Transgrid

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HumeLink

Surface Water and Groundwater
Impact Assessment Addendum
Technical Report 12

HumeLink

Technical Report 12 - Surface Water and Groundwater Impact Assessment Addendum

Transgrid

Reference: 507179

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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 to support Transgrid's application for approval of the project 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, commencing 30 August 2023 and concluding 10 October 2023.

Since the public exhibition of the EIS, a few amendments and refinements have been proposed. The main purpose of this report is to assess the potential surface water and groundwater impacts from construction and operation of the amended project.

The study area for the assessment comprises the amended project footprint plus a one kilometre buffer. The key changes to potential surface water and groundwater impacts between the EIS project and the amended project include:

- updated erosion hazard from the EIS for the amended project footprint, including changes to the transmission line corridor and access tracks.
- inclusion of additional infrastructure in the impact assessment, including nominated access tracks, additional telecommunications connections to existing substations, construction compounds and combined worker accommodation facilities and construction compounds.
- inclusion of potential controlled blasting locations and an assessment of their proximity to sensitive environments.
- identification of access track waterway crossings and their proximity to waterfront land (ie with 40 metres of a waterway).
- additional site inspections to survey waterways with a Strahler order 4 or above and that intersected or are in proximity to the amended project footprint.
- refined/updated construction water demand estimates and the development of performance-based criteria to support assessment of potential non-potable and potable water sources.

The amended project footprint traverses four major surface water catchments: the Hawkesbury-Nepean River, Lachlan River, Murrumbidgee River and Upper Murray River catchments. The amended project footprint crosses many waterways ranging from ephemeral drainage lines to major rivers. The amended project footprint overlies five groundwater sources, including the Kyeamba Alluvial, Gundagai Alluvial, Lachlan Fold Belt (Murray Darling Basin), Lachlan Fold Belt (Greater Metropolitan) and Yass Catchment Fractured Rock groundwater sources.

The catchments and groundwater sources intersected by the amended project footprint are unchanged from the EIS project, although the groundwater source previously referred to as the Goulburn Fractured Rock in the EIS is now referred to as the Lachlan Fold Belt (Greater Metropolitan) groundwater source in line with the updated Water Sharing Plan for Greater Metropolitan Region Groundwater Sources 2023. In the EIS project, only one accommodation facility was located in the Upper Murray catchment (this facility has subsequently been removed from the amended project), however, in the amended project one kilometre of transmission line and associated access tracks would be located in this catchment. Apart from the Upper Murray catchment. the lengths of the transmission line corridor located in each catchment are about the same.

The waterways impacted by the transmission line corridor are essentially the same for the amended project compared to the EIS project, however, in some cases the locations of impact have changed or the transmission line corridor has been moved further away or closer to waterways.

The most substantial changes in waterway impacts are due to the nomination of additional access tracks and changes in construction compounds and worker accommodation facilities.

Construction impacts on surface water

The following potential construction impacts on surface water were identified:

- **Erosion risk and sedimentation impacts** – Erosion risk within the amended project footprint varies considerably depending on the soil type, terrain steepness and the average annual rainfall at specific locations. Disturbance of the ground through vegetation removal, earthworks and other construction activities would pose the greatest risk to surface water. Construction activities in proximity to waterways would increase erosion risk. For the purposes of the assessment, buffer distances were identified around waterways and the potential soil erosion categorised for areas within the amended project footprint. The sensitivity of a location was determined based on whether it was within a buffer zone of a waterway and its potential soil erosion category. Project components and the type of construction activities were then also considered in deriving an impact significance. For amended project components such as the access tracks, transmission line easement and structures, a range of impact ratings were identified depending upon specific locations. About 74 per cent of the amended project footprint is considered to have a low risk of erosion and sedimentation impacts on surface waters, 24 per cent moderate risk and 2 per cent high risk. While there was a decrease in the proportion of high risk areas between the amended project and the EIS project, there was a substantial increase in the area potentially impacted due to the nomination of access tracks. For other amended project components that have a discrete location (ie substations), a site-specific impact significance was determined – which was generally of low to moderate impact significance. The different impact significance outcomes for different locations would be used to determine the soil and water management measures including erosion and sedimentation control during construction.
- **Geomorphology impacts** – Potential impacts on geomorphology would be primarily related to erosion risk and sedimentation impacts (ie sediment being washed into waterways) and therefore the risk profile, impact significance and mitigation measures would be the same as erosion risk and sedimentation impacts. An additional risk (compared to the EIS project) to geomorphology would be waterway crossings associated with nominated access tracks. New tracks and upgraded tracks have the largest potential impact to waterways due to required ground disturbance activities. Where these access tracks are within waterfront land, this would have a moderate risk of impacts. Where these access tracks cross waterways, these would have a high risk of impacts. These potential impacts would be managed through implementing appropriate design guidelines and mitigation measures.
- **Water quality impacts** – The major potential impacts on water quality would be primarily related to erosion risk and sedimentation. Therefore, the risk profile, impact significance and mitigation measures would be the same as erosion risk and sedimentation impacts. The change in location of construction compounds, and additional combined worker accommodation facilities and construction compounds (compared to the EIS), which would include concrete batching plants, and associated materials and chemicals/fuel storage and use would also impact on water quality at a localised level. All construction compounds, and combined worker accommodation facilities and construction compounds have been located outside vegetated riparian zones of Strahler order waterways classified 4 or higher – which are generally perennial waterways with a high likelihood of containing key fish habitat. However, due to the increase in the number of construction compounds and combined worker accommodation facilities, as well as the inclusion of the access tracks, the potential risks to water quality have increased with the amended project compared to the EIS project.

- **Water supply impacts** – Approximately 715 megalitres (ML) of water is estimated to be required over the 2.5-year construction period of which approximately 40 per cent would need to be potable (for concrete batching and consumption at the combined worker accommodation facilities and construction compounds) and the remainder would be non-potable water (primarily for dust suppression). Overall, this is a 27 per cent increase from the amount of water estimated to be required for the EIS project.

  The water supply strategy has been refined from the EIS project. For the amended project, potable water would be sourced via direct connection with existing council water reticulations where possible. Where direct connection to existing council water reticulation systems is not available/feasible, potable water could be transported from a nearby town/population centre to the point of usage via water carts/tankers. Further consultation would be undertaken with local councils to ensure there is sufficient capacity within the existing water reticulation systems to meet the potable water demand. Non-potable water would be sourced from on-site sources (ie construction sedimentation basins, farm dams and/or rainwater tanks) where available. In addition, non-potable water could be purchased from existing groundwater and/or surface water allocation holders who wish to temporarily sell their water allocation (or part of their water allocation) through the open water market. Where possible, the preference would be to use existing water extraction points, subject to agreement with the relevant landowners.

  The total water demand during construction is a small percentage of the total volume of water allocated under the Water Sharing Plans (WSPs) in the amended project footprint, however the distribution of existing groundwater and surface water licenced extraction volumes is variable across the amended project footprint. The potential impacts from water supply on non-potable water sources/users would be negligible as purchasing water from an existing Water Access Licence (WAL) holder with predetermined extraction volumes would have already been evaluated and deemed to be acceptable via the relevant approvals process. Any surface water/groundwater extraction would be carried out in compliance with the conditions stated in the purchased WALs and the relevant WSP.

- **Wastewater disposal** – The volumes of wastewater generated by construction activities (excluding combined worker accommodation facilities and construction compounds) would be generally low, ranging from 50 kL to 100 kL (assuming a conservative 200 L per person) depending on the site and occupancy levels. The EIS presented information over the life cycle of the project, while the amended project considers a refined estimation approach of daily wastewater generation as this provides a more acute representation. Wastewater from these activities would be collected in tanks or field portaloos – which would be pumped out into a tanker. The tanker would dispose of any wastewater at local sewage treatment plants. Wastewater generated at the combined worker accommodation facilities and construction compounds would require a connection into the town sewerage network, where possible. However, in most instances, wastewater from these facilities would be collected in tanks which would be pumped out into a tanker. The tanker would dispose of any wastewater at local sewage treatment plants. Further consultation would be undertaken with local councils to ensure there is sufficient capacity within the nearby wastewater treatment plants to meet the water disposal demand.

Construction impacts on groundwater

Overall, the potential impacts and risks of the amended project to groundwater during construction have increased compared to potential impacts and risks identified in the EIS project due to the following amendments and refinements:

- Inclusion of additional infrastructure in the assessment which may require temporary dewatering during construction, such as the additional telecommunications connections to existing substations.
- Inclusion of potential controlled blasting locations for transmission line structure construction, which have the potential to cause localised changes to existing groundwater flow pathways and potential localised groundwater quality impacts (eg increased turbidity and/or nitrates used in blasting operation leaching into groundwater).

Other potential impacts and risks to groundwater during construction are generally the same for the amended project compared to the EIS project, however, in some cases the locations of impact have changed due to changes to the transmission line corridor.

Construction activities that could potentially impact groundwater resources mainly relate to the construction of the transmission line structures foundation and additional telecommunications connections to existing substations, which would require excavation up to five metres below ground level or piles which may extend greater than 20 metres below ground level. These activities may intercept groundwater where the groundwater table is shallow (ie < 2 metres below ground level) and the potential short-term impacts such as changes in groundwater level (ie from dewatering), interference to groundwater flow direction and impacts on groundwater quality on bores within or close to the amended project footprint could be moderate to high. Substation modification and construction was also identified as potentially having moderate impacts on groundwater.

Temporary dewatering (if required) could potentially exceed the minimal impact consideration in the NSW Aquifer Interference Policy (AIP) where shallow groundwater is encountered (ie < 2 metres below ground level). However, the induced drawdowns would be temporary only and would not prevent the long-term viability of the potentially affected Groundwater Dependent Ecosystems (GDEs) or water supply work.

In addition, vibration impacts from controlled blasting activities could potentially loosen silt/sand/rock particles and chemical precipitates lining fractures which can increase turbidity of groundwater (where shallow groundwater is encountered ie less than two metres below ground level (mbgl)) and the use of nitrates (ie ammonium nitrate) in controlled blasting operations could leach into groundwater and impact groundwater quality. Potential controlled blasting impacts are expected to be highly localised, as literature suggests that the distance over which the near-field breakage of intact rock and the formation of new fractures would be limited.

While there are other potential risks to groundwater during construction, overall, the impacts of construction on groundwater would be minor.

Operational impacts on surface water and groundwater

The amended project involves changes to the transmission line corridor in some locations (including the Green Hills corridor amendment) as well as nomination of additional access tracks/waterway crossings that may be retained during operation for maintenance activities. This may have resulted in slight changes to the location of surface water impacts during operation, however overall the potential operational surface water impacts of the amended project are generally consistent with the impacts described in Section 7.1.1 of the *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS.

The amended project involves changes to the transmission line corridor in some locations (including the Green Hills corridor amendment) and has marginally increased the maximum expected transmission line structure piling depth to up to 28 metres below ground level. The substation bench layout at the proposed Gugaa 500 kV substation and nominated access track locations have also been amended. However, these changes are considered minor and therefore the potential operational groundwater impacts of the amended project are generally consistent with the impacts described in Section 7.1.6 of the *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS.

Mitigation measures

The measures proposed to avoid, manage and/or mitigate impacts to surface water and groundwater include:

- Soil and Water Management Plans (SWMPs) and Erosion and Sediment Control Plans (ESCPs) would be prepared and implemented. Where there is a higher risk of potential impact due to the activity (ie construction compound), the proximity of a waterway or other specific characteristics (ie high erosion potential), site-specific plans would be prepared.
- Where works have been identified within waterfront land by spatial analysis. Waterfront land would need to be confirmed onsite, using the waterfront land tool, as per the Natural Resources Access Regulator (NRAR) documentation/e-tool. Where waterfront land is confirmed, the works would be undertaken in accordance with the relevant Guidelines for Controlled Activity approvals for construction (NSW Government, 2024a).

- Consideration of scour protection will be included in any infrastructure that is within a waterway. The design will incorporate features that minimise impact on flow conditions and natural functioning of the waterway in accordance with relevant guidelines.
- Water supply management will be undertaken in accordance with agreements between the construction contractors and relevant landowners, water users and suppliers. Groundwater and surface water allocations purchased from existing registered bores/users must be extracted in accordance with the conditions stated in the associated WAL(s) and Water Supply Works approval(s).
- Where temporary dewatering is required, a dewatering assessment will be undertaken to estimate dewatering volumes and dewatering procedures will be included in the SWMP in line with the minimal impact criteria listed within the NSW AIP, relevant WSPs and licencing requirements where relevant (Water Supply Works Approval and WAL(s) if dewatering volumes exceed 3 ML/year)
- Where controlled blasting is required, a suitably qualified blasting specialist will be engaged to carry out a detailed blasting assessment and trial blasts (if required) to determine blasting design and site-specific parameters. The blasting assessment should identify measures to limit vibrations to the recommended “safe” levels (defined in AS 2187.2-2006 Explosives - Storage and use), limit rock mass damage, avoid "over-blasting" and consider potential impacts to GDEs, groundwater users and surface water bodies.

With the proposed mitigation measures in place, impacts are expected to be negligible to minor.

Conclusions

Overall, the potential impacts and risks of the amended project to surface water and groundwater have increased compared to potential impacts and risks identified for the EIS project. This is due to a more detailed understanding of the project design, along with amendments and refinements, which includes:

- changes to the transmission line corridor
- an increase in the number and size of construction compounds and combined worker accommodation facilities and construction compounds
- inclusion of additional infrastructure in the assessment such as nominated access tracks and additional telecommunications connections to existing substations. Some of this infrastructure is located within waterfront land (ie within 40 m of a waterway) and/or crosses waterways
- an increase in potable water requirements
- inclusion of potential controlled blasting locations for transmission line structure construction.

Due to the increase in water quality impacts as a result of changes to erosion and sedimentation and geomorphology impacts on surface water, more site specific ESCPs and SWMPs would be developed to mitigate any impacts.

The increase in potable water requirements would require further consultation with councils to ensure that supplies are adequate to meet demands.

The changes to the transmission line route does not result in any overall change in potential impact significance to surface water or groundwater but may have minor localised impacts in some new areas. Localised impacts will be effectively managed by the environmental management measures proposed.

Overall, the amended project is expected to have minimal additional surface water and groundwater impacts compared to the impacts identified in the EIS. Any impacts would be adequately managed with the implementation of the proposed environmental management measures.

