Transgrid

People. Power. Possibilities.

HumeLink

Phase 1 Contamination Assessment
Addendum
Technical Report 10

Executive summary

Transgrid proposes to increase the energy network capacity in southern New South Wales (NSW) through the development of around 365 kilometres (km) 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 six Local Government Areas (LGAs) including Wagga Wagga City, Snowy Valleys, Cootamundra-Gundagai Regional, Upper Lachlan Shire, Yass Valley and Goulburn Mulwaree.

An Environmental Impact Statement (EIS) was prepared in accordance with the requirements of Division 5.2 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). The EIS was placed on public exhibition by the NSW Department of Planning, Housing and Infrastructure (DPHI) (formerly the NSW Department of Planning and Environment (DPE) for a period of 42 days, between 30 August 2023 and 10 October 2023.

Transgrid has proposed amendments and refinements to the project as described in the EIS. These amendments provide functional improvements to the design and construction methodology of the project. The proposed amendments take into account submissions received during the public exhibition of the EIS and ongoing design and construction methodology development following the selection of the construction contractors. Project refinements have also been made as part of the ongoing design and construction methodology development since the EIS was exhibited. The main purpose of this report is to assess the potential soil and contamination impacts from construction and operation of the amended project to support the environmental assessment of the amended project in accordance with Division 5.2 of the EP&A Act.

The amended contamination study area consists of the amended project footprint plus a one kilometre buffer. The contamination assessment included a desktop study of relevant data, and a field survey of select sites and properties. The desktop study and field survey generated a list of areas of environmental concern (AECs) and a risk rating associated with the level of ground disturbance the amended project would produce, as well as the soil and contamination aspects identified.

Construction impacts on soils and contamination

As per the assessment of construction impacts on soils and contamination in *Technical Report 10 – Phase 1 Contamination Assessment* prepared for the EIS, the proposed construction activities, would cause soil and rock disturbance. If these activities are not properly managed, the disturbance of contaminated soil has the potential to cause harm to sensitive receivers (including flora and fauna) and human health for the construction workers on the amended project.

To appropriately assess the potential for contamination impacts during construction of the amended project, a qualitative contamination assessment has been undertaken in accordance with guidelines made or approved under the *Contamination Land Management Act 1997* (CLM Act).

A qualitative risk ranking was undertaken with most of the AECs evaluated as having low risk rankings; however, two areas were identified as having a moderate risk ranking due to historical and present-day land use and activities. The areas with moderate risk ranking include sewage treatment plants, and areas of disturbed land, uncontrolled fill, waste stockpiling and dumping. The locations of these areas are presented in figures presented in this report.

Unexpected contamination conditions may be encountered due to previously unknown heterogeneities in the subsurface, soil contamination not previously identified, or changes in the amended project scope. The potential risk associated with unexpected contamination finds has not been assessed as this would be managed in accordance with an Unexpected Contamination Finds Protocol during construction.

While there is the potential to encounter contamination in AECs during construction, the assessment found that there is a low risk of groundwater contamination from ground disturbance.

The risk of encountering dryland salinity and acid sulfate soils remains unchanged from the risks identified in *Technical Report 10 - Phase 1 Contamination Assessment* prepared for the EIS. The risk of exposure to Naturally Occurring Asbestos (NOA) has been reduced due to the design changes, with most of the amended contamination study area containing low to no probability of NOA. Waste materials, including potentially contaminated waste, could be produced during construction through excavation of unsuitable material. Any soil removed during construction would require assessment to determine its suitability for re-use within the amended project, or management and/or disposal as a waste to licenced facilities in accordance with the NSW Waste Classification Guidelines 2014 Parts 1-4, Addendum 2016 and any applicable Resource Recovery Orders and Exemptions under the *Protection of the Environment Operations Act 1997* (POEO Act). Review of Schedule 1 of the POEO Act indicates that an environment protection license (EPL) will not be required for premises or activity-based processes.

Operational impacts on soils and contamination

During operation, there would be minimal soil disturbance associated with general maintenance activities. As such, the operation of the amended project is unlikely to result in exposure of human and environmental receivers to existing potentially contaminated soil or groundwater.

Residual contamination, if identified during construction and not sufficiently remediated or managed, could have an impact during operation of the amended project. The impact is likely to be localised.

Refer to *Technical Report 10 – Phase 1 Contamination Assessment* prepared for the EIS for further information regarding specific soil and groundwater contamination risks during operation of the amended project. During operation, there would be minimal exposed topsoil within proximity to waterways and, therefore, little or no risk of soil erosion and subsequent transport of sediment into nearby receiving waterways.

Mitigation measures

The key measures proposed to avoid, manage and/or mitigate impacts to soils and contamination are consistent with the measures outlined in *Technical Report 10 – Phase 1 Contamination Assessment* prepared for the EIS. One mitigation measure has been revised due to the changes to the design and the amended contamination study area. This is in relation to the presence of NOA in areas where controlled blasting is proposed as a construction methodology. The mitigation measure indicates that detailed design will consider the risk of encountering NOA within the amended project footprint.

Conclusion

Based on the information reviewed and assessed, the amended contamination study area is not affected by broad-scale contamination, and the risk of soil and groundwater contamination is generally low. Impacts to soil can be managed through mitigation measures to avoid or mitigate impacts. Most of the amended contamination study area comprises farmlands, forestry, or native vegetation with minimal areas of potential soil contamination identified. As stated in *Technical Report 12 – Surface Water and Groundwater Impact Assessment Addendum*, potential groundwater contamination is also considered low, given the absence of groundwater contamination sources and minimal interaction of the amended project with groundwater.

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Abbreviation or term	Description
ACM	Asbestos containing material
AECs	Areas of environmental concern
AEMO	Australian Energy Market Operator
ARTC	Australian Rail Track Corporation
ASC	Australian soil classification
BTEXN	Benzene, Toluene, Ethylbenzene, Xylene and Naphthalene
CEMP	Construction Environmental Management Plan
CLM Act	*Contaminated Land Management Act 1997*
COPCs	Contaminants of potential concern
CSSI	Critical State Significant Infrastructure
DPHI	Department of Planning, Housing and Infrastructure
DSI	Detailed Site Investigation
EHC Act	*Environmentally Hazardous Chemicals Act 1985*
EIS	Environmental Impact Statement
EMS	Environmental management system
ENM	Excavated natural materials
EPA	Environment Protection Authority
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
EPL	Environment Protection Licence
ERA	Environmental Risk Assessment
ESCP	Erosion and Sediment Control Plan
kV	Kilovolt
LEP	Local Environmental Plan
mAHD	Metres above the Australian Height Datum
mbgl	Metres below ground level
NEM	National Electricity Market
NEPM 2013	National Environment Protection (Assessment of Site Contamination) Measure
NOA	naturally occurring asbestos
NSW	New South Wales
OCP	Organochlorine pesticide
OPP	Organophosphate pesticides
PACM	Potential asbestos containing material
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated biphenyl
PFAS	Per- and Poly-fluorinated Alkyl Substances
pH	unit of measurement for acidity and alkalinity
POEO Act	*Protection of the Environment Operations Act 1997*
POEO (General) Regulation	Protection of the Environment Operations (General) Regulation 2022
POEO (Waste) Regulation	Protection of the Environment Operations (Waste) Regulation 2014
PPE	Personal protective equipment

Abbreviation or term	Description
PSI	Preliminary Site Investigation
Resilience and Hazards SEPP	State Environmental Planning Policy (Resilience and Hazards) 2021
SEARs	Planning Secretary's Environmental Assessment Requirements
SPR	source pathway receptor
SWMP	Soil and Water Management Plan
TRH	Total recoverable hydrocarbons
UXO	Unexploded ordnance
VENM	Virgin excavated natural materials

Glossary of terms

Term	Description
amended contamination study area (the)	The amended project footprint plus a one kilometre buffer.
amended project (the)	The CSSI project “HumeLink”, which is the subject of the Amendment Report and inclusive of the proposed amendments and project refinements to the project as described in the EIS. The project involves the construction and operation of high voltage transmission lines and associated infrastructure between Wagga Wagga, Bannaby and Maragle.
amended project footprint (the)	The area that has been assumed for the purpose of the Amendment Report 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.
amendment	A change in what the proponent is seeking approval for following the public exhibition of the EIS. It requires changes to the project description in the EIS and amendments to the associated infrastructure application.
areas of environmental concern	Potential contamination sources are referred to as areas of environmental concern.
asbestos containing material	Any, material, object, product or debris that contains asbestos.
brake and winch site	A brake and winch site is a temporarily cleared area where plant and equipment are located to spool and winch conductors into place on transmission line structures. The locations of the brake and winch sites may or may not be within the nominated transmission line easement. These sites are only required for construction of the project and do not need to be maintained during operation.
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 ■ concrete batching plants ■ helipads ■ crushing/screening plants ■ parking.
Construction Environmental Management Plan	A Construction Environmental Management Plan (CEMP) describes how activities undertaken during the construction phase of development would be managed to avoid or mitigate impacts, and how those environmental management requirements would be implemented.
EIS contamination study area (the)	The EIS project footprint plus a one kilometre buffer.
EIS project (the)	The CSSI project “HumeLink”, which was the subject of the Environmental Impact Statement. The project involves the construction and operation of high voltage transmission lines and associated infrastructure between Wagga Wagga, Bannaby and Maragle.
EIS project footprint (the)	The area that was assumed for the purpose of the 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.
excavated natural material (ENM)	Excavated natural material is defined by the NSW EPA as naturally occurring rock and soil (including but not limited to materials such as sandstone, shale, clay and soil) that has: a) been excavated from the ground, and b) contains at least 98% (by weight) natural material, and c) does not meet the definition of Virgin Excavated Natural Material in the POEO Act. Excavated natural material does not include material located in a hotspot; that has been processed; or that contains asbestos, acid sulfate soils, potential acid sulfate soils or sulfidic ores.

Term	Description
future Maragle 500 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 a separate planning approval (reference SS1-9717, EPBC 2018/836).
metres above the Australian Height Datum	A common reference level used in Australia which is approximately equivalent to the height above sea level in meters.
NSW EPA Resource Recovery Order	Resource recovery orders are made by the NSW EPA under the POEO Regulation to allow certain waste to be beneficially reused. Generators and processors of waste to which a resource recovery order applies must meet all the conditions of an order to supply a resource recovery waste to a consumer (refer to clauses 91, 92 and 93 of the POEO Regulation).
refinement	Refinements to the project are defined as aspects of the project that generally fit within the limits set by the project description in the EIS. Refinements do not change what is being sought for approval or require an amendment to the infrastructure application for the project.
spoil	Excavated soil and rock
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.
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*.
transmission line corridor	An area generally 200 metres wide that the transmission line route and easement would be located within.
transmission line 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 select locations would require wider easements up to 130 metres wide for specific engineering or property reasons. The easement grants a right of access and for construction, maintenance and operation of the transmission line and other operational assets.
transmission line route	The location of the transmission line structures along the middle of the transmission line easement.
transmission line structures	Proposed free standing structures to support the transmission lines.
virgin excavated natural material (VENM)	Natural material such as clay, gravel, sand, soil or rock fines that: ■ has been excavated or quarried from areas that are not contaminated with manufactured chemicals, or with process residues, as a result of industrial, commercial, mining or agricultural activities ■ does not contain sulfidic ores or soils, or any other waste ■ and includes excavated natural material that meets such criteria for virgin excavated natural material as may be approved pursuant to an EPA Gazettal notice.
work site	A general word to describe a defined construction location.

1 Introduction

1.1 Background

Transgrid proposes to increase the energy network capacity in southern New South Wales (NSW) through the development of around 365 kilometres (km) 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 six Local Government Areas (LGAs) including Wagga Wagga City, Snowy Valleys, Cootamundra-Gundagai Regional, Upper Lachlan Shire, Yass Valley and Goulburn Mulwaree. HumeLink is a priority project for the Australian Energy Market Operator (AEMO) and the Commonwealth and NSW governments and has been declared as Critical State Significant Infrastructure (CSSI). 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.

An Environmental Impact Statement (EIS) was prepared in accordance with the requirements of Division 5.2 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). The EIS was placed on public exhibition by the NSW Department of Planning, Housing and Infrastructure (DPHI) (formerly the NSW Department of Planning and Environment (DPE)) for a period of 42 days, between 30 August 2023 and 10 October 2023.

Transgrid has proposed amendments and refinements to the project as described in the EIS. The amendments provide functional improvements to the design and construction methodology of the project. The proposed amendments take into account submissions received during the public exhibition of the EIS and ongoing design and construction methodology development following the selection of the construction contractors. Project refinements have also been made as part of the ongoing design and construction methodology development since the EIS was exhibited. These amendments and refinements have been described and considered in relevant impact assessments.

1.2 Key features of the project (as publicly exhibited)

The key components of the project as outlined and assessed in the EIS included:

- 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 (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 works 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.

1.3 Overview of the proposed amendments and refinements

Since the public exhibition of the EIS, several amendments and refinements to the project have been proposed.

The proposed amendments to the project include:

- changes to the transmission line corridor, including the realignment of the route through Green Hills State Forest to the west of Batlow
- change to the number and location of construction ancillary facilities, including worker accommodation facilities and construction compounds
- nomination of access tracks to support the construction and operation of the project
- additional telecommunications connections to existing substations.

The proposed refinements to the project include:

- transmission line and substation design refinements at Gregadoo
- identification of areas where controlled blasting may be required
- use of approved water sources
- use of helicopters and drones.

Refer to Chapter 2 of this report for a detailed description of amendments and refinements relevant to this assessment.

Figure 1-1 shows the location of the amended project and Figure 1-2 shows the key components of the amended project.

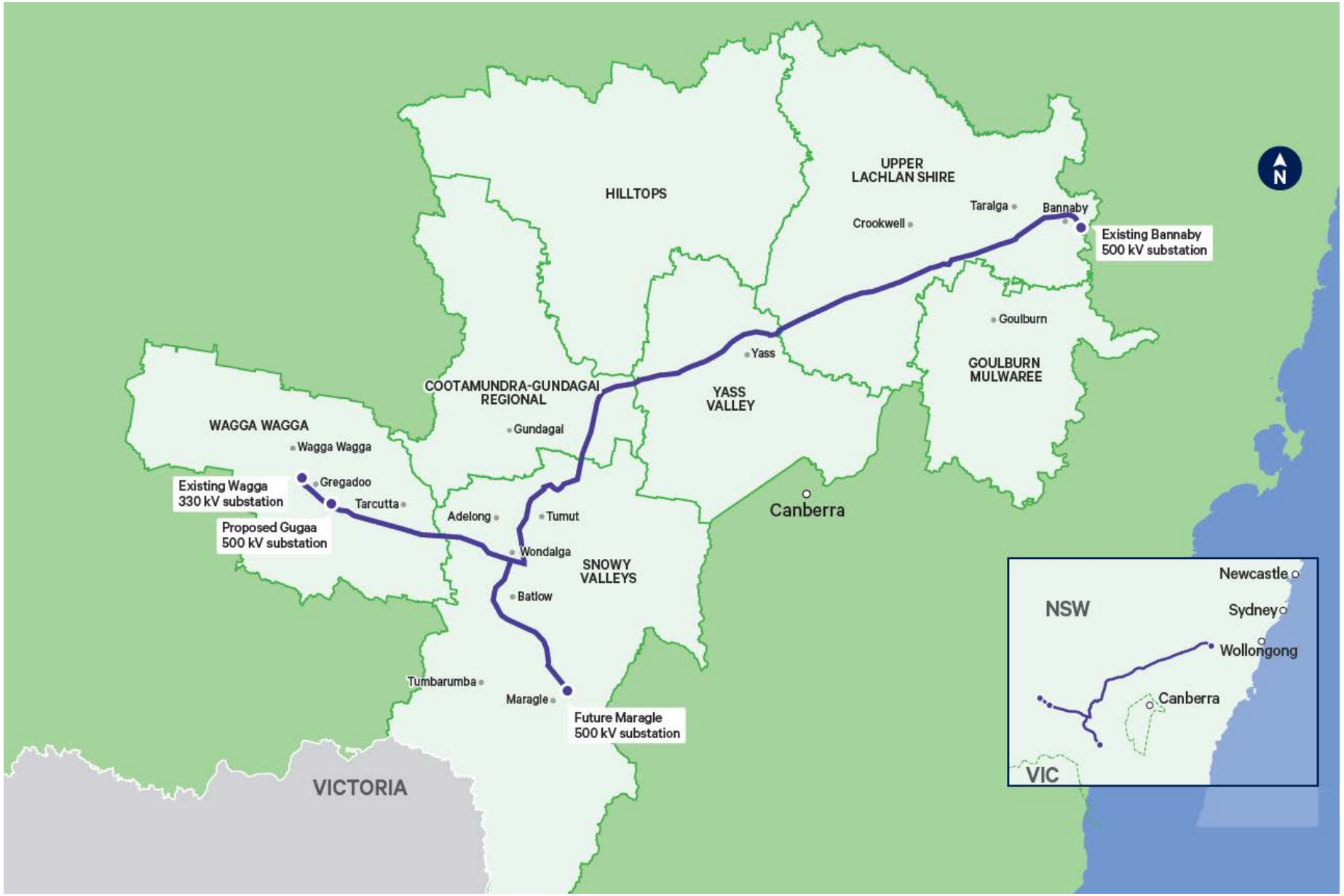
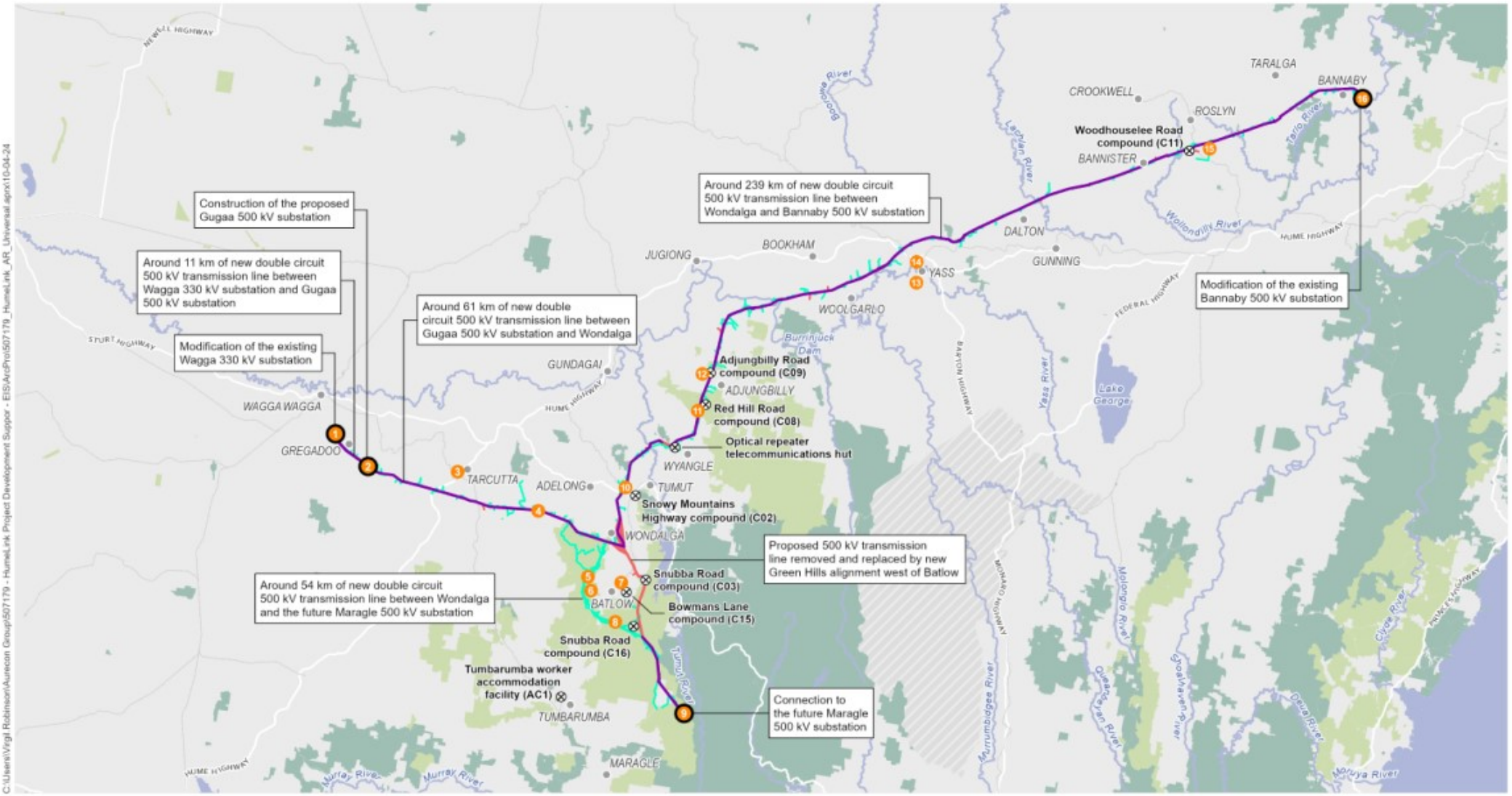


Figure 1-1 Overview of the amended project location



HumeLink **Soil and Contamination**

Figure 1-2: Key components of the amended project

1.4 Purpose and structure of this report

This report forms an addendum to *Technical Report 10 – Phase 1 Contamination Assessment* prepared for the EIS. The purpose of this report is to support the HumeLink Amendment Report by assessing the potential contamination impacts associated with the proposed amendments and refinements to the project.

This report is structured as follows:

- Chapter 1 (Introduction) – provides an overview of the project, the proposed amendments and the purpose of this report.
- Chapter 2 (Summary of the proposed amendments and refinements) – provides a description of the proposed amendments and refinements relevant to this assessment.
- Chapter 3 (Legislative and policy context) – provides an outline of the key legislative requirements and policy guidelines relating to the proposed amendments to the project.
- Chapter 4 (Methodology) – provides an outline of the methodology used for the preparation of this report.
- Chapter 5 (Existing environment) – describes the existing environment with reference to the potential for contaminated land and groundwater in the amended contamination study area.
- Chapter 6 (Assessment of impacts) – describes the potential construction and operation impacts associated with the proposed amendments and refinements of the project.
- Chapter 7 (Management of impacts) – outlines any new or revised mitigation measures for the proposed amendments to the project.
- Chapter 8 (Conclusion) – provides a conclusion of the potential impacts of the proposed amendments to the project with reference to the potential for contaminated land and groundwater impacts.
- Chapter 9 (References) – identifies the key information sources (including reports and documents) used to generate the assessment.

1.5 Key project terms

The key project terms used in this assessment include:

- Amended contamination study area – The amended project footprint plus a one kilometre buffer.
- Amended project – The CSSI project “HumeLink”, which is the subject of the Amendment Report and inclusive of the proposed amendments and project refinements to the project as described in the EIS. The project involves the construction and operation of high voltage transmission lines and associated infrastructure between Wagga Wagga, Bannaby and Maragle.
- Amended project footprint – The area that has been assumed for the purpose of the Amendment Report 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.
- EIS contamination study area – The EIS project footprint plus a one kilometre buffer.
- EIS project - The CSSI project “HumeLink”, which was the subject of the EIS. The project involves the construction and operation of high voltage transmission lines and associated infrastructure between Wagga Wagga, Bannaby and Maragle.
- EIS project footprint – The area that was assumed for the purpose of the 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.

2 Summary of the proposed amendments and refinements

Transgrid has identified several proposed amendments and refinements to the project as described in the EIS. These amendments and refinements reflect functional improvements to the design and construction methodology of the project. They consider:

- feedback received from stakeholders prior to and during the public exhibition of the EIS
- comments made in formal submissions on the EIS
- ongoing design and construction methodology development by the construction contractors.

Amendments to the project are defined as changes in what the proponent is seeking approval for following the public exhibition of the EIS. Project amendments require changes to the project description in the EIS and amendments to the associated infrastructure application.

The proposed amendments to the project include:

- changes to the transmission line corridor including the realignment of the route through Green Hills State Forest to the west of Batlow
- changes to the number and location of construction ancillary facilities including worker accommodation facilities and construction compounds
- nomination of access tracks to support the construction and operation of the project
- additional telecommunications connections to existing substations.

Refinements to the project are defined as aspects of the project that generally fit within the limits set by the project description in the EIS. Refinements do not change what is being sought approval for or require an amendment to the infrastructure application for the project. For completeness, these refinements have been considered in this report.

- The proposed refinements to the project include:
- transmission line and substation design refinements at Gregadoo
- identification of areas where controlled blasting may be required
- use of approved water sources
- use of helicopters and drones.

Table 2-1 describes the proposed amendments and refinements relevant to this technical report. A full description of the amended project is provided in Chapter 3 (Description of the amended project) of the Amendment Report. The construction contractors will continue to refine and confirm the design and construction methodology during detailed design and construction planning.

Table 2-1 Proposed amendments and refinements relevant to this assessment

Amendment / refinement	Description
Amendments	
Changes to the transmission line corridor	The amended project includes the preferred western route through Green Hills State Forest. The new 32.5 km route extends from Wondalga through the Green Hills State Forest before travelling to the west and south of Batlow and connecting to the EIS project transmission line corridor in Bago State Forest. In addition, the following minor changes have been made to the transmission line corridor following design considerations and feedback from landholders: ■ 1.4 km realignment of the corridor to the north between Ashfords Road to Ivydale Road, Gregadoo ■ 2.5 km realignment of the corridor to the south across Kyeamba Creek and Tumbarumba Road, Book Book ■ 2.7 km realignment of the corridor to the east near Snowy Mountains Highway, Gadara ■ 1.4 km realignment of the corridor to the east adjacent Minjary National Park at Gocup ■ 5.9 km realignment of the corridor from north of the crossing of Tumut River to south of the crossing of Killimicat Creek, Killimicat (including a minor 50 m shift to the north for 2.1 km and a 2.6 km shift to the south from Brungle Road to before the crossing of Killimicat Creek) ■ 0.4 km realignment of the corridor to the north at Bannister, about 2.7 km west of Crookwell Road/Goulburn Road ■ narrowing of the project footprint at Wondalga, Gobarralong and Bowning.
Updates to construction ancillary facilities including worker accommodation facilities and construction compounds	**Changes to construction compounds** Following further construction planning and consultation with landowners, the following compounds described and assessed in the EIS have been removed from the project: ■ Snowy Mountains Highway compound (C02) ■ Snubba Road compound (C03) ■ Red Hill Road compound (C08) ■ Adjungbilly Road compound (C09) ■ Woodhouselee Road compound (C11) ■ Bowmans Lane compound (C15) ■ Snubba Road compound (C16). These have been replaced with the following compounds: ■ Ardrossan Headquarters Road compound (C17) – located about 7.6 km west of Batlow ■ Snubba Road compound (C18) – located about 7.7 km south of Batlow ■ Gadara Road compound (C19) – located about 4.9 km west of Tumut ■ Ellerslie Road compound (C21) – located about 13.1 km south-west of Adelong. The proposed footprint for the Gregadoo Road compound (C06), Honeysuckle Road compound (C07), Bannaby substation compound (C12) and Memorial Avenue compound (C14) have also been revised. Following these changes, there are now 11 standalone construction compounds proposed.
	Changes to accommodation facilities The Tumbarumba accommodation facility (AC01) is no longer required. The amended project includes the following new combined worker accommodation facilities and compounds: ■ Tarcutta accommodation facility and compound (AC03) – located about 1.5 km south-west of Tarcutta ■ Adjungbilly accommodation facility and compound (AC04) – located about 21.7 km east of Gundagai ■ Yass accommodation facility and compound (AC05) – located on the north-western outskirts of the Yass township ■ Crookwell accommodation facility and compound (AC06) – located off Graywood Siding Road, about 18.1 km north of Goulburn ■ Green Hills accommodation facility and compound (AC07) – located about 6.5 km west of Batlow.

Amendment / refinement	Description
Nomination of access tracks	New access tracks or upgrades to existing access tracks are proposed to connect construction areas and the transmission line easement to the existing road network. Existing unsealed local roads, forest roads, and tracks proposed for use as part of the access arrangements may also require minor improvement work, such as grading or resurfacing, or drainage work.
Additional telecommunications connections to existing substations	Removal of the telecommunications hut at Killimicat from the scope and inclusion of additional telecommunications connections to the following Transgrid substations: ■ Gadara 132 kV substation ■ Gullen Range 330 kV substation ■ Crookwell 2 330 kV substation.
Refinements	
Identification of areas where controlled blasting may be required	Preliminary geotechnical investigations and further consideration of terrain along the amended project alignment have identified several potential areas where controlled blasting may be required.

3 Legislative and policy context

There has been no change to the legislative and policy context presented in *Technical Report 10 – Phase 1 Contamination Assessment* prepared for the EIS.

4 Methodology

As per the EIS, the assessment methodology of this report followed the framework for the assessment of site contamination outlined in the National Environment Protection (Assessment of Site Contamination) Measure (NEPM 2013). There are various sections of the methodology that are specific to the assessment of the amended contamination study area. These have been described in further detail below.

4.1 Key tasks

The following key tasks were carried out to assess the proposed amendments and refinements:

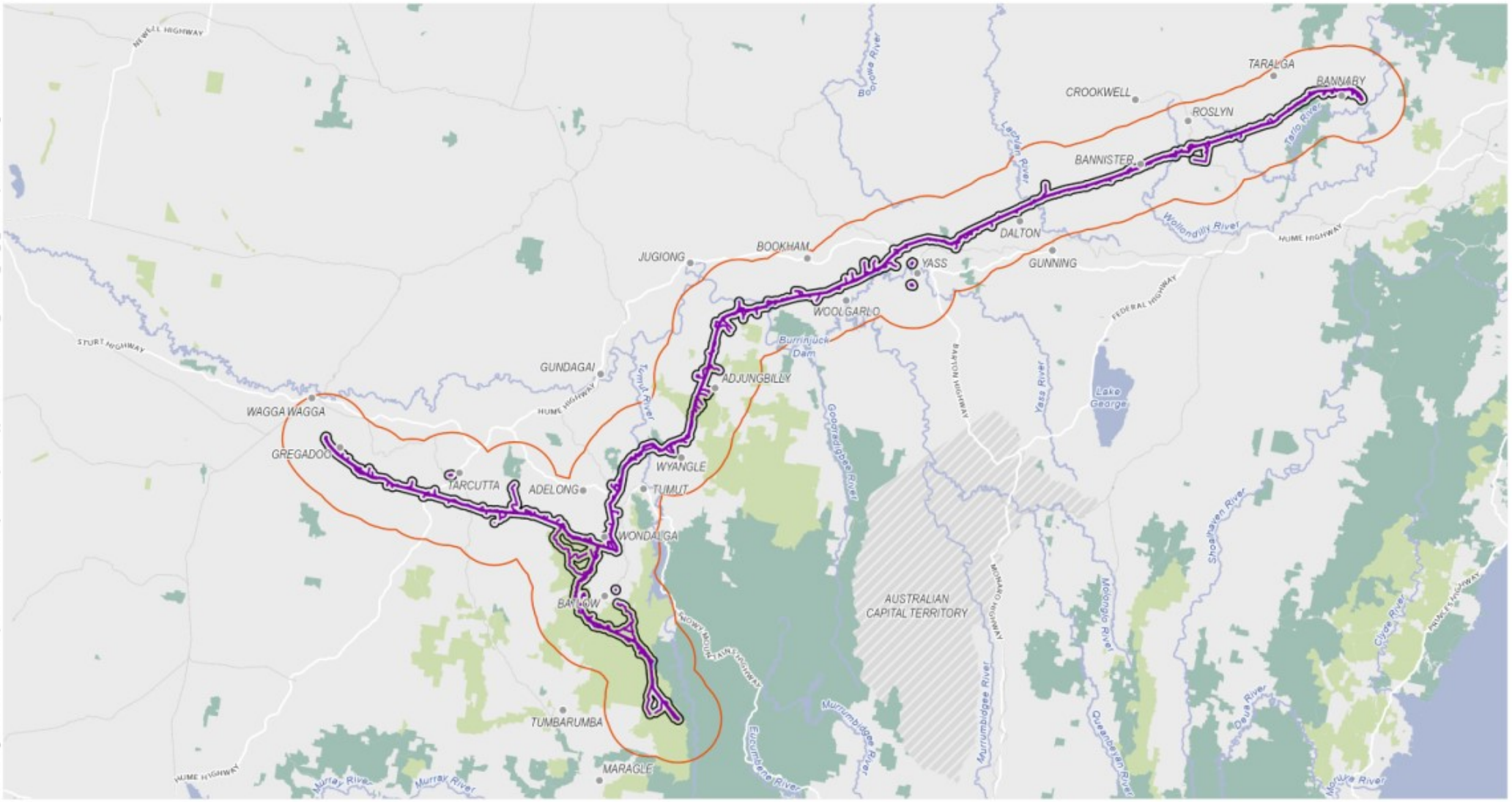
- A review of the amended project footprint.
- A desktop assessment comprising a review of existing information and aerial photography to identify the current environmental conditions of the amended contamination study area and potential sources of contamination.
- Field surveys for the revised and new construction compounds and new combined worker accommodation facilities and compounds (10 sites in total). Field surveys were not considered necessary for changes to the transmission line corridor. Except for the Green Hills corridor amendment, the amended sections of the transmission line corridor largely fall within the EIS contamination study area, and have therefore already been assessed. The desktop assessment of the Green Hills corridor amendment revealed a very low risk of contamination. As such, a field survey of this area was not considered necessary.
- The identification of additional areas of environmental concern (AECs) within the amended contamination study area.
- The identification of potential construction, operational and cumulative impacts of the proposed amendments.
- The identification of mitigation measures to avoid or minimise potential impacts of the proposed amendments.

4.2 Study areas

The amended contamination study area covers the amended project footprint plus a one kilometre buffer as presented in Figure 4-1.

The one kilometre buffer was included to capture potential contaminating activities immediately outside of the amended project footprint. In addition, a 10 kilometre radius around the amended project footprint was used as a search area for the purpose of the NSW Government per- and poly-fluorinated alkyl substances (PFAS) Investigation Program and Department of Defence Unexploded Ordnance (UXO) desktop searches. The extended 10 kilometre radius is due to the type of contaminants (which are persistent and can travel long distances) and activities associated with PFAS and UXO sources sites and residues.

The survey sites comprised private properties and publicly accessible roadside locations as presented in Figure 4-2. The survey sites were based on the locations of revised and new construction compounds and new combined worker accommodation facilities and compounds. The criteria adopted for the identification of AECs are presented in Section 4.5.1.



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

1:925,000

0 20 40km

Projection: GDA 1994 MGA Zone 55

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FIGURE 4-1: Amended contamination study area

4.3 Desktop assessment

The methodology of the desktop assessment is consistent with the approach used in *Technical Report 10 – Phase 1 Contamination Assessment*. Refer to the *Technical Report 10 – Phase 1 Contamination Assessment* prepared for the EIS for additional detail regarding the methodology of the desktop assessment.

4.4 Field survey

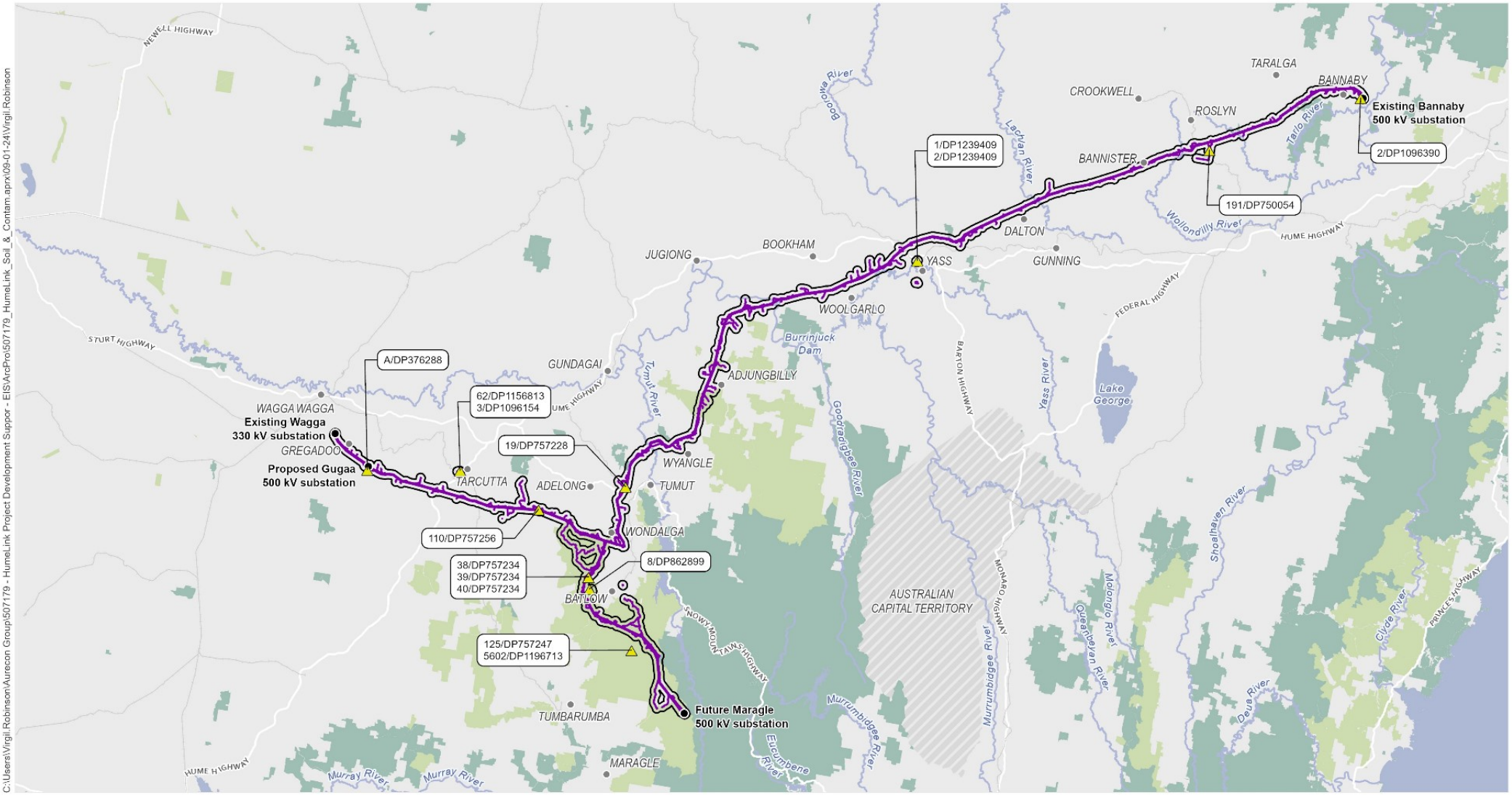
Field surveys were conducted from 16 October 2023 to 20 October 2023. The surveys focused on inspection of sections of the amended contamination study area. The field surveys were carried out on selected private properties and within publicly accessible areas within the amended contamination study area. The private properties assessed during the field survey are presented in Table 4-1 and Figure 4-2. Section 5.10 summarises the observations and findings of the field surveys.

Despite amendments being made to the Honeysuckle Road compound (C07), Adjungbilly accommodation facility and compound (AC04) and Memorial Avenue compound (C14) they were excluded from the field surveys conducted for this report for the following reasons:

- **Honeysuckle Road compound (C07)** – Amendments to this compound were minor. A field survey was undertaken at this location as part of the contamination assessment undertaken for the EIS. As such, only a desktop review of the site is considered necessary.
- **Adjungbilly accommodation facility and compound (AC04)** – The location is near the former Adjungbilly Road compound (C09) which was surveyed during the EIS development. As such, only a desktop review of the site is considered necessary.
- **Memorial Avenue compound (C14)** – This site was visited in August 2022 and the findings were included in the EIS. The boundary amendments are very minor along the northern section of the compound site and this minor change does not warrant an additional field survey.

Table 4-1 Properties assessed during the contamination field survey

Asset	Lot/DP	Address
Amended Gregadoo Road compound (C06)	A/DP376288	1070 Livingstone Gully Road, Gregadoo
Tarcutta accommodation facility and compound (AC03)	62/DP1156813 and 3/DP1096154	28 Mates Gully Road, Tarcutta
Ellerslie Road compound (C21)	110/DP757256	1154 Yaven Creek Road, Ellerslie
Ardrossan Headquarters Road compound (C17)	38/DP757234, 39/DP757234, and 40/DP757234	91 Back Camp Road, Green Hills
Snubba Road compound (C18)	5602/DP1196713 and 125/DP757247	1670 Batlow Road Willigobung
Gadara Road compound (C19)	19/DP757228	Gadara Road, Gadara
Amended Bannaby 500 kV substation compound	2/DP1096390	486 Hanworth Road Bannaby
Yass accommodation facility and compound (AC05)	2/DP1239409 1/DP1239409	113 Faulder Avenue, Yass 25 Faulder Avenue, Yass
Green Hills accommodation facility and compound (AC07)	8/DP862899	278 Lower Bago Road Kunama
Crookwell accommodation facility and compound (AC06)	191/DP750054	500 Graywood Siding Road, Wayo



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

1:925,000

0 20 40km

Projection: GDA 1994 MGA Zone 55

HumeLink **Soil and Contamination**

FIGURE 4-2: Contamination survey sites

4.5 Criteria adopted

The criteria adopted for the contamination assessment of the amended project is consistent with the criteria adopted in *Technical Report 10 – Phase 1 Contamination Assessment* prepared for the EIS. Details regarding these criteria have been included here to provide context to the impact ratings used in this report.

4.5.1 Areas of environmental concern

The potential contamination sources are referred to as areas of environmental concern (AECs).These AECs have been determined through a review of available site history information, public databases, site inspections and historical aerial photographs, as outlined in Sections 4.3 and 4.4.

4.5.2 Risk rating for AECs

Risk ratings are assigned based on linkages between AECs and sensitive receivers, pathways by which contamination moves through the environment, sensitive receivers and the potential risks of these AECs to the sensitive receivers.

Sensitive receivers include both human and environmental receivers. Human receivers include current or future site users such as residents or visitors, on- and off-site construction and maintenance workers and current or future users of surrounding sites. Environmental receivers include a broad range of flora and fauna, soil microorganisms, surface water bodies and groundwater.

The risk rating includes consideration of whether the identified AECs are likely to be disturbed by construction and whether they are located near any sensitive receivers that could be impacted by contaminants of potential concern (COPCs) (if present).

Qualitative risk is assessed by estimating the likelihood of each identified potential Source-Pathway-Receiver (SPR) linkage occurring and the foreseeable consequence of the exposure.

When there are linkages between the AECs and sensitive receivers through exposure pathways (such as exposure of a contaminant in soil to a construction worker via inhalation or contact with skin), there may be potential risks that require risk assessment, management or remediation.

The qualitative risk assessment (Australian/New Zealand ISO standard on risk management (derived from AS/NZS ISO 3100:2009)) applies a rating matrix to determine the qualitative contamination impact risk. The risk is assessed by estimating the likelihood of the linkages between AECs and sensitive receivers occurring and the foreseeable consequence of the exposure and therefore, construction and operation impacts.

The likelihood ratings are defined as follows:

- **Rare** – has not occurred in the past five years OR may occur in exceptional circumstances ie, less than 10 per cent chance of occurring in the next 24 months if the risk is not mitigated.
- **Unlikely** – may have occurred once in the last five years OR has a 10 to 30 per cent chance of occurring in the future if the risk is not mitigated.
- **Possible** – has happened during the past five years but not in every year OR has a 40 to 60 per cent chance of occurring in the next 24 months if the risk is not mitigated.
- **Likely** – has happened at least once in the past year and in each of the previous five years OR has a 60 to 90 per cent chance of occurring in the next 24 months if the risk is not mitigated.
- **Almost Certain** – has happened several times in the past year and in each of the previous five years OR has a greater than 90 per cent chance of occurring in the next 24 months if the risk is not mitigated.

The consequence definitions applicable to human receivers and various environmental receivers (water, ecological, built environment) are presented in Table 4-2.

Table 4-2 Consequence definitions

Classification	Human Health	Ground/Surface Water	Ecological	Built Environment
Severe	Irreversible damage to human health or death	Substantial pollution of sensitive water resources	Major change to the number of one or more species or ecosystems	Irreparable damage to buildings, structures or the environment
Moderate	Non-permanent effects to humans	Substantial pollution of non-sensitive water resources or small-scale pollution	Change to population densities of non-sensitive species	Damage to sensitive buildings, structures or the environment
Mild	Slight short tern health effects to humans	Slight pollution to non-sensitive water resources	Some changes to population densities but with no negative effects on the function of the ecosystem	Easily repairable effects of damage to buildings or structures.
Negligible	No measurable health effects to humans	Insubstantial pollution to non-sensitive water resources	No major changes to population densities in the environment or in any ecosystem	Very slight non-structural damage or cosmetic harm to buildings or structures.

The overall risk ratings are assessed in accordance with Table 4-3.

Table 4-3 Risk ratings matrix

Consequence	Likelihood				
	Rare	Unlikely	Possible	Likely	Almost Certain
Severe	Low	Moderate to Low	High to Moderate	Very High	Very High
Moderate	Negligible to Low	Low	Moderate	High to Moderate	High
Mild	Negligible	Low	Low	Moderate to Low	Moderate
Negligible	Negligible	Negligible	Negligible to Low	Low	Low

Risk ratings are defined as follows:

- **Negligible** – The presence of the identified source does not give rise to the potential to cause major harm.
- **Low** – It is possible that harm could arise to a designated receiver from an identified source, though this is likely to be mild.
- **Moderate** – It is possible that harm could arise to a specific receiver, but it is unlikely that such harm would be major.
- **High** – A designated receiver is likely to experience major harm from an identified source without remedial action.
- **Very High** – There is a high probability that severe harm could arise to a designated receiver from an identified source without appropriate remedial action.

Assessment of significance

The significance of impacts is determined by the sensitivity of the environment as well as the magnitude of the expected change. Sensitivity of the environment is based on the existing and proposed land use. For example, a low-density residential land use is more sensitive than an industrial/commercial land use. In a residential land use, there is more potential of exposure to COPCs (if present) as soil is likely to be exposed through residential gardening and the vicinity and duration to human receivers. An industrial setting is less sensitive as it would likely have extensive hardstand, limited occupancy times, security and exclusion and other occupational health and safety controls imposed on the industry to manage risks to employees.

The assessment of significance matrix is presented in Table 4-4.

Table 4-4 Assessment of significance

Magnitude of Impact	Sensitivity of Environmental Values		
	High	Moderate	Low
High	Major	High	Moderate
Moderate	High	Moderate	Low
Low	Moderate	Low	Negligible

The *Sensitivity of Environmental Values* evaluation is influenced by the following criteria:

- Condition of the environmental value, ie, how far is it understood to have already been changed from its original natural form or state?
- How unique or rare is the condition or value or its dependant ecological receivers?
- How sensitive are the dependant receivers to changes? Does the project exacerbate contamination risks to human health from potential existing contamination present?
- How do any available site investigation results (if available) compare against the identified soil quality and contamination criteria?
- Does the project interact with soil and contamination that has a detrimental environmental outcome?
- The Magnitude of Impact evaluation is influenced by the following criteria:
    a. If a qualitative assessment has been conducted, how do the results compare to the pre-development conditions?
    b. How do the results compare against the identified soil quality and contamination criteria?
- For quantitative assessments the following is considered
    a. expected duration of impact: temporary vs long-lasting/permanent
    b. expected extent of impact: local vs regional/widespread
    c. estimated degree of change from pre-development conditions.

4.5.3 Impact assessment

The impact assessment incorporated an assessment of significance and risk rating to assess the impacts for construction and operation and develop the mitigation measures to prevent contamination migration or spread.

The proposed activities associated with the amended project were reviewed to identify the activities that have the potential to lead to a disturbance or a change in soils as well as influence contamination conditions. These activities are indicated in Chapter 6.

It is noted that most impacts are expected to occur during construction, associated with the installation of the transmission line structures, access tracks, combined worker accommodation facilities and construction compounds and construction compounds.

4.6 Limitations and uncertainty

This report has been written to inform the Amendment Report regarding the potential for impacts associated with contaminated land and groundwater for the amended project. The methodology of the assessment is consistent with the approach taken in *Technical Report 10 – Phase 1 Contamination Assessment* prepared for the EIS. As such, the limitations and associated uncertainties remain unchanged from those described in *Technical Report 10 – Phase 1 Contamination Assessment* prepared for the EIS.

5 Existing environment

The existing environment of the amended contamination study area is presented in the figures in Attachment A to Attachment K.

5.1 Topography

The topography of the amended contamination study area is widely variable, with elevations ranging from approximately 240 metres above the Australian height datum (mAHD) to 1,214 mAHD. The topography of each applicable amended project element is presented in Table 5-4.

5.2 Soil and geology

Surface outcrops of geological units within the amended contamination study area have been determined from a review of the NSW Seamless Geology dataset (Department of Regional NSW, 2022). The amended contamination study area extends through and across highly variable landscapes and geological history given the scale of the amended project.

According to the NSW Seamless Geology dataset (Department of Regional NSW, 2022) the most common geology type of the proposed new and upgraded access tracks are Igneous felsic intrusive, sedimentary rocks and Igneous silicic to intermediate volcanic. The percentages of access tracks underlain by these geological landscapes (top three geological landscapes only) is presented in Table 5-1. An extract of this map across the amended contamination study area is presented in Attachment B.

Table 5-1 Percentage of geological units

Geological unit	Percentage
Igneous felsic intrusive	32.82
Igneous silicic to intermediate volcanic	17.64
Sedimentary rocks	29.66

The geological units underlying each section of the amended contamination study area is presented in Table 5-4. An extract of this map across the amended contamination study area is presented in Attachment B.

The soil types present within the amended contamination study area are widely variable. The predominant soils underlying the amended contamination study area according to the Australian Soil Classification (CSIRO, 2021) include Kurosols, Dermosols, and Kandosols and Ferrosols. The distribution of these soils is presented in Attachment C, with the specific soil types presented in Table 5-4. The predominant soil types across the amended project are either sand or clay based, or a mixture of the two.

The Australian Soil Resource Information System (CSIRO, 2014) indicates that for the amended contamination study area, there is low or extremely low probability of acid sulfate soils. Acid sulfate soils probability mapping is presented in Attachment D.

The predominate soils underlying the proposed new and upgraded access tracks according to the Australian Soil Classification (DPE, 2021) are presented in Table 5-2 (top three geological landscapes only). The distribution of these soils is presented in Attachment E.

Table 5-2 Australian Soil Classification soil types

ASC Soil type	Percentage
Dermosols	19.41
Kurosols	24.08
Kandosols	12.29

A review of the Hydrogeological Landscapes of NSW and the ACT dataset (DPE, 2022) revealed that the proposed new and upgraded access tracks are predominately located in areas of low – moderate salinity hazard. Salinity risk across the amended contamination study area is presented in Table 5-3 and Attachment F.

Table 5-3 Percentage of salinity hazard

Salinity Risk	Percentage
Very Low	12.03
Low	38.63
Moderate	29.26
High	7.03
Very High	13.05

5.3 Land use / Land zoning

Land use in the amended sections of the project footprint are predominantly Agriculture and Primary Production. A map of land use across the amended contamination study area has been presented in Attachment G, with the specific land zonings presented in Table 5-4.

The amended sections of the project footprint are predominantly zoned RU1 Primary Production and RU3 Forestry. A map of land zoning across the amended contamination study area has been presented in Attachment H, with the specific land zonings presented in Table 5-4.

Table 5-4 Existing environment at the amended project footprint

Amendment	Section of amended project footprint	Topography	Soil and Geology	Land use / Land zoning
Changes to the transmission line corridor	Ashfords Road to Ivydale Road, Gregadoo	Element assessed in the EIS contamination study area, no change as a result of the amended project		
	Tumbarumba Road, Book Book	Element assessed in the EIS contamination study area, no change as a result of the amended project		
	Green Hills State Forest	Topography ranges from approximately 575 mAHD to 1,214 mAHD. There is a general increase in elevation from the northern end in Wondalga to the southern end in Nurenmerenmong.	Predominately underlain by Green Hills Granodiorite (Sthg) (NSW Seamless Geology dataset, Department of Regional NSW, 2022). The predominate soils according to the Australian Soil Classification (CSIRO, 2021), are Dermosols. Salinity hazard ranges from very low to low. Extremely low probability of acid sulfate soils.	Land use is predominately 'Production native forests'. Land zoning is predominately RU3 – Forestry, with small sections of SP2, R5, RU1 and RU4.
	Narrowed the project footprint at Wondalga	Element assessed in the EIS contamination study area, no change as a result of the amended project		
	Snowy Mountains Highway, Gadara	Element assessed in the EIS contamination study area, no change as a result of the amended project		
	Gocup (adjacent Minjary National Park)	Element assessed in the EIS contamination study area, no change as a result of the amended project		
	Brungle Road, Killimicat	Element assessed in the EIS contamination study area, no change as a result of the amended project		
	Gobarralong	Element assessed in the EIS contamination study area, no change as a result of the amended project		
	Bowning	Element assessed in the EIS contamination study area, no change as a result of the amended project		
	Bannister	Element assessed in the EIS contamination study area, no change as a result of the amended project		
Additional telecommunications connections to existing substations	Additional telecommunications connection to existing Gullen Range 330 kV substation	Element assessed in the EIS contamination study area, no change as a result of the amended project		
	Additional telecommunications connection to existing Crookwell 2 330 kV substation	Topography of this telecommunications connection study area ranges from 882 mAHD to 918 mAHD. There is a steady incline in elevation from the substation to the telecommunications connection site to the transmission line.	Predominately underlain by Crookwell Basalt (GEckc) (NSW Seamless Geology dataset, Department of Regional NSW, 2022). The predominate soils according to the Australian Soil Classification (CSIRO, 2021), are Ferrosols. Salinity hazard is low. Extremely low probability of acid sulfate soils.	Land use in this section of the amended contamination study area is predominately 'Grazing modified pastures'. Land zoning in this area is E3 – Environmental Management.

