

APPENDIX

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DUNGOWAN DAM AND PIPELINE EIS

Contamination Preliminary Site Investigation



Dungowan Dam and pipeline project

Contamination Preliminary Site Investigation

Prepared for Water Infrastructure NSW

September 2022

Dungowan Dam and pipeline project

Contamination Preliminary Site Investigation

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Executive Summary

ES1 Introduction

The Peel River, part of the Namoi River catchment, provides water for irrigation as well as being the primary water supply for the city of Tamworth. Prompted by the millennium drought, investigations into the future water supply and demand for bulk water were undertaken for the regional city of Tamworth and the Peel Valley water users. The Dungowan Dam and pipeline project (the project) is a critical project to improving long-term water security for the region. The project includes a new dam at Dungowan (new Dungowan Dam) approximately 3.5 km downstream of the existing Dungowan Dam and a new section of pipeline about 32km long between the proposed Dam outlet and the tie in point to an existing pipeline from Dungowan Showground to the Calala Water Treatment Plant (WTP).

In September 2022, the Minister for Planning and Homes declared the project to be Critical State Significant Infrastructure (CSSI) as it is a development that is essential for the State for economic and social reasons. This requires Schedule 5 of the *State Environmental Planning Policy (Planning Systems) 2021* to be updated to reflect the CSSI status of the project. As CSSI, the project is subject to Part 5, Division 5.2 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), which requires the preparation of an environmental impact statement (EIS) and the approval of the NSW Minister for Planning and Homes. The EIS has been prepared for the planning approval application for the project. This contamination assessment has been prepared to support the EIS.

EMM Consulting Pty Limited (EMM) was commissioned by Water Infrastructure NSW to undertake a Stage 1 preliminary site investigation (PSI) to assess potential contamination risks for the project. The objective of the PSI was to assess whether historical or present activities have the potential to cause, or have caused, contamination that may impact on the land use suitability for the project footprint. This was undertaken by reviewing site history, the physical setting and general conditions of the project footprint and surrounding land.

ES2 Scope of work

EMM's scope of services for this PSI comprised:

- a review of available information regarding the soils, geology and hydrogeology in the vicinity of the project footprint;
- research and review of available historical records including aerial photographs, topographic maps and current and historic land title information relevant to the project footprint;
- an inspection of the project footprint; and
- preparation of this report presenting the findings of the PSI through the development of a conceptual site model and appropriate recommendations in accordance with relevant legislative guidelines.

ES3 Findings

A review of the environmental setting of the project area was completed based on available information sources. Furthermore, detailed database searches were undertaken for the entire area of the project footprint to inform the site inspections and subsequent report.

A number of potential areas of contamination were identified by reviewing historical information, the environmental setting and site conditions. This information was used to assess potential contaminants, exposure mechanisms, pathways and potentially affected media as outlined in the conceptual site model prepared for the site.

The project area is predominantly rural (agricultural) land, with the exception of the easternmost portion, which includes land utilised as part of the existing Dungowan Dam and associated catchment area.

There is no known existing baseline data or previous investigations documenting the presence of contaminants of potential concern (CoPC) across the project area, with the exception of a known sheep dip site. A number of potential areas of contamination were identified by reviewing the site history, the environmental setting and site conditions. This site information was used to assess potential contaminants, exposure mechanisms, pathways and potentially affected media as outlined in the conceptual site models for each key site within the project footprint.

There is no known history of significant contaminating activities at the site or surrounds, with the exception of potentially widespread historical mining exploration. The agricultural activities observed in general across the project footprint and surrounds appeared non-intensive and thus frequent and widespread application of pesticides/herbicides and/or fill material causing widespread contamination is considered unlikely to be present at concentrations above the relevant assessment criteria throughout the project footprint.

The investigation findings indicate there is a low potential that project construction activities may encounter naturally occurring asbestos (NOA) near the far western end of the project footprint and near the central portion of the project footprint, which has been mapped in these areas as having a low probability of formation occurrence, potential/actual acid sulfate soils (PASS/AASS) and acid mine drainage (AMD) impacted material resulting from potentially acid forming (PAF) rock and/or historical mining waste. Additionally, there is a known contaminated site at a former sheep dip where elevated concentrations of arsenic in soil have been identified. Based on the conceptual site model and tier 1 preliminary risk assessment completed as part of the PSI, these contamination sources were identified as either low or medium risk and should be managed in accordance with the recommendations outlined in this report.

ES4 Recommendations

The key management measures recommended for the construction and/or ongoing operation of the project include:

- undertake further investigations at identified low-medium risk areas of potential contamination outlined in this report, which have not been adequately characterised and will be disturbed by construction activities caused by the project. These investigations should be undertaken prior to ground disturbance activities in each respective area; and
- development of appropriate project documentation (eg Construction Environmental Management Plan (CEMP), Contaminated Land Management Plan (CLMP), Construction Soil and Water Management Plan (CSWMP), Asbestos Management Plan (AMP), Operational Environmental Management Plan (OEMP)) to manage contamination during the construction and operation of the project.

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1 Introduction

1.1 The project

The Peel River, part of the Namoi River catchment, provides water for irrigation as well as being the primary water supply for the city of Tamworth. Prompted by the millennium drought, investigations into the future water supply and demand for bulk water were undertaken for the regional city of Tamworth and the Peel Valley water users. The Dungowan Dam and pipeline project (the project) is a critical project to improving long-term water security for the region. The project includes a new dam at Dungowan (new Dungowan Dam) approximately 3.5 km downstream of the existing Dungowan Dam and a new section of pipeline about 32km long between the proposed Dam outlet and the tie in point to an existing pipeline from Dungowan Showground to the Calala Water Treatment Plant (WTP).

In September 2022, the Minister for Planning and Homes declared the project to be Critical State Significant Infrastructure (CSSI) as it is a development that is essential for the State for economic and social reasons. This requires Schedule 5 of the *State Environmental Planning Policy (Planning Systems) 2021* to be updated to reflect the CSSI status of the project. As CSSI, the project is subject to Part 5, Division 5.2 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), which requires the preparation of an environmental impact statement (EIS) and the approval of the NSW Minister for Planning and Homes.

The EIS has been prepared for the planning approval application for the project. This contamination assessment has been prepared to support the EIS.

In addition to requiring approval from the NSW Minister for Planning and Homes, the project has been deemed a controlled action under the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and requires approval from the Commonwealth Minister for the Environment. The Minister for the Environment has accredited the NSW planning process for the assessment of the project. Therefore, a single EIS has been prepared to address the requirements set out by the NSW Department of Planning, Industry and Environment (DPIE) and the Commonwealth Department of Agriculture, Water and Environment (DAWE).

1.2 Project location

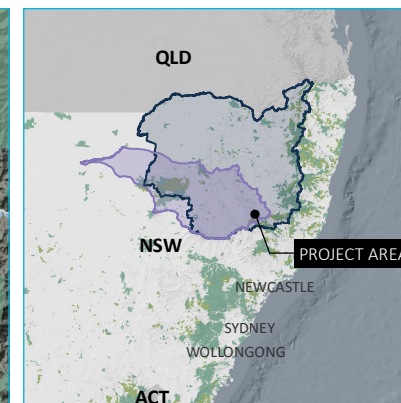
The project is located in the Tamworth Regional local government area (LGA), the New England Tablelands bioregion and part of the New England and North West region of NSW, west of the Great Dividing Range (DPE 2017). The New England and North West region is home to approximately 186,900 people and has a total area of around 99,100 km² (ABS 2018).

The city of Tamworth is the nearest (and largest) town to the project with over 40,000 residents. Other nearby regional towns include Quirindi (70 km west), Manilla (90 km north-west), Gloucester (90 km south-east), Armidale (100 km north) and Gunnedah (110 km west of the project).

The existing Dungowan Dam is in the Namoi River catchment approximately 50 km south-east of Tamworth in NSW. The Namoi catchment covers 4,700 km² and borders the Gwydir and Castlereagh catchments and is bounded by the Great Dividing Range in the east, the Liverpool Ranges and Warrumbungle Ranges in the south, and the Nandewar Ranges and Mount Kaputar to the north.

The existing Dungowan Dam is on Dungowan Creek, which is a tributary of the Peel River. Dungowan Creek is confined by the existing Dungowan Dam, while the Peel River system is regulated by Chaffey Dam, located in the upper catchment near the town of Woolomin, approximately 45 km from Tamworth.

The project's regional setting is shown in Figure 1.1.



- KEY**
- Project footprint
 - Major road
 - Named watercourse
 - Named waterbody
 - NPWS reserve
 - State forest
 - Tamworth Regional local government area
- INSET KEY**
- Namoi River catchment
 - New England North West region

Regional setting

Dungowan Dam and pipeline project
Figure 1.1

1.2.1 Project impact areas

In outlining the project, a project footprint has been defined to facilitate the assessment of direct impacts from the project:

- Project footprint: all areas where direct impacts may be experienced during construction and/or operation.

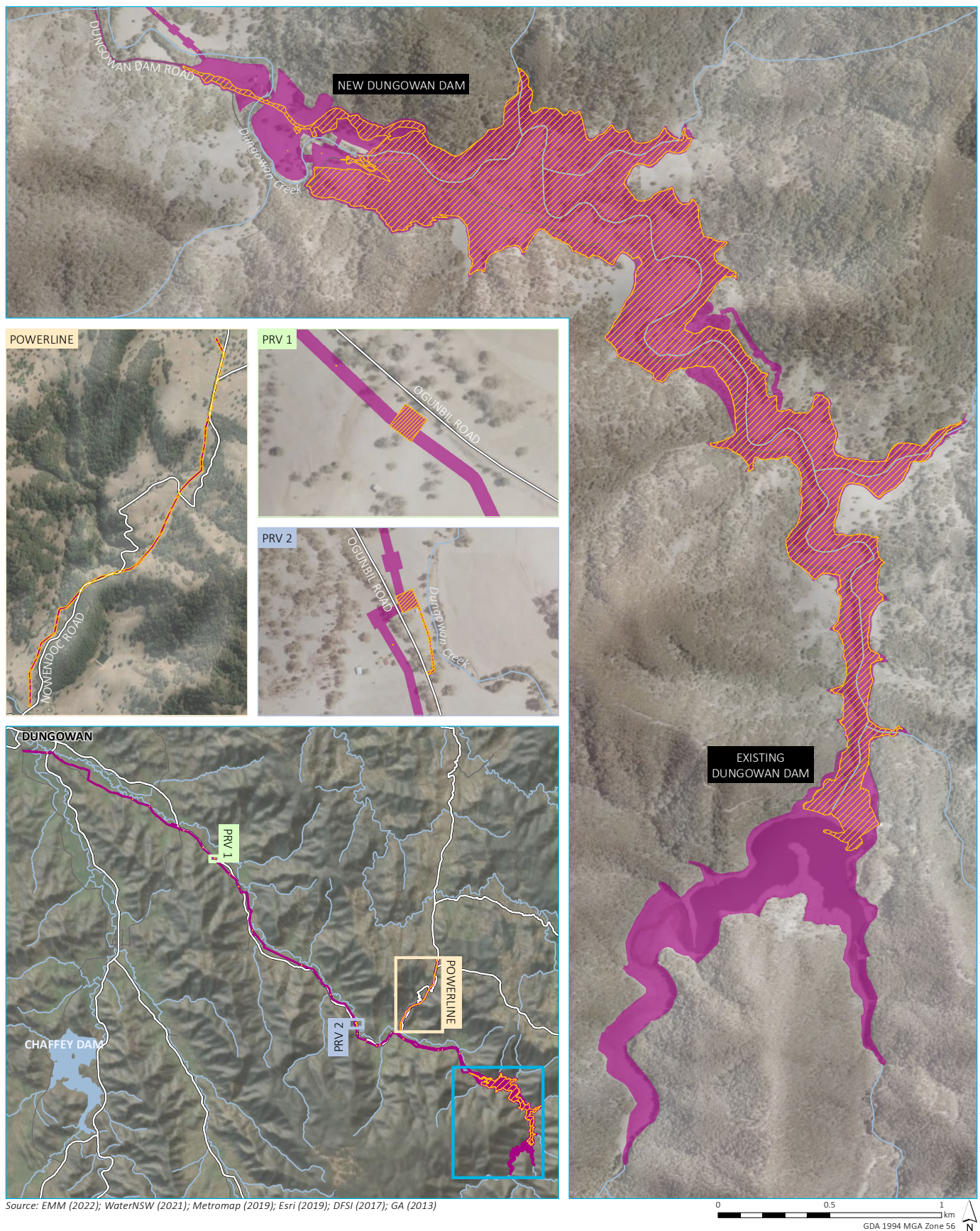
The project footprint has an area of 315 ha and is comprised of the construction and operational footprints, of which there is some overlap:

- Construction footprint: areas where vegetation clearing and/or ground disturbance is required for construction of the dam, pipeline and ancillary facilities, including the area needed to decommission and rehabilitate the existing dam; and
- Operational footprint: areas where there will be permanent operational elements or easements, including infrastructure needed to operate the new Dungowan Dam and pipeline. The operation footprint includes the inundation area, being the area defined by the proposed full supply level (FSL) for the project.

Additional areas outside the project footprint have also been considered where relevant to the assessment of project impacts and include:

- Upstream flood extent: An area above the FSL to the level of a probable maximum flood (PMF) event that would be inundated for relatively short periods during operation associated with extreme rainfall events;
- Project area: A 10 km buffer around the project footprint defined to allow for assessment of potential indirect impacts; and
- Downstream impact area: the area where hydrological changes may occur due to the project. This area is discussed in detail in the Surface Water Assessment (EMM 2022) as well as other technical reports subject to changed flow regimes as a result of the new Dungowan Dam operation. The downstream impact area includes Dungowan Creek and also the Peel River downstream of Chaffey Dam.

The project construction and operational footprints are shown in Figure 1.2.



- KEY**
- Construction footprint
 - Operational footprint
 - Existing environment
 - Major road
 - Minor road
 - Named watercourse
 - Named waterbody

Project footprint

Dungowan Dam and pipeline project
Figure 1.2

1.3 Purpose of this report

This Contamination Preliminary Site Investigation (PSI) supports the EIS for the Dungowan Dam and pipeline project. It documents the contamination assessment methods and results, the measures built into the project design to avoid and minimise impacts to human health and the environment, and the mitigation, and management measures, proposed to address any contamination impacts.

The specific objectives of this assessment are to inform the EIS and address the Secretary's Environment Assessment Requirements (SEARs) by:

- completing desktop PSI works to inform the understanding of contamination conditions within the project footprint;
- identifying potential areas and contaminants of concern within the project footprint;
- assessing the potential for contamination to be present within the project footprint;
- providing a preliminary qualitative assessment, and desktop review of available quantitative data, in relation to contamination risk posed during construction and operation of the project;
- assessing where further investigation should be undertaken, or appropriate management procedures should be implemented for the construction and operational phases of the project; and
- assessing whether the land may be contaminated and if so, whether remediation may be required including confirmation that future assessment and/or remediation would be undertaken in accordance with the current guidelines.

1.3.1 Assessment guidelines and requirements

This Contamination PSI has been prepared in accordance with the SEARs for the Dungowan Dam and pipeline project, as well as relevant government assessment requirements, guidelines and policies, and in consultation with the relevant government agencies.

The SEARs must be addressed in the EIS. Table 1.1 lists the matters relevant to this assessment and where they are addressed in this report.

Table 1.1 Relevant matters raised in SEARs

Requirement	Chapter/Section addressed
27. An assessment of the impact of the project on soils and land capability of the site and surrounds, including: a) ... b) acid sulphate soils; c) ... d) ... e) acid drainage from waste rock, overburden, spoil and excavated areas.	Chapter 5
29. An assessment of the risk of soil contamination based on the predicted geochemistry of any excavated rock and any previous disturbance of land	Chapters 5, 6
30. Characterisation of the nature and extent of any contamination on the site and surrounding area.	Chapters 4, 5

Table 1.1 **Relevant matters raised in SEARs**

Requirement	Chapter/Section addressed
31. Documented consultation with landholders within the potential project area, including the inundation area, for the purpose of determining where any known current or historic private landfills or waste disposal locations are situated	Sections 4.10 and 4.2.1
32. The procedure or assessment plan by which landfills, or waste disposal locations will be identified, contamination risks mitigated, and appropriately remediated and/or removed from site.	Sections 3.2, 4.9, 4.10, 5.3.1 & 6.2
33. Documentation of any actions that are necessary actions to be taken to prevent contamination of surface, groundwaters and soils.	Chapter 6

To inform preparation of the SEARs, the DPE invited relevant government agencies to advise on matters to be addressed in the EIS. These matters were taken into account by the Secretary for DPE when preparing the SEARs.

1.3.2 Other relevant reports

This Contamination PSI has been prepared with reference to other technical reports that were compiled as part of the EIS. The other relevant reports referenced in this Contamination PSI are listed below:

- Land, Soils and Erosion Assessment (EMM 2022) – appended to the EIS;
- Waste Management Assessment (EMM 2022) – appended to the EIS;
- Groundwater Assessment (EMM 2022) – appended to the EIS;
- Surface Water Assessment (EMM 2022) – appended to the EIS;
- Social Impact Assessment – (EMM 2022) – Appended to the EIS;
- Bushfire Risk Assessment (BlackAsh 2022) – Appended to the EIS;
- Biodiversity Development Assessment Report (EMM 2022) – Appended to the EIS; and
- Statement of Heritage Impact (EMM 2022) – Appended to the EIS.

2 Description of the project

This chapter provides a summary of the Dungowan Dam and pipeline project. It outlines the permanent infrastructure required to operate the project, as well as the key construction elements and activities required to construct the project. A comprehensive and detailed description of the project is provided in Appendix B1 of the EIS, which has been relied upon for the basis of this technical assessment.

2.1 Project overview

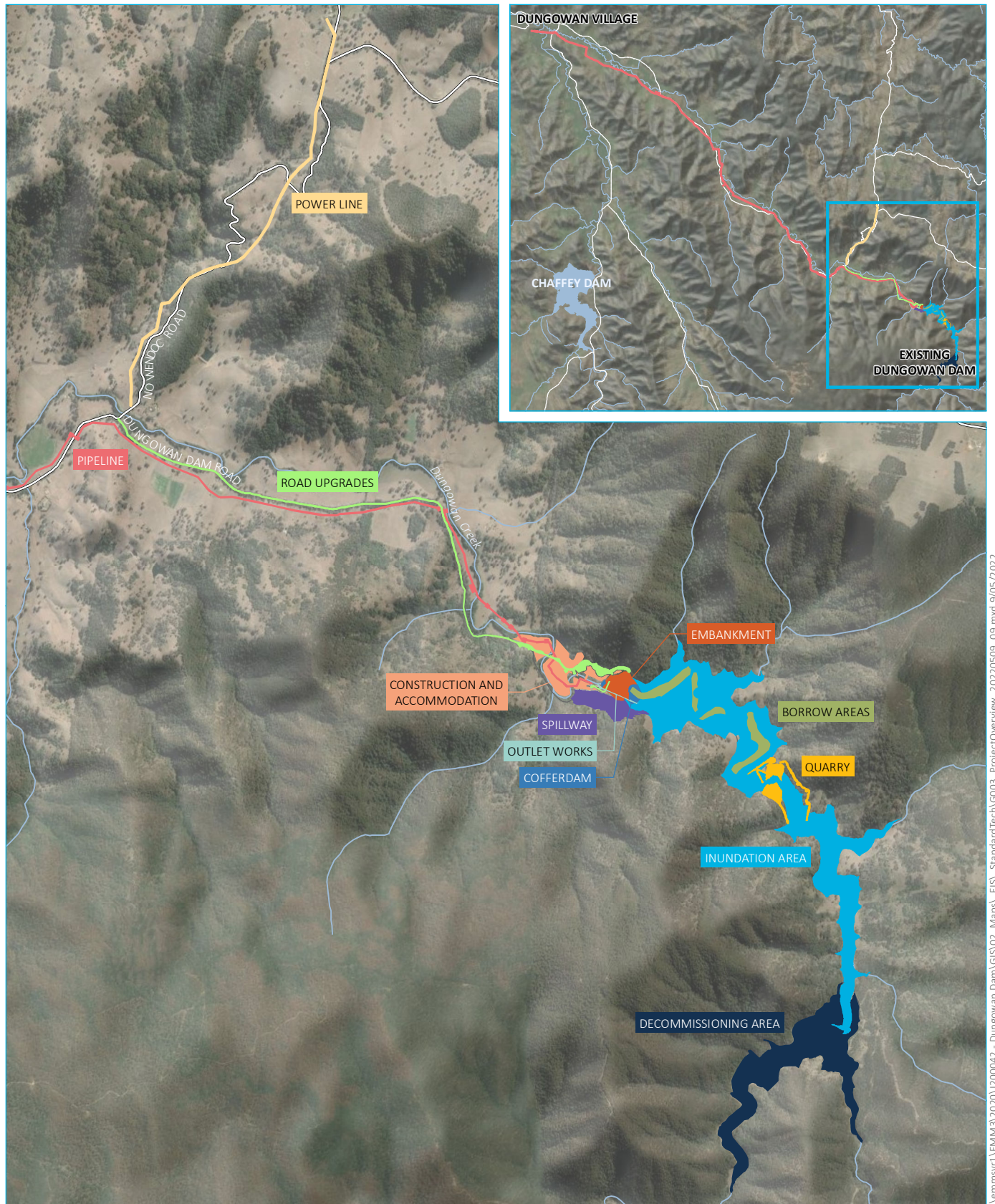
Water Infrastructure NSW proposes to build a new dam at Dungowan (new Dungowan Dam) about 3.5 km downstream of the existing Dungowan Dam and an enlarged delivery pipeline from the new Dungowan Dam outlet to the tie in point to the existing pipeline from Dungowan Showground to the Calala WTP. The existing pipeline from Dungowan Showground to the Calala WTP is not part of the Dungowan Dam and pipeline project. A summary of project elements is provided in Table 2.1. An overview of the project is provided in Figure 2.1.

Table 2.1 Overview of the project

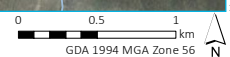
Project element	Summary of the project
New Dungowan Dam infrastructure	Earth and rockfill embankment dam with height of ~58 m and a dam crest length of ~270 m.
	Storage capacity of 22.5 GL at full supply level (FSL) of RL 660.2 m AHD.
	The new Dungowan Dam on Dungowan Creek has a catchment size of 175 km ² and is part of the Peel Valley and Namoi River catchment.
	Inundation extent (to FSL) of 130 ha (1.3 km ²)
	Spillway to the south of the dam wall including an approach channel, uncontrolled concrete ogee crest, chute and stilling basin. Free standing multiple-level intake tower connected with a bridge to the embankment, diversion tunnel with outlet conduit, valve house and associated pipework and valves.
	A permanent access road over the Dam crest to the valve house for operation and maintenance.
Pipeline infrastructure	Water diversion works including a diversion tunnel and temporary pipeline and upstream and downstream cofferdams to facilitate construction of the dam wall embankment.
	31.6 km of buried high density polyethylene (HDPE) pipe between 710 mm to 900 mm nominal diameter.
	Maximum 71 ML/day from the proposed dam to the junction with the pipeline from Chaffey Dam to the Calala Water Treatment Plant, to replace the existing 22 ML/day pipeline. The pipeline would connect to the valve house on the left abutment of the embankment. Valve infrastructure would include control valves installed in two above ground buildings along the pipeline.
Ancillary infrastructure and works	10 m wide easement for the 31.6 km length of the pipeline. The replacement pipeline extends from the new Dungowan Dam to a connection point with the existing pipeline between Dungowan Showground and Calala WTP.
	Road works to improve existing roads to provide construction access, temporary establishment and use of a construction compound, an accommodation camp, two upstream quarries and four borrow areas within the inundation area.
Decommissioning of existing Dungowan Dam	A new 4.2 km long 11 kV overhead powerline (including a new easement and access track) connecting to an existing overhead line approximately 6 km north west of the dam. The existing overhead line that extends approximately 13.2 km to the Niangala area would also require minor upgrades, including re-stringing of new overhead wiring and replacement of some poles.
	Dewatering of existing dam, removal of existing Dungowan Dam infrastructure and full height breach of the existing Dungowan Dam wall. Rehabilitation of inundation area of existing Dungowan Dam

Table 2.1 **Overview of the project**

Project element	Summary of the project
Disturbance	Areas of disturbance have been identified based on the direct impacts of the project. There is some overlap in the areas disturbed during construction and operation, with a resulting total disturbance area proposed for the project of 315 ha (project footprint). Disturbance would occur in a staged manner, with construction requiring disturbance of approximately 315 ha (construction footprint). Following construction and once rehabilitation is completed, there would be a permanent disturbance of approximately 158 ha comprising the inundation area and permanent infrastructure (operational footprint).
Construction	Construction duration of approximately 6 years. Construction workforce of approximately 125 workers at construction peak.
Operation	WaterNSW will be responsible for management, operation and general maintenance of the new dam. Tamworth Regional Council will be responsible for the management, operation and general maintenance of the pipeline. Public use and access to the dam would not be permitted and there would be no public facilities available during operation One to two new full time workers plus part time work for existing WaterNSW operations team. Due to the new Dungowan Dam being prioritised over Chaffey Dam for Tamworth's future water supply, the water reserved for town water in Chaffey Dam would increase from 14.3 GL to 30 GL to ensure that water is set aside to meet Tamworth's town water supply water demand in years when rainfall is low.
Design life	100 years for zoned earthen embankment, structural concrete elements of the dam and the pipeline. 15 to 50 years for other non-structural project elements and pavements.
Assessment period (operational)	The assessment end point is when the water system performance reaches a level when an additional water supply option or change to the Water Sharing Plan is required. This has been estimated to be when the mean average annual water demand from Tamworth increases to 11 GL/year.



Source: EMM (2022); WaterNSW (2021); Esri (2019); DFSI (2017); GA (2013)



KEY

- | | | |
|---|--|---|
| ■ Inundation area | ■ Quarries | ■ Existing environment |
| ■ Borrow areas | ■ Spillway | — Major road |
| ■ Construction and accommodation camp | ■ Road upgrade | — Minor road |
| ■ Outlet works | ■ Decommissioning area | — Named watercourse |
| ■ Cofferdams | ■ Power line footprint | ■ Named waterbody |
| ■ Embankment | ■ Pipeline construction footprint | |

Project overview

Dungowan Dam and pipeline project
Figure 2.1

3 Methodology

3.1 Statutory context, policy and guidelines

The relevant legislation and policies for contaminated land that have been considered during the preparation of this report include Commonwealth and NSW legislation detailed below.

3.1.1 Commonwealth regulatory and policy framework

The following Commonwealth legislation, policies and guidelines have been considered during the preparation of this report:

- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act);
- National Environment Protection Council (NEPC) 1999. National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended 2013 (ASC NEPM, 2013); and
- *Workplace Health and Safety Act 2011*.

3.1.2 New South Wales regulatory and policy framework

The following NSW legislation, policies and guidelines have been considered during the preparation of this report:

- *Protection of the Environment Operations Act 1997* (NSW) (POEO Act);
- *Contaminated Land Management Act 1997* (NSW) (CLM Act);
- *Environmentally Hazardous Chemicals Act 1985* (NSW) (EHC Act);
- State Environmental Planning Policy (Resilience and Hazards) 2021;
- NSW Environment Protection Authority (NSW EPA 2015). Guidelines on the Duty to Report Contamination under the *Contaminated Land Management Act 1997*;
- NSW Environment Protection Authority (NSW EPA 2017). Contaminated Land Management Guidelines for the Site Auditor Scheme (3rd Edition);
- NSW EPA (2016). Environmental Guidelines: Solid Waste Landfills, Second Edition;
- NSW EPA (2020). Guidelines for the Consultants Reporting on Contaminated Land; and
- NSW DEC (2007). Guidelines for the Assessment and Management of Groundwater Contamination.

3.2 Methodology

The construction of the new Dungowan Dam, pipeline and ancillary infrastructure would result in the disturbance and excavation of surface and subsurface soils and rock. Surface disturbance would also occur as a result of construction activities associated with the development of construction sites, temporary and permanent access roads, powerline infrastructure, transport and storage of excavated soil and rock, the development of boat ramp facilities, existing Dungowan Dam decommissioning works and construction of accommodation for the project work force. Groundwater may also be encountered during construction.

The methodologies for evaluating the Dungowan Dam and pipeline project are summarised in the following sections.

- desktop review encompassing:
 - database searches to assess elements of environmental inputs including historical use, land zoning and topography;
 - a review of aerial imagery changes over time; and
 - a review of other relevant project design documents made available;
- site inspection:
 - physical walk-over of the site; and
 - photography of the general site setting and features of interest.

Information about potential contamination sources was also collected through interviews with local landowners held as part of the project Social Impact Assessment as well as consultation with Tamworth Regional Council.

To achieve the desired objectives, which is to ensure that risks arising from the disturbance and excavation of land and disposal of soil during the project are reduced, including disturbance to potential site contamination, the following methodology has been adopted:

1. Identification of potential contamination within the project footprint (and defined buffer areas) by assessing the existing environment through the desktop review, consultation with landowners and site inspection. Buffer areas refer to the distance between the project footprint boundary and surrounding area that has been applied to each background search that has been conducted (ie applied to database searches for background information).
2. Assessment of the location of potential unlicensed landfills and other potential contamination sources were undertaken by reviewing background information including records of prior investigations, aerial imagery, interviewing resident landholders and undertaking a site inspection of identified areas of interest to identify potential waste disposal locations.
3. Assessment of the potential contamination impacts of the project during construction and operation.
4. Preliminary qualitative risk assessment encompassing potential construction/operational impacts including existing contamination sources.
5. Identification and description of mitigation measures to manage potential or known soil and groundwater contamination during construction and operation.

3.3 Information sources

A search of the following databases was undertaken by Lotsearch Pty Ltd as presented in Table 3.1 and Annexure A.

Table 3.1 List of database searches

Source	Database(s)
Commonwealth of Australia - Department of Finance	Cadastre Boundaries, Topographic Data, Points of Interest, Tanks (Areas), Tanks (Points), Major Easements, State Forest, Mining Subsidence Districts
Commonwealth of Australia - CSIRO	Atlas of Australian Soils, Atlas of Australian Acid Sulphate Soils
Commonwealth of Australia - Department of Agriculture, Water and the Environment	Ramsar Wetlands
Commonwealth of Australia – Department of Finance	Sensitive receptors
Commonwealth of Australia - Geoscience Australia	National Waste Management Site Database, Hydrogeology Map of Australia
Commonwealth of Australia - Bureau of Meteorology	Groundwater Dependant Ecosystems
Commonwealth of Australia - National Land and Water Resources Audit	Dryland Salinity - National Assessment
State Government of NSW - Environment Protection Authority	List of NSW contaminated sites notified to EPA, Contaminated Land: Records of Notice, Former Gasworks, EPA PFAS Investigation Program, EPA Other Sites with Contamination Issues, Licensed Activities under the POEO Act 1997, Delicensed POEO Activities still Regulated by the EPA, Former POEO Licensed Activities now revoked or surrendered, UPSS Environmentally Sensitive Zones
State Government of NSW - Department of Planning and Environment (DPE) – Environment, Energy and Science (EES)	Soil, Hydrologic Soil Groups, Acid Sulfate Soil, NSW National Parks and Wildlife, Service Reserves, Soil Landscapes, Dryland Salinity Potential of Western Sydney, State Heritage Items, Native Vegetation of the Sydney Metropolitan Area, NSW BioNet Species Sightings
State Government of NSW – DPE - Water/ Water Administration Ministerial Corporation; Commonwealth of Australia (Bureau of Meteorology)	Groundwater Boreholes
State Government of NSW - DPE – Resources and Geoscience	Geological Units 1:100,000, Geological Structures 1:100,000, Naturally Occurring Asbestos Potential
State Government of NSW - Rural Fire Service	Bush Fire Prone Land
State Government of NSW - DPE	Environmental Planning Instrument (EPI): SEPP Precincts, Land Zoning, Heritage, Acid Sulfate Soils

Table 3.1 List of database searches

Source	Database(s)
Hardie Grant	UBD Business to Business Directory 1991 (Premise & Intersection Matches), UBD Business to Business Directory 1991 (Road & Area Matches), UBD Business to Business Directory 1986 (Premise & Intersection Matches), UBD Business to Business Directory 1986 (Road & Area Matches), UBD Business Directory 1982 (Premise & Intersection Matches), UBD Business Directory 1982 (Road & Area Matches), UBD Business Directory 1978 (Premise & Intersection Matches), UBD Business Directory 1978 (Road & Area Matches), UBD Business Directory 1975 (Premise & Intersection Matches), UBD Business Directory 1975 (Road & Area Matches), UBD Business Directory 1970 (Premise & Intersection Matches), UBD Business Directory 1970 (Road & Area Matches), UBD Business Directory 1961 (Premise & Intersection Matches), UBD Business Directory 1961 (Road & Area Matches), UBD Business Directory 1950 (Premise & Intersection Matches), UBD Business Directory 1950 (Road & Area Matches), UBD Business Directory Drycleaners & Motor Garages/Service Stations (Premise & Intersection Matches), UBD Business Directory Drycleaners & Motor Garages/Service Stations (Road & Area Matches)

3.4 Conceptual site model and qualitative risk assessment

Potentially contaminated material (ie soil, rock, sediment) has the potential to adversely impact human health and ecological receptors if not managed appropriately. A conceptual site model (CSM) is used to present and assess the linkage between potential contamination sources, exposure pathways¹, and receptors. As detailed in the ASC NEPM (2013), the development of a CSM is a key component of contaminated site assessments and provides the framework for identifying how potential receptors may be exposed to contamination.

A risk is considered to be posed to a receptor when the pathway between the receptor and a contamination source is 'complete' and the contamination is present at concentrations that could have a negative impact on the health of the receptor. Where there is no or insufficient quantitative analytical data to assess whether concentrations of contamination pose a risk, a qualitative risk assessment is used.

To assess the relative risk of existing and potential contamination during project construction and operation, a qualitative risk assessment was undertaken for the study area (detailed in Section 5.3.1). The methodology for the risk assessment is detailed in Table 3.2.

Table 3.2 Preliminary qualitative risk assessment methodology

Identification of areas and contaminants of concern
Identified using the methodology outlined in Section 3.4
Likelihood of contamination to be present and likely extent of impacts
Identified by review of information presented in Section 4

¹ An exposure pathway is the link from the source of contamination to the exposed population or environment eg direct contact, inhalation or ingestion by human receptors, transport in wind or groundwater migration (NEPC 1999).

Table 3.2 Preliminary qualitative risk assessment methodology

Identification of areas and contaminants of concern	
Potential migration pathways	
Construction	Operation
• Dust generation • Excavation and disposal or reuse of spoil • Extraction and disposal or reuse of groundwater from dewatering or drainage • Migration of groundwater via preferential pathways • Surface water erosion. • Management of waste water • Storage, use and management of fuels, chemicals etc	• Migration of groundwater via preferential pathways • Surface water erosion and sedimentation.
Potential receptors	
Construction	Operation
• Project construction workers and visitors • Surrounding land users such as the general public and nearby residents and commercial workers • Receiving water bodies • Ecological receptors.	• Intrusive maintenance workers • Future site users of final land use such as commercial, open space or residential • Ecological receptors • Receiving water bodies.
Potential exposure pathways	
Construction	Operation
• Direct contact, ingestion or inhalation by human receptors and fauna • Uptake by terrestrial and aquatic flora and intake by aquatic fauna.	• Direct contact, ingestion or inhalation by human receptors and fauna • Uptake by terrestrial and aquatic flora and intake by aquatic fauna.

To identify the risk rating, the preliminary qualitative contamination risk assessment matrix in Table 3.3 was used. The matrix was used to assign the risk in assuming the absence of appropriate controls and mitigation measures. This site conceptual model and risk assessment is included in Figure 5.1.

Table 3.3 **Preliminary qualitative risk assessment matrix**

Consequence	Likelihood of soil or groundwater contamination to be present				
	Very unlikely to be present at concentrations above the relevant assessment criteria and limited in extent	Potentially present at concentrations above the relevant assessment criteria and limited in extent	Potentially present at concentrations above the relevant assessment criteria and widespread	Most likely present at concentrations above the relevant assessment criteria and widespread	Known to be present at concentrations above the relevant assessment criteria and widespread
No or unlikely exposure pathway for human or ecological receptors either now or during or post construction*	Low	Low	Low	Medium	Medium
Exposure pathway for human or ecological receptors likely to be present and complete either now, during or post construction*	Low	Medium	Medium	High	High
Exposure pathway for human or ecological receptors present and are complete either now, during or post construction*	Medium	Medium	High	High	High

Note: * without implementation of appropriate controls or remediation as recommended in the management of construction and operational impacts – Section 6

4 Existing environment

4.1 Site identification

Site identification details are presented in Table 4.1 below.

Table 4.1 Site description

Site description	The new Dungowan Dam is approximately 3.5 km downstream of the existing dam. The new pipeline will originate at the dam and then travel approximately 32 km west to the junction with the Chaffey Dam pipeline. A powerline will also extend approximately 4.3 km north of the site from Dungowan Creek at Ogunbil. The construction of a new permanent access road approximately 5 km in length to the new Dungowan Dam crest.
Site location	Dam area: Dungowan Dam Road, Ogunbil, NSW 2340 Pipeline area: Ogunbil Road, Dungowan Creek Road and Dungowan Dam Road, Dungowan, NSW 2340 Powerline: Nowendoc Road, Ogunbil NSW 2340
Site layout	Refer to Figure 1.2.
Title identification details	Various freehold and Tamworth Regional Council owned land.
Area	Approximately 315 ha, excluding buffer areas.
Site features	A site inspection was undertaken between 24-25 June 2020, 10-11 September 2020 and 28-29 October 2021 The site is generally freehold agricultural land, with the exception of the eastern end, which includes Tamworth Regional Council owned land in the existing Dungowan Dam area. Key features are outlined in Section 1.1 and Figure 1.2. A photographic log is provided in Annexure B
Local government area	Tamworth Regional Council.
Land use and zoning	RU1 Primary Production, with the exception of small pockets of RU5 Village and RU3 Forestry greater than 400 m from the site.
Surrounding land use	Mix of agricultural land (mostly grazing) and undeveloped bushland, all zoned primary production. Other features include Dungowan Creek (and tributaries) and water infrastructure at the existing dam site.

4.2 Site history

A review of previous investigations, historical aerial photographs, historical topographic maps and other readily available information (where relevant) for the site was undertaken for this report. As part of the review and investigations, Tamworth Regional Council were consulted with on their knowledge of contaminated sites in the area and provided the documents discussed in 4.2.1ii, 4.2.1iii and 4.2.1iv below. Consultation held with local landowners also provided information regarding potential sources of contamination. This is discussed further in Section 4.10.

4.2.1 Previous investigations

i SMEC 2022, Dungowan Dam – Detailed Design, Existing Dungowan Dam Breach Optimisation Reference No. 30013137, prepared for WINSW

Seven locations were selected to target any sediments potentially deposited in the inundated valley floor as a result of the typical process of sediment erosion, transport and accumulation since the existing Dungowan Dam was constructed in 1957. The chosen sample locations were also informed by the results from the bathymetric survey, which was compared against the pre-construction topographic contours shown on the original Dungowan Dam drawings.

The adopted sampling method was selected such that sampling equipment could recover undisturbed deposited sediment samples (where possible). Due to limited sediment depths encountered, fine clay silts encountered, light organics present and depth of water column at FSL, piston sampling was abandoned due to penetration refusal and replaced with a grab sampler. The piston sampling refusal was consistent across all sample locations. Refusal was suggested as hitting the rocky or gravel part of the original channel.

Sediment samples were collected using an Ekman grab sampler. All sediment samples (eg from within reservoir) were analysed for:

- trace metals;
- pesticides (OPP/OCP);
- polycyclic aromatic hydrocarbons (PAH);
- total organic carbon (TOC);
- particle size analysis; and
- Wentworth Grade Scale (AS 1289 3.6.1 wet sieving).

Three (3) boreholes were undertaken from the dam crest and the downstream raising of the existing dam to sample both the original engineered fill material and the additional engineered fill material. A further five (5) test pits (TP 01 to TP 05) were completed to sample the Zone 3B (Rockfill) and Zone 4 (Random Fill) in the downstream shoulder of the embankment dam. The sampled materials were only assessed for contaminants of concern (eg no engineering properties).

The test pits were excavated to approximately 2.0-2.5 m deep into the embankment shoulder to minimise disturbance at each specified location in a line perpendicular to the dam crest. The material sampled was the random rockfill comprised of more weathered local rock materials taken from the auxiliary spillway excavation. The sample fines materials were sampled and stored for contamination testing.

SMEC Australia Pty Ltd (SMEC) reported the laboratory analytical results for the sediment samples, when compared with the Sediment ISGC-Low (21 mg/kg) and ISGC-high (52 mg/kg) thresholds for Nickel (ANZECC, 2000), were equal to or above the SIGC-low threshold, but below the ISGC-high threshold. It is noted that other reported results were either below the adopted criteria, below the laboratory limit of reporting or were not compared against criteria.

This report presented the interpretation of the information obtained during the geological and geotechnical site investigations carried out by SMEC for the new Dungowan Dam Planning and Development Phase. This reflects the understanding of project geology relevant to the development of the project design presented in the EIS. It is noted that further geotechnical investigations are underway to support the next phase of the project through detailed design. The scope of this report involved the assessment of the available project specific geological and geotechnical investigation data and the development of the geological model for the project at the New Dungowan Dam. The report presents conceptual geological models, descriptions of the geological units, interpretation of current investigation data in the form of geological sections and interpretation of the subsurface conditions for use in the design of the dam and associated structures.

Five (5) distinct subsurface soil profiles were identified at the site, comprising:

- fill and topsoil;
- upper, more cohesive alluvials along the valley floor;
- lower, more granular alluvials along the valley floor;
- colluvial deposits on slopes and directly beneath steep slopes; and
- weathered rock or regolith.

The alluvial profile generally ranges in thickness from 1 m to 5 m and comprises sequential layers of both fine and coarse grain sediment. The colluvial profile is variable in thickness, ranging from 0.25 m to greater than 7 m. In some locations decomposed and fresher rock is evident on slopes and in stream beds. Intermixing of the alluvial and colluvial profiles is encountered in a limited number of locations, where steep slopes terminate at the valley floor indicating a series of depositional events. Anthropogenic fill material encountered at multiple test pit and drilling locations generally comprised reworked natural materials, with trace inclusions of refuse when located adjacent to demolished buildings (eg tiles, glass, etc).

A total of 11 samples were analysed for Acid Sulfate Soil/Acid Generation (SPOCAS suite) from eight (8) test pit locations (TP39, TP41, TP42 and TP44 to TP48) to a maximum depth of 2.1 m below ground level (SMEC 2020). The SPOCAS analysis reported the following outcomes:

- generally, the actual and potential acidity in the sampled materials were low, with some of the acidity due to sources other than pyritic materials;
- two samples from TP44 (0.1 m and 1.55 m) reported elevated concentrations of actual acidity and soil pH values between pH 4.3 and pH 5.1. The deeper of those samples showed elevated magnesium levels; and
- with the exception of materials at TP44, soils had excess acid neutralisation capacity for the acidity contained in its host material.

SMEC (2020) stated that further information was required to assess to what extent Actual ASS, and PASS are likely to require management during construction and commissioning/initial filling of the dam. It was recommended that further work included sampling of surface and subsurface materials along the creek high watermark areas at regular 100 m intervals with analysis for SPOCAS and chromium reducible sulfur (Scr).

The SMEC (2020) desktop assessment indicated that the presence of acid sulfate rock (ASR) was also possible within the project footprint. If exposed to oxygen, ASR has the potential to generate acidic leachate referred to as Acid Mine Drainage (AMD). Rock core samples from five locations to a maximum depth of 30 m below ground level were analysed for the acid based accounting (ABA)/net acid generation (NAG) range. In summary:

- six of the eight samples were classified as non-acid forming (NAF);
- BH4 (15.45 m) was classified as potentially acid forming (PAF) – mild, with net acid generation (NAG) pH below pH 4.5 and positive net acid producing potential (NAPP);
- BH7 (30.48 m) was classified as uncertain, with NAG pH below pH 4.5 but a negative NAPP value; and
- based on these results, further sampling and analysis was recommended.

Figure 4.1 shows the locations where potentially acid forming (PAF) and ASS were detected by SMEC (2020).

iii [Mitchel Hanlon Consulting Pty Ltd \(MHC\) 2018, Delineation of Arsenic Contamination for the Former Plunge Sheep Dip Site, 801 Dungowan Dam Road, Ogunbil, Lot 54 in DP 755322, prepared for Tamworth Regional Council](#)

Mitchel Hanlon Consulting Pty Ltd (MHC) was engaged by Tamworth Regional Council to delineate the extent of known soil based arsenic contamination at a former dip site located at 801 Dungowan Dam Road, Ogunbil (Lot 54 in DP 755322), which is situated on the Dungowan Dam project site near the proposed quarry (refer to Figure 4.1).

The site featured dermosols underlain by slate, phyllite, tuff, sandstone, conglomerates, chert and jasper of the Woolloomin Beds formation. Dungowan Creek was situated approximately 65 m south of the dip.

Soil sampling was conducted via a systematic grid pattern with a total of 14 sampling locations at 0.2 m and 0.4 m depth resulting in the collection of 28 primary samples. The grid spacing was approximately 6.4 m, allowing the detection with 95% accuracy of a hotspot of at least 7.6 m. Six samples exceeded the adopted health investigation level (HIL) A Residential criterion for arsenic (100 mg/kg). The 95% UCL was 68.48 mg/kg.

MHC recommended undertaking a risk assessment with additional sampling or developing a remediation action plan to remove the contaminated soil, which was estimated to cover an area of approximately 250 m² to a depth of 0.6 m.

iv [MHC 2019, Addendum to Site Investigation Report for the Former Sheep Dip Site, 20 May 2019](#)

MHC was engaged by Tamworth Regional Council to delineate the extent of known soil based arsenic contamination at a former dip site located at 801 Dungowan Dam Road, Ogunbil (Lot 54 in DP 755322).

MHC undertook a detailed site investigation (DSI) which identified a number of areas containing elevated concentrations of arsenic in shallow soil (MHC 2018). These areas (hot spots) were further sampled and analysed with the aim of delineating specific areas of contamination.

The DSI identified hot spot concentrations in the order of two (2) to four (4) times the adopted criteria (100 mg/kg) under the National Environmental Protection (Assessment of Contamination) Measure 1999, as amended 2013 (ASC NEPM).

Following the outcome of the DSI, MHC in consultation with Tamworth Regional Council determined that a Human Health Risk Assessment (HHRA) was required to determine if the observed concentrations posed a significant exposure risk to site users and occupants.

Based upon the outcome of EnRiskS HHRA, it was recommended that no site remediation works were required given the site is maintained as unoccupied agricultural (grazing) land and access by farm workers is limited. However, if the land use is proposed to change or the potential for human exposure increases, remediation works may be required. As the physical dip (plunge) had not been removed and remained in situ, it was recommended that the area is suitably secured to prevent access to the dip and surrounding contaminated shallow soil.

v [Environmental Risk Sciences Pty Ltd 2019, Human Health Risk Assessment – Former Sheep Dip, Tamworth, 16 May 2019](#)

Environmental Risk Sciences Pty Ltd (EnRiskS) was engaged by MHC to undertake a HHRA in relation to the presence of arsenic in soil as a result of the presence of a former sheep dip located on a rural residential property identified as Lot 54 in DP 755322 in Tamworth, NSW.

The assessment included analysis of 2 soil samples for arsenic bioaccessibility and derivation of a site-specific risk-based criteria for arsenic. The bioaccessibility of arsenic in the soil was found to be relatively high, approximately 80%. A review of the NEPM indicated that for arsenic, where the bioaccessibility is 70% or greater, it is not appropriate to adjust the HIL on the basis of bioaccessibility. This is due to some uncertainties in understanding the toxicity of arsenic.

A site-specific rural arsenic soil criterion of 400 mg/kg was derived based on the bioaccessibility. Statistical analysis for average and 95% Upper Confidence Limit (UCL) showed all samples were below the site-specific criteria, the maximum was less than 250% of the site-specific criteria and the standard deviation was less than 50% of the site-specific criteria. It was therefore concluded that there were no risk issues of concern in relation to the presence of arsenic in soil in the area of the former dip site, within the larger rural property.

4.2.2 Historical imagery review

A summary of the aerial photograph review is presented in Table 4.2. Refer to Annexure C for the historical aerials.

Table 4.2 **Historical imagery review**

Image details	Review of project footprint and surrounds (500 m radius)
1960 aerial imagery, black and white	The project footprint and surrounds are dominated by partially cleared agricultural land which generally resemble the most recent (2020) imagery. The eastern portion of the project footprint has notably more vegetated land and topographic variation, compared to more intensive agricultural use towards the western end. However, a number of small farm residences and buildings are visible throughout the project footprint and surrounds, mostly concentrated within close proximity to Dungowan Creek. The original Dungowan Dam is visible at the eastern end of the project footprint.
1966 aerial imagery, black and white	Imagery only available for the western portion of the project footprint (10 km length of pipeline) and far eastern portion (dam area). The image quality is poor surrounding the dam area, but overall appears to be generally consistent with the previous aerial image (1960).
1967 aerial imagery, black and white	Imagery only available for the central-eastern portion of the project footprint (15 km length of pipeline). Generally consistent with the previous aerial image (1960).
1976 topographic map, colour	The map displays notable homestead and town names and other key features. The map notes an open cut mine approximately 1 km east of the Dungowan township and 1 km from the project footprint on the northern side of Dungowan Creek.
2020 aerial imagery, colour (Google)	Generally consistent with the previous aerial imagery (1966/67), with generally more vegetated land and present especially towards the eastern end of the project footprint and dam area. No significant development has been identified across the project footprint.

4.2.3 Mining activity

An article in the Maitland Mercury and Hunter River General Advertiser (1881) refers to the presence of copper deposits and mining in the area. A copper lode and mining shaft was reportedly located along a spur line 'about half a mile' (approximately 800 m) from a house in Dungowan, which is within proximity to the western end of the project footprint (approximately 500 m to 1 km). This may correspond with an open cut mine identified from the 1976 topographic map approximately 1 km east of the Dungowan township (Table 4.2).

It is possible that the subsurface geology in the area may contain other naturally occurring minerals found along the New England Fold Belt, such as zinc, silver or gold. Given the presence of known mineral deposits, undocumented historical mining activities may have occurred in the vicinity of the new Dungowan Dam.

4.2.4 Asbestos containing material

Potential asbestos containing material (ACM) was identified during the SMEC geotechnical investigation near location BH08. The potential ACM was observed on the ground surface and comprised a number of small to large fragments (5 mm to 2 m) located near a demolished house within the proposed dam spillway alignment.

4.3 Heritage

The database search (refer to Annexure A, Part 2, p. 48 and Part 3, p. 45) indicated that the following locally listed heritage items are present within a 200 m radius of the project footprint:

- Ogunbil Brick Shearing Shed and Silo, listing I283 on *Tamworth Regional Local Environmental Plan 2010*, bisecting the project footprint; and
- Port Stephens Cutting, listing I264 on *Tamworth Regional Local Environmental Plan 2010*, where the proposed powerline will traverse, but not impact this heritage listed road cutting on Nowendoc Road, situated approximately 136 m north-west of the pipeline at Ogunbil.

4.4 Geology, soils and topography

The geological map shown in Annexure A (Part 1, p. 34) indicates that the project footprint features undifferentiated Palaeozoic aged sandstone, mostly lithic, with schist, phyllite, slate, chert, jasper, metabasites, amphibolite and limestones, with some Wisemans Arm Formation sandstone, conglomerate and basalt towards the western end of the project footprint. However, the project footprint is mostly dominated by Cainozoic aged undifferentiated alluvium (fluvial sand, silt, clay and gravel deposits) with some colluvium and residual soils, which are generally spatially distributed within the present Dungowan Creek floodplain.

Elevation across the project footprint ranges between 430 and 480 m Australian Height Datum (AHD) at the western end, to 560 to 700 m AHD at the eastern end where the site exhibits significant valley confinement with peaks up to 1,050 m AHD within 1 km of the project footprint. The new Dungowan Dam crest is situated 672 m AHD with a toe level of 610 m AHD. The existing Dungowan Dam has a crest level of 689 m AHD and a toe level of 655 m AHD. All elevations are approximate.

The soil landscape shown in Annexure A (Part 1, p. 38) indicated the pipeline section of the project footprint is dominated by dermosols featuring dark porous loamy soils, cracking clays and gravelly soils. The eastern end of the project footprint is dominated by chromosols, featuring hard acidic red and yellow soils along with shallow loamy soils.

Available borehole lithological data (Annexure A, Part 1, p. 31) shows the subsurface generally consists of (in order of depth) sandy loam, clay, gravel, shale and basalt.

No ASS or dryland salinity were identified within the project footprint from the database search and mapping as described in Section 3.3. There is a provisional classification of low and extremely low probability of occurrence of potential ASS, generally within the upper 1 m in wet/riparian areas of the project footprint (Annexure A, Part 1, p. 41). It is also noted that the existing dam area has been mapped as having a high probability of occurrence of ASS.

4.5 Hydrology and hydrogeology

The hydrogeological unit intersecting the project footprint is fractured or fissured, extensive aquifers of low to moderate productivity. There are over 100 registered groundwater bores within 1 km of the project footprint, mostly within the western portion, with the following characteristics:

- the authorised purposes of the groundwater bores are predominately for domestic, stock and irrigation use;
- one groundwater bore was identified within the project footprint boundary (refer to map in Annexure A, Part 1, p. 26);
- the final installed depth of the groundwater bores ranged from 3 to 83 m; and
- the standing water level within the groundwater bores ranged from 0.5 to 26 m.

Available information on these monitoring wells is provided in Annexure A (Part 1, p. 27).

Dungowan Creek and tributaries intersect the project footprint at a number of locations, which forms part of the Namoi catchment within the Murray–Darling basin. The Peel River intersects the project footprint at the far eastern end.

Areas of high, moderate and low potential groundwater dependant ecosystems (GDE) were identified within a 500 m radius of the project footprint (Annexure A, Part 1, p. 58). These include both river and vegetation ecosystems in ridges and valleys in metamorphic rocks, mostly towards the western end of the project footprint, and vegetation ecosystems in undulating granitic plateau with higher residuals including basalt capping towards the eastern end of the project footprint.

The project is situated within the Northern NSW Area 1 underground petroleum storage system (UPSS) sensitive zone. No UPSS or underground storage tanks (USTs) are known to be present or have historically been present within the project footprint.

4.6 Ecology and natural hazards

The project footprint and surrounds are dominated by partially cleared open grassland/woodland for cropping and grazing within the valley floodplain, while the surrounding slopes feature mostly disturbed woodland and open forest. The Peel River and Dungowan Creek are listed as protected riparian corridors (DPE 2022).

Additionally, no wetlands or State Environmental Planning Policy Protected Areas were identified within a 500 m radius of the project footprint.

There are small pockets of land within and surrounding the western portion of the project footprint classified as Bushfire Prone Land by the Rural Fire Service. However, most of the land within and surrounding the project footprint within the eastern portion is Bushfire Prone Land as it is significantly more vegetated (Annexure A, Part 1, p. 54).