Contents

Attachments

Figures

Tables

Abbreviations

Abbreviation	Description
AIP	Aquifer Interference Policy
BoM	Bureau of Meteorology
CEMP	Construction Environmental Management Plan
CSSI	Critical State Significant Infrastructure
DECC	Former Department of Environment and Climate Change
DPI	Department of Primary Industries
DPIE	Former Department of Planning, Industry, and the Environment
EIS	Environmental Impact Statement
EP&A Act	Environmental Planning and Assessment Act 1979
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)
ESCP	Erosion and Sediment Control Plan
GDE	groundwater dependent ecosystem
GIS	Geographical Information System
HSU	Hydrostratigraphic unit
KFH	key fish habitat
kT/year	kilotonnes per year
km	kilometres
LGA	Local Government Area
m	metres
mAHD	metres above the Australian Height Datum
mbgl	metres below ground level
MDBA	Murray Darling Basin Authority
ML	megalitres
µS/cm	microsiemens per centimetre
NRAR	Natural Resources Access Regulator
NSW	New South Wales
NSW DCCEEW Water	NSW Department of Climate Change, Energy, the Environment and Water – Water
Planning Systems SEPP	State Environmental Planning Policy (Planning Systems) 2021
QLD	Queensland
RFS	Rural Fire Service
SA	South Australia
SEARs	Planning Secretary's Environmental Assessment Requirements
SSI	State Significant Infrastructure
SWMP	Soil and Water Management Plan
T/day	Tonnes per day
TAS	Tasmania
VIC	Victoria
WAL	Water Access Licence
Water Act	Water Act 1912
WM Act	Water Management Act 2000
WQMP	Water Quality Monitoring Plan

Abbreviation	Description
WRP	Water Resource Plan
WSP	Water Sharing Plan

Glossary of terms

Term	Description
access routes	Roads providing the access to and from the amended project footprint.
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.
amended surface water and groundwater study area	The amended project footprint plus a one kilometre buffer.
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.
amenity	The pleasantness of a place as conveyed by desirable attributes including visual, noise, odour etc (Australian Institute of Landscape Architects QLD, 2018).
Asset Protection Zone	A bushfire protection measure, providing a buffer around assets. APZs are designed and maintained to reduce fuel near assets, and to reduce the potential for damage from direct flame contact, smoke, radiant heat, and ember attack. The dimensions for APZs are designed in line with *Planning for Bush Fire Protection: A guide for councils, planners, fire authorities and developers* (NSW RFS, 2019), and are determined by surrounding vegetation type, slope, and the type of asset/development.
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.
capacity	The volume a road is designed to accommodate.
climate change	A change in global or regional climate patterns, in particular a change apparent from the mid to late 20th century onwards and attributed, largely, to the increased levels of atmospheric greenhouse gases.
combined cumulative impact assessment	Combined cumulative impact assessment approach involves considering the combined effect of the different cumulative impacts of the project with other relevant future projects on key matters in an identified area (DPE, 2022a).
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 construction would be managed to avoid or mitigate impacts, and how those environmental management requirements would be implemented.
Critical State Significant Infrastructure	Critical State Significant Infrastructure (CSSI) projects are high priority infrastructure projects that are essential to the State for economic, social or environmental reasons.

Term	Description
easement clearing zone	The vegetation zones along the transmission line easements which would require the clearing and ongoing maintenance of tall growing vegetation that may intrude on the vegetation clearance requirements at maximum line operating conditions (maximum conductor sag and maximum conductor blowout) at that location at the time of construction of the project, or at any time in the future. To minimise impacts on biodiversity and ground stability within this zone, ground cover vegetation would be retained, with partial mid-storey removal required along with complete removal of the canopy layer.
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 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.
EIS surface water and groundwater study area	The EIS project footprint plus a one kilometre buffer.
floodplain	Land that is subject to flooding up to the Probable Maximum Flood (PMF), which is the maximum possible flood that would reasonably be expected to ever occur.
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).
hazard tree	A hazard tree is defined as a tree or part of tree that if it were to fall would infringe on the vegetation clearance requirements at maximum conductor sag of the transmission lines.
Hydrostatigraphy	Hydrostatigraphy is the structure of subsurface porous materials in reference to the flow of groundwater, often relating to geological units.
indicative disturbance area	The area of land that would be temporarily or permanently cleared for the project including: ■ construction and operation of all proposed infrastructure elements (including the proposed transmission line and structures, substation site work, telecommunications hut and other ancillary work) ■ construction elements such as construction compounds and worker accommodation facility, access tracks and brake/winch sites. The area is identified based on realistic project component locations and areas however it is indicative at this stage. The final disturbance area would be confirmed during finalisation of the design and construction methodology and would be developed as part of the consideration of avoidance and impact minimisation. This indicative disturbance area includes areas required for operation and maintenance.
issue-specific cumulative impact assessment	Issue-specific cumulative impact assessment approach involves considering the impacts of the project together with the impacts of other relevant future projects on specific issues (key matters) within an identified area (DPE, 2022a).
karst environments	An area of land made up of limestone.
Key Fish Habitat	Key Fish Habitat (KFH) is aquatic habitat that are important to the sustainability of the recreational and commercial fishing industries, the maintenance of fish populations generally, and the survival and recovery of threatened aquatic species.
metres above Australian Height Datum	A common reference level used in Australia which is approximately equivalent to the height above sea level in meters.
perched aquifers	Perched aquifers are aquifers which occur above the regional water table.
proponent	The entity seeking approval for the CSSI application, which for the HumeLink project is NSW Electricity Networks Operations Pty Ltd (referred to as Transgrid).
Ramsar wetland	Wetlands designated under the Convention on Wetlands of International Importance which are representative, rare or unique wetlands, or wetlands that are important for conserving biological diversity.

Term	Description
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.
sediment containment dam	A sediment containment dam is a purpose-built dam designed to collect and settle sediment from stormwater runoff. A sediment containment dam may not always be required and is dependent on a number of requirements such as the catchment area and expected soil loss rate.
sensitive receptor	A location where people are likely to work or reside; this may include a dwelling, school, hospital, office or public recreational area.
Strahler stream order	Strahler stream order classification is a 'top down' system in which streams of the first order have no upgradient streams flowing into them (DPE 2022). If two streams of the same order merge, the resulting stream is given a number that is one higher. If two rivers with different stream orders merge, the resulting stream is given the higher of the two numbers. Under the Strahler stream order classification, first to third order streams are typically headwater streams. Streams classified as fourth through sixth order are typically medium streams, and streams that are seventh order or larger are typically rivers.
substation bench	The switchyard within a substation needs to be accessible under most circumstances to allow fault response and access for operational and maintenance reasons. To assist with this requirement, the switchyard is located on a bench to provide a stable, dry weather trafficable and free-draining structure and provide a safe platform for workers, vehicles, cranes and trucks in order to facilitate the maintenance and operation of the switchyard for the duration of its operational life.
surface water and groundwater study area	The study area for the surface water and groundwater assessment includes the project footprint with a one kilometre buffer.
the Guidelines	State significant infrastructure guidelines – preparing an environmental impact statement (DPE, 2022)
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.
transposition	Transposition is the periodic swapping of positions of the conductors on a transmission line in order to improve transmission reliability.
unconfined aquifers	Unconfined aquifers are aquifers that do not have a confining layer like a clay layer or solid rock which restricts flow from one aquifer to another.
water quality objectives	Water quality objectives are long-term goals for water quality management. They are measures, levels or narrative statements of indicators of water quality that protect environmental values. They define what the water quality should be to protect the environmental values - after consideration of the socio-economic assessment of protecting the water quality.

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.

A separate Submissions Report has been prepared to respond to the submissions received during EIS public exhibition period and should be read in conjunction with this Amendment Report.

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. This figure is presented in further detail in Attachment A.

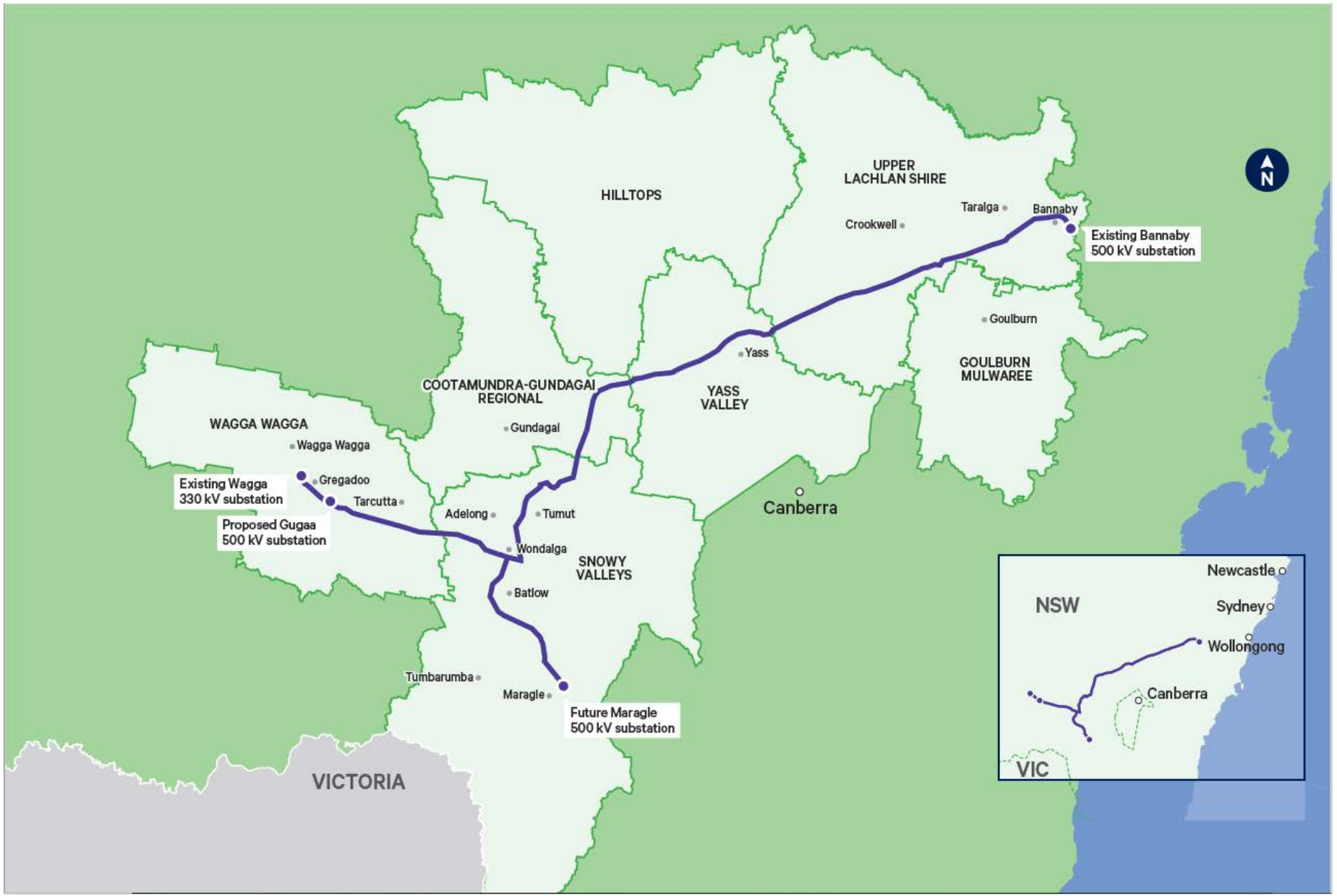
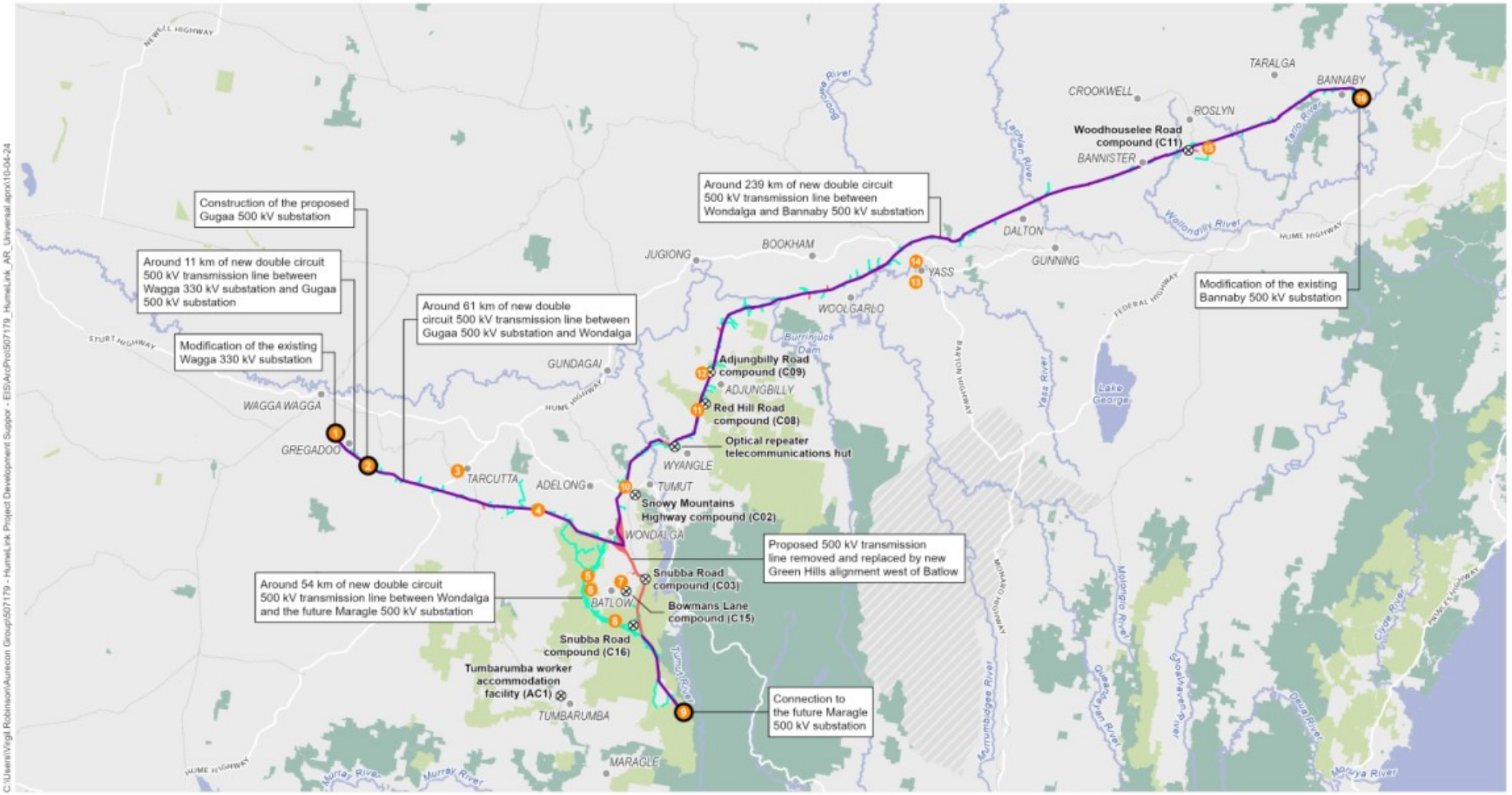


Figure 1-1 Overview of amended project location



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EIS project footprint
Removed footprint
Amendments
Removed project facility
National park and reserve
State forest
Waterbody
Waterway
Major road
Railway

Construction ancillary facilities

1. Wagga 330 kV substation compound (C01)
2. Amended Gregadoo Road compound (C06)
3. Tarcutta accommodation facility and compound (AC03)
4. Ellerslie Road compound (C21)
5. Ardrossan Headquarters Road compound (C17)
6. Green Hills accommodation facility and compound (AC07)
7. Amended Memorial Avenue compound (C14)
8. Snubba Road compound (C18)
9. Maragle 500 kV substation compound (C05)
10. Gadara Road compound (C19)
11. Amended Honeysuckle Road compound (C07)
12. Adjungbilly accommodation facility and compound (AC04)
13. Yass substation compound (C10)
14. Yass accommodation facility and compound (AC05)
15. Crookwell accommodation facility and compound (AC06)
16. Amended Bannaby 500 kV substation compound (C12)

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

1:925,000
0 20 40km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

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 12 - Surface water and Groundwater Impact Assessment* prepared for the EIS. The purpose of this report is to support the HumeLink Amendment Report by assessing the potential impacts to surface water and groundwater 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 impacts to surface water and groundwater.
- 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 surface water 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 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 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.
- EIS surface water and groundwater study area – The EIS project footprint plus a one kilometre buffer.
- Amended surface water and groundwater study area – The amended project footprint plus a one kilometre buffer.

