Transgrid

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HumeLink

Land Use and Property Impact Assessment

EIS Technical Report 5

HillPDA CONSULTING

HUMELINK

EIS Technical Report 5: Land Use and Property Impact Assessment

June 2023

EXECUTIVE SUMMARY

Background

Transgrid proposes to increase the energy network capacity in southern New South Wales (NSW) through the development of around 360 kilometres of new 500 kilovolt (kV) high voltage transmission lines and associated infrastructure between Wagga Wagga, Bannaby and Maragle. This project is collectively referred to as HumeLink. The project would be located across five Local Government Areas (LGAs) including Wagga Wagga City, Snowy Valleys, Cootamundra-Gundagai Regional, Upper Lachlan Shire and Yass Valley.

Construction of the project is targeted to commence in 2024, subject to the required planning and regulatory approvals. Once construction has commenced, the project is estimated to take approximately 2.5 years to build and would become operational by the end of 2026.

Project description

The key components of HumeLink include:

- construction and operation of around 360 kilometres of new double circuit 500 kV transmission lines and associated infrastructure between Wagga Wagga, Bannaby, and Maragle
- construction of a new 500/330 kV substation at Gregadoo (Gugaa 500 kV substation) approximately 11 kilometres south-east of the existing Wagga 330/132 kV substation (Wagga 330 kV substation)
- demolition and rebuild of a section of Line 51 (around two kilometres in length) as a double circuit 330 kV transmission line connecting into the Wagga 330 kV substation
- modification of the existing Wagga 330 kV substation and Bannaby 500/330 kV substation (Bannaby 500 kV substation) to accommodate the new transmission line connections
- connection of transmission lines to the future Maragle 500/330 kV substation (Maragle 500 kV substation, approved under the Snowy 2.0 Transmission Connection Project)
- provision of one optical repeater telecommunications hut and associated connections to existing local electrical infrastructure
- establishment of new and/or upgraded temporary and permanent access tracks
- ancillary work required for construction of the project such as construction compounds, worker accommodation facilities, utility connections and/or relocations, brake and winch sites, and helipad/helicopter support facilities.

Report purpose

The purpose of this report is to assess the potential land use and property impacts from construction and operation of the project to support the environmental assessment of the project in accordance with Division 5.2 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

The land use and property assessment forms part of the Environmental Impact Statement (EIS) for the project. It has been prepared to address some of the Planning Secretary's Environmental Assessment Requirements (SEARs) (SSI 96656827) relating to land use and property including, an assessment of impact of the project on land reserved under the *National Parks and Wildlife Act 1974*, Crown lands including State forests, mineral resources and exploration licenses, rail reserves and pipeline corridors. It provides an assessment of potential impacts of the project on land use and property and outlines proposed management measures.

Methodology

The methodology for the land use and property impact assessment is designed to meet the requirements of the SEARs. The methodology involved the following tasks:

- review and interpretation of project information, consultation outcomes and project SEARs
- consideration of the spatial extent of the project to determine broad assessment parameters
- definition of the land use and property study area
- overview of the legislative and policy context for the project as relevant to land use and property
- field study of key publicly accessible sites along the project footprint
- desktop analysis of data sources, aerial imagery and field observations to describe the existing land use and property environment
- assessment of the probability and consequence of potential land use and property impacts arising from the construction and operation of the project; and assess potential cumulative land use and property impacts associated with the project
- identification of measures to avoid, minimise and mitigate land use and property impacts arising from the project's construction and operation.

Key project terms

The project footprint is used to determine the direct land use and property impacts. The project footprint is the area that is assumed for the purpose of this EIS to be directly affected by the construction and operation of the project. It includes the indicative location of project infrastructure, the area that would be directly disturbed during construction and any easement required during operation.

The project footprint is considered conservative and direct impacts are likely to be less. This assessment is based on the intersection of the project with land uses, properties, and any other features.

In addition to the project footprint, the land use and property study area (study area) is used to contextualise any potential impacts within the wider region. The study area comprises the combined LGAs that the project footprint is located within, including:

- Wagga Wagga City LGA
- Snowy Valleys LGA
- Cootamundra-Gundagai Regional LGA
- Upper Lachlan Shire LGA
- Yass Valley LGA.

Existing environment

The project is located within the Riverina Murray and South East and Tablelands regions of NSW. Whilst the project footprint does not include major urbanised areas, project infrastructure would be relatively close to the regional centres of Wagga Wagga (approximately five kilometres), Tumut (approximately four kilometres) and Yass (approximately five kilometres) as well as smaller settlements such as Gilmore and Dalton. These centres support the surrounding communities, providing major employment opportunities, goods and services, access to government services, entertainment and health care. Major transportation corridors near the project footprint include the Snowy Mountains Highway and Hume Highway.

Property

The study area covers an area of around 2.8 million hectares, of which the project footprint covers around 8,551 hectares. Land tenure within the project footprint is predominantly freehold (7,226 hectares) followed by NSW Government (508 hectares) and Crown Land (508 hectares). The project footprint intersects around 760 lots with an average lot size of approximately 132 hectares.

Land use

Land uses within the project footprint are associated with agriculture and primary production, infrastructure, urban, natural environment, extractive industries and water. The predominant land use is agriculture and primary production, which comprises around 8,267 hectares (97 per cent) of the total project footprint. Of this, grazing land uses comprise around 75 per cent of the project footprint, forestry around 13 per cent and cropping around nine per cent. Non-agriculture and primary production land uses comprise slightly more than three per cent of the total area of the project footprint.

Impact assessment

Land use and property impacts arising from the project are assessed in alignment with the method outlined in Section 4.3.1. The construction and operation of the project would have similar types of property and land use impacts, however in most cases the extent and magnitude of impacts would be greater during construction. This is due to the greater spatial extent and intensity of construction activities compared to operational activities.

Construction

While the construction phase of the project would cover a broader spatial extent, impacts would be temporary and progressive in nature as construction progresses in different sections along the proposed transmission line route, likely with multiple work fronts. Direct property impacts would be due to changes in tenure and ownership, land requirements, impacts to property infrastructure and residence alterations, movement restrictions and potential changes to property values. Whilst some moderate impacts are predicted to arise from construction of the project, with appropriate mitigations in place, impacts would be effectively managed, and are therefore assessed as minor.

Operation

Changes to land uses during the operational phase of the project are generally assessed as negligible or minor, as a substantial amount of the land required for construction would be remediated and/or able to return to its previous use upon operation. Permanent changes to land uses associated with the project would therefore be minor. However, the operation of the project would result in moderate impacts to forestry in addition to tenure and ownership arrangements that may be required for the project, whilst impacts to other land uses would be minor or negligible.

Mitigation

The implementation of various management and mitigation measures could reduce the extent and consequence of impacts during construction and operation. Generally, all impacts could be effectively managed, minimised or avoided.

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ABBREVIATIONS AND DEFINITIONS

Term	Description
ACT	Australian Capital Territory
ALUM	Australian Land Use and Management Classification system
Bannaby 500 kV substation	The existing 500/330 kV substation at Bannaby
CSP	community strategic plan
construction compounds	Main construction compounds proposed for construction of the project. Each main construction compound would accommodate a range of facilities which may include (but not limited to): • laydown areas • site offices • amenities • construction support facilities such as vehicle and equipment storage, maintenance sheds, chemical/fuel stores and stockpile areas • parking.
double-circuit transmission line	A double circuit transmission line carries six conductors (ie two circuits) on a single transmission line structure.
DPE	NSW Department of Planning and Environment (formerly the NSW Department of Planning, Industry and Environment - DPIE)
easement	A legal right attached to a parcel of land that enables the non-exclusive use of the land by a third party other than the owner. For transmission lines, an easement defines the corridor area where the lines are located and that allows access, construction and maintenance work to take place. The easements for the 500 kV transmission lines would typically be 70 metres wide. However, a few locations would require wider easements up to 110 metres wide at transposition locations and up to 130 metres wide where the new transmission line would parallel the relocated section of Line 51. The easement grants a right of access and for construction, maintenance and operation of the transmission line and other operational assets.
EIS	Environmental Impact Statement
ETMHC	Electricity Transmission Ministerial Holding Corporation
future Maragle 500/330 kV substation	The future Maragle 500/330 kV substation that would be built under the approved Snowy 2.0 Transmission Connection Project, which is subject to separate planning approval (reference SS1-9717, EPBC 2018/836)
ha	hectare
ILUA	Indigenous Land Use Agreement
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan
LGA	Local Government Area
LLS	Local Land Services
LSPS	Local Strategic Planning Statement
LUCRA Guide	Land Use Conflict Risk Assessment Guide
NEM	National Electricity Market
NPW Act	NSW National Parks and Wildlife Act 1974
NSW	New South Wales
the project	The CSSI project "HumeLink", which is the subject of this Environmental Impact Statement. The project involves construction and operation of high voltage transmission lines and associated infrastructure between Wagga Wagga, Bannaby and Maragle.
project footprint	The area that has been assumed for the purpose of this EIS to be directly affected by the construction and operation of the project. It includes the indicative location of project infrastructure, the area that would be directly disturbed during construction and any easement required during operation.
proposed Gugaa 500kV substation	The new 500/330 kV substation proposed near Wagga Wagga

Term	Description
SEARs	Planning Secretary's Environmental Assessment Requirements
single circuit transmission lines	A single circuit transmission line has three conductors or wires (ie one circuit) carried on a single transmission line structure.
study area	The broader area that the project is located within, comprises of five Local Government Areas (LGA): • Wagga Wagga City LGA • Snowy Valleys LGA • Cootamundra-Gundagai Regional LGA • Upper Lachlan Shire LGA • Yass Valley LGA.
telecommunications hut	The proposed optical repeater telecommunications hut as part of HumeLink, which is required to boost the signal in the optical fibre ground wire.
transmission line route	The location of the transmission line structures along the middle of the transmission line easement.
Transgrid	The project is proposed to be undertaken by NSW Electricity Networks Operations Pty Ltd (referred to as Transgrid). Transgrid is the operator and manager of the main high voltage transmission network in NSW and the ACT, and is the Authorised Network Operator for the purpose of an electricity transmission or distribution network under the provisions of the *Electricity Network Assets (Authorised Transactions) Act 2015*.
TSR	Travelling stock reserves are parcels of Crown land where the grazing industry can move stock on foot.
Transposition	Transposition is the periodic swapping of positions of the conductors of a transmission line in order to improve transmission reliability.
Wagga 330 kV substation	The existing 330/132 kV substation located in Wagga Wagga.
waterway crossing	A crossing over water established for access.
windbreak	Windbreaks are plantings usually made up of rows of trees or shrubs (or a combination of both) planted to protect adjacent land from soil erosion, or to protect livestock or crops from wind damage and cold temperatures. Windbreaks can also support local biodiversity and provide shade for livestock.

INTRODUCTION

1.0 INTRODUCTION

1.1 Overview

The Australian energy landscape is transitioning to a greater mix of low-emission renewable energy sources, such as wind and solar. To support this transition, meet our future energy demands and connect Australian communities and businesses to these lower cost energy sources, the national electricity grid needs to evolve.

Transgrid proposes to increase the energy network capacity in southern New South Wales (NSW) through the development of around 360 kilometres of new 500 kilovolt (kV) high voltage transmission lines and associated infrastructure between Wagga Wagga, Bannaby and Maragle. This project is collectively referred to as HumeLink. The project would be located across five Local Government Areas (LGAs) including Wagga Wagga City, Snowy Valleys, Cootamundra-Gundagai Regional, Upper Lachlan Shire and Yass Valley. The location of the project is shown in Figure 1-1.

HumeLink would involve construction of a new substation east of Wagga Wagga as well as connection to existing substations at Wagga Wagga and Bannaby and a future substation at Maragle in the Snowy Mountains (referred to as the future Maragle 500 kV substation). The future Maragle 500 kV substation is subject to a separate major project assessment and approval (reference SSI-9717, EPBC 2018/836).

The project would deliver a cheaper, more reliable and more sustainable grid by increasing the amount of renewable energy that can be delivered across the national electricity grid, helping to transition Australia to a low carbon future. It would achieve this by supporting the transfer of energy from existing renewable generation as well as facilitate development of new renewable generation in the Wagga Wagga and Tumut Renewable Energy Zones. The project would provide the required support for the network in southern NSW, allowing for the increase in transfer capacity between new renewable generation sources and the state's demand centres of Sydney, Newcastle and Wollongong. The project would also improve the efficiency and reliability of the current energy transfer in this part of the network.

Furthermore, HumeLink would form a key part of the transmission line infrastructure that supports the transfer of energy within the National Electricity Market (NEM) by connecting with other major interconnectors. The NEM incorporates around 40,000 kilometres of transmission lines across Queensland (QLD), NSW, Australian Capital Territory (ACT), Victoria (VIC), South Australia (SA) and Tasmania (TAS).

Construction of the project is targeted to commence in 2024, subject to the required planning and regulatory approvals. Once construction has commenced, the project is estimated to take approximately 2.5 years to build and would become operational by the end of 2026.

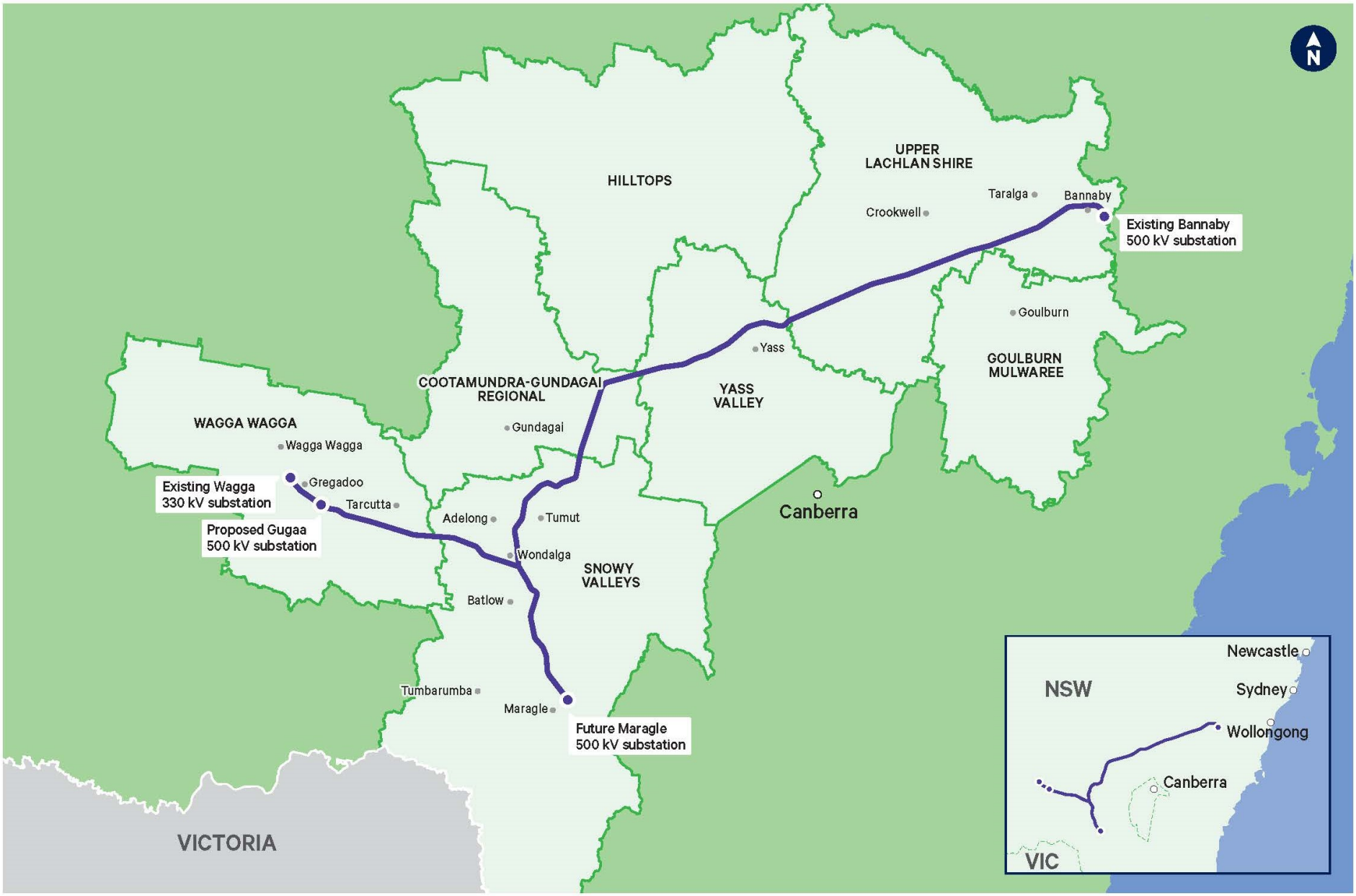
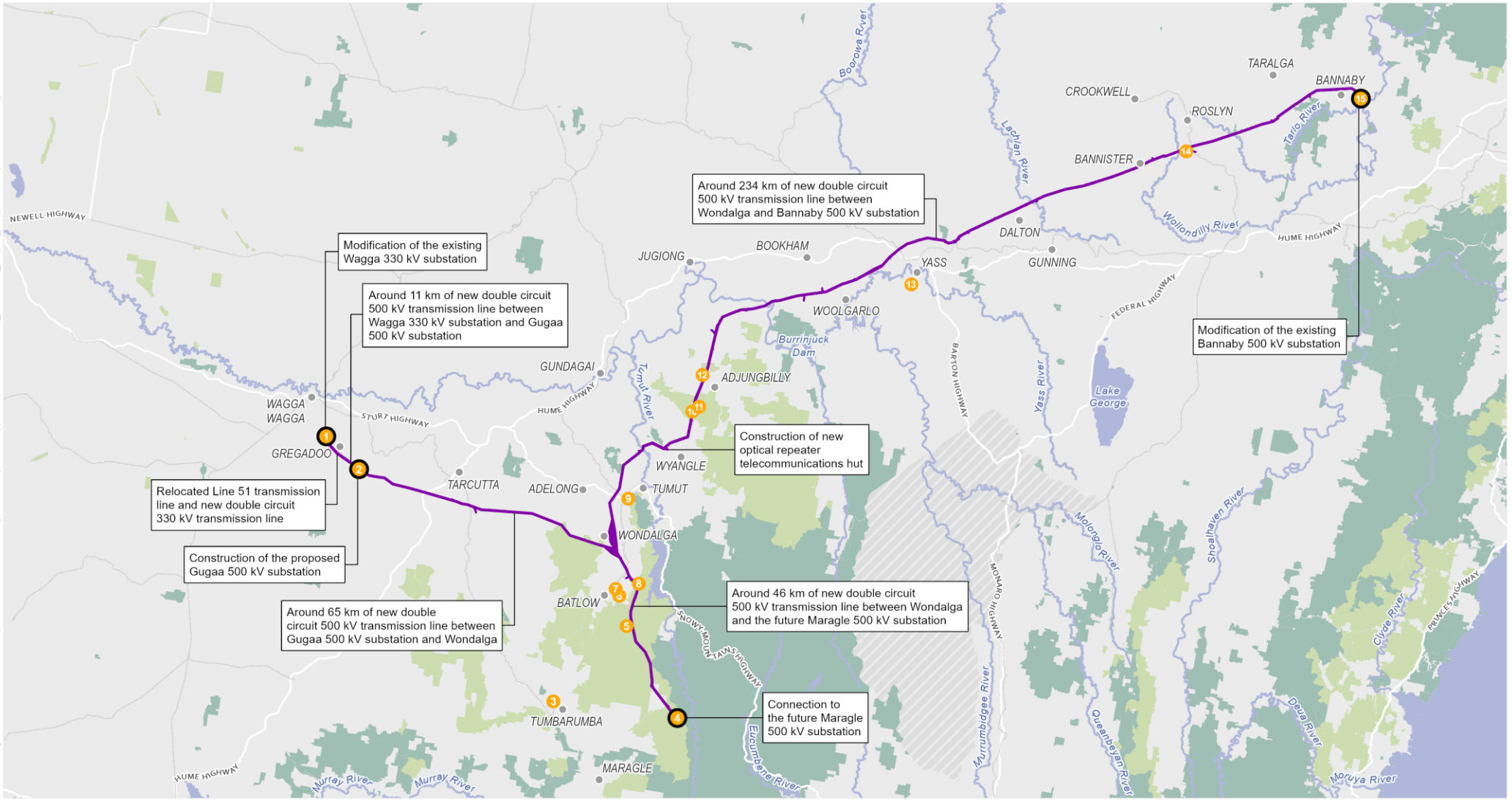


Figure 1-1 Location of the project

1.2 Key components

The project includes the following key components (refer to Figure 1-2):

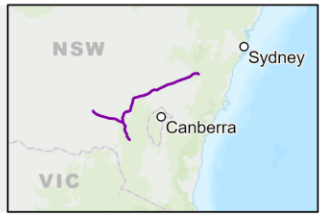
- construction and operation of around 360 kilometres of new double circuit 500 kV transmission lines and associated infrastructure between Wagga Wagga, Bannaby and Maragle
- construction of a new 500/330 kV substation at Gregadoo (Gugaa 500kV substation) approximately 11 kilometres south-east of the existing Wagga 330/132 kV substation (Wagga 330 kV substation)
- demolition and rebuild of a section of Line 51 (around two kilometres in length) as a double circuit 330 kV transmission line connecting into the Wagga 330 kV substation
- modification of the existing Wagga 330 kV substation and Bannaby 500/330 kV substation (Bannaby 500 kV substation) to accommodate the new transmission line connections
- connection of transmission lines to the future Maragle 500/330 kV substation (Maragle 500 kV substation, approved under the Snowy 2.0 Transmission Connection Project (SSI-9717))
- provision of one optical repeater telecommunications hut and associated connections to existing local electrical infrastructure
- establishment of new and/or upgraded temporary and permanent access tracks
- ancillary work required for construction of the project such as construction compounds, worker accommodation facilities, utility connections and/or relocations, brake and winch sites, and helipad/helicopter support facilities.



Project footprint
National park and reserve
State forest
Waterbody
Waterway
Major road
Railway
Substation location

Construction ancillary facilities

1. Wagga 330 kV substation compound (C01)
2. Gregadoo Road compound (C06)
3. Tumbarumba accommodation facility (AC1)
4. Maragle 500 kV substation compound (C05)
5. Snubba Road compound (C16)
6. Bowmans Lane compound (C15)
7. Memorial Avenue compound (C14)
8. Snubba Road compound (C03)
9. Snowy Mountains Highway compound (C02)
10. Honeysuckle Road compound (C07)
11. Red Hill Road compound (C08)
12. Adjungbilly Road compound (C09)
13. Yass substation compound (C10)
14. Woodhouselee Road compound (C11)
15. Bannaby 500 kV substation compound (C12)



Source: *Aurecon, Transgrid, Spatial Services (DCS), ESRI Basemap*

1:925,000
0 20 40 km

Projection: GDA 1994 MGA Zone 55

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HumeLink **Land Use and Property**

FIGURE 1-2: Key components of the project

1.3 Purpose and scope of this report

The purpose of this report is to assess the potential land use and property impacts from construction and operation of the project to support the environmental assessment of the project in accordance with Division 5.2 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

1.4 Secretary's environmental assessment requirements

This assessment forms part of the Environmental Impact Statement (EIS) for the project. It addresses the Planning Secretary's Environmental Assessment Requirements (SEARs) (SSI 96656827) relating to land use and property. It provides an assessment of potential impacts of the project on land use and property and outlines proposed management measures.

Table 1-1 outlines the SEARs relevant to this assessment along with a reference to where these are addressed.

Table 1-1 Property and land use related SEARs

Secretary's requirement	Where addressed
An assessment of impact of the project on agricultural land, land reserved under the *National Parks and Wildlife Act 1974*, Crown lands including State forests, travelling stock reserves, mineral resources and exploration licenses, rail reserves and pipeline corridors	• Refer to Sections 5.2.2, 5.3.1.1, 6.1.2, 6.2.1.1, 7.1.2, and 7.2.1.1 for the overview and assessment of potential impacts to agricultural land and travelling stock reserves. *Technical Report 4 – Agricultural Impact Assessment* provides further detail on the potential impacts on agricultural land and travelling stock reserves in addition to agricultural productivity. • Refer to Sections 5.3.4, 6.2.4 and 7.2.4 for the overview and assessment of potential impacts to land reserved under the *National Parks and Wildlife Act 1974*. • Refer to Sections 5.2, 5.3.1.2, 6.1, 6.2.1.2, 7.1 and 7.2.1.2 for the overview and assessment of potential impacts on Crown land including State forests. • Refer to Sections 5.3.5, 6.2.5 and 7.2.5 for the overview and assessment of potential impacts on mineral resources and exploration licences. • Refer to Sections 5.3.2, 6.2.2 and 7.2.3.3 for the overview and assessment of potential impacts on rail reserves and pipeline corridors.

1.5 Structure of this report

The report is structured as follows:

- Chapter 1: Introduction of the project, background, overview of the project and relevant SEARs
- Chapter 2: Description of the construction and operation of the project
- Chapter 3: Overview of the relevant statutory and policy conditions
- Chapter 4: Assessment methodology
- Chapter 5: Description of the existing environment
- Chapter 6: Assessment of impacts relating to the construction of the project
- Chapter 7: Assessment of impacts relating to the operation of the project
- Chapter 8: Assessment of cumulative impacts relating to relevant projects
- Chapter 9: Proposed methods of managing impacts
- Chapter 10: Conclusions
- Chapter 11: References.

1.6 Key project terms

1.6.1 Project footprint

The project footprint has been assumed for the purpose of this EIS to be directly affected by the construction and operation of the project. It includes the indicative location of project infrastructure, the area that would be directly disturbed during construction and any easement required during operation.

1.6.2 Land use and property study area

The land use and property study area (study area) comprises the five LGAs that the project footprint is located in Figure 4-1 which includes Wagga Wagga City LGA, Snowy Valleys LGA, Cootamundra-Gundagai Regional LGA, Upper Lachlan Shire LGA and Yass Valley LGA.

PROJECT DESCRIPTION

2.0 PROJECT DESCRIPTION

The project description in this chapter is based on a concept design and indicative construction methodology for the project. The design and construction methodology would continue to be refined and confirmed during detailed design and construction planning by the construction contractors. Further details on the project are provided in Chapters 3 and 4 of the EIS.

2.1 Summary of key components of the project

Key components of the project are summarised in Table 2-1.

Table 2-1 Key components of the project

Component	Description
Transmission lines and supporting infrastructure	
Transmission lines and structures	The project includes the construction of 500 kV transmission line sections between: • Wagga 330 kV substation and the proposed Gugaa 500 kV substation (approximately 11 km) • Gugaa 500 kV substation and Wondalga (approximately 65 km) • Wondalga and Maragle 500 kV substation (approximately 46 km) • Wondalga and Bannaby 500 kV substation (approximately 234 km). The transmission line section between the Wagga 330 kV substation and proposed Gugaa 500 kV substation would operate at 330 kV under HumeLink. The project also includes the rebuild of approximately 2 km of Line 51 as a new 330 kV transmission line between the Wagga 330 kV substation and around Ivydale Road, Gregadoo. This would be adjacent to the new transmission line between the existing Wagga 330 kV and proposed Gugaa 500 kV substations. The 500 kV transmission lines would be supported on a series of free-standing steel lattice structures that would range between around 50 m up to a maximum of 76 m in height and generally spaced between 300 to 600 m apart. The typical transmission line structure height would be around 60 m. Earth wire and communications cables would be co-located on the transmission line structures. The 330 kV structures for the rebuild of Line 51 would range between 24 m and 50 m in height and have a typical height of 40 m. Indicative configurations of transmission line structures that may be used as part of the project are shown in Figure 2-1. The type and arrangement of the structures would be refined during detailed design. The footings of each structure would require an area of up to 300 m^2 to 450 m^2, depending on ground conditions and the proposed structure type. Additional disturbance at each structure site may be required to facilitate structure assembly and stringing.
Transmission line easements	The easements for the 500 kV transmission lines are typically 70 m wide. However, a number of locations may require wider easements of up to 110 m wide at transposition locations[1] and up to 130 m wide where the new transmission line would parallel the relocated section of Line 51. The easement provides a right of access to construct, maintain and operate the transmission line and other operational assets. The easement also generally identifies the zone of initial vegetation clearance and ongoing vegetation management to ensure safe electrical clearances during the operation of the lines. Vegetation management beyond the easement may also occur where nearby trees have the potential to fall and breach safety clearances.

[1] Transposition is the periodic swapping of positions of the conductors of a transmission line in order to improve transmission reliability.

Component	Description
Telecommunications hut	Telecommunications huts, which contain optical repeaters, would be required to boost the signal in the optical fibre ground wire (OPGW). One telecommunications hut would be required for the project. The telecommunications hut would be located adjacent to existing transmission line structures. Cables would be installed between the transmission line structure and the local power supply. The telecommunications hut would be surrounded by a security fence. A new easement would be established for the telecommunications hut power connection. The project also involves a telecommunications connection of OPGW between two proposed transmission line structures and the future Rye Park Wind Farm substation (SSD-6693). This removes the need for an additional telecommunications hut in this area of the project.
Substation activities	
Construction of the proposed Gugaa 500 kV substation	A new 500/330 kV substation would be constructed at Gregadoo, about 11 km south-east of the Wagga 330 kV substation. The substation would include seven new 500/330 kV transformers and three 500 kV reactors. The proposed Gugaa 500 kV substation is expected to occupy an area of approximately 22 hectares.
Modification of the existing Bannaby 500 kV substation	The existing Bannaby 500 kV substation on Hanworth Road, Bannaby would be expanded to accommodate connections for new 500 kV transmission line circuits. The modification would include changes to the busbars, line bays, bench and associated earthworks, steelwork, drainage, external fence, internal/external substation roads, secondary containment dams, sediment containment dams, cabling, and secondary systems. All of the works would be restricted to the existing substation property.
Modification of the existing Wagga 330 kV substation	The existing Wagga 330 kV substation on Ashfords Road, Gregadoo would be reconfigured to accommodate new bays for two new 500 kV transmission line circuits within the existing substation property. This would include modifications to the busbars, line bays, existing line connections, bench and associated earthworks, relocation of existing high voltage equipment, drainage, external fence, internal substation roads, steelwork, cabling, and secondary systems.
Connection to the future Maragle 500 kV substation	The project would connect to the future Maragle 500 kV substation approved under the Snowy 2.0 Transmission Connection Project (SS1-9717). Construction of the Maragle substation is proposed to be undertaken between 2023 and 2026. Further detail on the Snowy 2.0 Transmission Connection project is available at the Department of Planning and Environment's Major Projects website: www.planningportal.nsw.gov.au/major-projects/project/10591.
Ancillary facilities	
Access tracks	Access to the transmission line structures and the substations would be required during construction and operation. Wherever possible, existing roads, tracks and other existing disturbed areas would be used to minimise vegetation clearing or disturbance. Upgrades to existing access tracks may be required. In areas where there are no existing roads or tracks, suitable access would be constructed. This may include waterway crossings.
Construction compounds	Construction compounds would be required during construction to support staging and equipment laydown, concrete batching, temporary storage of materials, plant and equipment and worker parking required to construct the various elements of the project. Fourteen potential construction compound locations have been identified. The proposed use of the construction compounds and their proposed boundaries/layout would be refined as the project design develops in consultation with relevant stakeholders and the construction contractors.
Worker accommodation facility	Existing accommodation facilities within towns adjacent to the project would provide temporary accommodation for the majority of the construction workers. However, a potential shortage in accommodation has been identified close to the project footprint. A potential option to provide additional temporary worker accommodation during the construction period is the establishment of a temporary worker accommodation facility at the corner of Courabyra Road and Alfred Street, Tumbarumba to accommodate about 200 construction workers. The worker accommodation facility would consist of demountable cabins and would be connected to existing utilities. All required amenities for the accommodation facility would be provided including services and worker parking for light and heavy vehicles. However, the ultimate delivery of the project may include multiple temporary worker accommodation facilities in various forms, which would be outlined in the Worker Accommodation Strategy for the project. The strategy will be developed in consultation with

Component	Description
	councils, and other relevant stakeholders. Any new or changed worker accommodation facility would be subject to additional environmental assessment, as required.
Helipad/helicopter facilities	To facilitate construction of the project, helicopters may be used to deliver materials/equipment and transfer personnel to construction areas particularly within high alpine regions. To enable helicopters to operate safely and allow easy access to the site, a helicopter landing pad would be required. The helipad is expected to occupy an area of around 30 m by 30 m and would be remediated after construction. These areas would typically be located on existing disturbed land not subject to inundation and a reasonable distance from waterways, sensitive receivers and drainage lines. Eight locations have been identified and assessed as potential helipad locations. The exact locations to be used would be confirmed during detailed design by the construction contractors. In addition to this, the existing facilities at the Wagga Wagga Airport and Tumut Airport may be used.
Utilities	The project would require utility connections, adjustments and protection. Such works include interfaces with other transmission lines and connections to existing services for temporary facilities. Potential impacts to existing services and utilities would be confirmed during detailed design and any proposed relocation and/or protection works would be determined in consultation with the relevant asset owners.

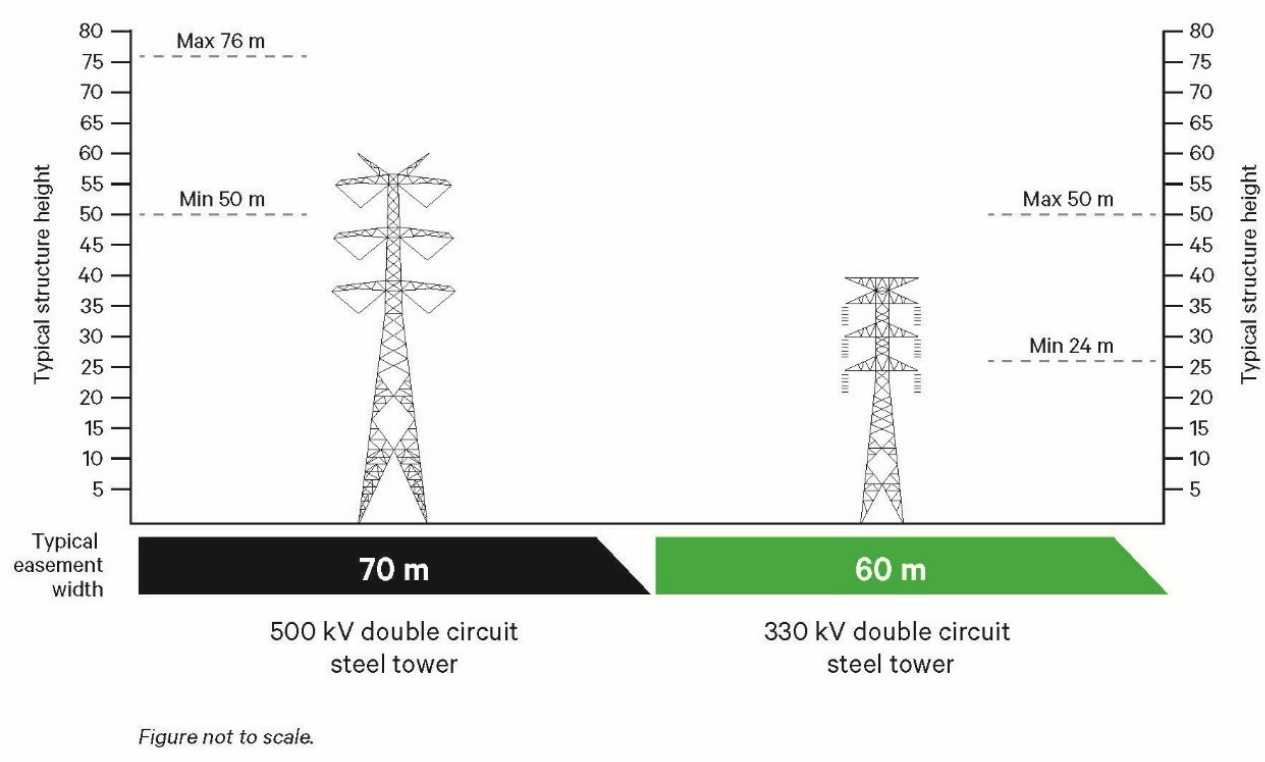


Figure 2-1 Indicative transmission line structures

2.2 Construction of the project

2.2.1 Construction activities

Key construction activities would generally include (but are not limited to):

- site establishment work, such as:
  - clearing of vegetation and topsoil
  - establishment of construction compounds and helipad/helicopter facilities
  - utility relocations and/or adjustments

- construction of new access tracks and waterway crossings and/or upgrade of existing access tracks to transmission line structures
- road improvement work
- establishment of environmental management measures and security fencing
- construction of temporary worker accommodation

- construction of the transmission lines, such as:
  - earthwork and establishment of construction benches and brake and winch sites for each transmission line structure
  - construction of footings and foundation work for the new transmission line structures including boring and/or excavation, steel fabrication work and concrete pours
  - erection of the new transmission line structures
  - stringing of conductors, overhead earth wires and OPGW
  - installation of associated transmission line structure fittings inclusive of all earthing below ground level
- relocation of a section of Line 51, such as:
  - demolition of the existing section of Line 51
  - erection of new transmission line structures for the rebuild of Line 51 in a new location
  - stringing of conductors, overhead earth wires and OPGW
  - installation of associated transmission line structure fittings inclusive of all earthing below ground level
- construction of the proposed Gugaa 500 kV substation, such as:
  - bulk earthwork to form the substation bench, access roads, drainage and oil containment structures
  - installation of concrete foundations, bund walls, fire walls, noise walls and kerbs including excavation
  - installation of reinforced concrete and piled foundations for the electrical equipment and associated steel support structures
  - installation of electrical conduits, electrical trenches, site stormwater drainage, oil containment work and associated concrete pits, pipes and tanks including excavation
  - installation of new ancillary and equipment control buildings
  - erection of galvanised steel structures to support electrical equipment
  - installation of electrical equipment on foundations and/or steel support structures
  - installation of conductors, cabling, wiring, electrical panels and electrical equipment
  - erection of the substation site boundary security fencing, including site access gates
  - connection of the proposed transmission lines to the substation
- modification of the existing Bannaby 500 kV substation to enable the proposed connection and operation of the new transmission lines such as:
  - bulk earthwork to form the extended substation bench, new access road, modified stormwater drainage, modified oil containment and modified sediment control structures
  - installation of concrete foundations, retaining walls, bund walls, fire walls and kerbs including excavation
  - installation of reinforced concrete and piled foundations for the electrical equipment and associated steel support structures

- erection of galvanised steel structures to support electrical equipment
- installation of electrical equipment on foundations and/or steel support structures
- installation of electrical conduits, electrical trenches, site stormwater drainage, oil containment work and associated concrete pits, pipes and tanks including excavation
- installation of conductors, cabling, wiring, electrical panels and electrical equipment
- installation of fencing, lighting and other security features
- demolish redundant fencing including footings and kerbs
- testing and commissioning
- connection of the proposed transmission lines to the substation.

- modification of the existing Wagga 330 kV substation to enable the proposed connection and operation of the new transmission lines such as:
  - demolition and removal of redundant electrical equipment, fencing and cabling
  - bulk earthwork to form the extended substation bench and modified drainage structures
  - installation of concrete foundations and kerbs including excavation
  - installation of reinforced concrete and piled foundations for the electrical equipment and associated steel support structures
  - erection of galvanised steel structures to support electrical equipment
  - installation of electrical equipment on foundations and/or steel support structures
  - installation of electrical conduits, electrical trenches, and modified site stormwater drainage including excavation
  - installation of conductors, cabling, wiring, electrical panels and electrical equipment
  - installation of fencing, lighting and other security features
  - testing and commissioning
  - connection of the proposed transmission lines to the substation.
- connection of the proposed transmission lines to the future Maragle 500 kV substation including:
  - stringing conductors between transmission line structures and the future Maragle 500 kV substation gantry (including overhead earth wire (OHEW) and OPGW)
  - installing droppers from the future substation gantry to the switchgear
- construction of the telecommunications hut, such as:
  - bulk earthwork to form the pad for the hut
  - excavation and preparation for concrete foundations
  - installation of reinforced concrete and piled foundations
  - excavation and installation of electrical equipment conduits, trenches and general site drainage work
  - installation of the building, site wiring and electrical equipment
  - installation of security fencing and site access gates
- installation of buried cabling from the 500 kV transmission line structures to Rye Park Wind Farm substation
- commissioning of new electrical infrastructure
- demobilisation and rehabilitation of areas disturbed by construction activities.

A number of activities are expected to commence in accordance with the project conditions of approval before the key construction activities outlined above. These activities are considered pre-construction minor work and would comprise low impact activities that would begin after planning approval but prior to approval of the Construction Environmental Management Plan.

2.2.2 Construction program

Construction of the project is targeted to commence in 2024 and is estimated to take about 2.5 years to complete. The project is expected to be fully operational by the end of 2026 (refer to Figure 2-2).

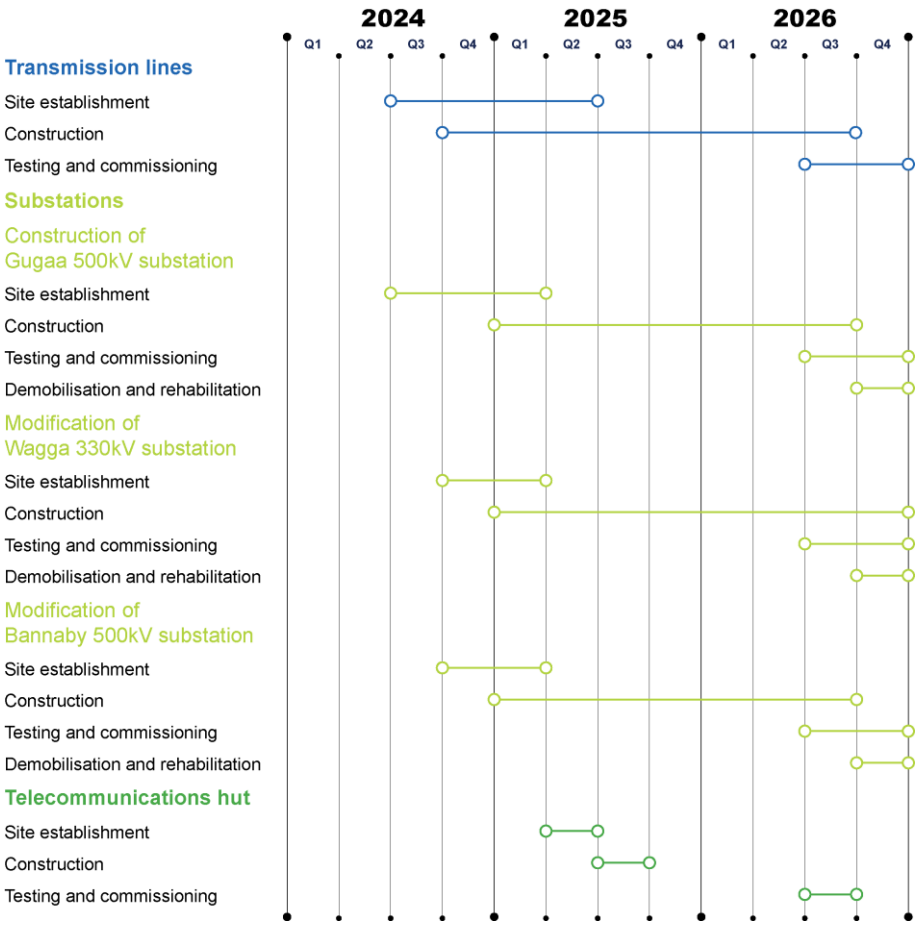


Figure 2-2 HumeLink indicative construction program

Indicative duration of construction activities

Construction at each transmission line structure would be intermittent and construction activities would not occur for the full duration at any one location. Durations of any particular construction activity, and inactive/respite periods, may vary for a number of reasons including (but not limited to):

- multiple work fronts
- resource and engineering constraints
- work sequencing and location.

Figure 2-3 presents an indicative duration of construction activities associated with an individual transmission line structure.

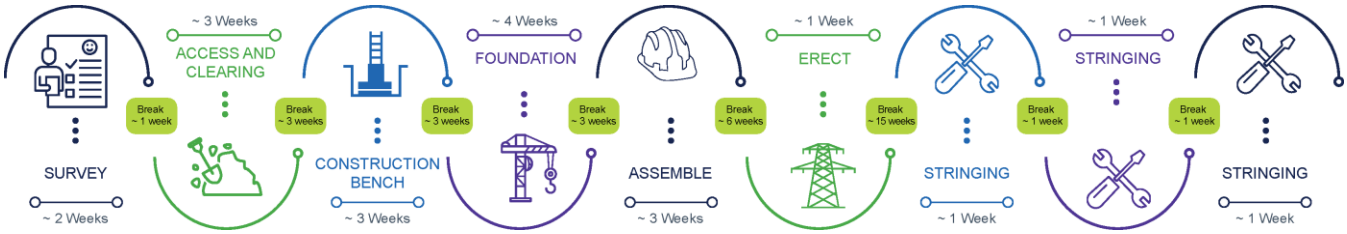


Figure 2-3 Indicative duration and sequence of construction activities for transmission line structures

Construction of the proposed Gugaa 500 kV substation could take up to 2.5 years.

2.2.3 Construction hours

It is expected that construction activities would largely be undertaken during standard construction hours. However, there would be times when working outside of standard construction hours would be required (as defined by the *Interim Construction Noise Guideline* (DECC, 2009)), subject to approval. As the details of construction methodology and project needs are developed, these hours will be refined for certain activities.

Where extended hours are proposed for activities in proximity to sensitive receivers, additional measures would be implemented and the work would be managed through an out-of-hours work protocol.

A series of work outside the standard construction hours is anticipated to include (but is not limited to) the following:

- transmission line construction at crossings of a main road or railway. These locations are expected to have restricted construction hours requiring some night work for activities such as conductor stringing over the crossing(s)
- work where a road occupancy licence (or similar) is required
- transmission line cutover and commissioning
- the delivery of equipment or materials outside standard hours requested by police or other authorities for safety reasons (such as the delivery of transformer units)
- limited substation assembly work (eg oil filling of the transformers)
- connection of the new assets to existing assets under outage conditions (eg modification and/or connection work at Bannaby 500 kV substation, Wagga 330 kV substation and Maragle 500 kV substation), which is likely to require longer working hours
- emergency work to avoid the loss of lives and/or property and/or to prevent environmental harm
- work timed to correlate with system planning outages
- situations where agreement is reached with affected sensitive receivers.

2.2.4 Construction plant and equipment

An indicative list of construction plant and equipment likely to be required during construction is provided below.

- air compressors
- backhoes
- bobcat
- bulldozers
- concrete agitator
- concrete pump
- cranes (various sizes up to 400 tonnes)
- crawler crane with grab attachments
- drill and blast units and associated support plant/equipment
- drones
- dumper trucks
- elevated work platform
- excavators (various sizes)
- flatbed Hiab truck
- fuel trucks
- generators
- graders
- helicopter and associated support plant/equipment
- mulchers
- piling rig

- pneumatic jackhammers
- rigid tippers
- rollers (10-15 and 12-15 tonne)
- semi-trailers
- tilt tray trucks
- trenchers
- transport trucks
- watercarts
- winches.

2.2.5 Construction traffic

Construction vehicle movements would comprise vehicles transporting equipment, waste, materials and spoil, as well as workers' vehicles. A larger number of heavy vehicles would be required during the main civil construction work associated with the substations. Non-standard or oversized loads would also be required for the substation work (eg for transformer transport) and transportation of transmission line structure materials and conductors.

The haulage (transit) routes for project related vehicle trips would use much of the surrounding road network between Wagga Wagga, Tumbarumba, Yass, and Bannaby, including the highways (Hume Highway (M31), Sturt Highway (A20), and Snowy Mountain Highway (B72), and arterial roads.

2.2.6 Construction workers

The construction workers would vary depending on the stage of construction and associated activities. During peak construction activities, the project could employ up to 1,200 construction workers across multiple work fronts.

2.3 Pre-commissioning and commissioning phases

Prior to energisation of the infrastructure, a series of pre-commissioning activities would be conducted. This would include testing the new transmission lines and substation earthing, primary and secondary equipment.

2.4 Operation phase

The design life of the project is 50 years, which can be extended to more than 70 years for some assets.

The substations and transmission lines would be inspected by field staff and contractors on a regular basis, with other operational activities occurring in the event of an emergency (as required).

Likely maintenance activities would include:

- regular inspection (ground and aerial) and maintenance of electrical equipment
- general building, asset protection zone and access road/track
- vegetation clearing/trimming within the easement
- fire detection system inspection and maintenance
- stormwater drainage systems maintenance.

It is expected that these activities would only require light vehicles and/or small to medium plant (depending on the work required).

LEGISLATIVE AND POLICY CONTEXT

3.0 LEGISLATIVE AND POLICY CONTEXT

3.1 Legislation

3.1.1 Native Title Act 1993

The *Native Title Act 1993* (Cwth) recognises the rights and interests of Aboriginal and Torres Strait Islander people in land and waters. It provides recognition and protection of native title and establishes ways in which future dealings affecting native title may proceed. It provides standards for dealing with native title and mechanisms for determining claims to native title. Native title is not able to be extinguished and applications can be made for the determination of native title. At the time of drafting, no land within the study area or project footprint (defined in Section 1.6.1) was found to be the subject of an application or determination made under the *Native Title Act 1993*.

3.1.1.1 Gundungurra Indigenous Land Use Agreement

The Gundungurra Indigenous Land Use Agreement 2014 (ILUA) is an agreement between the Gundungarra people, the Gundungurra Tribal Council Aboriginal Corporation, Gundungurra Aboriginal Heritage Association and the NSW Government. The ILUA covers an area of 694,200 hectares (150,472 hectares of which are within the study area) including 20 parks and reserves. The ILUA does not recognise native title over these lands with the Gundungurra people agreeing to withdraw their native title claim on registration of the agreement. The ILUA provides the Gundungurra People an opportunity to be consulted with respect to management of national parks, state conservation areas and Forestry Corporation of NSW lands. Approximately 1,163 hectares of the project footprint falls within the ILUA area. Tarlo River National Park and Back Arm Nature Reserve are located within the ILUA area and are (in part) located immediately adjacent to the project footprint (refer to Section 5.3.4).

3.1.1.2 Tumut Brungle Indigenous Land Use Agreement

The Tumut Brungle Indigenous Land Use Agreement (1999) is a legally binding agreement between Wiradjuri and Walgalu people and the Adelong Consolidated Gold Mine NL. The NSW State government is not a signatory. The agreement covers an area of approximately 8500 sq km. The agreement expires upon expiration or earlier termination of the last mining tenement to be granted to ACG in relation to the Deed Area or 20 years from the 26/08/1998, whichever is the later. The project traverses this agreement area.

3.1.2 Aboriginal Land Rights Act 1983

The *Aboriginal Land Rights Act 1983* (NSW) provides for land rights for Aboriginal people in NSW. The Act provides for the creation of Aboriginal Land Councils, and for land to be vested in those Councils. The study area (defined in Section 1.6.2) was found to overlap with the land of 13 Local Aboriginal Land Councils (LALCs). The following five LALCs intersect the project footprint:

- Brungle/Tumut LALC
- Wagonga LALC
- Pejar LALC
- Wagga Wagga LALC
- Onerwal LALC.

3.1.3 Mining Act 1992

The *Mining Act 1992* (NSW) provides the legal and regulatory framework for the exploration and development of NSW's mineral resources. It aims to facilitate this development whilst fostering social and economic benefits, enabling site rehabilitation and otherwise minimising environmental impacts, and providing a framework for landholder compensation. The *Mining Act 1992* provides the assessment framework and consent authority for mining exploration licences and mining leases in NSW.

Mining leases and mining exploration licenses within the study area and project footprint (defined in Section 1.6) are outlined in Section 5.3.5.

3.1.4 Local Land Services Act 2013

The *Local Land Services Act 2013* (NSW) establishes Local Land Services (LLS), a NSW Government corporation responsible for issues related to agriculture, biosecurity, and natural resource management in NSW. It aims to deliver advisory services and programs related to the aforementioned matters, as well as deliver these services in accordance with NSW's social, economic and environmental interests. LLS is also intended to disseminate scientific knowledge with regard to land management, as well as facilitating collaboration across communities, government, and industries. LLS also provides funding for biodiversity conservation.

In addition to the above, the *Local Land Services Act 2013* provides the legislative framework for the management of travelling stock reserves (TSRs), as discussed in Section 6.1.2, Section 7.1.2 and Section 5.2.2.

3.1.5 Crown Land Management Act 2016

Crown land is land that is owned and managed by the NSW Government, including a wide range of different land types and uses. The *Crown Land Management Act 2016* (NSW) provides management principles for Crown land in NSW, as well as clarity around ownership and use. It aims to manage Crown land for the benefit of the people of NSW, including through providing community engagement requirement triggers for decisions about Crown land. The *Crown Land Management Act 2016* also facilitates the use of Crown land by the Aboriginal people of NSW for cultural purposes. As identified in Section 5.2, the project footprint intersects with a number of Crown land parcels requiring the Act to be considered.

3.1.6 Forestry Act 2012

The forestry industry in NSW operates under the legal framework of the *Forestry Act 2012* (NSW). The *Forestry Act 2012* establishes the Forestry Corporation of NSW as a State owned corporation to efficiently and effectively manage the environmentally sustainable supply of timber from relevant lands, as well as to contribute to regional development and conduct its activities in line with ecologically sustainable development principles.

Land managed by Forestry Corporation of NSW (State forests) are identified in Section 5.3.1.2. Under the *Forestry Act 2012*, the Forestry Corporation of NSW is obliged to maintain a long-term sustainable supply of timber. The potential impact of this obligation is discussed in Section 6.2.1.2.

3.1.7 Land Acquisition (Just Terms Compensation) Act 1991

The *Land Acquisition (Just Terms Compensation) Act 1991* (NSW) aims to guide the process for land proposed to be acquired by a NSW government agency.

The principles of the *Land Acquisition (Just Terms Compensation) Act 1991* are to ensure that compensation for land acquired by a NSW Government agency is provided at the market value of the land, to establish proceedings for the acquisition of land by a NSW Government agency, and to encourage acquisition by agreement rather than the compulsory process. Any land acquisitions required for the project would need to align with this Act.

3.1.8 National Parks and Wildlife Act 1974

The *National Parks and Wildlife Act 1974 (NSW)* (NPW Act) directs the management of the natural environment in NSW. The laws within the NPW Act are based on four principles:

- the conservation of nature
- the conservation of objects, places or features and landscapes of cultural value
- fostering public appreciation, understanding and enjoyment
- the management of ecologically sustainable places for public recreation.

The principal way in which land in parks and reserves are managed under the NPW Act is through Plans of Management. These are legal documents prepared for each area, managed under the NPW Act, that contain information about that area and specific management objectives to align with the principles above. The project footprint does not intersect any national parks or other land managed under the NPW Act. However, several sections of the project footprint are located within close proximity to land reserved under the NPW Act as identified in Section 5.3.4.

3.1.9 Local environmental plans

The land use and property study area, as defined in Section 1.6.2, includes the five LGAs within which the project is located. Table 3-1 identifies the Local Environmental Plans (LEPs) intersected by the project footprint (defined in Section 1.6.1).

Table 3-1 Study area LEPs

LGA	Local Environmental Plan
Wagga Wagga City	Wagga Wagga Local Environmental Plan 2010
Snowy Valleys	Tumbarumba Local Environmental Plan 2010 Tumut Local Environmental Plan 2012
Cootamundra-Gundagai Regional	Gundagai Local Environmental Plan 2011
Yass Valley	Yass Valley Local Environmental Plan 2013
Upper Lachlan Shire	Upper Lachlan Local Environmental Plan 2010

3.1.9.1 Land use zoning

As identified above, the project footprint (defined in Section 1.6.1) intersects land covered by six LEPs. It therefore traverses land to which a wide range of land use zoning applies. Whilst Critical State Significant Infrastructure proposals such as the project are not subject to the requirements within LEPs and land use zoning specifically, it is useful to consider them in this process to adequately assess potential land use impacts.

The land use zones that are intersected by the project footprint and their quantities are identified in Table 3-2, along with the corresponding quantities for the study area.

Table 3-2 Land use zones within the study area and project footprint

Zone and objectives within the project footprint (from Standard Instrument LEP)	Study area		Area in project footprint	
	Area (ha)	Area (%)	Area (ha)	Area (%)
C3 Environmental Management	57,252.9	2.0%	276.5	3.2
C4 Environmental Living	3,594.6	0.1%	0.1	0.0
IN1 General Industrial	2,401.9	0.1%	2.0	0.0
R5 Large Lot Residential	12,007.9	0.4%	60.4	0.7
RE1 Public Recreation	3,804.5	0.1%	0.1	0.0
RU1 Primary Production	1,513,108.0	52.4%	5,651.9	66.1
RU2 Rural Landscape	576,456.6	20.0%	1,417.0	16.6
RU3 Forestry	184,609.1	6.4%	1,090.9	12.8
SP1 Special Activities	432.8	0.0%	15.1	0.2
SP2 Infrastructure	13,227.0	0.5%	36.7	0.4
Total*	2,888,171.0	100%	8550.5	100.0

Source: State Government of NSW and NSW Department of Planning and Environment, 2022

* Note:

1. study area total includes zones not found within the project footprint.

2. the total area is calculated from unrounded land use zone areas. The total area of land use zones within the project footprint may slightly differ from other total areas included in this report due to minor variations in datasets and GIS processing.

As shown above, there are a wide range of rural, environmental, residential, commercial and infrastructure related zones that are within the project footprint.

The predominant land use zone within the project footprint is RU1 Primary production, comprising approximately 5,653 hectares (66.1 per cent) of the total 8,552 hectares of zoned land in the project footprint. The principal objectives for the zone, as outlined in the *Standard Instrument – Principal Local Environmental Plan (2006 EPI 155a)* are to:

- encourage sustainable primary industry production by maintaining and enhancing the natural resource base
- encourage diversity in primary industry enterprises and systems appropriate for the area
- minimise the fragmentation and alienation of resource lands
- minimise conflict between land uses within this zone and land uses within adjoining zones.

Other main land use zones in the project footprint include:

- RU2 Rural Landscape (1,416 hectares) generally between Yass and Bannaby
- RU3 Forestry (1,091 hectares) generally east of Wondalga, around the Red Hill/Billapaloola area, and around Tumut
- C3 Environmental Management (276.4 hectares) east of Pejar.

Urban zones that are within the study area include:

- R5 Large Lot Residential (60.4 hectares) north of Yass
- IN1 General Industrial (3.1 hectares), including south of Yass

3.2 Policy

3.2.1 Regional plans

In 2017, the NSW Department of Planning, Industry and Environment (now Department of Planning and Environment (DPE)) finalised Regional Plans, ensuring strategic land use planning covered all of NSW. Regional Plans aim to direct regional strategic planning from a centralised position, and are developed in collaboration with government agencies, councils, industry, and local communities.

The project footprint traverses five LGAs which are covered by the following Regional Plans:

- *Riverina Murray Regional Plan 2036* which covers:
    - Wagga Wagga City LGA
    - Snowy Valleys LGA
    - Cootamundra-Gundagai Regional LGA.
- *South East and Tablelands Regional Plan 2036* which covers:
    - Upper Lachlan Shire LGA
    - Yass Valley LGA.

3.2.1.1 Riverina Murray Regional Plan 2041

In 2023, the NSW Government published the Riverina Murray Regional Plan 2041. The Plan outlines a vision and strategic land use planning priorities for the 20 LGAs under its remit. The Plan contains a range of strategies and objectives that are relevant to the HumeLink project:

- Objective 1:
    - Strategy 1.1: Strategic and statutory planning should aim to first avoid, then minimise impacts on biodiversity and the natural environment. Biodiversity offsetting (through the BC Act) should only be used when 'avoid' and 'minimise' principles are not feasible. To assist with this:
        - strategic and statutory planning will:
            - ensure land uses adjacent to high environmental value land and land containing regional and locally significant corridors are compatible with conservation outcomes or have adequate buffers to separate incompatible land uses.
- Objective 5: Ensure housing supply, diversity, affordability, and resilience
    - Strategy 5.3: New urban development will:
        - minimise land use conflict with other uses, including agricultural land, freight corridors, industrial uses, and energy developments and corridors.
- Objective 7: Provide for appropriate rural residential development
    - Strategy 7.1: New rural residential development areas must be identified in a local housing or other strategy, approved by the department, prepared in accordance with Objective 5 and:
        - protect the economic use of rural land and be located away from significant agriculture, forestry, extractive resources or energy production or distribution areas or other air pollution emission sources.
- Objective 8: Provide for short-term accommodation
    - Strategy 8.1: Strategic and statutory planning should consider:
        - the provision of housing for workers by employers, including state agencies, by providing flexible controls
        - the capacity of existing and planned infrastructure to service accommodation for workers

        - provision for workers' accommodation sites such as caravan parks, manufactured home estates, tiny homes and manufactured homes on land in or adjoining existing centres, new development areas and publicly owned land.
    - Strategy 8.2: Development applications for large-scale projects should be supported by a workforce accommodation strategy that:
        - assesses anticipated impacts on the local housing market, including cumulative impacts associated with other large scale projects in the area
        - shows how potential employees can access accommodation, without detrimentally affecting existing housing availability and affordability
        - illustrates how the project will contribute to the supply of local housing, and support the nearest centre or centres
        - allows for the plan to be monitored and updated over the life of the project.
- Objective 11: Plan for integrated and resilient utility infrastructure
    - Strategy 11.1: Strategic and statutory planning will:
        - optimise development controls to ensure development does not hinder the ongoing operation of infrastructure
- Objective 13: Support the transition to net zero by 2050
    - Strategy 13.1: To prepare for the transition to net zero emissions, strategic and statutory planning will:
        - appropriately consider opportunities to minimise land use conflict for the South West REZ, renewable energy generation and associated infrastructure outside the REZ.

The Plan identifies energy generation and transmission projects as key employment and infrastructure opportunities for the region. It also emphasises the protection of existing employment industries such as forestry and agriculture from incompatible land uses.

Overall, the project generally aligns with the relevant directions and priorities outlined in the Riverina Murray Regional Plan 2041.

3.2.1.2 South East and Tablelands Regional Plan 2036

In 2017, the NSW Government published the *South East and Tablelands Regional Plan 2036*. The Plan outlines a vision and strategic land use planning directions and priorities for the nine LGAs under its remit.

The Plan contains a range of directions and actions that are relevant to the HumeLink project:

- Direction 6: Position the region as a hub of renewable energy excellence
    - Action 6.1: Identify opportunities for renewable energy industries.
    - Action 6.3: Encourage the co-location of renewable energy projects to maximise infrastructure, including corridors with access to the electricity network.
- Direction 8: Protect important agricultural land
    - Action 8.1: Map important agricultural land to better inform strategic and local planning processes.
    - Action 8.2: Protect identified important agricultural land from land use conflict and fragmentation and manage the interface between important agricultural land and other land uses through local environmental plans.
- Direction 14: Protect important environmental assets
    - Action 14.2: Protect the validated high environmental value lands in local environmental plans.
    - Action 14.3: Minimise potential impacts from development on areas of high environmental value, including groundwater-dependent ecosystems and aquatic habitats, and implement the 'avoid, minimise and offset' hierarchy.