Amendment	Section of amended project footprint	Topography	Soil and Geology	Land use / Land zoning
	Additional telecommunications connection to existing Gadara 132 kV substation	Topography in this section of the amended contamination study area ranges from 309 mAHD to 360 mAHD. There is a gradual decrease from the substation to the telecommunications connection site to the transmission line.	Predominately underlain by Colluvium (Q_c) (NSW Seamless Geology dataset, Department of Regional NSW, 2022). The predominate soils according to the Australian Soil Classification (CSIRO, 2021), are Kurosols. Salinity hazard ranges from low to moderate. Extremely low probability of acid sulfate soils.	Land use in this section of the amended contamination study area is predominately 'Grazing native vegetation' and 'manufacturing and industrial'. Land zoning in this area is RU1 – Primary Production.
	Gadara 132 kV substation	See 'Additional telecommunications connection to existing Gadara 132 kV substation' above		
	Gullen Range 330 kV substation	Element assessed in the EIS contamination study area, no change as a result of the amended project		
	Crookwell 2 330 kV substation	Element assessed in the EIS contamination study area, no change as a result of the amended project		
Changes to ancillary facilities – new combined worker accommodation facilities and construction compounds	Amended Gregadoo Road compound (C06)	Element assessed in the EIS contamination study area, no change as a result of the amended project		
	Tarcutta accommodation facility and compound (AC03)	Topography at the proposed accommodation facility and compound is relatively flat, ranging from approximately 240 mAHD to 257 mAHD.	Predominately underlain by Colluvium (Q_c) (NSW Seamless Geology dataset, Department of Regional NSW, 2022). The predominate soils according to the Australian Soil Classification (CSIRO, 2021), are Kurosols. Salinity hazard is moderate. Extremely low probability of acid sulfate soils	Land use in this section of the amended contamination study area is predominately 'Grazing native vegetation' and 'cropping'. Land zoning in this area is RU1 – Primary Production.
	Ellerslie Road compound (C21)	The amended section was assessed as part of the EIS contamination study area		
	Ardrossan Headquarters Road compound (C17)	Topography at the proposed compound declines from west to east, ranging from approximately 775 mAHD to 812 mAHD.	Predominately underlain by Green Hills Granodiorite (Stgh) (NSW Seamless Geology dataset, Department of Regional NSW, 2022). The predominate soils according to the Australian Soil Classification (CSIRO, 2021), are Dermosols. Salinity hazard is low. Extremely low probability of acid sulfate soils.	Land use in this section of the amended contamination study area is predominately 'Production native forests'. Land zoning in this area is RU3 – Forestry.

Amendment	Section of amended project footprint	Topography	Soil and Geology	Land use / Land zoning
	Snubba Road compound (C18)	Topography at the proposed compound ranges from approximately 1,089 mAHD to 1,109 mAHD.	Predominately underlain by Igneous – felsic intrusive rocks (Sgs) (NSW Seamless Geology dataset, Department of Regional NSW, 2022). The predominate soils according to the Australian Soil Classification (CSIRO, 2021), are Dermosols. Salinity hazard is very low. Extremely low probability of acid sulfate soils.	Land use in this section of the amended contamination study area is predominately 'Production native forests'. Land zoning in this area is RU3 – Forestry.
	Gadara Road compound (C19)	Element assessed in the EIS contamination study area, no change as a result of the amended project		
	Amended Bannaby 500 kV substation compound (C12)	Element assessed in the EIS contamination study area, no change as a result of the amended project		
	Yass accommodation facility and compound (AC05)	Topography at the proposed accommodation facility and compound is relatively flat, ranging from approximately 483 mAHD to 487 mAHD.	Predominately underlain by O'Briens Creek Sandstone Member (Sdoso) and Residual Deposits (Q_r) (NSW Seamless Geology dataset, Department of Regional NSW, 2022). The predominate soils according to the Australian Soil Classification (CSIRO, 2021), are Kandosols. Salinity hazard is very high. Extremely low probability of acid sulfate soils.	Land use in this section of the amended contamination study area is predominately 'Grazing modified pastures. Land zoning in this area is B5 – Business Development.
	Green Hills accommodation facility and compound (AC07)	Topography at the proposed accommodation facility and compound is elevated and relatively flat, ranging from approximately 866 mAHD to 888 mAHD.	Predominately underlain by Green Hills Granodiorite (Sthg) (NSW Seamless Geology dataset, Department of Regional NSW, 2022). The predominate soils according to the Australian Soil Classification (CSIRO, 2021), are Dermosols. Salinity hazard is very low. Extremely low probability of acid sulfate soils.	Land use in this section of the amended contamination study area is predominately 'irrigated perennial horticulture', with smaller areas of 'residential and farm infrastructure', and 'grazing modified pastures'. Land zoning in this area is RU1 – Primary Production.

Amendment	Section of amended project footprint	Topography	Soil and Geology	Land use / Land zoning
	Crookwell accommodation facility and compound (AC06)	Topography at the proposed compound facility is slightly undulated, ranging from approximately 874 mAHD to 893 mAHD.	Predominately underlain by Bumballa Formation (Obeb) and the Abercrombie Formation (Oada) A faulted boundary separates these rock units (NSW Seamless Geology dataset, Department of Regional NSW, 2022). The predominate soils according to the Australian Soil Classification (CSIRO, 2021), are Kurosols. Salinity hazard is high. Low probability of acid sulfate soils.	Land use in this section of the amended contamination study area is 'cropping'. Land zoning in this area is E3 – Environmental management.

5.4 EPA Search

A review of the EPLs issued by the NSW Environment Protection Authority (EPA) under the POEO Act (NSW EPA, 2022b) identified one additional EPL in the amended contamination study area that was not within the EIS contamination study area. The site which is subject to an EPL is in proximity to the Yass accommodation facility and compound (AC05) and is described in Table 5-5.

Table 5-5 EPLs within the amended contamination study area

Licence Number	Licensee	Premises	Status	Scheduled activities	Distance to amended project footprint
1730	Yass Valley Council	Yass Sewage Treatment Plant (STP), Faulder Avenue, Yass, NSW	Issued	Sewage treatment processing by small plants	AC05 is located within 20 m of this site.
3142*	Australian Rail Track Corporation Limited (ARTC)	Australian Rail Track Corporation network	Issued	Railway activities – railway infrastructure operations	The project footprint intersects a railway line north-west of Yass.

Note:

* This EPL covers ARTC operations across NSW and has been referenced in this report based on a submission received from the ARTC on the EIS. This EPL is within the EIS contamination study area and amended contamination study area.

A map of additional EPLs across the amended contamination study area is presented in Attachment I.

5.5 National Waste Management

A search of the Waste Management Facilities Database (Orr and Gordon, 2017) identified one additional waste site within the amended contamination study area which is summarised in Table 5-6.

Table 5-6 National Waste Management sites within the amended contamination study area

Name	Class	Address	Distance from amended project footprint
Yass Transfer Station	Transfer Station	32 Faulder Avenue, Yass.	Yass accommodation facility and compound (AC05) is located directly adjacent to this site.

Three of the four waste sites identified in the EIS are no longer relevant to the amended project as they do not fall within the amended contamination study area. These sites are listed below.

- Bellette Landfill
- Tumut Resource Recovery Centre
- Batlow Landfill.

5.6 Hydrogeology

As presented in *Technical Report 10 – Phase 1 Contamination Assessment* prepared for the EIS, information regarding hydrological areas is based on regions greater than the amended contamination study area and provide a regional assessment of quality. As such, the findings from the EIS remain unchanged. The amended project footprint, however, does intercept various Water Resource Plans and Water Sharing Plans, providing valuable insight into groundwater occurrence, usage and regulation across the amended project footprint. Refer to *Technical Report 12 - Surface Water and Groundwater Impact Assessment Addendum* for additional information regarding hydrogeology in the region.

5.7 Naturally occurring asbestos

The NSW Government's online environmental data portal has mapped areas within NSW where naturally occurring asbestos (NOA) has been found or has the potential to be found within 10 metres (DRNSW, 2015). Point data information indicates areas where NOA has been found, and the polygon data is based on geological mapping and the potential for NOA to be found.

According to this portal, the risk of encountering NOA in the amended contamination study area during construction of the amended project is predominantly unchanged compared to the risk of NOA assessed in *Technical Report 10 - Phase 1 Contamination Assessment* prepared for the EIS. There is however a reduced risk in the Green Hills State Forest as the amended project footprint has shifted from an area of medium NOA potential to no mapped NOA potential.

There are areas within the amended contamination study area where controlled blasting is proposed. Controlled blasting would be used for some construction activities where hard rock has been identified. Several types of controlled blasting may occur including controlled bench blasting or a controlled single blast (or single consecutive series of controlled blasts) for each tower pad. The techniques used will be based on engineering design and where hard rock has been identified from geotechnical investigations. In some of the proposed controlled blasting areas, a medium to high potential for NOA is mapped. This includes controlled blasting areas 3, 5 and 8. Regions mapped as low, medium and high potential regions for NOA1 and potential controlled blasting areas are presented in Attachment J.

5.8 Per- and poly-fluorinate alkyl substances

There are no changes to the proximity of the amended contamination study area to the Per- and poly-fluorinated alkyl substances (PFAS) sites described in the EIS. Refer to the *Technical Report 10 - Phase 1 Contamination Assessment* prepared for the EIS for additional information regarding PFAS risk

5.9 Historical aerial photography review

A review of historical aerial photographs of representative portions of the amended contamination study area was conducted by viewing approximately one aerial photograph per decade where available. This review was focussed on the amended project footprint areas that fall outside the EIS contamination study area and areas that are typically associated with revised and new construction compounds and new combined worker accommodation facilities and construction compounds.

The review indicated that the amended contamination study area has remained largely rural since the 1980s with minimal large-scale filling or earthworks identified.

Key points of interest and potentially contaminating activities identified for the amended project include:

- Many of the areas within the amended project footprint are areas of rural, vacant land that have largely remained unchanged over the years.
- All amended sections within the Green Hills State Forest have predominantly been forestry land since the 1960s.
- Agricultural pastures have been observed at the Green Hills accommodation facility and compound (AC07) from the 1960s to present.
- Minor earthworks were observed between the 1960s and 1990s at the Amended Bannaby 500 kV substation compound (C12).

[1] https://geo.seed.nsw.gov.au/

5.10 Field surveys

Field surveys of selected areas within the amended contamination study area, as identified in Section 4.4, were undertaken from 16 October 2023 to 20 October 2023 to assess the potential risk of subsurface contamination. The main observations from the field survey findings are presented in Table 5-7.

Table 5-7 Field survey summary

Amended project infrastructure/ survey location	Field survey notes and observed ground conditions
Amended Gregadoo Road compound (C06)	■ Current land use is agricultural, and the land is currently cropped ■ Earthworks for the construction of a farm dam ■ High voltage transmission powerlines run through the property. Earthworks would have been undertaken at the base of the towers during construction ■ Adjacent properties are also cleared farmland ■ O'Briens Creek is located approximately 800 m east of the proposed construction compound ■ Topography is gently undulating.
Tarcutta accommodation facility and compound (AC03)	■ Current land use is agricultural (cattle grazing) ■ Earthworks for the construction of a farm dam ■ A distribution line running east-west through the combined worker accommodation facility and construction compound was observed. Earthworks would have been undertaken during construction ■ Residential properties and agricultural sheds are located to the east of the proposed combined worker accommodation facility and construction compound ■ An unnamed creek is located approximately 200 m to the north of the proposed combined worker accommodation facility and construction compound ■ Topography is gently undulating.
Ellerslie Road compound (C21)	■ Current land use is agricultural (cattle grazing) ■ Earthworks for the construction of farm dam to the east of the proposed construction compound, and during construction of current dwelling (brick) and shed ■ Surface water (ie creeks) is located to the north and east of the site. Moderate erosion is visible ■ High voltage transmission lines run to the north of the site. Earthworks would have been undertaken at the base of the towers during construction ■ Surrounding land is used for cattle grazing purposes.

Amended project infrastructure/ survey location	Field survey notes and observed ground conditions
Ardrossan Headquarters Road compound (C17)	■ There is currently a Forestry headquarters/depot at the site of the proposed construction compound ■ There is currently a depot containing several structures surrounded by a cleared grassed area, with a paved roadway into the site (Back Camp Road) ■ The proposed construction compound site is within a Forestry Corporation of NSW area (FCNSW), surrounded by pine plantations in different stages of growth ■ Timber stockpiles were visible ■ Helicopter landing pad located in the southern portion of the proposed construction compound site ■ Two shipping containers located in southern portion of the proposed construction compound site ■ Fuel tanker parked adjacent to the helicopter pad ■ A site plan of the current depot is available, and refers to several potential sources of contamination including diesel storage, a fire tanker shed, chemical shed, a wash bay and petrol storage ■ Topography at the proposed construction compound site is undulating hills.
Snubba Road compound (C18)	■ Current land use is cleared forestry land, located within a FCNSW area ■ The proposed construction compound is located at the junction of several roads including Kopsens Road, Bago Forest Way and Settlement Track ■ Low amounts of erosion were visible from the roadway ■ Stockpiles of organic forestry waste were observed.
Gadara Road compound (C19)	■ The construction compound site is in cleared agricultural land. No animals were observed in the paddock at the time of inspection ■ The proposed construction compound is adjacent to Gadara Road ■ A farm dam is located to the north-west of site, beyond the site boundaries, with the potential for historical earthworks activities ■ Surface water, ie Sandy Creek, is located approx. 300 m south-west of the proposed construction compound ■ Visy pulp and paper factory is visible from site, located approximately 2 kilometres north-west of the site ■ The proposed construction compound site is sloped, falling towards Gadara Road, surrounded by undulating hills ■ High pressure gas main signage observed on southern side of Gadara Road.
Amended Bannaby 500 kV substation compound (C12)	■ The proposed construction compound site is an existing 500/330 kV substation and is surrounded by undulating hills used for cattle grazing ■ Overhead powerlines and transmission line structures run in and out of the proposed construction compound ■ Earthworks would have taken place during construction of the substation and transmission towers; several farm dams are also present in the surrounding area.

Amended project infrastructure/ survey location	Field survey notes and observed ground conditions
Yass accommodation facility and compound (AC05)	■ The proposed combined worker accommodation facility and construction compound site was viewed from the roadside, as no access was available at the time of inspection ■ A truck laydown area, machinery compound and cleared agricultural grazing land were observed ■ Intermediate bulk containers were observed, though what liquids they contain(ed) and if they were full was not able to be determined ■ Waste stockpiles were identified in the southern portion of the property, appearing to mostly comprise treated timber and bricks ■ Miscellaneous construction and demolition waste was present, appearing to mostly comprise treated timber and bricks ■ Combined worker accommodation facility and construction compound site is used for vehicle storage ■ Industrial building is located on the southern portion of the property ■ Yass Transfer Station is located adjacent (east) to the proposed combined worker accommodation facility and construction compound ■ Wastewater facility is located to the south-west of the proposed combined worker accommodation facility and construction compound ■ Bango Creek runs adjacent to the western and northern boundary of the proposed combined worker accommodation facility and construction.
Green Hills accommodation facility and compound (AC07)	■ A large portion of the proposed combined worker accommodation facility and construction compound is currently an apple orchard ■ A fertiliser storage tank was observed on the access road to current residence ■ Adjacent land uses are forestry and agriculture ■ A gravel road leads from Lower Bago Road to the residential property ■ The local topography is undulating hills.
Crookwell accommodation facility and compound (AC06)	■ The proposed combined worker accommodation facility and construction compound was not able to be inspected due to ongoing maintenance and construction works at the Crookwell Wind Farm at the time of inspection ■ The proposed combined worker accommodation facility and construction compound was observed from approximately 2-3 kilometres away, outside the boundaries of the wind farm ■ The proposed combined worker accommodation facility and construction compound consists of several 600 kW wind turbines, with earthworks likely during the construction of the turbines and surrounding facilities.

5.11 Areas of environmental concern

Several AECs were identified in the amended contamination study area from both the desktop assessment and field survey. These AECs related to activities/observations such as existing infrastructure, potentially dumped wastes, stored materials, landfilling activities, stockpiled material, NOAs, and areas with potential historical uncontrolled filling or historical ground disturbance.

These AECs were identified as having the potential to cause harm to human health or ecological receivers during construction (land disturbance) and operation of the amended project, without mitigation measures in place.

Identified AECs and the potential human health and ecological hazards for the amended project are summarised in Table 5-8 (in accordance with the risk rating matrix described in Section 4.5.2) and presented in Attachment K. These AECs are related to the amended project and are in addition to the AECs identified in the EIS.

Table 5-8 Identified areas of environmental concern within the amended contamination study area.

AECs	Rationale for concern	Confirmed location (based on aerial imagery)	Sensitive receivers	Potential contaminants of concern	Risk rating
Existing transmission line infrastructure (amended sections only)	Onsite spills and leaks from maintenance activities, asbestos and/or lead paints on transmission line structures.	Portions of the amended contamination study area.	■ terrestrial fauna/flora ■ surface water features ■ present and future site users ■ construction and maintenance workers.	■ BTEXN ■ TRH ■ asbestos ■ heavy metals.	Low
Farm dams (farm dams in amended sections only)	Areas of potential contaminant sediment build-up (sink).	Multiple locations within the amended contamination study area.	■ terrestrial fauna/flora ■ surface water features ■ present and future site users ■ construction and maintenance workers.	■ heavy metals ■ Organochlorine pesticides (OCP) ■ Organophosphate pesticides (OPP) ■ elevated nutrient concentrations ■ pathogens (Escherichia coli).	Low
Cleared improved agricultural land, including cropping and irrigated land. (Green Hills corridor amendment)	Historical use of pesticides, herbicides and fertilisers, large scale land clearance and heavy machinery use.	Portions of the amended contamination study area.	■ terrestrial fauna/flora ■ surface water features ■ present and future site users ■ construction and maintenance workers.	■ heavy metals ■ OCP ■ OPP.	Low
Areas with pesticide use, including Hume Forest and FCNSW owned land (amended sections only)	Ongoing use of pesticides, including for pine plantations.	Portions of the amended contamination study area that are within state forests.	■ terrestrial fauna/flora ■ surface water features ■ present and future site users ■ construction and maintenance workers.	■ OCP ■ OPP.	Low
Designated hunting grounds (Green Hills corridor amendment)	Lead bullets used within hunting grounds.	Around 35°47’31.6”S 148°18’45.1”E	■ terrestrial fauna/flora ■ surface water features ■ present and future site users ■ construction and maintenance workers.	■ Lead.	Low

AECs	Rationale for concern	Confirmed location (based on aerial imagery)	Sensitive receivers	Potential contaminants of concern	Risk rating
Areas of disturbed land, fill, stockpiling and dumping (amended compound sites – (C06, AC03, C17, C18, C19, C21, C12, AC05)	Areas with stockpiles, and earthworks.	Portions of the amended contamination study area, including: ■ 35°12'29.6"S 147°23'35.2"E ■ 34°44'03.0"S 149°04'55.5"E ■ 34°41'38.5"S 149°11'02.8"E ■ 34°37'09.2"S 149°25'44.5"E ■ 34°31'54.2"S 149°41'47.1"E ■ 35° 36' 01" S148° 07' 56" E	■ terrestrial fauna/flora ■ surface water features ■ present and future site users ■ construction and maintenance workers.	■ BTEXN ■ TRH ■ Asbestos ■ heavy metals ■ PCBs ■ Polycyclic Aromatic Hydrocarbons (PAH) ■ OCP ■ OPP.	Moderate
Helicopter landing pad and fuel tanker observed during site visit (2023)	Potential fuel spills or leaks from the fuel tanker.	■ 35° 30' 12" S ■ 148° 03' 36.5" E	■ terrestrial fauna/flora ■ surface water features ■ present and future site users ■ construction and maintenance workers.	■ TPH ■ BTEXN ■ PAH ■ heavy metals.	Low
Yass Sewage Treatment Plant	Sewage treatment plants are associated with a range of COPCs include TPH/TRH, BTEX, heavy metals, OCPs, OPPs and pathogens. If managed incorrectly, disturbance of contaminated soil has the potential to result in impacts to human health and/or the environment.	■ 35°31'28.06"S ■ 148°09'10.21"E	■ terrestrial fauna/flora ■ surface water features ■ present and future site users ■ construction and maintenance workers.	■ TPH ■ BTEXN ■ PAH ■ heavy metals.	Moderate
Fertiliser storage tank observed (2023)	Potential for spills or leaks from the Fertiliser storage tank.	■ 35° 32' 06" S ■ 148° 04' 13" E	■ terrestrial fauna/flora ■ surface water features ■ present and future site users ■ construction and maintenance workers.	■ OCP ■ OPPs ■ Nutrients.	Low

AECs	Rationale for concern	Confirmed location (based on aerial imagery)	Sensitive receivers	Potential contaminants of concern	Risk rating
AECs identified in *Technical Report 10 – Phase 1 Contamination Assessment* prepared for the EIS that are no longer relevant					
Bellette Landfill and Tumut Resource Recovery Centre	Operating as a waste transfer station.	Approximately 35°19'37.6"S 148°10'51.8"E	■ terrestrial fauna/flora ■ surface water features ■ present and future site users ■ construction and maintenance workers.	■ BTEXN ■ TRH ■ asbestos ■ heavy metals ■ PCBs ■ PAH ■ OCP ■ OPP ■ PFAS.	Moderate
Batlow Landfill	Historical landfill activities at the Batlow site.	35°32'01.6"S 148°09'37.2"E.	■ terrestrial fauna/flora ■ surface water features ■ present and future site users ■ construction and maintenance workers.	■ BTEXN ■ TRH ■ asbestos ■ heavy metals ■ PCBs ■ PAH ■ OCP ■ OPP ■ PFAS.	Moderate

6 Assessment of impacts

6.1 Construction impacts

6.1.1 Potential to encounter contamination

Several AECs, which could potentially be encountered during construction, have been identified in Table 5-8 and presented in Attachment K. During construction of the amended project there is the potential to:

- Disturb existing contamination via construction activities or generate erosion of soils via removal of vegetation
- Mobilise contaminants and sediments which may impact adjacent soils, surface water and groundwater
- Increase the migration of contaminants into surrounding areas via leaching, overland flow and/or subsurface flow (water and/or vapour) or dust, which could potentially impact major receiving environments including the Tumut River, Murrumbidgee River and Wollondilly River, and other minor receiving environments (streams and minor waterways) present within the amended contamination study area
- Impact sensitive receivers such as flora and fauna through the mobilisation and migration of contaminants thereby degrading existing environmental conditions
- Increase the risk of exposure to contaminants, either through direct or indirect exposure, to site workers, landowners, as well as the local community.

Depending on the extent of contamination and work undertaken, the risk of disturbing or encountering contaminated material during construction varies. Hence, based on the information available, a risk rating has been assigned to each land use activity based on the potential for contamination to be caused or soil impacts. The risk rating criteria is based on those outlined in Section 4.5.2. This is summarised and presented in Table 6-1.

Table 6-1 Preliminary contamination risk rating (amended contamination study area only)

Area of interest	Construction activity	Potential construction impact	Likelihood for COPCs to be present and encountered	Complete source, pathway, receiver linkage?	Preliminary risk evaluation
Existing transmission line infrastructure (amended sections only)	Excavation activities, vegetation clearance, stripping and grubbing, stock piling, utility work and vehicle movement.	Common COPCs associated with existing transmission line infrastructure include pesticides, herbicides, and hydrocarbons, which are typically associated with maintenance activities within the easement. In addition, asbestos containing materials (ACMs) and lead containing paint may be present on existing infrastructure. If managed incorrectly, disturbance of contaminated soil has the potential to result in the impacts listed in Section 6.1, that could impact human health and/or the environment.	Low potential for COPCs to be present and encountered.	Linkage complete during construction (without appropriate controls being implemented).	Low
Near farm dams and bottom sediments within dams (Existing or historical and infilled) (farm dams within amended sections only)	Excavation activities.	Historical farm dams which are now filled could contain uncontrolled fill and residual sediment at the bottom of the dam. Common COPCs associated with farm dam sediments include heavy metals, nutrients, herbicides and pesticides. If managed incorrectly, disturbance of sediments within a farm dam has the potential to result in the impacts listed in Section 6.1, that could impact human health and/or the environment.	Low to moderate potential for accumulation of contaminants within dam sediments.	Linkage complete during construction (without appropriate controls being implemented).	Low
	Pile construction and de-watering.	If managed incorrectly, de-watering during construction could lead to receivers encountering potentially contaminated dam water, and potentially draw-down surface water from the farm dam. Both activities could potentially impact human health and/or the environment through: ■ direct contact by construction workers ■ incidental discharge into the receiving environment.	Dams are not likely to be disturbed during construction.	It is not known whether the dam surface water has a hydraulic connection with groundwater.	Low
Cleared improved agricultural land (including cropping and irrigated land) (Green Hills corridor amendment)	Excavation activities, vegetation clearance, stripping and grubbing, stock piling, utility work and vehicle movement.	Common COPCs associated with agricultural activities include pesticides, herbicides, nutrients and heavy metals. If managed incorrectly, disturbance of contaminated soil from agricultural activities has the potential to result in the impacts listed in Section 6.1, that could impact human health and/or the environment.	Low potential for agricultural COPCs to be present and encountered.	Linkage complete during construction (without appropriate controls being implemented).	Low

Area of interest	Construction activity	Potential construction impact	Likelihood for COPCs to be present and encountered	Complete source, pathway, receiver linkage?	Preliminary risk evaluation
	Pile construction and de-watering.	Common COPCs associated with agricultural activity include pesticides, herbicides, nutrients and heavy metals. If managed incorrectly, de-watering during construction could potentially encounter contaminated groundwater, which could potentially result in the impacts listed in Section 6.1 for human health and/or the environment.	Anticipated groundwater depth to be > 5 mbgl. Low potential for agricultural COPCs to be present and encountered due to low mobility and surface of near surface usage.	Linkage complete during construction (without appropriate controls being implemented).	Low
Areas with pesticide use	Excavation activities, vegetation clearance, stripping and grubbing, stock piling, utility work and vehicle movement.	Common COPCs associated with pesticide use includes OCPs and OPPs. If managed incorrectly, disturbance of contaminated soil has the potential to result in the impacts listed in Section 6.1, that could impact human health and/or the environment.	Low potential for OCPs and OPPs to be present and encountered.	Linkage complete during construction (without appropriate controls being implemented).	Low
Designated hunting ground (Green Hills corridor amendment)	Excavation activities, vegetation clearance, stripping and grubbing, stock piling, utility work and vehicle movement.	Common COPCs associated with designated hunting ground includes lead from lead bullet use. If managed incorrectly, disturbance of contaminated soil has the potential to result in the impacts listed in Section 6.1, that could impact human health and/or the environment.	Low potential for lead to be present and encountered.	Linkage complete during construction (without appropriate controls being implemented).	Low
Areas of earthworks and, stockpiling and dumping as identified in 1, Attachment K (amended compound sites – (C06, AC03, C17, C18, C19, C21, C12, AC05)	Excavation activities, vegetation clearance, stripping and grubbing, stock piling, utility work and vehicle movement.	Fill material and illegal dumping can contain a range of COPCs, including asbestos, heavy metals, pesticides, herbicides, PCBs and hydrocarbons. If managed incorrectly, disturbance of contaminated soil has the potential to result in the impacts listed in Section 6.1, that could impact human health and/or the environment.	Moderate potential for COPCs to be present. Cars, drums containing chemicals were identified in the field survey.	Linkage complete during construction (without appropriate controls being implemented).	Moderate
	Pile construction and de-watering.	Fill material and dumping can contain a range of COPCs, including asbestos, heavy metals, pesticides, herbicides, PCBs and hydrocarbons. If managed incorrectly, de-watering during construction could potentially encounter contaminated groundwater, which could potentially result in the impacts listed in Section 6.1 for human health and/or the environment.	Anticipated groundwater depth to be > 5 mbgl. Low risk of COPCs to be present and encountered.	Linkage complete during construction (without appropriate controls being implemented).	Low

Area of interest	Construction activity	Potential construction impact	Likelihood for COPCs to be present and encountered	Complete source, pathway, receiver linkage?	Preliminary risk evaluation
	Pile construction and de-watering.	Landfill and waste transfer stations can contain a range of COPCs, including asbestos, heavy metals, pesticides, herbicides, PCBs and hydrocarbons. If managed incorrectly, de-watering during construction could potentially encounter contaminated groundwater, which could potentially result in the impacts listed in Section 6.1 for human health and/or the environment.	Anticipated groundwater depth to be > 5 mbgl. Low COPCs to be present and encountered.	Linkage complete during construction (without appropriate controls being implemented).	Low
Areas with potential for Naturally Occurring Asbestos (NOA)	Controlled blasting.	If managed incorrectly, blasting could result in the disturbance of NOA in rock, weathered rock and surrounding soils. This has the potential to result in the following situations that could impact human health: ■ direct contact and inhalation by construction workers, current and future land users, and future maintenance workers ■ risk of dust exposure to construction workers, current and future land users, and future maintenance workers.	Moderate potential for COPCs to be encountered during controlled blasting activities. Some areas where controlled blasting may be required are in areas ranging from low to high potential of encountering naturally occurring asbestos. This data is not based on findings of NOA, rather the likelihood of NOA based on geological mapping.	Linkage complete during construction (without appropriate controls being implemented).	Moderate (localised)
Storage of fuel and chemicals at various locations	Excavation activities, vegetation clearance, stripping and grubbing, stock piling, utility work and vehicle movement.	Fuel and chemical storage tanks have the potential to leak or spill. This would likely result in contaminated material leaching into the soil, surface water and/or groundwater. If managed incorrectly, disturbance of contaminated soil and surface water has the potential to result in the impacts listed in Section 6.1, that could impact human health and/or the environment.	Although possible, the likelihood of leaks or spills from storage tanks is considered to be low. As such, there is a low potential for COPCs to be present and encountered.	Linkage incomplete until there is evidence to suggest chemical storage spills have occurred.	Low

Area of interest	Construction activity	Potential construction impact	Likelihood for COPCs to be present and encountered	Complete source, pathway, receiver linkage?	Preliminary risk evaluation
Yass Sewage Treatment Plant	Excavation activities, vegetation clearance, stripping and grubbing, stock piling, utility work and vehicle movement in proximity to the sewage treatment plant.	Sewage treatment plants are associated with a range of COPCs include TPH/TRH, BTEX, heavy metals, OCPs, OPPs and pathogens. If managed incorrectly, disturbance of contaminated soil has the potential to result in the impacts listed in Section 6.1, that could impact human health and/or the environment.	There is a moderate potential of leaching contaminants from sewage treatment plants. There is a moderate potential for COPCs to be encountered during construction.	Linkage complete during construction (without appropriate controls being implemented).	Moderate (localised)

6.1.2 Potential impacts of contamination on the amended project

Soil contamination

The impacts of soil contamination during construction largely remain unchanged from those outlined in *Technical Report 10 – Phase 1 Contamination Assessment* prepared for the EIS.
Further construction planning has confirmed the need for controlled blasting in areas along the transmission line corridor. Controlled blasting would be used for some construction activities where hard rock has been identified. In some of the proposed controlled blasting areas, a medium to high potential for NOA is mapped. These include controlled blasting areas 3, 5 and 8. The location of these controlled blasting areas and NOA potential is presented in Attachment J.

To appropriately assess the impacts of contamination on the amended project a qualitative contamination assessment has been undertaken in accordance with guidelines made or approved under the *Contaminated Land Management Act 1997* (CLM Act).

A qualitative risk ranking was undertaken and is presented in Table 6-1.

Most of the AECs were identified in *Technical Report 10 – Phase 1 Contamination Assessment* prepared for the EIS and remain unchanged. There were some additional AECs identified due to the amended project. Most AECs were evaluated as having low risk rankings; however, several areas were identified as having a moderate risk ranking due to historical and present-day land use and activities. The areas with a moderate risk ranking include Yass Sewage Treatment Plant and areas of disturbed land, uncontrolled fill, waste stockpiling and potential dumping. The locations of these areas are presented in Attachment K.

Unexpected contamination conditions may be encountered due to previously unknown heterogeneities in the subsurface, soil contamination not previously identified or changes in the amended project scope. The potential risk associated with unexpected contamination finds has not been assessed as this would be managed in accordance with an Unexpected Contamination Finds Protocol during construction.

The risk of encountering contaminated soil would be minimised through the implementation of mitigation measures detailed in Chapter 7.

Groundwater contamination

The risk of groundwater contamination on the amended project are unchanged from the groundwater contamination risk outlined in *Technical Report 10 – Phase 1 Contamination Assessment* prepared for the EIS. Based on the potential to encounter contamination in AECs during construction (refer to Table 6-1), there is a low risk of groundwater contamination from ground disturbance.

6.1.3 Potential impacts of the amended project on contamination

Construction activities have the potential to introduce contamination to the environment within the amended project footprint. These potential impacts remain unchanged from those described in *Technical Report 10 – Phase 1 Contamination Assessment* prepared for the EIS.

Potential impacts would be minimised through the implementation of mitigation measures provided in Chapter 7.

6.2 Operational impacts

During operation, there would be minimal soil disturbance associated with general maintenance activities. As such, the operation of the amended project is unlikely to result in exposure of human and environmental receivers to existing potentially contaminated soil or groundwater.

If residual contamination is identified during construction and is not sufficiently remediated or managed, it could have an impact during operation of the amended project. The impact is likely to be localised.

Refer to *Technical Report 10 – Phase 1 Contamination Assessment* prepared for the EIS for further information regarding specific soil and groundwater contamination risks during operation.

6.3 Cumulative impacts

Since the public exhibition of the EIS, an updated cumulative impact search has been undertaken. This updated search has identified the following two proposed projects that had not been considered in Chapter 25 (Cumulative impacts) of the EIS:

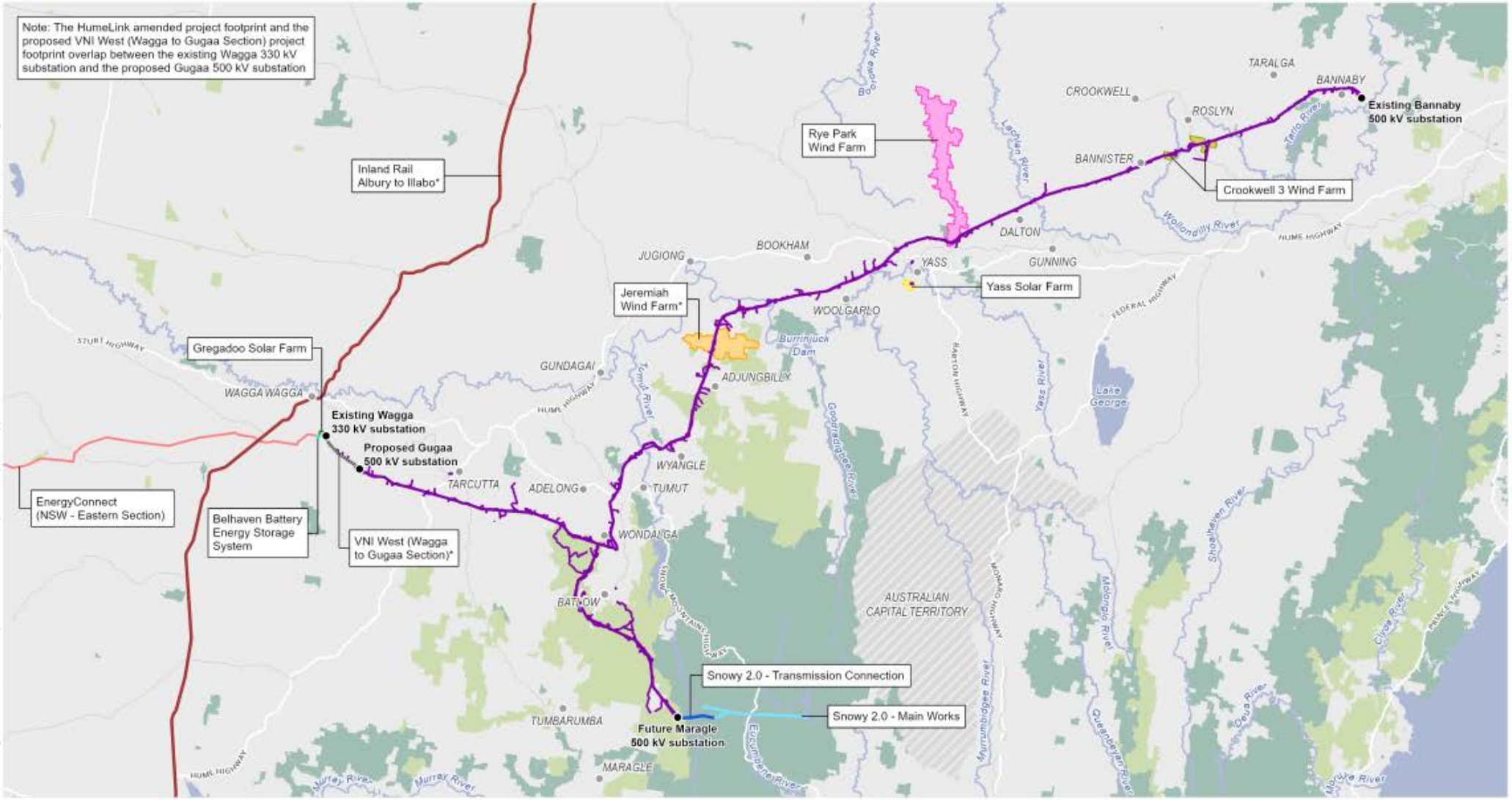
- Belhaven Battery Energy Storage System
- Yass Solar Farm.

Table 6-2 presents the cumulative impacts of the amended project for these two newly identified proposed projects.

Table 6-2 Summary of cumulative impacts identified

Project	Details	Status	Distance and Interface	Cumulative Impacts
Belhaven Battery Energy Storage System	Construction and operation of a 400 MW / 800 MWh Battery Energy Storage System including transmission connection and associated infrastructure.	EIS being prepared SEARs issued on 18/05/2023	The main site is located about 1.5 km west of the existing Wagga 330 kV substation, but a connection from BESS to the substation (most likely underground) is proposed. Based on publicly available information there are likely to be overlapping construction programs.	The Belhaven Battery Energy Storage System Scoping Report prepared by Ramboll in 2023, identified potential impacts associated with the project. These include, the disturbance and compaction of soils and sediments, as well as the disturbance of unknown contaminated areas. Considering the distance of the Belhaven Battery Energy Storage System from the amended project, the level of impact expected during the construction phase is low. As a result, the cumulative risk posed by this project is considered to be negligible.
Yass Solar Farm	The construction, operation and decommissioning of a 100 MW solar photovoltaic energy generating facility with an associated battery energy storage system.	EIS being prepared SEARs issued on 22/12/2023	The site surrounds the Yass substation, and based on publicly available information, there are likely to be overlapping construction programs.	The Yass Solar Farm Scoping Report prepared by Ramboll in 2023, identified potential impacts associated with the project. These include, the disturbance and compaction of soils and sediments, as well as disturbance of unknown contaminated areas. Given the proximity of the Yass Solar Farm to the amended project and the likelihood of impacts, cumulative impacts are expected to be limited. The establishment and use of the Yass combined worker accommodation facility and construction compound (AC05) and Yass substation compound (C10) in Yass is a potential cumulative impact that may be encountered during construction. Overall, the cumulative risk from this project is considered to be low.

The location of projects for which cumulative impacts were considered relative to the amended project is set out in Figure 6-1.



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

Relevant future projects

- Belhaven Battery Energy Storage System
- 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
- VNI West (Wagga to Gugga Section)*
- Yass Solar Farm

*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 **Soil and Contamination**

FIGURE 6-1: Relevant future projects

7 Management of impacts

The approach to management of impacts during both construction and operation of the amended project is consistent with what was included in *Technical Report 10 – Phase 1 Contamination Assessment* prepared for the EIS, apart from a revised mitigation measures related to NOA. Table 7-1 provides a summary of any additional or revised mitigation measures that would be implemented for the amended project.

Any new or revised mitigation measures are marked in **bold** and any mitigation measures that are no longer relevant are ~~struck out~~.

Table 7-1 Revised mitigation measures

Impact	Mitigation measures	Timing	Relevant location
SC5: Naturally occurring asbestos	**Detailed design will consider the risk of encountering naturally occurring asbestos (NOA) within the project footprint. Consideration may include movement of footings to areas with less risk of NOA, footing design changes or minimising rock blasting and ripping where practicable.** An Asbestos Management Plan will be prepared in accordance with the NSW Government Code of Practice How to manage and control asbestos in the workplace (SafeWork, 2020). The Asbestos Management Plan will include the following: ■ management or isolation of areas mapped as medium to high risk of NOA, where direct disturbance of NOA is confirmed to be required for project construction works ■ placement of suitable signage around the work areas ■ list of appropriate personal protective equipment, including Respiratory Protective Equipment ■ implementation of dust suppression controls including wetting surfaces, covering disturbed surfaces and the use of sealed air-conditioned vehicles to minimise potential asbestos impacts to workers ■ decontamination of the workers' coveralls, personal protective equipment, equipment and work site ■ procedures for the disposal of NOA material or waste, if required ■ implementation of air monitoring using pumps and sample filter grid cowls for asbestos fibres and dusts if it is suspected that exposure to NOA dust during work might exceed safe levels of airborne asbestos. The air monitoring pumps, and reporting must be undertaken by a licensed asbestos assessor.	Detailed design and construction	All locations

8 Conclusion

This report assesses the impacts of potential contamination and soil disturbance during construction and operation of the amended project. The assessment has included a desktop review of available information and public databases, a field survey, and consolidation and interpretation of the data to identify potential AECs within the amended contamination study area and recommendations for mitigation measures relating to soil and contamination.

Based on the information reviewed and assessed, the amended contamination study area is not affected by broad-scale contamination, and the risk of soil and groundwater contamination is generally low. Most of the amended contamination study area comprises farmlands, forestry or native vegetation with minimal areas of potential soil contamination identified. Potential groundwater contamination is also considered low, given the absence of groundwater contamination sources and minimal interaction of the amended project with groundwater.

Potential contamination sources and AECs in the amended contamination study area include farmlands and built-up areas, existing transmission infrastructure, cleared agricultural land, farm dams, waste management centres, areas of localised disturbed land, uncontrolled fill, waste stockpiling and dumping as described in *Technical Report 10 - Phase 1 Contamination Assessment* prepared for the EIS. Due to the design changes, there is a sewage pumping station that has been identified as an additional potential source of contamination based on the amended contamination study area. Most AECs have been assessed to pose a low risk during construction and operation, with land uses including sewage treatment plants, and areas of uncontrolled fill assigned a moderate risk rating.

Bellette Landfill, Tumut Resource Recovery Centre and Batlow Landfill were identified as AECs with a moderate risk rating in *Technical Report 10 - Phase 1 Contamination Assessment* prepared for the EIS. Due to the changes to the design, these sites are no longer relevant to the amended project.

The risk of encountering dryland salinity and acid sulfate soils remains unchanged from the risks identified in *Technical Report 10 - Phase 1 Contamination Assessment* prepared for the EIS.

There is an increase in the risk of exposure to NOA due to proposed controlled blasting in potential controlled blasting areas 3, 5 and 8, which are in areas of medium to high potential for NOA.

The impacts of soil contamination on the amended project, and groundwater contamination during construction of the amended project are unchanged. The construction activities remain largely unchanged from what was originally proposed, as such the impacts of the amended project on contamination are the same as identified in *Technical Report 10 - Phase 1 Contamination Assessment* prepared for the EIS.

The amended project's impact on soil and contamination would be avoided or minimised through the implementation of mitigation measures. Additional contaminated land investigations following detailed design would be undertaken to target proposed ground disturbance within AECs with moderate risk identified in this report.

Further contamination assessment, such as detailed site investigations (DSIs), would target locations identified as moderate risk AECs where ground disturbance is expected to occur. The DSI must be tailored to the proposed area of ground disturbance and be undertaken in accordance with the assessment of site contamination NEPM 2013 and guidelines endorsed by the NSW EPA. It is not considered necessary to undertake DSI work within identified low risk AECs or broad scale sampling programs within low-risk land uses of the amended contamination study area such as forestry, national parks and agricultural lands with no or minimal structures or uncontrolled filling.

Should unexpected contamination be identified during construction, appropriate management and remediation options would need to be identified through a project specific Unexpected Contamination Find Protocol within the Construction Environmental Management Plan (CEMP). The mitigation measures relevant to construction detailed in this report would be included in the project CEMP. With the implementation of these measures, the amended project's impact on soil and contamination is expected to be low.

9 References

Acid Sulfate Soil Management Advisory Committee (1998), *Acid Sulfate Soil Manual.*

Acid Sulfate Soils Management Advisory Committee (1998), *Acid Sulfate Soils Assessment Guidelines.*

Australian Government (2018), *National Water Quality Management Strategy.*

Coffey & Hollingsworth Consulting Engineers (1969), *The Electrical Commission of NSW, Wagga, 330 kV Substation Site Investigation.*

CSIRO (2009), *Australian Soil and Land Survey Handbook.*

CSIRO (2014) *Australian Soil Resource Information System,* Accessed from: **https://www.asris.csiro.au/**.

CSIRO (2021), *The Australian Soil Classification.* 3rd ed. Melbourne: CSIRO Publishing.

DECC (2008), *Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom 2004) and Volume 2 (A. Installation of Services; B. Waste Landfills; C. Unsealed Roads; D. Main Roads; E. Mines and Quarries).*

Department of Defence (2022), *Where is Unexploded Ordnance (UXO)?* Accessed from: **https://www.whereisuxo.org.au/**.

Department of Environment and Climate Change (2008a) *Managing Urban Stormwater: Soils and construction - Volume 2A Installation of services*. Available from: **https://www.environment.nsw.gov.au/research-and-publications/publications-search/managing-urban-stormwater-soils-and-construction-volume-2a-installation-of-services**

Department of Environment and Climate Change (2008b) *Managing Urban Stormwater: Soils and Construction – Volume 2C Unsealed Roads*. Available at: **https://www.environment.nsw.gov.au/research-and-publications/publications-search/managing-urban-stormwater-soils-and-construction-volume-1-4th-editon**.

Department of Regional NSW (2022), *NSW Seamless Geology.* Accessed from: https://data.nsw.gov.au/data/organization/about/department-of-regional-new-south-wales.

DLWC (1998), *Guidelines for the Use of Acid Sulfate Soils Risk Maps.*

DLWC (2000), *Soil and Landscape Issues in Environment Impact Assessment.*

DLWC (2002b), *Sites investigations for Urban Salinity.*

DPE (2022), *eSPADE 2.2.* Accessed from: https://www.environment.nsw.gov.au/eSpade2Webapp/#

DPE (2022), *Hydrogeological Landscapes of New South Wales and the Australian Capital Territory.* Accessed from: https://datasets.seed.nsw.gov.au/dataset/hydrogeological-landscapes-nsw-act

DPE (2022), *Cattle dip site locator.*

DPI (2014), *Salinity Training Manual.*

DPIE (2016), *Hydrogeological Landscapes of NSW and ACT dataset.*

DPIE (2017), *NSW Landuse 2013.*

DPIE (2022), *Cumulative Impact Assessment Guidelines for State Significant Projects.*

DRNSW (2015), *Naturally Occurring Asbestos in NSW.*

HACA (2020), *Naturally occurring asbestos.*

Landcom (2004) *Managing Urban Stormwater: Soils and construction - Volume 1*. Available from: **https://www.environment.nsw.gov.au/research-and-publications/publications-search/managing-urban-stormwater-soils-and-construction-volume-1-4th-editon**

NEPM (2013), *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013).*

NSW DECC (2008), *Book 4 Dryland Salinity: Productive use of Saline Land and Water*

NSW EPA (2007), *Guidelines for the Assessment and Management of Groundwater Contamination*

NSW EPA (2020), *Guidelines for the Assessment and Management of Sites Impacted by Hazardous Ground Gases*

NSW EPA (2014), *Waste Classification Guidelines - Part 1 to Part 4 and Addendum (2016)*

NSW EPA (2015), *Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997*

NSW EPA (2017a), *Guidelines for the NSW Site Auditor Scheme (Third Edition)*

NSW EPA (2017b), *Unlicensed premises regulated by the EPA.*

NSW EPA (2020a), *Sampling Design Guidelines for Contaminated Land*
NSW EPA (2020b), *Guidelines for Consultants Reporting on Contaminated Land*

NSW EPA (2021a), *Former gasworks sites.*

NSW EPA (2021b), *The NSW Government PFAS Investigation Program*

NSW EPA (2022a), *List of notified sites.*

NSW EPA (2022b), *Public registers*.