4.7 Climate

Based on the information available from the nearest Bureau of Meteorology data source (Tamworth Airport Australian Weather Station (055325) located approximately 30 km north west of the project footprint), the region experiences warm to hot summers and cold winters with an average maximum temperature in the summer (January) of 33.1°C and an average minimum temperature in winter (July) of 2.2°C. The region experiences an annual average rainfall of 618.3 mm. December experiences the highest median rainfall of 70 mm whereas April experiences the lowest (14.5 mm).

4.8 NSW EPA records and other potential regulatory contamination issues

There were no identified records within a minimum 500 m radius of the project footprint for the following searches undertaken (refer to Annexure A, Part 1, p. 2):

- contaminated land record of notices issued under the CLM Act;
- contaminated sites notified to the NSW EPA;
- per- and poly-fluoroalkyl substances (PFAS) site investigations;
- Department of Defence sites (including unexploded ordnance sites);
- former gasworks;
- fuel depots/terminals and service stations;
- aviation fire fighting facilities;
- dry cleaners;
- electrical substations;
- landfills/waste management facilities;
- power stations; and
- telephone exchanges.

Additionally, there were no records for USTs or properties affected by loose-fill asbestos insulation within the project footprint.

4.8.1 Mining activities

i Current mining and exploration titles applications

Table 4.3 Current mining and exploration titles applications

Application ref	Applicant	Currency	Operation	Resource	Minerals	Distance	Direction
EL9003	LODE RESOURCES PTY LTD	12/10/2020 – 12/10/2023	EXPLORING	MINERALS	Group 1	0 m	Onsite

Table 4.3 Current mining and exploration titles applications

Application ref	Applicant	Currency	Operation	Resource	Minerals	Distance	Direction
EL9002	ANGEL JADE PTY LTD	01/10/2020 – 1/10/2022	EXPLORING	MINERALS	Group 2, Group 3	946 m	North

Licence EL9003 covers almost the entirety of the western portion of the project footprint and surrounding land (refer to maps in Annexure A, Part 1, p. 45).

Licence EL9002 is situated approximately 1 km north of the central portion of the project footprint (refer to maps in Annexure A, Part 2, p. 41).

Group 1 minerals refer to metallic minerals, while group 2 and 3 minerals refer to non-metallic minerals and semi-precious stones respectively.

ii Historical mining and exploration titles/applications

Table 4.4 Historical mining and exploration titles/applications

Title ref	Holder	Start Date	End Date	Resource	Minerals	Distance	Direction
EL0191	SERPENTINE MINERALS NL	01 Jul 1969	01 Jul 1971	MINERALS	Cu Mo	0 m	Onsite
EL0224	NICKEL MINES LIMITED	01 Dec 1969	01 Dec 1970	MINERALS	W Au Ni Pt Sb	0 m	Onsite
EL0464	FISCHERS COPPER MINE PTY LIMITED	01 Jul 1971	01 Jul 1972	MINERALS	Cu Ag Mo	0 m	Onsite
EL0563	ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED	01 Dec 1972	01 Jun 1974	MINERALS	Cu Zn	0 m	Onsite
EL1875	NEWMONT HOLDINGS PTY LIMITED	01 Jun 1982	01 Nov 1982	MINERALS	Cu Au	0 m	Onsite
EL2219	COLONIAL EXPLORATION & RESOURCES NL	01 May 1984	01 May 1987	MINERALS	Au	0 m	Onsite
EL2860	MUMBIL MINES NL	01 May 1987	01 Mar 1989	MINERALS	Pt Au Pd	0 m	Onsite
EL3145	CLUTHA MINERALS LIMITED	01 Jul 1988	01 Mar 1990	MINERALS	Au	154 m	South East
EL6270	KEEGAN, Michael John	14 Jul 2004	19 Apr 2006	MINERALS	Nil minerals	37 m	East
EL6613	PEEL EXPLORATION LIMITED	22 Aug 2006	21 Aug 2010	MINERALS	Cu Au Mo Pb W Cr Zn	0 m	Onsite
EL6693	BARFUSS CORPORATION PTY LTD	4 Jan 2007	3 Jan 2011	MINERALS	Jade Nephrite Rhodonite	0 m	Onsite

Table 4.4 **Historical mining and exploration titles/applications**

Title ref	Holder	Start Date	End Date	Resource	Minerals	Distance	Direction
EL7489	GOLD OF OPHIR PTY LTD	25 Mar 2010	10 Apr 2012	MINERALS	Au	0 m	Onsite
EL7760	KIMBA RESOURCES PTY LTD	1 Jun 2011	1 Jun 2013	MINERALS	Au	0 m	Onsite
EL7770	IRGS NORTHERN GOLD PTY LTD	06 Jun 2011	17 Feb 2015	MINERALS	Au	0 m	Onsite
EL7883	ANGEL JADE PTY LTD	10 Jan 2012	10 Jan 2014	MINERALS	Serpentine Jade Nephrite	0 m	Onsite
EL8012	SOC1 PTY LTD	21 Nov 2012	19 Dec 2013	MINERALS		0 m	Onsite
EL8056	IRGS NORTHERN GOLD PTY LTD	12 Feb 2013	17 Feb 2015	MINERALS	Au	0 m	Onsite
EL8067	IRGS NORTHERN GOLD PTY LTD	22 Mar 2013	26 Nov 2013	MINERALS		0 m	Onsite
EL8375	SOC2 PTY LTD	27 May 2015	07 Dec 2015	MINERALS	Au	0 m	Onsite
PEL0110				PETROLEUM	Petroleum	0 m	Onsite
PSPA036	PANGAEA OIL & GAS PTY LIMITED	11/11/2009	11/11/2010	PETROLEUM	Petroleum	0 m	Onsite

Historical mining titles cover the entirety of the project footprint and surrounding 1 km buffer area (refer to maps in Annexure A, Part 1, p. 45). Minerals for which exploration has been undertaken include copper, silver, nickel, antimony, zinc, gold, tungsten, platinum, molybdenum, palladium and chromium, along with magnesium rich minerals such as jade, nephrite and rhodonite, along with Serpentine which can contain chrysotile (white) asbestos. It is noted that although nephrite is a non-asbestiform fibrous mineral, silicate can generate silica particles which can be harmful to human health. There are also two records for petroleum exploration licences within the project footprint.

4.8.2 Licenced activities under the POEO Act 1997

Delicensed activities still regulated by the EPA include logging operations held under Licence no 3957 and 12981 by Forestry Corporation of NSW approximately 470 m south west and 800 m east of the western end of the project footprint (existing dam area), surrendered in 2000. Licence no 4113 for pig accommodation within the central portion of the project footprint was surrendered in 2000.

4.8.3 Fire services sites

Aqueous Film Forming Foams (AFFF) containing PFAS compounds were commonly used by fire agencies from the late 1970s to early 2000s.

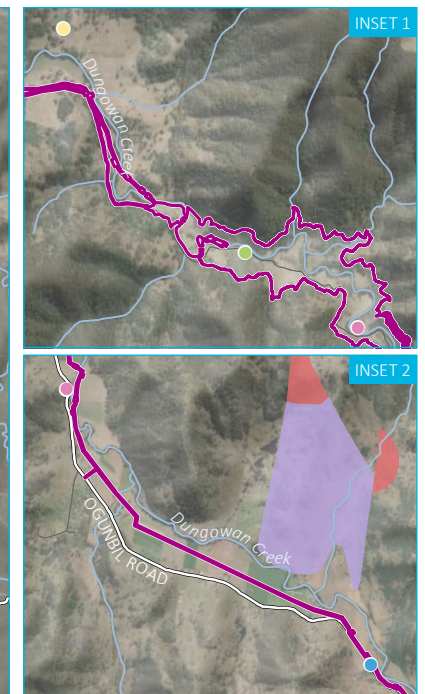
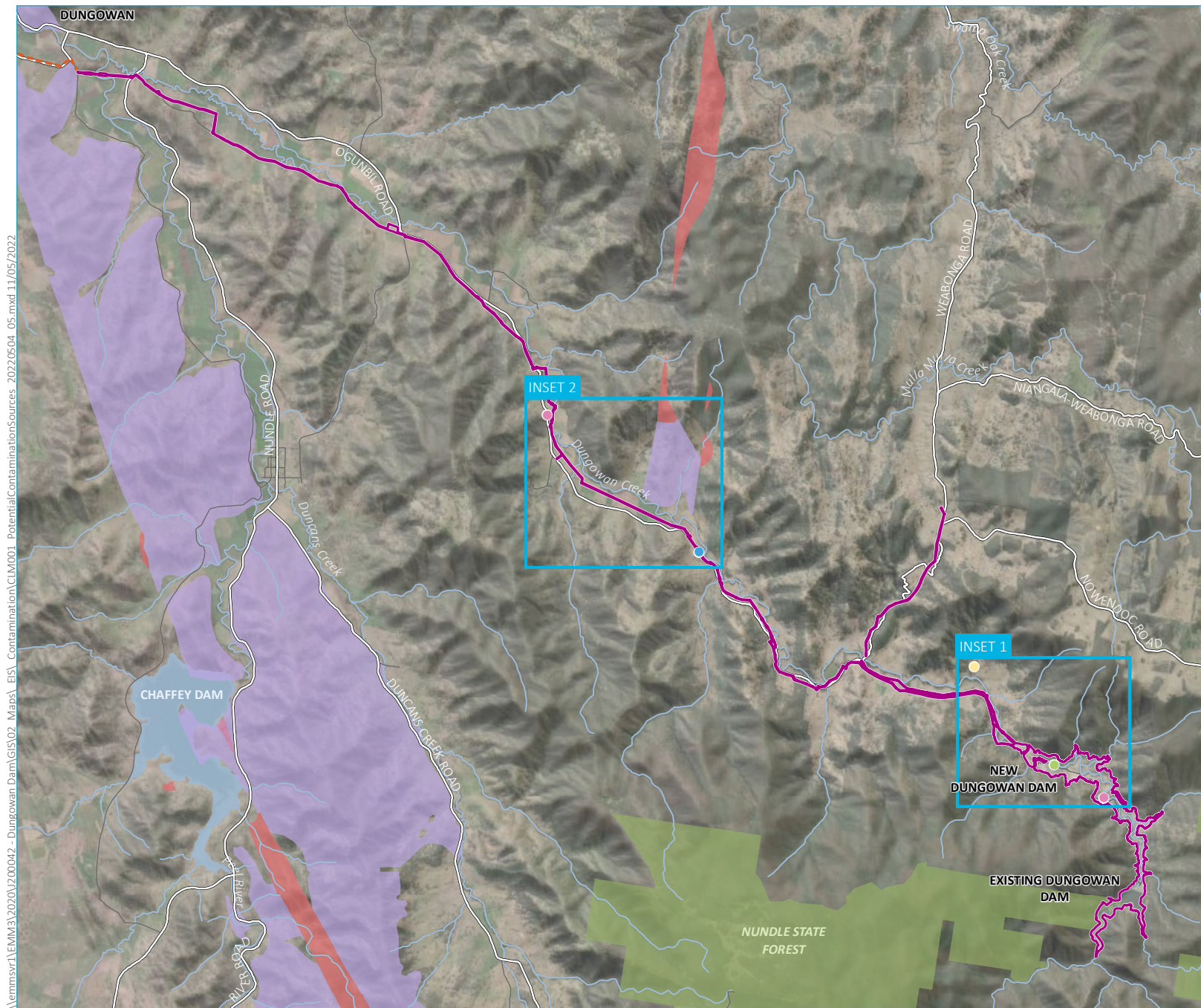
‘Dungowan RFB’ is reported to be located at the intersection of Nundle Road and Duri-Dungowan Road, approximately 400 m north-northeast of the project footprint in the township of Dungowan.

Although the Ogunbil Rural Fire Service (RFS) did not appear in the database search results, it was identified during the site inspections (refer to Section 1.1), however no obvious signs of fire training activities (eg burnt or bare areas, fire training equipment, vehicles or areas of dead grass or vegetation) were noted during the inspection, which may be indicative of contamination caused by fire training.

4.8.4 Naturally occurring asbestos

NSW Trade & Investment, Resources and Energy (2013) mapping of areas where there is potential for naturally occurring asbestos (NOA) to occur within about 10 m of the surface throughout New South Wales was reviewed. NOA was not generally mapped as being present except for two areas near the far western end of the project footprint and another near the central portion of the project footprint, which are located in proximity to the proposed pipeline. These two areas are limited in extent and have been assessed as having a low probability of formation occurrence of NOA (refer to Figure 4.1). One of these areas is mapped at the far western end on the project footprint on south side of the Peel River near Dungowan Recreation Area. It is also noted that areas of high probability of occurrence are situated approximately 2 km north of the central portion of the project footprint, with a known occurrence approximately 30 km north-north west of the project footprint. The region is also home to the historical Woodsreef Asbestos Mine, situated approximately 90 km north west of the project footprint.

In an undisturbed state, the presence of NOA is generally well bound in the crystalline fabric of the host rock and does not present a risk to human health. However, the inhalation of airborne mineral asbestos fibres presents a potential human health risk where asbestos bearing rocks are disturbed in a manner likely to release respirable fibres.



- KEY**
- Project footprint
 - Confirmed acid sulfate soil
 - Confirmed potentially acid forming rock
 - Former sheep dip
 - Ogunbil RFS
 - Existing Dungowan Dam pipeline
 - Major road
 - Minor road
 - Named watercourse
 - Named waterbody
 - State forest
 - Naturally occurring asbestos potential
 - High
 - Medium
 - Low

Potential contamination sources

Dungowan Dam and pipeline project
Contamination preliminary site investigation
Figure 4.1

4.9 Site inspection

Site inspections were undertaken between 24-25 June 2020, 10-11 September 2020 and 28-29 October 2021 to evaluate areas of potential contamination, including visible signs of waste and disturbed ground, which may be indicative of unlicensed landfills and burials. The key outcomes of the site inspections are summarised below. A photographic log is provided in Annexure B.

4.9.1 General observations

The project footprint is generally freehold agricultural land and follows Dungowan Creek from the Peel River confluence at the western end, upstream to the existing Dungowan Dam at the eastern end. The eastern end of the existing dam area is Tamworth Regional Council owned land used for existing water supply infrastructure, and there is notably more vegetated undeveloped bushland surrounding the eastern section of the project footprint.

4.9.2 Areas of interest

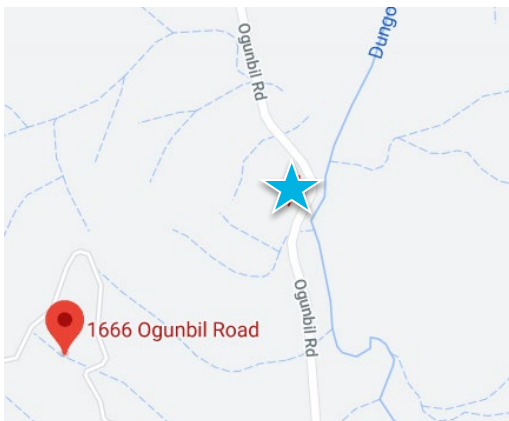
The following features were observed:

- the existing Dungowan Dam area was fenced off and not accessible by the general public (Annexure B, Plate 1) and it is assumed that potentially contaminating activities would be highly restricted and limited within the operating facility;
- the general area is predominantly freehold agricultural land (Annexure B, Plate 2);
- areas of disturbed ground and cuttings were observed along hillslopes within 20 m of the project footprint along Dungowan Dam Road (Annexure B, plates 3, 4, 6, 10);
- evidence of fill material including potential mounds were observed along Dungowan Dam Road (Annexure B, Plate 5);
- former/abandoned buildings were observed along Dungowan Dam Road (Annexure B, plates 7, 8);
- potentially asbestos containing service pits (eg telecommunications) were observed along Ogunbil and Dungowan Dam Road (Annexure B, Plate 9);
- the Ogunbil RFS building was observed to be a small shed situated along Ogunbil Road adjacent to the project footprint (Annexure B, Plate 11); and
- an above ground storage tank (AST) with an estimated capacity of 5,000 litres (L), with unknown contents, approximately 50 m downgradient of the project footprint (Annexure B, Plate 16).

4.10 Interviews with Local Landowners

Interviews were held with landholders where properties were within the project footprint, including the inundation area. As part of the landowner interviews for the Social Impact Assessment that forms part of the EIS and to gain an understanding of the potential presence of unregulated waste burial areas within the project footprint, local residents were asked the following question 'Does the landowner dispose of, or are they aware of an historical disposal of waste on the land? If 'yes', where was the waste disposal situated?' Information obtained from the interview is provided in Table 4.5.

Table 4.5 **Resident interview regarding waste disposal on private land**

Address	Response	Location (if applicable)
1666 Ogunbil Road 'Cooee' 1345 Ogunbil Road 'Brooklyn'	A sheep dip was historically located at 1666 Ogunbil Road. Domestic landfills were historically located at both properties, but the landholders believe they are no longer active and have been cleaned up. All current waste is removed by Tamworth Regional Council.	
803 Ogunbil Road 'Dungowan Station'	Not aware of any past waste disposal on the land. All current waste is removed by Tamworth Regional Council.	Not applicable.
1064 Ogunbil Road 'Wyuna'	Landholder noted that there would have been domestic waste disposal undertaken by previous owners, however they are not aware of exact landfill burial locations. Any waste that has been identified on their land has been removed. All waste currently is removed by Tamworth Regional Council.	Not applicable.
2254 Ogunbil Road 'Chevrolet'	Landholder noted that they are not currently disposing any waste on their land, and all waste is removed by Tamworth Regional Council. They believe that waste would have historically been disposed on the land, but they are not aware of any specific waste disposal locations.	Not applicable.
1124 Ogunbil Road 'Wyntara'	Landholder noted that animal waste (innards, droppings) was historically discarded at various location on the property. Also noted that they were aware of old metal fencing being disposed all over the place but has been removing this over time. They were not aware of a historic waste disposal site on the property. All current waste is removed by Tamworth Regional Council.	Not applicable.
1064 Ogunbil Road 'Wyuna'	Landholder noted that there has been no historical disposal of waste on the property and that all current waste is removed by Tamworth Regional Council.	Not applicable.
323 Dungowan Creek Road	Residents are not aware of any historic disposal of waste on the land and that all current waste is removed by Tamworth Regional Council. Landholder did note that there is an old copper mine behind the cemetery.	Not applicable.

5 Potential impacts

5.1 Construction impacts

Construction phase impacts relate to the excavation and surface disturbance areas associated with the construction of the project. The following sections outline potential contamination impacts of construction activities from both existing sources and sources introduced as a result of construction activities.

5.1.1 Existing sources

There are potential contamination impacts from existing sources across the entire project footprint (refer to Figure 4.1). These are described in Table 5.1 below.

Table 5.1 Potential existing source areas and CoPC

Source type and CoPC	Identified source area
Uncontrolled fill/demolished buildings – asbestos, petroleum hydrocarbons, polychlorinated biphenyls (PCB), metals, organochlorine pesticides (OCP) / organophosphorus pesticides (OPP)	- Potential uncontrolled use of fill material across the entire project footprint. Anthropogenic fill material was encountered at depths of up to 1 m during the geotechnical investigation at multiple test pit and drilling locations (SMEC 2020). Fill materials generally comprised reworked natural materials, with trace inclusions of refuse when located adjacent to demolished buildings (eg tiles, glass, etc). - Potential ACM was observed on the ground surface by SMEC, in small to large fragments (5 mm to 2 m), near a demolished house within the proposed dam spillway alignment. - Suspected fill material was also observed during the site inspections undertaken by EMM.
Historical application of herbicides and pesticides on agricultural land – OCP/OPP	All land areas used for agricultural purposes, which comprise most of the project footprint.
Culverts and pipelines – asbestos	Within all areas on within the project footprint, particularly adjacent to roadways where service conduits exist. Potentially asbestos containing service pits were observed during the site inspections.
Historical mining activity/PAF rock – acid mine drainage – heavy metals	- Numerous historical mining exploration titles cover the project footprint and surrounds, including one current title. Cuttings into hillslopes were observed during the site inspections. Potential elevated concentrations of metals may be present associated with historical mining/exploration activity including the potential presence of residual spoil. - SMEC (2020) indicated that the presence of PAF rock was also possible within the project footprint with one sample confirmed to be PAF. However, this was encountered below the proposed project excavation depths.
Potential/actual acid sulfate soils (ASS) – metals	- There is a provisional classification of low and extremely low probability of occurrence of Potential ASS (PASS), generally within the upper 1 m in wet/riparian areas of the site (Annexure A, Part 1, p. 47). It is also noted that the existing dam area has been mapped as a high probability of occurrence of ASS. - SPOCAS analysis undertaken by SMEC (2020) reported the following outcomes: - generally, the Actual and Potential Acidity in the sampled materials were low, with some of the acidity due to sources other than pyritic materials; and - from eleven samples, two samples from TP44 (0.1 m and 1.55 m) showed elevated levels of actual acidity and soil pH values between pH 4.3 and pH 5.1. The deeper of those samples showed elevated magnesium levels.
Ogunbil RFS – PFAS	The Ogunbil RFS building was observed to be a small shed situated along Ogunbil Road adjacent to the project footprint within the central portion. AFFF containing PFAS compounds were commonly used by fire agencies from the late 1970s to early 2000s.

Table 5.1 **Potential existing source areas and CoPC**

Source type and CoPC	Identified source area
Above ground storage tank (AST) with unknown contents – likely petroleum hydrocarbons	A single AST was identified during the site inspections, located on Dungowan Dam Rd, Lot 11 DP1018729. The storage capacity was visually estimated to be approximately 5,000 L, however the contents were unable to be determined. ASTs of this kind are typically used for bulk fuel storage and it may be assumed the tank is or has been used to store diesel. Spills and leaks can result in contamination of underlying soils and infiltrate shallow groundwater if present. However, it was noted that the AST was observed to be located approximately 50 m downgradient of the pipeline footprint, which largely precludes the potential for migration of contamination (if present) towards the site.
Former sheep dip – arsenic	- Known arsenic contamination at a former dip site located adjacent to the proposed quarry at 801 Dungowan Dam Road, Ogunbil was recently investigated (MHC 2018). The highest concentration reported was 490 mg/kg, exceeding the NEPM Health Investigation Level (HIL) C for recreational land use (300 mg/kg). The investigation findings concluded there was significant contamination, which warranted a risk assessment or remediation. Statistical analysis undertaken during EnRiskS HHRA for average and 95% UCL showed all samples were below the site-specific criteria (400 mg/kg), the maximum was less than 250% of the site-specific criteria and the standard deviation was less than 50% of the site-specific criteria (EnRiskS 2019). - A second sheep dip was reportedly located at 1666 Ogunbil Road. No evidence of previous contamination investigations has been identified at this location; however, it is located outside of the project footprint.
NOA – asbestos	Two areas near the far western end of the project footprint and another near the central portion of the project footprint have been assessed as a low probability of formation occurrence of NOA. One of these areas is situated within the project footprint at the far western end on the south side of the Peel River near Dungowan Recreation Area. It is noted that areas of high probability of occurrence are situated approximately 2 km north of the central portion of the project footprint, with a known occurrence 30 km north of the project footprint. Additionally, records of historical mining titles within the project footprint include the mineral serpentinite, which can contain chrysotile (white) asbestos.

5.1.2 Potential impacts on existing sources from project construction activities

The construction phase has the potential to disturb existing contamination (where present) through the exposure pathways and receptors enabled by various activities, particularly the excavation and management of construction spoil.

Excavated material would be transported to disposal/reuse sites following classification and confirmation of suitability for the proposed land use.

Construction activities, which require consideration of potential contamination are primarily related to excavation works (surface and trenching works), and may include the following:

- temporary and permanent stockpiling of spoil on land;
- cut and fill for site establishment, spillway and embankment;
- laydown and storage of materials (including dangerous goods);
- delivery of materials, plant and equipment; and
- excavating, filling and rehabilitation of disturbed areas to the final approved landform.

5.1.3 Potential introduced sources from project activities during construction

Additionally, new sources of contamination may be introduced through construction. These include and are not limited to spills/leaks of chemicals or waste generation associated with:

- ancillary utility works;
- storage of petroleum, diesel, chemicals and other hydrocarbons (including dangerous goods), etc;
- establishment of site offices, amenities and temporary infrastructure; and
- construction of permanent operational infrastructure.

There is the potential for exposure of human and ecological receptors to contamination as a result of the inappropriate management of waste, including potential leaks and spills from equipment and plant (generated by construction activities). Typical examples would include spills of hydrocarbons while refuelling or lubricants used by machinery, and generation of construction waste. However, these impacts can be managed with the implementation of suitable management measures.

5.1.4 Potential exposure pathways and receptors

If not managed appropriately, there would be potentially complete human exposure pathways from contamination sources to receptors (where identified). These may include:

- direct dermal contact and incidental ingestion of contaminated soil by construction workers during excavation and stockpiling of potentially impacted spoil where present;
- inhalation of fibres or dust from soil by construction workers;
- direct dermal contact and incidental ingestion of contaminated surface water/perched groundwater by project construction workers;
- inhalation of soil/groundwater vapours within a trench or outdoor air by construction workers; and
- exposure of ecological receptors via plant uptake and/or animal ingestion.

5.2 Operational impacts

5.2.1 Impacts from existing potential sources of contamination during operation

Potential impacts from existing contamination during operation of the project are primarily associated with the reuse or disturbance of contaminated spoil and sediment that may be either naturally occurring (mineral deposits) or anthropogenic in origin (refer to Section 5.3.1 for a preliminary risk assessment). If management protocols are not implemented appropriately, this could create an exposure pathway for water infiltration and subsequent leaching of contaminants.

5.2.2 Impacts to the environment from project activities during operation

For the purposes of this contamination assessment, identified operational impacts primarily relate to the low potential for contamination of soil, surface water and groundwater arising from maintenance incidents, leaks and spills associated with the operation of the project. Maintenance activities would include minor servicing of pumps, valves and other mechanical infrastructure in the dam and pipeline elements, with only minor quantities of oils and greases expected to be used. The risk of contamination events occurring during operation is considered low.

To manage spills and leaks associated during the operation of the project, spill containment facilities would be in permanent operational facilities where there is a risk of impact from spills. Site management activities would be documented in an Operational Environmental Management Plan (OEMP) prepared to inform the operation of the project.

5.3 Preliminary conceptual site model

5.3.1 Sources and preliminary risk assessment

Several sources of potential contamination have been identified (refer to Section 5.1.1). A tier 1 preliminary risk assessment of these sources is presented in Table 5.2 below. The risk assessment framework is outlined in Section 3.4.

Disturbance and transport of spoil during the project may potentially lead to contamination of construction and laydown areas not previously contaminated and thus present new sources.

Table 5.2 Potential sources – tier 1 preliminary risk assessment

Source type and CoPC	Identified source area	Tier 1 preliminary risk assessment
Uncontrolled landfills/fill material/demolished buildings – asbestos, petroleum hydrocarbons, PCB, metals, OCP)/(OPP	• Potential uncontrolled use/disposal of fill material across the entire project alignment. Anthropogenic fill material was encountered at depths of up to 1 m during the geotechnical investigation at multiple test pit and drilling locations (SMEC 2020). Fill materials generally comprised reworked natural materials, with trace inclusions of refuse when located adjacent to demolished buildings (eg tiles, glass, etc). • Potential ACM was observed on the ground surface by SMEC, in small to large fragments (5 mm to 2 m), near a demolished house within the proposed dam spillway alignment. • Suspected fill material was also observed during the site inspections undertaken by EMM. • Interview with landowners indicate the potential for localised unregulated burials to be present, however none were visually identified during the site inspections or desktop review.	• Low • Intensive human development and land uses have not occurred across the site, so widespread or significant contamination resulting from fill material and/or demolition waste is considered unlikely to be present at concentrations above the relevant assessment criteria.
Historical application of herbicides and pesticides on agricultural land – OCP/OPP	• All land areas used for agricultural purposes, which comprise most of the site.	• Low • The agricultural activities observed in general across the site and surrounds appeared non-intensive and thus frequent and widespread application of pesticides and/or herbicides across a large area is considered unlikely.

Table 5.2 **Potential sources – tier 1 preliminary risk assessment**

Source type and CoPC	Identified source area	Tier 1 preliminary risk assessment
Culverts and pipelines – asbestos	Within all areas on the project site, particularly adjacent to roadways where service conduits exist. Potentially asbestos containing service pits were observed during the site inspections.	- Low - Underground service infrastructure is not considered to be significantly developed or concentrated at the project site, so widespread and significant asbestos contamination is unlikely.
PAF rock – acid mine drainage – heavy metals	SMEC (2020) indicated that the presence of PAF rock was also possible within the project footprint with one sample confirmed to be PAF. This sample was obtained from below the proposed project excavation depth.	- Low - Medium - While six of the eight samples were classified as NAF, one sample (obtained from below the proposed depth of excavation) was classified as PAF and another was uncertain.
Acid sulfate soils (ASS) – metals	- There is a provisional classification of low and extremely low probability of occurrence of Potential ASS (PASS), generally within the upper 1 m in wet/riparian areas of the site (Annexure A, Part 1, p. 47). It is also noted that the existing dam area has been mapped as a high probability of occurrence of ASS. - The SPOCAS analysis on the site undertaken by SMEC (2020) reported the following outcomes: - generally, the Actual and Potential Acidity in the sampled materials were low, with some of the acidity due to sources other than pyritic materials; and - from eleven samples, two samples from TP44 (0.1 m and 1.55 m) showed elevated levels of actual acidity and soil pH values between pH 4.3 and pH 5.1. The deeper of those samples showed elevated magnesium levels.	- Low - Medium - No ASS was identified within the site from the database search and mapping. While the provisional classification for the site is extremely low to low potential PASS, this range numerically includes up to 70% probability of occurrence. Notwithstanding, an area of high occurrence is situated within the existing Dungowan Dam area. - Sample TP44 is located downstream of the dam site and is located in an area that is unlikely to be exploited for embankment fill.
Historical mining	Numerous historical mining exploration titles cover the entire site area and surrounds, including one current title (refer Annexure A, Part 1, p. 52). There are potential elevated concentrations of metals associated with historical mine exploration activities	- Low - Records of widespread mining exploration exist for the site and surrounding area however no ground disturbance associated with mining was observed within the project footprint during the site inspection.
Ogunbil RFS – PFAS	The Ogunbil RFS building was observed to be a small shed situated along Ogunbil Road adjacent to the site within the central portion. Aqueous Film Forming Foams (AFFF) containing PFAS compounds were commonly used by fire agencies from the late 1970s to early 2000s. No external infrastructure was visible and the internal features of the shed were not accessible during the site inspections.	- Low - Given the very small footprint of the infrastructure observed, and no visible storage tanks or training area, it is unlikely that widespread or significant contamination associated with the use of PFAS has occurred here.

Table 5.2 **Potential sources – tier 1 preliminary risk assessment**

Source type and CoPC	Identified source area	Tier 1 preliminary risk assessment
AST/bulk fuel storage – petroleum hydrocarbons	A single AST was identified during the site inspections, located on Dungowan Dam Rd, Lot 11 DP1018729. The storage capacity was visually estimated to be approximately 5,000 L. While the contents were unable to be determined, ASTs of this kind are typically used for bulk fuel storage and it may be assumed the tank is or has been used to store diesel. Spills and leaks can result in contamination of underlying soils and infiltrate shallow groundwater if present. However, it was noted that the AST was observed to be located approximately 50 m downgradient of the pipeline footprint which largely precludes the potential for migration of contamination (if present) towards the site.	- Low - It was noted that the AST was observed to be located approximately 50 m downgradient of the pipeline footprint which largely precludes the potential for migration of contamination (if present) towards the site.
Former sheep dip – arsenic	- Known arsenic contamination at a former dip site located adjacent to the proposed quarry at 801 Dungowan Dam Road, Ogunbil was recently investigated (MHC 2018). The highest concentration reported was 490 mg/kg, exceeding the NEPM Health Investigation Level (HIL) C for recreational land use (300 mg/kg). The investigation findings concluded there was significant contamination which warranted a risk assessment or remediation. Statistical analysis undertaken during EnRiskS HHRA for average and 95% UCL showed all samples were below the site-specific criteria (400 mg/kg), the maximum was less than 250% of the site-specific criteria and the standard deviation was less than 50% of the site-specific criteria (EnRiskS 2019). - A second sheep dip was reportedly located at 1666 Ogunbil Road. No evidence of previous contamination investigations has been identified at this location; however, it is located outside of the new Dungowan Dam disturbance footprint.	- Low - EnRiskS HHRA suggested the identified arsenic contamination was not statistically significant or widespread. It is noted the risk assessment was prepared specifically for continued rural land use only. - A second sheep dip identified at 1666 Ogunbil Road is currently outside the project pipeline disturbance footprint. Further assessment should be undertaken if the pipeline alignment intersects the former dip location.
NOA – asbestos	Two areas near the far western end of the project footprint and another near the central portion of the project footprint have been assessed as a low probability of formation occurrence of NOA. One of these areas is situated within the project footprint itself at the far western end on the south side of the Peel River near Dungowan Recreation Area. It is noted that areas of high probability of occurrence are situated approximately 2 km north of the central portion of the project footprint, with a known occurrence 30 km north of the project footprint. Additionally, records of historical mining titles in the project footprint include the mineral serpentinite, which can contain chrysotile (white) asbestos.	- Low - Available mapping data and historical records of former mining titles suggest NOA may occur near two locations along the pipeline alignment.

5.3.2 Pathways

The following transport mechanisms may apply at the site:

- surface run-off of CoPC into drainage lines and Peel Valley catchment area;
- excavation and re-location of soil during construction activities;
- vertical seepage of CoPC into the underlying soils and into perched groundwater; and
- atmospheric dispersion (aeolian transport) of dust, derived from contaminated soil or hazardous building materials (HBM), eg asbestos or lead.

Identified potential exposure pathways for the nominated CoPC include:

- i) dermal contact and incidental ingestion of soil;
- ii) inhalation of dust (including soil derived) or fibres;
- iii) dermal contact and incidental ingestion of groundwater/surface water;
- iv) inhalation of soil/groundwater/surface water vapours in outdoor air;
- v) inhalation of soil/groundwater vapours within a trench; and
- vi) plant uptake and/or ingestion by animals.

Based on the physical and chemical features of the CoPC identified, the exposure pathways that may be applicable to each CoPC at the site are presented in Table 5.3.

Table 5.3 CoPC and applicable exposure pathways

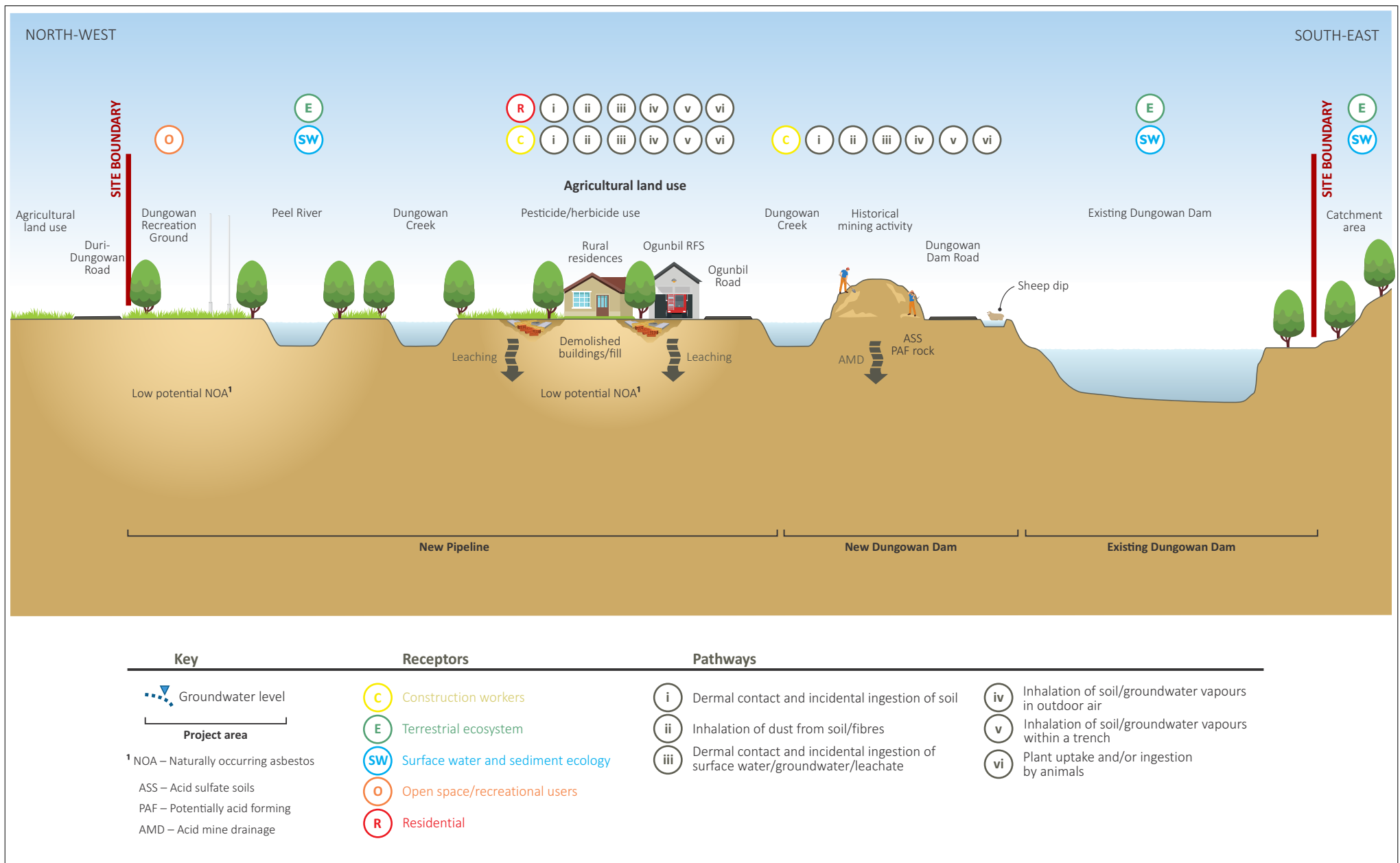
CoPC	Applicable pathways
Asbestos	ii
TPH	i, ii, iii, iv, v, vi
TRH/BTEX	i, ii, iii, iv, v, vi
PAH	i, ii, iii, iv, v, vi
VOCs	i, ii, iii, iv, v, vi
Metals (eg arsenic, lead, etc)	i, ii, iii
OPP, OCP	i, ii, iii, vi

5.3.3 Receptors

The CSM has been developed to identify existing known sources and areas of contamination, associated potential impacts to human health and ecological receptors and to identify exposure source, pathway and receptor linkages. Typical receptors during the construction phase include:

- project construction workers;
- surrounding human users (although access will be restricted from construction areas) such as residential and/or agricultural workers; and
- ecological receptors, including terrestrial and aquatic ecosystems in receiving surface water bodies.

The preliminary CSM for the construction works is presented in Figure 5.1 below.



Conceptual site model
Dungowan Dam EIS
Preliminary site investigation
Figure 5.1

6 Environmental management and mitigation measures

6.1 Management objectives

The key objectives of the contamination management approach are to:

- demonstrate that the construction works will be undertaken in accordance with relevant requirements of the CLM Act, POEO Act and EHC Act;
- prevent significant impacts to project workers and surrounding human receptors from the disturbance of CoPC identified during this assessment;
- prevent significant impacts to surrounding watercourses and ecological receptors from CoPC; and
- formally record the actions taken to identify and control exposure to workplace hazardous substances, as well as their use and transport.

6.2 Management of impacts

The environmental management and mitigation measures to be undertaken during the project to manage potential contamination issues and achieve the management objectives and outcomes are presented in the following sections.

6.2.1 Assessment of construction disturbance areas

Based on the tier 1 preliminary risk assessment completed (refer to Table 5.2), areas within the project footprint that have been assessed as low risk do not require further assessment or remediation and would be managed by the implementation of the Contaminated Land Management Plan (CLMP) for the project. Contamination investigations should be undertaken to further evaluate identified low-medium risks associated with the presence of PAF rock and PASS, which have not been adequately characterised and will be disturbed by construction activities caused by the project, (refer Table 5.2 and Section 5.2.2). The aim of these investigations are to:

- assess the presence of existing contamination (associated with the presence of PAF rock and PASS) and risks posed to the environment, so that appropriate controls can be implemented during construction; and
- characterise the soil and/or excavated spoil for CoPC, either in-situ or at designated sites, to confirm suitability for re-use/disposal as part of the project or off-site disposal to licensed landfill or re-use facility in accordance with the applicable land use criteria, Waste Classification Guidelines (NSW EPA, 2014) or applicable Resource Recovery exemption and/or order, where required.

Identified low-medium risk sources identified within this PSI for the project requiring further assessment, include:

- PASS/ASS: Although samples indicating the presence of PASS conditions were obtained downstream of the new Dungowan Dam, there is a potential that similar conditions may be encountered within the project disturbance footprint. As per SMEC (2020), further information is required to assess to what extent AASS and PASS are likely to require management during construction and commissioning/initial filling of the dam. This may include sampling of surface and subsurface materials along Dungowan Creek high watermark areas at regular intervals (eg 100 m) with analysis for SPOCAS and chromium reducible sulfur (Scr), where material would be excavated or otherwise disturbed as part of project construction activities;

- AMD: SMEC (2020) have noted that management of ASR/AMD may include the following if pyrite material was expected to be disturbed or used in the construction:
 - minimising disturbance of pyritic materials where possible;
 - ensuring the material has fully reacted and is treated prior to placement, if the material is used in structural areas of the dam; and
 - implementing appropriate environmental controls during construction and operation to capture any AMD;
- further testing will be required in the key construction areas to enhance the understanding of ASR characteristics and where actual acidity may be present in the material. SMEC (2020) recommended that further testing includes:
 - testing of available cores in key areas including ABA and SCr;
 - sampling at additional locations in key excavation areas followed by ABA and SCr analysis; and
 - where elevated acid production potential is identified, consider kinetic AMD testing to evaluate AMD quality over time.

EMM notes that any further testing should preferentially target materials from the proposed disturbance footprint (eg the upstream borrow areas and spillway excavation), and exclude samples from below the dam designs excavation levels.

Protocols for the sampling, analysis, monitoring and management of excavated rock and other potentially contaminated materials would be developed and provided in the relevant management plans prepared for the project including the CLMP, CSWMP and AMP.

A Sampling, Analysis and Quality Plan (SAQP) will be prepared to inform the scope of contamination investigations in accordance with the NEPM (ASC NEPM 2013). The SAQP(s) will detail:

- data quality objectives (DQOs) and data quality indicators (DQIs);
- justification of the number, density and location of sampling locations based on the potential for contamination, excavation extents and quantities requiring off-site disposal;
- the sampling locations would target areas of concern and provide coverage of the construction disturbance areas;
- analytical suite and schedule, including contaminants of concern;
- assessment criteria for on-site reuse or off-site disposal, if required (waste classification); and
- sampling and laboratory methodologies, field and laboratory quality assurance and control.

Following the completion of contamination or spoil investigations, a report will be prepared for each construction disturbance area providing conclusions on site suitability, material characterisation and recommendations for health and environmental controls during construction.

Following demobilisation of the construction disturbance area, a post-construction report would be prepared for each construction disturbance location. The post-construction report would confirm the land is fit for purpose and confirm if remedial works are required to clean up contamination from the project works to ensure compliance with the land domains in accordance with the project land rehabilitation strategy.

6.2.2 Contaminated soil and water management during construction

Protocols for the management of contaminated soil and water during construction will be included in the CEMP for all construction works of the project. The CEMP would:

- detail requirements for safety controls including the following where required:
 - air monitoring;
 - exclusion zones and decontamination;
 - excavation ventilation;
 - dust suppression and containment;
 - personnel protective equipment; and
 - training and supervision.
- detail requirements for environmental controls including the following:
 - erosion and sediment control;
 - management of surface water runoff around the excavation/tunnelling/blast areas and prevention of surface water entering excavations;
 - stockpile management procedures for segregating materials and preventing cross contamination of clean material (VENM or ENM) with contaminated material including both natural (eg PAF rock and NOA) and anthropogenic sources of contamination;
 - materials tracking and records; and
 - management of liquid and solid waste arising from construction and blasting activities (eg during excavation of the diversion tunnel), including mitigation of blasting residues.

Sediment and erosion mitigation measures that will be implemented are detailed in the Surface Water Assessment appended to the EIS.

6.2.3 Asbestos management

A site-specific asbestos management plan (AMP) is required under Part 8.4 of the NSW *Work Health and Safety Regulation 2017* where there is potential for NOA or other asbestos materials to be encountered. This will relate to works that may intersect, excavate or otherwise encounter areas with potential, likely and confirmed NOA.

Water Infrastructure NSW would be required to ensure human exposure to NOA is below the guideline limits outlined in Workplace Exposure Standards for Airborne Contaminants (Safe Work Australia 2018). It is noted that NOA is not proposed to be transported offsite and would be reused/managed as part of the project. Specific protocols will be stipulated for separation, monitoring, validation and clearance of asbestos.

The AMP and associated Standard Work Procedures will satisfy the relevant requirements of:

- *Work Health and Safety Regulation 2017*; and
- the Safe Work Australia Asbestos Codes of Practice and Guidance Notes.

All persons performing the works will be required to undertake a suitable risk assessment and develop a Safe Work Method Statement (SWMS) for all work activities prior to commencing work in potential or actual asbestos impacted areas.

In the event that non naturally occurring asbestos containing material (ACM) is identified (eg in historic building structures or materials), which require offsite disposal, the material would be segregated, managed and disposed of as Special Waste and transported and disposed in accordance with *Protection of the Environment Operations (Waste) Regulation 2014*. Where more than 100 kg of asbestos waste or more than 10 m² of asbestos sheeting is transported, the NSW EPA online tool WasteLocate will be used. The handling and disposal of asbestos waste will be tracked and recorded.

6.2.4 Waste management and transport

As part of the CSWMP, waste management plans would include procedures for handling and storing excavated rock and/or stockpiled materials, including potentially or known contaminated soil/fill in accordance with the POEO Act.

Material that has been assessed as not suitable for re-use or managed (eg via encapsulation or treatment) will be appropriately characterised prior to offsite disposal.

The following material handling requirements will be implemented for trucks transporting materials off-site:

- where required, a licensed transporter will be used to transport material to an appropriately licensed disposal location or waste facility;
- all truck loads will be filled to the correct level and not over filled;
- trucks carrying spoil materials will be covered prior to exiting the work site and would remain covered until authorised to unload at the receiving destination;
- trucks transporting saturated materials will be fitted with seals to ensure that the movement of potentially saturated materials is undertaken appropriately. The integrity of the seals would be inspected and tested at regular intervals as prescribed in the CEMP;
- if construction materials are tracked or spilt, leaks and spills will be cleaned up in a manner that prevent contamination of land and waterways; and
- all truckloads and waste material contents and volumes will be described and tracked, and a register completed to reconcile and check material has been lawfully and appropriately disposed in accordance with project approvals and relevant legislation.

Temporary excavated rock stockpiles may be stored at select locations within the project footprint. All stockpiled material will be tracked in accordance with protocols outlined within the CEMP for material tracking.

6.2.5 Assessment of imported Virgin Excavated Natural Material (VENM)

Prior to the importation of any virgin excavated natural material (VENM) during construction, the VENM source(s) will be identified and assessed against the definition of VENM in the Waste Classification Guidelines (NSW EPA 2014) and POEO Act. The VENM source(s) will be assessed by an appropriately qualified contaminated land consultant.

6.2.6 Unexpected finds

An unexpected finds procedure will be included in the CEMP for use during construction and operation of the project. An unexpected find is potential contamination that was not previously identified during this contamination assessment or other investigations conducted for the project. Project workers will be trained in identifying the following:

- soil that appears to be contaminated based on visual and olfactory (odour) assessment;
- NOA or other ACM (ie either bonded or friable asbestos);
- evidence of sheep dips;
- groundwater or surface water that appears to be contaminated based on visual and olfactory (odour) assessment (including sheens or abnormal discolouration on the water surface, free phase liquids such as petroleum fuel, etc);
- potentially contaminating infrastructure (such as historical building structures potentially containing hazardous materials); and
- fill containing wastes (eg residual mine waste and tailings, NOA, refuse).

In the event of an unexpected contamination find:

- excavation works will temporarily be suspended at the location of the unexpected find, the environment manager contacted and the area of concern appropriately isolated;
- the area will be inspected by a contaminated land consultant and if required, appropriate sampling and analysis would be undertaken with the sampling activities documented in a report; and
- workplace health and safety and environmental protection requirements will be reviewed, depending on the type of unexpected finds encountered.

6.2.7 Summary of construction mitigation measures

Measures that will be implemented to mitigate potential contamination impacts identified during construction are outlined in Table 6.1 below.

Table 6.1 Mitigation measures-- contamination

Impact	Ref#	Mitigation Measure	Timing
Contaminated Lands	SC_01	A Contaminated Land Management Plan (CLMP) will be prepared and implemented as part of the CEMP. The plan will include, but not be limited to consideration of the following: - capture and management of any surface runoff contaminated by exposure to the contaminated land; - further investigations required to determine the extent, concentration, and type of contamination, as identified in the site investigations; - management of the remediation and subsequent validation of the contaminated land, including any certification required; - measures to ensure the safety of site personnel and local communities during construction; - complete pre- and post-construction site assessments in areas to be used for project office compounds, depots or laydown areas in accordance with the ASC NEPM; and - process for tracking excavated material and waste.	Pre-construction Construction
Contaminated Lands	SC_02	Potentially contaminated areas directly affected by the project will be investigated and managed in accordance with the requirements of guidance endorsed under section 105 of the <i>Contaminated Land Management Act 1997</i> . This includes further investigations in areas of potential contamination identified in the project footprint. If contamination posing a risk to human or ecological receptors is identified, a Remediation Action Plan will be prepared and implemented.	Pre-construction Construction
Contaminated Lands	SC_03	The Construction Soil and Water Management Plan (CSWMP) will include procedures to manage potentially contaminated stormwater runoff.	Pre-construction Construction
Unexpected Finds	SC_04	The discovery of previously unidentified contaminated material will be managed in accordance with an unexpected contaminated lands discovery procedure. The procedure will include: - cease work in the vicinity; - initial assessment by an appropriately qualified environmental consultant; and - further assessment and management of contamination, if confirmed, in accordance with section 105 of the CLM Act.	Pre-construction Construction
Handling of Hazardous Materials	SC_05	Asbestos handling and management will be undertaken in accordance with an Asbestos Management Plan (as part of the Work Health and Safety Plan).	Pre-construction Construction
Accidental spill	SC_06	A site specific emergency spill plan will be developed, and include spill management measures in accordance with relevant EPA guidelines. The plan will address measures to be implemented in the event of a spill, including initial response and containment, notification of emergency services and relevant authorities.	Pre-construction Construction
Spill management	SC_07	Activities with the potential for spillage of hydrocarbon and other chemicals (such as refuelling and washing down of plant and equipment) will be undertaken away from water courses or in any location which drains directly to waters with appropriate temporary bunding. Storage of fuels, oils and chemicals will be stored in suitably bunded areas in accordance with relevant legislation and Australian standards. Refuelling operations will not be left unattended.	Pre-construction Construction
Use of hazardous materials	SC08	The use of hazardous materials will be undertaken following a risk assessment in accordance with the project Construction Hazard and Risk Management Plan. Risk assessments will include an environmental assessment to determine whether it is practical to use a chemical with a lower hazard level and the key controls to be implemented prior to use.	Pre-construction Construction

6.2.8 Operational environmental management plan (OEMP)

An OEMP would be developed to manage potential impacts to the surrounding environment during operation of the project. The OEMP would be a 'live' document with the capacity to be updated if conditions are different to those expected and would include provision for the management of leaks and spills, which may occur during operation of the project.

7 Conclusions

A review of the environmental setting of the project area was completed based on available information sources. Furthermore, detailed database searches were undertaken for the entire area of the project footprint to inform the site inspections and subsequent report.

A number of potential areas of contamination were identified by reviewing historical information, the environmental setting and conditions encountered during the inspections undertaken. This information was used to assess potential contaminants, exposure mechanisms, pathways and potentially affected media as outlined in the conceptual site model.

There is no identified history of significant widespread contaminating activities within the project footprint, with the exception of historical mining exploration based on a record of titles held across the project footprint and historical information. The agricultural activities observed in general across the project footprint and surrounds appeared non-intensive and thus frequent and widespread application of pesticides/herbicides and/or fill material causing widespread contamination is considered unlikely to be present at concentrations above the relevant assessment criteria throughout the project footprint.

Based on the review of the existing environment and previous investigations, there is a low potential that construction works may encounter NOA, PASS/ASS and AMD impacts. Additionally, there is a known contaminated site at a former sheep dip with elevated arsenic concentrations in soil at 801 Dungowan Dam Road, Ogunbil. Based on the conceptual site model and tier 1 preliminary risk assessment completed, these contamination sources were identified as low to medium risk and need to be managed in accordance with the recommendations outlined in this report.

The key management measures for the construction and/or ongoing operation of the project include:

- undertaking recommended further assessment at identified low - medium risk areas of potential contamination outlined in this report, which have not been adequately characterised and will be disturbed by construction activities caused by the project; and
- development of appropriate project documentation (eg CLMP, CSWMP, AMP, OEMP) to manage contamination identified during the construction and operation of the project.

Temporary construction laydown areas would be required to store materials, spoil and equipment as well as provide space for other ancillary facilities such as site offices. The laydown areas would be used to stockpile material from trenching and excavation activities. Stockpiling would be ongoing for the duration of the trenching and excavation works. Stockpiling activities would be managed by adopting appropriate erosion and sediment controls in accordance with Managing Urban Stormwater: Soils and Construction (Landcom, 2004) (The Blue Book). Operational impacts associated with the project are not considered to present a significant risk, but would be outlined in the OEMP to ensure appropriate management actions are documented in the event of an incidence of environmental harm occurring.