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	
Transmission line and substation design refinements at Gregadoo	The transmission line between the existing Wagga 330 kV substation and the proposed Gugaa 500 kV substation has been assessed as operating at 500 kV for the amended project. However, energisation to 500 kV would only occur at the commissioning stage of the Victoria to NSW Interconnector West (VNI West) project, which is subject to a separate Planning Approval. Until such time, the line will operate at 330 kV.
	Associated changes with energisation to 500 kV include additional infrastructure at the proposed and relocated Gugaa 500 kV substation. The area of land required for the proposed Gugaa 500 kV substation has also increased in size.
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.
Use of approved water sources	Further analysis of water sources has been carried out for the project which complements the analysis carried out in the EIS. In addition, a process has been proposed to assist with selecting water sources to be used during construction.
Use of helicopters and drones	Additional information and assessment for the use of helicopters and drones for stringing transmission lines is now available with the engagement of construction contractors and this information has been presented in the Amendment Report. Drones are also expected to be used for additional construction activities such as, but not limited to, surveys and vegetation management. With the use of helicopters confirmed by the construction contractors and the proposed changes to ancillary facilities, the potential helipad locations have also been revised.

2.1 Background

Transgrid proposes to increase the energy network capacity in southern New South Wales (NSW) through the development of around 365 kilometres of new 500 kilovolt (kV) high-voltage transmission lines and associated infrastructure between Wagga Wagga, Bannaby and Maragle. This project is collectively referred to as HumeLink. The project would be located across 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.

3 Legislative and policy context

There have been no changes to the legislative or policy context presented in *Technical Report 12 - Surface Water and Groundwater Impact Assessment* prepared for the EIS.

4 Methodology

4.1 Key tasks

The amended project footprint was used to assess the impacts of the refined/amendment components as described in Chapter 2. The amendments to the project footprint required the potential impacts on surface water and groundwater resources during construction and operation to be reassessed. The key tasks included:

- updating the erosion hazard from the EIS for the amended project footprint and access tracks
- waterfront land proximity analysis of project amendments, including:
  - access tracks
  - additional telecommunications connections to existing substations
  - accommodation and compound sites
- potential controlled blasting locations and their proximity to sensitive environments
- identification of access track waterway crossings and whether they are within waterfront land (ie with 40 metres of a waterway)
- waterway survey (site visit)
- water supply assessment and identification of focus areas for future supply works.

Most of these tasks included Geographic Information System (GIS) analysis. The methodology followed for the key tasks are presented in Section 4.1.1.

4.1.1 GIS analysis

This section outlines the GIS methodology conducted for the surface water, groundwater (water supply and existing environment), controlled blasting, access tracks, additional telecommunications connections to existing substations, construction compounds and combined worker accommodation facilities and construction compounds analyses. Table 4-1 provides the data sources for each of the datasets used.

Table 4-1 Summary of data inputs utilised for analysis

Dataset	Description	Data source	Website
HumeLink – Footprint V13.2 - 20231114	Polygons of amended project footprint	Transgrid	-
Access tracks	Polygons of nominated access tracks and associated category describing required works	Transgrid	-
Camps_Compounds_Laydowns_Areas	Polygons of proposed combined worker accommodation facilities and construction compounds, construction compounds, and laydown areas	Transgrid	-
Groundwater Dependent Ecosystem (GDE) Aquatic	Polylines of Aquatic GDEs and associated potential defined by BoM	BoM	GDE Atlas Home: Water Information: Bureau of Meteorology (bom.gov.au)
GDE Terrestrial	Polygons of Terrestrial GDEs and associated potential defined by BoM	BoM	GDE Atlas Home: Water Information: Bureau of Meteorology (bom.gov.au)
PotentialBlastingAreascombined	Polygons of identified sections along the amended project footprint where controlled blasting may be utilised for construction	Transgrid	-

Dataset	Description	Data source	Website
SEPP_Drinking_Water_Catchment (Sydney drinking water catchment)	Polygon of Sydney Drinking Water Catchment	NSW Government	Environmental Planning Instrument - Drinking Water Catchment | Dataset | NSW Planning Portal
Additional telecommunications connections to existing substations	Polygons of additional telecommunications connections to existing substations as part of amended project footprint	Transgrid	-
StrahlerStreamOrder and HydroLine	Strahler order of NSW Government Hydroline dataset, conducted as per NSW Government guidelines	NSW Government	https://datasets.seed.nsw.gov.au/dataset/nsw-hydrography
HydroAreas (Major rivers)	Polygon of waterway where waterway is large in width, used to gather more accurate waterfront land boundaries	NSW Government	https://datasets.seed.nsw.gov.au/dataset/nsw-hydrography
Major Waterway Catchments	Catchment Boundaries of New South Wales	NSW Government	https://datasets.seed.nsw.gov.au/dataset/catchment-boundaries-of-new-south-wales7d60c
National Groundwater Information System (NGIS) Bores	National Groundwater Information System Bore Locations and associated information	BoM	http://www.bom.gov.au/water/groundwater/ngis/data.shtml
Water levels	Associated water level information included in the NGIS	BoM	http://www.bom.gov.au/water/groundwater/ngis/data.shtml
Salinity	Associated salinity information included in the NGIS	BoM	http://www.bom.gov.au/water/groundwater/ngis/data.shtml
WSP_Groundwater_1st_July_2023_master_with_comments. (WSP groundwater)	Water Sharing Plans (WSPs) for Groundwater	NSW Government	WATER SHARING PLANS SPATIAL DATA | Dataset | SEED (nsw.gov.au)
Regulated_Rivers_July_2023_with_comments.	Surface Water Catchments	NSW Government	WATER SHARING PLANS SPATIAL DATA | Dataset | SEED (nsw.gov.au)
WSP_Surface_Water_Unregulated_1st_July_2023. (WSP surface water)	Water Sharing Plans for Surface Water	NSW Government	WATER SHARING PLANS SPATIAL DATA | Dataset | SEED (nsw.gov.au)

4.1.1.1 Existing Environment – Groundwater Users

- A one kilometre buffer was applied to the amended project footprint.
- A new layer (groundwater analysis: existing environment) was created by overlaying the Water Sharing Plan (WSP) groundwater dataset and clipping to the NGIS bores dataset.
- The following data was obtained from the groundwater analysis (existing environment) layer:
  - Bores count number per WSP groundwater area
  - Bores count number per bore type
- Overlay water level with bores ‘per bore type’ to show water level range.
- The bore ID and WSP groundwater area were overlayed to salinity data.

4.1.1.2 Existing Environment – Surface Water Catchments

- A one kilometre buffer was applied to the amended project footprint.
- The major waterway catchments dataset was intersected with the amended project footprint (non-inclusive of access tracks).
- The length in kilometres of each major waterway catchment within the amended project footprint was calculated.

4.1.1.3 Impacted water analysis (crossings)

- A 40 metre buffer was applied to the Strahler order (named waterways) dataset.
- The amended project footprint was overlayed to the following datasets to identify where crossings occur:
  - Strahler order (named waterways) (40 metre buffer)
  - HydroAreas (major rivers)
  - SEPP (Sydney drinking water catchment)

4.1.1.4 Controlled blasting areas and sensitive environment analysis

- A 50 metre buffer was applied to the potential controlled blasting areas dataset. The 50 metre buffer was selected to encompass potential surface water and groundwater impacts from controlled blasting activities, which are expected to be highly localised as literature suggests that the distance over which the near-field permanent damage to the rock slope in the form of breakage of intact rock and the formation of new fractures would be limited. For example, Hoek and Bray (1981), suggests that the onset of rock breakage to be within 20 metres of the blast hole for a 100 kg charge weight.
- New layers were created by overlaying the 50 metre buffer blasting dataset to the following datasets:
  - NGIS bores
  - HydroAreas (major rivers) waterbodies
  - GDE aquatic (high potential)
  - GDE terrestrial (high potential).

4.1.1.5 Waterfront land analysis

The following amended project components were analysed for potential impacts within waterfront land:

- access tracks
- additional telecommunications connections to existing substations accommodation locations and construction compounds.

The analysis determined whether the amended project components were within 40 metres of different Strahler order waterways. The 40 metre was selected as this is defined as waterfront land in the relevant guidelines. Construction and operational activities within waterfront land have a higher risk of causing surface water impacts and are likely to require additional mitigation measures to minimise risk and impacts.

Waterfront land identified in this Addendum is based on the spatial analysis undertaken for this assessment, which provides a nominal estimation where waterfront land may occur. Waterfront land would need to be confirmed onsite in accordance with Natural Resources Access Regulator (NRAR) guidelines, including using the waterfront land tool, as per the NRAR documentation/e-tool.

The reason for this is that waterfront land is identified based on presence of defined bed and banks, evidence of flow and geomorphic features and presence of aquatic/riparian vegetation (for wetlands).

Consideration was given to access tracks and additional telecommunications connections to existing substations that crossed waterways and the Strahler order of the waterways impacted.

4.1.2 Waterway survey

A waterway survey was undertaken between 16 October 2023 and 20 October 2023 to verify information obtained from the publicly available datasets and mapping. Site inspections were conducted in waterways with a Strahler order 4 or above and that intersected or are in proximity to the amended project footprint. At each waterway, the following tasks were conducted in general accordance with the AUSRIVAS Physical-Chemical protocol (Parsons *et al.*, 2002):

- Visual inspection and photographic survey of:
  - general geomorphology and topography
  - bank/soil condition and level of vegetation
  - evidence of previous or current erosion around the drainage areas
  - bank and bed substrate
  - floodplain condition and vegetation (where applicable)
  - existing flow obstructions or flow diversions within the sub-catchment.
- Measurements of instream water quality parameters were taken using a calibrated handheld YSI water quality meter (parameters included pH, temperature, conductivity, dissolved oxygen, Oxidation Reduction Potential (ORP) turbidity).

The locations included in the waterway survey are summarised in Table 4-2 below and are illustrated in Figure 4-2. The findings and results of the waterway survey are documented in Attachment B.

Table 4-2 Undertaken waterway survey summary

Waterway	Strahler order	Key Fish Habitat (KFH) Basin	Comment
Adelong Creek	4	Murray Darling South	Inaccessible due to forestry road closure
Bago Creek	4	Murray Darling South	Surveyed successfully
Buddong Creek	5	Murray Darling South	Surveyed successfully
Cart Road Creek	4	Murray Darling South	Inaccessible (private property)
Comatawa Creek	4	Murray Darling South	Surveyed successfully
Cooks Creek	4	Murray Darling South	Inaccessible (private property)
Darlows Creek	4	Murray Darling South	Surveyed successfully
Derringullen Creek	5	Murray Darling South	Surveyed for EIS
Foleys Gully	4	Murray Darling South	Surveyed successfully
Galvins Creek	5 and 4	Murray Darling South	Surveyed successfully
Gilmore Creek	4 and 5	Murray Darling South	Surveyed successfully
Gocup Creek	4	Murray Darling South	Surveyed successfully
Humes Creek	4	Murray Darling South	Surveyed, inaccessible for water quality meter
Jerrawa Creek	5	Murray Darling South	Surveyed successfully
Jugiong Creek	4	Murray Darling South	Surveyed successfully
Keajura Creek	6	Murray Darling South	Surveyed successfully
Killimicat Creek	5	Murray Darling South	Surveyed for EIS
Kyeamba Creek	7	Murray Darling South	Surveyed successfully
Long Creek	4	Murray Darling South	Surveyed successfully
Mandys Creek	4	Murray Darling South	Surveyed successfully
Merrill Creek	4	Murray Darling South	Surveyed successfully
Middle Creek	5	Hawkesbury Nepean	Inaccessible (private property)