NSW EPA (2022a), *Contaminated Land Management Act 1997 No 140 (CLM Act)*

NSW EPA (2022b), *Protection of the Environment Operations Act 1997 No 156*

NSW Government (2022b), *Historical Imagery Viewer.*

NSW OEH (2013), *NSW Landuse*

Orr, K. & Gordon, D. (2017). *Waste Management Facilities.*

Queensland Department of Natural Resources, Mines and Energy (2004), *Acid Sulfate Soils Laboratory Methods Guidelines*

Attachments

Attachment A
Amended sections of the project

C:\Users\Virgil.Robinson\Aurecon Group\507179 - HumeLink Project Development Suppor - EIS\ArcPro\507179_HumeLink_SWGW_.aprx\05-03-24

Amended project footprint

EIS project footprint

Existing Transgrid transmission line

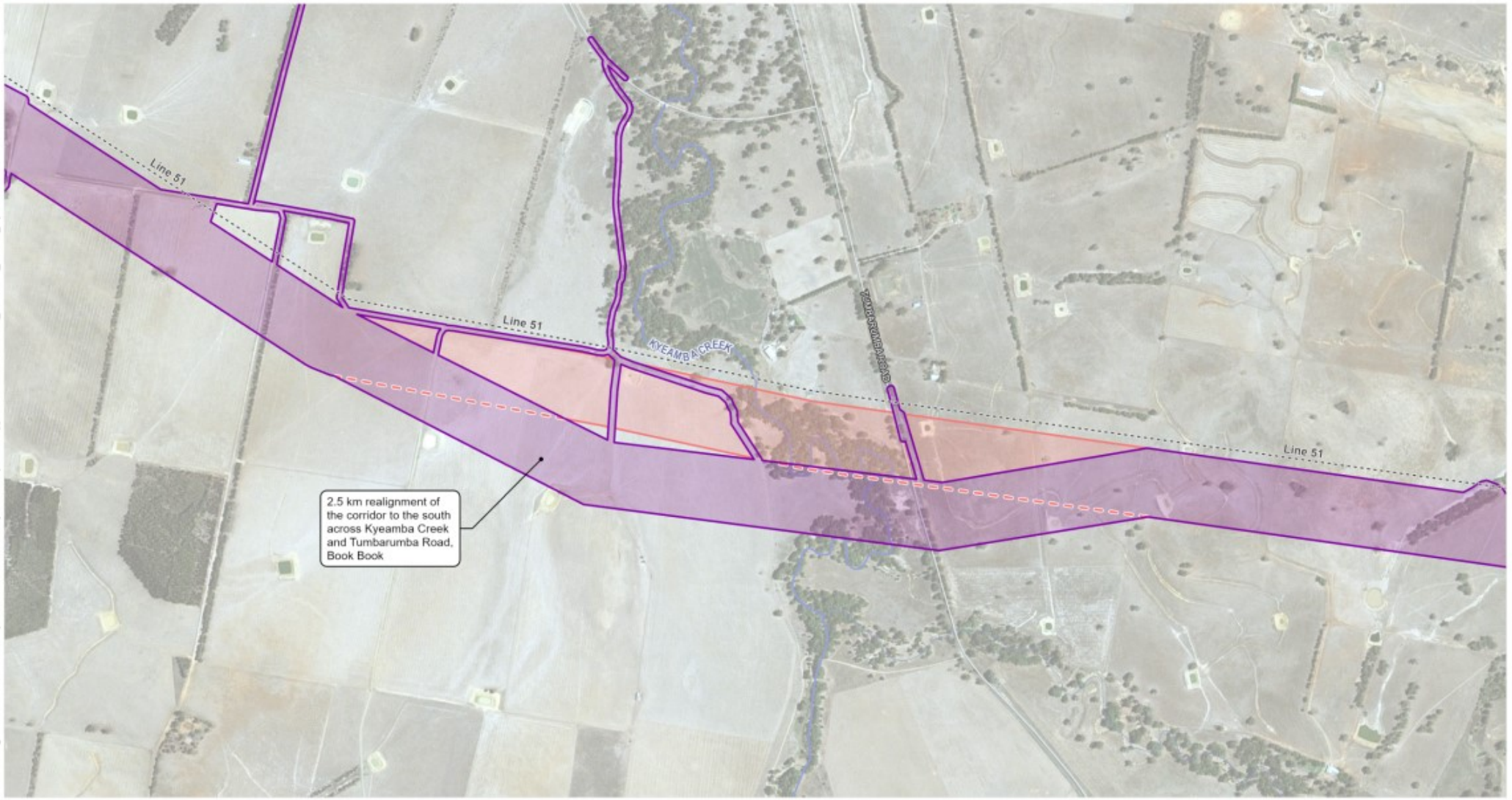
Substation

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

1:15,000

0 0.3 0.6 km

Projection: GDA 1994 MGA Zone 55



C:\Users\Virgil Robinson\Aurecon Group\507179 - HumeLink Project Development Suppor - EIS\ArcPro\507179_HumeLink_SWGW_.aprx\05-03-24

Amended project footprint

EIS project footprint

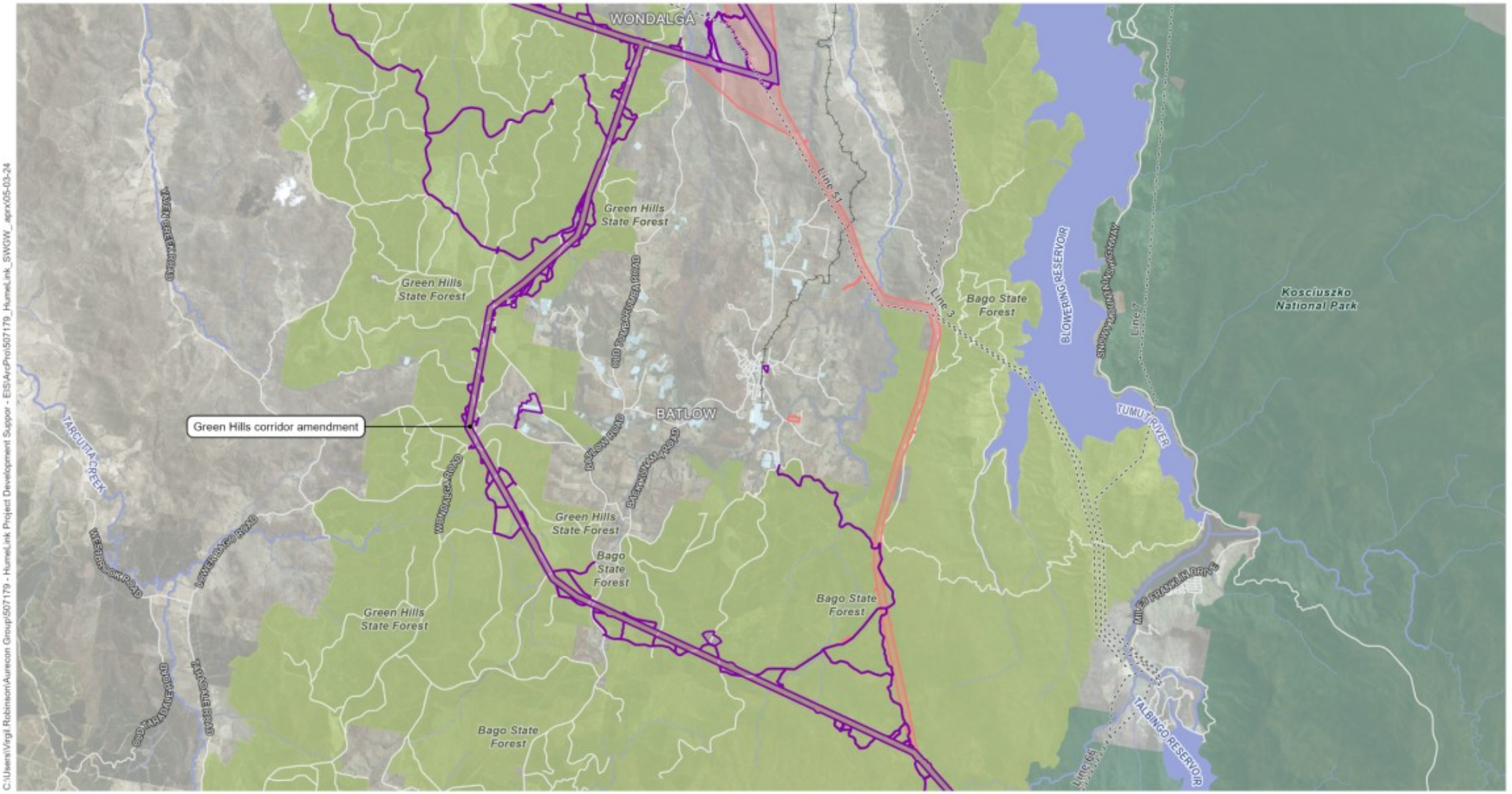
Existing Transgrid transmission line

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

1:11,500

0 0.25 0.5 km

Projection: GDA 1994 MGA Zone 55



Amended project footprint
EIS project footprint
National park and reserve
State forest
Waterbody
Existing Transgrid transmission line
Railway

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

1:125,000
0 2.5 5km

Projection: GDA 1994 MGA Zone 55

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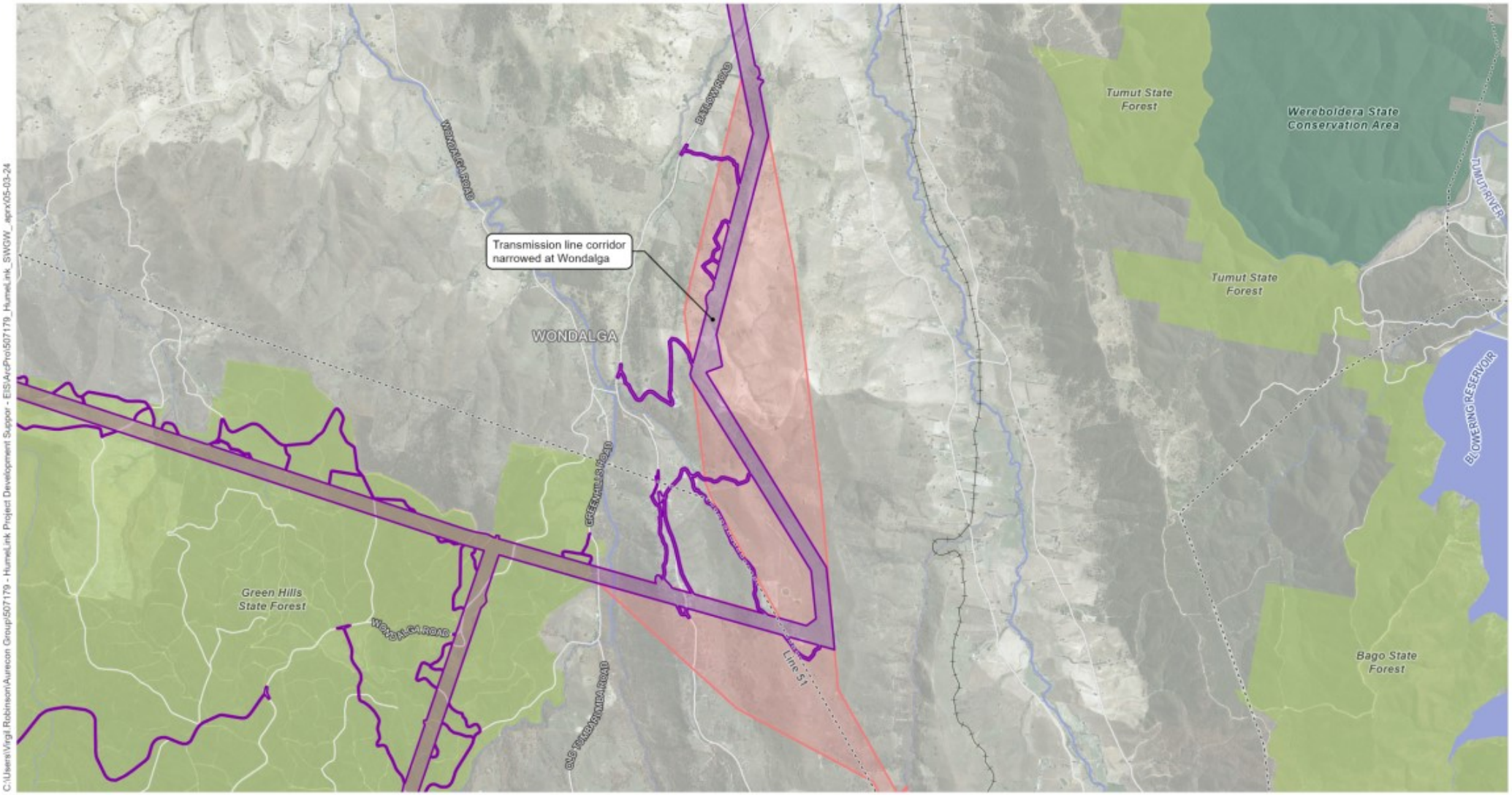
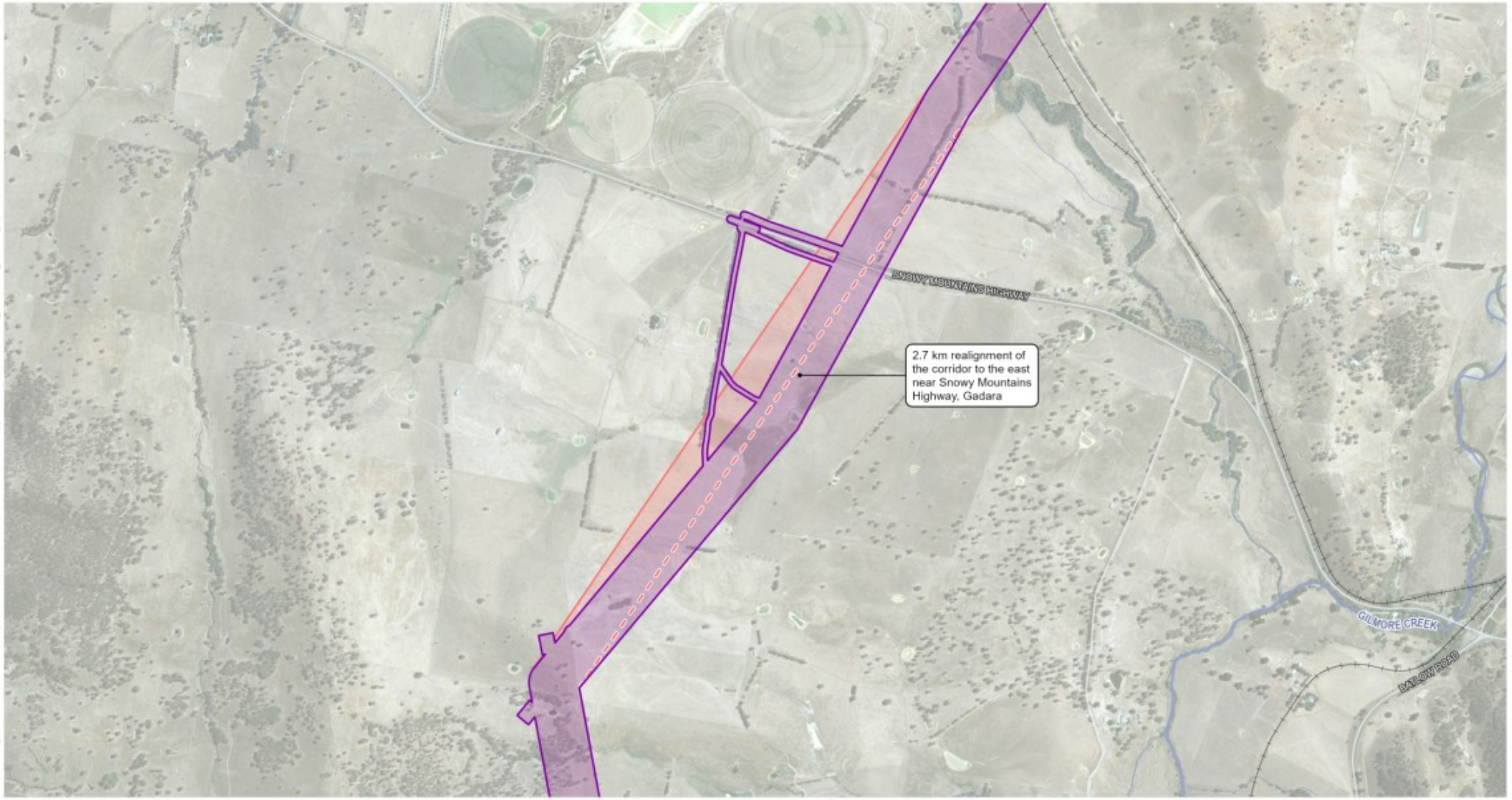


Amended project footprint
EIS project footprint
National park and reserve
State forest
Waterbody
Existing Transgrid transmission line
Railway

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

1:50,000
0 1 2km

Projection: GDA 1994 MGA Zone 55



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Amended project footprint

EIS project footprint

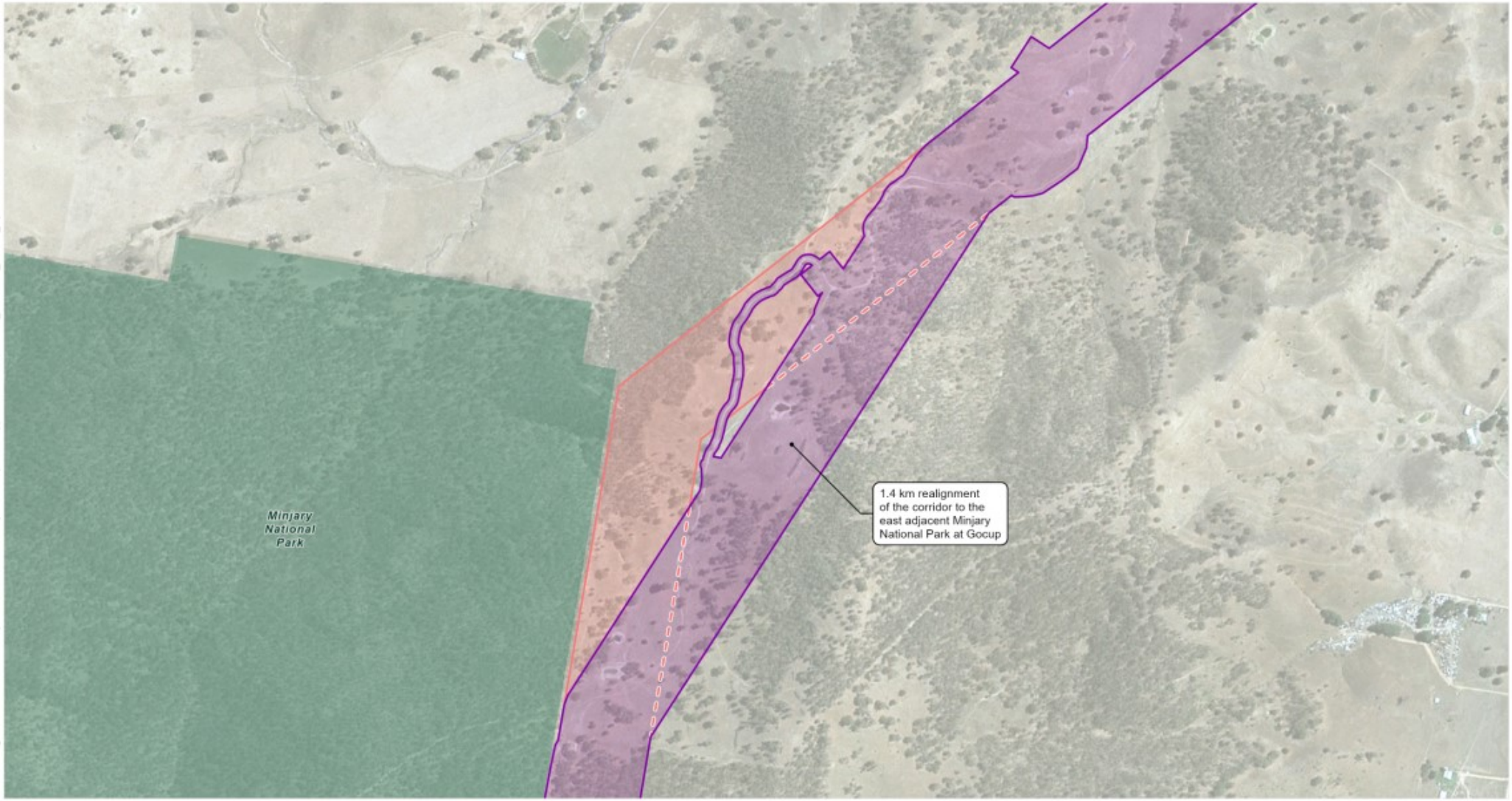
Railway

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

1:16,000

0 0.3 0.6km

Projection: GDA 1994 MGA Zone 55



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Amended project footprint

EIS project footprint

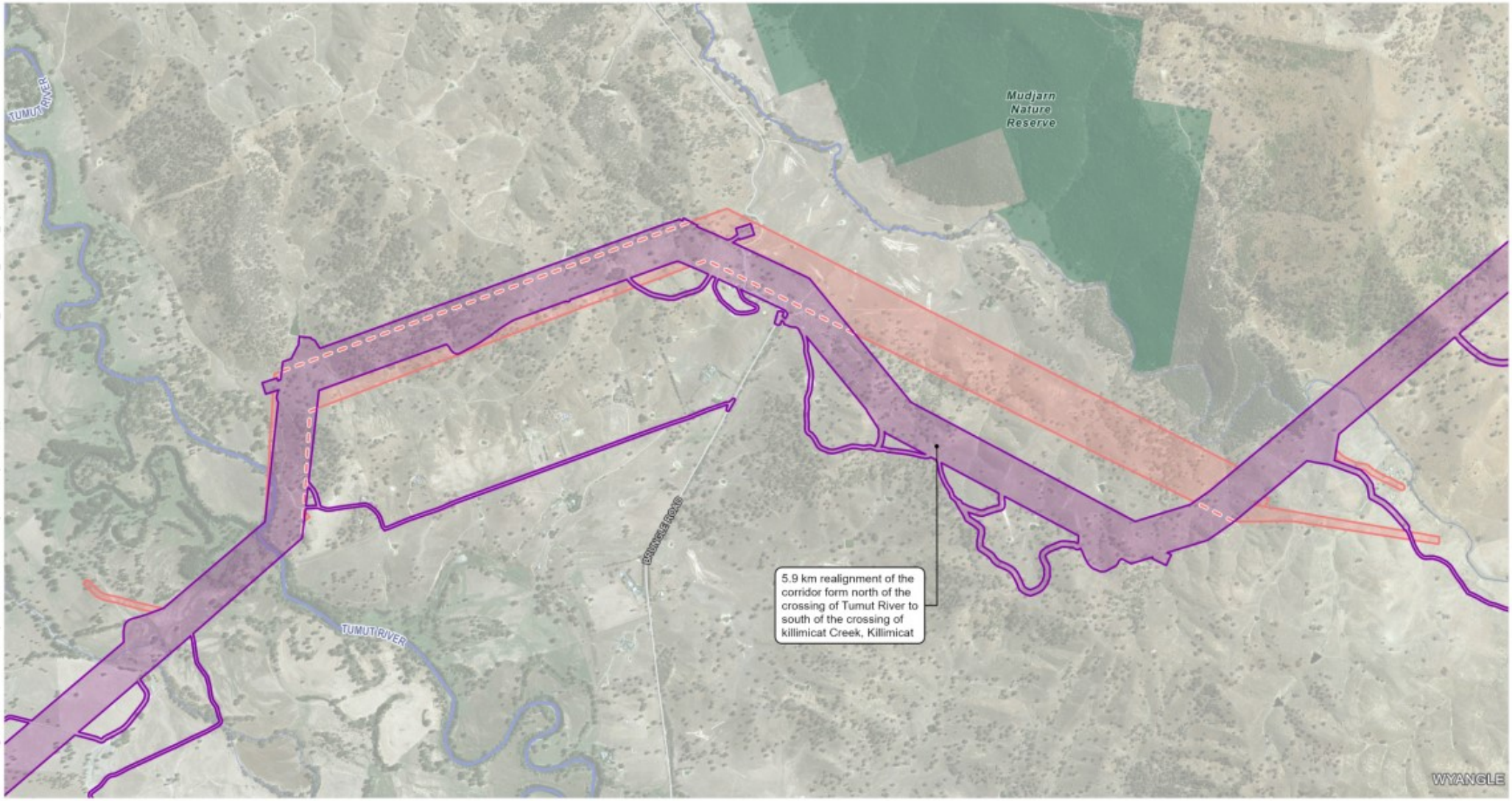
National park and reserve

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

1:8,500

0 0.15 0.3km

Projection: GDA 1994 MGA Zone 55



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Amended project footprint

EIS project footprint

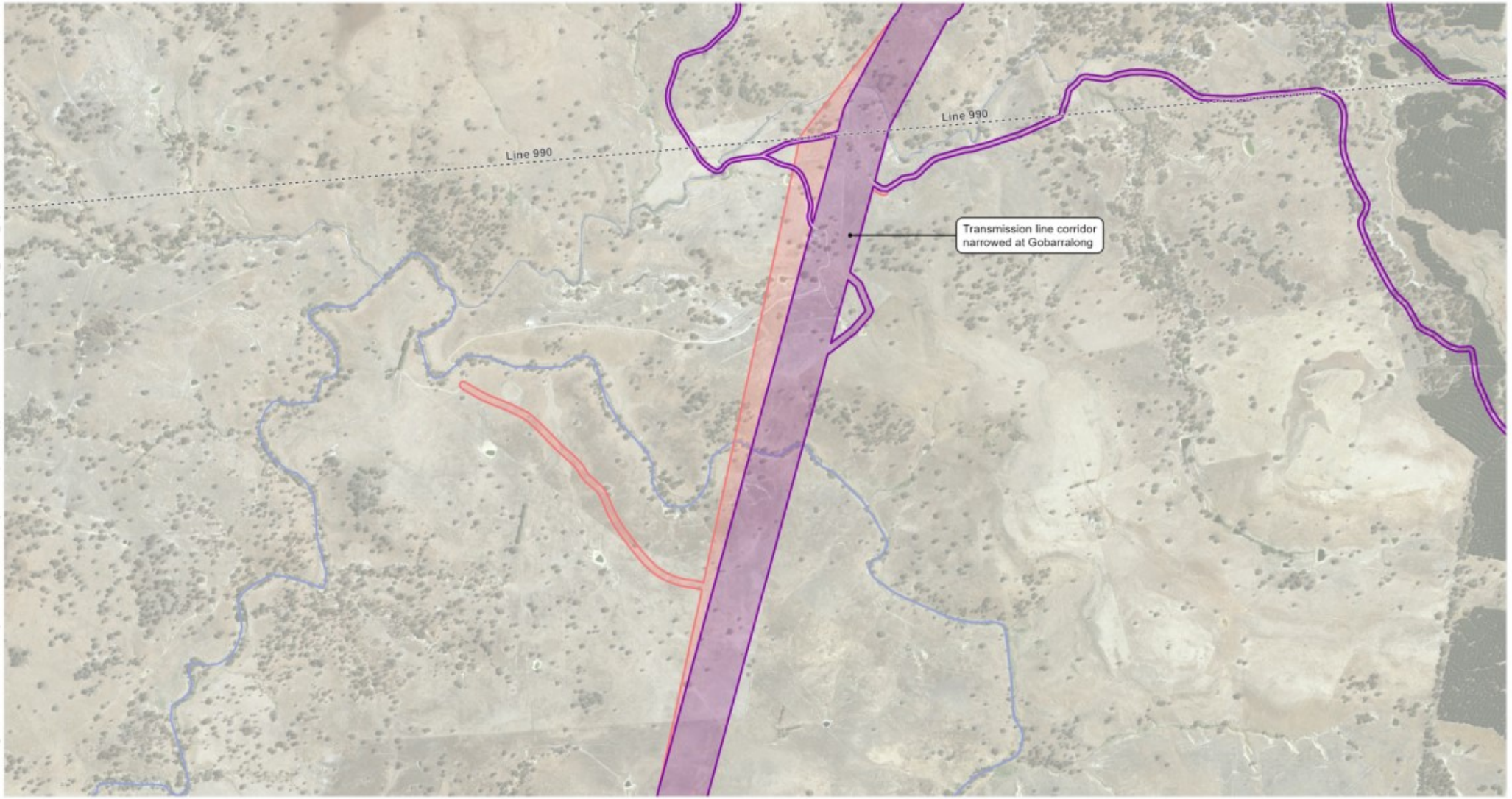
National park and reserve

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

1:20,000

0 0.4 0.8km

Projection: GDA 1994 MGA Zone 55



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Amended project footprint

EIS project footprint

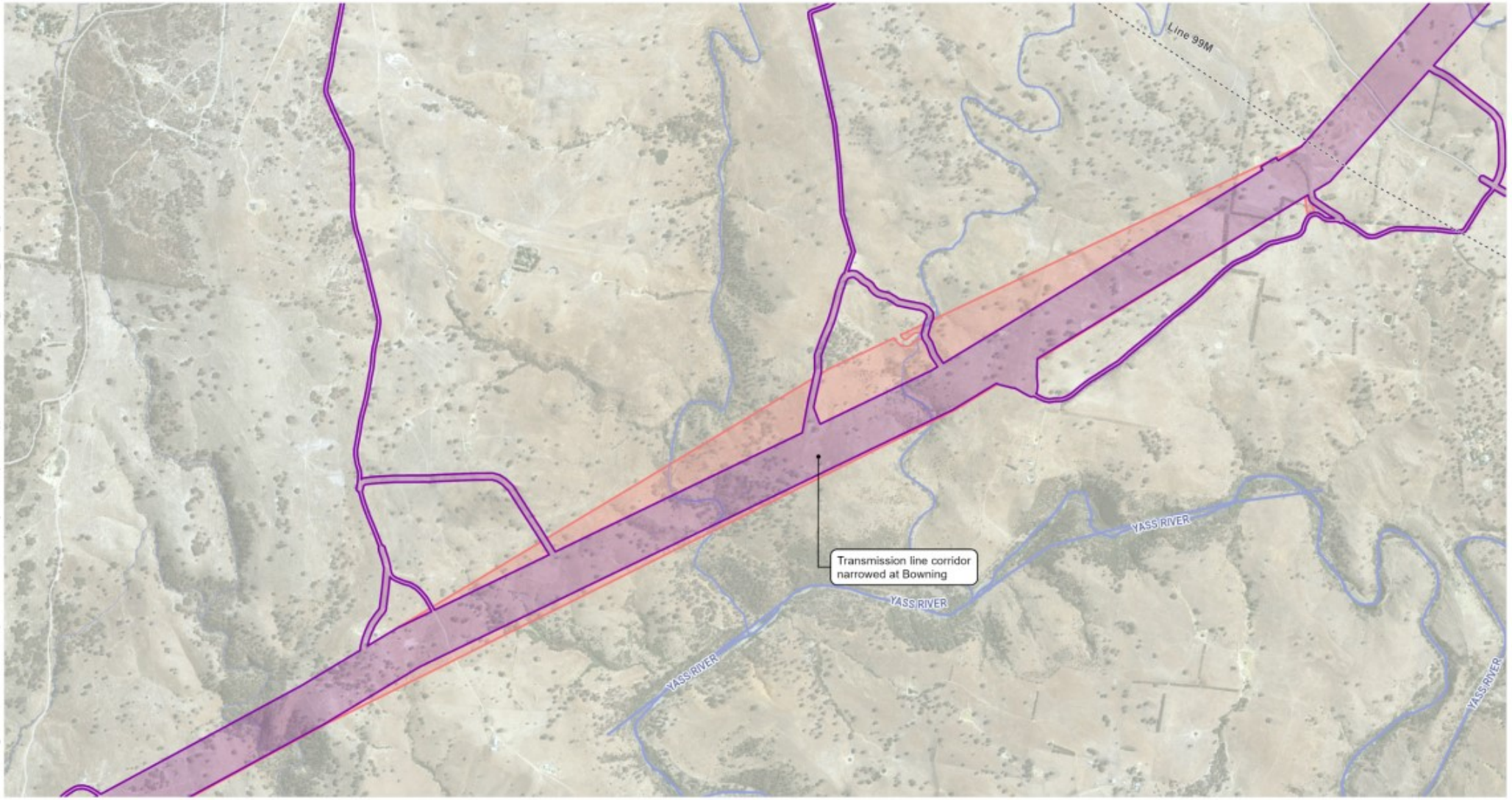
Existing Transgrid transmission line

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

1:16,000

0 0.3 0.6km

Projection: GDA 1994 MGA Zone 55



C:\Users\Virgil Robinson\Aurecon Group\5071179 - HumeLink Project Development Suppor - EIS\ArcPro\5071179_HumeLink_SWGW_.aprx\05-03-24

Amended project footprint

EIS project footprint

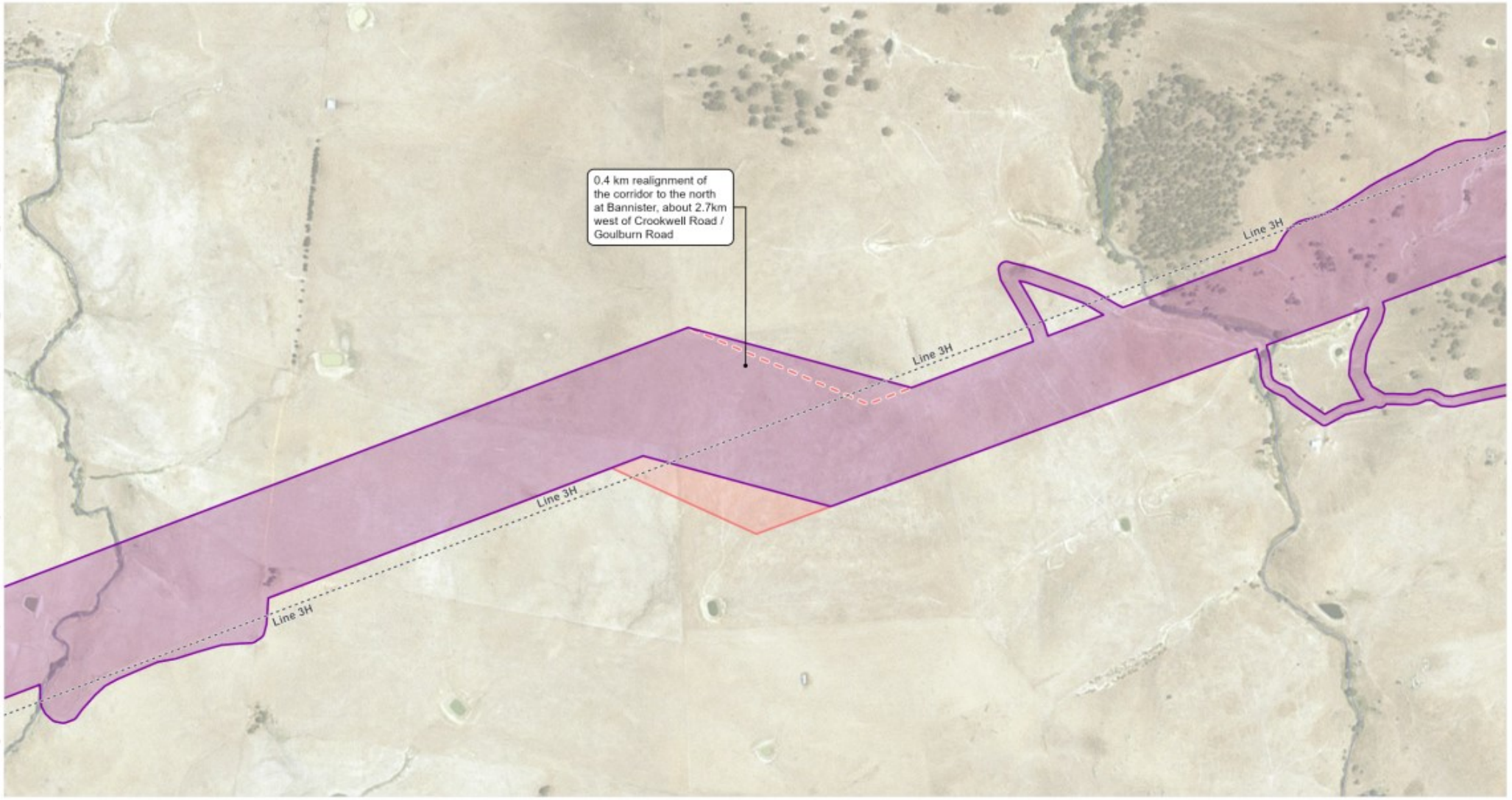
Existing Transgrid transmission line

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

1:17,500

0 0.35 0.7km

Projection: GDA 1994 MGA Zone 55



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Amended project footprint

EIS project footprint

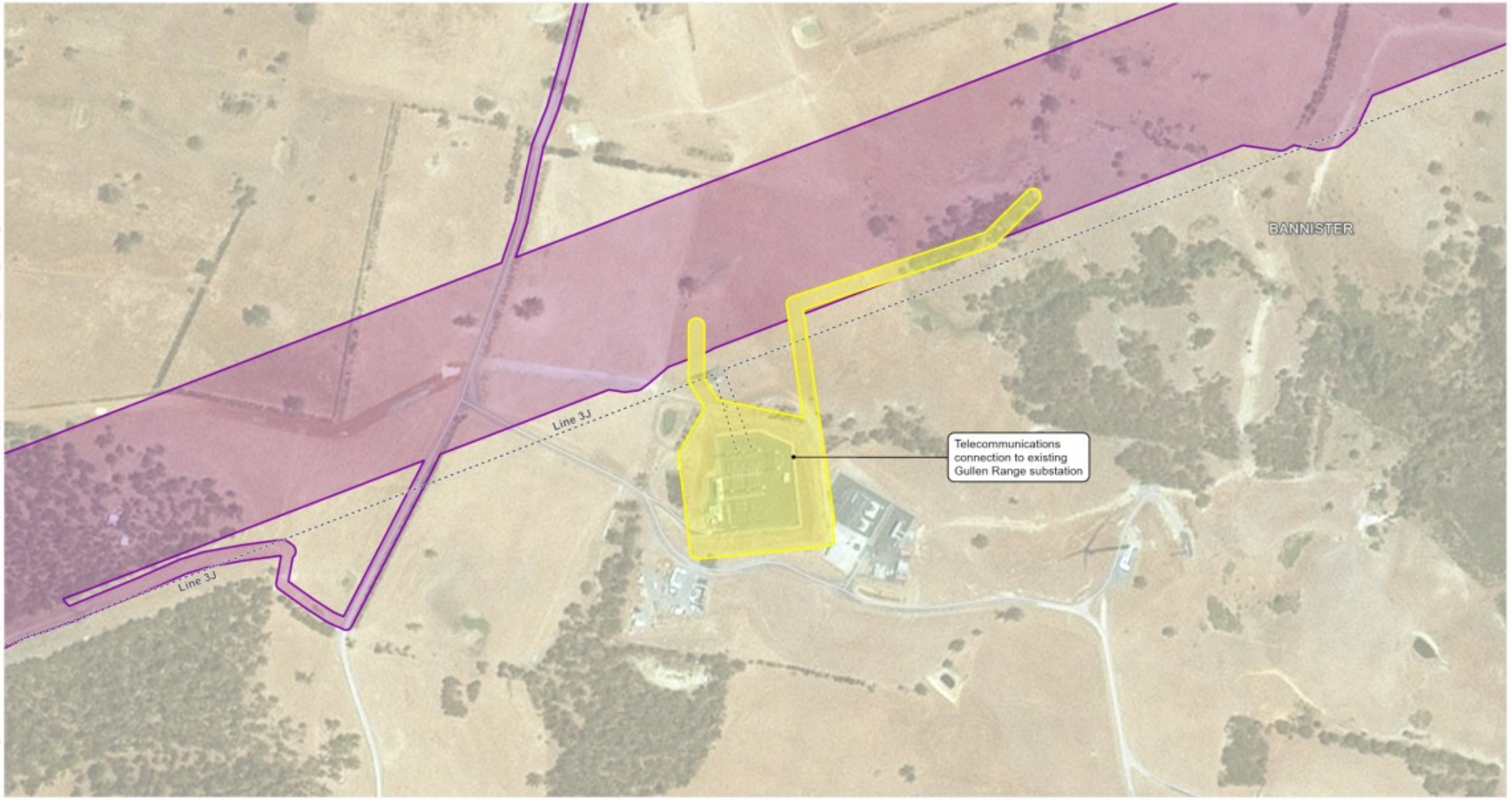
Existing Transgrid transmission line

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

1:7,500

0 0.15 0.3km

Projection: GDA 1994 MGA Zone 55



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Amended project footprint

Telecommunications connection

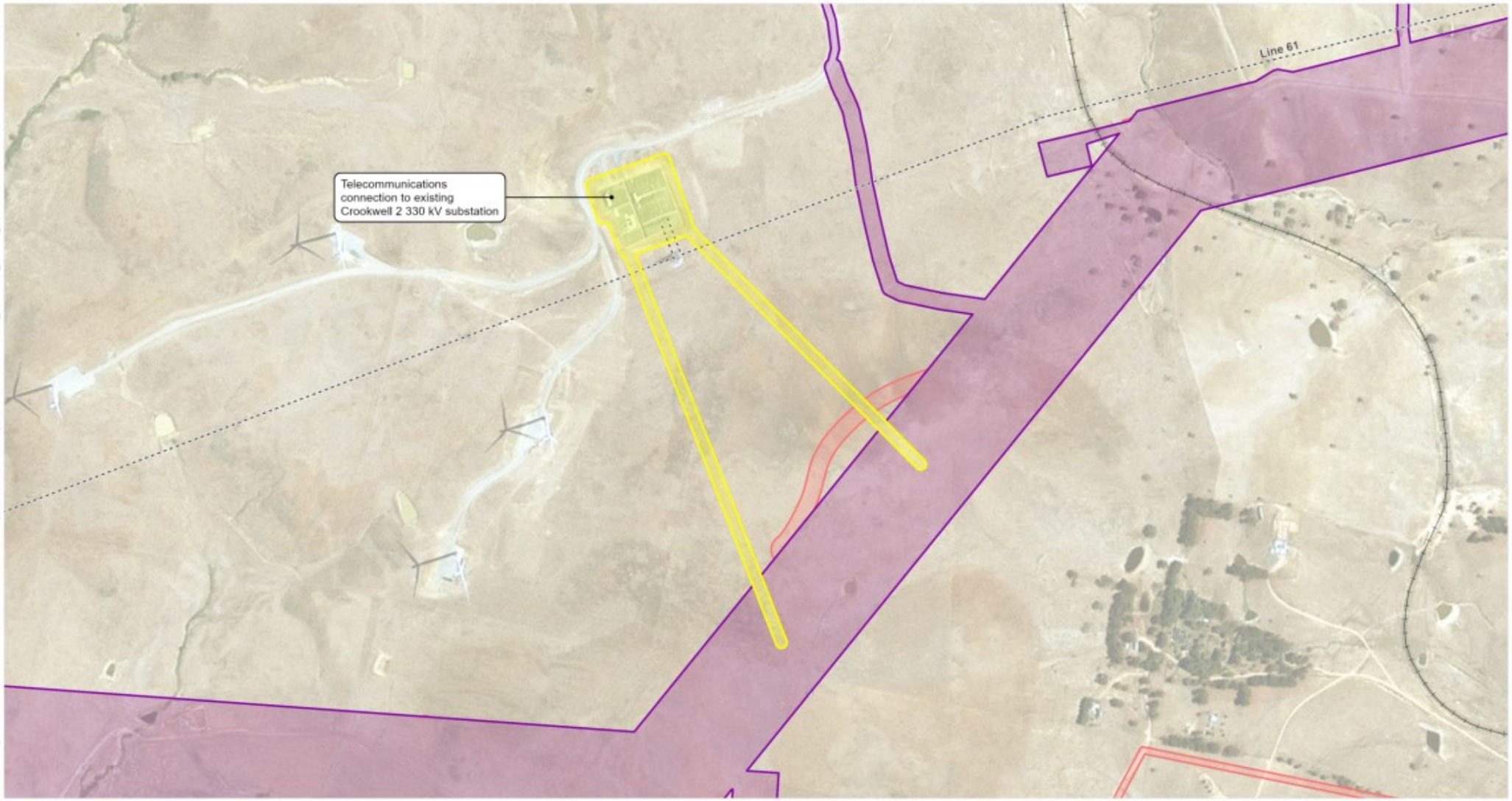
Existing Transgrid transmission line

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

1:5,000

0 0.1 0.2km

Projection: GDA 1994 MGA Zone 55



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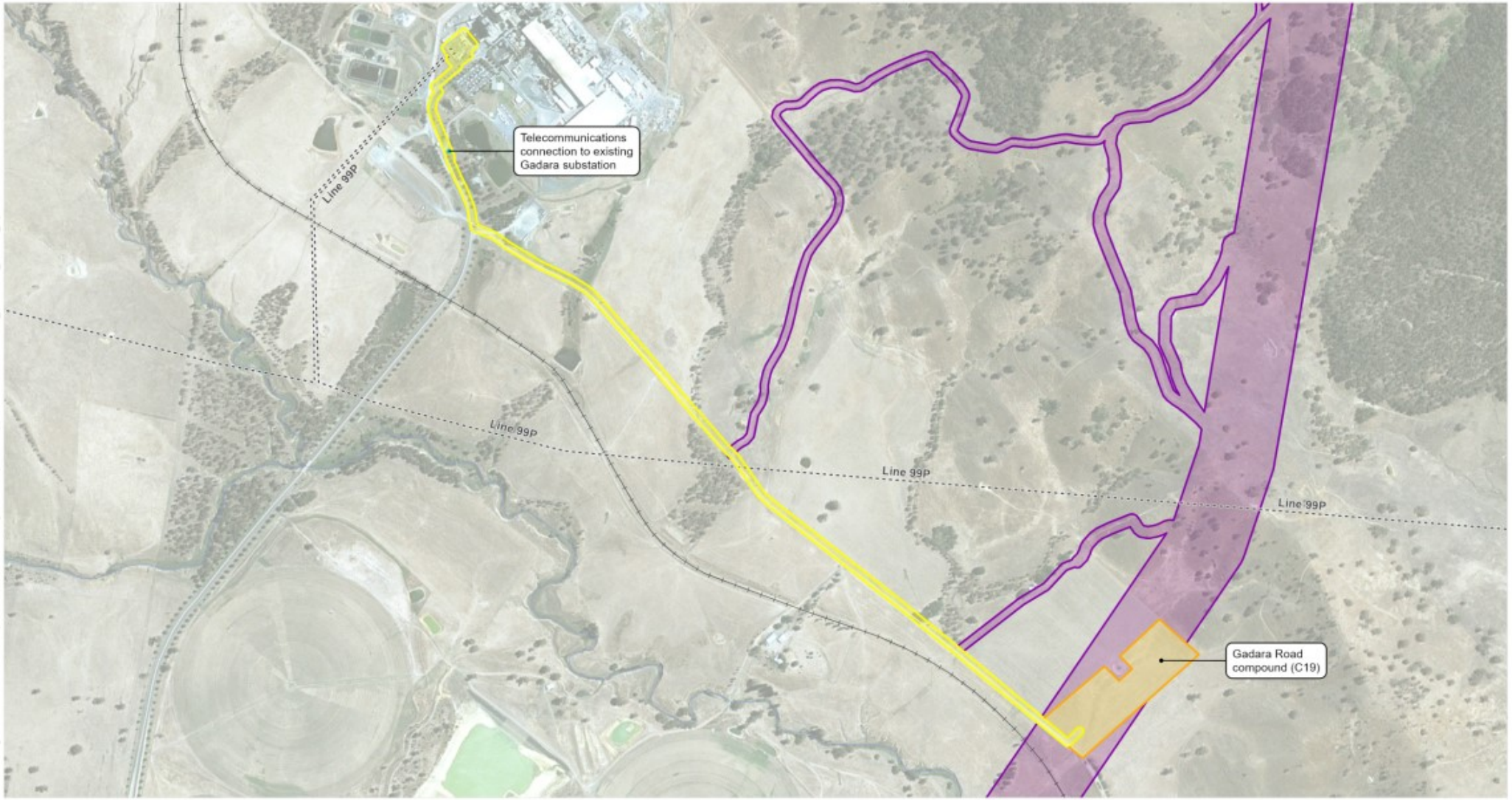
Amended project footprint
EIS project footprint
Telecommunications connection
Existing Transgrid transmission line
Railway