References

- Environmental Risk Sciences Pty Ltd (EnRiskS) 2019, *Human Health Risk Assessment – Former Sheep Dip, Tamworth*, 16 May 2019
- Landcom 2004, *Managing Urban Stormwater: Soils and Construction*
- Mitchel Hanlon Consulting Pty Ltd (MHC) 2018, *Delineation of Arsenic Contamination for the Former Plunge Sheep Dip Site, 801 Dungowan Dam Road, Ogunbil, Lot 54 in DP 755322*, prepared for Tamworth Regional Council
- MHC 2019, *Addendum to Site Investigation Report for the Former Sheep Dip Site*, 20 May 2019
- National Environment Protection Council (NEPC) 1999, *National Environment Protection (Assessment of Site Contamination) Measure 2019* (ASC NEPM 2013)
- National Occupational Health and Safety Commission 2005, *Code of Practice for the Safe Removal of Asbestos 2nd Edition* April 2005
- NSW Environment Protection Authority (NSW EPA) 2014, *Waste Classification Guidelines, Part 1: Classifying Waste*. November 2014
- NSW EPA 2015, *Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997*
- NSW EPA 2017, *Guidelines for the NSW Site Auditor Scheme* (3rd edition)
- NSW EPA 2020, *Guidelines for consultants reporting on contaminated land*
- NSW Department of Primary Industries (DPI) 2020, *Tamworth Agricultural Institute (TAI)*, <https://www.dpi.nsw.gov.au/about-us/science-and-research/centres/tamworth>
- NSW Department of Planning and Environment (DPE) 2022, *EPI – Riparian lands*
- NSW Trade & Investment, Resources and Energy 2013, *Naturally occurring asbestos in NSW*, <https://trade.maps.arcgis.com/apps/PublicInformation/index.html?appid=87434b6ec7dd4aba8cb664d8e646fb06>
- NSW *Work Health and Safety Regulation* 2017
- Safe Work Australia 2018, *Workplace Exposure Standards for Airborne Contaminants*, 27 April 2018
- SMEC 2020, *Geotechnical Interpretive Report, Dungowan Dam*
- SMEC 2022, *Dungowan Dam – Detailed Design, Existing Dungowan Dam Breach Optimisation Reference No. 30013137, prepared for WINSW*
- The Maitland Mercury and Hunter River General Advertiser (NSW: 1843 - 1893) 1881, 10 December, p 5 (Second sheet to The Maitland), viewed 8 Oct 2020, <http://nla.gov.au/nla.news-article844792>

Acronyms

List of Acronyms

Term	Definition
AASS	Actual acid sulfate soil
ABA	Acid based accounting
ABS	Australian Bureau of Statistics
ACM	Asbestos containing material
AEP	Annual Exceedance Probability
AFFF	Aqueous film-forming foam
AHD	Australian height datum
AMD	Acid mine drainage
AMP	Asbestos management plan
ASR	Acid sulfate rock
AS	Australian standard
ASS	Acid sulfate soils
AST	Above-ground storage tank
CEMP	Construction environmental management plan
CLM Act	Contaminated Land Management Act 1997 (NSW)
CLMP	Contamination Land Management Plan
CoPC	Contaminants of potential concern
CSM	Conceptual site model
CSSI	Critical State Significant Infrastructure
CSWMP	Construction Soil and Water Management Plan
DAWE	Commonwealth Department of Agriculture, Water and Environment
DSI	Detailed site investigation
DPE	Department of Planning and Environment
DPIE	NSW Department of Planning, Industry and Environment
DQI	Data quality indicators
DQO	Data quality objectives
DUAP	NSW Department of Urban Affairs and Planning
EC	Electrical conductivity
EHC Act	Environmentally Hazardous Chemicals Act 1985 (NSW)
EIS	Environmental impact statement

List of Acronyms

Term	Definition
EMM	EMM Consulting Pty Ltd
EPA	Environment Protection Authority
EP&A Act	Environmental Planning and Assessment Act 1979
EPBC Act	Commonwealth Environment Protection and Biodiversity Conservation Act 1999
FSL	Full supply level
GDE	Groundwater dependant ecosystem
HIL	Health investigation level
HDPE	High-density polyethylene
LGA	Local government area
NAF	Non-Acid forming
NAG	Net acid generation
NAPP	Net acid producing potential
NEPC	National Environment Protection Council
NEPM	National Environmental Protection (Assessment of Site Contamination) Measure, as amended (2013)
MHC	Mitchel Hanlon Consulting Pty Ltd
NOA	Naturally Occurring Asbestos
NSW	New South Wales
OEH	Office of Environment and Heritage
OEMP	Operational environmental management plan
PAF	Potentially acid forming
PASS	Potential acid sulfate soils
PFAS	Per- and polyfluoroalkyl substances
PMF	Probable maximum flood
POEO Act	Protection of the Environment Operations Act 1997 (NSW)
PPE	Personal protective equipment
PSI	Preliminary site investigation
SAQP	Sampling analysis and quality control plan
SEARs	Secretary's environment assessment requirements
SPOCAS	Suspension peroxide oxidation combined acidity and sulfur
UCL	Upper confidence limit
UPSS	Underground petroleum storage system

List of Acronyms

Term	Definition
UST	Underground storage tank
VENM	Virgin excavated natural material
WTP	Water treatment plant

Annexure A

Database search reports



LOTSEARCH

LOTSEARCH ENVIRO LITE

Date: 18 May 2022 11:45:52

Reference: LS032388 EL

Address: Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340

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	06/04/2022	06/04/2022	Quarterly	-	-	-	-
Topographic Data	NSW Department of Customer Service - Spatial Services	25/06/2019	25/06/2019	Annually	-	-	-	-
List of NSW contaminated sites notified to EPA	Environment Protection Authority	19/04/2022	11/04/2022	Monthly	1000m	0	0	0
Contaminated Land Records of Notice	Environment Protection Authority	10/05/2022	10/05/2022	Monthly	1000m	0	0	0
Former Gasworks	Environment Protection Authority	02/03/2022	14/07/2021	Quarterly	1000m	0	0	0
National Waste Management Facilities Database	Geoscience Australia	12/05/2021	07/03/2017	Annually	1000m	0	0	0
National Liquid Fuel Facilities	Geoscience Australia	15/02/2021	13/07/2012	Annually	1000m	0	0	0
EPA PFAS Investigation Program	Environment Protection Authority	03/05/2022	14/07/2021	Monthly	2000m	0	0	0
Defence PFAS Investigation & Management Program - Investigation Sites	Department of Defence	11/05/2022	11/05/2022	Monthly	2000m	0	0	0
Defence PFAS Investigation & Management Program - Management Sites	Department of Defence	11/05/2022	11/05/2022	Monthly	2000m	0	0	0
Airservices Australia National PFAS Management Program	Airservices Australia	11/05/2022	11/05/2022	Monthly	2000m	0	0	0
Defence 3 Year Regional Contamination Investigation Program	Department of Defence	03/03/2022	03/03/2022	Quarterly	2000m	0	0	0
EPA Other Sites with Contamination Issues	Environment Protection Authority	16/02/2022	13/12/2018	Annually	1000m	0	0	0
Licensed Activities under the POEO Act 1997	Environment Protection Authority	10/05/2022	10/05/2022	Monthly	1000m	0	0	0
Delicensed POEO Activities still regulated by the EPA	Environment Protection Authority	10/05/2022	10/05/2022	Monthly	1000m	0	0	0
Former POEO Licensed Activities now revoked or surrendered	Environment Protection Authority	10/05/2022	10/05/2022	Monthly	1000m	3	3	3
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
Points of Interest	NSW Department of Customer Service - Spatial Services	19/08/2021	19/08/2021	Quarterly	1000m	0	7	35
Tanks (Areas)	NSW Department of Customer Service - Spatial Services	19/08/2021	19/08/2021	Quarterly	1000m	0	0	0
Tanks (Points)	NSW Department of Customer Service - Spatial Services	19/08/2021	19/08/2021	Quarterly	1000m	0	0	2
Major Easements	NSW Department of Customer Service - Spatial Services	19/08/2021	19/08/2021	Quarterly	1000m	0	0	0
State Forest	Forestry Corporation of NSW	25/02/2021	14/02/2021	Annually	1000m	0	0	0
NSW National Parks and Wildlife Service Reserves	NSW Office of Environment & Heritage	10/02/2022	31/12/2021	Annually	1000m	0	0	0
Hydrogeology Map of Australia	Commonwealth of Australia (Geoscience Australia)	08/10/2014	17/03/2000	Annually	1000m	1	1	1
Temporary Water Restriction (Botany Sands Groundwater Source) Order 2018	NSW Department of Planning, Industry and Environment	28/03/2022	23/02/2018	Annually	1000m	0	0	0
National Groundwater Information System (NGIS) Boreholes	Bureau of Meteorology; Water NSW	24/01/2022	24/01/2022	Annually	2000m	1	13	113

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features On-site	No. Features within 100m	No. Features within Buffer
NSW Seamless Geology Single Layer: Rock Units	Department of Regional NSW	17/02/2022	01/05/2021	Annually	1000m	3	4	4
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	2	6
Naturally Occurring Asbestos Potential	NSW Dept. of Industry, Resources & Energy	04/12/2015	24/09/2015	Unknown	1000m	0	1	1
Atlas of Australian Soils	Australian Bureau of Agriculture and Resource Economics and Sciences (ABARES)	19/05/2017	17/02/2011	As required	1000m	1	1	3
Environmental Planning Instrument Acid Sulfate Soils	NSW Department of Planning, Industry and Environment	06/04/2022	18/02/2022	Monthly	500m	0	-	-
Atlas of Australian Acid Sulfate Soils	CSIRO	19/01/2017	21/02/2013	As required	1000m	1	1	2
Dryland Salinity - National Assessment	National Land and Water Resources Audit	18/07/2014	12/05/2013	None planned	1000m	0	0	0
Mining Subsidence Districts	NSW Department of Customer Service - Subsidence Advisory NSW	19/08/2021	05/08/2021	Quarterly	1000m	0	0	0
Current Mining Titles	NSW Department of Industry	20/04/2022	20/04/2022	Monthly	1000m	1	1	1
Mining Title Applications	NSW Department of Industry	20/04/2022	20/04/2022	Monthly	1000m	0	0	0
Historic Mining Titles	NSW Department of Industry	20/04/2022	20/04/2022	Monthly	1000m	13	13	14
Environmental Planning Instrument SEPP State Significant Precincts	NSW Department of Planning, Industry and Environment	15/11/2021	07/12/2018	Monthly	1000m	0	0	0
Environmental Planning Instrument Land Zoning	NSW Department of Planning, Industry and Environment	15/11/2021	05/11/2021	Monthly	1000m	1	1	2
Commonwealth Heritage List	Australian Government Department of the Agriculture, Water and the Environment	18/05/2021	20/11/2019	Annually	1000m	0	0	0
National Heritage List	Australian Government Department of the Agriculture, Water and the Environment	18/05/2021	20/11/2019	Annually	1000m	0	0	0
State Heritage Register - Curtilages	NSW Department of Planning, Industry and Environment	19/08/2021	25/06/2021	Quarterly	1000m	0	0	0
Environmental Planning Instrument Local Heritage	NSW Department of Planning, Industry and Environment	06/04/2022	25/03/2022	Monthly	1000m	0	0	7
Bush Fire Prone Land	NSW Rural Fire Service	16/05/2022	08/12/2021	Weekly	1000m	3	3	3
Eastern Bushland Database (North Region)	NSW Office of Environment & Heritage	24/07/2016	01/01/1991	None planned	1000m	1	2	2
Ramsar Wetlands of Australia	Australian Government Department of Agriculture, Water and the Environment	28/03/2022	19/03/2020	Annually	1000m	0	0	0
Groundwater Dependent Ecosystems	Bureau of Meteorology	14/08/2017	15/05/2017	Annually	1000m	3	5	7
Inflow Dependent Ecosystems Likelihood	Bureau of Meteorology	14/08/2017	15/05/2017	Unknown	1000m	10	12	20
NSW BioNet Species Sightings	NSW Office of Environment & Heritage	16/05/2022	16/05/2022	Weekly	10000m	-	-	-

Site Diagram

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340



Legend Site Boundary Internal Parcel Boundaries	Total Area: 295960m² Total Perimeter: 26.29km 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: 0 325 650 1,300 1,950 2,600 3,250 Meters Data Sources: Aerial Imagery: © NSW Department of Finance, Services & Innovation Coordinate System: GDA 1994 MGA Zone 56 Date: 18 May 2022
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Contaminated Land

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340

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

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340

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

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Terms of use and disclaimer for Contaminated Land: Record of Notices, please visit

<http://www.epa.nsw.gov.au/clm/clmdisclaimer.htm>

Former Gasworks

Former Gasworks within the dataset buffer:

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

Former Gasworks Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

Waste Management & Liquid Fuel Facilities

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340

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

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340

EPA PFAS Investigation Program

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

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

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

Defence PFAS Investigation Program

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

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

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

Defence PFAS Management Program

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

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

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

Airservices Australia National PFAS Management Program

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

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

Airservices Australia National PFAS Management Program Data Custodian: Airservices Australia

Defence Sites

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340

Defence 3 Year Regional Contamination Investigation Program

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

Property ID	Base Name	Address	Known Contamination	Loc Conf	Dist	Dir
N/A	No records in buffer					

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

EPA Other Sites with Contamination Issues

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340

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

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340

Licensed Activities under the POEO Act 1997

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

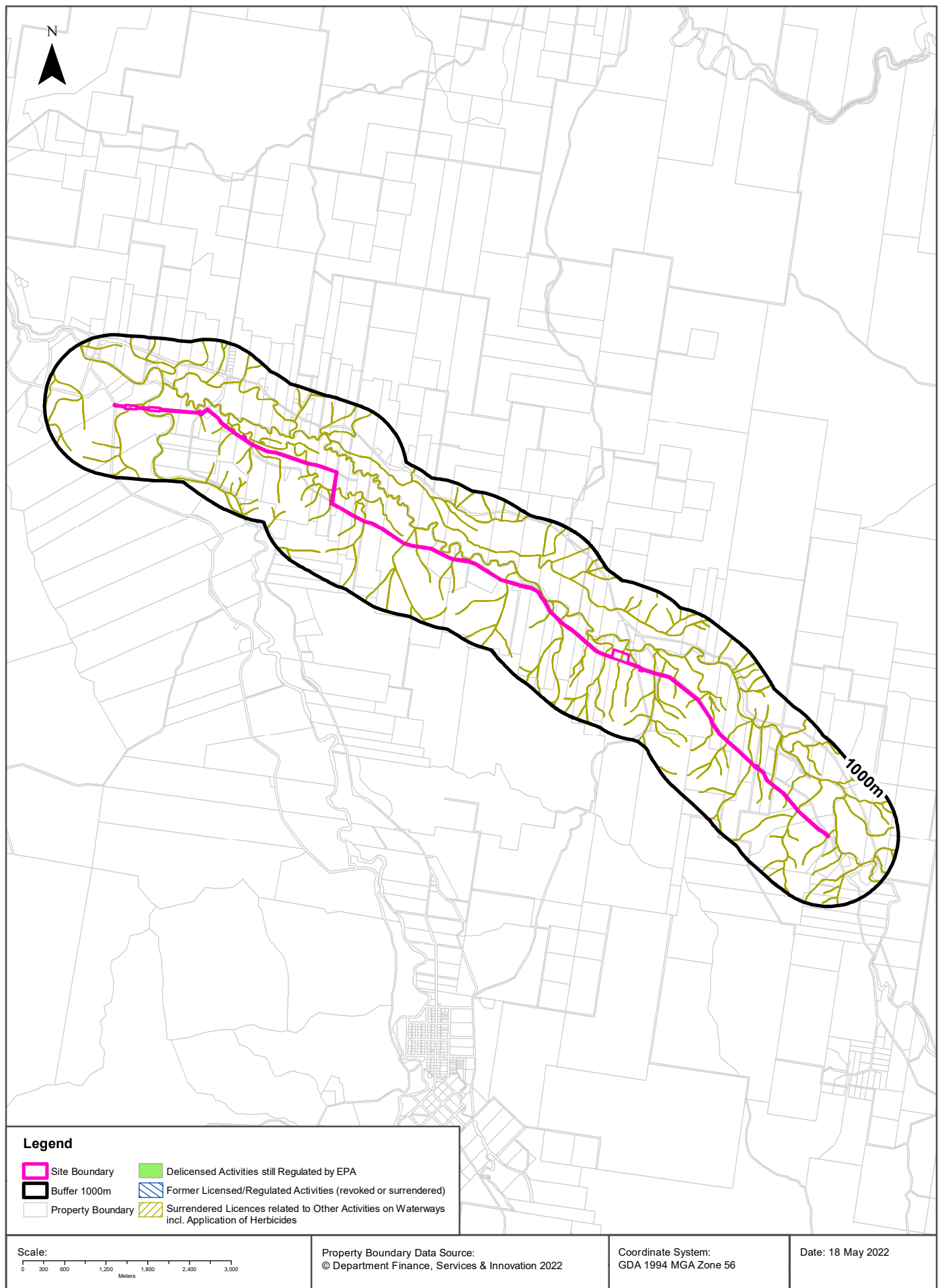
EPL	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
N/A	No records in buffer							

POEO Licence Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

Delicensed & Former Licensed EPA Activities

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340



EPA Activities

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340

Delicensed Activities still regulated by the EPA

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

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

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

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

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

Licence No	Organisation	Location	Status	Issued Date	Activity	Loc Conf	Distance	Direction
4653	LUHRMANN ENVIRONMENT MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW	Surrendered	06/09/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	0m	On-site
4838	Robert Orchard	Various Waterways throughout New South Wales - SYDNEY NSW 2000	Surrendered	07/09/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	0m	On-site
6630	SYDNEY WEED & PEST MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW - PROSPECT, NSW, 2148	Surrendered	09/11/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	0m	On-site

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

Historical Business Directories

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340

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						

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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					

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Historical Business Directories

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340

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

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

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

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

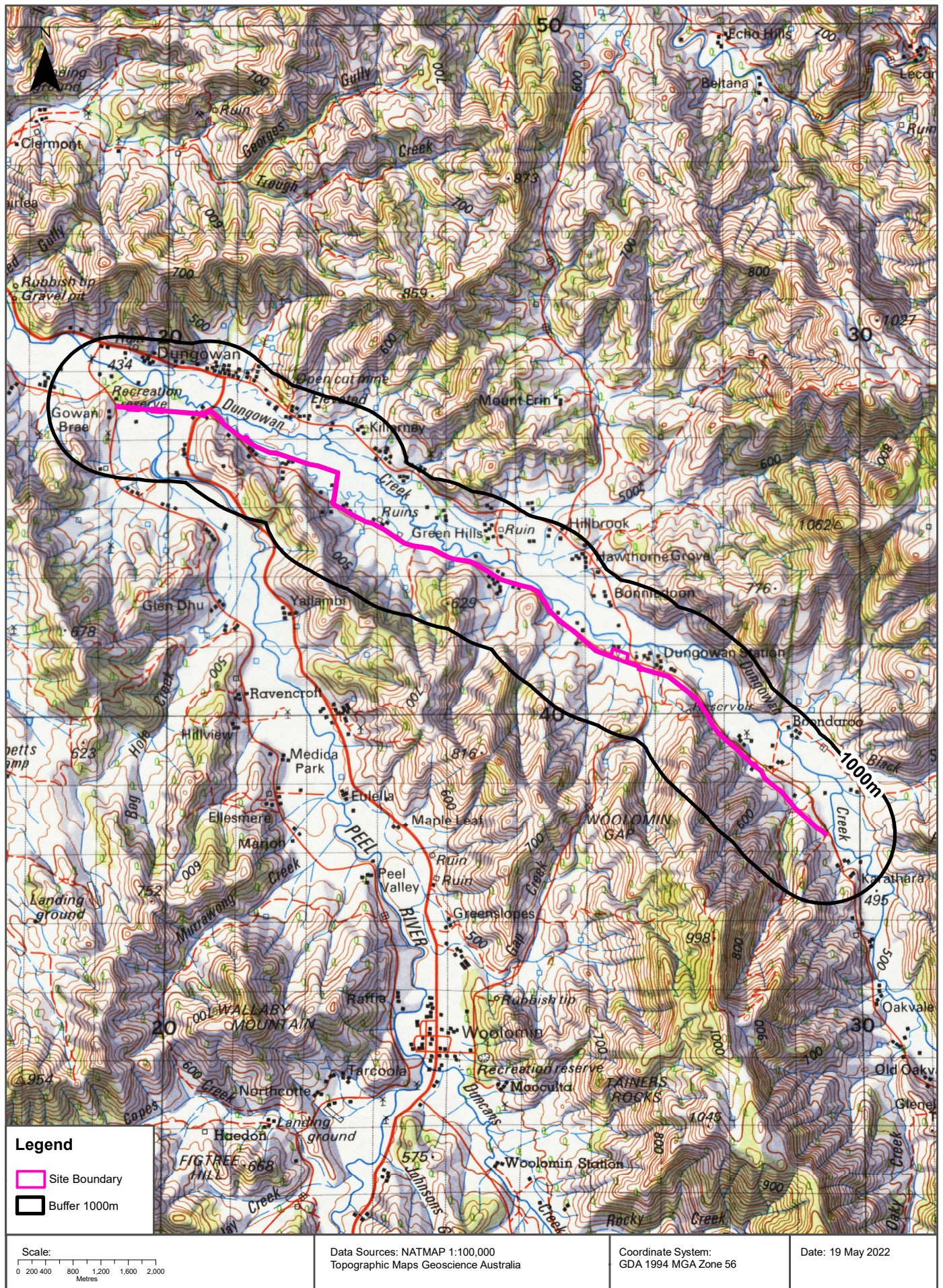
Dry Cleaners, Motor Garages & Service Stations from UBD Business Directories, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published.

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
N/A	No records in buffer					

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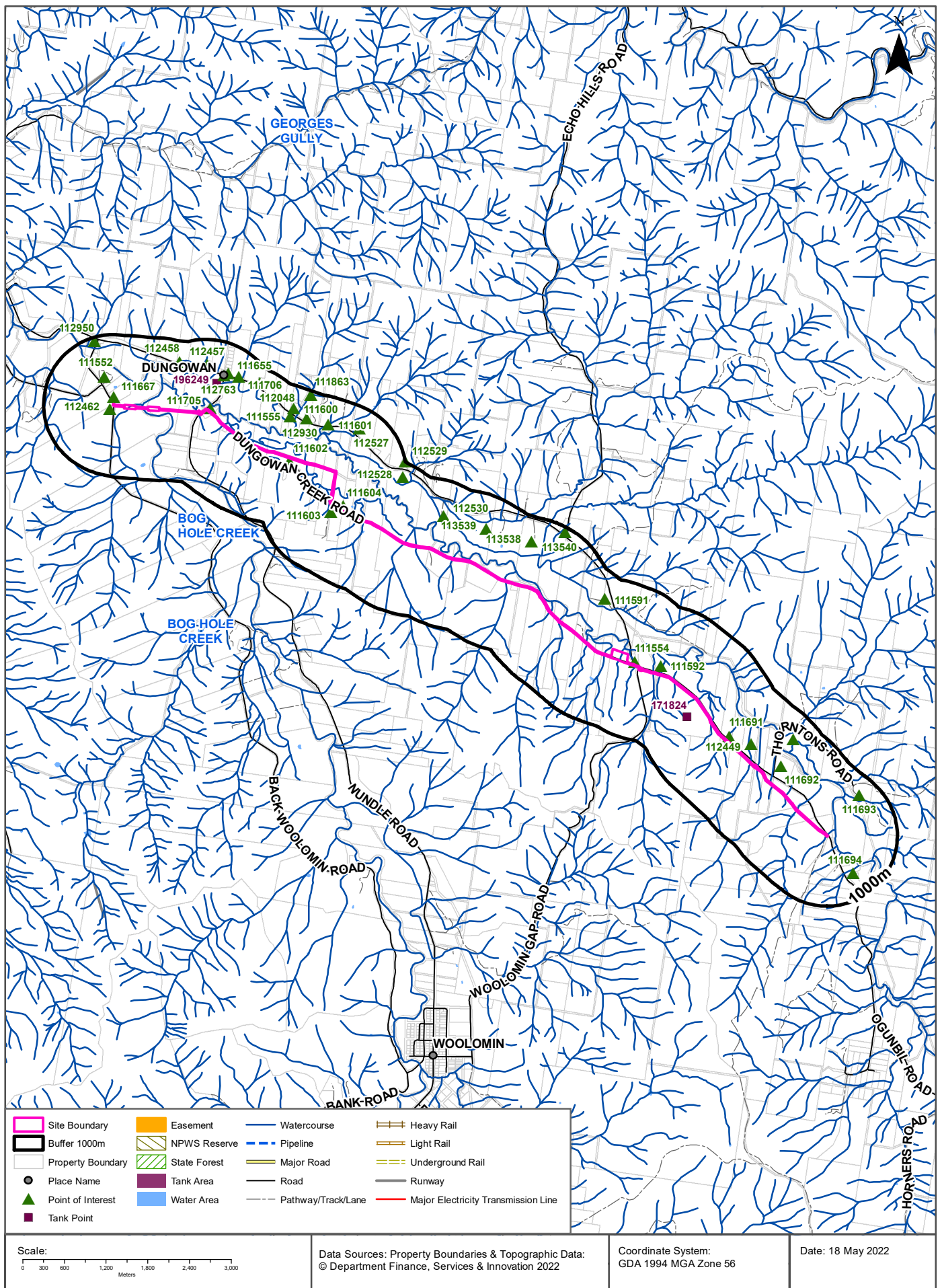
Historical Map 1979

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340



Topographic Features

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340



Topographic Features

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340

Points of Interest

What Points of Interest exist within the dataset buffer?

Map Id	Feature Type	Label	Distance	Direction
111705	Homestead	BRIDGEDOOR	30m	North West
111554	Place Of Worship	Place Of Worship	37m	South East
111604	Homestead	ROSEVILLE	43m	North West
111602	Homestead	AVOCA	49m	North West
111691	Homestead	GORDON	67m	South East
112462	Homestead	GOWAN BRAE	78m	North West
111603	Homestead	DORISVILLE	97m	West
111667	Homestead	KURRA WILLA	102m	North West
111592	Homestead	DUNGOWAN STATION	117m	South East
112449	Homestead	ST KILDA	195m	South East
111692	Homestead	KENMUIR	265m	South East
111552	Sports Field	DUNGOWAN RECREATION GROUND	420m	North West
112530	Homestead	ULALE PARK	498m	North West
113539	Homestead	GREEN HILLS	526m	North
112763	Village	DUNGOWAN	540m	North West
111555	Place Of Worship	ANGLICAN CHURCH	556m	North West
111655	Place Of Worship	Place Of Worship	595m	North West
111601	Homestead	KEEWAH	598m	North West
112930	Primary School	DUNGOWAN PUBLIC SCHOOL	606m	North West
112457	Homestead	ROCKDALE	629m	North West
111591	Homestead	BONNIEDOON	642m	East
111706	Homestead	GLENCOE	643m	North West
113538	Homestead	KILDARE	644m	North East
111690	Homestead	BOONDAROO	645m	South East
111694	Homestead	KARATHARRA	651m	South East
111600	Homestead	MARILBA	679m	North West
112458	Homestead	IRRIWILLBIN	695m	North West
112527	Homestead	KILLARNEY	705m	North West
111693	Homestead	MT PLEASANT	737m	South East
112048	Sports Court	TENNIS COURT	782m	North West
112528	Homestead	MOUNT VIEW	789m	North West

Map Id	Feature Type	Label	Distance	Direction
113540	Homestead	HILLBROOK	929m	North East
112950	Firestation - Bush	DUNGOWAN RFB	946m	North West
111863	Cemetery	DUNGOWAN CEMETERY	947m	North West
112529	Homestead	EOLARDA	999m	North West

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

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Topographic Features

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340

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
171824	Water	Operational		01/01/1972	252m	South East
196249	Water	Operational		01/05/2013	393m	North West

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

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340

State Forest

What State Forest exist within the dataset buffer?

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

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

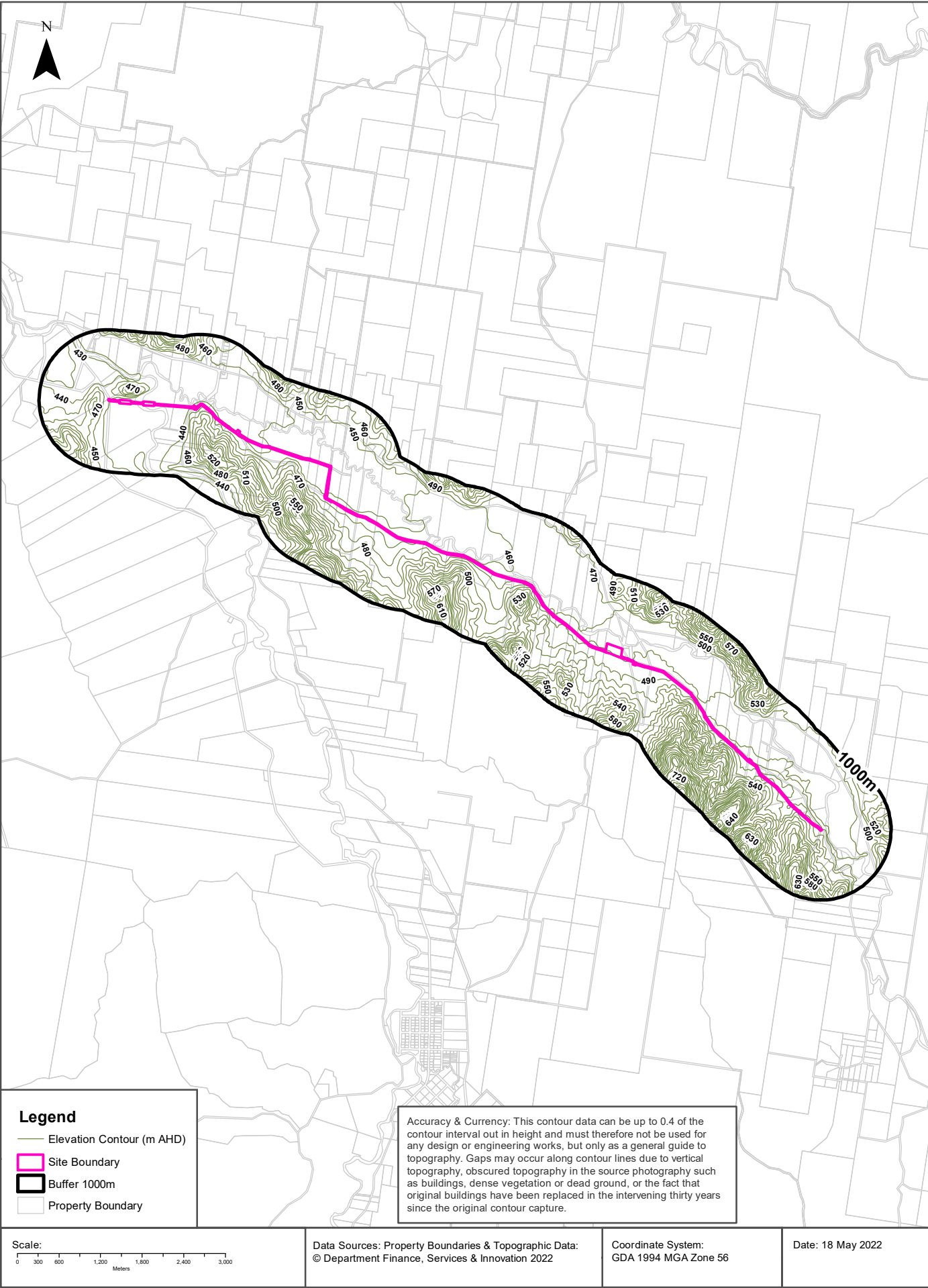
What NPWS Reserves exist within the dataset buffer?

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

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

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340



Hydrogeology & Groundwater

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340

Hydrogeology

Description of aquifers within the dataset buffer:

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

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

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Temporary Water Restriction (Botany Sands Groundwater Source) Order 2018

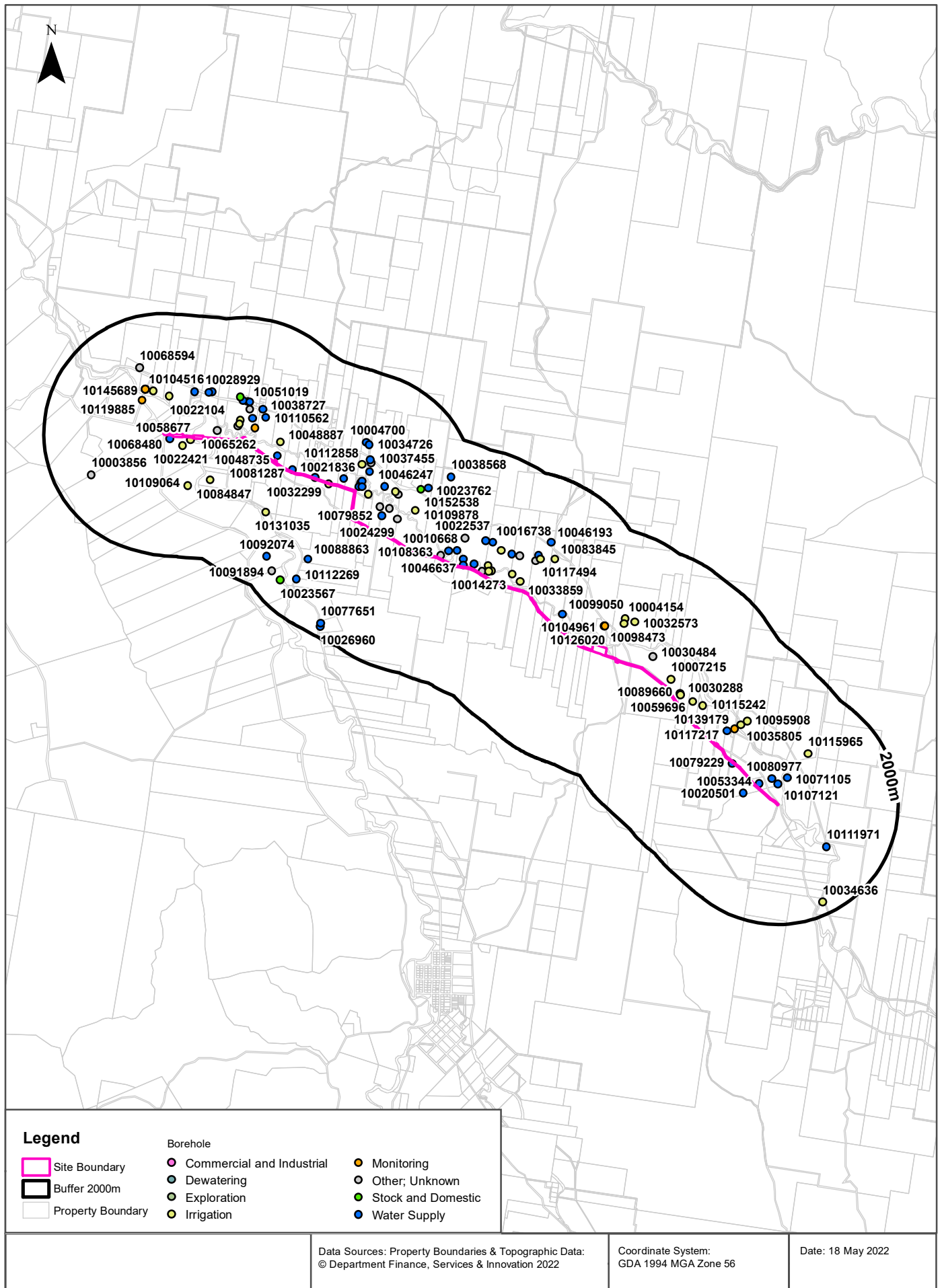
Temporary water restrictions relating to the Botany Sands aquifer within the dataset buffer:

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

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

Groundwater Boreholes

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340



Data Sources: Property Boundaries & Topographic Data:
© Department Finance, Services & Innovation 2022

Coordinate System:
GDA 1994 MGA Zone 56

Date: 18 May 2022

Hydrogeology & Groundwater

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340

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
10032299	GW901980	Irrigation	Unknown		4.00		AHD			1.00	0m	On-site
10080467	GW053771	Water Supply	Functioning		5.50		AHD	Hard			9m	North West
10065272	GW969151	Water Supply	Functioning	01/03/2007	6.10		AHD				18m	North West
10079229	GW902560	Water Supply	Unknown	02/06/1995	18.90		AHD		1.000	12.20	18m	South East
10081287	GW901065	Water Supply	Unknown		3.60		AHD		15.000	1.20	30m	North West
10027981	GW022624	Unknown	Unknown	01/01/1943	5.50		AHD	Fresh			47m	North West
10108363	GW053882	Unknown	Unknown		6.70		AHD	Good			49m	North West
10058677	GW902163	Irrigation	Unknown		8.00		AHD			6.00	51m	North West
10068480	GW902347	Water Supply	Unknown	06/02/1995	13.40		AHD				57m	North West
10053344	GW970906	Water Supply	Functioning	11/07/2014	54.80		AHD		0.250	19.20	60m	South East
10048735	GW900836	Water Supply	Unknown		6.00		AHD				76m	North West
10065393	GW059349	Water Supply	Removed	01/01/1982	5.50		AHD	Good	25.260	2.40	85m	North West
10036812	GW043840	Water Supply	Functioning		3.60		AHD				90m	North West
10060159	GW059348	Irrigation	Unknown		5.50		AHD	Good			103m	North
10030288	GW053742	Irrigation	Functioning		5.00		AHD				118m	South East
10046637	GW970931	Water Supply	Functioning	21/06/2010			AHD				120m	North West
10021836	GW053772	Water Supply	Functioning		5.50		AHD	Soft			123m	North West
10065262	GW053773	Unknown	Functioning		6.10		AHD	Soft			127m	North West
10089660	GW900543	Water Supply	Unknown		6.00		AHD		100.000	1.50	130m	South East
10014273	GW022623	Irrigation	Unknown	01/03/1965	5.30		AHD	Fresh			132m	North East
10062159	GW043839	Water Supply	Functioning		3.60		AHD				132m	North West
10033859	GW053745	Irrigation	Functioning		6.00		AHD				134m	East
10007215	GW902023	Irrigation	Unknown	15/01/1991	5.00		AHD			3.00	141m	South East
10022421	GW018442	Irrigation	Unknown		8.20		AHD	Hard			143m	North West
10000375	GW043841	Water Supply	Functioning		5.40		AHD				154m	North West
10010668	GW015468	Water Supply	Functioning	01/01/1900	4.60		AHD				175m	North West
10012315	GW062286	Irrigation	Functioning		4.30		AHD				181m	North
10001475	GW043838	Water Supply	Functioning		8.50		AHD				194m	North West
10062731	GW019534	Unknown	Unknown	01/01/1953	5.50		AHD	Hard			197m	North West

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
10020501	GW061118	Water Supply	Functioning		3.00		AHD				214m	South East
10099050	GW900587	Water Supply	Unknown		5.50		AHD		30.000	3.00	214m	South East
10028654	GW053744	Irrigation	Functioning		7.00		AHD				218m	East
10109169	GW900914	Irrigation	Unknown	01/01/1962	7.00		AHD			1.00	222m	North West
10134343	GW038065	Irrigation	Unknown		5.10		AHD				226m	North West
10119997	GW093022	Monitoring	Unknown	17/10/1999	16.00	436.53	AHD		1.000		231m	North West
10150286	GW970932	Water Supply	Functioning	21/06/2010			AHD				239m	North West
10059696	GW053743	Irrigation	Functioning		7.00		AHD				246m	South East
10030484	GW027966	Unknown	Unknown	01/02/1964	5.50		AHD				252m	South East
10080977	GW967549	Water Supply	Unknown		7.10		AHD			3.20	256m	South East
10107121	GW967548	Water Supply	Unknown				AHD				261m	South East
10117217	GW901511	Water Supply	Unknown		4.00		AHD			3.00	271m	South East
10073665	GW053409	Water Supply	Unknown	01/12/1980	4.90		AHD				274m	North West
10066102	GW900509	Irrigation	Unknown		8.00		AHD			6.00	280m	North West
10048887	GW027058	Irrigation	Unknown	01/03/1967	6.10		AHD				306m	North West
10024299	GW022628	Unknown	Unknown	01/01/1963	4.90		AHD				322m	North West
10115242	GW901129	Irrigation	Unknown	15/10/1994	4.50		AHD	Good		3.00	333m	South East
10104961	GW965456	Monitoring	Unknown	09/12/2001	16.00		AHD			5.20	336m	East
10010107	GW900915	Water Supply	Unknown	01/01/1962	7.00		AHD			1.00	339m	North West
10126020	GW093023	Monitoring	Unknown	10/10/1999	16.00	470.81	AHD		0.500		340m	East
10139179	GW093024	Monitoring	Unknown	18/10/1999	13.00	486.34	AHD		0.500		382m	South East
10046247	GW902281	Water Supply	Unknown	01/01/1995	7.00		AHD			1.20	397m	North West
10079852	GW053881	Unknown	Unknown		5.50		AHD	Good			398m	North West
10071105	GW902080	Water Supply	Unknown	01/01/1947	7.50		AHD	Good		3.60	437m	South East
10086101	GW022627	Unknown	Unknown	01/01/1965	5.10		AHD	Fresh			440m	North West
10112858	GW022625	Irrigation	Unknown	01/05/1965	5.90		AHD	Fresh			446m	North West
10046323	GW019304	Unknown	Unknown	01/01/1961	5.50		AHD	Hard			469m	North West
10022537	GW015467	Unknown	Functioning	01/01/1944	6.10		AHD				475m	North West
10110562	GW900834	Water Supply	Unknown		7.00		AHD				478m	North West
10047336	GW900871	Water Supply	Unknown		6.50		AHD			2.00	495m	North West
10035805	GW071540	Irrigation	Unknown	10/06/1992	3.00	600.00	AHD				503m	South East
10098473	GW902022	Irrigation	Unknown	20/02/1991	5.00		AHD			1.50	504m	East
10052684	GW965225	Irrigation	Unknown	05/06/1998	6.00		AHD				506m	North East
10091003	GW968892	Water Supply	Functioning	20/06/2009	9.20		AHD		1.200	1.90	516m	North

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
10037455	GW022626	Unknown	Functioning	01/01/1965	4.90		AHD	Hard			539m	North West
10117494	GW031088	Unknown	Unknown	01/08/1968	5.50		AHD	0-500 ppm			539m	East
10070386	GW900895	Water Supply	Unknown	01/08/1982	6.00		AHD	Good	20.000	1.80	541m	North East
10036312	GW049353	Unknown	Functioning	01/05/1979	4.50		AHD	Good			551m	North East
10016738	GW900155	Water Supply	Unknown	05/06/1991	9.10		AHD				553m	North
10038727	GW965097	Water Supply	Unknown	01/10/2000	6.10		AHD				554m	North West
10082800	GW965783	Water Supply	Unknown				AHD				574m	North West
10081731	GW051080	Water Supply	Functioning	01/07/1980	7.30		AHD		1.260	4.00	589m	North West
10004154	GW027967	Irrigation	Unknown	01/04/1965	6.10		AHD				591m	East
10051019	GW968814	Water Supply	Functioning	20/05/1909	5.00		AHD				594m	North West
10109878	GW901066	Irrigation	Unknown	01/01/1944	7.00		AHD			5.00	596m	North West
10054765	GW969358	Water Supply	Functioning	16/08/2006	36.00		AHD		1.260	9.70	599m	North West
10133897	GW022632	Irrigation	Functioning	01/01/1965	5.60		AHD	0-500 ppm			601m	East
10022104	GW053469	Irrigation	Unknown	01/05/1981	7.00		AHD				617m	North West
10095908	GW071326	Irrigation	Unknown	01/06/1992	3.00	485.00	AHD				623m	South East
10028332	GW965806	Water Supply	Unknown	14/05/2003			AHD				646m	North East
10119885	GW093020	Monitoring	Unknown	16/10/1999	10.00	430.41	AHD		1.000		646m	North West
10032573	GW027968	Irrigation	Unknown	01/01/1966	5.50		AHD				647m	East
10021084	GW028233	Irrigation	Unknown	01/11/1958	4.90		AHD				670m	North West
10067488	GW045764	Stock and Domestic	Functioning		6.20		AHD				670m	North West
10084847	GW042674	Irrigation	Functioning	01/01/1946	9.10		AHD				693m	West
10072251	GW900870	Unknown	Unknown		4.50		AHD			2.00	698m	North West
10104516	GW059006	Irrigation	Functioning	01/06/1984	5.00		AHD				719m	North West
10051239	GW967161	Water Supply	Unknown				AHD				726m	North West
10083845	GW900586	Irrigation	Unknown		5.00		AHD		10.000	2.30	728m	East
10053304	GW968758	Water Supply	Functioning	14/11/2000	5.40		AHD			3.30	730m	North West
10028929	GW964957	Water Supply	Unknown	12/01/2000	30.48		AHD		1.870	5.18	751m	North West
10131035	GW038198	Irrigation	Unknown	01/05/1975	15.20		AHD				783m	West
10145689	GW093021	Monitoring	Unknown	15/10/1999	11.00	430.53	AHD		1.000		788m	North West
10155046	GW093021	Unknown	Unknown			430.53	AHD		1.000		788m	North West
10155245	GW093021	Unknown	Unknown			430.53	AHD		1.000		788m	North West
10109064	GW901586	Irrigation	Unknown	07/12/1998	8.00		AHD				801m	West
10034726	GW901756	Water Supply	Unknown		18.00		AHD		1.000	15.00	806m	North West
10004700	GW902559	Water Supply	Unknown	27/09/2000			AHD				821m	North West
10046193	GW071084	Water Supply	Unknown	01/10/1993	82.80	475.00	AHD	501-1000 ppm			933m	North East

NGIS Bore ID	NSW Bore ID	Bore Type	Status	Drill Date	Bore Depth (m)	Reference Elevation	Height Datum	Salinity (mg/L)	Yield (L/s)	SWL (mbgl)	Distance	Direction
10152538	GW903137	Stock and Domestic	Functioning	21/11/2018	78.00		AHD				952m	North West
10115965	GW902167	Irrigation	Unknown	31/03/1995	6.00		AHD			2.00	966m	South East
10088863	GW902343	Water Supply	Unknown	24/01/1995	25.00		AHD	Good			981m	West
10023762	GW967613	Water Supply	Unknown				AHD				1030m	North West
10111971	GW902770	Water Supply	Unknown		3.00		AHD			0.50	1078m	South East
10068594	GW068191	Unknown	Unknown	30/08/1989	9.40		AHD		1.000	4.00	1159m	North West
10038568	GW901175	Water Supply	Unknown	10/08/1994	36.60		AHD				1351m	North
10112269	GW069162	Water Supply	Unknown	27/02/1991	29.00		AHD				1351m	West
10003856	GW050076	Unknown	Unknown		30.00		AHD				1384m	West
10092074	GW053517	Water Supply	Unknown	01/01/1981	7.30		AHD				1460m	West
10023567	GW018762	Stock and Domestic	Unknown	01/03/1957			AHD	Good			1562m	West
10091894	GW018760	Unknown	Unknown	01/01/1947	6.10		AHD	Good			1575m	West
10077651	GW069161	Water Supply	Unknown	28/02/1991	29.00		AHD				1774m	West
10034636	GW029784	Irrigation	Unknown	01/07/1967	12.20		AHD				1794m	South East
10026960	GW069160	Water Supply	Unknown	27/02/1991	29.00		AHD				1824m	West

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

Hydrogeology & Groundwater

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340

Driller's Logs

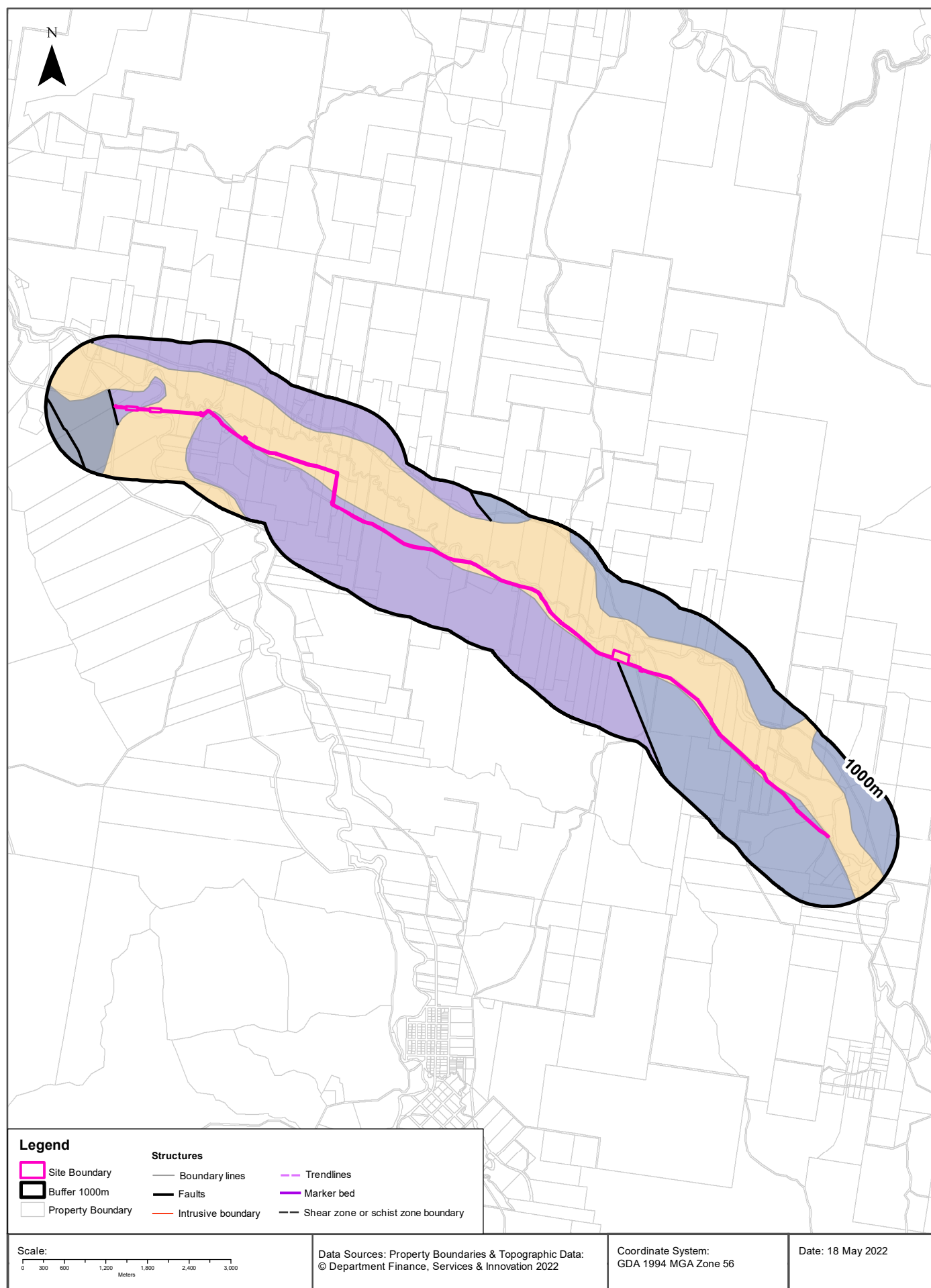
Drill log data relevant to the boreholes within the dataset buffer:

NGIS Bore ID	Drillers Log	Distance	Direction
10079229	0.00m-0.60m Soil 0.60m-3.00m Ridge Clay 3.00m-6.60m Clay and Gravel 6.60m-16.60m Brwon Shale 16.60m-16.90m w.b. Brwon Shale 16.90m-17.40m Brwon Shale 17.40m-18.90m Blue Basalt	18m	South East
10027981	0.00m-2.44m Soil Loam 2.44m-5.49m Gravel Water Supply	47m	North West
10068480	0.00m-0.60m soil 0.60m-5.50m Ridge clay 5.50m-6.40m Gravel w.b 6.40m-12.80m Shale - yellow 12.80m-13.40m Basalt - blue	57m	North West
10053344	0.00m-0.30m Topsoil 0.30m-1.20m Rock; loose 1.20m-5.70m Rocks; claybound 5.70m-51.80m Basalt; blue 51.80m-52.40m Basalt; water beairng 52.40m-54.80m Basalt; blue	60m	South East
10014273	0.00m-2.44m Soil Sandy Loam 2.44m-5.33m Gravel Water Supply	132m	North East
10062731	0.00m-3.05m Soil 3.05m-5.49m Gravel Water Supply	197m	North West
10020501	0.00m-3.00m Clay 3.00m-3.01m Rock	214m	South East
10134343	0.00m-5.18m Clay Nominal Water Supply 0.00m-5.18m Sand Nominal 0.00m-5.18m Gravel Nominal	226m	North West
10119997	0.00m-8.00m Black Clay 8.00m-12.00m Gravely Clay 12.00m-15.50m Gravel 15.50m-16.00m Shale Red	231m	North West
10030484	0.00m-1.52m Loam 1.52m-3.66m Gravel Water Supply 3.66m-5.49m Clay Gravel	252m	South East
10117217	0.00m-4.00m	271m	South East
10073665	0.00m-1.50m Topsoil Loose 1.50m-4.90m Gravel Coarse Water Supply	274m	North West
10048887	0.00m-2.74m Loam 2.74m-6.10m Gravel Water Supply	306m	North West
10024299	0.00m-3.05m Soil Clay 3.05m-3.96m Gravel Sand Water Supply 3.96m-4.27m Clay Gravel 4.27m-4.88m Gravel Clay	322m	North West
10104961	0.00m-7.00m clay black 7.00m-12.00m claybound gravel 12.00m-15.50m gravel fine 15.50m-16.00m shale green blue	336m	East
10126020	0.00m-7.00m Black Clay 7.00m-12.00m Clay bound Gravel 12.00m-15.50m Fine Gravel 15.50m-16.00m Shale blue/green	340m	East
10139179	0.00m-6.00m Black Clay 6.00m-9.00m Clay bound gravel 9.00m-12.50m Fine gravel 12.50m-13.00m Shale blue/green	382m	South East

NGIS Bore ID	Drillers Log	Distance	Direction
10086101	0.00m-0.91m Soil 0.91m-1.83m Clay Hard 1.83m-2.13m Clay Boulder 2.13m-2.74m Gravel Sand Water Supply 2.74m-3.35m Clay Gravel Water Supply 3.35m-3.66m Gravel Water Supply 3.66m-4.27m Clay Gravel Water Supply 4.27m-4.57m Gravel Clay Water Supply 4.57m-5.12m Clay Grey	440m	North West
10112858	0.00m-3.66m Soil 3.66m-5.94m Gravel Packed Water Supply 3.66m-5.94m Clay	446m	North West
10046323	0.00m-3.05m Soil 3.05m-5.49m Gravel Water Supply	469m	North West
10022537	0.00m-6.10m Loam	475m	North West
10047336	0.00m-6.50m	495m	North West
10091003	0.00m-2.00m Soil & Rocks 2.00m-6.00m Clay & Rocks 6.00m-8.50m Gravel/Rocks, water bearing 8.50m-9.20m Gravel/Rocks/Clay	516m	North
10037455	0.00m-0.91m Soil 0.91m-4.88m Gravel Shale	539m	North West
10016738	0.00m-0.60m SOIL 0.60m-3.00m CLAY 3.00m-6.00m CLAY BOUND GRAVEL 6.00m-8.80m GRAVEL (WATER) 8.80m-9.10m BLUE ROCK	553m	North
10038727	0.00m-0.90m topsoil 0.90m-5.20m clay 5.20m-5.80m gravel 5.80m-6.10m ridge	554m	North West
10081731	0.00m-4.00m Clay 4.00m-7.30m Gravel Water Supply	589m	North West
10004154	0.00m-1.83m Loam 1.83m-6.10m Gravel Water Supply	591m	East
10054765	0.00m-1.20m Soil, surface 1.20m-9.20m Clay, ridge 9.20m-33.50m Shale 33.50m-34.10m Shale, water bearing 34.10m-36.00m Shale	599m	North West
10133897	0.00m-2.13m Loam 2.13m-3.66m Clay Water Supply 3.66m-5.64m Gravel Creek Water Supply	601m	East
10022104	0.00m-3.60m Loam River 3.60m-4.60m Sand Gravel Water Supply 4.60m-6.00m Clay Reddish 6.00m-7.00m Sand Gravel Water Supply	617m	North West
10119885	0.00m-6.00m Black Clay 6.00m-9.50m Fine Gravel 9.50m-10.00m Shale blue/greed	646m	North West
10032573	0.00m-1.83m Loam 1.83m-5.49m Gravel Water Supply	647m	East
10021084	0.00m-1.83m Clay Loam 1.83m-4.88m Clay Gravel Water Supply	670m	North West
10072251	0.00m-4.50m	698m	North West
10028929	0.00m-2.40m clay 2.40m-6.40m gravel 6.40m-21.60m jasper 21.60m-30.48m jasper	751m	North West
10131035	0.00m-0.91m Topsoil Black 0.91m-1.83m Clay Gravel 1.83m-4.88m Clay 4.88m-8.23m Clay Gravel Boulder Water Supply 4.88m-8.23m Some Rock 8.23m-15.24m Clay Stoney	783m	West
10145689	0.00m-7.00m Black Clay 7.00m-10.50m Fine Gravel 10.50m-11.00m Shale blue/green	788m	North West
10155046	0.00m-7.00m Black Clay 7.00m-10.50m Fine Gravel 10.50m-11.00m Shale blue/green	788m	North West

NGIS Bore ID	Drillers Log	Distance	Direction
10155245	0.00m-7.00m Black Clay 7.00m-10.50m Fine Gravel 10.50m-11.00m Shale blue/green	788m	North West
10109064	0.00m-1.80m soil (black) 1.80m-4.20m sandy loam 4.20m-8.00m gravel (river) and sand	801m	West
10046193	0.00m-0.40m RED LOAM 0.40m-7.20m FRACTURED BROWN SHALE 7.20m-31.50m RED SHALE 31.50m-58.80m GREY SHALE 58.80m-68.10m DARK GREY SHALE 68.10m-70.50m LIGHT GREY SHALE 70.50m-82.80m DARK GREY SHALE	933m	North East
10088863	0.00m-0.30m Topsoil - brown 0.30m-1.20m Brown Clay 1.20m-7.60m Basalt - blue 7.60m-25.00m Highly Fractured Brwon Shale	981m	West
10068594	0.00m-2.00m Alluvial Soil 2.00m-7.40m Clay & Gravel 7.40m-9.20m River Gravel 9.20m-9.40m Rock	1159m	North West
10038568	0.00m-0.30m SOIL 0.30m-1.50m RIDGE CLAY 1.50m-14.60m YELLOW SHALE 14.60m-27.40m BLUE BASALT 27.40m-27.70m W.B. BASALT 27.70m-35.30m BLUE BASALT 35.30m-35.60m W.B. BASALT 35.60m-36.60m BLUE BASALT	1351m	North
10112269	0.00m-3.00m 3.00m-11.00m Brown Shale 11.00m-30.00m Black Shale 30.00m-47.00m Bassalt	1351m	West
10023567	0.00m-6.10m Loam 6.10m-7.62m Water Supply	1562m	West
10091894	0.00m-3.96m Loam 3.96m-6.10m Gravel Water Supply	1575m	West
10077651	0.00m-0.30m 0.30m-16.00m Brown Shale 16.00m-25.00m Black Shale 25.00m-29.00m	1774m	West
10034636	0.00m-3.66m Loam 3.66m-12.19m Gravel Water Supply	1794m	South East
10026960	0.00m-0.30m 0.30m-12.00m Brown Shale 12.00m-28.00m Black Shale 28.00m-29.00m	1824m	West

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



Geology

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340

Geological Units

What are the Geological Units within the dataset buffer?

