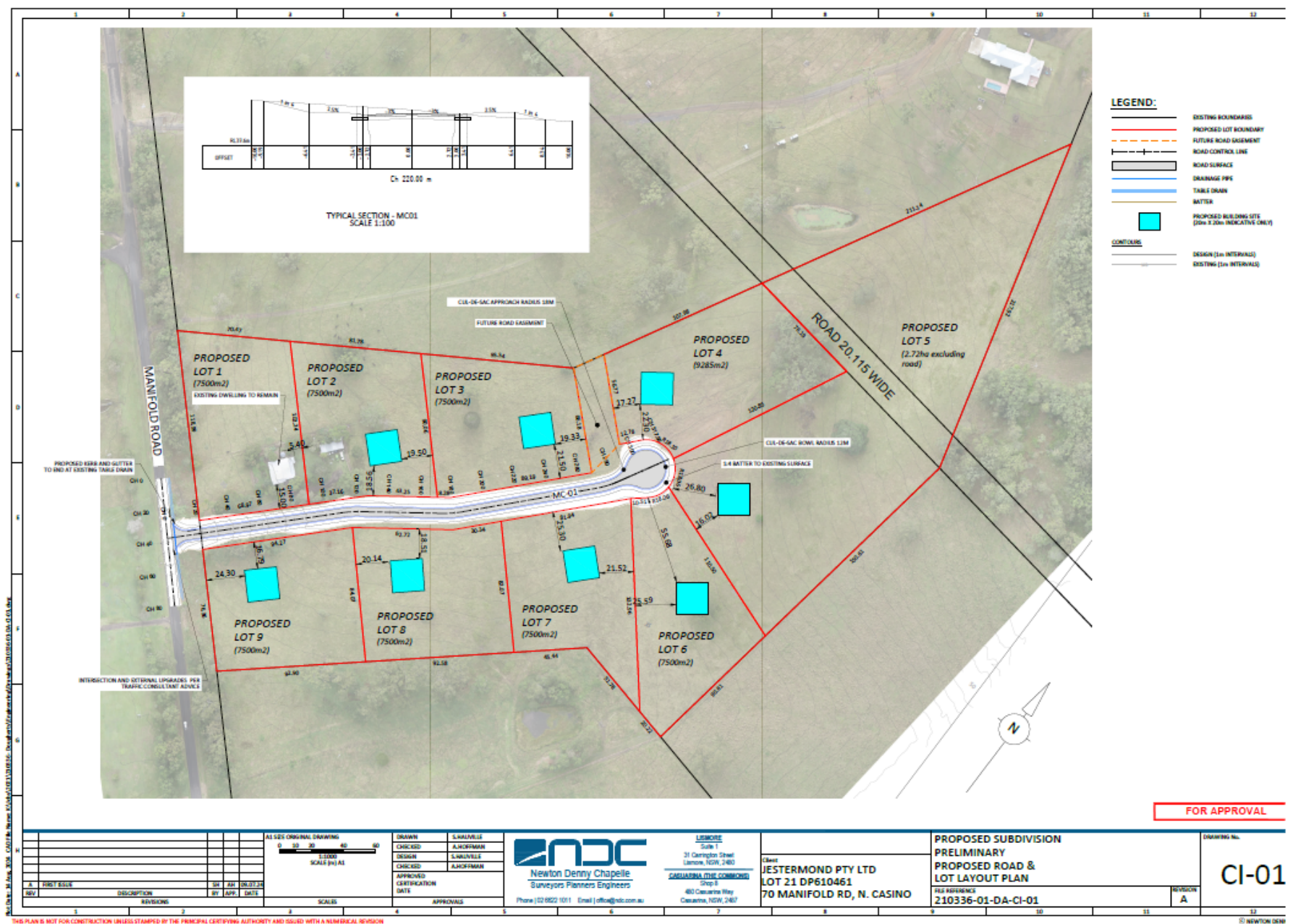
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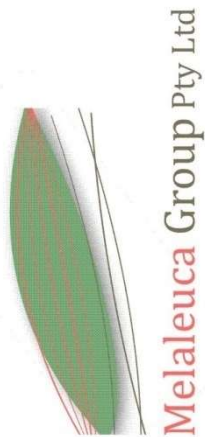


# A Conceptual Site Layout Plan





# B   Agricultural   Assessment



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Date: 20<sup>th</sup> December 2023

Tim Fitzroy  
Tim Fitzroy and Associates  
61 Pine Ave  
Ballina NSW 2478

Dear Tim,

**Re: Agricultural Assessment – Lot 21 DP601461 70 Manifold Road, North Casino, NSW 2470**

As instructed by yourself, we have completed a desktop review of available information to enable the provision of advice on the Agricultural viability of the Subject Site and surrounding area (1km).

Documentation reviewed includes:

- LotSearch (2023) – 70 Manifold Rd, North Casino NSW 2470;
- Heritage Management & Planning Pty Ltd (2023) 70 Manifold Road, Casino NSW Aboriginal Cultural Heritage Assessment;
- Available Historical mapping;
- ASS and Soils Mapping;
- Biophysical Strategic Agricultural Land (BSAL) Mapping (Department of Planning and Environment 2013);
- North Coast Agricultural Land Classification (or Agricultural Land Suitability on Council's online mapping);
- Farmland of State and Regional Significance.
- Available aerial imagery (Google Earth); and
- Available site photos (provided by T Fitzroy).

The Subject Site Area (Lot 21 DP601461 70 Manifold Road, North Casino) is located approximately 6km north-east of the Casino CBD. Manifold Road forms the south-western boundary of the site with remaining boundaries formed by other rural allotments.

The site is zoned RU1 – Primary Production with the proposal to rezone the land to R5 – Large Lot Residential. This Site was identified within Richmond River Rural Residential Development Strategy 1999 and Draft Richmond Valley Growth Management Strategy 2022.

Available historical information indicates that the site has been predominantly used for non-intensive agricultural enterprises such as grazing. Imagery between 1958 and 1987 does indicate some cropping in paddocks in the south-western portion of the site. The type of crop(s) is unknown and no recent (30 years) evidence of cropping is available.

The site was predominantly devoid of treed vegetation from 1958 onwards. While structures varied between 1958 to 1979, since this time no apparent change in use has occurred. A large farm dam was constructed between 1967 and 1979. Historical mapping indicates the site was once part of a larger holding.

It is considered likely that the Site has followed the generic history of the locality whereby original allotments (i.e., early 1900s) were gradually subdivided into smaller allotments by the 1950s. In addition, the Site was likely to have been cleared in the late 1800s or early 1900s as evidenced by the aerial image from 1958. Agricultural pursuits during the Site's history are likely to be subsistence farming followed by Dairy Cattle until the 1950s whereby conversion to beef grazing occurred. While some cropping is indicated in historical aerials, it is considered that given this is not an ongoing activity due to environmental conditions of the site along with costs involved to crop a small area.

The BSAL (2013) mapping is considered contemporary. This mapping does not indicate any of the Subject Site being within the bounds of strategic agricultural land.

North Coast Agricultural Land Classification shows the majority of the Subject Site:

- Class 4 - Suitable for grazing, but not for cultivation. Pasture improvement relies on minimum tillage techniques. Productivity may be seasonally high but overall is low as a result of major environmental constraints.

The remaining (small northern) portion of the Site is mapped as:

- Class 5 - Land unsuitable for agriculture, or at best suited only to light grazing. Agricultural production is very low or zero as a result of severe constraints, including economic factors which prevent land improvement.

The site is not mapped under the Farmland of State and Regional Significance.

The geology and soils of the Site (Nammoona Soil landscape) indicate low fertility. Acid Sulphate soils are considered unlikely. The natural vegetation of the area is likely to be Open Dry Sclerophyll Forests. The mapped Plant Community Type (PCT) is Northern Hinterland Hills Bloodwood-Red Gum Grassy Forest whereby the main species include a range of Eucalyptus species with Bloodwood (*Corymbia* spp.), Forest Oak (*Allocasuarina torulosa*) and Broad-leaf apple (*Angophora subvelutina*).

A review of climate of the area (including My Climate View by CSIRO and BOM) indicate non-significant variability in future climate. However, the area is considered hot during Summer (mean max. temperature of 30.9°C) and dry Winters (<50mm per month). Agricultural enterprises in the locality are dominantly cattle grazing. The agricultural potential of the Site is considered limited due to its

size, low soil fertility, limited water (single dam, no groundwater bore) and climatic conditions. Further, the location of the Site near a School (Casino Christian School) and rural residential properties would negate the ability for intensive animal industries to be developed on the Site. While some intensive plant opportunities may be possible, the need for large inputs (fertilisers and water) would deem these unlikely. Protected enterprises (such as Mushrooms, Spirulina, Snails) may also be probable. However, such enterprises need very small areas (e.g., often <200m<sup>2</sup> shed).

Agricultural enterprises in the locality are similarly limited. Forestry is an additional consideration; however, this type of enterprise in the locality is on very large properties to allow for the economies of scale given the low soil fertility (equates to slow tree growth) and climatic conditions of the area.

Should you require any additional information or wish to clarify any matter raised in this correspondence please feel free to contact the writer at any time.

Yours faithfully,

**Melaleuca Group**



.....

Dr. Melissa Van Zwieten

Senior Environmental Scientist

# C Lotsearch





# LOTSEARCH

LOTSEARCH ENVIRO PROFESSIONAL

**Date: 22 Nov 2023 14:27:00**

**Reference: LS050358 EP**

**Address: 70 Manifold Road, North Casino, NSW 2470**

**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:

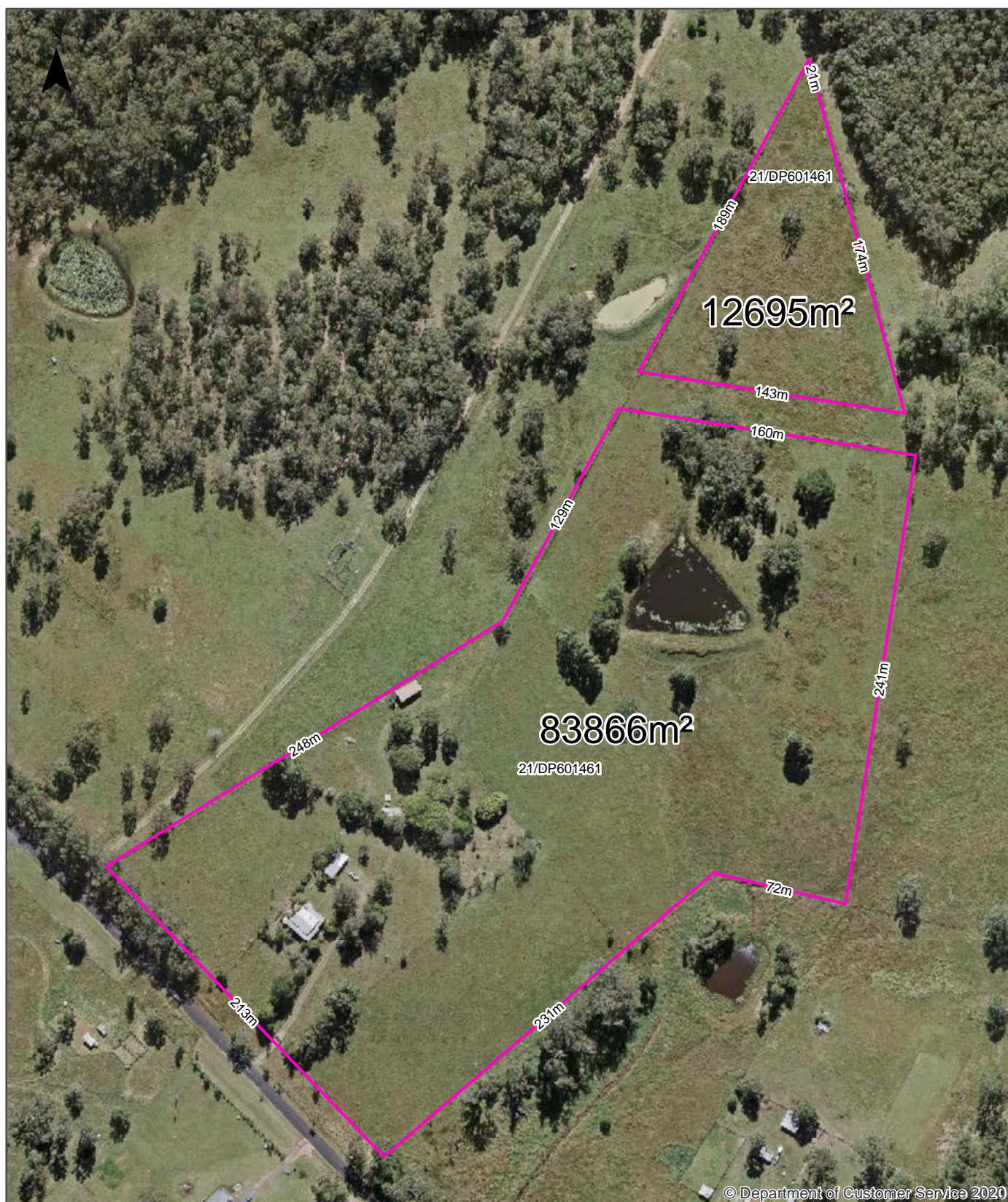
Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features On-site	No. Features within 100m	No. Features within Buffer
Cadastre Boundaries	NSW Department of Customer Service - Spatial Services	14/09/2023	14/09/2023	Quarterly	-	-	-	-
Topographic Data	NSW Department of Customer Service - Spatial Services	22/08/2022	22/08/2022	Annually	-	-	-	-
List of NSW contaminated sites notified to EPA	Environment Protection Authority	16/10/2023	10/10/2023	Monthly	1000m	0	0	0
Contaminated Land Records of Notice	Environment Protection Authority	06/10/2023	06/10/2023	Monthly	1000m	0	0	0
Former Gasworks	Environment Protection Authority	16/10/2023	14/07/2021	Quarterly	1000m	0	0	0
Notices under the POEO Act 1997	Environment Protection Authority	26/07/2023	26/07/2023	Monthly	1000m	0	0	0
National Waste Management Facilities Database	Geoscience Australia	26/05/2022	07/03/2017	Annually	1000m	0	0	0
National Liquid Fuel Facilities	Geoscience Australia	20/09/2023	07/09/2020	Annually	1000m	0	0	0
EPA PFAS Investigation Program	Environment Protection Authority	23/10/2023	23/09/2022	Monthly	2000m	0	0	0
Defence PFAS Investigation & Management Program - Investigation Sites	Department of Defence	19/10/2023	19/10/2023	Monthly	2000m	0	0	0
Defence PFAS Investigation & Management Program - Management Sites	Department of Defence	19/10/2023	19/10/2023	Monthly	2000m	0	0	0
Airservices Australia National PFAS Management Program	Airservices Australia	19/10/2023	19/10/2023	Monthly	2000m	0	0	0
Defence Controlled Areas	Department of Defence	10/10/2023	10/10/2023	Quarterly	2000m	0	0	0
Defence 3 Year Regional Contamination Investigation Program	Department of Defence	19/10/2023	02/09/2022	Quarterly	2000m	0	0	0
National Unexploded Ordnance (UXO)	Department of Defence	10/10/2023	10/10/2023	Quarterly	2000m	0	1	1
EPA Other Sites with Contamination Issues	Environment Protection Authority	13/11/2023	15/12/2022	Annually	1000m	0	0	0
Licensed Activities under the POEO Act 1997	Environment Protection Authority	23/10/2023	23/10/2023	Monthly	1000m	0	0	0
Delicensed POEO Activities still regulated by the EPA	Environment Protection Authority	23/10/2023	23/10/2023	Monthly	1000m	0	0	0
Former POEO Licensed Activities now revoked or surrendered	Environment Protection Authority	23/10/2023	23/10/2023	Monthly	1000m	0	4	4
UBD Business Directories (Premise & Intersection Matches)	Hardie Grant			Not required	150m	0	0	0
UBD Business Directories (Road & Area Matches)	Hardie Grant			Not required	150m	-	0	0
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	-	0	0
Cattle dips of the Northern Rivers region	NSW Dept. of Primary Industries	06/10/2023	06/10/2023	Annually	1000m	0	0	1
Points of Interest	NSW Department of Customer Service - Spatial Services	13/11/2023	13/11/2023	Quarterly	1000m	1	1	4
Tanks (Areas)	NSW Department of Customer Service - Spatial Services	13/11/2023	13/11/2023	Quarterly	1000m	0	0	0
Tanks (Points)	NSW Department of Customer Service - Spatial Services	13/11/2023	13/11/2023	Quarterly	1000m	0	0	2
Major Easements	NSW Department of Customer Service - Spatial Services	19/10/2023	19/10/2023	Quarterly	1000m	0	0	0
State Forest	Forestry Corporation of NSW	16/08/2022	14/08/2022	Annually	1000m	0	0	0
NSW National Parks and Wildlife Service Reserves	NSW Office of Environment & Heritage	16/02/2023	31/12/2022	Annually	1000m	0	0	0