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

1:7,000
0 0.15 0.3 km

Projection: GDA 1994 MGA Zone 55



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Amended project footprint

Construction compound site

Telecommunications connection

Existing Transgrid transmission line

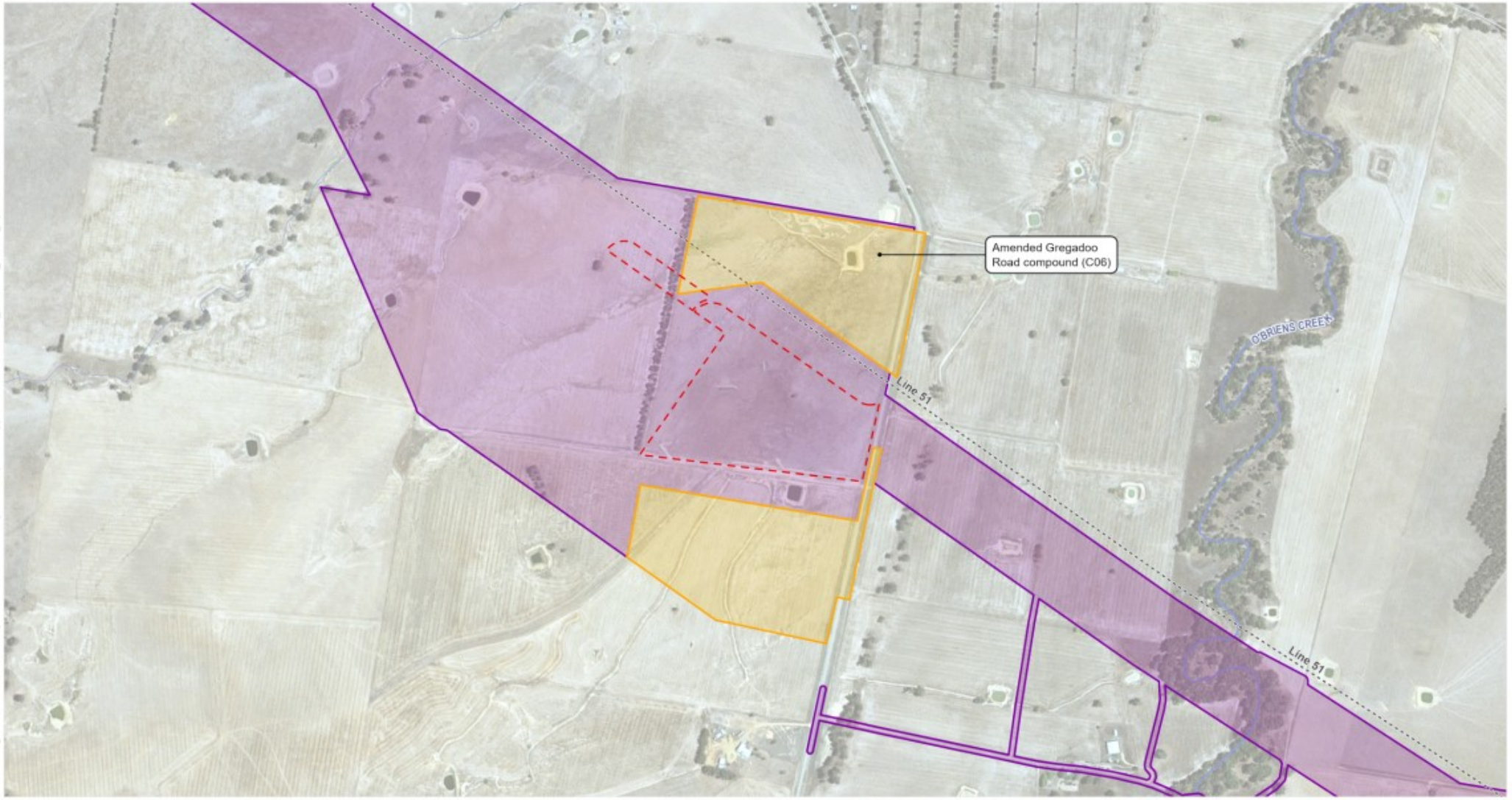
Railway

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

1:10,000

0 0.2 0.4 km

Projection: GDA 1994 MGA Zone 55



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Amended project footprint

Construction compound site

Gregadoo Road compound (C06) as shown in EIS

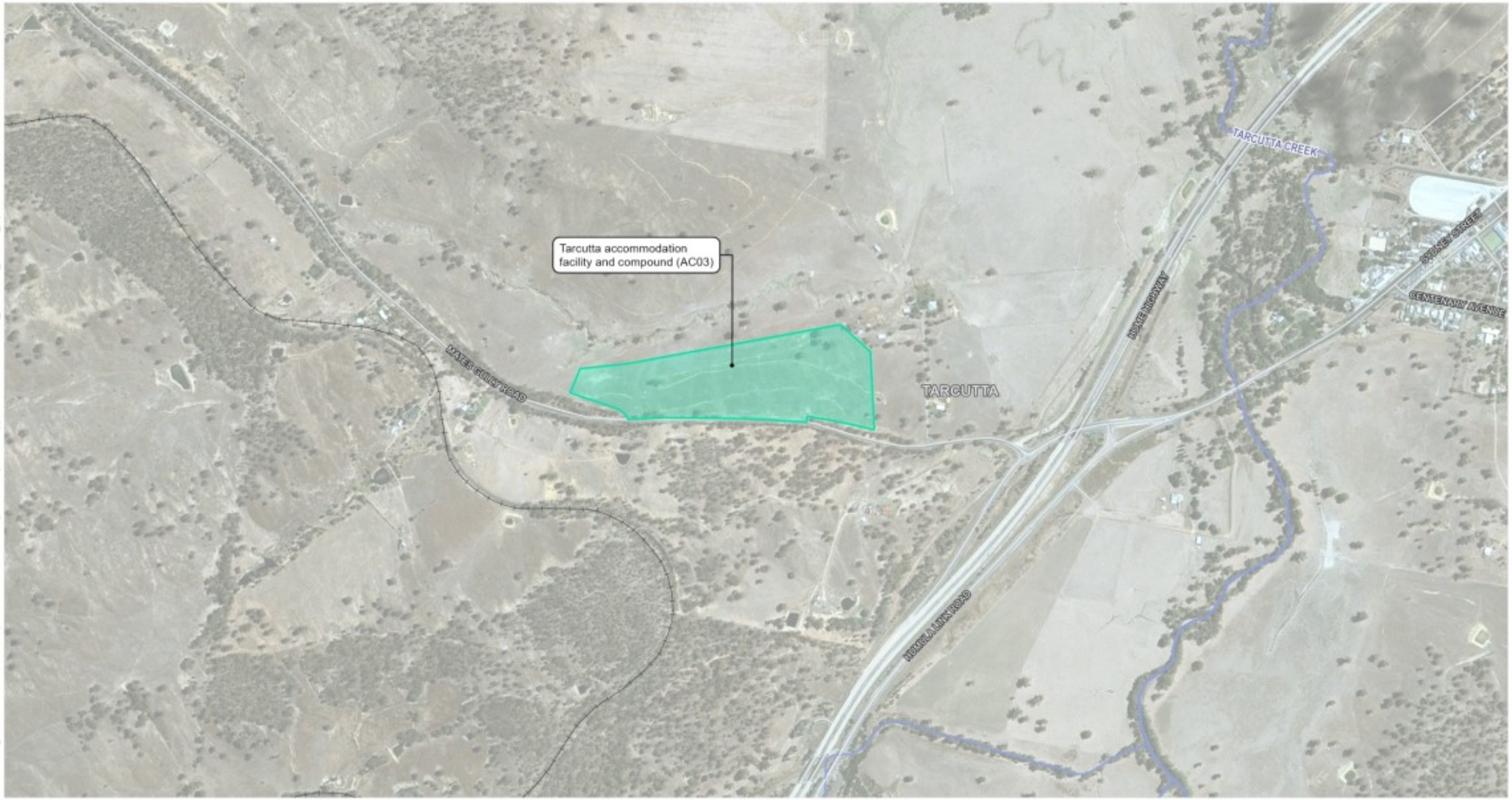
Existing Transgrid transmission line

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

1:10,000

0 0.2 0.4 km

Projection: GDA 1994 MGA Zone 55



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Amended project footprint

Construction compound and worker accomodation site

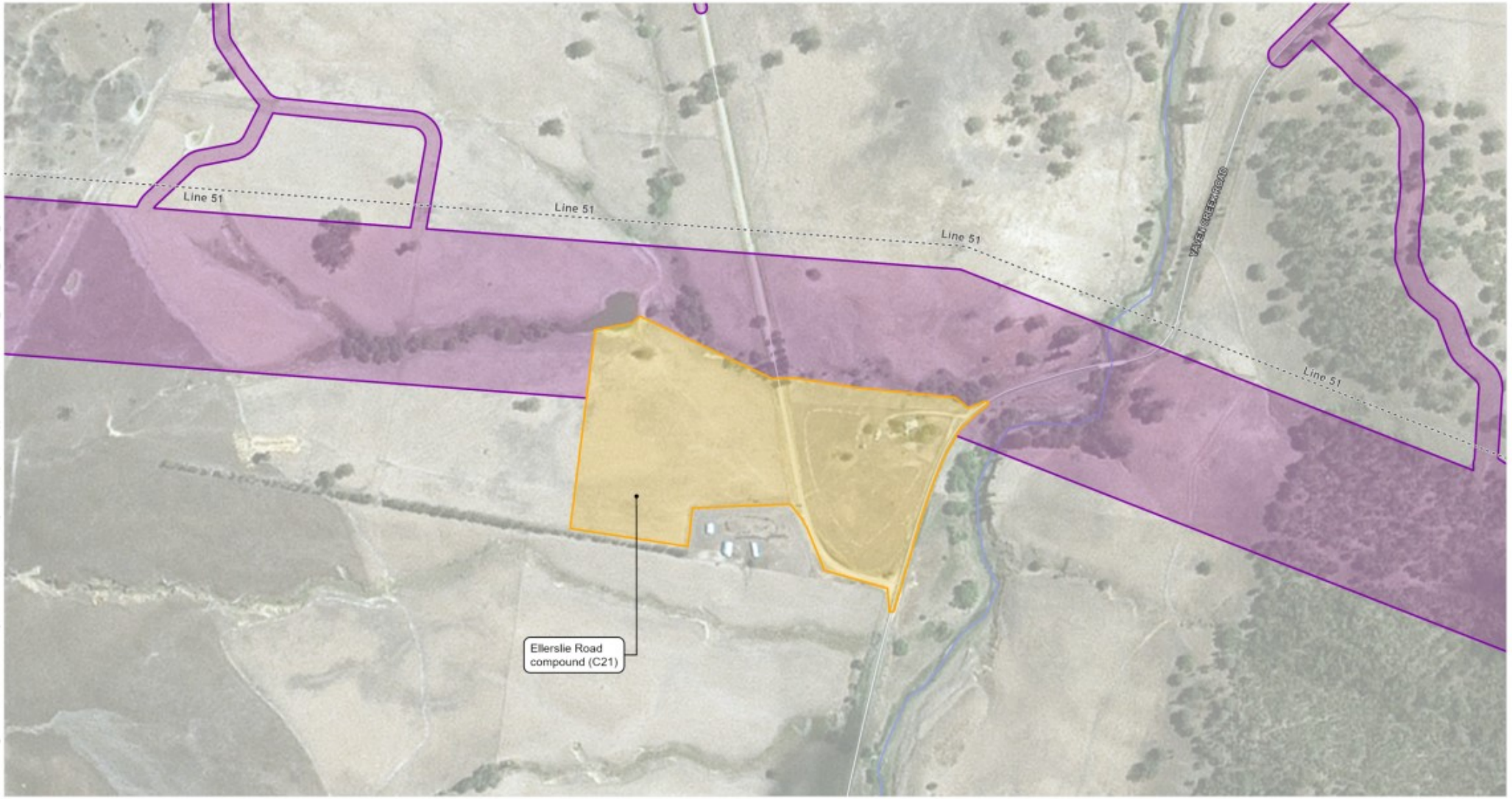
Railway

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

1:10,000

0 0.2 0.4 km

Projection: GDA 1994 MGA Zone 55



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Amended project footprint

Construction compound site

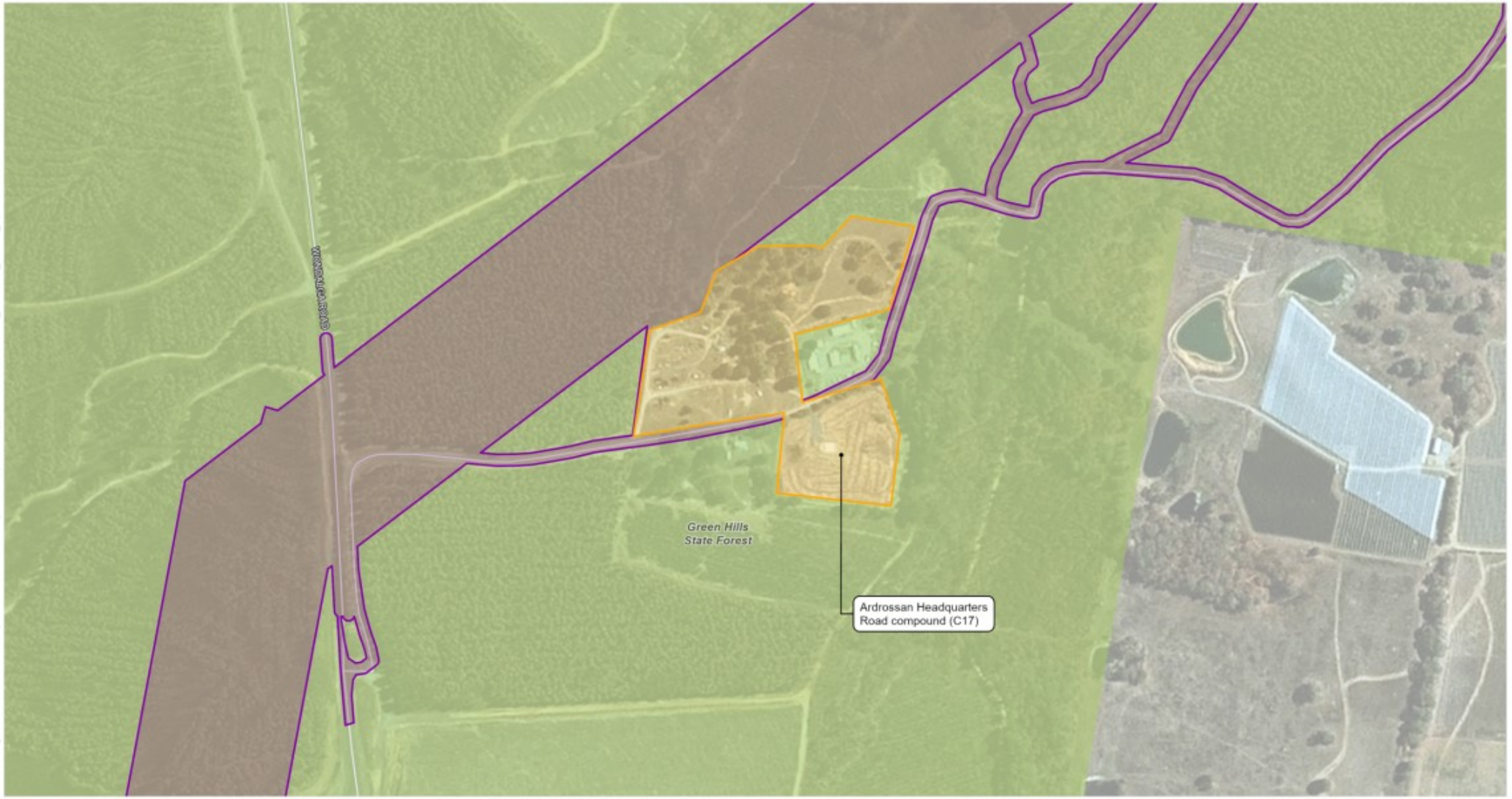
Existing Transgrid transmission line

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

1:5,000

0 0.1 0.2km

Projection: GDA 1994 MGA Zone 55



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Amended project footprint

Construction compound site

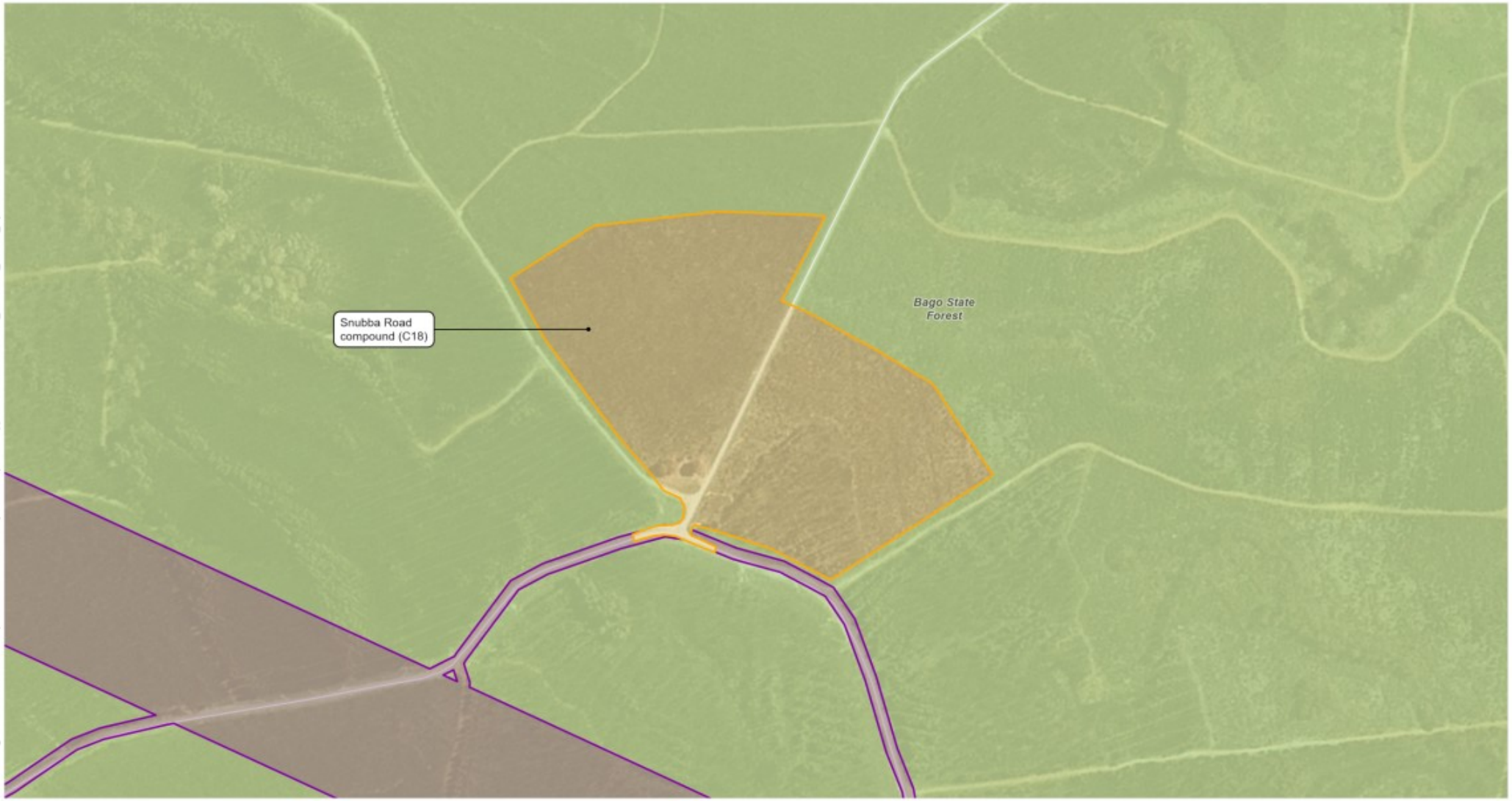
State forest

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

1:5,000

0 0.1 0.2km

Projection: GDA 1994 MGA Zone 55



C:\Users\Virgil Robinson\Aurecon Group\507179 - HumeLink Project Development Suppor - ESI\ArcPro\507179_HumeLink_SWGW_.aprx\05-03-24

Amended project footprint

Construction compound site

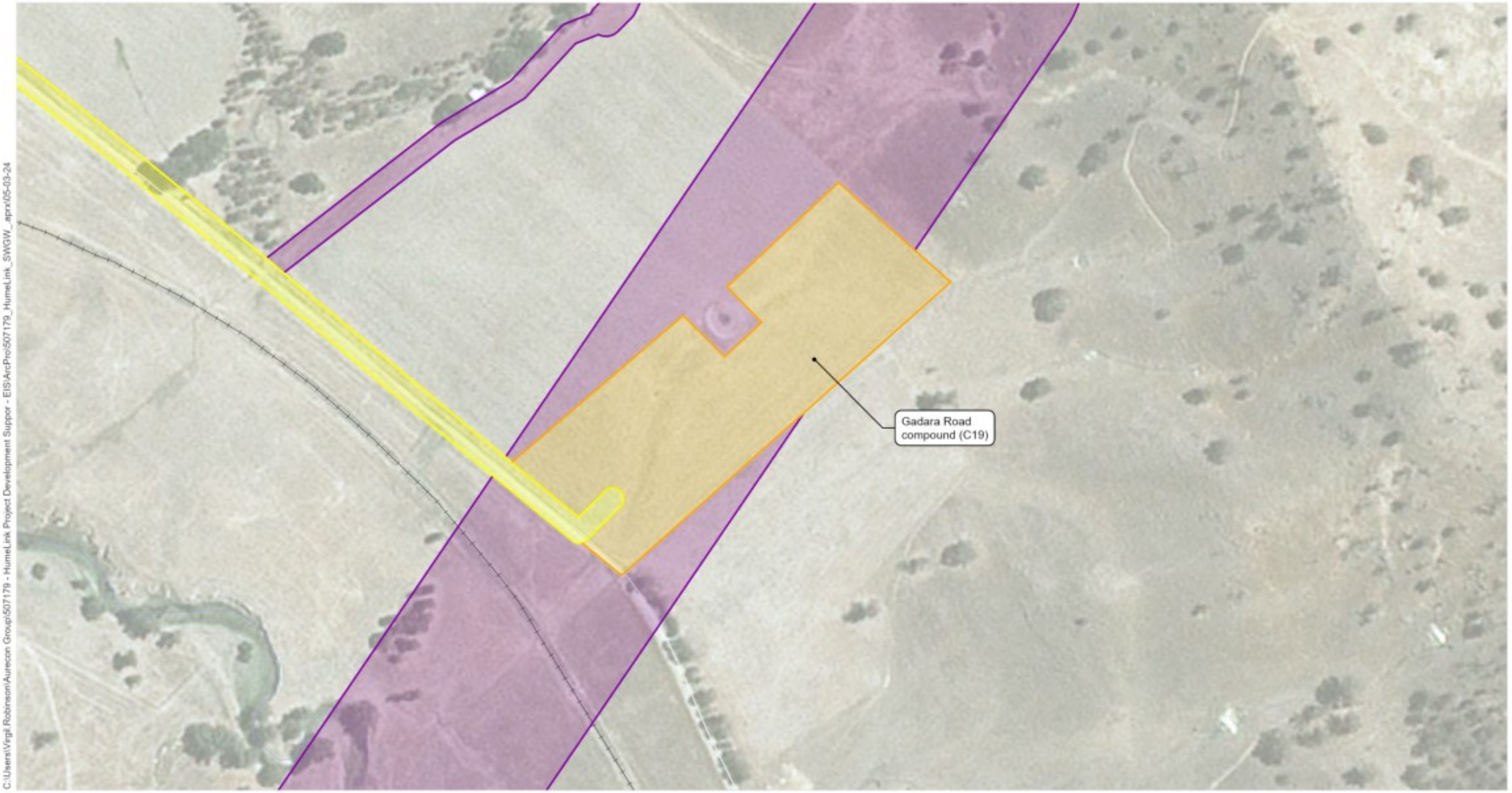
State forest

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

1:5,000

0 0.1 0.2km

Projection: GDA 1994 MGA Zone 55



C:\Users\Virgil Robinson\Aurecon Group\5071179 - HumeLink Project Development Suppor - EIS\ArcPro\5071179_HumeLink_SWGW_.aprx\05-03-24

Amended project footprint

Construction compound site

Telecommunications connection

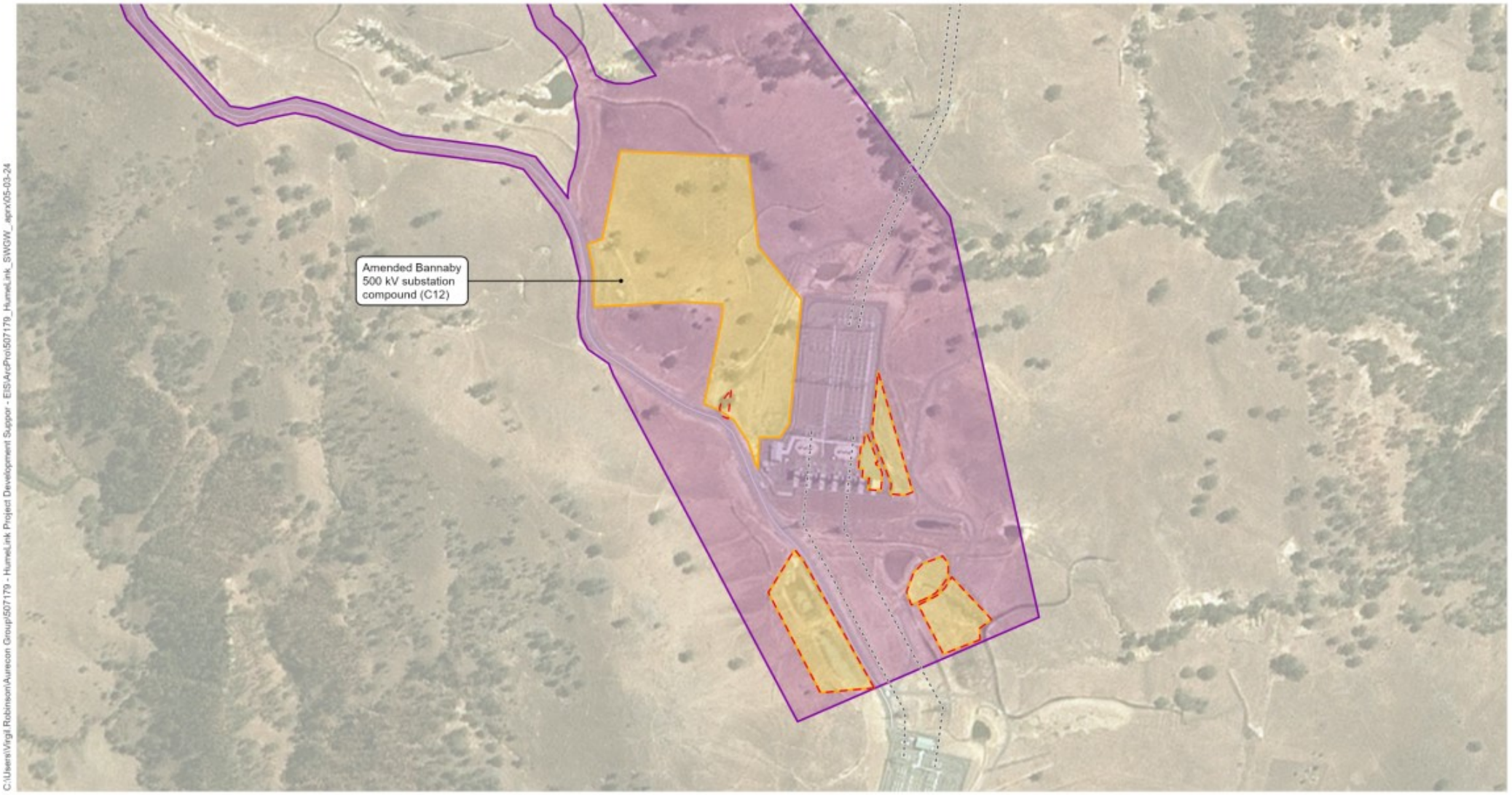
Railway

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

1:3,500

0 0.07 0.15km

Projection: GDA 1994 MGA Zone 55



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Amended project footprint

Construction compound site

Bannaby substation compound (C12) as shown in EIS

Existing Transgrid transmission line

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

1:5,500

0 0.1 0.2 km

Projection: GDA 1994 MGA Zone 55

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Amended project footprint

Construction compound and worker accomodation site

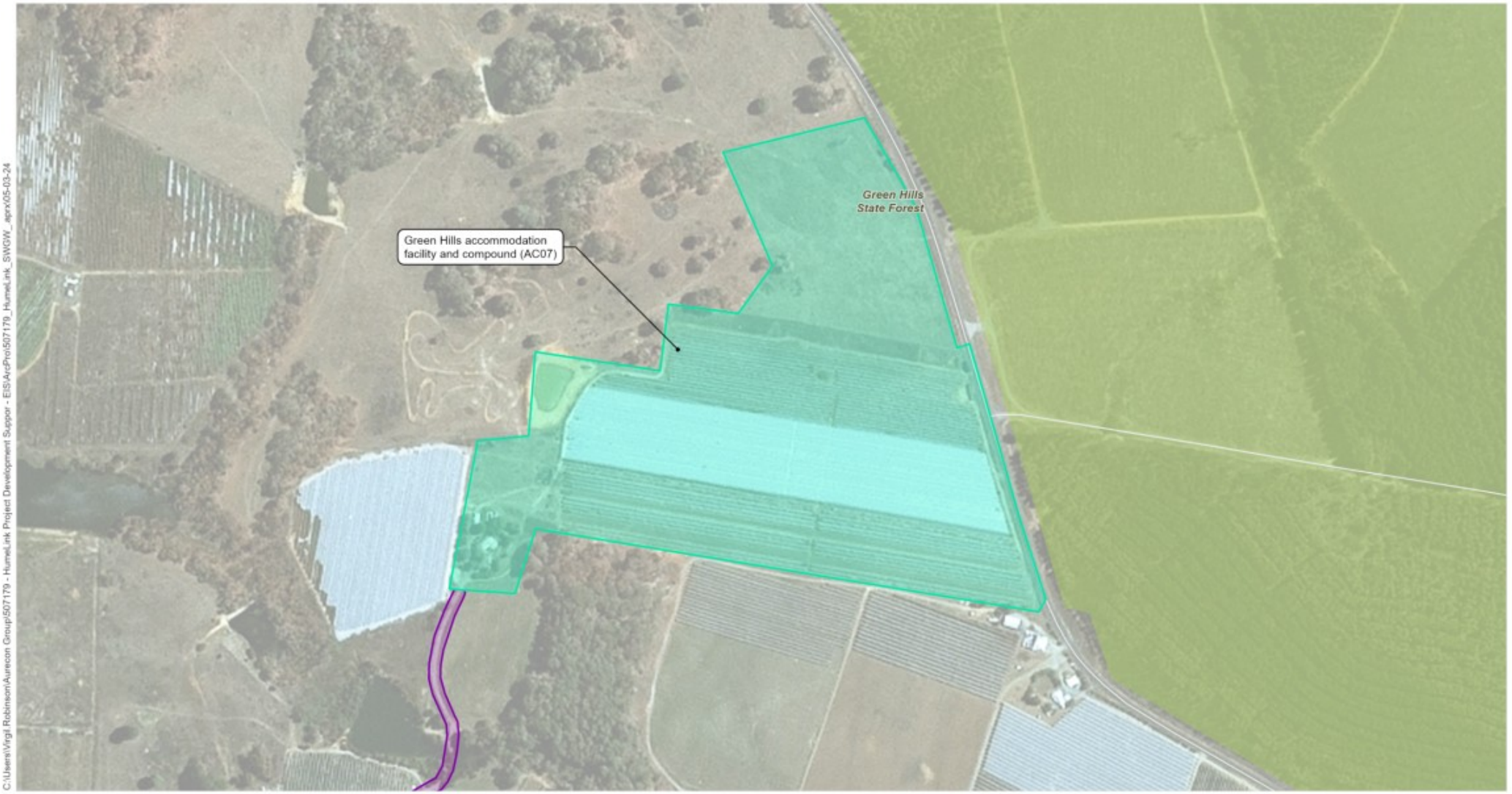
Existing Transgrid transmission line

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

1:5,000

0 0.1 0.2km

Projection: GDA 1994 MGA Zone 55



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Amended project footprint

Construction compound and worker accomodation site

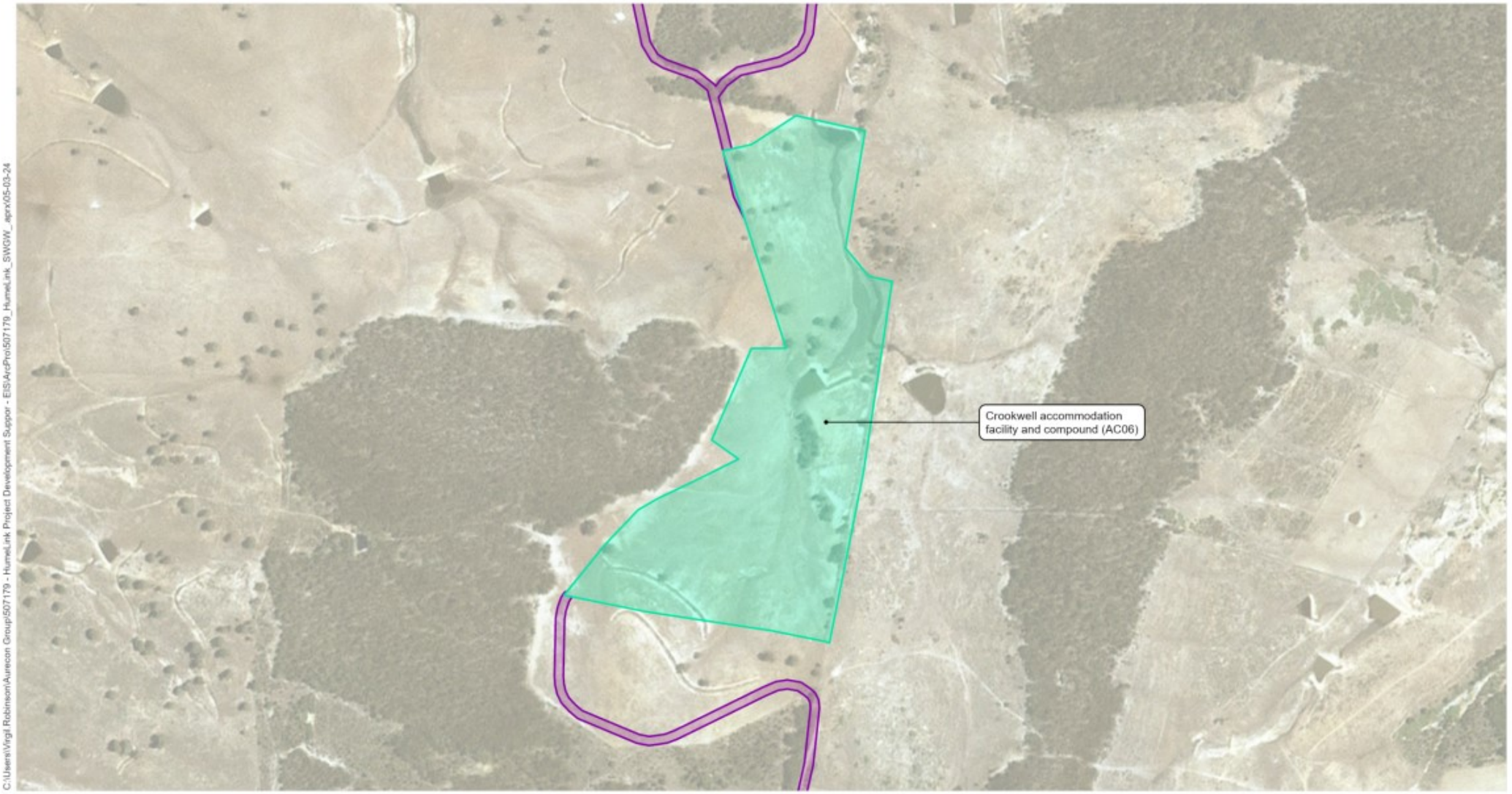
State forest

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

1:5,000

0 0.1 0.2km

Projection: GDA 1994 MGA Zone 55



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Amended project footprint

Construction compound and worker accomodation site

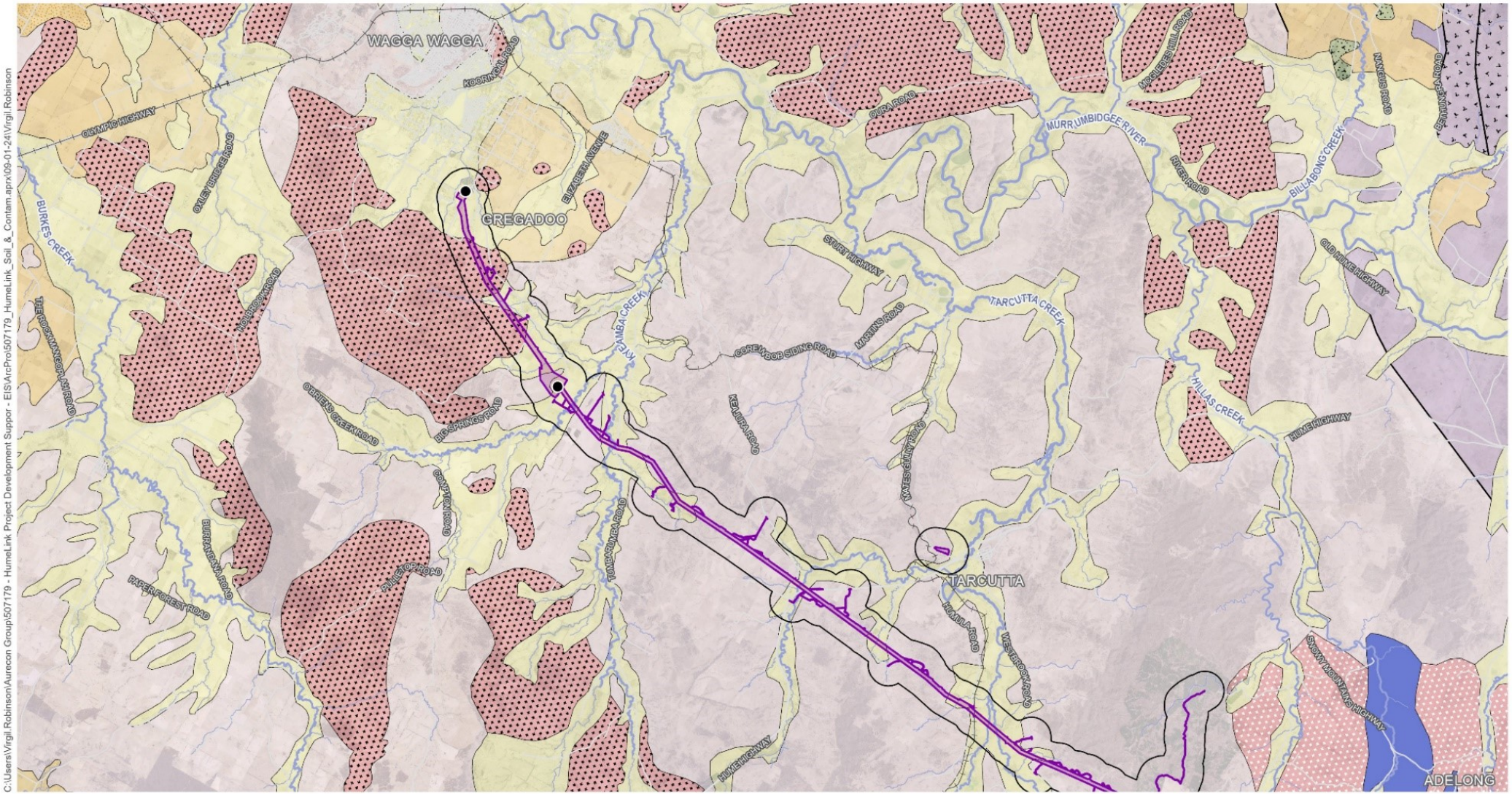
Source: *Aurecon, Transgrid, Spatial Services (DCS), ESRI Basemap*

1:6,500

0 0.1 0.2km

Projection: GDA 1994 MGA Zone 55

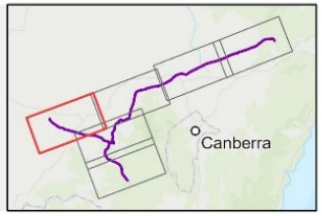
Attachment B
NSW Seamless Geology



Amended project footprint
Amended contamination study area
Railway
Watercourse
Substation

NSW Simplified Surface Geology (1:1500k)

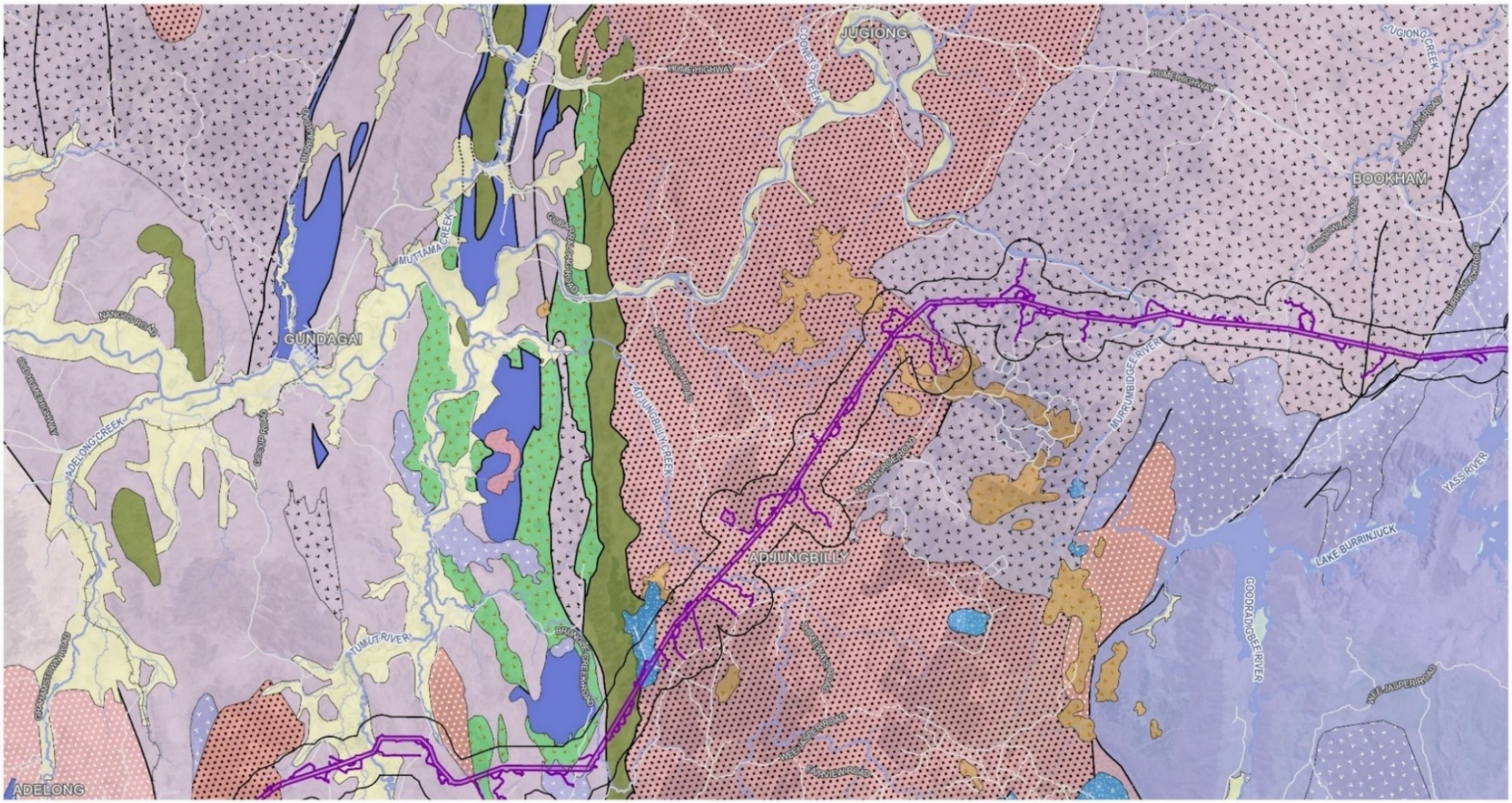
Fault
Geological boundary
Igneous felsic intrusive (I-type)
Igneous felsic intrusive (S-type)
Igneous mafic volcanic (Ordovician)
Regolith
Igneous silicic to intermediate volcanic (S-type)
Sedimentary & volcanic
Quaternary alluvial deposits
Ordovician sedimentary rocks
Silurian sedimentary and volcanic rocks
Silurian-Devonian sedimentary and volcanic rocks
Ordovician sedimentary and volcanic rocks
Quaternary colluvial deposits
Cenozoic undifferentiated sediments/sedimentary rocks
Silurian silicic to intermediate intrusives



Source: *Aurecon, Transgrid, Department of Regional New South Wales, Spatial Services (DCS), ESRI Basemap*

1:200,000
0 4 8 km

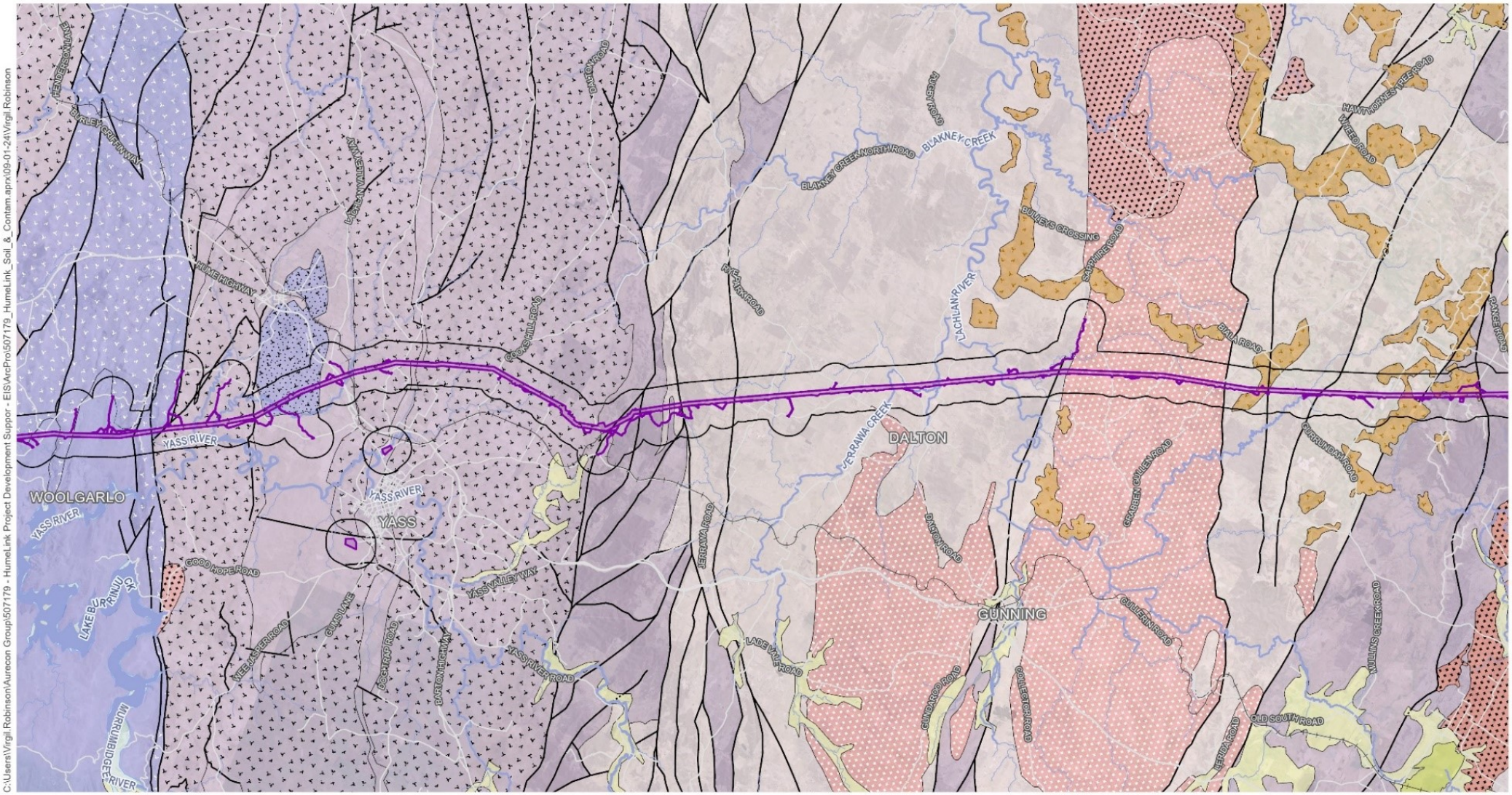
Projection: GDA 1994 MGA Zone 55



Source: *Aurecon, Transgrid, Department of Regional New South Wales, Spatial Services (DCS), ESRI Basemap*

1:200,000
0 4 8 km

Projection: GDA 1994 MGA Zone 55



Amended project footprint
Amended contamination study area
Railway
Watercourse
Substation

NSW Simplified Surface Geology (1:1500k)

Fault
Fault, concealed
Geological boundary - concealed
Geological boundary
Water feature

Igneous felsic intrusive (I-type)
Igneous felsic intrusive (S-type)
Igneous mafic volcanic
Igneous silicic to intermediate volcanic (I-type)
Igneous silicic to intermediate volcanic (S-type)

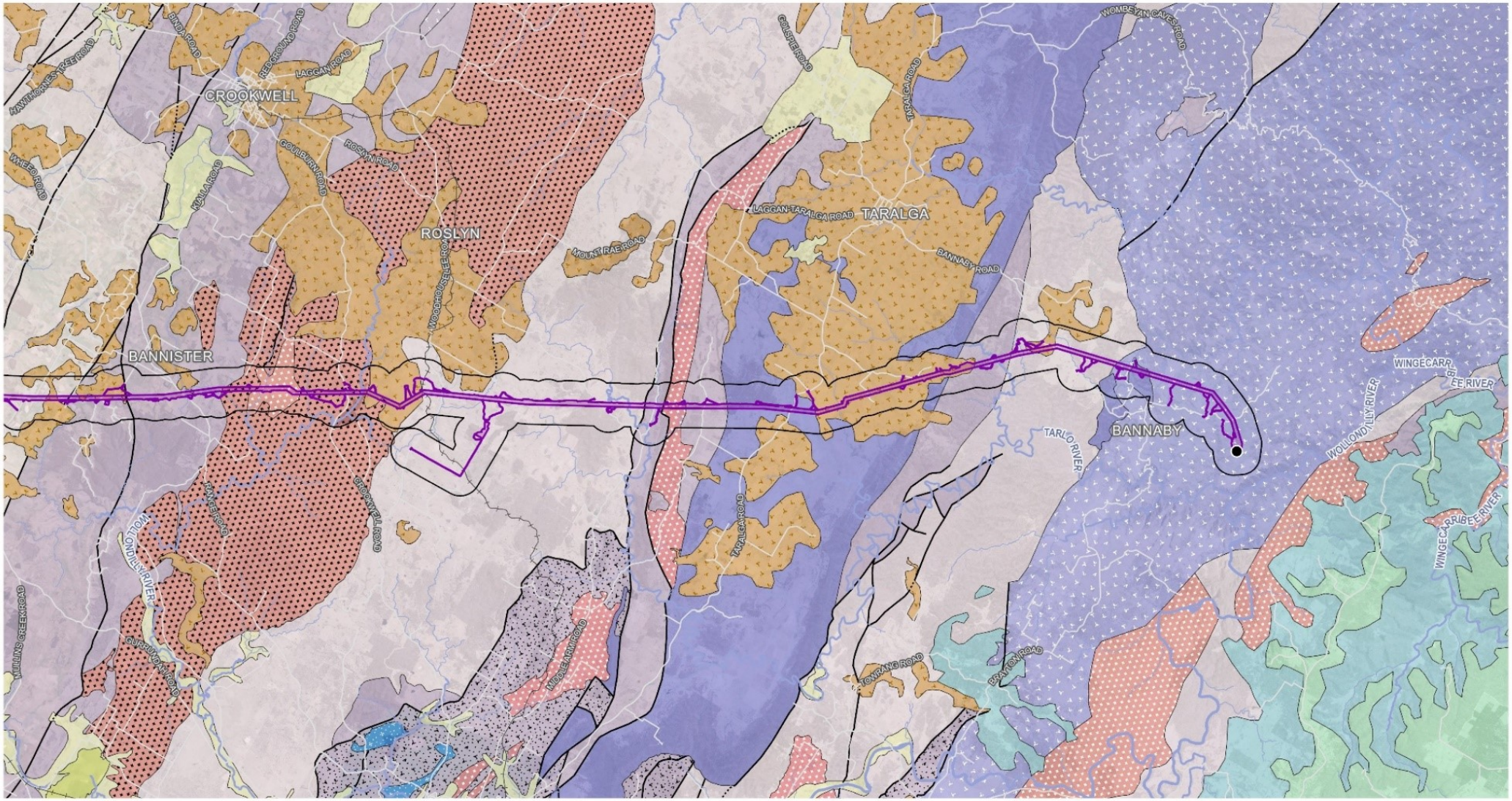
Sedimentary & volcanic
Quaternary alluvial deposits
Quaternary lacustrine deposits
Devonian sedimentary and volcanic rocks
Ordovician sedimentary rocks

Silurian sedimentary and volcanic rocks
Cenozoic mafic volcanic rocks
Devonian silicic to intermediate intrusives
Silurian silicic to intermediate intrusives
Water

Source: *Aurecon, Transgrid, Department of Regional New South Wales, Spatial Services (DCS), ESRI Basemap*

1:200,000
0 4 8km

Projection: GDA 1994 MGA Zone 55



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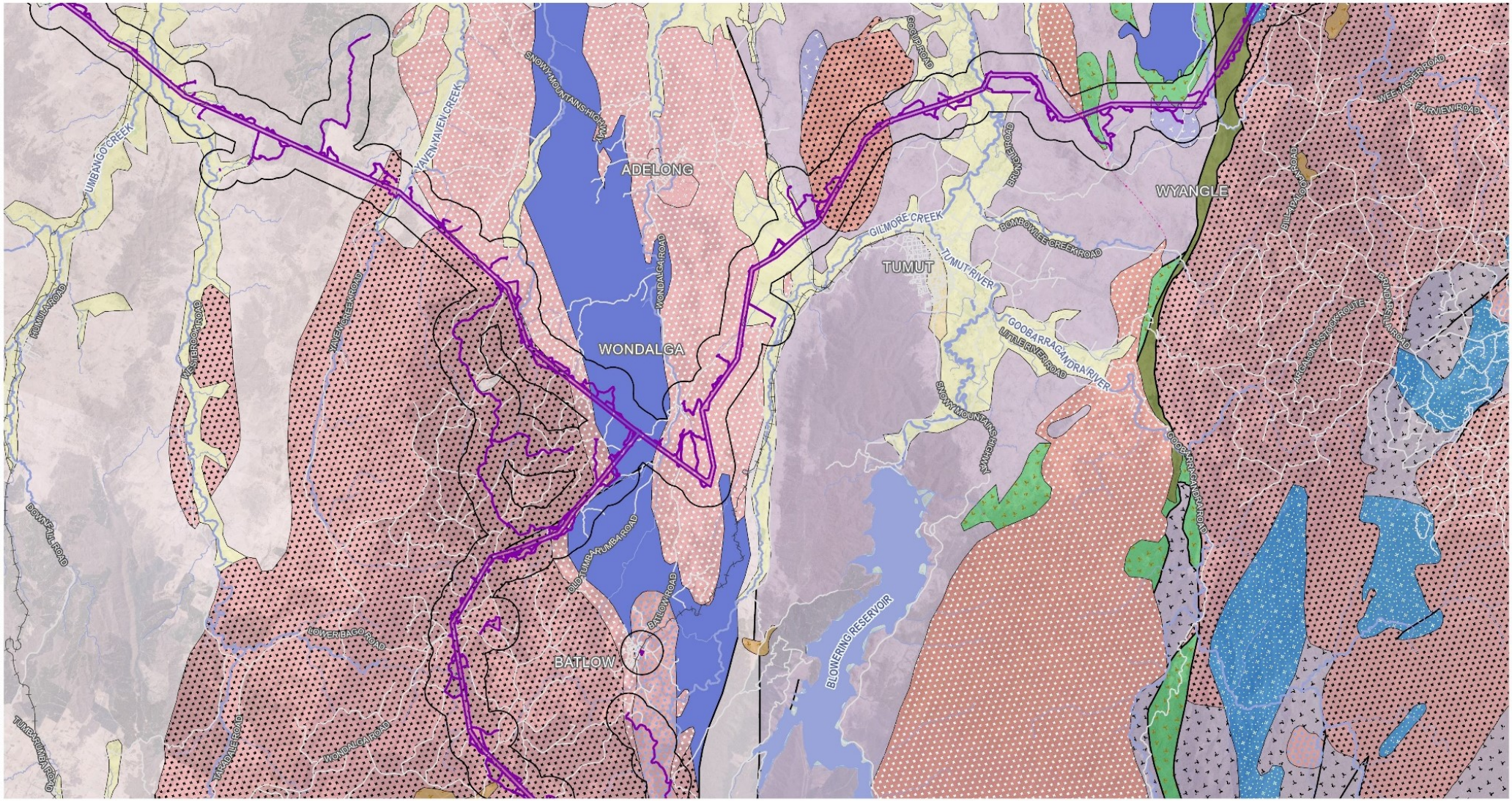
Source: *Aurecon, Transgrid, Department of Regional New South Wales, Spatial Services (DCS), ESRI Basemap*

1:200,000

0 4 8km

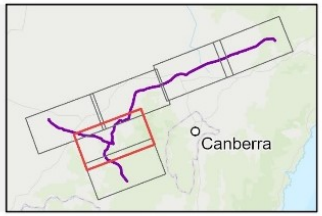
Projection: GDA 1994 MGA Zone 55



Amended project footprint
Amended contamination study area
Railway
Watercourse
Substation

NSW Simplified Surface Geology (1:1500k)

- Dyke or vein
- Fault
- Fault, concealed
- Geological boundary
- Water feature
- Igneous felsic intrusive (I-type)
- Igneous felsic intrusive (S-type)
- Igneous felsic intrusive (undifferentiated)
- Igneous mafic volcanic
- Igneous mafic volcanic (Ordovician)
- Igneous mafic intrusive
- Igneous silicic to intermediate volcanic (I-type)
- Igneous silicic to intermediate volcanic (S-type)
- Quaternary alluvial deposits
- Silurian mafic volcanic rocks
- Ordovician mafic intrusives
- Devonian sedimentary and volcanic rocks
- Ordovician sedimentary rocks
- Silurian sedimentary and volcanic rocks
- Cenozoic mafic volcanic rocks
- Ordovician sedimentary and volcanic rocks
- Palaeozoic ultramafic rocks and serpentinized ultramafic rocks
- Quaternary colluvial deposits
- Devonian silicic to intermediate intrusives
- Silurian silicic to intermediate intrusives
- Water