Unit Code	Unit Name	Description	Unit Stratigraphy	Age	Dominant Lithology	Distance
N_a	Alluvium	Unconsolidated alluvial clay, silt, sand, and gravel deposits.	/Alluvium///	Cenozoic (base) to Now (top)	Clastic sediment	0m
Ddom	Myra beds	Slate, phyllite, chert, jasper, metabasalt extrusives and intrusives, minor lithic wacke.	/Woolomin Group//Myra beds//	Silurian (base) to Devonian (top)	Slate	0m
Csa	Sandon Association	Lithic (meta-)wacke, slate, phyllite, chert, jasper, amphibolite, metabasalt. Greywacke, sandstone, siltstone, mudstone and paraconglomerate.	/Sandon Association///	Devonian (base) to Carboniferous (top)	Metamorphic rock	0m
C__i	Wisemans Arm Formation	Andesitic lithic wacke, siltstone and granule to boulder conglomerate, with olistoliths of andesite, limestone, chert, basalt and siltstone.	///Wisemans Arm Formation//	Frasnian (base) to Carboniferous (Pennsylvanian) (top)	Sandstone	24m

Linear Geological Structures

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

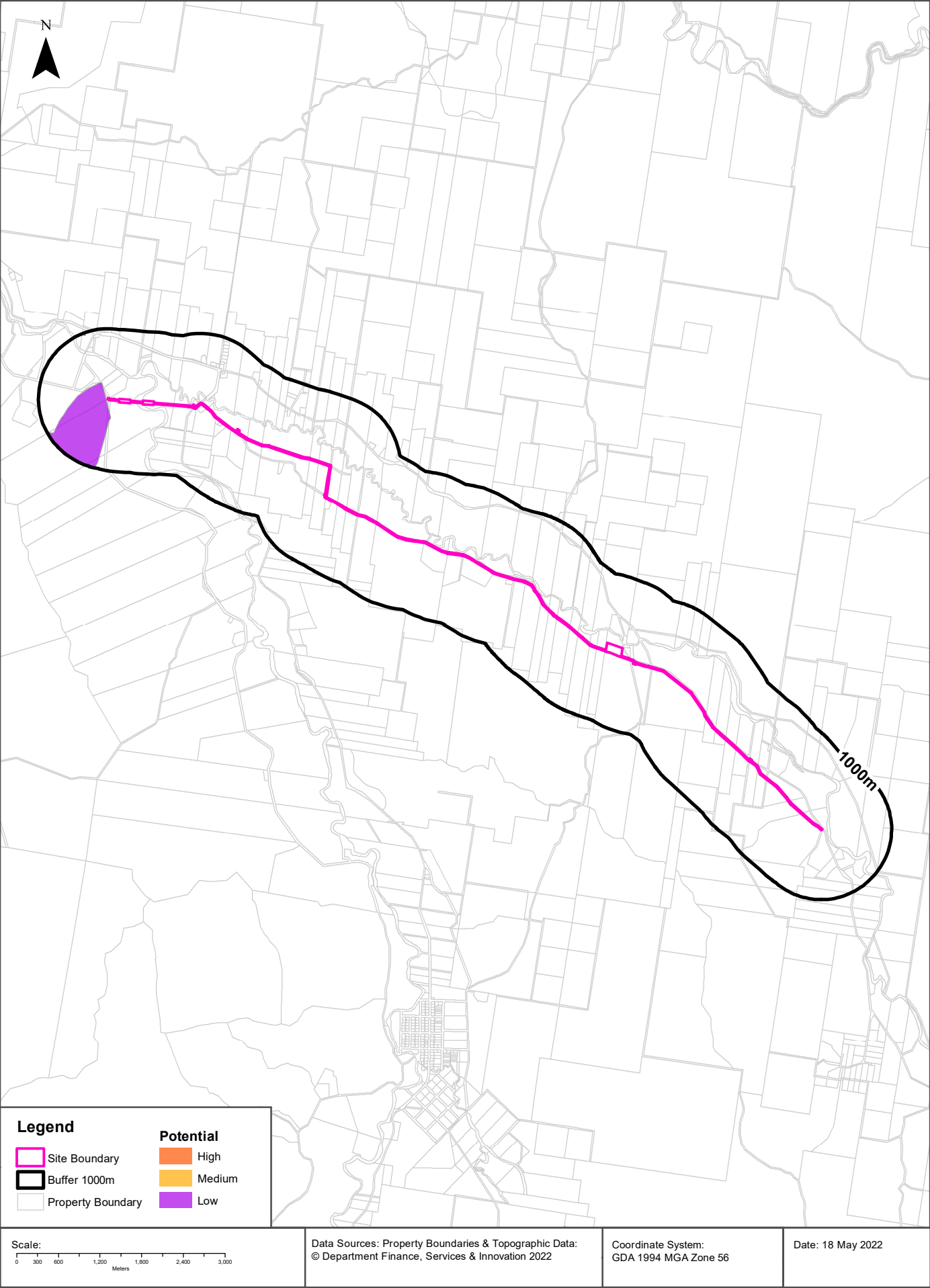
Map ID	Feature Description	Map Sheet Name	Distance
No Features			

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
47551	Faulted boundary	Fault, inferred	Nandewar Regional Assessment Area, digital geology dataset, 2003	18m
9310	Faulted boundary	Fault, position approximate	Tamworth-Hastings 1:250,000 Metallogenic Map	24m
9311	Faulted boundary	Fault, position approximate	Tamworth-Hastings 1:250,000 Metallogenic Map	662m
9248	Faulted boundary	Fault, position approximate	Tamworth-Hastings 1:250,000 Metallogenic Map	779m
9290	Faulted boundary	Fault, position approximate	Tamworth-Hastings 1:250,000 Metallogenic Map	783m
9242	Faulted boundary	Fault, position accurate	Tamworth-Hastings 1:250,000 Metallogenic Map	959m

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

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Naturally Occurring Asbestos Potential

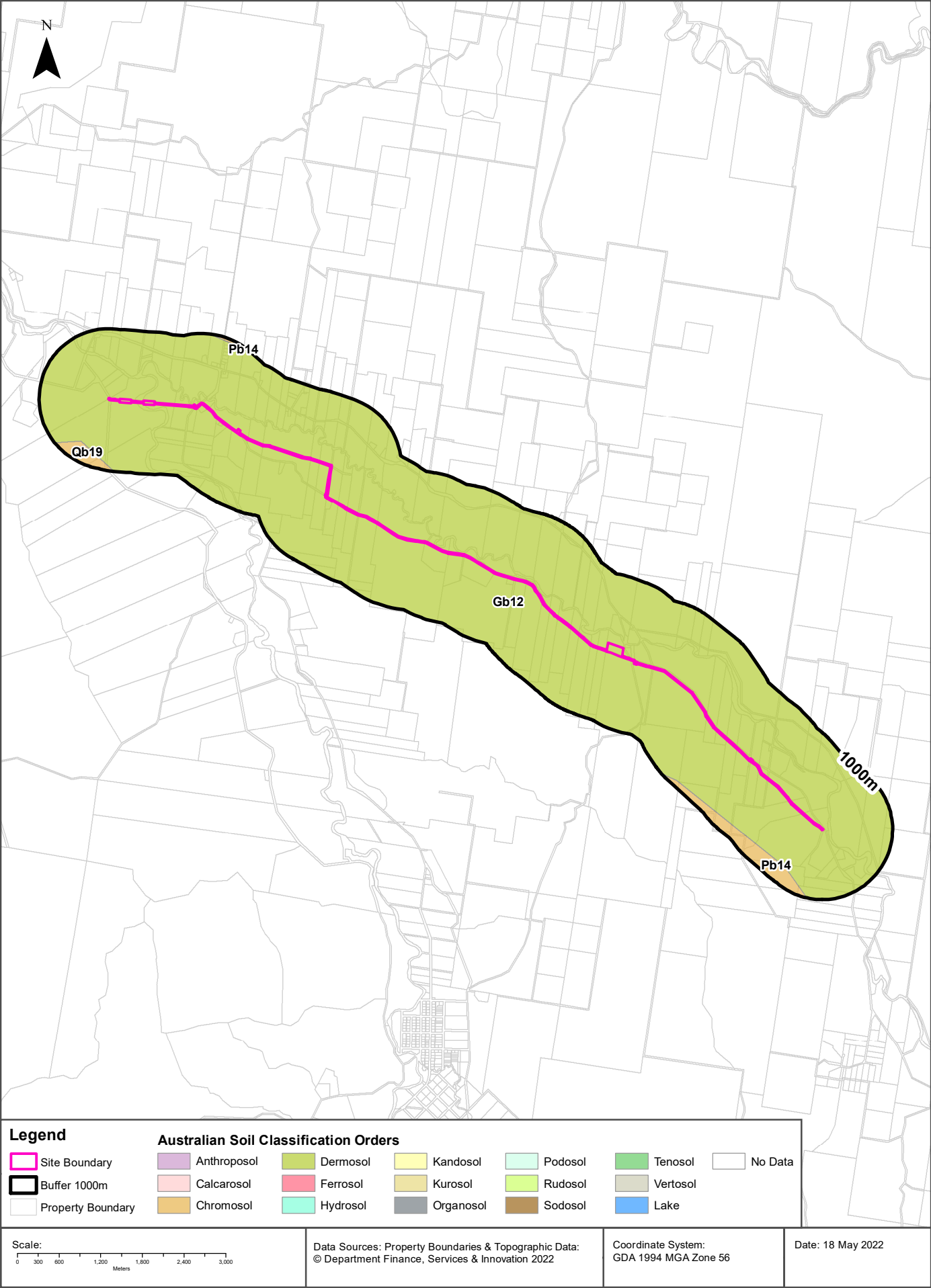
Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340

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
Low	Dew	Wisemans Arm Formation		Wisemans Arm Formation	250000	Devonian	Devonian	clastic sediment	sanstone, conglomerate, siltstone	Sandstone, granule to boulder conglomerate and siltstone with olistoliths of chert, limestone basalt, andesite and siltstone	24m	West

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



Soils

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340

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
Gb12	Dermosol	River flood-plains, terraces, and levees: chief soils are probably dark porous loamy soils (Um6.11 and Um6.12) with other (Um) and (Uc) soils. Associated are, locally, fairly large areas of dark cracking clays such as (Ug5.16); areas of (Dy3.4) soils; and sometimes areas of gravelly (Gn2) soils. Soils data are limited.	0m	On-site
Qb19	Chromosol	Hilly: chief soils are hard neutral red soils (Dr2.22). Associated are: (Db1.22 and Db1.23) on slopes; (Dr2.23), usually on lower slopes; shallow loams, such as (Um4.1), usually in steep situations; and small areas of other soils including (Dy2.43) in low-lying positions and (Gn2.14) on steeper colluvial slopes especially in eastern occurrences of the unit. As mapped, areas of units Gb12, Ob14, and Qb20 are included.	726m	West
Pb14	Chromosol	Hilly with rock outcrops and very steep slopes in some areas: chief soils are hard acidic red soils (Dr2.21); hard acidic yellow mottled soils (Dy3.41); and shallow loamy soils, such as (Um4.1). Associated are various (Gn2) soils, such as (Gn2.14), (Gn2.24), and (Gn2.74), especially in "fill" situations; and undescribed soils (a) associated with serpentine and related rock types and (b) of the narrow stream valleys. As mapped, areas of unit Tb50 are included.	749m	South East

Atlas of Australian Soils Data Source: CSIRO

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Acid Sulfate Soils

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340

Environmental Planning Instrument - Acid Sulfate Soils

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

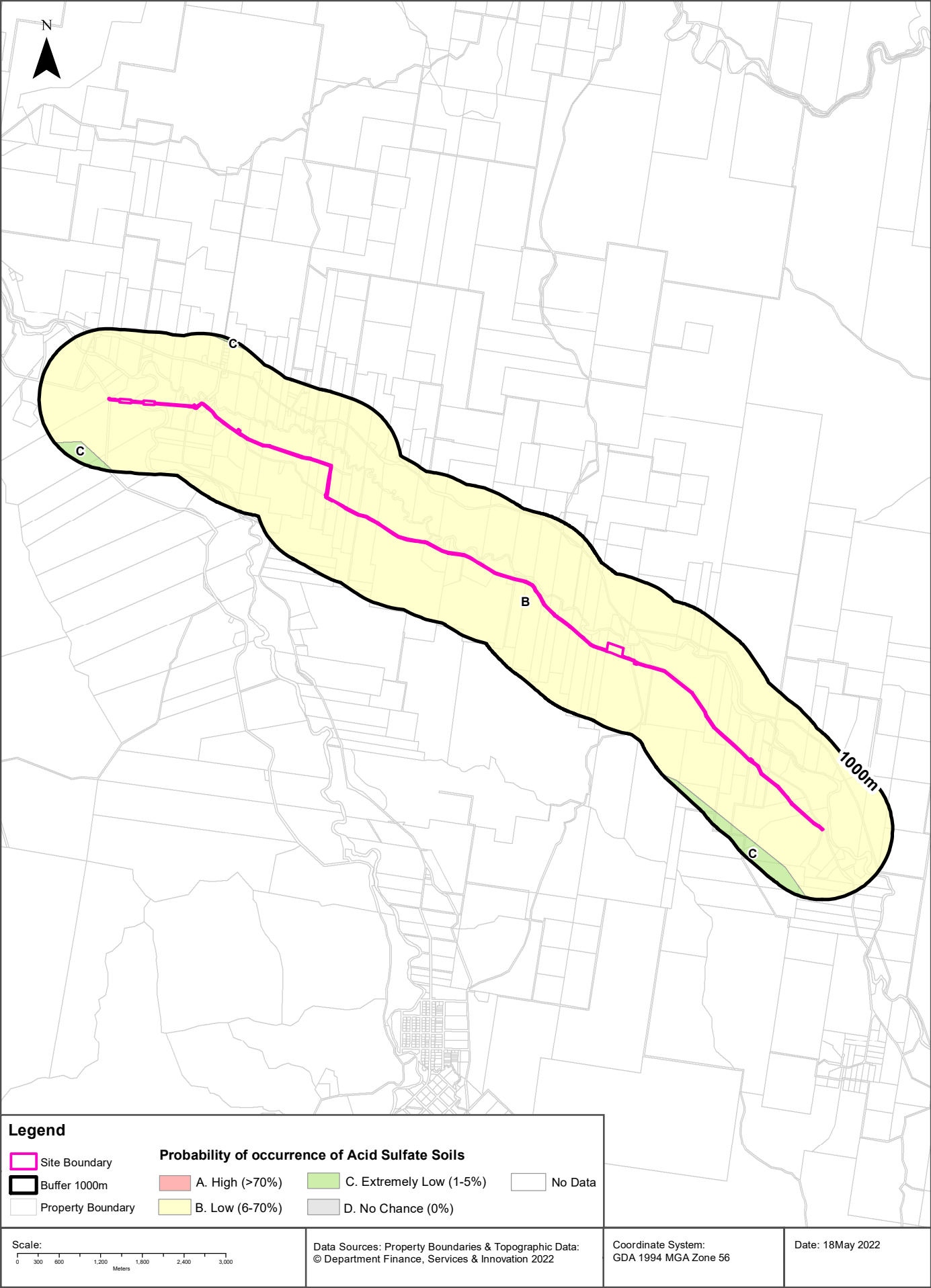
Soil Class	Description	EPI Name
N/A		

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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Acid Sulfate Soils

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340

Atlas of Australian Acid Sulfate Soils

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

Class	Description	Distance	Direction
B	Low Probability of occurrence. 6-70% chance of occurrence.	0m	On-site
C	Extremely low probability of occurrence. 1-5% chance of occurrence with occurrences in small localised areas.	727m	South East

Atlas of Australian Acid Sulfate Soils Data Source: CSIRO

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Dryland Salinity

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340

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

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340

Mining Subsidence Districts

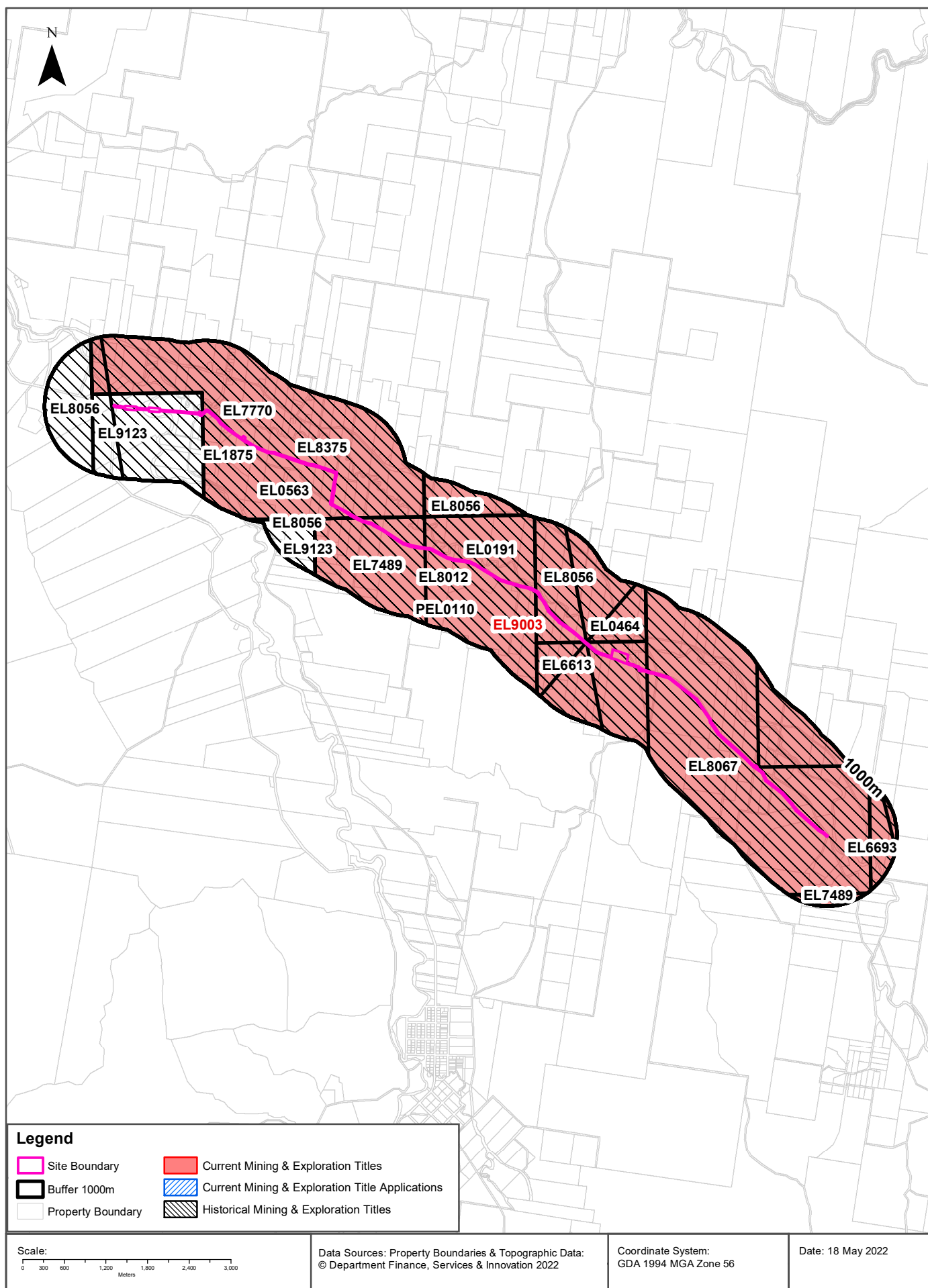
Mining Subsidence Districts within the dataset buffer:

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

Mining Subsidence District Data Source: © Land and Property Information (2016)
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Mining & Exploration Titles

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340



Mining

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340

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
EL9003	LODE RESOURCES LTD	12/10/2020	12/10/2023	12 Oct 2020	EXPLORING	MINERALS	Group 1	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

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340

Historical Mining & Exploration Titles

Historical Mining & Exploration Titles within the dataset buffer:

Title Ref	Holder	Start Date	End Date	Resource	Minerals	Dist	Dir
EL7770	IRGS NORTHERN GOLD PTY LTD	06 Jun 2011	17 Feb 2015	MINERALS	Au	0m	On-site
EL8067	IRGS NORTHERN GOLD PTY LTD	22 Mar 2013	26 Nov 2013	MINERALS		0m	On-site
EL8056	IRGS NORTHERN GOLD PTY LTD	12 Feb 2013	17 Feb 2015	MINERALS	Au	0m	On-site
EL0464	FISCHERS COPPER MINE PTY LIMITED	01 Jul 1971	01 Jul 1972	MINERALS	Cu Ag Mo	0m	On-site
EL8012	SOC1 PTY LTD	21 Nov 2012	19 Dec 2013	MINERALS		0m	On-site
EL6613	PEEL EXPLORATION LIMITED	22 Aug 2006	21 Aug 2010	MINERALS	Cu Au Mo Pb W Cr Zn	0m	On-site
PEL0110				PETROLEUM	Petroleum	0m	On-site
EL8375	SOC2 PTY LTD	27 May 2015	07 Dec 2015	MINERALS	Au	0m	On-site
EL7489	GOLD OF OPHIR PTY LTD	25 Mar 2010	10 Apr 2012	MINERALS	Au	0m	On-site
EL9123	SENTINEL RESOURCES (AUSTRALIA) PTY LTD			MINERALS		0m	On-site
EL1875	NEWMONT HOLDINGS PTY LIMITED	01 Jun 1982	01 Nov 1982	MINERALS	Cu Au	0m	On-site
EL0191	SERPENTINE MINERALS NL	01 Jul 1969	01 Jul 1971	MINERALS	Cu Mo	0m	On-site
EL0563	ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED	01 Dec 1972	01 Jun 1974	MINERALS	Cu Zn	0m	On-site
EL6693	BARFUSS CORPORATION PTY LTD	4 Jan 2007	3 Jan 2011	MINERALS	Jade Nephrite Rhodonite	609m	South East

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

State Environmental Planning Policy

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340

State Significant Precincts

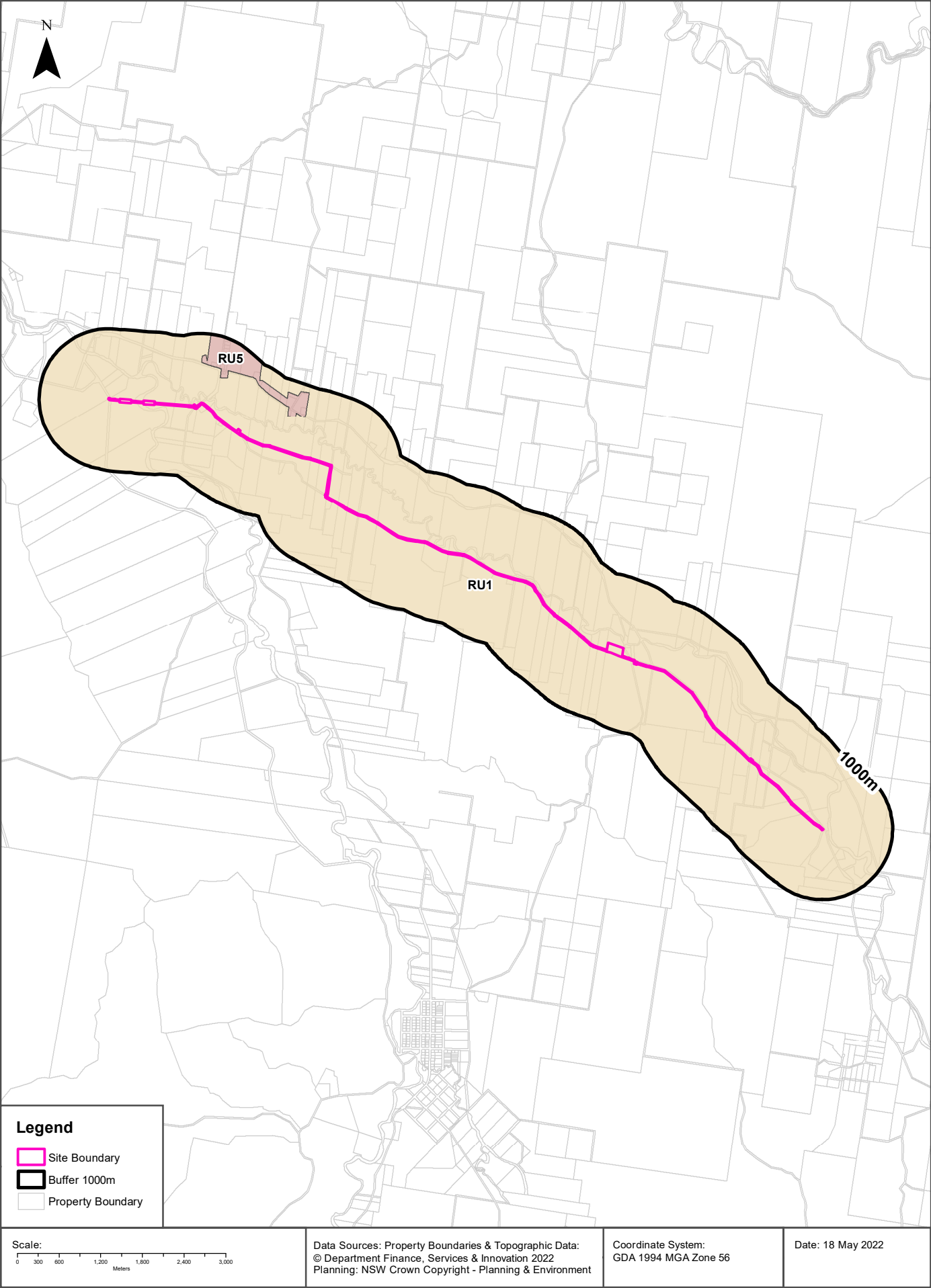
What SEPP State Significant Precincts exist within the dataset buffer?

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

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EPI Planning Zones

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340



Environmental Planning Instrument

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340

Land Zoning

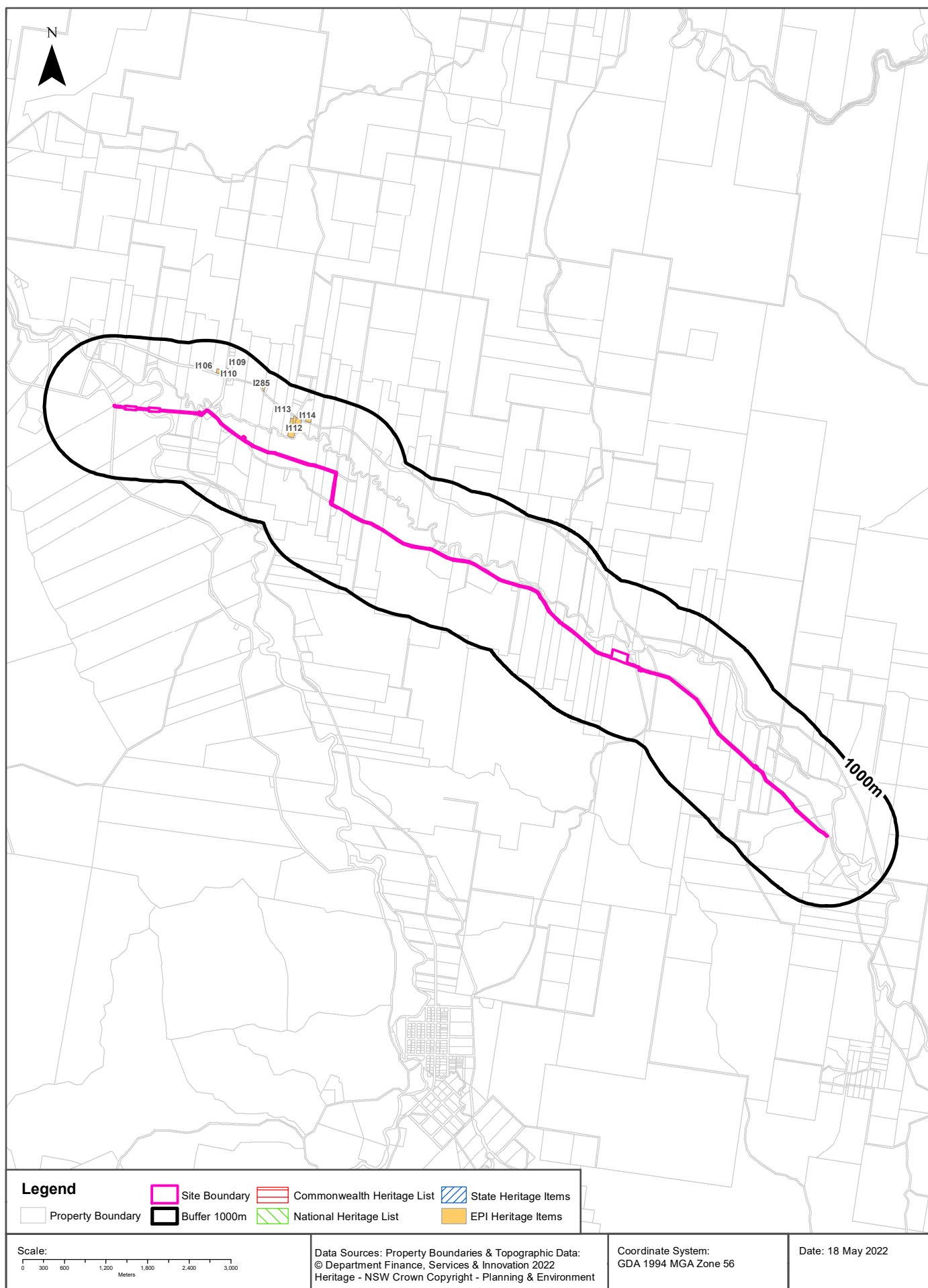
What EPI Land Zones exist within the dataset buffer?

Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
RU1	Primary Production		Tamworth Regional Local Environmental Plan 2010	21/01/2011	21/01/2011	06/11/2020		0m	On-site
RU5	Village		Tamworth Regional Local Environmental Plan 2010	21/01/2011	21/01/2011	06/11/2020		443m	North West

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Heritage Items

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340



Heritage

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340

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

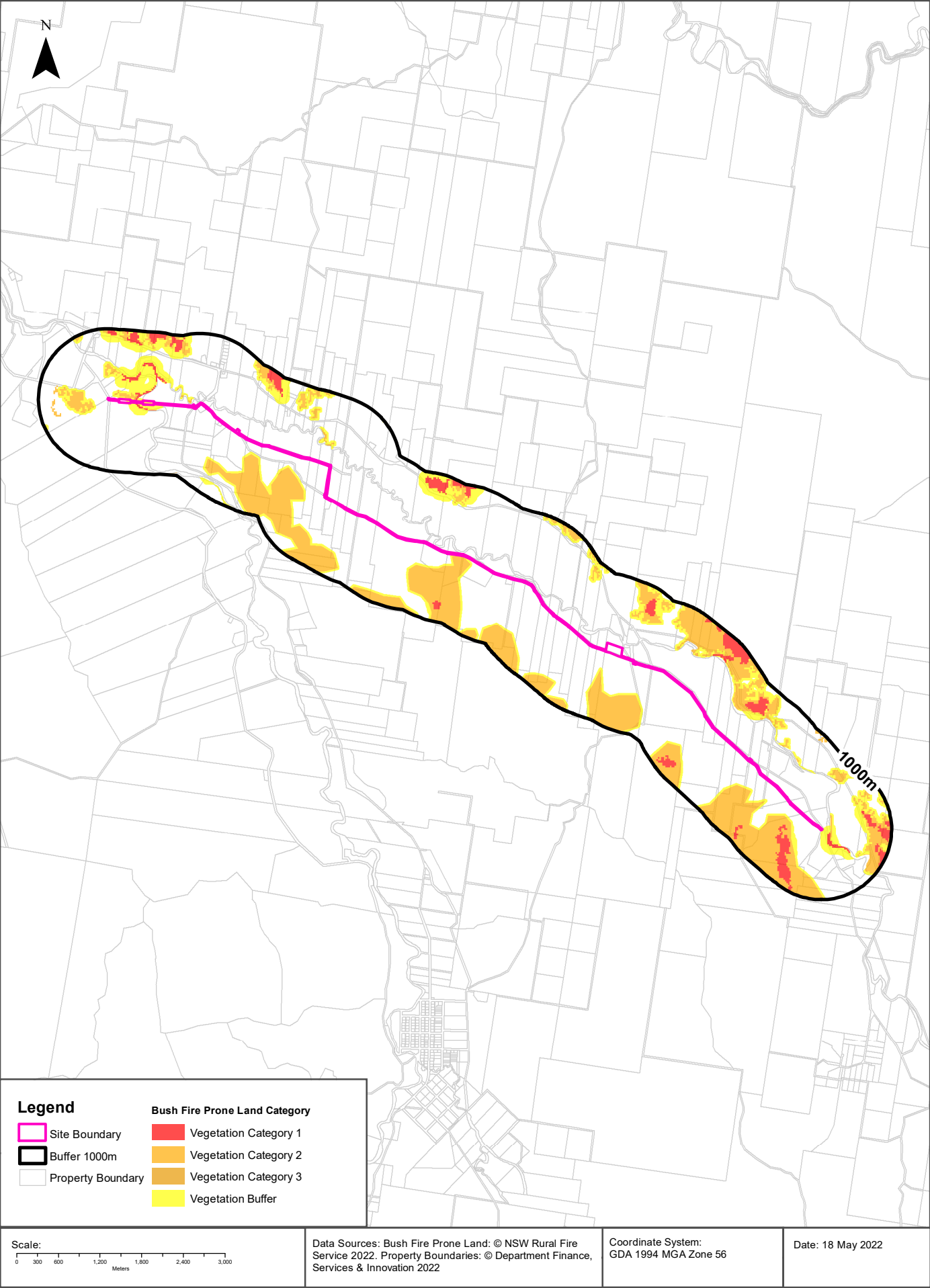
What are the EPI Heritage Items located within the dataset buffer?

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
I112	Dungowan Hall	Item - General	Local	Tamworth Regional Local Environmental Plan 2010	21/01/2011	21/01/2011	30/11/2018	273m	North West
I113	St Thomas Anglican Church	Item - General	Local	Tamworth Regional Local Environmental Plan 2010	21/01/2011	21/01/2011	30/11/2018	488m	North West
I106	Dungowan Store, Bakery and Residence	Item - General	Local	Tamworth Regional Local Environmental Plan 2010	21/01/2011	21/01/2011	30/11/2018	550m	North West

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
I110	Roman Catholic Church, Former Convent and School Site	Item - General	Local	Tamworth Regional Local Environmental Plan 2010	21/01/2011	21/01/2011	30/11/2018	561m	North West
I114	Dungowan Public School	Item - General	Local	Tamworth Regional Local Environmental Plan 2010	21/01/2011	21/01/2011	30/11/2018	570m	North West
I109	Former Manvell Bakery	Item - General	Local	Tamworth Regional Local Environmental Plan 2010	21/01/2011	21/01/2011	30/11/2018	621m	North West
I285	Pld Piallamore School Building	Item - General	Local	Tamworth Regional Local Environmental Plan 2010	21/01/2011	21/01/2011	30/11/2018	704m	North West

Heritage Data Source: NSW Crown Copyright - Planning & Environment

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Natural Hazards

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340

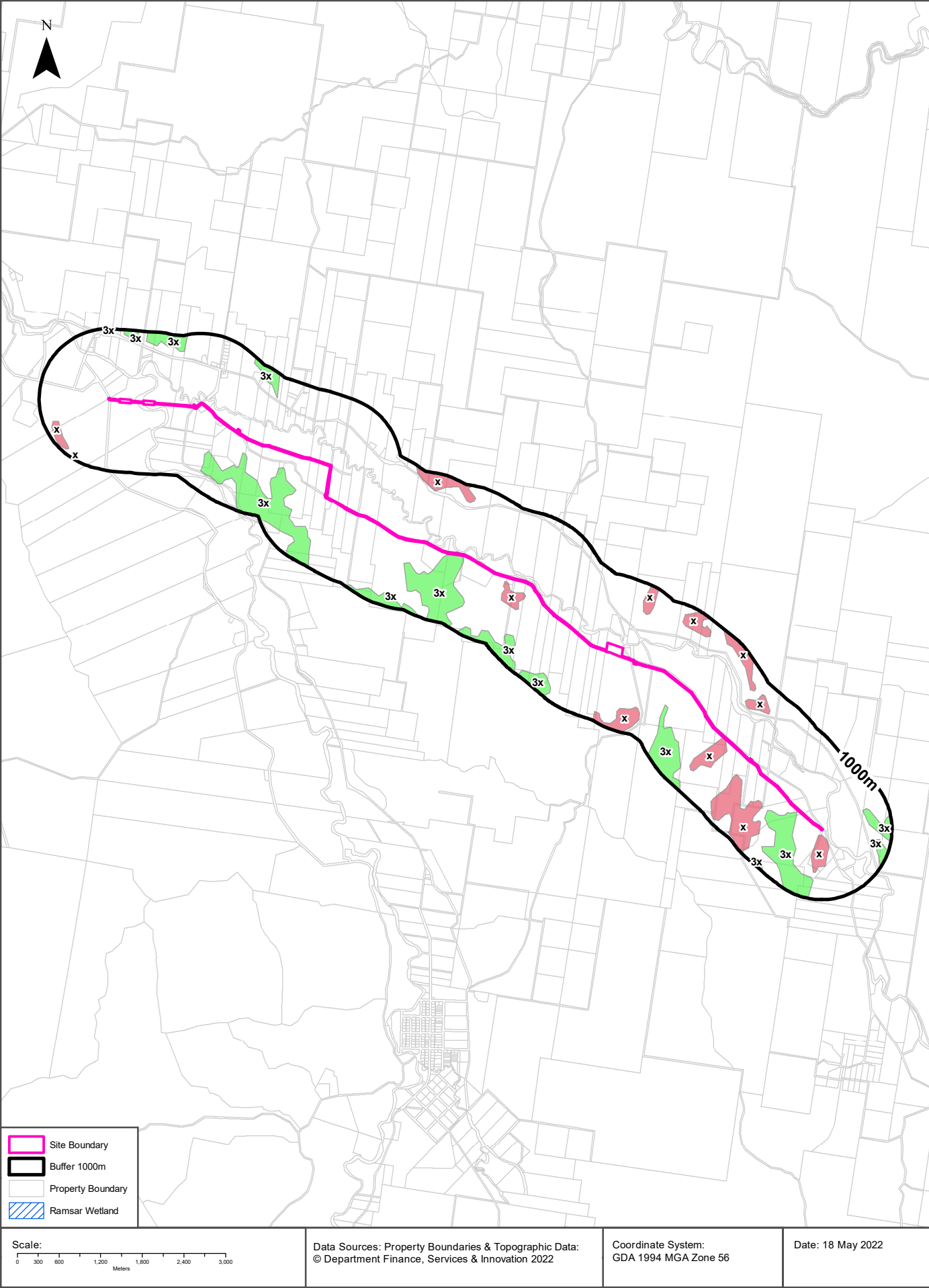
Bush Fire Prone Land

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 - Vegetation & Ramsar Wetlands
Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340



Ecological Constraints

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340

Vegetation - Eastern Bushland Database (North Region)

What Vegetation exists within the dataset buffer?

Veg Code	Veg Desc	NVISCCode	NVISDesc	Distance	Direction
3x	disturbed dry open forest	4	Dry forest system	0m	On-site
x	disturbed forest woodland	23	Disturbed bushland	7m	South East

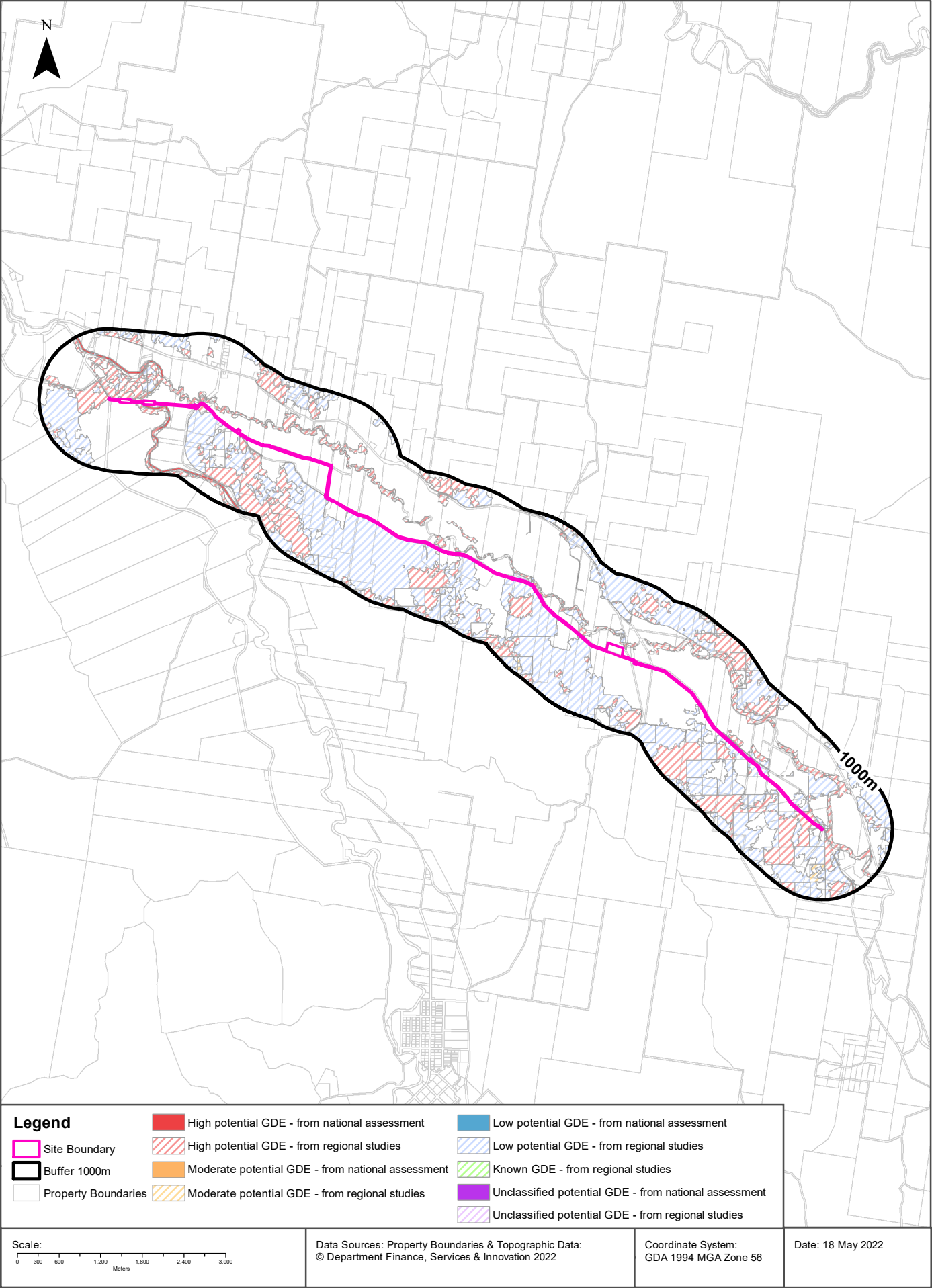
Vegetation Eastern Bushland Database Data Source: NSW Office of Environment and Heritage
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Ramsar Wetlands

What Ramsar Wetland areas exist within the dataset buffer?

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

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



Ecological Constraints

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340

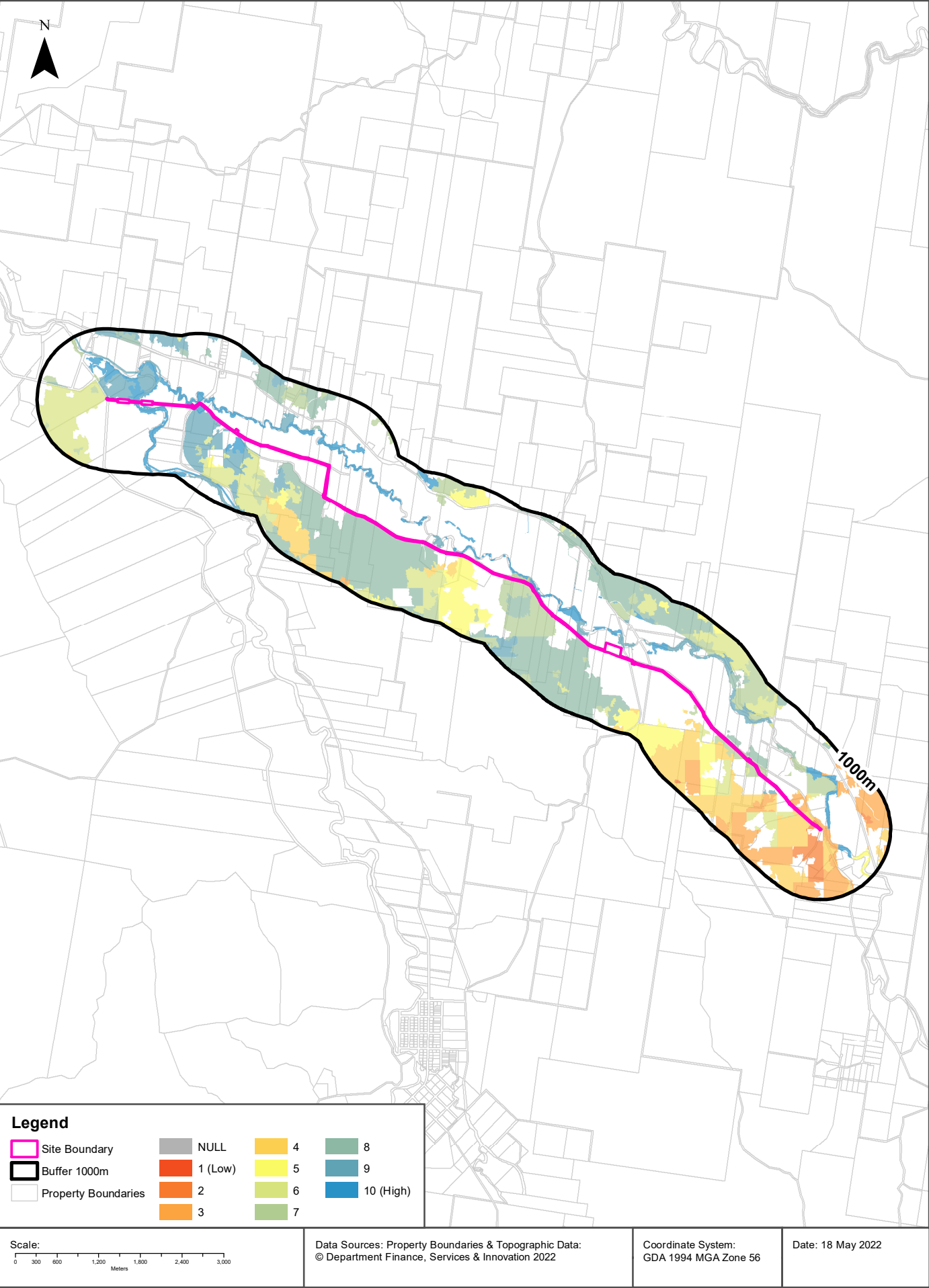
Groundwater Dependent Ecosystems Atlas

Type	GDE Potential	Geomorphology	Ecosystem Type	Aquifer Geology	Distance	Direction
Terrestrial	Low potential GDE - from regional studies	Ridges and valleys in metamorphic rocks.	Vegetation		0m	On-site
Aquatic	High potential GDE - from national assessment	Ridges and valleys in metamorphic rocks.	River		0m	On-site
Terrestrial	High potential GDE - from regional studies	Ridges and valleys in metamorphic rocks.	Vegetation		0m	On-site
Terrestrial	High potential GDE - from regional studies	Undulating granitic plateau with higher residuals including basalt cappings.	Vegetation		35m	South East
Aquatic	Moderate potential GDE - from national assessment	Ridges and valleys in metamorphic rocks.	River		45m	North West
Terrestrial	Low potential GDE - from regional studies	Undulating granitic plateau with higher residuals including basalt cappings.	Vegetation		417m	South East
Terrestrial	Moderate potential GDE - from regional studies	Ridges and valleys in metamorphic rocks.	Vegetation		485m	South East

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

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340



Ecological Constraints

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340

Inflow Dependent Ecosystems Likelihood

Type	IDE Likelihood	Geomorphology	Ecosystem Type	Aquifer Geology	Distance	Direction
Terrestrial	7	Ridges and valleys in metamorphic rocks.	Vegetation		0m	On-site
Terrestrial	4	Ridges and valleys in metamorphic rocks.	Vegetation		0m	On-site
Terrestrial	9	Ridges and valleys in metamorphic rocks.	Vegetation		0m	On-site
Terrestrial	2	Ridges and valleys in metamorphic rocks.	Vegetation		0m	On-site
Terrestrial	5	Ridges and valleys in metamorphic rocks.	Vegetation		0m	On-site
Aquatic	10	Ridges and valleys in metamorphic rocks.	River		0m	On-site
Terrestrial	8	Ridges and valleys in metamorphic rocks.	Vegetation		0m	On-site
Terrestrial	10	Ridges and valleys in metamorphic rocks.	Vegetation		0m	On-site
Terrestrial	3	Ridges and valleys in metamorphic rocks.	Vegetation		0m	On-site
Terrestrial	6	Ridges and valleys in metamorphic rocks.	Vegetation		0m	On-site
Terrestrial	3	Undulating granitic plateau with higher residuals including basalt cappings.	Vegetation		35m	South East
Aquatic	9	Ridges and valleys in metamorphic rocks.	River		45m	North West
Terrestrial	7	Undulating granitic plateau with higher residuals including basalt cappings.	Vegetation		417m	South East
Terrestrial	10	Undulating granitic plateau with higher residuals including basalt cappings.	Vegetation		485m	North East
Terrestrial	6	Undulating granitic plateau with higher residuals including basalt cappings.	Vegetation		515m	East
Terrestrial	8	Undulating granitic plateau with higher residuals including basalt cappings.	Vegetation		526m	East
Terrestrial	5	Undulating granitic plateau with higher residuals including basalt cappings.	Vegetation		594m	South East
Terrestrial	2	Undulating granitic plateau with higher residuals including basalt cappings.	Vegetation		603m	South East
Terrestrial	9	Undulating granitic plateau with higher residuals including basalt cappings.	Vegetation		762m	North West
Terrestrial	4	Undulating granitic plateau with higher residuals including basalt cappings.	Vegetation		817m	South East

Inflow Dependent Ecosystems Likelihood Data Source: The Bureau of Meteorology

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Ecological Constraints

Ogunbil Road & Dungowan Dam Road (1 of 3), Dungowan, NSW 2340

NSW BioNet Atlas

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

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Amphibia	Litoria booroolongensis	Booroolong Frog	Endangered	Not Sensitive	Endangered	
Animalia	Aves	Anthochaera phrygia	Regent Honeyeater	Critically Endangered	Not Sensitive	Critically Endangered	
Animalia	Aves	Artamus cyanopterus cyanopterus	Dusky Woodswallow	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Chthonicola sagittata	Speckled Warbler	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Circus assimilis	Spotted Harrier	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Daphoenositta chrysoptera	Varied Sittella	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Glossopsitta pusilla	Little Lorikeet	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Hieraaetus morphnoides	Little Eagle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Neophema pulchella	Turquoise Parrot	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Ninox connivens	Barking Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Petroica boodang	Scarlet Robin	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Petroica phoenicea	Flame Robin	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Stagonopleura guttata	Diamond Firetail	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Dasyurus maculatus	Spotted-tailed Quoll	Vulnerable	Not Sensitive	Endangered	
Animalia	Mammalia	Miniopterus orianae oceanensis	Large Bent-winged Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Petaurus norfolcensis	Squirrel Glider	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Phascolarctos cinereus	Koala	Vulnerable	Not Sensitive	Endangered	
Animalia	Mammalia	Pteropus poliocephalus	Grey-headed Flying-fox	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Reptilia	Uvidicolus sphyrurus	Border Thick-tailed Gecko	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Cymbidium canaliculatum	Tiger Orchid	Not Listed	Category 2	Not Listed	
Plantae	Flora	Swainsona sericea	Silky Swainson-pea	Vulnerable	Not Sensitive	Not Listed	

Data does not include NSW category 1 sensitive species.