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features On-site	No. Features within 100m	No. Features within Buffer
Hydrogeology Map of Australia	Commonwealth of Australia (Geoscience Australia)	29/08/2022	19/08/2019	None planned	1000m	1	1	2
Temporary Water Restriction (Botany Sands Groundwater Source) Order 2018	NSW Department of Planning, Industry and Environment	09/05/2023	23/02/2018	Annually	1000m	0	0	0
National Groundwater Information System (NGIS) Boreholes	Bureau of Meteorology; Water NSW	18/04/2023	13/07/2022	Annually	2000m	0	0	22
NSW Seamless Geology Single Layer: Rock Units	Department of Regional NSW	17/02/2022	01/05/2021	Annually	1000m	1	1	3
NSW Seamless Geology – Single Layer: Trendlines	Department of Regional NSW	17/02/2022	01/05/2021	Annually	1000m	0	0	0
NSW Seamless Geology – Single Layer: Geological Boundaries and Faults	Department of Regional NSW	17/02/2022	01/05/2021	Annually	1000m	0	0	0
Naturally Occurring Asbestos Potential	NSW Dept. of Industry, Resources & Energy	04/12/2015	24/09/2015	Annual	1000m	0	0	0
Atlas of Australian Soils	Australian Bureau of Agriculture and Resource Economics and Sciences (ABARES)	19/05/2017	17/02/2011	None planned	1000m	1	1	2
Soil Landscapes of Central and Eastern NSW	NSW Department of Planning, Industry and Environment	18/08/2022	27/07/2020	Annually	1000m	1	3	4
Environmental Planning Instrument Acid Sulfate Soils	NSW Department of Planning, Industry and Environment	10/10/2023	01/09/2023	Monthly	500m	0	-	-
Atlas of Australian Acid Sulfate Soils	CSIRO	19/01/2017	21/02/2013	None planned	1000m	1	1	1
Dryland Salinity - National Assessment	National Land and Water Resources Audit	18/07/2014	12/05/2013	Annual	1000m	0	0	0
Mining Subsidence Districts	NSW Department of Customer Service - Subsidence Advisory NSW	16/10/2023	16/10/2023	Quarterly	1000m	0	0	0
Current Mining Titles	NSW Department of Industry	23/10/2023	23/10/2023	Monthly	1000m	1	1	1
Mining Title Applications	NSW Department of Industry	23/10/2023	23/10/2023	Monthly	1000m	0	0	0
Historic Mining Titles	NSW Department of Industry	23/10/2023	23/10/2023	Monthly	1000m	9	9	11
Environmental Planning Instrument SEPP State Significant Precincts	NSW Department of Planning, Industry and Environment	31/08/2023		Monthly	1000m	0	0	0
Environmental Planning Instrument Land Zoning	NSW Department of Planning, Industry and Environment	10/10/2023	15/09/2023	Monthly	1000m	1	2	3
Commonwealth Heritage List	Australian Government Department of the Agriculture, Water and the Environment	20/10/2023	13/04/2022	Annually	1000m	0	0	0
National Heritage List	Australian Government Department of the Agriculture, Water and the Environment	20/10/2023	13/04/2022	Annually	1000m	0	0	0
State Heritage Register - Curtilages	NSW Department of Planning, Industry and Environment	06/09/2023	03/03/2023	Quarterly	1000m	0	0	0
Environmental Planning Instrument Local Heritage	NSW Department of Planning, Industry and Environment	10/10/2023	22/09/2023	Monthly	1000m	0	0	0
Bush Fire Prone Land	NSW Rural Fire Service	28/09/2023	15/08/2023	Monthly	1000m	3	3	3
NSW Native Vegetation Type Map	NSW Department of Planning and Environment	26/05/2023	12/12/2022	Quarterly	1000m	3	3	6
Ramsar Wetlands of Australia	Australian Government Department of Agriculture, Water and the Environment	09/05/2023	01/11/2022	Annually	1000m	0	0	0
Groundwater Dependent Ecosystems	Bureau of Meteorology	28/10/2022	26/10/2022	Annually	1000m	1	1	5
Inflow Dependent Ecosystems Likelihood	Bureau of Meteorology	28/10/2022	26/10/2022	Annually	1000m	1	2	10
NSW BioNet Species Sightings	NSW Office of Environment & Heritage	22/11/2023	22/11/2023	Weekly	10000m	-	-	-



# Site Diagram

70 Manifold Road, North Casino, NSW 2470



© Department of Customer Service 2020

## Legend

- Site Boundary
- Internal Parcel Boundaries

**Total Area:** 96561m<sup>2</sup>

**Total Perimeter:** 1.82km

### Disclaimers:

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

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

### Scale:

0 25 50 100 150  
Meters

Data Sources: Aerial Imagery:  
© NSW Department of Finance, Services & Innovation

Coordinate System:  
GDA 1994 MGA Zone 56

Date: 22 November 2023

# Contaminated Land

70 Manifold Road, North Casino, NSW 2470

## 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

70 Manifold Road, North Casino, NSW 2470

### 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

## Contaminated Land

70 Manifold Road, North Casino, NSW 2470

## EPA Notices

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

Number	Type	Name	Address	Status	Issued Date	Act	Offence	Offence Date	Loc Conf	Dist	Dir
N/A	No records in buffer										

NSW EPA Notice Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

## Waste Management & Liquid Fuel Facilities

70 Manifold Road, North Casino, NSW 2470

### National Waste Management Site Database

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

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

Waste Management Facilities Data Source: Geoscience Australia  
Creative Commons 3.0 © Commonwealth of Australia <http://creativecommons.org/licenses/by/3.0/au/deed.en>

### 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
N/A	No records in buffer										

National Liquid Fuel Facilities Data Source: Geoscience Australia  
Creative Commons 3.0 © Commonwealth of Australia <http://creativecommons.org/licenses/by/3.0/au/deed.en>

# PFAS Investigation & Management Programs

70 Manifold Road, North Casino, NSW 2470

## 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				

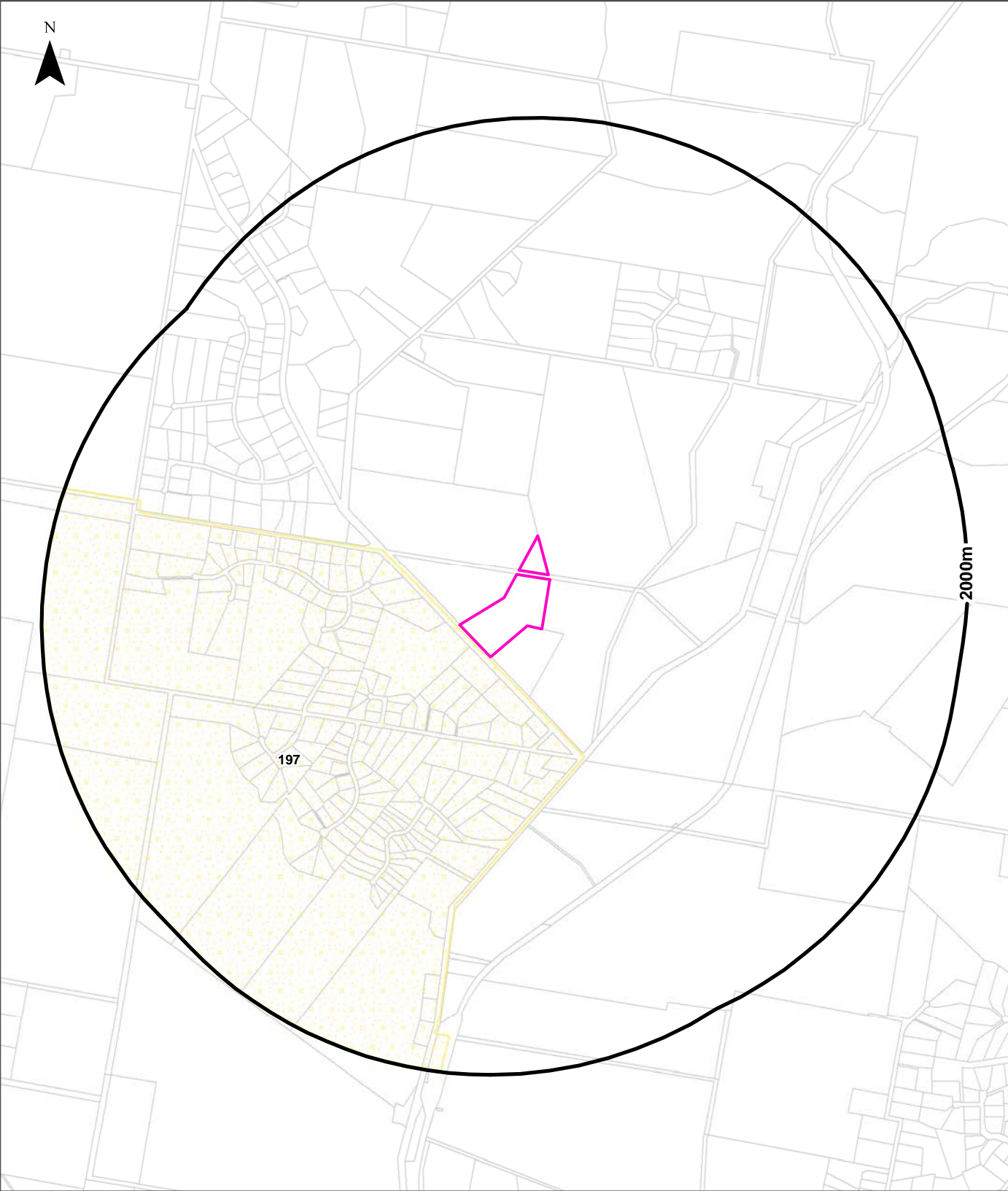
Defence PFAS Management Program Data Custodian: Department of Defence, Australian Government

















## 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	 Information
		 Sea Dumping of Depth Charges	 Other
			 Other Sea Dumping Sites

Scale:



Data Sources: Property Boundaries & Topographic Data:  
© Department Finance, Services & Innovation 2023

Coordinate System:  
GDA 1994 MGA Zone 56

Date: 22 November 2023



# Defence Sites and Unexploded Ordnance

70 Manifold Road, North Casino, NSW 2470

## 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
197	Casino	Other	Records indicate that large numbers of Troops Camped and Trained in the vicinity of Casino during WWII.		Not Commonwealth Land	As Supplied	13m	South West

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

## EPA Other Sites with Contamination Issues

70 Manifold Road, North Casino, NSW 2470

### EPA Other Sites with Contamination Issues

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

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

Sites within the dataset buffer:

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

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

## EPA Activities

70 Manifold Road, North Casino, NSW 2470

## Licensed Activities under the POEO Act 1997

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

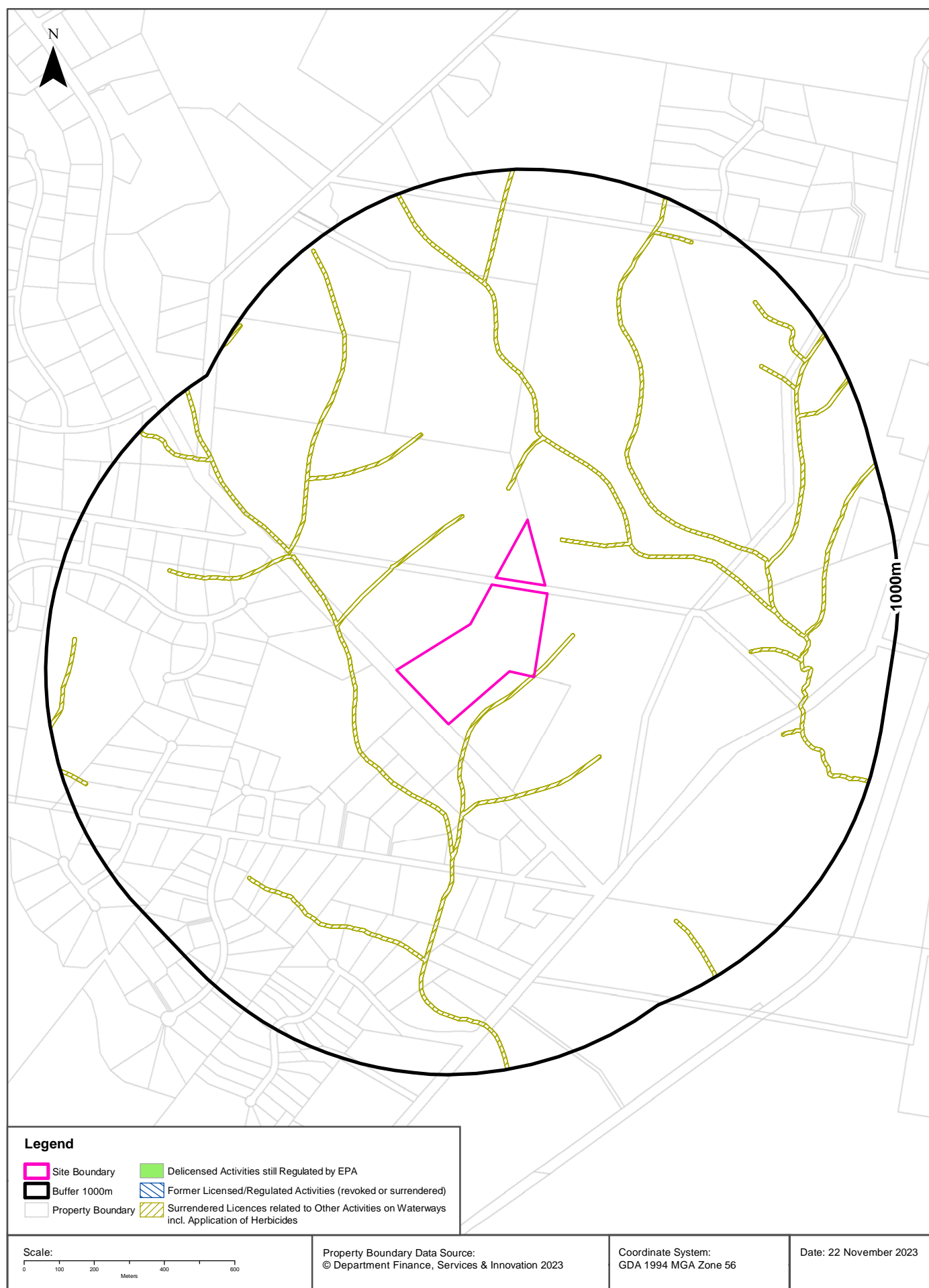
EPL	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
N/A	No records in buffer							

POEO Licence Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

# Delicensed & Former Licensed EPA Activities

70 Manifold Road, North Casino, NSW 2470



## EPA Activities

70 Manifold Road, North Casino, NSW 2470

### Delicensed Activities still regulated by the EPA

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

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

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

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

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

Licence No	Organisation	Location	Status	Issued Date	Activity	Loc Conf	Distance	Direction
4292	FAR NORTH COAST COUNTY COUNCIL	COUNTY DISTRICT - LISMORE NSW 2480	Surrendered	06/09/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	0m	North East
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	North East
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	North East
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	North East