- Action 14.5: Support planning authorities to undertake strategic, landscape-scale assessments of biodiversity and areas of high environmental value.

- Direction 15: Enhance biodiversity connections
  - Action 15.1: Protect and enhance the function and resilience of biodiversity corridors in local strategies.
- Direction 28: Manage rural lifestyles
  - Action 28.1: Enable new rural residential development only where it has been identified in a local housing strategy prepared by council and approved by the DPE.

The Plan also sets out Local Government Narratives that identify priorities specific to the LGAs contained within the South East and Tablelands region, including protecting agricultural and horticultural land, encouraging food security, promoting tourism and protecting picturesque environments, and accommodating housing growth in existing urban areas. The Local Government Narrative for the Upper Lachlan Shire LGA identifies existing expertise and investment in the LGA in renewable energy, specifically in wind farms. This aligns with the HumeLink project as a large portion of the study area traverses the Upper Lachlan Shire LGA. The project generally supports the identified priorities and actions from the Plan.

3.2.2 Local strategic planning policy

This section discusses local strategies and policies for the five LGAs that the project footprint intersects. Most relevant are the Local Strategic Planning Statements (LSPS), which provide 20+ year visions for land use planning. LSPSs establish priorities and actions to deliver the vision, drawing from local community strategic plans (CSPs), regional plans and other relevant local and state policies.

3.2.2.1 Cootamundra-Gundagai Regional Council LSPS

The project footprint largely avoids the population centres of the Cootamundra-Gundagai Regional LGA, however, it is located within close proximity to one of the smaller villages in the LGA, Adjungbilly, and through surrounding rural, agricultural, and environmental land. Relevant priorities related to Adjungbilly are:

- Priority 4: opportunities to protect and enhance agricultural land
- Priority 7: opportunities to grow agricultural industries.

Together, these priorities seek to strengthen agricultural industries and link the industries with transport and other infrastructure. Minimises adverse effects on agricultural land may be key to supporting the goals of the Cootamundra-Gundagai LSPS.

3.2.2.2 Snowy Valleys Council LSPS

Snowy Valleys Council's LSPS *Envisage 2040: Our Path to a Sustainable Future* (2020) is informed by its CSP (2020), the *Snowy Valleys Regional Economic Development Strategy* and *Snowy Valleys Destination Management Plan*.

Key relevant priorities from the LSPS pertain to the retention and management of the natural environment, including retention of established trees where possible, noting that actions typical relate to residential development. The LSPS also prioritises with government and other stakeholders to take advantage of the opportunities provided by Snowy 2.0.

Relevant priorities are extracted below:

- Growth Through Innovation: Planning Priority 2: provide opportunities for local employment
- Our Natural Environment Planning Priority 1: protect, conserve and enhance Snowy Valley's landform, waterways and bushland that have high environmental value
  - Action A21: advocate for the retention of established trees where practical in new residential and rural residential subdivisions

- Our Natural Environment Planning Priority 2: manage energy, water and waste efficiently to ensure a sustainable urban environment
    - Action A25: demonstrate leadership in environmental sustainability by reducing Council's carbon footprint and supporting the use of clean energy to contribute to the aspirational objective of achieving net-zero emissions by 2050 and increase renewable energy generation and energy and water efficiency
- Our Infrastructure: Planning Priority 3: collaborate with Government agencies and other stakeholders to stimulate positive outcomes
    - Action A40: work with the NSW and Federal Governments to take advantage of the opportunities provided by Snowy 2.0.

The project footprint passes close to Tumut, potentially supporting local employment in the Snowy Valleys and the 'growth through innovation planning priority 2' noted above. Avoidance of the multiple national parks and nature reserves in the LGA would support the Snowy Valleys LSPS's natural environment planning priorities. The balance of relevant land is largely forestry and primary production areas, and ensuring that the impact on these areas is minimised would also support the Snowy Valleys LSPS's growth through innovation planning priority 2.

3.2.2.3 Upper Lachlan Shire Council LSPS

The Upper Lachlan Shire Council's *Local Strategic Planning Statement* (2020) sets the strategic agenda for Council to 2040. Its themes focus on the promotion of agriculture and protection of agricultural land, protecting and enhancing the natural environment, and developing tourism in the region. The LSPS has the following relevant priorities and actions when considering land use and property impacts of the project:

- Priority 1: Non-Urban Land
    - Action 1.1: promote a diverse agriculture-based economy
    - Action 1.2: plan for diverse agri-business and agricultural land reform
    - Action 1.3: improve biodiversity connectivity and protection
    - Action 1.4: protect and enhance the Indigenous, European, rural and natural landscapes
    - Action 1.7: recognise environmental landscape values as productive elements or recreation elements
    - Action 1.8: identify and protect high-value agricultural land
- Priority 3: Tourism
    - Action 3.4: leverage and celebrate our natural and cultural heritage, creative expression, climate and natural beauty
    - Action 3.5: conserve and adaptively reuse heritage assets and enhance areas of high environmental value
- Priority 4: Business Development
    - Action 4.6: plan for increased capacity in various growth sectors, and seek value-adding options.

The project footprint passes through a large portion of the Upper Lachlan Shire, largely through agricultural land. To support the actions under the Upper Lachlan Shire LSPS's Priority 1: Non-Urban Land, minimising negative effects on agricultural land would be important. The LSPS notes that agriculture remains the most significant contributor to the region's economy, therefore protecting agricultural land is of major significance to the LGA. The LSPS's Priority 1 also contains actions for the recognition and protection of environmental land. The project footprint traverses through a large area zoned C3 Environmental Management, located approximately halfway between Goulburn and Crookwell, which incorporates Pejar Dam and land around Woodhouselee and Roslyn. To support the LSPS Priority 1 (actions 1.3, 1.4, and 1.7), as well as LSPS Priority 3 (actions 3.4, 3.5, and 3.7), the impacts (both visual and environmental) of the project on these areas should be minimised.

To support the LSPS's Priority 3: Tourism, the project should seek to avoid areas of high environmental value where possible, and where impractical, seek to minimise the impact of the project on these areas. The LSPS's Priority 4: Business Development contains actions related to the economy in the Upper Lachlan Shire. The presence of a major infrastructure project in the region would support actions 4.1 and 4.6 under Priority 4, particularly as renewable energy is an important and growing sector in the Upper Lachlan Shire. The colocation of major electricity infrastructure with potential renewable energy investments may support the LSPS's goal. The LSPS also notes that the LGA has significant existing economic contribution and employment in electricity, gas, water and waste services; recognising the importance of associated land uses to employment generation.

3.2.2.4 Wagga Wagga City LSPS

Wagga Wagga City adopted its *Local Strategic Planning Statement: Planning for the future: Wagga Wagga 2020* in February 2021. The LSPS has the following relevant principles and actions when considering land use and property impacts of the project:

- Principle 1: protect and enhance natural areas
    - Action ENV1: development integrates, protects and enhances high value biodiversity and natural areas, environmental corridors, open space and parklands based on the hierarchy of 'protect, minimise, mitigate and offset'
    - Action ENV2: consider and pursue biodiversity outcomes through a range of methods
- Principle 5: encourage and support investment
- Principle 7: growth is supported by sustainable infrastructure
    - Action ECON8: provide for more diverse industries, including renewable energy, emerging and creative industries and the development of new small business ventures
    - Action ECON10: develop a Rural Lands Strategy to protect productive rural land, diversity rural economic activity and identify where changes to rural zoning and minimum lot size reduction could be considered
- Principle 11: strong and resilient rural and village communities.

The project should seek to minimise its effect on the environment and biodiversity to support actions under Principle 1 of *Wagga Wagga 2020*. The LSPS notes the importance of agriculture and forestry to the region and its economy. Almost the entirety of the relevant area of the Wagga Wagga City LGA is agricultural and forestry land, though a small part is traversed by the Hume Highway. Ensuring these areas and key infrastructure are not adversely affected by the project would support the priorities and actions of *Wagga Wagga 2020*.

3.2.2.5 Yass Valley Council LSPS

Yass Valley Council published its *Local Strategic Planning Statement* in May 2020. Yass Valley Council's LSPS contains the following priorities and actions that are relevant to land use and property:

- Planning Priority 2: focus growth in Yass and Murrumbateman
    - Action: ensure that planning proposals and Development Applications can demonstrate how proposed land uses will manage the interface with any agricultural or industrial land
- Planning Priority 4: protect and conserve the natural environment, built and Aboriginal cultural heritage of Yass Valley
    - Action: work with local Aboriginal community to identify, interpret and promote Aboriginal Cultural Heritage
    - Action: encourage biodiversity offsets from developments to regional corridors where possible
- Planning Priority 6: maximise opportunities for tourism, industry, and investment within the Yass Valley.

The LSPS includes a range of actions to protect and conserve the environment in Yass Valley, as well as to maintain sufficient agricultural and industrial land. These priorities are important as the project footprint traverses a wide range of lands in the Yass Valley. This includes urban areas, agricultural areas, industrial areas, and the lands surrounding the Murrumbidgee and Yass Rivers. The action listed above under Planning Priority 2 would be important for the HumeLink project to address, as Yass Valley Council's LSPS seeks to reduce land use conflict. The project should seek to minimise the disturbance of the environment and any Aboriginal cultural heritage identified within the project footprint to support Planning Priority 4.

3.2.2.6 The Tablelands 2016-2036 Regional CSP

The Tablelands 2016-2036 Regional Community Strategic Plan (Regional CSP) was released in 2017. The Regional CSP is unique as it serves as the CSP for the three NSW LGAs listed below:

- Goulburn-Mulwaree Council
- Upper Lachlan Shire Council
- Yass Valley Council.

Goulburn-Mulwaree LGA is not intersected by the project footprint.

The Regional CSP contains strategies that are relevant to the land use and property, including:

- Strategy EC4: foster and develop a diverse, adaptive, and innovative agriculture industry
- Strategy EN5: investigate and implement approaches to reduce our carbon footprint.

Strategy EC4 has specific roles for the relevant councils, including to ensure that sufficient land is zoned for agricultural purposes. Strategy EN5 identifies that the relevant councils should support the development of renewable energy facilities where appropriate in the region.

As the Regional CSP's most significant focus is on supply and protection of agricultural land; ensuring that the project footprint minimises adverse effects on these lands would be important to the relevant councils. Additionally, the construction and operation of the project near current and potential future renewable energy investments may support the Regional CSP's goals.

METHODOLOGY

4.0 METHODOLOGY

4.1 Overview of approach

The methodology used for the land use and property impact assessment is designed to meet the requirements of the SEARs (refer to Section 1.4). The methodology involved the following approach:

- completing a review of relevant policy and legislation to contextualise assessment and identifying potential impacts associated with any legal requirements
- completing a review of preliminary stakeholder engagement outcomes to inform the approach and identify potentially important areas of concern in the relevant communities, including planned development
- undertaking a field survey, which included collecting photographic evidence and taking detailed qualitative notes regarding land use and property at publicly accessible locations within the project footprint
- completing GIS analysis of the available data sources (refer to Section 4.4) to quantify impacts where possible through comparing identified lots, zones, land uses, and other features against the project footprint and study area
- completing a desktop review of potential future property and land use changes including:
    - consideration of landowner-identified potential future developments and/or subdivisions
    - investigation of the status, extent, and timing of submitted or approved large-scale projects in the study area (including approved major projects, State significant infrastructure applications and State significant development applications)
- extensive desktop analysis of satellite imagery, field survey photographs and notes, and other data sources to ground-truth any identified impacts where possible
- completing an assessment of the potential impacts on construction and operation of the project, and potential cumulative impacts of the project, in accordance with the impact assessment principles of the *Land Use Conflict Risk Assessment Guide* (LUCRA Guide) (refer to Section 4.3.1) (NSW DPI, 2011)
- recommending management approaches to mitigate identified land use and property impacts arising from the project where possible.

4.2 Assessment approach

The project components and activities have been reviewed to determine the extent and nature of potential land use and property impacts related to the project. This includes the construction and operation of the transmission lines, substation and supporting ancillary work (eg access tracks and construction compounds).

4.2.1 Assessment areas

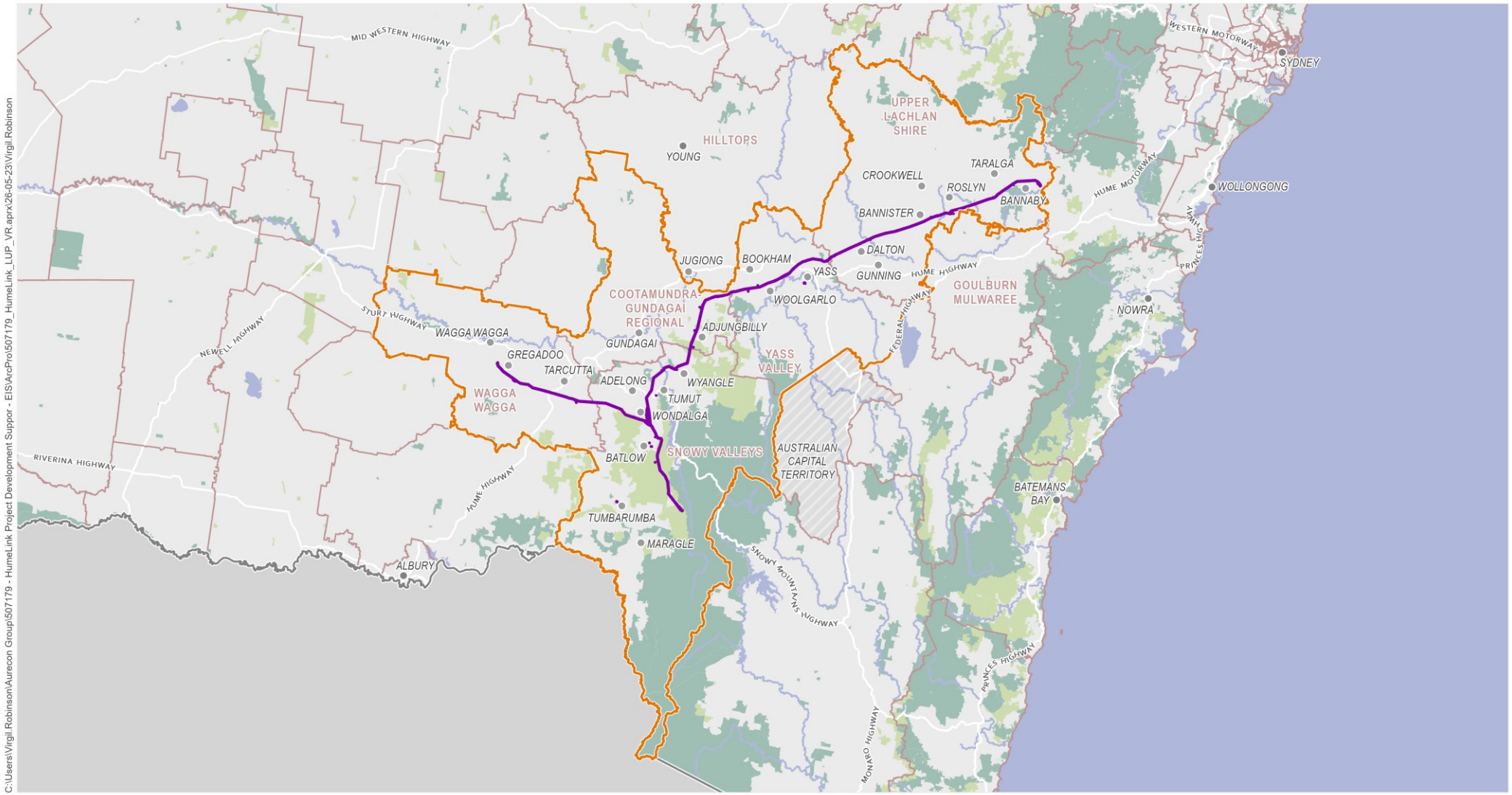
The project footprint and land use and property study area (study area) have been used for the purpose of this assessment.

The project footprint and study area allow for an understanding of direct and regional impacts to property and land use within these LGAs. The project footprint is used to determine the direct land use and property impacts. The study area contextualises any potential impacts within the wider region.

The project footprint and study area referred to in this section are shown in **Figure 4-1**.

This approach allows for the consideration of particularly sensitive or strategic land uses, as well as contiguous land holdings.

The project footprint is utilised to assess construction and operational impacts of the project, which represents a conservative approach to the impact assessment. It should be noted that the footprint upon operation would be limited to the permanent project elements including the proposed transmission line structures, new substation infrastructure, telecommunications hut and permanent access tracks and associated easements, as outlined in Chapter 2.0. The footprint, upon operation, would therefore be much smaller compared to the project footprint.



Source: *Aurecon, Transgrid, Spatial Services (DCS), ESRI Basemap*

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Projection: GDA 1994 MGA Zone 55

HumeLink **Land Use and Property**

FIGURE 4-1: Land use and property study area

4.2.2 Field survey

A field survey was completed in March 2022, across three days and covered 41 sites spread throughout the project footprint. The survey was conducted by four-wheel drive vehicle and on foot from publicly-accessible parts of the project footprint.

At each site, photographs were taken, and detailed notes were made regarding the existing land use, including any sensitive or significant land uses, and well as the presence of any infrastructure. The survey data was then utilised throughout the assessment to inform desktop research. The survey approach was qualitative and based on observations.

The field survey also included visits to the major settlements near the project footprint (including Wagga Wagga, Batlow, Tumut, and Yass) to support understanding of the local context of the project.

4.3 Assessment criteria

4.3.1 Land Use Conflict Risk Assessment Guide

The risk assessment framework from the LUCRA Guide is adopted to guide the land use impact assessment. The NSW Department of Primary Industries (NSW DPI) published the LUCRA Guide in October 2011 to assist land managers and consent authorities in identifying, assessing, and mitigating land use conflict (NSW DPI, 2011).

The level of consequence framework established in the LUCRA Guide frames the assessment of potential property and land use impacts of the project.

Table 4-1 Level of consequence assessment descriptors

Level descriptor	Description
Severe	• severe and/or permanent damage to the environment • irreversible • severe impact on the community • neighbours are in prolonged dispute and legal action involved.
Major	• serious and/or long-term impact to the environment • long-term management implications • serious impact on the community • neighbours are in serious dispute.
Moderate	• moderate and/or medium-term impact to the environment and community • some ongoing management implications • neighbour disputes occur.
Minor	• minor and/or short-term impact to the environment and community • can be effectively managed as part of normal operations • infrequent disputes between neighbours.
Negligible	• very minor impact to the environment and community • can be effectively managed as part of normal operations • neighbour disputes unlikely.

Source: NSW Department of Primary Industries, 2011

4.3.2 NSW Landuse 2017 dataset (v1.2)

A key component of the impact assessment is analysing land use. Land use can be defined in a range of ways, and therefore can be interrogated in a range of ways using different data and approaches. For the purpose of this report, coverage of a wide area and internal consistency are important to enable comparison and analysis across the study area.

The NSW Landuse 2017 dataset (v1.2) (referred to as 'the Landuse dataset'), published in June 2020, maps land use across NSW. It has complete coverage of NSW and is generally mapped at a scale of 1 to 8,000, with higher resolution mapping of some landuse classes and urban areas. The Landuse dataset is generated through a combination of pattern and feature interpretation by GIS software and manual analysis and validation. It uses multiple inputs, including satellite and aerial imagery, cadastre and zoning information, topographic information, and historical imagery. The dataset was subject to peer review and quality assurance processes.

The Landuse dataset uses the Australian Land Use and Management Classification Version 8 (henceforth 'ALUM system'). The ALUM system provides land use classes at primary, secondary, and tertiary level. The primary class defines the management directive of the land manager where the secondary class describes the main use of the land with tertiary classes typically including specific commodities, vegetation types, or land management practices. For the purposes of this report, secondary classes are utilised to analyse land uses in the study area and project footprint. The secondary classes utilised by the ALUM system are shown in Table 4-2. The grouping of secondary classes shown below is strictly for the purposes of this report, and does not relate to the ALUM system's primary classes.

Table 4-2 ALUM system secondary land use classes

Agriculture and primary production	Infrastructure and utilities	Urban
• 2.1.0 Grazing native vegetation • 2.2.0 Production native forestry • 3.1.0 Plantation forests • 3.2.0 Grazing modified pastures • 3.3.0 Cropping • 3.4.0 Perennial horticulture • 3.5.0 Seasonal horticulture • 3.6.0 Land in transition • 4.1.0 Irrigated plantation forests • 4.2.0 Grazing irrigated modified pastures • 4.3.0 Irrigated cropping • 4.4.0 Irrigated perennial horticulture • 4.5.0 Irrigated seasonal horticulture • 4.6.0 Irrigated land in transition • 5.1.0 Intensive horticulture • 5.2.0 Intensive animal production	• 5.6.0 Utilities • 5.7.0 Transport and communication • 5.9.0 Waste treatment and disposal	• 5.3.0 Manufacturing and industrial • 5.4.0 Residential and farm infrastructure • 5.5.0 Services

Natural environment	Extractive industries	Water
• 1.1.0 Nature conservation • 1.2.0 Managed resource protection • 1.3.0 Other minimal use	• 5.8.0 Mining	• 6.1.0 Lake • 6.2.0 Reservoir/dam • 6.3.0 River • 6.4.0 Channel/aqueduct • 6.5.0 Marsh/wetland • 6.6.0 Estuary/coastal waters

Source: Australian Bureau of Agricultural and Resource Economics and Sciences, 2016

4.4 Data sources

The following data sources were used to inform the land use and property impact assessment:

- strategic planning documents for State and local governments
- LEPs for the LGAs within the study area, including land use zoning maps
- consultation outcomes related to the project
- observations from the field survey as outlined in Sections 4.2.2
- NSW Department of Planning and Environment's NSW Landuse 2017 v1.2 dataset (released 2020)
- NSW Government Spatial Services' ePlanning SIX Maps and Spatial Portal services
- NSW Government's Sharing and Enabling Environmental Data (SEED) portal
- NSW Planning Portal's Spatial Viewer and Major Projects services
- NSW Department of Regional NSW's MinView service
- Geoscience Australia's NationalMap
- satellite imagery from Google Earth and Bing Maps.

4.5 Key assumptions

This following assumptions underpin the approach, data, and conclusions contained within this land use and property impact assessment:

- the project footprint, for example construction compounds and their proposed boundaries and layouts, will be refined as design progresses, in consultation with relevant stakeholders and construction contractors, lessening impacts
- the land occupied by construction activities and permanent infrastructure would be smaller than the assessed project footprint
- transmission line easements would not be cleared entirely, and some agricultural operations would be able to continue within the easement once the project is operational
- transmission line easements would typically be 70 metres wide, with a few locations requiring wider easements of up to 130 metres
- construction compounds and other temporary ancillary facilities used to facilitate construction of the project would be returned to their existing land use (where possible).

4.6 Limitations and uncertainty

In preparing and undertaking this impact assessment, the following have been identified as potential limitations:

- broad project footprint subject to further refinements during detailed design
- locational inputs provided by stakeholders may not be entirely accurate, limiting usefulness in spatial analysis
- discrepancies within and between public datasets
- technical limitations of GIS software
- anomalies or gaps in GIS datasets.

These limitations have been managed by adopting a conservative approach to assessing risk and impact as far as practicable. The management measures in Chapter 9.0 have also been drafted to address some of the uncertainties associated with the conservative approach to the impact assessment. Additionally, redundancy is 'built in' to the report development process, whereby multiple sources and field observations have been consulted wherever possible to ensure that results are as accurate as possible. Data sources have been referenced (refer to Section 4.4) and referred to in text where relevant to ensure transparency.

EXISTING ENVIRONMENT

5.0 EXISTING ENVIRONMENT

5.1 Regional context

The NSW regional plans for the area, *Riverina Murray Regional Plan 2036* and *South East and Tablelands Regional Plan 2036,* prioritise the following land uses in the study area:

- agribusiness
- forestry
- tourism
- information communication technology
- transport and logistics
- value-add manufacturing.

Details regarding the economic contribution of industry is discussed further in *Technical Report 6 – Economic Impact Assessment*.

Whilst the project footprint does not include major urbanised areas, project infrastructure would be relatively close to the regional centres of Wagga Wagga (five kilometres), Tumut (four kilometres) and Yass (five kilometres) as well as smaller settlements such as Gilmore and Dalton. These centres support the surrounding communities, providing major employment opportunities, goods and services, access to government services, entertainment and health care.

Major transportation corridors near the project footprint include the Snowy Mountains Highway and Hume Highway. These corridors connect the regional centres and surrounding communities including agriculture and other businesses to the rest of NSW. The project footprint crosses the Snowy Mountains Highway at Gadara, approximately 6.5 kilometres west of Tumut, and the Hume Highway twice, once approximately five kilometres north of Yass, and again at Keajura Road, approximately nine kilometres south-west of Tarcutta.

5.2 Property

Land tenure within the study area includes a mix of private and public landowners, with land tenure within and near the project footprint shown in Attachment A. Land is generally freehold, with other types including Crown Land and government land, as shown in **Table 5-1**.

Table 5-1 Ownership summary

Ownership	Area (ha)		Lots (count)	
	Study area	Project footprint	Study area	Project footprint
Freehold	2,106,117	7,226	97,698	678
Local government	2,424	1	402	1
NSW Government	206,662	508	2,446	56
Crown	111,742	508	4,319	25
Shared Crown/Council	10	0	3	0
Unknown	5,194	308	184	0
Commonwealth Government	354	0	17	0
Total	**2,816,882**	**8,551**	**105,069**	**760**

Source: NSW Spatial Services, 2022

Note: Freehold land may also include freehold land owned by local government

The project footprint intersects a total of 760 lots, with an average lot size of approximately 132 hectares. The average amount of land intersected by the project footprint per lot is 10.8 hectares, whilst the average proportion of a lot intersected by the project footprint is approximately 22.5 per cent. The impacts of the project on these matters are property and ownership matters are described in Section 6.1.

5.2.1 Built environment

Built environment refers to the artificial or modified structures in the environment, such as residential residences and farm infrastructure (including fences, sheds, irrigation infrastructure, private airstrips, and fuel storages), as well as other non-residential buildings such as churches or community halls. The project footprint intersects built infrastructure throughout its course, on land of all types of tenure.

Nine residences are located within the project footprint. Additionally, two dilapidated residences are located within the project footprint.

5.2.2 Travelling stock reserves

TSRs are parcels of Crown land where the grazing industry can move stock on foot. In addition to easing livestock movements, TSRs may be locations of sensitive biodiversity and Aboriginal and non-Aboriginal heritage. TSRs are primarily managed by NSW LLS. The study area contains 6738 hectares of TSRs across approximately 500 individual reserves. The project footprint intersects 18.4 hectares of TSRs, across four reserves.

Additional detail about agricultural matters, including land capability and biosecurity risks, can be found in *Technical Report 4 – Agricultural Land Impact Assessment.* It was identified that in addition to the TSRs, livestock can also be moved along public roads subject to a permit from the LLS.

5.3 Land uses

Table 5-2 identifies the secondary land use classes as defined under the ALUM system (refer to Section 4.3.2) that fall within the project footprint.

Table 5-2 Secondary land use classes identified within the project footprint

Agriculture and primary production	Infrastructure	Urban
• 2.1.0 Grazing native vegetation • 2.2.0 Production native forestry • 3.1.0 Plantation forests • 3.2.0 Grazing modified pastures • 3.3.0 Cropping • 3.6.0 Land in transition • 4.4.0 Irrigated perennial horticulture	• 5.6.0 Utilities • 5.7.0 Transport and communication • 5.9.0 Waste treatment and disposal	• 5.3.0 Manufacturing and industrial • 5.4.0 Residential and farm infrastructure • 5.5.0 Services
Natural environment	**Extractive industries**	**Water**
• 1.2.0 Managed resource protection • 1.3.0 Other minimal use	• 5.8.0 Mining	• 6.1.0 Lake • 6.2.0 Reservoir/dam • 6.3.0 River • 6.5.0 Marsh/wetland

Source: Australian Bureau of Agricultural and Resource Economics and Sciences, 2016

Agriculture and primary production

Primary production includes activities such as forestry, the production of pasture, cropping, and grazing. The predominant primary production land use in the study area is grazing, though forestry and cropping constitute a large proportion of the remaining land. The project footprint intersects approximately 8266.9 hectares of land associated with agriculture and primary production uses. This accounts for 96.7 per cent of the total project footprint area.

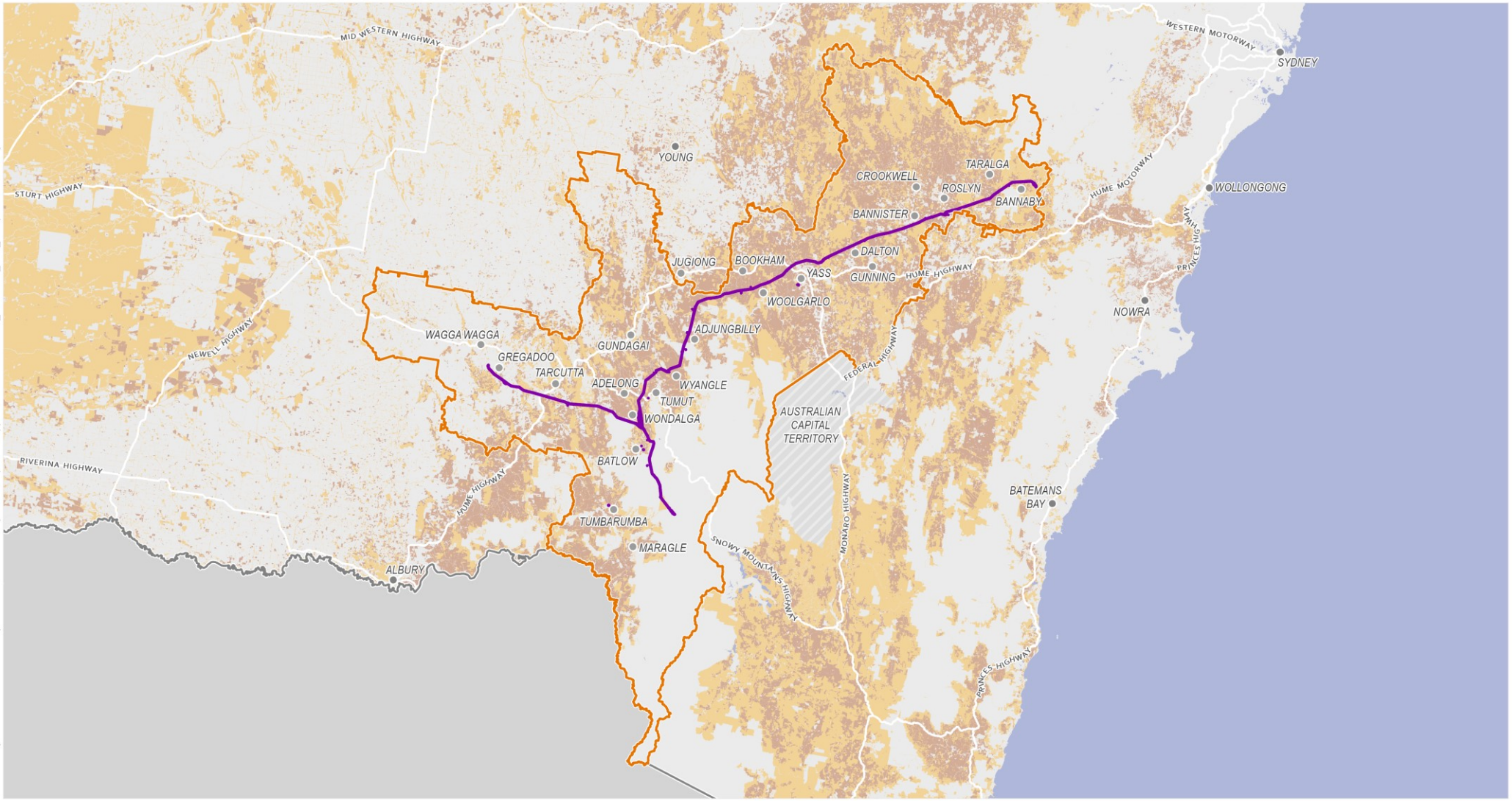
5.3.1.1 Agriculture

The predominant agricultural land use in the project footprint is grazing land, including grazing native vegetation and modified pasture grazing (refer to Figure 5-1 for an example). Grazing native vegetation land uses (refer to Figure 5-2 and Attachment B) are generally concentrated in the area between Bannister and Jerrawa, with less concentrated use through the rest of the project footprint. Grazing modified pastures land uses are spread throughout the project footprint, especially between Bango and Wondalga. Additionally, the following construction compounds intersect grazing land (greater than one hectare in area):

- Tumbarumba accommodation facility (AC1) – 10.4 hectares of grazing modified pastures land
- Snowy Mountains Highway compound (C02) – 1.4 hectares of grazing modified pastures land
- Snubba Road compound (C03) – 5.1 hectares grazing modified pastures land
- Woodhouselee Road compound (C11) – five hectares grazing modified pastures land.

Figure 5-1 Area near Woolgarlo (west of Yass) showing grazing native vegetation, approximately two kilometres north of the project footprint

Source: HillPDA, 21 March 2022



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Source: *Aurecon, Transgrid, DPE, Spatial Services (DCS), ESRI Basemap*

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Projection: GDA 1994 MGA Zone 55

HumeLink **Land Use and Property**

FIGURE 5-2: Grazing land uses

Cropping is identified as another significant agricultural land use in the project footprint. The use is prevalent between Wagga Wagga and Darlow and between Myrtleville and Dalton, with smaller concentrations dispersed throughout the project footprint. An example of an area of cropping land use (including an existing transmission line) is shown at Figure 5-3.

In addition to the agricultural land uses outlined above, the project footprint also intersects or abuts the following agricultural land uses in small quantities:

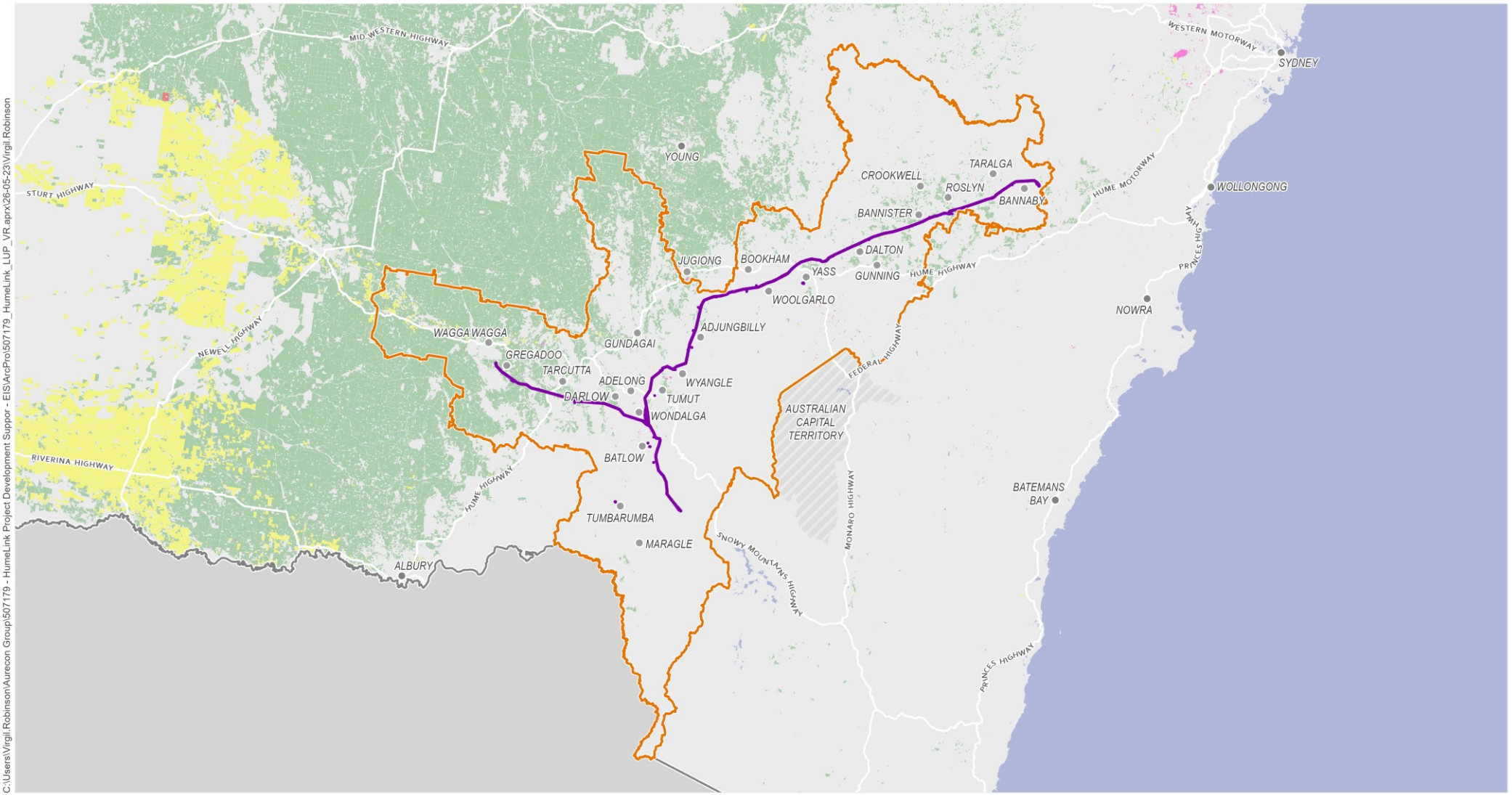
- irrigated cropping
- irrigated perennial horticulture
- perennial horticulture
- land in transition.

Land in transition refers to land changing land classes, most usually from native vegetation or forest to pasture or cropping.

The spatial distribution of cropping land use within the study area is shown in Figure 5-4 and Attachment C.

Figure 5-3 Area within the project footprint, near Big Springs (south-east of Gregadoo). View to the north-west showing cropping land and existing transmission Line 51

Source: HillPDA, 23 March 2022



Source: *Aurecon, Transgrid, DPE, Spatial Services (DCS), ESRI Basemap*

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Projection: GDA 1994 MGA Zone 55

HumeLink **Land Use and Property**

FIGURE 5-4: Cropping land uses

5.3.1.2 Forestry

Forestry is a significant land use in the study area, totalling 212,781 hectares (7.4 per cent) of the study area, and approximately 1,087.1 hectares (12.7 per cent) of the project footprint. These areas are shown in Figure 5-8 and Attachment D.

Approximately 1,087.1 hectares of the intersected forestry land is made up of production native forestry land use. This is the dominant land use around the project footprint south of Tumut, in the areas surrounding Batlow. Production native forestry is also significant between Wondalga and Westwood, as well as north of Tumut in Red Hill and Adjungbilly. Four construction compounds intersect production native forestry land use areas, shown in **Table 5-3**. The status of these areas was ascertained from satellite imagery taken between 2017 and August 2022.

Table 5-3 Production native forestry land uses and project footprint

Project infrastructure	Production native forestry area intersected	Observation(s)
Maragle 500 kV substation compound (C05)	11.10 hectares	Currently forested, not harvested within the last five years (refer to Figure 5-5). The majority of the compound would be cleared as part of the Snowy 2.0 Transmission Connection project approval before any work for this project commences.
Honeysuckle Road compound (C07)	8.20 hectares	Harvested in August 2018, appears to have been cleared since that time (refer to Figure 5-6).
Red Hill Road compound (C08)	2.59 hectares	Does not contain forested areas. An existing building is located within the construction compound boundary and is likely used to support forestry operations.
Snubba Road compound (C16)	2.64 hectares	An area roughly corresponding to the proposed construction compound was harvested in late 2020, and does not appear to have been replanted (refer to Figure **5-7**).

Source: Geoscience Australia, 2022a

Figure 5-5 Area associated with the Maragle substation compound (C05), showing production native forestry area

Source: Niche, 21 January 2022

Figure 5-6 Area associated with the Honeysuckle Road compound (C07), showing a cleared forestry area

Source: Niche, 13 September 2022

Figure 5-7 Area associated with the Snubba Road compound (C16), south-east of Batlow, showing a cleared forestry area

Source: Aurecon, 17 August 2022

The areas identified in the Landuse dataset as production native forestry align with NSW State forest boundaries, much of which is crown land. State forests are managed by the Forestry Corporation of NSW to balance environmental conservation, recreation, and timber production. The project footprint area intersects with the State forests identified in Table 5-4.

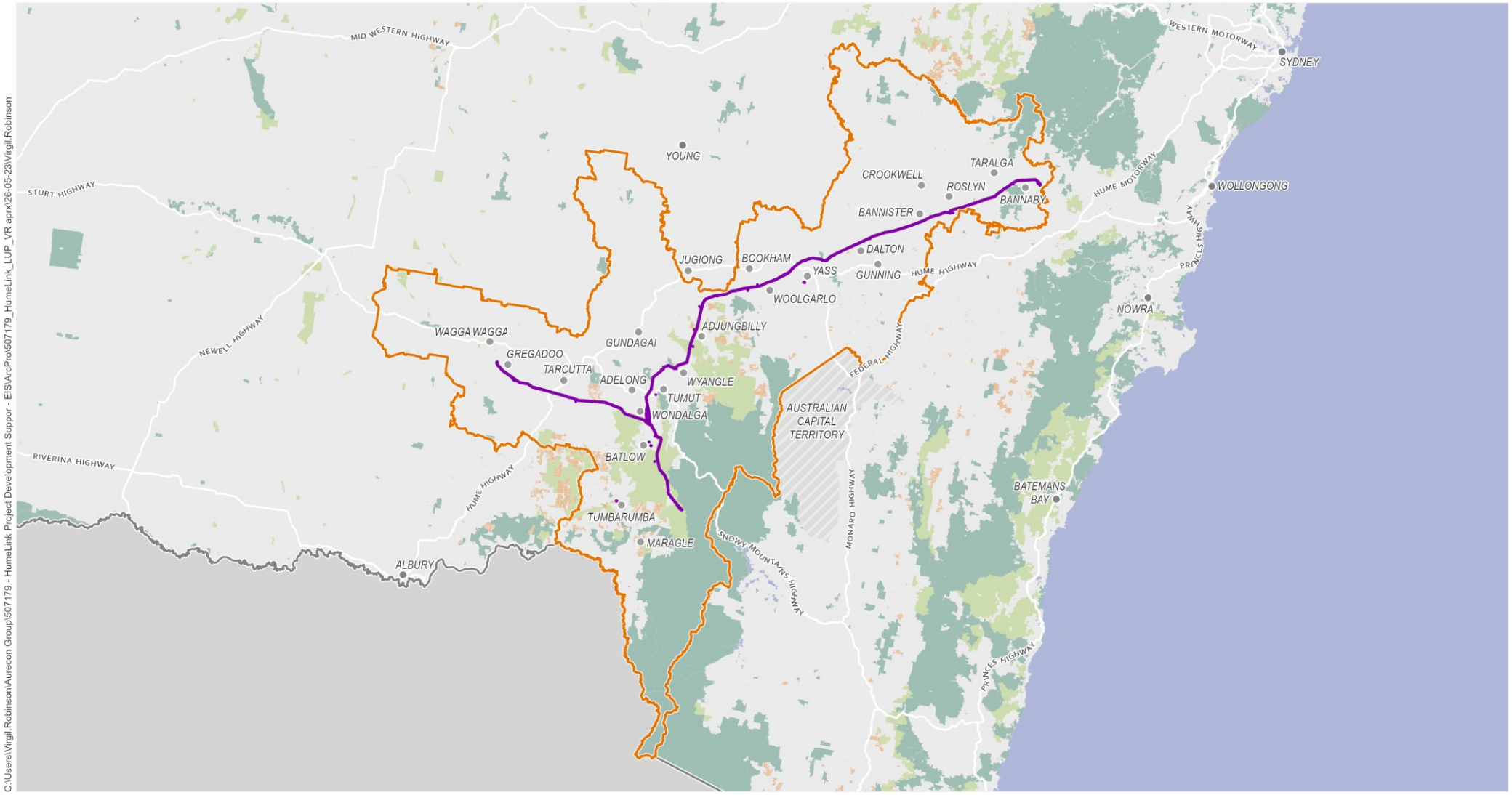
Table 5-4 State forests intersecting with the project footprint

State forest name	Area (ha) within study area	Area (ha) within project footprint	% of State Forest intersected by project footprint
Bago State Forest	51,073	675.8	1.3%
Green Hills State Forest	25,886	239.5	0.9%
Red Hill State Forest	10,380	171.8	1.7%
Total	87,339	1,087.1	1.2%

Source: Forestry Corporation of NSW, 2014; NSW Government and Forestry Corporation of NSW, 2022

In addition to production native forestry land, the project footprint also intersects approximately 21.5 hectares of land identified as being used for plantation forests. This includes two areas near Adjungbilly and Gobarralong, five small areas near Gocup, and an area near Ellerslie, as shown in Figure 5-8.

An area of plantation forestry land use near Adjungbilly is proposed to contain the Adjungbilly Road compound (C09), resulting in the intersection of 12.1 hectares of plantation forestry by the project footprint.



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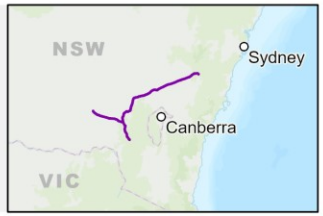
Project footprint
Land use and property study area
State of Victoria
State forest
National park and reserve
Major road

Land Use 2017
3.1.0 Plantation forests



Source: *Aurecon, Transgrid, DPE, Spatial Services (DCS), ESRI Basemap*

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0 40 80km

Projection: GDA 1994 MGA Zone 55

HumeLink **Land Use and Property**

FIGURE 5-8: Forestry land uses

5.3.2 Infrastructure and utilities

Land identified as being used for infrastructure purposes within the study area are generally associated with transportation infrastructure (eg roads, rail and airports) and utilities (eg energy production/transmission and water treatment). The project footprint intersects with approximately 71.5 hectares of land associated with infrastructure land uses, including utilities, roads and highways.

The project footprint intersects approximately 57.3 hectares of land identified as being used for utilities purposes, almost entirely associated with the existing Transgrid assets listed below:

- Wagga 330 kV substation
- Yass substation
- Bannaby 500 kV substation.

Additionally, existing major electricity transmission lines lie adjacent to (or within one kilometre of) the project footprint for the majority of its length, intersecting sections between Gobarralong and Red Hill (east of Gundagai), between Red Hill and Wondalga (west of Tumut), and short sections north of Yass and around Bannaby. The project footprint also intersects with local electricity lines in numerous locations.

Only a small area (of less than 1,000 square metres) identified as utilities land use is not associated with Transgrid assets. This area is identified as part of the Gullen Solar Farm, near Bannister, where a proposed access track intersects the solar farm area. Though wind farms are not necessarily identified through the Landuse dataset classifications (typically shown as grazing or other 'dominant' land use), the project footprint traverses the Gullen Range Wind Farm and the Crookwell 2 Wind Farm, at Bannister and Woodhouselee respectively. The nearest wind turbine to the project footprint is approximately 250 metres away, however the project footprint would intersect various ancillary structures such as access tracks and electricity transmission lines (over and/or underground).

Other significant utilities land uses identified near the project footprint include the Snowy Mountains Scheme, including dams, reservoirs, and power stations, with the nearest assets to the project footprint located between six and 20 kilometres from the footprint, east of Tumut and Batlow. Other major utilities infrastructure near the project footprint include:

- gas pipelines:
    - Moomba to Sydney and Dalton to Canberra underground gas pipelines, located approximately 3.5 kilometres from the project footprint at Dalton
    - Wodonga to Wagga Wagga Interconnect and Young to Wagga Wagga underground gas pipelines, located approximately 12.5 kilometres north-west of the project footprint at Gregadoo.
- water pipelines:
    - Oura to Ungarie underground water pipeline, located approximately 15 kilometres north of the project footprint at Gregadoo
    - Jugiong to Boorowa underground water pipeline, located at Jugiong, approximately 15 kilometres north-west of the project footprint at Gobarralong
    - Binalong to Murrumbateman water main runs through the project footprint approximately five kilometres north-west of Yass.
- Electrical cables:
    - AARNet electrical cables run through the project footprint from the Wagga 330 kV substation to the Gregadoo Road compound (C06)
    - Essential Energy electrical cables are located throughout the entire project footprint
    - Gullen Range Wind Farm electrical cables run through the project footprint approximately three kilometres south-west of Bannister

- Nextgen electrical cables run through the project footprint approximately two kilometres north-west of Dalton.

- Cellular network:
  - There are various points along the project footprint where the Optus global system for mobile communication link intersect
  - There are various points along the project footprint where Telstra cable lines intersect.
- Pipes and services
  - The Riverina Water County Council pipes and services is located at the Wagga 330 kV substation and runs south through the project footprint
  - Snowy Valley Council pipes and services cross the project footprint between Adelong and Gilmore.

Additionally, the project footprint intersects various local infrastructure, including water, gas, sewer, stormwater and telecommunication infrastructure.

In terms of transport infrastructure, the project footprint intersects several major roads and railway lines, identified in Table 5-5.

Table 5-5 Major roads and railway lines intersected by the project footprint (listed from west to east)

Item	Type	Approximate location of intersection
Tumbarumba Road	Regional road	25 km south-east of Wagga Wagga
Hume Highway (first intersection)	National road	9 km south-west of Tarcutta
Batlow Road	State road	South of Wondalga, 15 km south-west of Tumut
Snowy Mountains Highway*	State road	At Gadara, 5 km west of Tumut
Elliot Way	Regional road	27 km east of Tumbarumba
Gocup Road	State road	At Gocup 6 km north-west of Tumut.
Hume Highway (second intersection)	National road	6 km north-west of Yass (refer to Figure 5-9)
Main Southern railway line	Railway line	North of the Hume Highway, 7 km north-west of Yass (refer to Figure 5-10)
Grabben Gullen Road	Regional road	Near Gurrundah, approximately 17 km north-east of Gunning.
Crookwell Road / Goulburn Road**	Regional road	At Pejar Dam, 20 km north-west of Goulburn
Taralga Road	Regional road	At Myrtleville, approximately 29 km north-east of Goulburn

*Note – the Snowy Mountains Highway also abuts the project footprint at the Snowy Mountains Highway compound (C02) though is not intersected by it.

** Crookwell Road / Goulburn Road changes designation at approximately the location of the intersection with the project footprint.

Figure 5-9 View looking north across the Hume Highway from a rest area (near its second intersection with the project footprint). The project footprint is located 275 metres north of this location.

Source: HillPDA, 22 March 2022

Figure 5-10 View looking north-west across farmland toward the Main Southern railway line (the horizontal, dark green feature in the centre of the image), at the location of its intersection with the project footprint. The project footprint is located approximately 650 metres north-west of this location.

Source: HillPDA, 21 March 2022

In addition to the roads listed in the table above, the project footprint also intersects with a wide range of other roads including local roads and streets, as well as fire trails and private access tracks.

Four rail corridors are within the project footprint. Field observations confirmed that the rail corridors are not operational. The identified non-operational railway lines are listed below, along with the approximate location of their intersection with the project footprint:

- Wagga Wagga Tumbarumba Railway: intersects project footprint at Humula Road, south-east of Tarcutta
- Goulburn Crookwell Railway: intersects project footprint near Woodhouselee Road, Woodhouselee
- Tumut Railway Line: the former Gadara station is within the project footprint, and the Gilmore junction station is adjacent to the proposed Snowy Mountains Highway compound (C02)
- Kunama Railway Line: intersects project footprint north-east of Batlow.

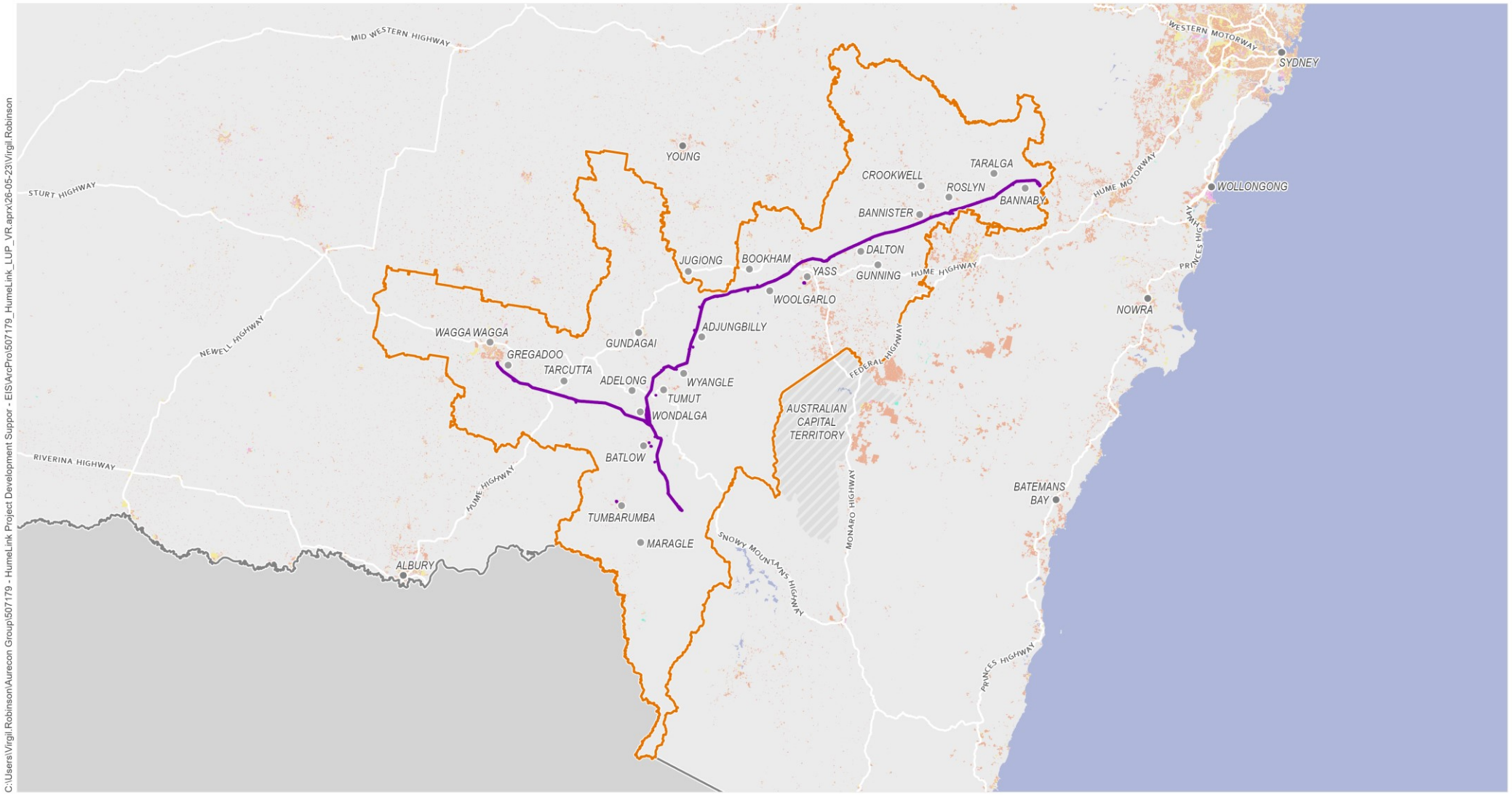
Other significant transport land uses identified within the vicinity of the project footprint include:

- Wagga Wagga Airport, east of Wagga Wagga, approximately 6.5 kilometres north of the project footprint at the Wagga 330 kV substation
- Tumut Aerodrome, north of Tumut, approximately five kilometres east of the project footprint at Gocup.

Waste treatment and disposal land uses are within the project footprint at the Bowmans Lane compound (C15), with the relevant land identified by Snowy Valleys Council as being used to store green waste following the 2019-2020 bushfires.

5.3.3 Urban

Urban land uses include residential and farm land uses, as well as industrial and services land uses. The project footprint intersects approximately 18.4 hectares of land associated with urban land uses (refer to Attachment E).



Source: *Aurecon, Transgrid, DPE, Spatial Services (DCS), ESRI Basemap*

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Projection: GDA 1994 MGA Zone 55

HumeLink **Land Use and Property**

FIGURE 5-11: Urban land uses

5.3.3.1 Residential and farm infrastructure

The primary urban land use within the project footprint is residential and farm infrastructure. In the context of the project footprint, residential land use is primarily associated with residences on large lots (eg greater than one hectare). These land uses are reflective of housing associated with farms and larger rural estates. Low density residential land uses (eg less than 1,000 square metre lots) are not located within the project footprint. Concentrations of residential and farm infrastructure land uses near the project footprint are identified in the areas shown below:

- Gregadoo, including in the vicinity of Wagga 330 kV substation and the Wagga 330 kV compound (C01)
- Batlow, including near the Memorial Avenue compound (C14) and Bowmans Lane compound (C15)
- Tumut and Gilmore, including near the Snowy Mountains Highway compound (C02)
- around Killimicat and Gocup
- around Yass and Bango, including near the Yass substation compound (C10)
- scattered throughout the rest of the project footprint.

The project footprint intersects approximately 14 hectares of land associated with residential and farm infrastructure.

5.3.3.2 Manufacturing and industrial

A small area of manufacturing and industrial land use exist at Woodhouselee, approximately three kilometres east of the location where the project footprint crosses Pejar Dam, totalling approximately 0.14 hectares. A proposed access track for the project intersects this area, which is associated with a bulk grain storage facility.

No other manufacturing or industrial land uses are identified within the project footprint, however there are two areas near the project footprint:

- at Gadara, west of Tumut, the Visy Pulp and Paper plant (paper manufacturing plant), which is located approximately 1.5 kilometres west of the project footprint
- at Gilmore, where a timber mill is located immediately to the west of the Snowy Mountains Highway compound (C02), on the opposite site of the road.

5.3.3.3 Services

Land uses identified as services include a wide range of facilities that serve population centres, for example, commercial facilities, sporting and cultural facilities, or health facilities. The project footprint intersects services land uses totalling 4.3 hectares of land, including:

- a small hardstand area and an area of grassed and vegetated land, associated with the Gregadoo Waste Management Centre Tip Shop (refer to Figure 5-12) immediately south of the Wagga 330 kV substation. Excluding the portion of hardstand area, the project footprint avoids the operational area of the Tip Shop.
- in Batlow, the Memorial Avenue compound (C14) is collocated with an area identified in the Landuse dataset as being used for commercial services. Analysis of the site identified that it consists of an existing administration building, various sheds and maintenance facilities, and a hardstand area that would be utilised as part of the Memorial Avenue compound (C14).

Figure 5-12 Area within the project footprint, alongside Ashfords Road, Gregadoo, approximately 350 metres south of the existing Wagga 330 kV substation, showing the Gregadoo Waste Management Centre Tip Shop and existing transmission lines.

Source: HillPDA, 23 March 2022

5.3.4 Natural environment

The project footprint intersects approximately 32.8 hectares of land categorised as natural environment (refer to Figure 5-15 and Attachment F) similar to the format of the other sections. Most of the land (26.4 hectares) is identified as being used for managed resource protection (including riparian areas and landscaped areas) with the remainder classified as other minimal use (6.4 hectares). The project footprint does not intersect any nature conservation land use areas, though it abuts or traverses very near to some of these areas, including national parks, nature reserves, and state conservation areas, as identified in Table 5-6.

Areas identified as managed resource protection land uses host a wide range of environmental features. In most instances, they consist of clustered or linear vegetation features or riparian corridors. Many of the linear vegetation features appeared to be in use as windbreaks, supporting adjacent agricultural land uses.

Table 5-6 Natural environment features and land uses near and within the project footprint.

Land use class	Location/feature name	Detail	Area within project footprint
Nature conservation	Tarlo River National Park	Located south of Bannaby. The project footprint lies generally between 200 m and 500 m away from the national park boundary, with some parts of the project footprint (including a proposed access trail) located approximately 10 m from the boundary.	None
	Back Arm Nature Reserve	Located near Middle Arm and Chatsbury. The project footprint is located less than 100 m from the southernmost point of the reserve.	None
	Bango Nature Reserve	Located north-east of Yass. The project footprint is approximately 150 m from the southernmost point of the reserve.	None
	Burrinjuck Nature Reserve	Located south-west of Yass. The project footprint is located approximately 2 km from the reserve's northernmost point.	None

Land use class	Location/feature name	Detail	Area within project footprint
	Mudjarn Nature Reserve	Located near Killimicat. The project footprint traverses to the south-west of the reserve, 200 m away at its nearest point.	None
	Minjary National Park	Located north-west of Tumut. The project footprint lies adjacent to the edge of the national park for approximately 2.1 km, separated by a small distance (approximately 10 m).	None
	Wereboldera State Conservation Area	Located south-west of Tumut. The project footprint is approximately 600 m from the nearest point of the state conservation area's boundary.	None
	Kosciuszko National Park	Located south-east of Batlow. The project footprint in this area is adjacent to cleared areas associated with existing electricity infrastructure. At the nearest point, the project footprint is approximately 100 m from the national park boundary.	None
Managed resource protection	Windbreaks	Typically associated with linear planted features on agricultural properties. Scattered throughout project footprint (refer to Figure 5-13).	26.4 ha
	Riparian areas	Typically associated with vegetation alongside creeks or creek beds. Scattered throughout project footprint (refer to Figure 5-14).	
	Other	Identified within the project footprint between the Hume Highway and Keajura Road. Classed as biodiversity within the Landuse dataset.	
		Identified within the project footprint at Gurrundah. Appears to be a plantation.	
Other minimal use	Roslyn-Woodhouselee area	Areas of residual native cover surrounded by grazing land uses. Northernmost section of this land use is directly within the project footprint.	6.4 ha
	Gregadoo-Big Springs area	Cleared area adjacent to O'Briens Creek.	