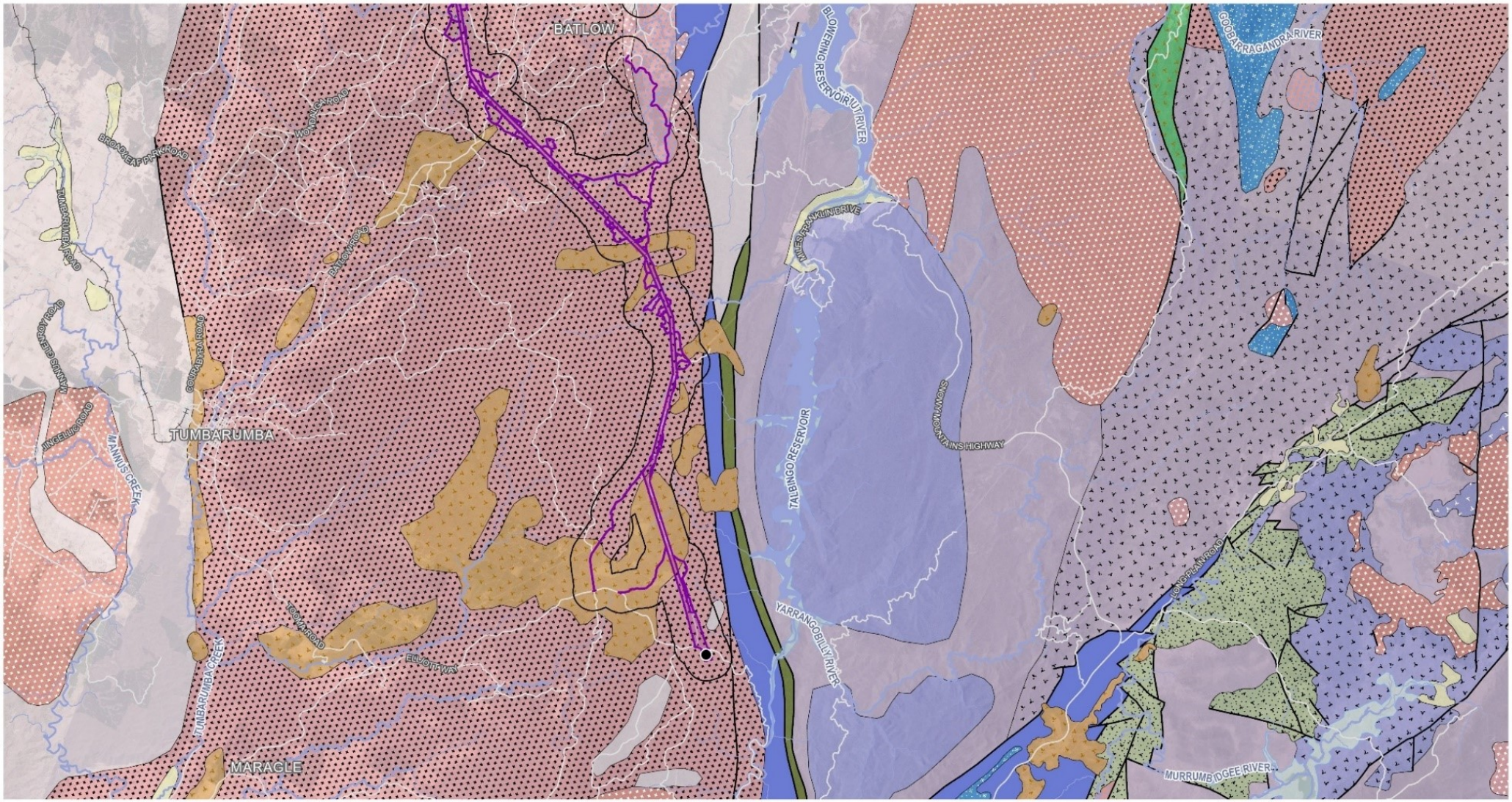


Source: *Aurecon, Transgrid, Department of Regional New South Wales, Spatial Services (DCS), ESRI Basemap*

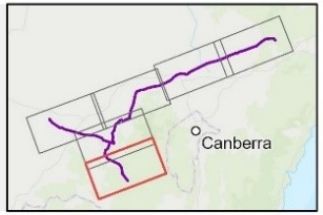
1:200,000
0 4 8km

Projection: GDA 1994 MGA Zone 55

C:\Users\Virgil.Robinson\Aurecon Group\507179 - HumeLink Project Development Suppor - EIS\ArcPro\507179_HumeLink_Soil_&_Contam.aprx\09-01-24\Virgil.Robinson



Amended project footprint
Amended contamination study area
Railway
Watercourse
Substation
NSW Simplified Surface Geology (1:1500k)
Dyke or vein
Fault
Fault, concealed
Geological boundary
Water feature
Igneous felsic intrusive (I-type)
Igneous felsic intrusive (S-type)
Igneous felsic intrusive (undifferentiated)
Igneous mafic volcanic
Igneous mafic volcanic (Ordovician)
Igneous mafic intrusive
Igneous silicic to intermediate volcanic (I-type)
Igneous silicic to intermediate volcanic (S-type)
Sedimentary & volcanic
Quaternary alluvial deposits
Silurian mafic volcanic rocks
Ordovician mafic intrusives
Devonian sedimentary and volcanic rocks
Ordovician sedimentary rocks
Silurian sedimentary and volcanic rocks
Cenozoic mafic volcanic rocks
Ordovician sedimentary and volcanic rocks
Palaeozoic ultramafic rocks and serpentinized ultramafic rocks
Devonian silicic to intermediate intrusives
Silurian silicic to intermediate intrusives
Water



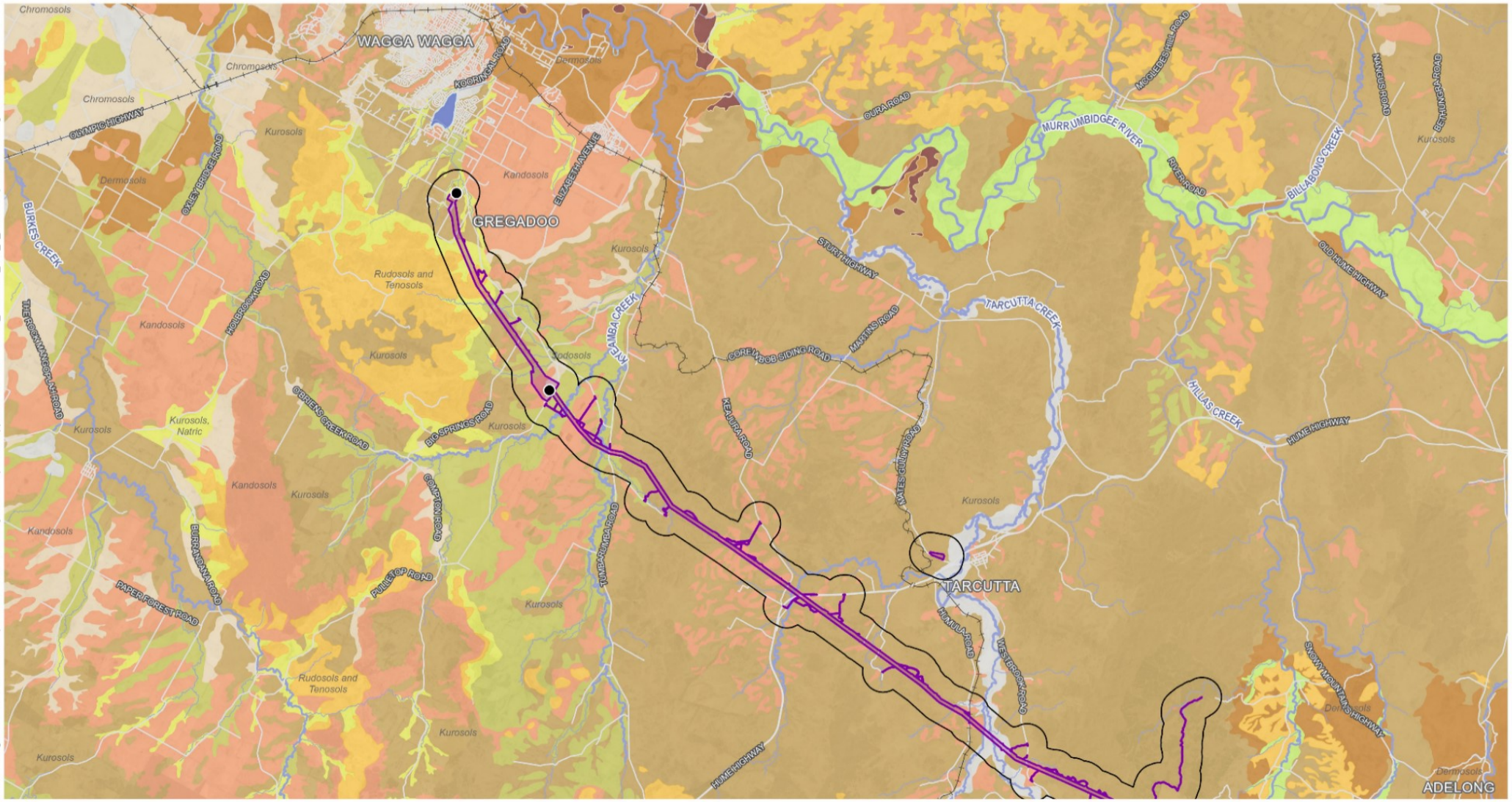
Source: *Aurecon, Transgrid, Department of Regional New South Wales, Spatial Services (DCS), ESRI Basemap*

1:200,000
0 4 8km

Projection: GDA 1994 MGA Zone 55

C:\Users\Virgil.Robinson\Aurecon Group\507179 - HumeLink Project Development Suppor - EIS\ArcPro\507179_HumeLink_Soil_&_Contam.aprx\09-01-24\Virgil.Robinson

Attachment C
Australian soil classification



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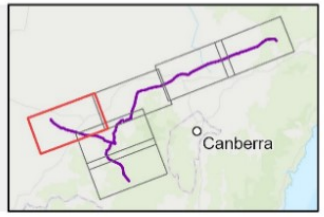
Amended project footprint
Amended contamination study area
Railway
Watercourse
Substation

Australian Soil Classification

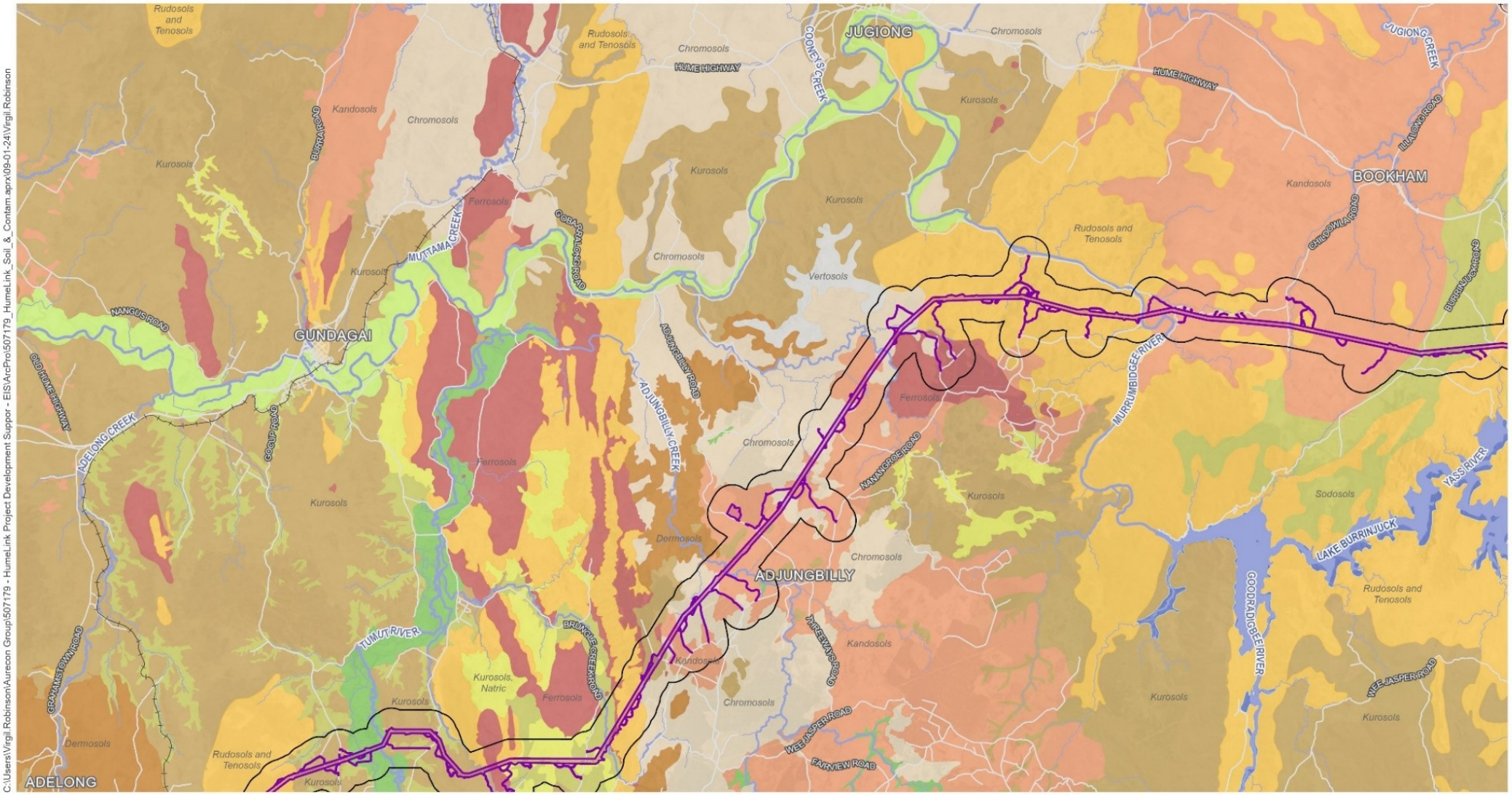
Chromosols
Dermosols
Ferrosols
Hydrosols
Kandosols
Kurosols
Kurosols, Natric
Organosols
Rudosols
Rudosols (Alluvial)
Rudosols and Tenosols
Sodosols
Tenosols
Tenosols (Alluvial)
Vertosols
Water



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

1:200,000
0 4 8km

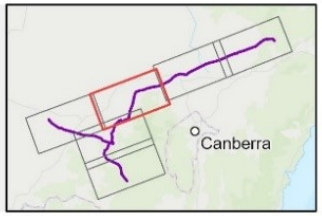
Projection: GDA 1994 MGA Zone 55



Amended project footprint
Amended contamination study area
Railway
Watercourse
Substation

Australian Soil Classification

Chromosols
Dermosols
Ferrosols
Hydrosols
Kandosols
Kurosols
Kurosols, Natric
Organosols
Rudosols
Rudosols (Alluvial)
Rudosols and Tenosols
Sodosols
Tenosols
Tenosols (Alluvial)
Vertosols
Water



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

1:200,000
0 4 8km

Projection: GDA 1994 MGA Zone 55

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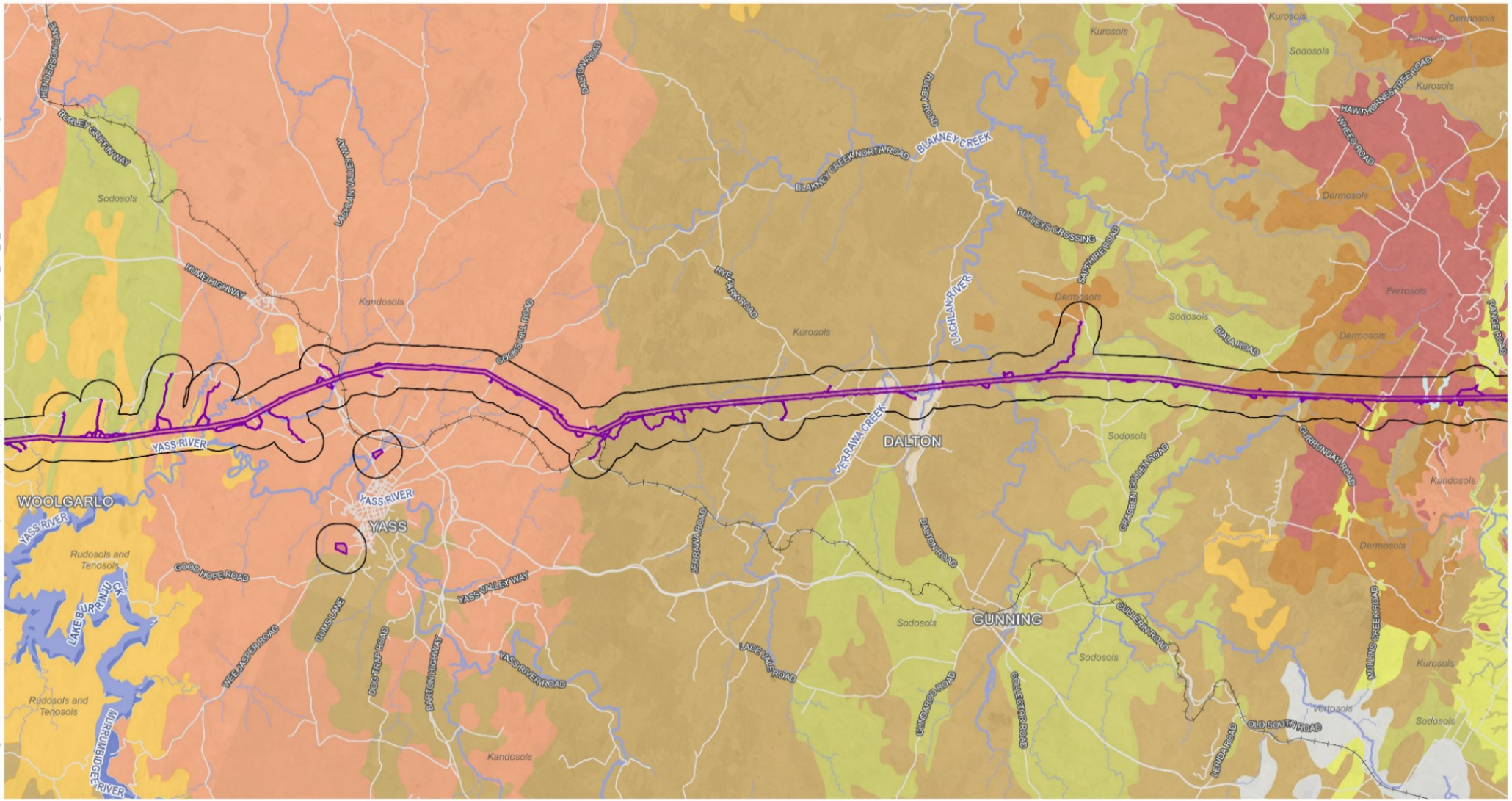

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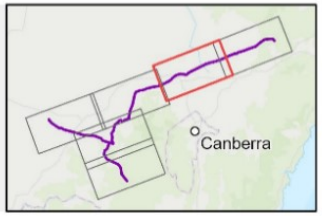
Amended project footprint
Amended contamination study area
Railway
Watercourse
Substation

Australian Soil Classification

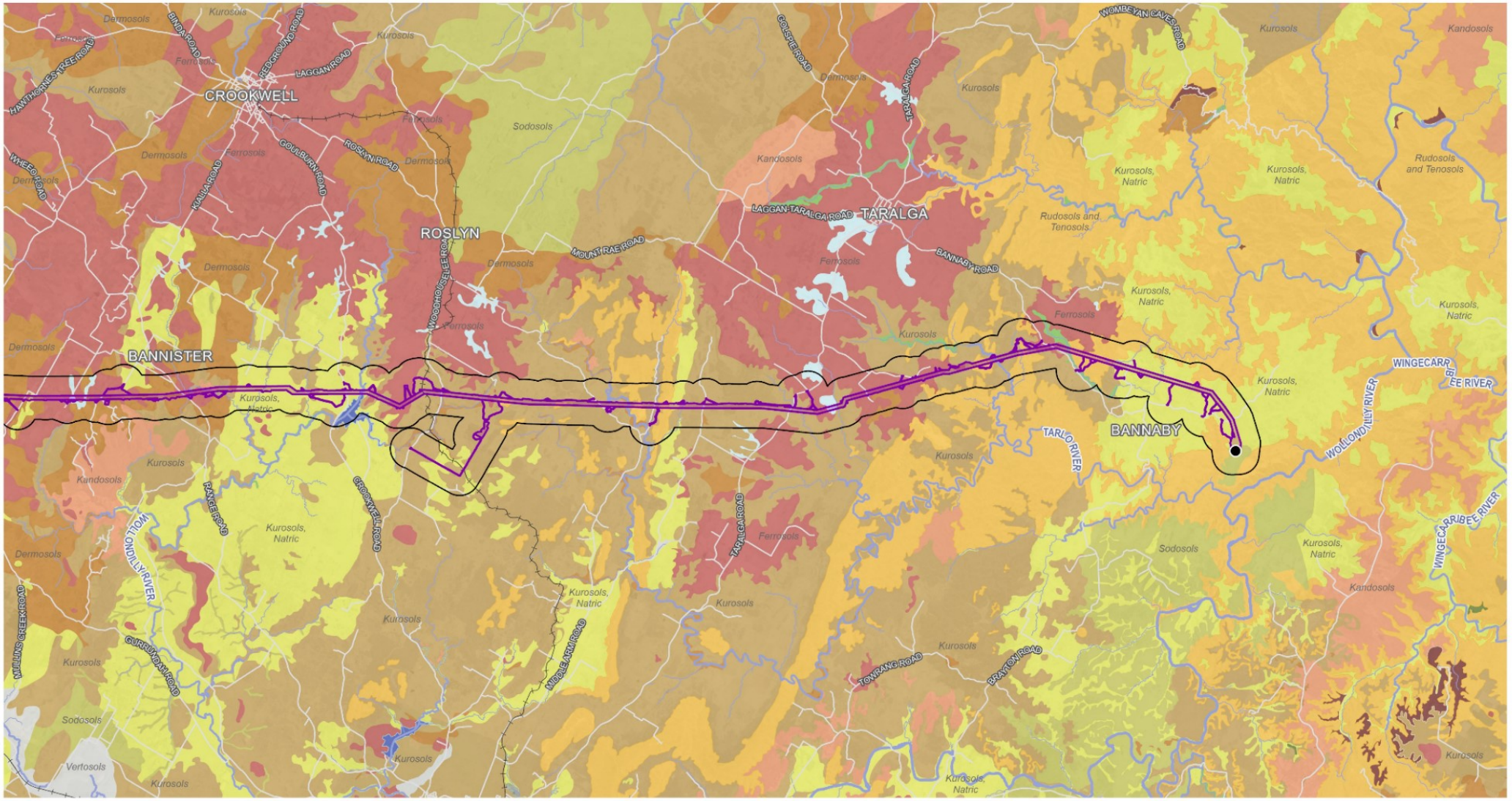
Chromosols
Dermosols
Ferrosols
Hydrosols
Kandosols
Kurosols
Kurosols, Natric
Organosols
Rudosols
Rudosols (Alluvial)
Rudosols and Tenosols
Sodosols
Tenosols
Tenosols (Alluvial)
Vertosols
Water



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

1:200,000
0 4 8km

Projection: GDA 1994 MGA Zone 55

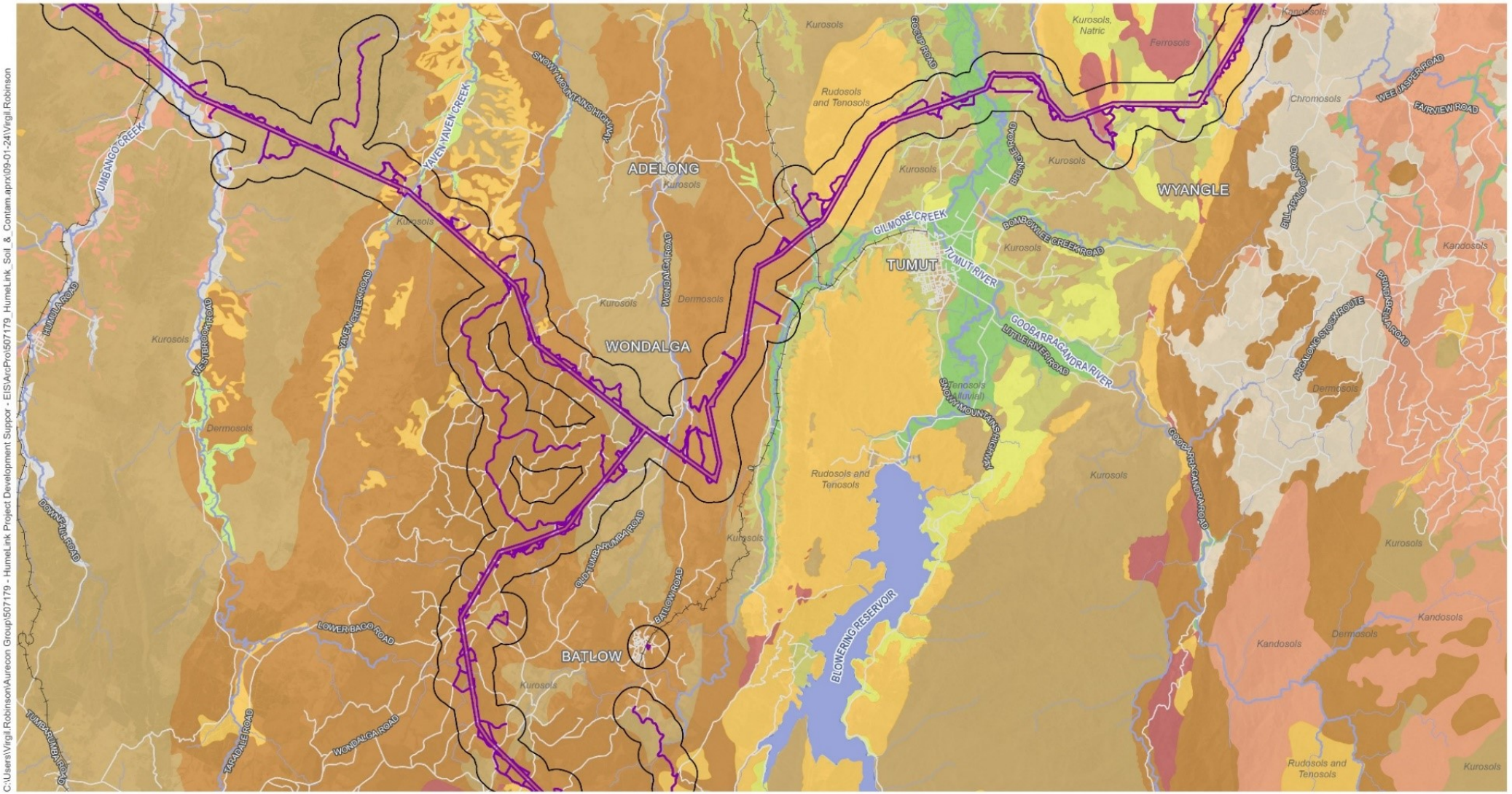


Source: *Aurecon, Transgrid, DPE, Spatial Services (DCS), ESRI Basemap*

1:200,000

0 4 8km

Projection: GDA 1994 MGA Zone 55



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Amended project footprint
Amended contamination study area
Railway
Watercourse
Substation

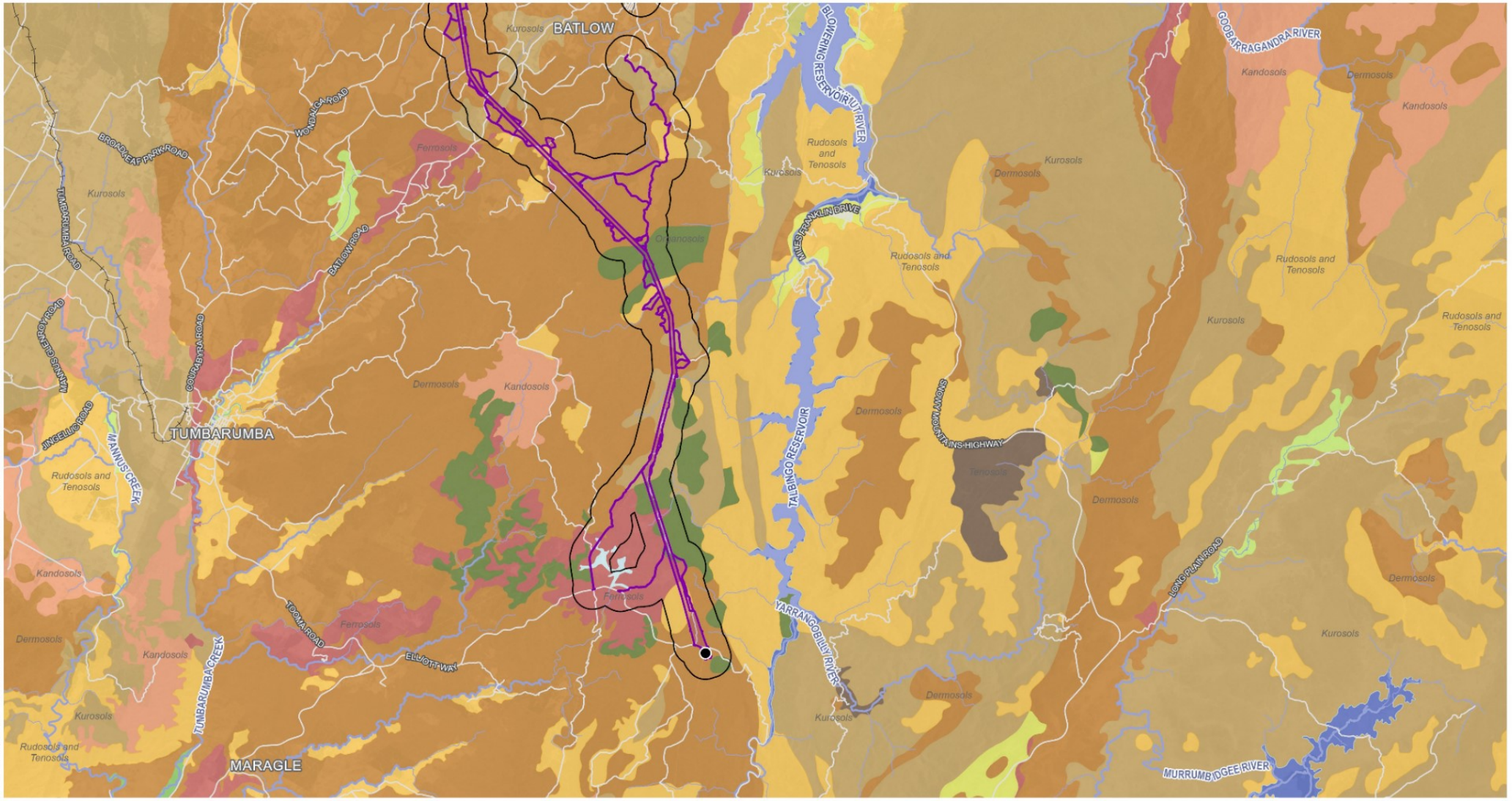
Australian Soil Classification

Chromosols
Dermosols
Ferrosols
Hydrosols
Kandosols
Kurosols
Kurosols, Natric
Organosols
Rudosols
Rudosols (Alluvial)
Rudosols and Tenosols
Sodosols
Tenosols
Tenosols (Alluvial)
Vertosols
Water

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

1:200,000
0 4 8 km

Projection: GDA 1994 MGA Zone 55



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

1:200,000

0 4 8km

Projection: GDA 1994 MGA Zone 55

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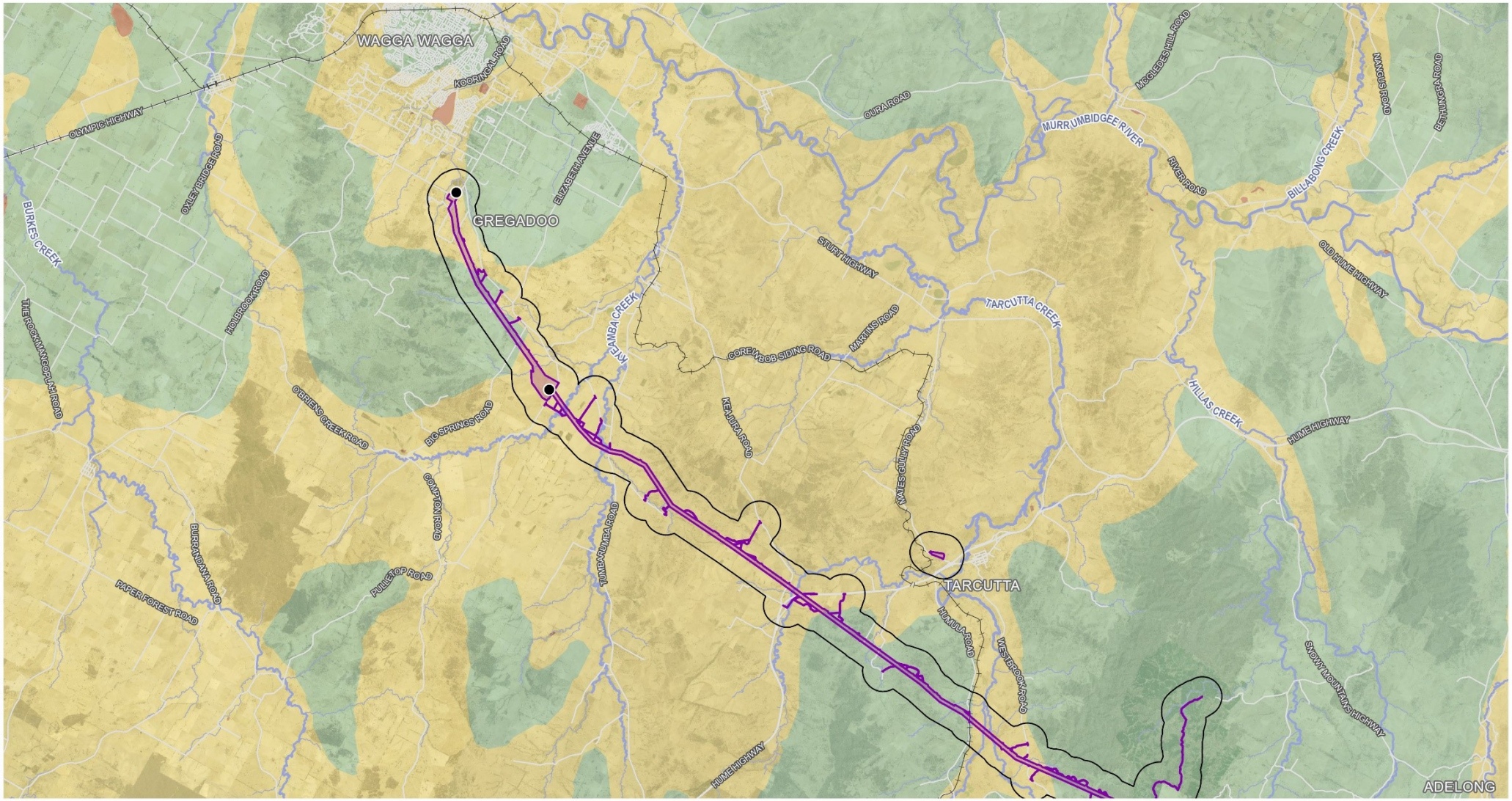
Attachment D
Acid sulfate soils



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Amended project footprint

Amended contamination study area

Railway

Watercourse

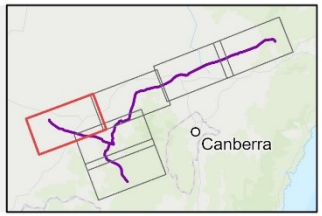
Substation

National Acid Sulfate Soils Atlas

High Probability/Very Low Confidence

Low Probability/Very Low Confidence

Extremely Low Probability/Very Low Confidence

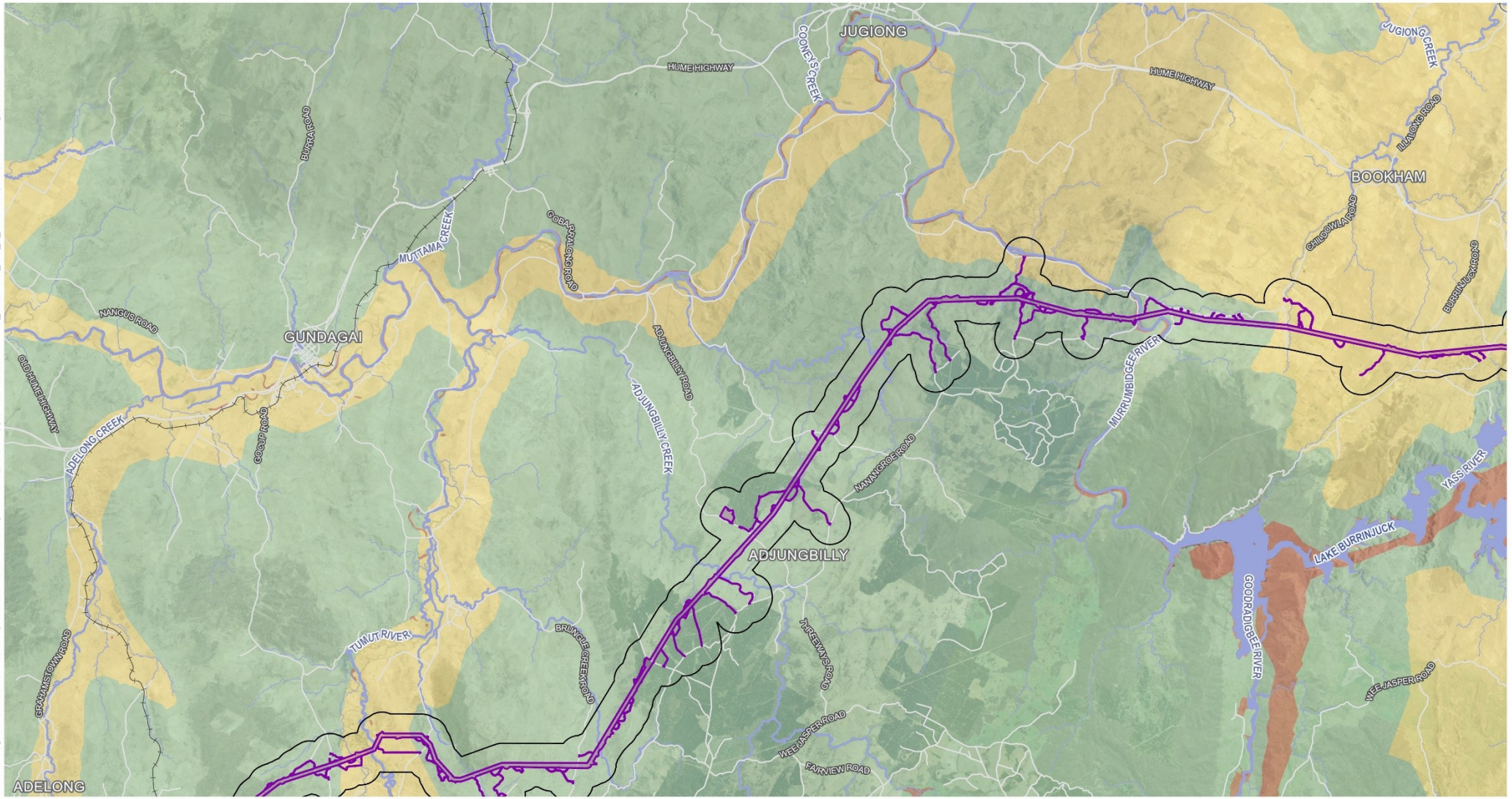


Source: *Aurecon, Transgrid, CSIRO, Spatial Services (DCS), ESRI Basemap*

1:200,000

0 4 8km

Projection: GDA 1994 MGA Zone 55



Amended project footprint

Amended contamination study area

Railway

Watercourse

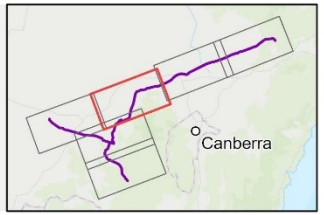
Substation

National Acid Sulfate Soils Atlas

High Probability/Very Low Confidence

Low Probability/Very Low Confidence

Extremely Low Probability/Very Low Confidence

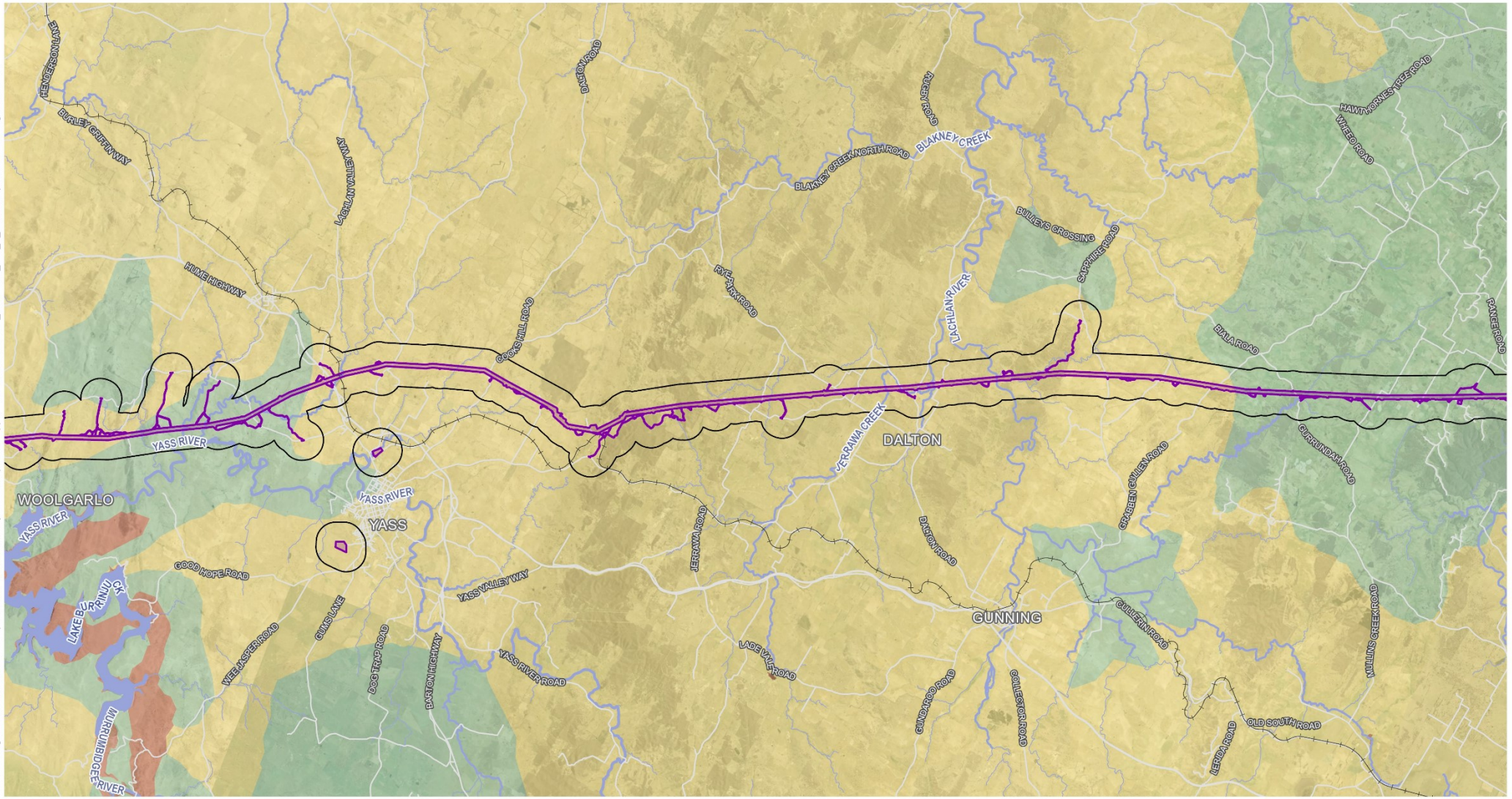


Source: *Aurecon, Transgrid, CSIRO, Spatial Services (DCS), ESRI Basemap*

1:200,000

0 4 8km

Projection: GDA 1994 MGA Zone 55



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Amended project footprint

Amended contamination study area

Railway

Watercourse

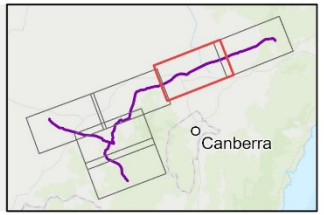
Substation

National Acid Sulfate Soils Atlas

High Probability/Very Low Confidence

Low Probability/Very Low Confidence

Extremely Low Probability/Very Low Confidence

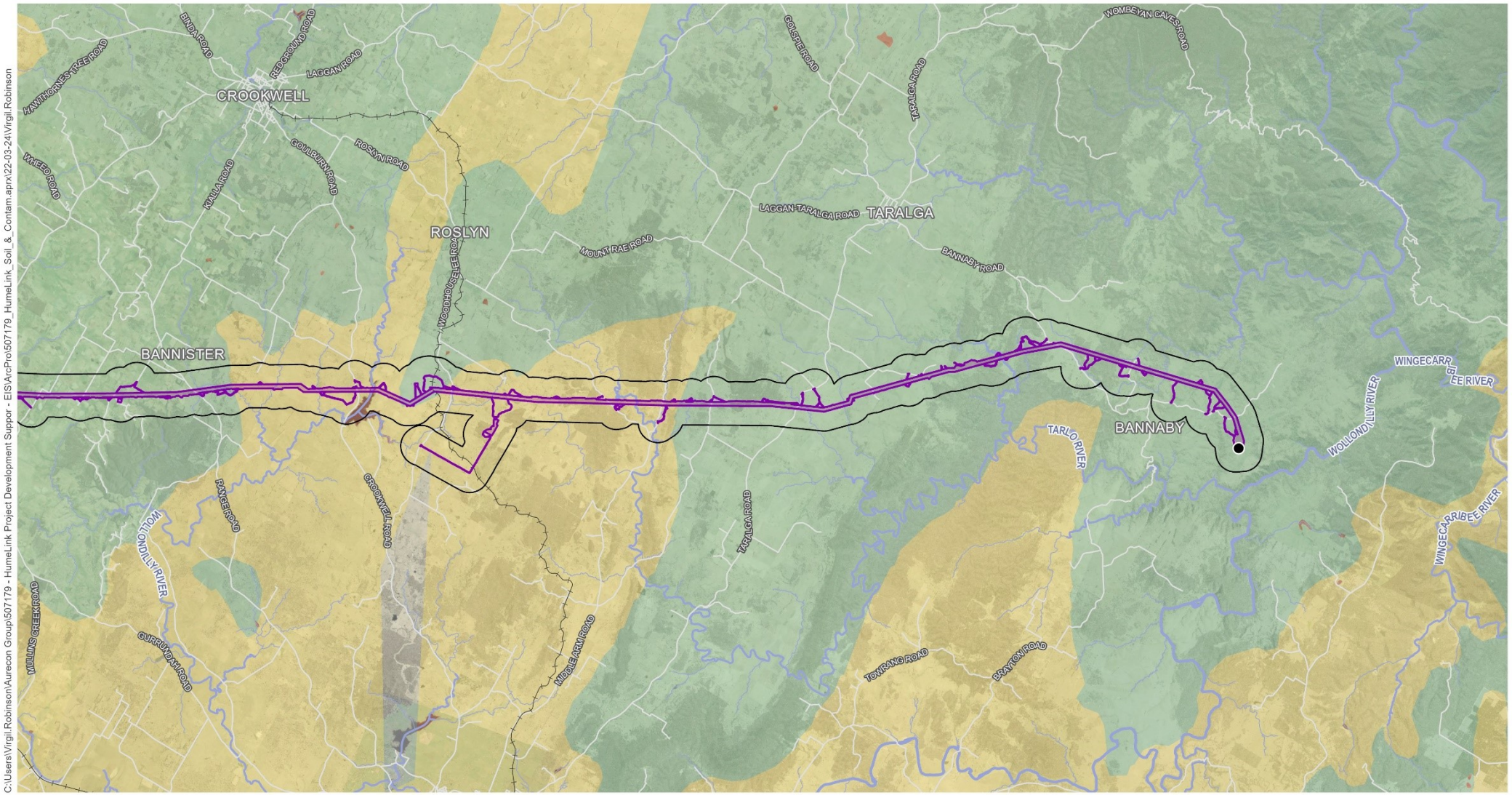


Source: *Aurecon, Transgrid, CSIRO, Spatial Services (DCS), ESRI Basemap*

1:200,000

0 4 8 km

Projection: GDA 1994 MGA Zone 55



Amended project footprint

Amended contamination study area

Railway

Watercourse

Substation

National Acid Sulfate Soils Atlas

High Probability/Very Low Confidence

Low Probability/Very Low Confidence

Extremely Low Probability/Very Low Confidence

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

1:200,000

0 4 8km

Projection: GDA 1994 MGA Zone 55

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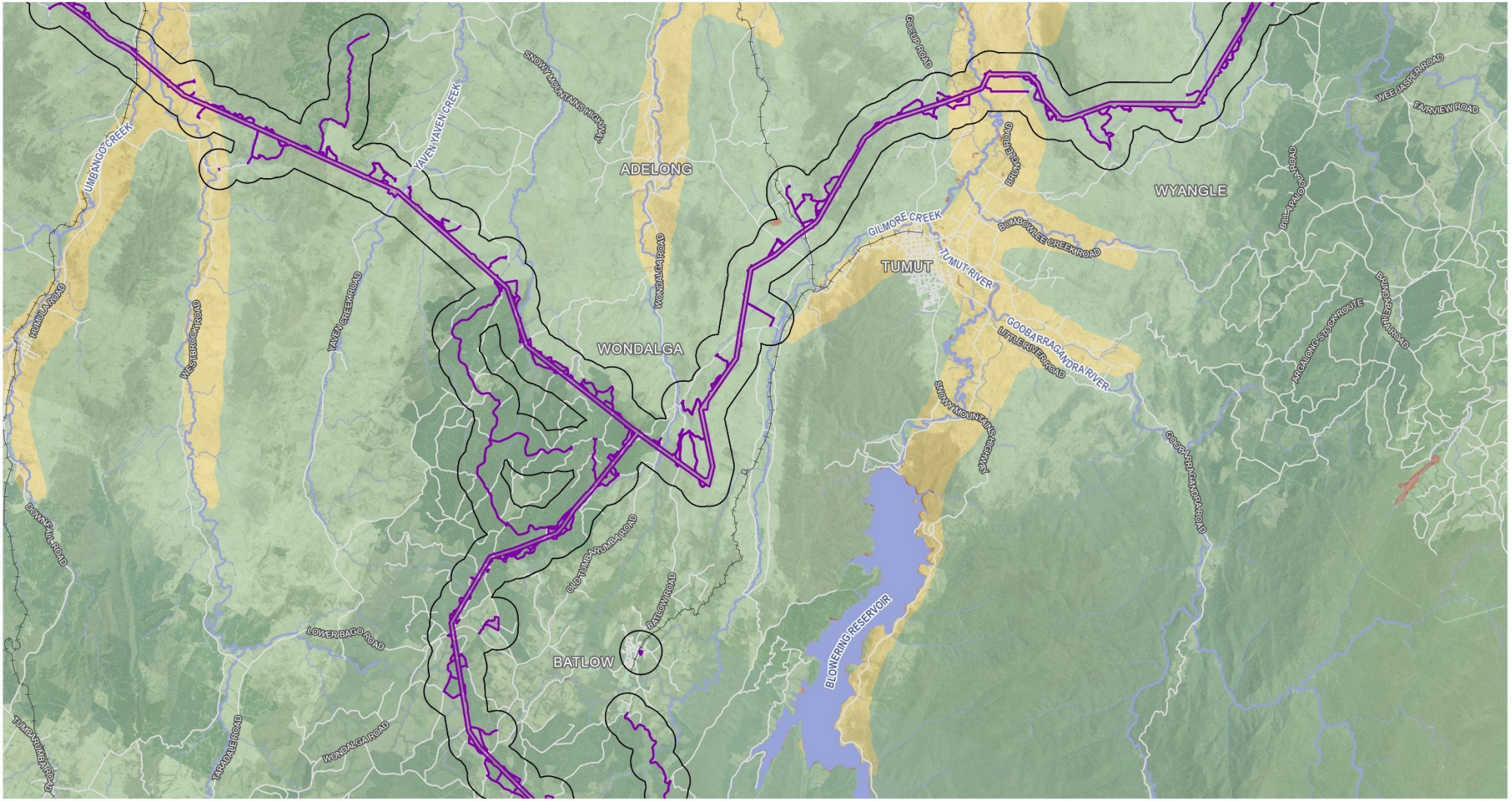
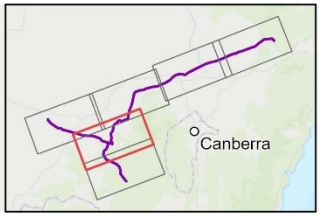


Amended project footprint
Amended contamination study area
Railway
Watercourse
Substation