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



## Historical Business Directories

70 Manifold Road, North Casino, NSW 2470

### Business Directory Records 1950-1991 Premise or Road Intersection Matches

Universal Business Directory records 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
N/A	No records in buffer						

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

## Business Directory Records 1950-1991 Road or Area Matches

Universal Business Directory records 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
N/A	No records in buffer					

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

## Historical Business Directories

70 Manifold Road, North Casino, NSW 2470

### 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						

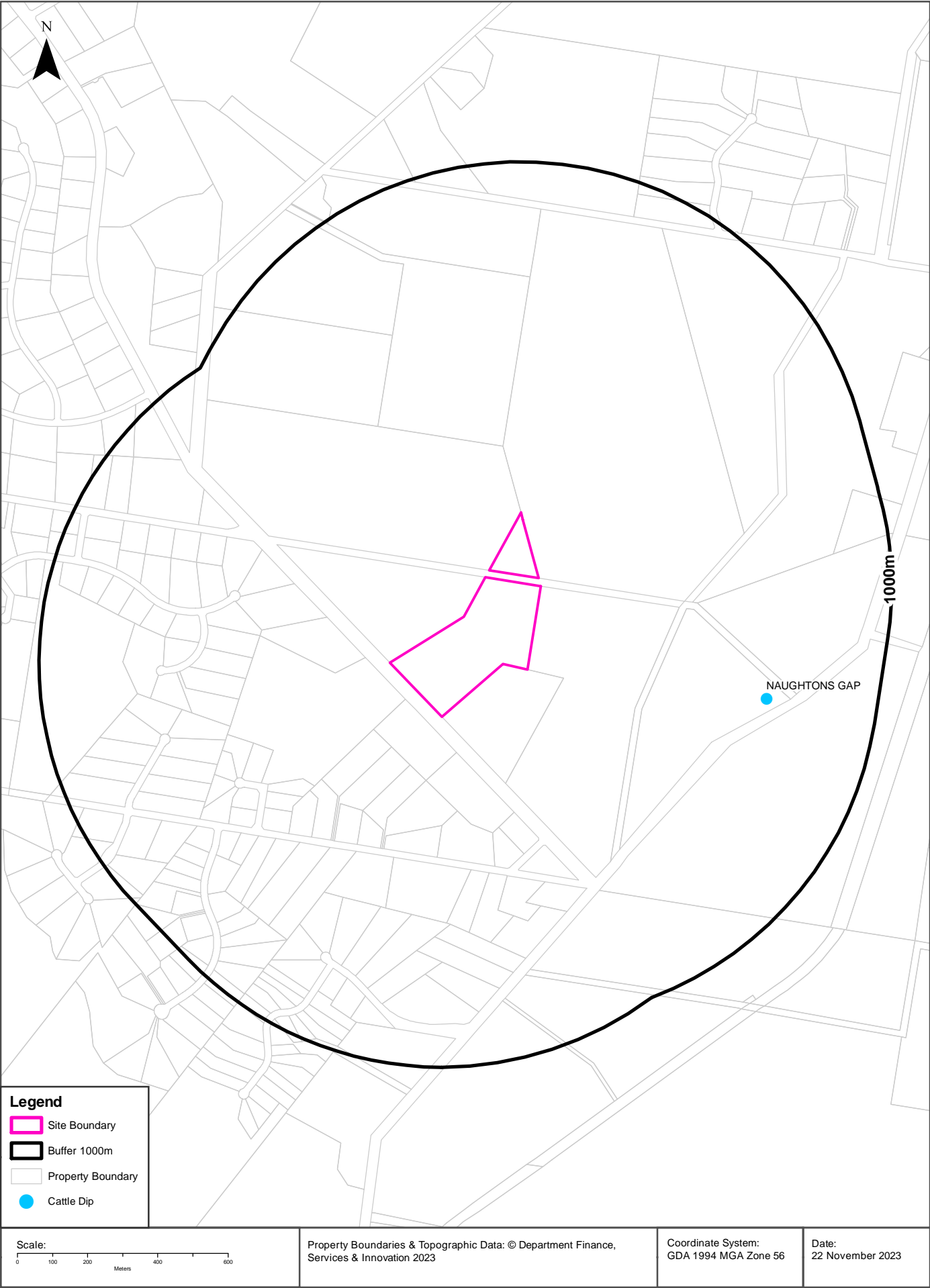
Reproduced with permission of UBD and Hardie Grant Media Pty Ltd DD 01/08/2018

## 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
N/A	No records in buffer					

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## Cattle Dips

70 Manifold Road, North Casino, NSW 2470

### Cattle Dips of the Northern Rivers Region

Cattle dip sites within the dataset buffer:

Dip Name	Road	Town	Dip Status	Licence / Lease Status	Licence / Lease Expiry Date	Distance	Direction
NAUGHTONS GAP	NOUGHTON GAP ROAD	VIA CASINO	DECOMMISSION	LAPSED	30/11/1998	686m	East

Cattle dip site data provided by the NSW Department of Primary Industries.



Aerial Imagery 2022

70 Manifold Road, North Casino, NSW 2470



Scale: 0 50 100 150 200 Meters	Data Source Aerial Imagery: © 2023 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.	Coordinate System: GDA 1994 MGA Zone 56	Date: 21 November 2023
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Aerial Imagery 2016

70 Manifold Road, North Casino, NSW 2470



<p>Scale:</p> <p>0 50 100 150 200</p> <p>Meters</p>	<p>Data Source Aerial Imagery: © 2023 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.</p>	<p>Coordinate System:</p> <p>GDA 1994 MGA Zone 56</p>	<p>Date: 21 November 2023</p>
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# Aerial Imagery 2009

70 Manifold Road, North Casino, NSW 2470







Scale: 0 50 100 150 200 Meters	Data Source Aerial Imagery: © 2023 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.	Coordinate System: GDA 1994 MGA Zone 56	Date: 21 November 2023
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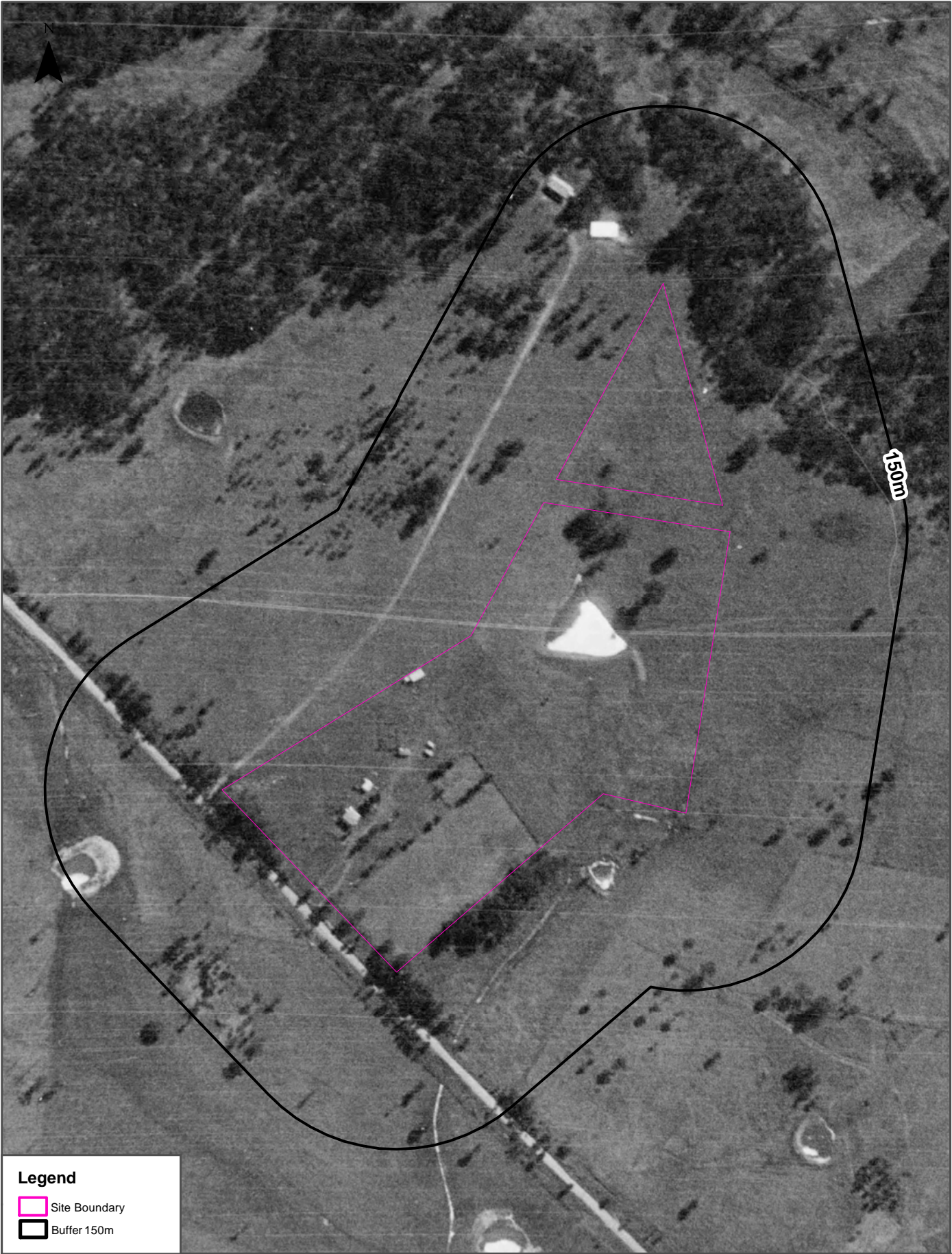












Scale: 0 50 100 150 200 Meters	Data Source Aerial Imagery: © NSW Department of Customer Service	Coordinate System: GDA 1994 MGA Zone 56	Date: 21 November 2023
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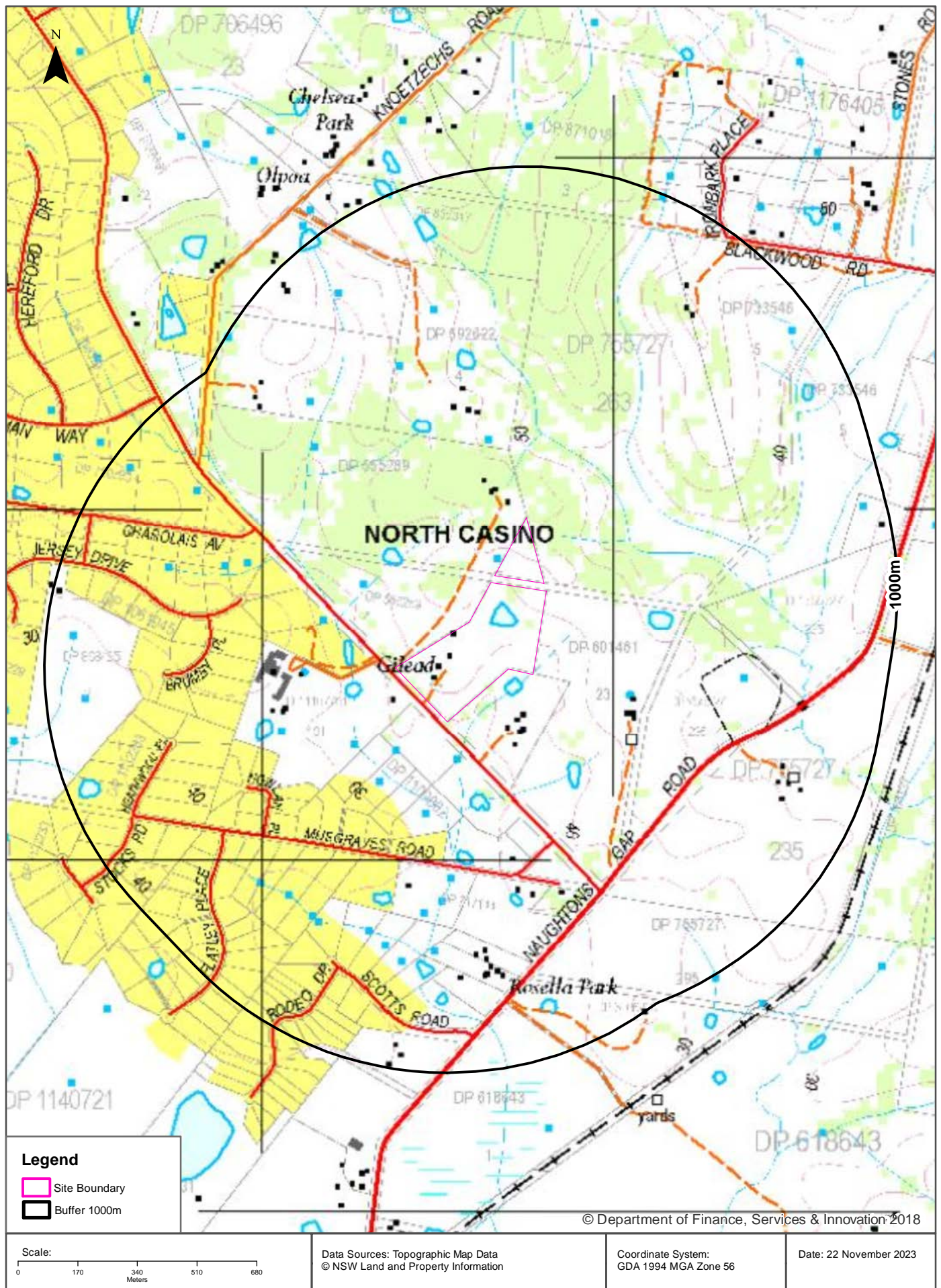






# Topographic Map 2015

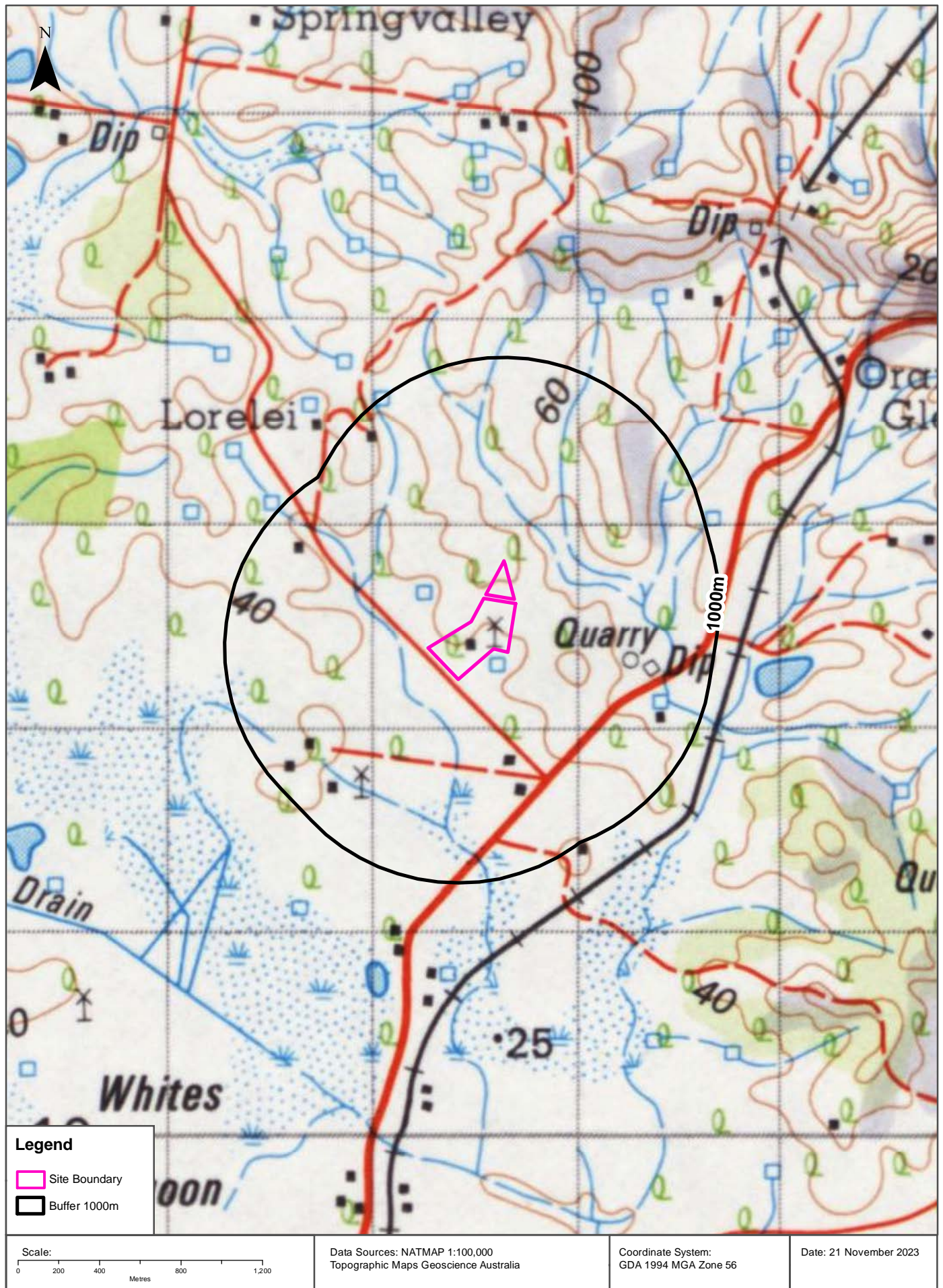
70 Manifold Road, North Casino, NSW 2470