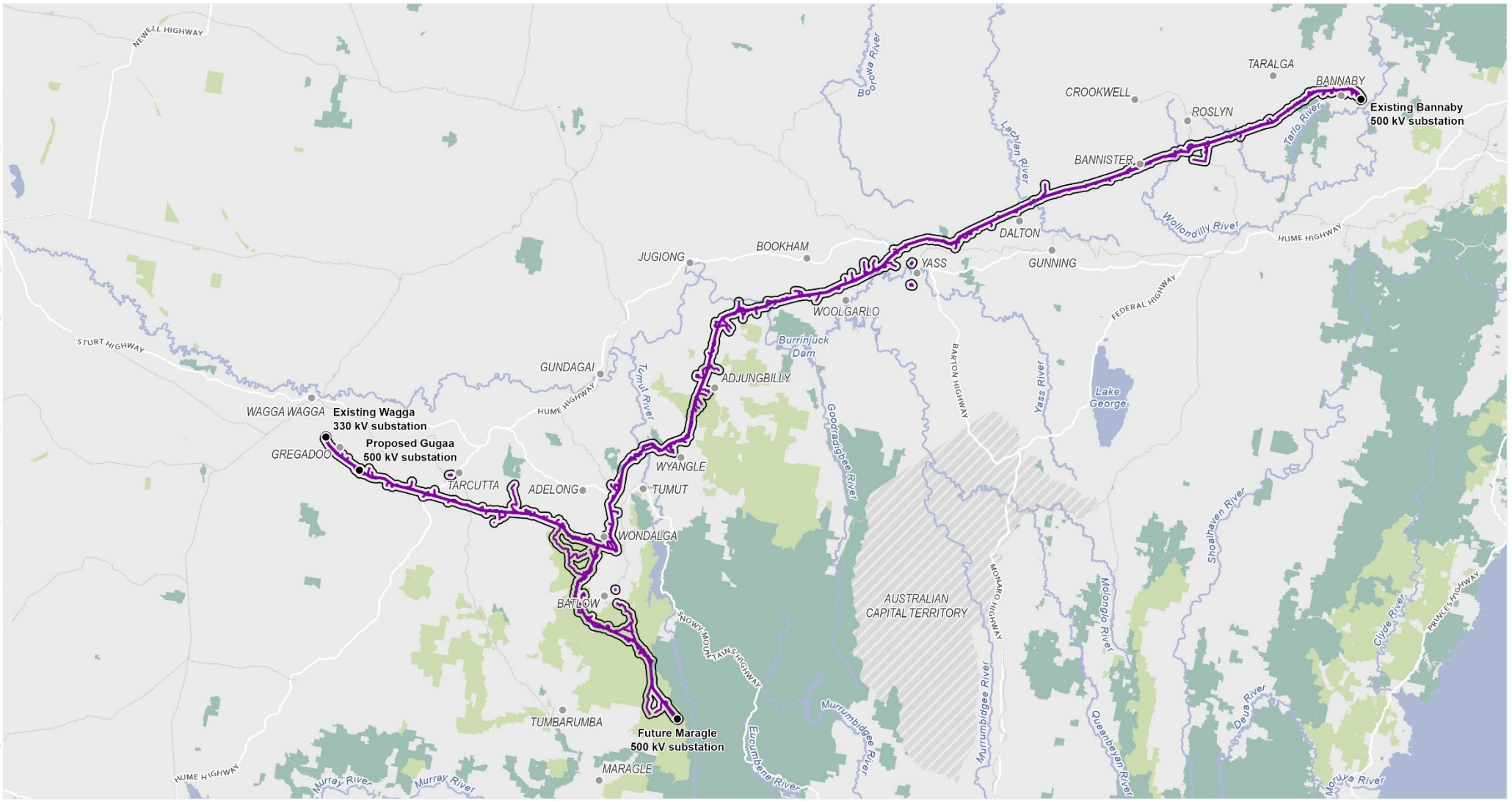
Waterway	Strahler order	Key Fish Habitat (KFH) Basin	Comment
Nacki Creek	4	Murray Darling South	Inaccessible due to forestry road closure.
O'Briens Creek (west)	4 and 6	Murray Darling South	Surveyed for EIS
O'Briens Creek (east)	4 and 6	Murray Darling South	Inaccessible (private property)
Oak Creek	4	Murray Darling South	Surveyed for EIS
Pejar Creek	4	Hawkesbury Nepean	Surveyed for EIS
Right Arm Creek	4	Murray Darling South	Inaccessible (private property)
Saw Mill Creek	4	Murray Darling South	Surveyed successfully
Sawpit Gully	4	Murray Darling South	Inaccessible (private property)
Sheepyard Creek	4	Murray Darling South	Surveyed successfully
Snubba Creek	4	Murray Darling South	Surveyed for EIS, surveyed successfully again
Tarcutta Creek	6	Murray Darling South	Surveyed for EIS
Tooles Creek	5 and 6	Murray Darling South	Inaccessible (private property). Photos taken from roadway
Unnamed Waterway 2 (tributary to Adjungbilly Creek)	4	Murray Darling South	Surveyed successfully
Unnamed Waterway 3	4	Murray Darling South	Inaccessible (private property)
Unnamed Waterway 4 (tributary to Pejar Creek)	4	Hawkesbury Nepean	Surveyed successfully
Unnamed Waterway 5	4	Hawkesbury Nepean	Inaccessible (private property)
Unnamed Waterway 6	4	Hawkesbury Nepean	Inaccessible (private property)
Windowie Creek	4	Murray Darling South	Surveyed, inaccessible for water quality meter

4.1.3 Impact assessment

This surface water and groundwater assessment was undertaken in accordance with the methodology presented in Section 4.4 of the *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS.

4.2 Study area

The amended surface water and groundwater study area includes the amended project footprint plus a one kilometre buffer. The amended surface water and groundwater study area is outlined in Figure 4-1.



Amended project footprint

Amended surface water and groundwater study area

National park and reserve

State forest

Waterbody

Waterway

Major road

Railway

Substation

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

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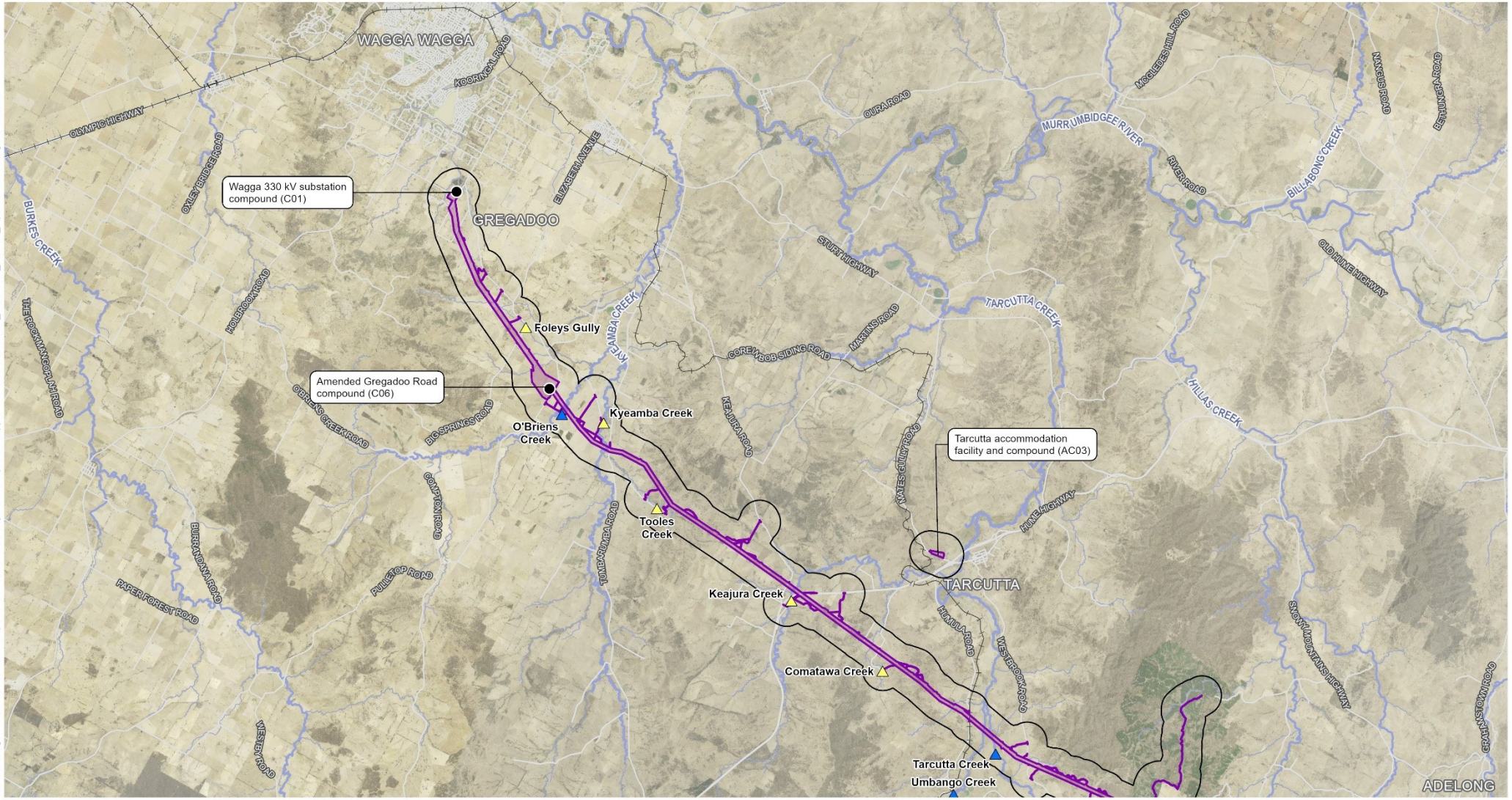
0 20 40km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

FIGURE 4-1: Amended surface water and groundwater study area



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Amended project footprint

Amended surface water and groundwater study area

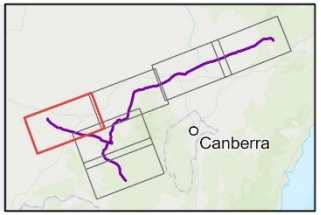
Railway

Watercourse

Substation

Field survey location (EIS)

Field survey location (Amendment Report)



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

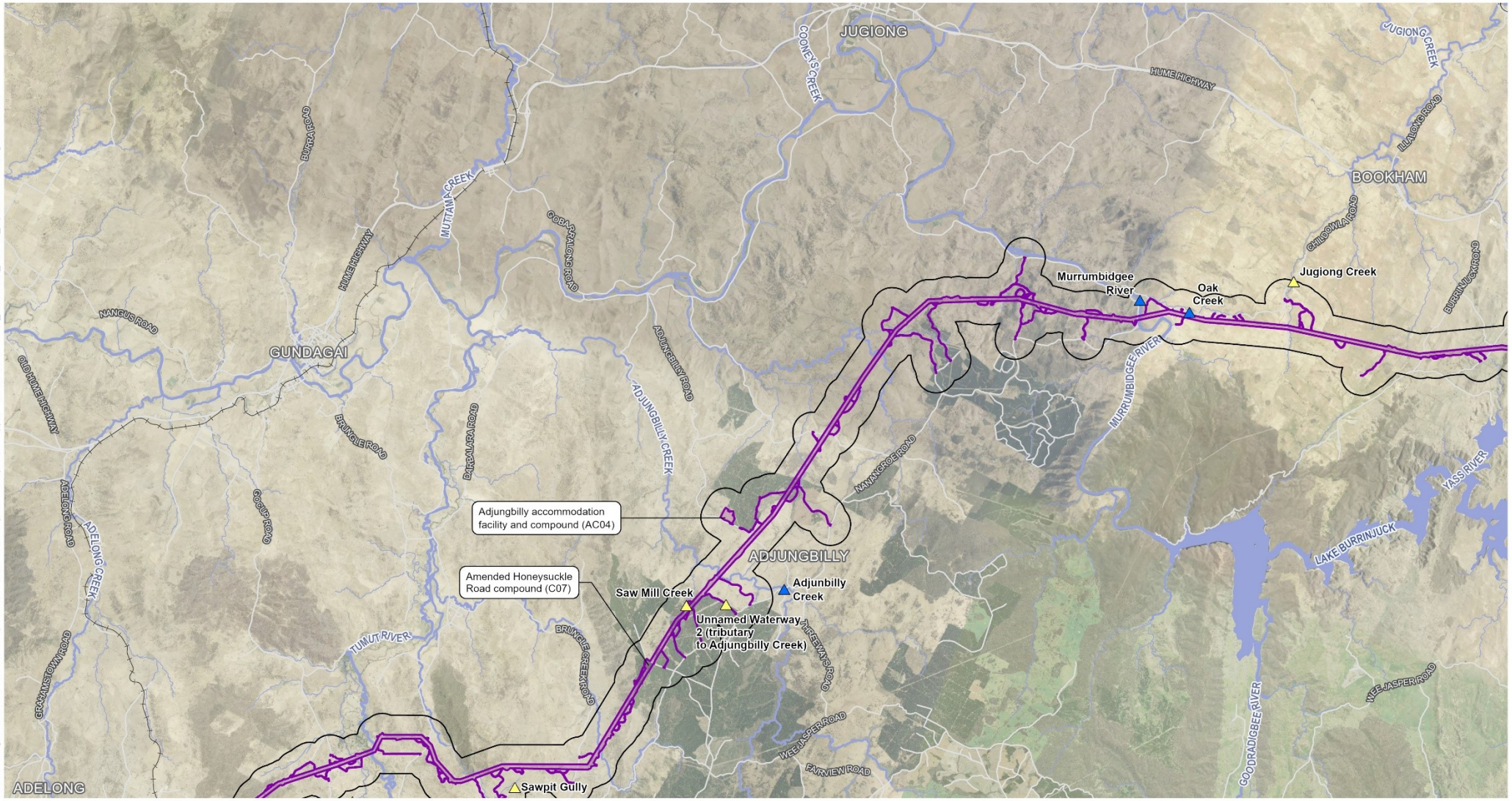
1:200,000

0 4 8 km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 4-2a: Field survey locations



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

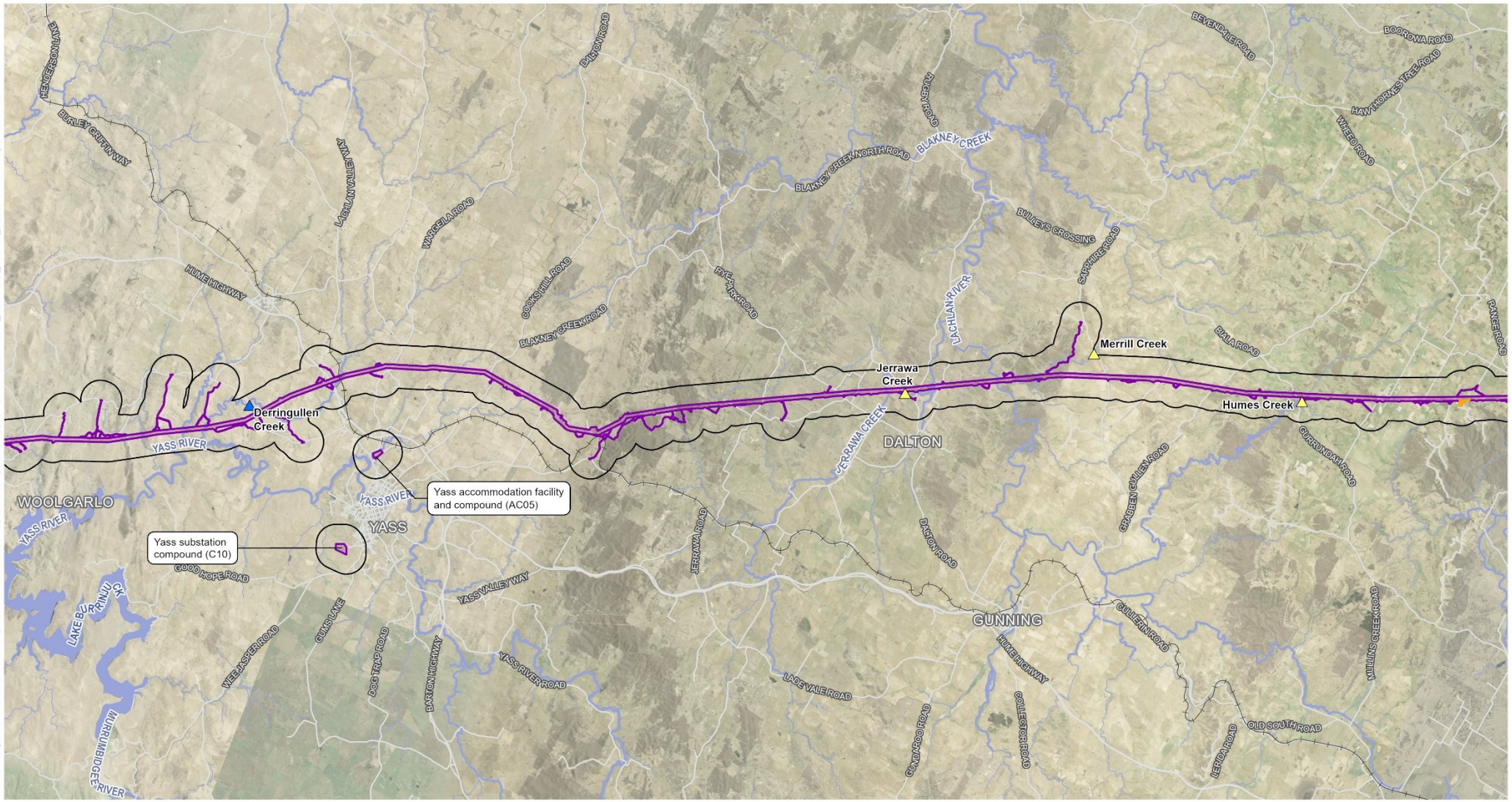
1:200,000

0 4 8km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 4-2b: Field survey locations