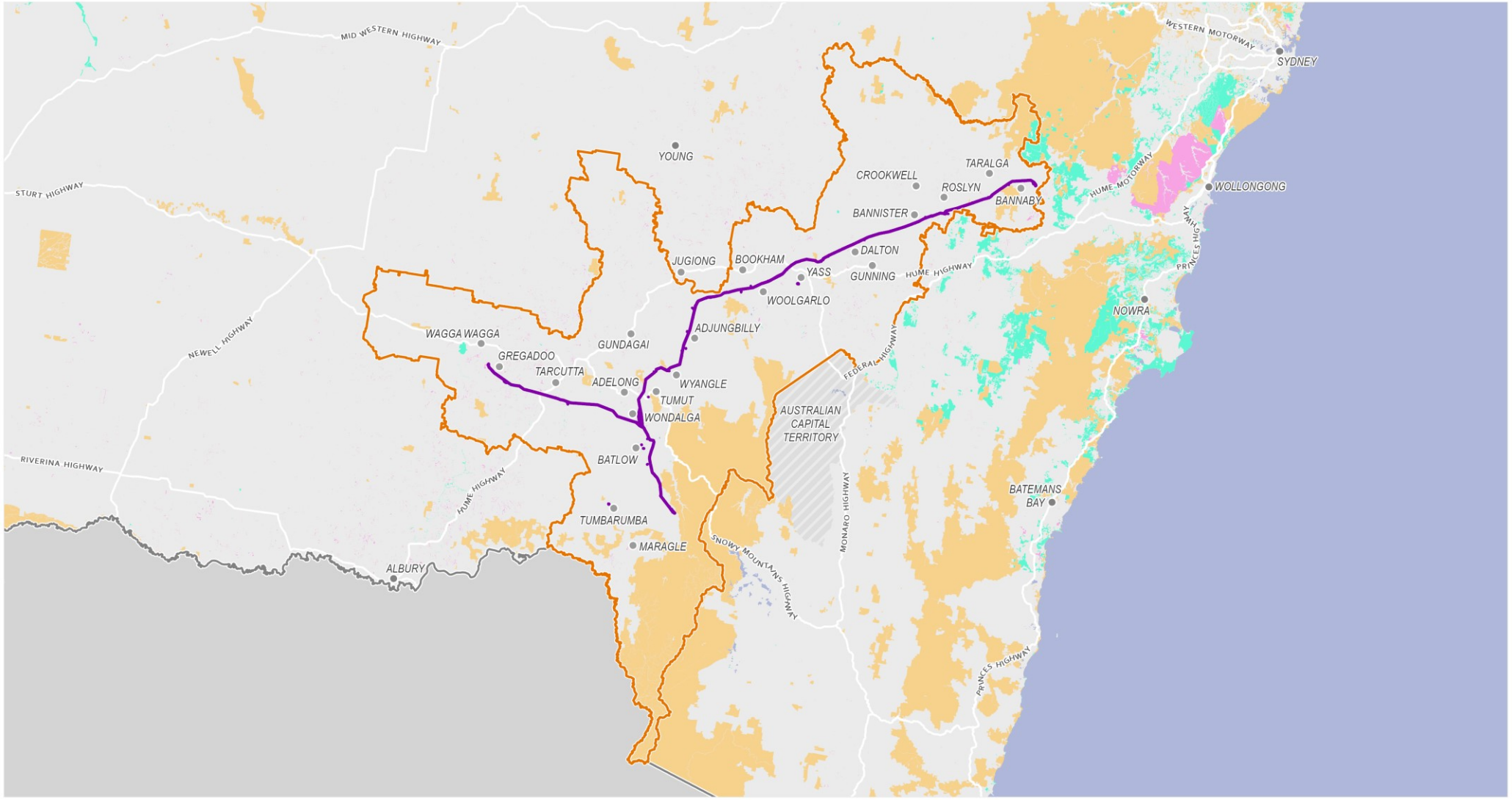
Figure 5-13 Area alongside Keajura Road, near the Hume Highway (approximately 50 metres north of the project footprint), showing windbreak with cleared gap for existing transmission lines

Source: HillPDA, 23 March 2022

Figure 5-14 Area alongside Westbrook Road at Oberne Creek adjacent to the project footprint, approximately 11 kilometres south-east of the Hume Highway at Tarcutta, showing managed resource protection land use associated with a riparian environment

Source: HillPDA, 23 March 2022

Natural environment uses and impacts are considered in more detail in *Technical Report 1 – Biodiversity Development Assessment Report.*



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Projection: GDA 1994 MGA Zone 55

HumeLink **Land Use and Property**

FIGURE 5-15: Natural environment land uses

5.3.5 Extractive industries

A review of the MinView database, undertaken in May 2023, identified the extent of current mining leases and exploration licences within or close to the project footprint. Identified mining exploration licenses and applications were observed to occur across a range of land tenures and uses, including on crown land and private land. While there are no mining leases within or near the project footprint, the project footprint intersects a number of exploration licences, as shown in Table 5-7.

Table 5-7 Exploration licences (as at May 2023)

Title	Title holder	Expiry date	Resource
EL8959	New South Resources Pty Ltd	25/03/2026	Minerals
EL8954	New Base Metals Pty Ltd	11/03/2026	Minerals
EL8996	Cullarin Metals Pty Ltd	17/08/2026	Minerals
EL8998	Godolphin Tenements Pty Ltd	9/09/2023	Minerals
EL9013	TRK Resources Pty Ltd	18/09/2023	Minerals
EL9028	Right Resources Pty Ltd	18/01/2023	Minerals
EL9049	TRK Resources Pty Ltd	15/02/2024	Minerals
EL9063	Wildcat Gold Pty Ltd	18/02/2027	Minerals
EL9089	Right Resources Pty Ltd	15/03/2027	Minerals
EL9120	Aurum Metals Pty Ltd	30/03/2027	Minerals
EL9370	Godolphin Tenements Pty Ltd	10/03/2028	Minerals
EL9374	Carbozorb Pty Ltd	18/03/2028	Minerals
EL9466	Legacy Minerals Pty Ltd	19/09/2027	Minerals
EL9544	Rox 1 Pty Ltd	29/03/2027	Minerals
EL9449	Right Resources Pty Ltd	10/08/2025	Minerals
EL9532	Gilmore Metals Pty Ltd	19/02/2026	Minerals

In addition to the mining exploration licences identified above, three sites in proximity to the project footprint are identified in the Landuse dataset as mining. The project footprint intersects land and access roads associated with the Gregadoo Waste Management Centre, approximately 500 metres south of the Wagga 330 kV substation (refer to Figure 5-16). The intersected land is incorrectly identified as an area of mining land use. South-west of Tumut, a waste/recycling facility located adjacent to the Snowy Mountains Highway compound (C02), near the Tumut Resource Recovery Centre is incorrectly identified as a mining land use in the Landuse dataset. Additionally, an area of mining land use, north of Wondalga, is approximately 200 metres west of the project footprint. The site appears to be a local quarry.

Figure 5-16 View to the south-west of the Gregadoo Waste Management Centre access road, approximately 500 metres south of the Wagga 330 kV substation. The access road and photo location are both within the project footprint

Source: HillPDA, 23 March 2022

5.3.6 Water

Approximately 154 hectares of the project footprint are classified as a water land use, typically associated with crossings over rivers and creeks, as well as areas classified as marshes or wetlands. The largest body of water intersected by the project footprint is classified as a lake, at Pejar Dam (refer to Figure 5-17), on the Wollondilly River (approximately 5.3 hectares intersected). Other major waterways within the project footprint include the Murrumbidgee River (refer to Figure 5-18) and the Tumut River.

Additionally, the project footprint is located near the major water storages of Blowering and Talbingo Reservoirs and Jounama Pondage, south of Tumut. Of these, the nearest is Blowering Reservoir, located approximately 2.5 kilometres east of the project footprint at its nearest point. Additionally, the project footprint is located approximately 2.5 kilometres from Lake Burrinjuck at its nearest point, south-west of Yass.

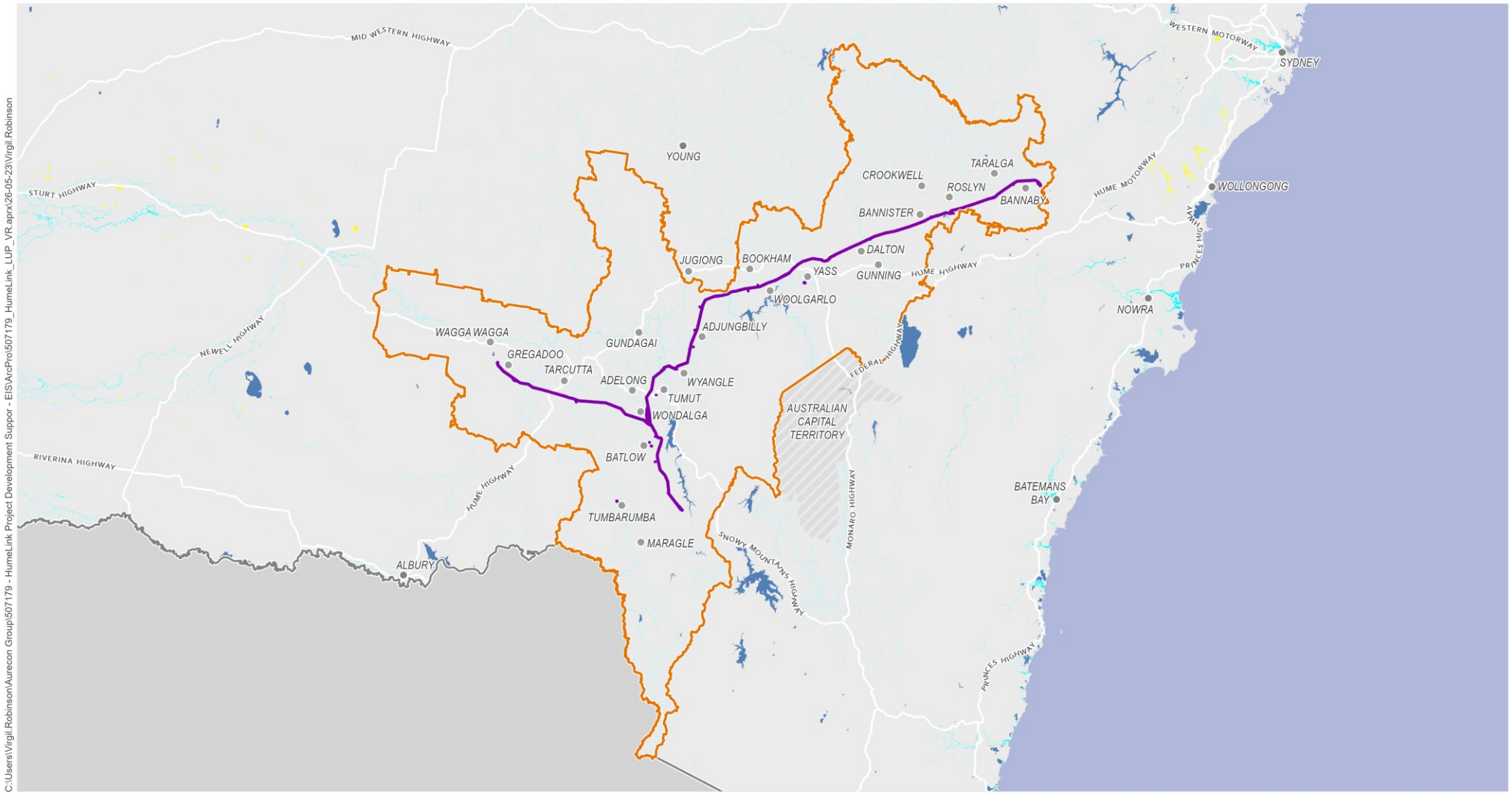
Figure 5-17 Pejar Dam, view the north-east showing Crookwell 2 Wind Farm and Bannaby to Yass transmission line, approximately two kilometres south of the project footprint

Source: HillPDA, 21 March 2022

Figure 5-18 View over the Murrumbidgee River from within the project footprint, approximately 21 kilometres south-east of Jugiong

Source: HillPDA, 22 March 2022

Water land uses within the project footprint are shown in Figure 5-19 and Attachment G and detailed in Table 5-8.



Project footprint

Land use and property study area

State of Victoria

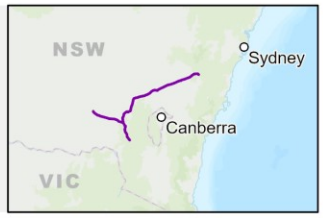
Major road

Land Use 2017

6.1.0 Lake

6.2.0 Reservoir/dam

6.3.0 River



Source: *Aurecon, Transgrid, DPE, Spatial Services (DCS), ESRI Basemap*

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Projection: GDA 1994 MGA Zone 55

HumeLink **Land Use and Property**

FIGURE 5-19: Water uses

Table 5-8 Water land uses within and near the project footprint

Land use class	Location/feature name	Detail	Area within project footprint (ha)
Lake	Blowering and Talbingo Reservoirs and Jounama Pondage	South of Tumut, approximately 2.5 km from the project footprint at nearest location.	Nil
	Lake Burrinjuck	South-west of Yass, approximately 2.5 km from the project footprint at nearest location.	Nil
	Pejar Dam	Large water storage on the Wollondilly River, north of Goulburn. Supplies drinking water to Goulburn. Project footprint traverses the dam (refer to Figure 5-17).	5.3
	Lake total		**5.3**
Reservoir/dam	Large private dam	Within the project footprint, east of Book Book.	0.5
	Reservoir/dam total		**0.5**
River	Murrumbidgee River	Major river in the region, tributary to the Murray River. Project footprint traverses the Murrumbidgee north-east of Adjungbilly (refer to Figure 5-18).	2.5
	Tumut River	Major river in the region, tributary to the Murrumbidgee River. Project footprint traverses the Tumut River near Killimicat.	3.6
	Various	Project footprint traverses numerous smaller rivers, creeks and other streams.	118.5
	Total river		**124.6**
Marsh/wetland	Various	Project footprint traverses numerous marsh/wetland areas	23.7
	Total marsh/wetland		**23.7**
All water			**154**

No areas identified as channel/aqueduct or estuary/coastal waters are within or near the project footprint.

Further detail on the existing environment in relation to water can be found in *Technical Report 11 – Hydrology and Flooding Impact Assessment* and *Technical Report 12 – Surface Water and Groundwater Impact Assessment*.

5.3.7 Summary of land use extents

This section summarises the spatial extent of land uses within the project footprint and study area as defined using the Landuse dataset, as outlined in Section 4.3.2.

Table 5-9 Summary of land use spatial extents within the study area and project footprint

Land use	Study area		Project footprint		Proportion (%) of study area land use contained within the project footprint
	Area (ha)	Percentage	Area (ha)	Percentage	
1.1.0 Nature conservation	481,366	16.5	0.0	<0.1	0.0
1.2.0 Managed resource protection	10,543	0.4	26.4	0.3	0.3
1.3.0 Other minimal use	6,751	0.2	6.4	0.1	0.1
2.1.0 Grazing native vegetation	698,533	23.9	2171.9	25.4	0.3
2.2.0 Production native forestry	212,683	7.3	1067.1	12.5	0.5
3.1.0 Plantation forests	32,797	1.1	21.5	0.2	0.1
3.2.0 Grazing modified pastures	855,829	29.3	4200.1	49.1	0.5
3.3.0 Cropping	469,306	16.1	802.2	9.4	0.2
3.4.0 Perennial horticulture	894	<0.1	0.0	<0.1	0.0
3.5.0 Seasonal horticulture	102	<0.1	0.0	<0.1	0.0
3.6.0 Land in transition	595	<0.1	3.3	<0.1	0.6
4.1.0 Irrigated plantation forests	5	<0.1	0.0	<0.1	0.0
4.2.0 Grazing irrigated modified pastures	960	<0.1	0.0	<0.1	0.0
4.3.0 Irrigated cropping	8,353	0.3	0.0	<0.1	0.0
4.4.0 Irrigated perennial horticulture	2,730	0.1	4.1	<0.1	0.2
4.5.0 Irrigated seasonal horticulture	6	<0.1	0.0	<0.1	0.0
5.1.0 Intensive horticulture	64	<0.1	0.0	<0.1	0.0
5.2.0 Intensive animal production	2,634	0.1	0.0	<0.1	0.0
5.3.0 Manufacturing and industrial	1,023	<0.1	0.1	<0.1	0.0
5.4.0 Residential and farm infrastructure	50,715	1.7	14.0	0.2	0.0
5.5.0 Services	4,097	0.1	4.3	<0.1	0.1
5.6.0 Utilities	363	<0.1	57.3	0.7	15.8
5.7.0 Transport and communication	12,329	0.4	8.4	0.1	0.1
5.8.0 Mining	1,062	<0.1	3.6	<0.1	0.3
5.9.0 Waste treatment and disposal	392	<0.1	5.7	0.1	1.5
6.1.0 Lake	14,962	0.5	5.3	0.1	0.0
6.2.0 Reservoir/dam	1,158	<0.1	0.5	<0.1	0.0
6.3.0 River	43,329	1.5	124.6	1.5	0.3
6.5.0 Marsh/wetland	8,182	0.3	23.7	0.3	0.3
Total all land use categories	2,921,763	100.0	8550.5	100.0	0.3

Note: the total area is calculated from unrounded land use areas. The total area of land use within the project footprint may slightly differ from other total areas included in this report due to minor variations in datasets and GIS processing.

5.4 Planned local development

Stakeholder consultation was undertaken by Transgrid in relation to the project, including enabling stakeholders to identify matters on an interactive mapping platform. This included landowners and other stakeholders identifying areas and sites near or within the project footprint that may be affected by future development.

A large number of sites were submitted by stakeholders as potential future development locations. Based on development application (DA) searches undertaken for the project footprint in September 2022, only four of the proposals were able to be corroborated with a submitted or determined DA. Of these, three are located between five hundred metres and one kilometre from the project footprint. The project footprint intersects multiple constituent lots of a larger consolidated lot, in Bowning, approximately five hundred metres south-west of the Hume Highway. A point on the lot approximately 350 metres northwest of the project footprint was identified by the landowner as a site planned for the construction of a residence. This proximity may impact the landowner's decision to construct a residence at that location, however, the intersected lot is large enough to offer alternative locations should the landowner seek further separation from the project footprint.

In addition to the above consideration of planned local development, consideration of proposed and approved major projects within the vicinity of the project footprint that may contribute to cumulative impacts on land use and property is provided in Chapter 8.0.

CONSTRUCTION IMPACTS

6.0 CONSTRUCTION IMPACTS

This chapter details the anticipated land use and property impacts resulting from the construction of the project, in alignment with the methodology outlined in Chapter 4.0. Direct impacts from the project are considered through analysis of land use and property in the project footprint, whilst the study area is used to contextualise and assess any broader impacts.

For the purpose of the assessment, potential impacts have been based on the project footprint as the final locations of permanent infrastructure are yet to be confirmed and would be subject to detailed design and consultation with relevant stakeholders/landowners. Therefore, the impacts presented in this chapter are conservative and would be refined as the project progresses.

6.1 Property

The project would require the use of land temporarily (during construction) and permanently (during operation). While the permanent property requirements would be long-term and relate to operation of the project, they would commence during construction and have subsequently been assessed in this section. This section describes potential impacts to property resulting from the project in terms of changes to tenure, land and movement restriction, the built environment, and property values.

6.1.1 Tenure and ownership adjustments

As outlined in Section 5.2, the project footprint contains a variety of freehold and public land. The project would require temporary or permanent alterations to property tenure or ownership arrangements to facilitate construction. The temporary arrangements are considered in this section. While it is acknowledged the permanent arrangements would commence before construction, they have been assessed as a long-term operation impact (refer to Section 7.1.1). The temporary arrangement to facilitate construction would involve:

- temporary leases of freehold and government and crown land for temporary access to the project footprint as well as establishment and use of construction compounds, the worker accommodation facility and construction areas established for the construction of the transmission lines
- landowner agreements or specific access track easements for temporary off-easement access tracks.

Table 6-1 provides an overview of the tenure and ownership alterations for the construction compounds and accommodation facility that may be required for the project.

Table 6-1 Temporary tenure and ownership impact summary

Project infrastructure	Ownership	Site area	Proposed tenure or ownership impact
Wagga 330 kV substation compound (C01)	Transgrid	Approximately 1.92 ha	N/A
Snowy Mountains Highway compound (C02)	Snowy Valleys Council	Approximately 1.38 ha	Leased
Snubba Road compound (C03)	Private property	Approximately 5.12 ha	Leased
Maragle 500 kV substation compound (C05)	Acquisition currently underway for Snowy 2.0 Transmission Connection Project from FCNSW	Approximately 11.10 ha	N/A
	Existing Transgrid easement	Approximately 0.87 ha	N/A
Gregadoo Road compound (C06)	Private property	Approximately 16.40 ha	Leased

Project infrastructure	Ownership	Site area	Proposed tenure or ownership impact
Honeysuckle Road compound (C07)	Forestry Corporation of NSW	Approximately 8.20 ha	Leased
Red Hill Road compound (C08)	Forestry Corporation of NSW	Approximately 2.59 ha	Leased
Adjungbilly Road compound (C09)	Private property	Approximately 12.09 ha	Leased
Yass substation compound (C10)	Transgrid	Approximately 21.44 ha	N/A
Woodhouselee Road compound (C11)	Private property	Approximately 5.00 ha	Leased
Bannaby 500 kV substation compound (C12)	Electricity Transmission Ministerial Holding Corporation, leased and managed by Transgrid	Approximately 2.75 ha	N/A
Memorial Avenue compound (C14)	Private property	Approximately 2.03 hectares	Leased
Bowmans Lane compound (C15)	Snowy Valleys Council	Approximately 5.74 ha	Leased
Snubba Road compound (C16)	Forestry Corporation of NSW/Crown land	Approximately 2.64 ha	Leased
Worker accommodation facility at Tumbarumba (AC1)	Snowy Valleys Council	Approximately 21.44 ha	Leased

In total, approximately 40 hectares would be leased from private landowners, 28 hectares from local government and around 13 hectares from State agencies. The landowner agreement process is outlined in Transgrid's *Landowner Easement and Compensation Guide* (Transgrid, 2023). Temporary leases would be negotiated with landowners via commercial negotiations.

Additional land may be required for additional facilities and work sites such as temporary access tracks and minor staging, brake and winch sites, work sites, storage or laydown areas along the project footprint, subject to detailed design. This would take place across land with various tenure and ownership arrangements, including Crown land. The most significantly impacted Crown land area would be the part of Bago State Forest intersected by the project footprint, southeast of Batlow. The project footprint traverses approximately 20 kilometres of Crown land through Bago State Forest, all of which is classified as production native forestry land (refer to Section 6.2.1.2).

A large parcel of Crown land is also intersected by the project footprint in Gobarralong, along Bundarbo Road and the Murrumbidgee River. The project footprint traverses approximately 1.8 kilometres of this land, which is constituted of land classified as grazing modified pastures and grazing native vegetation (refer to Section 6.2.1.1). The next most significant parcel of Crown land intersected by the project footprint is located on the western shore of Pejar Dam. The project footprint traverses approximately 700 metres of this land, which is constituted of land classified as grazing native vegetation (refer to Section 6.2.1.1).

Other areas of Crown land intersected by the project footprint are far smaller, and are generally classified as grazing land uses or managed resource protection areas. The project footprint intersects several TSRs that are Crown land, including at Gurrundah, Bannister, and Myrtleville (refer to Section 6.1.2 for detail regarding TSRs). Finally, the project footprint also passes close to large Crown land areas associated with nature conservation land use areas at Minjary National Park and Bango Nature Reserve.

Overall, impacts to tenure and ownership arising from the construction of the project would be minor due to the short term nature of the leasing requirements. The compensation process as provided in Transgrid's *Landowner Easement and Compensation Guide* (Transgrid, 2023) would contribute to mitigating these impacts.

6.1.2 Travelling stock reserves

TSRs within the study area are identified in the *Technical Report 4 – Agricultural Impact Assessment*. As outlined in Section 5.2.2, the project footprint intersects 18.4 hectares of TSRs, across four TSRs, totalling less than 0.3 per cent of the total area of TSRs within the study area (6,738 hectares). The project footprint generally intersects a small area of each TSR. The most significantly intersected TSR (located near Myrtleville) has roughly half of its total area intersected. It adjoins another TSR that has a much smaller proportion of its total area intersected, reducing any impacts.

Technical Report 4 – Agricultural Impact Assessment notes that whilst there are a number of TSRs within the project footprint, any restrictions on access to these areas would only be associated with the construction process and would therefore be temporary. Additionally, more than two thirds of the total area of the intersected TSRs would remain unaffected by the project footprint.

Property impacts to TSRs arising from the construction of the project would be negligible.

6.1.3 Built environment alterations

Construction of the project may require the removal of structures within the project footprint for construction of the transmission lines and the establishment of associated easements. As identified in Section 5.2.1, nine residences are identified within the project footprint. Detailed design would seek to refine the transmission line route to avoid or minimise impacts on residential residences and other structures where possible. The final transmission line route would aim to be located as far as practicable from residential residences. If impacts cannot be avoided, then the residences/structures would be acquired and the structures relocated or as otherwise agreed with the landowner prior to the commencement of construction.

Other structures, such as fencing, irrigation, private airstrips and fuel storage within the easement, may require adjustments or removal to facilitate construction and enable future compliance with Transgrid's *Living and working with electricity transmission lines* (Transgrid, n.d.-a). Removal and/or infrastructure adjustments would be carried out in consultation with landowners. Transgrid may also install locked and signed access gates to enable access to the easement should a landowner not have a suitable nearby access.

Considering a worst case scenario, up to nine residences within the project footprint may require removal. The current concept design however is expected to directly impact one residence based on the indicative easement, likely requiring demolition. The project would continue to be refined to avoid and or minimise impacts on residential residences where possible. While the final easement would be more refined than the project footprint, any removal of residences and infrastructure would place a cost and productivity burden on landowners and can cause displacement. Overall, the impact is considered to be moderate.

6.1.4 Land requirements

The project would require land to construct temporary infrastructure including access tracks, construction compounds and the worker accommodation facility. The telecommunications hut, new and modified substations, connections to utilities, and the transmission line and structures, while for operation purposes, would be established during construction. These are assessed in Section 7.1.4.

As noted in Section 5.2, the project footprint was found to intersect a total of 760 lots, with approximately 22.5 per cent of each lot being intersected on average.

Access on public roads and rail corridors may also be temporarily disrupted to allow for construction activities including stringing of transmission lines. Any disruption would be short-term and scheduled in consultation with the relevant authority and in accordance with required licences (eg road occupancy licence).

The spatial extent of land restrictions during construction would be more extensive than during operation, though some impacts would be temporary. Land not required for operation would be remediated and able to be repurposed by the landowners. These impacts are outlined in the following sections.

Overall, the impact to land requirements arising from the construction of the project would be minor.

6.1.4.1 Access tracks

Access to the transmission line structures would be required during construction and may be retained for operational purposes. This may require access across private properties from the local road network. Where not limited by difficult terrain, access tracks would be contained within the transmission line easements. Where access tracks extend beyond the easements, the location of the access tracks would be agreed with the landowner.

Access tracks would fall into two broad groups:

- unimproved access tracks that provide access to work sites by using existing roads or tracks, or driving on existing soil or ground surface with minimal or no prior preparation
- constructed access tracks in areas where there are no existing roads or tracks, or where terrain conditions prevent continuous access along the easement between road crossings.

The project footprint includes a conservative 30-metre-wide corridor that would contain an indicative disturbance area that is 10 metres wide, which allows for location flexibility and potential earthworks either side of the access track during construction. Furthermore upon completion of construction, retained access tracks would be approximately six metres wide.

6.1.4.2 Construction compounds

This assessment has considered that up to 14 construction compounds may be required to support project construction. The final number and layout of compounds would be refined as the project progresses, in consultation with the construction contractors. The proposed construction compounds range in size from between approximately 1.4 hectares to 21.4 hectares. Cumulatively, this equates to up to around 99 hectares of land that could be temporarily required during construction for construction compounds. The land use impact on construction compounds is addressed in Section 6.2.

Some construction compounds would accommodate helicopter landing pads (helipads), required to deliver materials and equipment in areas of rough terrain. Helipads would occupy an area of approximately 30 metres by 30 metres. The helipad sites would be spread across the extent of the project and wholly contained within their respective construction compound, therefore would not require additional land. The exact location and number of the helipads would be confirmed during detailed design in consultation with the construction contractors. While land used for helipads would not be fenced, it could not be used for an alternate purpose while construction is occurring.

The use of this land for alternate purposes would not be possible for the full duration of construction.

All land used for construction compounds (including helipads) would be returned to existing conditions upon completion of construction work.

6.1.4.3 Temporary worker accommodation

Located in consultation with Snowy Valleys Council, the temporary worker accommodation at Tumbarumba (Tumbarumba accommodation facility (AC1)) would require the use of approximately 11 hectares of land for the construction of demountable accommodation cabins, amenities, parking, access and connections to utilities.

The use of this land for alternate purposes would not be possible for the full duration of construction.

Once the project reaches the operation phase, the Tumbarumba accommodation facility (AC1) would be dismantled and land use returned to existing conditions, or as otherwise agreed with Snowy Valleys Council.

6.1.4.4 Transmission line and structures

During construction there may be temporary access restrictions near work sites for the construction of the transmission lines. Parts of some properties would be used to access, and small work sites established, to facilitate construction work and activities. The land required for construction of each transmission line structure would include 50 metre by 70 metre work site plus brake and winch sites at select locations. While construction

work would be intermittent (generally around 21 weeks at any transmission line structure location including survey) and would occur at different parts of the project footprint at different times, access to small sections of the project footprint may not be possible for short periods of time.

6.1.5 Movement restrictions

Construction of the project is unlikely to substantially restrict movements of landowners, operators, and livestock within the project footprint for the entire duration of construction. Access may be restricted temporarily for certain activities such as the construction of transmission line structures or stringing. However, these restrictions would be short-term and undertaken in consultation with landowners. While there is likely to be some temporary fragmentation of properties during construction, construction at each transmission line structure would be intermittent and would not occur for the full construction duration. Any properties or landowners subject to short-term changes to access during construction would be provided with alternative access.

Landowners throughout the project footprint may be affected by changed access regimes arising from temporary road closures, transmission line stringing work over roads, or simply through increased traffic. Social impacts arising to landowners from access changes are covered in detail in *Technical Report 7 – Social Impact Assessment*.

Additionally, landowners that operate or utilise aircraft services in or near the project footprint (such as for aerial crop spraying) would be subject to restrictions on aerial operations arising from the construction of the project. These impacts would commence at different stages of the construction process in different locations, as transmission line structures and transmission line stringing work progressed.

The *Technical Report 14 - Aviation Impact Statement* assessed that there are 35 aircraft landing areas (ALAs) and four helicopter landing sites (HLS) within three nautical miles of the project footprint. It assessed that the project would result in a major impact on four ALAs. This means that the use of the ALA would be compromised by the nearby location of the transmission line. This may include the aerodrome being unusable or a significant modification to its layout being required to enable aviation operations to continue. For additional detail on these impacts, refer to the *Technical Report 14 - Aviation Impact Statement*.

Overall, movement restrictions during construction would be more significant compared to during operation. However, changes would be intermittent and short-term and the process for maintaining property access would be developed in consultation with relevant stakeholders. Restrictions to the movement of aircraft in and around the project footprint would be more significant, and these restrictions would commence during the construction process.

Generally, construction impacts that restrict movement would be most significant at the project footprint scale, though these would be short term and addressed in consultation with directly impacted stakeholders through property management plans as identified in Section 9.0. At the scale of the study area, impacts to movement restrictions arising from construction of the project would generally be minor and would be managed through the Construction Environmental Management Plan (CEMP) and associated management plans.

6.1.6 Land value

The property market responds to various positive and negative influences, which may be impacted by the construction and/or operation of the project. Changes in the property market are generally captured by one or more of the following elements:

- general market forces: ie interest rates, international investment, supply/demand, population and market growth
- market perception: the community's perception of construction activity impacts, risks and uncertainty
- locational attributes: ie positive or negative elements such as amenity, accessibility, travel times, view corridors and noise sources.

The impact of transmission lines on property value both regionally and nationally remains undetermined and much of the previous research on the impact of high voltage transmission lines on property value relates to

residential properties in suburban and urban areas, rather than agricultural land which makes up the vast majority of the properties within the project footprint.

There is a perception that the presence of transmission lines has an adverse impact on property values. Landowners may experience changes to land value due to reduced amenity and noise impacts associated with the operation of the project. Social impacts arising from these changes are assessed in detail in *Technical Report 7 – Social Impact Assessment* whilst an assessment of the extent of changes is provided in *Technical Report 9 – Noise and Vibration Impact Assessment*.

The severity of property value impact varies between studies. A study of transmission line removal in Wellington (New Zealand) found negative sale price impacts on 27 per cent for properties adjacent to the transmission line structures, and that this impact reduces to five per cent for properties at 50 metres from the transmission line structures (Callanan, 2014). This effect diminishes to a negligible amount at a distance of 100 metres. Another study found that the price of houses within 50 metres of a transmission line were 20 per cent less than the mean house price, 15 per cent less at distance of 50 to 100 metres of a transmission line and seven per cent less at distance between 100 and 200 metres (Han, H. and Elliot, P, 2013). Little impact on the property prices was found for distances over 200 metres (ibid).

The latter study also concludes that vulnerability to transmission line impacts on land value is influenced by three variables: use, size and availability of substitutes. Moreover, it reports that properties whose primary use is residential are more vulnerable to value impacts than agricultural or recreational uses.

A study by James Chalmers explored the market impact of the Colstrip-BPA 500 kV line in United States, Montana on the sale of agricultural and residential properties. The study employed appraisal-based techniques to evaluate a cohort of 56 case studies and undertook a statistical evaluation of sales in the Aspen Valley Ranches subdivision in Jefferson County. The study found an average impact of 15 per cent devaluation for rural residential subdivisions within 1,000 feet (around 300 metres) of the line. However, the study found "little to no sensitivity to price impacts within production agriculture and amenity-influenced agricultural properties" (Chalmers, , 2012).

With production agriculture accounting for the vast majority of land in the project footprint, it is expected that the impact of the project on land prices within the project footprint and wider study area would be minimal. It is anticipated that the main impact of the project on the land values of impacted agricultural properties would be directly correlated to any loss of productivity (refer to *Technical Report 6 – Economic Impact Assessment*).

These impacts may be partially or fully mitigated through compensation as outlined in the *Landowner Easement and Compensation Guide* (Transgrid, 2023).

Overall, impacts to property value during construction are assessed as being moderate for landowners within the project footprint. These impacts would be reduced to minor with the application of mitigation measures outlined in Chapter 9.0.

6.1.7 Construction property impact assessment summary

Table 6-8 contains an overview of the property impacts pertaining to the construction of the project, as identified in the preceding sections.

Table 6-2 Construction property impact summary

Property impact category	Impact assessment
Tenure and ownership adjustments	Minor
Travelling stock reserves	Negligible
Built environment	Moderate
Land requirements	Minor
Movement restrictions	Minor
Land value	Minor

6.2 Land use

Construction of the project would result in temporary impacts on existing land uses within and around the project footprint. Impacts would broadly be classified into the following categories:

- direct changes in land use resulting from the construction of transmission line structures, any required clearing of easements, access tracks, substation work, telecommunications hut, construction compounds and other ancillary facilities
- changes in amenity (eg visual, noise, air quality and traffic impacts) associated with construction of the project.

Potential economic impacts arising from changes to land use and amenity are outlined in *Technical Report 6 – Economic Impact Assessment*. Potential social impacts arising from changes to land use and amenity are discussed in *Technical Report 7 – Social Impact Assessment*. The extent of visual and landscape amenity changes and noise and vibration are outlined in *Technical Report 8 – Landscape Character and Visual Impact Assessment* and *Technical Report 9 – Noise and Vibration Impact Assessment*.

As identified in Table 5-9, the project footprint covers an area of approximately 8,551 hectares. However, the project footprint is conservative to allow for flexibility during the detailed design and construction phase. As such, the final area used for construction would be smaller than the project footprint assumed in this assessment, and subsequently the spatial extent of impacts to land use would be lower. For example as identified in Section 6.1.4.1, while the project footprint includes a 30-metre-wide corridor for the construction of access tracks, the indicative disturbance area within this corridor would be approximately 10 metres wide to allow for location flexibility during detailed design and construction.

The following sections present the impacts on secondary land use classes as classified by the ALUM system outlined in Section 4.3.2 and Table 4-2 . The analysis draws on the quantified land use spatial extents specified in Chapter 5.0 to consider the impacts to land use during construction. It also considers the broader study area implications of altering the land uses within the project footprint. Where further specific information is available on the observed use of land, according to satellite and field observations, this has also been discussed.

6.2.1 Agriculture and primary production

As noted in Section 5.3, agriculture and primary production is the predominant land use in both the project footprint and the study area. These land uses comprise approximately 8,267 hectares (96.7 per cent) of the project footprint, the majority of which comprises land used for grazing (74.5 per cent of the project footprint). The agriculture and primary production land intersected by the project footprint accounts for approximately 0.43 per cent of the total agriculture and primary production land use of the study area. As identified in *Technical Report 6 – Economic Impact Assessment*, primary industries are among the most significant economic and employment contributors in the study area, signifying the importance of the relevant land uses.

6.2.1.1 Agriculture

The project footprint intersects approximately 7,178 hectares of land used for agricultural purposes. This report assesses the land use impacts of the project on classified agricultural land. The *Technical Report 4 – Agricultural Impact Assessment* assesses the impacts on agricultural processes and productivity.

During construction, the extent and intensity of potential and expected impacts are generally greater due to higher activity and a larger area of land in comparison to operation. However, construction impacts would only be temporary in duration and intermittent.

Five construction compounds associated with the construction of the project are currently classified as being used for agricultural purposes including grazing and cropping. During construction, the existing land uses within these properties would be impacted. The relevant project components and areas are shown in Table 6-3.

Table 6-3 Accommodation facility and construction compound areas collocated with agriculture land uses

Relevant component/area	Land use	Observation(s)	Construction area (ha)
Tumbarumba accommodation facility (AC1)	Grazing modified pastures	Cleared grazing area.	11.0
Snowy Mountains Highway compound (C02)	Grazing modified pastures	Cleared grazing area.	1.4
Snubba Road compound (C03)	Grazing modified pastures	Cleared grazing area, divided by fences.	5.1
Gregadoo Road compound (C06)	Cropping	Cleared cropping land, adjacent to existing transmission lines. Bisected by tree windbreak.	16.4
Woodhouselee Road compound (C11)	Grazing modified pastures	Cleared grazing area, bisected by access track.	5.0
Bannaby substation compound (C12)	Grazing modified pastures	Cleared grazing area.	2.8
Proposed Gugaa 500 kV substation	Cropping	Cleared cropping land, adjacent to existing transmission lines. Bisected by tree windbreak.	22.0
Bannaby 500 kV substation	Grazing native vegetation	Marginal area of larger grazing area, including waterway bank and trees.	0.2

Note: observations sourced from satellite imagery (Geoscience Australia, 2022a) and field survey.

Despite the potential impacts outlined above, it is noted that agricultural land intersected by the project footprint constitutes only 0.4 per cent of total agricultural land within the study area. The potential impact on the availability of cropping and irrigated perennial horticulture land uses would be minimal in the context of the study area as the project footprint intersects just 0.05 per cent of the total land associated with those uses across the study area. The project footprint intersects grazing land constituting a more notable proportion of the study area's quantum of such land (0.4 per cent), though it is still small. These land uses would be intermittently affected during the project's construction phase.

Overall, temporary impacts to agricultural land uses during construction of the project are assessed as being minor. The impacts of changes to land use on agricultural activities and productivity are further discussed in *Technical Report 4 – Agricultural Impact Assessment.*

6.2.1.2 Forestry

As outlined in Section 5.3.1.2, the project footprint intersects approximately 1,087 hectares of production native and plantation forest land use areas. This represents around 0.5 per cent of the total production native and plantation forest land use across the study area. Forestry and timber processing are important land uses to the regional economy, particularly to the Snowy Valleys LGA.

Construction of the project would result in temporary impacts to forestry land through the location of the following construction compounds:

- Maragle 500 kV substation compound (C05) – production native forestry
- Honeysuckle Road compound (C07) – production native forestry
- Red Hill Road compound (C08) – production native forestry
- Adjungbilly Road compound (C09) – private plantation forestry
- Snubba Road compound (C16) – production native forestry.

Based on the concept design it is likely that the construction of the project would result in up to 375.9 hectares of production native forestry land and 16.2 hectares of plantation forestry, subject to detailed design. Of this 37.5 hectares would be located within construction compounds. For both these forestry land uses, this represents a temporary loss of less than 0.2 per cent of the respective total forestry land across the study area.

The use of these areas for construction compounds may require clearing of the land and therefore costs to the operator in terms of lost productivity. While the construction compounds would be temporary, they may have an economic and productivity impact on the forest industry due to the cost and delays associated with replanting and waiting for new growth. The economic impact of the project operation to forestry land uses is discussed in *Technical Report 6 – Economic Impact Assessment*.

The status of the forestry land associated with the construction compounds listed above is shown in Table 6-4, as drawn from field observations and satellite imagery.

Table 6-4 Compounds collocated with forestry land uses

Relevant compound	Land use	Area (ha)	Observation(s)[1]
Maragle 500 kV substation compound (C05)	Production native forestry	11.97[2]	Currently forested, not harvested within the last five years.
Honeysuckle Road compound (C07)	Production native forestry	8.20	Harvested in August 2018, appears to have been cleared since that time.
Red Hill Road compound (C08)	Production native forestry	2.59	Does not contain forested areas. An existing building is located within the construction compound boundary and is likely used to support forestry operations.
Adjungbilly Road compound (C09)	Private plantation forestry	12.09	Last harvested in approximately mid-2017. Significant regrowth evident (refer to Figure 6-1).
Snubba Road compound (C16)	Production native forestry	2.64	An area roughly corresponding with the construction compound was harvested in late 2020 and does not appear to have been replanted.

Note 1:observations sourced from satellite imagery (Geoscience Australia, 2022a) and field survey.

Note 2: 10.12 hectares of the Maragle 500 kV substation compound (C05) has been assessed, and would be cleared, under the Snowy 2.0 Transmission Connection project. Of the remaining 1.85 hectares, only 0.98 hectares would require clearing of forestry land for the project.

Any clearing required at the above sites to facilitate project construction and/or operation would result in the loss of some forestry resources at the Maragle 500 kV substation compound (C05) and the Adjungbilly Road compound (C09). A portion of the Maragle 500 kV substation compound (C05) (10.12 hectares) has been assessed and would be cleared as part of Snowy 2.0 Transmission Connection project. Of the remaining 1.85 hectares, 0.98 hectares would require clearing of forestry land, with 0.87 hectares falling within an existing Transgrid easement that would not require clearing. The remaining compounds associated with forestry land uses, do not currently host forestry resources. The selection of these sites, therefore, over other potential construction compounds with forestry cover, reduces the potential impact.

Figure 6-1 View looking north, approximately 400 metres south of the Adjungbilly Road compound (C09) showing an example of the associated plantation forestry land use area and young trees

Source: HillPDA, 22 March 2022

Impacts to forestry land associated with the transmission line easement are assessed in Section 7.2.1.2 as they would be long term and predominantly associated with the maintenance and operation of the transmission line. It is acknowledged however that this work would be undertaken during construction. Further detail on vegetation clearance requirements to facilitate construction is provided in *Technical Report 1 – Biodiversity Development Assessment Report*.

Overall, temporary impacts to forestry land uses resulting from the construction process are assessed as being moderate.

6.2.2 Infrastructure and utilities

As discussed in Section 5.3.2, the project footprint intersects approximately 71.5 hectares of infrastructure and utility land uses, accounting for approximately 0.8 per cent of the total for these land uses across the study area.

This area includes the existing Wagga 330 kV substation and Bannaby 500 kV substation that are proposed for modification as part of the project. The existing substation at Yass is not proposed to be modified as part of the project, but would be used to facilitate project construction work. Changes to the land use in these areas would not occur.

The location and approximate size of the construction and operational areas of the project footprint associated with utilities land uses is identified in Table 6-5 . Note that the majority of sites are already occupied by Transgrid.

Table 6-5 Project components associated with infrastructure and utility land uses

Compound name	Locality	Existing land use(s)	Zoning	Current use (desktop research)	Utilities land area (hectares)
Wagga 330 kV substation compound (C01)	Wagga Wagga	Utilities	RU1	Substation	1.9
Wagga 330 kV substation	Wagga Wagga	Utilities	RU1	Substation	2.2
Yass substation compound (C10)	Yass	Utilities	SP2 Electricity Generation	Substation	21.4
Bannaby substation compound (C12)	Bannaby	Utilities Grazing modified pastures	RU2	Substation Hardstand areas	2.8
Bannaby 500 kV substation	Bannaby	Utilities Grazing native vegetation Residential and farm infrastructure	RU2	Substation Hardstand areas Grazing areas	7.5

The project footprint intersects one small parcel of utilities land use area other than the substation sites, which is associated with an access track to be constructed for the project at Bannister. The track intersects part of the Gullen Range Solar Farm, though satellite imagery suggests that the access track is unlikely to interfere with access and function of the solar farm land use. The project footprint was also found to intersect with components of the Crookwell 2 Wind Farm (refer to Section 5.3.2), including electricity transmission lines and access tracks. Any impacts to this land use would be managed through consultation with the landowner.

As identified in Section 5.3.2, desktop research suggested that the project footprint would not intersect with any major underground gas or water pipelines. Potential impacts to local services and utilities would be determined during detailed design and any proposed relocation and/or protection work would be determined in consultation with the relevant service operator/asset owners.

As detailed in Section 5.3.2, the project footprint intersects with major transport corridors including the NSW Main Southern railway line, the Hume Highway, the Snowy Mountains Highway and other important regional and local roads, and several non-operational railway lines. These uses would not be altered, however there may be temporary disruptions during construction. Any construction disruption would be short-term and scheduled in consultation with the relevant authority and required license and/or access conditions (eg road occupancy licence). Construction of the project across the non-operational railway lines identified in Section 5.3.2 would not result in any impacts due to those lines not being in use.

Transport and traffic impacts are considered in *Technical Report 16 – Traffic and Transport Impact Assessment*, and social impacts arising from changes to transport infrastructure are considered in *Technical Report 7 – Social Impact Assessment*.

Waste treatment land uses are within the project footprint at the Bowmans Lane compound (C15), which was previously used by Snowy Valleys Council to store green waste following the 2019-2020 bushfires. The construction compound would require approximately half of the total area associated with the site during construction, resulting in a temporary loss of approximately 5.7 hectares of waste treatment land use area. Transgrid has consulted with Snowy Valleys Council and obtained agreement on the use of the site to facilitate the project. This land would be returned to its existing condition and use following the completion of construction.

Impacts to infrastructure and utility land uses arising from the construction of the project are temporary and assessed as being negligible.

6.2.3 Urban

The project footprint intersects with approximately 18.4 hectares of land associated with urban land uses. This represents approximately 0.2 per cent of the project footprint, and less than 0.1 per cent of the total amount of urban land use area across the study area.

6.2.3.1 Residential and farm infrastructure

The project footprint intersects approximately 14 hectares of residential and farm infrastructure land use areas, which constitutes 0.2 per cent of the total project footprint area. This is less than 0.1 per cent of the total residential and farm infrastructure land use area in the study area.

Construction of the project would require some adjustments to land utilised for residential and farm infrastructure, as discussed in Section 6.1.3. This is mainly to accommodate access tracks or the transmission line easement. A number of these properties already contain an existing transmission line and the use is maintained. The project footprint generally avoids intersecting with residential and farm infrastructure land uses including residences.

As identified in Section 6.1.3, some structures associated with residential and farm infrastructure within the final easement may need to be demolished and/or relocated, subject to negotiations with the landowners. These structures are generally contained within an area of a different land use category (such as grazing modified pastures), and whilst there would be impacts to property and structures (as discussed in Section 6.1), the land use would not be impacted.

Whilst these impacts would be highly significant to affected stakeholders, in terms of land use, their significance is low. Residential and farm infrastructure land use within the project footprint represents less than 0.1 per cent of the total of that land use across the study area, and the supply of suitable land for these uses would not be significantly impacted.

Overall, construction impacts on residential and farm infrastructure land uses are assessed to be minor.

6.2.3.2 Manufacturing and industrial

Construction work associated with the project is unlikely to impact manufacturing and industrial land uses within or near the project footprint. The only identified manufacturing and industrial land use identified within the project footprint (the bulk grain storage area at Woodhouselee (identified in Section 5.3.3.2)) may be intersected by an access track, however it is unlikely that the land use would be altered.

While Snowy Mountain Highway compound (C02) is classified under the Landuse dataset as 'Grazing modified pastures', the area has recently been rezoned under the *Tumut Local Environmental Plan 2012* for industrial purpose. Construction of the project would temporarily limit the opportunity of this land to transition to industrial land uses, however upon operation there would be no limitations.

Due to the low likelihood of land use changes and the insignificant amount of land affected, the impact to manufacturing and industrial land uses arising from construction would be negligible.

6.2.3.3 Services

The project footprint intersects with few areas associated with services land uses, totalling approximately 4.3 hectares, as outlined in Section 5.3.3.3. The areas identified as being intersected by the project footprint are all found to be serving different functions, including waste management and a storage compound. The Memorial Avenue compound (C14) in Batlow would serve as a construction compound for the project, utilising the current facilities onsite. The use of the existing storage compound for as a construction compound would represent a continuation of the observed current use at the site, as shown in Table 6-6.

Table 6-6 Construction compounds collocated with services land uses

Relevant construction compound	Land use	Area (ha)	Observation(s)
Memorial Avenue compound (C14)	Services	2.0	Warehouse/storage compound with associated hardstand and landscaped areas.

The other services land area was located adjacent to the Wagga 330 kV substation, identified as the Gregadoo Waste Management Centre Tip Shop (the Tip Shop). However, the project footprint does not intersect operational areas of the Tip Shop (other than a small portion of its hardstand area), and the facility would continue to operate during construction. Wagga Wagga City Council would be consulted on any direct property impacts relating to the Tip Shop. Minor noise and traffic impacts may be experienced at this location.

Overall, impacts to services land uses arising from construction of the project are expected to be negligible.

6.2.4 Natural environment

The project footprint is selected to avoid, where possible, areas classified as natural environment. As a result, the project footprint does not intersect any land identified as nature conservation (ie nature reserves, state conservation areas, and national parks). Whilst the project footprint is able to avoid nature conservation areas, as identified in Section 5.3.4, it intersects 26.4 hectares of managed resource protection and 6.4 hectares of other minimal use areas. The intersected areas represent a total of 0.5 per cent and 0.3 per cent (respectively) of the total area for these land uses across the study area.

During construction, vegetation within managed resource protection areas may be required to be cleared to enable the construction of physical structures and establish appropriate clearances from the transmission lines. Further details of vegetation clearing extents and potential biodiversity issues are discussed and assessed in *Technical Report 1 – Biodiversity Development Assessment Report*. For this assessment, it is assumed that any cleared area would be substantially less than the project footprint as the operational easement is typically 70 metres wide, compared to the project footprint which is typically 200 metres wide. Additionally, natural environment land that would not be required to be permanently cleared would be rehabilitated and reinstated (as agreed with the landowner) upon completion of the construction phase of the project.

As noted earlier, the project footprint intersects 26.4 hectares of managed resource protection areas, often associated with agricultural windbreaks, remnant vegetation and riparian areas.

The project components and construction compounds that intersect natural environment land use areas are shown in Table 6-7.

Table 6-7 Project components and construction compounds collocated with natural environment land uses

Relevant project component	Land use	Area (ha)	Observation(s)
Wagga 330 kV substation compound (C01)	Managed resource protection	1.9	Treed and grassed area adjacent to existing electricity transmission lines.
Gregadoo Road compound (C06)	Managed resource protection	16.4	Tree windbreak.

Overall, the project's avoidance of national parks, nature reserves, and state conservation areas significantly mitigates the likelihood of impacts to natural environment land uses arising from the construction phase. A very small amount of managed resource protection land would be required for the Wagga 330 kV substation compound (C01) and Gregadoo Road compound (C06).

Overall, natural environment land use impacts arising from the construction of the project are considered minor in the broader context of the study area.

6.2.5 Extractive industries

As identified in Section 5.3.5, the project footprint does not intersect any extractive industries land uses. Additionally, there are no mining leases identified within or close to the project footprint. Though the project footprint intersects a number of current and potential exploration licences, none of these permit extraction activities.

Any potential mining exploration activities associated with the identified exploration licences would include low-impact activities such as ground or aerial surveying or small-scale drilling (Department of Regional NSW, 2022a). Though it is possible these activities may occur in part of an exploration licence area that would be intersected by the project, it is likely that the activities would be able to proceed alongside the project during construction, or in an adjacent part of the exploration licence area. As such, a minor temporary impact may be realised should a proponent wish to undertake mining exploration activities within the project footprint during the construction period.

Overall, impacts to extractive industries land uses during construction of the project would be negligible.

6.2.6 Water

Land uses categorised as water in Section 5.3.6 include lakes, reservoirs, dams, rivers, aqueducts, wetlands, marsh and estuaries. These uses comprise 154 hectares or 1.8 per cent of the project footprint. The total water land use area within the project footprint represents 0.23 per cent of the total water land use area in the study area.

Construction of the project has the potential to cause temporary impacts on water land use areas within the project footprint. During construction, temporary waterway crossings may be required for access. Access track construction would be carried out so as to cause minimal disturbance to riparian areas and watercourses.

Some recreational water uses such as swimming, kayaking, fishing or boating on the larger waterbodies of Pejar Dam, and the Murrumbidgee and Tumut rivers may be temporarily impacted during line stringing. Access to navigable waters of Pejar Dam would intermittently be restricted during the line stringing. A 100-metre-wide area would be established as an exclusion zone during this work, for a two to three week period. Where outside the exclusion zone, recreation activities could continue. There may be similar temporary, short-term access restrictions to other areas, though this would not alter the land use. Potential impacts on recreational uses of waterbodies and waterways are discussed further in *Technical Report 7 – Social Impact Assessment*.

Further discussion about potential impacts on ecological and biodiversity values within the project footprint are discussed in *Technical Report 1 – Biodiversity Development Assessment Report*. Potential impacts on surface water and groundwater are discussed in *Technical Report 12 – Surface Water and Groundwater Impact Assessment.*

Overall, impacts to water land uses during project construction are assessed as being negligible.

6.2.7 Construction land use impact summary

Table 6-8 contains an overview of the land use impacts pertaining to the construction of the project, as identified in the preceding sections.

Table 6-8 Construction land use impact summary

Land use	Impact assessment
Agriculture	Minor
Forestry	Moderate
Infrastructure and utilities	Negligible
Residential and farm infrastructure	Minor
Manufacturing and industrial	Negligible
Services	Negligible
Natural environment	Minor
Extractive industries	Negligible
Water	Negligible

OPERATIONAL IMPACTS

7.0 OPERATIONAL IMPACTS

This chapter details the anticipated land use and property impacts resulting from the operation of the project, in alignment with the methodology outlined in Chapter 4.0.

7.1 Property

This section describes potential impacts to property resulting from the operation of the project in terms of tenure, land and movement restriction, built environment changes and property values.

7.1.1 Tenure and ownership adjustments

As outlined in Section 5.2 and Section 6.1, the project footprint contains a variety of freehold and public land. The project would require permanent alterations to property tenure or ownership arrangements to facilitate operation. This may involve:

- formal easement applications for affected sections of Crown land in accordance with the *Crown Land Management Act 2016* for ongoing access
- acquisition of easements for the transmission lines to provide a right of access to maintain and operate the transmission lines and other operational assets either by agreement or in accordance with the requirements of the *Land Acquisition (Just Terms Compensation) Act 1991*
- additional minor easements or landowner agreements may be required if ancillary infrastructure falls outside the proposed easement for the new transmission lines
- an easement for the transmission lines through three State forests would be by agreement with Forestry Corporation of NSW via a Deed of Easement, or in accordance with the requirements of the *Land Acquisitions (Just Terms Compensation) Act 1991*
- landowner agreements or specific access track easements for permanent off-easement access tracks
- freehold land acquisition for the proposed Gugaa 500 kV substation
- freehold land acquisition for the proposed telecommunications hut.

Table 7-1 provides an overview of the tenure and ownership alterations that may be required for the project.

Table 7-1 Tenure and ownership impact summary

Project infrastructure	Ownership	Permanent property impact
Proposed Gugaa 500 kV substation	Freehold	Land acquisition
Modification area at existing Wagga 330 kV substation	Transgrid	N/A – Owned by Transgrid
Modification area at existing Bannaby 500 kV substation	Electricity Transmission Ministerial Holding Corporation' leased and managed by Transgrid	N/A – occupied by Transgrid, existing property arrangements remain unchanged
Telecommunications hut	Freehold	Property acquisition and establishment of easement for power connections.
Transmission line, structures and access tracks	Freehold	New easement established. Where agreement cannot be reached with the landowner, compulsory acquisition would be undertaken.
	Crown land	Formal easement application
	NSW Government	New easement established

During operation, some land within the easement would be permanently required for transmission line infrastructure. Other land would have partial use restrictions as per the requirements of adhering to the

Living and working with electricity transmission lines guide (Transgrid, n.d.-a). The compensation process undertaken with landowners would assist in reducing the significance of operational impacts.

While the tenure and ownership arrangements would be long term and create management implications, the compensation process is designed to reduce the significance of impacts. The operation impact is therefore moderate.

7.1.2 Travelling stock reserves

As identified in Section 6.1.2, the impact of the project on TSRs would generally be limited to the construction process and would be limited to four reserves. These TSRs could be subject to easements and transmission line structures during project operation, but any impacts could be managed and would be negligible.

7.1.3 Built environment alterations

Operation of the project would result in restrictions to the establishment of future infrastructure and residences in or near the easement. Any future infrastructure or residences would need to comply with Transgrid's *Living and working with electricity transmission lines* (Transgrid, n.d.-a). The maintenance of fencing would need to be in line with Transgrid's *Fencing Guidelines.*

Additional built infrastructure changes following the construction phase would be unlikely. The impacts arising from operation of the project could be effectively managed as part of normal operations and would therefore be negligible.

7.1.4 Land requirements

Land requirements for the operation of the project would arise during the construction process, as identified in Section 6.1.4. Whilst construction-only land requirements would no longer apply once the project was operational (such as land used for the construction compounds), those associated with the telecommunications hut, new and modified substations, connections to utilities, and the transmission lines and structures would become permanent as discussed in the following sections. The land required to facilitate these structures could no longer be used for other purposes, however, the total amount of land required would be significantly reduced compared to the project footprint.

While land requirements associated with the project operation would be long term, the potential worst-case spatial extent of new built infrastructure, that would be fenced off, would be around 58 hectares. Twenty-two hectares of this is concentrated on the one property to accommodate the proposed Gugaa 500 kV substation. The remainder of land being for the transmission line structures and, telecommunications hut, which are small impacts dispersed across a wide area. Considering this, the land requirements for project operation are considered manageable and would be a minor impact.

7.1.4.1 Access tracks

Land used to build or upgrade access tracks during the construction process, or any temporary access tracks that are not required for project operation, would be returned to existing conditions. Some access tracks would be required for operation of the project to provide access for maintenance and would generally be contained within the easements. Access tracks would typically be between six metres to just over eight metres wide, inclusive of shoulders. Where access tracks extend beyond the easements, ongoing arrangements would be agreed with the landowner.

7.1.4.2 Transmission line and structures

During operation, land within the transmission line easements (as identified in Section 6.1.4.4) would be permanently subject to restrictions on activities in order to comply with the requirements outlined in *Living and working with electricity transmission lines* (Transgrid, n.d.-a).

The transmission line would be around 360 kilometres in length and would sit within an easement typically 70 metres wide. A few locations would require wider easements up to 110 metres wide at transposition locations and up to 130 metres wide where new transmission line would parallel the relocated section of Line 51. This equates to a total spatial extent of 2,014 hectares based on the current concept design which is subject to refinement during detailed design. The location of the transmission line and associated transmission line structures would continue to be refined within the project footprint during detailed design in consultation with landowners.

Land between transmission line structures would not be fenced off and would remain accessible. Transmission line structures would be permanent structures located between approximately 300 metres to 600 metres apart, with footings up to 450 square metres. There would be 860 transmission line structure footings within the easement, equating to a spatial extent of 38.7 hectares based on the current concept design which is subject to refinement during detailed design. This would be confirmed during detailed design.

Additionally, as noted in Section 6.1.3, some locked and signed access gates installed by Transgrid may be retained for operation.

7.1.4.3 Telecommunications hut

The proposed telecommunications hut would be located within the project footprint near Killimicat. The telecommunications hut would also require land acquisitions and easements to facilitate access and connection to the existing power supply. The power supply easement would be approximately two metres in width by 980 metres, totalling 1,960 square metres. The hut would be fenced off and would occupy an area of approximately 20 metres by 20 metres, totalling 400 square metres.

7.1.4.4 Substations

The proposed Gugaa 500 kV substation is expected to occupy an area of approximately 22 hectares.

Work associated with existing Bannaby 500 kV substation on Hanworth Road, Bannaby would be restricted to the property already owned by the Electricity Transmission Ministerial Holding Corporation (ETMHC) and managed and leased by Transgrid. The existing Wagga 330 kV substation on Ashfords Road, Gregadoo would be reconfigured to accommodate new bays for two new 500 kV transmission line circuits within the existing substation property boundary. The project would connect to the future Maragle 500 kV substation proposed under the Snowy 2.0 Transmission Connection Project and would remain within the proposed property extent.

7.1.5 Movement restrictions

Movement within and across the transmission line easement would be permanently altered once the project becomes operational due to the limitations imposed under the *Living and working with electricity transmission lines* guide (Transgrid, n.d.-a). Compliance with the guide would restrict movement within and around transmission line easements in a number of ways, such as by limiting the height of vehicles able to operate in the easement or enabling Transgrid to refuse permission for the construction of roads through a Transgrid easement.

Moving and parking vehicles or plant would be restricted with the maximum height of a vehicle allowed under transmission lines 4.3 metres high. This would restrict some heavy vehicles which generally have a height limit of 4.6 metres (National Heavy Vehicle Regulator, 2016). The movement of vehicles or plant within five metres of transmission line structures or between transmission line structure legs and/or guy wires; and operation of aircraft within 60 metres of transmission line structures or guy wires would also be restricted by the *Living and working with electricity transmission lines* (Transgrid, n.d.-a).

Impacts to aircraft landing areas arising from the construction phase have been considered in Section 6.1.5. Whilst these impacts would commence during construction, they would become permanent during operation, as transmission lines and transmission line structures would limit approach and departure angles for aircraft. Aircraft landing areas subject to major impacts would result in permanent restrictions on movement, particularly for aerial agricultural operations. Though the aircraft landing areas identified as being majorly impacted are concentrated in the area between Batlow and Tumut, this is unlikely to increase the impact significance as landing

areas subject to minor impacts are present nearby. For further detail on impacts to aviation operations, refer to *Technical Report 14 - Aviation Impact Statement*.

Despite the likelihood of localised and/or intermittent restrictions on movement arising due to the operation of the project, overall, impacts would manageable and subsequently minor.

7.1.6 Land value

The operation of the project is not anticipated to further change the land value impacts that are identified as arising during the construction period (refer to Section 6.1.6); any impacts would remain minor and would likely decrease in significance over time.

7.1.7 Operation property impact assessment summary

Table 7-2 contains an overview of the property impacts pertaining to the operation of the project, as identified in the preceding sections.

Table 7-2 Operation property impact summary

Land use	Impact assessment
Tenure and ownership adjustments	Moderate
Travelling stock reserves	Negligible
Built environment	Negligible
Land requirements	Minor
Movement restrictions	Minor
Land value	Minor

7.2 Land use

This section considers the potential land use impacts of the project during operation. Whilst the amount of land impacted by the project during the operation phase would be significantly smaller that during the construction phase (refer to Section 6.2), permanent impacts to land use would arise through the addition of project infrastructure that may prevent or reduce the ability of an area to maintain its existing land use.

7.2.1 Agriculture and primary production

7.2.1.1 Agriculture

The operational phase would see the affected area of land use impacts reduced as compared to the construction phase (refer to Section 6.2.1.1), though any changes would be permanent. This would result from land within and adjacent to easements and infrastructure being able to be used for grazing and other agricultural activities such as cropping (subject to height restrictions – refer to Section 6.1.5) once the project is operational.