National Acid Sulfate Soils Atlas

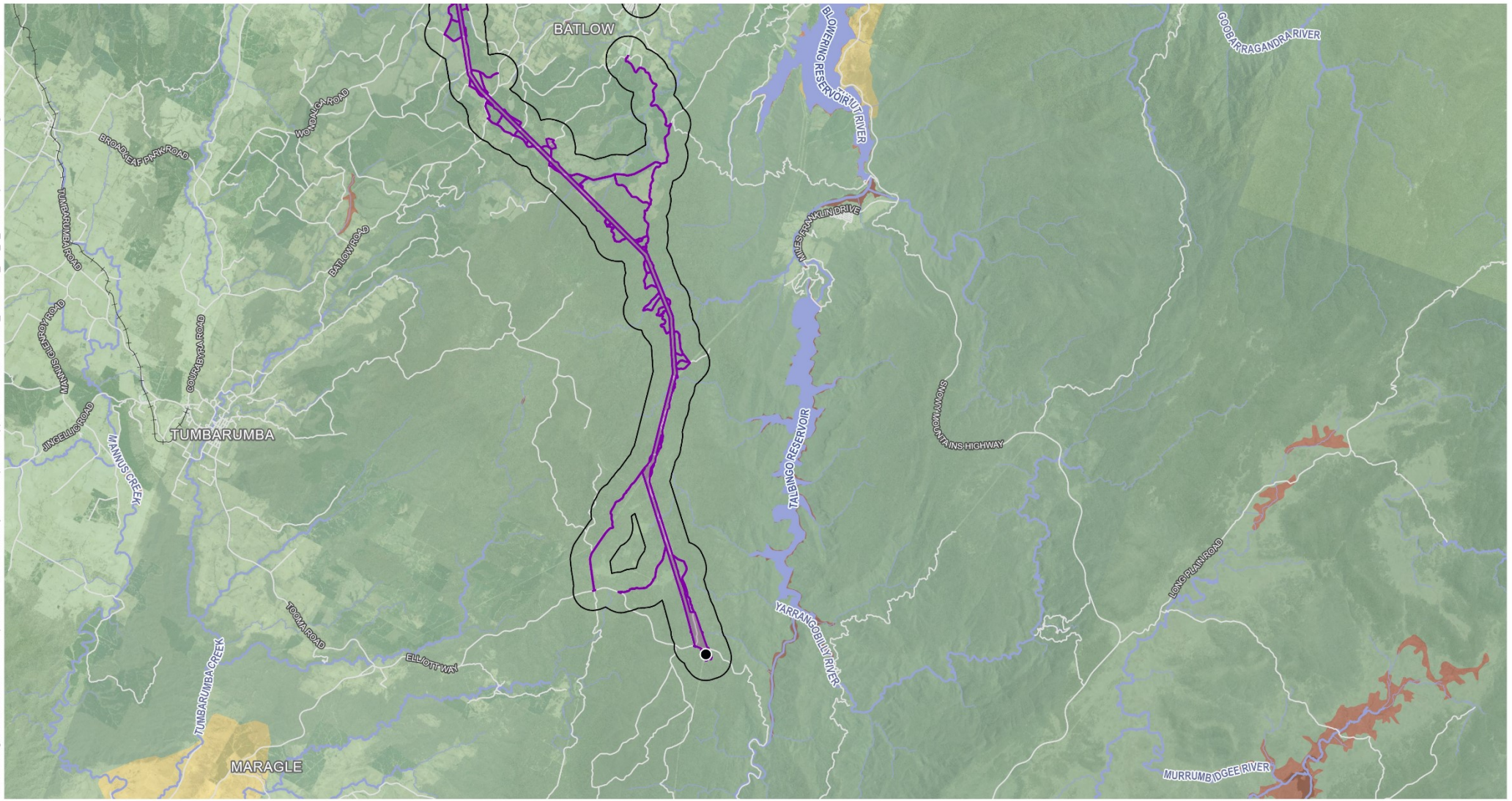
High Probability/Very Low Confidence
Low Probability/Very Low Confidence
Extremely Low Probability/Very Low Confidence



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

1:200,000
0 4 8km

Projection: GDA 1994 MGA Zone 55



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Amended project footprint

Amended contamination study area

Railway

Watercourse

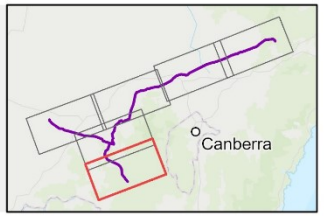
Substation

National Acid Sulfate Soils Atlas

High Probability/Very Low Confidence

Low Probability/Very Low Confidence

Extremely Low Probability/Very Low Confidence



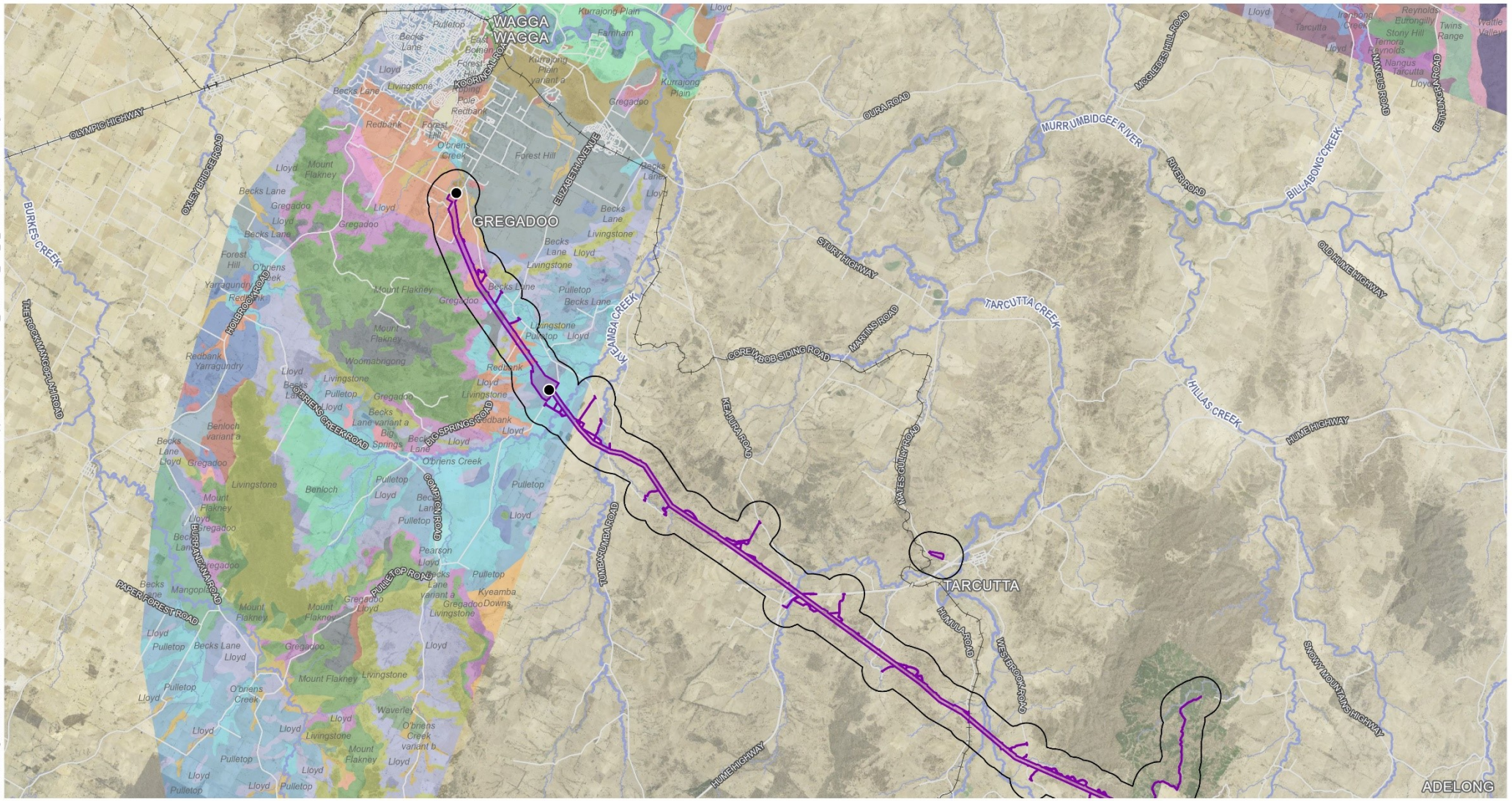
Source: *Aurecon, Transgrid, CSIRO, Spatial Services (DCS), ESRI Basemap*

1:200,000

0 4 8 km

Projection: GDA 1994 MGA Zone 55

Attachment E
Soil landscapes



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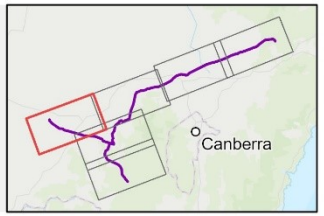
Amended project footprint
Amended contamination study area
Railway
Watercourse
Substation

Soil Landscapes

- Becks Lane
- Becks Lane variant a
- Benloch
- Benloch variant a
- Bethungra
- Big Springs
- Currajong
- Currawarna
- East Bomen
- Eurongilly
- Farnham
- Forest Hill
- Glenmornon
- Gregadoo
- Gregadoo variant a
- Ironbong Creek
- Ironbong Creek variant a
- Kurrajong Plain
- Kurrajong Plain variant a
- Kyeamba Downs
- Livingstone
- Lloyd
- Mangoplah
- Mount Flakney
- Mount Flakney variant a
- Nangus
- O'briens Creek
- O'briens Creek variant a
- O'briens Creek variant b
- Pearson
- Pulletop
- Redbank
- Reynolds
- Roping Pole
- Stony Hill
- Tarcutta
- Temora
- Temora variant a
- Twins Range
- Twins Range variant a
- Wattle Valley
- Waverley
- Woomabrigong
- Yarragundry



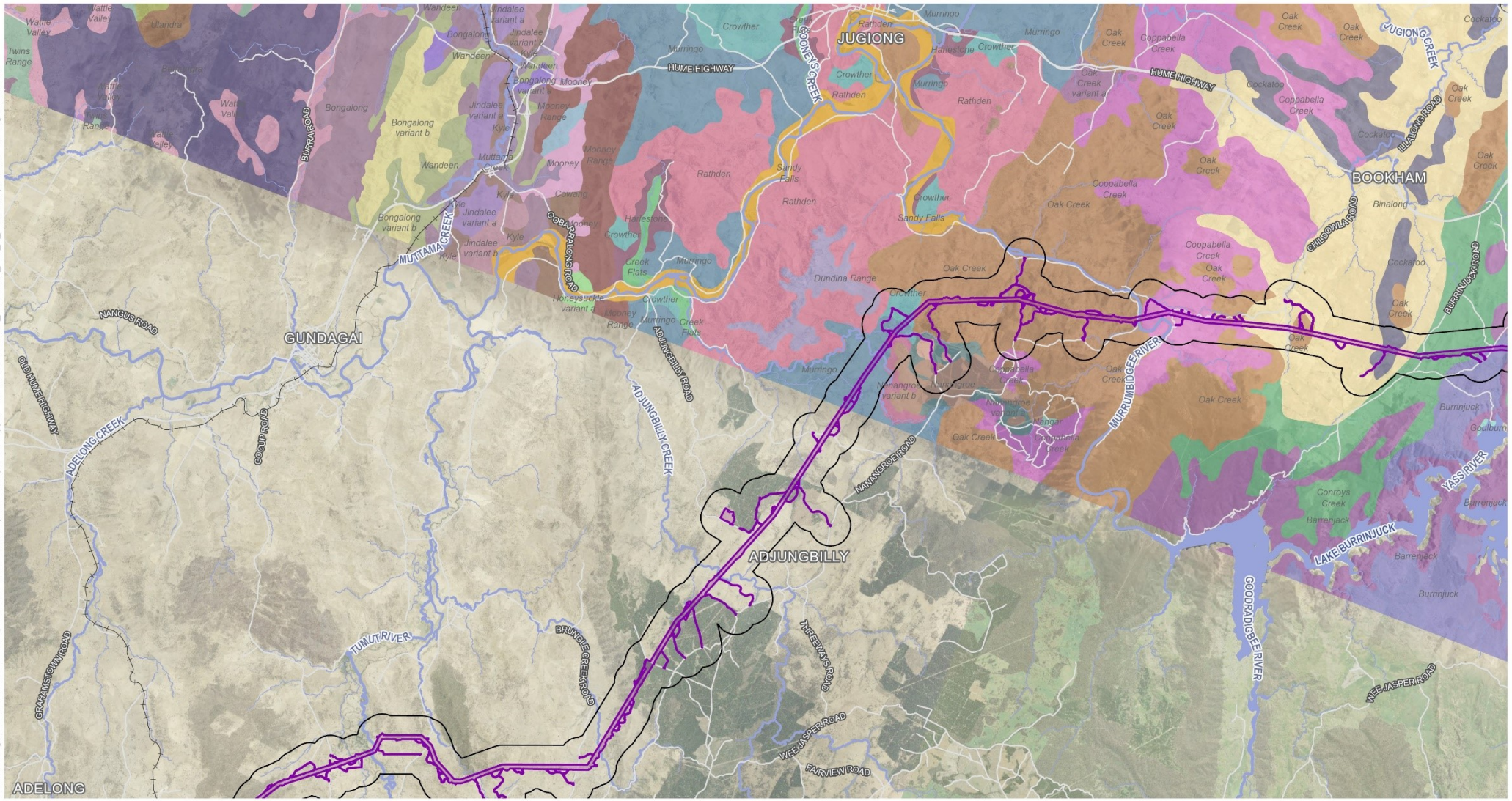
Source: *Aurecon, Transgrid, DPE, Spatial Services (DCS), ESRI Basemap*

1:200,000
0 4 8 km

Projection: GDA 1994 MGA Zone 55

HumeLink

Attachment E: Soil Landscapes **Page 1 of 6**



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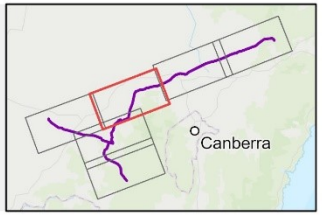
Amended project footprint
Amended contamination study area
Railway
Watercourse
Substation

Soil Landscapes

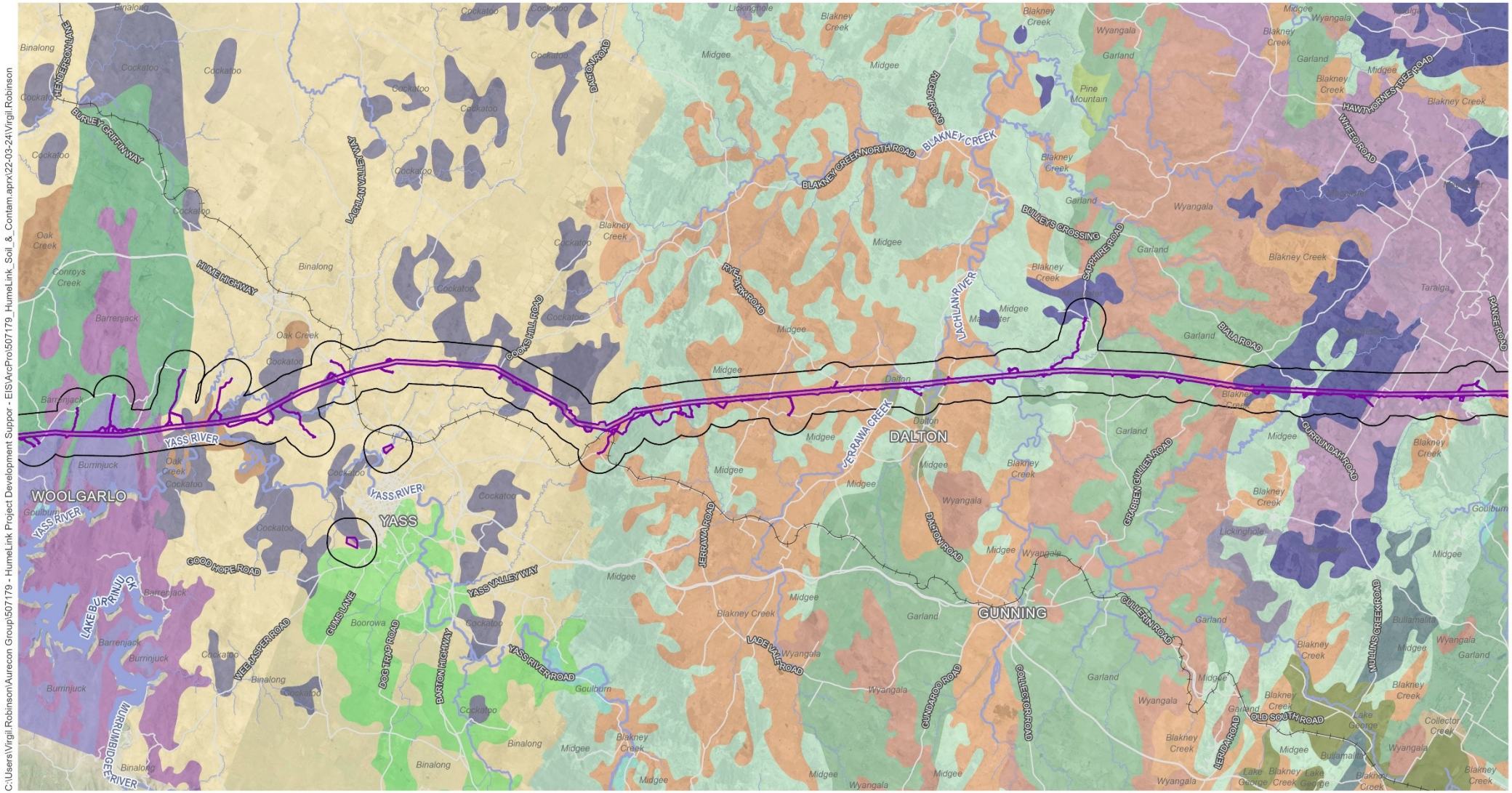
- Barrenjack
- Bethungra
- Binalong
- Bongalong
- Bongalong variant a
- Bongalong variant b
- Burrinjuck
- Caulderwood
- Cockatoo
- Conroys Creek
- Coppabella Creek
- Cowang
- Creek Flats
- Crowther
- Crowther variant a
- Dundina Range
- Goulburn
- Harlestone
- Honeysuckle variant a
- Jindalee variant a
- Jindalee variant b
- Kyle
- Mooney
- Mooney Range
- Murringo
- Muttama Creek
- Nanangroe
- Nanangroe variant a
- Nanangroe variant b
- Nangar
- Nangus
- Oak Creek
- Oak Creek variant a
- Rathden
- Sandy Falls
- Tarcutta
- Twins Range
- Twins Range variant a
- Ulandra
- Ulandra variant a
- Wandeen
- Wattle Valley



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

1:200,000
0 4 8 km

Projection: GDA 1994 MGA Zone 55

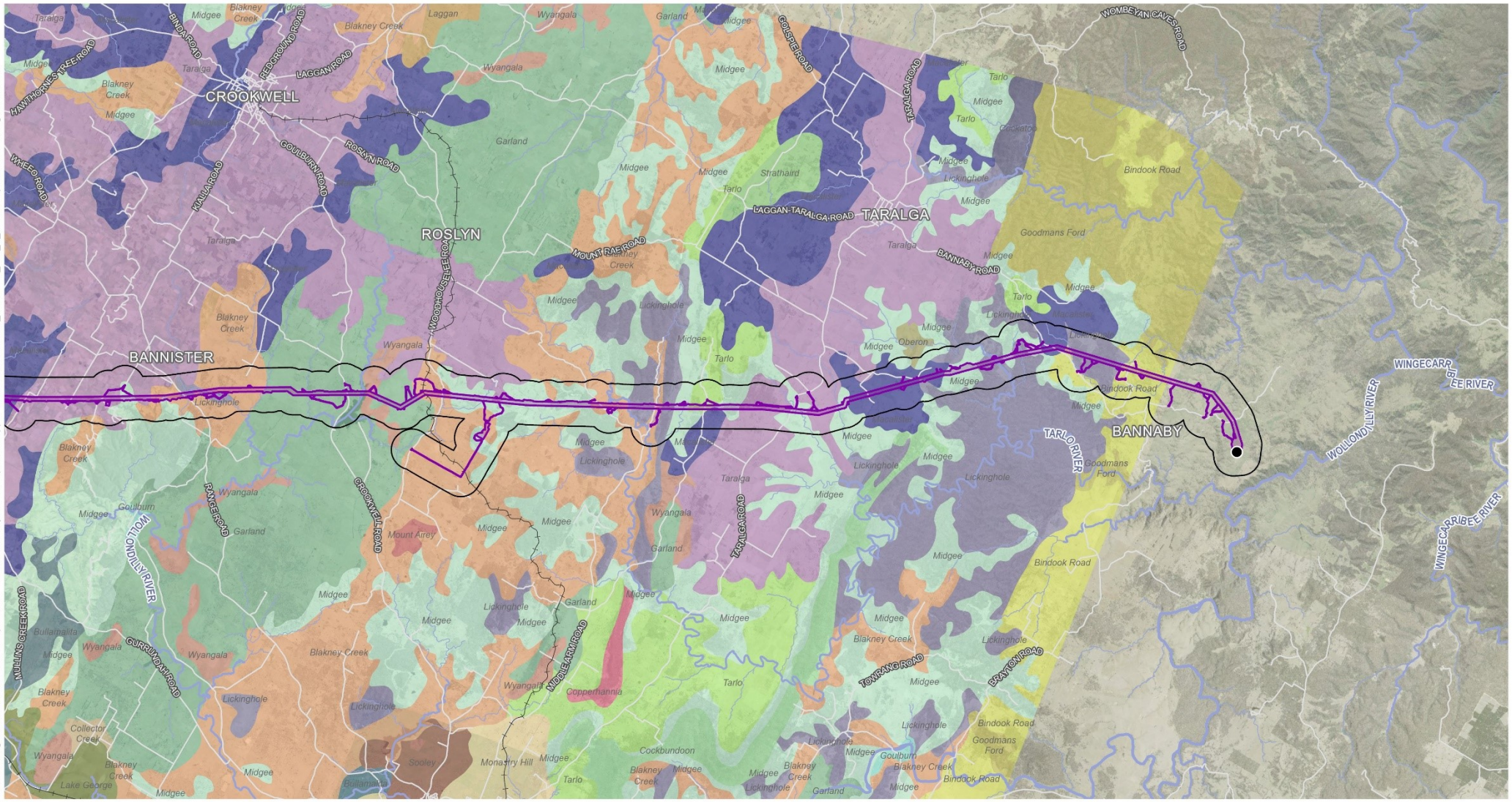


Source: *Aurecon, Transgrid, DPE, Spatial Services (DCS), ESRI Basemap*

1:200,000

0 4 8 km

Projection: GDA 1994 MGA Zone 55



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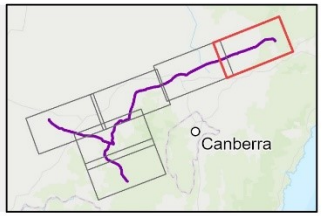
Amended project footprint
Amended contamination study area
Railway
Watercourse
Substation

Soil Landscapes

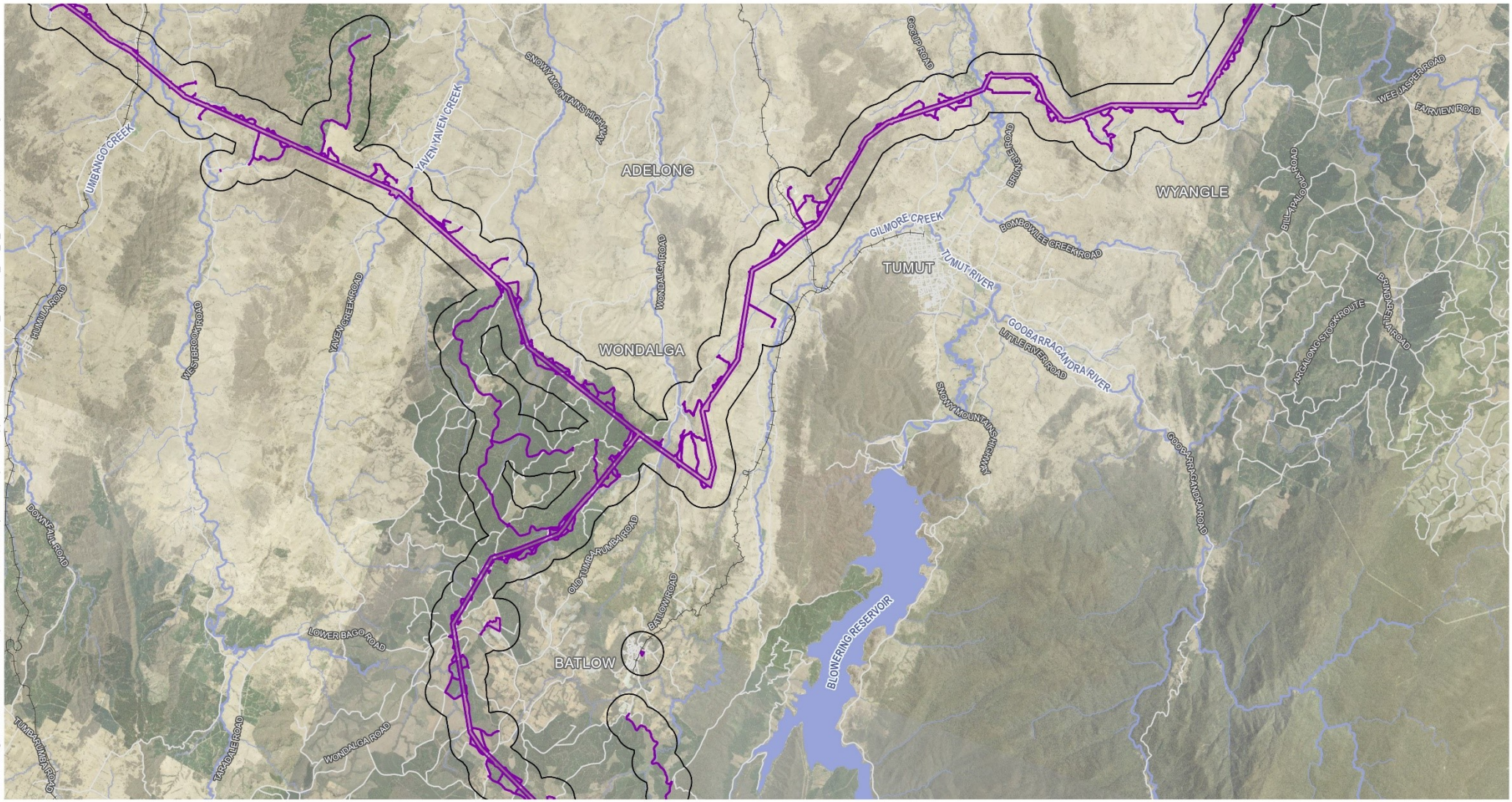
- Bindook Road
- Blakney Creek
- Bullamalita
- Cockatoo
- Cockbundoon
- Collector Creek
- Copperhannia
- Garland
- Goodmans Ford
- Goulburn
- Laggan
- Lake George
- Lickinghole
- Macalister
- Midgee
- Monastry Hill
- Mount Airey
- Oberon
- Sooley
- Strathaird
- Taralga
- Tarlo
- Wyangala



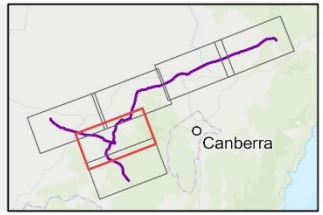
Source: *Aurecon, Transgrid, DPE, Spatial Services (DCS), ESRI Basemap*

1:200,000
0 4 8km

Projection: GDA 1994 MGA Zone 55



Amended project footprint
Amended contamination study area
Railway
Watercourse
Substation



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

1:200,000
0 4 8 km

Projection: GDA 1994 MGA Zone 55

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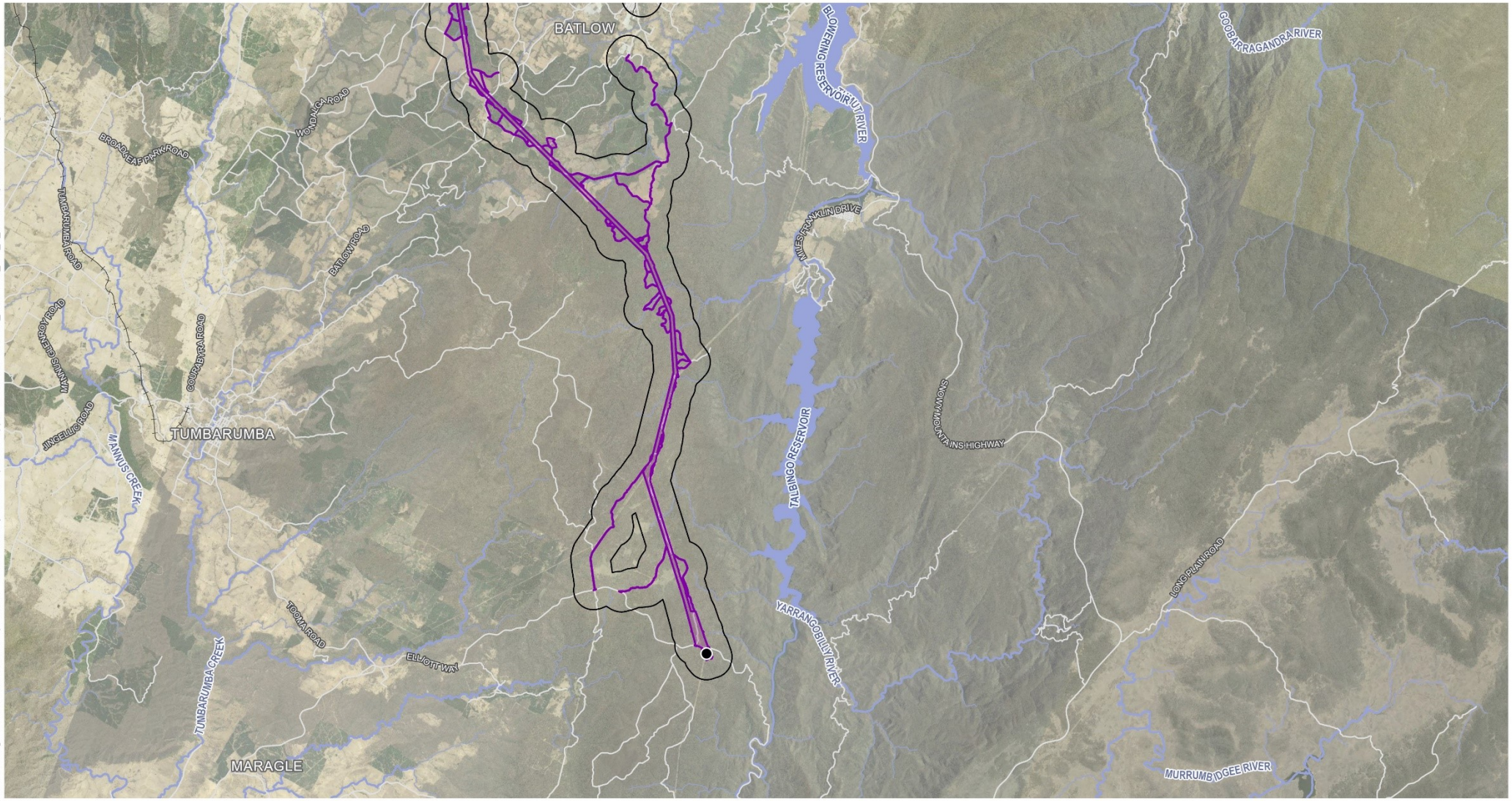


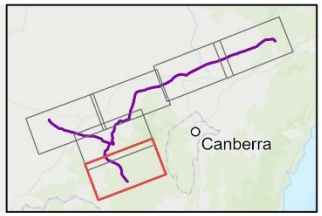
Amended project footprint

Amended contamination study area

Railway

Watercourse

Substation



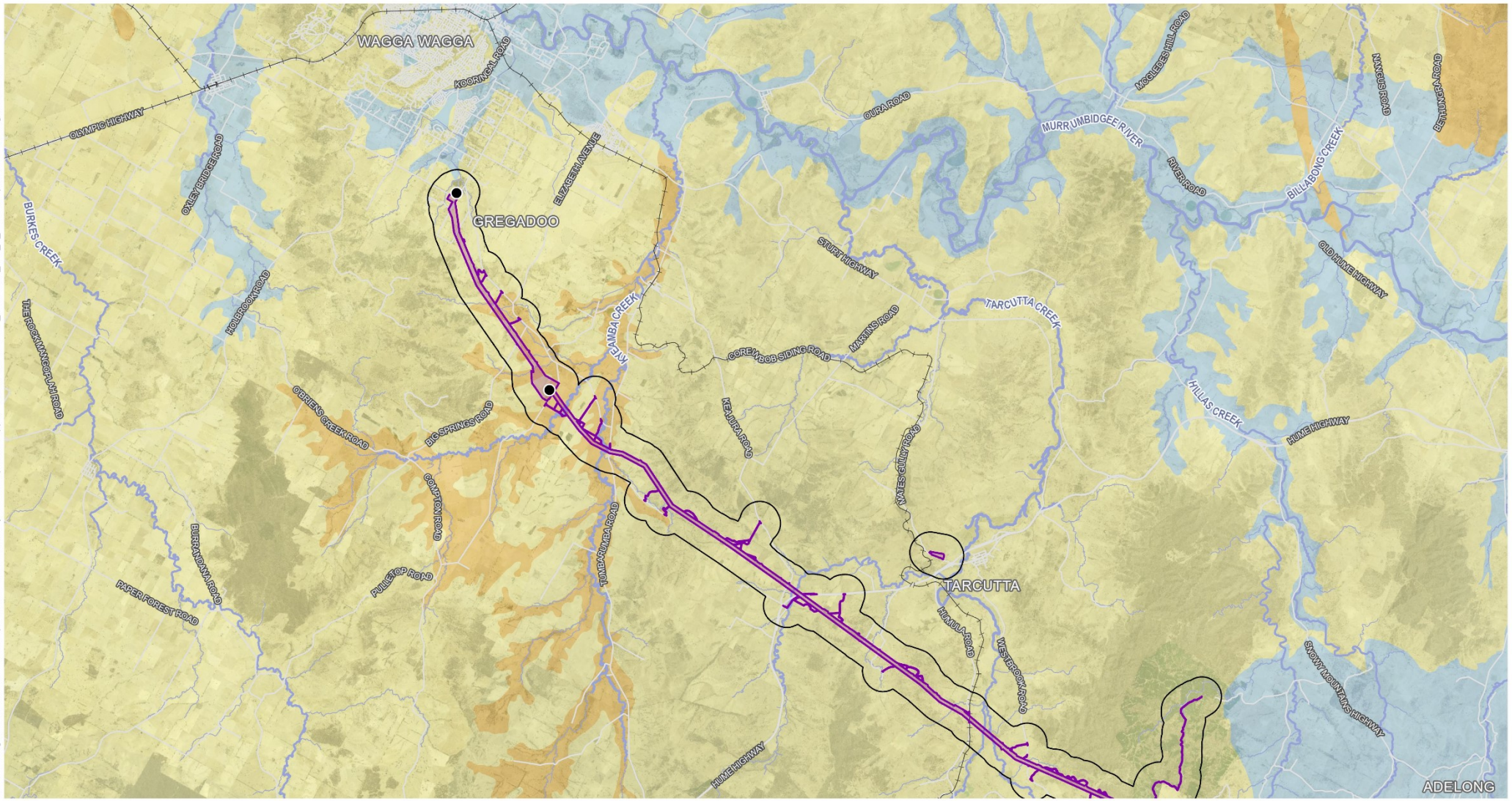
Source: *Aurecon, Transgrid, DPE, Spatial Services (DCS), ESRI Basemap*

1:200,000

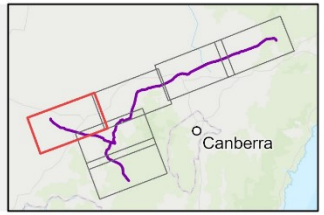
0 4 8 km

Projection: GDA 1994 MGA Zone 55

Attachment F
Soil salinity



Amended project footprint
Amended contamination study area
Railway
Watercourse
Substation
Overall salinity hazard
High
Moderate
Low



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

1:200,000
0 4 8km

Projection: GDA 1994 MGA Zone 55

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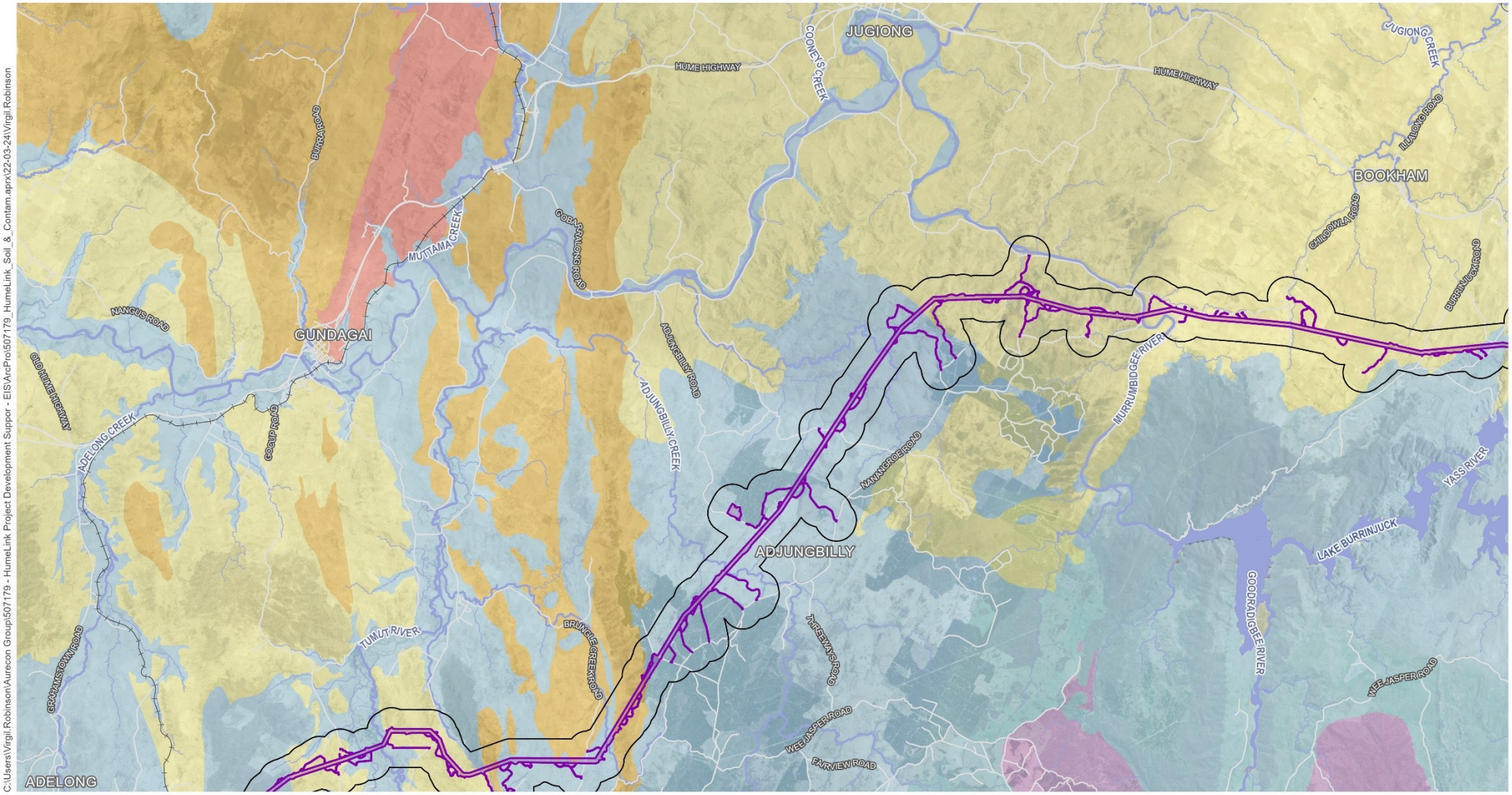

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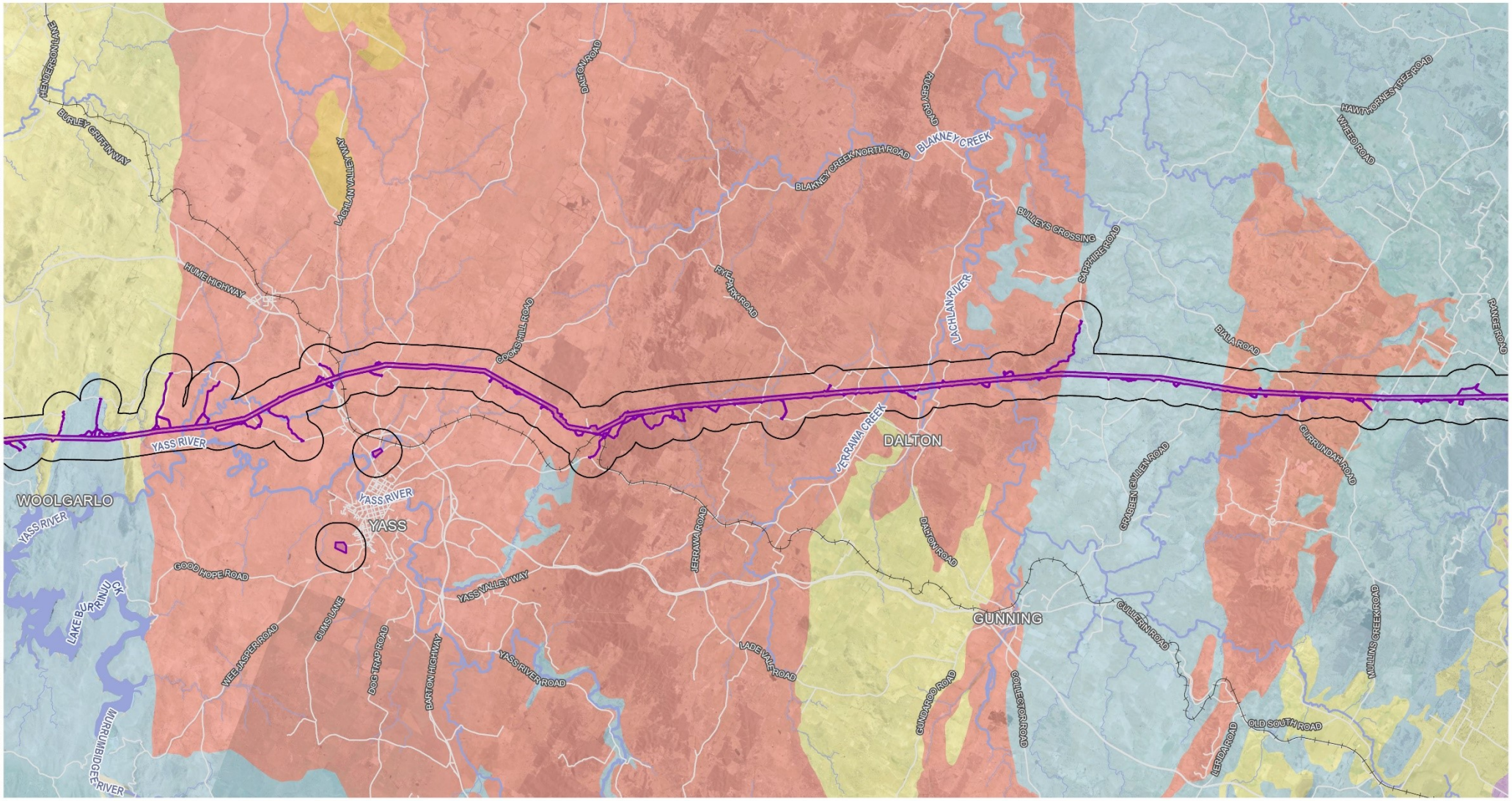
Source: *Aurecon, Transgrid, DPE, Spatial Services (DCS), ESRI Basemap*

1:200,000

0 4 8 km

Projection: GDA 1994 MGA Zone 55



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

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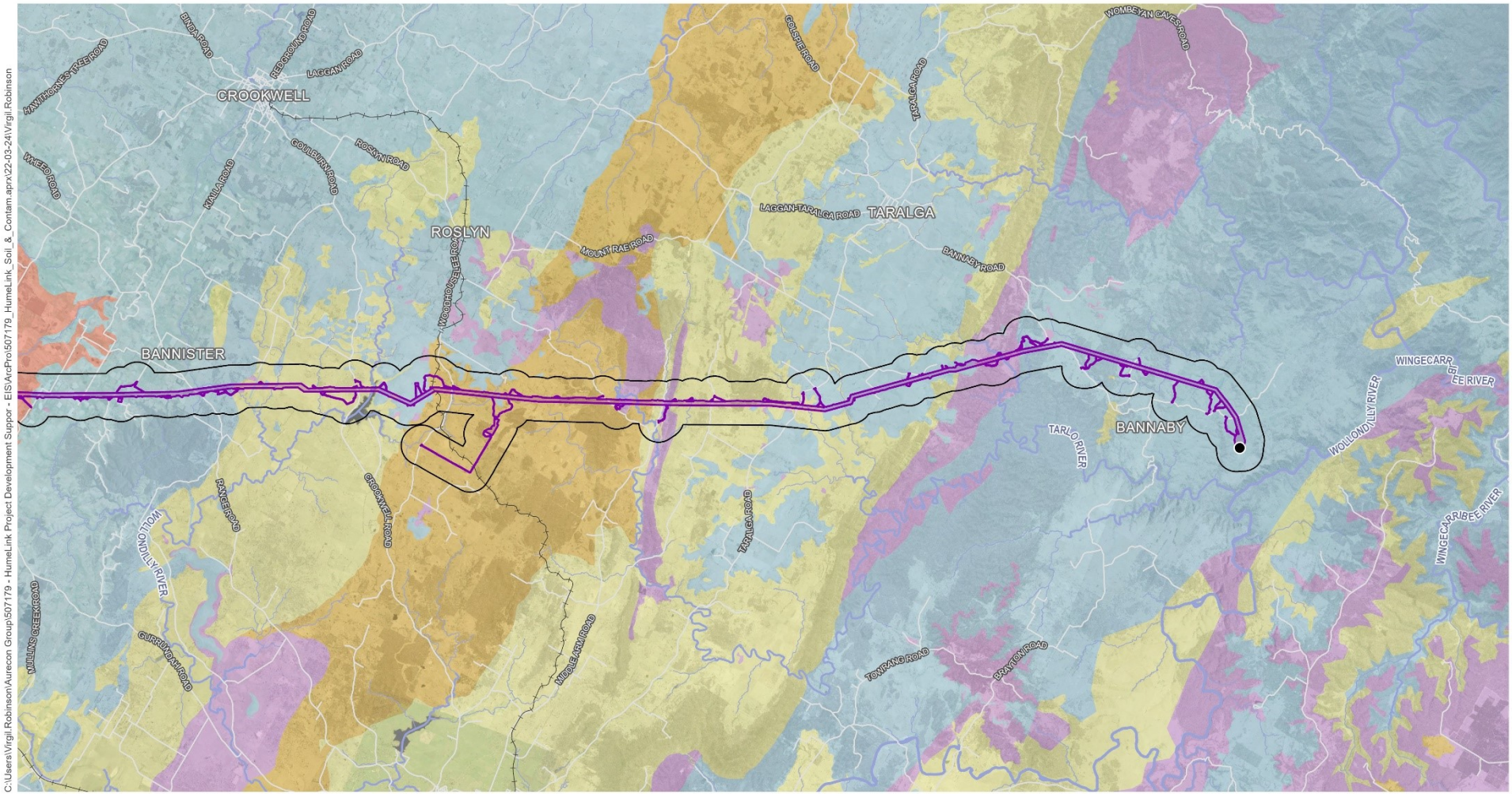
0 4 8 km

Projection: GDA 1994 MGA Zone 55

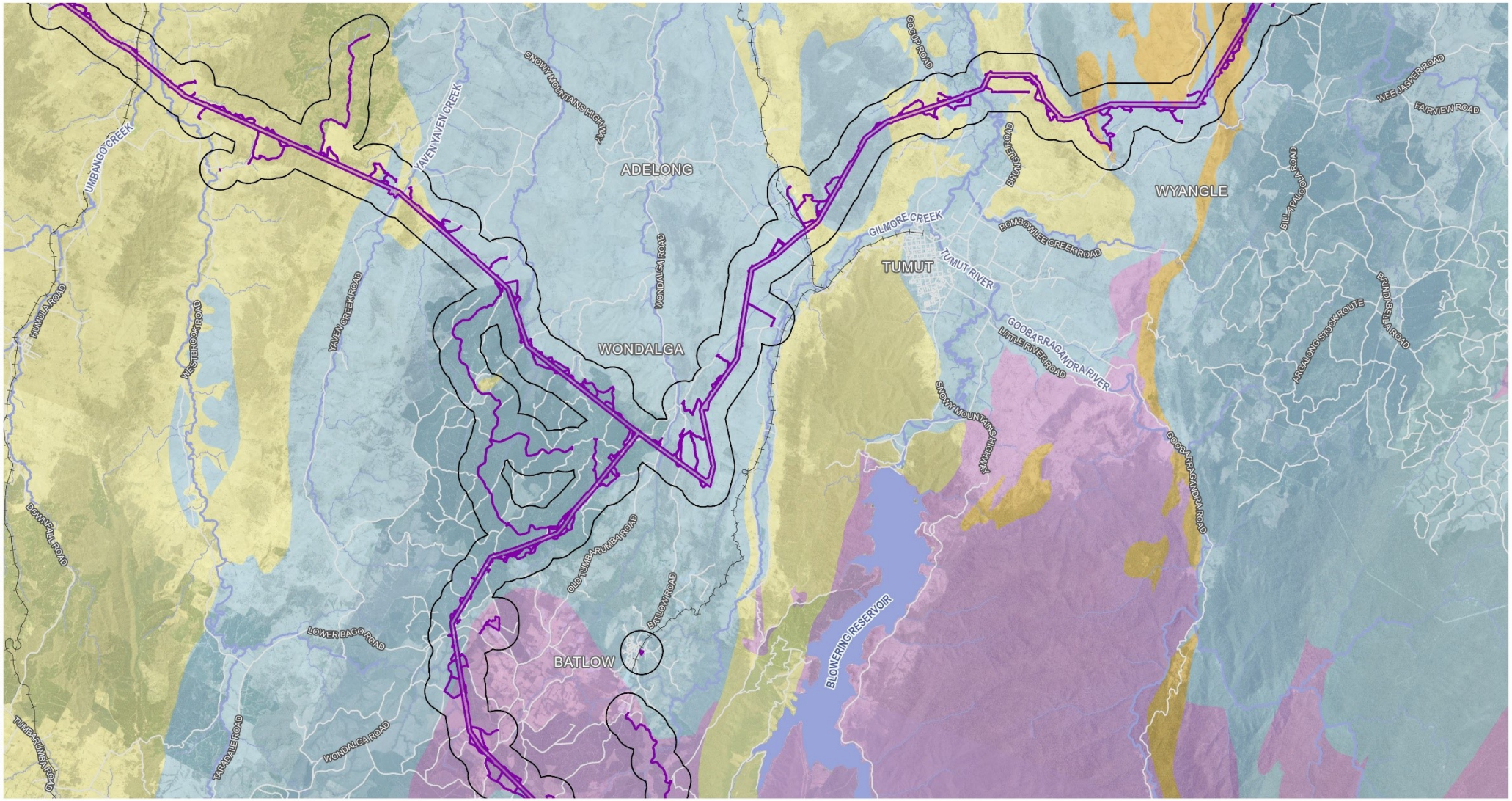


Source: *Aurecon, Transgrid, DPE, Spatial Services (DCS), ESRI Basemap*

1:200,000

0 4 8km

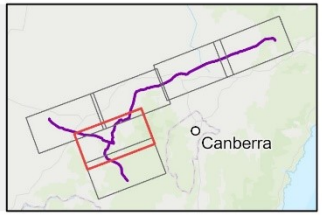
Projection: GDA 1994 MGA Zone 55



Amended project footprint
Amended contamination study area
Railway
Watercourse
Substation

Overall salinity hazard

High
Moderate
Low
Very Low



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

1:200,000
0 4 8km

Projection: GDA 1994 MGA Zone 55

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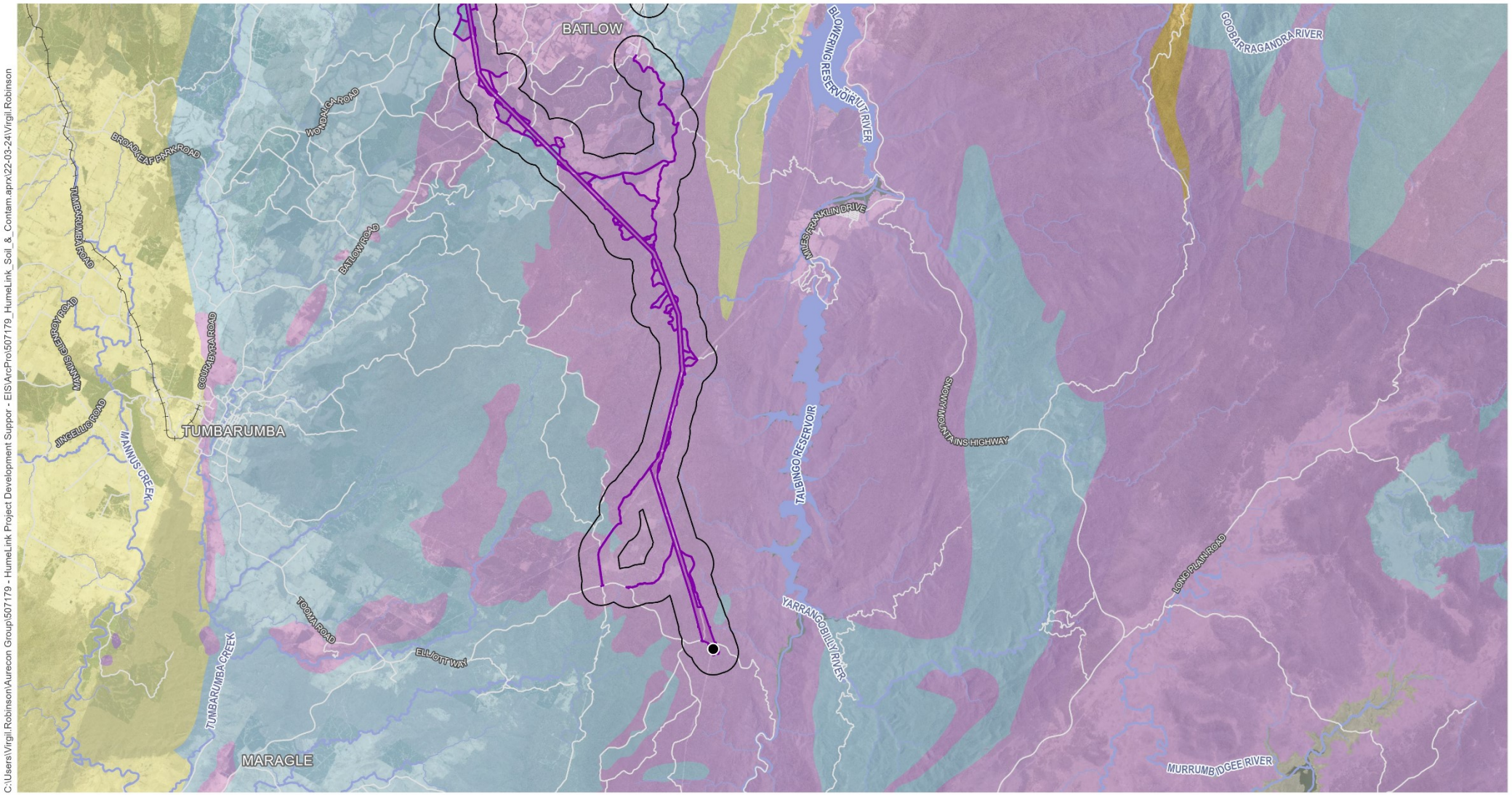