## Historical Map 1974

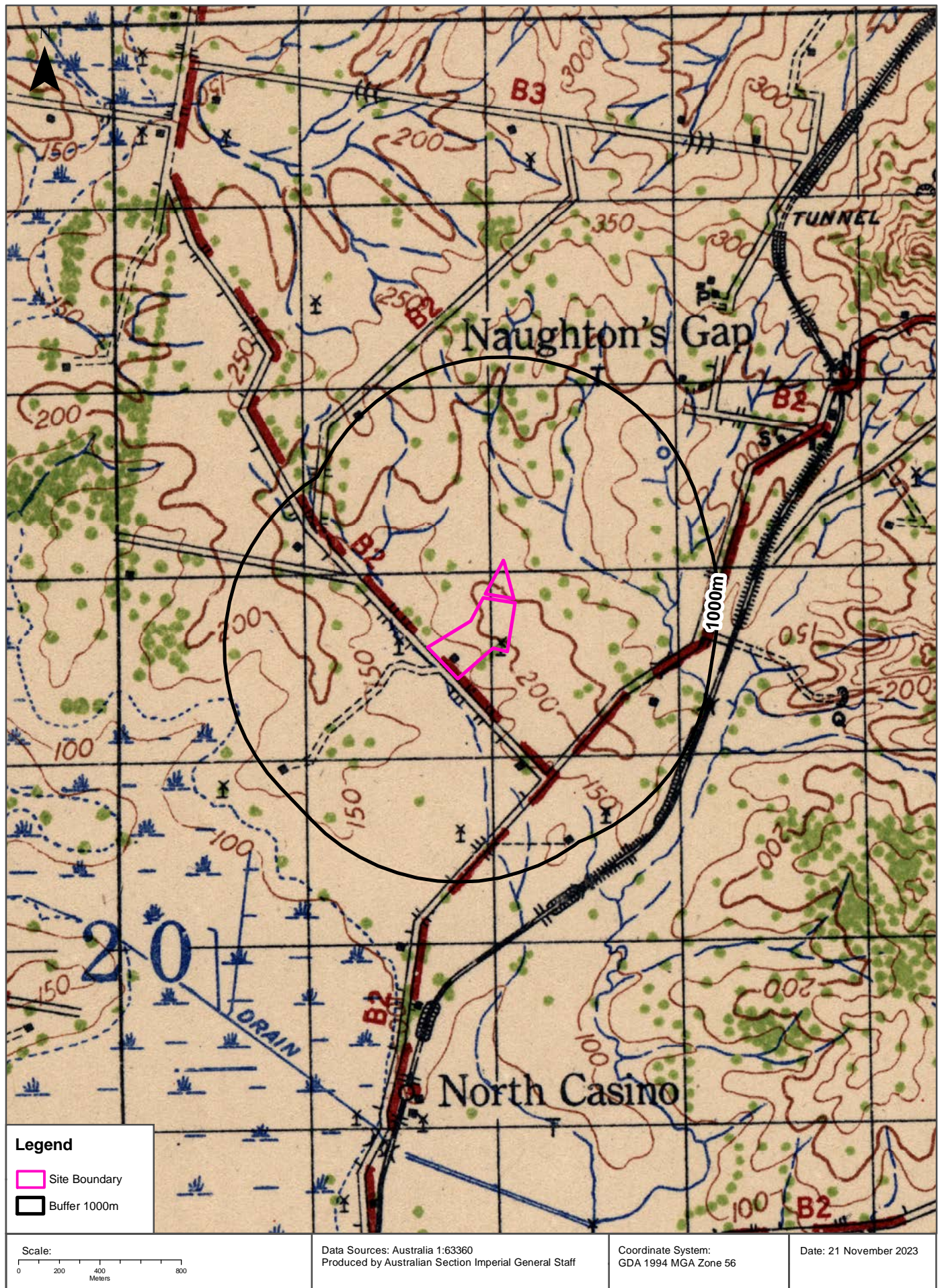
70 Manifold Road, North Casino, NSW 2470





## Historical Map c.1942

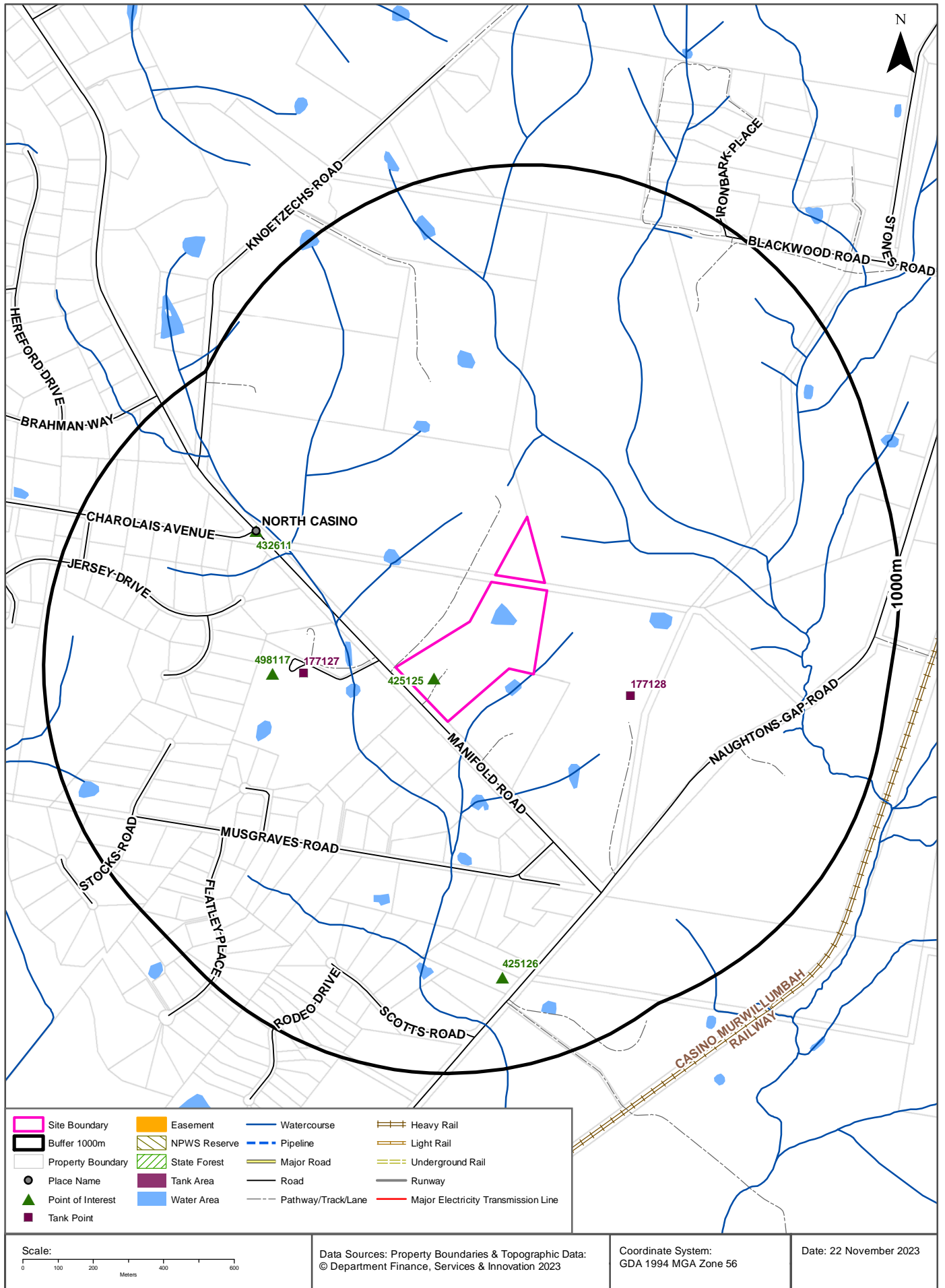
70 Manifold Road, North Casino, NSW 2470





# Topographic Features

70 Manifold Road, North Casino, NSW 2470



## Topographic Features

70 Manifold Road, North Casino, NSW 2470

### Points of Interest

What Points of Interest exist within the dataset buffer?

Map Id	Feature Type	Label	Distance	Direction
425125	Homestead	GILEAD	0m	On-site
498117	Combined Primary-Secondary School	CASINO CHRISTIAN SCHOOL	350m	West
432611	Village	NORTH CASINO	554m	North West
425126	Homestead	ROSELLA PARK	744m	South

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

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## Topographic Features

70 Manifold Road, North Casino, NSW 2470

### 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
177127	Water	Operational		01/09/2012	261m	West
177128	Water	Operational		01/09/2012	282m	East

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
N/A	No records in buffer				

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

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## Topographic Features

70 Manifold Road, North Casino, NSW 2470

### 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)

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

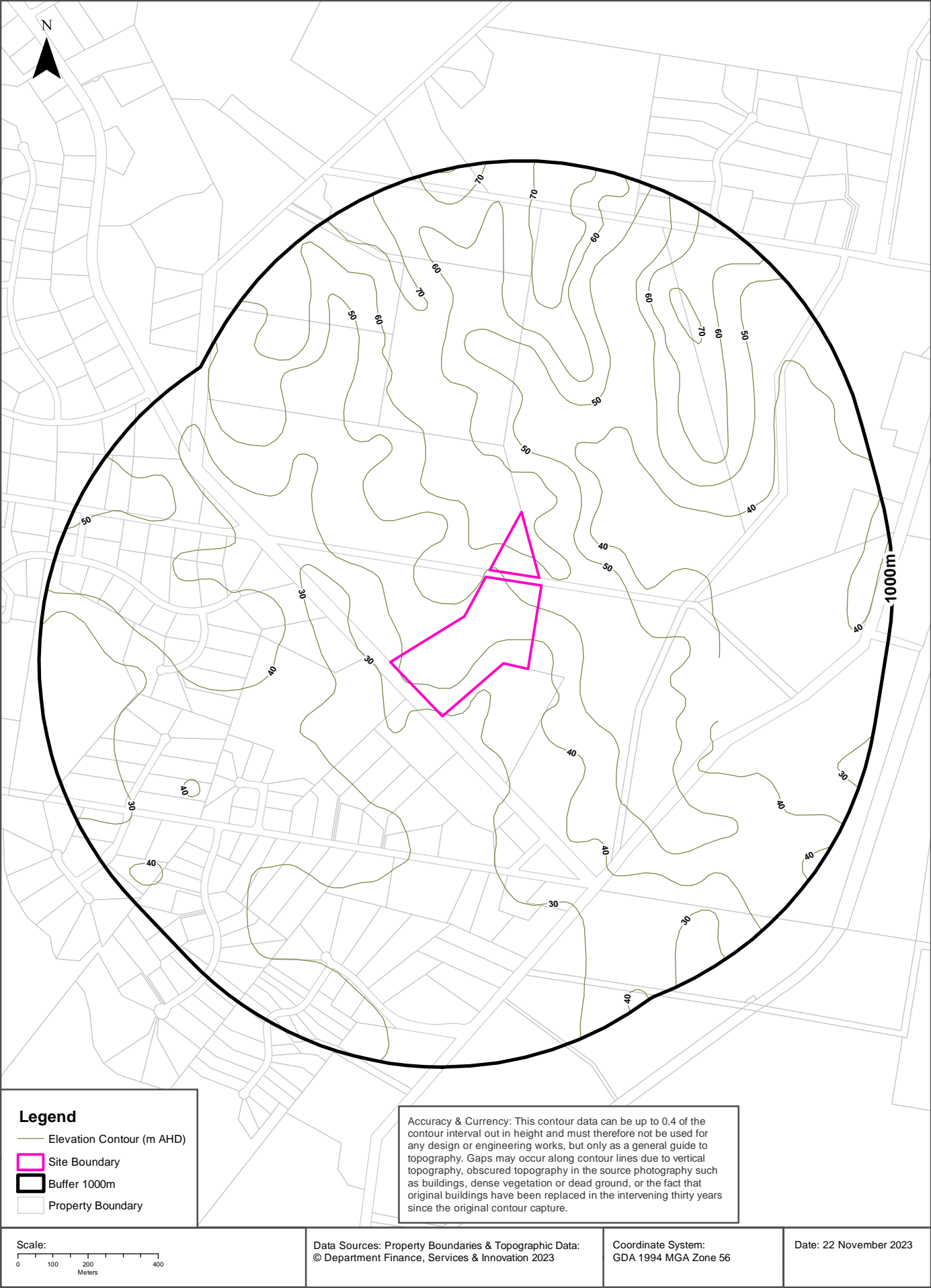
### National Parks and Wildlife Service Reserves

What NPWS Reserves exist within the dataset buffer?