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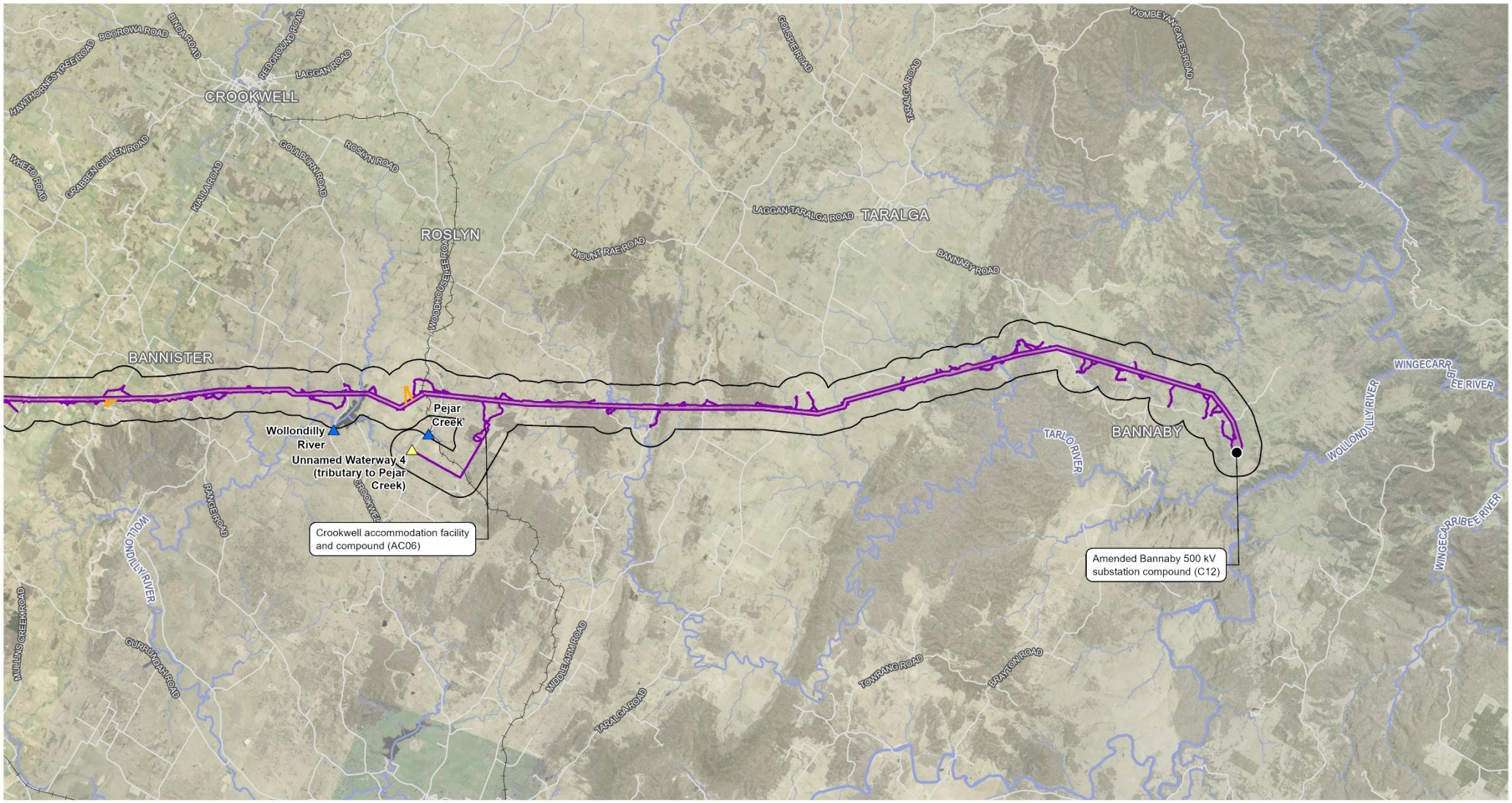
Source: *Aurecon, Transgrid, Spatial Services (DCS), ESRI Basemap*

1:200,000
0 4 8km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 4-2c: Field survey locations



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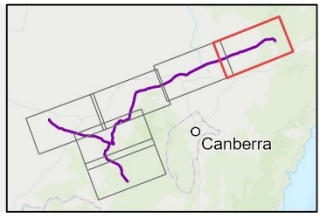
Amended project footprint
Amended surface water and groundwater study area
Telecommunications connection
Railway
Watercourse
Substation
Field survey location (EIS)
Field survey location (Amendment Report)



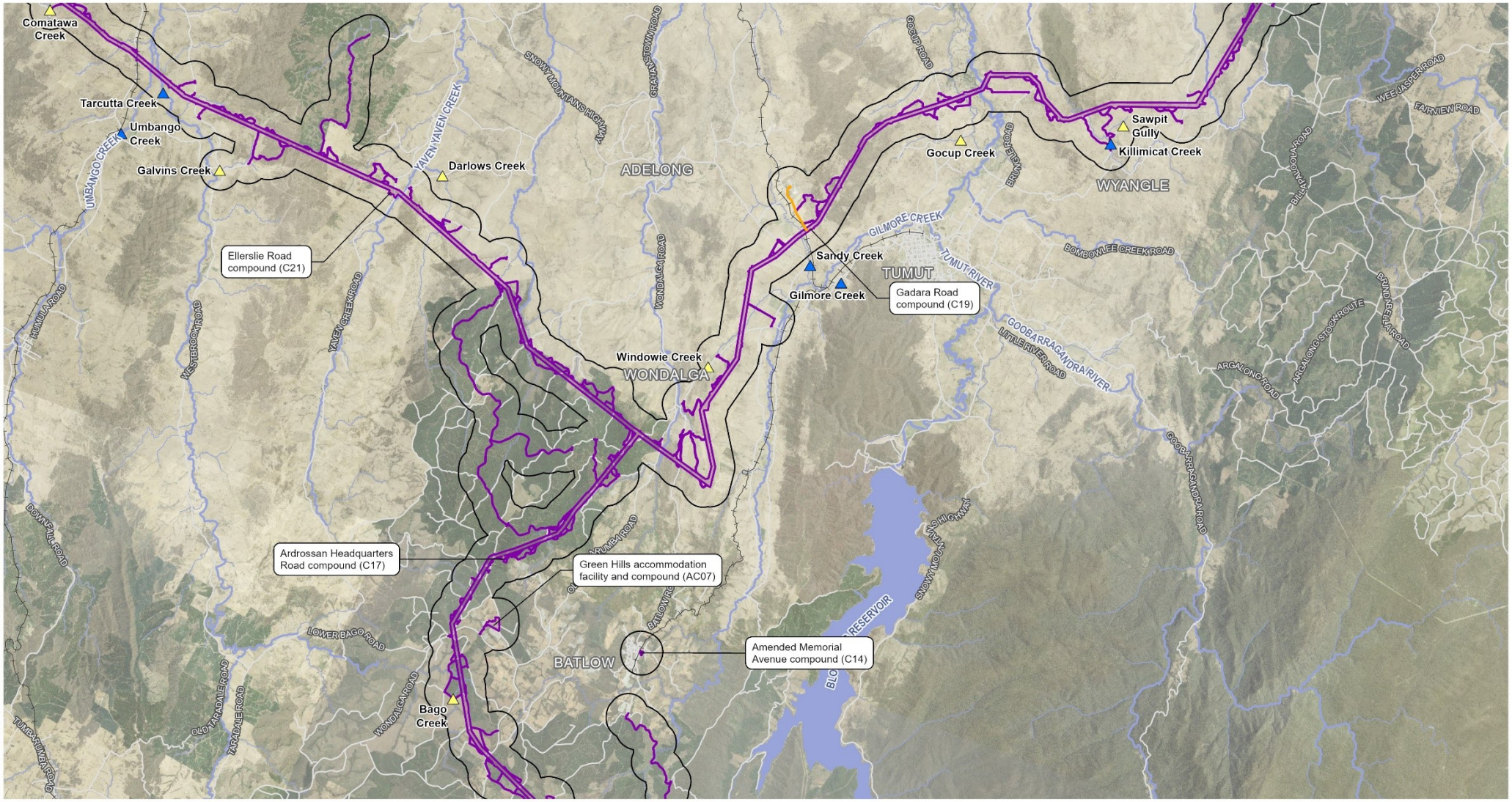
Source: *Aurecon, Transgrid, Spatial Services (DCS), ESRI Basemap*

1:200,000
0 4 8km

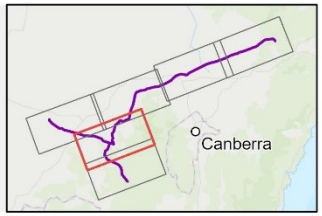
Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 4-2d: Field survey locations



Amended project footprint
Amended surface water and groundwater study area
Telecommunications connection
Railway
Watercourse
Substation
Field survey location (EIS)
Field survey location (Amendment Report)



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

1:200,000
0 4 8km

Projection: GDA 1994 MGA Zone 55

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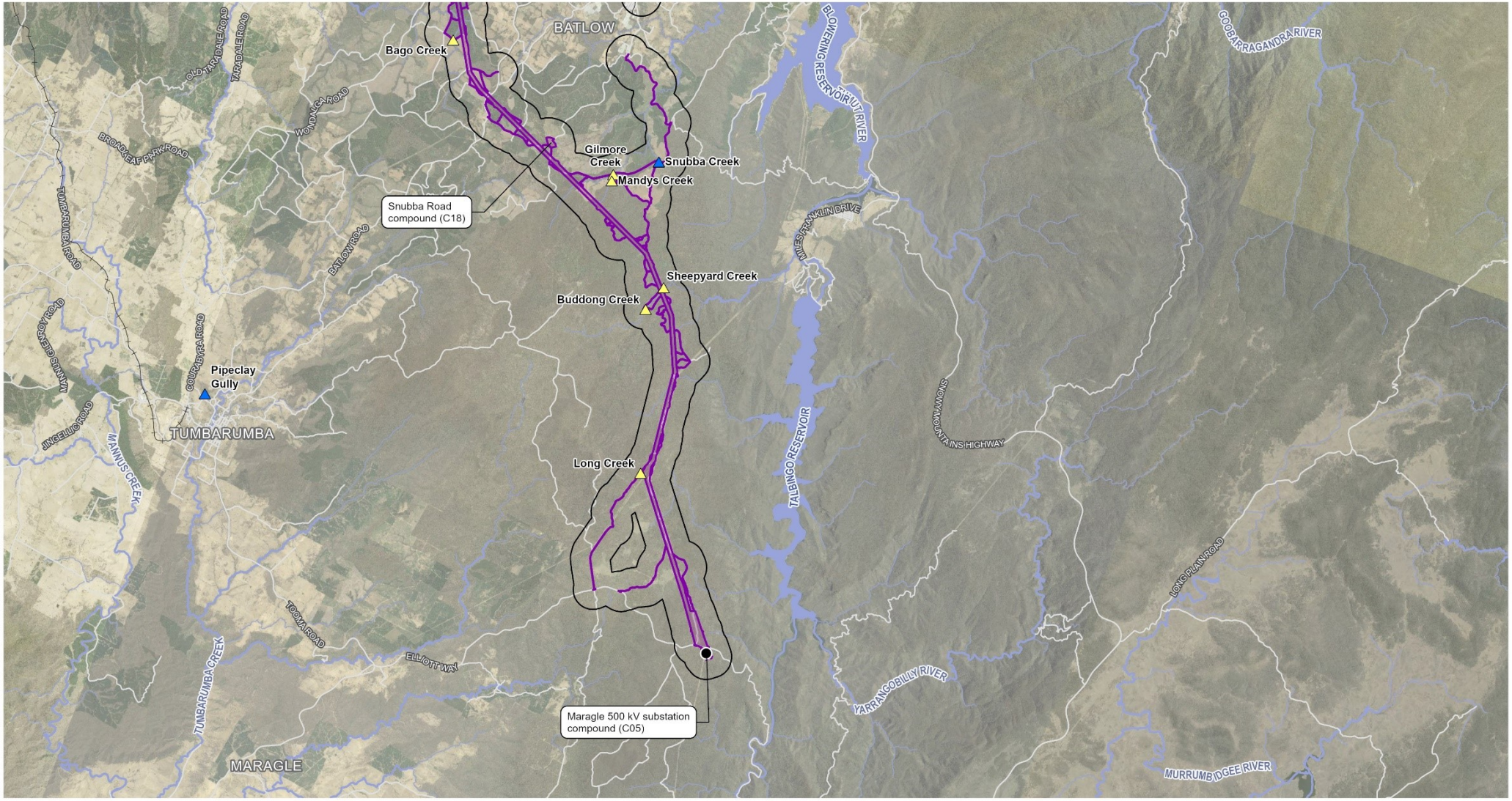
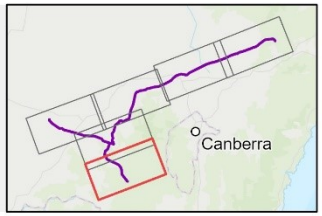
HumeLink **Surface Water and Groundwater**

Figure 4-2e: Field survey locations



Amended project footprint
Amended surface water and groundwater study area
Railway
Watercourse
Substation
Field survey location (EIS)
Field survey location (Amendment Report)



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

1:200,000
0 4 8km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 4-2f: Field survey locations

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5 Existing environment

The existing environment is described in Section 17.3 of the EIS and Section 5 of *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS is still applicable to the amended project.