Source: *Aurecon, Transgrid, DPE, Spatial Services (DCS), ESRI Basemap*

1:200,000

0 4 8km

Projection: GDA 1994 MGA Zone 55

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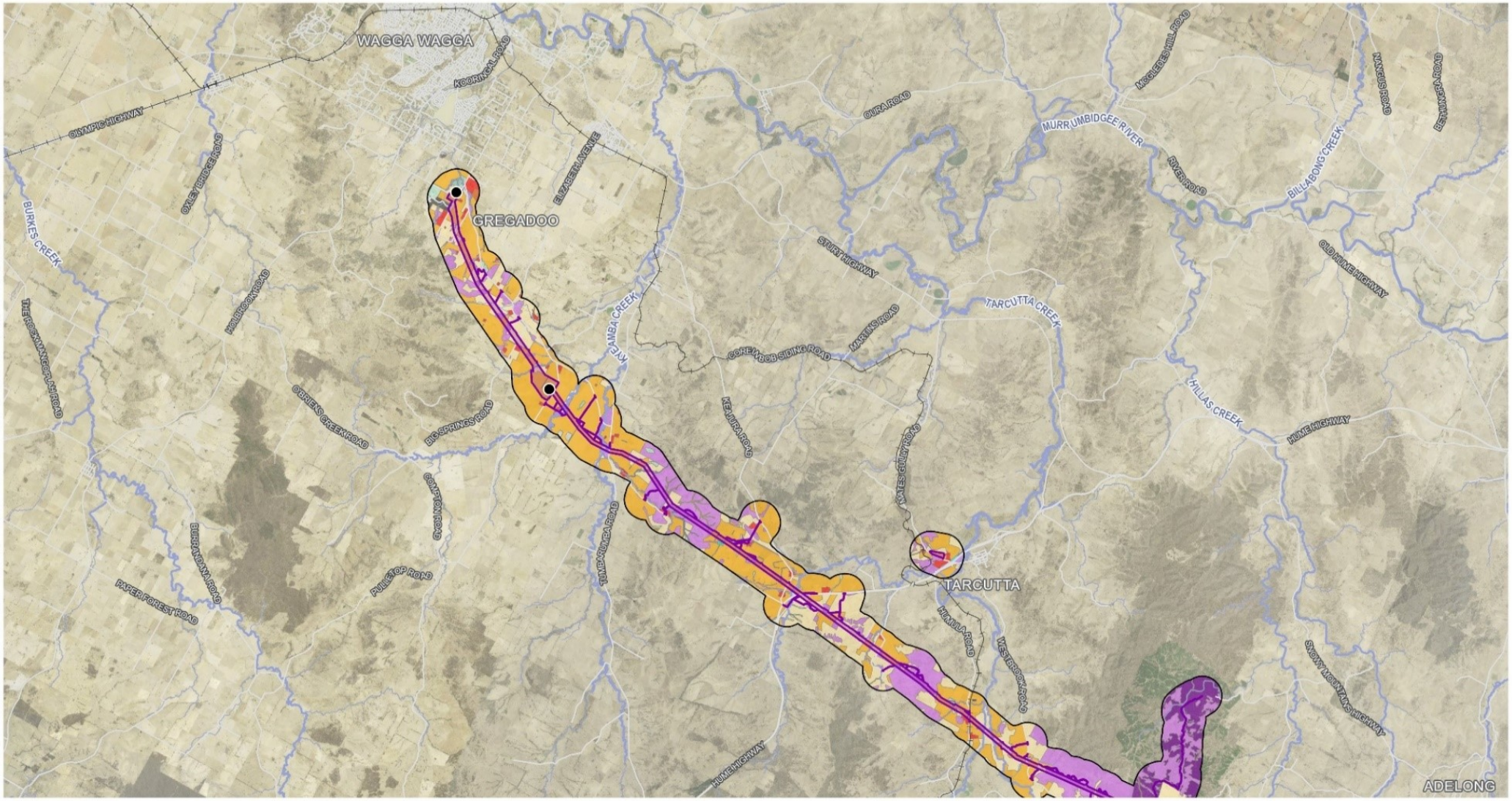
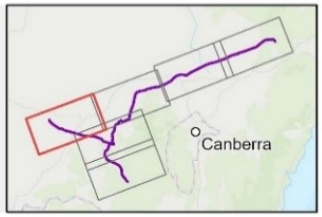
Attachment G
Land use



Amended project footprint
Amended contamination study area
Railway
Substation

Land Use 2017

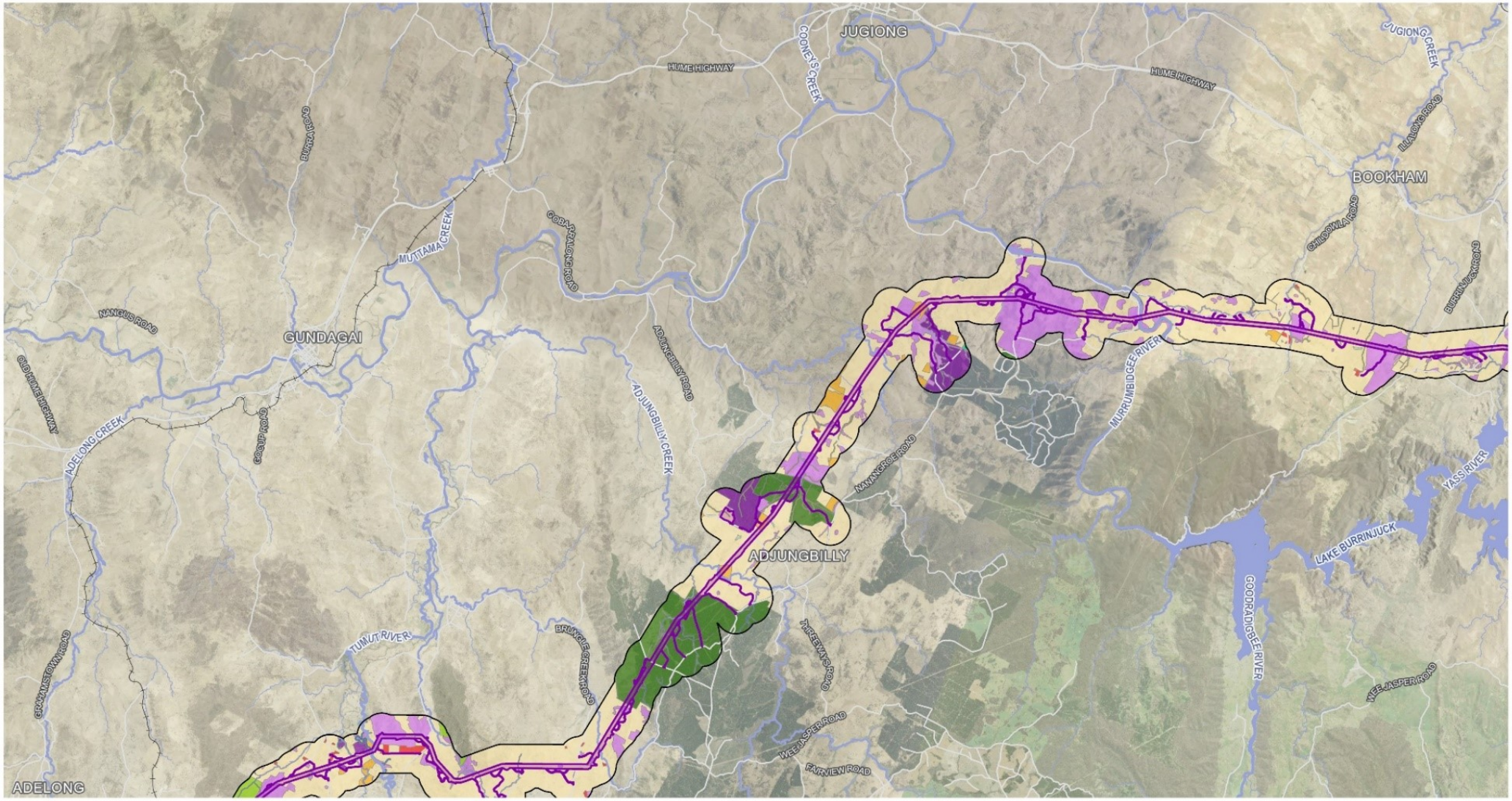
- 1.2.0 Managed resource protection
- 1.3.0 Other minimal use
- 2.1.0 Grazing native vegetation
- 3.1.0 Plantation forests
- 3.2.0 Grazing modified pastures
- 3.3.0 Cropping
- 3.4.0 Perennial horticulture
- 4.4.0 Irrigated perennial horticulture
- 5.2.0 Intensive animal production
- 5.4.0 Residential and farm infrastructure
- 5.5.0 Services
- 5.6.0 Utilities
- 5.7.0 Transport and communication
- 5.8.0 Mining
- 6.2.0 Reservoir/dam
- 6.3.0 River
- 6.5.0 Marsh/wetland



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

1:200,000
0 4 8 km

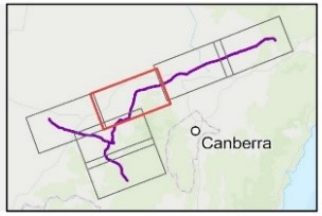
Projection: GDA 1994 MGA Zone 55



Amended project footprint
Amended contamination study area
Railway

Land Use 2017

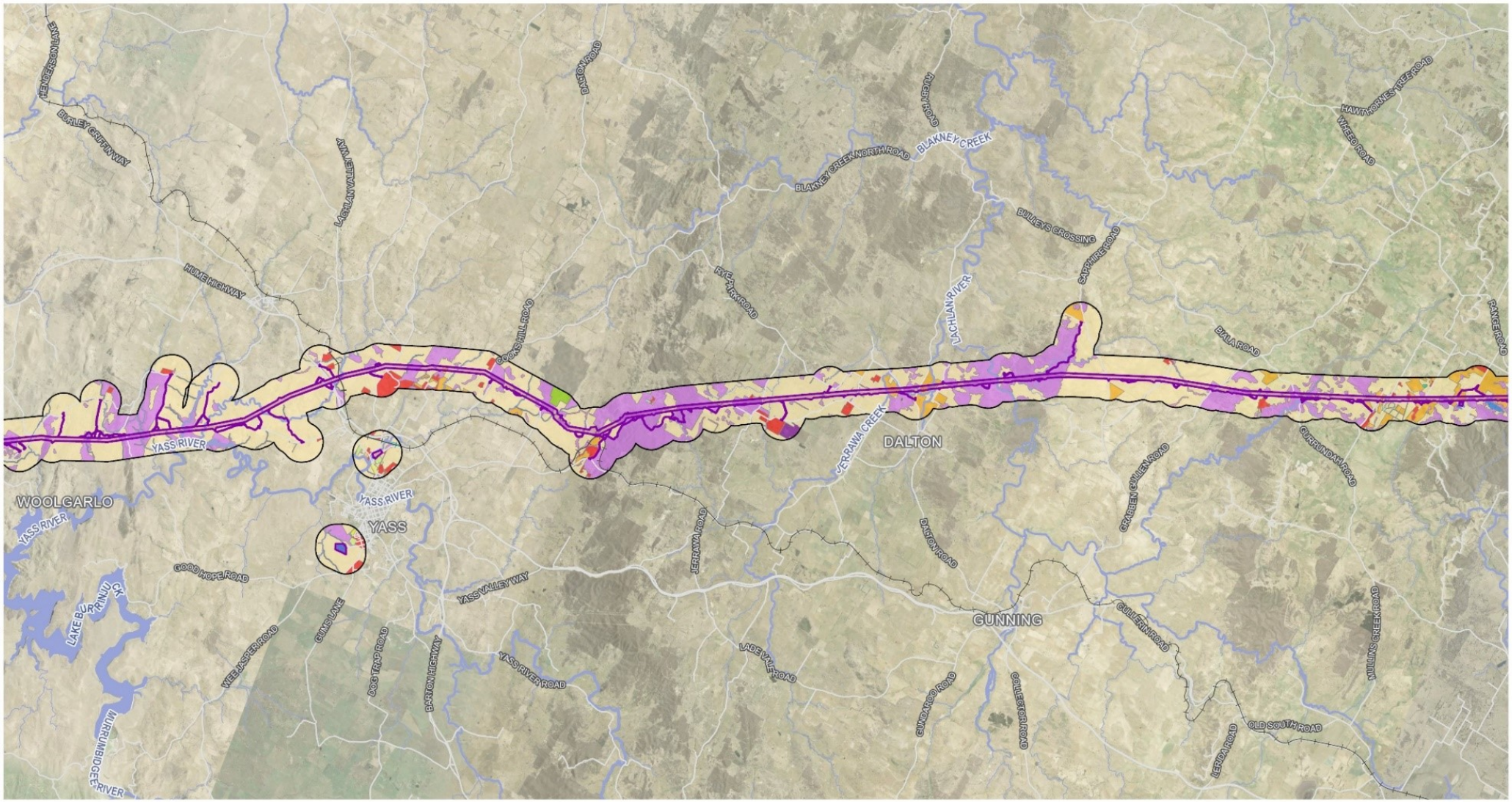
1.1.0 Nature conservation
1.2.0 Managed resource protection
2.1.0 Grazing native vegetation
2.2.0 Production native forestry
3.1.0 Plantation forests
3.2.0 Grazing modified pastures
3.3.0 Cropping
4.4.0 Irrigated perennial horticulture
5.4.0 Residential and farm infrastructure
5.7.0 Transport and communication
6.2.0 Reservoir/dam
6.3.0 River
6.5.0 Marsh/wetland



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

1:200,000
0 4 8 km

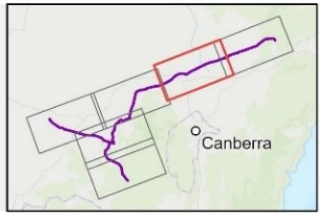
Projection: GDA 1994 MGA Zone 55



Amended project footprint
Amended contamination study area
Railway

Land Use 2017

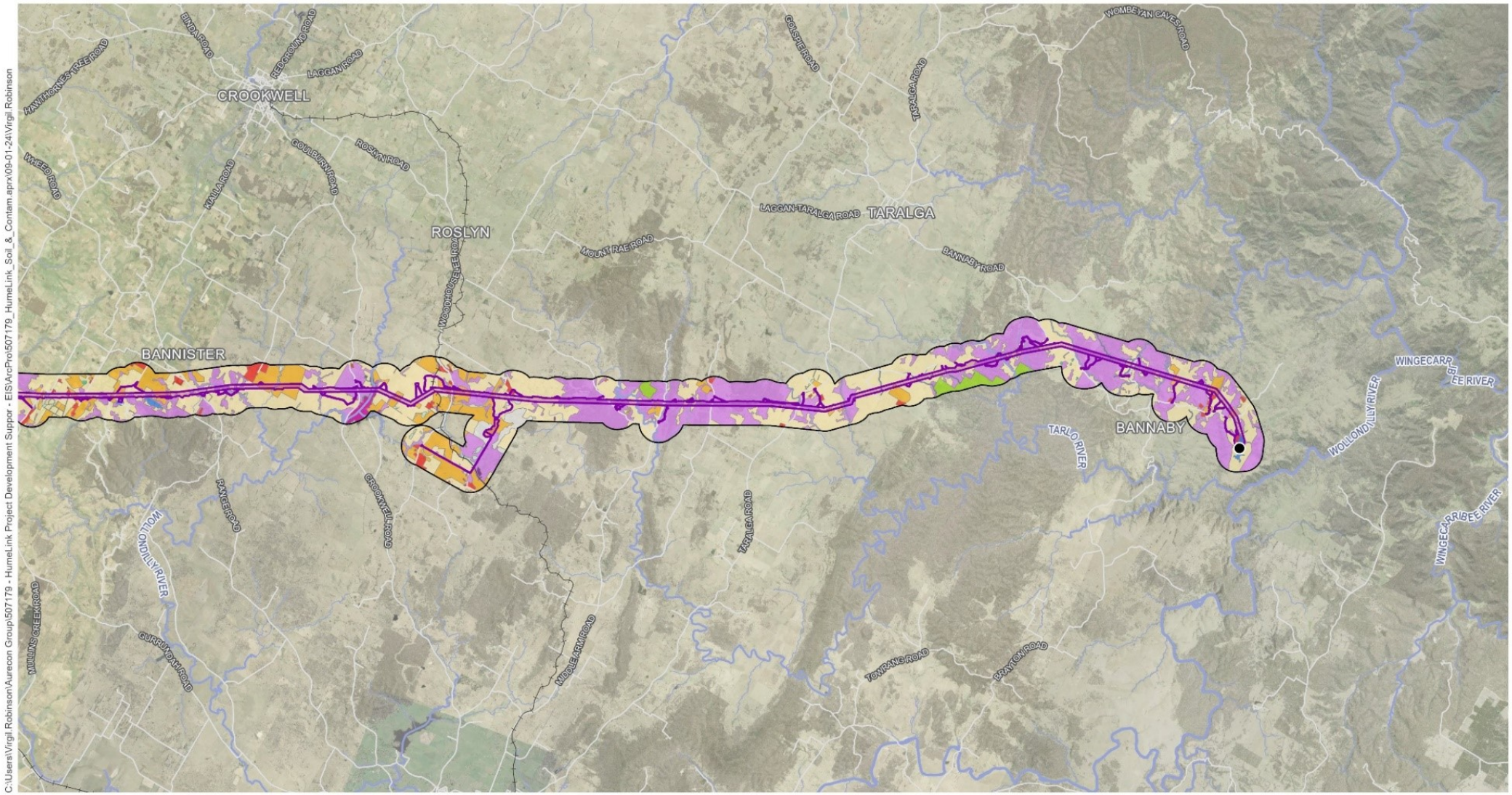
1.1.0 Nature conservation
1.2.0 Managed resource protection
2.1.0 Grazing native vegetation
3.1.0 Plantation forests
3.2.0 Grazing modified pastures
3.3.0 Cropping
5.1.0 Intensive horticulture
5.2.0 Intensive animal production
5.3.0 Manufacturing and industrial
5.4.0 Residential and farm infrastructure
5.5.0 Services
5.6.0 Utilities
5.7.0 Transport and communication
5.8.0 Mining
5.9.0 Waste treatment and disposal
6.2.0 Reservoir/dam
6.3.0 River
6.5.0 Marsh/wetland



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

1:200,000
0 4 8km

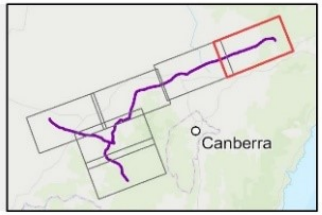
Projection: GDA 1994 MGA Zone 55



Amended project footprint
Amended contamination study area
Railway
Substation

Land Use 2017

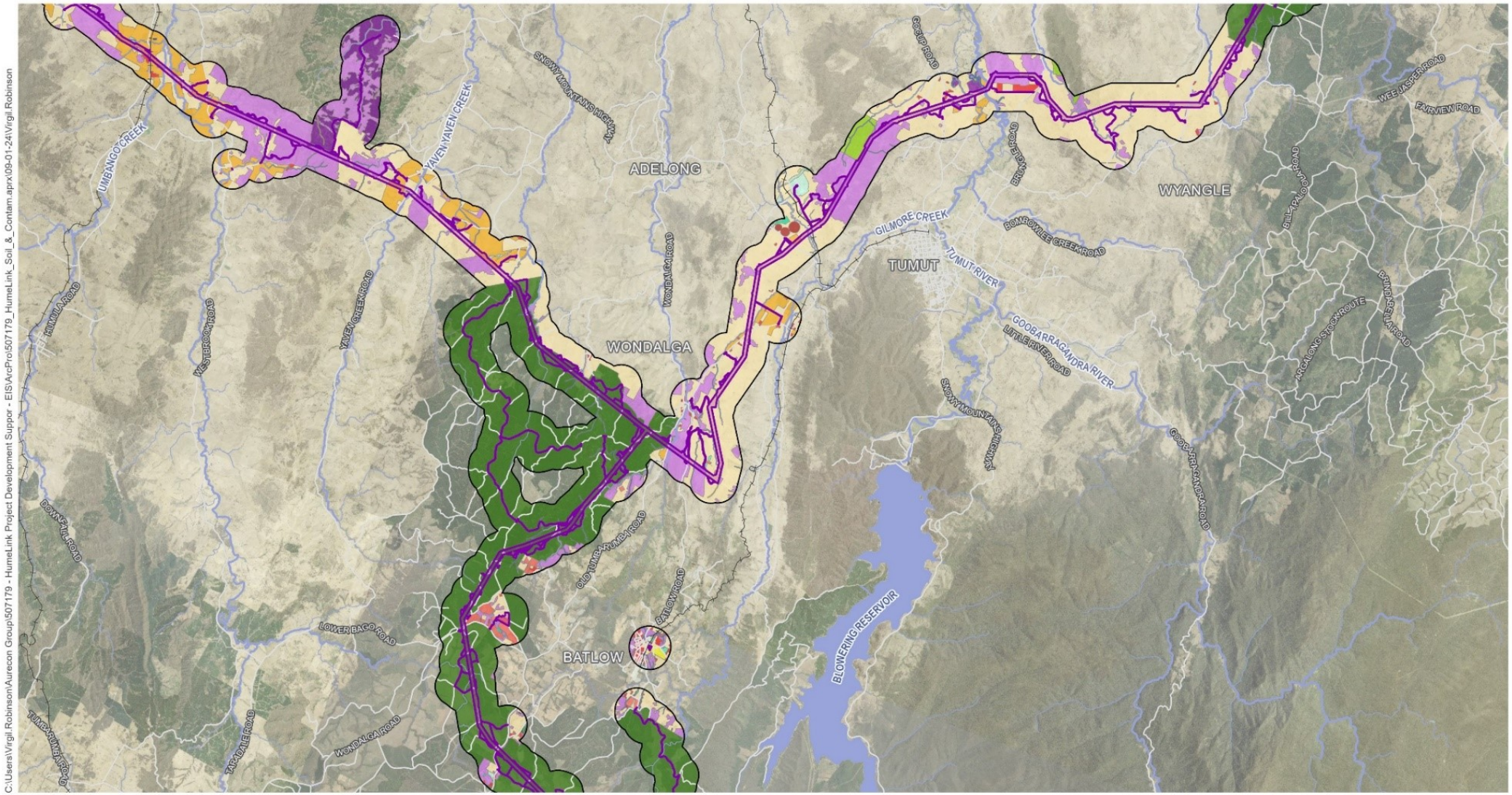
- 1.1.0 Nature conservation
- 1.2.0 Managed resource protection
- 1.3.0 Other minimal use
- 2.1.0 Grazing native vegetation
- 3.1.0 Plantation forests
- 3.2.0 Grazing modified pastures
- 3.3.0 Cropping
- 5.3.0 Manufacturing and industrial
- 5.4.0 Residential and farm infrastructure
- 5.6.0 Utilities
- 5.8.0 Mining
- 6.1.0 Lake
- 6.2.0 Reservoir/dam
- 6.3.0 River



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

1:200,000
0 4 8km

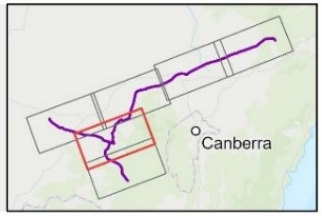
Projection: GDA 1994 MGA Zone 55



Amended project footprint
Amended contamination study area
Railway

Land Use 2017

1.1.0 Nature conservation
1.2.0 Managed resource protection
1.3.0 Other minimal use
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
3.6.0 Land in transition
4.3.0 Irrigated cropping
4.4.0 Irrigated perennial horticulture
5.1.0 Intensive horticulture
5.2.0 Intensive animal production
5.3.0 Manufacturing and industrial
5.4.0 Residential and farm infrastructure
5.5.0 Services
5.6.0 Utilities
5.7.0 Transport and communication
5.8.0 Mining
5.9.0 Waste treatment and disposal
6.2.0 Reservoir/dam
6.3.0 River
6.5.0 Marsh/wetland



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

1:200,000
0 4 8km

Projection: GDA 1994 MGA Zone 55

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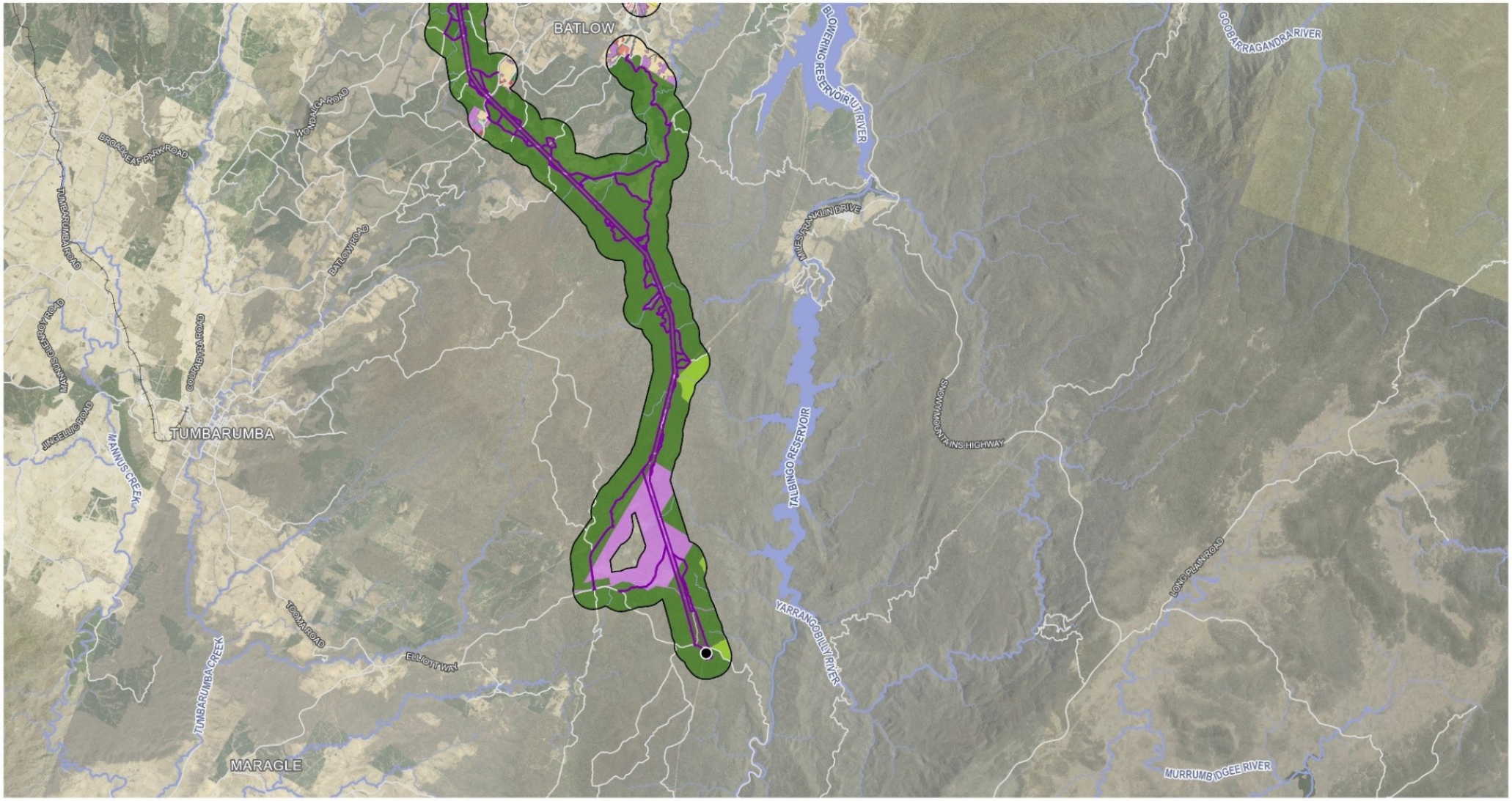
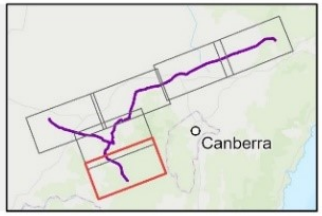


Amended project footprint
Amended contamination study area
Railway
Substation

Land Use 2017

- 1.1.0 Nature conservation
- 1.2.0 Managed resource protection
- 1.3.0 Other minimal use
- 2.1.0 Grazing native vegetation
- 2.2.0 Production native forestry
- 3.2.0 Grazing modified pastures
- 3.3.0 Cropping
- 3.4.0 Perennial horticulture
- 3.6.0 Land in transition
- 4.4.0 Irrigated perennial horticulture
- 5.3.0 Manufacturing and industrial
- 5.4.0 Residential and farm infrastructure
- 5.5.0 Services
- 5.6.0 Utilities
- 5.7.0 Transport and communication
- 5.9.0 Waste treatment and disposal
- 6.2.0 Reservoir/dam
- 6.3.0 River



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

1:200,000
0 4 8 km

Projection: GDA 1994 MGA Zone 55

Attachment H
Land zoning

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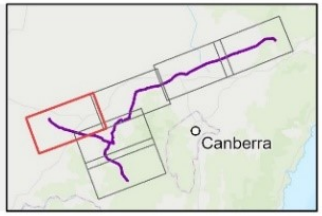
Amended project footprint
Amended contamination study area
Railway
Watercourse
Substation

Land Zoning

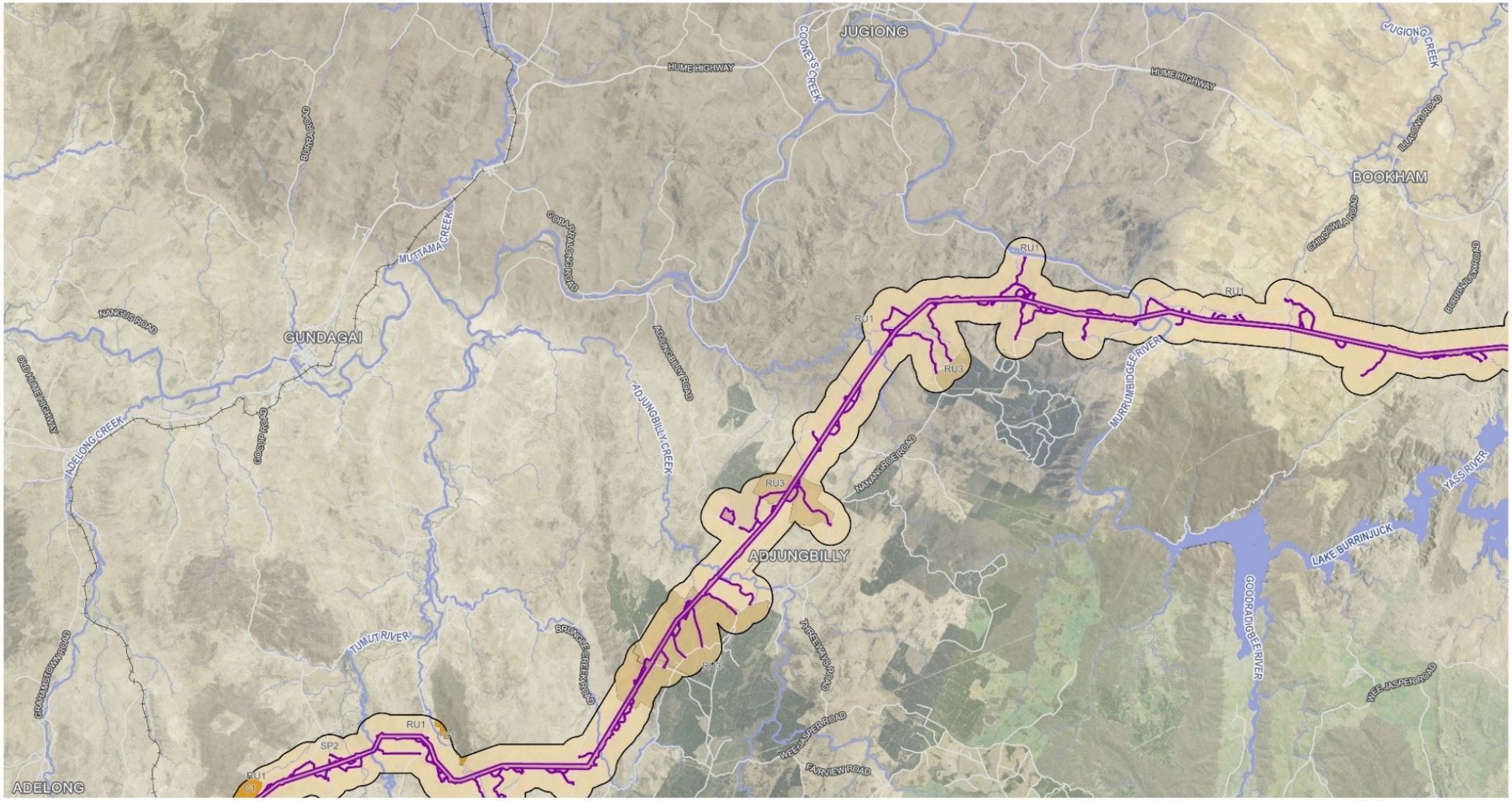
RU1 - Primary Production
RU2 - Rural Landscape
RU4 - Primary Production Small Lots
SP1 - Special Activities
SP2 - Infrastructure



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

1:200,000
0 4 8 km

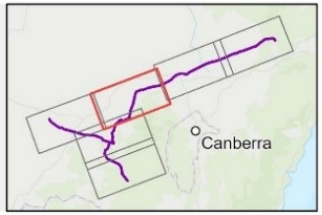
Projection: GDA 1994 MGA Zone 55



Amended project footprint
Amended contamination study area
Railway
Watercourse
Substation

Land Zoning

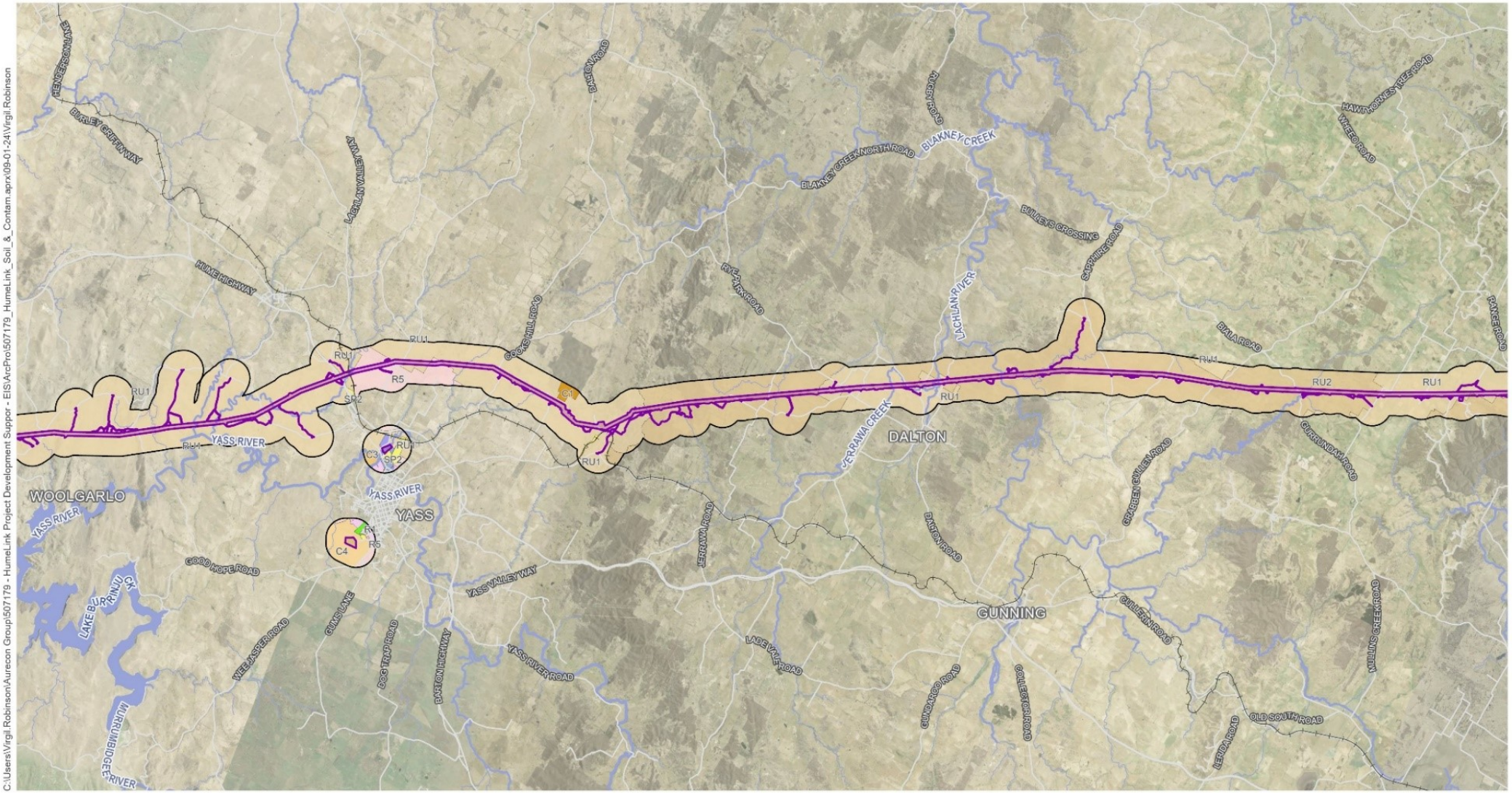
C1 - National Parks and Nature Reserves
RU1 - Primary Production
RU3 - Forestry
SP1 - Special Activities
SP2 - Infrastructure
W1 - Natural Waterways



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

1:200,000
0 4 8 km

Projection: GDA 1994 MGA Zone 55

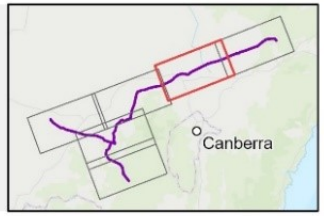


Amended project footprint
Amended contamination study area
Railway
Watercourse

Substation

Land Zoning

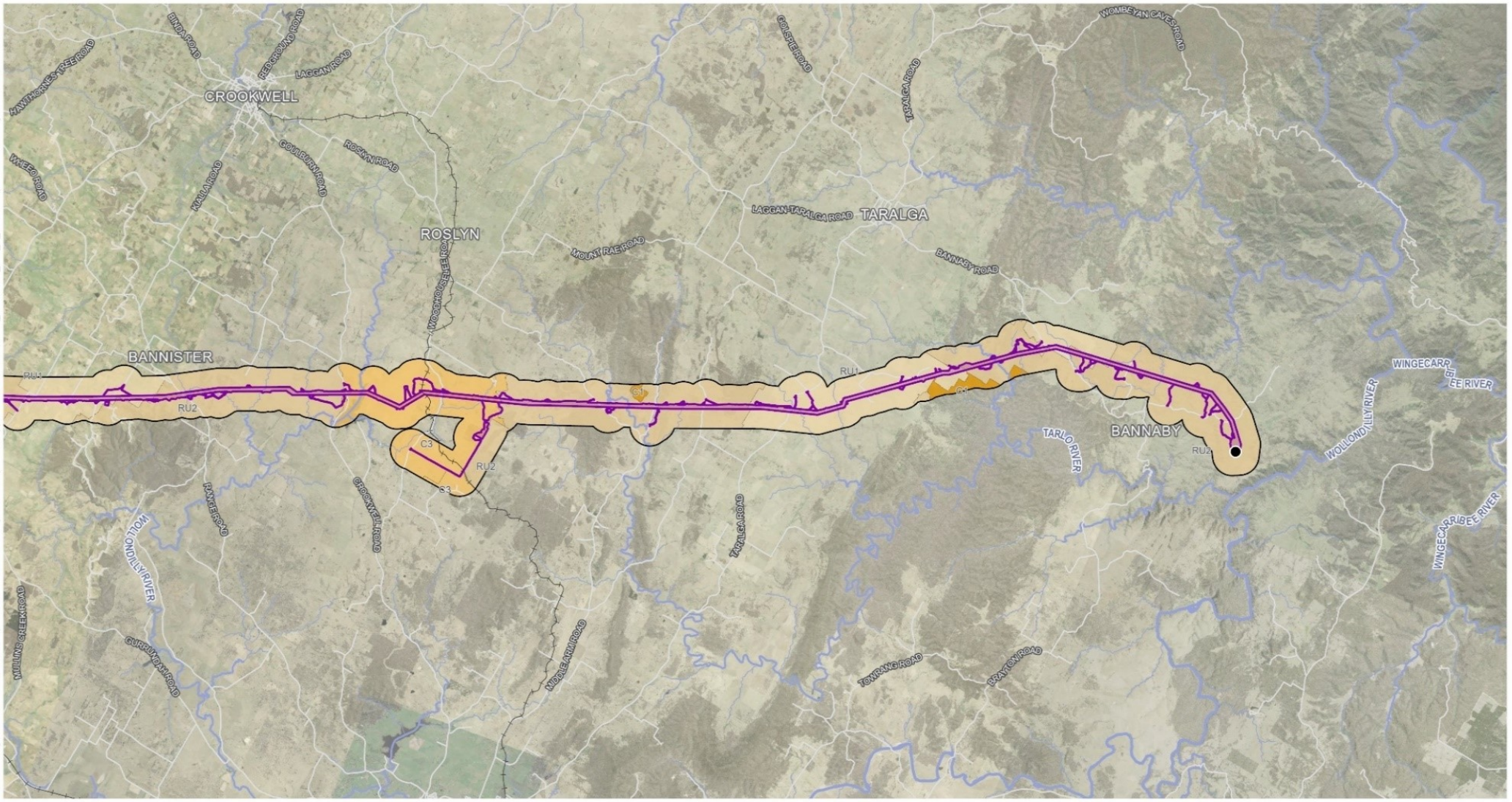
C1 - National Parks and Nature Reserves
C3 - Environmental Management
C4 - Environmental Living
E1 - Local Centre
E3 - Productivity Support
E4 - General Industrial
R1 - General Residential
R2 - Low Density Residential
R5 - Large Lot Residential
RE1 - Public Recreation
RE2 - Private Recreation
RU1 - Primary Production
RU2 - Rural Landscape
SP2 - Infrastructure
W1 - Natural Waterways



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

1:200,000
0 4 8km

Projection: GDA 1994 MGA Zone 55



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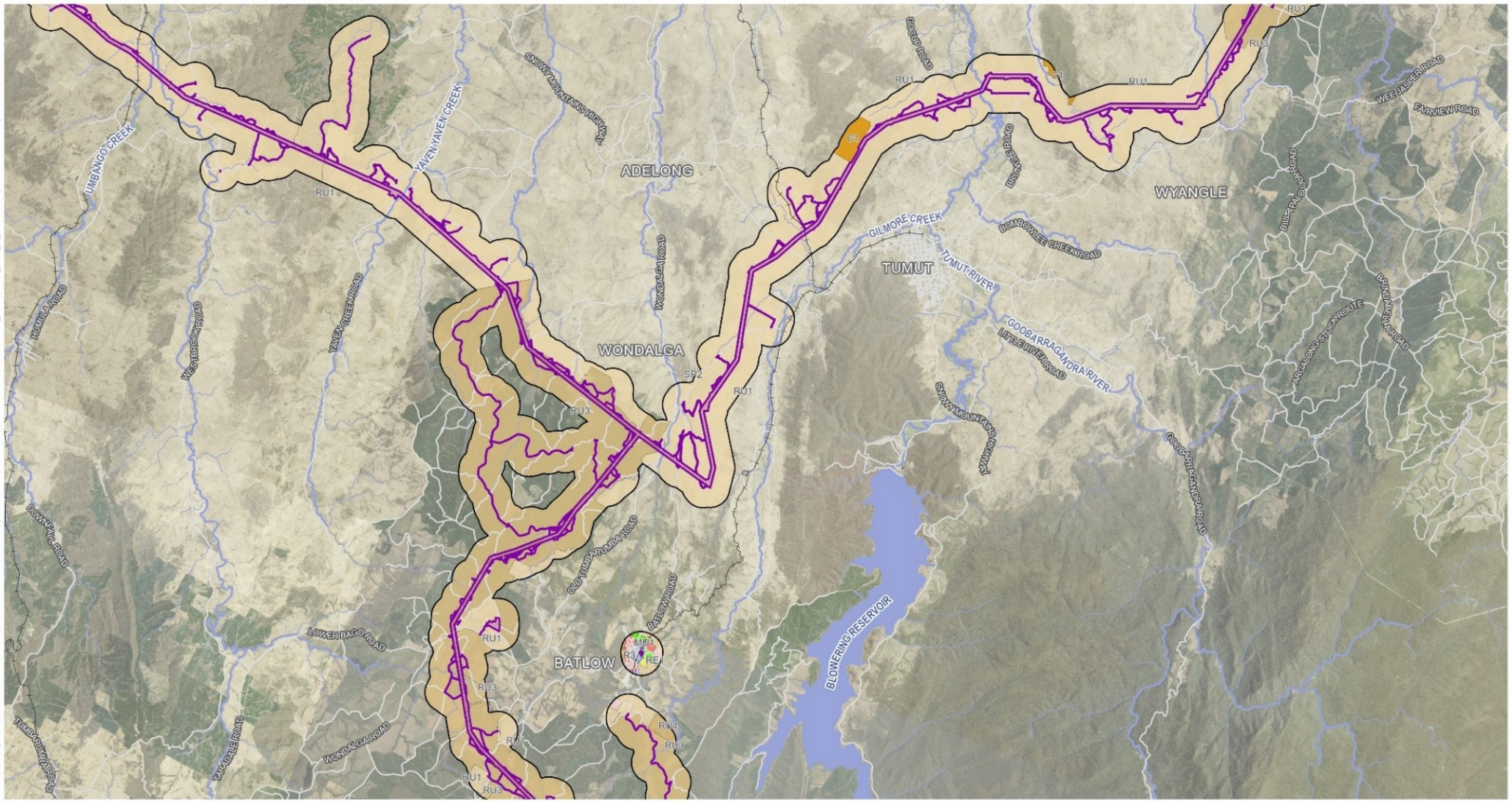
Source: *Aurecon, Transgrid, DPE, Spatial Services (DCS), ESRI Basemap*

1:200,000

0 4 8km

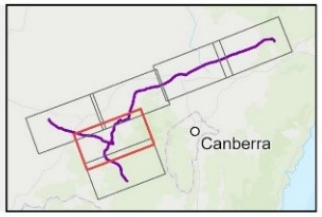
Projection: GDA 1994 MGA Zone 55



Amended project footprint
Amended contamination study area
Railway
Watercourse
Substation

Land Zoning

C1 - National Parks and Nature Reserves
E4 - General Industrial
MU1 - Mixed Use
R3 - Medium Density Residential
R5 - Large Lot Residential
RE1 - Public Recreation
RU1 - Primary Production
RU3 - Forestry
RU4 - Primary Production Small Lots
SP2 - Infrastructure



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

1:200,000
0 4 8km

Projection: GDA 1994 MGA Zone 55

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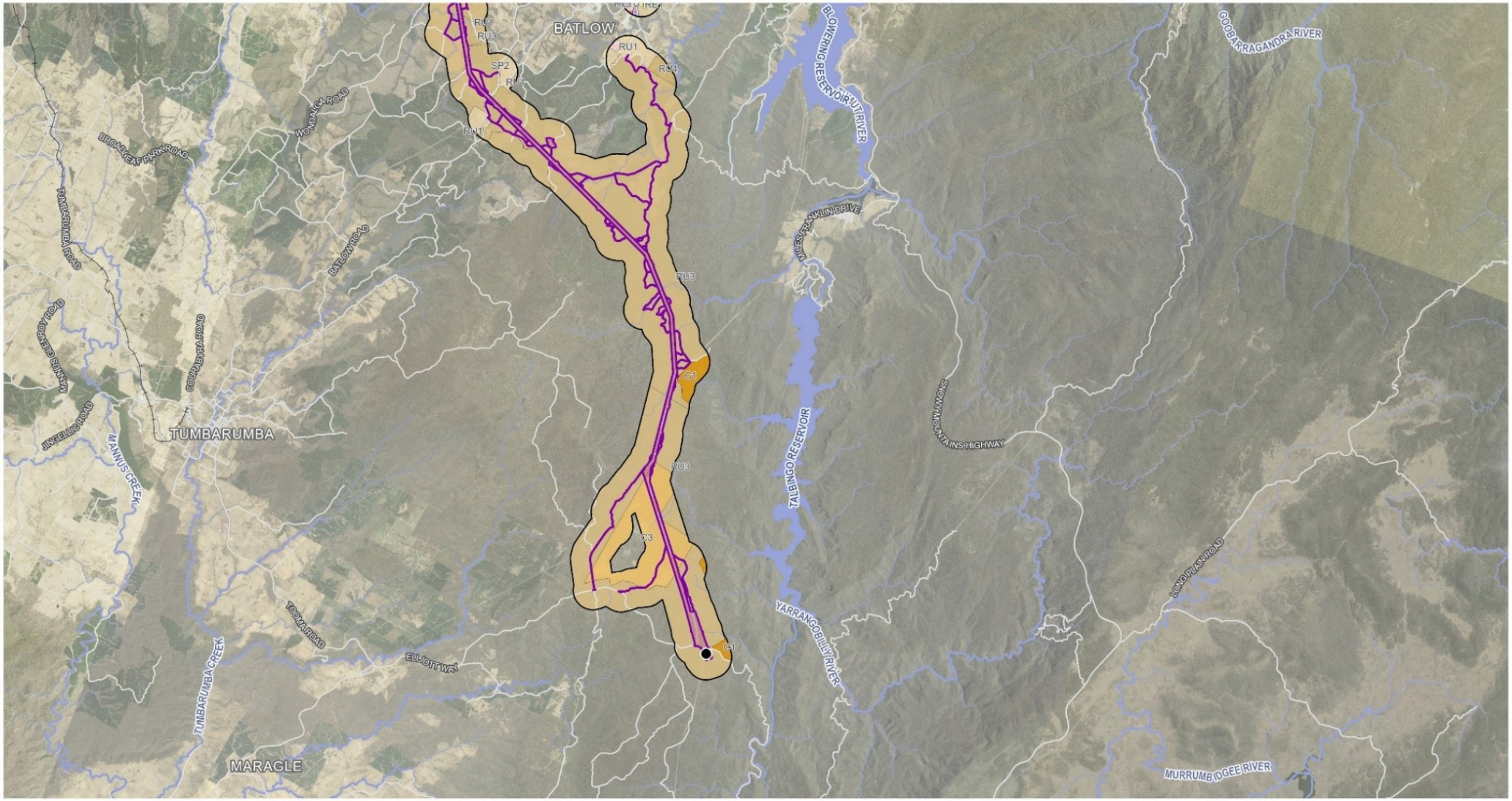

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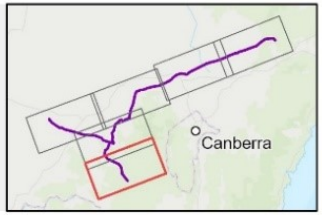
- Amended project footprint
- Amended contamination study area
- Railway
- Watercourse
- Substation