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

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

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



## Hydrogeology & Groundwater

70 Manifold Road, North Casino, NSW 2470

### Hydrogeology

Description of aquifers within the dataset buffer:

Description	Distance	Direction
Fractured or fissured, extensive aquifers of low to moderate productivity	0m	On-site
Porous, extensive highly productive aquifers	203m	South West

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

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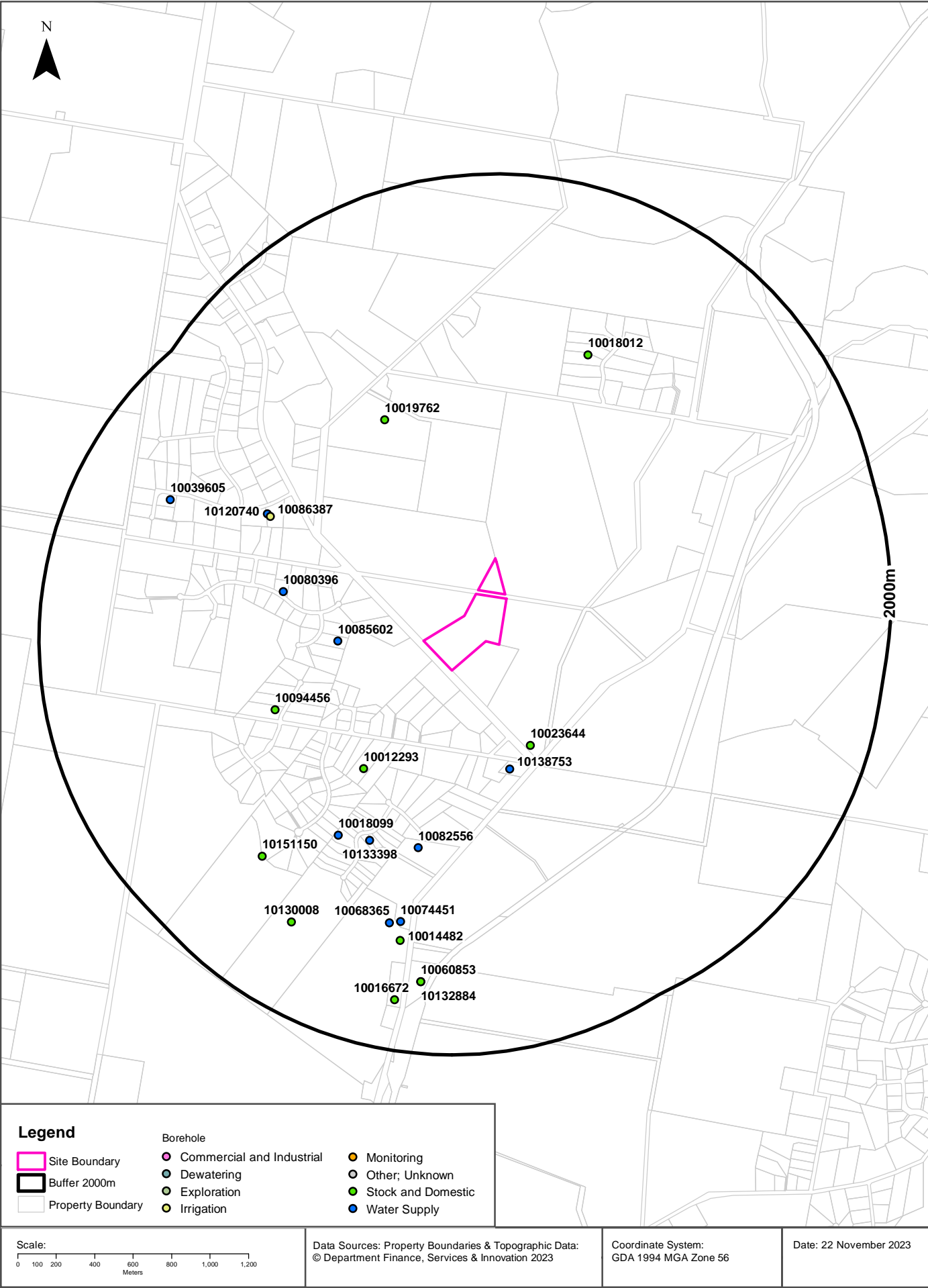
### Temporary Water Restriction (Botany Sands Groundwater Source) Order 2018

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

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

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





# Hydrogeology & Groundwater

70 Manifold Road, North Casino, NSW 2470

## 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
10085602	GW305392	Water Supply	Unknown	25/08/2005	24.00		AHD		2.270	10.40	444m	West
10023644	GW038379	Stock and Domestic	Unknown		5.40		AHD				550m	South East
10138753	GW064317	Water Supply	Unknown	01/09/1983	25.00		AHD				595m	South
10012293	GW033811	Stock and Domestic	Unknown	01/02/1972	24.40		AHD	1001-3000 ppm			688m	South West
10080396	GW306645	Water Supply	Functioning	30/11/2009	54.00		AHD	1500	4.547	26.00	773m	West
10094456	GW046038	Stock and Domestic	Unknown	01/11/1949	3.70		AHD	Brackish			851m	South West
10019762	GW033292	Stock and Domestic	Unknown	01/07/1971	26.50		AHD				921m	North West
10082556	GW304905	Water Supply	Unknown	11/11/2004	30.00		AHD		2.000		941m	South
10133398	GW304798	Water Supply	Functioning	02/11/2004	23.00		AHD	1300	0.750	7.00	982m	South West
10086387	GW301916	Irrigation	Unknown		43.00		AHD				1025m	North West
10018099	GW306306	Water Supply	Functioning	23/03/2007	42.00		AHD		0.500		1043m	South West
10120740	GW300124	Water Supply	Unknown	22/05/1991	36.50		AHD				1045m	North West
10018012	GW032450	Stock and Domestic	Unknown	01/07/1970	18.00		AHD	Good			1163m	North East
10074451	GW306128	Water Supply	Functioning	26/02/2007	42.00		AHD		1.000	8.00	1335m	South
10068365	GW024181	Water Supply	Unknown		31.10		AHD	1001-3000 ppm			1352m	South
10151150	GW308564	Stock and Domestic	Functioning	10/01/2020	54.00		AHD				1382m	South West
10014482	GW070815	Stock and Domestic	Unknown	17/06/1992	39.60	25.00	AHD		0.375	5.60	1431m	South
10039605	GW305029	Water Supply	Unknown	03/02/2005	62.00		AHD		0.750	24.00	1506m	West
10130008	GW303119	Stock and Domestic	Unknown	27/02/2002	21.00		AHD				1553m	South West
10060853	GW071004	Stock and Domestic	Unknown	01/06/1993	44.00	25.00	AHD		2.750	5.40	1629m	South
10132884	GW038971	Stock and Domestic	Unknown	01/01/1948	13.70		AHD	Salty			1629m	South
10016672	GW046313	Stock and Domestic	Unknown	01/12/1974	17.70		AHD				1739m	South

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

# Hydrogeology & Groundwater

70 Manifold Road, North Casino, NSW 2470

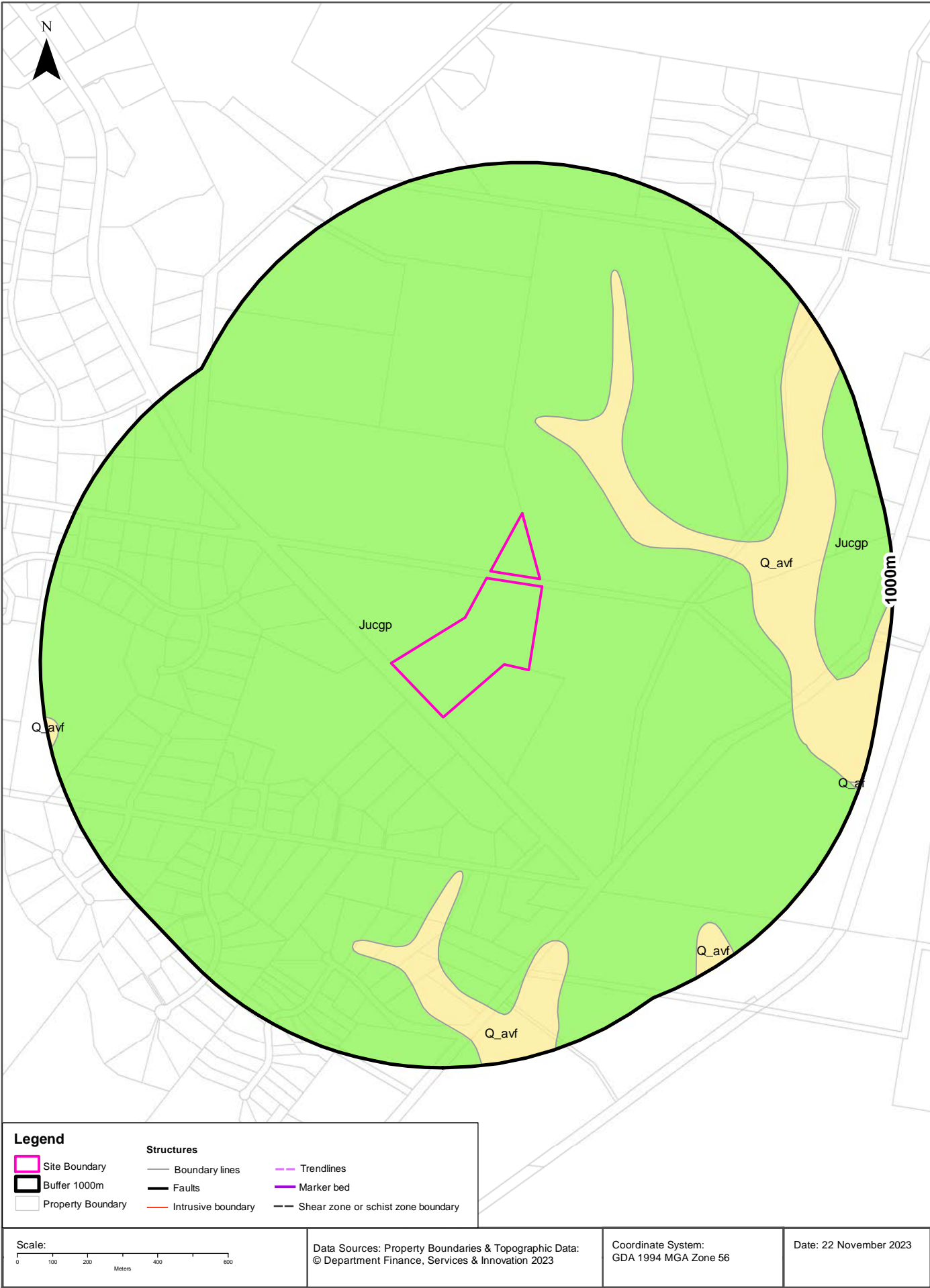
## Driller's Logs

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

NGIS Bore ID	Drillers Log	Distance	Direction
10085602	0.00m-1.00m sandy top soil 1.00m-5.00m clay 5.00m-6.00m shale 6.00m-12.00m weathered sandstone 12.00m-24.00m fractured sandstone	444m	West
10023644	0.00m-2.43m Loam Sandy 2.43m-5.48m Volcanic Rock	550m	South East
10138753	0.00m-2.00m Soil 2.00m-9.00m Clay 9.00m-18.00m Shale Soft Water Supply 18.00m-25.00m Sandstone	595m	South
10012293	0.00m-1.21m Sand 1.21m-2.43m Clay Grey 2.43m-4.87m Clay 4.87m-7.31m Sandstone Yellow Soft 7.31m-24.38m Sandstone Grey	688m	South West
10080396	0.00m-0.30m Topsoil, black, sandy 0.30m-2.00m Sandy Clay, yellow 2.00m-5.00m Sandy Clay, brown 5.00m-29.00m Sandstone, Grafton, grey to brown 29.00m-33.00m Sandstone, cracky, grey/brown, cemented off 33.00m-49.00m Sandstone, Grafton, grey 49.00m-53.00m Sandstone, hard, glassy, grey, broken, water bearing 53.00m-54.00m Sandstone, hard	773m	West
10094456	0.00m-0.91m Soil Sandy 0.91m-3.05m Clay Grey 3.05m-3.66m Rock White Hard Some Decomposed Seams	851m	South West
10019762	0.00m-0.61m Soil Sandy 0.61m-3.66m Clay 3.66m-7.62m Sandstone 7.62m-26.52m Sandstone Grey Water Supply	921m	North West
10082556	0.00m-0.30m sandy soil 0.30m-9.70m sandy clay 9.70m-14.60m sandstone soft grey muddy 14.60m-30.00m sandstone with shale layers grey	941m	South
10133398	0.00m-6.00m brown clay 6.00m-23.00m white sandstone	982m	South West
10018099	0.00m-2.40m Soil, sandy 2.40m-8.00m Clay 8.00m-42.00m Sandstone with Shale layers	1043m	South West
10120740	0.00m-0.60m SANDY SOIL 0.60m-8.50m CLAY 8.50m-36.50m MUDDY SANDSTONE WITH CLEAN SANDSTONE LAYERS	1045m	North West
10018012	0.00m-5.79m Clay Sandy 5.79m-6.40m Sandstone 6.40m-6.70m Sandstone Water Supply 6.70m-7.92m Sandstone 7.92m-17.37m Sandstone Grey Fine 17.37m-17.98m Shale Grey	1163m	North East
10074451	0.00m-3.00m Soil 3.00m-15.00m Clay 15.00m-33.00m Sandstone Shale 33.00m-42.00m Sandstone	1335m	South
10014482	0.00m-0.30m Soil 0.30m-7.30m Clay 7.30m-29.60m Sandy Shale 29.60m-34.00m Shale with sandstone layers 34.00m-39.60m Sandstone Shale	1431m	South
10039605	0.00m-0.30m sandy soil 0.30m-0.90m clay 0.90m-62.00m sandstone with layers of mudstone	1506m	West

NGIS Bore ID	Drillers Log	Distance	Direction
10130008	0.00m-0.30m Soil 0.30m-2.10m Heavy Clay 2.10m-5.40m Sandy Clay 5.40m-21.00m Soft Sandstone	1553m	South West
10060853	0.00m-0.30m Soil 0.30m-11.00m Clay 11.00m-35.40m Sandstone interbedded shale 35.40m-36.90m Sandstone 36.90m-44.00m Sandstone interbedded shale	1629m	South
10132884	0.00m-12.80m Driller 12.80m-13.71m Sandstone Water Supply	1629m	South
10016672	0.00m-0.91m Soil Black 0.91m-3.05m Clay Yellow 3.05m-9.75m Sandstone Yellow 9.75m-9.83m Gravel Sandstone Water Supply 9.83m-15.24m Sandstone Grey 15.24m-17.68m Sandstone Grey Clean Water Supply	1739m	South

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



## Geology

70 Manifold Road, North Casino, NSW 2470

### Geological Units

What are the Geological Units within the dataset buffer?

Unit Code	Unit Name	Description	Unit Stratigraphy	Age	Dominant Lithology	Distance
Jucgp	Piora Member	Medium- to coarse-grained quartzose sandstone with a strongly developed clay matrix. Contains minor amounts of carbonaceous material, coal clasts, mudstone bands, and garnet-rich sandy beds.	/Ungrouped Clarence-Moreton Basin units//Grafton Formation/Piora Member/	Middle Jurassic (base) to Early Cretaceous (top)	Sandstone	0m
Q_avf	Alluvial fan deposits	Fluvially-deposited quartz-lithic sand, silt, gravel, clay.	/Alluvium//Alluvial valley deposits//Alluvial fan deposits/	Quaternary (base) to Now (top)	Clastic sediment	226m
Q_af	Alluvial floodplain deposits	Silt, very fine- to medium-grained lithic to quartz-rich sand, clay.	/Alluvium//Alluvial floodplain deposits//	Quaternary (base) to Now (top)	Clastic sediment	968m

### Linear Geological Structures

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

Map ID	Feature Description	Map Sheet Name	Distance
No Features			

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

Map ID	Boundary Type	Description	Map Sheet Name	Distance
No Features				

Geological Data Source: Statewide Seamless Geology v2.1, Department of Regional NSW

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# Naturally Occurring Asbestos Potential