NSW BioNet: © State of NSW and Office of Environment and Heritage

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

LC Code	Location Confidence
Premise Match	Georeferenced to the site location / premise or part of site
Area Match	Georeferenced to an approximate or general area
Road Match	Georeferenced to a road or rail corridor
Road Intersection	Georeferenced to a road intersection
Buffered Point	A point feature buffered to x metres
Adjacent Match	Land adjacent to a georeferenced feature
Network of Features	Georeferenced to a network of features
Suburb Match	Georeferenced to a suburb boundary
As Supplied	Spatial data supplied by provider

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LOTSEARCH

LOTSEARCH ENVIRO LITE

Date: 18 May 2022 11:48:03

Reference: LS032416 EL

Address: Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340

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	06/04/2022	06/04/2022	Quarterly	-	-	-	-
Topographic Data	NSW Department of Customer Service - Spatial Services	25/06/2019	25/06/2019	Annually	-	-	-	-
List of NSW contaminated sites notified to EPA	Environment Protection Authority	19/04/2022	11/04/2022	Monthly	1000m	0	0	0
Contaminated Land Records of Notice	Environment Protection Authority	10/05/2022	10/05/2022	Monthly	1000m	0	0	0
Former Gasworks	Environment Protection Authority	02/03/2022	14/07/2021	Quarterly	1000m	0	0	0
National Waste Management Facilities Database	Geoscience Australia	12/05/2021	07/03/2017	Annually	1000m	0	0	0
National Liquid Fuel Facilities	Geoscience Australia	15/02/2021	13/07/2012	Annually	1000m	0	0	0
EPA PFAS Investigation Program	Environment Protection Authority	03/05/2022	14/07/2021	Monthly	2000m	0	0	0
Defence PFAS Investigation & Management Program - Investigation Sites	Department of Defence	11/05/2022	11/05/2022	Monthly	2000m	0	0	0
Defence PFAS Investigation & Management Program - Management Sites	Department of Defence	11/05/2022	11/05/2022	Monthly	2000m	0	0	0
Airservices Australia National PFAS Management Program	Airservices Australia	11/05/2022	11/05/2022	Monthly	2000m	0	0	0
Defence 3 Year Regional Contamination Investigation Program	Department of Defence	03/03/2022	03/03/2022	Quarterly	2000m	0	0	0
EPA Other Sites with Contamination Issues	Environment Protection Authority	16/02/2022	13/12/2018	Annually	1000m	0	0	0
Licensed Activities under the POEO Act 1997	Environment Protection Authority	10/05/2022	10/05/2022	Monthly	1000m	0	0	0
Delicensed POEO Activities still regulated by the EPA	Environment Protection Authority	10/05/2022	10/05/2022	Monthly	1000m	0	0	0
Former POEO Licensed Activities now revoked or surrendered	Environment Protection Authority	10/05/2022	10/05/2022	Monthly	1000m	4	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
Points of Interest	NSW Department of Customer Service - Spatial Services	19/08/2021	19/08/2021	Quarterly	1000m	0	12	22
Tanks (Areas)	NSW Department of Customer Service - Spatial Services	19/08/2021	19/08/2021	Quarterly	1000m	0	0	0
Tanks (Points)	NSW Department of Customer Service - Spatial Services	19/08/2021	19/08/2021	Quarterly	1000m	0	0	1
Major Easements	NSW Department of Customer Service - Spatial Services	19/08/2021	19/08/2021	Quarterly	1000m	0	0	0
State Forest	Forestry Corporation of NSW	25/02/2021	14/02/2021	Annually	1000m	0	0	0
NSW National Parks and Wildlife Service Reserves	NSW Office of Environment & Heritage	10/02/2022	31/12/2021	Annually	1000m	0	0	0
Hydrogeology Map of Australia	Commonwealth of Australia (Geoscience Australia)	08/10/2014	17/03/2000	Annually	1000m	1	1	1
Temporary Water Restriction (Botany Sands Groundwater Source) Order 2018	NSW Department of Planning, Industry and Environment	28/03/2022	23/02/2018	Annually	1000m	0	0	0
National Groundwater Information System (NGIS) Boreholes	Bureau of Meteorology; Water NSW	24/01/2022	24/01/2022	Annually	2000m	1	5	46

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features On-site	No. Features within 100m	No. Features within Buffer
NSW Seamless Geology Single Layer: Rock Units	Department of Regional NSW	17/02/2022	01/05/2021	Annually	1000m	2	2	2
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	5
Naturally Occurring Asbestos Potential	NSW Dept. of Industry, Resources & Energy	04/12/2015	24/09/2015	Unknown	1000m	0	0	1
Atlas of Australian Soils	Australian Bureau of Agriculture and Resource Economics and Sciences (ABARES)	19/05/2017	17/02/2011	As required	1000m	2	2	2
Environmental Planning Instrument Acid Sulfate Soils	NSW Department of Planning, Industry and Environment	06/04/2022	18/02/2022	Monthly	500m	0	-	-
Atlas of Australian Acid Sulfate Soils	CSIRO	19/01/2017	21/02/2013	As required	1000m	2	2	2
Dryland Salinity - National Assessment	National Land and Water Resources Audit	18/07/2014	12/05/2013	None planned	1000m	0	0	0
Mining Subsidence Districts	NSW Department of Customer Service - Subsidence Advisory NSW	19/08/2021	05/08/2021	Quarterly	1000m	0	0	0
Current Mining Titles	NSW Department of Industry	20/04/2022	20/04/2022	Monthly	1000m	1	1	2
Mining Title Applications	NSW Department of Industry	20/04/2022	20/04/2022	Monthly	1000m	0	0	0
Historic Mining Titles	NSW Department of Industry	20/04/2022	20/04/2022	Monthly	1000m	11	13	13
Environmental Planning Instrument SEPP State Significant Precincts	NSW Department of Planning, Industry and Environment	15/11/2021	07/12/2018	Monthly	1000m	0	0	0
Environmental Planning Instrument Land Zoning	NSW Department of Planning, Industry and Environment	15/11/2021	05/11/2021	Monthly	1000m	1	1	1
Commonwealth Heritage List	Australian Government Department of the Agriculture, Water and the Environment	18/05/2021	20/11/2019	Annually	1000m	0	0	0
National Heritage List	Australian Government Department of the Agriculture, Water and the Environment	18/05/2021	20/11/2019	Annually	1000m	0	0	0
State Heritage Register - Curtilages	NSW Department of Planning, Industry and Environment	19/08/2021	25/06/2021	Quarterly	1000m	0	0	0
Environmental Planning Instrument Local Heritage	NSW Department of Planning, Industry and Environment	06/04/2022	25/03/2022	Monthly	1000m	2	3	3
Bush Fire Prone Land	NSW Rural Fire Service	16/05/2022	08/12/2021	Weekly	1000m	3	3	3
Eastern Bushland Database (North Region)	NSW Office of Environment & Heritage	24/07/2016	01/01/1991	None planned	1000m	3	3	4
Ramsar Wetlands of Australia	Australian Government Department of Agriculture, Water and the Environment	28/03/2022	19/03/2020	Annually	1000m	0	0	0
Groundwater Dependent Ecosystems	Bureau of Meteorology	14/08/2017	15/05/2017	Annually	1000m	5	5	6
Inflow Dependent Ecosystems Likelihood	Bureau of Meteorology	14/08/2017	15/05/2017	Unknown	1000m	9	14	18
NSW BioNet Species Sightings	NSW Office of Environment & Heritage	16/05/2022	16/05/2022	Weekly	10000m	-	-	-

Site Diagram

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340



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Legend

-  Site Boundary
-  Internal Parcel Boundaries

Total Area: 368279m²

Total Perimeter: 36.44km

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:

0 300 600 1,200 1,800 2,400 3,000
Meters

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

Coordinate System:
GDA 1994 MGA Zone 56

Date: 18 May 2022

Contaminated Land

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340

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

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340

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

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<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

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Waste Management & Liquid Fuel Facilities

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340

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
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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
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PFAS Investigation & Management Programs

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340

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
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Defence PFAS Investigation Program

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

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

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

Defence PFAS Management Program

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

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

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

Airservices Australia National PFAS Management Program

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

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

Airservices Australia National PFAS Management Program Data Custodian: Airservices Australia

Defence Sites

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340

Defence 3 Year Regional Contamination Investigation Program

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

Property ID	Base Name	Address	Known Contamination	Loc Conf	Dist	Dir
N/A	No records in buffer					

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

EPA Other Sites with Contamination Issues

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340

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

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340

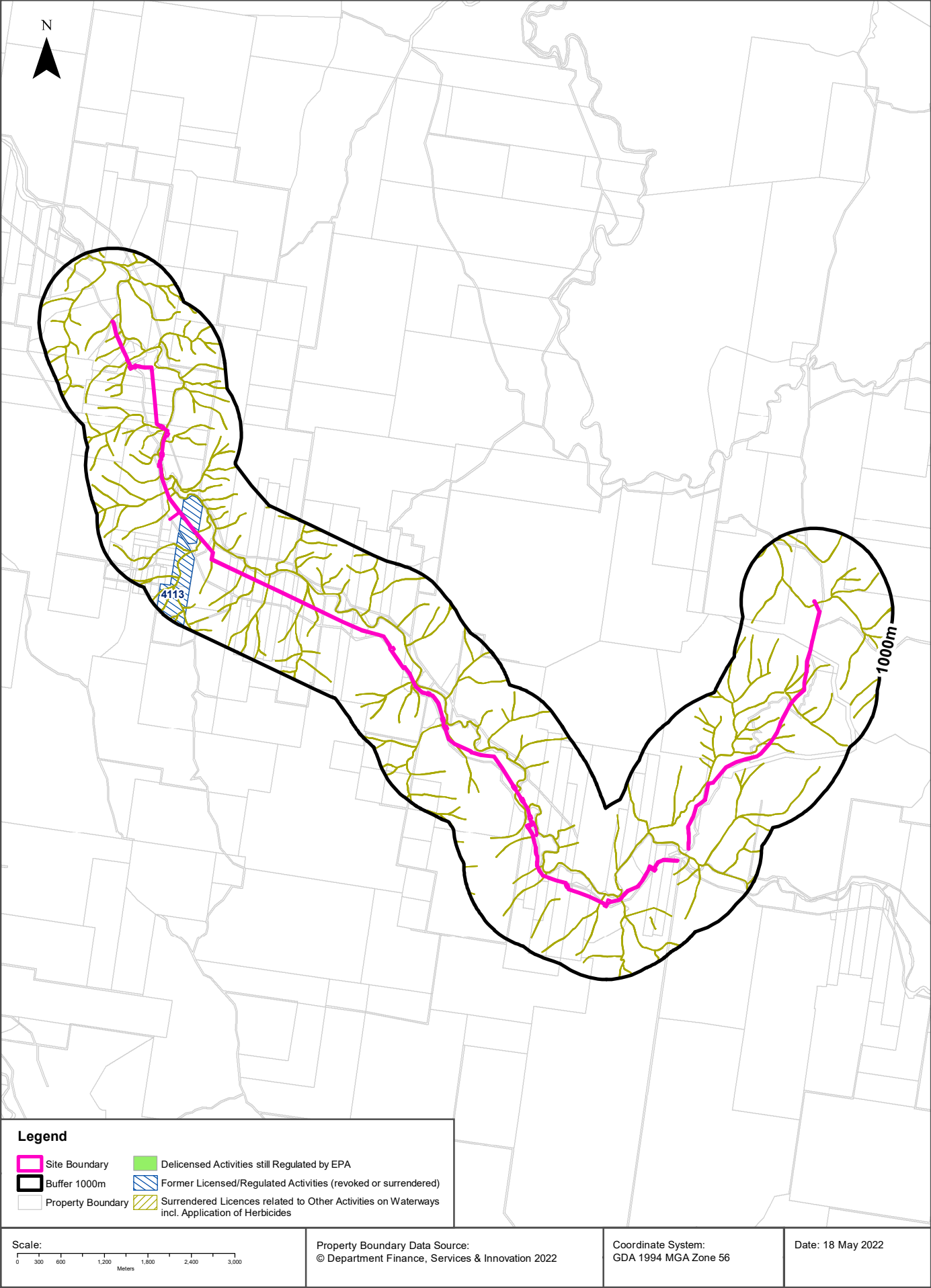
Licensed Activities under the POEO Act 1997

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



EPA Activities

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340

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
4113	ANTHONY BULL	-, DUNGOWAN, NSW 2340	Surrendered	01/03/2000	Pig accommodation	Premise Match	0m	On-site
4653	LUHRMANN ENVIRONMENT MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW	Surrendered	06/09/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	0m	On-site
4838	Robert Orchard	Various Waterways throughout New South Wales - SYDNEY NSW 2000	Surrendered	07/09/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	0m	On-site
6630	SYDNEY WEED & PEST MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW - PROSPECT, NSW, 2148	Surrendered	09/11/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	0m	On-site

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

Historical Business Directories

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340

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						

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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					

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Historical Business Directories

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340

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

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

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

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

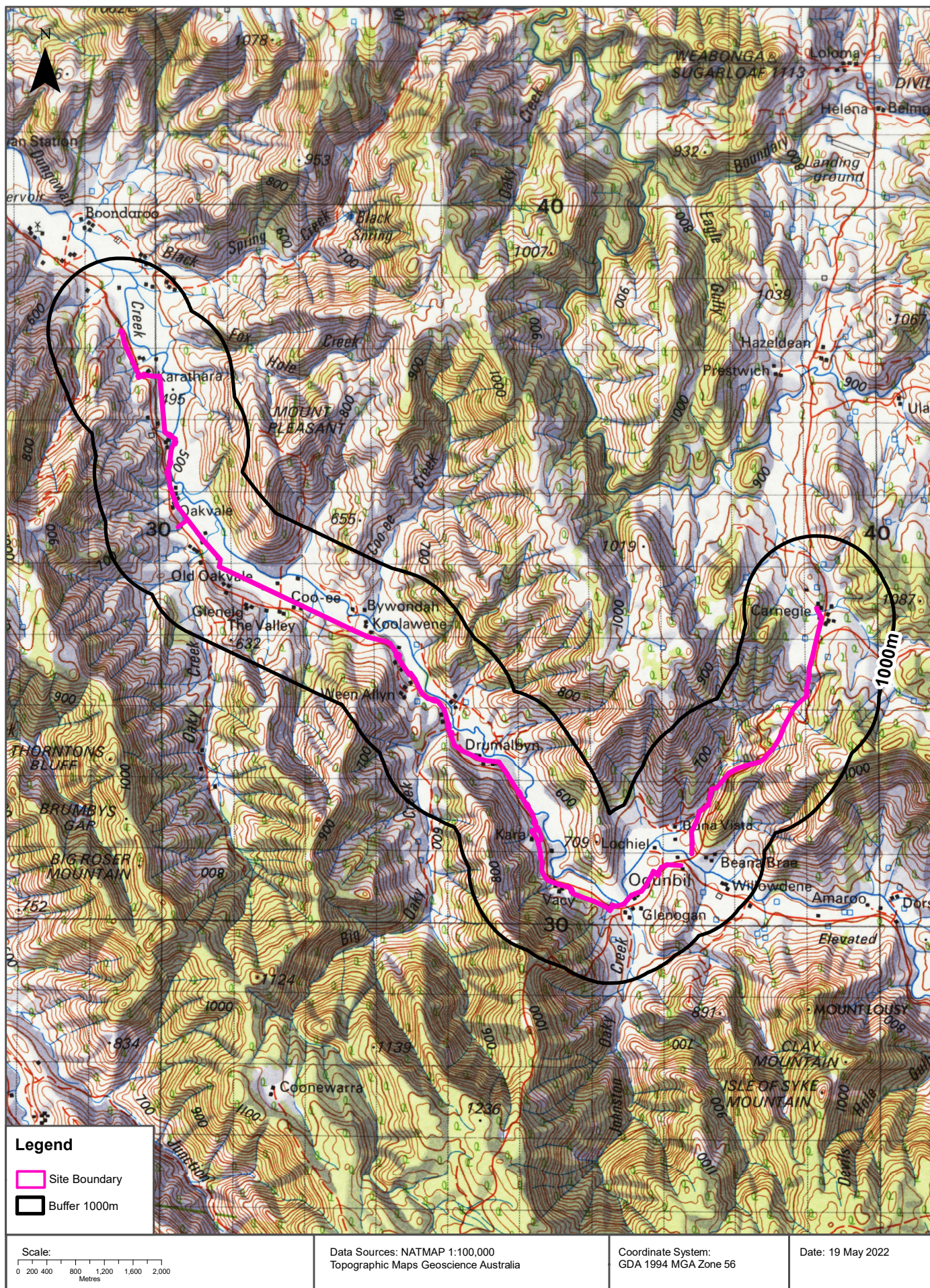
Dry Cleaners, Motor Garages & Service Stations from UBD Business Directories, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published.

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
N/A	No records in buffer					

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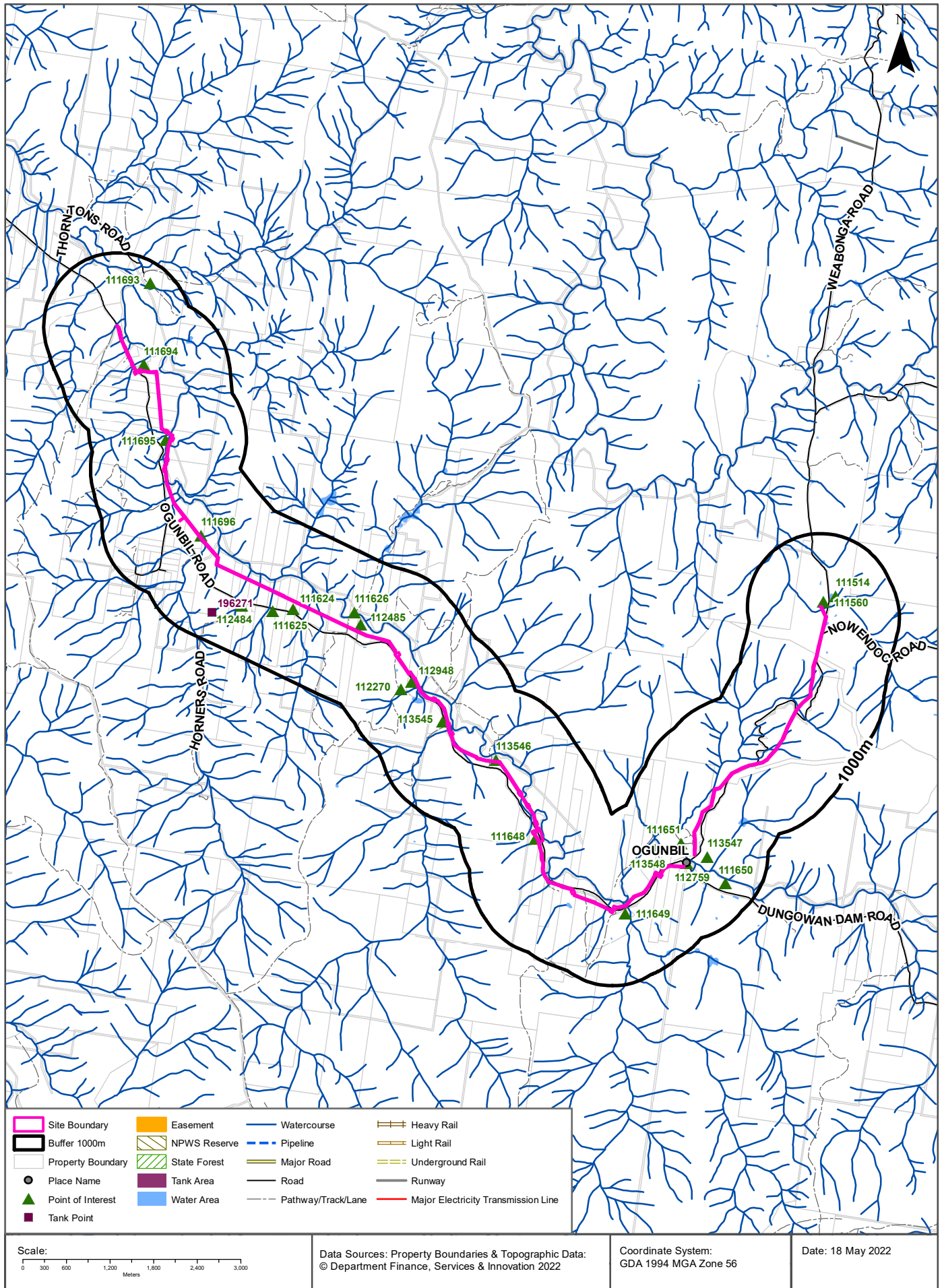
Historical Map 1979

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340



Topographic Features

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340



Topographic Features

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340

Points of Interest

What Points of Interest exist within the dataset buffer?

Map Id	Feature Type	Label	Distance	Direction
111648	Homestead	KARA	16m	South East
113546	Homestead	DRUMALBYN	17m	South East
111696	Homestead	OAKVALE	18m	North West
112948	Firestation - Bush	OGUNBIL RFB	45m	North West
111695	Homestead	BROOKLYN	54m	North West
113545	Homestead	DRUMALBYN	54m	South
112759	Locality	OGUNBIL	55m	South East
111560	Homestead	CARNEGIE	69m	East
111694	Homestead	KARATHARRA	77m	North West
111649	Homestead	GLENOGAN	87m	South East
112485	Homestead	KOOLAWENE	96m	North West
111624	Homestead	COO-EE	97m	North West
113547	Homestead	BEANA BRAE	169m	South East
111651	Homestead	BONA VISTA	182m	South East
111626	Homestead	BYWONDAH	211m	North West
112270	Homestead	WEEN ALLYN	226m	West
111625	Homestead	CALLOOL	236m	North West
111514	Swamp	THREE CORNER SWAMP	241m	East
113548	Homestead	LOCHIEL	283m	South East
112484	Homestead	GLENELG	349m	North West
111650	Homestead	WILLOWDENE	574m	South East
111693	Homestead	MT PLEASANT	741m	North West

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

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Topographic Features

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340

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
196271	Water	Operational		01/05/2013	619m	West

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

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340

State Forest

What State Forest exist within the dataset buffer?

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

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

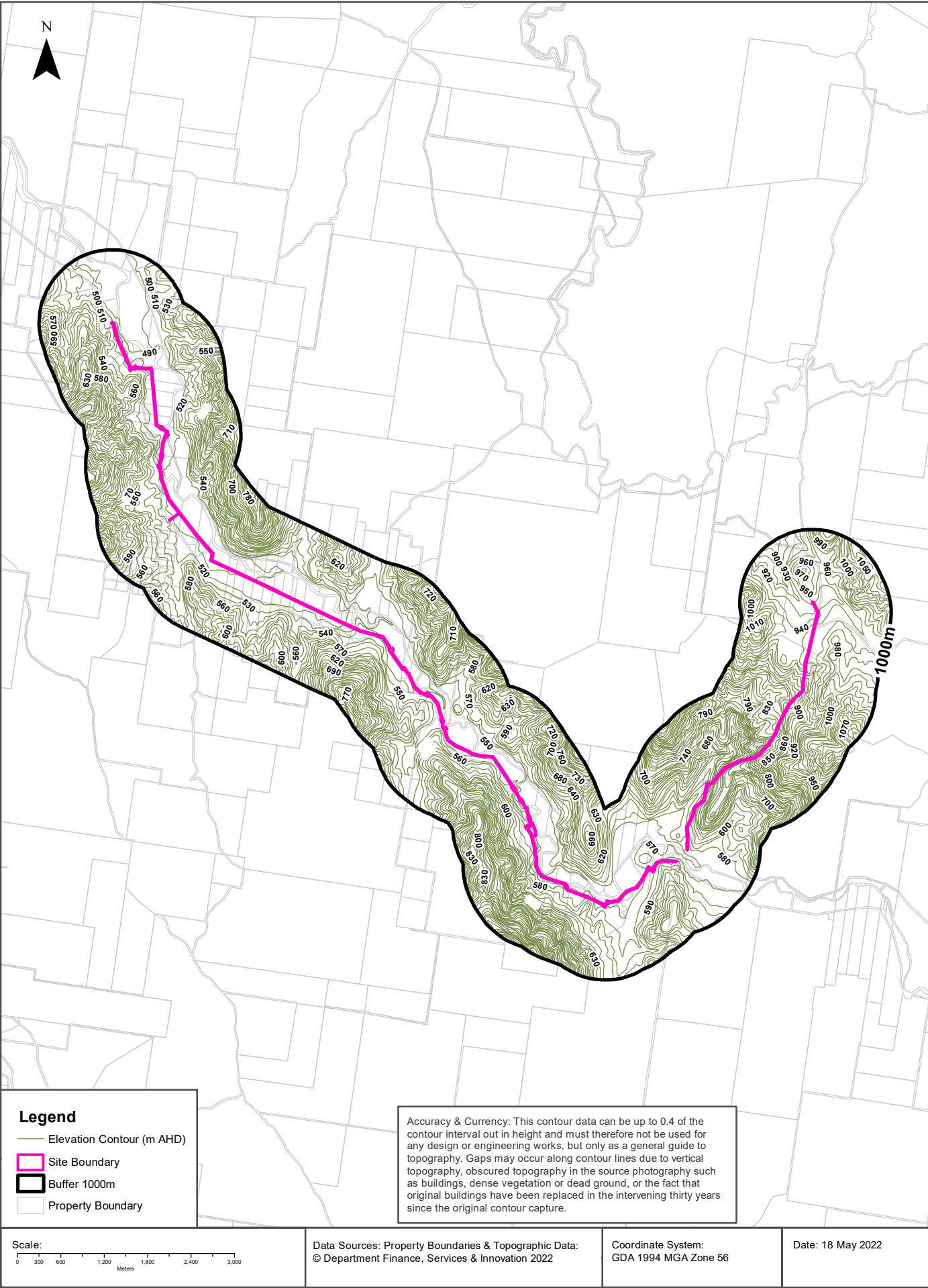
What NPWS Reserves exist within the dataset buffer?

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

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

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340



Hydrogeology & Groundwater

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340

Hydrogeology

Description of aquifers within the dataset buffer:

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

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

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Temporary Water Restriction (Botany Sands Groundwater Source) Order 2018

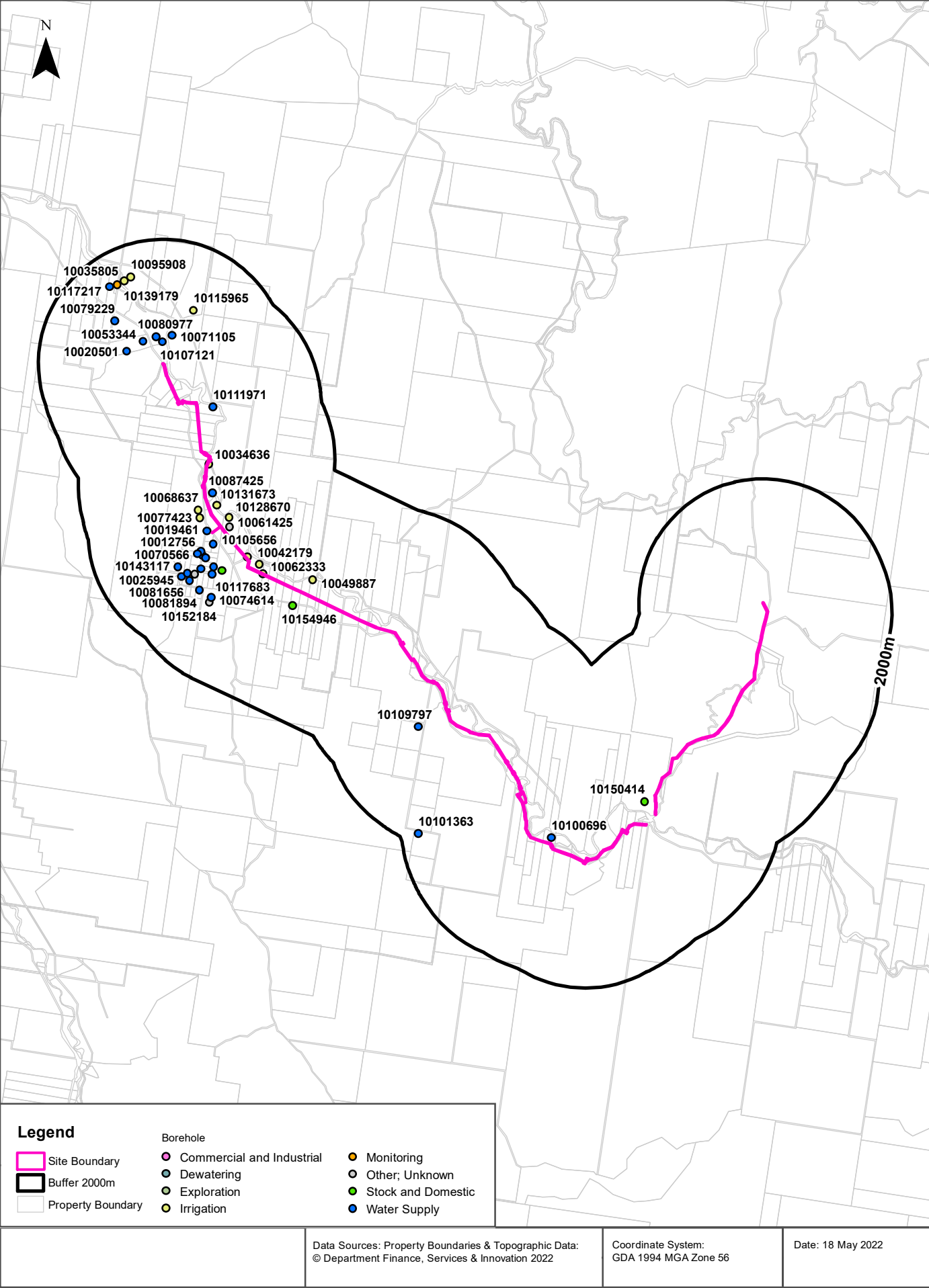
Temporary water restrictions relating to the Botany Sands aquifer within the dataset buffer:

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

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

Groundwater Boreholes

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340



Hydrogeology & Groundwater

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340

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
10062333	GW060479	Irrigation	Functioning	01/01/1985	7.00		AHD				0m	On-site
10104673	GW901471	Irrigation	Unknown	01/10/1996	7.00		AHD		8.000	3.40	14m	North West
10034636	GW029784	Irrigation	Unknown	01/07/1967	12.20		AHD				17m	North West
10019461	GW060946	Water Supply	Unknown	01/05/1985	29.00		AHD				83m	North West
10100696	GW967964	Water Supply	Functioning	10/10/2006	24.40		AHD		1.080	4.60	84m	South East
10061425	GW018848	Unknown	Unknown	01/01/1946	5.50		AHD				104m	North West
10042179	GW053697	Irrigation	Unknown		4.00		AHD				110m	North West
10087425	GW049349	Water Supply	Functioning	01/04/1979	5.40		AHD				120m	North West
10131673	GW024334	Irrigation	Unknown	01/12/1965	5.50		AHD	0-500 ppm			127m	North West
10150414	GW903440	Stock and Domestic	Functioning	29/06/2020	48.00		AHD				163m	South East
10068637	GW029782	Irrigation	Functioning	01/08/1967	38.10		AHD				164m	North West
10077423	GW029783	Irrigation	Functioning	01/05/1967	25.00		AHD				179m	North West
10105656	GW965104	Water Supply	Unknown	13/01/2001	42.68		AHD		1.750	7.00	181m	North West
10128670	GW042690	Irrigation	Unknown		6.00		AHD				195m	North West
10154946	GW904667	Stock and Domestic	Functioning	16/06/2020	66.00		AHD				246m	North West
10111971	GW902770	Water Supply	Unknown		3.00		AHD			0.50	248m	North West
10049887	GW901426	Irrigation	Unknown		6.50		AHD		60.000	3.20	249m	North West
10107121	GW967548	Water Supply	Unknown				AHD				340m	North West
10012756	GW965175	Water Supply	Unknown	19/11/2001			AHD				347m	North West
10004613	GW969121	Water Supply	Functioning	01/03/2006			AHD				393m	North West
10010153	GW044883	Stock and Domestic	Unknown		6.10		AHD				408m	North West
10024774	GW060652	Water Supply	Unknown	01/01/1985	22.80		AHD				410m	North West
10070566	GW965841	Water Supply	Unknown	24/12/2002	25.00		AHD		0.900	16.10	412m	North West
10080977	GW967549	Water Supply	Unknown		7.10		AHD			3.20	439m	North West
10071105	GW902080	Water Supply	Unknown	01/01/1947	7.50		AHD	Good		3.60	464m	North West
10053344	GW970906	Water Supply	Functioning	11/07/2014	54.80		AHD		0.250	19.20	468m	North West
10060966	GW062718	Water Supply	Unknown	01/06/1986	27.40		AHD				480m	North West
10109797	GW969260	Water Supply	Functioning	04/12/2006	18.90		AHD				516m	South West
10117683	GW969214	Water Supply	Functioning	27/09/2009	36.50		AHD	812	0.450	18.00	576m	North West

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
10020501	GW061118	Water Supply	Functioning		3.00		AHD				603m	North West
10104000	GW064277	Water Supply	Unknown	01/06/1987	31.00		AHD				610m	North West
10004005	GW067796	Unknown	Unknown	20/06/1989	43.80		AHD	Good	0.700	26.00	717m	North West
10079188	GW964978	Water Supply	Unknown		28.00		AHD				757m	North West
10074614	GW018847	Water Supply	Unknown	01/01/1956	3.70		AHD				761m	West
10143117	GW969201	Water Supply	Functioning	20/09/2009	21.30		AHD	1107	0.680	9.14	774m	North West
10152184	GW903099	Unknown	Functioning	14/04/2019	21.00		AHD				836m	West
10081656	GW061539	Water Supply	Unknown	01/03/1986	42.60		AHD				852m	West
10081894	GW056040	Water Supply	Unknown	01/03/1982	40.80		AHD				854m	West
10025945	GW068623	Water Supply	Unknown	25/10/1990	42.60		AHD	Good			860m	North West
10115965	GW902167	Irrigation	Unknown	31/03/1995	6.00		AHD			2.00	980m	North West
10079229	GW902560	Water Supply	Unknown	02/06/1995	18.90		AHD		1.000	12.20	1028m	North West
10139179	GW093024	Monitoring	Unknown	18/10/1999	13.00	486.34	AHD		0.500		1460m	North West
10035805	GW071540	Irrigation	Unknown	10/06/1992	3.00	600.00	AHD				1467m	North West
10095908	GW071326	Irrigation	Unknown	01/06/1992	3.00	485.00	AHD				1484m	North West
10117217	GW901511	Water Supply	Unknown		4.00		AHD			3.00	1500m	North West
10101363	GW969261	Water Supply	Functioning	04/12/2006	18.60		AHD		1.000	10.00	1703m	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

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340

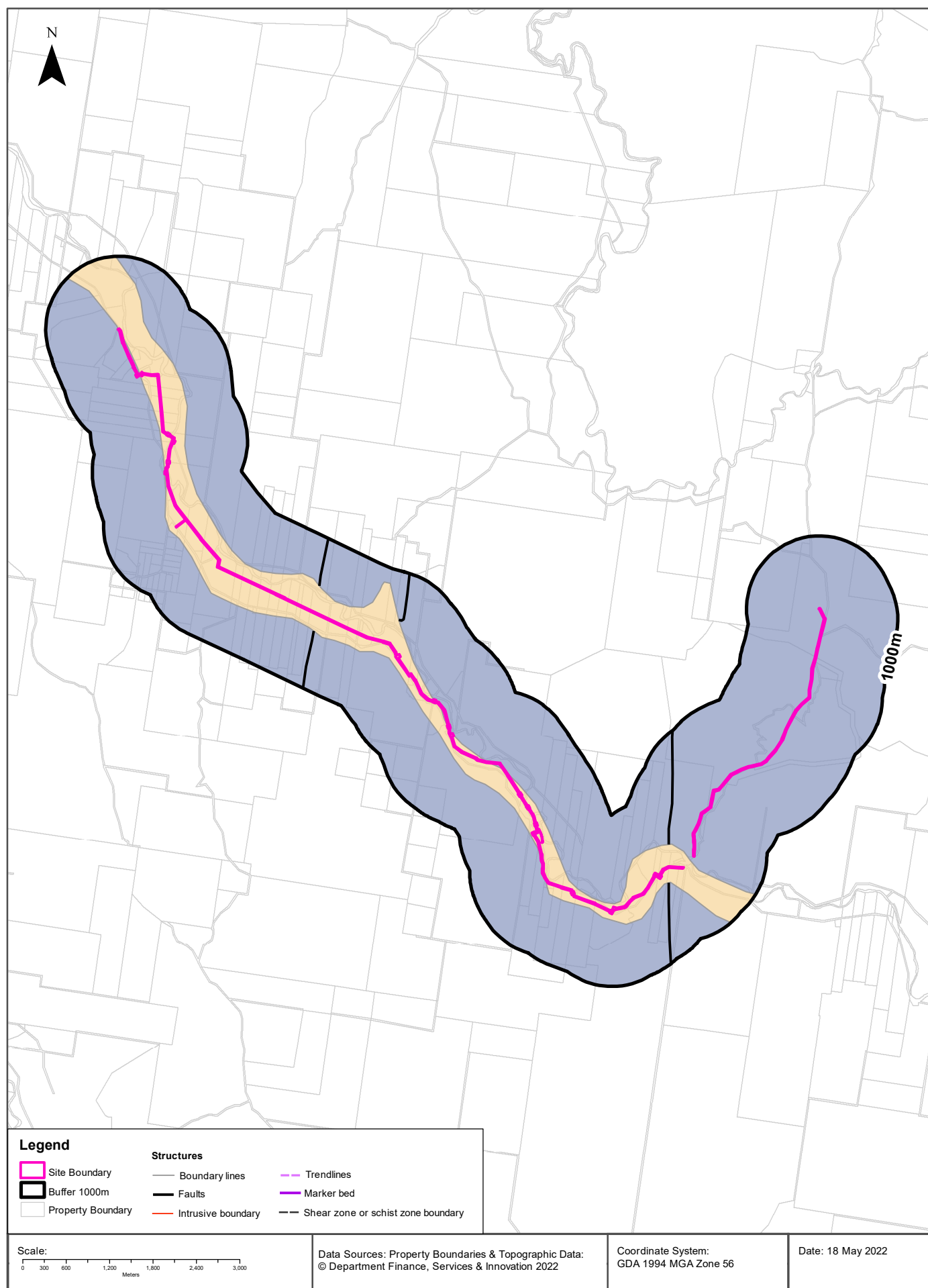
Driller's Logs

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

NGIS Bore ID	Drillers Log	Distance	Direction
10062333	0.00m-6.00m Loam Sandy 0.00m-6.00m Shale 6.00m-7.00m Clay 6.00m-7.00m Gravel River	0m	On-site
10104673	0.00m-7.00m (	14m	North West
10034636	0.00m-3.66m Loam 3.66m-12.19m Gravel Water Supply	17m	North West
10019461	0.00m-0.60m Topsoil 0.60m-21.60m Clay 21.60m-25.30m Rock Fractured Water Supply 25.30m-29.00m Basalt Water Supply	83m	North West
10100696	0.00m-0.30m Soil, surface 0.30m-0.90m Broken Basalt 0.90m-12.20m Basalt 12.20m-12.50m Basalt, water bearing 12.50m-15.50m Basalt 15.50m-15.80m Basalt, water bearing 15.80m-21.00m Basalt 21.00m-21.30m Basalt, water bearing 21.30m-24.40m Basalt	84m	South East
10131673	0.00m-0.30m Soil 0.30m-5.49m Gravel Fine-coarse Water Supply	127m	North West
10068637	0.00m-15.85m Soil Basalt Rock 15.85m-17.07m Clay 17.07m-20.73m Rock Soft Decomposed 20.73m-35.05m Rock Water Supply 35.05m-38.10m Rock Hard	164m	North West
10077423	0.00m-6.10m Soil Basaltic Rock 6.10m-6.71m Rock 6.71m-10.06m Rock Sandy Water Supply 10.06m-24.99m Rock	179m	North West
10105656	0.00m-24.00m weatherite shale 24.00m-26.20m shale 26.20m-30.79m shale 30.79m-42.68m grey shale	181m	North West
10024774	0.00m-0.60m Topsoil 0.60m-9.10m Clay Ridge Gravel 9.10m-19.70m Basalt Rotten 19.70m-20.00m Basalt Water Supply 20.00m-22.80m Basalt Rotten	410m	North West
10070566	0.00m-0.90m topsoil 0.90m-9.10m clay/ridge 9.10m-22.80m basalt 22.80m-23.40m basalt/water bearing 23.40m-25.00m basalt	412m	North West
10053344	0.00m-0.30m Topsoil 0.30m-1.20m Rock; loose 1.20m-5.70m Rocks; claybound 5.70m-51.80m Basalt; blue 51.80m-52.40m Basalt; water beairng 52.40m-54.80m Basalt; blue	468m	North West
10060966	0.00m-24.10m Rock Rotten 24.10m-27.40m Rock Water Supply	480m	North West
10109797	0.00m-0.30m Topsoil 0.30m-0.60m Clay 0.60m-4.60m Gravel, claybound 4.60m-10.60m Shale, brown 10.60m-11.20m Shale, water bearing 11.20m-14.50m Shale, brown 14.50m-15.70m Basalt, water bearing 15.70m-18.90m Basalt	516m	South West

NGIS Bore ID	Drillers Log	Distance	Direction
10117683	0.00m-0.90m Clay, brown 0.90m-1.50m Gravel 1.50m-22.80m Shale, weathered 22.80m-36.50m Basalt, blue, fractured	576m	North West
10020501	0.00m-3.00m Clay 3.00m-3.01m Rock	603m	North West
10104000	0.00m-1.20m Soil Surface 1.20m-11.50m Clay Yellow 11.50m-25.80m Basalt Rotten 25.80m-26.10m Basalt Rotten Water Supply 26.10m-28.70m Basalt Rotten 28.70m-29.00m Basalt Water Supply 29.00m-31.00m Basalt Rotten Water Supply	610m	North West
10004005	0.00m-1.50m Red Clay & Boulders 1.50m-27.40m Brown Shale 27.40m-43.80m Blue Shale	717m	North West
10143117	0.00m-1.82m Gravel, ridge 1.82m-6.00m Shale, weathered 6.00m-21.30m Shale, blue	774m	North West
10081656	0.00m-0.60m Soil Surface 0.60m-19.80m Clay Ridge 19.80m-33.20m Basalt Hard 33.20m-42.60m Basalt Water Supply	852m	West
10081894	0.00m-1.00m Topsoil Red 1.00m-6.00m Clay Red 6.00m-26.00m Clay 6.00m-26.00m Shale Seams 26.00m-40.80m Shale Water Supply	854m	West
10025945	0.00m-0.30m Red Surface Soil 0.30m-1.80m Ridge Gravel 1.80m-10.60m Blue Shale 10.60m-42.60m Decomposed Basalt	860m	North West
10079229	0.00m-0.60m Soil 0.60m-3.00m Ridge Clay 3.00m-6.60m Clay and Gravel 6.60m-16.60m Brwon Shale 16.60m-16.90m w.b. Brwon Shale 16.90m-17.40m Brwon Shale 17.40m-18.90m Blue Basalt	1028m	North West
10139179	0.00m-6.00m Black Clay 6.00m-9.00m Clay bound gravel 9.00m-12.50m Fine gravel 12.50m-13.00m Shale blue/green	1460m	North West
10117217	0.00m-4.00m	1500m	North West
10101363	0.00m-0.30m Topsoil 0.30m-1.80m Clay 1.80m-5.40m Shale, brown 5.40m-15.10m Limestone 15.10m-16.30m Limestone, water bearing 16.30m-18.60m Limestone	1703m	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

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340

Geological Units

What are the Geological Units within the dataset buffer?

Unit Code	Unit Name	Description	Unit Stratigraphy	Age	Dominant Lithology	Distance
N_a	Alluvium	Unconsolidated alluvial clay, silt, sand, and gravel deposits.	/Alluvium///	Cenozoic (base) to Now (top)	Clastic sediment	0m
Csa	Sandon Association	Lithic (meta-)wacke, slate, phyllite, chert, jasper, amphibolite, metabasalt. Greywacke, sandstone, siltstone, mudstone and paraconglomerate.	/Sandon Association///	Devonian (base) to Carboniferous (top)	Metamorphic rock	0m

Linear Geological Structures

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

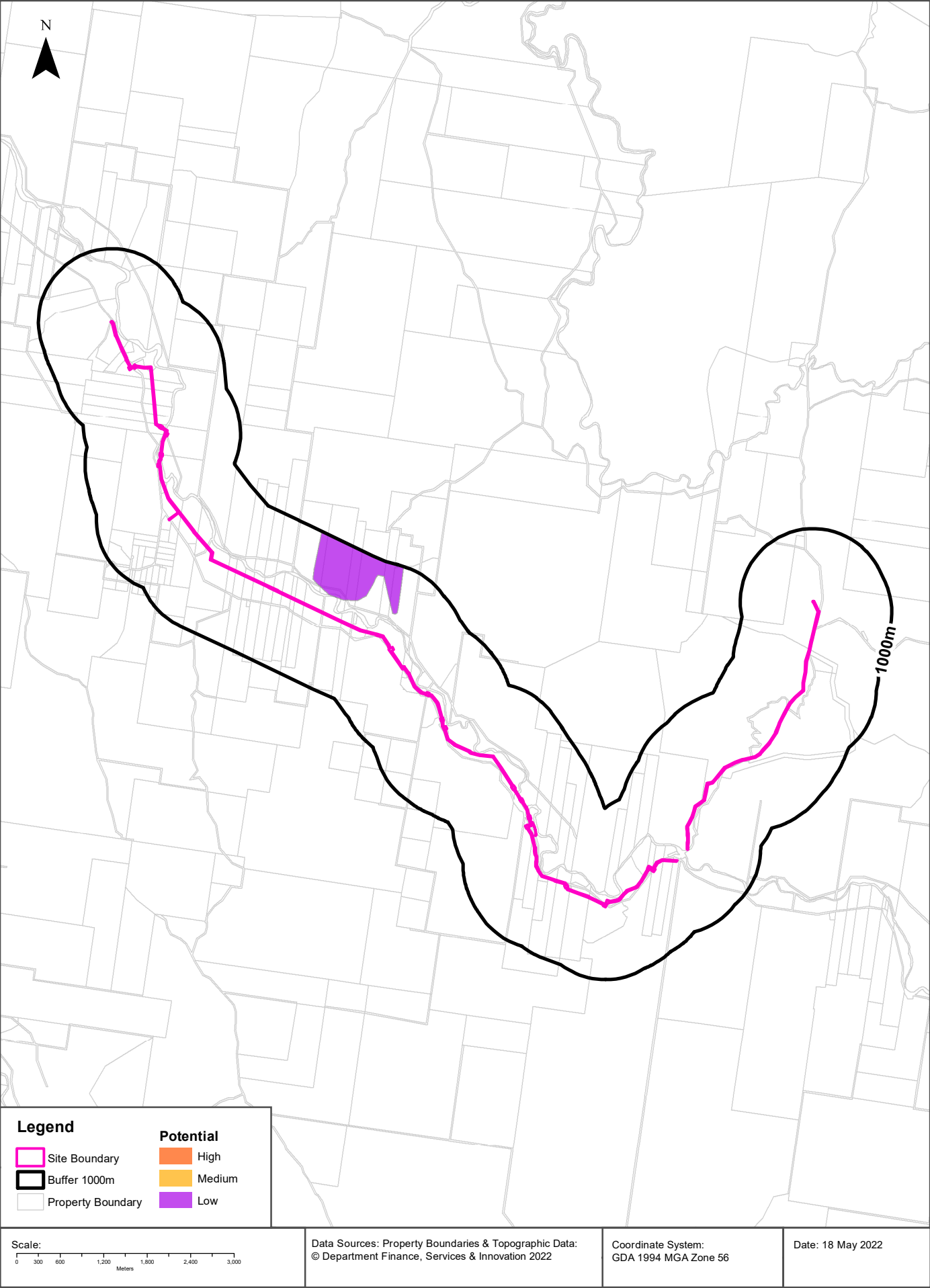
Map ID	Feature Description	Map Sheet Name	Distance
No Features			

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
9321	Faulted boundary	Fault, inferred	Tamworth-Hastings 1:250,000 Metallogenic Map	128m
45762	Faulted boundary	Fault, position accurate	Nandewar Regional Assessment Area, digital geology dataset, 2003	223m
9325	Faulted boundary	Fault, inferred	Tamworth-Hastings 1:250,000 Metallogenic Map	301m
9148	Faulted boundary	Fault, position accurate	Tamworth-Hastings 1:250,000 Metallogenic Map	346m
9146	Faulted boundary	Fault, position accurate	Tamworth-Hastings 1:250,000 Metallogenic Map	356m

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

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Naturally Occurring Asbestos Potential

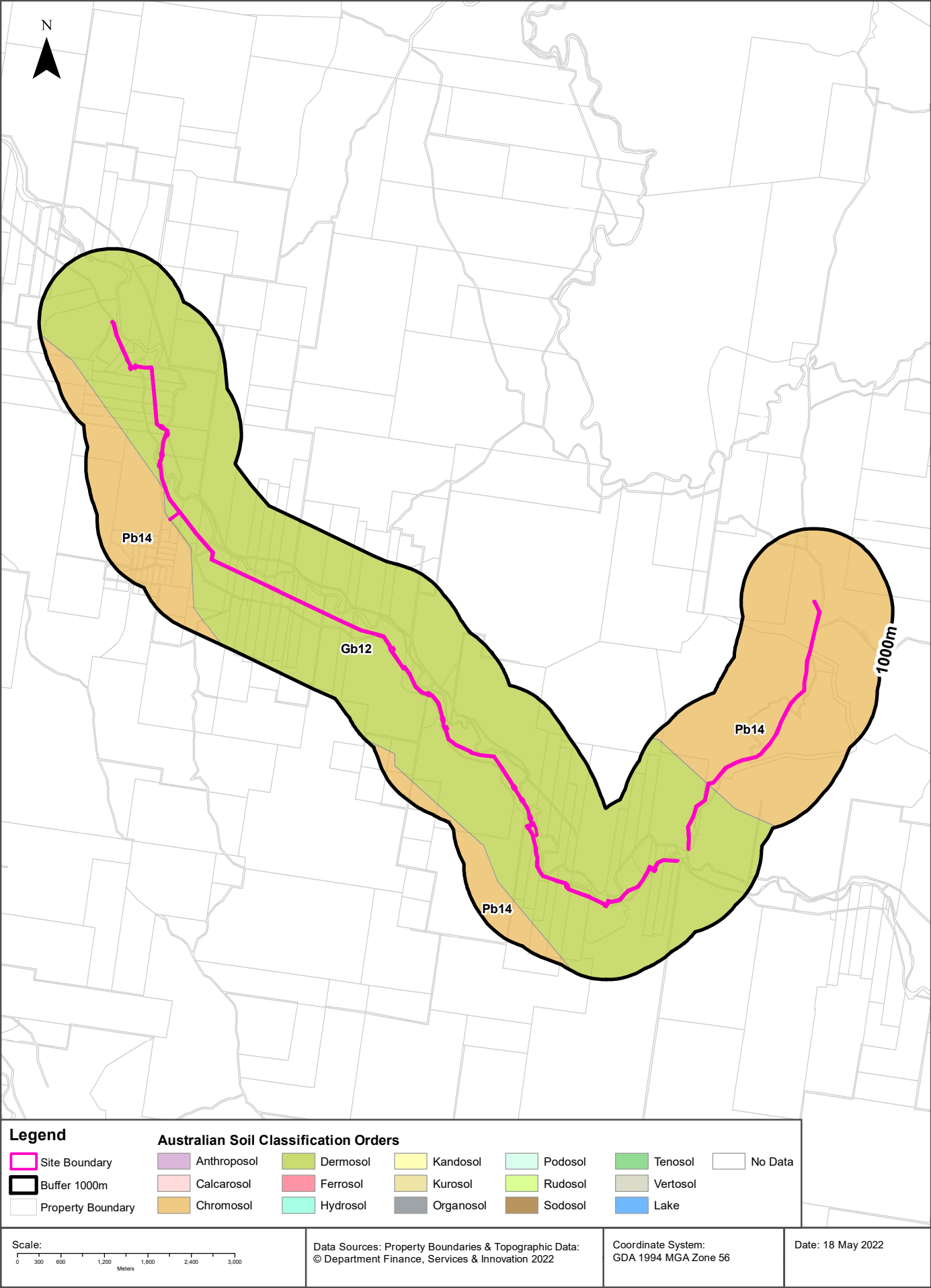
Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340

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
Low	DCs	undifferentiated			250000	Carboniferous	Devonian	clastic sediment	sandstone, schist, phyllite, slate, chert, jasper, metabasites, amphibolite	Lithic sandstone, schist, phyllite, slate, chert, jasper, metabasites, amphibolite and rare limestones	257 m	North West

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



Soils

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340

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
Gb12	Dermosol	River flood-plains, terraces, and levees: chief soils are probably dark porous loamy soils (Um6.11 and Um6.12) with other (Um) and (Uc) soils. Associated are, locally, fairly large areas of dark cracking clays such as (Ug5.16); areas of (Dy3.4) soils; and sometimes areas of gravelly (Gn2) soils. Soils data are limited.	0m	On-site
Pb14	Chromosol	Hilly with rock outcrops and very steep slopes in some areas: chief soils are hard acidic red soils (Dr2.21); hard acidic yellow mottled soils (Dy3.41); and shallow loamy soils, such as (Um4.1). Associated are various (Gn2) soils, such as (Gn2.14), (Gn2.24), and (Gn2.74), especially in "fill" situations; and undescribed soils (a) associated with serpentine and related rock types and (b) of the narrow stream valleys. As mapped, areas of unit Tb50 are included.	0m	On-site

Atlas of Australian Soils Data Source: CSIRO

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Acid Sulfate Soils

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340

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?