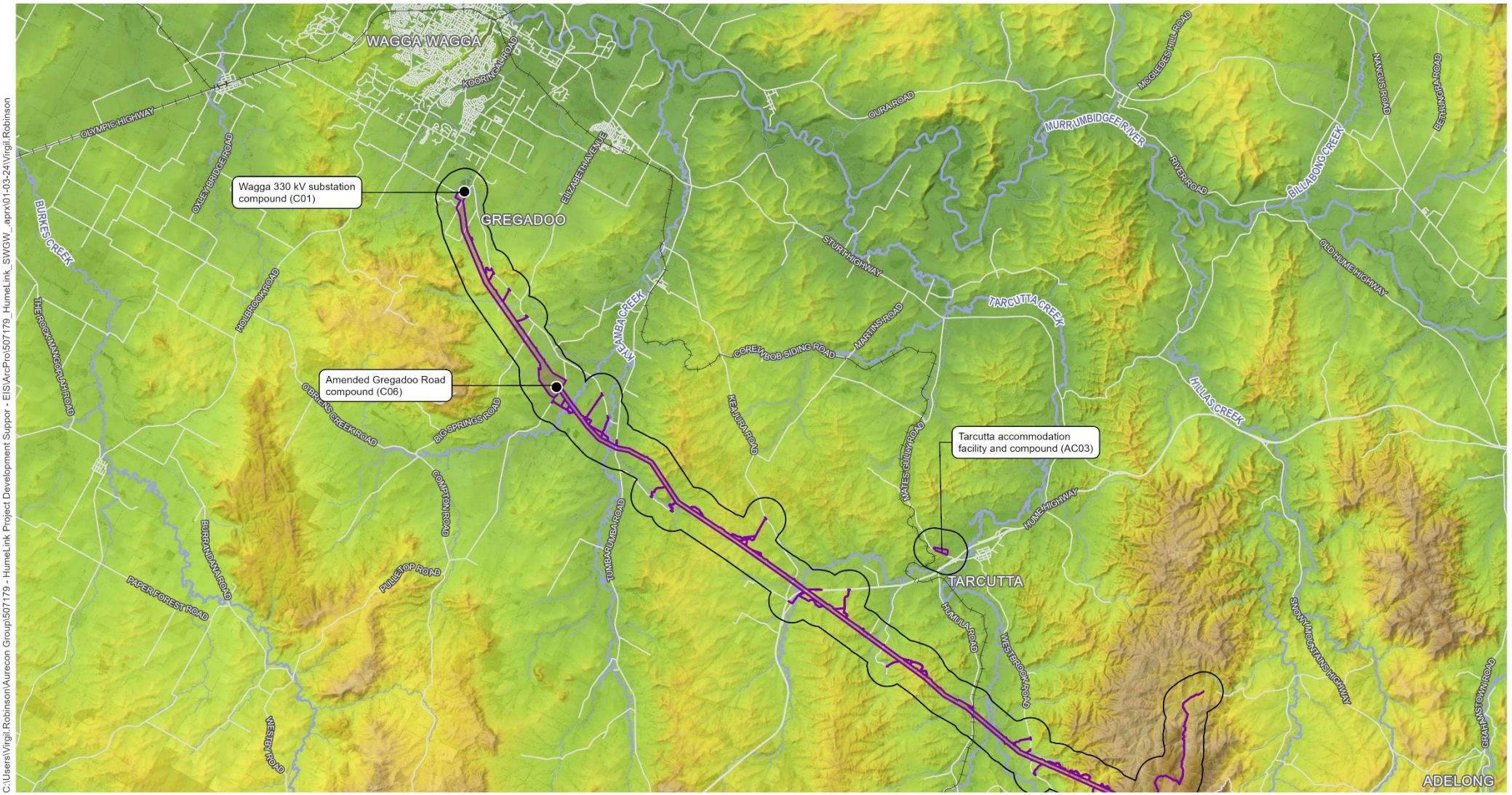
Updated figures for the existing environment are presented in the following sections with descriptions provided on the areas new to the amended project footprint.

5.1 Topography

The topography of the EIS project footprint is described in Section 5.2 of the *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS.

The Green Hills Corridor amendment from the east of Batlow to the west of Batlow now traverses flatter, higher elevation topography compared to the EIS project. The other changes in the transmission line corridor are generally on similar topography compared to the EIS project.

The updated topography figure with the project amendments is presented in Figure 5-1.



Amended project footprint

Amended surface water and groundwater study area

Railway

Watercourse

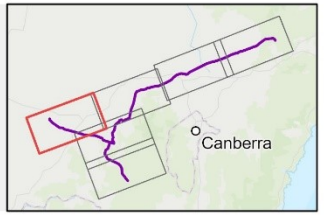
Substation

World Hillshade

Digital elevation (mAHD)

1650

350



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

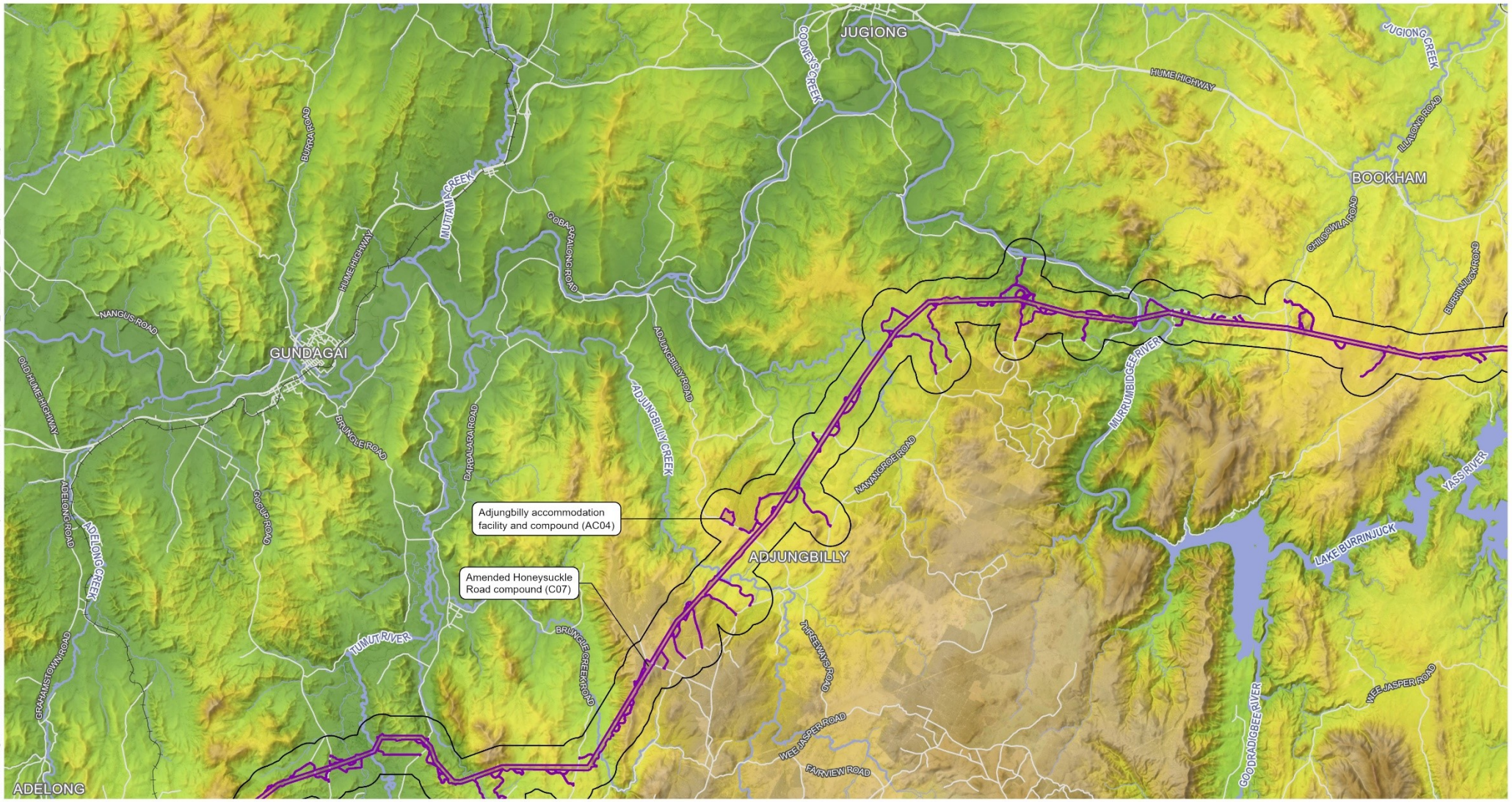
1:200,000

0 4 8 km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-1a: Topography



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Amended project footprint

Amended surface water and groundwater study area

Railway

Watercourse

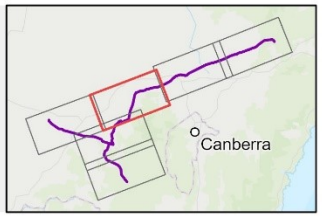
Substation

World Hillshade

Digital elevation (mAHD)