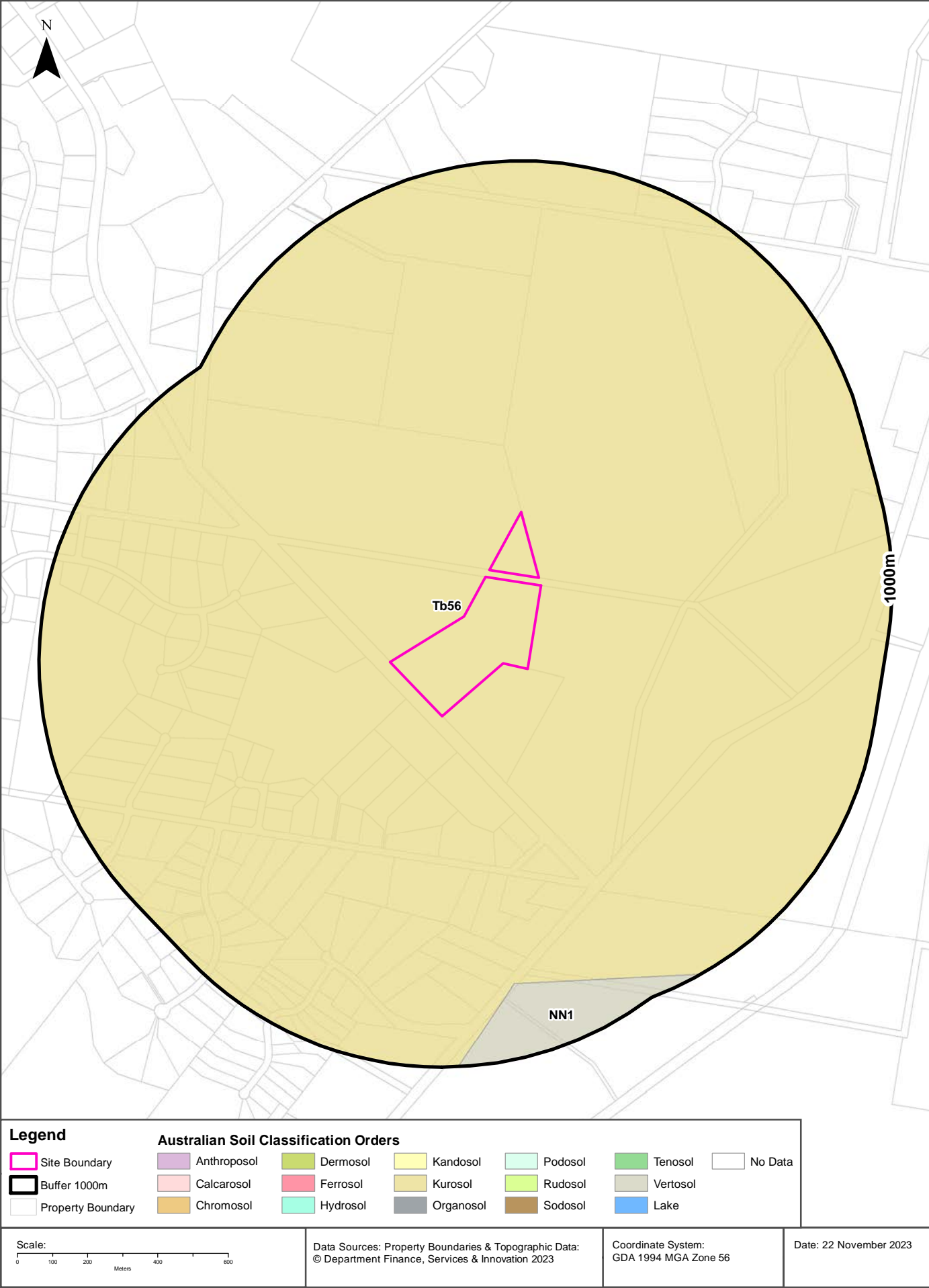
70 Manifold Road, North Casino, NSW 2470

## Naturally Occurring Asbestos Potential

Naturally Occurring Asbestos Potential within the dataset buffer:

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

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



## Soils

70 Manifold Road, North Casino, NSW 2470

### Atlas of Australian Soils

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

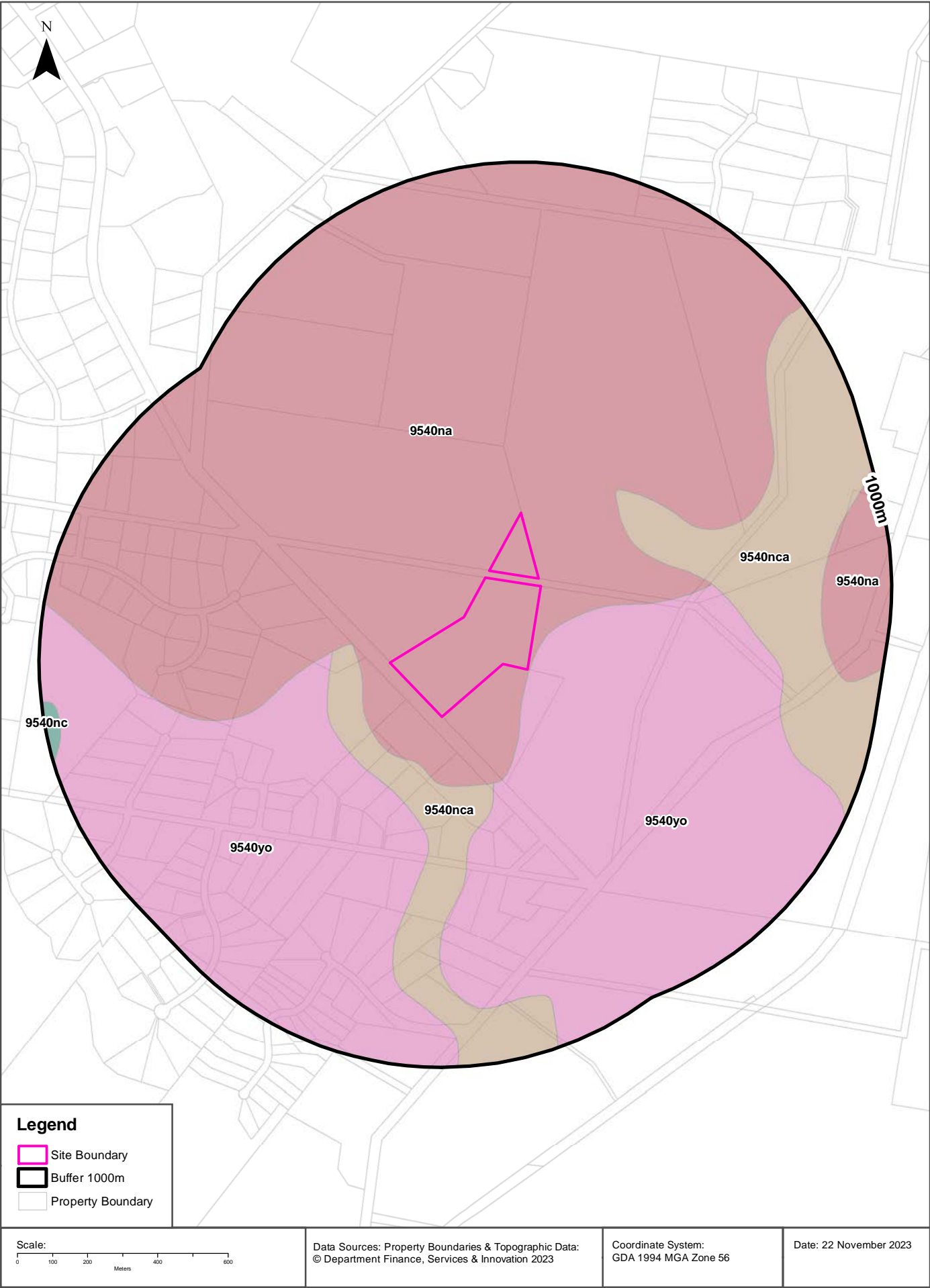
Map Unit Code	Soil Order	Map Unit Description	Distance	Direction
Tb56	Kurosol	Hilly to steep hilly: generally similar to unit Tb55 but with rock outcrops and some shallow (Um) and (Uc) soils as well as soils of the adjoining units.	0m	On-site
NN1	Vertosol	River flood-plains: relatively large and poorly drained, flat areas of deep dark cracking clays (Ug5.4) and (Ug5.16) with some melon-hole microrelief. Associated are friable yellow mottled soils (Dy5.1), and well-drained sandy levee soils (not described). As mapped, small islands of adjacent units are included.	790m	South

Atlas of Australian Soils Data Source: CSIRO

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# Soil Landscapes of Central and Eastern NSW

70 Manifold Road, North Casino, NSW 2470



## Soils

70 Manifold Road, North Casino, NSW 2470

### Soil Landscapes of Central and Eastern NSW

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

Soil Code	Name	Distance	Direction
<a href="#">9540na</a>	Nammoona	0m	On-site
<a href="#">9540yo</a>	Yorklea	4m	South East
<a href="#">9540nca</a>	North Casino variant a	87m	East
<a href="#">9540nc</a>	North Casino	956m	West

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

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## Acid Sulfate Soils

70 Manifold Road, North Casino, NSW 2470

### Environmental Planning Instrument - Acid Sulfate Soils

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

Soil Class	Description	EPI Name
N/A		

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

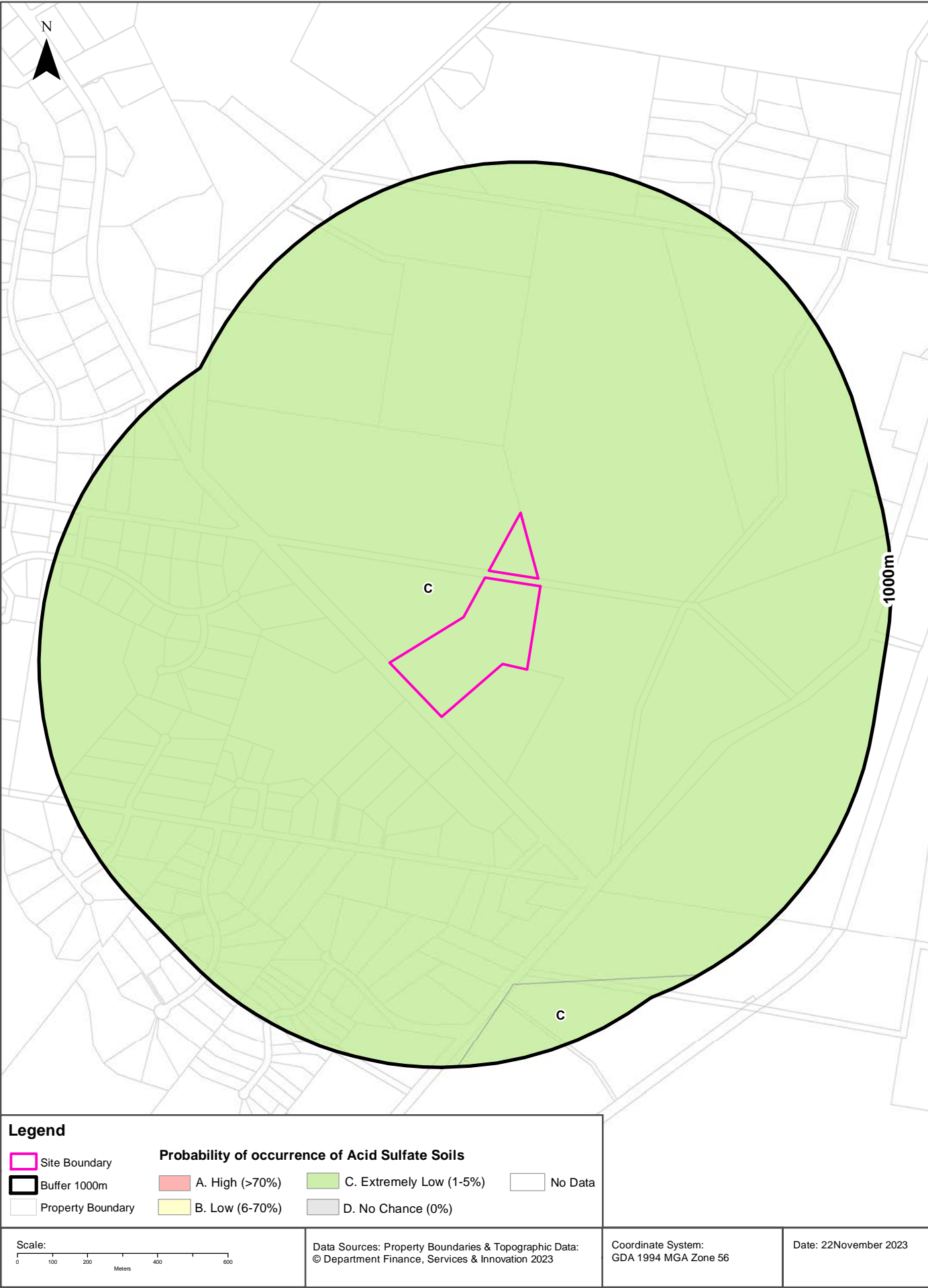
Soil Class	Description	EPI Name	Distance	Direction
N/A				

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# Atlas of Australian Acid Sulfate Soils

70 Manifold Road, North Casino, NSW 2470





## Acid Sulfate Soils

70 Manifold Road, North Casino, NSW 2470

### 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

70 Manifold Road, North Casino, NSW 2470

### 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

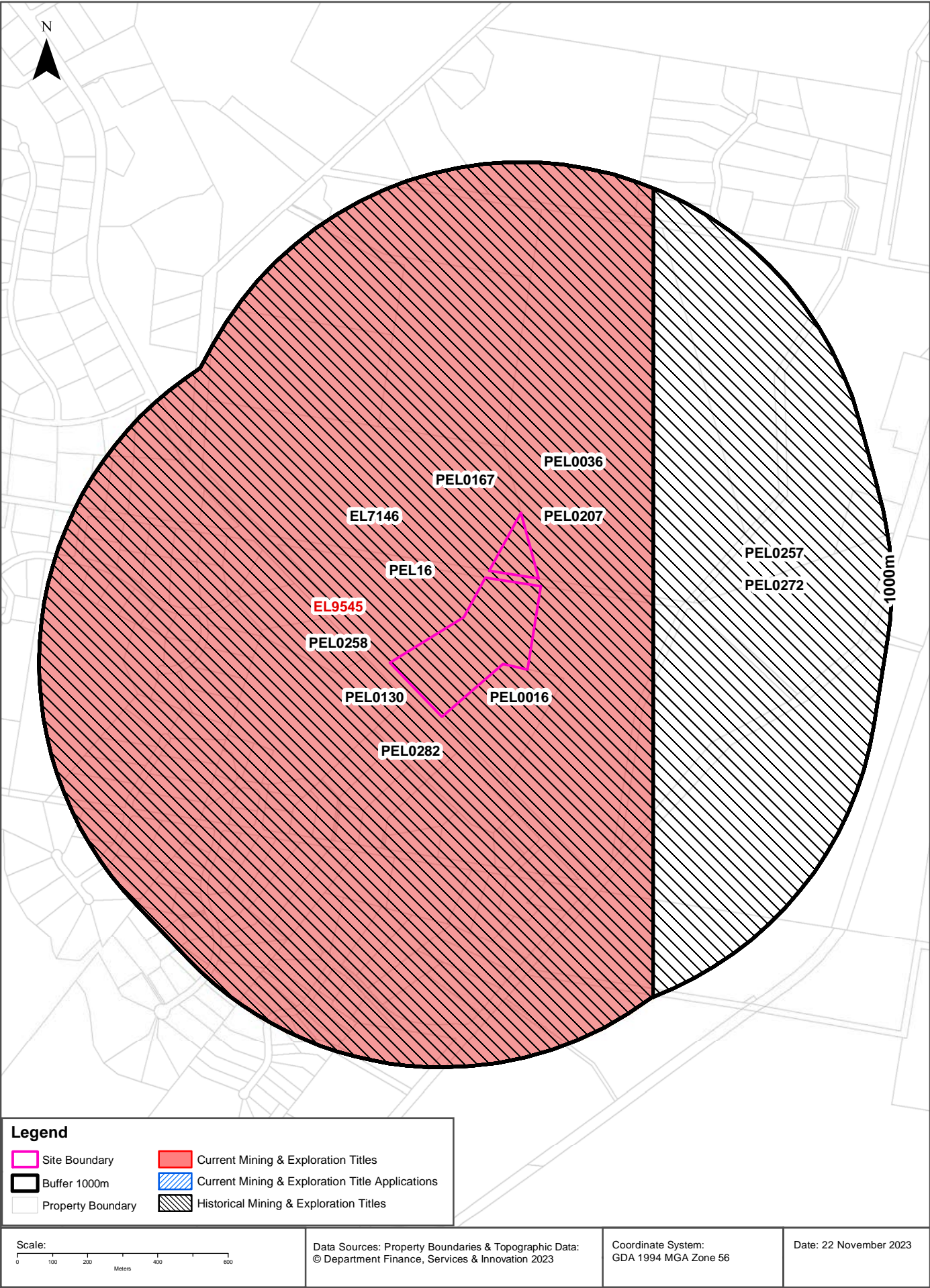
70 Manifold Road, North Casino, NSW 2470

### 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

70 Manifold Road, North Casino, NSW 2470

### 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
EL9545	GEOGEN PTY LTD	30/03/2023	30/03/2029	20230330	EXPLORING	MINERALS	Group 8	0m	On-site

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

### Current Mining & Exploration Title Applications

Current Mining & Exploration Title Applications within the dataset buffer:

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

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



## Mining

70 Manifold Road, North Casino, NSW 2470

### Historical Mining & Exploration Titles

Historical Mining & Exploration Titles within the dataset buffer:

Title Ref	Holder	Start Date	End Date	Resource	Minerals	Dist	Dir
PEL0282	AGL PETROLEUM OPERATIONS PTY LTD	19930403	19920411	PETROLEUM	Petroleum	0m	On-site
PEL0258	ENDEAVOUR RESOURCES LTD, CLARENCE PETROLEUM NL, TARGET EXPLORATION PTY LTD, CHARTERHALL OIL AUSTRALIA PTY LTD, OIL COMPA	19810701	19970311	PETROLEUM	Petroleum	0m	On-site
PEL0016	CARLITA HOLDINGS PL, OIL COMPANY OF AUSTRALIA LTD, METGASCO LTD	19970111	20160612	PETROLEUM	Petroleum	0m	On-site
EL7146	GRADIENT ENERGY LIMITED	20080528	20110415	MINERALS	Geothermal	0m	On-site
PEL0167	BRIDGE OIL			PETROLEUM	Petroleum	0m	On-site
PEL0207	MAGNUM EXPLORATION N.L.	19770807	19780707	PETROLEUM	Petroleum	0m	On-site
PEL0130	MID-EASTERN OIL NL			PETROLEUM	Petroleum	0m	On-site
PEL16	METGASCO LTD	20060728	20130228	MINERALS		0m	On-site
PEL0036	MID-EASTERN OIL NL			PETROLEUM	Petroleum	0m	On-site
PEL0257	OIL AND MINERALS QUEST NL	19800312		PETROLEUM	Petroleum	320m	East
PEL0272	CLAREMONT PETROLEUM NL, CHARTERHALL OIL AUSTRALIA PTY LTD, BASCO ENERGY INC., PLANET RESOURCES GROUP NL, KANDER PTY LTD	19840307	19870207	PETROLEUM	Petroleum	320m	East

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

# State Environmental Planning Policy

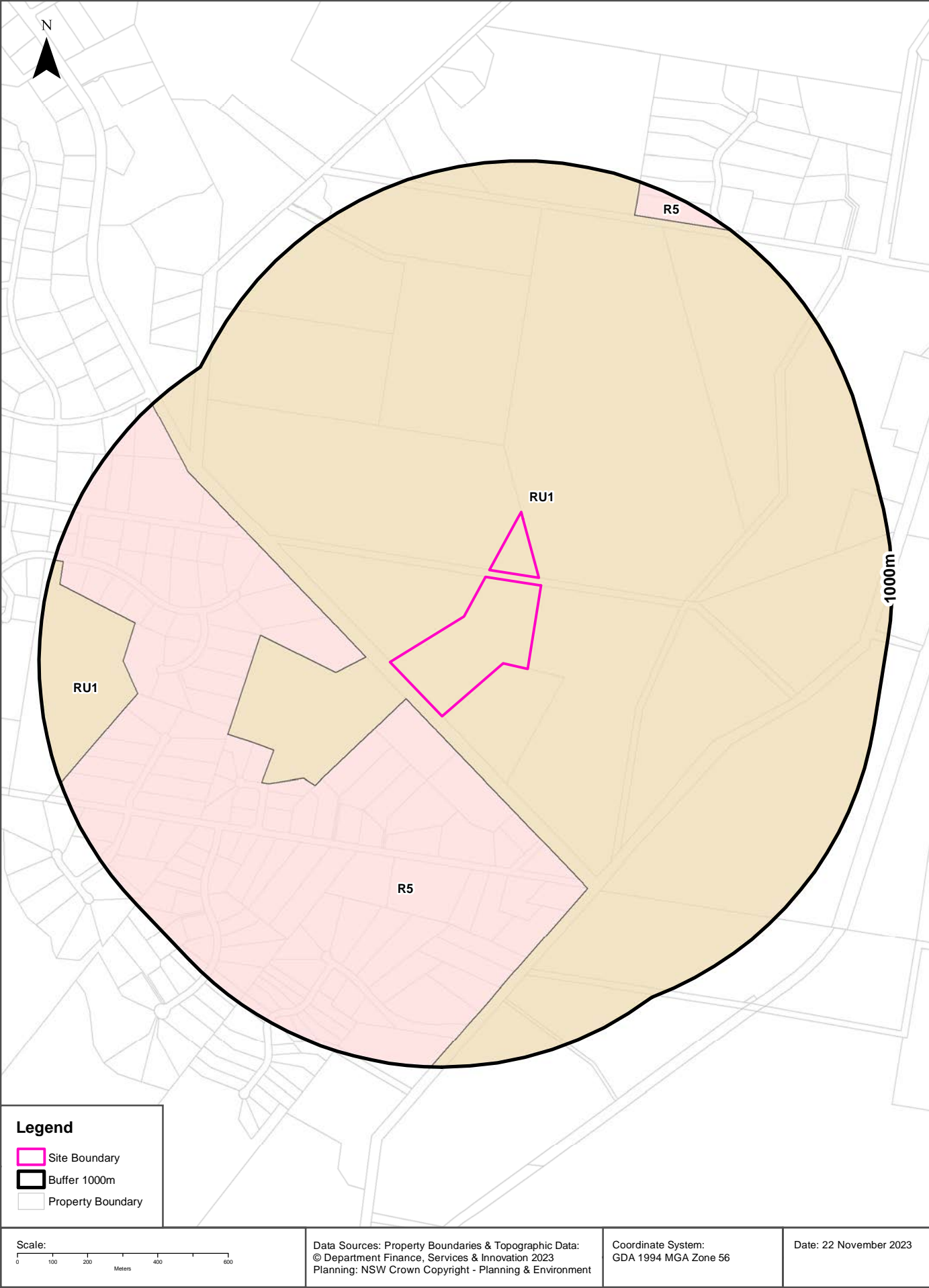
70 Manifold Road, North Casino, NSW 2470

## 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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# Environmental Planning Instrument

70 Manifold Road, North Casino, NSW 2470

## 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
RU1	Primary Production		Richmond Valley Local Environmental Plan 2012	28/04/2023	28/04/2023	28/04/2023	Map Amendment No 1	0m	On-site
R5	Large Lot Residential		Richmond Valley Local Environmental Plan 2012	28/04/2023	28/04/2023	28/04/2023	Map Amendment No 1	40m	South West
R5	Large Lot Residential		Richmond Valley Local Environmental Plan 2012	28/04/2023	28/04/2023	28/04/2023	Map Amendment No 1	903m	North East

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

70 Manifold Road, North Casino, NSW 2470

### 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							

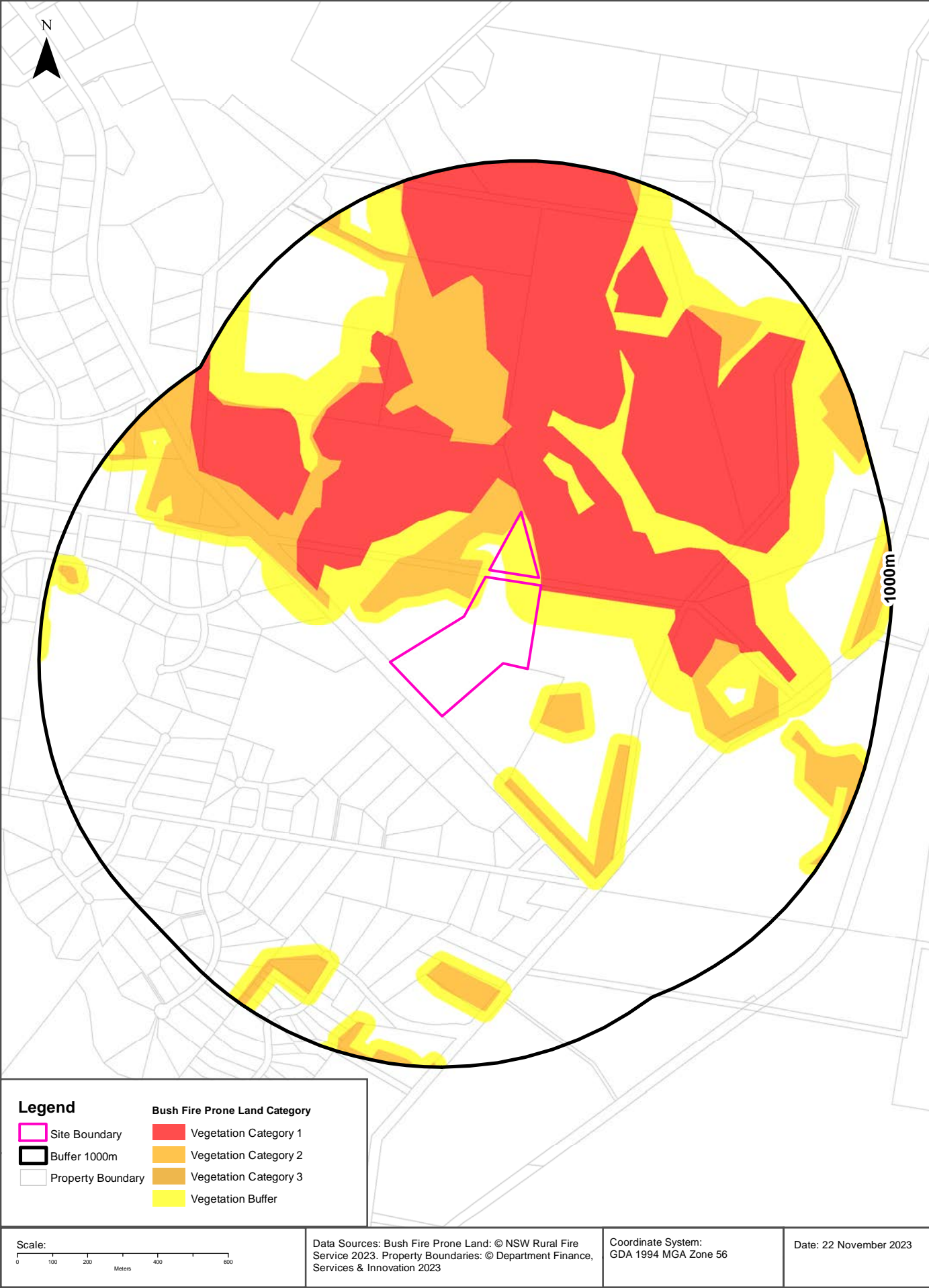
Heritage Data Source: NSW Crown Copyright - Office of Environment & Heritage  
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### Environmental Planning Instrument - Heritage

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

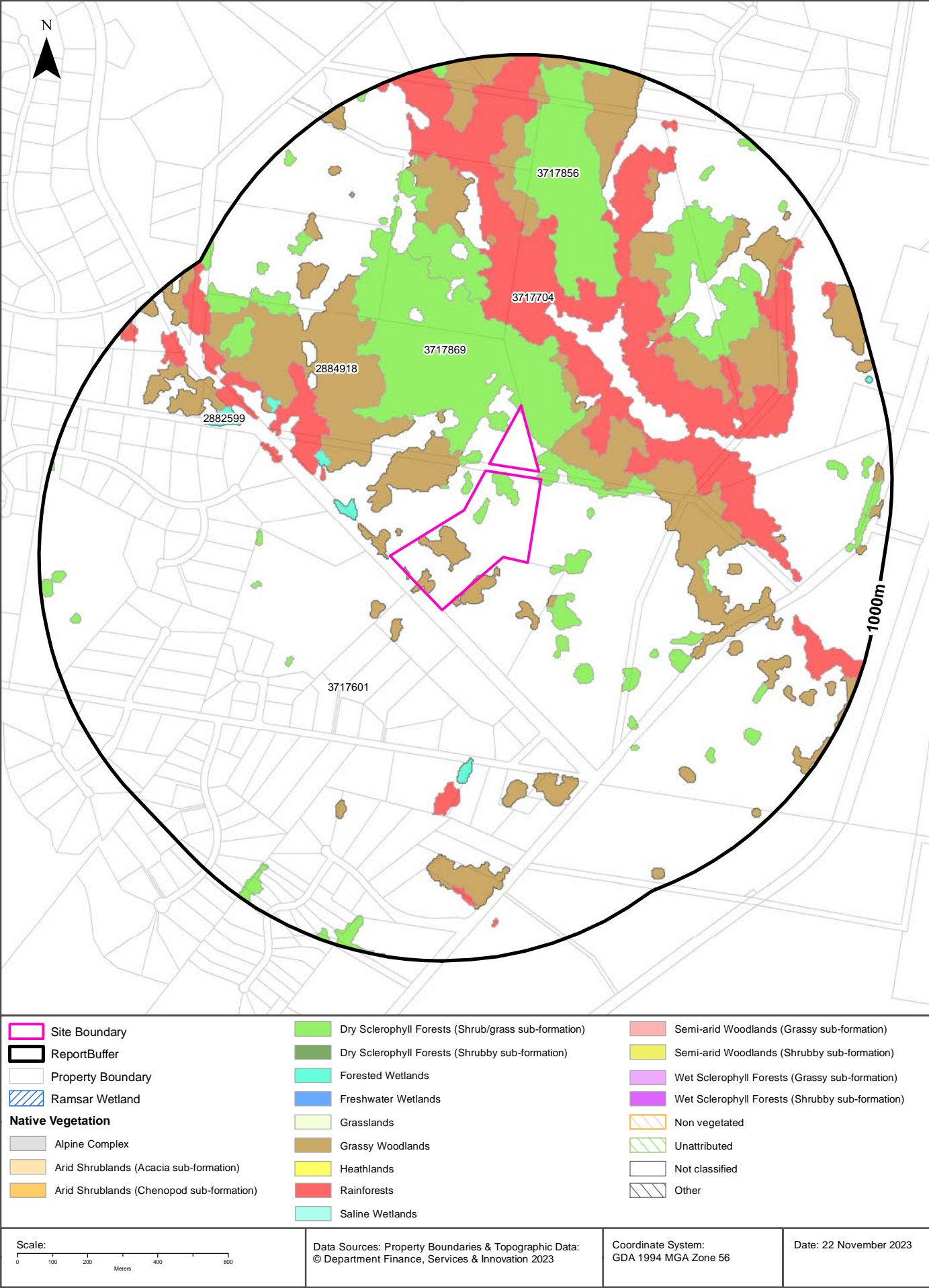
70 Manifold Road, North Casino, NSW 2470

### 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 2	0m	On-site
Vegetation Buffer	0m	On-site

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





## Ecological Constraints

70 Manifold Road, North Casino, NSW 2470

### Native Vegetation

What native vegetation exists within the dataset buffer?