Land Zoning

- C1 - National Parks and Nature Reserves
- C3 - Environmental Management
- E4 - General Industrial
- MU1 - Mixed Use
- R3 - Medium Density Residential
- R5 - Large Lot Residential
- RE1 - Public Recreation
- RU1 - Primary Production
- RU3 - Forestry
- RU4 - Primary Production Small Lots
- SP2 - Infrastructure



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

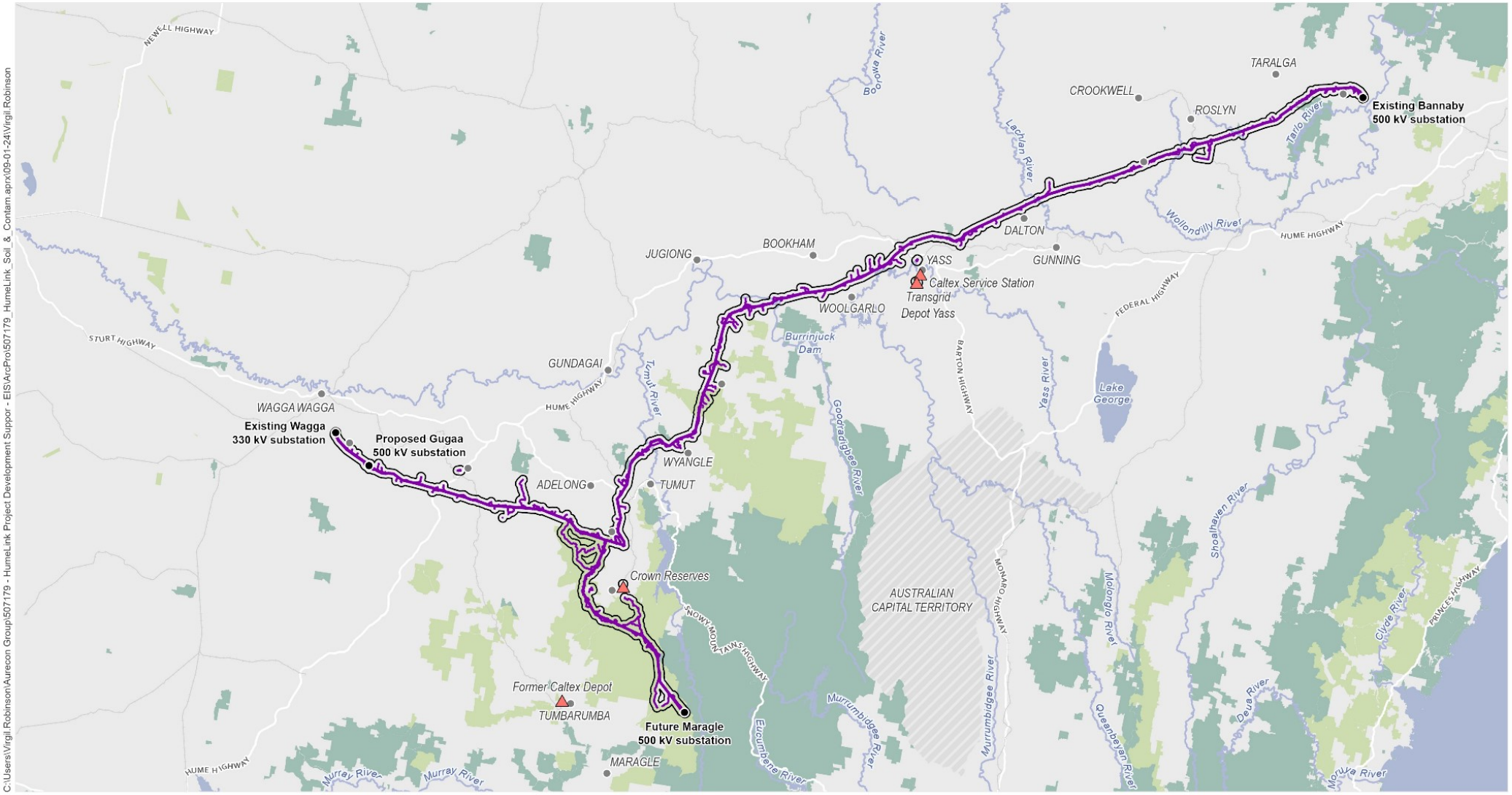
1:200,000

0 4 8km

Projection: GDA 1994 MGA Zone 55

Attachment I

Contaminated sites notified to the NSW EPA near the amended contamination study area



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Amended project footprint
Amended contamination study area
National park and reserve
State forest
Waterbody
Waterway
Major road
Railway
Substation
Contaminated Sites notified to the NSW EPA

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

1:925,000
0 20 40km

Projection: GDA 1994 MGA Zone 55

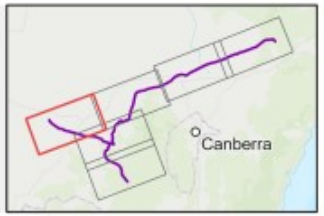
HumeLink

Attachment I: Contaminated Sites notified to the NSW EPA **Page 1 of 1**

Attachment J
Naturally occurring asbestos

Amended project footprint
Amended contamination study area
Railway
Watercourse
Substation
Potential controlled blasting area

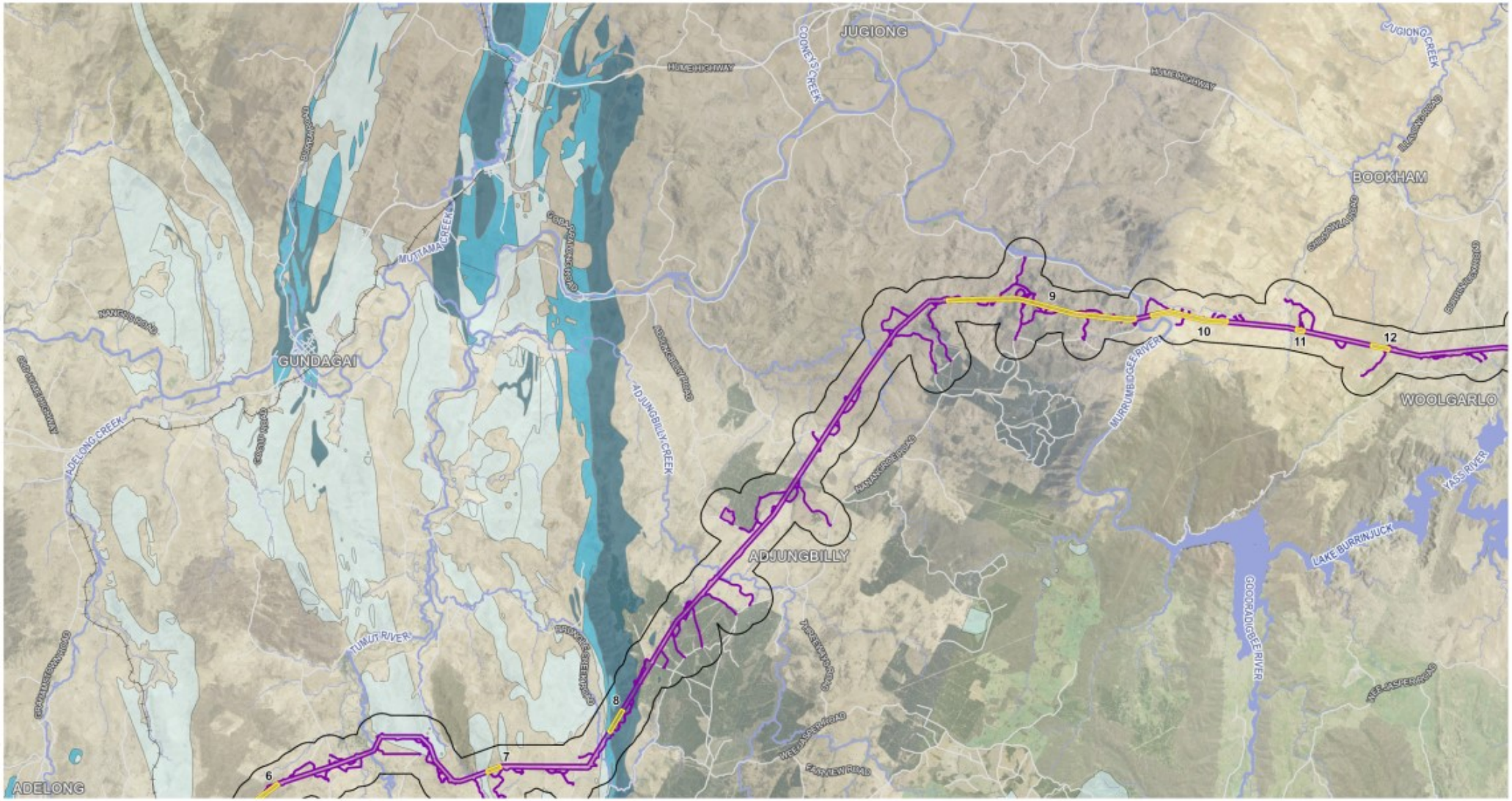
Naturally Occurring Asbestos Potential
High Asbestos Potential
Medium Asbestos Potential
Low Asbestos Potential



Source: *Aurecon, Transgrid, Department of Regional New South Wales, Spatial Services (DCS), ESRI Basemap*

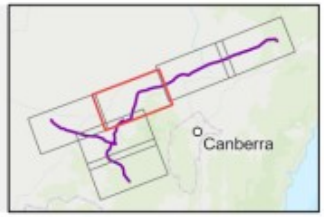
1:200,000
0 4 8km

Projection: GDA 1994 MGA Zone 55



Amended project footprint
Amended contamination study area
Railway
Watercourse
Substation
Potential controlled blasting area

Naturally Occurring Asbestos Potential
High Asbestos Potential
Medium Asbestos Potential
Low Asbestos Potential

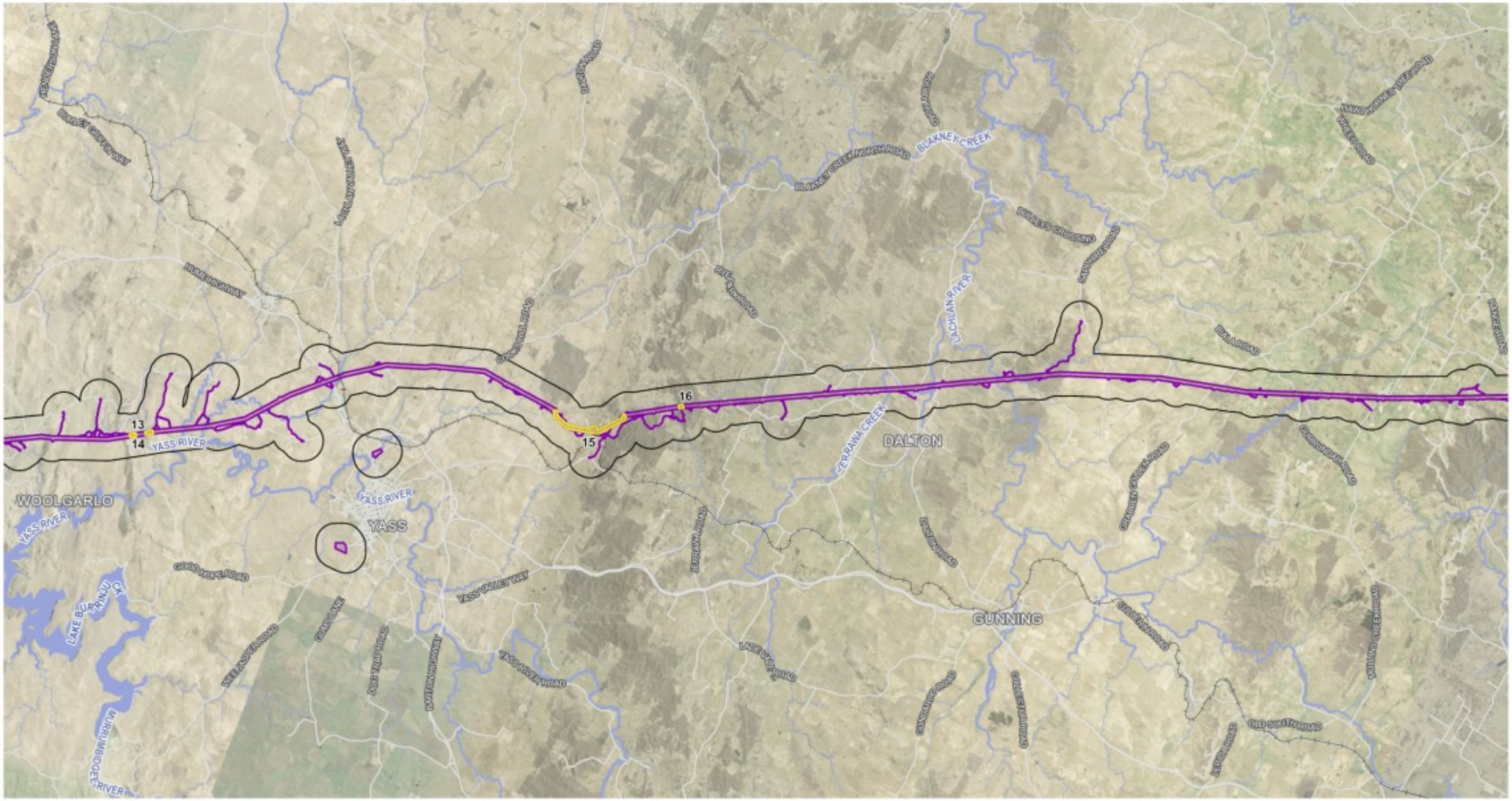


Source: *Aurecon, Transgrid, Department of Regional New South Wales, Spatial Services (DCS), ESRI Basemap*

1:200,000
0 4 8 km

Projection: GDA 1994 MGA Zone 55

HumeLink



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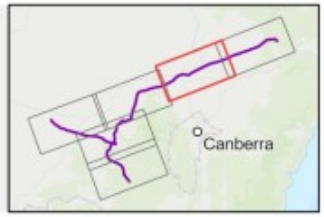
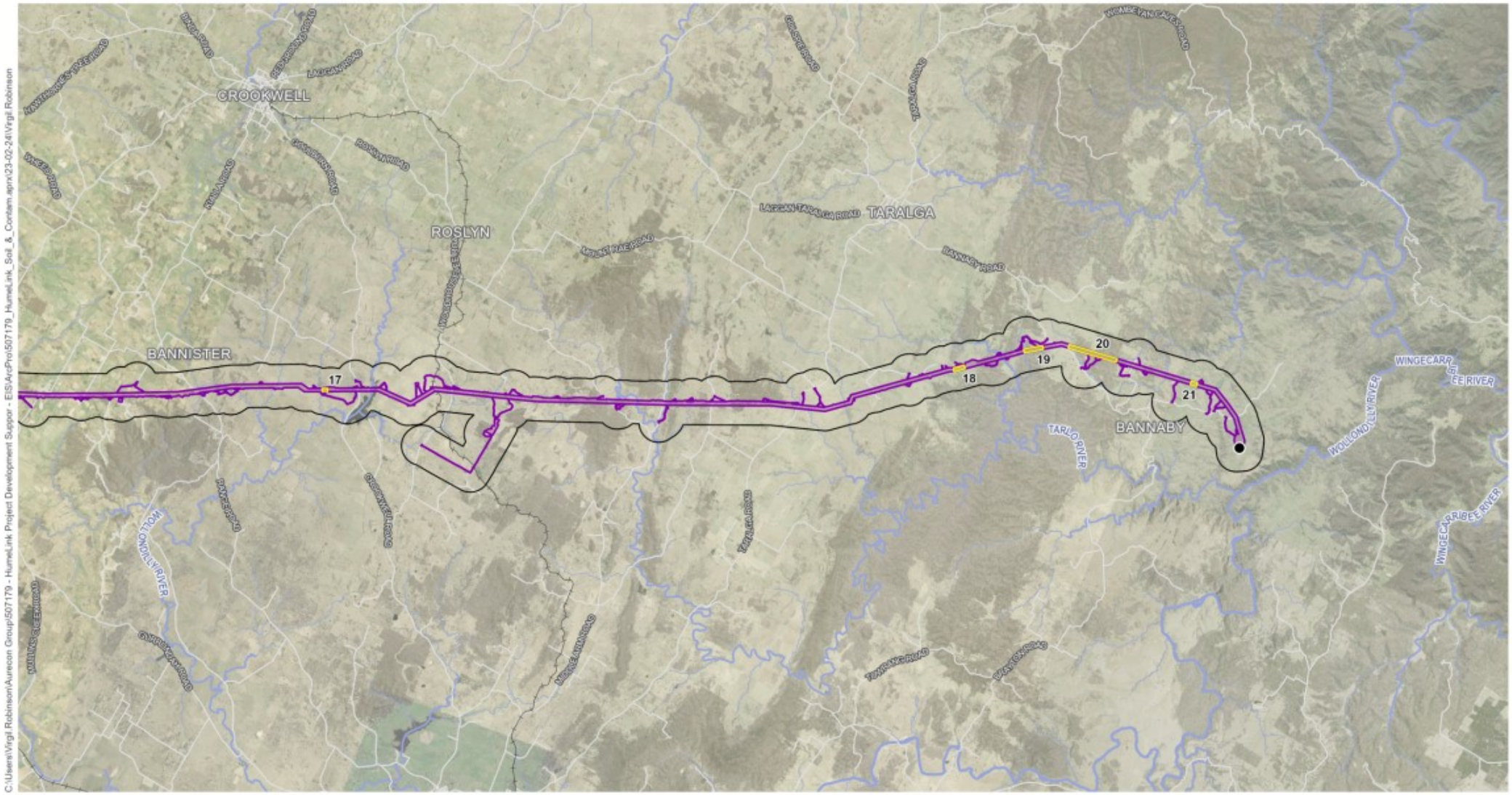
Amended project footprint
Amended contamination study area
Railway
Watercourse
Substation
Potential controlled blasting area



Source: *Aurecon, Transgrid, Department of Regional New South Wales, Spatial Services (DCS), ESRI Basemap*

1:200,000
0 4 8 km

Projection: GDA 1994 MGA Zone 55

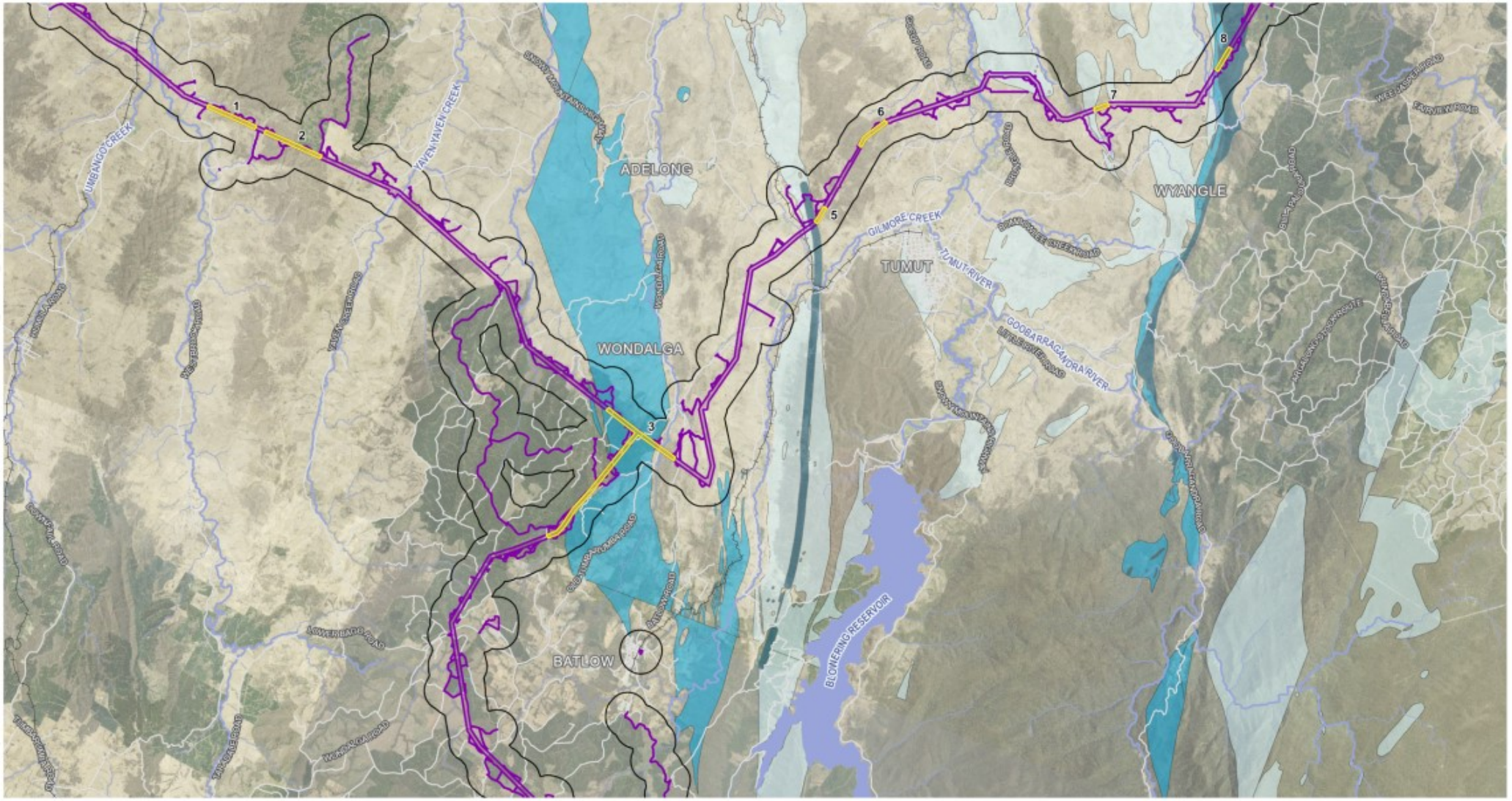


Source: *Aurecon, Transgrid, Department of Regional New South Wales, Spatial Services (DCS), ESRI Basemap*

1:200,000

0 4 8 km

Projection: GDA 1994 MGA Zone 55



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Amended project footprint

Amended contamination study area

Railway

Watercourse

Substation

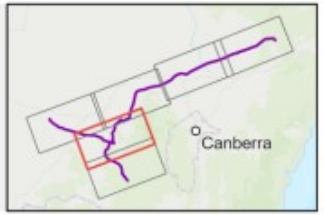
Potential controlled blasting area

Naturally Occurring Asbestos Potential

High Asbestos Potential

Medium Asbestos Potential

Low Asbestos Potential

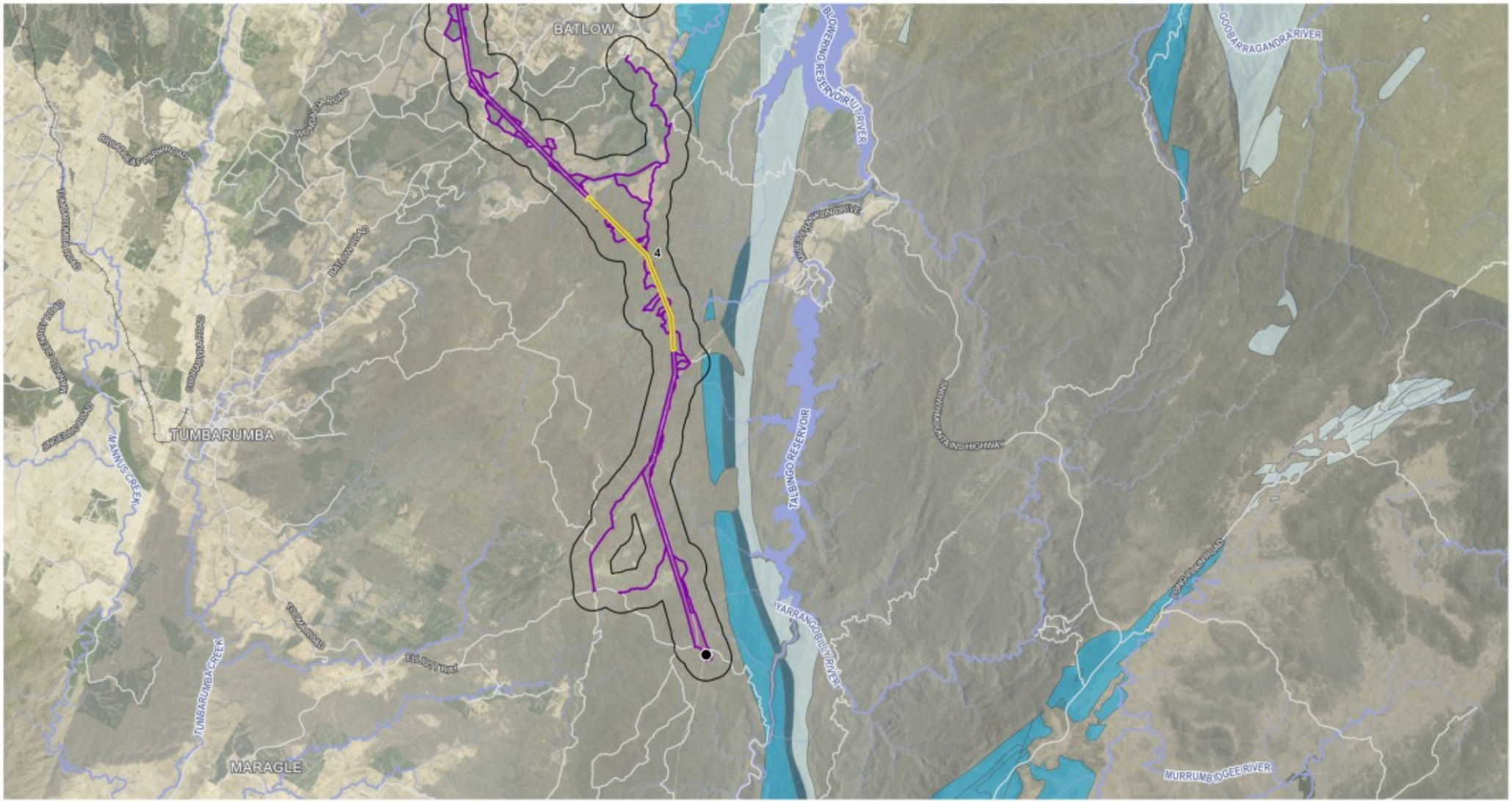


Source: *Aurecon, Transgrid, Department of Regional New South Wales, Spatial Services (DCS), ESRI Basemap*

1:200,000

0 4 8 km

Projection: GDA 1994 MGA Zone 55



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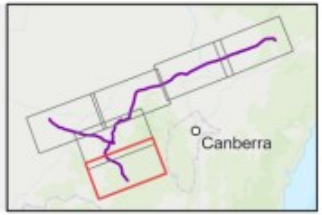
Amended project footprint
Amended contamination study area
Railway
Watercourse
Substation
Potential controlled blasting area

Naturally Occurring Asbestos Potential
High Asbestos Potential
Medium Asbestos Potential
Low Asbestos Potential

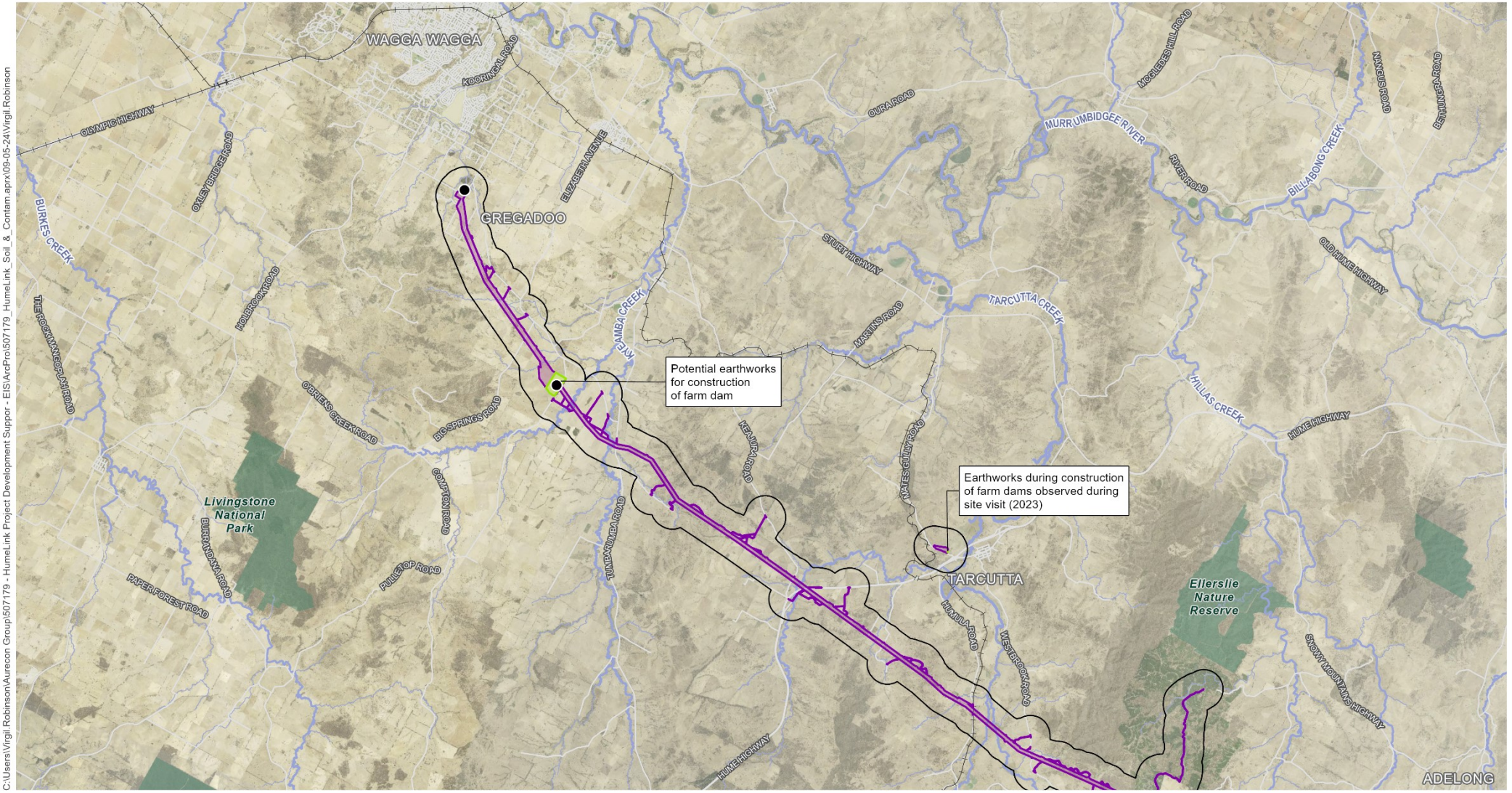


Source: *Aurecon, Transgrid, Department of Regional New South Wales, Spatial Services (DCS), ESRI Basemap*

1:200,000
0 4 8 km

Projection: GDA 1994 MGA Zone 55

Attachment K
Areas of environmental concern (AECs)



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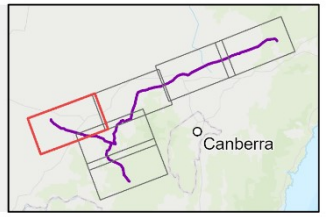
Amended project footprint
Amended contamination study area
National park and reserve
State forest

Watercourse
Substation

Areas of Environmental Concern

Risk Rating

Low



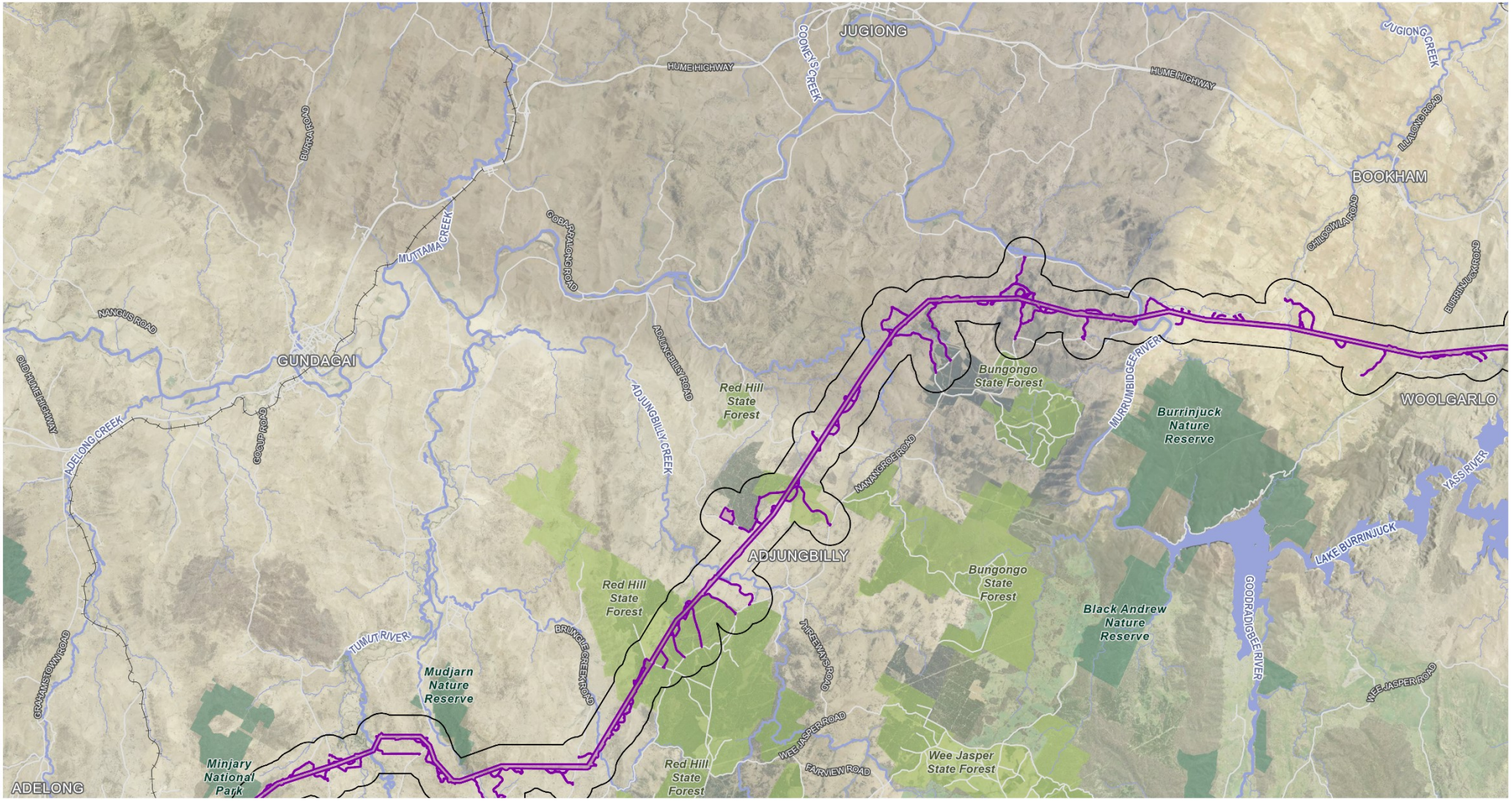
Source: *Aurecon, Transgrid, Spatial Services (DCS), ESRI Basemap*

1:200,000

0 4 8km

Projection: GDA 1994 MGA Zone 55

HumeLink



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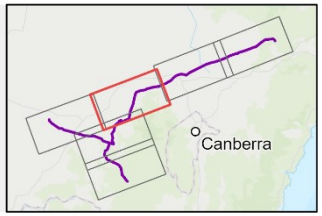
Amended project footprint
Amended contamination study area
National park and reserve
State forest
Watercourse
Substation

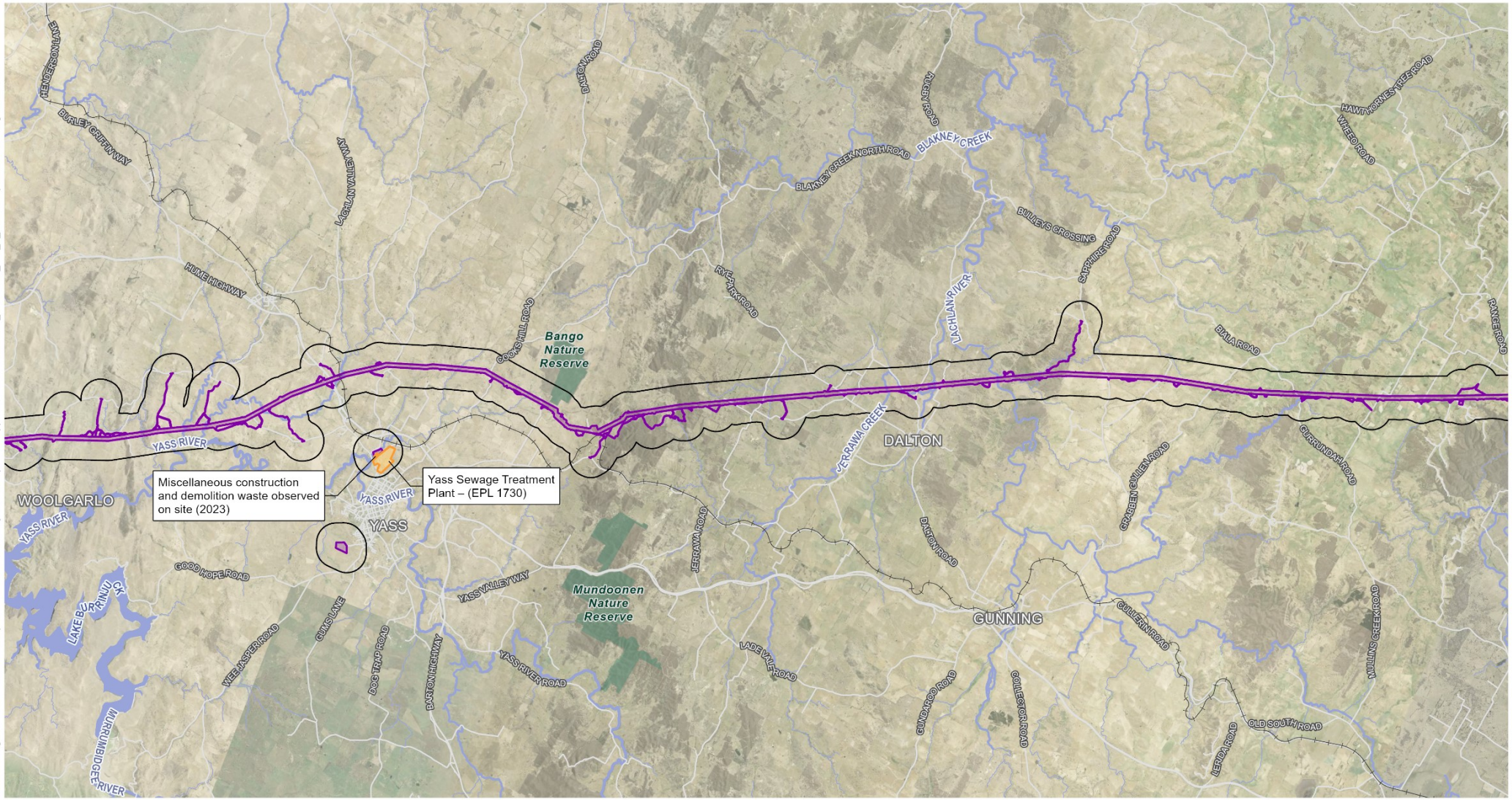


Source: *Aurecon, Transgrid, Spatial Services (DCS), ESRI Basemap*

1:200,000
0 4 8km

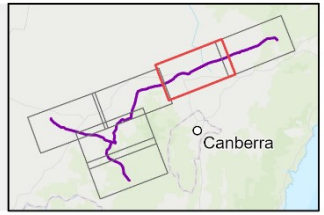
Projection: GDA 1994 MGA Zone 55

HumeLink



Amended project footprint
Amended contamination study area
National park and reserve
State forest
Watercourse
Substation

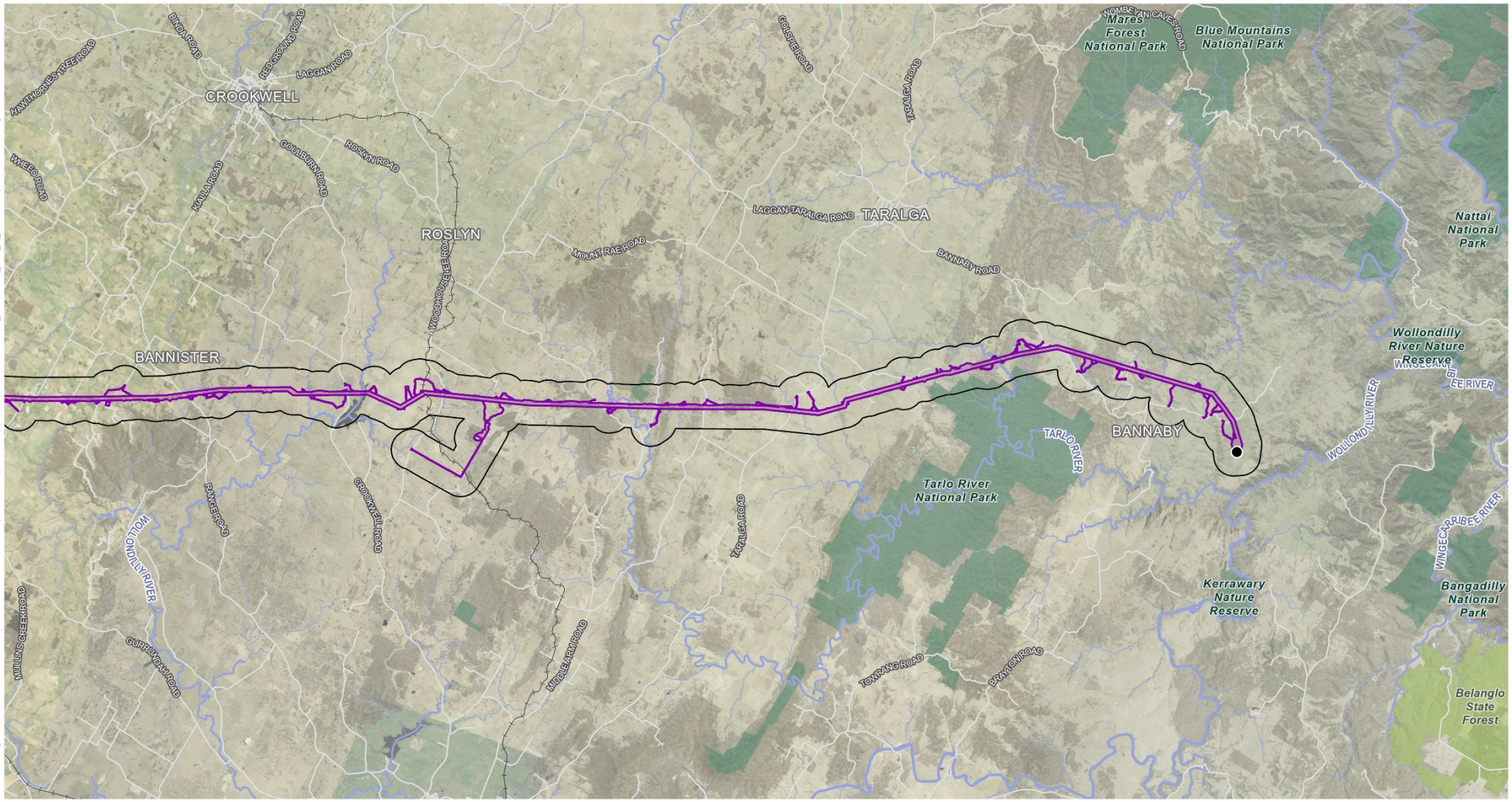
Areas of Environmental Concern
Risk Rating
Moderate



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

1:200,000
0 4 8km

Projection: GDA 1994 MGA Zone 55



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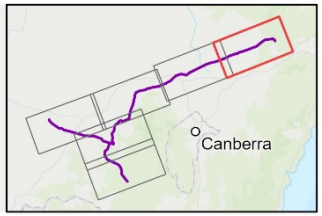
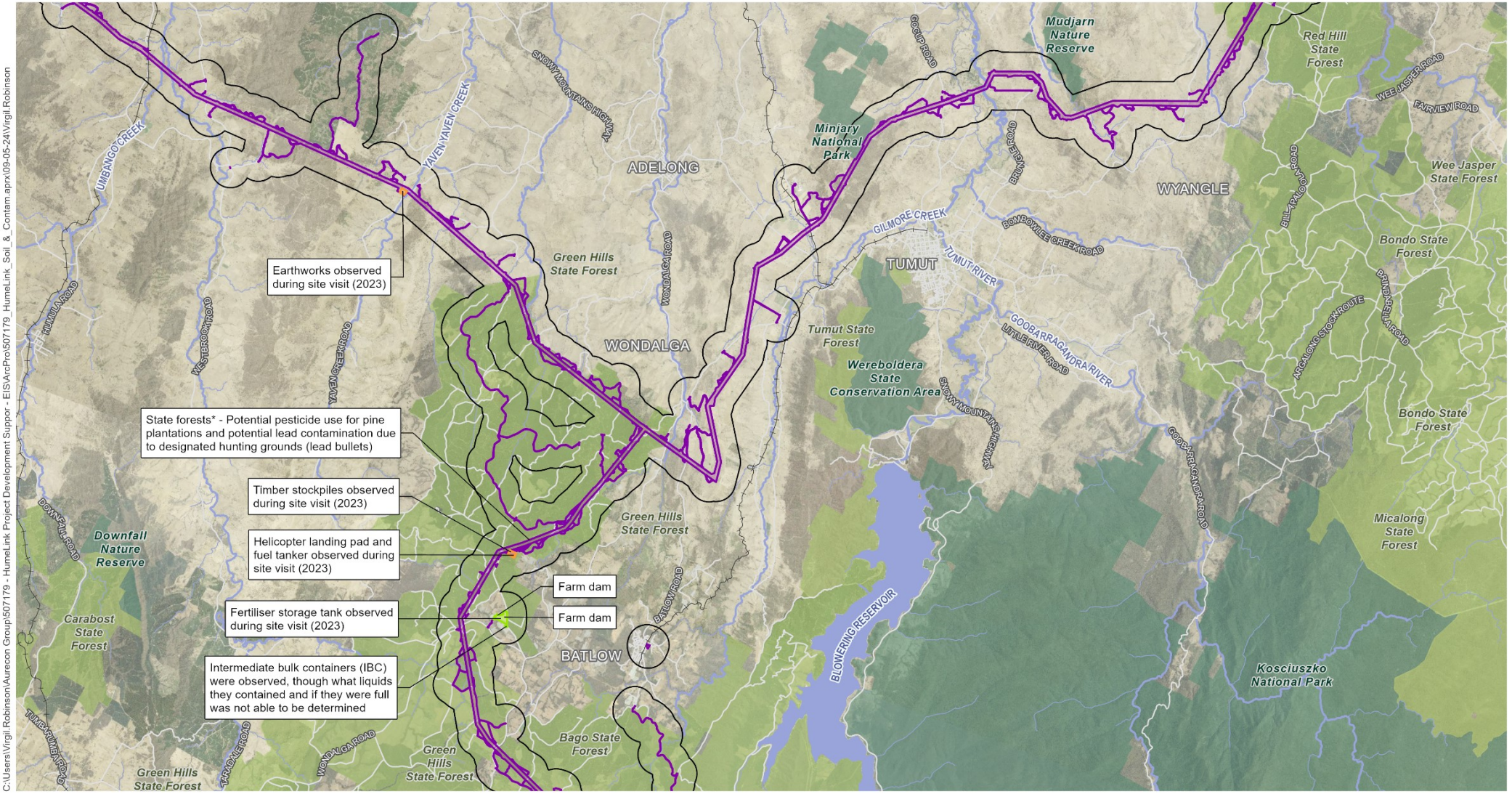
Amended project footprint
Amended contamination study area
National park and reserve
State forest
Watercourse
Substation



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

1:200,000
0 4 8km

Projection: GDA 1994 MGA Zone 55



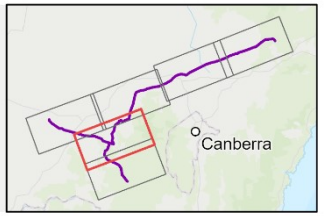
Amended project footprint
Amended contamination study area
National park and reserve
State forest
Watercourse
Substation

Areas of Environmental Concern

Risk Rating

Low
Moderate

*State forests intersecting the Green Hills corridor amendment considered low risk AECs



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

1:200,000
0 4 8km

Projection: GDA 1994 MGA Zone 55

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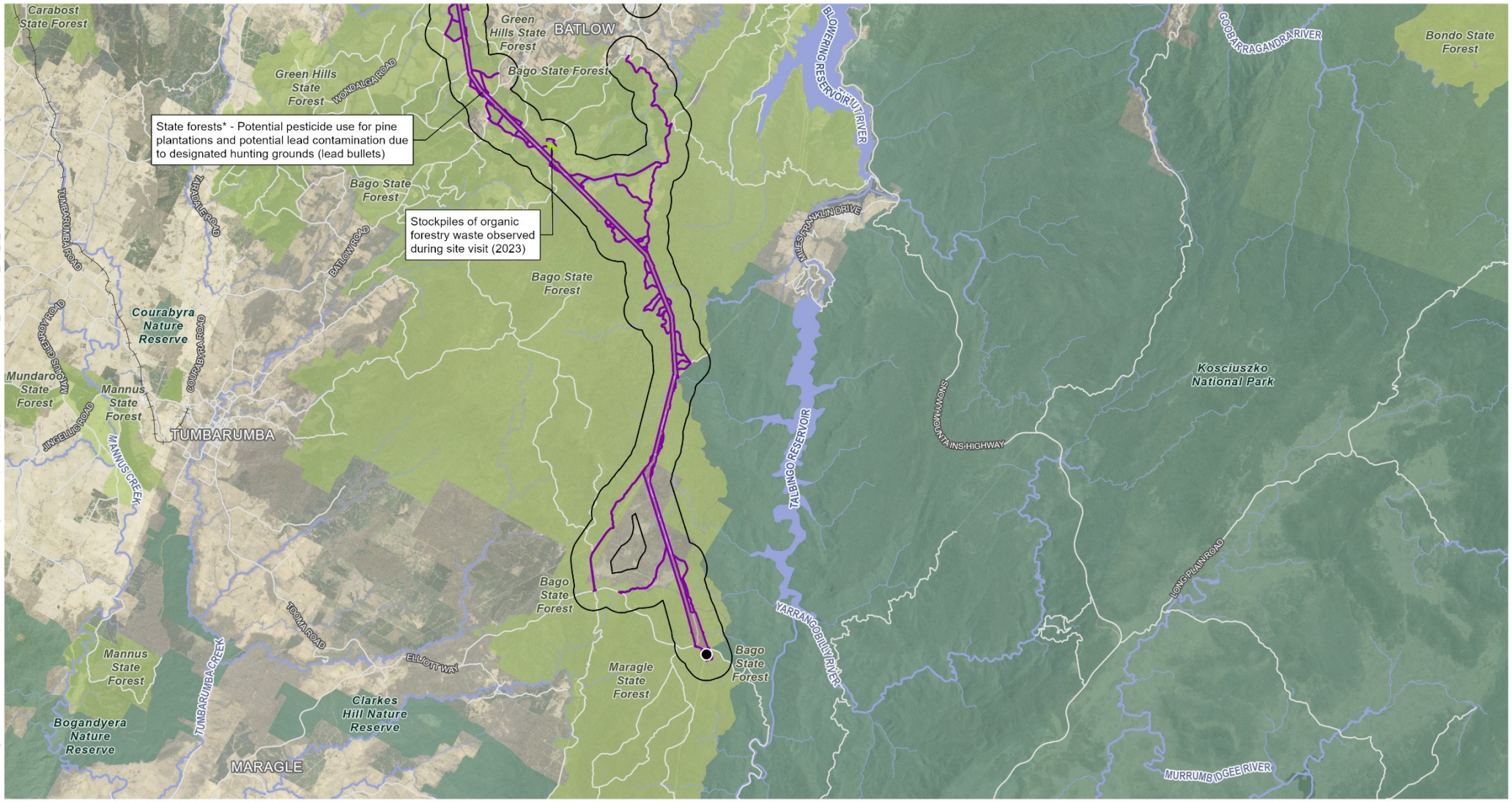

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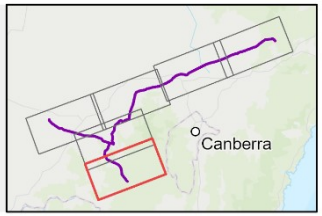
Amended project footprint
Amended contamination study area
National park and reserve
State forest
Watercourse
Substation

Areas of Environmental Concern

Risk Rating

Low

*State forests intersecting the Green Hills corridor amendment considered low risk AECs



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

1:200,000
0 4 8km

Projection: GDA 1994 MGA Zone 55

HumeLink

Attachment K: Potential areas of environmental concern for contamination **Page 6 of 6**

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