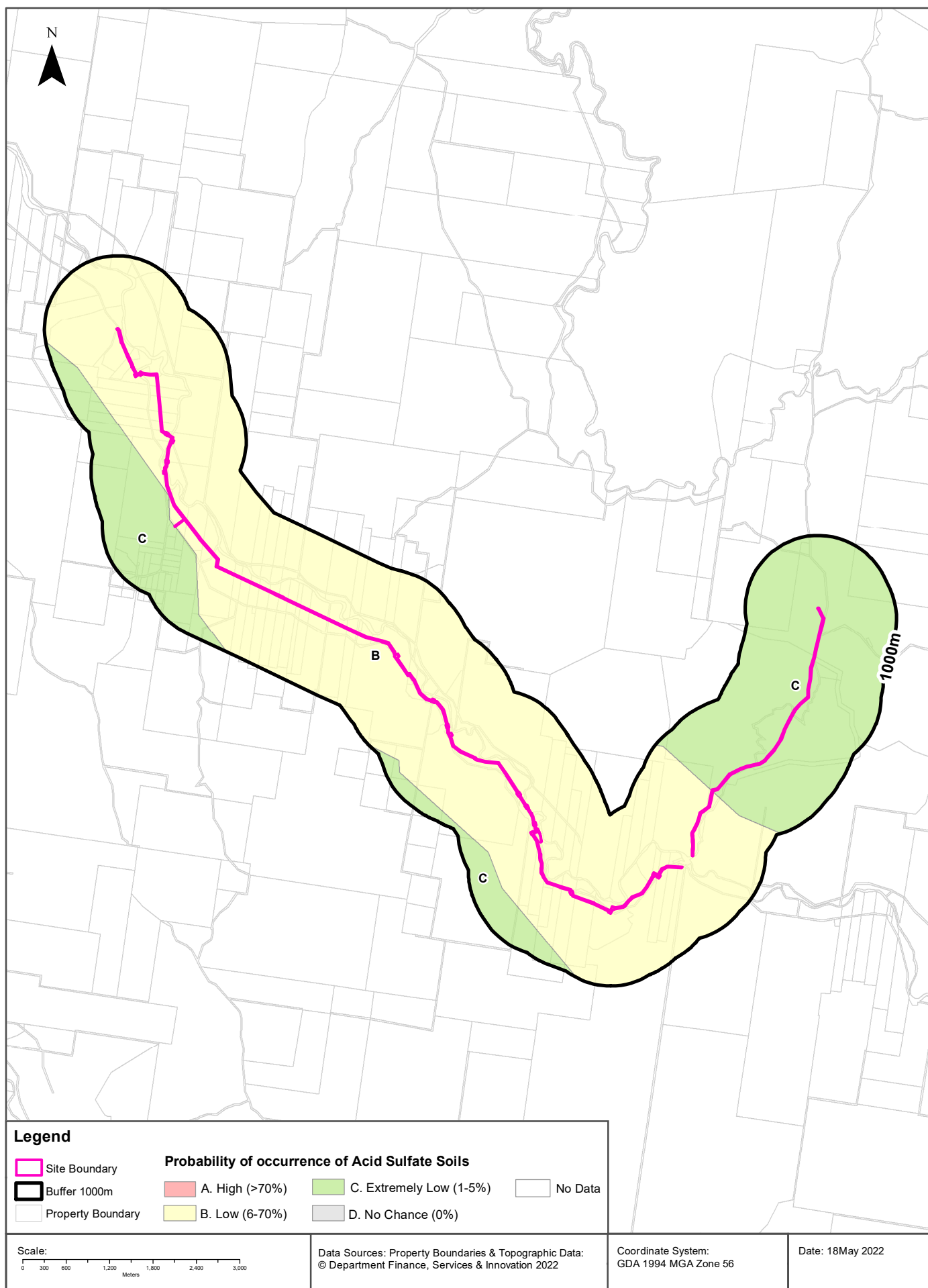
Soil Class	Description	EPI Name	Distance	Direction
N/A				

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Atlas of Australian Acid Sulfate Soils

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340



Acid Sulfate Soils

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340

Atlas of Australian Acid Sulfate Soils

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

Class	Description	Distance	Direction
B	Low Probability of occurrence. 6-70% chance of occurrence.	0m	On-site
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

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340

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

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340

Mining Subsidence Districts

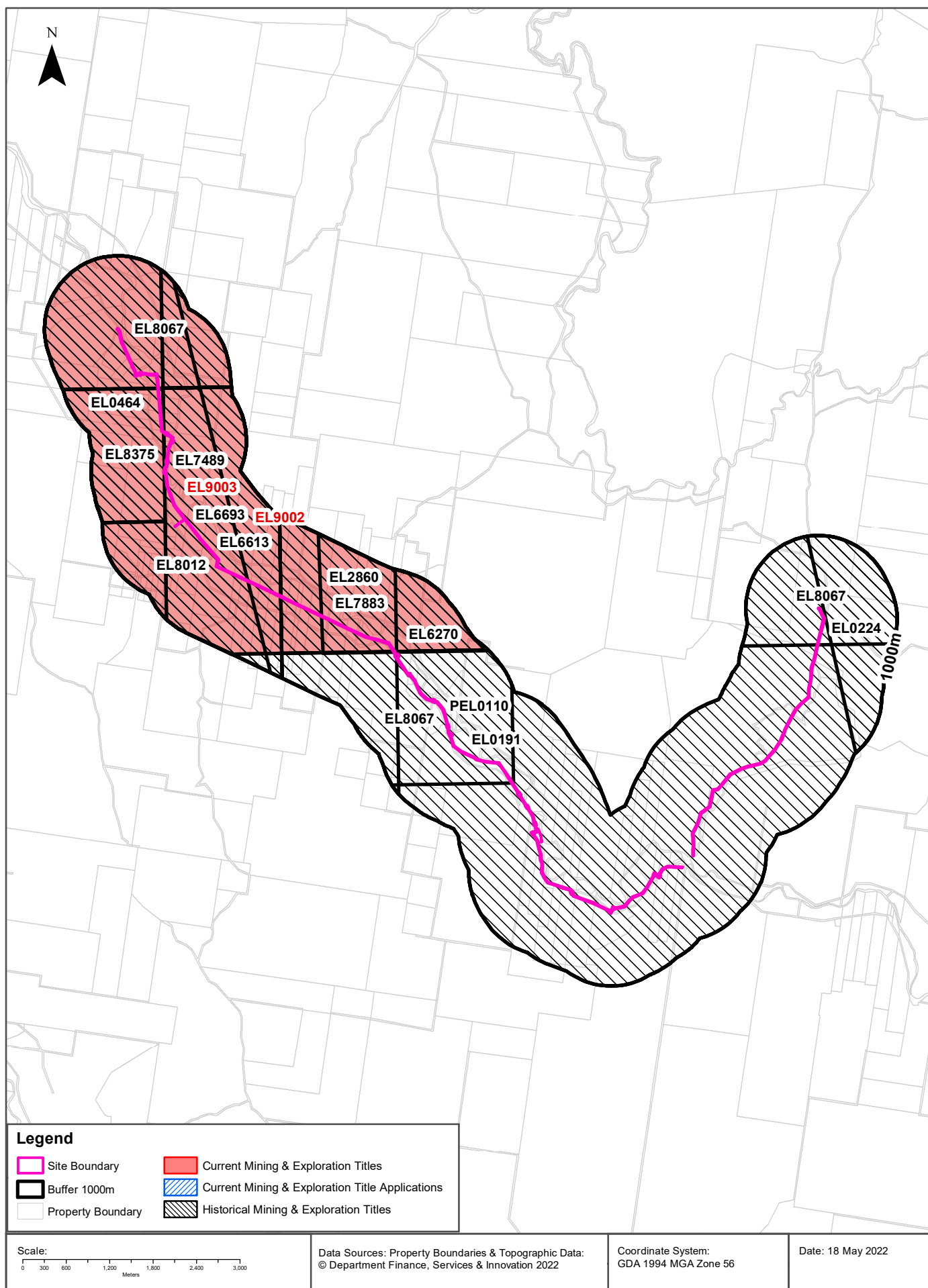
Mining Subsidence Districts within the dataset buffer:

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

Mining Subsidence District Data Source: © Land and Property Information (2016)
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Mining & Exploration Titles

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340



Mining

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340

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
EL9003	LODE RESOURCES LTD	12/10/2020	12/10/2023	12 Oct 2020	EXPLORING	MINERALS	Group 1	0m	On-site
EL9002	ANGEL JADE PTY LTD	01/10/2020	01/10/2022	01 Oct 2020	EXPLORING	MINERALS	Group 2, Group 3	946m	North West

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

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340

Historical Mining & Exploration Titles

Historical Mining & Exploration Titles within the dataset buffer:

Title Ref	Holder	Start Date	End Date	Resource	Minerals	Dist	Dir
EL0191	SERPENTINE MINERALS NL	01 Jul 1969	01 Jul 1971	MINERALS	Cu Mo	0m	On-site
EL6693	BARFUSS CORPORATION PTY LTD	4 Jan 2007	3 Jan 2011	MINERALS	Jade Nephrite Rhodonite	0m	On-site
EL8067	IRGS NORTHERN GOLD PTY LTD	22 Mar 2013	26 Nov 2013	MINERALS		0m	On-site
EL2860	MUMBIL MINES NL	01 May 1987	01 Mar 1989	MINERALS	Pt Au Pd	0m	On-site
EL7489	GOLD OF OPHIR PTY LTD	25 Mar 2010	10 Apr 2012	MINERALS	Au	0m	On-site
EL7883	ANGEL JADE PTY LTD	10 Jan 2012	10 Jan 2014	MINERALS	Seperntinite Jade Nephrite	0m	On-site
EL0464	FISCHERS COPPER MINE PTY LIMITED	01 Jul 1971	01 Jul 1972	MINERALS	Cu Ag Mo	0m	On-site
EL8012	SOC1 PTY LTD	21 Nov 2012	19 Dec 2013	MINERALS		0m	On-site
EL6613	PEEL EXPLORATION LIMITED	22 Aug 2006	21 Aug 2010	MINERALS	Cu Au Mo Pb W Cr Zn	0m	On-site
PEL0110				PETROLEUM	Petroleum	0m	On-site
EL8375	SOC2 PTY LTD	27 May 2015	07 Dec 2015	MINERALS	Au	0m	On-site
EL0224	NICKEL MINES LIMITED	01 Dec 1969	01 Dec 1970	MINERALS	W Au Ni Pt Sb	10m	East
EL6270	KEEGAN, Michael John	14 Jul 2004	19 Apr 2006	MINERALS	Nil minerals	21m	North

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

State Environmental Planning Policy

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340

State Significant Precincts

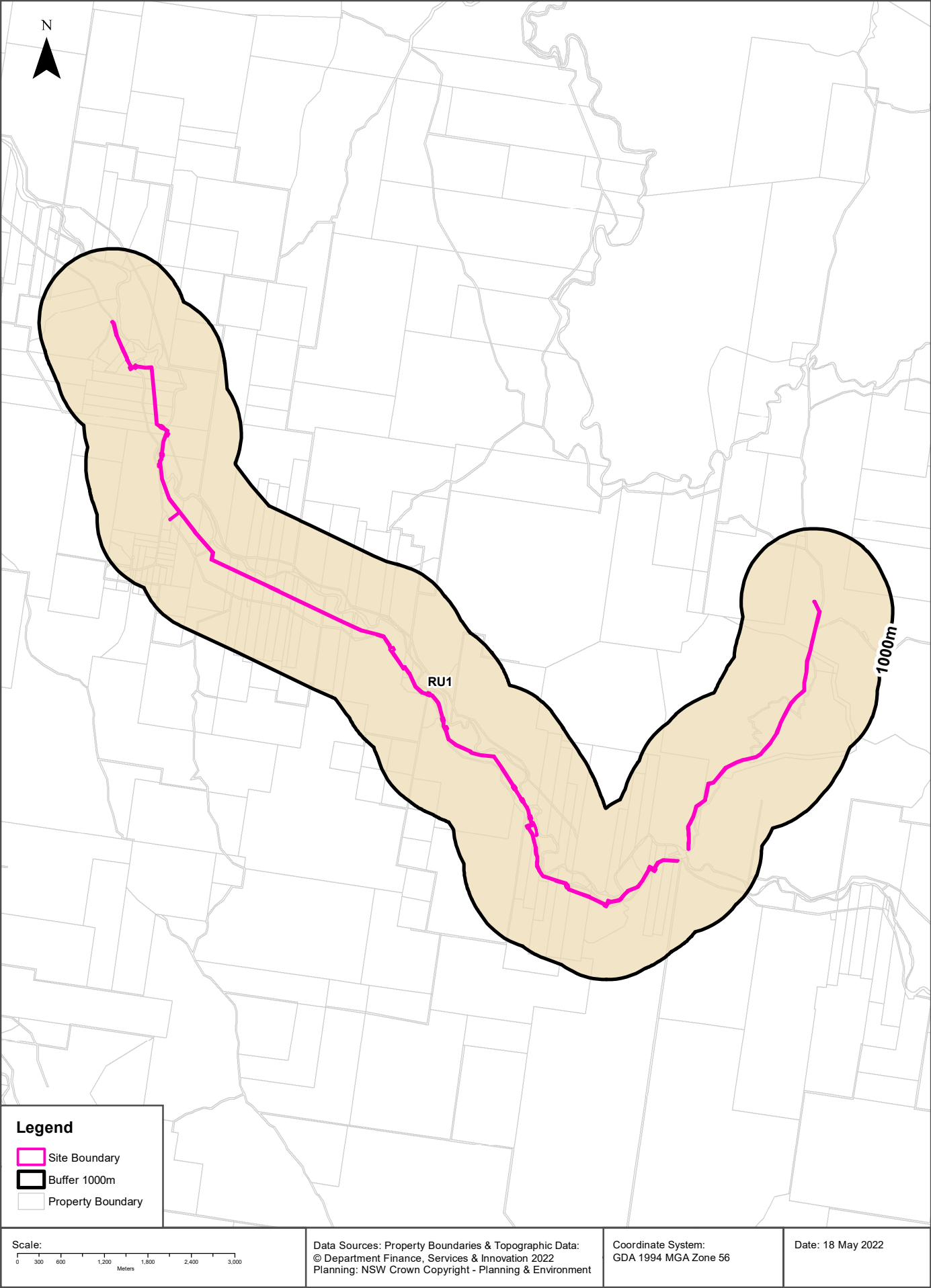
What SEPP State Significant Precincts exist within the dataset buffer?

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

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EPI Planning Zones

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340



Environmental Planning Instrument

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340

Land Zoning

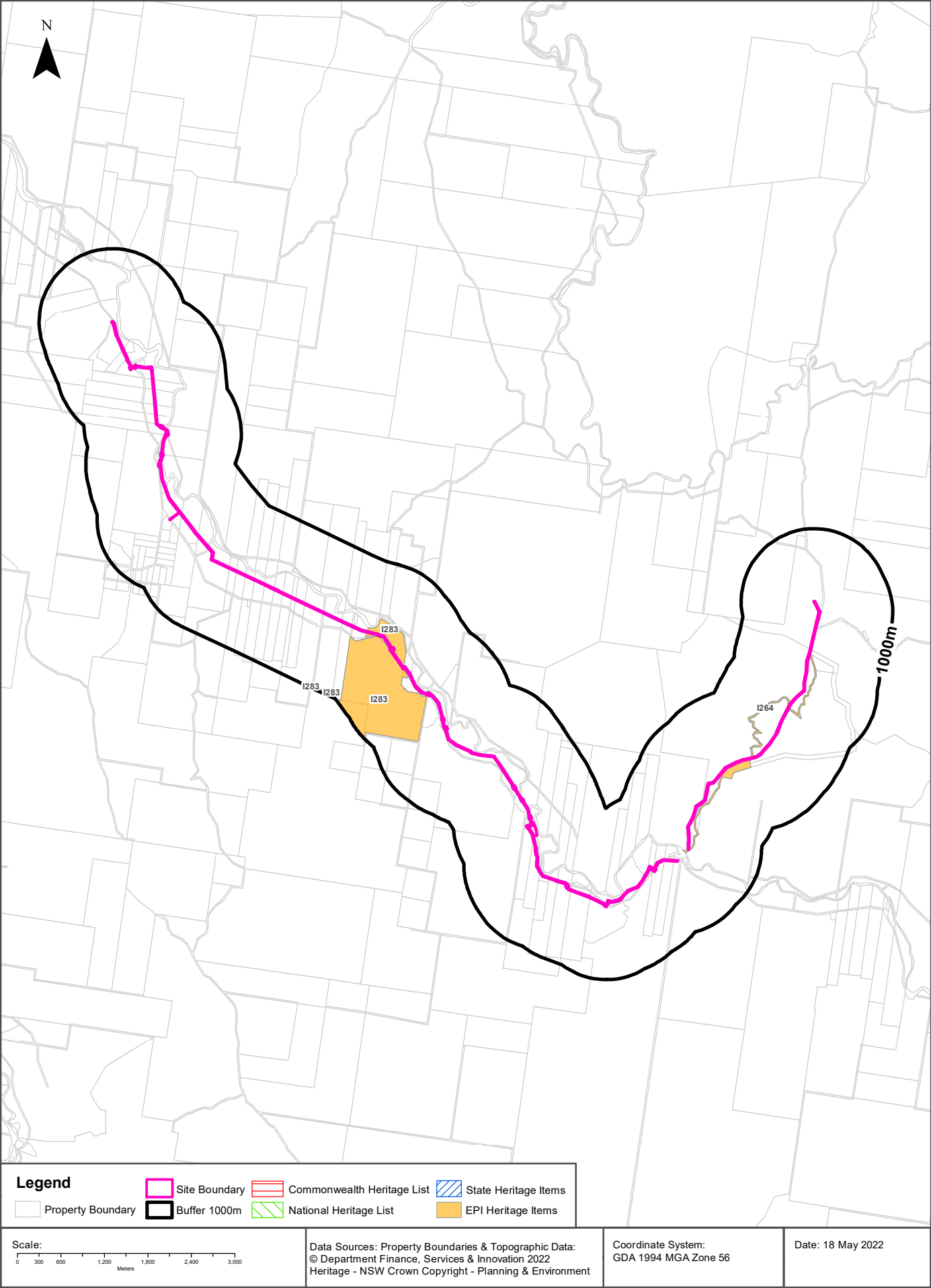
What EPI Land Zones exist within the dataset buffer?

Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
RU1	Primary Production		Tamworth Regional Local Environmental Plan 2010	21/01/2011	21/01/2011	06/11/2020		0m	On-site

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Heritage Items

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340



Heritage

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340

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							

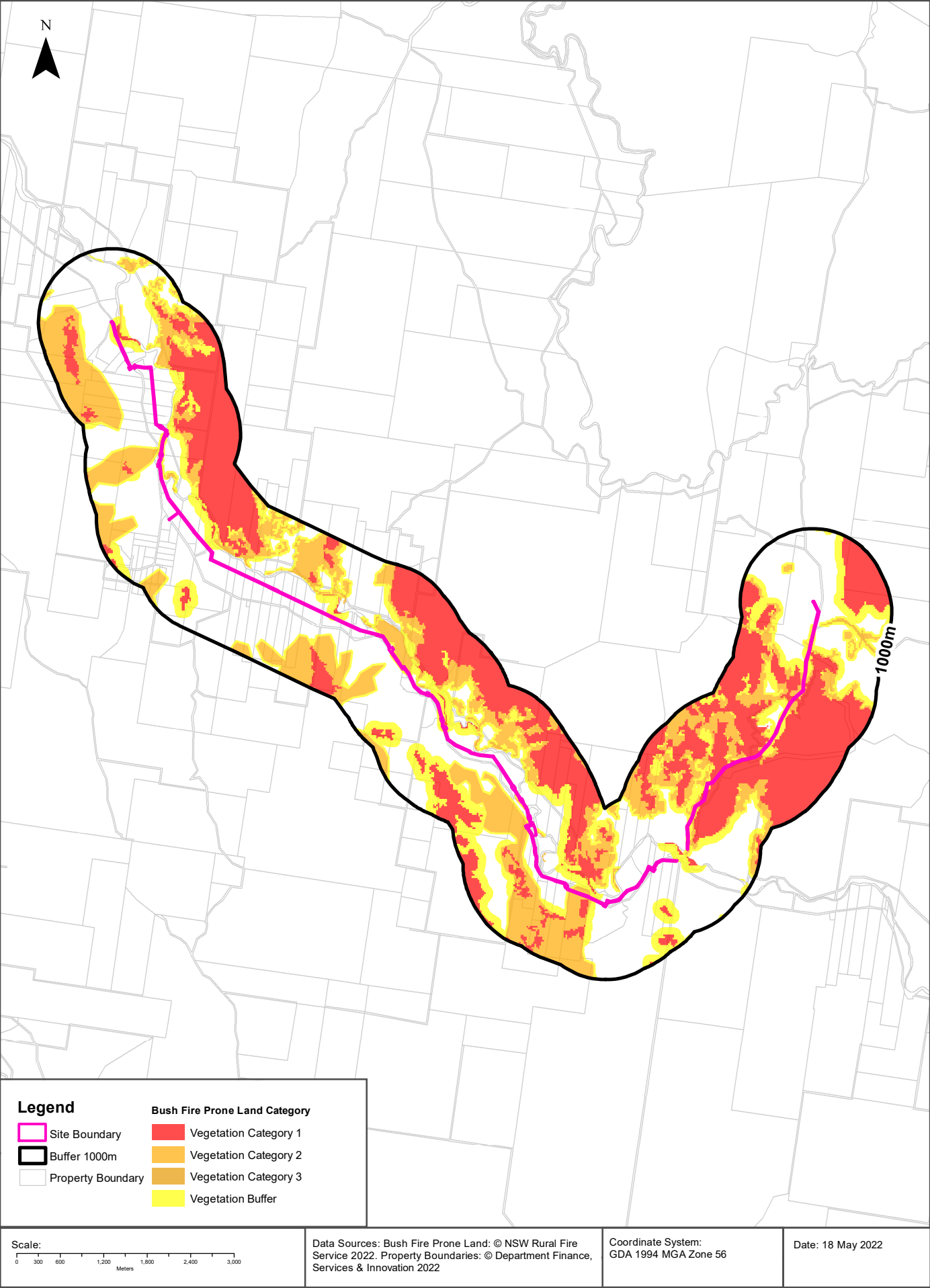
Heritage Data Source: NSW Crown Copyright - Office of Environment & Heritage
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Environmental Planning Instrument - Heritage

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
I283	Ogunbil Brick Shearing Shed and Silo	Item - General	Local	Tamworth Regional Local Environmental Plan 2010	21/01/2011	21/01/2011	30/11/2018	0m	On-site
I264	Port Stephens Cutting	Item - General	Local	Tamworth Regional Local Environmental Plan 2010	21/01/2011	21/01/2011	30/11/2018	0m	On-site
I283	Ogunbil Brick Shearing Shed and Silo	Item - General	Local	Tamworth Regional Local Environmental Plan 2010	21/01/2011	21/01/2011	30/11/2018	0m	West

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Natural Hazards

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340

Bush Fire Prone Land

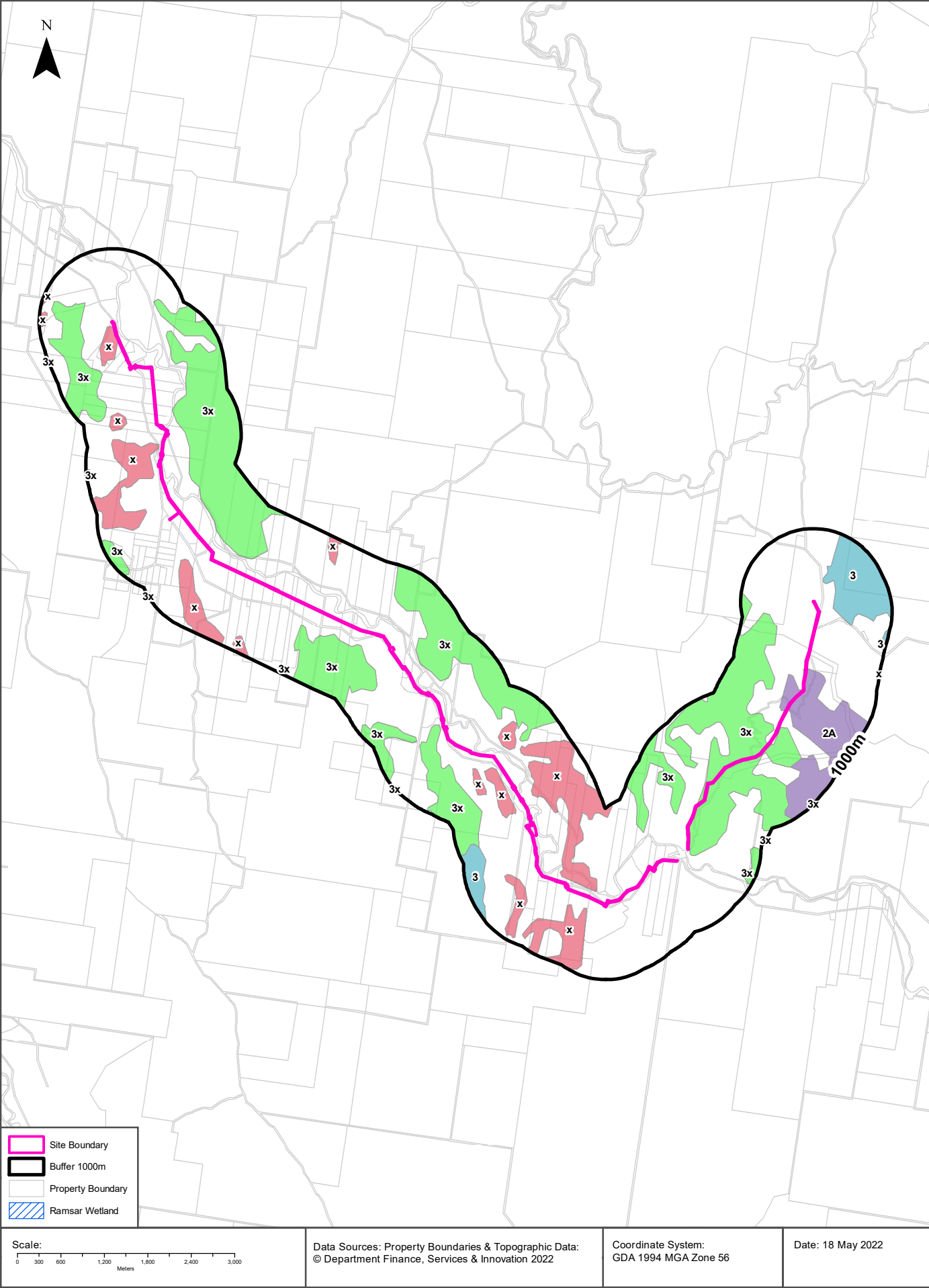
What are the nearest Bush Fire Prone Land Categories that exist within the dataset buffer?

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 - Vegetation & Ramsar Wetlands

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340



Ecological Constraints

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340

Vegetation - Eastern Bushland Database (North Region)

What Vegetation exists within the dataset buffer?

Veg Code	Veg Desc	NVISCCode	NVISDesc	Distance	Direction
3x	disturbed dry open forest	4	Dry forest system	0m	On-site
2A	moist eucalypt forest [mod. reliability]	8	Moist forest system	0m	On-site
x	disturbed forest woodland	23	Disturbed bushland	0m	On-site
3	dry open forest	4	Dry forest system	184m	East

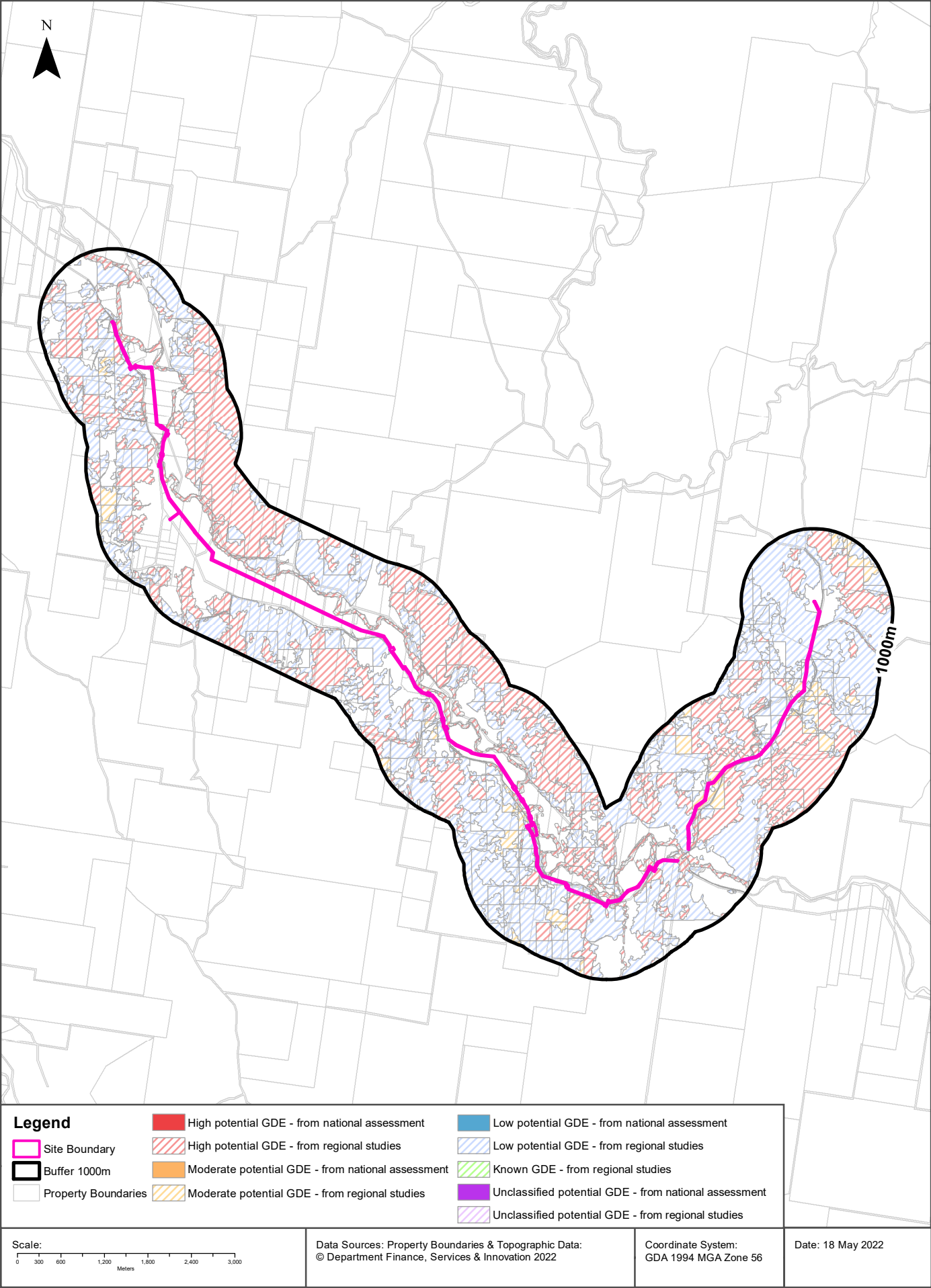
Vegetation Eastern Bushland Database Data Source: NSW Office of Environment and Heritage
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Ramsar Wetlands

What Ramsar Wetland areas exist within the dataset buffer?

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

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



Ecological Constraints

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340

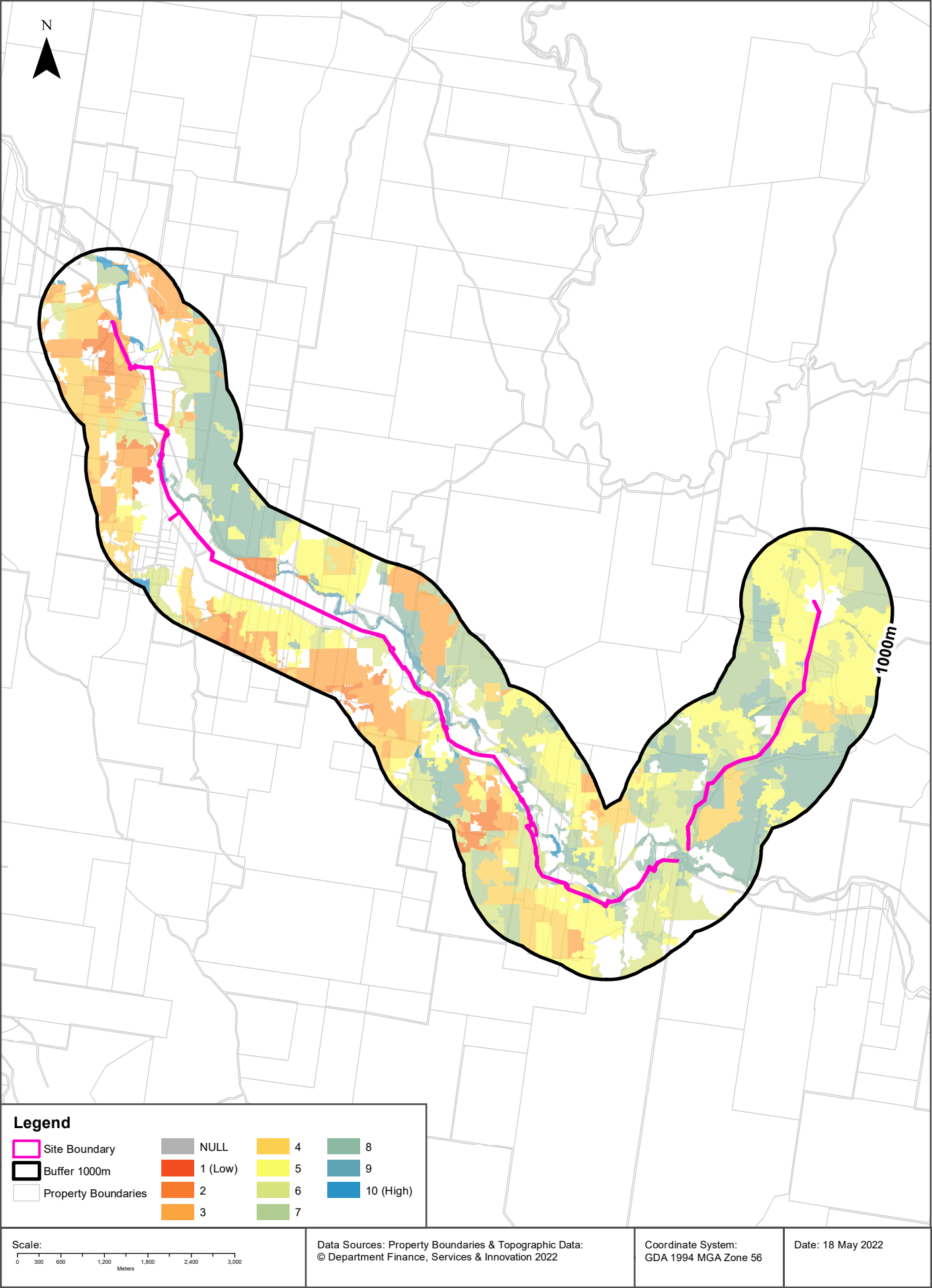
Groundwater Dependent Ecosystems Atlas

Type	GDE Potential	Geomorphology	Ecosystem Type	Aquifer Geology	Distance	Direction
Terrestrial	Low potential GDE - from regional studies	Undulating granitic plateau with higher residuals including basalt cappings.	Vegetation		0m	On-site
Terrestrial	Low potential GDE - from regional studies	Ridges and valleys in metamorphic rocks.	Vegetation		0m	On-site
Terrestrial	High potential GDE - from regional studies	Ridges and valleys in metamorphic rocks.	Vegetation		0m	On-site
Terrestrial	High potential GDE - from regional studies	Undulating granitic plateau with higher residuals including basalt cappings.	Vegetation		0m	On-site
Terrestrial	Moderate potential GDE - from regional studies	Undulating granitic plateau with higher residuals including basalt cappings.	Vegetation		0m	On-site
Terrestrial	Moderate potential GDE - from regional studies	Ridges and valleys in metamorphic rocks.	Vegetation		142m	North West

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

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340



Ecological Constraints

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340

Inflow Dependent Ecosystems Likelihood

Type	IDE Likelihood	Geomorphology	Ecosystem Type	Aquifer Geology	Distance	Direction
Terrestrial		6 Undulating granitic plateau with higher residuals including basalt cappings.	Vegetation		0m	On-site
Terrestrial		3 Ridges and valleys in metamorphic rocks.	Vegetation		0m	On-site
Terrestrial		8 Undulating granitic plateau with higher residuals including basalt cappings.	Vegetation		0m	On-site
Terrestrial		4 Ridges and valleys in metamorphic rocks.	Vegetation		0m	On-site
Terrestrial		9 Undulating granitic plateau with higher residuals including basalt cappings.	Vegetation		0m	On-site
Terrestrial		7 Undulating granitic plateau with higher residuals including basalt cappings.	Vegetation		0m	On-site
Terrestrial		4 Undulating granitic plateau with higher residuals including basalt cappings.	Vegetation		0m	On-site
Terrestrial		5 Undulating granitic plateau with higher residuals including basalt cappings.	Vegetation		0m	On-site
Terrestrial		10 Undulating granitic plateau with higher residuals including basalt cappings.	Vegetation		0m	On-site
Terrestrial		2 Ridges and valleys in metamorphic rocks.	Vegetation		1m	North West
Terrestrial		3 Undulating granitic plateau with higher residuals including basalt cappings.	Vegetation		5m	North West
Terrestrial		10 Ridges and valleys in metamorphic rocks.	Vegetation		46m	North West
Terrestrial		2 Undulating granitic plateau with higher residuals including basalt cappings.	Vegetation		79m	North West
Terrestrial		6 Ridges and valleys in metamorphic rocks.	Vegetation		92m	North West
Terrestrial		5 Ridges and valleys in metamorphic rocks.	Vegetation		117m	North West
Terrestrial		8 Ridges and valleys in metamorphic rocks.	Vegetation		118m	North West
Terrestrial		7 Ridges and valleys in metamorphic rocks.	Vegetation		489m	North West
Terrestrial		9 Ridges and valleys in metamorphic rocks.	Vegetation		819m	North West

Inflow Dependent Ecosystems Likelihood Data Source: The Bureau of Meteorology

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Ecological Constraints

Ogunbil Road & Dungowan Dam Road (2 of 3), Dungowan, NSW 2340

NSW BioNet Atlas

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

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Amphibia	Litoria booroolongensis	Booroolong Frog	Endangered	Not Sensitive	Endangered	
Animalia	Amphibia	Litoria daviesae	Davies' Tree Frog	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Anthochaera phrygia	Regent Honeyeater	Critically Endangered	Not Sensitive	Critically Endangered	
Animalia	Aves	Artamus cyanopterus cyanopterus	Dusky Woodswallow	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Chthonicola sagittata	Speckled Warbler	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Circus assimilis	Spotted Harrier	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Daphoenositta chrysoptera	Varied Sittella	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	Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subspecies)	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Neophema pulchella	Turquoise Parrot	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Ninox connivens	Barking Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Ninox strenua	Powerful Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Oxyura australis	Blue-billed Duck	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Petroica boodang	Scarlet Robin	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Petroica phoenicea	Flame Robin	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Stagonopleura guttata	Diamond Firetail	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Dasyurus maculatus	Spotted-tailed Quoll	Vulnerable	Not Sensitive	Endangered	
Animalia	Mammalia	Falsistrellus tasmaniensis	Eastern False Pipistrelle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Miniopterus orianae oceanensis	Large Bent-winged Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Petauroides volans	Greater Glider	Not Listed	Not Sensitive	Vulnerable	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Mammalia	<i>Petaurus norfolcensis</i>	Squirrel Glider	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	<i>Phascolarctos cinereus</i>	Koala	Vulnerable	Not Sensitive	Endangered	
Animalia	Mammalia	<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Reptilia	<i>Uvidicolus sphyrurus</i>	Border Thick-tailed Gecko	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	<i>Asterolasia beckersii</i>	Dungowan Starbush	Critically Endangered	Not Sensitive	Critically Endangered	
Plantae	Flora	<i>Cymbidium canaliculatum</i>	Tiger Orchid	Not Listed	Category 2	Not Listed	
Plantae	Flora	<i>Eucalyptus nicholii</i>	Narrow-leaved Black Peppermint	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	<i>Eucalyptus oresbia</i>	Small-fruited Mountain Gum	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	<i>Euphrasia arguta</i>		Critically Endangered	Not Sensitive	Critically Endangered	
Plantae	Flora	<i>Haloragis exalata</i> subsp. <i>velutina</i>	Tall Velvet Sea-berry	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	<i>Swainsona sericea</i>	Silky Swainson-pea	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	<i>Thesium australe</i>	Austral Toadflax	Vulnerable	Not Sensitive	Vulnerable	

Data does not include NSW category 1 sensitive species.

NSW BioNet: © State of NSW and Office of Environment and Heritage

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

LC Code	Location Confidence
Premise Match	Georeferenced to the site location / premise or part of site
Area Match	Georeferenced to an approximate or general area
Road Match	Georeferenced to a road or rail corridor
Road Intersection	Georeferenced to a road intersection
Buffered Point	A point feature buffered to x metres
Adjacent Match	Land adjacent to a georeferenced feature
Network of Features	Georeferenced to a network of features
Suburb Match	Georeferenced to a suburb boundary
As Supplied	Spatial data supplied by provider

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Date: 19 May 2022 12:17:00

Reference: LS032417 EL

Address: Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340

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

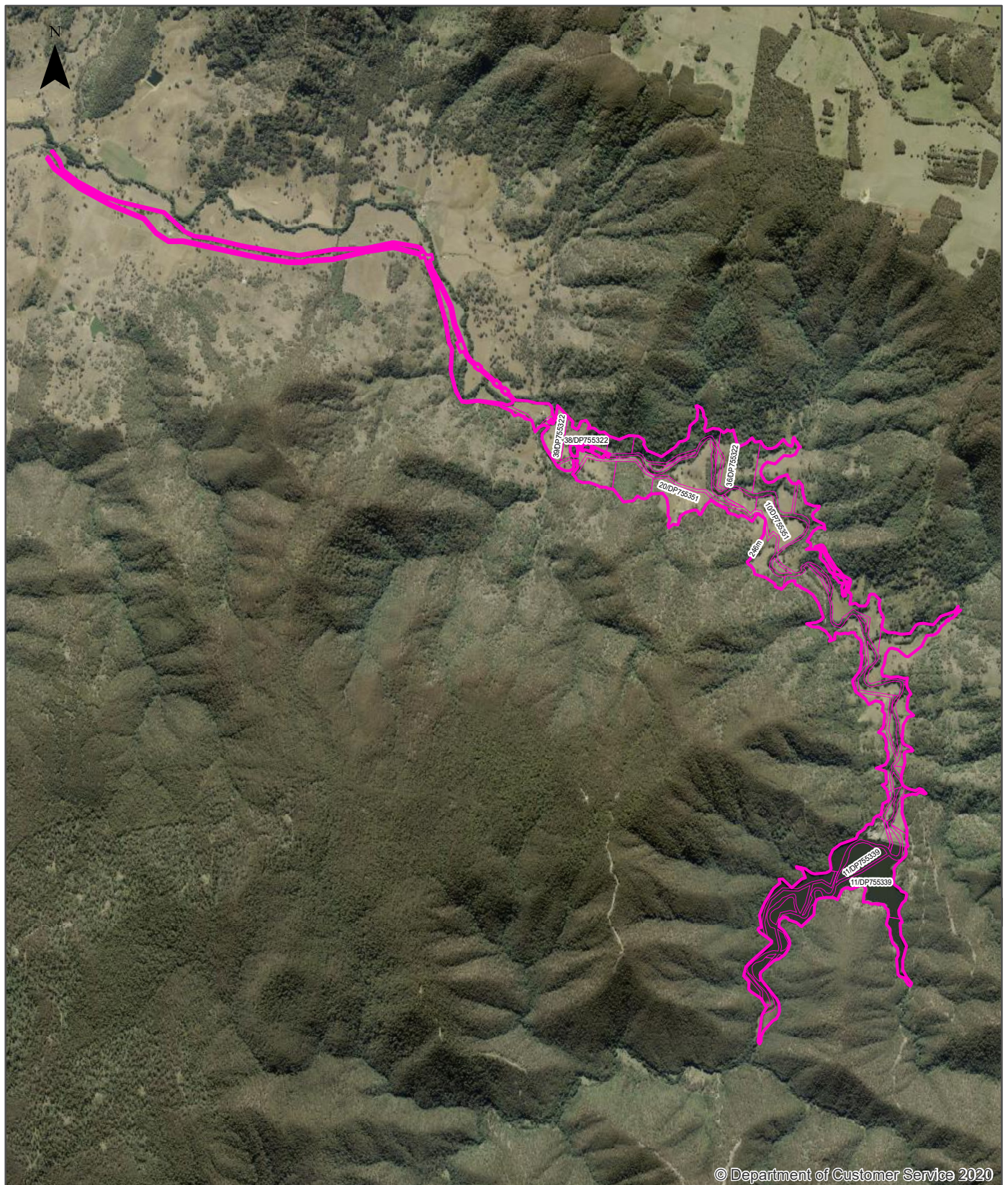
Datasets contained within this report, detailing their source and data currency:

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	06/04/2022	06/04/2022	Quarterly	-	-	-	-
Topographic Data	NSW Department of Customer Service - Spatial Services	25/06/2019	25/06/2019	Annually	-	-	-	-
List of NSW contaminated sites notified to EPA	Environment Protection Authority	19/04/2022	11/04/2022	Monthly	1000m	0	0	0
Contaminated Land Records of Notice	Environment Protection Authority	10/05/2022	10/05/2022	Monthly	1000m	0	0	0
Former Gasworks	Environment Protection Authority	02/03/2022	14/07/2021	Quarterly	1000m	0	0	0
National Waste Management Facilities Database	Geoscience Australia	12/05/2021	07/03/2017	Annually	1000m	0	0	0
National Liquid Fuel Facilities	Geoscience Australia	15/02/2021	13/07/2012	Annually	1000m	0	0	0
EPA PFAS Investigation Program	Environment Protection Authority	03/05/2022	14/07/2021	Monthly	2000m	0	0	0
Defence PFAS Investigation & Management Program - Investigation Sites	Department of Defence	11/05/2022	11/05/2022	Monthly	2000m	0	0	0
Defence PFAS Investigation & Management Program - Management Sites	Department of Defence	11/05/2022	11/05/2022	Monthly	2000m	0	0	0
Airservices Australia National PFAS Management Program	Airservices Australia	11/05/2022	11/05/2022	Monthly	2000m	0	0	0
Defence 3 Year Regional Contamination Investigation Program	Department of Defence	03/03/2022	03/03/2022	Quarterly	2000m	0	0	0
EPA Other Sites with Contamination Issues	Environment Protection Authority	16/02/2022	13/12/2018	Annually	1000m	0	0	0
Licensed Activities under the POEO Act 1997	Environment Protection Authority	10/05/2022	10/05/2022	Monthly	1000m	0	0	0
Delicensed POEO Activities still regulated by the EPA	Environment Protection Authority	10/05/2022	10/05/2022	Monthly	1000m	2	2	2
Former POEO Licensed Activities now revoked or surrendered	Environment Protection Authority	10/05/2022	10/05/2022	Monthly	1000m	3	3	3
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
Points of Interest	NSW Department of Customer Service - Spatial Services	19/08/2021	19/08/2021	Quarterly	1000m	5	7	12
Tanks (Areas)	NSW Department of Customer Service - Spatial Services	19/08/2021	19/08/2021	Quarterly	1000m	0	0	0
Tanks (Points)	NSW Department of Customer Service - Spatial Services	19/08/2021	19/08/2021	Quarterly	1000m	0	0	0
Major Easements	NSW Department of Customer Service - Spatial Services	19/08/2021	19/08/2021	Quarterly	1000m	0	0	0
State Forest	Forestry Corporation of NSW	25/02/2021	14/02/2021	Annually	1000m	1	1	2
NSW National Parks and Wildlife Service Reserves	NSW Office of Environment & Heritage	10/02/2022	31/12/2021	Annually	1000m	0	0	0
Hydrogeology Map of Australia	Commonwealth of Australia (Geoscience Australia)	08/10/2014	17/03/2000	Annually	1000m	1	1	1
Temporary Water Restriction (Botany Sands Groundwater Source) Order 2018	NSW Department of Planning, Industry and Environment	28/03/2022	23/02/2018	Annually	1000m	0	0	0
National Groundwater Information System (NGIS) Boreholes	Bureau of Meteorology; Water NSW	24/01/2022	24/01/2022	Annually	2000m	0	0	2

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features On-site	No. Features within 100m	No. Features within Buffer
NSW Seamless Geology Single Layer: Rock Units	Department of Regional NSW	17/02/2022	01/05/2021	Annually	1000m	2	2	2
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	2
Naturally Occurring Asbestos Potential	NSW Dept. of Industry, Resources & Energy	04/12/2015	24/09/2015	Unknown	1000m	0	0	0
Atlas of Australian Soils	Australian Bureau of Agriculture and Resource Economics and Sciences (ABARES)	19/05/2017	17/02/2011	As required	1000m	2	2	2
Environmental Planning Instrument Acid Sulfate Soils	NSW Department of Planning, Industry and Environment	06/04/2022	18/02/2022	Monthly	500m	0	-	-
Atlas of Australian Acid Sulfate Soils	CSIRO	19/01/2017	21/02/2013	As required	1000m	3	3	3
Dryland Salinity - National Assessment	National Land and Water Resources Audit	18/07/2014	12/05/2013	None planned	1000m	0	0	0
Mining Subsidence Districts	NSW Department of Customer Service - Subsidence Advisory NSW	19/08/2021	05/08/2021	Quarterly	1000m	0	0	0
Current Mining Titles	NSW Department of Industry	20/04/2022	20/04/2022	Monthly	1000m	0	0	1
Mining Title Applications	NSW Department of Industry	20/04/2022	20/04/2022	Monthly	1000m	0	0	0
Historic Mining Titles	NSW Department of Industry	20/04/2022	20/04/2022	Monthly	1000m	6	6	7
Environmental Planning Instrument SEPP State Significant Precincts	NSW Department of Planning, Industry and Environment	15/11/2021	07/12/2018	Monthly	1000m	0	0	0
Environmental Planning Instrument Land Zoning	NSW Department of Planning, Industry and Environment	15/11/2021	05/11/2021	Monthly	1000m	1	1	2
Commonwealth Heritage List	Australian Government Department of the Agriculture, Water and the Environment	18/05/2021	20/11/2019	Annually	1000m	0	0	0
National Heritage List	Australian Government Department of the Agriculture, Water and the Environment	18/05/2021	20/11/2019	Annually	1000m	0	0	0
State Heritage Register - Curtilages	NSW Department of Planning, Industry and Environment	19/08/2021	25/06/2021	Quarterly	1000m	0	0	0
Environmental Planning Instrument Local Heritage	NSW Department of Planning, Industry and Environment	06/04/2022	25/03/2022	Monthly	1000m	0	1	1
Bush Fire Prone Land	NSW Rural Fire Service	16/05/2022	08/12/2021	Weekly	1000m	3	3	3
Eastern Bushland Database (North Region)	NSW Office of Environment & Heritage	24/07/2016	01/01/1991	None planned	1000m	3	3	4
Ramsar Wetlands of Australia	Australian Government Department of Agriculture, Water and the Environment	28/03/2022	19/03/2020	Annually	1000m	0	0	0
Groundwater Dependent Ecosystems	Bureau of Meteorology	14/08/2017	15/05/2017	Annually	1000m	3	3	3
Inflow Dependent Ecosystems Likelihood	Bureau of Meteorology	14/08/2017	15/05/2017	Unknown	1000m	9	9	9
NSW BioNet Species Sightings	NSW Office of Environment & Heritage	16/05/2022	16/05/2022	Weekly	10000m	-	-	-

Site Diagram

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340



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Legend

- Site Boundary
- Internal Parcel Boundaries

Total Area: 2.48km²

Total Perimeter: 44.96km

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:

0 200 400 800 1,200 1,600 2,000
Meters

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

Coordinate System:
GDA 1994 MGA Zone 56

Date: 19 May 2022

Contaminated Land

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340

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

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340

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

Waste Management & Liquid Fuel Facilities

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340

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
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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
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PFAS Investigation & Management Programs

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340

EPA PFAS Investigation Program

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

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

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

Defence PFAS Investigation Program

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

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

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

Defence PFAS Management Program

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

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

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

Airservices Australia National PFAS Management Program

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

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

Airservices Australia National PFAS Management Program Data Custodian: Airservices Australia

Defence Sites

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340

Defence 3 Year Regional Contamination Investigation Program

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

Property ID	Base Name	Address	Known Contamination	Loc Conf	Dist	Dir
N/A	No records in buffer					

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

EPA Other Sites with Contamination Issues

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340

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

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340

Licensed Activities under the POEO Act 1997

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

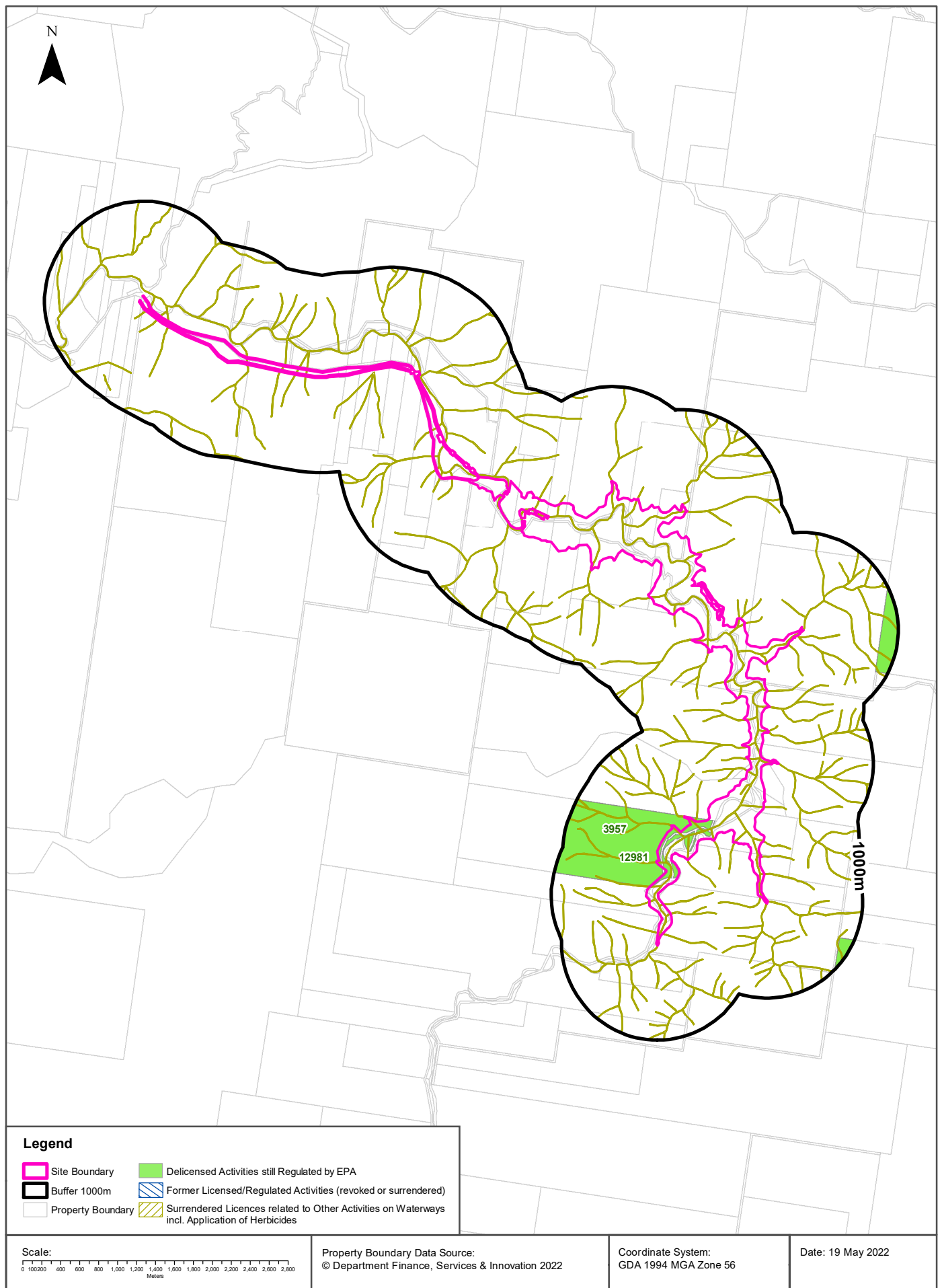
EPL	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
N/A	No records in buffer							