1650

350



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

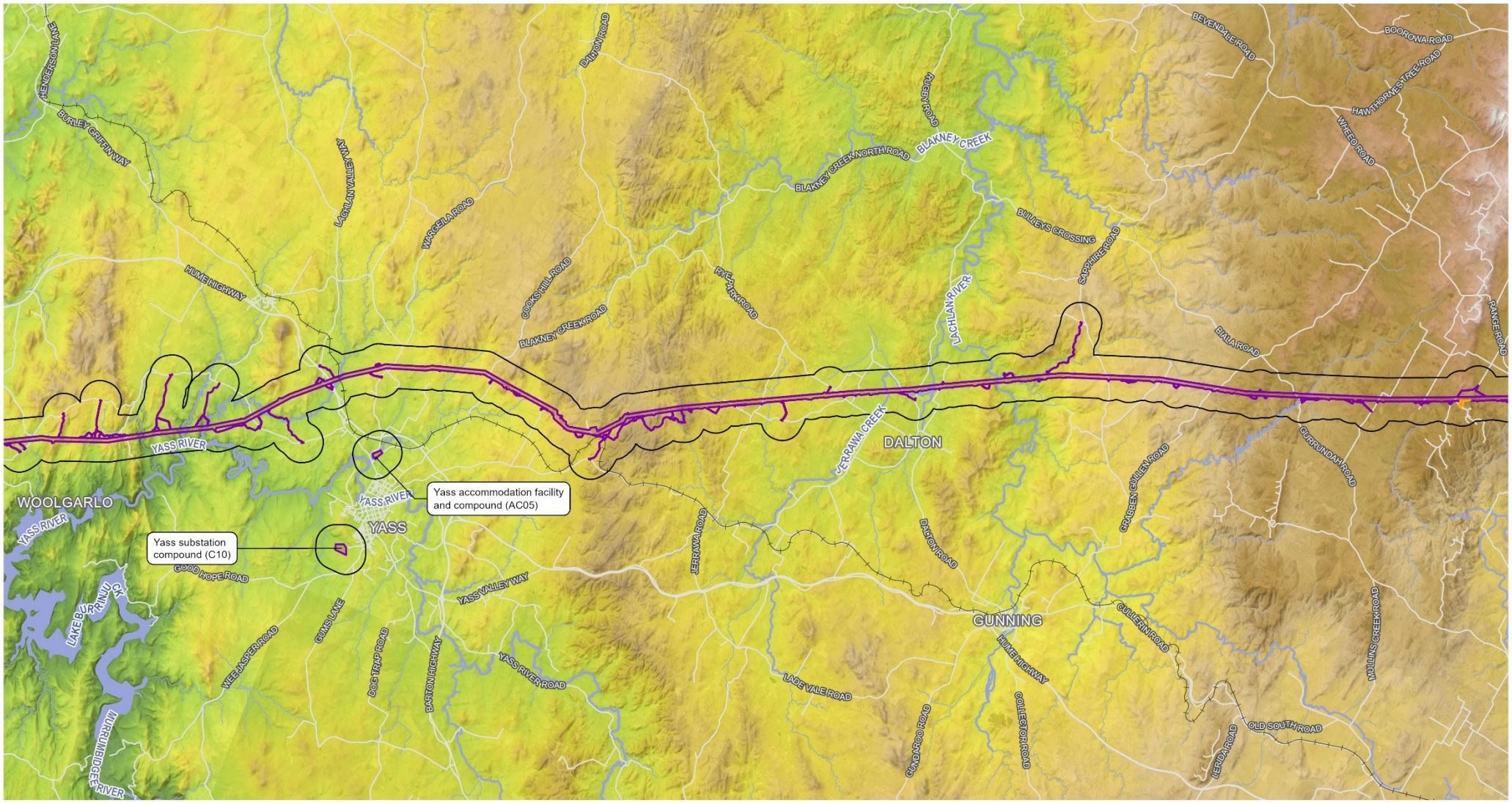
1:200,000

0 4 8km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-1b: Topography



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

1:200,000

0 4 8km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-1c: Topography

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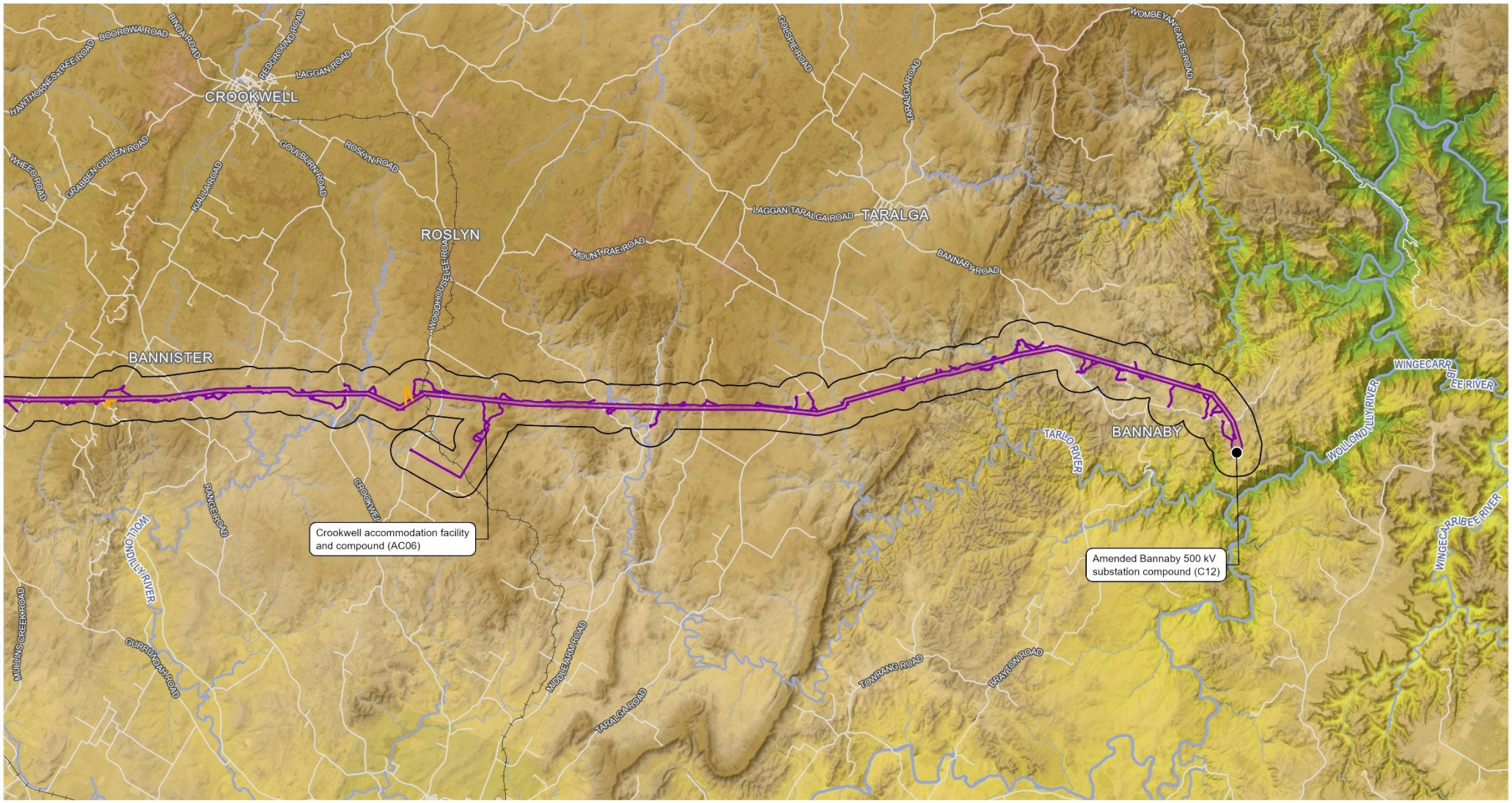


Amended project footprint

Amended surface water and groundwater study area

Telecommunications connection

Railway

Watercourse

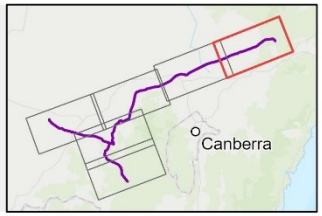
Substation

World Hillshade

Digital elevation (mAHD)

1650

350



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

1:200,000

0 4 8km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-1d: Topography

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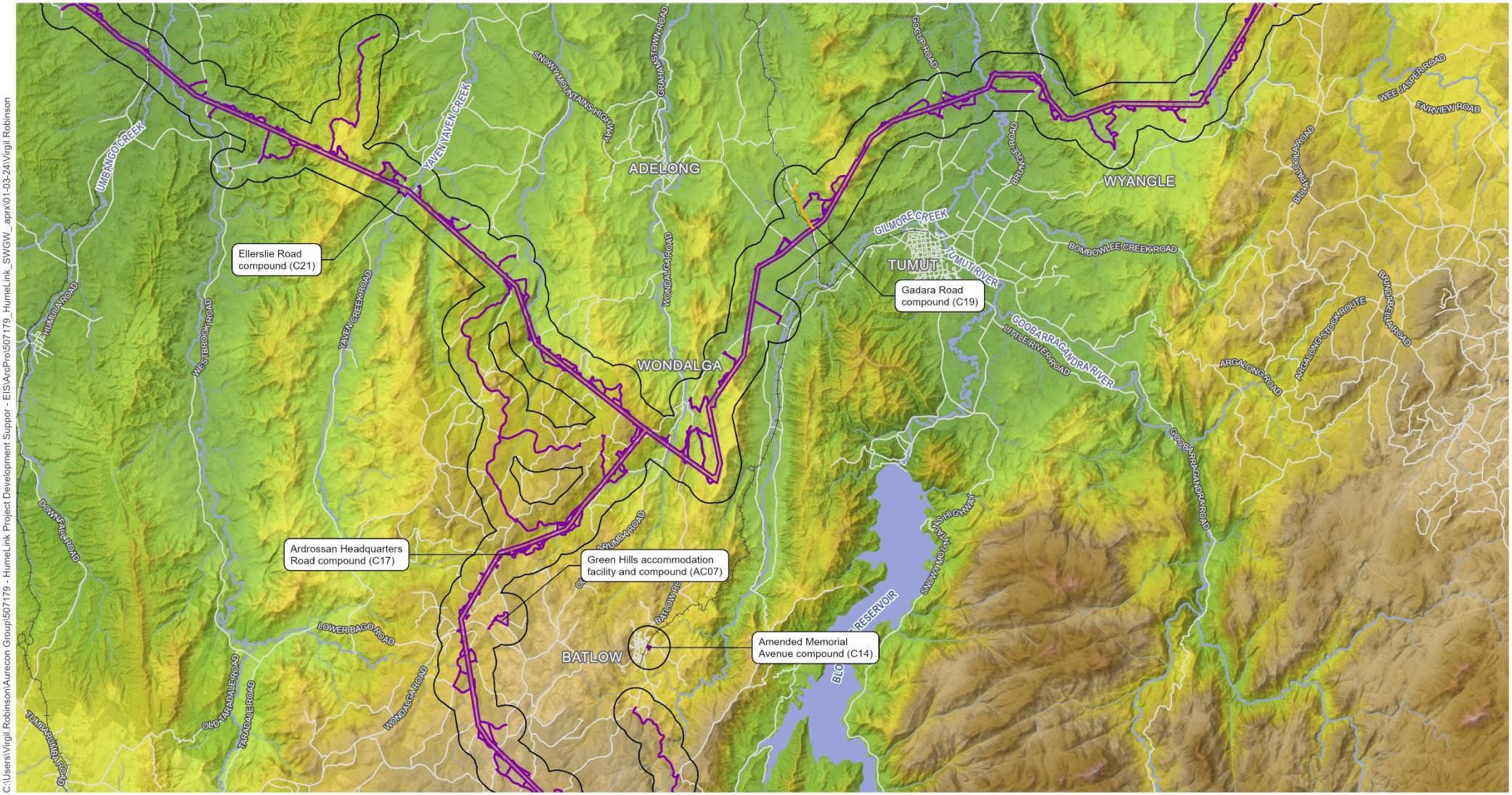

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Amended project footprint

Amended surface water and groundwater study area

Telecommunications connection

Railway

Watercourse

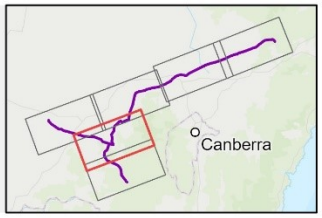
Substation

World Hillshade

Digital elevation (mAHD)

1650

350



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

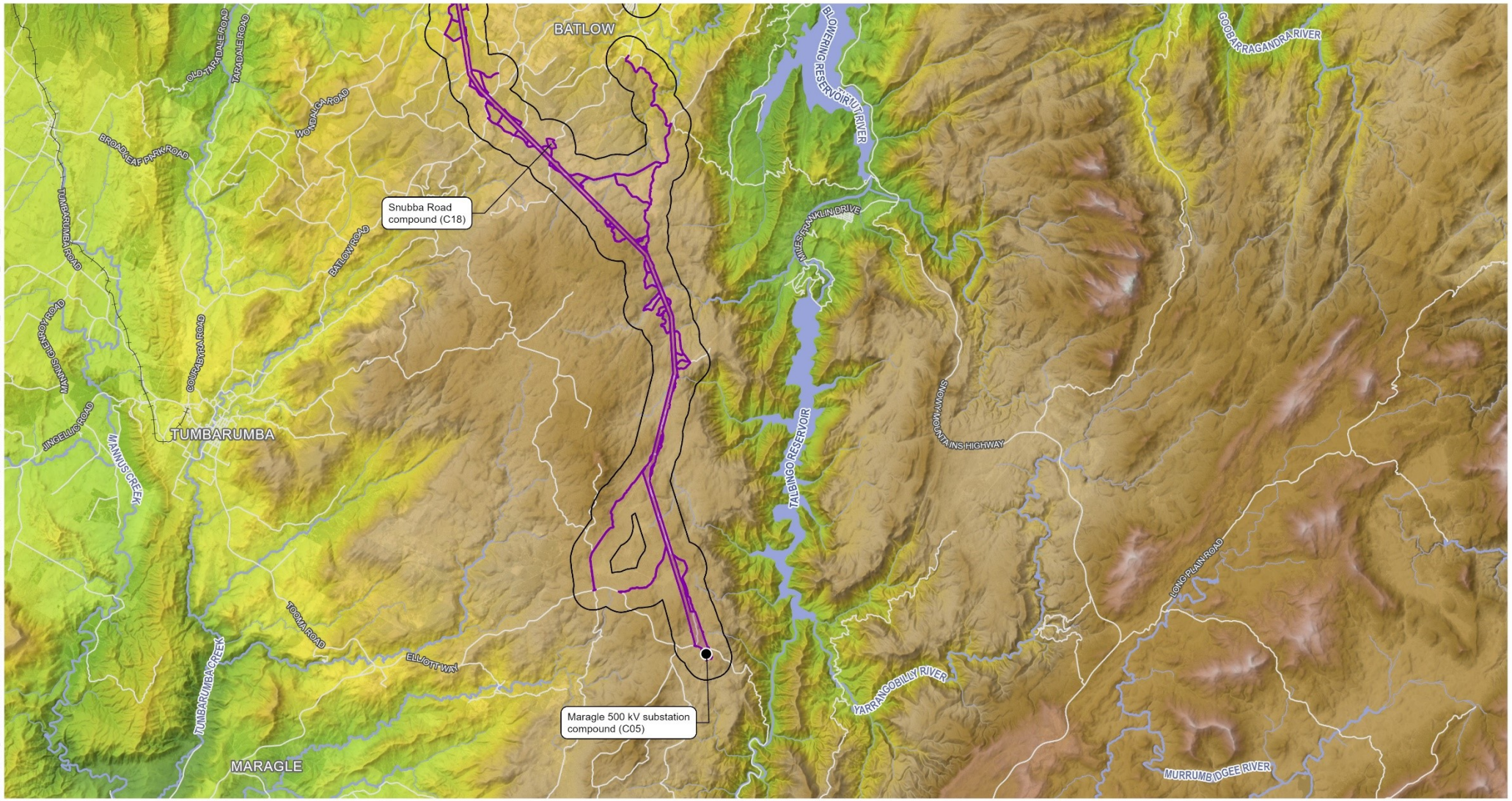
1:200,000

0 4 8 km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-1e: Topography



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

1:200,000

0 4 8 km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-1f: Topography

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5.2 Surface water

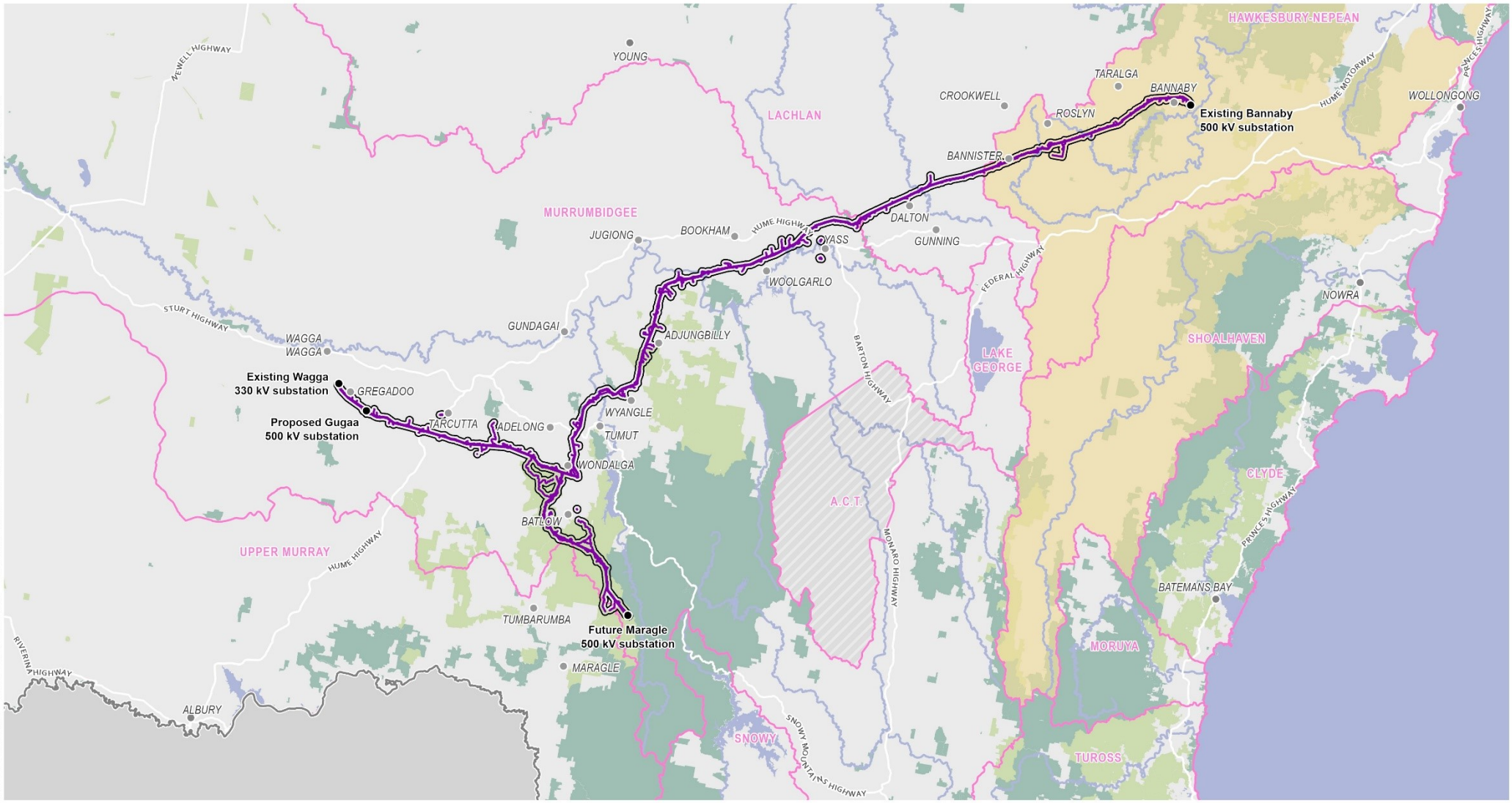
5.2.1 Catchment overview

The amended project is located in the same four major surface water catchments as the EIS project, namely: Murrumbidgee, Murray, Lachlan and Hawkesbury catchments. These catchments are described in Section 5.3.1 of *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS. Due to the changes in the alignment, the length of transmission line corridor within each catchment has changed slightly. These changes are presented in Table 5-1. In the EIS project, one worker accommodation facility was located in the Upper Murray catchment. However, in the amended project around one kilometre of the transmission line corridor and associated access tracks are now located in the Upper Murray catchment and the worker accommodation facility has also been removed.