Ongoing operation of the proposed Gugaa 500kV substation and the modification to the Bannaby 500 kV substation would result in permanent impacts to agricultural land uses. Table 7-3 identifies the land use area permanently impacted as a result of the project.

Table 7-3 Project components and areas collocated with agriculture land uses

Relevant component/area	Land use	Observation(s)	Operational area (ha)	Permanent land use change
Proposed Gugaa 500 kV substation	Cropping	Cleared cropping land, adjacent to existing transmission lines. Bisected by tree windbreak.	22.0	The area would change to utilities land use.
Modified Bannaby 500 kV substation	Grazing native vegetation	Marginal area of larger grazing area, including waterway bank and trees.	0.2	The area would change to utilities land use.

Note: observations sourced from satellite imagery (Geoscience Australia, 2022a) and field survey.

Operation of the proposed Gugaa 500 kV substation, would result in the permanent loss of up to 21.2 hectares of cropping land use area, which would permanently change to utilities land use. This would represent a permanent reduction of around 2.6 per cent of the total cropping land use area in the project footprint, though it would be an insignificant proportion of the cropping land use area at the study area scale. The modification of the Bannaby 500 kV substation would also result in a small permanent loss of 0.2 hectares of grazing native vegetation land use area as it would change to utilities land use.

Transgrid's *Living and working with electricity transmission lines* (Transgrid, n.d.-a) generally permits cropping, grazing, and other agricultural land uses, albeit with some restrictions, generally around the height of machinery, and the use of metallic objects or irrigation. Therefore, within easements, the classification of agricultural land uses is unlikely to be altered. Whilst cropping and horticulture activities would be permitted within easements, the limitations of operating in easements (ie on aerial spraying or height of trees) may limit the effectiveness of such land uses, and could eventuate in shifts to less intensive agricultural land uses such as grazing.

Permanent impacts to agricultural land uses arising from operation of the project are considered low, as agricultural uses are generally permitted within easements and therefore the relevant agricultural land use is unlikely to change. However, operation of the proposed Gugaa 500 kV substation would result in a permanent change of use from cropping to utilities land use. In the context of the extent of cropping land across the study area, the land use impact to agriculture is assessed as minor.

7.2.1.2 Forestry

The impact of construction compounds on forestry land use areas identified in Section 6.2.1.2 would no longer apply once construction work are complete, as compounds would be returned to their previous condition (in consultation with the relevant landowner).

For the purpose of this assessment it is assumed that vegetation within the easement would be cleared or restricted in height for safety and operation reasons. Forestry would no longer be an appropriate land use within the transmission line easements.

As a worst case scenario, the project footprint has been used to broadly calculate the potential extent of land clearing as it covers all project infrastructure including access tracks. The actual extent of clearing would be substantially less as the ultimate easement is more than half the size of the project footprint and not all areas within the easement would require clearing. Based on the concept design it is likely that the project would result in approximately 347.7 hectares of production native forestry land and 4.1 hectares of plantation forestry land being permanently removed from production as a result of the project, subject to detailed design. This would equate to approximately 0.2 per cent of the total area of forestry land use within the study area. Further detail on forestry clearance for operation of the project is provided in *Technical Report 1 – Biodiversity Development Assessment Report*.

Analysis of satellite imagery confirmed that the majority of the area classified as forestry land uses was forested, with only a small portion being cleared. In addition to direct impacts associated with land clearing, restrictions

on operating within and near Transgrid easements may further reduce or alter access arrangement for forestry equipment on a permanent basis.

It is noted that Transgrid would seek to compensate forestry operators for any lost plantation forestry land. Transgrid's preference would be to provide compensation payment, though compensation could also occur through provision of replacement land. Either approach would help to minimise any reduction in forestry land available for timber supply. Any compensation or arrangements for land replacement would be considered in consultation with Forestry Corporation of NSW. This would offset permanent impacts, though would potentially have flow-on land use impacts associated with transferring land currently used for other purposes to forestry land uses.

Permanent impacts to forestry land uses arising from the operation of the project are considered to be moderate.

7.2.2 Infrastructure and utilities

As the majority of the infrastructure and utilities land use areas impacted by the project footprint (refer to Section 6.2.2) are associated with existing substations, the operational impact would be considered minimal, as existing substations would not experience land use changes. The operation of the proposed Gugaa 500 kV substation would result in a permanent addition of up to 22.0 hectares of utilities land use area.

As identified in Section 6.2.2, the 5.7 hectares of waste treatment and disposal land use area impacted by the Bowmans Lane compound (C15) would be returned to its existing condition and use once the project reaches the operation phase.

Where the transmission line infrastructure traverses transport infrastructure such as roads or railway lines, occasional or routine access to complete maintenance or repair work disruption may temporarily affect users during operation. This would not impact land use.

Infrastructure and utilities land use impacts arising from the operation of the project would therefore be negligible.

7.2.3 Urban

7.2.3.1 Residential and farm infrastructure

The operational area of the project would be smaller than the project footprint, thereby resulting in further reduced impacts to residential and farm infrastructure land use areas. Due to the small amount of potentially impacted land (identified in Section 6.2.3.1), impacts to residential and farm infrastructure land uses arising from the operation of the project are considered to be negligible.

7.2.3.2 Manufacturing and industrial

As outlined in Section 6.2.3.2, the project footprint is unlikely to result in land use impacts during construction due to the small amount of potentially impacted land. As the operation of the project would affect a smaller area, permanent land use impacts arising from the operation of the project are considered negligible.

7.2.3.3 Services

As outlined in Section 6.2.3.3, the construction of the project would have negligible impacts on services land use within the project footprint, with the most significant area associated with the Memorial Avenue compound (C14) in Batlow. The operational area of the project would be smaller than the project footprint, reducing the amount of potentially impacted services land use area for the project operation by at least two hectares (the area of the Memorial Avenue compound (C14). Additionally, operation of the project is highly unlikely to impact land use associated with the Gregadoo Waste Management Centre Tip Shop (south of the Wagga 330 kV substation).

Impacts to services land use arising from the operation of the project are therefore considered negligible.

7.2.4 Natural environment

The parts of the project footprint associated with the construction of the project (including construction compounds and the indicative disturbance area) would no longer impact natural environment land uses during operation. The 0.2 hectares of managed resource protection land use area associated with construction compounds (refer to Section 6.2.4) would be returned to its previous use in consultation with the relevant landowners.

The operation of the project would result in changes to areas categorised as managed resource protection and other minimal use land uses through the construction of a new substation and through compliance with restrictions of operating within easements.

The construction and operation of the proposed Gugaa 500 kV substation would result in a permanent land use change for 0.9 hectares of managed resource protection land associated with a treed windbreak. This area would shift to utilities land use.

Compliance with the exclusion zone and height limits of the easement would result in a permanent impact to natural environment land uses. This would impact a smaller area than that identified in Section 6.2.4 as the easement would be significantly reduced from the project footprint. The area within the easement would be subject to the *Living and working with electricity transmission lines* guide (Transgrid, n.d.-a), which specifies that the planting of trees within transmission line easements is permitted (outside exclusion zones), but trees must have a mature height of less than four metres. Some natural environment land use areas may permanently change to land uses that are compatible with transmission line easements, such as grazing. Other areas may be permanently impacted through the presence of access tracks required during operation.

The operational area of the project is near various national parks, reserves, and conservation areas (refer to Section 5.3.4). From a land use perspective, these areas would not be altered as the project footprint avoids the boundaries of these areas. However, changes to adjacent land would be permanent and may impact environmental and biodiversity outcomes (refer to *Technical Report 1 – Biodiversity Development Assessment Report)*.

Overall, due to the small total area affected, permanent impacts to natural environment land uses arising from the operation of the project are considered minor.

7.2.5 Extractive industries

As identified in Section 5.3.5, the project footprint does not intersect any extractive industries land uses, though it does intersect mining exploration licences.

During operation of the project, any potential mining exploration activities or subsequent mining activities would be limited to operating in line with the *Living and working with electricity transmission lines* guide (Transgrid, n.d.-a). This would preclude operations within the exclusion zone (as defined within *Living and working with electricity transmission lines* guide notes) that any potential mining activity would be determined by Transgrid on a case-by-case basis. Any potential exploration licence activities would likely proceed without necessitating the use of land within the easement.

Given the small size of the easement in comparison to mining leases and exploration licences, and the lack of existing mining leases within the project footprint, operation of the project is considered to have a negligible on extractive industries land uses within the study area.

7.2.6 Water

The project footprint intersects a wide range of water land use areas, most notably those associated with Pejar Dam and the Murrumbidgee and Tumut rivers. This would not change during operation, as the easement and transmission lines would permanently affect these areas. Transmission line structures would not be constructed within water bodies.

Operation of the project may include changed access to areas associated with water land uses through any permanent access tracks, as well as restrictions to on-water activities under transmission lines including height limits imposed on marine vessels (such as boats) that may traverse within the transmission line easements. Whilst these changes would be permanent, they would not result in land use changes. Potential impacts on recreational uses of waterbodies and waterways are discussed further in *Technical Report 7 – Social Impact Assessment*. Overall, operation of the project is considered to have a negligible impact on water land uses.

7.2.7 Operation land use impact summary

Table 7-4 contains an overview of the land use impacts pertaining to the operation of the project, as identified in the preceding sections.

Table 7-4 Operation land use impact summary

Land use	Impact assessment
Agriculture	Minor
Forestry	Moderate
Infrastructure and utilities	Negligible
Residential and farm infrastructure	Negligible
Manufacturing and industrial	Negligible
Services	Negligible
Natural environment	Minor
Extractive industries	Negligible
Water	Negligible

7.3 Planned development

Planned future developments have been identified within or near the project footprint. Whilst some of these planned land uses would be able to proceed unaffected by the project, others may be highly constrained. The project footprint is refined in consultation with landowners, and therefore impacts to some of these planned developments may have been mitigated through earlier revisions of the project.

As identified in Section 5.4, four sites with submitted or determined DAs have been identified near the project footprint. Three of these sites are between 500 metres and one kilometre from the project footprint and would likely be unaffected by the construction or operation of the project. The remaining site is located in Bowning, near the Hume Highway. Its parent lot is intersected by the project footprint for a distance of around 250 metres. The proposed site within the lot is separated from the project footprint by roughly 300 metres. Though the presence of the project during operation may reduce the desire of the landowner to complete their proposed development, it is considered that there would be no material restrictions on such an undertaking due to the project.

Overall, impacts to planned development associated with the operation of the project are minor, with the potential to be reduced to negligible, dependent on the final easement alignment.

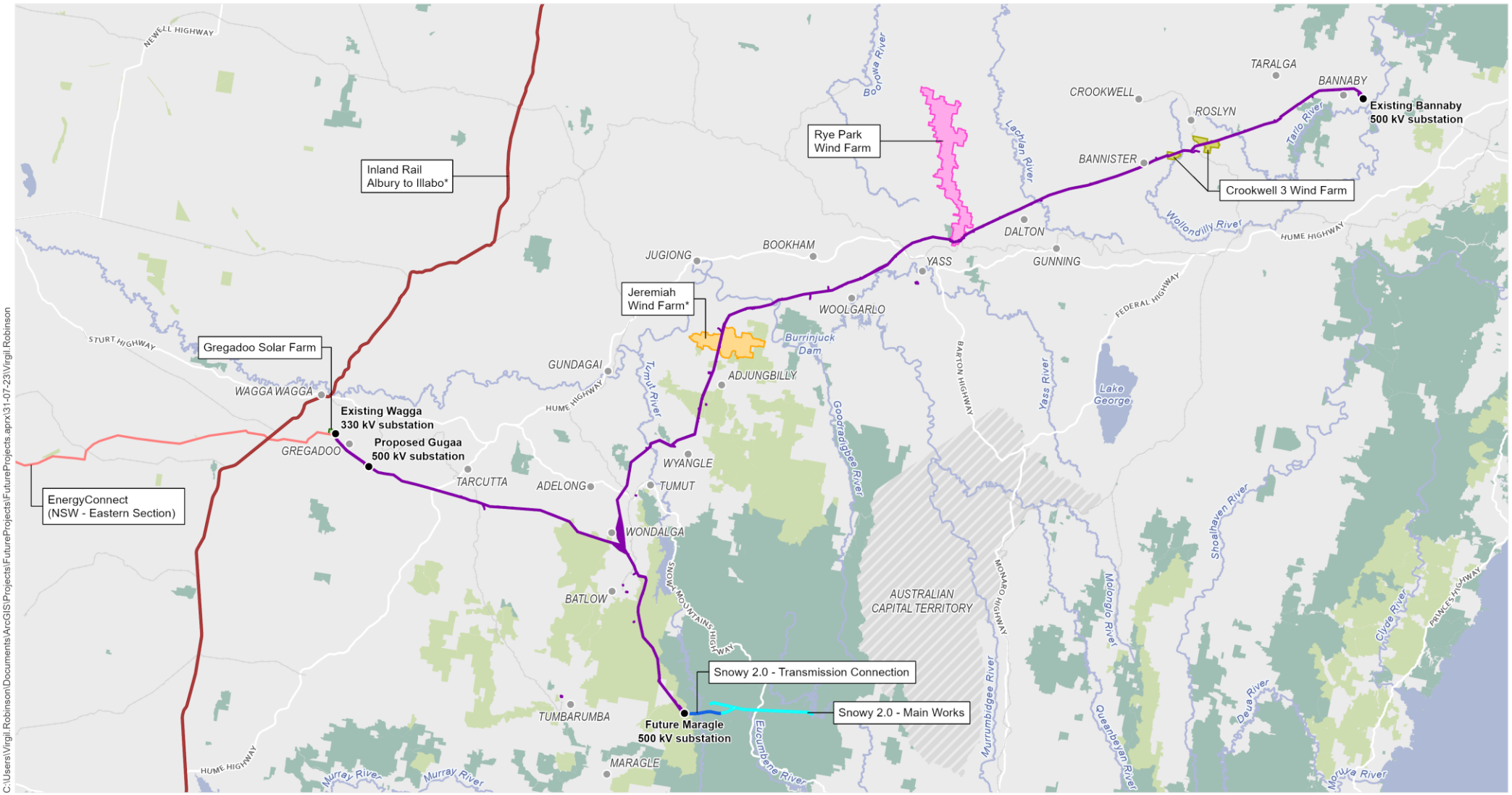
CUMULATIVE IMPACTS

8.0 CUMULATIVE IMPACTS

The cumulative impact assessment was prepared in accordance with the *Cumulative Impact Assessment Guidelines for State Significant Projects* (DPE, 2022). Projects with the potential for cumulative impacts with the project were identified, and shown in **Figure 8-1,** through a review of publicly available information and environmental assessments from the following data sources in March 2023:

- DPEs Major Projects register
- DPEs Southern Regional Planning Panel project register
- NSW Independent Planning Commission project register
- EPBC Act Public Ports
- Transport for NSW Projects Map.

Each of these projects is presented in Table 8-1 below.

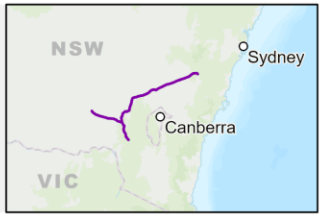


Project footprint
National park and reserve
State forest
Waterbody
Waterway
Major road
Railway
Substation

Relevant future projects

Crookwell 3 Wind Farm
EnergyConnect (NSW - Eastern Section)
Gregadoo Solar Farm
Inland Rail Albury to Illabo*
Jeremiah Wind Farm*
Rye Park Wind Farm
Snowy 2.0 - Main Works
Snowy 2.0 - Transmission Connection

*Note: Subject to approval



Source: *Aurecon, Transgrid, Spatial Services (DCS), ESRI Basemap*

1:925,000
0 20 40km

Projection: GDA 1994 MGA Zone 55

HumeLink **Land Use and Property**

FIGURE 8-1: Relevant future projects

Table 8-1 Summary of potential cumulative impacts

Project overview	Status and timeframe (as of October 2022)	Cumulative impact(s)
Name: **EnergyConnect (NSW – Eastern Section)** **SSI-9172452** **Description:** **537 kilometre transmission line connection between Buronga and Wagga 330 kV substations and associated substation and other work.** **Relationship to project footprint:** **The eastern terminus of EnergyConnect (NSW – Eastern Section) is the Wagga 330 kV substation.**	Approved 2 September 2022 Proposed construction period: Construction began in early 2023 and is expected to be complete by late 2024.	EnergyConnect (NSW – Eastern Section) would contribute to cumulative impacts to land use and property as it overlaps with the project footprint at the Wagga 330 kV substation. This could contribute to consecutive construction impacts in the area surrounding Wagga Wagga, with both projects including major infrastructure work in this area. Cumulative impacts to land use and property would only occur if a landowner owned land affected by both projects, as they do not overlap outside of a Transgrid owned property (the Wagga 330 kV substation). Cumulative impacts to land use and property would therefore be unlikely to occur and of minimal consequence. Further, the impacts of both projects on agricultural land are minor compared to the large scale of regional agricultural activity and the cumulative impacts would also be minor. Any cumulative impacts would be reduced in magnitude due to the breadth of the two projects, as well as the separation of any EnergyConnect (NSW – Eastern Section) work from the vast majority of the project footprint. EnergyConnect (NSW – Eastern Section) also approaches the Wagga 330 kV substation from a different direction compared to the project footprint, further reducing the potential for cumulative impacts. At a broader scale, any cumulative impacts from the two projects would be negligible.
Name: **Victoria to NSW Interconnector West (VNI West)** **Description:** **Program of electricity transmission work to better connect NSW and Victoria, with connections proposed to the existing Wagga 330 kV substation.** **Relationship to project footprint:** **Several options have been developed with new interconnector corridors connecting to the existing Wagga 330 kV substation and there is potential for a preferred option to intersect the project footprint between the existing Wagga 330 kV substation and proposed Gugaa 500 kV substation.**	Scoping phase Proposed construction period: Construction proposed to commence in 2026 with commissioning by 2028.	VNI West could contribute to cumulative impacts to land use and property in the context of the study area as it would result in an additional significant linear infrastructure project being constructed and operated in south west NSW. As VNI West does not yet have a defined corridor or construction period, cumulative land use and property impacts that would arise from the completion of the two projects cannot be definitively assessed. If the preferred option does intersect the project footprint between the existing Wagga 330 kV substation and proposed Gugaa 500 kV substation, cumulative land use impacts would largely be limited to agricultural land use. However, the impacts of both projects on agricultural land would be expected to be minor compared to the large scale of regional agricultural activity and the cumulative impacts would also be minor. There is also potential for cumulative property impacts if a landowner owned land affected by both projects. Should this occur, potential cumulative impacts would be localised and expected to be managed in accordance with the requirements of the Land Acquisition (Just Terms Compensation) Act 1991.

Project overview	Status and timeframe (as of October 2022)	Cumulative impact(s)
		At a broader scale, any cumulative impacts from the two projects would be negligible.
Name: **Gregadoo Solar Farm (GSF)** **SSD-8825** **Description:** **47 megawatt solar farm, substation and associated infrastructure.** **Relationship to project footprint:** **Immediately west of the Wagga 330 kV substation.**	Approved 11 December 2018, Modification 2 approved 2021 Proposed construction period: Construction proposed to commence in mid-2023 and take about 9 months to complete	GSF would contribute to cumulative impacts to land use and property in the Wagga Wagga region as it lies immediately west of the Wagga 330 kV substation and construction compound, and would result in changes to a 96 ha site. Cumulative impacts to land use would arise from the construction and operation of the GSF through permanent land use changes from the existing cropping and grazing uses at the site to utilities land use. Whilst grazing of sheep may still be occasionally permitted at the site, it would generally be excluded. Cumulative impacts to property would include the removal of farm infrastructure and environmental assets such as dams and tree windbreaks. Cumulatively, the impact of the GSF and the project on land use at the study area and project footprint scale would be negligible, however, due to the concentration of impacts and (likely) alignment of timeframes of the two projects, cumulative impacts may be minor or moderate for landowners near the Wagga 330 kV substation.
Name: **Snowy 2.0 Main Work (Snowy 2.0)** **SSI-9687** **Description:** **Pumped hydroelectricity storage project involving 27 km of tunnelling work and construction of an underground power station.** **Relationship to project footprint:** **Nearest point located approximately six kilometres east of the project footprint, measured from the Maragle 500 kV substation.**	Approved 20 May 2020, Modification 1 approved 2022 Proposed construction period: Construction began in October 2020 with expected completion by 2026	The construction and operation of Snowy 2.0 could contribute to cumulative impacts to land use and property in the Snowy Valleys LGA. Any contribution to cumulative impacts would, however, be largely mitigated through the separation of Snowy 2.0 from the project footprint, and most of its work being underground. Additionally, the consolidated ownership of land in the area (State forests and national parks) would lessen Snowy 2.0's potential contribution to cumulative impacts to property. Overall, cumulative impacts arising from Snowy 2.0 and the project would be negligible.

Project overview	Status and timeframe (as of October 2022)	Cumulative impact(s)
Name: **Snowy 2.0 Transmission Connection Project (Snowy TCP)** **SSI-9717** **Description:** **9 km transmission line connection between the Snowy 2.0 site (refer above) and existing Transgrid transmission lines, as well as construction of a new substation.** **Relationship to project footprint:** **The proposed Snowy TCP would terminate adjacent to the Maragle 500 kV substation compound (C05).**	Approved 2 August 2022 Proposed construction period: Construction expected to begin in late 2023 with expected completion by end of 2025.	The construction and operation of Snowy TCP would contribute to cumulative impacts to land use and property in the Snowy Valleys LGA through changes to forestry land. Significant amounts of land clearing and operational restrictions are required to facilitate construction and operation of Snowy TCP. Cumulative impacts to forestry land use arising from the combination of the projects would therefore be moderate, but isolated to the Snowy Valleys LGA of the project footprint. Cumulative impacts to property would involve easements through forestry and national park land. The project would not contribute to property impacts for conservation areas in the Snowy Valleys LGA, but Snowy TCP and the project would cause cumulative impacts to NSW state forest property, exacerbated by existing easements through such land. Cumulative impacts to property arising from the two projects would therefore be minor, and isolated to the Snowy Valleys LGA of the project footprint. Cumulative land use and property impacts arising from the two projects would be reduced through arrangements to compensate the Forestry Corporation of NSW for reductions in land available for forestry.
Name: **Jeremiah Wind Farm (JWF)** **SSD-22472709** **Description:** **65 turbine wind farm.** **Relationship to project footprint:** **The project footprint traverses the subject site area, north of Adjungbilly, approximately nine kilometres north-east of Adjungbilly Road compound (C09). Some proposed wind turbine locations are within 500 metres of the project footprint.**	Preparing EIS Proposed construction period: Project approval anticipated in 2023 with construction expected to take about 24–30 months.	Cumulative impacts to land use may arise from the construction and operation of the JWF through restrictions on land uses where project infrastructure is located. However, both projects have relatively small footprints upon operation, which would enable the predominant land use in the surrounding area (grazing) to continue largely unaffected. The impacts to land use arising from the projects would largely be limited to transmission line structures and wind turbine platforms, which are spread across a large area. Cumulative impacts to land use would therefore be minimal. Cumulative impacts to property arising from the two projects would include changing access regimes experienced by landowners across multiple projects (due to construction work and access tracks) and increasing amenity impacts. The two projects may also contribute to cumulative impacts to agricultural operations in adjacent areas due to restrictions on flying near wind turbines and transmission line easements. It is possible that the timeframes of the projects could overlap, which would increase the likelihood of cumulative impacts arising from construction work. However, the project footprint and the JWF overlap in only a small area with few residents, who would be more sensitive to any property impacts. Cumulative impacts to property would therefore be minor.

Project overview	Status and timeframe (as of October 2022)	Cumulative impact(s)
Name: **Rye Park Wind Farm (RPWF)** **SSD-6693** **Description:** **77 turbine wind farm and ancillary access tracks and electricity transmission lines.** **Relationship to project footprint:** **The project footprint intersects the RPWF site area one kilometre south-east of Bango Nature Reserve. The nearest proposed wind turbine is approximately 250 metres from the project footprint. The project would also directly connect to a substation constructed as part of the RPWF.**	Approved 23 August 2022 (Modification 2) Proposed construction period: Currently under construction since December 2021 with expected completion in June 2023.	Cumulative impacts to land use may arise due to an overlap between the two projects. Both projects have relatively small footprints upon operation, which would enable the predominant land use (grazing) to continue in the area largely unaffected. Cumulative impacts to land use would therefore be minimal. Cumulative impacts to property arising from the two projects would include changing access regimes experienced by landowners across multiple projects (due to construction work and access tracks) and increasing amenity impacts. Cumulative impacts to property would also be experienced by landowners through additional easements, however this is likely mitigated by the easement-affected property being owned by the wind farm owners. The wind farm owners would likely be more open to the project's easement traversing their property and would be unaffected by impacts from RPWF itself. Cumulative impacts to property would therefore be minimal. At a broader scale, any cumulative impacts from the two projects would be negligible.
Name: **Crookwell 3 Wind Farm (C3WF)** **SSD-6695** **Description:** **16 turbine wind farm and associated infrastructure.** **Relationship to project footprint:** **The project footprint intersects the site area for the proposed development, which is located adjacent to the Crookwell 2 Wind Farm, approximately 18.5 kilometres south-east of Crookwell. The nearest wind turbine would be approximately 200 metres from the project footprint.**	Approved 14 October 2020 Proposed construction period: Detailed design and pre-construction activities are being carried out with main construction work expected to take about 18 months once commenced.	Both projects have relatively small footprints upon operation, which would enable the predominant land use (grazing) to continue in the area largely unaffected. Cropping, the other significant land use in the immediate surrounds, may suffer cumulative impacts due to the reduced ability to undertake aerial agricultural operations (ie spraying). Cumulative impacts to land use would therefore be minor. Cumulative impacts to property arising from the two projects would include changing access regimes experienced by landowners across multiple projects (due to construction work and access tracks) and increasing amenity impacts. Cumulative property impacts would also be experienced by landowners through additional easements, however this is likely mitigated by the easement-affected property being owned by the wind farm owners. The wind farm owners would likely more open to the project's easement traversing their property and would be unaffected by impacts from C3WF itself. Cumulative impacts to property would therefore be minimal. At a broader scale, any cumulative impacts from the two projects would be negligible.

Project overview	Status and timeframe (as of October 2022)	Cumulative impact(s)
Name: **Inland Rail – Albury to Illabo** **Description:** **Upgrade 185 km of rail track from Albury to Illabo.** **Relationship to project footprint:** **The upgrade of rail track passes through Wagga Wagga.**	EIS on exhibition Proposed construction period: Construction is proposed to begin in early 2024 and is expected to take about 16 months.	Inland Rail may contribute to cumulative impacts to land use and property through its proximity to the project footprint, northwest of the Wagga 330 kV substation. This could contribute to consecutive construction impacts in the area surrounding Wagga Wagga, with both projects including major infrastructure work in this area. Cumulative impacts to property could occur if a landowner owned land affected by both projects, though the physical separation of the two projects renders this unlikely, and any impacts would likely be of minimal consequence. Additionally, any cumulative impacts that eventuated would be reduced in magnitude due to the breadth of the two projects, as well as the separation of any Inland Rail work from the vast majority of the project footprint. Inland Rail also traverses Wagga Wagga in a different direction compared to the project footprint, further reducing the potential for cumulative impacts. At a broader scale, any cumulative impacts from the two projects would be negligible.

MANAGEMENT OF IMPACTS

9.0 MANAGEMENT OF IMPACTS

The mitigation measures that would be implemented to avoid, manage or mitigate potential impacts to land use and property are outlined in Table 9-1. Impacts associated with biodiversity, agricultural land use, economic, social, aviation and traffic and transport would be managed through mitigation measures identified in:

- *Technical Report 1 – Biodiversity Development Assessment Report*
- *Technical Report 4 – Agricultural Impact Assessment*
- *Technical Report 6 – Economic Impact Assessment*
- *Technical Report 7 - Social Impact Assessment*
- *Technical Report 9 – Noise and Vibration Impact Assessment*
- *Technical Report 14 – Aviation Impact Statement*
- *Technical Report 16 – Traffic and Transport Impact Assessment.*

Table 9-1 Land use and property mitigation measures

Impact	Mitigation measures	Timing	Relevant location
Direct land use impacts	The location of infrastructure, work sites and access tracks (temporary and permanent) will be confirmed in consultation with landowners. Where permanent tracks are required, a single access track will be designed to serve both temporary and permanent purposes, where possible.	Detailed design and construction	All locations
Property impacts	A property management plan will be developed for directly impacted properties in consultation with landowners and stakeholders. The property management plans will outline the protocols that will be implemented to address landowner concerns during construction. This may include: • the process for rectification of any damage to property infrastructure caused by construction • the process for rehabilitation and stabilisation of disturbed areas following the completion of construction • measures to minimise disruption to agricultural practices during construction • any fencing and gate requirements • specific biosecurity protocols.	Detailed design and construction	All locations
Access impacts – operation	Management of access on private landowner properties required for access to infrastructure for maintenance, including opening and closing of gates, will be done in accordance with landowner requirements.	Detailed design and operation	All locations

CONCLUSION

10.0 CONCLUSION

This report assesses the potential land use and property impacts associated with the construction and operation of the project, which includes the development of around 360 kilometres of new 500 kV high voltage transmission lines and associated infrastructure between Wagga Wagga, Bannaby and Maragle.

The report has established a baseline for land use and property across the study area through a review of planning and legislation context, location attributes, and field and desktop analysis of the existing environment. An assessment was undertaken to evaluate the potential construction and operation impacts on the existing land use and property environment.

The project footprint largely consists of primary production land uses, including agriculture and forestry, with smaller proportions of other land uses such as infrastructure, urban, natural environment, extractive industries and water. More specifically to agriculture and primary production, grazing modified pastures, grazing native vegetation and production native forestry comprise the greatest extent of land uses that intersect with the project footprint. Generally, the quantity of land contained within the project footprint for each land use was found to be inconsequential compared to the total land use area across the study area.

The assessment has found that the project would result in a range of generally minor impacts on land use and property. The impacts would vary in their distribution across the study area during construction and operation of the project.

While the construction stage of the project would cover a broader spatial extent, most impacts would be temporary and intermittent in nature as construction moves between different locations along the transmission line route. Other land use and property impacts would be less transient, with those arising at construction compounds and the worker accommodation facility, and work to construct and modify substations occurring in a more consistent manner throughout the construction phase. Direct property impacts are likely due to changes in tenure and ownership, impacts to property infrastructure and residence alterations land requirements and movement restrictions. Many of the identified impacts to property would arise during construction of the project and would become permanent upon operation. With appropriate mitigations in place, these impacts are assessed as being minor.

Changes to land uses during operation of the project are generally assessed as negligible or minor, as a substantial amount of the land required for construction use would be remediated and/or able to return to its previous use upon operation. Permanent changes to land uses associated with the project would therefore be minimal. The operation of the project would result in permanent impacts on forestry, and some agriculture land uses depending on activities that are permitted within the easement as outlined in the *Living and working with electricity transmission lines* (Transgrid, n.d – a). The impact to forestry would be moderate, due to the long-term loss of forestry areas along the transmission line easements. Despite this, with the implementation of the mitigation and management measures outlined in this report, operational impacts to land use would be appropriately mitigated.

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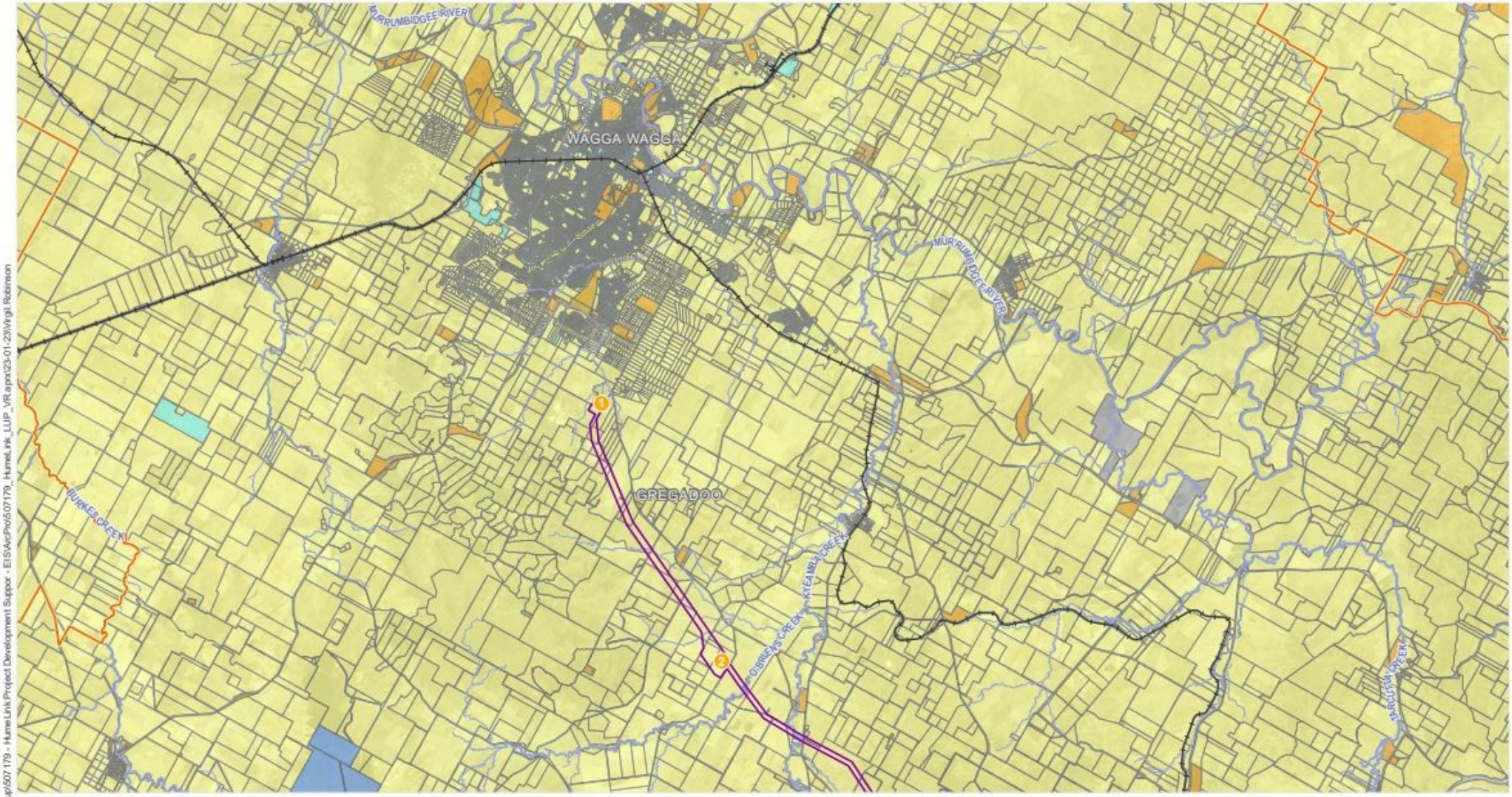
ATTACHMENT A – PROPERTY OWNERSHIP



Project footprint

Land use and property study area

Waterway

Railway

Construction ancillary facilities

1 Wagga 330 kV substation compound (C01)

2 Gregadoo Road compound (C06)

Controlling Authority

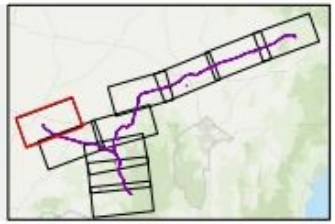
Crown

Freehold

Local Government Authority

NSW Government

Unknown



Source: *Base data (aerial imagery, transport, water, and cadastral themes); NSW Foundation Spatial Data Framework; Transgrid*

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Projection: GDA 1994 MGA Zone 55

HumeLink

Attachment A: Property ownership **Page 1 of 10**

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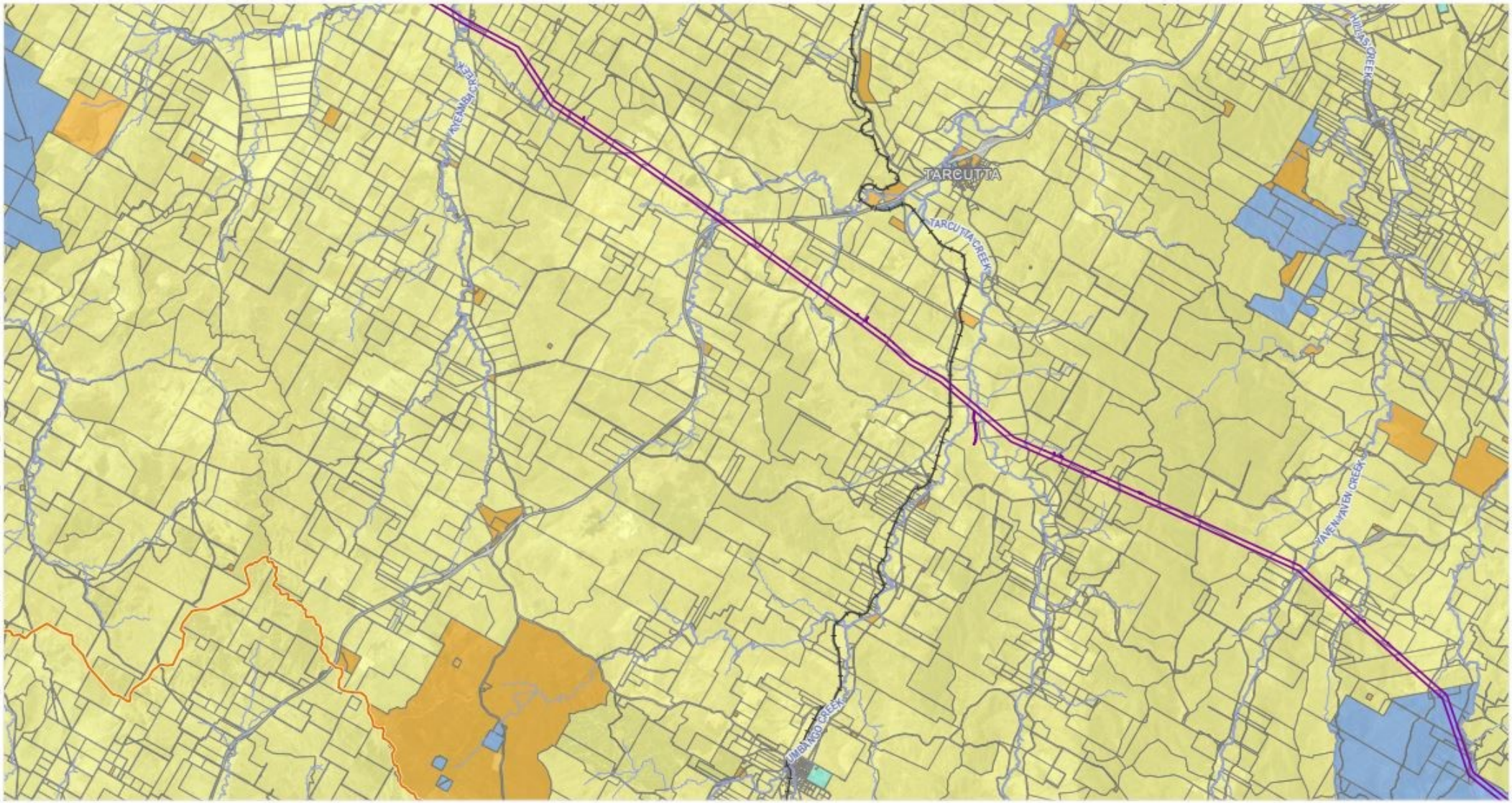
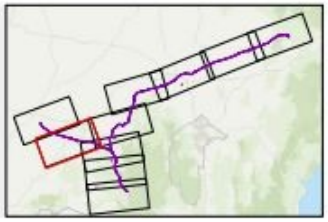


Project footprint
Land use and property study area
Waterway
Railway
Controlling Authority
Crown
Freehold
Local Government Authority
NSW Government



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HumeLink

Attachment A: Property ownership **Page 2 of 10**

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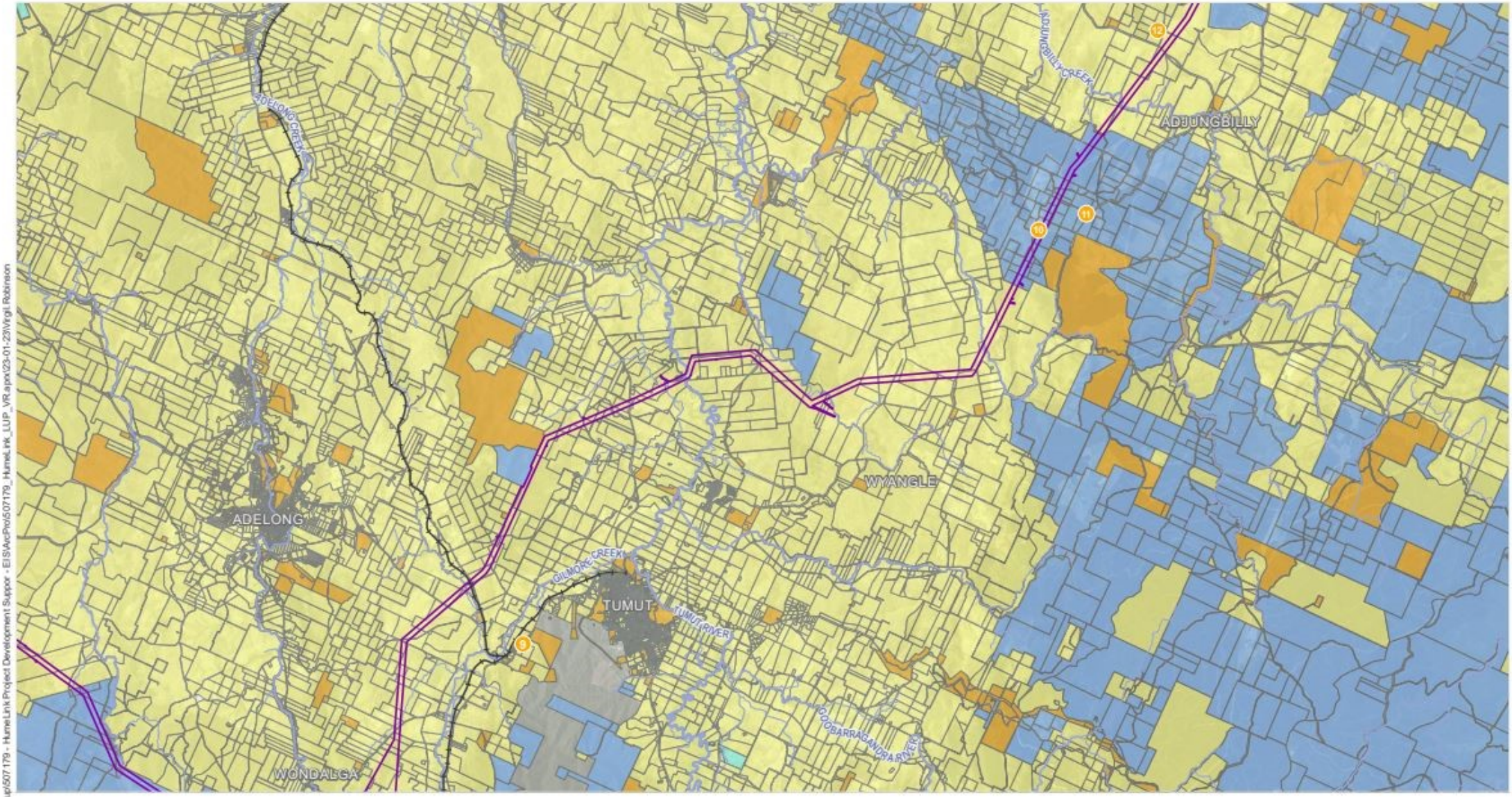


Project footprint

Land use and property study area

Waterway

Railway

Construction ancillary facilities

9 Snowy Mountains Highway compound (C02)

10 Honeysuckle Road compound (C07)

11 Red Hill Road compound (C08)

12 Adjungbilly Road compound (C09)

Controlling Authority

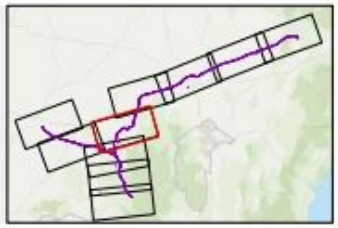
Crown

Freehold

Local Government Authority

NSW Government

Unknown



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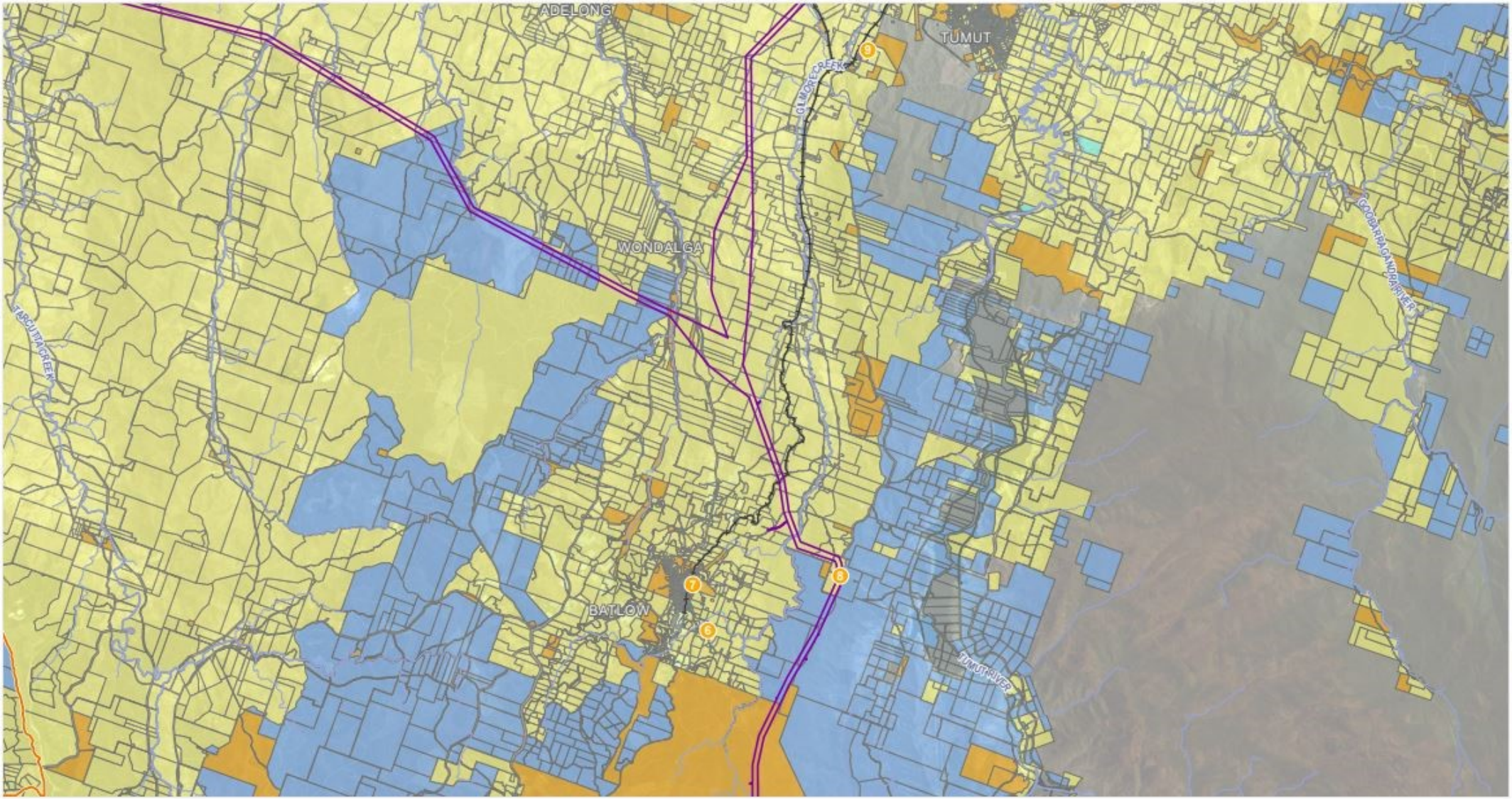

Project footprint
Land use and property study area
Waterway
Railway

Construction ancillary facilities

6 Bowmans Lane compound (C15)
7 Memorial Avenue compound (C14)
8 Snubba Road compound (C03)
9 Snowy Mountains Highway compound (C02)

Controlling Authority

Crown
Freehold

Local Government Authority
NSW Government
Shared Crown / Council
Unknown

Source: *Base data (aerial imagery, transport, water, and cadastral themes): NSW Foundation Spatial Data Framework; Transgrid*

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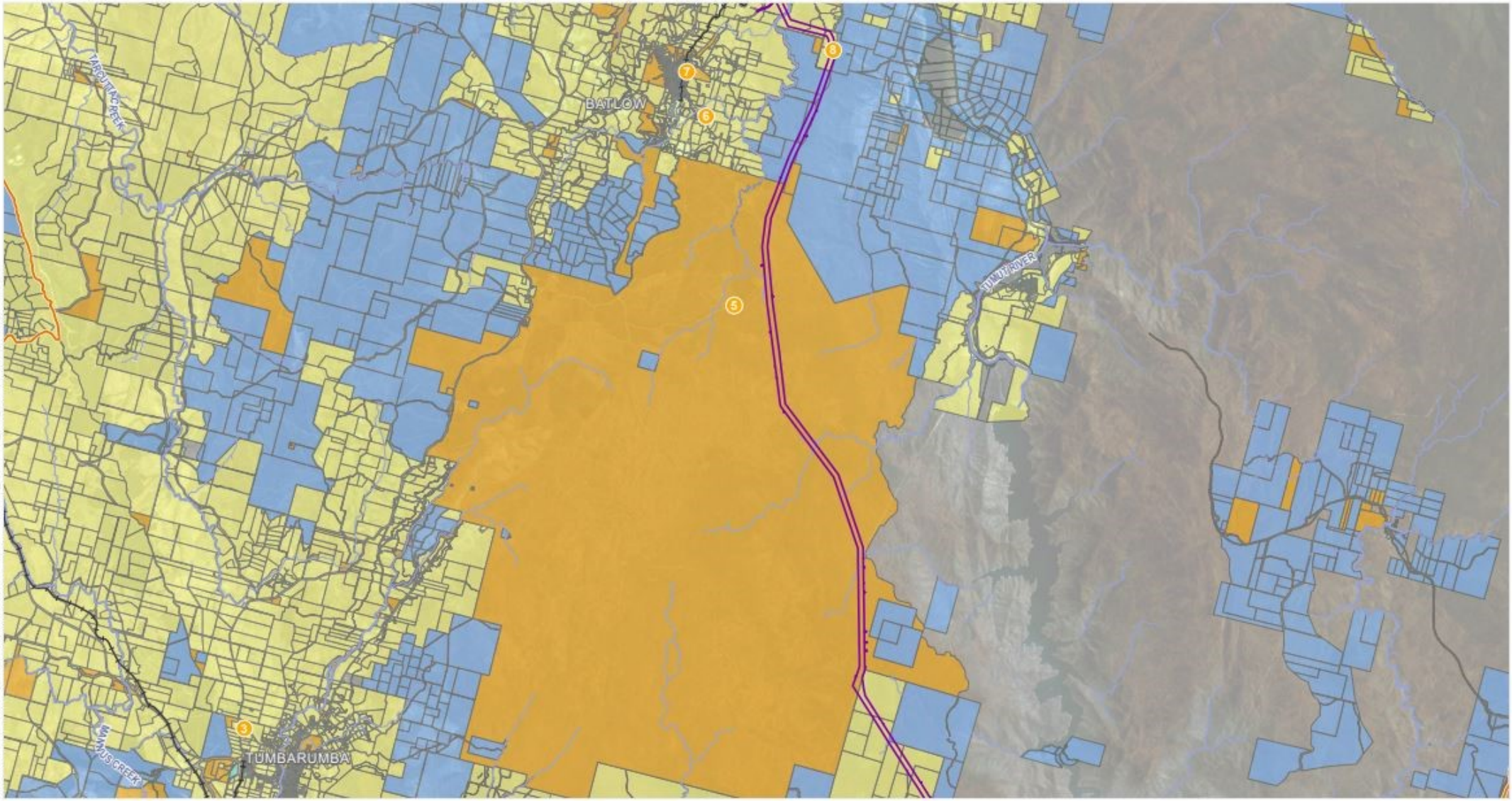

Project footprint

Land use and property study area

Waterway

Railway

Construction ancillary facilities

3 Tumbarumba worker accommodation facility (AC1)

5 Snubba Road compound (C16)

6 Bowmans Lane compound (C15)

7 Memorial Avenue compound (C14)

8 Snubba Road compound (C03)

Controlling Authority

Crown

Freehold

Local Government Authority

NSW Government

Unknown

Source: *Base data (aerial imagery, transport, water, and cadastral themes); NSW Foundation Spatial Data Framework; Transgrid*

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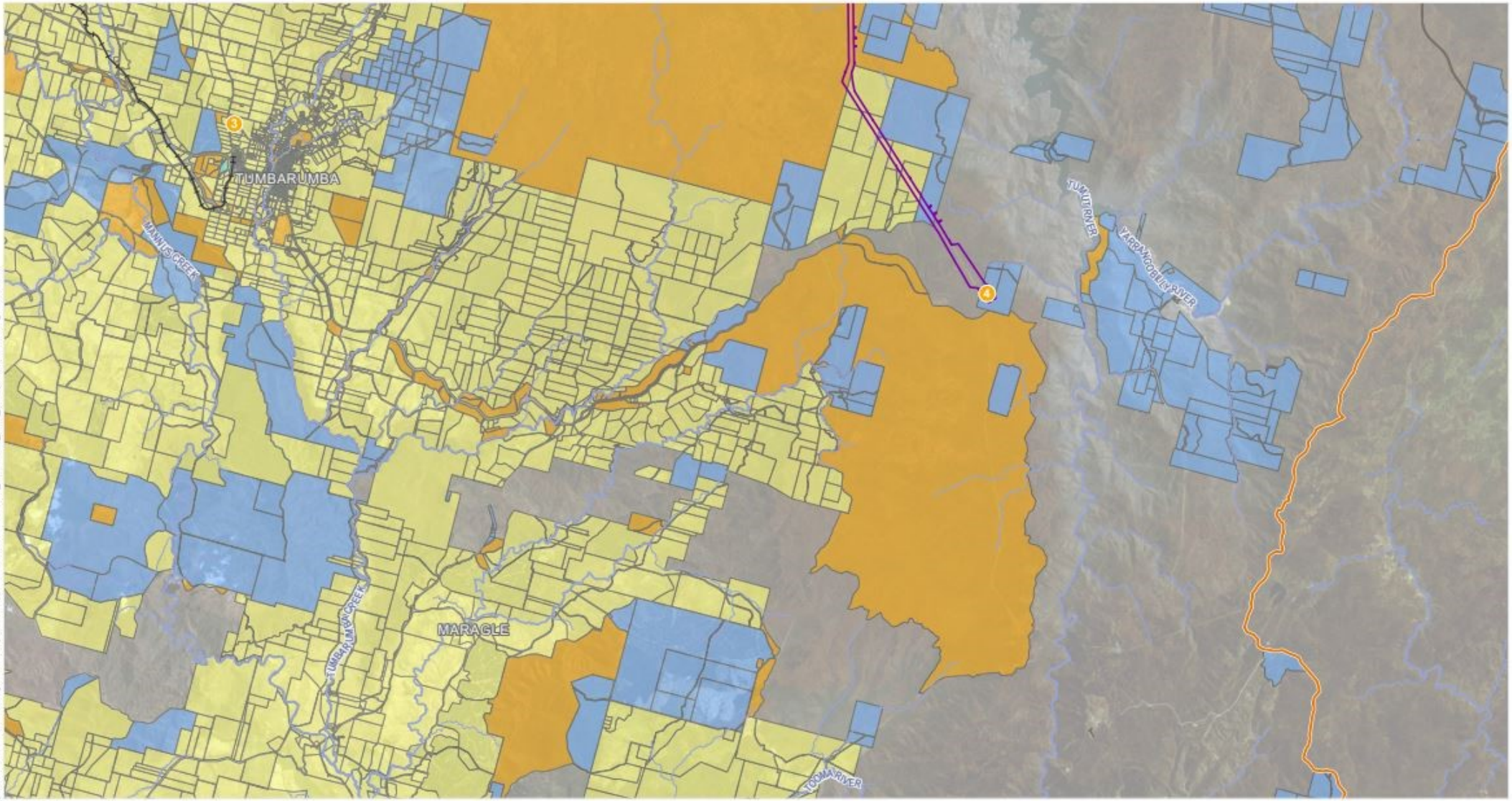

Project footprint

Land use and property study area

Waterway

Railway

Construction ancillary facilities

3 Tumbarumba worker accommodation facility (AC1)

4 Maragle 500 kV substation compound (C05)

Controlling Authority

Crown

Freehold

Local Government Authority

NSW Government

Unknown

Source: *Base data (aerial imagery, transport, water, and cadastral themes); NSW Foundation Spatial Data Framework; Transgrid*

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Projection: GDA 1994 MGA Zone 55

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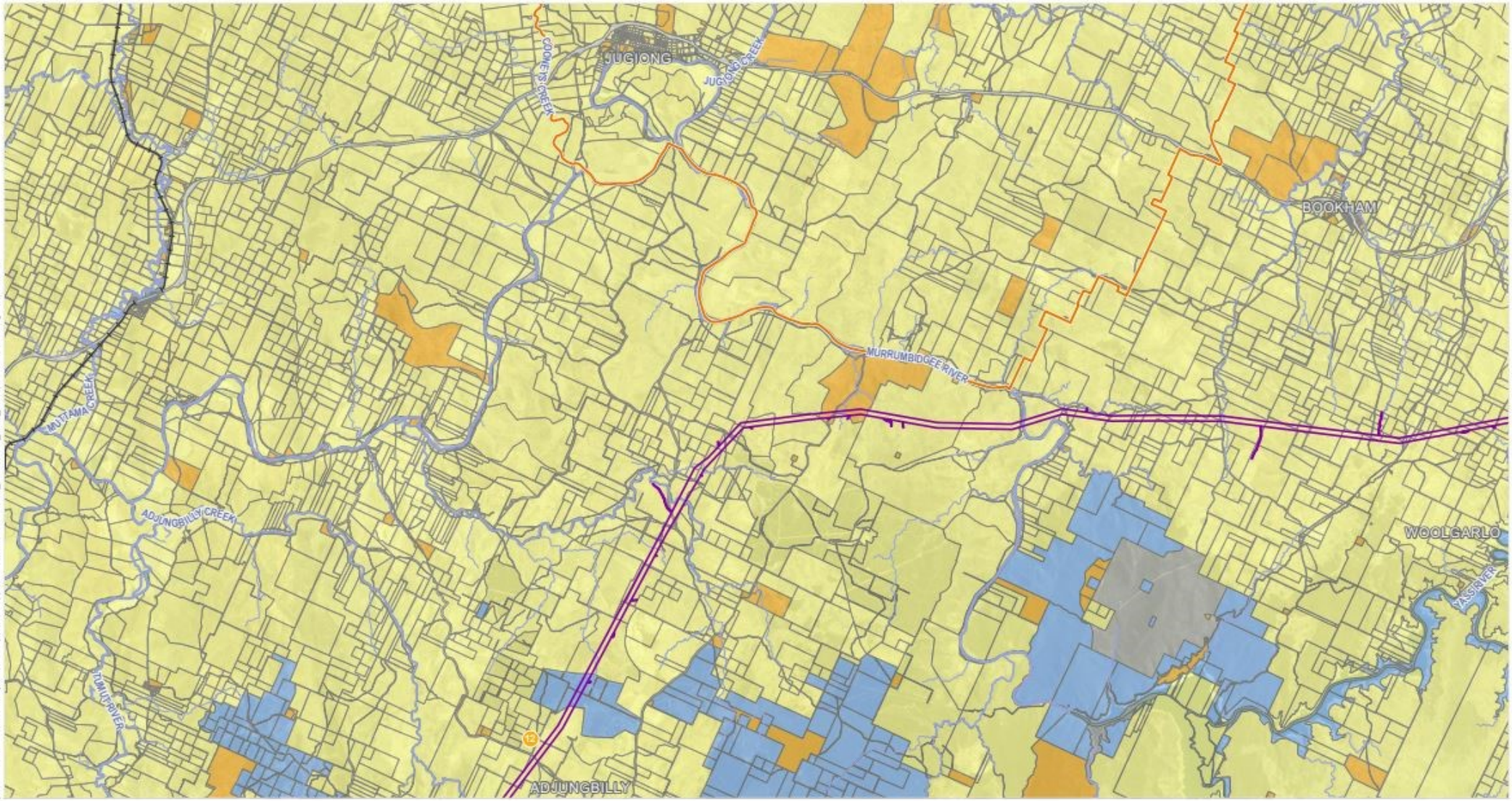

Project footprint

Land use and property study area

Waterway

Railway

Construction ancillary facilities

12 Adjungbilly Road compound (C09)

Controlling Authority

Crown

Freehold

Local Government Authority

NSW Government

Shared Crown / Council

Unknown

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Source: *Base data (aerial imagery, transport, water, and cadastral themes): NSW Foundation Spatial Data Framework; Transgrid*

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0 4 7 km

Projection: GDA 1994 MGA Zone 55

Project footprint

Land use and property study area

Waterway

Railway

Construction ancillary facilities

13 Yass substation compound (C10)

Controlling Authority

Crown

Freehold

Local Government Authority

NSW Government

Unknown

Source: *Base data (aerial imagery, transport, water, and cadastral themes): NSW Foundation Spatial Data Framework; Transgrid*