POEO Licence Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

Delicensed & Former Licensed EPA Activities

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340



EPA Activities

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340

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
3957	FORESTRY CORPORATION OF NEW SOUTH WALES		LOWER NORTH EAST REGION (L.N.E.R) STATE FORESTS AND CROWN-TIMBER LANDS (EX.PLANTATION S) WITHIN THE L.N.E.R. SHOWN ON MAP 1 - L.N.E.R. FOREST AGREEMENT		Logging operations	Network of Features	0m	On-site
12981	FORESTRY CORPORATION OF NEW SOUTH WALES		Brigalow and Nandewar Community Conservation Area		Logging operations	Network of Features	0m	On-site

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

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

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

Licence No	Organisation	Location	Status	Issued Date	Activity	Loc Conf	Distance	Direction
4653	LUHRMANN ENVIRONMENT MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW	Surrendered	06/09/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	0m	On-site
4838	Robert Orchard	Various Waterways throughout New South Wales - SYDNEY NSW 2000	Surrendered	07/09/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	0m	On-site
6630	SYDNEY WEED & PEST MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW - PROSPECT, NSW, 2148	Surrendered	09/11/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	0m	On-site

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

Historical Business Directories

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340

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						

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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					

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Historical Business Directories

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340

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

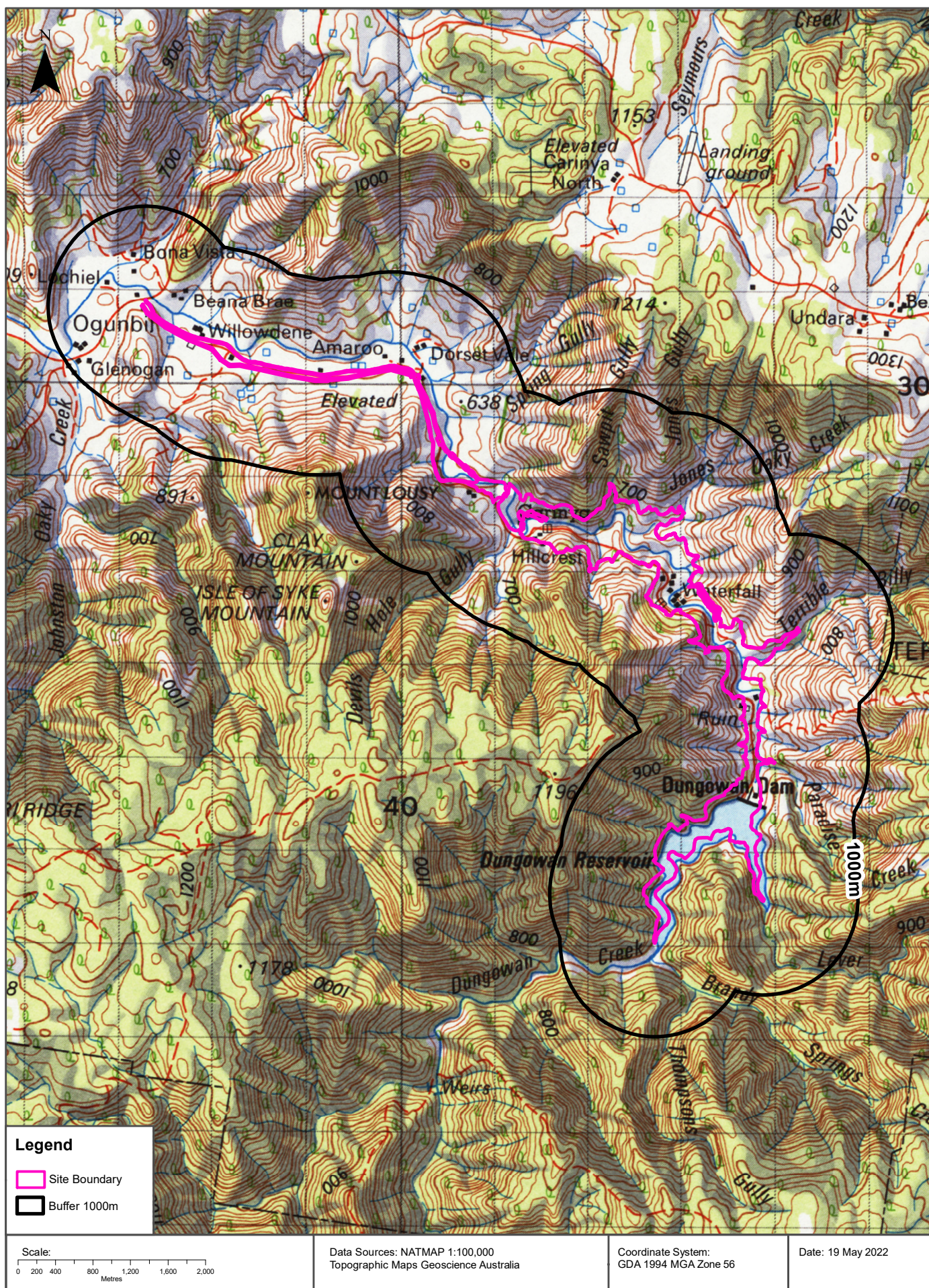
Dry Cleaners, Motor Garages & Service Stations Road or Area Matches

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					

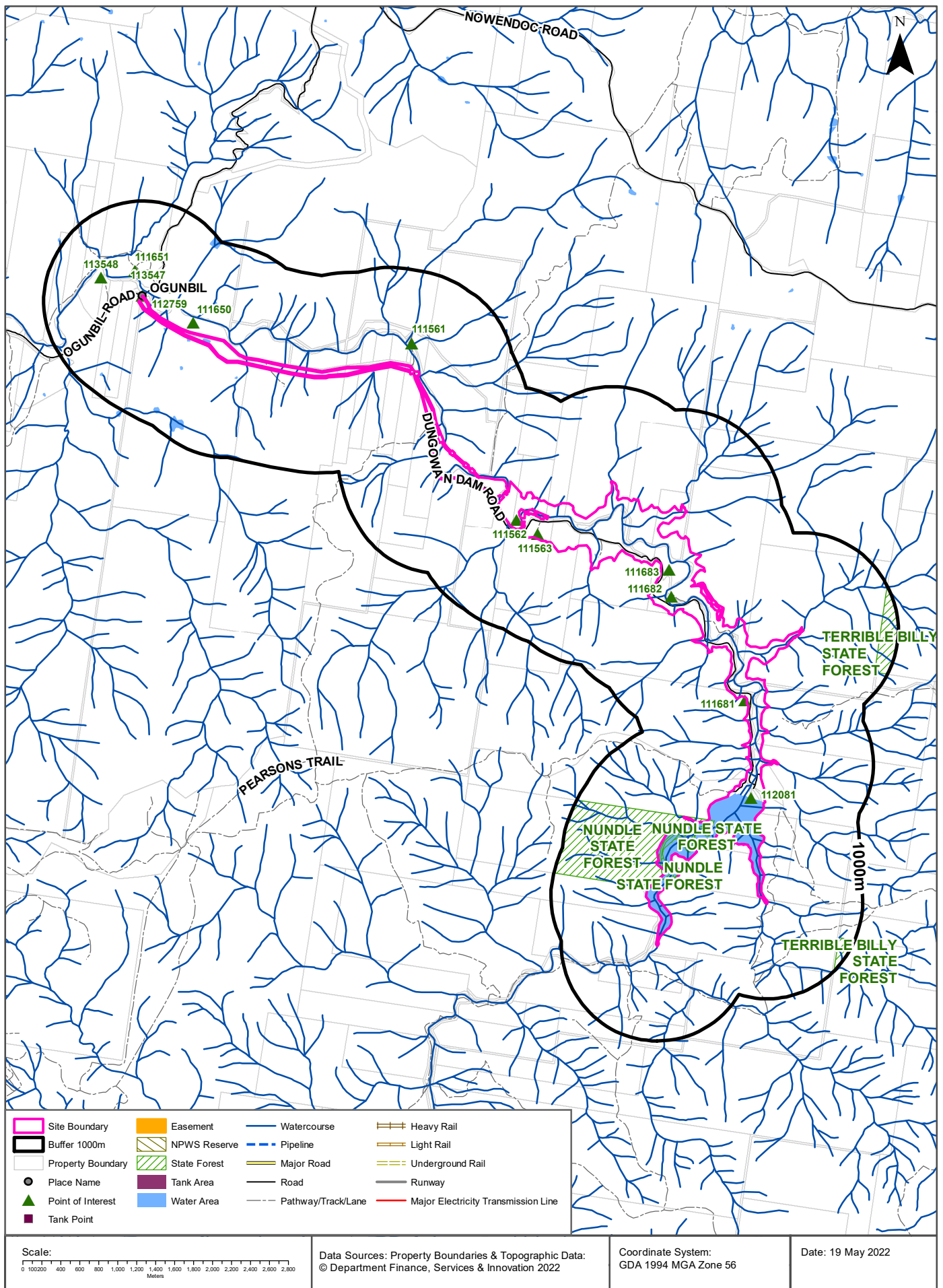
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Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340



Topographic Features

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340



Topographic Features

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340

Points of Interest

What Points of Interest exist within the dataset buffer?

Map Id	Feature Type	Label	Distance	Direction
111682	Homestead	WATERFALL	0m	On-site
111563	Homestead	HILLCREST	0m	On-site
111683	Homestead	EAGLE FARM	0m	On-site
112081	Dam Wall	DUNGOWAN DAM	0m	On-site
111562	Homestead	CARINYA	0m	On-site
112759	Locality	OGUNBIL	3m	North West
111681	Homestead	PARADISE	22m	South East
111650	Homestead	WILLOWDENE	105m	North West
111561	Homestead	DORSET VALE	234m	North West
113547	Homestead	BEANA BRAE	276m	North West
111651	Homestead	BONA VISTA	280m	North West
113548	Homestead	LOCHIEL	469m	North West

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

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Topographic Features

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340

Tanks (Areas)

What are the Tank Areas located within the dataset buffer?

Note. The large majority of tank features provided by LPI are derived from aerial imagery & are therefore primarily above ground tanks.

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

Tanks (Points)

What are the Tank Points located within the dataset buffer?

Note. The large majority of tank features provided by LPI are derived from aerial imagery & are therefore primarily above ground tanks.

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

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

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Major Easements

What Major Easements exist within the dataset buffer?

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

Map Id	Easement Class	Easement Type	Easement Width	Distance	Direction
N/A	No records in buffer				

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

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Topographic Features

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340

State Forest

What State Forest exist within the dataset buffer?

State Forest Number	State Forest Name	Distance	Direction
538	NUNDLE	0m	On-site
539	TERRIBLE BILLY	805m	East

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

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National Parks and Wildlife Service Reserves

What NPWS Reserves exist within the dataset buffer?

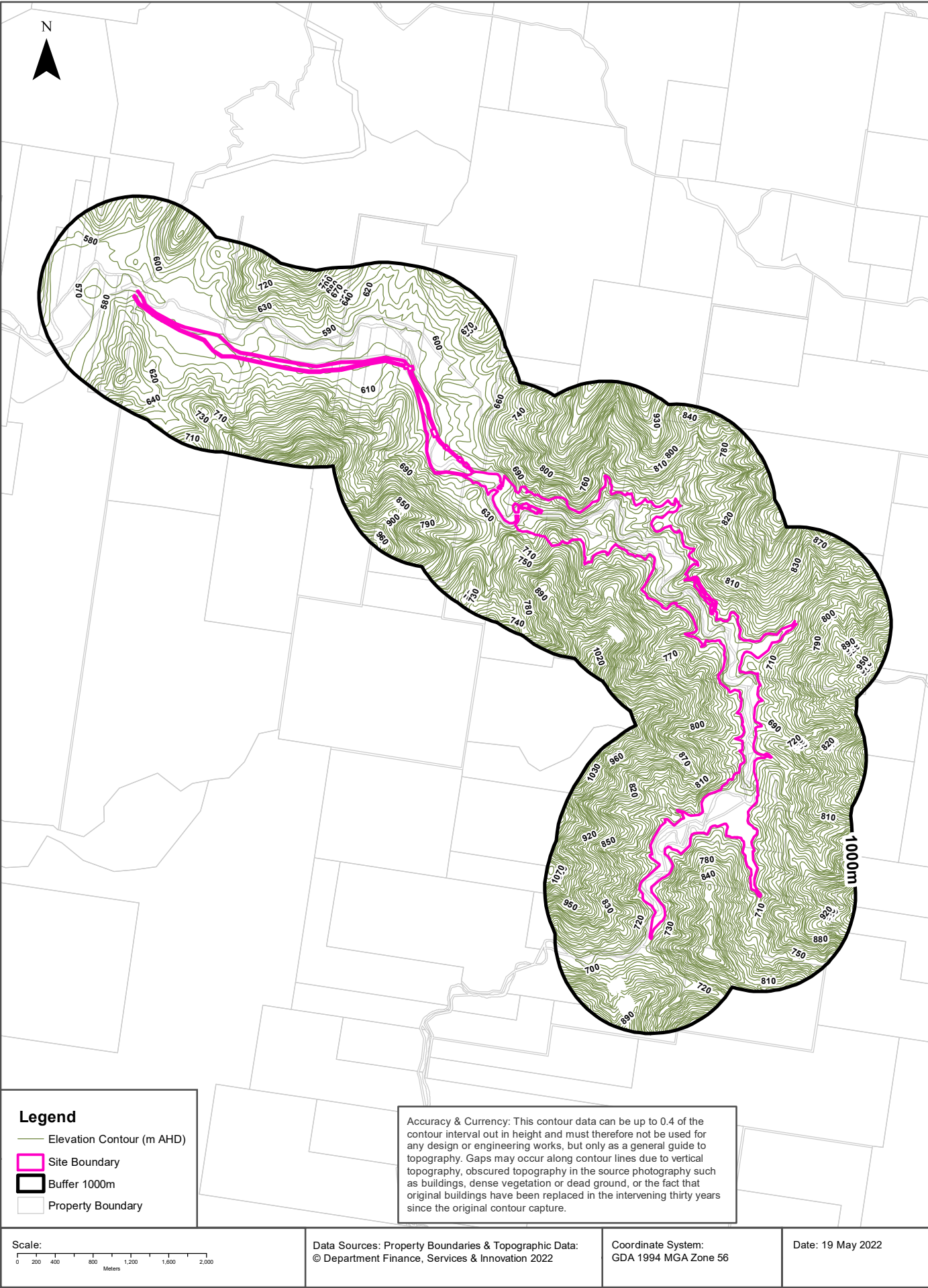
Reserve Number	Reserve Type	Reserve Name	Gazetted Date	Distance	Direction
N/A	No records in buffer				

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

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Elevation Contours (m AHD)

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340



Hydrogeology & Groundwater

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340

Hydrogeology

Description of aquifers within the dataset buffer:

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

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

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Temporary Water Restriction (Botany Sands Groundwater Source) Order 2018

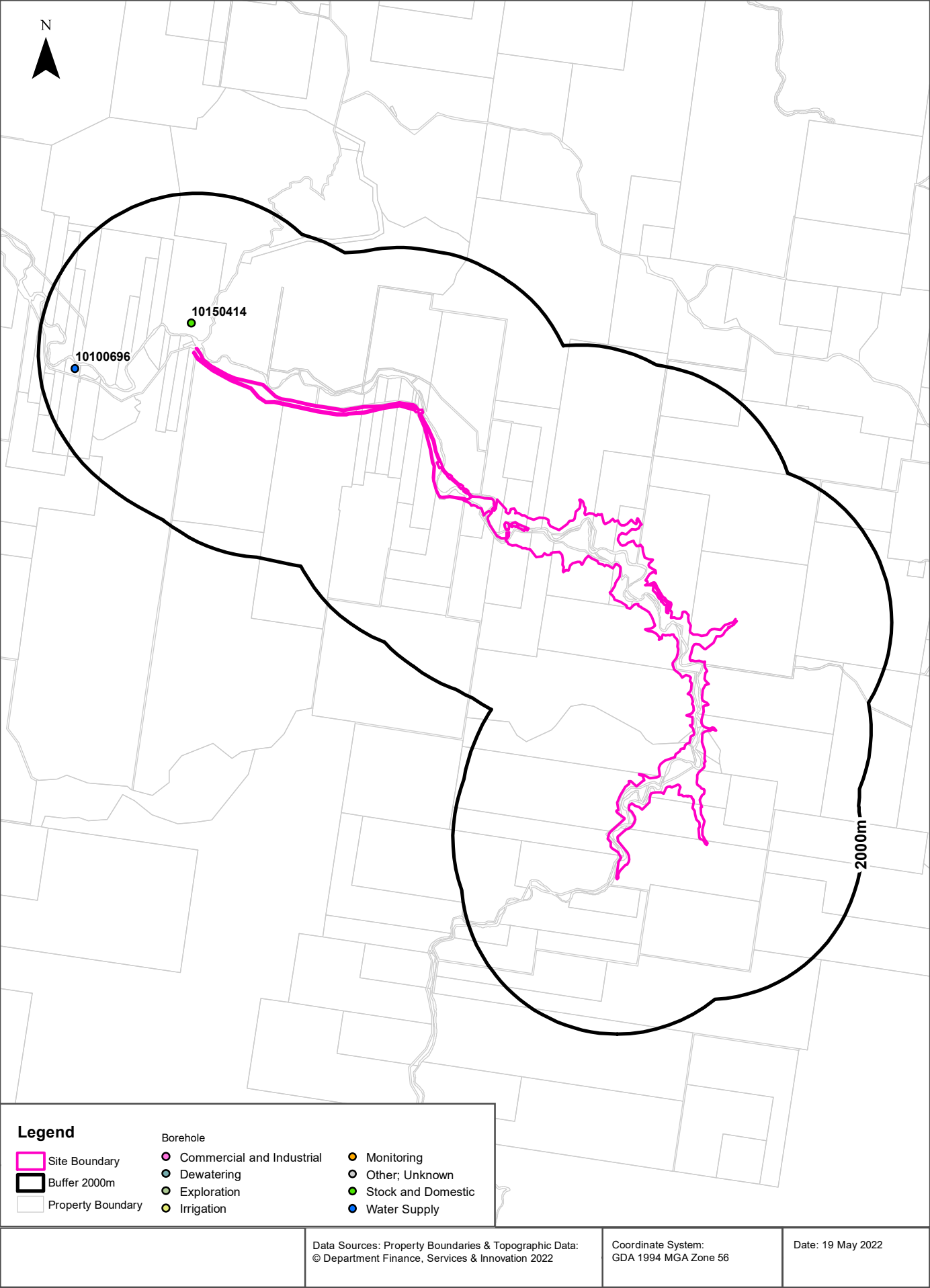
Temporary water restrictions relating to the Botany Sands aquifer within the dataset buffer:

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

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

Groundwater Boreholes

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340



Data Sources: Property Boundaries & Topographic Data:
© Department Finance, Services & Innovation 2022

Coordinate System:
GDA 1994 MGA Zone 56

Date: 19 May 2022

Hydrogeology & Groundwater

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340

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
10150414	GW903440	Stock and Domestic	Functioning	29/06/2020	48.00		AHD				327m	North West
10100696	GW967964	Water Supply	Functioning	10/10/2006	24.40		AHD		1.080	4.60	1539m	North West

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

Hydrogeology & Groundwater

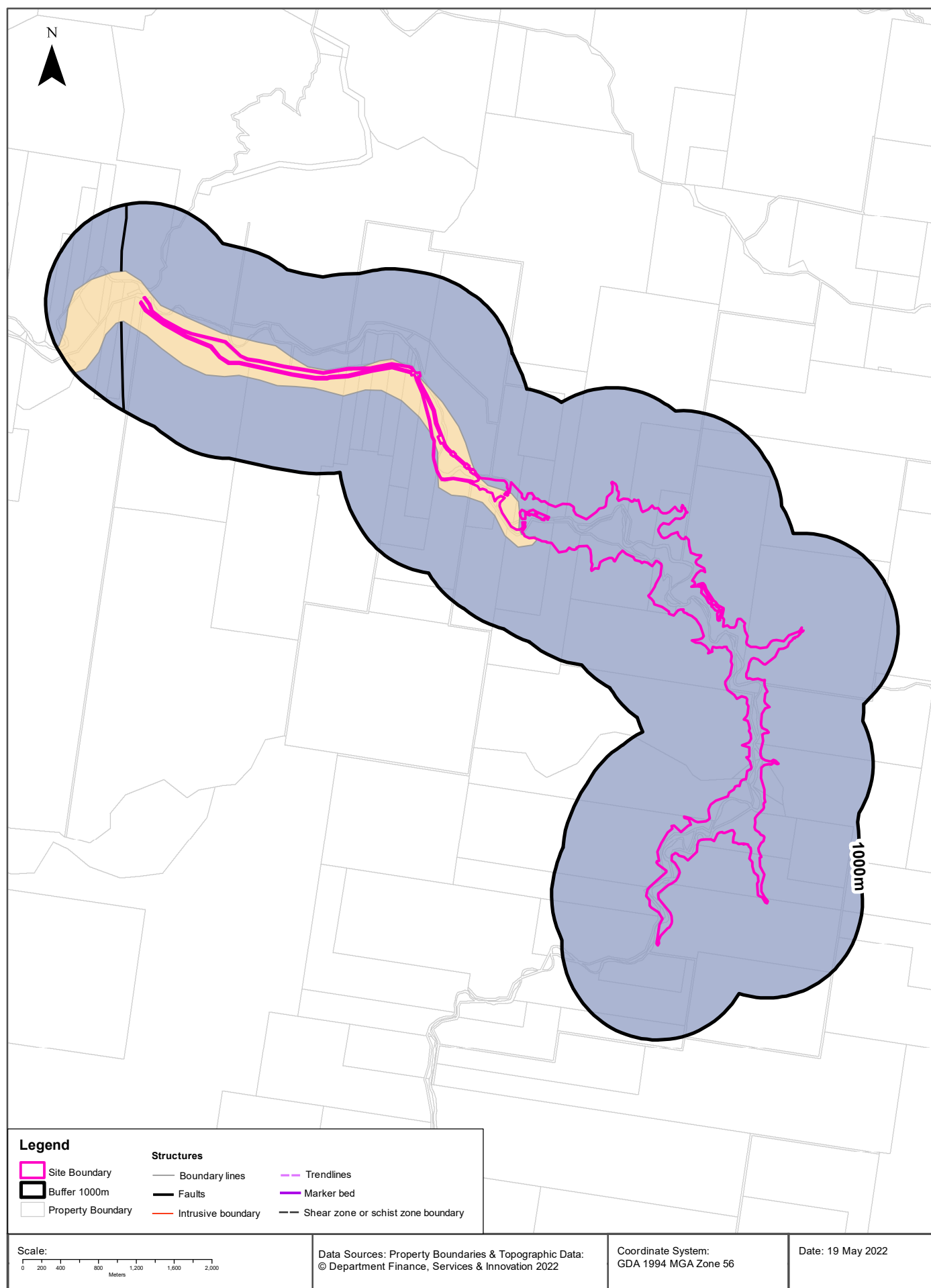
Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340

Driller's Logs

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

NGIS Bore ID	Drillers Log	Distance	Direction
10100696	0.00m-0.30m Soil, surface 0.30m-0.90m Broken Basalt 0.90m-12.20m Basalt 12.20m-12.50m Basalt, water bearing 12.50m-15.50m Basalt 15.50m-15.80m Basalt, water bearing 15.80m-21.00m Basalt 21.00m-21.30m Basalt, water bearing 21.30m-24.40m Basalt	1539m	North West

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



Geology

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340

Geological Units

What are the Geological Units within the dataset buffer?

Unit Code	Unit Name	Description	Unit Stratigraphy	Age	Dominant Lithology	Distance
Csa	Sandon Association	Lithic (meta-)wacke, slate, phyllite, chert, jasper, amphibolite, metabasalt. Greywacke, sandstone, siltstone, mudstone and paraconglomerate.	/Sandon Association////	Devonian (base) to Carboniferous (top)	Metamorphic rock	0m
N_a	Alluvium	Unconsolidated alluvial clay, silt, sand, and gravel deposits.	/Alluvium////	Cenozoic (base) to Now (top)	Clastic sediment	0m

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
9321	Faulted boundary	Fault, inferred	Tamworth-Hastings 1:250,000 Metallogenic Map	273m
9325	Faulted boundary	Fault, inferred	Tamworth-Hastings 1:250,000 Metallogenic Map	361m

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

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Naturally Occurring Asbestos Potential

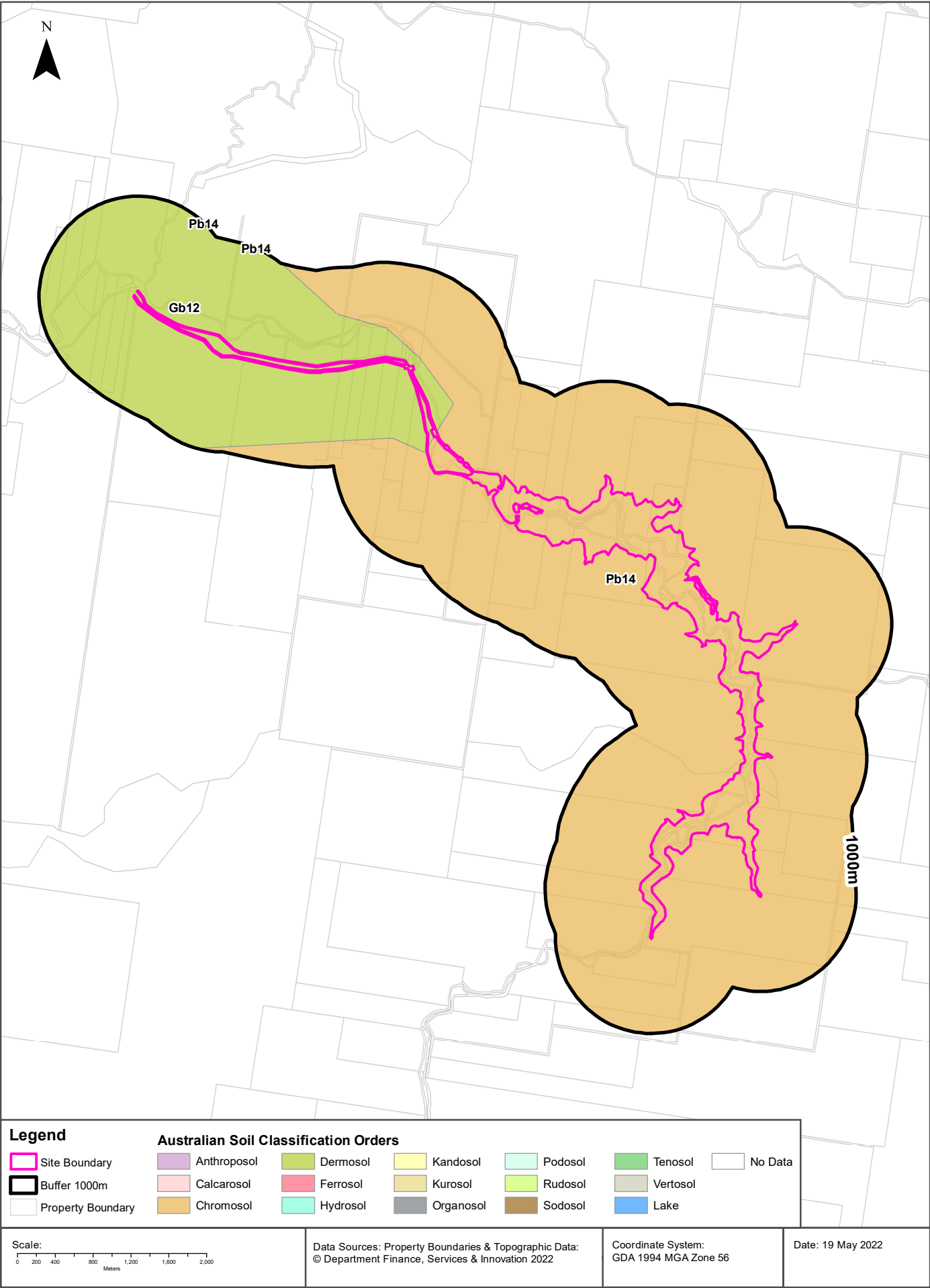
Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340

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

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340

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
Pb14	Chromosol	Hilly with rock outcrops and very steep slopes in some areas: chief soils are hard acidic red soils (Dr2.21); hard acidic yellow mottled soils (Dy3.41); and shallow loamy soils, such as (Um4.1). Associated are various (Gn2) soils, such as (Gn2.14), (Gn2.24), and (Gn2.74), especially in "fill" situations; and undescribed soils (a) associated with serpentine and related rock types and (b) of the narrow stream valleys. As mapped, areas of unit Tb50 are included.	0m	On-site
Gb12	Dermosol	River flood-plains, terraces, and levees: chief soils are probably dark porous loamy soils (Um6.11 and Um6.12) with other (Um) and (Uc) soils. Associated are, locally, fairly large areas of dark cracking clays such as (Ug5.16); areas of (Dy3.4) soils; and sometimes areas of gravelly (Gn2) soils. Soils data are limited.	0m	On-site

Atlas of Australian Soils Data Source: CSIRO

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Acid Sulfate Soils

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340

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?

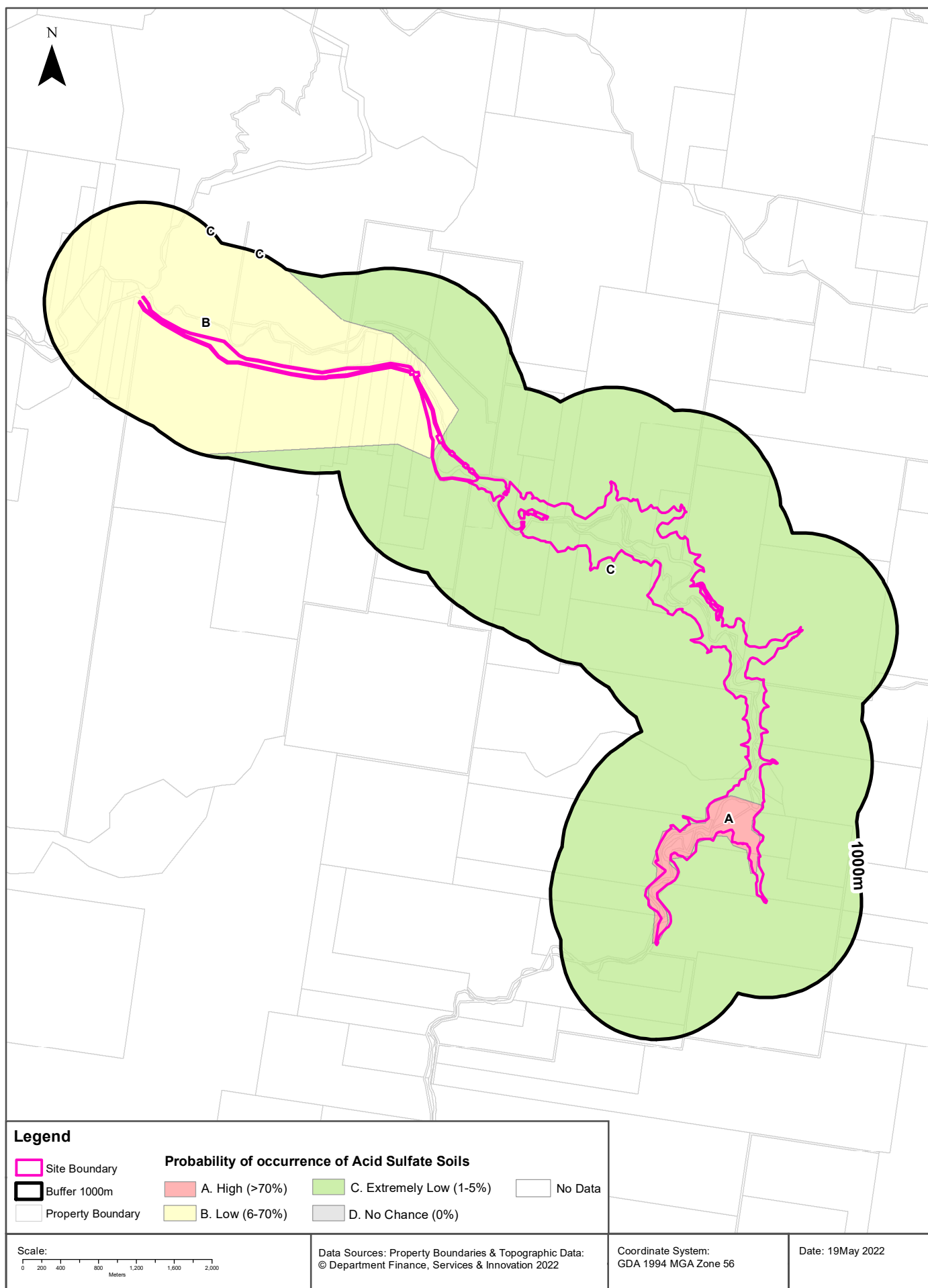
Soil Class	Description	EPI Name	Distance	Direction
N/A				

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Atlas of Australian Acid Sulfate Soils

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340



Acid Sulfate Soils

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340

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
A	High Probability of occurrence. >70% chance of occurrence.	0m	On-site
B	Low Probability of occurrence. 6-70% chance of occurrence.	0m	On-site

Atlas of Australian Acid Sulfate Soils Data Source: CSIRO

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Dryland Salinity

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340

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.

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In many cases where a high risk is indicated, less than 100% of the area will have a high hazard or risk.

Mining

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340

Mining Subsidence Districts

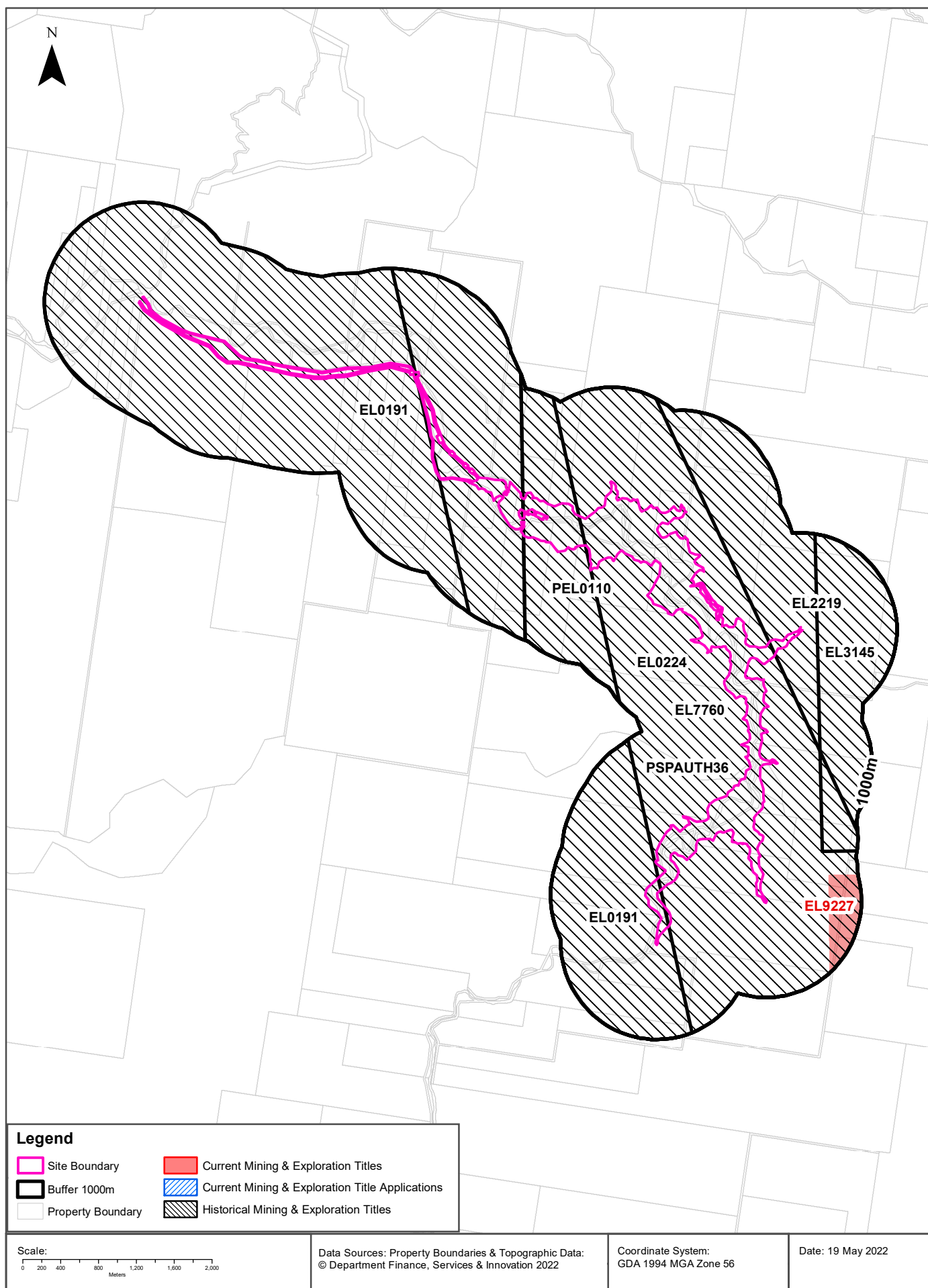
Mining Subsidence Districts within the dataset buffer:

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

Mining Subsidence District Data Source: © Land and Property Information (2016)
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Mining & Exploration Titles

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340



Mining

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340

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
EL9227	GREAT SOUTHERN PRECIOUS METALS PTY LTD	23/07/2021	23/07/2023	23 Jul 2021	EXPLORING	MINERALS	Group 1	653m	South East

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

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340

Historical Mining & Exploration Titles

Historical Mining & Exploration Titles within the dataset buffer:

Title Ref	Holder	Start Date	End Date	Resource	Minerals	Dist	Dir
EL0191	SERPENTINE MINERALS NL	01 Jul 1969	01 Jul 1971	MINERALS	Cu Mo	0m	On-site
EL7760	KIMBA RESOURCES PTY LTD	1 Jun 2011	1 Jun 2013	MINERALS	Au	0m	On-site
EL2219	COLONIAL EXPLORATION & RESOURCES NL	01 May 1984	01 May 1987	MINERALS	Au	0m	On-site
EL0224	NICKEL MINES LIMITED	01 Dec 1969	01 Dec 1970	MINERALS	W Au Ni Pt Sb	0m	On-site
PEL0110				PETROLEUM	Petroleum	0m	On-site
PSPAUTH36	PANGAEA OIL & GAS PTY LIMITED	11/11/2009	11/11/2010	PETROLEUM	Petroleum	0m	On-site
EL3145	CLUTHA MINERALS LIMITED	01 Jul 1988	01 Mar 1990	MINERALS	Au	154m	East

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

State Environmental Planning Policy

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340

State Significant Precincts

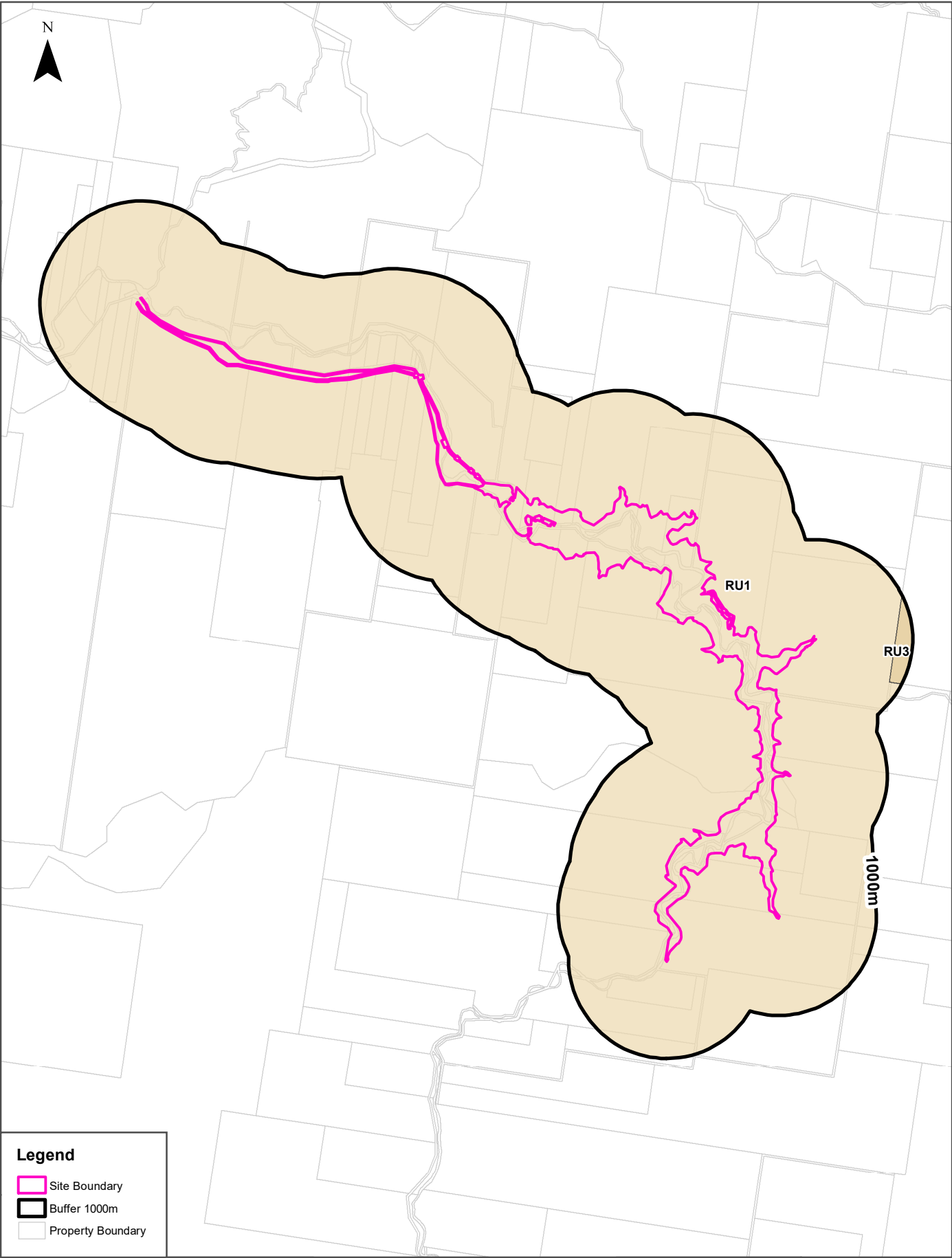
What SEPP State Significant Precincts exist within the dataset buffer?

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

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

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340



Scale:
0 200 400 800 1,200 1,600 2,000
Meters

Data Sources: Property Boundaries & Topographic Data:
© Department Finance, Services & Innovation 2022
Planning: NSW Crown Copyright - Planning & Environment

Coordinate System:
GDA 1994 MGA Zone 56

Date: 19 May 2022

Environmental Planning Instrument

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340

Land Zoning

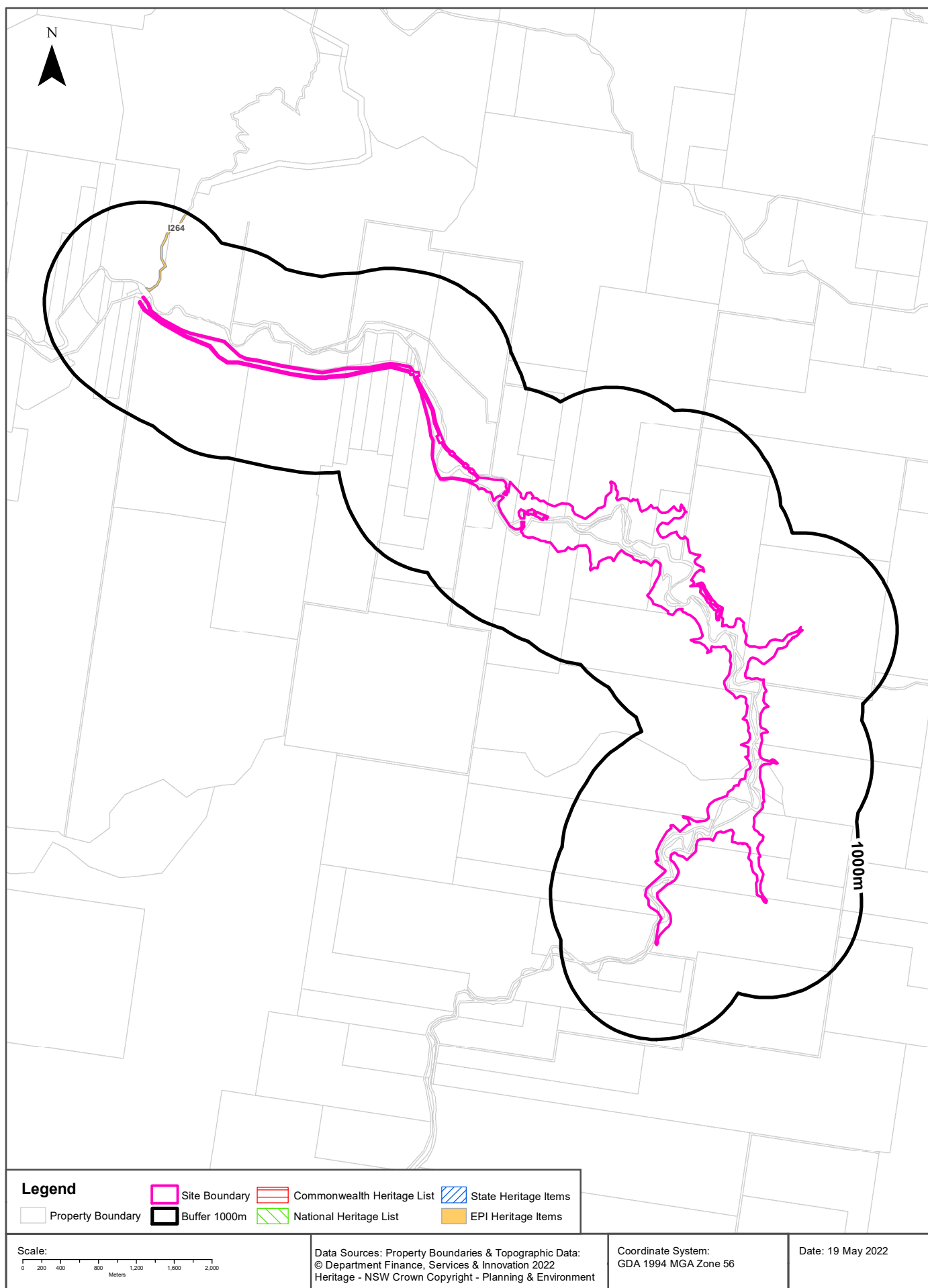
What EPI Land Zones exist within the dataset buffer?

Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
RU1	Primary Production		Tamworth Regional Local Environmental Plan 2010	21/01/2011	21/01/2011	06/11/2020		0m	On-site
RU3	Forestry		Tamworth Regional Local Environmental Plan 2010	21/01/2011	21/01/2011	06/11/2020		805m	East

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Heritage Items

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340



Heritage

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340

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							

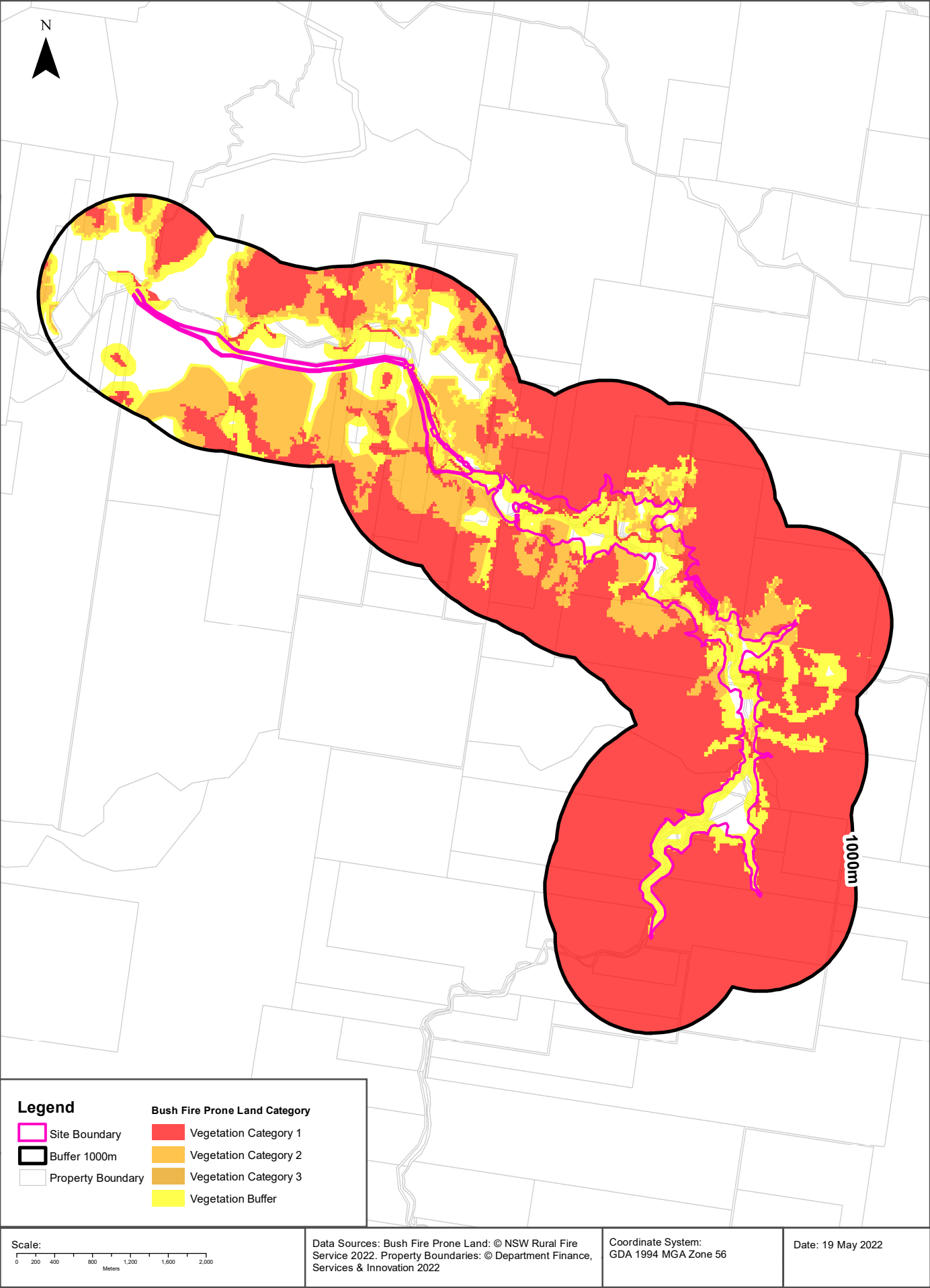
Heritage Data Source: NSW Crown Copyright - Office of Environment & Heritage
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Environmental Planning Instrument - Heritage

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
I264	Port Stephens Cutting	Item - General	Local	Tamworth Regional Local Environmental Plan 2010	21/01/2011	21/01/2011	30/11/2018	78m	North West

Heritage Data Source: NSW Crown Copyright - Planning & Environment
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Natural Hazards

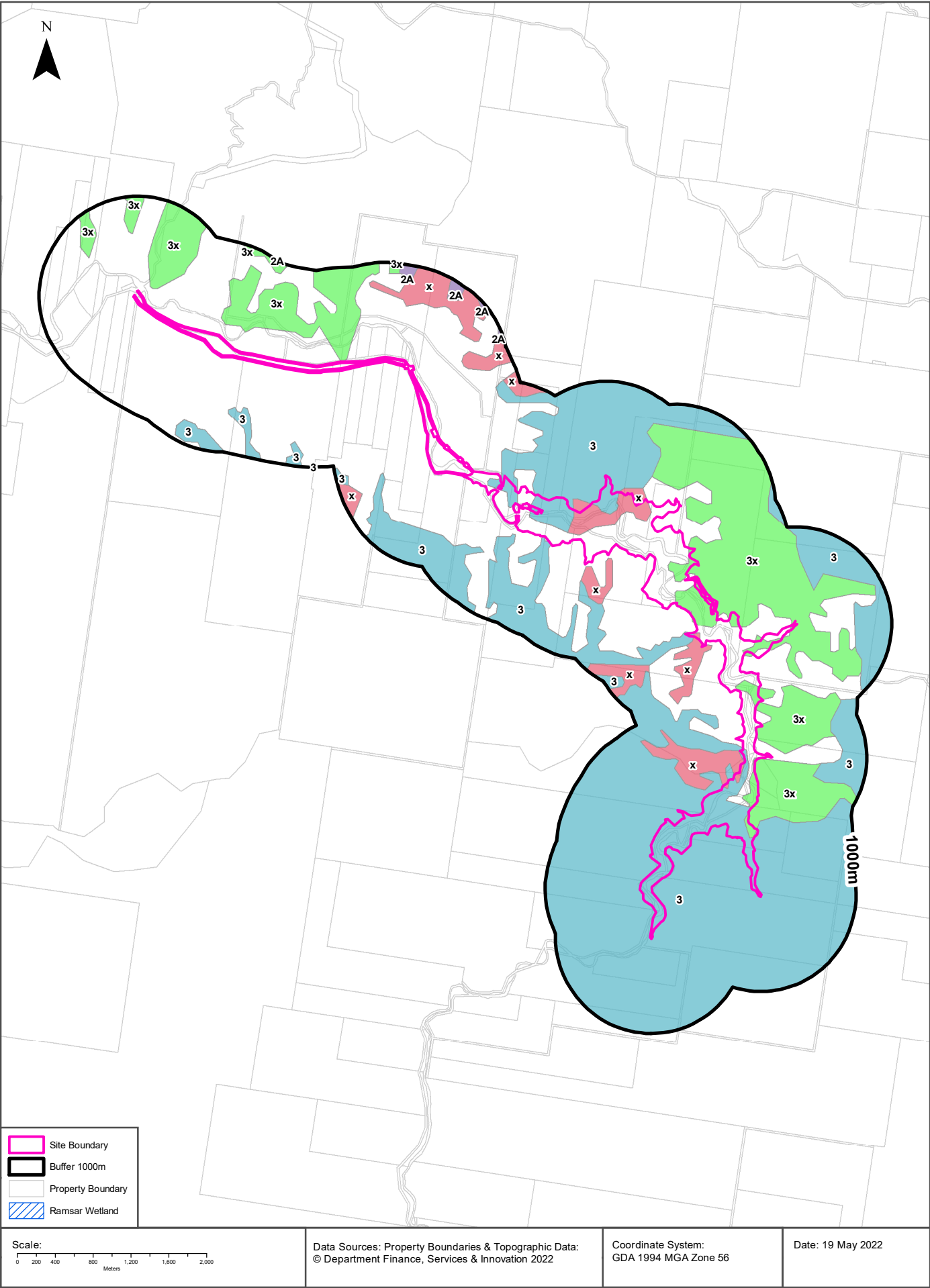
Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340

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

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340

Vegetation - Eastern Bushland Database (North Region)

What Vegetation exists within the dataset buffer?