Map ID	Vegetation Formation	Plant Community Type and Vegetation Formation	Vegetation Class	Dist	Dir
2884918	Grassy Woodlands	(Grassy Woodlands) Far North Lowland Basalt Grassy Forest	Coastal Valley Grassy Woodlands	0m	On-site
3717601	Not classified	(Not classified) Not classified	Not classified	0m	On-site
3717869	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Northern Hinterland Hills Bloodwood-Red Gum Grassy Forest	Clarence Dry Sclerophyll Forests	0m	On-site
2882599	Forested Wetlands	(Forested Wetlands) Northern Floodplain Paperbark Fern Swamp Forest	Coastal Swamp Forests	144m	West
3717704	Rainforests	(Rainforests) Border Ranges Black Booyong Subtropical Rainforest	Subtropical Rainforests	144m	North East
3717856	Dry Sclerophyll Forests (Shrub/grass sub-formation)	(Dry Sclerophyll Forests (Shrub/grass sub-formation)) Clarence Sandstone Rises Spotted Gum Grassy Forest	Clarence Dry Sclerophyll Forests	317m	North

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

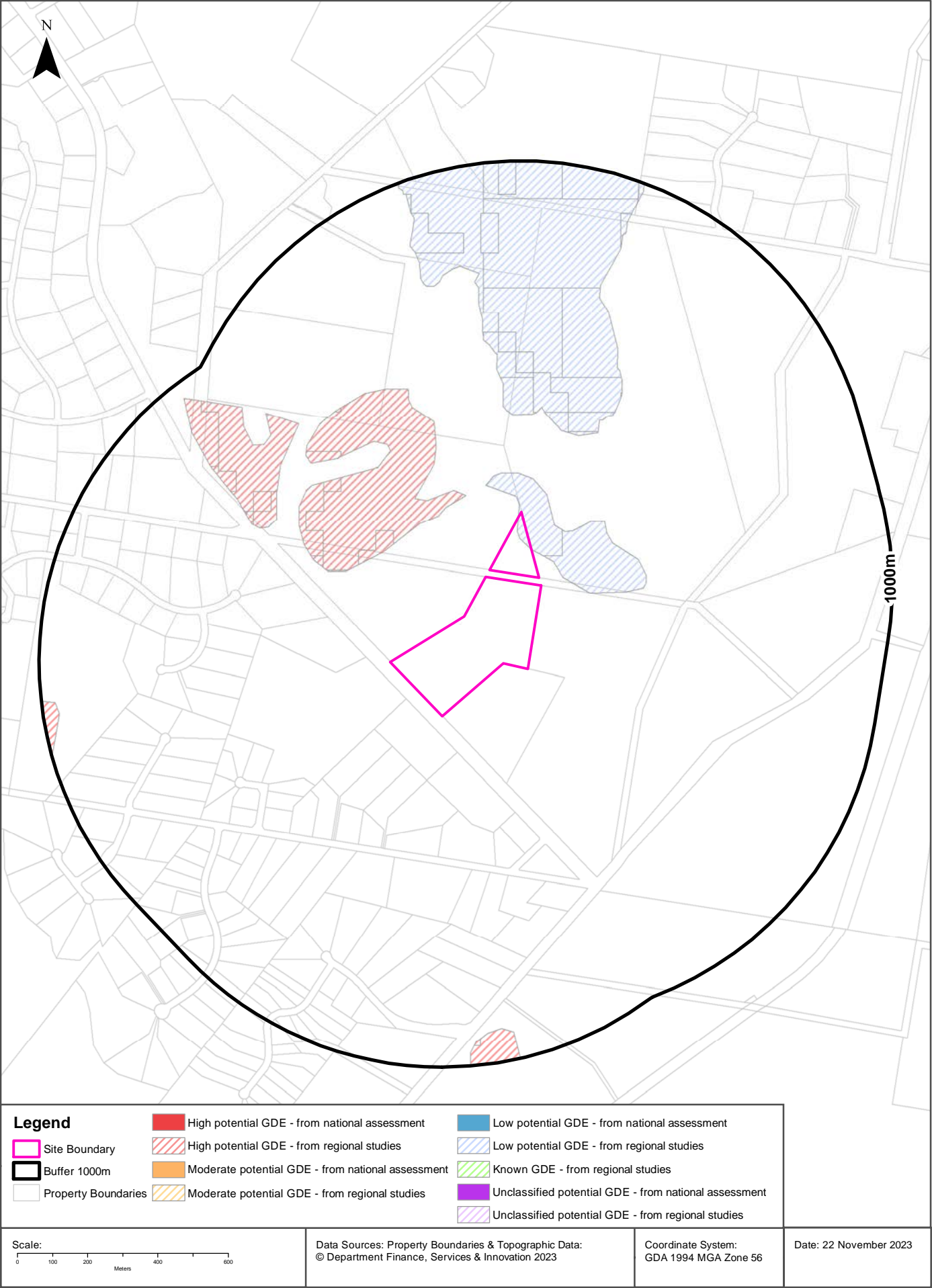
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### Ramsar Wetlands

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



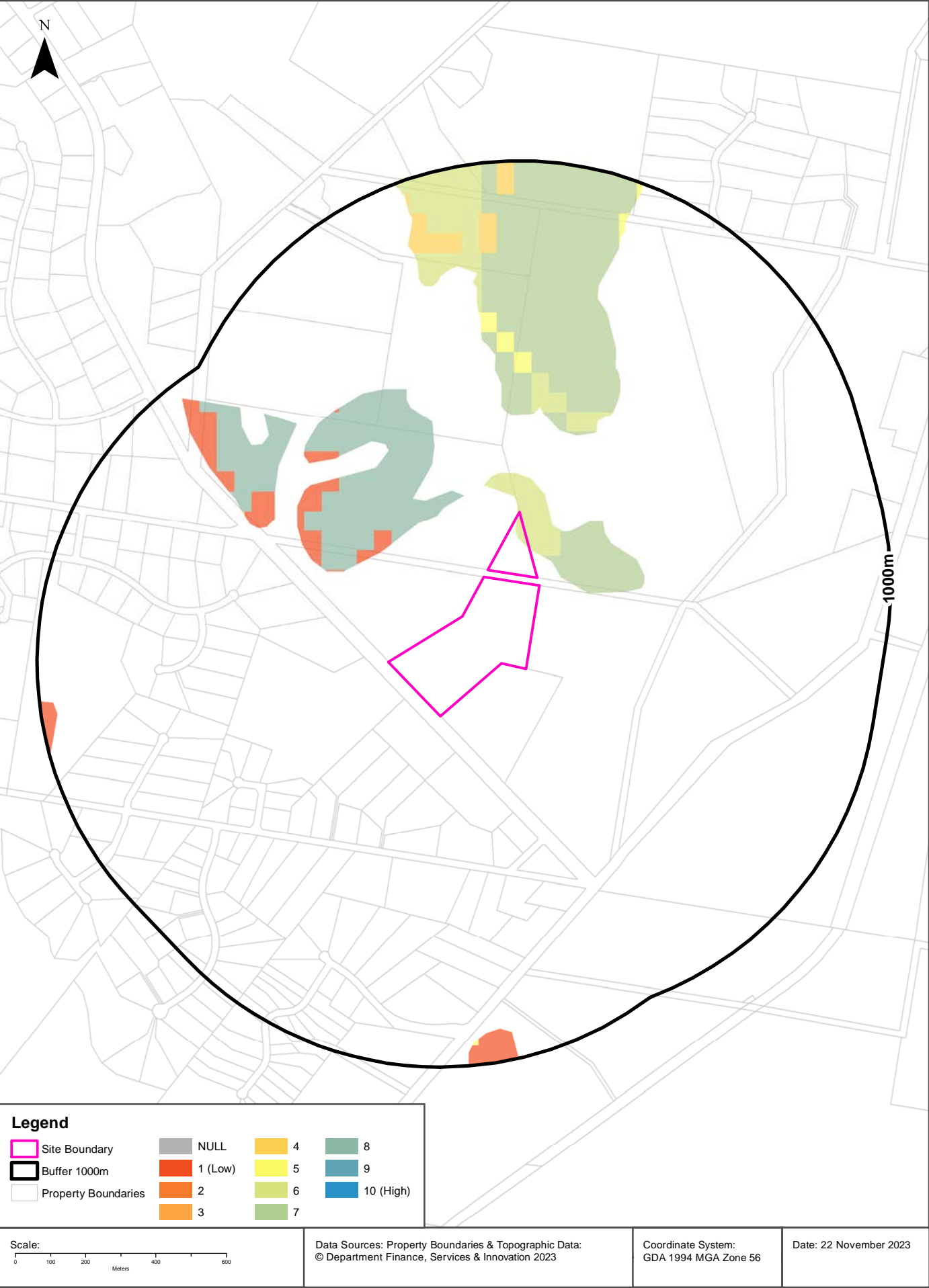
## Ecological Constraints

70 Manifold Road, North Casino, NSW 2470

### Groundwater Dependent Ecosystems Atlas

Type	GDE Potential	Geomorphology	Ecosystem Type	Aquifer Geology	Distance	Direction
Terrestrial	Low potential GDE - from regional studies	Dissected plateau margin on granite and metamorphic rocks.	Vegetation		0m	On-site
Terrestrial	High potential GDE - from regional studies	Basaltic plateau terminating southeast in dissected volcanic pile (Mount Warning).	Vegetation		162m	North West
Terrestrial	Low potential GDE - from regional studies	Basaltic plateau terminating southeast in dissected volcanic pile (Mount Warning).	Vegetation		263m	North East
Terrestrial	High potential GDE - from regional studies	Undulating granitic plateau with higher residuals including basalt cappings.	Vegetation		276m	North West
Terrestrial	High potential GDE - from regional studies	Coastal lowlands on weak sedimentary rocks, with littoral and alluvial plains.	Vegetation		286m	North West

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

70 Manifold Road, North Casino, NSW 2470

### Inflow Dependent Ecosystems Likelihood

Type	IDE Likelihood	Geomorphology	Ecosystem Type	Aquifer Geology	Distance	Direction
Terrestrial		6 Dissected plateau margin on granite and metamorphic rocks.	Vegetation		0m	On-site
Terrestrial		7 Dissected plateau margin on granite and metamorphic rocks.	Vegetation		26m	North
Terrestrial		8 Basaltic plateau terminating southeast in dissected volcanic pile (Mount Warning).	Vegetation		162m	North West
Terrestrial		6 Basaltic plateau terminating southeast in dissected volcanic pile (Mount Warning).	Vegetation		263m	North East
Terrestrial		1 Undulating granitic plateau with higher residuals including basalt cappings.	Vegetation		276m	North West
Terrestrial		1 Coastal lowlands on weak sedimentary rocks, with littoral and alluvial plains.	Vegetation		286m	North West
Terrestrial		5 Basaltic plateau terminating southeast in dissected volcanic pile (Mount Warning).	Vegetation		397m	North
Terrestrial		7 Basaltic plateau terminating southeast in dissected volcanic pile (Mount Warning).	Vegetation		400m	North
Terrestrial		4 Coastal lowlands on weak sedimentary rocks, with littoral and alluvial plains.	Vegetation		585m	North West
Terrestrial		4 Basaltic plateau terminating southeast in dissected volcanic pile (Mount Warning).	Vegetation		739m	North

Inflow Dependent Ecosystems Likelihood Data Source: The Bureau of Meteorology

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# Ecological Constraints

70 Manifold Road, North Casino, NSW 2470

## NSW BioNet Atlas

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

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Actitis hypoleucos	Common Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Anseranas semipalmata	Magpie Goose	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Ardena grisea	Sooty Shearwater	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Ardena pacifica	Wedge-tailed Shearwater	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Botaurus poiciloptilus	Australasian Bittern	Endangered	Not Sensitive	Endangered	
Animalia	Aves	Burhinus grallarius	Bush Stone-curlew	Endangered	Not Sensitive	Not Listed	
Animalia	Aves	Calidris acuminata	Sharp-tailed Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris ferruginea	Curlew Sandpiper	Endangered	Not Sensitive	Critically Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calyptorhynchus banksii samueli	Red-tailed Black-Cockatoo (inland subspecies)	Vulnerable	Category 2	Not Listed	
Animalia	Aves	Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo	Vulnerable	Category 2	Vulnerable	
Animalia	Aves	Carterornis leucotis	White-eared Monarch	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Chlidonias leucopterus	White-winged Black Tern	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Circus assimilis	Spotted Harrier	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Daphoenositta chrysoptera	Varied Sittella	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Dromaius novaehollandiae	Emu	Endangered Population	Not Sensitive	Not Listed	
Animalia	Aves	Ephippiorhynchus asiaticus	Black-necked Stork	Endangered	Not Sensitive	Not Listed	
Animalia	Aves	Falco subniger	Black Falcon	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Gallinago hardwickii	Latham's Snipe	Not Listed	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Glossopsitta pusilla	Little Lorikeet	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Haliaeetus leucogaster	White-bellied Sea-Eagle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Hieraaetus morphnoides	Little Eagle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Hirundapus caudacutus	White-throated Needletail	Not Listed	Not Sensitive	Vulnerable	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Irediparra gallinacea	Comb-crested Jacana	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Ixobrychus flavicollis	Black Bittern	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Limosa limosa	Black-tailed Godwit	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Lophoictinia isura	Square-tailed Kite	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Ninox connivens	Barking Owl	Vulnerable	Category 3	Not Listed	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	<i>Ninox strenua</i>	Powerful Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	<i>Numenius minutus</i>	Little Curlew	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	<i>Onychoprion fuscata</i>	Sooty Tern	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Oxyura australis</i>	Blue-billed Duck	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Pandion cristatus</i>	Eastern Osprey	Vulnerable	Category 3	Not Listed	
Animalia	Aves	<i>Phaethon rubricauda</i>	Red-tailed Tropicbird	Vulnerable	Not Sensitive	Not Listed	CAMBA;JAMBA
Animalia	Aves	<i>Philomachus pugnax</i>	Ruff	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	<i>Pluvialis squatarola</i>	Grey Plover	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	<i>Podargus ocellatus</i>	Marbled Frogmouth	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Polytelis swainsonii</i>	Superb Parrot	Vulnerable	Category 3	Vulnerable	
Animalia	Aves	<i>Pomatostomus temporalis temporalis</i>	Grey-crowned Babbler (eastern subspecies)	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Ptilinopus magnificus</i>	Wompoo Fruit-Dove	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Ptilinopus regina</i>	Rose-crowned Fruit-Dove	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Rostratula australis</i>	Australian Painted Snipe	Endangered	Not Sensitive	Endangered	
Animalia	Aves	<i>Stictonetta naevosa</i>	Freckled Duck	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Thinornis cucullatus cucullatus</i>	Eastern Hooded Dotterel	Critically Endangered	Not Sensitive	Vulnerable	
Animalia	Aves	<i>Tringa glareola</i>	Wood Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	<i>Tringa nebularia</i>	Common Greenshank	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	<i>Tringa stagnatilis</i>	Marsh Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	<i>Turnix maculosus</i>	Red-backed Button-quail	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	<i>Tyto longimembris</i>	Eastern Grass Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	<i>Tyto novaehollandiae</i>	Masked Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	<i>Tyto tenebricosa</i>	Sooty Owl	Vulnerable	Category 3	Not Listed	
Animalia	Mammalia	<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	<i>Macropus dorsalis</i>	Black-striped Wallaby	Endangered	Not Sensitive	Not Listed	
Animalia	Mammalia	<i>Micronomus norfolkensis</i>	Eastern Coastal Free-tailed Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	<i>Miniopterus australis</i>	Little Bent-winged Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	<i>Notamacropus parma</i>	Parma Wallaby	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	<i>Nyctophilus bifax</i>	Eastern Long-eared Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	<i>Petauroides volans</i>	Southern Greater Glider	Endangered	Not Sensitive	Endangered	
Animalia	Mammalia	<i>Petaurus australis</i>	Yellow-bellied Glider	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	<i>Petaurus norfolkensis</i>	Squirrel Glider	Vulnerable	Not Sensitive	Not Listed	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Mammalia	Phascogale tapoatafa	Brush-tailed Phascogale	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Phascogale cinereus	Koala	Endangered	Not Sensitive	Endangered	
Animalia	Mammalia	Pteropus poliocephalus	Grey-headed Flying-fox	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Scoteanax rueppellii	Greater Broad-nosed Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Thylogale stigmatica	Red-legged Pademelon	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Archidendron hendersonii	White Lace Flower	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Arthraxon hispidus	Hairy Jointgrass	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Clematis fawcettii	Northern Clematis	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Desmodium acanthocladum	Thorny Pea	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Eucalyptus glaucina	Slaty Red Gum	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Gossia fragrantissima	Sweet Myrtle	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Grevillea hilliana	White Yiel Yiel	Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Melaleuca irbyana	Weeping Paperbark	Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Rhodamnia rubescens	Scrub Turpentine	Critically Endangered	Not Sensitive	Critically Endangered	
Plantae	Flora	Rhodomirtus psidioides	Native Guava	Critically Endangered	Not Sensitive	Critically Endangered	
Plantae	Flora	Rhynchosia acuminatissima	Pointed Trefoil	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Senna acclinis	Rainforest Cassia	Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Sophora fraseri	Brush Sophora	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Tinospora smilacina	Tinospora Vine	Endangered	Not Sensitive	Not Listed	

Data does not include NSW category 1 sensitive species.

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## D Photos



**Photo A**      **Subject Site: Looking South**



**Photo B**      **Subject Site: Looking East**





**Photo C**      **Subject Site: Looking North**



**Photo D**      **Subject Site: Looking East**