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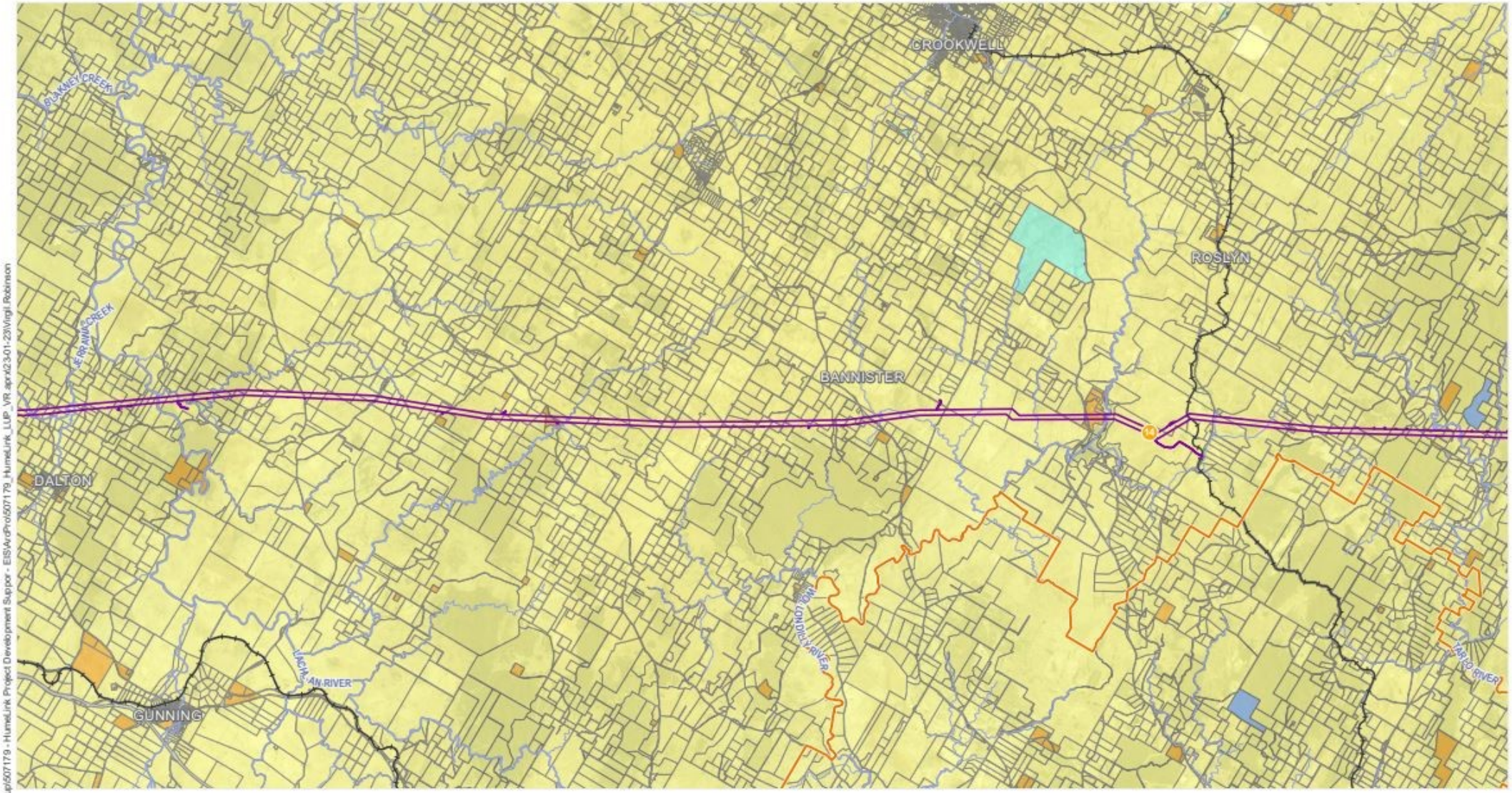


Project footprint

Land use and property study area

Waterway

Railway

Construction ancillary facilities

14 Woodhouselee Road compound (C11)

Controlling Authority

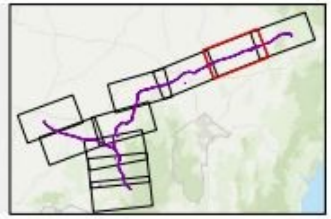
Crown

Freehold

Local Government Authority

NSW Government

Unknown



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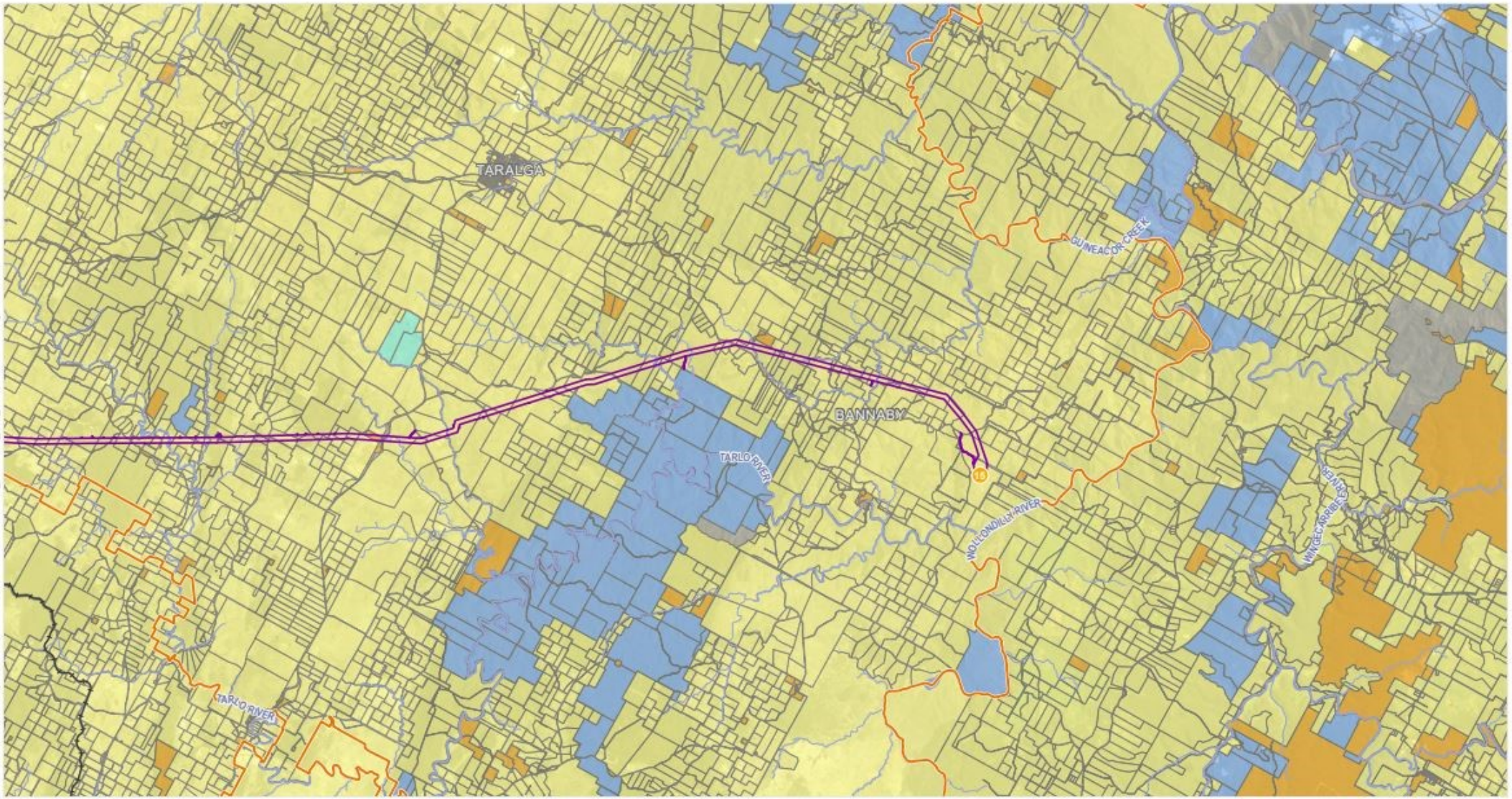


Project footprint

Land use and property study area

Waterway

Railway

Construction ancillary facilities

Bannaby 500 kV substation compound (C12)

Controlling Authority

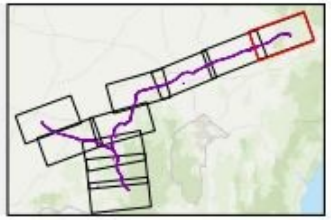
Crown

Freehold

Local Government Authority

NSW Government

Unknown



Source: *Base data (aerial imagery, transport, water, and cadastral themes); NSW Foundation Spatial Data Framework; Transgrid*

1:150,000

0 4 7 km

Projection: GDA 1994 MGA Zone 55

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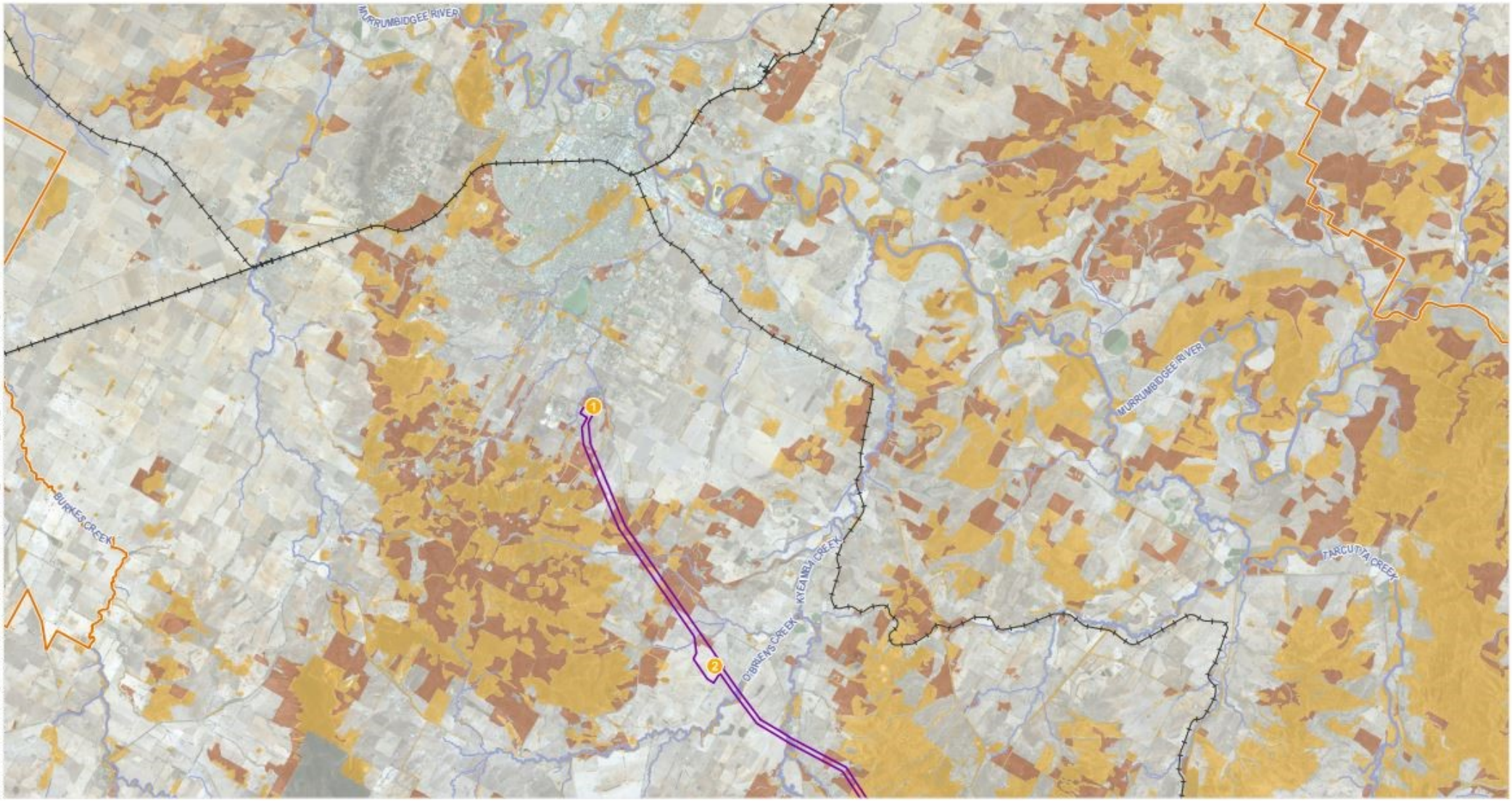
ATTACHMENT B – GRAZING LAND USES



Project footprint

Land use and property study area

Waterway

Railway

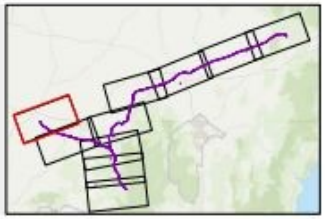
Construction ancillary facilities

1. Wagga 330 kV substation compound (C01)
2. Gregadoo Road compound (C06)

Land Use 2017

2.1.0 Grazing native vegetation

3.2.0 Grazing modified pastures



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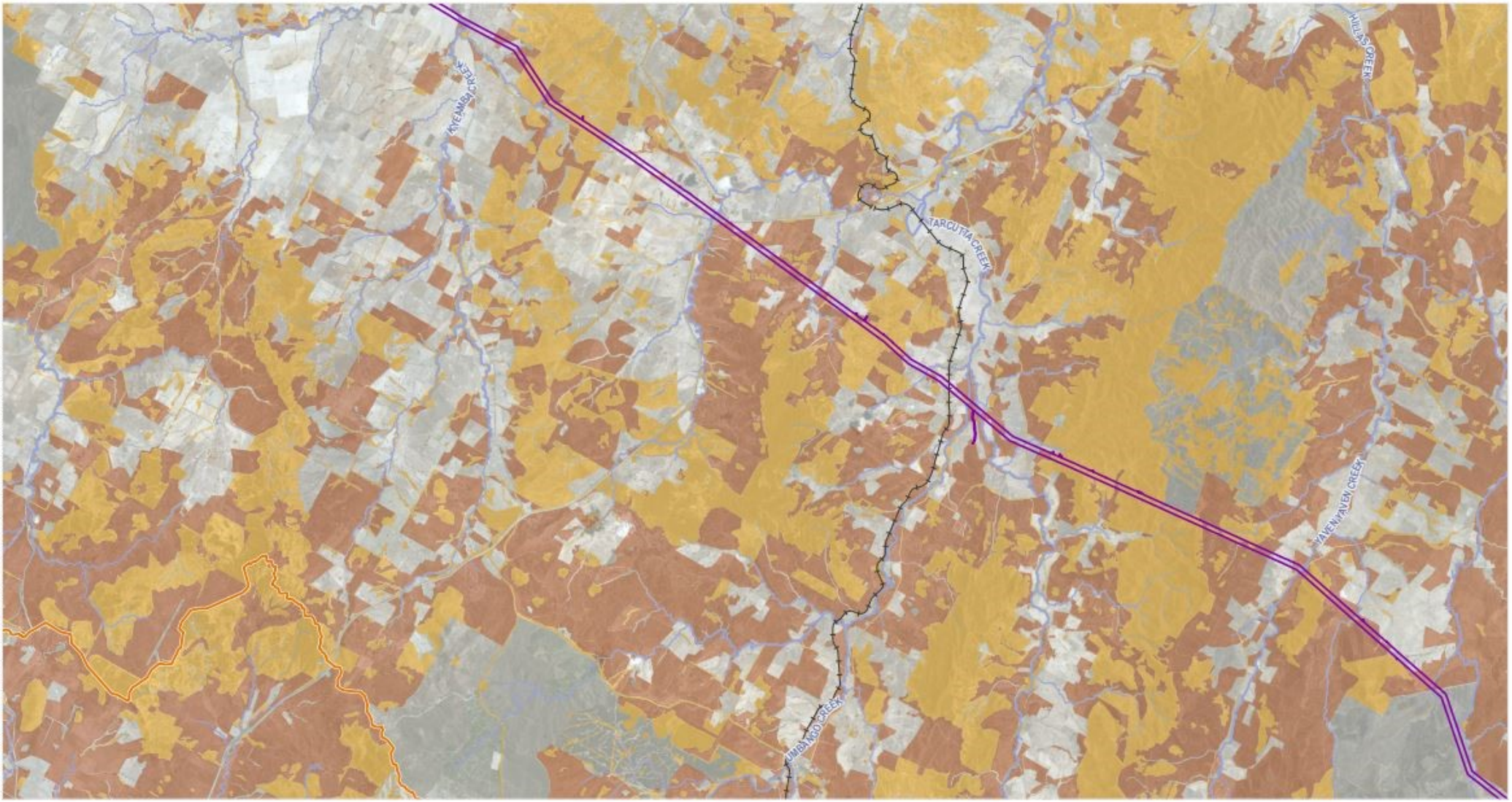
Source: *Base data (aerial imagery, transport, water, and cadastral themes): NSW Foundation Spatial Data Framework; Transgrid*

1:150,000

0 4 7 km

Projection: GDA 1994 MGA Zone 55



Project footprint
Land use and property study area
Waterway
Railway

Land Use 2017

2.1.0 Grazing native vegetation
3.2.0 Grazing modified pastures

Source: *Base data (aerial imagery, transport, water, and cadastral themes): NSW Foundation Spatial Data Framework; Transgrid*

1:150,000
0 4 7 km

Projection: GDA 1994 MGA Zone 55

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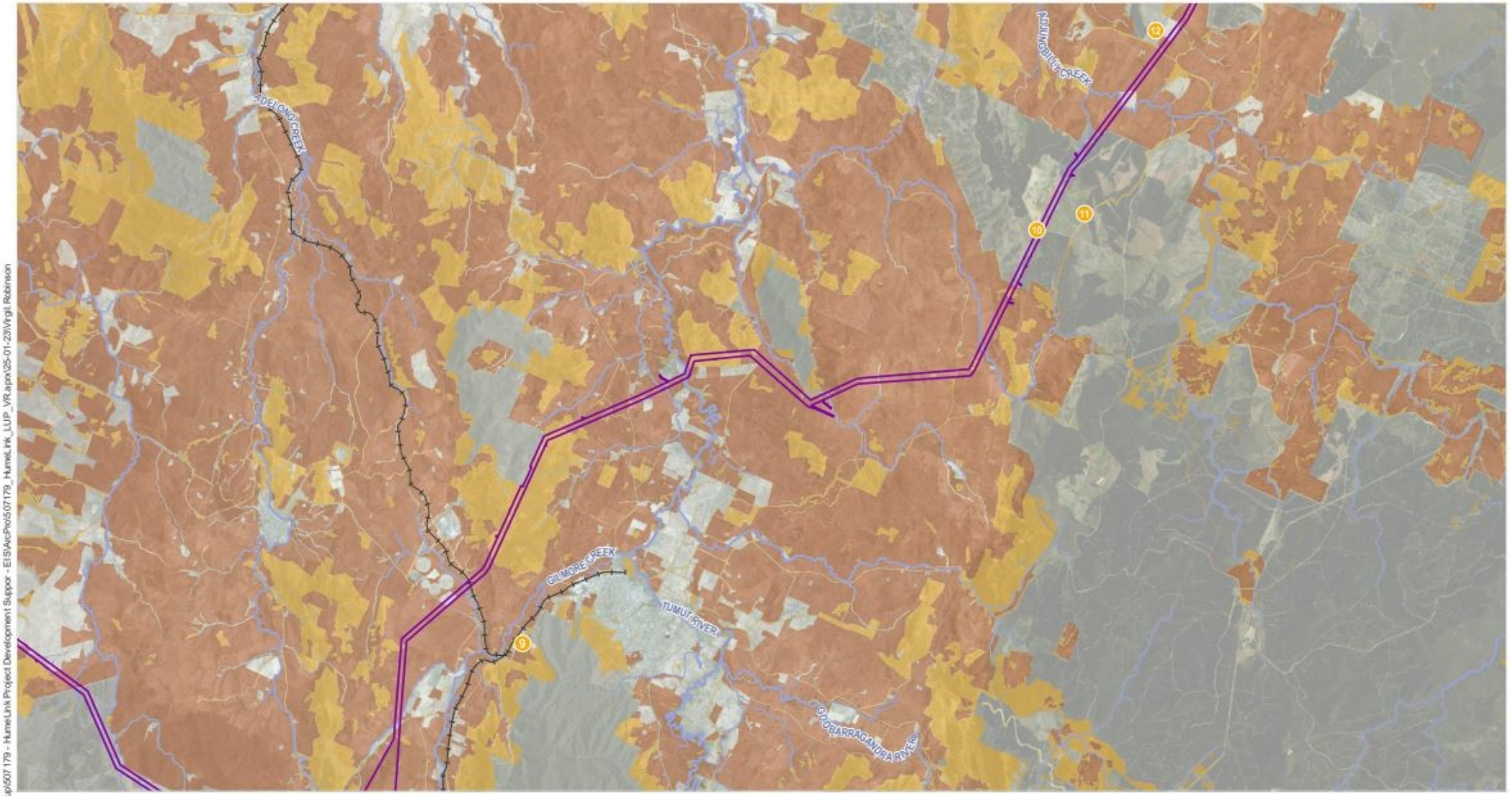


Project footprint

Land use and property study area

Waterway

Railway

Construction ancillary facilities

9 Snowy Mountains Highway compound (C02)

10 Honeysuckle Road compound (C07)

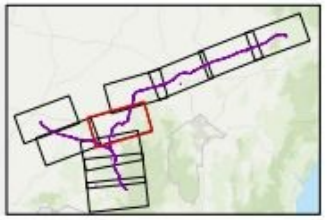
11 Red Hill Road compound (C08)

12 Adjungbilly Road compound (C09)

Land Use 2017

2.1.0 Grazing native vegetation

3.2.0 Grazing modified pastures



Source: *Base data (aerial imagery, transport, water, and cadastral themes); NSW Foundation Spatial Data Framework; Transgrid*

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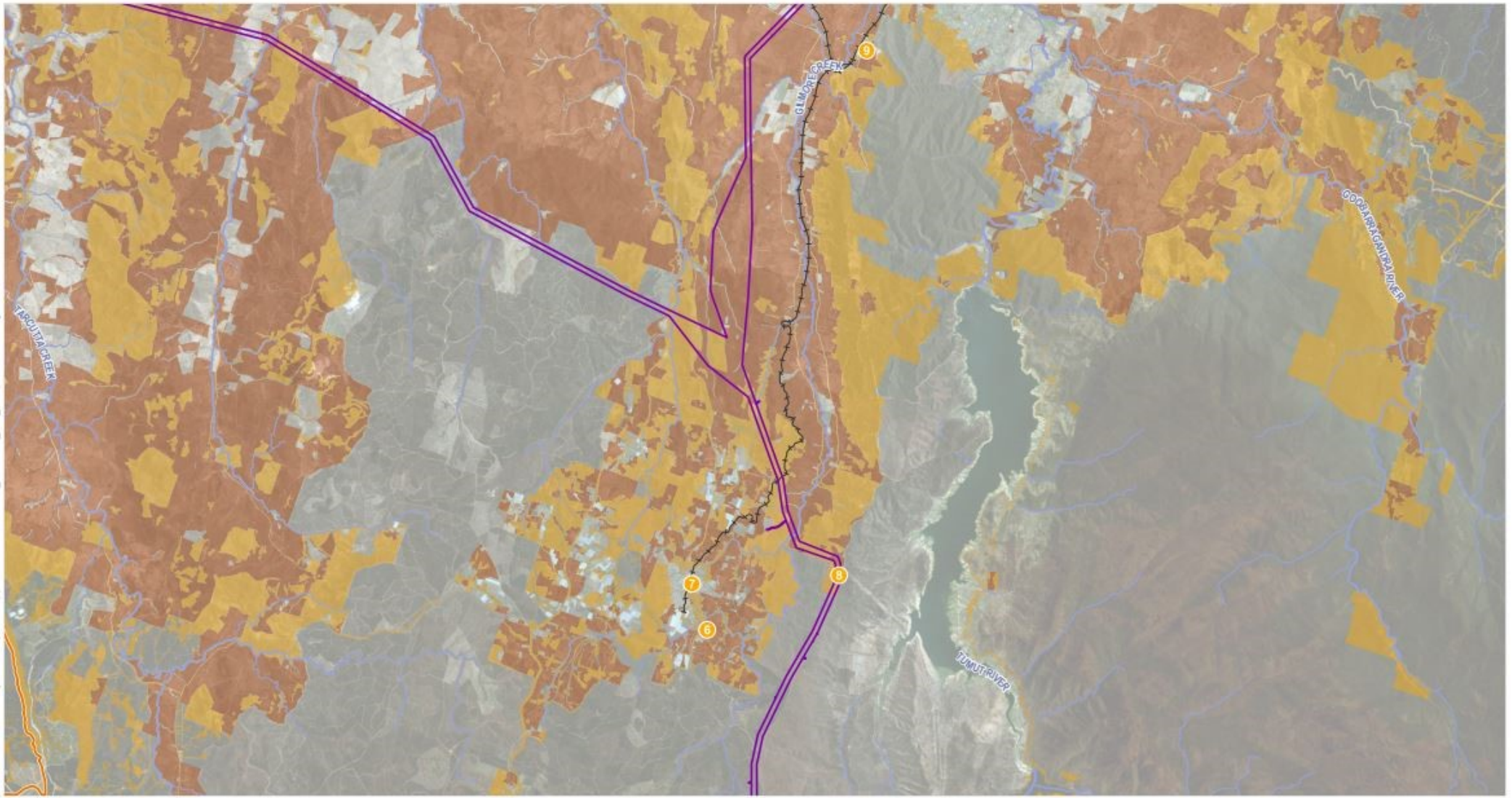
1:150,000

0 4 7 km

Projection: GDA 1994 MGA Zone 55



Project footprint

Land use and property study area

Waterway

Railway

Construction ancillary facilities

6 Bowmans Lane compound (C15)

7 Memorial Avenue compound (C14)

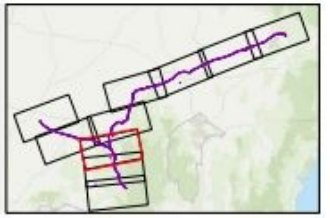
8 Snubba Road compound (C03)

9 Snowy Mountains Highway compound (C02)

Land Use 2017

2.1.0 Grazing native vegetation

3.2.0 Grazing modified pastures



Source: *Base data (aerial imagery, transport, water, and cadastral themes); NSW Foundation Spatial Data Framework; Transgrid*

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0 4 7 km

Projection: GDA 1994 MGA Zone 55

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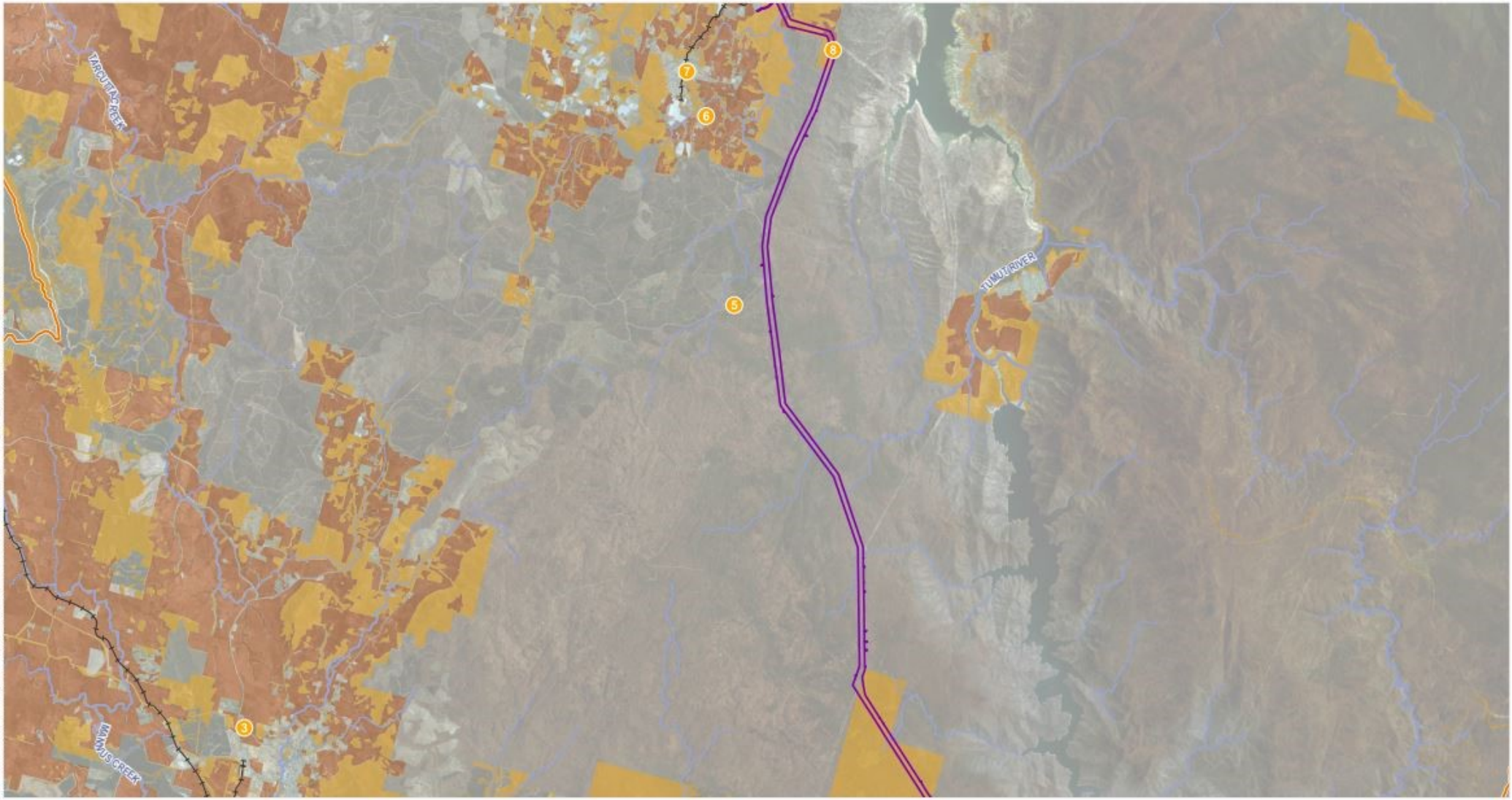


Project footprint

Land use and property study area

Waterway

Railway

Construction ancillary facilities

3 Tumbarumba worker accommodation facility (AC1)

5 Snubba Road compound (C16)

6 Bowmans Lane compound (C15)

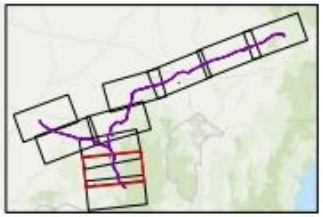
7 Memorial Avenue compound (C14)

8 Snubba Road compound (C03)

Land Use 2017

2.1.0 Grazing native vegetation

3.2.0 Grazing modified pastures



Source: *Base data (aerial imagery, transport, water, and cadastral themes): NSW Foundation Spatial Data Framework; Transgrid*

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0 4 7km

Projection: GDA 1994 MGA Zone 55

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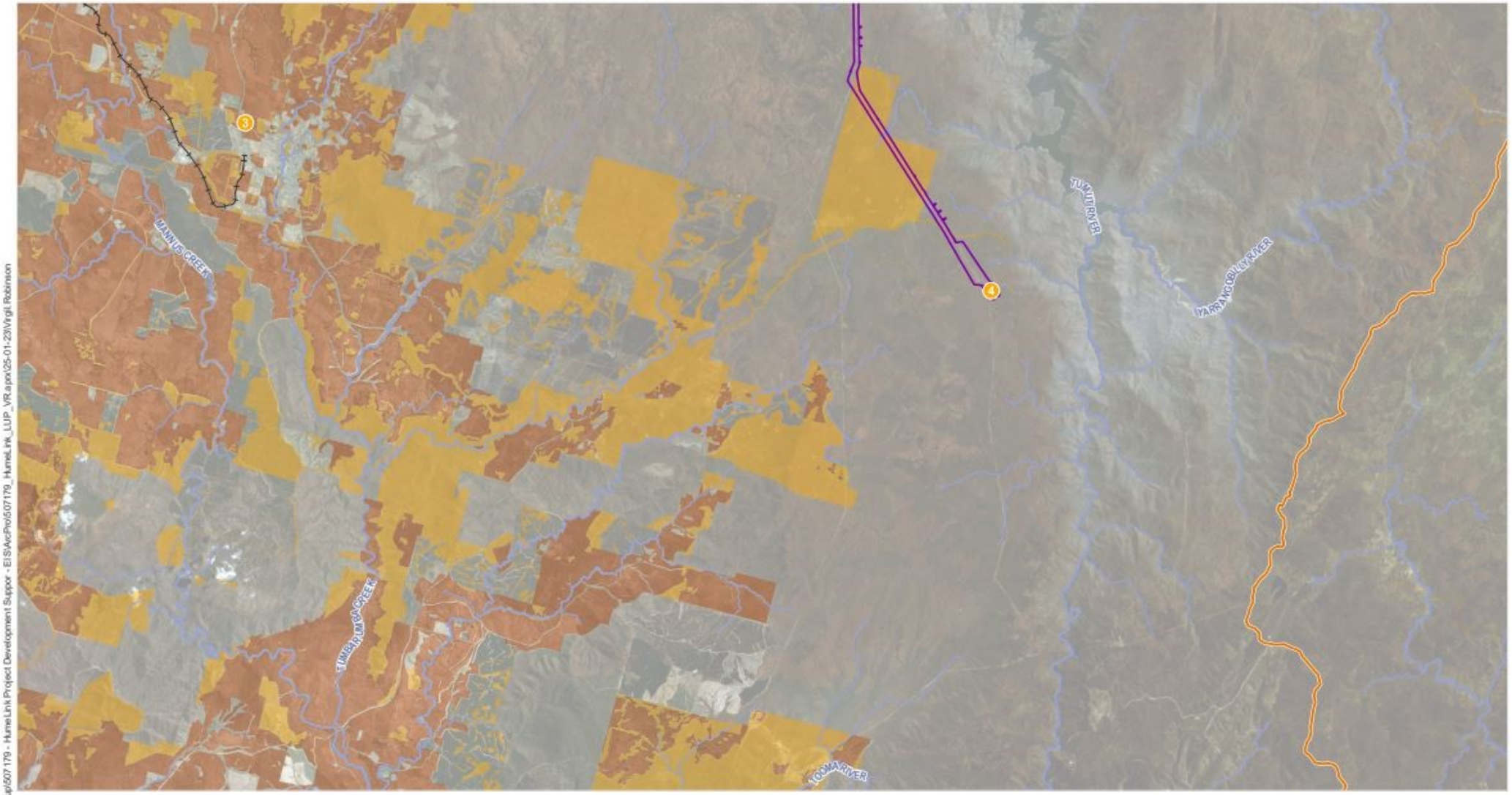


Project footprint

Land use and property study area

Waterway

Railway

Construction ancillary facilities

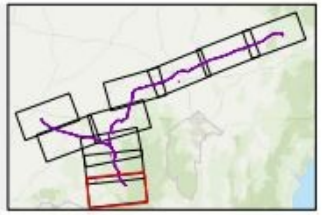
3 Tumbarumba worker accommodation facility (AC1)

4 Maragle 500 kV substation compound (C05)

Land Use 2017

2.1.0 Grazing native vegetation

3.2.0 Grazing modified pastures



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Source: *Base data (aerial imagery, transport, water, and cadastral themes); NSW Foundation Spatial Data Framework; Transgrid*

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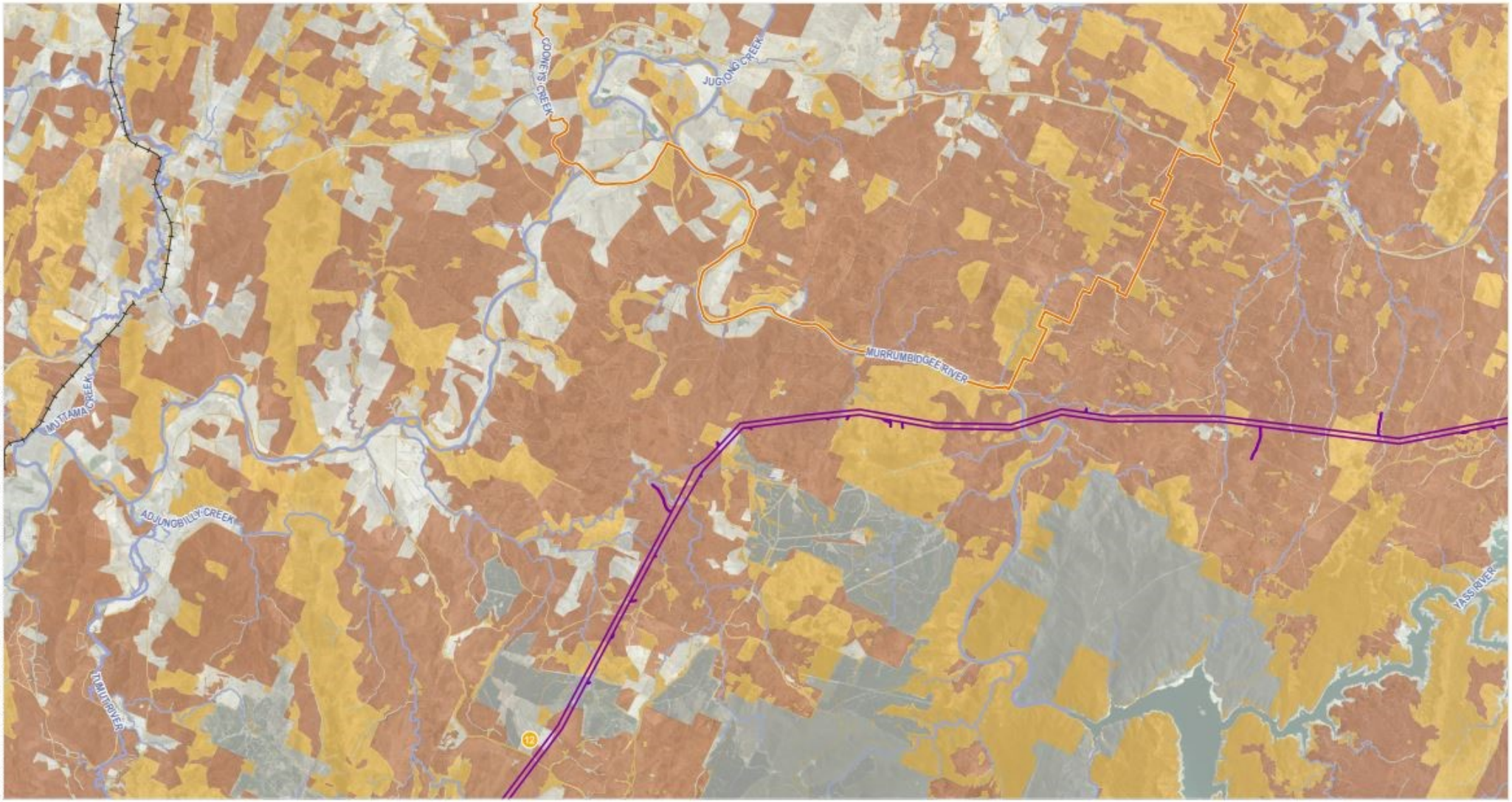
Projection: GDA 1994 MGA Zone 55



Project footprint

Land use and property study area

Waterway

Railway

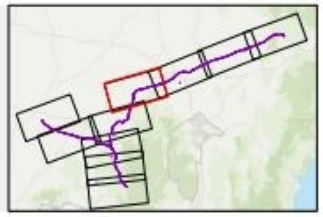
Construction ancillary facilities

12 Adjungbilly Road compound (C09)

Land Use 2017

2.1.0 Grazing native vegetation

3.2.0 Grazing modified pastures



Source: *Base data (aerial imagery, transport, water, and cadastral themes): NSW Foundation Spatial Data Framework; Transgrid*

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0 4 7km

Projection: GDA 1994 MGA Zone 55

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Project footprint

Land use and property study area

Waterway

Railway

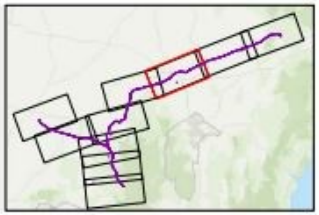
Construction ancillary facilities

13 Yass substation compound (C10)

Land Use 2017

2.1.0 Grazing native vegetation

3.2.0 Grazing modified pastures



Source: *Base data (aerial imagery, transport, water, and cadastral themes); NSW Foundation Spatial Data Framework; Transgrid*

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0 4 7 km

Projection: GDA 1994 MGA Zone 55

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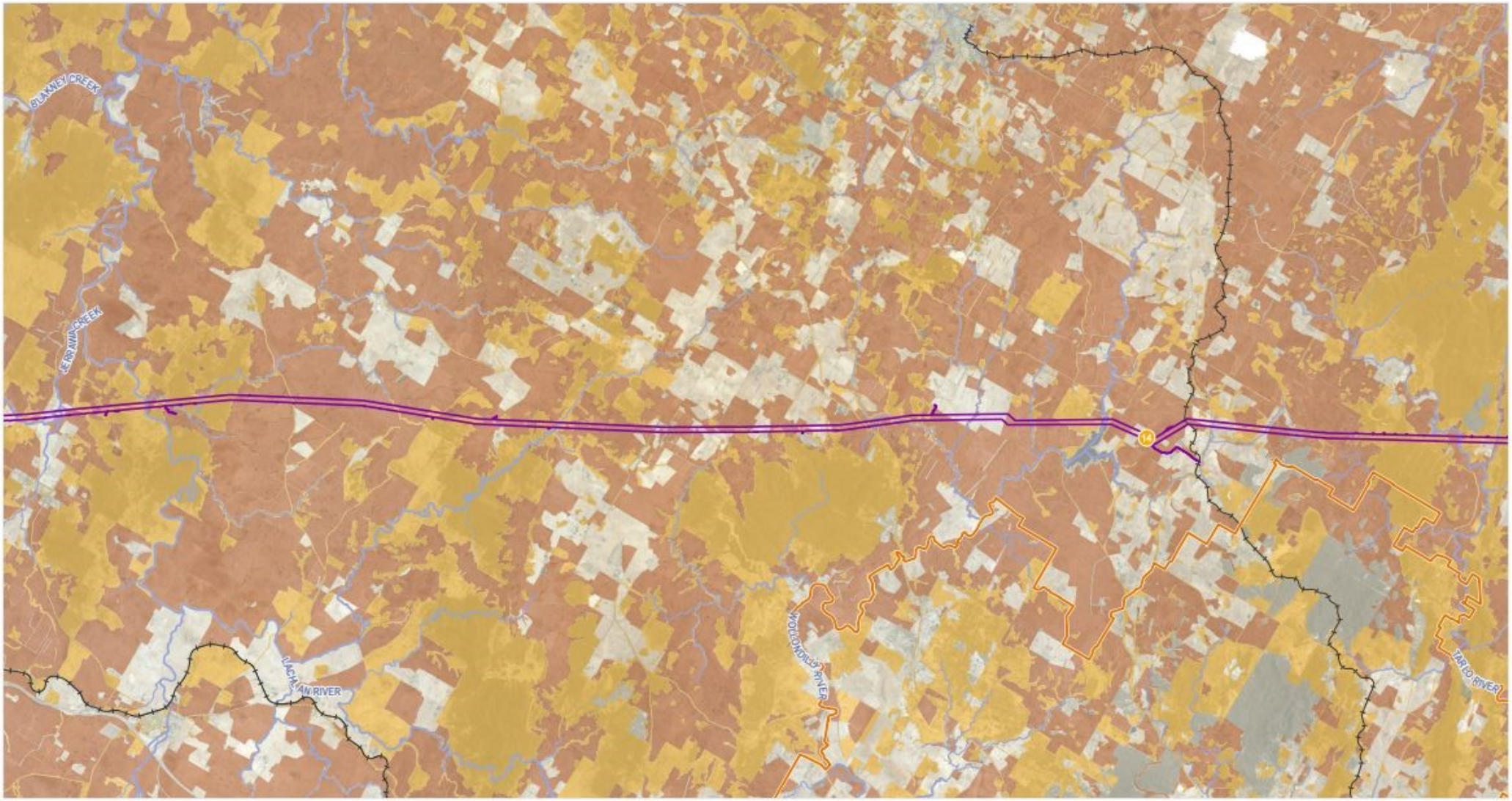

Project footprint

Land use and property study area

Waterway

Railway

Construction ancillary facilities

14 Woodhouselee Road compound (C11)

Land Use 2017

2.1.0 Grazing native vegetation

3.2.0 Grazing modified pastures

Source: *Base data (aerial imagery, transport, water, and cadastral themes): NSW Foundation Spatial Data Framework; Transgrid*

1:150,000

0 4 7 km

Projection: GDA 1994 MGA Zone 55

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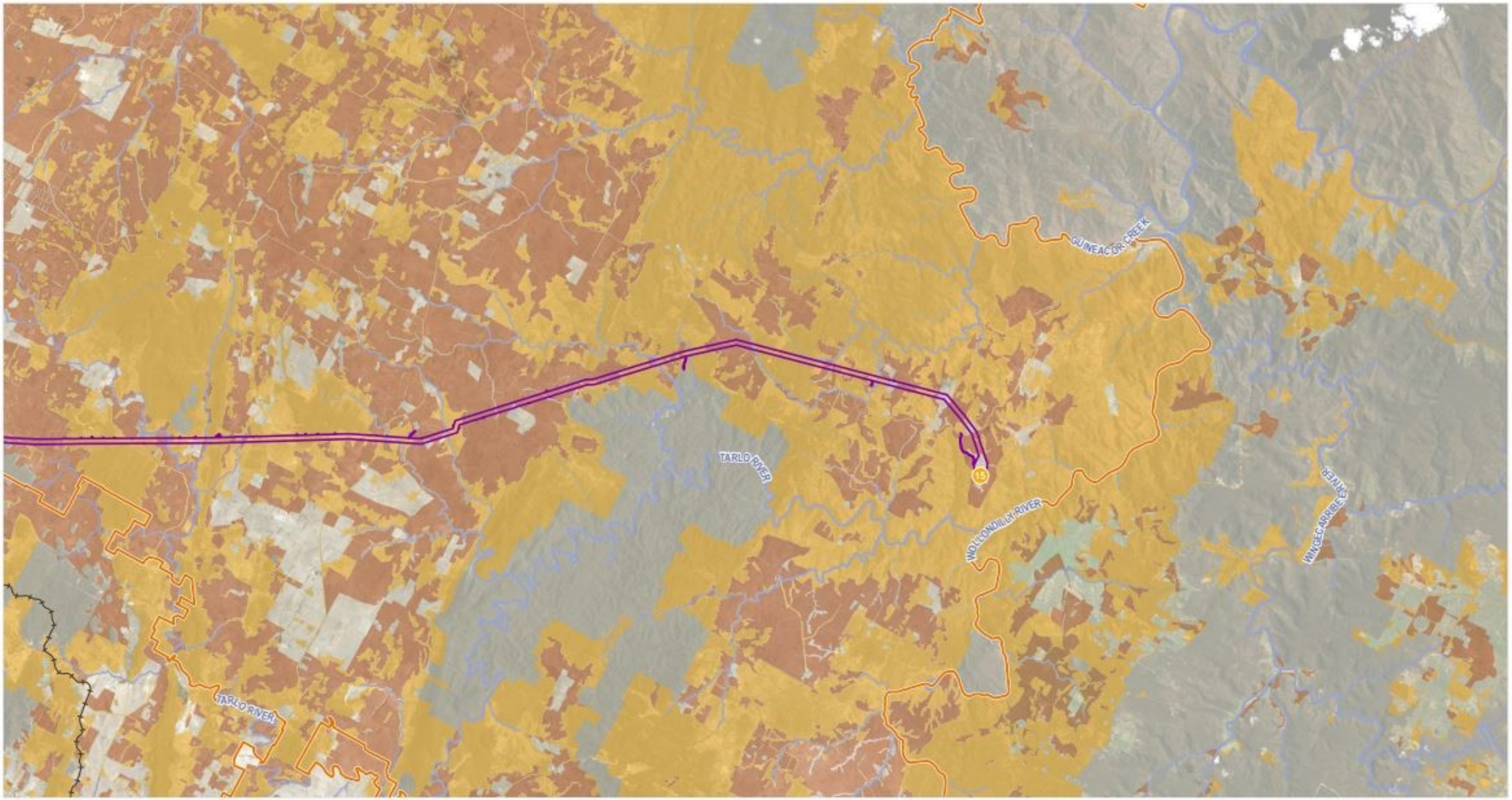


Project footprint

Land use and property study area

Waterway

Railway

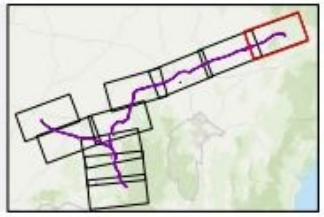
Construction ancillary facilities

15 Bannaby 500 kV substation compound (C12)

Land Use 2017

2.1.0 Grazing native vegetation

3.2.0 Grazing modified pastures



Source: *Base data (aerial imagery, transport, water, and cadastral themes); NSW Foundation Spatial Data Framework; Transgrid*

1:150,000

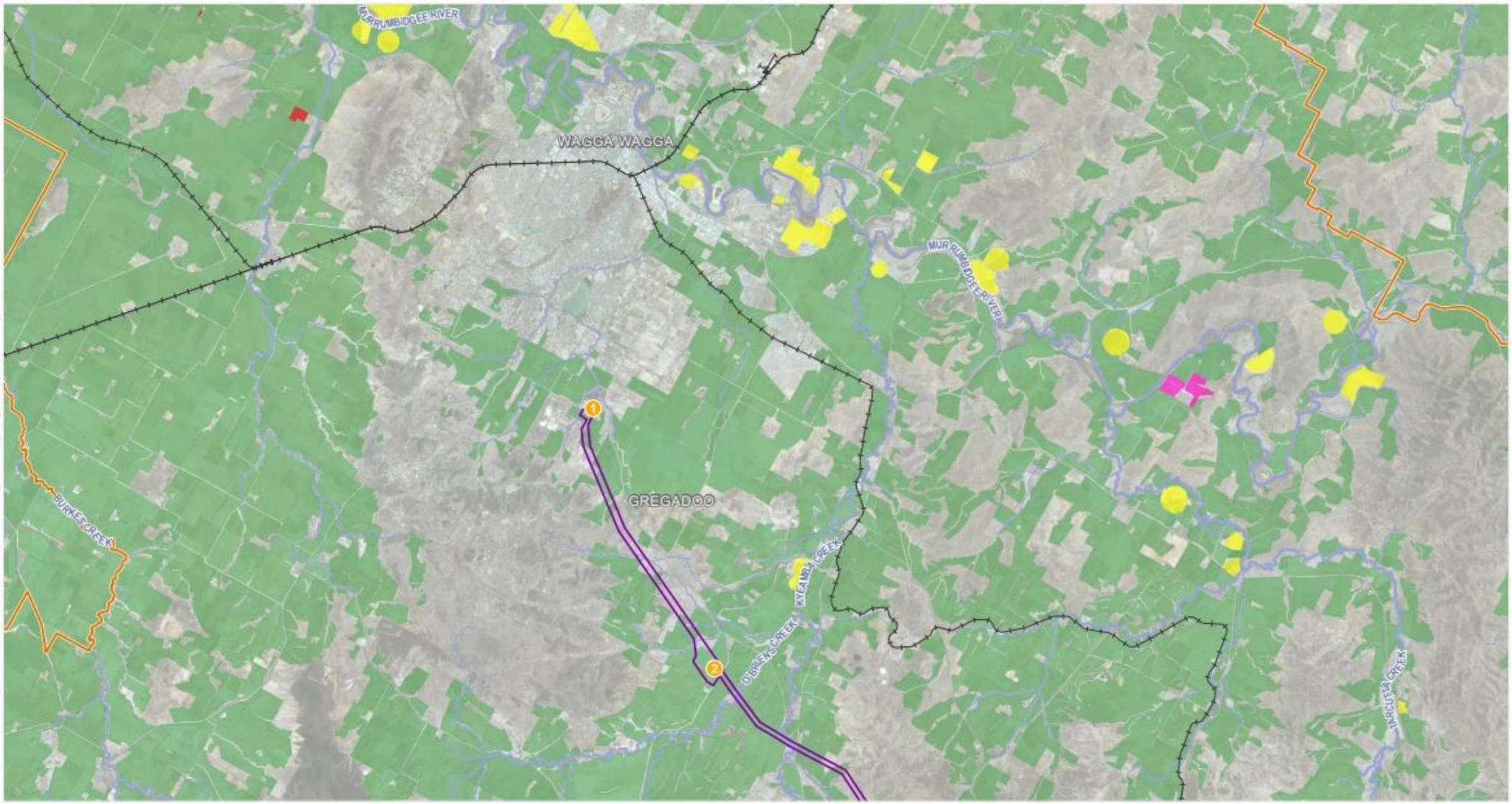
0 4 7km

Projection: GDA 1994 MGA Zone 55

HumeLink

Attachment B: Grazing land uses **Page 10 of 10**

ATTACHMENT C – CROPPING LAND USES



Project footprint

Land use and property study area

Waterway

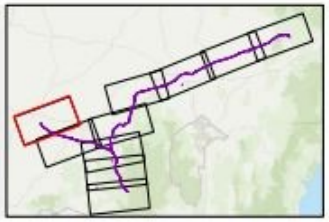
Railway

Construction ancillary facilities

1. Wagga 330 kV substation compound (C01)
2. Gregadoo Road compound (C06)

Land Use 2017

- 3.3.0 Cropping
- 3.4.0 Perennial horticulture
- 3.6.0 Land in transition
- 4.3.0 Irrigated cropping



Source: *Base data (aerial imagery, transport, water, and cadastral themes): NSW Foundation Spatial Data Framework; Transgrid*

1:150,000

0 4 7km

Projection: GDA 1994 MGA Zone 55

HumeLink

Attachment C: Cropping land uses **Page 1 of 10**

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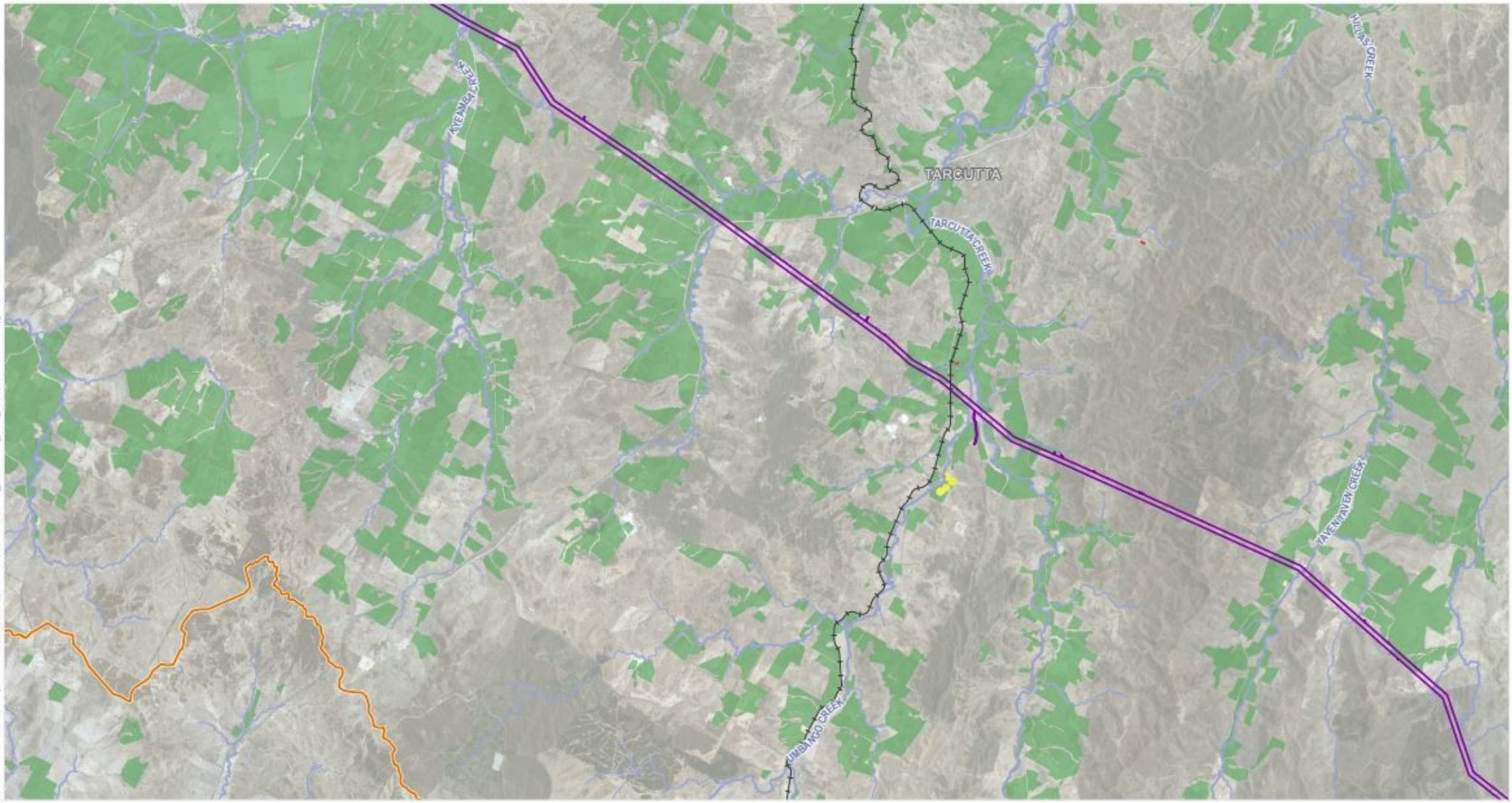


Project footprint

Land use and property study area

Waterway

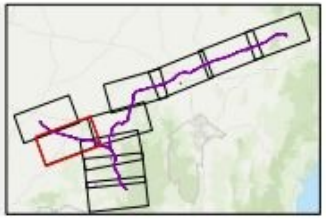
Railway

Land Use 2017

3.3.0 Cropping

3.4.0 Perennial horticulture

4.3.0 Irrigated cropping



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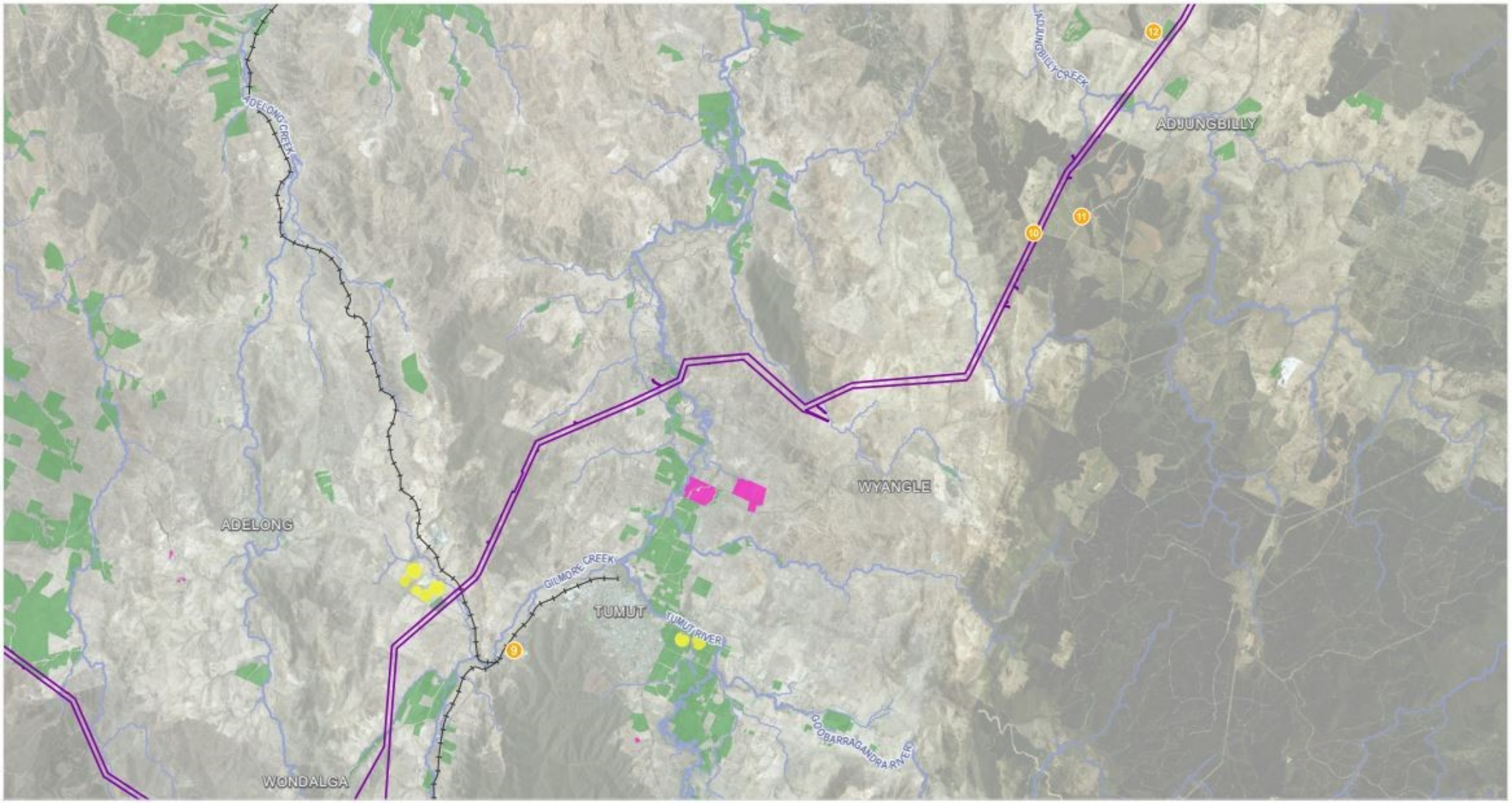
Source: *Base data (aerial imagery, transport, water, and cadastral themes): NSW Foundation Spatial Data Framework; Transgrid*

1:150,000

0 4 7 km

Projection: GDA 1994 MGA Zone 55



Project footprint

Land use and property study area

Waterway

Railway

Construction ancillary facilities

9 Snowy Mountains Highway compound (C02)

10 Honeysuckle Road compound (C07)

11 Red Hill Road compound (C08)

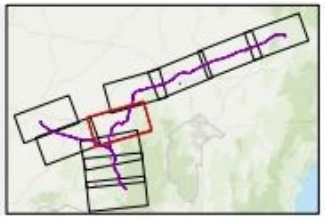
12 Adjungbilly Road compound (C09)

Land Use 2017

3.3.0 Cropping

3.6.0 Land in transition

4.3.0 Irrigated cropping



Source: *Base data (aerial imagery, transport, water, and cadastral themes): NSW Foundation Spatial Data Framework; Transgrid*