Veg Code	Veg Desc	NVISCCode	NVISDesc	Distance	Direction
3	dry open forest	4	Dry forest system	0m	On-site
3x	disturbed dry open forest	4	Dry forest system	0m	On-site
x	disturbed forest woodland	23	Disturbed bushland	0m	On-site
2A	moist eucalypt forest [mod. reliability]	8	Moist forest system	797m	North West

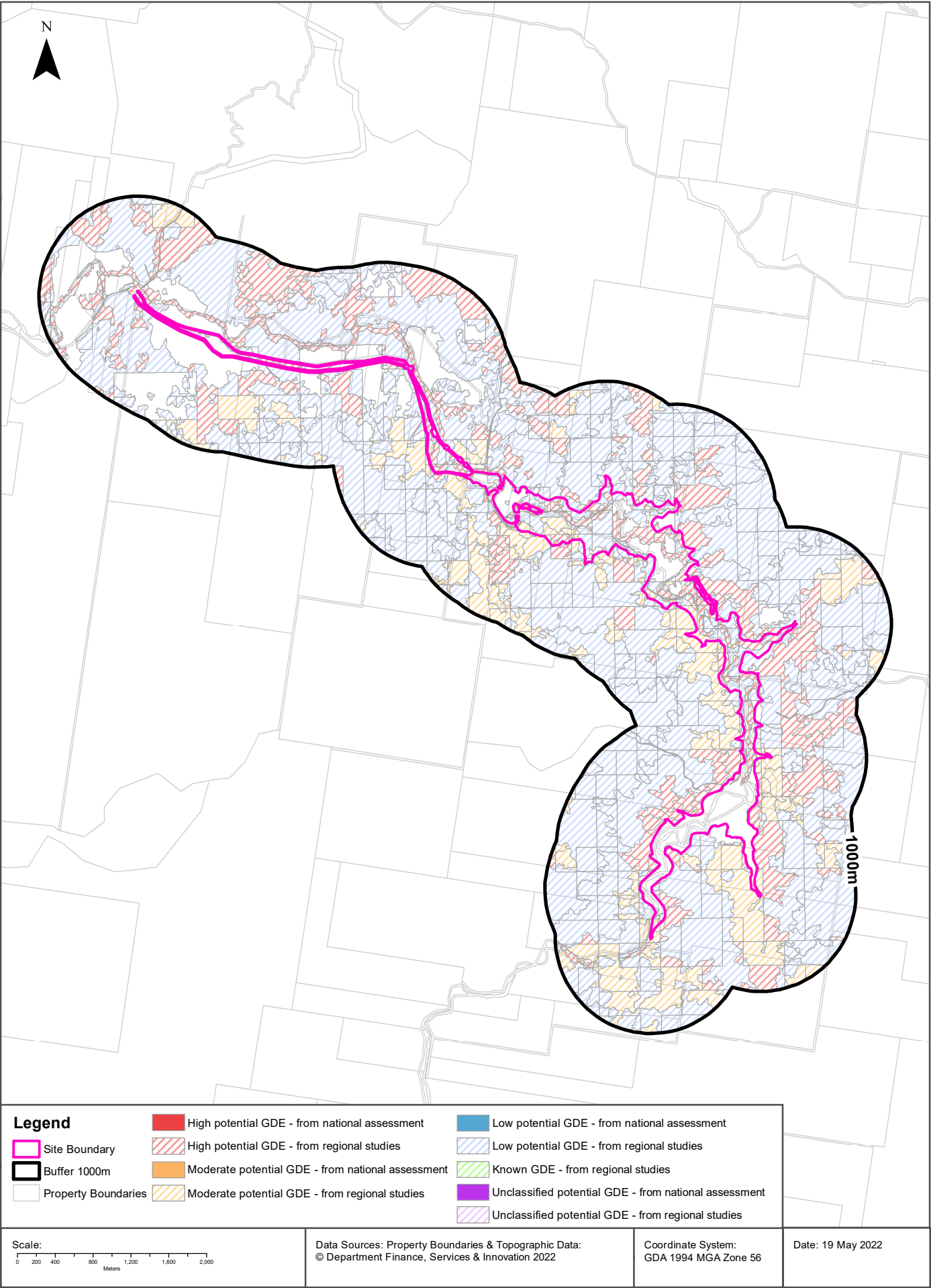
Vegetation Eastern Bushland Database Data Source: NSW Office of Environment and Heritage
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Ramsar Wetlands

What Ramsar Wetland areas exist within the dataset buffer?

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

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



Ecological Constraints

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340

Groundwater Dependent Ecosystems Atlas

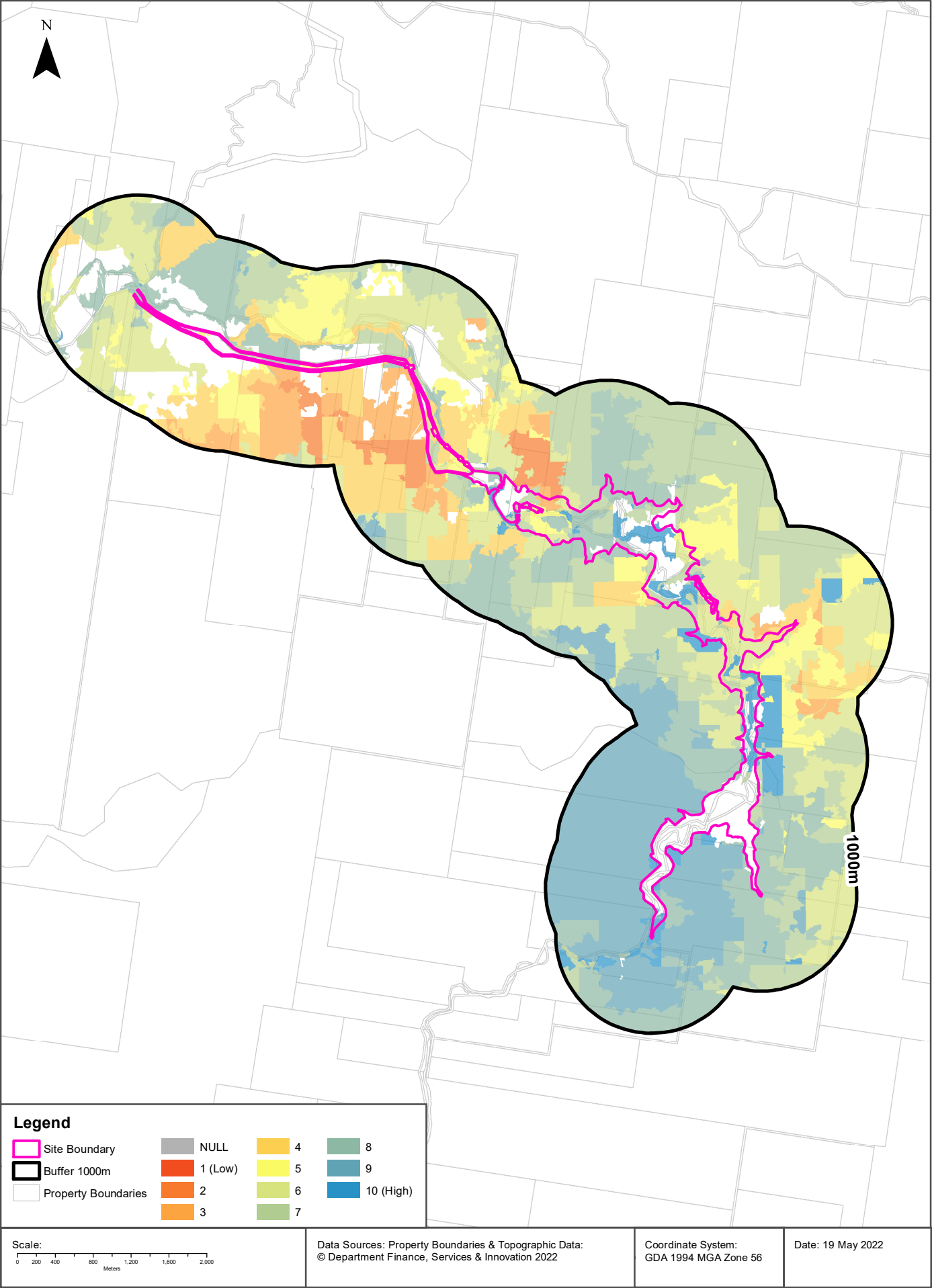
Type	GDE Potential	Geomorphology	Ecosystem Type	Aquifer Geology	Distance	Direction
Terrestrial	Low potential GDE - from regional studies	Undulating granitic plateau with higher residuals including basalt cappings.	Vegetation		0m	On-site
Terrestrial	High potential GDE - from regional studies	Undulating granitic plateau with higher residuals including basalt cappings.	Vegetation		0m	On-site
Terrestrial	Moderate potential GDE - from regional studies	Undulating granitic plateau with higher residuals including basalt cappings.	Vegetation		0m	On-site

Groundwater Dependent Ecosystems Atlas Data Source: The Bureau of Meteorology

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Ecological Constraints - Inflow Dependent Ecosystems Likelihood

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340



Ecological Constraints

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340

Inflow Dependent Ecosystems Likelihood

Type	IDE Likelihood	Geomorphology	Ecosystem Type	Aquifer Geology	Distance	Direction
Terrestrial		4 Undulating granitic plateau with higher residuals including basalt cappings.	Vegetation		0m	On-site
Terrestrial		2 Undulating granitic plateau with higher residuals including basalt cappings.	Vegetation		0m	On-site
Terrestrial		10 Undulating granitic plateau with higher residuals including basalt cappings.	Vegetation		0m	On-site
Terrestrial		6 Undulating granitic plateau with higher residuals including basalt cappings.	Vegetation		0m	On-site
Terrestrial		9 Undulating granitic plateau with higher residuals including basalt cappings.	Vegetation		0m	On-site
Terrestrial		7 Undulating granitic plateau with higher residuals including basalt cappings.	Vegetation		0m	On-site
Terrestrial		5 Undulating granitic plateau with higher residuals including basalt cappings.	Vegetation		0m	On-site
Terrestrial		8 Undulating granitic plateau with higher residuals including basalt cappings.	Vegetation		0m	On-site
Terrestrial		3 Undulating granitic plateau with higher residuals including basalt cappings.	Vegetation		0m	On-site

Inflow Dependent Ecosystems Likelihood Data Source: The Bureau of Meteorology

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Ecological Constraints

Ogunbil Road & Dungowan Dam Road (3 of 3), Dungowan, NSW 2340

NSW BioNet Atlas

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

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Amphibia	Litoria daviesae	Davies' Tree Frog	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Apus pacificus	Fork-tailed Swift	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Artamus cyanopterus cyanopterus	Dusky Woodswallow	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Calyptorhynchus lathami	Glossy Black-Cockatoo	Vulnerable	Category 2	Not Listed	
Animalia	Aves	Chthonicola sagittata	Speckled Warbler	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Daphoenositta chrysoptera	Varied Sittella	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Glossopsitta pusilla	Little Lorikeet	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Hirundapus caudacutus	White-throated Needletail	Not Listed	Not Sensitive	Vulnerable	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subspecies)	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Ninox connivens	Barking Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Ninox strenua	Powerful Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Petroica boodang	Scarlet Robin	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Petroica phoenicea	Flame Robin	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Stagonopleura guttata	Diamond Firetail	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Tyto novaehollandiae	Masked Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Tyto tenebricosa	Sooty Owl	Vulnerable	Category 3	Not Listed	
Animalia	Mammalia	Dasyurus maculatus	Spotted-tailed Quoll	Vulnerable	Not Sensitive	Endangered	
Animalia	Mammalia	Falsistrellus tasmaniensis	Eastern False Pipistrelle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Miniopterus orianae oceanensis	Large Bent-winged Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Petauroides volans	Greater Glider	Not Listed	Not Sensitive	Vulnerable	
Animalia	Mammalia	Petaurus australis	Yellow-bellied Glider	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Petaurus norfolcensis	Squirrel Glider	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Phascolarctos cinereus	Koala	Vulnerable	Not Sensitive	Endangered	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Mammalia	Scoteanax rueppellii	Greater Broad-nosed Bat	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Asterolasia beckersii	Dungowan Starbush	Critically Endangered	Not Sensitive	Critically Endangered	
Plantae	Flora	Chiloglottis platyptera	Barrington Tops Ant Orchid	Vulnerable	Category 2	Not Listed	
Plantae	Flora	Eucalyptus nicholii	Narrow-leaved Black Peppermint	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Eucalyptus oresbia	Small-fruited Mountain Gum	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Euphrasia arguta		Critically Endangered	Not Sensitive	Critically Endangered	
Plantae	Flora	Euphrasia ciliolata	Polblue Eyebright	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Haloragis exalata subsp. velutina	Tall Velvet Sea-berry	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Thesium australe	Austral Toadflax	Vulnerable	Not Sensitive	Vulnerable	

Data does not include NSW category 1 sensitive species.

NSW BioNet: © State of NSW and Office of Environment and Heritage

Location Confidences

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

LC Code	Location Confidence
Premise Match	Georeferenced to the site location / premise or part of site
Area Match	Georeferenced to an approximate or general area
Road Match	Georeferenced to a road or rail corridor
Road Intersection	Georeferenced to a road intersection
Buffered Point	A point feature buffered to x metres
Adjacent Match	Land adjacent to a georeferenced feature
Network of Features	Georeferenced to a network of features
Suburb Match	Georeferenced to a suburb boundary
As Supplied	Spatial data supplied by provider

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Annexure B

Photographic log

Plates – 24 June 2020



Plate 1 Existing Dungowan Dam entry gate



Plate 2 View of Dungowan Dam Road and Dungowan Creek from nearby hill



Plate 3 **Area of disturbance/cuttings on hillslope adjacent to Dungowan Dam Road**



Plate 4 **Area of ground disturbance on hillslope adjacent to Dungowan Dam Road**



Plate 5 **Soil stockpile adjacent to Dungowan Dam Road**



Plate 6 **Large clearing adjacent to Dungowan Dam Road**



Plate 7 **Former Dorset Vale School sign along Dungowan Dam Road**



Plate 8 **Building near former Dorset Vale School sign**



Plate 9 Potential asbestos containing service pits along Dungowan Dam Road



Plate 10 Clearing/cuttings along Dungowan Dam Road



Plate 11

Ogunbil Rural Fire Service building

Plates – 29 October 2021

Project	Dungowan Dam EIS		
Client	SMEC / WINSW	Job number	J200042
EMM field staff	L Lewis	Date:	29/10/2021



Plate 12

Revised pipeline footprint - Dungowan Dam Rd, facing west towards 38/DP755322

Location: -31.36632481/ 151.3336588

Direction: 150.95° clockwise from north

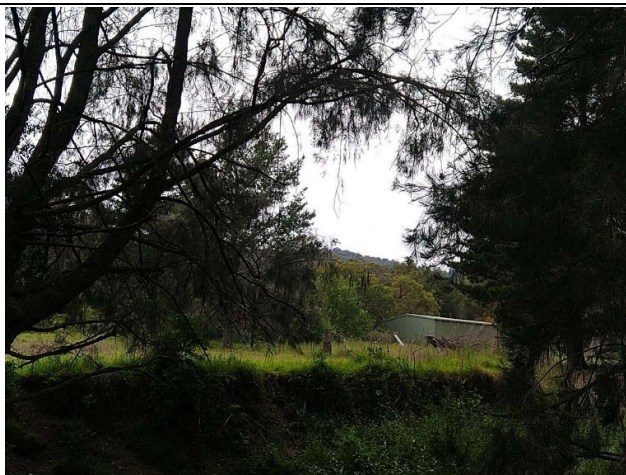


Plate 13

Revised pipeline footprint - Dungowan Dam Rd, facing northeast towards 38/DP755322

Location: -31.36575939/ 151.3313375

Direction: 0.57° clockwise from north



Plate 14

Revised pipeline footprint - Dungowan Dam Rd, facing north towards 9/DP755351

Location: -31.36379761/ 151.32991189

Direction: 153.62° clockwise from north



Plate 15

Revised pipeline footprint - Dungowan Dam Rd, facing north towards 9/DP755351

Location: -31.36286389/ 151.32974681

Direction: 85.31° clockwise from north



Plate 16

Revised pipeline footprint - Dungowan Dam Rd, facing southwest towards small (approx. 5,000 L) AST on 11/DP1018729 situated approx. 50m downgradient of pipeline

Location: -31.34815681/ 151.3000874

Direction: 111.73° clockwise from north



Plate 17

Transmission line footprint - southern end, facing north from Nowendoc Rd

Location: -31.34270169/ 151.2929129

Direction: 185.53° clockwise from north



Plate 18

Transmission line footprint - northern end, facing north from Nowendoc Rd

Location: -31.31271081/ 151.312258

Direction: 162.9° clockwise from north



Plate 19

Revised pipeline footprint - control valve site along Ogunbil Rd, facing east

Location: -31.3392599/ 151.2697903

Direction: 343.49° clockwise from north



Plate 20

Revised pipeline alignment - facing east from 3/DP842662

Location: -31.33083419/ 151.2632255

Direction: 275.59° clockwise from north



Plate 21

Revised pipeline alignment - facing west from 3/DP842662

Location: -31.33064669/ 151.26325739

Direction: 172.79° clockwise from north



Plate 22

Revised pipeline alignment - facing northeast from Ogunbil Rd towards 1/DP588646

Location: -31.29980519/ 151.2174079

Direction: 267.86° clockwise from north



Plate 23

Revised pipeline alignment - facing east from Ogunbil Rd towards 1/DP588646

Location: -31.29624681/ 151.216661

Direction: 354.88° clockwise from north



Plate 24

Revised pipeline alignment - facing northeast from Ogunbil Rd towards 118/DP755350

Location: -31.2901785/ 151.21578961

Direction: 294.13° clockwise from north



Plate 25

Revised pipeline alignment - facing east from Ogunbil Rd towards 6/DP246768

Location: -31.28147639/ 151.21318789

Direction: 334.65° clockwise from north



Plate 26

Proposed laydown area - cnr Dungowan Ck Rd and Ogunbil Rd, facing northeast

Location: -31.2528489/ 151.18073119

Direction: 181.49° clockwise from north



Plate 27

Proposed laydown area - cnr Dungowan Ck Rd and Nundle Rd, facing west towards Peel River

Location: -31.2194259/ 151.11641761

Direction: 187.04° clockwise from north

Plates – 28 October 2021

Project	Dungowan Dam EIS		
Client	SMEC / WINSW	Job number	J200042
EMM field staff	L Lewis	Date:	28/10/2021



Plate 28

Northern end of project footprint, adjacent to shed - 35 Back Woolomin Rd, Dungowan. Facing east

Location: -31.2182032/ 151.1034719

Direction: 144.03° clockwise from north



Plate 29

Revised pipeline alignment at Ogunbil Road, Lot 129 DP755350

Location: -31.304202/ 151.223713

Direction: 195.2° clockwise from north



Plate 30

Revised pipeline alignment at Ogunbil Road, Lot 129 DP755350

Location: -31.3025921/ 151.2221899

Direction: 231.33° clockwise from north



Plate 31

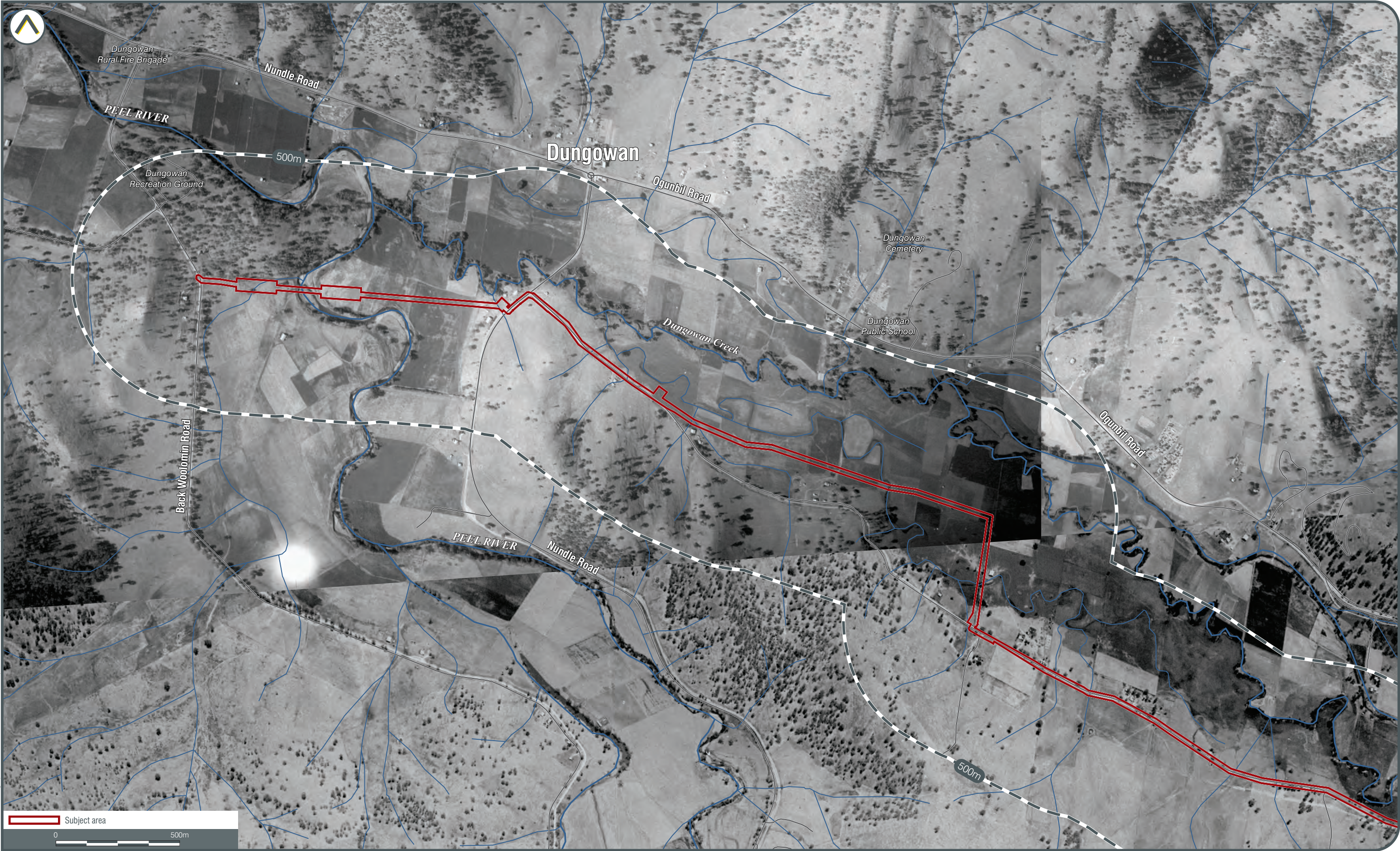
Revised pipeline alignment at Ogunbil Road, Lot 129 DP755350

Location: -31.3058046/ 151.224082

Direction: 216.26° clockwise from north

Annexure C

Historical aerals

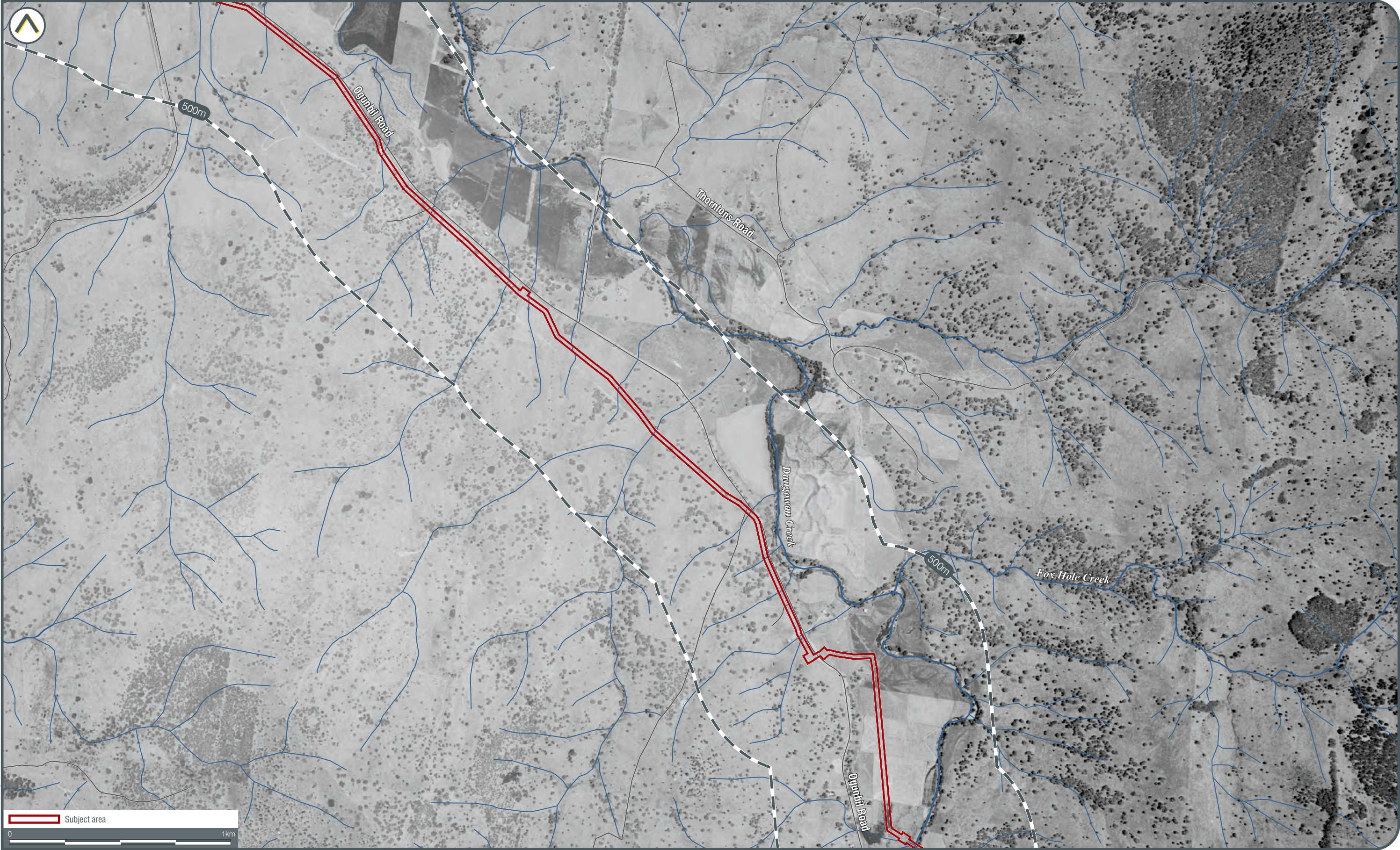


AERIAL PHOTOGRAPH - 1960 (0-5km)



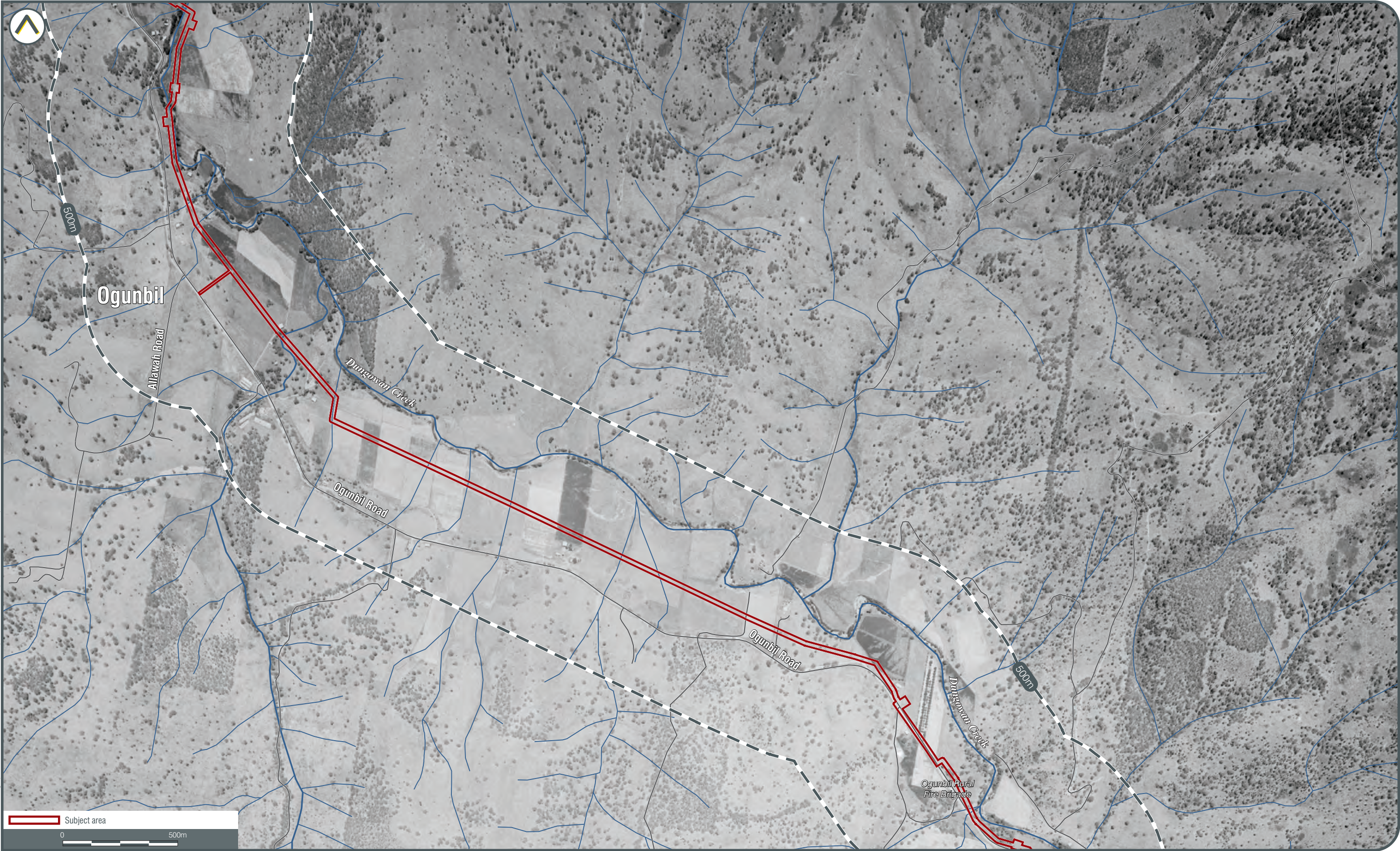
AERIAL PHOTOGRAPH - 1960 (5-10km)



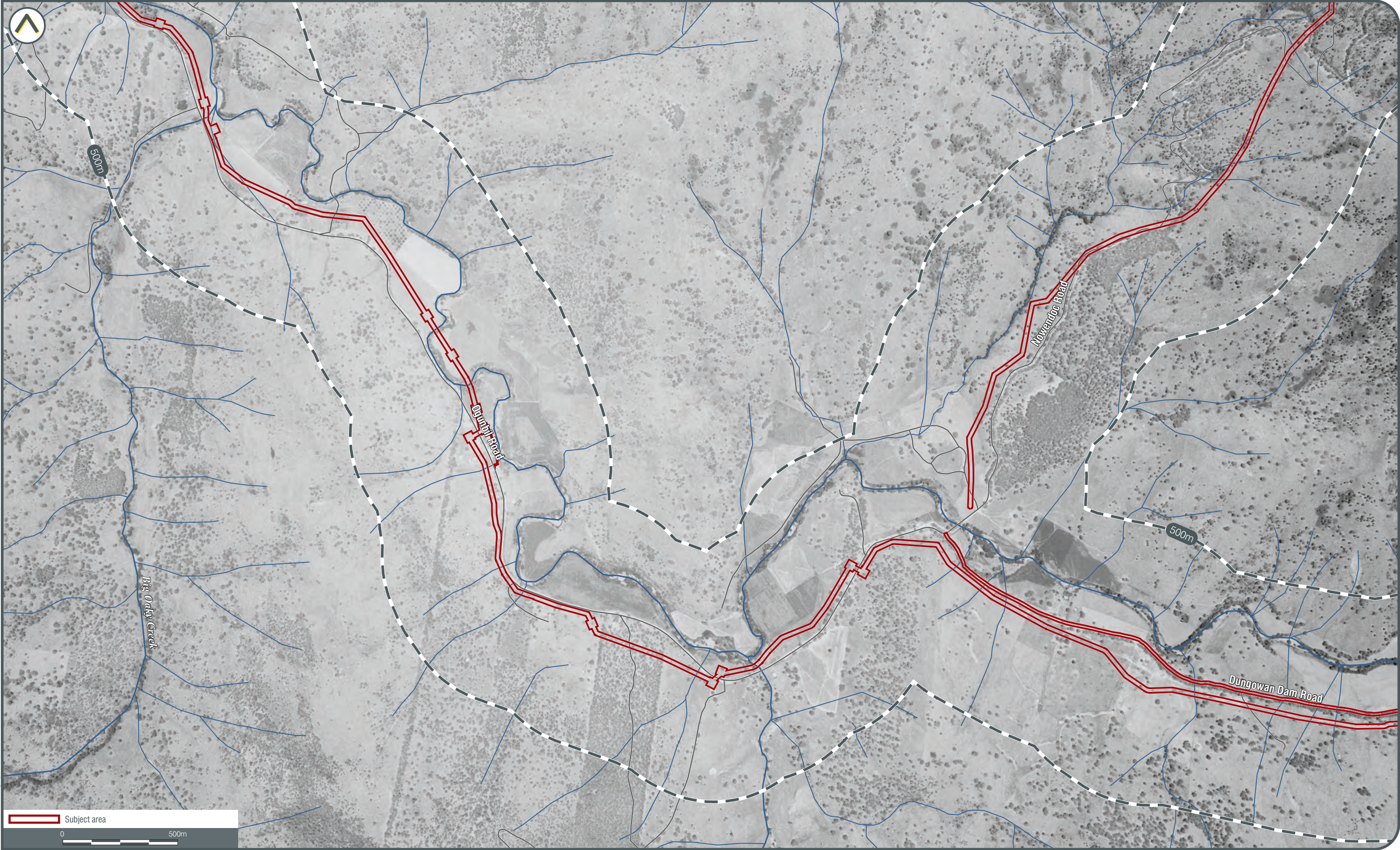


AERIAL PHOTOGRAPH - 1960 (10-15km)





AERIAL PHOTOGRAPH - 1960 (15-20km)

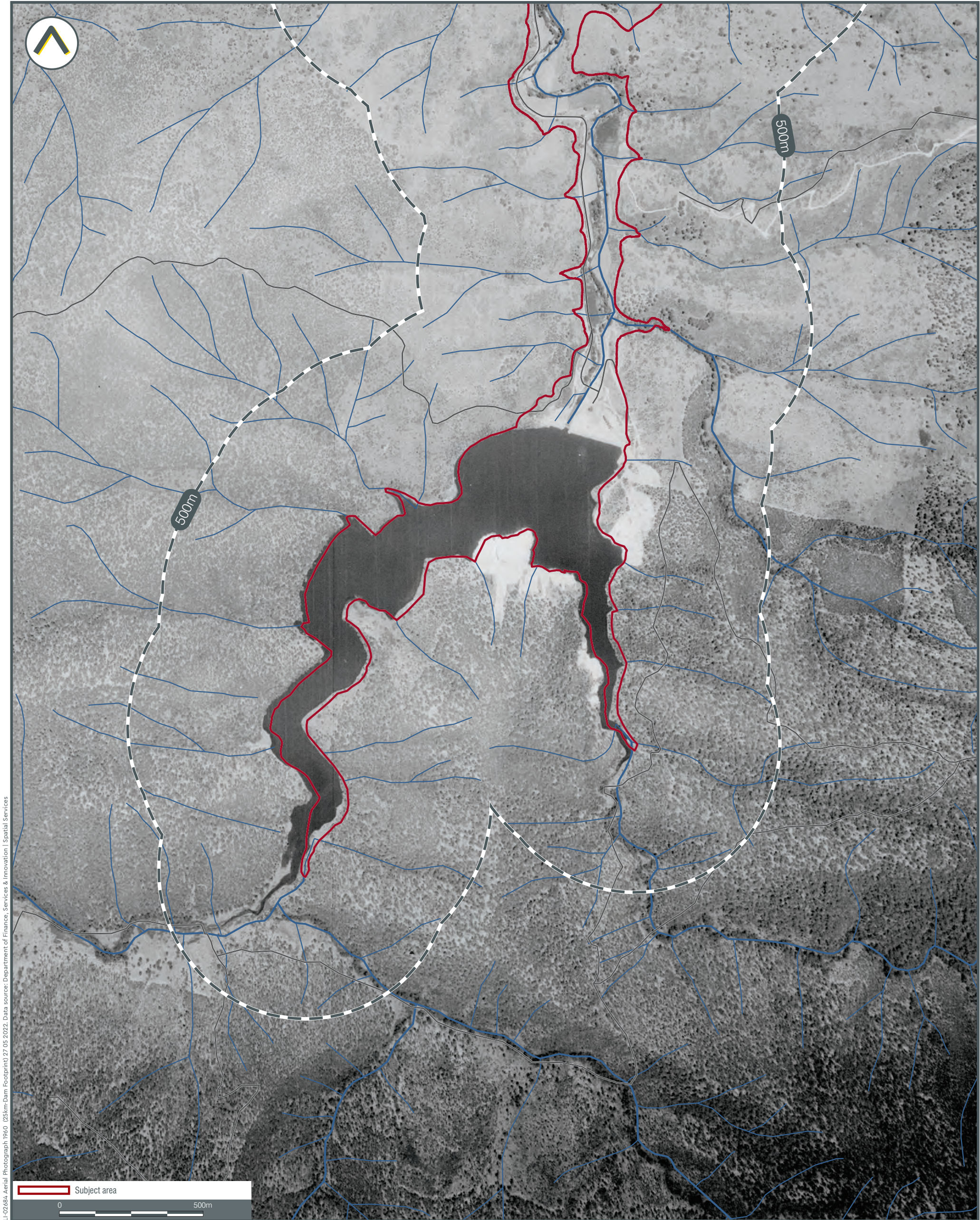


AERIAL PHOTOGRAPH - 1960 (20-25km)



AERIAL PHOTOGRAPH - 1960 (25km-Proposed Dam Footprint)

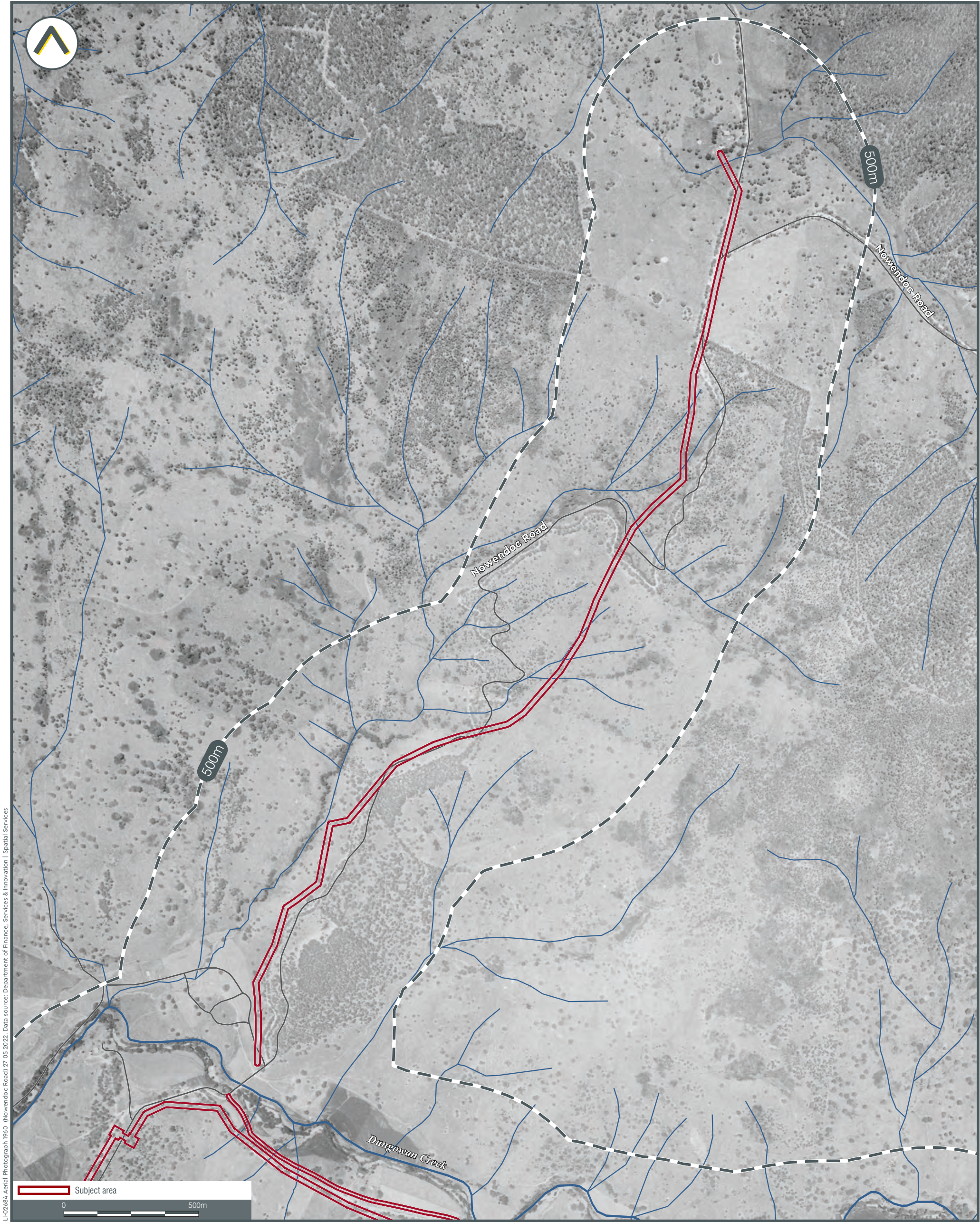
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AERIAL PHOTOGRAPH - 1960 (Dungowan Dam)



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AERIAL PHOTOGRAPH - 1960 (Nowendoc Road)





AERIAL PHOTOGRAPH - 1966 (0-5km)



AERIAL PHOTOGRAPH - 1966 (5-10km)





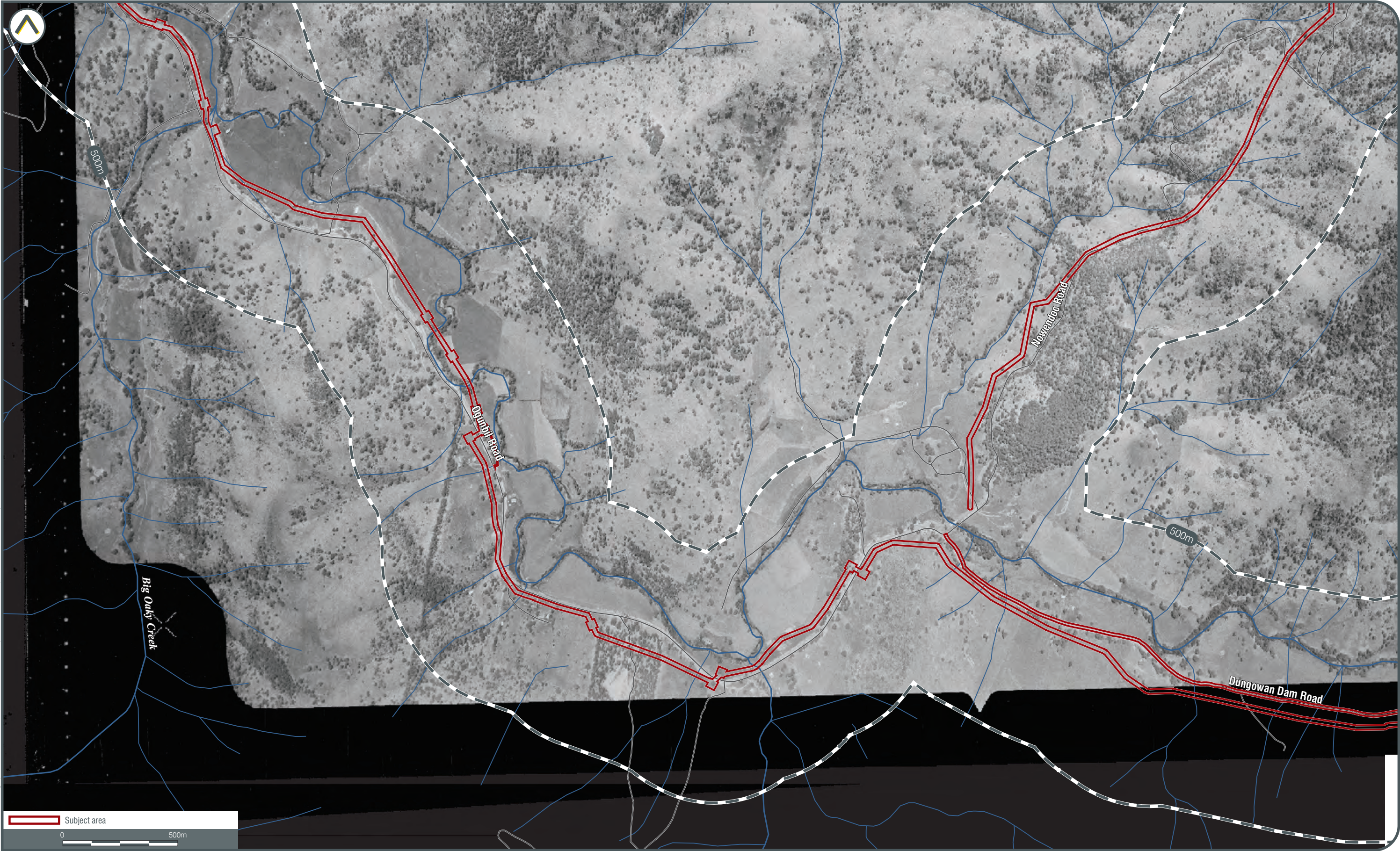
LI-02684 Aerial Photograph 1967 (10-15km) 26.05.2022. Data source: Department of Finance, Services & Innovation | Spatial Services

AERIAL PHOTOGRAPH - 1967 (10-15km)





AERIAL PHOTOGRAPH - 1967 (15-20km)

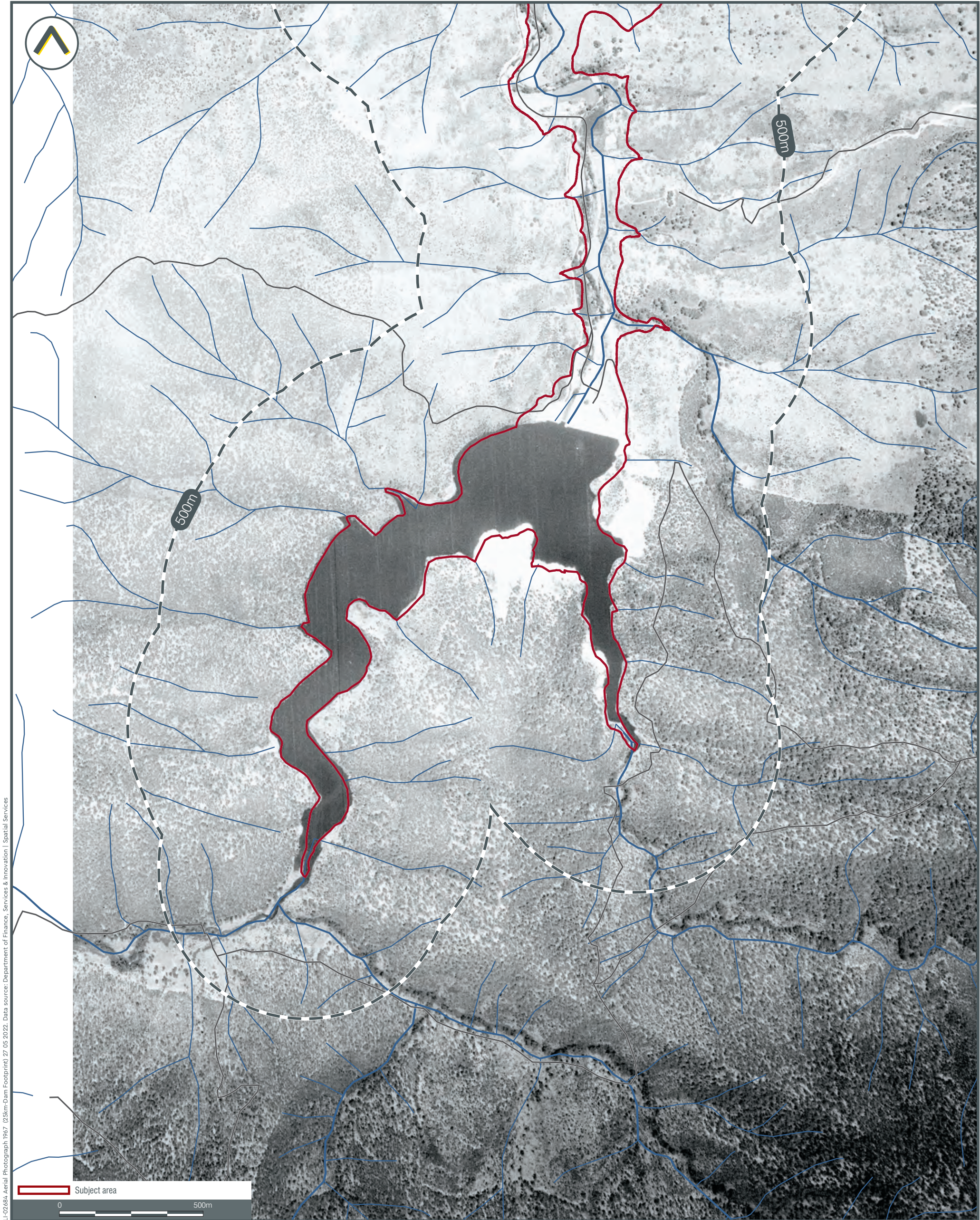


AERIAL PHOTOGRAPH - 1967 (20-25km)



AERIAL PHOTOGRAPH - 1966 (25km-Proposed Dam Footprint)

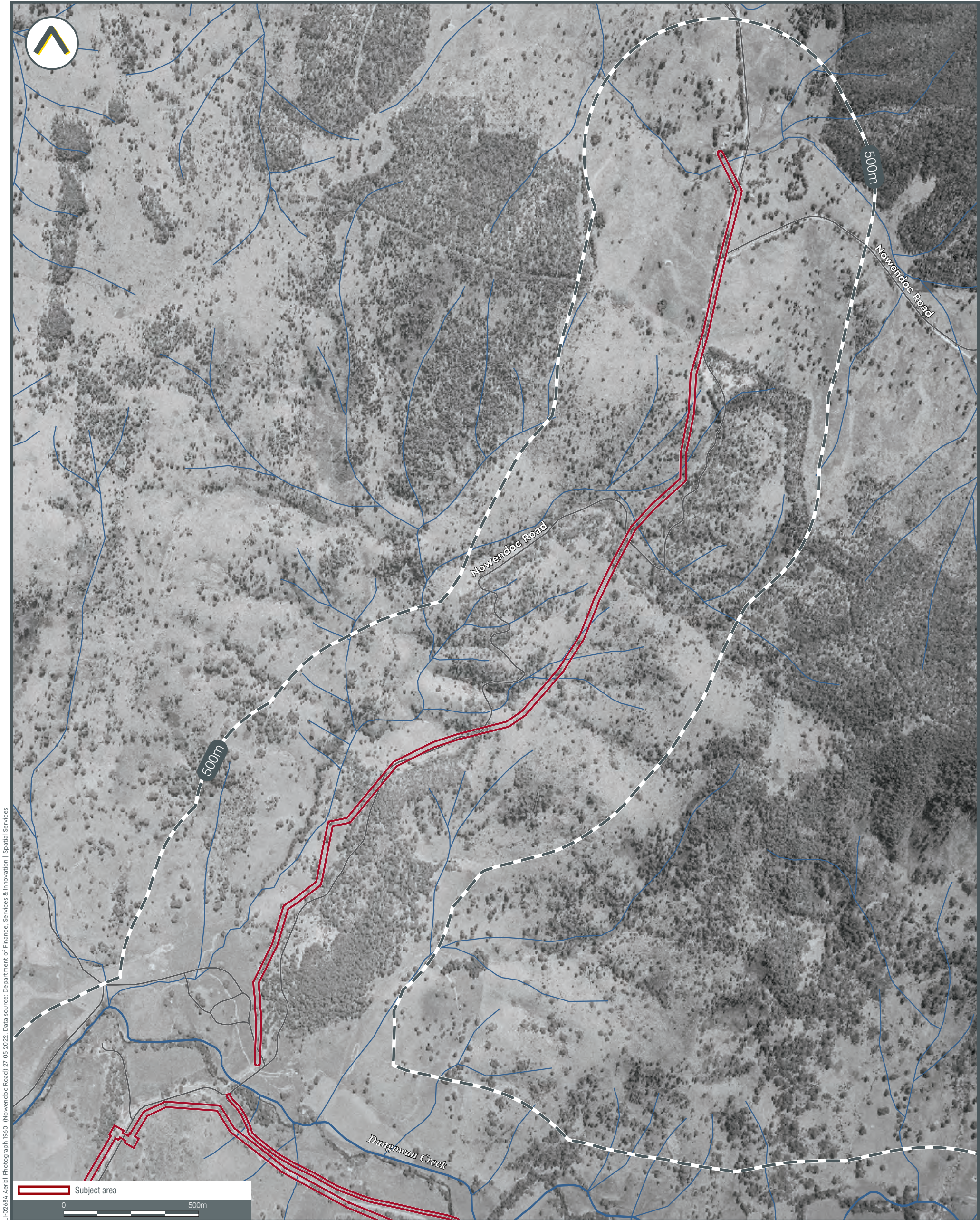
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AERIAL PHOTOGRAPH - 1960 (Nowendoc Road)



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