1:150,000

0 4 7km

Projection: GDA 1994 MGA Zone 55

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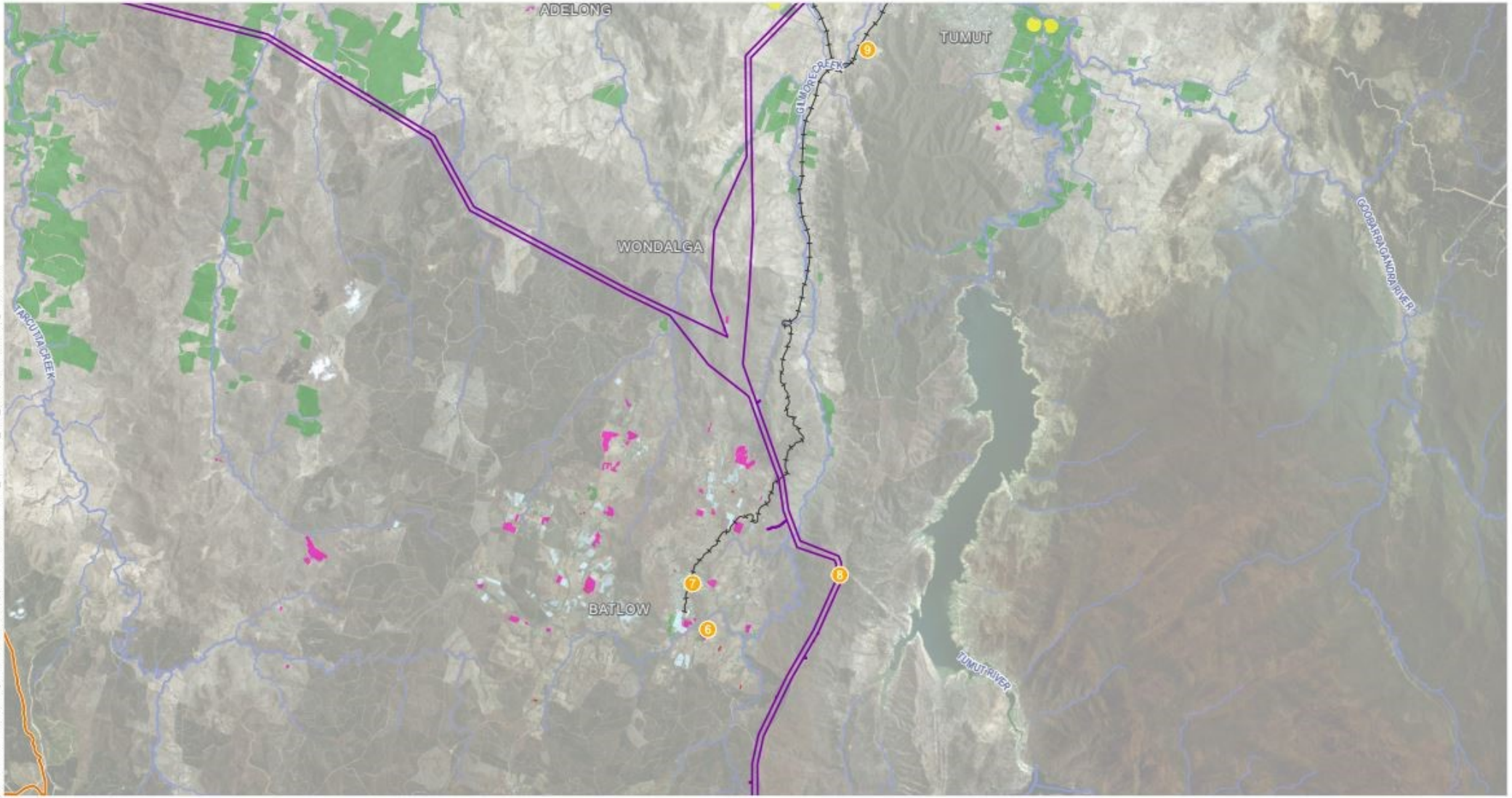


Project footprint

Land use and property study area

Waterway

Railway

Construction ancillary facilities

6 Bowmans Lane compound (C15)

7 Memorial Avenue compound (C14)

8 Snubba Road compound (C03)

9 Snowy Mountains Highway compound (C02)

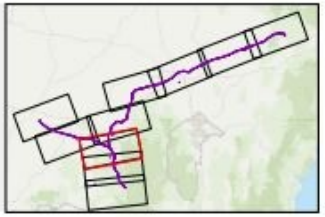
Land Use 2017

3.3.0 Cropping

3.4.0 Perennial horticulture

3.6.0 Land in transition

4.3.0 Irrigated cropping



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Source: *Base data (aerial imagery, transport, water, and cadastral themes): NSW Foundation Spatial Data Framework; Transgrid*

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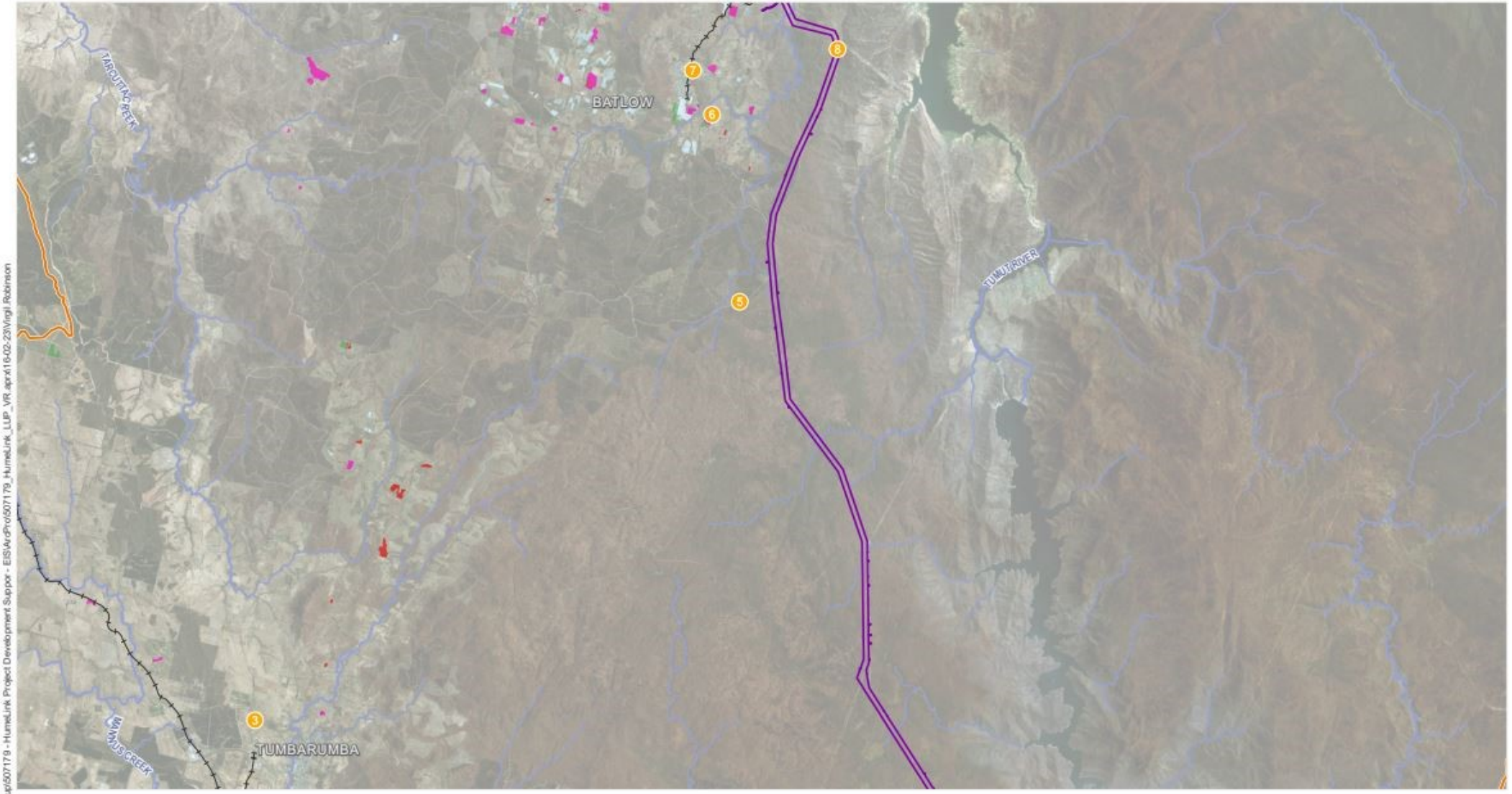
Projection: GDA 1994 MGA Zone 55



Project footprint

Land use and property study area

Waterway

Railway

Construction ancillary facilities

3 Tumbarumba worker accommodation facility (AC1)

5 Snubba Road compound (C16)

6 Bowmans Lane compound (C15)

7 Memorial Avenue compound (C14)

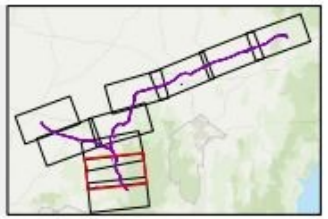
8 Snubba Road compound (C03)

Land Use 2017

3.3.0 Cropping

3.4.0 Perennial horticulture

3.6.0 Land in transition



Source: *Base data (aerial imagery, transport, water, and cadastral themes): NSW Foundation Spatial Data Framework; Transgrid*

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0 4 7 km

Projection: GDA 1994 MGA Zone 55

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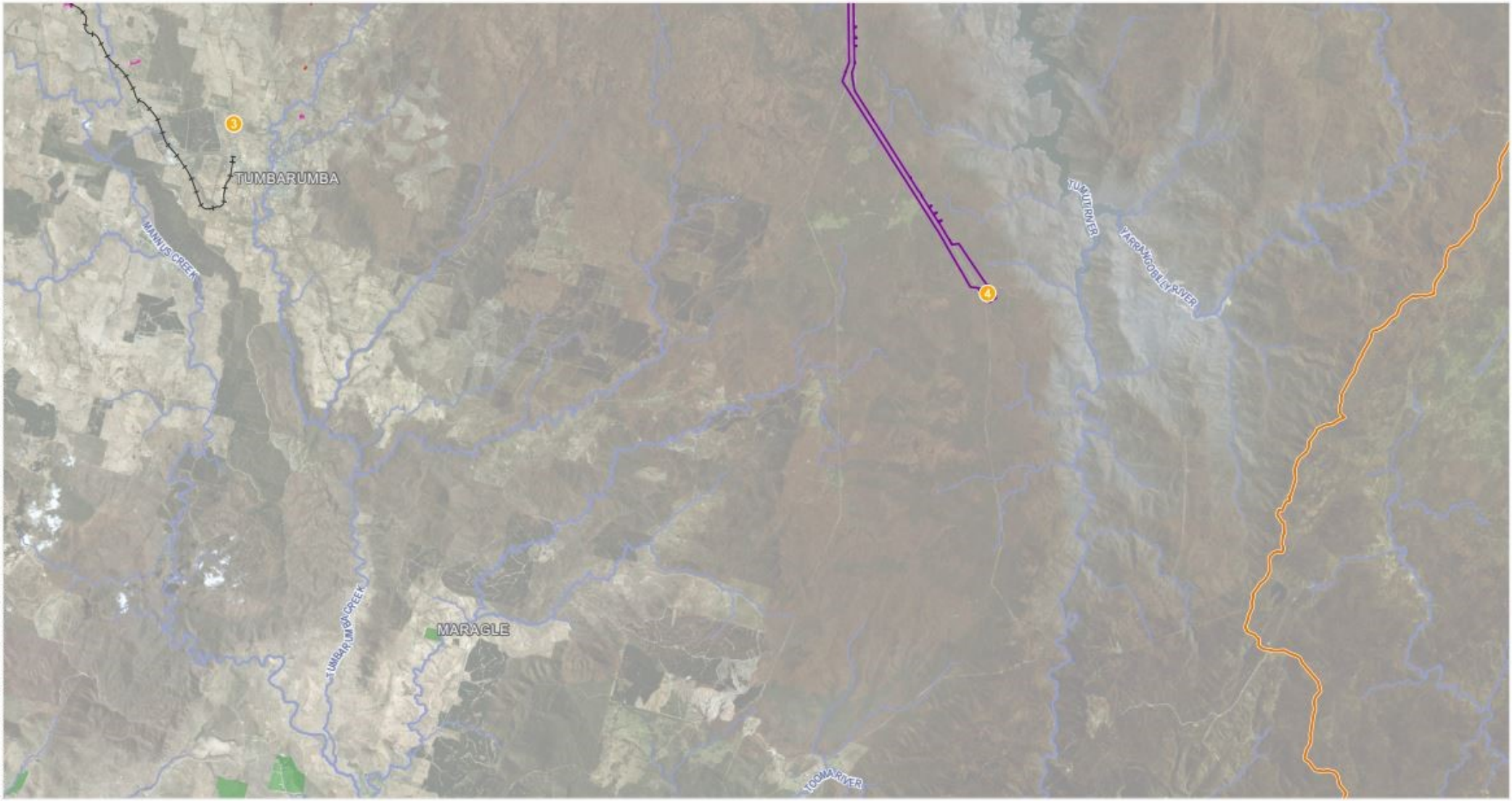

Project footprint

Land use and property study area

Waterway

Railway

Construction ancillary facilities

3 Tumbarumba worker accommodation facility (AC1)

4 Maragle 500 kV substation compound (C05)

Land Use 2017

3.3.0 Cropping

3.4.0 Perennial horticulture

3.6.0 Land in transition

Source: *Base data (aerial imagery, transport, water, and cadastral themes): NSW Foundation Spatial Data Framework; Transgrid*

1:150,000

0 4 7km

Projection: GDA 1994 MGA Zone 55

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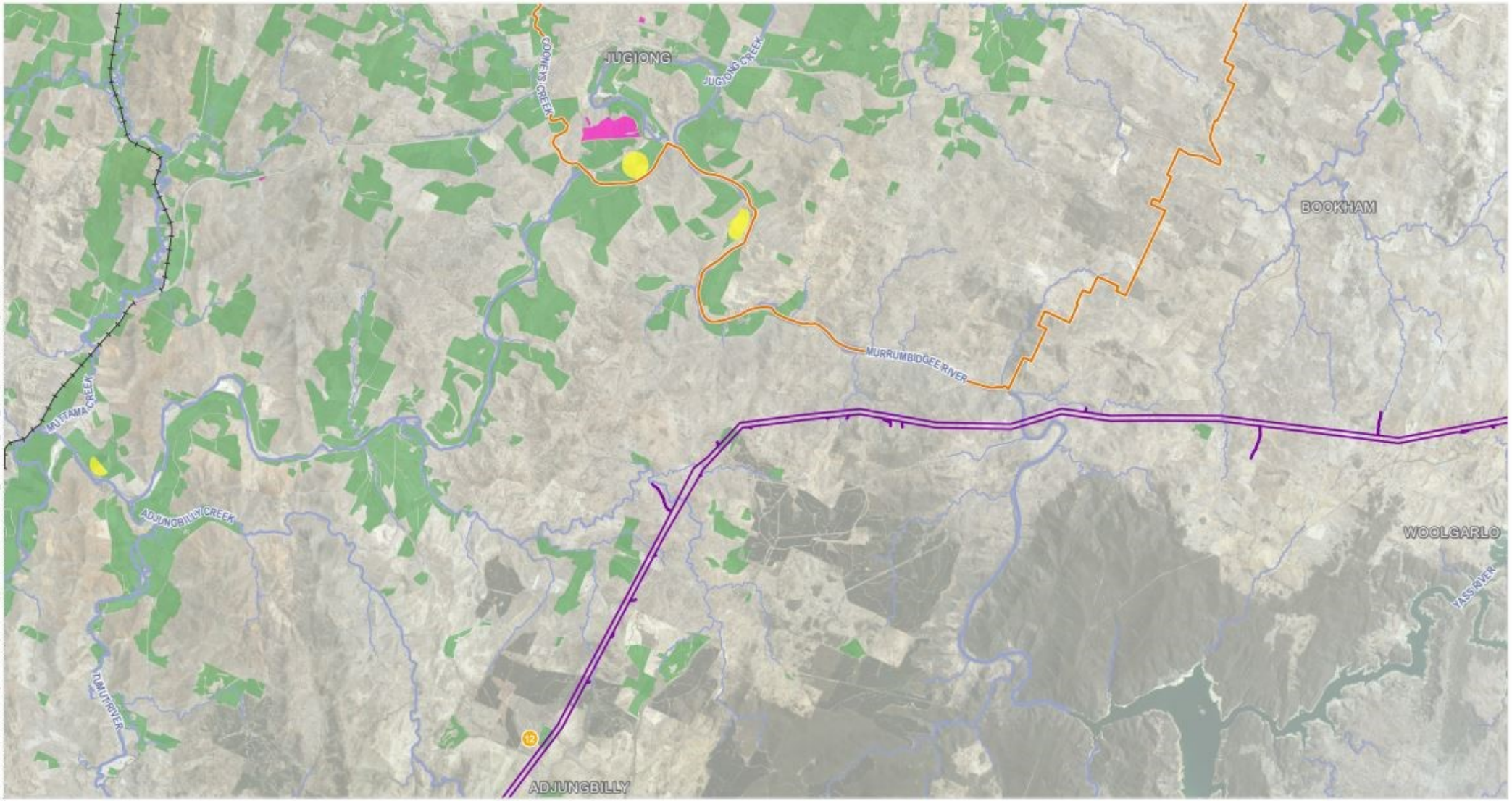


Project footprint

Land use and property study area

Waterway

Railway

Construction ancillary facilities

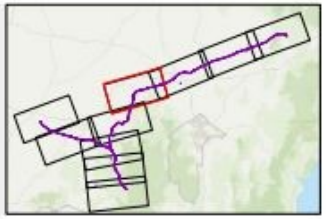
12 Adjungbilly Road compound (C09)

Land Use 2017

3.3.0 Cropping

3.6.0 Land in transition

4.3.0 Irrigated cropping



Source: *Base data (aerial imagery, transport, water, and cadastral themes); NSW Foundation Spatial Data Framework; Transgrid*

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Projection: GDA 1994 MGA Zone 55

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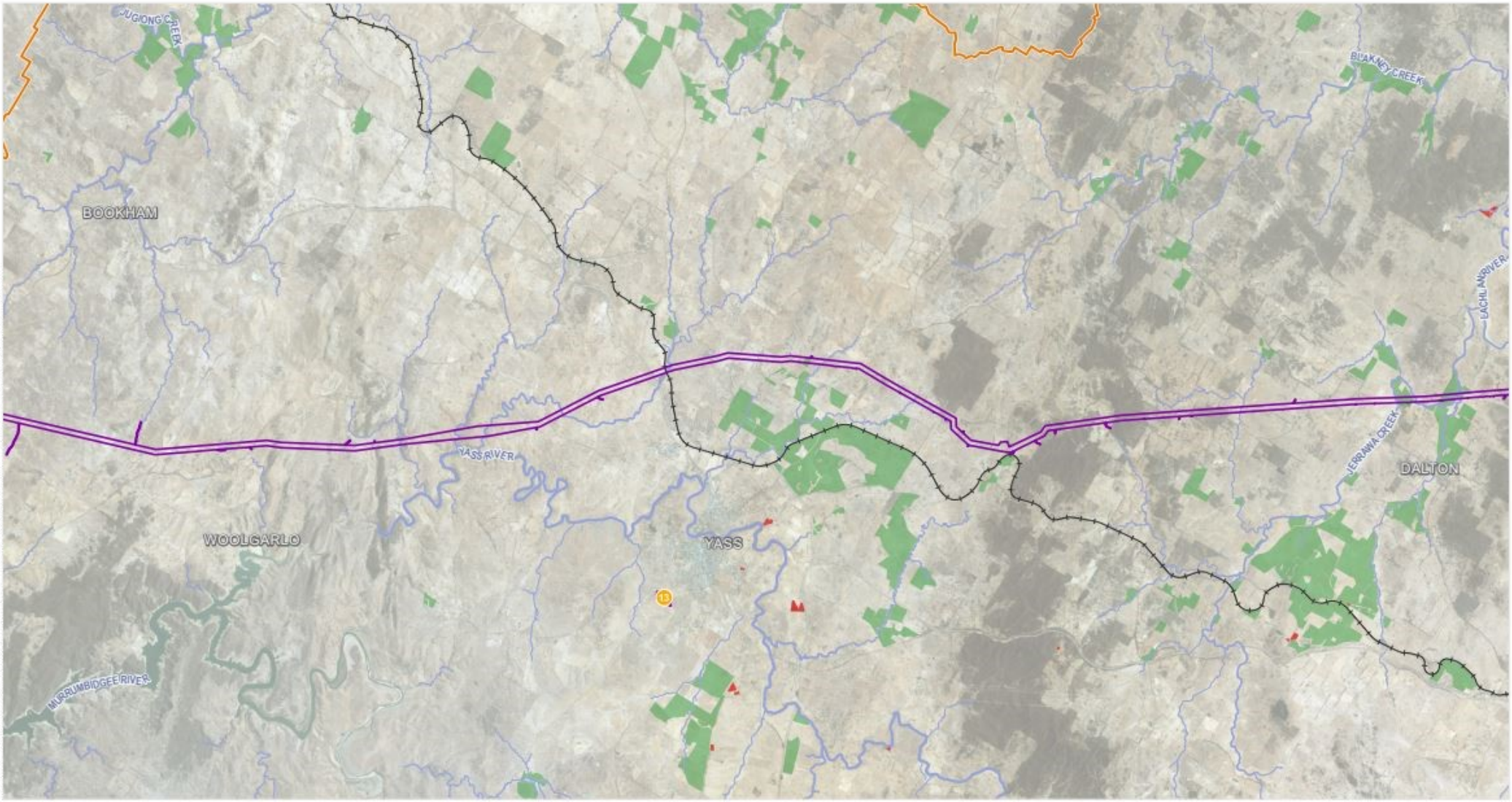


Project footprint

Land use and property study area

Waterway

Railway

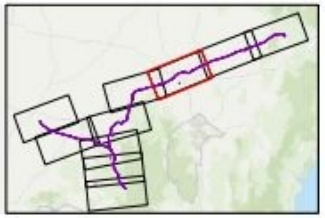
Construction ancillary facilities

13 Yass substation compound (C10)

Land Use 2017

3.3.0 Cropping

3.4.0 Perennial horticulture



Source: *Base data (aerial imagery, transport, water, and cadastral themes): NSW Foundation Spatial Data Framework; Transgrid*

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0 4 7 km

Projection: GDA 1994 MGA Zone 55

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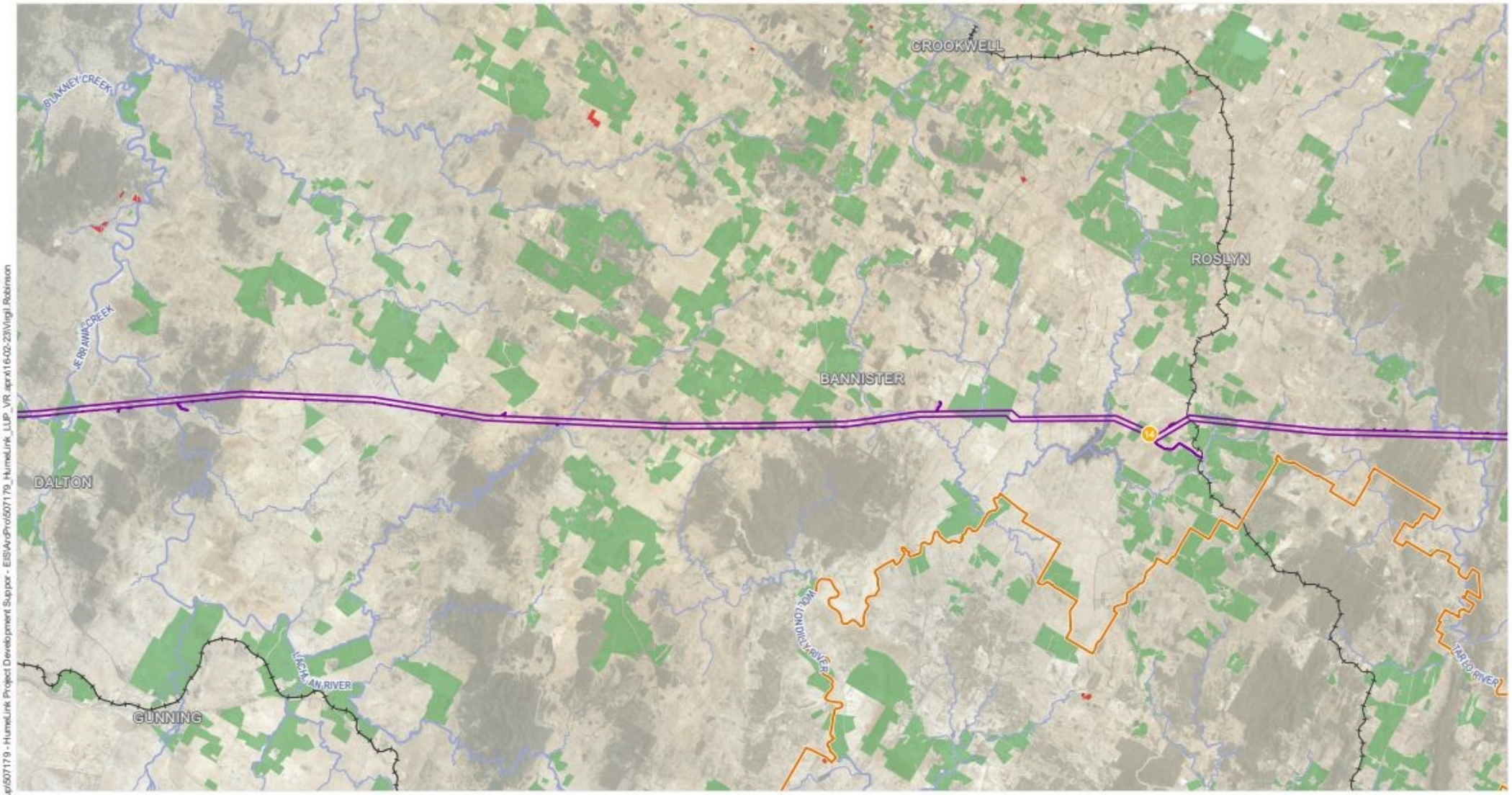


Project footprint

Land use and property study area

Waterway

Railway

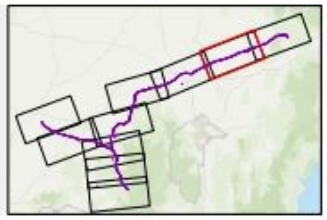
Construction ancillary facilities

Woodhouselee Road compound (C11)

Land Use 2017

3.3.0 Cropping

3.4.0 Perennial horticulture



Source: *Base data (aerial imagery, transport, water, and cadastral themes); NSW Foundation Spatial Data Framework; Transgrid*

1:150,000

0 4 7 km

Projection: GDA 1994 MGA Zone 55

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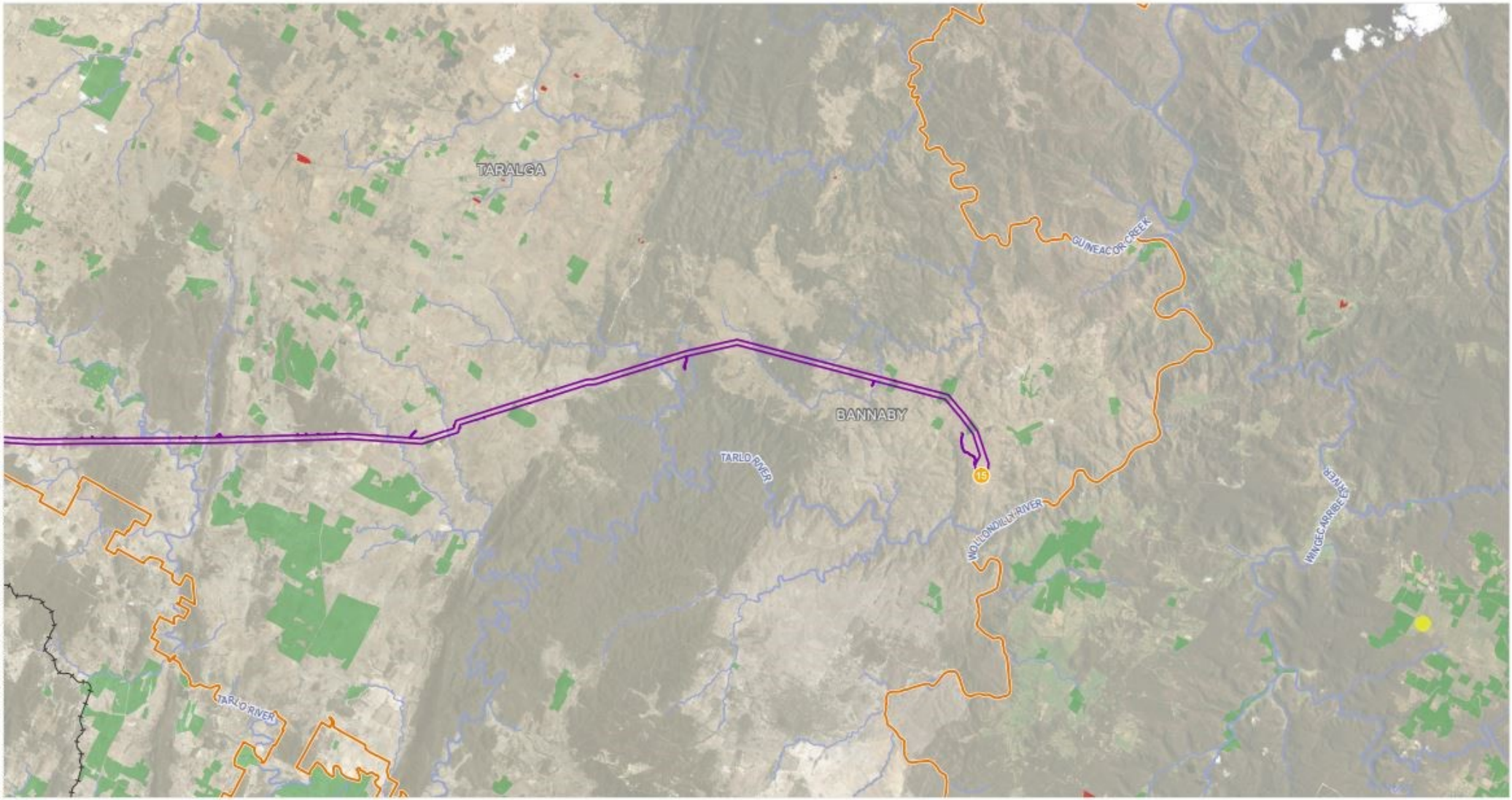


Project footprint

Land use and property study area

Waterway

Railway

Construction ancillary facilities

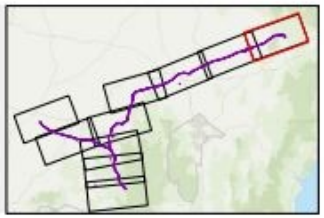
15 Bannaby 500 kV substation compound (C12)

Land Use 2017

3.3.0 Cropping

3.4.0 Perennial horticulture

4.3.0 Irrigated cropping



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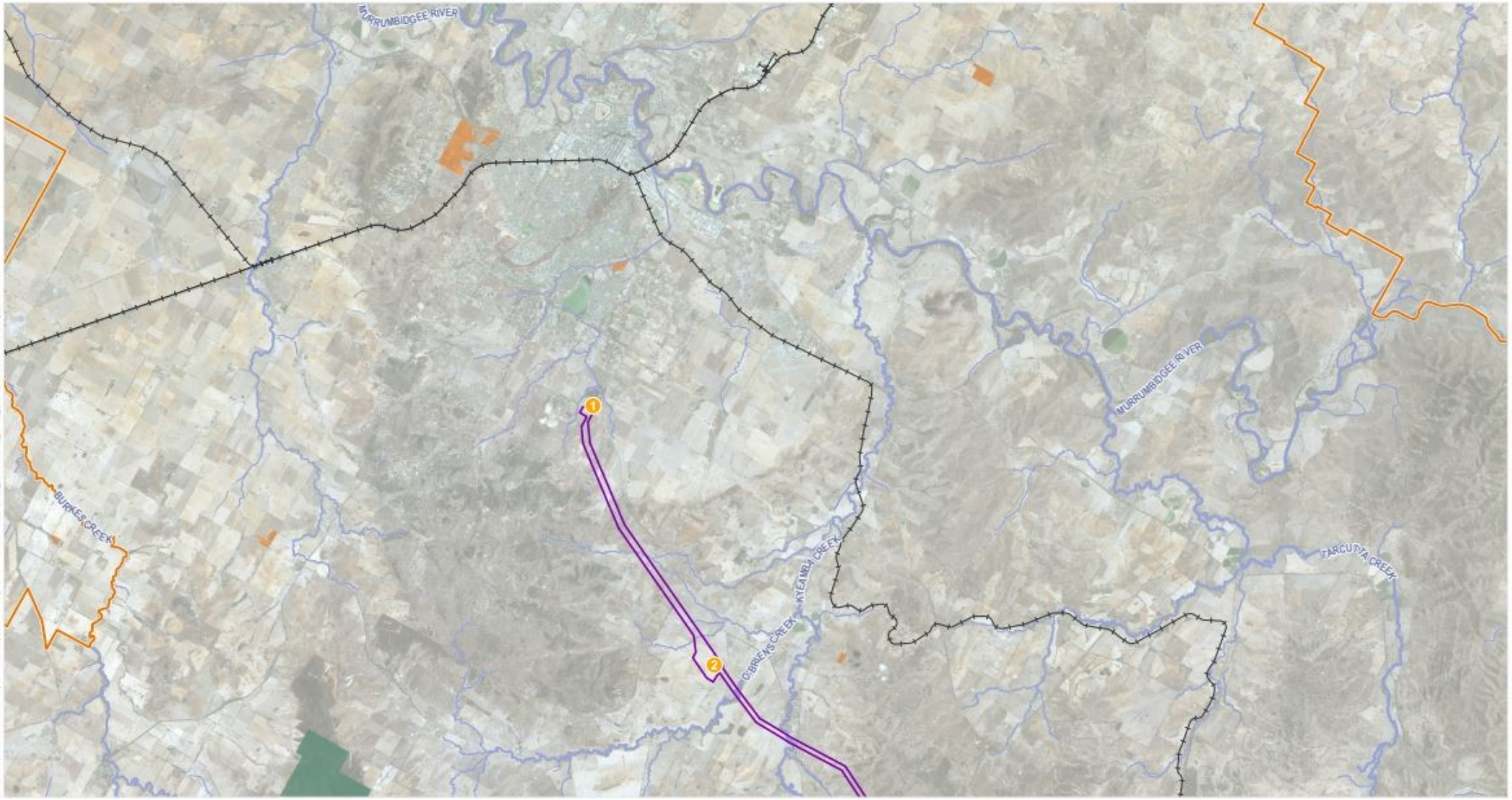
Source: *Base data (aerial imagery, transport, water, and cadastral themes): NSW Foundation Spatial Data Framework; Transgrid*

1:150,000

0 4 7km

Projection: GDA 1994 MGA Zone 55

ATTACHMENT D – FORESTRY LAND USES



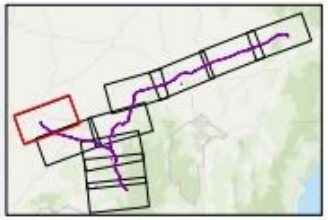
Project footprint
Land use and property study area
National park and reserve
Waterway
Railway

Construction ancillary facilities

1. Wagga 330 kV substation compound (C01)
2. Gregadoo Road compound (C06)

Land Use 2017

3.1.0 Plantation forests



Source: *Base data (aerial imagery, transport, water, and cadastral themes): NSW Foundation Spatial Data Framework; Transgrid*

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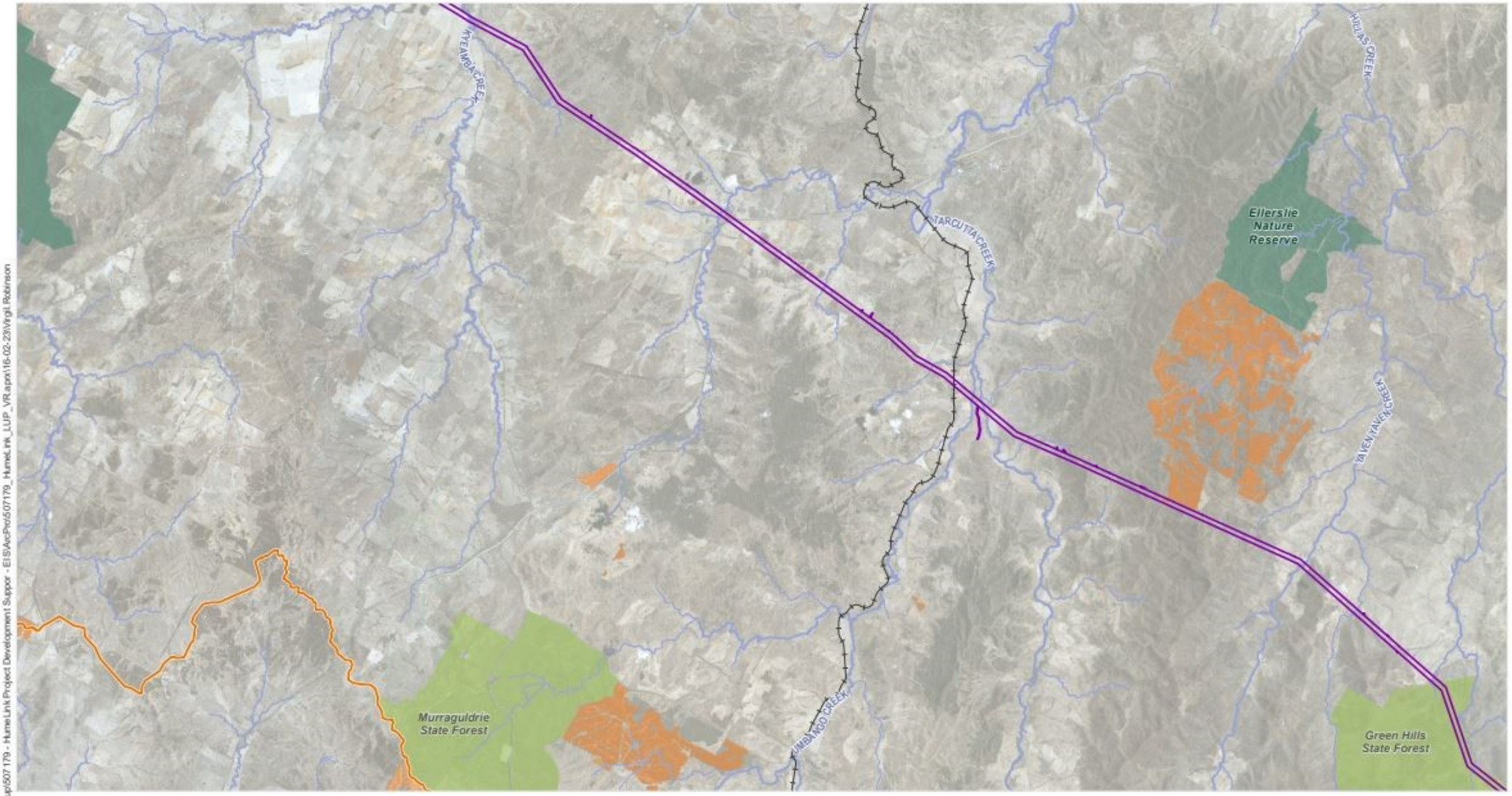
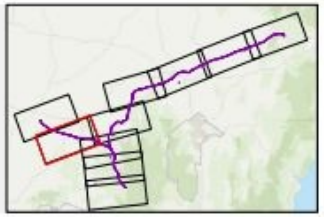
1:150,000
0 4 7 km

Projection: GDA 1994 MGA Zone 55



Project footprint
Land use and property study area
National park and reserve
State forest
Waterway
Railway

Land Use 2017
3.1.0 Plantation forests



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Source: *Base data (aerial imagery, transport, water, and cadastral themes); NSW Foundation Spatial Data Framework; Transgrid*

1:150,000
0 4 7km

Projection: GDA 1994 MGA Zone 55

Project footprint
Land use and property study area
National park and reserve
State forest
Waterway
Railway

Construction ancillary facilities

9 Snowy Mountains Highway compound (C02)
10 Honeysuckle Road compound (C07)
11 Red Hill Road compound (C08)
12 Adjungbilly Road compound (C09)

Land Use 2017

3.1.0 Plantation forests

Source: *Base data (aerial imagery, transport, water, and cadastral themes); NSW Foundation Spatial Data Framework; Transgrid*

1:150,000
0 4 7km

Projection: GDA 1994 MGA Zone 55

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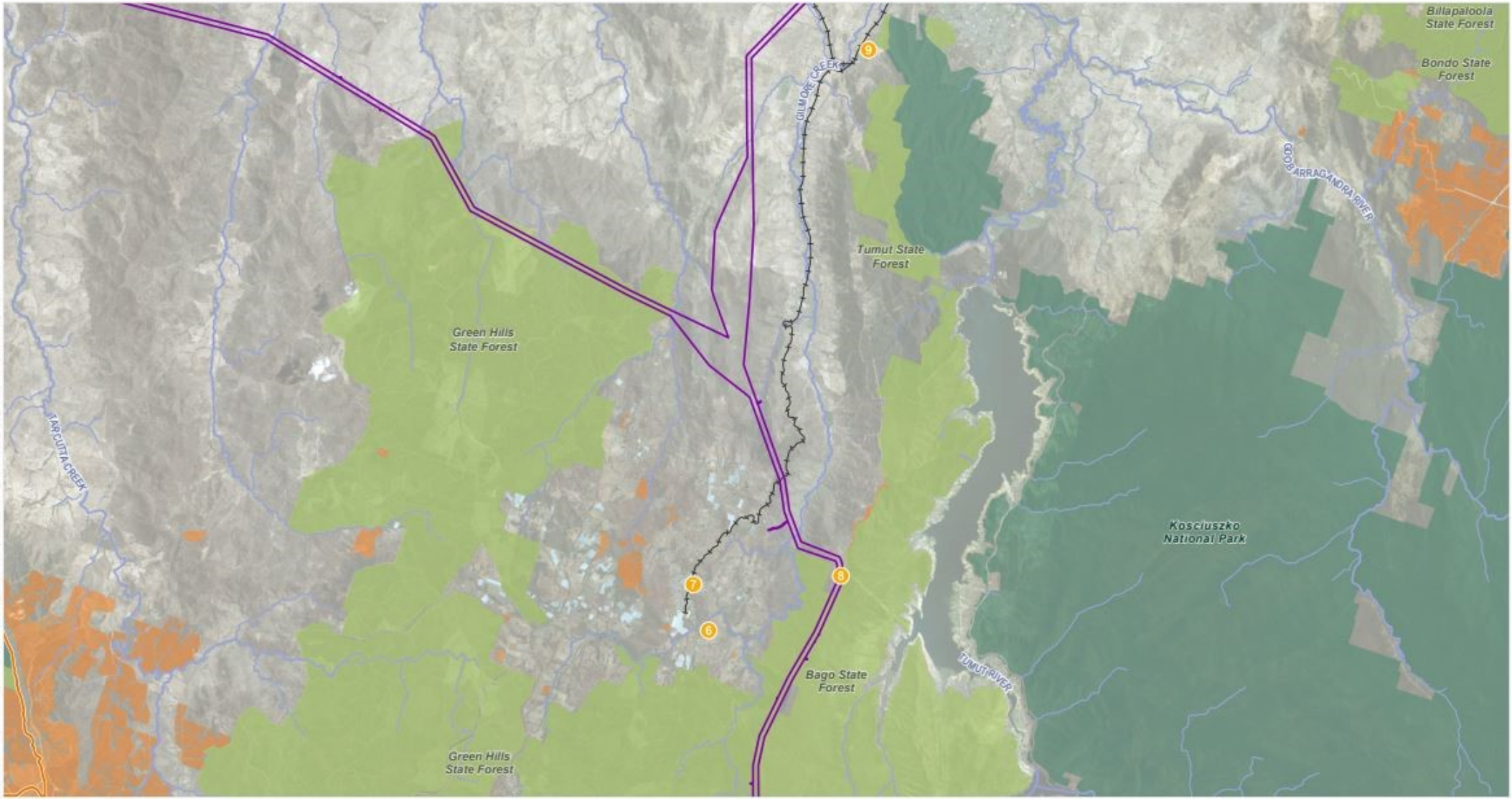

Project footprint
Land use and property study area
National park and reserve
State forest
Waterway
Railway

Construction ancillary facilities

6 Bowmans Lane compound (C15)
7 Memorial Avenue compound (C14)
8 Snubba Road compound (C03)
9 Snowy Mountains Highway compound (C02)

Land Use 2017

3.1.0 Plantation forests

Source: *Base data (aerial imagery, transport, water, and cadastral themes): NSW Foundation Spatial Data Framework; Transgrid*

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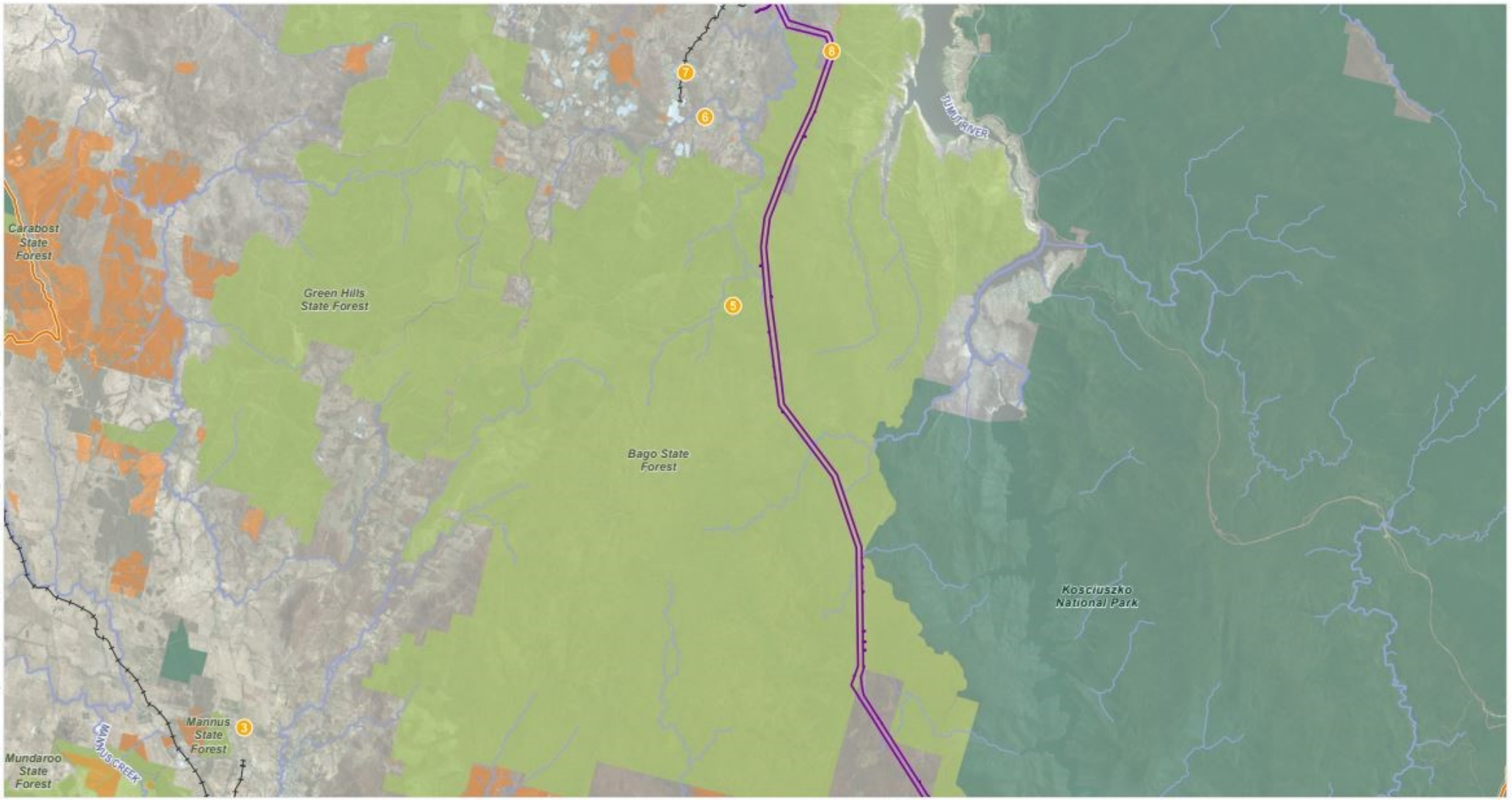
1:150,000
0 4 7 km

Projection: GDA 1994 MGA Zone 55



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Project footprint
Land use and property study area
National park and reserve
State forest
Waterway
Railway

Construction ancillary facilities

3 Tumbarumba worker accommodation facility (AC1)
5 Snubba Road compound (C16)
6 Bowmans Lane compound (C15)
7 Memorial Avenue compound (C14)
8 Snubba Road compound (C03)

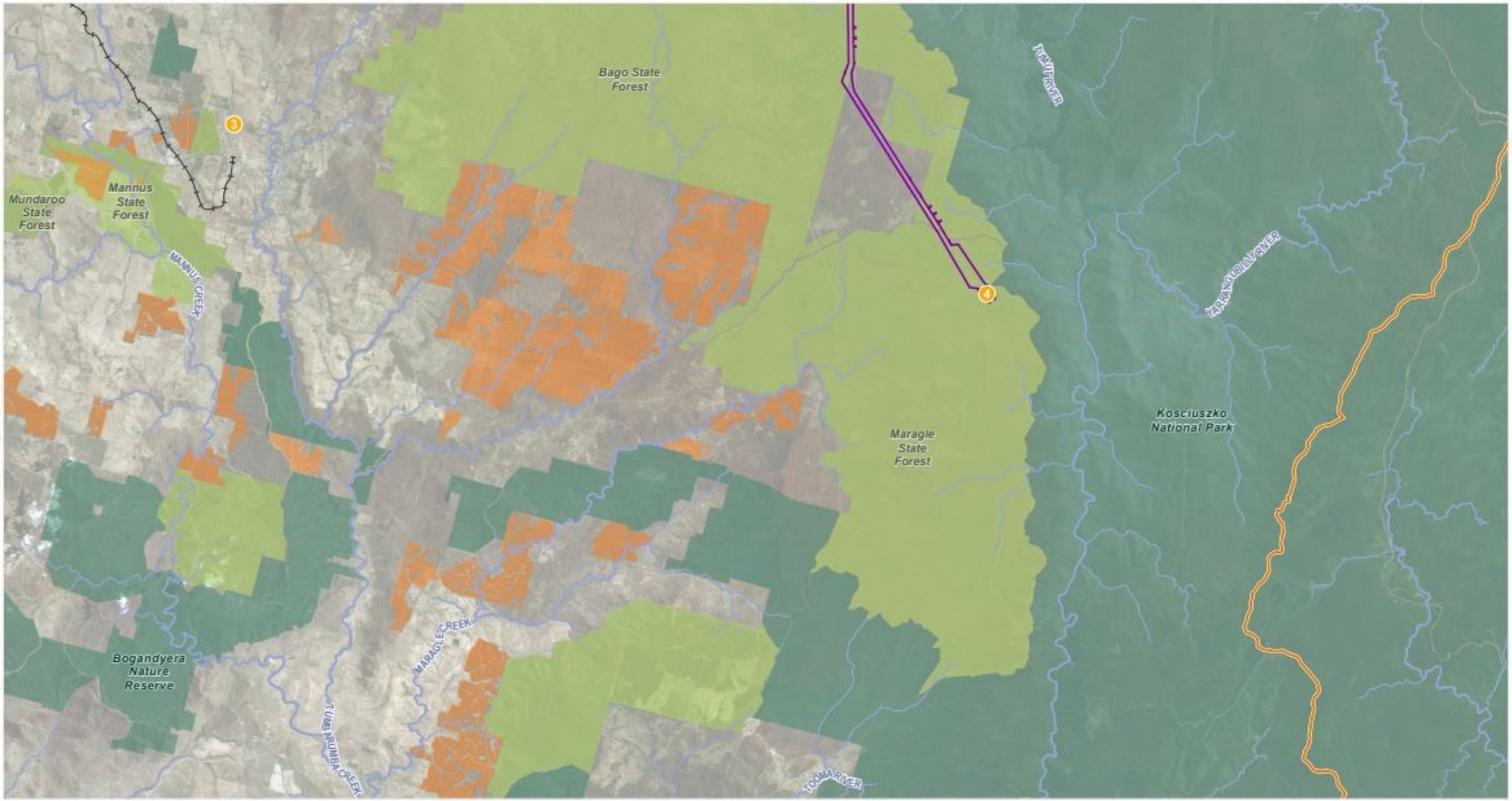
Land Use 2017

3.1.0 Plantation forests

Source: *Base data (aerial imagery, transport, water, and cadastral themes); NSW Foundation Spatial Data Framework; Transgrid*

1:150,000
0 4 7km

Projection: GDA 1994 MGA Zone 55



Project footprint

Land use and property study area

National park and reserve

State forest

Waterway

Railway

Construction ancillary facilities

3 Tumbarumba worker accommodation facility (AC1)

4 Maragle 500 kV substation compound (C05)

Land Use 2017

3.1.0 Plantation forests

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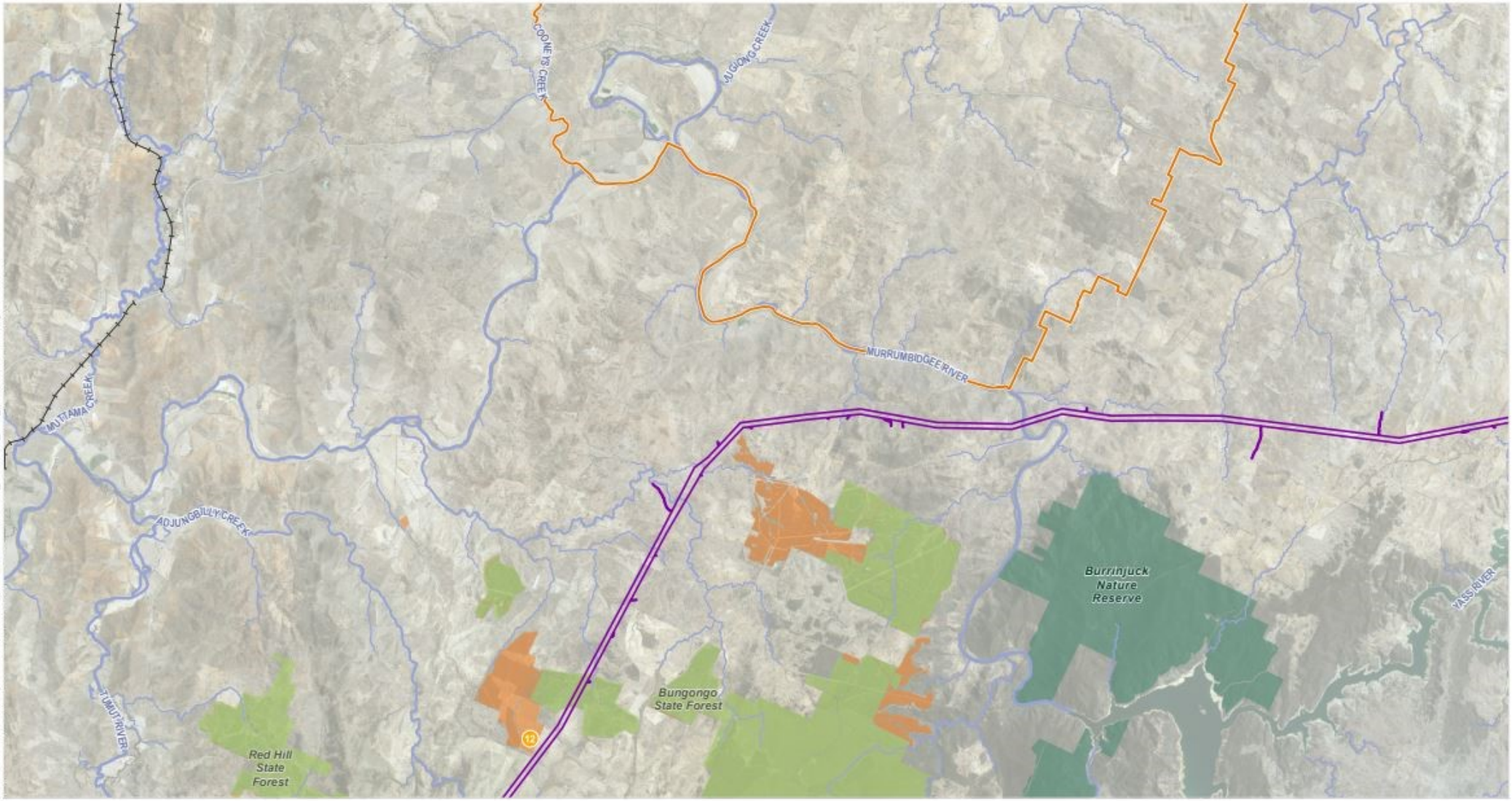
Source: Base data (aerial imagery, transport, water, and cadastral themes): NSW Foundation Spatial Data Framework; Transgrid

1:150,000

0 4 7km

Projection: GDA 1994 MGA Zone 55



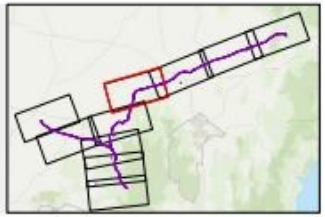
Project footprint
Land use and property study area
National park and reserve
State forest
Waterway
Railway

Construction ancillary facilities

12 Adjungbilly Road compound (C09)

Land Use 2017

3.1.0 Plantation forests



Source: *Base data (aerial imagery, transport, water, and cadastral themes): NSW Foundation Spatial Data Framework; Transgrid*

1:150,000
0 4 7 km

Projection: GDA 1994 MGA Zone 55

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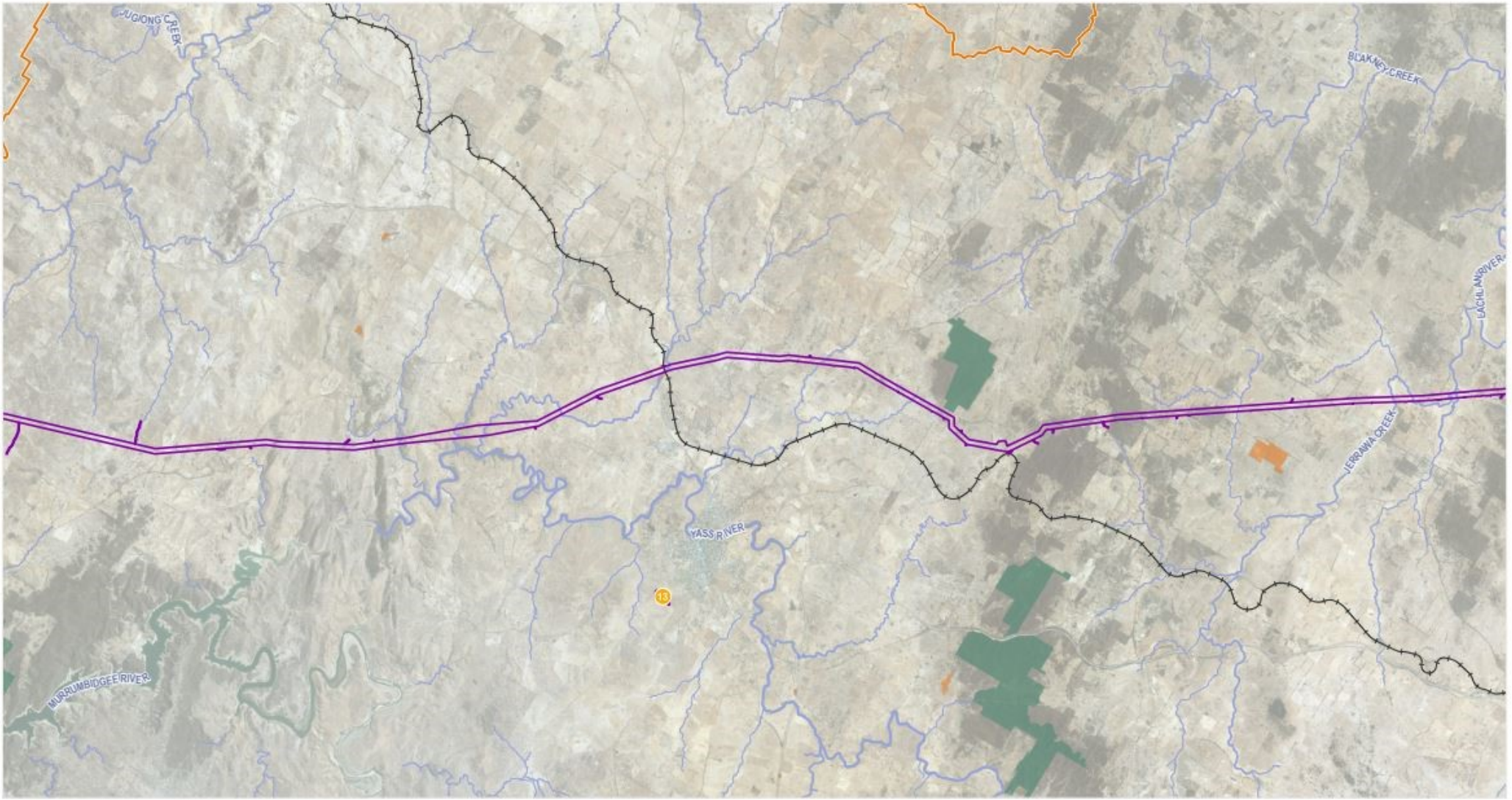


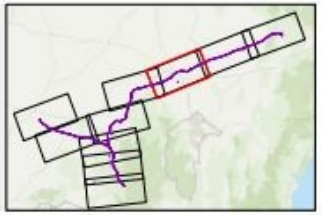
Project footprint
Land use and property study area
National park and reserve
Waterway
Railway

Construction ancillary facilities

13 Yass substation compound (C10)

Land Use 2017

3.1.0 Plantation forests



Source: *Base data (aerial imagery, transport, water, and cadastral themes): NSW Foundation Spatial Data Framework; Transgrid*

1:150,000
0 4 7 km

Projection: GDA 1994 MGA Zone 55

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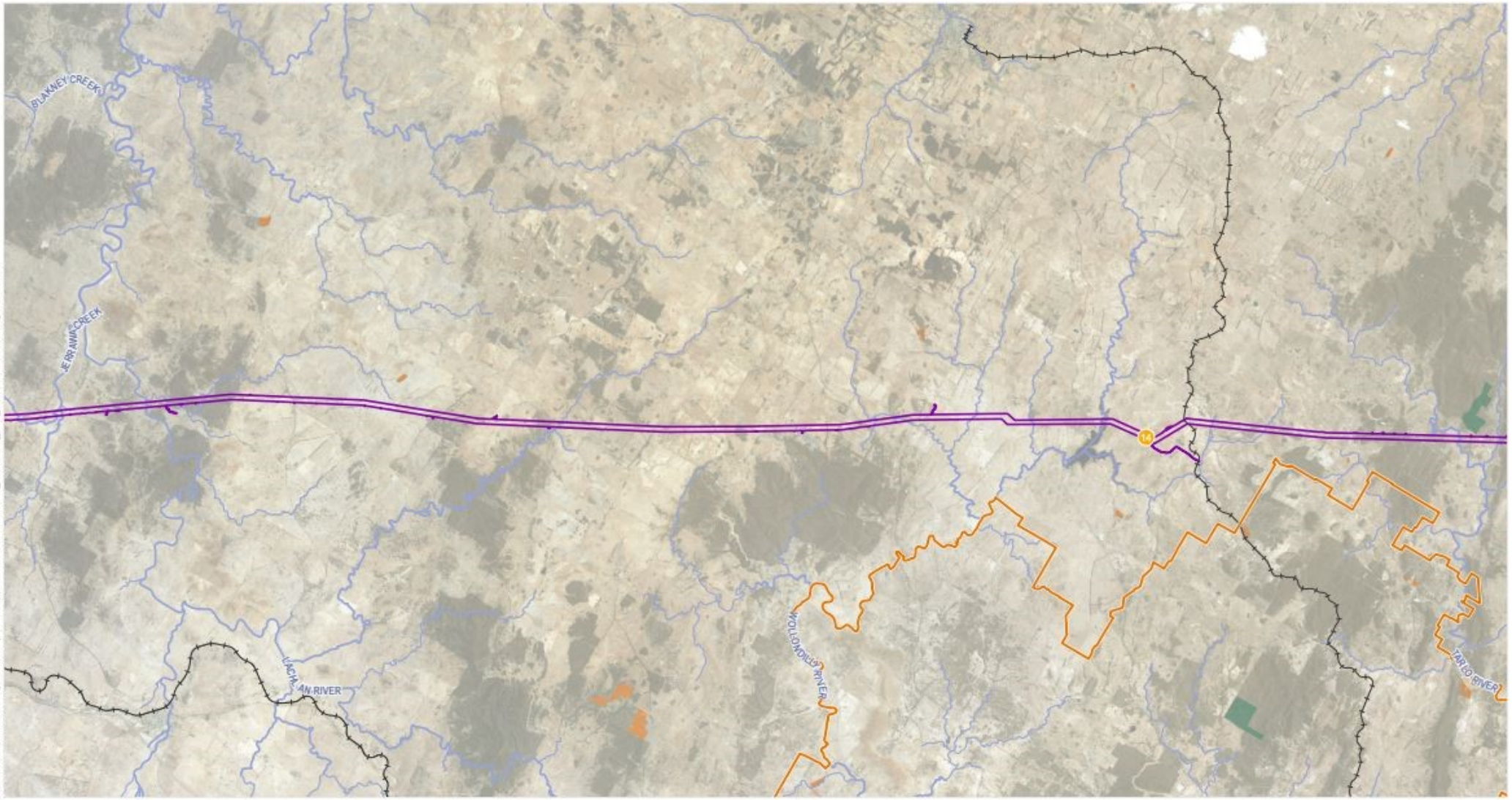

Project footprint
Land use and property study area
National park and reserve
Waterway
Railway

Construction ancillary facilities

14 Woodhouselee Road compound (C11)

Land Use 2017

3.1.0 Plantation forests

Source: *Base data (aerial imagery, transport, water, and cadastral themes); NSW Foundation Spatial Data Framework; Transgrid*

1:150,000
0 4 7 km

Projection: GDA 1994 MGA Zone 55

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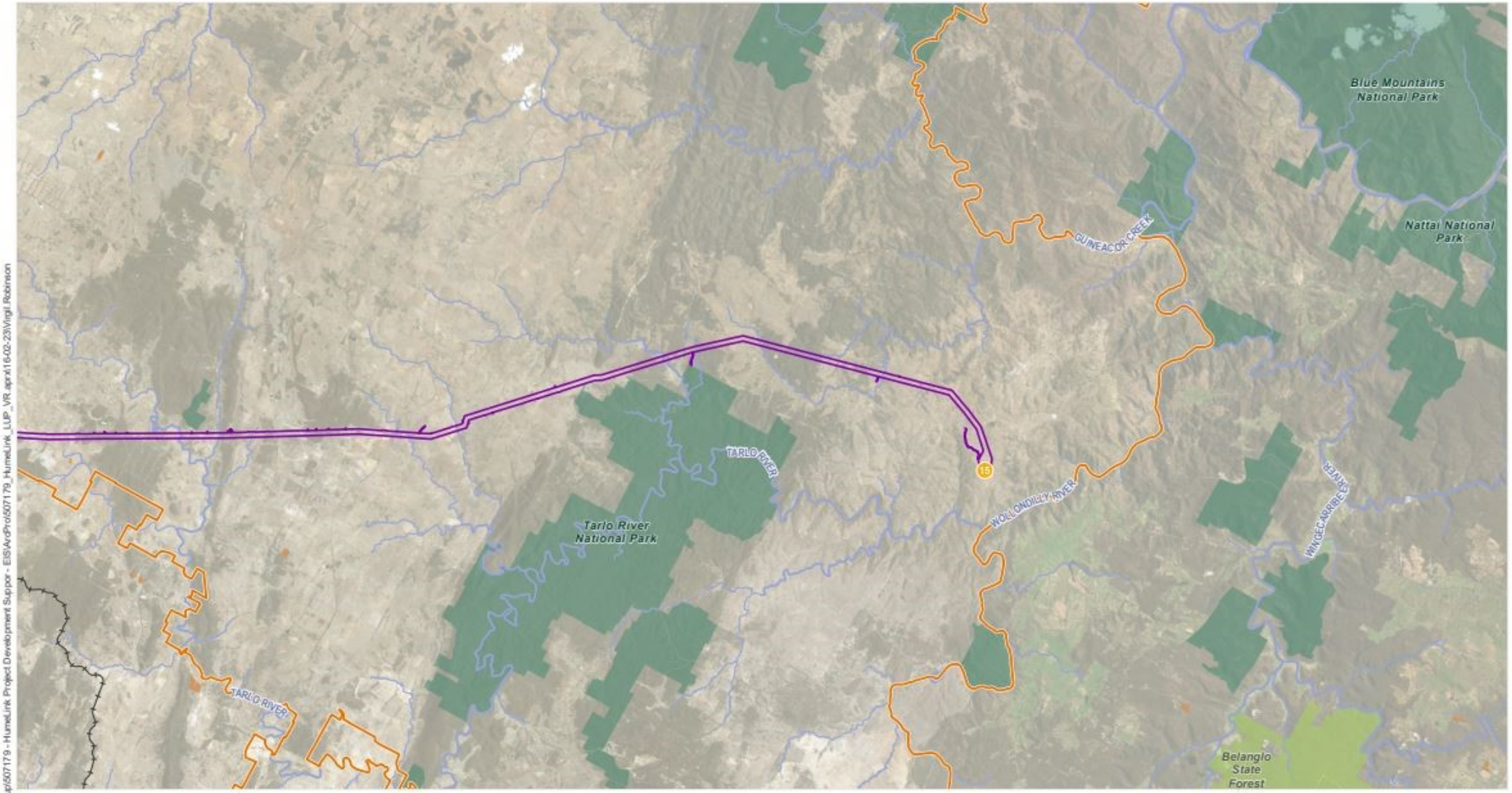

Project footprint
Land use and property study area
National park and reserve
State forest
Waterway
Railway

Construction ancillary facilities

15 Bannaby 500 kV substation compound (C12)

Land Use 2017

3.1.0 Plantation forests

Source: *Base data (aerial imagery, transport, water, and cadastral themes): NSW Foundation Spatial Data Framework; Transgrid*

1:150,000
0 4 7km

Projection: GDA 1994 MGA Zone 55

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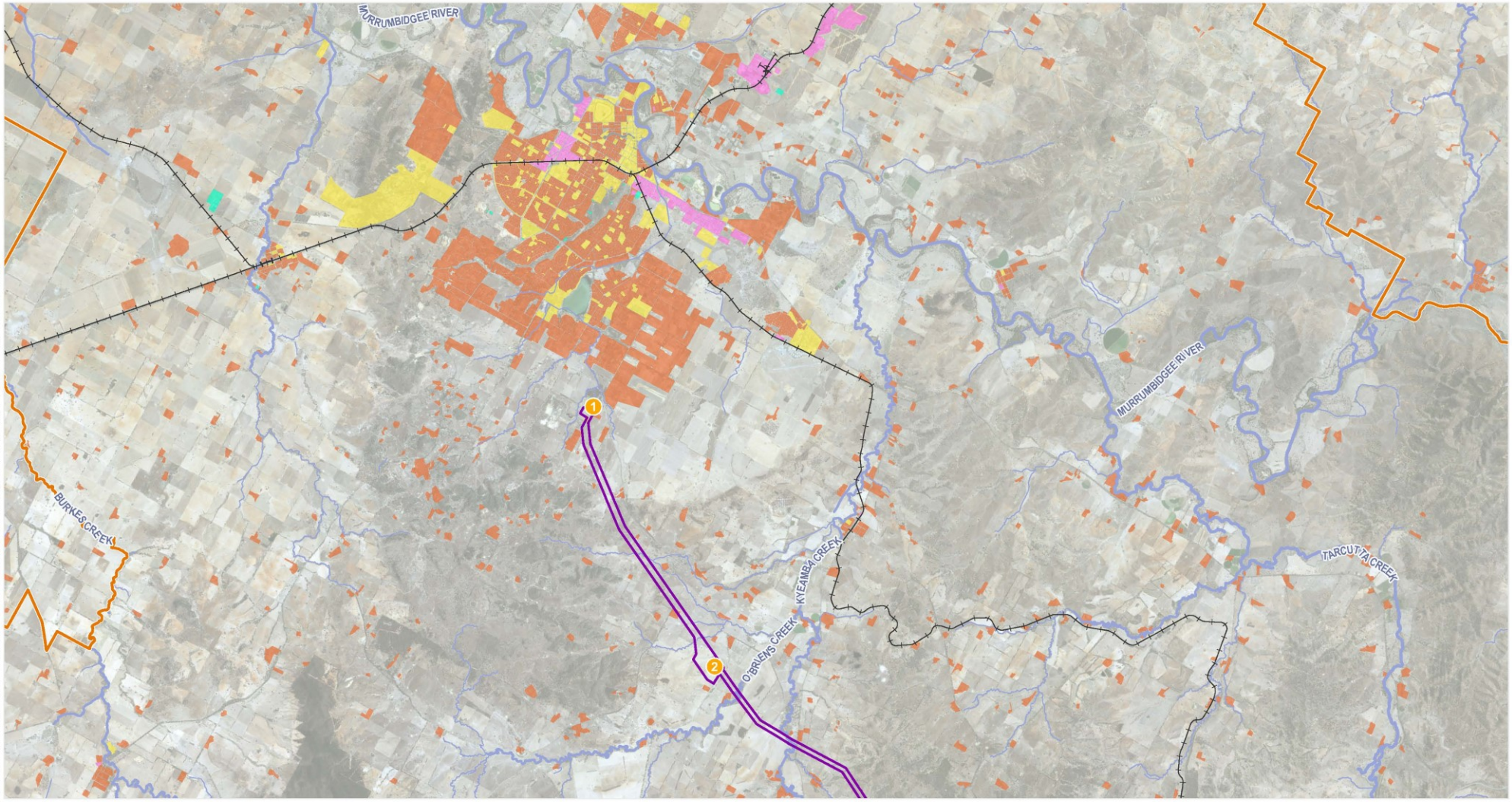
ATTACHMENT E – URBAN LAND USES



Project footprint

Land use and property study area

Waterway

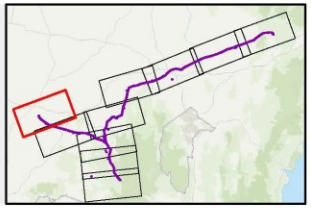
Railway

Construction ancillary facilities

1. Wagga 330 kV substation compound (C01)
2. Gregadoo Road compound (C06)

Land Use 2017

- 5.3.0 Manufacturing and industrial
- 5.4.0 Residential and farm infrastructure
- 5.5.0 Services
- 5.6.0 Utilities



Source: *Base data (aerial imagery, transport, water, and cadastral themes); NSW Foundation Spatial Data Framework; Transgrid*

1:150,000

0 4 7km

Projection: GDA 1994 MGA Zone 55

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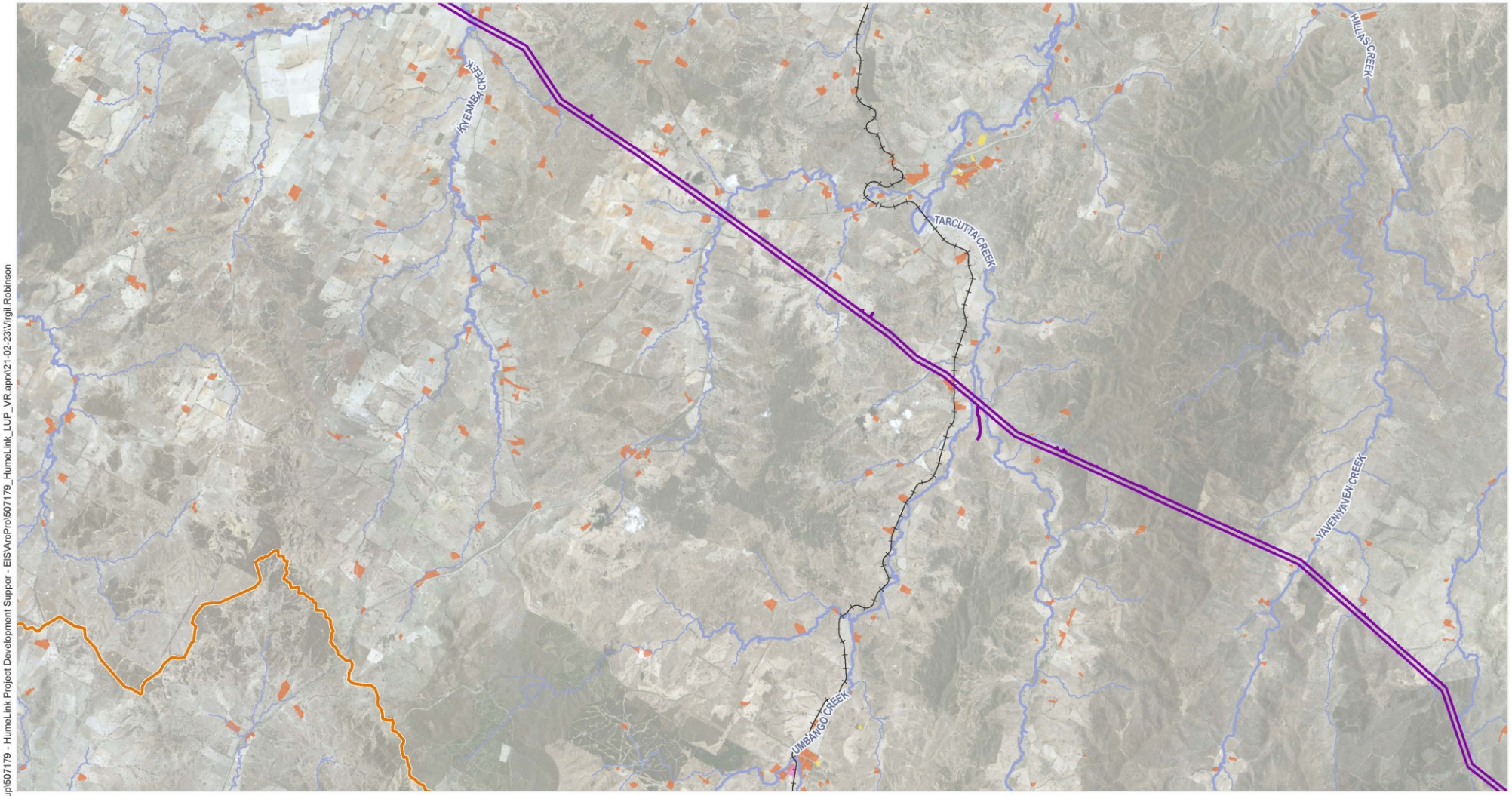


Project footprint

Land use and property study area

Waterway

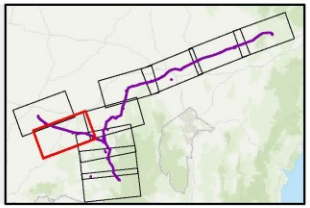
Railway

Land Use 2017

5.3.0 Manufacturing and industrial

5.4.0 Residential and farm infrastructure

5.5.0 Services



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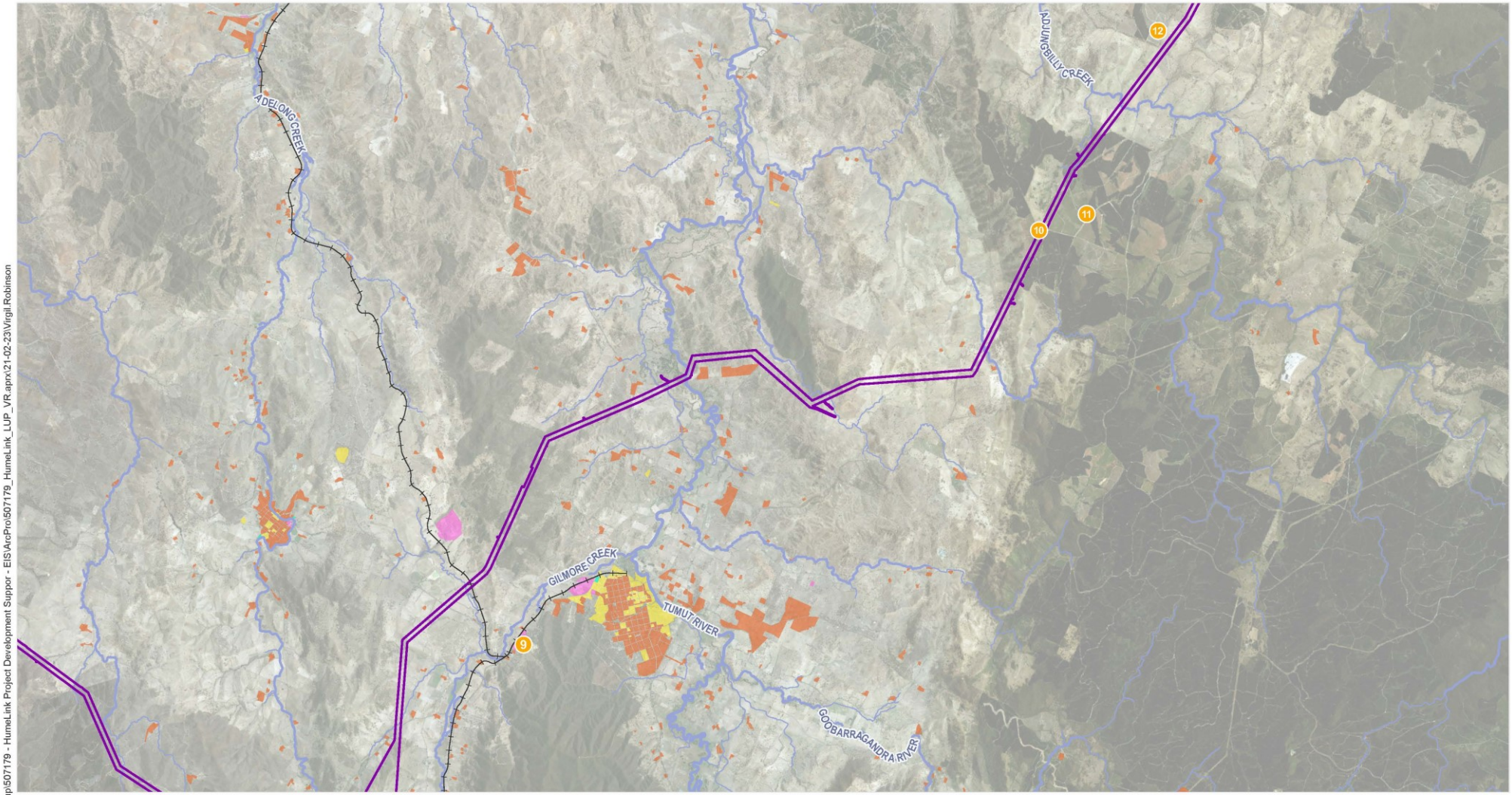
Source: *Base data (aerial imagery, transport, water, and cadastral themes); NSW Foundation Spatial Data Framework; Transgrid*

1:150,000

0 4 7 km

Projection: GDA 1994 MGA Zone 55



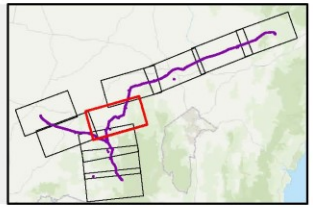
Project footprint
Land use and property study area
Waterway
Railway

Construction ancillary facilities

9 Snowy Mountains Highway compound (C02)
10 Honeysuckle Road compound (C07)
11 Red Hill Road compound (C08)
12 Adjungbilly Road compound (C09)

Land Use 2017

5.3.0 Manufacturing and industrial
5.4.0 Residential and farm infrastructure
5.5.0 Services
5.6.0 Utilities



Source: *Base data (aerial imagery, transport, water, and cadastral themes); NSW Foundation Spatial Data Framework; Transgrid*

1:150,000
0 4 7km

Projection: GDA 1994 MGA Zone 55

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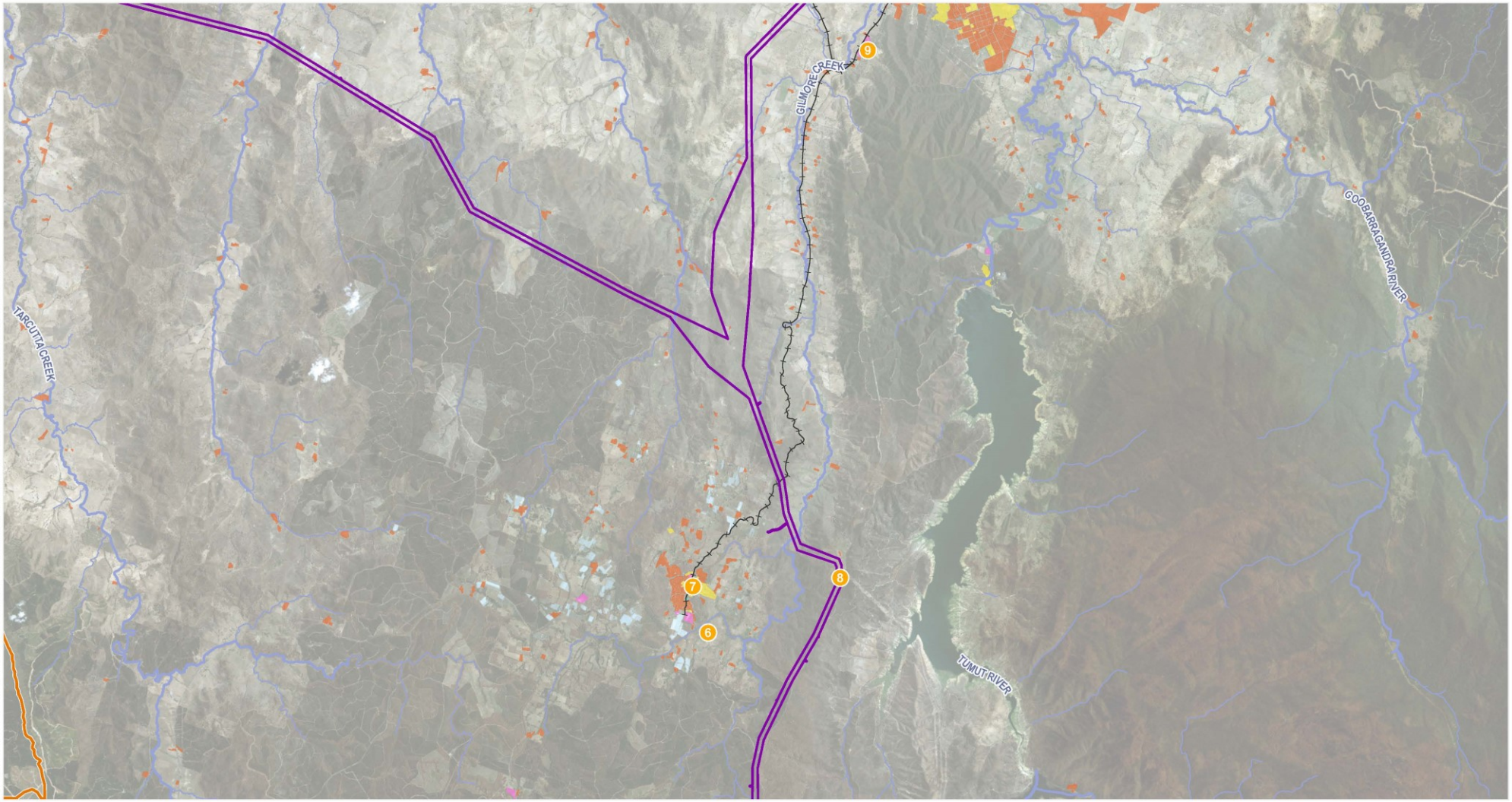

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Project footprint

Land use and property study area

Waterway

Railway

Construction ancillary facilities

6 Bowmans Lane compound (C15)

7 Memorial Avenue compound (C14)

8 Snubba Road compound (C03)

9 Snowy Mountains Highway compound (C02)

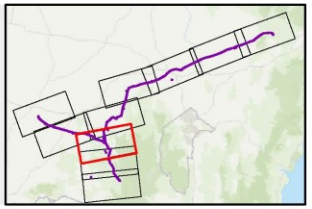
Land Use 2017

5.3.0 Manufacturing and industrial

5.4.0 Residential and farm infrastructure

5.5.0 Services

5.6.0 Utilities

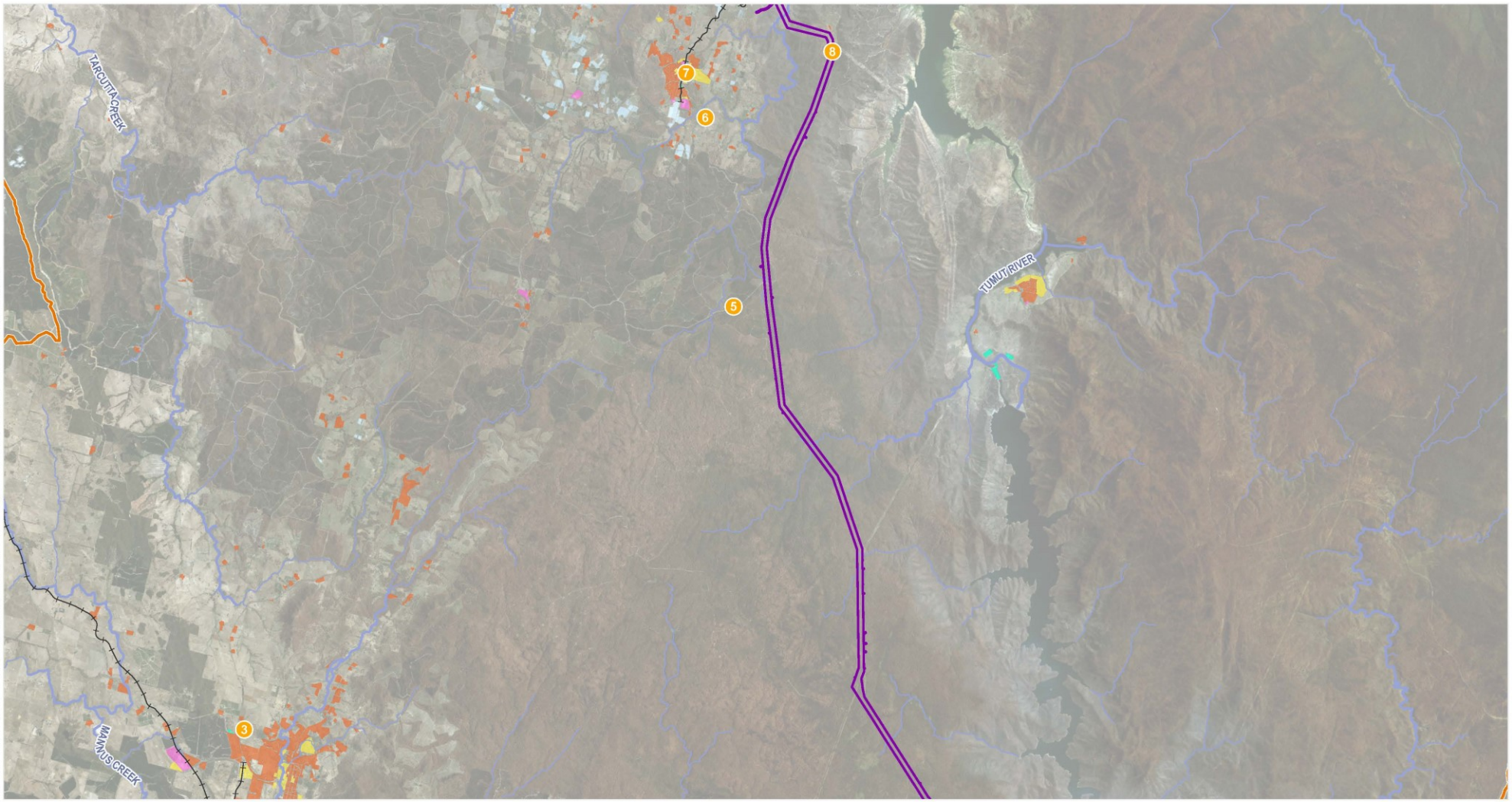


Source: *Base data (aerial imagery, transport, water, and cadastral themes); NSW Foundation Spatial Data Framework; Transgrid*

1:150,000

0 4 7km

Projection: GDA 1994 MGA Zone 55



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Project footprint

Land use and property study area

Waterway

Railway

Construction ancillary facilities

3 Tumbarumba worker accommodation facility (AC1)

5 Snubba Road compound (C16)

6 Bowmans Lane compound (C15)

7 Memorial Avenue compound (C14)

8 Snubba Road compound (C03)

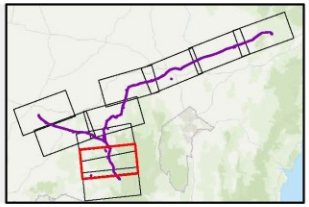
Land Use 2017

5.3.0 Manufacturing and industrial

5.4.0 Residential and farm infrastructure

5.5.0 Services

5.6.0 Utilities

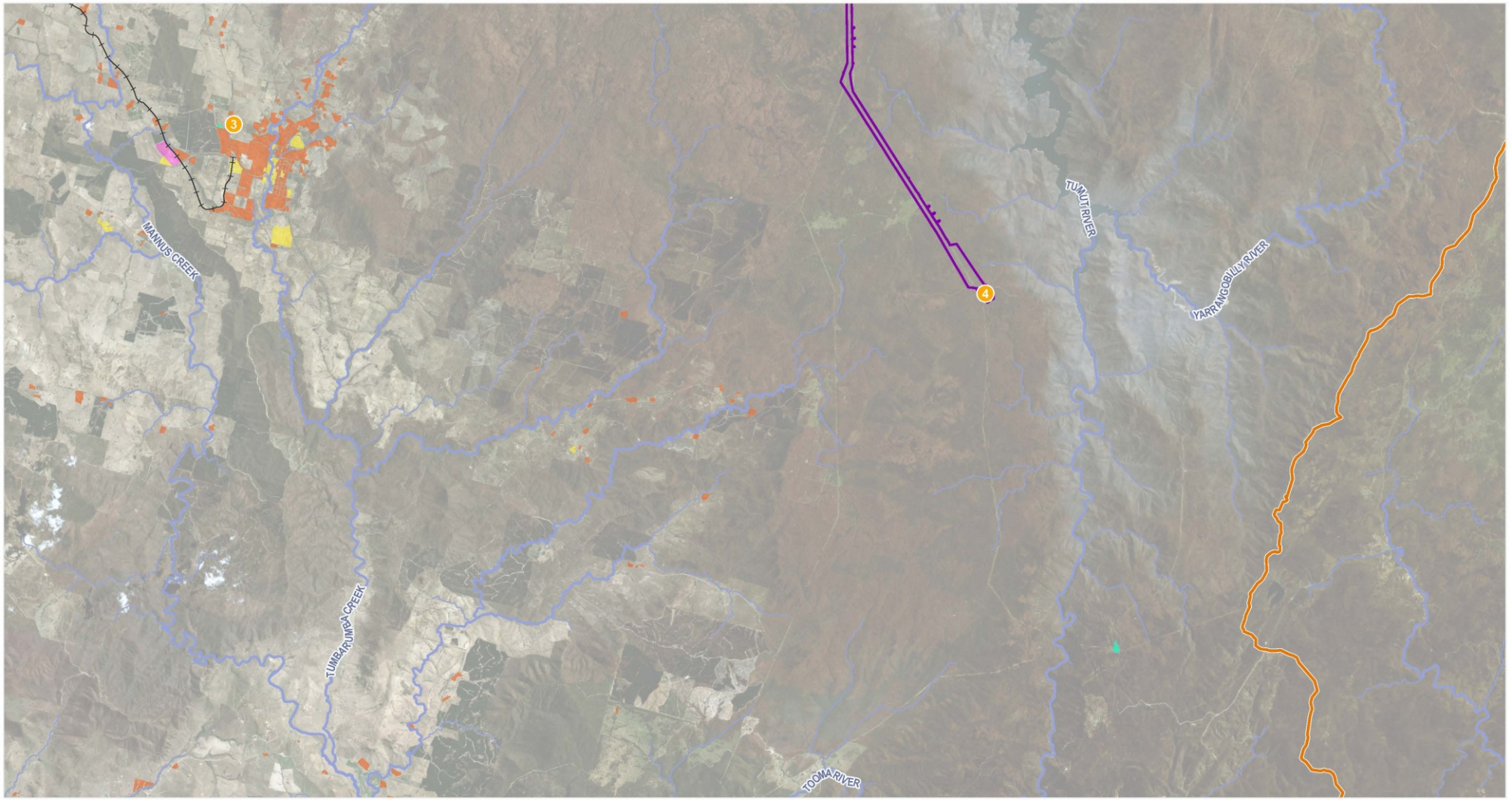


Source: *Base data (aerial imagery, transport, water, and cadastral themes); NSW Foundation Spatial Data Framework; Transgrid*

1:150,000

0 4 7km

Projection: GDA 1994 MGA Zone 55



Project footprint

Land use and property study area

Waterway

Railway

Construction ancillary facilities

3 Tumbarumba worker accommodation facility (AC1)

4 Maragle 500 kV substation compound (C05)

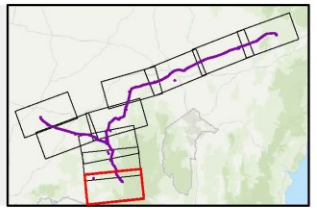
Land Use 2017

5.3.0 Manufacturing and industrial

5.4.0 Residential and farm infrastructure

5.5.0 Services

5.6.0 Utilities



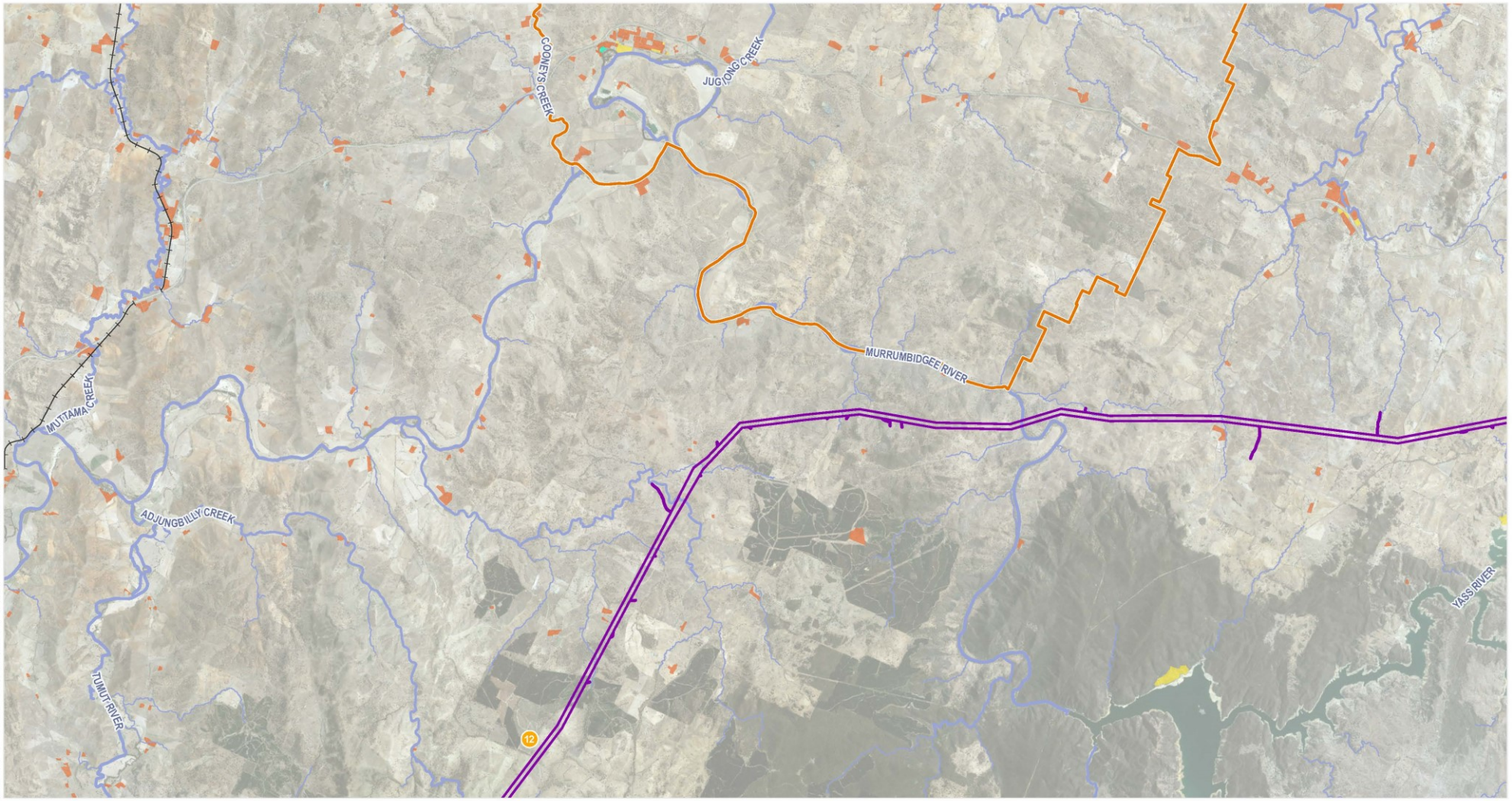
Source: *Base data (aerial imagery, transport, water, and cadastral themes); NSW Foundation Spatial Data Framework; Transgrid*

1:150,000

0 4 7km

Projection: GDA 1994 MGA Zone 55

C:\Users\Virgil.Robinson\Aurecon Group\507179 - HumeLink Project Development Suppor - EIS\ArcPro\507179_HumeLink_LUP_VR.aprx\21-02-23\Virgil.Robinson



Project footprint

Land use and property study area

Waterway

Railway

Construction ancillary facilities

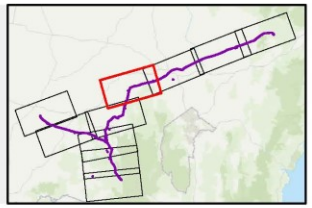
12 Adjungbilly Road compound (C09)

Land Use 2017

5.4.0 Residential and farm infrastructure

5.5.0 Services

5.6.0 Utilities



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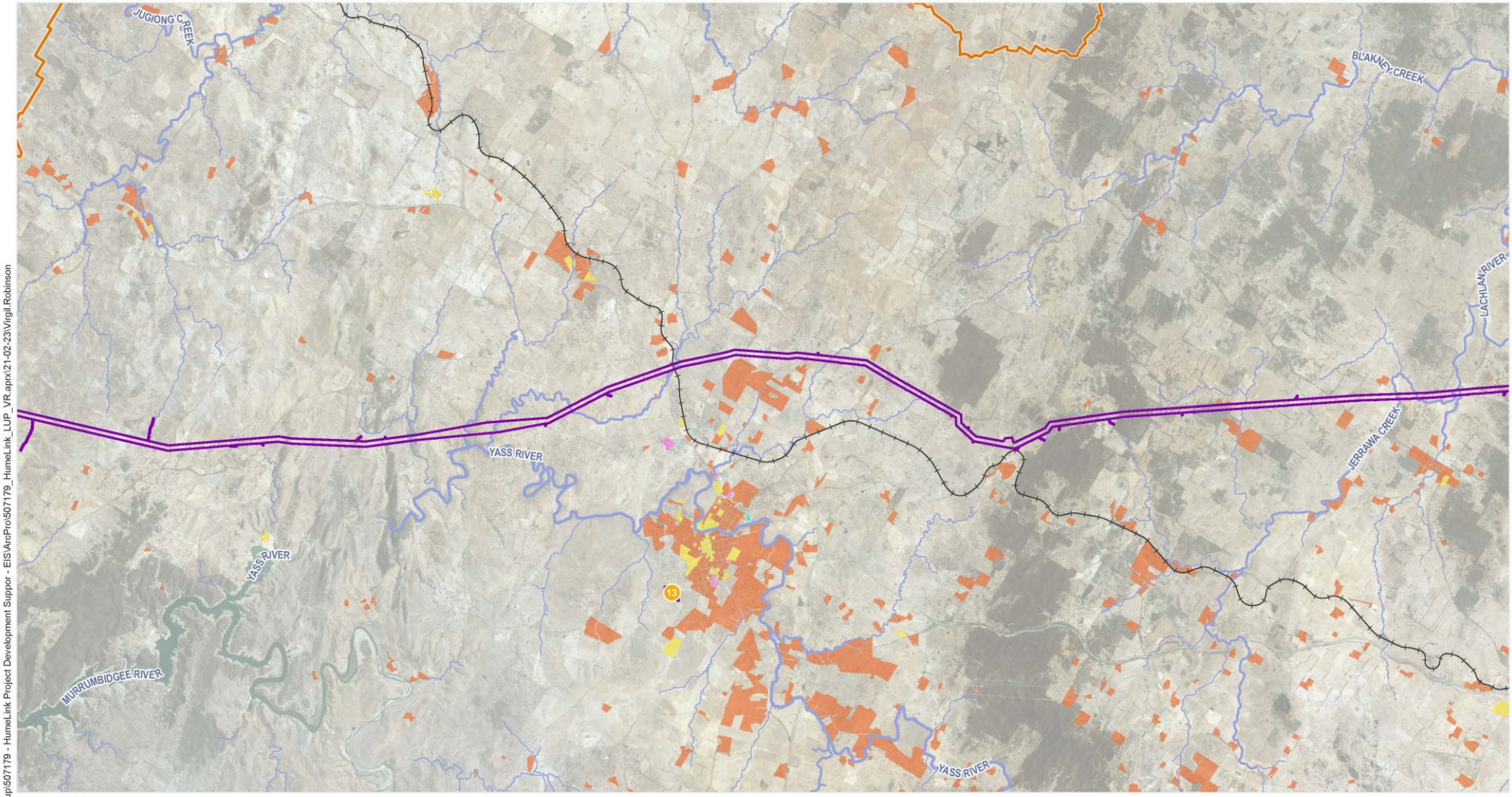
Source: *Base data (aerial imagery, transport, water, and cadastral themes); NSW Foundation Spatial Data Framework; Transgrid*

1:150,000

0 4 7km

Projection: GDA 1994 MGA Zone 55



Project footprint

Land use and property study area

Waterway

Railway

Construction ancillary facilities

13 Yass substation compound (C10)

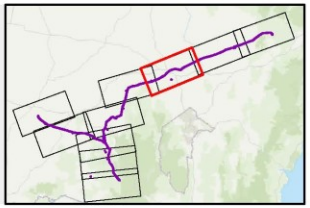
Land Use 2017

5.3.0 Manufacturing and industrial

5.4.0 Residential and farm infrastructure

5.5.0 Services

5.6.0 Utilities



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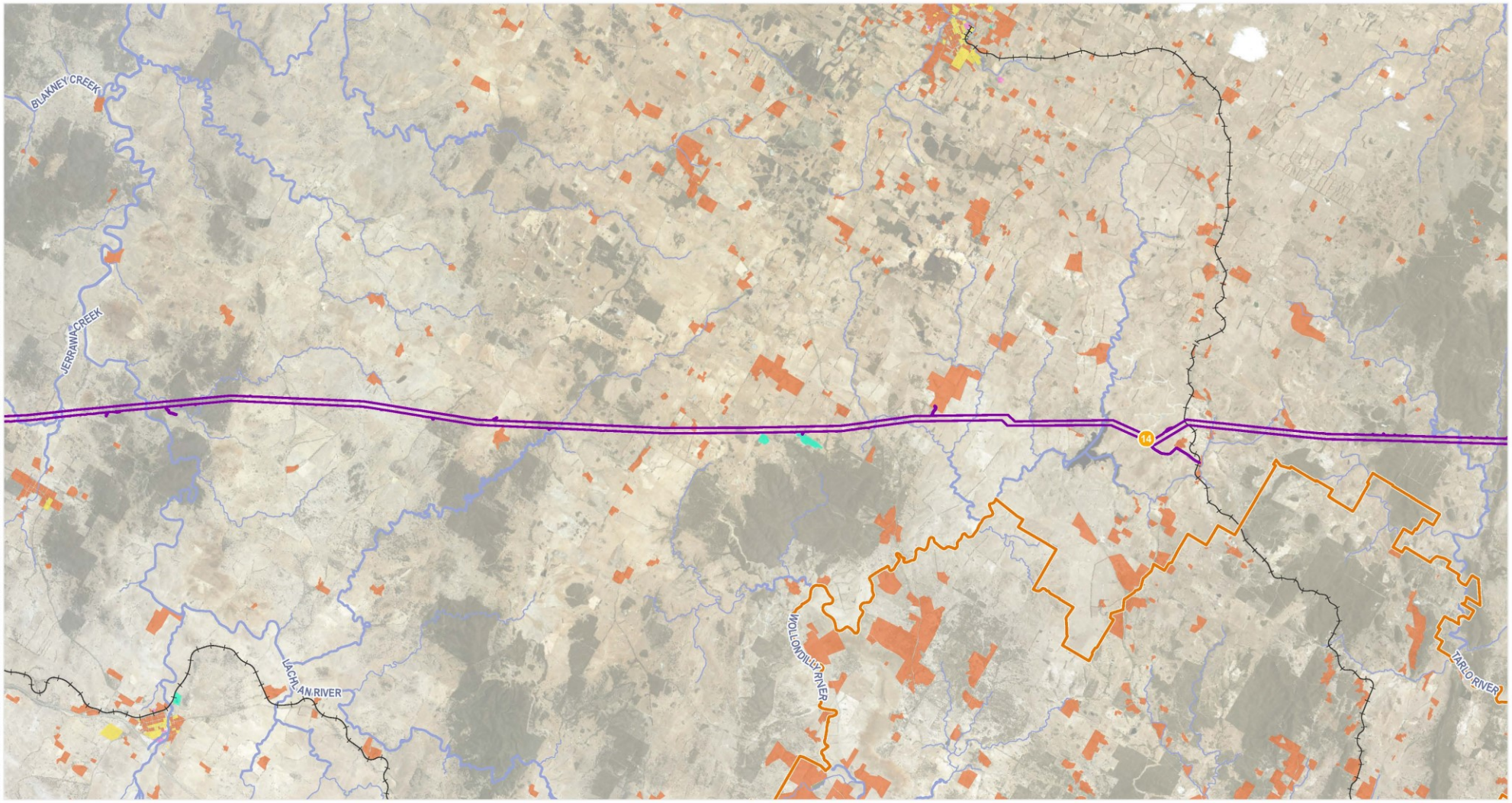
Source: *Base data (aerial imagery, transport, water, and cadastral themes); NSW Foundation Spatial Data Framework; Transgrid*

1:150,000

0 4 7 km

Projection: GDA 1994 MGA Zone 55



Project footprint

Land use and property study area

Waterway

Railway

Construction ancillary facilities

14 Woodhouselee Road compound (C11)

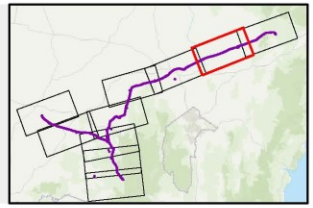
Land Use 2017

5.3.0 Manufacturing and industrial

5.4.0 Residential and farm infrastructure

5.5.0 Services

5.6.0 Utilities



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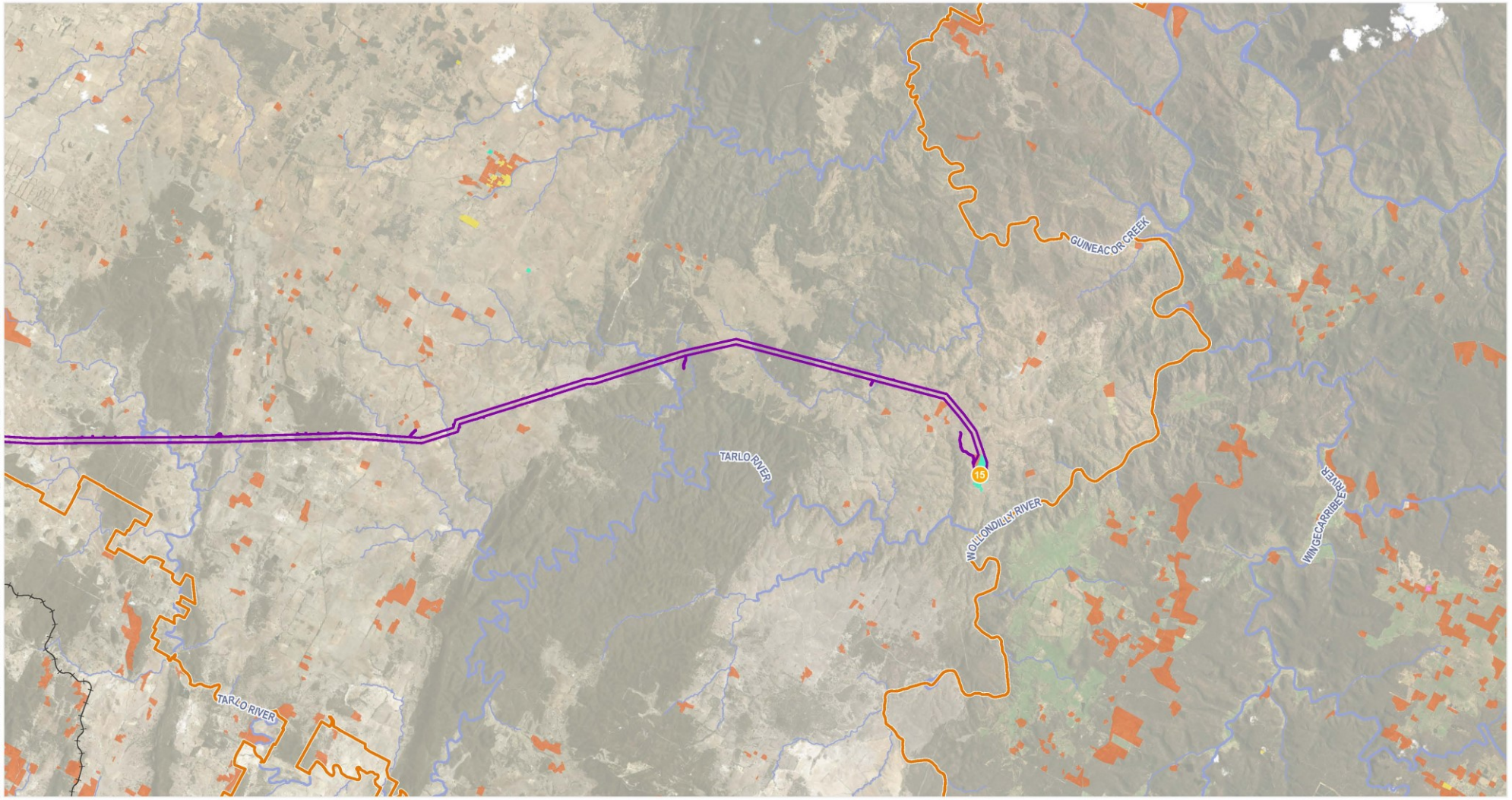
Source: *Base data (aerial imagery, transport, water, and cadastral themes); NSW Foundation Spatial Data Framework; Transgrid*

1:150,000

0 4 7 km

Projection: GDA 1994 MGA Zone 55



Project footprint

Land use and property study area

Waterway

Railway

Construction ancillary facilities

15 Bannaby 500 kV substation compound (C12)

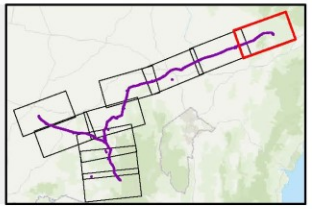
Land Use 2017

5.3.0 Manufacturing and industrial

5.4.0 Residential and farm infrastructure

5.5.0 Services

5.6.0 Utilities



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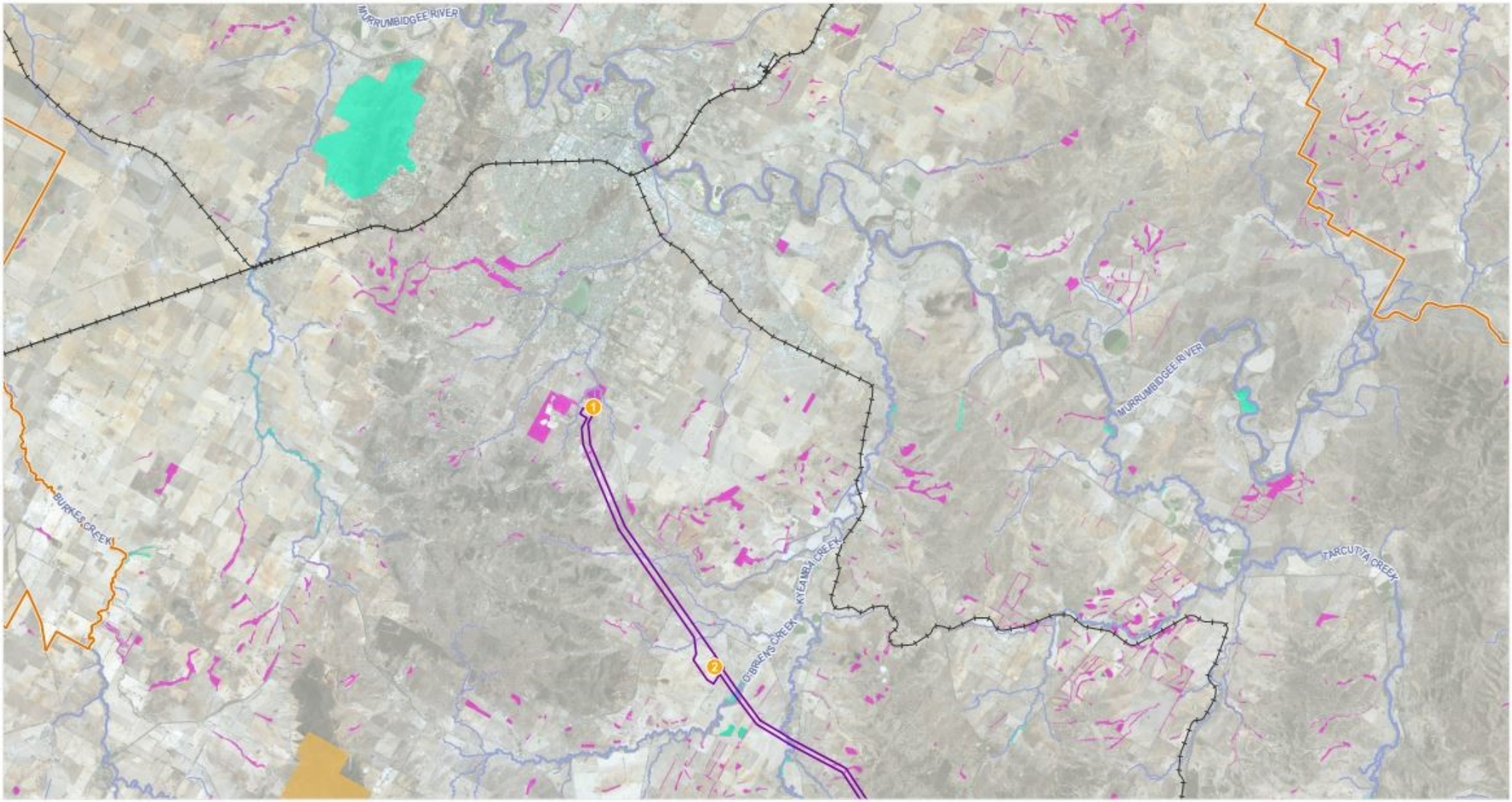
Source: *Base data (aerial imagery, transport, water, and cadastral themes); NSW Foundation Spatial Data Framework; Transgrid*

1:150,000

0 4 7km

Projection: GDA 1994 MGA Zone 55

ATTACHMENT F – NATURAL ENVIRONMENT LAND USES



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Project footprint

Land use and property study area

Waterway

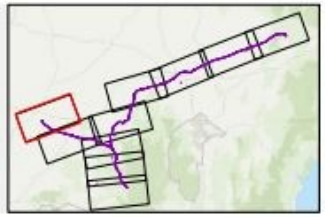
Railway

Construction ancillary facilities

1. Wagga 330 kV substation compound (C01)
2. Gregadoo Road compound (C06)

Land Use 2017

- 1.1.0 Nature conservation
- 1.2.0 Managed resource protection
- 1.3.0 Other minimal use



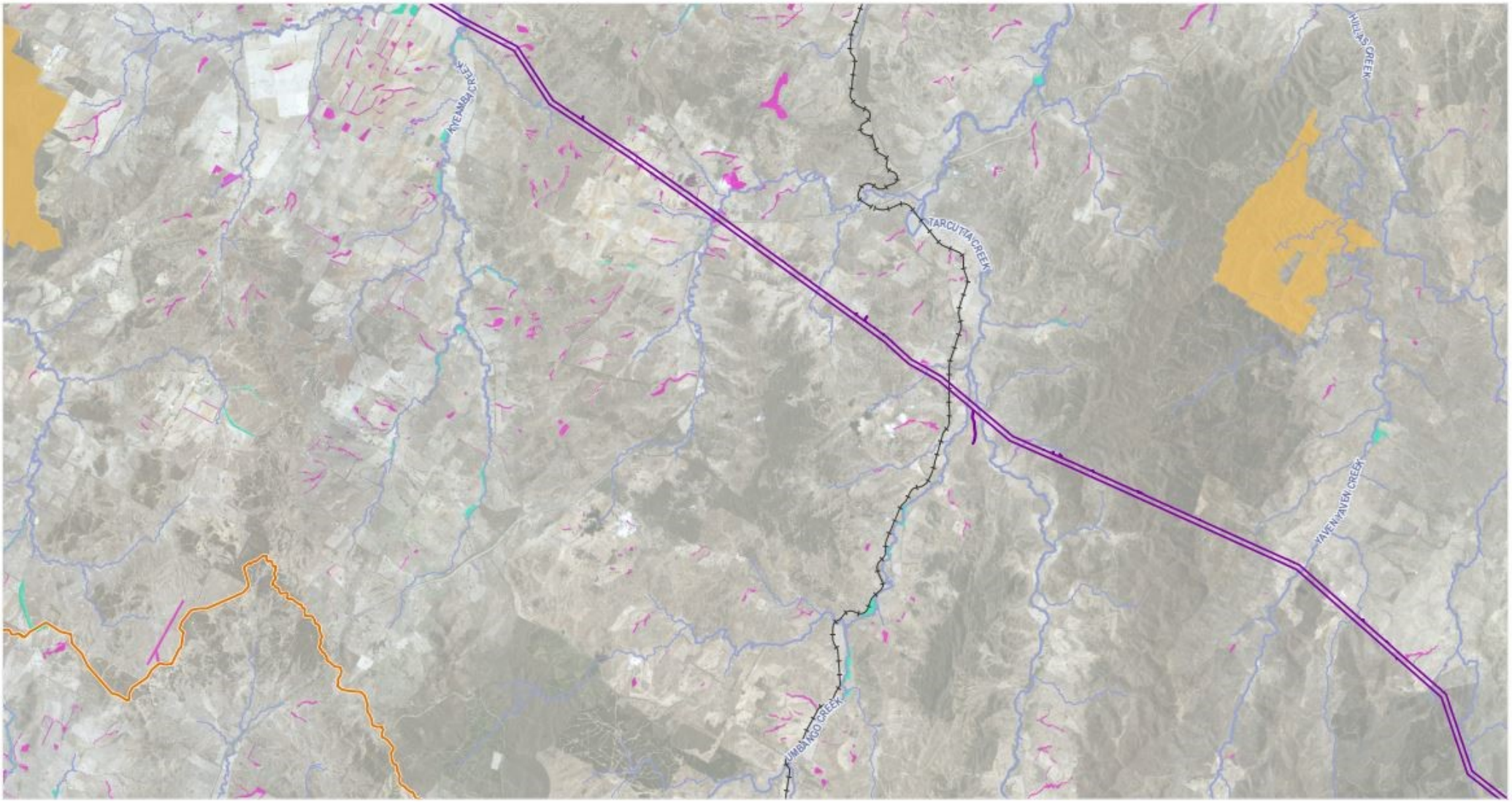
Source: *Base data (aerial imagery, transport, water, and cadastral themes); NSW Foundation Spatial Data Framework; Transgrid*

1:150,000

0 4 7 km

Projection: GDA 1994 MGA Zone 55

HumeLink



Project footprint

Land use and property study area

Waterway

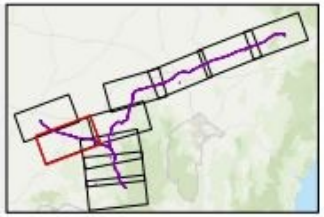
Railway

Land Use 2017

1.1.0 Nature conservation

1.2.0 Managed resource protection

1.3.0 Other minimal use



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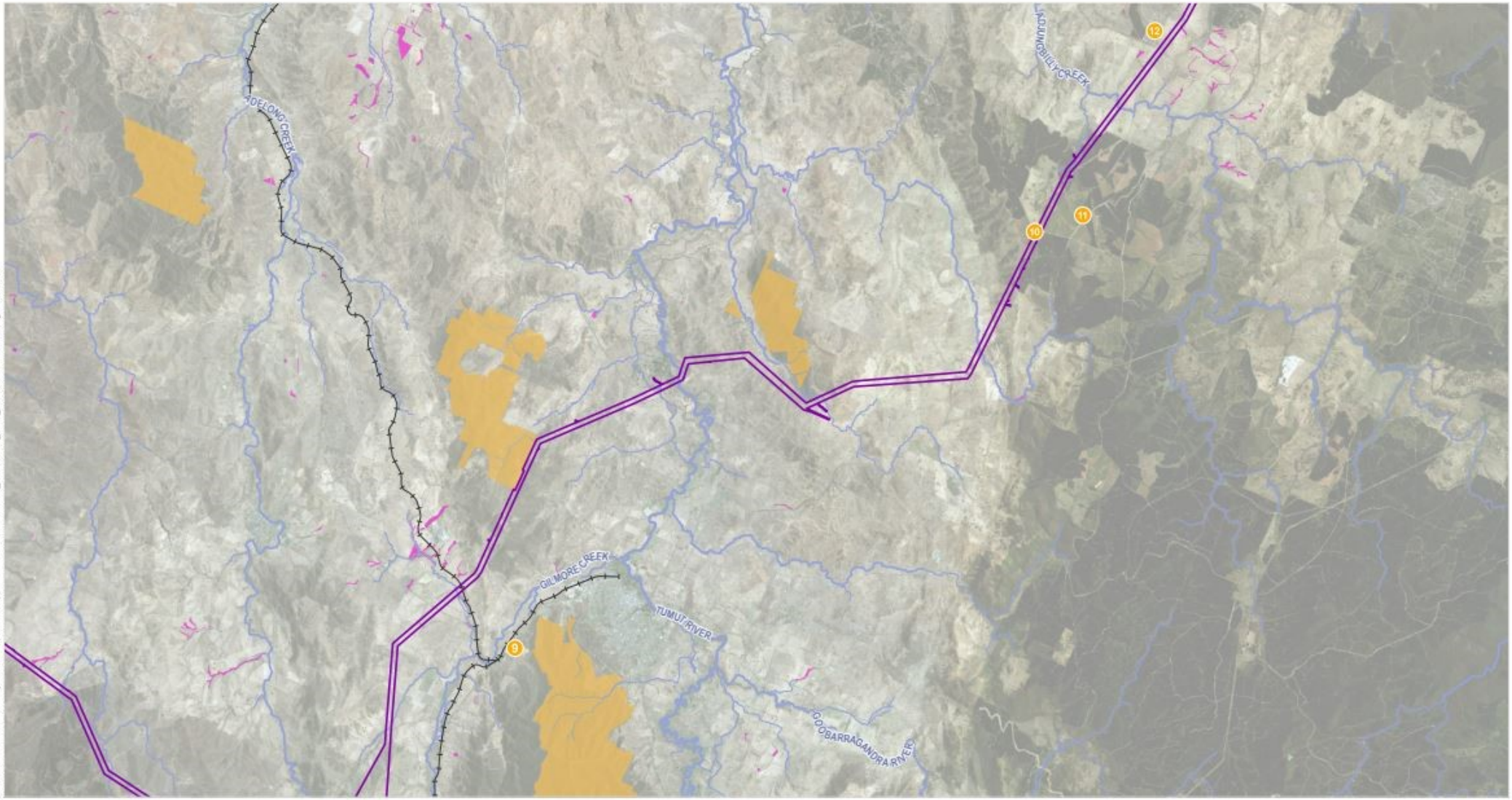
Source: *Base data (aerial imagery, transport, water, and cadastral themes): NSW Foundation Spatial Data Framework; Transgrid*

1:150,000

0 4 7km

Projection: GDA 1994 MGA Zone 55



Project footprint

Land use and property study area

Waterway

Railway

Construction ancillary facilities

9 Snowy Mountains Highway compound (C02)

10 Honeysuckle Road compound (C07)

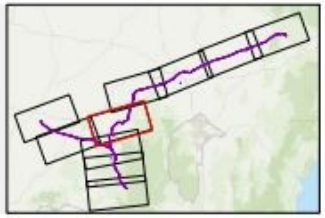
11 Red Hill Road compound (C08)

12 Adjungbilly Road compound (C09)

Land Use 2017

1.1.0 Nature conservation

1.2.0 Managed resource protection



Source: *Base data (aerial imagery, transport, water, and cadastral themes): NSW Foundation Spatial Data Framework; Transgrid*

1:150,000

0 4 7 km

Projection: GDA 1994 MGA Zone 55

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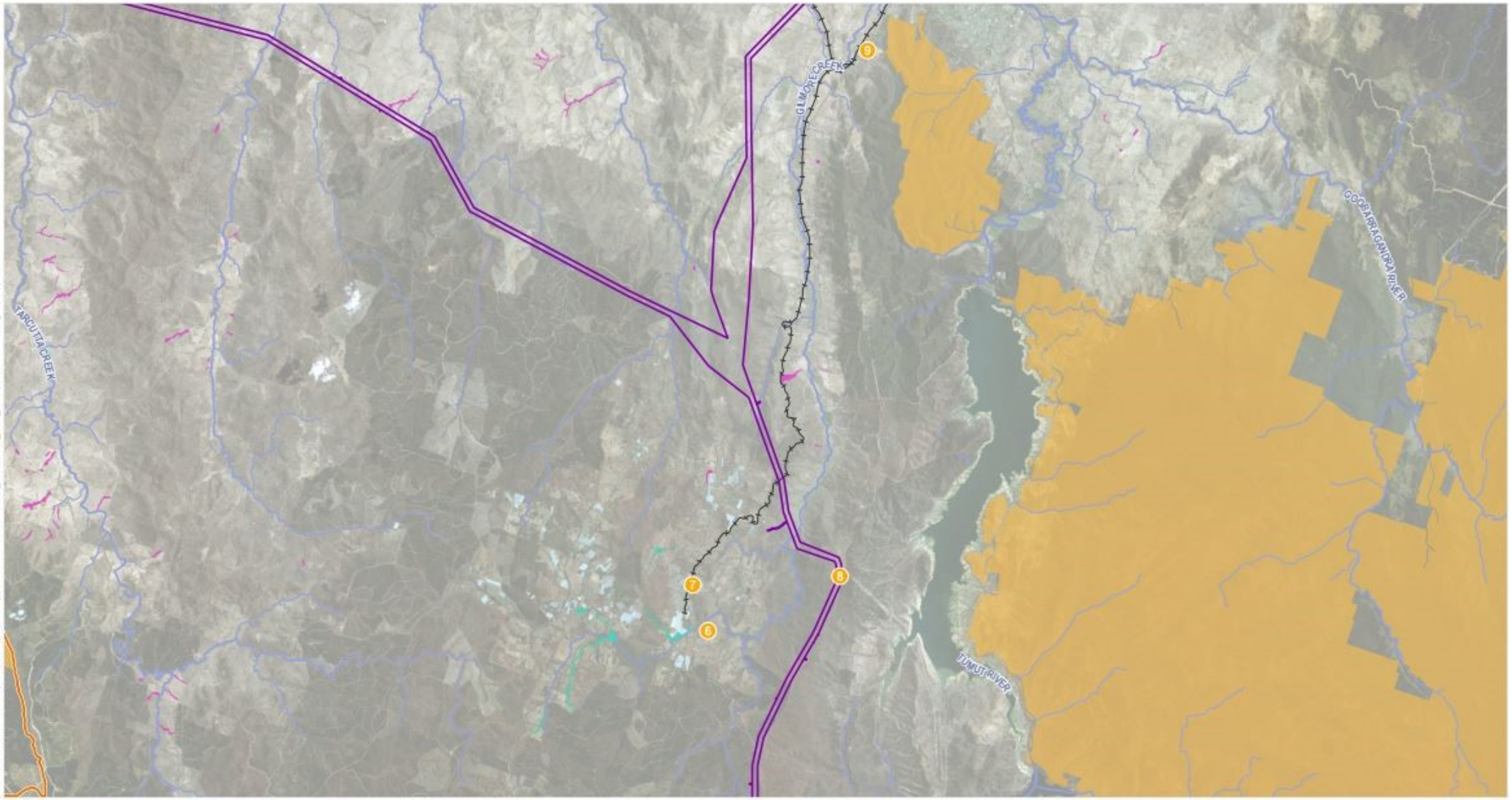


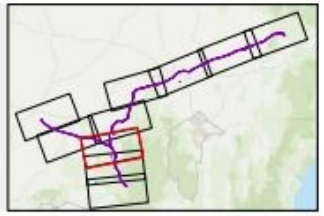
Project footprint
Land use and property study area
Waterway
Railway

Construction ancillary facilities

6 Bowmans Lane compound (C15)
7 Memorial Avenue compound (C14)
8 Snubba Road compound (C03)
9 Snowy Mountains Highway compound (C02)

Land Use 2017

1.1.0 Nature conservation
1.2.0 Managed resource protection
1.3.0 Other minimal use



Source: *Base data (aerial imagery, transport, water, and cadastral themes); NSW Foundation Spatial Data Framework; Transgrid*

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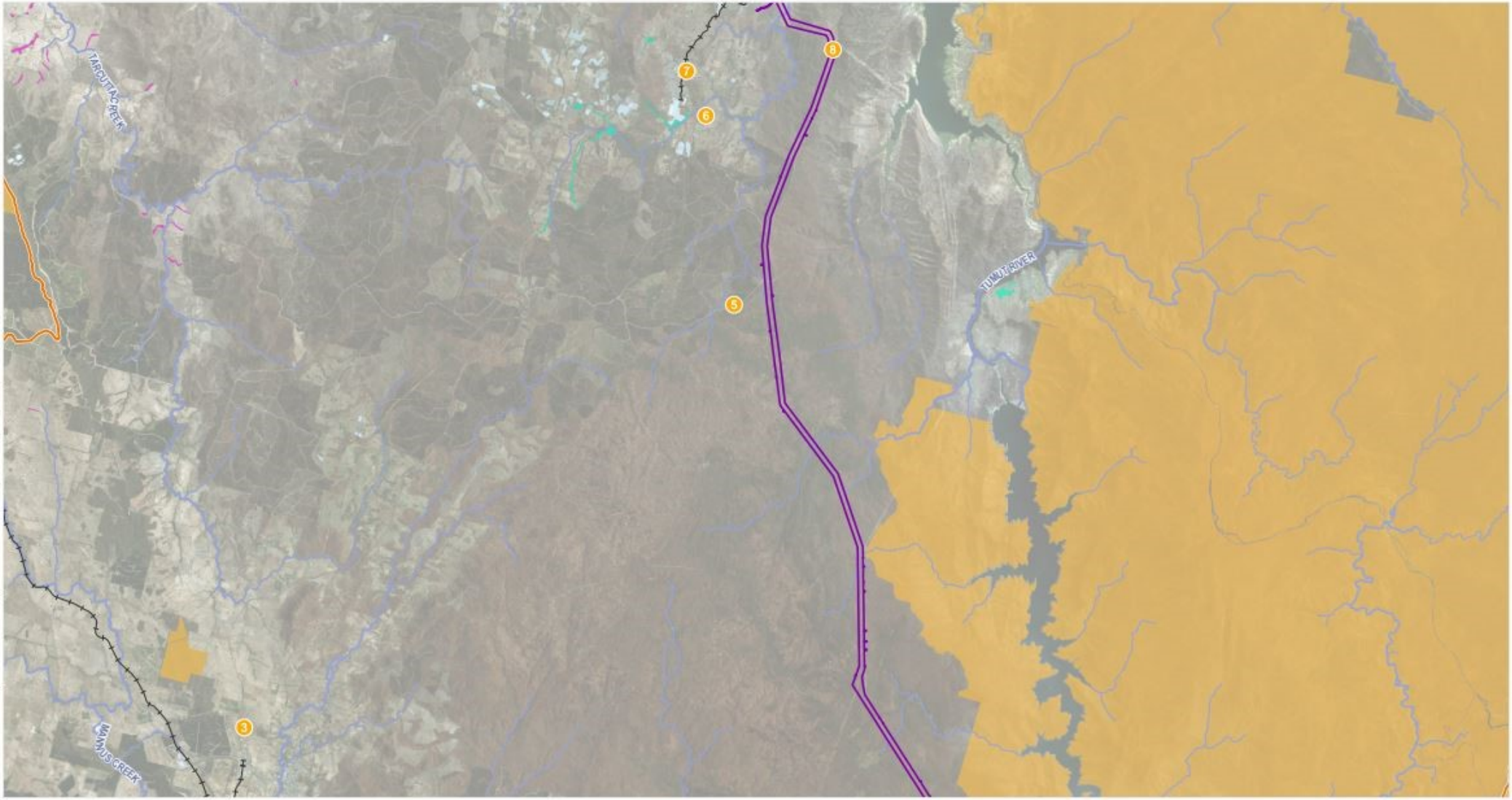
1:150,000
0 4 7 km

Projection: GDA 1994 MGA Zone 55



Project footprint

Land use and property study area

Waterway

Railway

Construction ancillary facilities

3 Tumbarumba worker accommodation facility (AC1)

5 Snubba Road compound (C16)

6 Bowmans Lane compound (C15)

7 Memorial Avenue compound (C14)

8 Snubba Road compound (C03)

Land Use 2017

1.1.0 Nature conservation

1.2.0 Managed resource protection

1.3.0 Other minimal use

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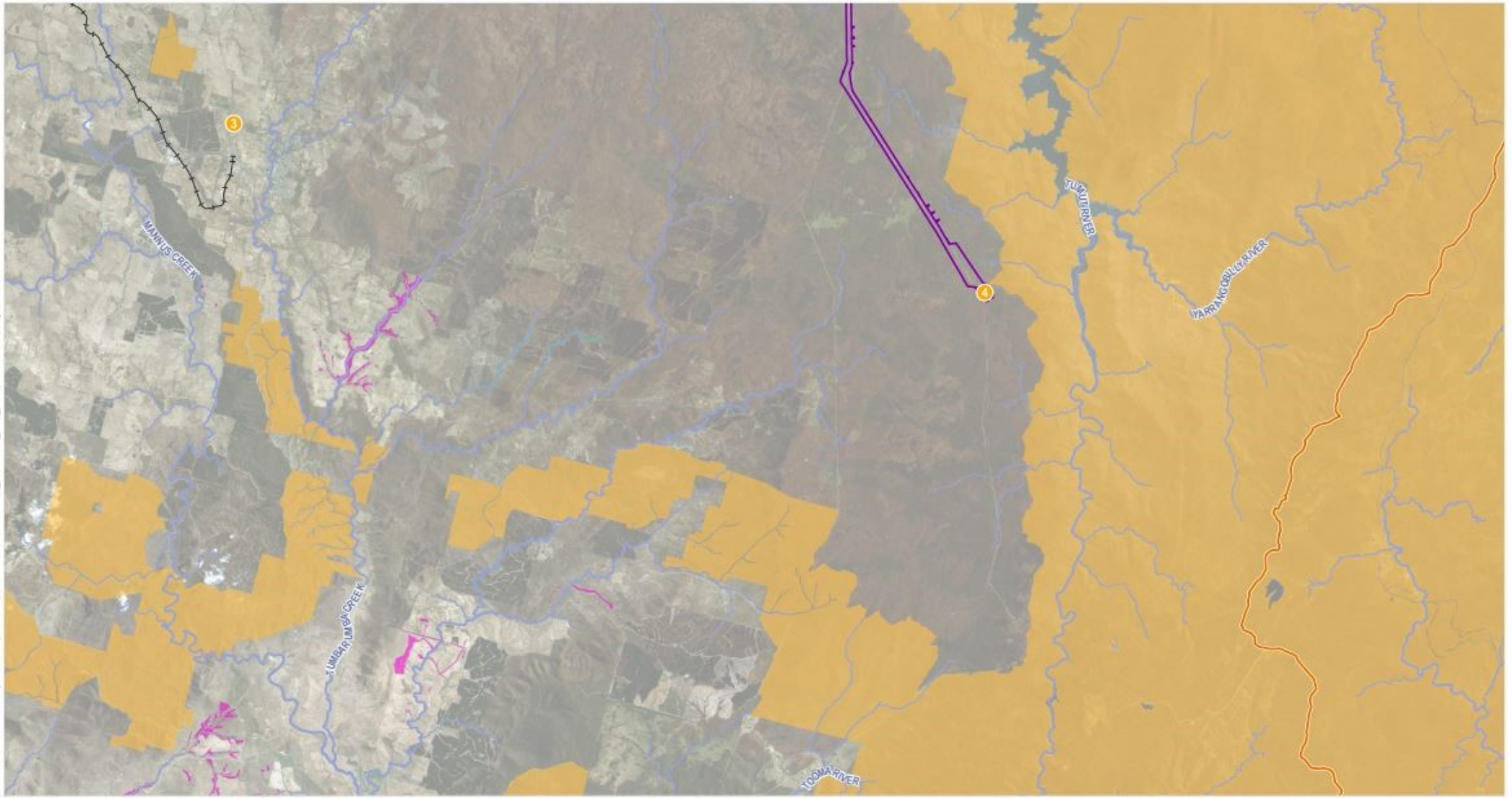
Source: *Base data (aerial imagery, transport, water, and cadastral themes): NSW Foundation Spatial Data Framework; Transgrid*

1:150,000

0 4 7km

Projection: GDA 1994 MGA Zone 55



Project footprint

Land use and property study area

Waterway

Railway

Construction ancillary facilities

3 Tumbarumba worker accommodation facility (AC1)

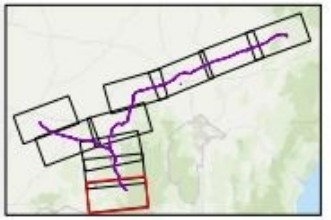
4 Maragle 500 kV substation compound (C05)

Land Use 2017

1.1.0 Nature conservation

1.2.0 Managed resource protection

1.3.0 Other minimal use



Source: *Base data (aerial imagery, transport, water, and cadastral themes): NSW Foundation Spatial Data Framework; Transgrid*

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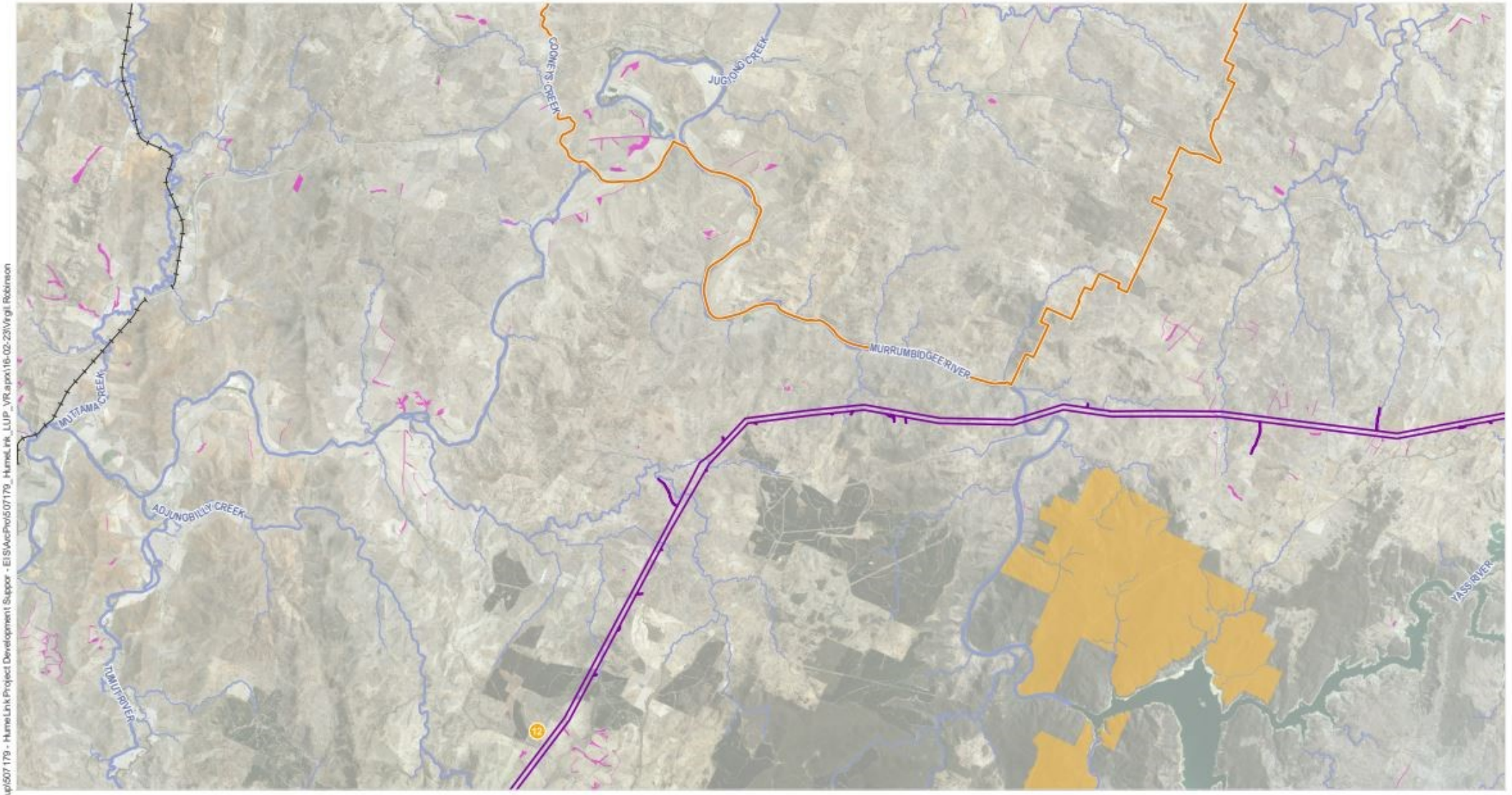
1:150,000

0 4 7 km

Projection: GDA 1994 MGA Zone 55



Project footprint

Land use and property study area

Waterway

Railway

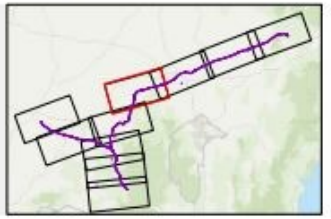
Construction ancillary facilities

12 Adjungbilly Road compound (C09)

Land Use 2017

1.1.0 Nature conservation

1.2.0 Managed resource protection



Source: *Base data (aerial imagery, transport, water, and cadastral themes): NSW Foundation Spatial Data Framework; Transgrid*

1:150,000

0 4 7 km

Projection: GDA 1994 MGA Zone 55

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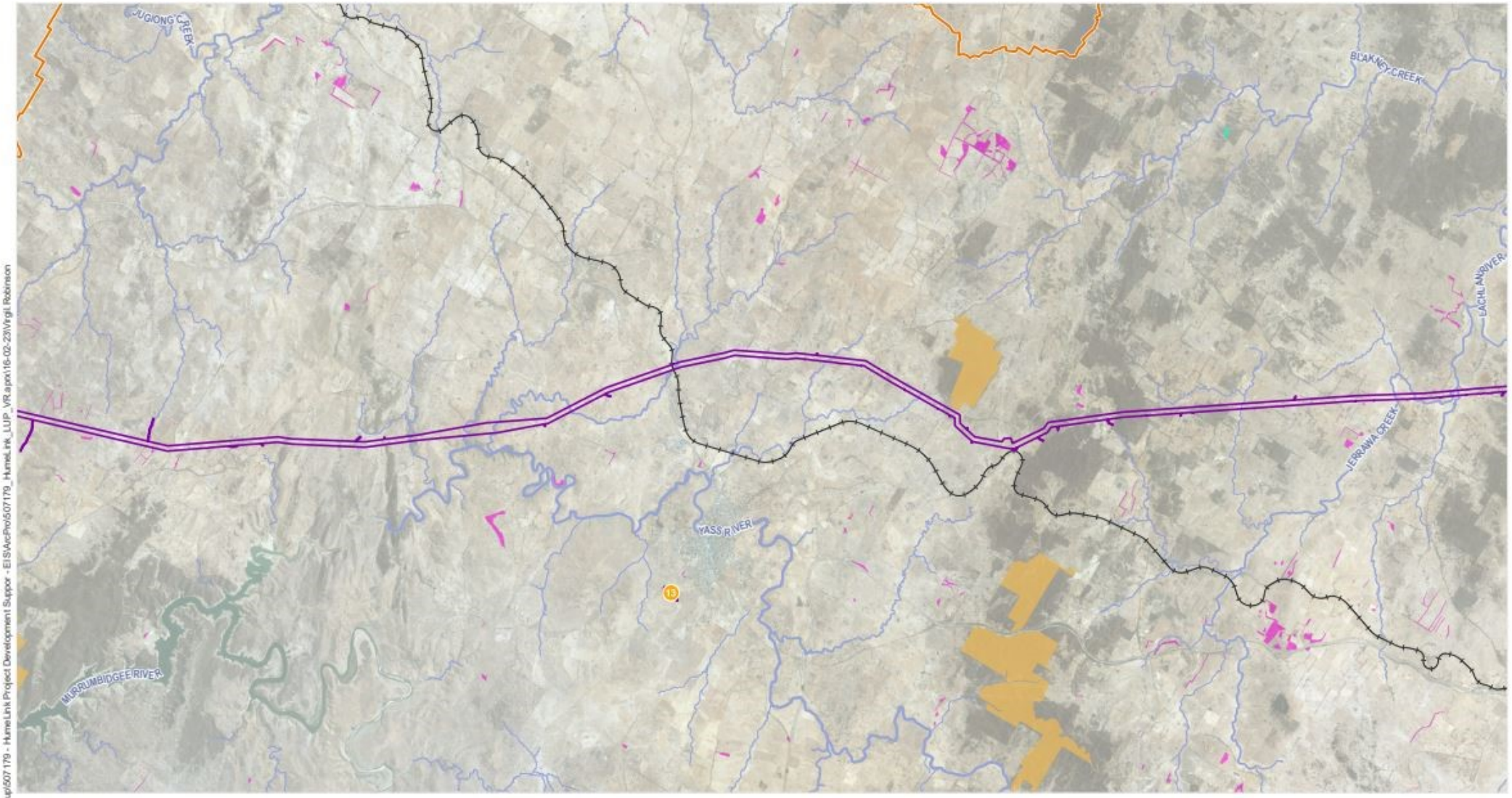


Project footprint

Land use and property study area

Waterway

Railway

Construction ancillary facilities

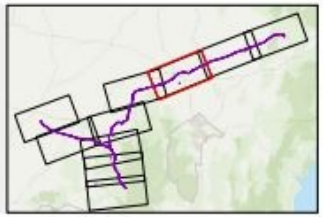
13 Yass substation compound (C10)

Land Use 2017

1.1.0 Nature conservation

1.2.0 Managed resource protection

1.3.0 Other minimal use



Source: *Base data (aerial imagery, transport, water, and cadastral themes); NSW Foundation Spatial Data Framework; Transgrid*

1:150,000

0 4 7 km

Projection: GDA 1994 MGA Zone 55

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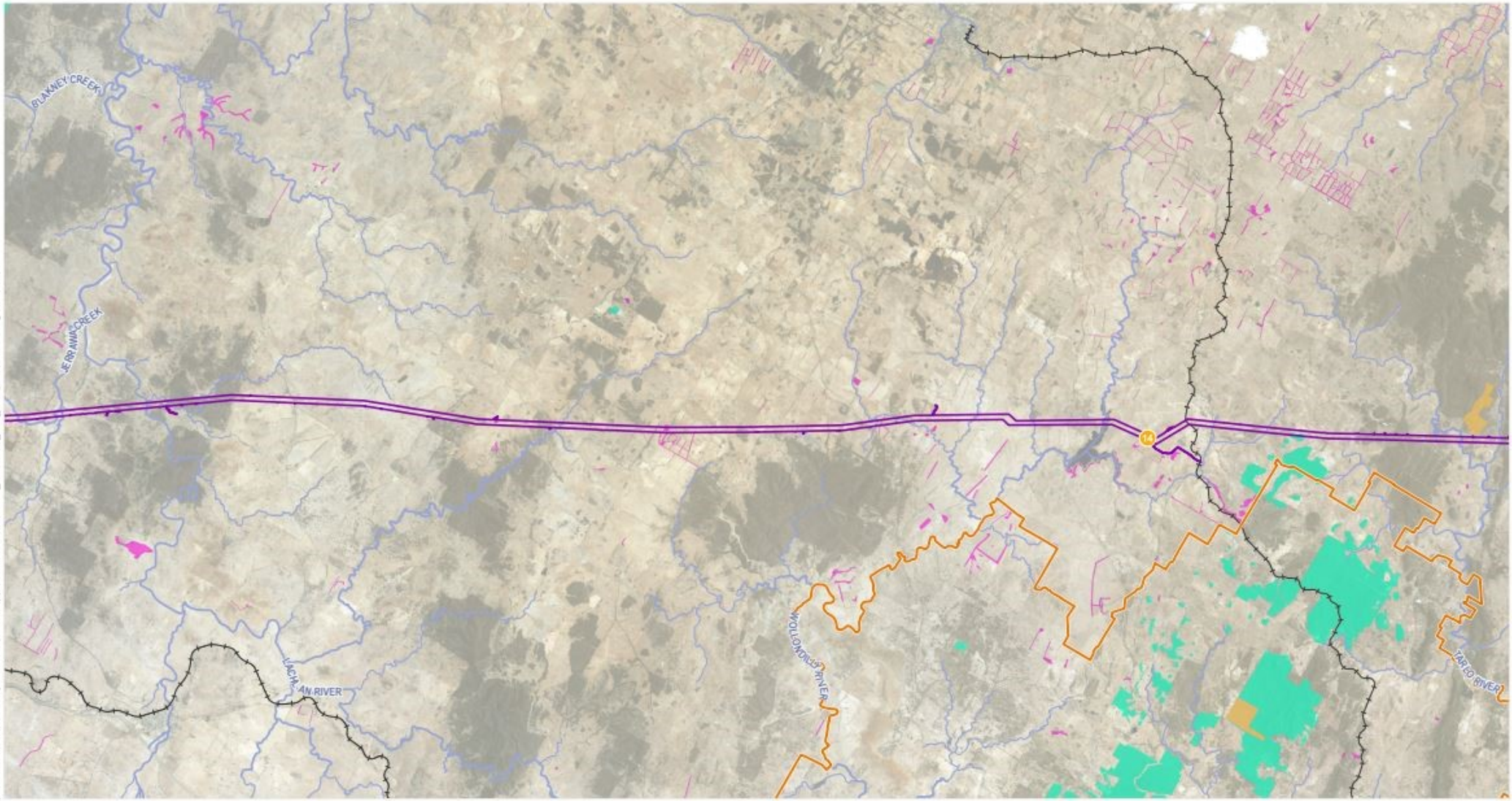

Project footprint

Land use and property study area

Waterway

Railway

Construction ancillary facilities

14 Woodhouselee Road compound (C11)

Land Use 2017

1.1.0 Nature conservation

1.2.0 Managed resource protection

1.3.0 Other minimal use

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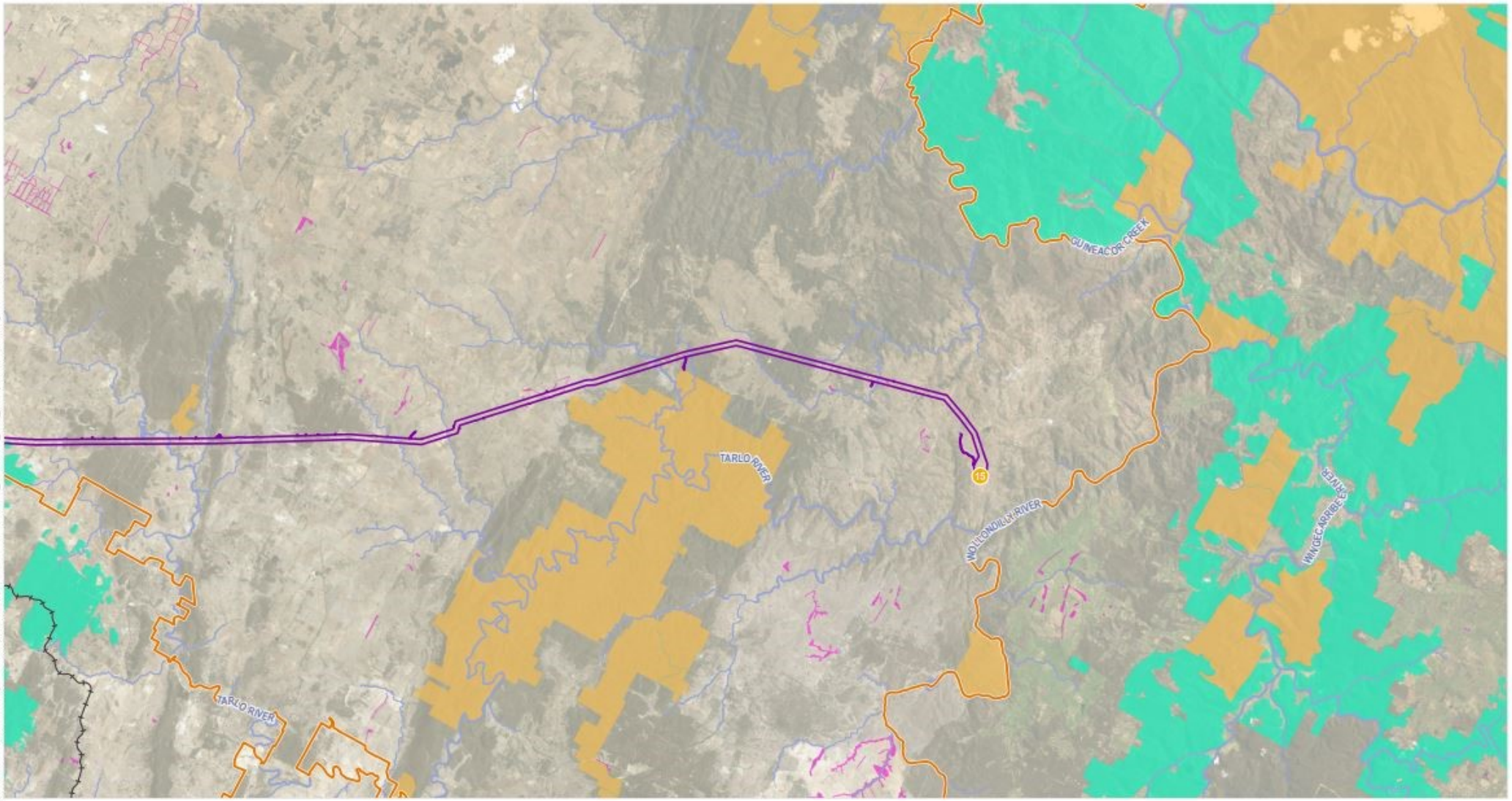
Source: *Base data (aerial imagery, transport, water, and cadastral themes); NSW Foundation Spatial Data Framework; Transgrid*

1:150,000

0 4 7km

Projection: GDA 1994 MGA Zone 55



Project footprint

Land use and property study area

Waterway

Railway

Construction ancillary facilities

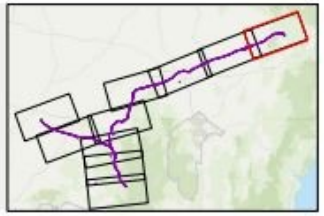
15 Bannaby 500 kV substation compound (C12)

Land Use 2017

1.1.0 Nature conservation

1.2.0 Managed resource protection

1.3.0 Other minimal use



Source: *Base data (aerial imagery, transport, water, and cadastral themes); NSW Foundation Spatial Data Framework; Transgrid*

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1:150,000

0 4 7 km

Projection: GDA 1994 MGA Zone 55

ATTACHMENT G – WATER LAND USES

Project footprint

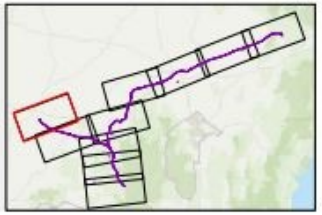
Land use and property study area

Construction ancillary facilities

1. Wagga 330 kV substation compound (C01)
2. Gregadoo Road compound (C06)

Land Use 2017

- 6.1.0 Lake
- 6.2.0 Reservoir/dam
- 6.3.0 River



Source: *Base data (aerial imagery, transport, water, and cadastral themes); NSW Foundation Spatial Data Framework; Transgrid*

1:150,000

0 4 7 km

Projection: GDA 1994 MGA Zone 55

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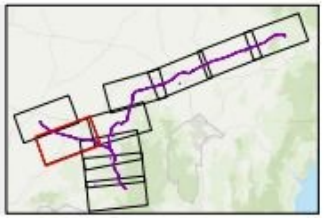
Project footprint

Land use and property study area

Land Use 2017

6.2.0 Reservoir/dam

6.3.0 River



Source: *Base data (aerial imagery, transport, water, and cadastral themes); NSW Foundation Spatial Data Framework; Transgrid*

1:150,000

0 4 7km

Projection: GDA 1994 MGA Zone 55

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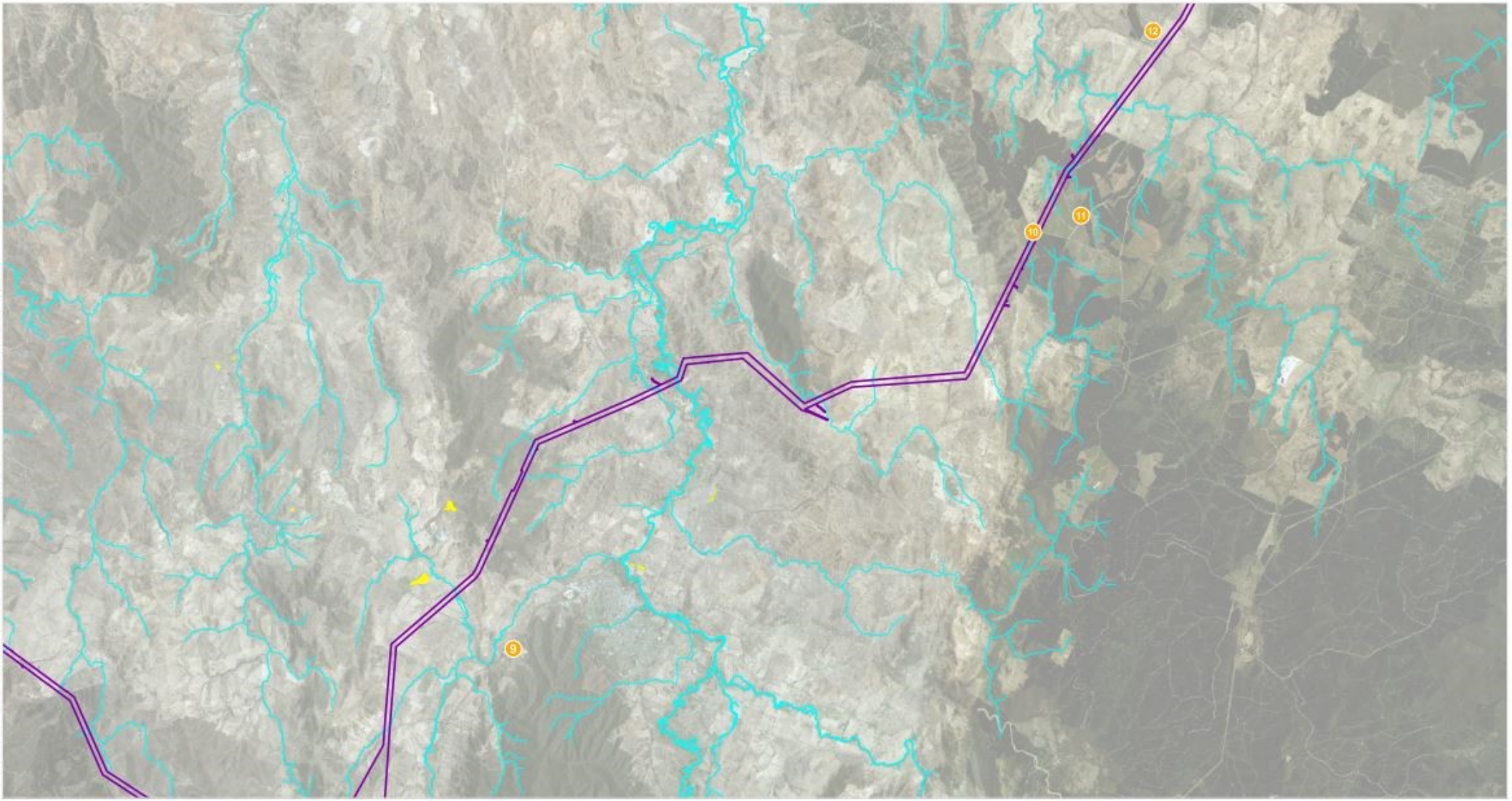


Project footprint

Land use and property study area

Construction ancillary facilities

9 Snowy Mountains Highway compound (C02)

10 Honeysuckle Road compound (C07)

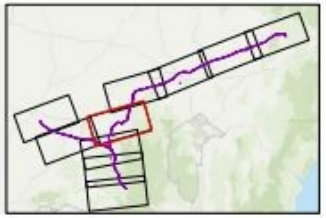
11 Red Hill Road compound (C08)

12 Adjungbilly Road compound (C09)

Land Use 2017

6.2.0 Reservoir/dam

6.3.0 River



Source: *Base data (aerial imagery, transport, water, and cadastral themes); NSW Foundation Spatial Data Framework; Transgrid*

1:150,000

0 4 7 km

Projection: GDA 1994 MGA Zone 55

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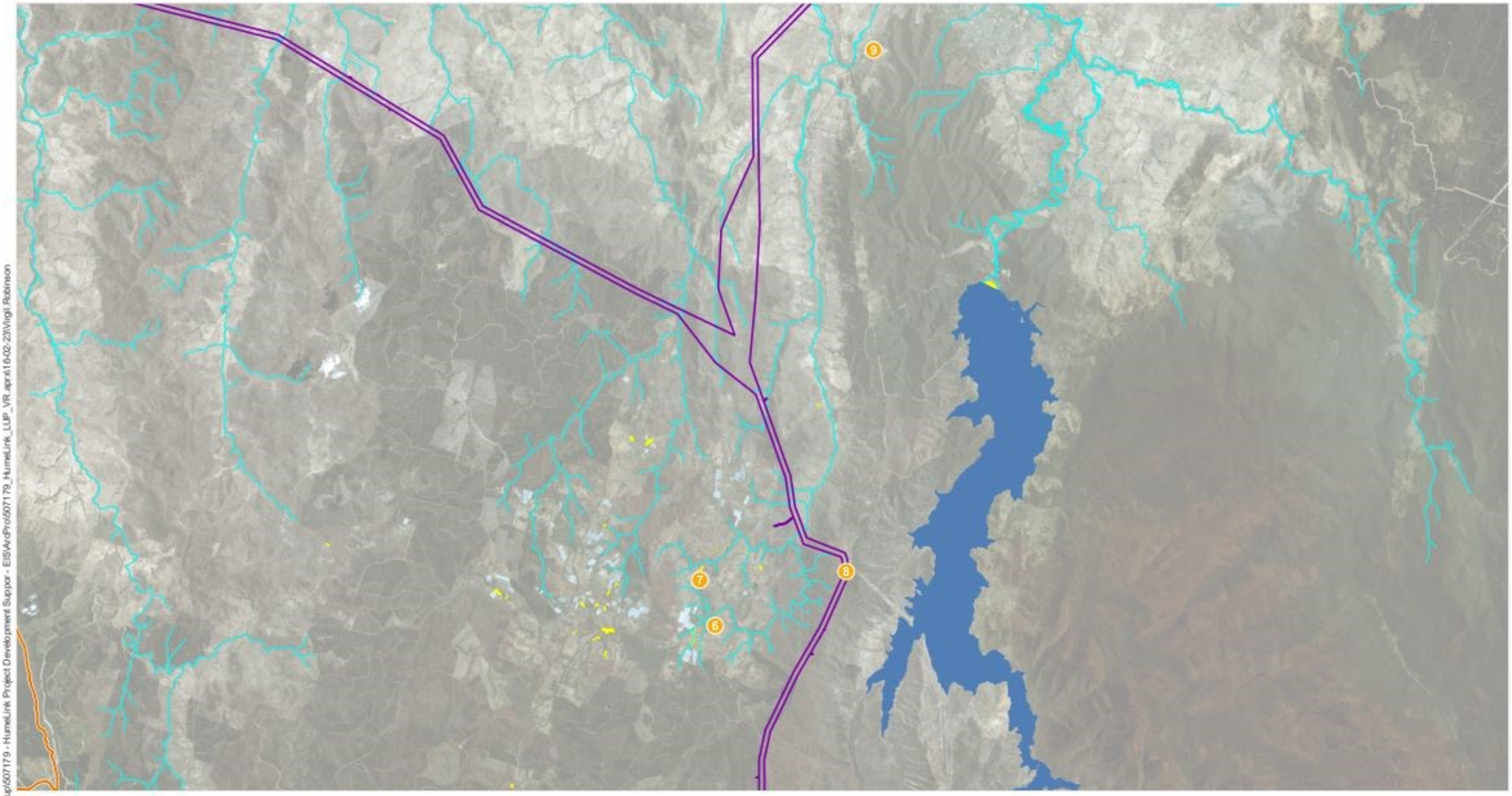

Project footprint

Land use and property study area

Construction ancillary facilities

6 Bowmans Lane compound (C15)

7 Memorial Avenue compound (C14)

8 Snubba Road compound (C03)

9 Snowy Mountains Highway compound (C02)

Land Use 2017

6.1.0 Lake

6.2.0 Reservoir/dam

6.3.0 River

Source: *Base data (aerial imagery, transport, water, and cadastral themes): NSW Foundation Spatial Data Framework; Transgrid*

1:150,000

0 4 7 km

Projection: GDA 1994 MGA Zone 55

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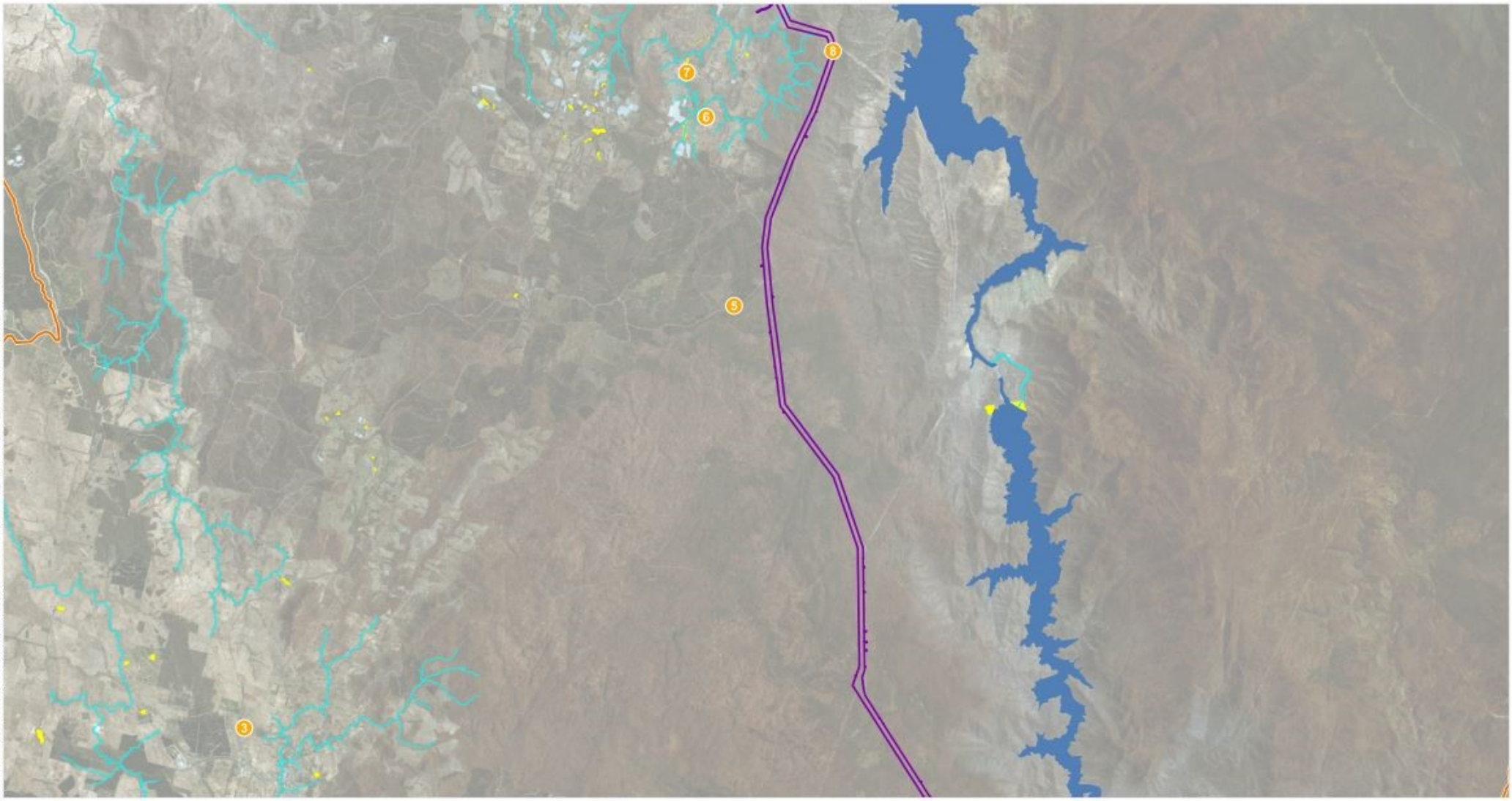


Project footprint

Land use and property study area

Construction ancillary facilities

3 Tumbarumba worker accommodation facility (AC1)

5 Snubba Road compound (C16)

6 Bowmans Lane compound (C15)

7 Memorial Avenue compound (C14)

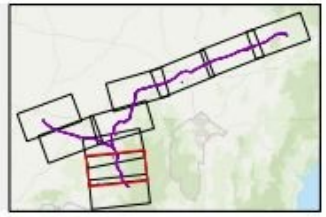
8 Snubba Road compound (C03)

Land Use 2017

6.1.0 Lake

6.2.0 Reservoir/dam

6.3.0 River



Source: *Base data (aerial imagery, transport, water, and cadastral themes); NSW Foundation Spatial Data Framework; Transgrid*

1:150,000

0 4 7km

Projection: GDA 1994 MGA Zone 55

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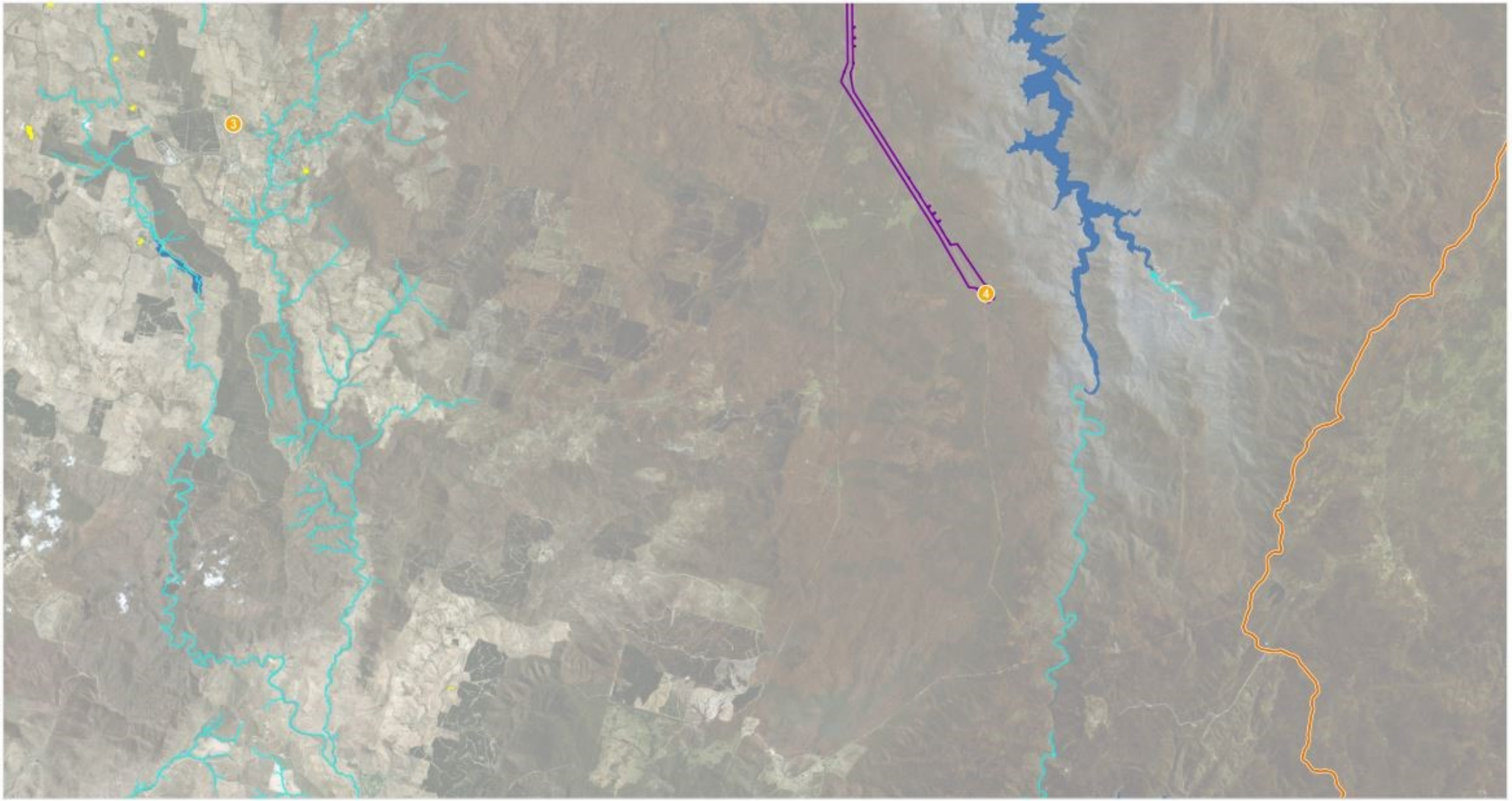


Project footprint

Land use and property study area

Construction ancillary facilities

3 Tumbarumba worker accommodation facility (AC1)

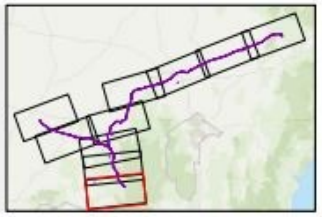
4 Maragle 500 kV substation compound (C05)

Land Use 2017

6.1.0 Lake

6.2.0 Reservoir/dam

6.3.0 River



Source: *Base data (aerial imagery, transport, water, and cadastral themes); NSW Foundation Spatial Data Framework; Transgrid*

1:150,000

0 4 7 km

Projection: GDA 1994 MGA Zone 55

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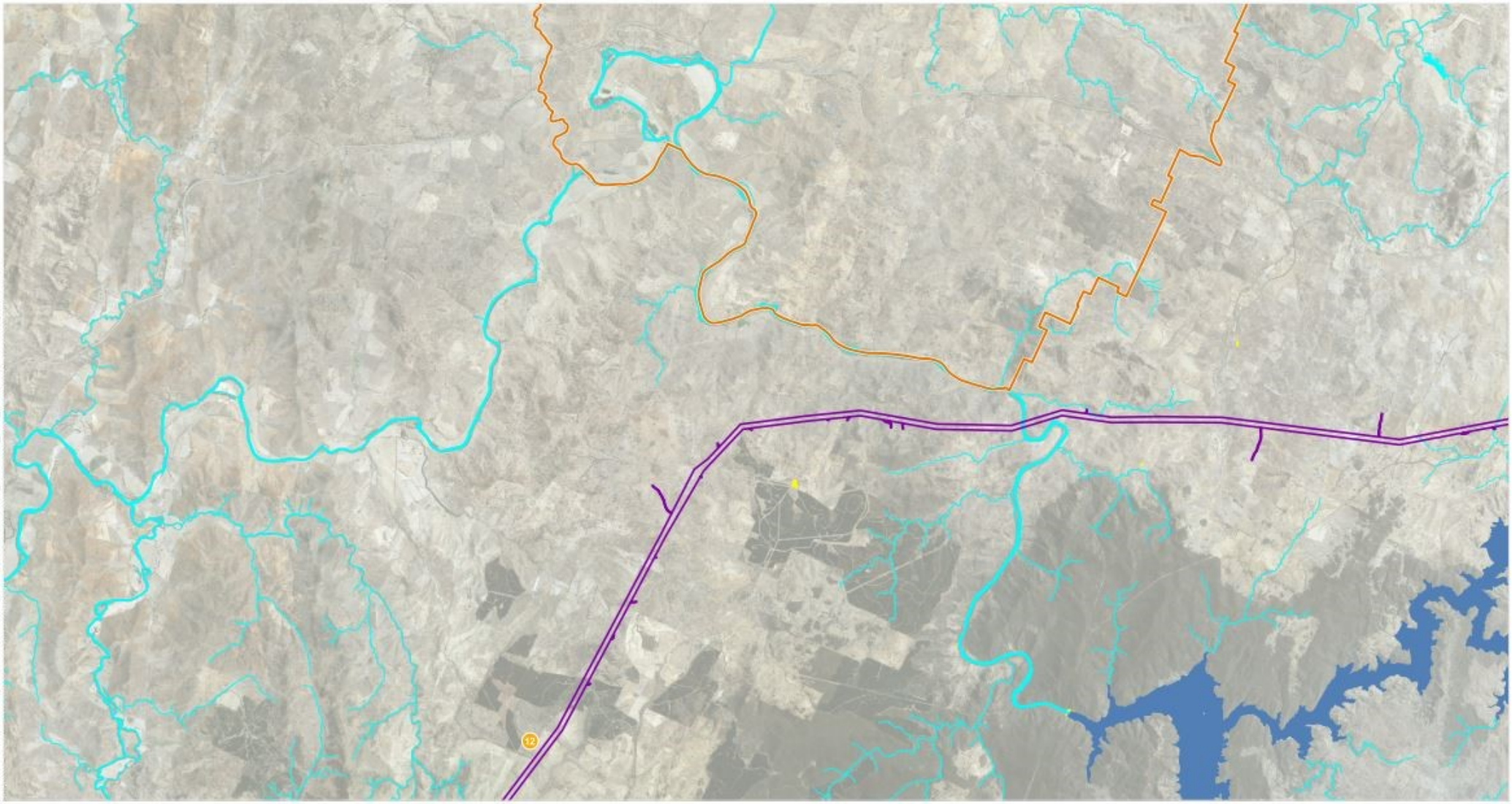


Project footprint

Land use and property study area

Construction ancillary facilities

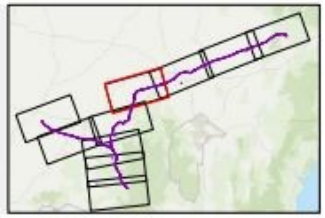
12 Adjungbilly Road compound (C09)

Land Use 2017

6.1.0 Lake

6.2.0 Reservoir/dam

6.3.0 River



Source: *Base data (aerial imagery, transport, water, and cadastral themes): NSW Foundation Spatial Data Framework; Transgrid*

1:150,000

0 4 7 km

Projection: GDA 1994 MGA Zone 55

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Project footprint

Land use and property study area

Construction ancillary facilities

13 Yass substation compound (C10)

Land Use 2017

6.1.0 Lake

6.2.0 Reservoir/dam

6.3.0 River

Source: *Base data (aerial imagery, transport, water, and cadastral themes): NSW Foundation Spatial Data Framework; Transgrid*

1:150,000

0 4 7 km

Projection: GDA 1994 MGA Zone 55

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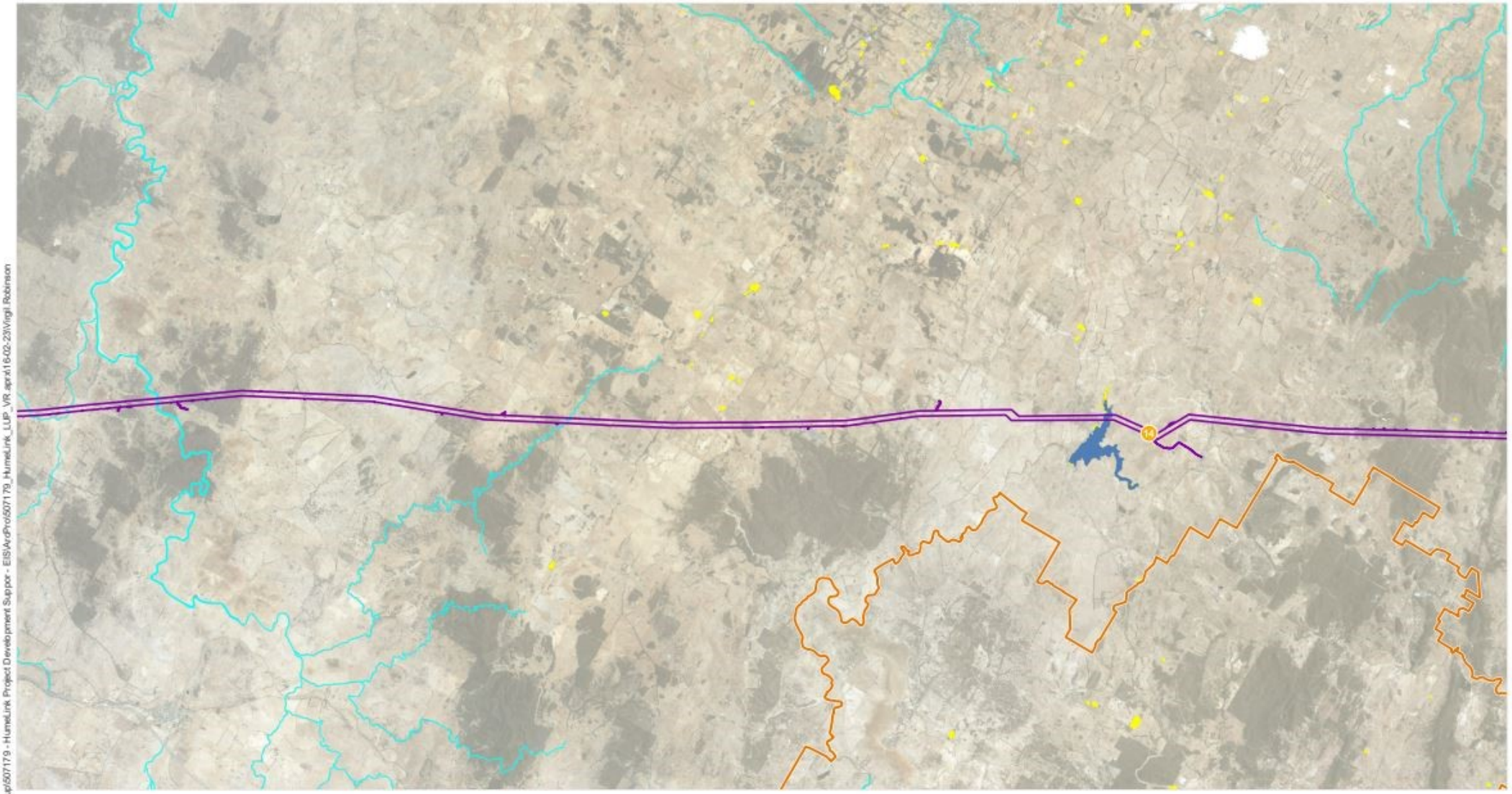


Project footprint

Land use and property study area

Construction ancillary facilities

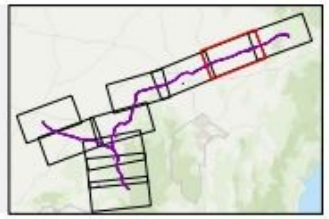
14 Woodhouselee Road compound (C11)

Land Use 2017

6.1.0 Lake

6.2.0 Reservoir/dam

6.3.0 River



Source: Base data (aerial imagery, transport, water, and cadastral themes); NSW Foundation Spatial Data Framework; Transgrid

1:150,000

0 4 7 km

Projection: GDA 1994 MGA Zone 55

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Project footprint

Land use and property study area

Construction ancillary facilities

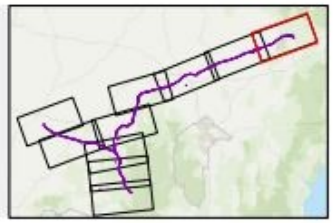
15 Bannaby 500 kV substation compound (C12)

Land Use 2017

6.1.0 Lake

6.2.0 Reservoir/dam

6.3.0 River



Source: *Base data (aerial imagery, transport, water, and cadastral themes); NSW Foundation Spatial Data Framework; Transgrid*

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Projection: GDA 1994 MGA Zone 55

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