Table 5-1 Amended project length within major catchments

Major Waterway Catchment	Approximate EIS project length within catchment (kilometres)	Approximate amended project length within catchment (kilometres)
Murrumbidgee	261	260
Murray	0	1
Lachlan	38	38
Hawkesbury (including Sydney Drinking Water Catchment (SDWC))	65	65

The NorBE undertaken for the EIS still applies for the amended project for the SDWC. The updated major surface water catchments figure for the amended project is presented in Figure 5-2.



Amended project footprint
Amended surface water and groundwater study area
State of Victoria
Catchment
Sydney Drinking Water Catchment
National park and reserve
State forest
Waterbody
Waterway
Major road
Substation

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

1:1,125,000
0 20 40km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

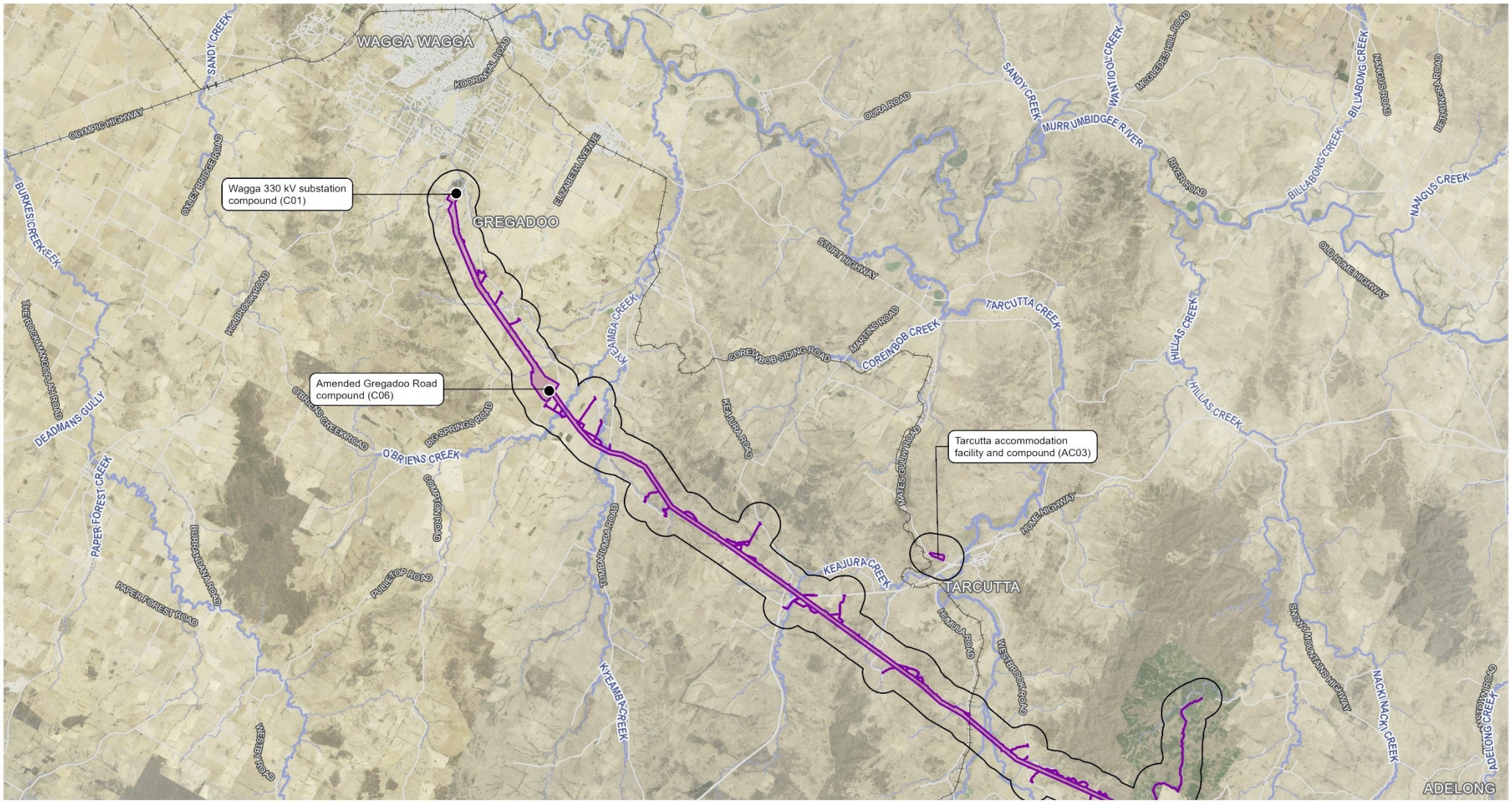
FIGURE 5-2: Major surface water catchments

5.2.2 Waterways and waterbodies

The waterways and waterbodies intercepted by the EIS project footprint are described in Section 5.3.2 and Attachment B of the *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS.

The updated list of named waterways intercepted by the transmission line corridor is outlined in Attachment C of this report. The Strahler stream order of each waterway is also provided. The number of waterways and locations of impact has increased due to the changes in the transmission line corridor and the additional infrastructure such as nominated access tracks and construction compounds and accommodation facilities.

The waterways and waterbodies intercepted by the amended transmission line corridor is presented in Figure 5-3.



Amended project footprint

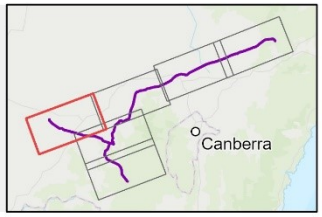
Amended surface water and groundwater study area

Telecommunications connection

Railway

Watercourse

Substation



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

1:200,000

0 4 8 km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-3a: Waterways and waterbodies

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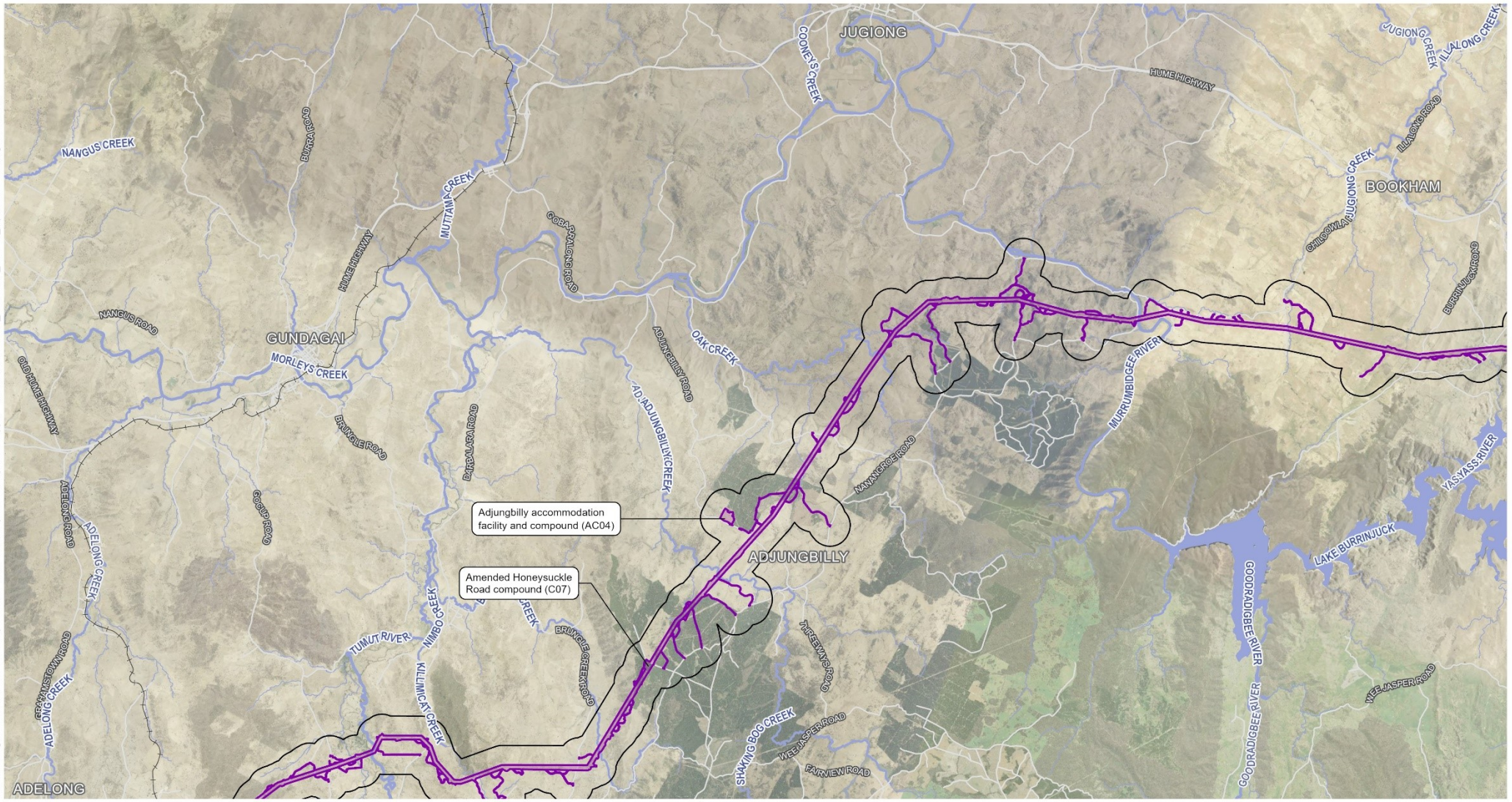

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Amended project footprint

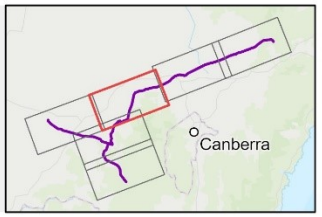
Amended surface water and groundwater study area

Telecommunications connection

Railway

Watercourse

Substation



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

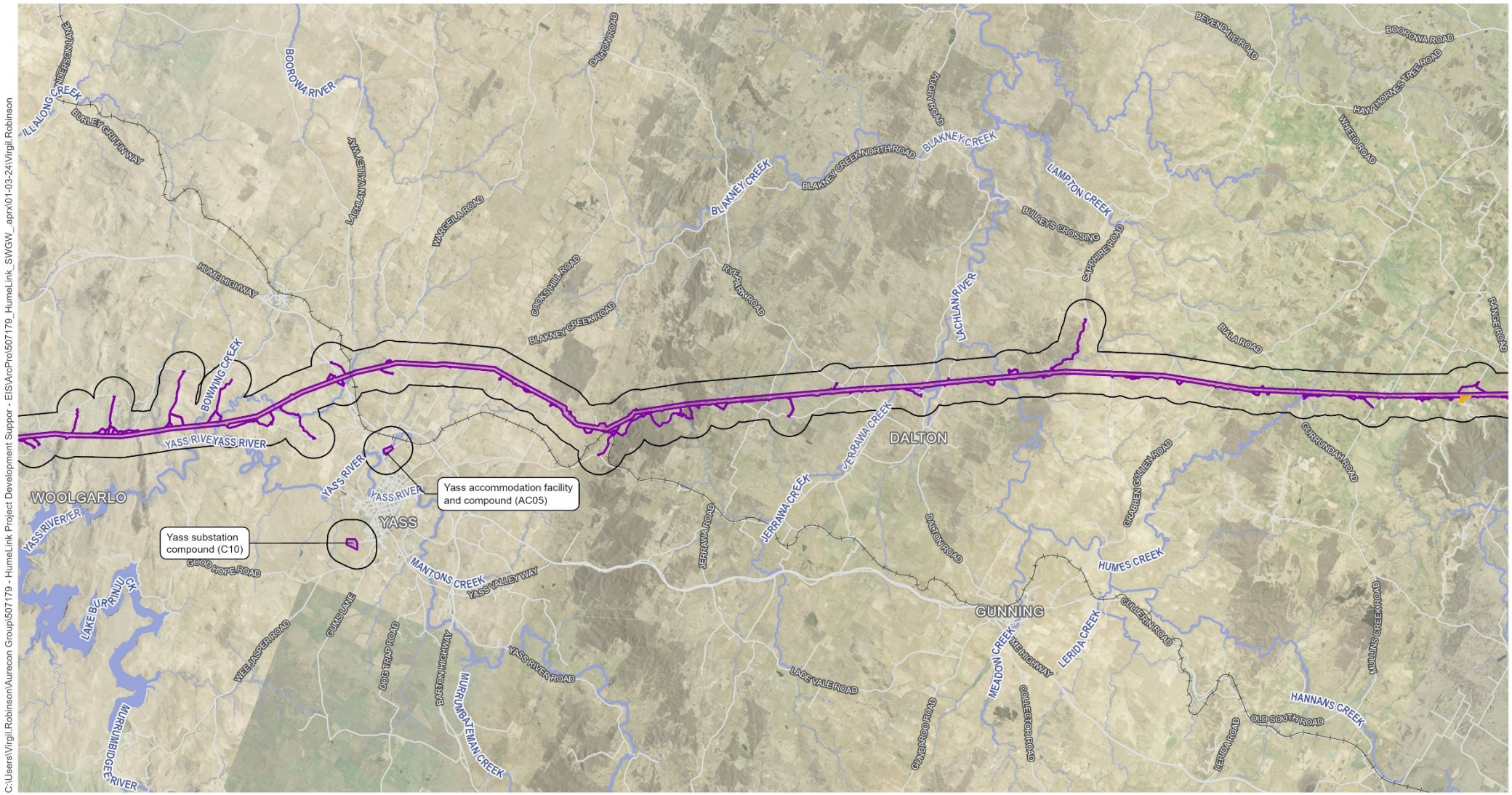
1:200,000

0 4 8km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-3b: Waterways and waterbodies



Amended project footprint

Amended surface water and groundwater study area

Telecommunications connection

Railway

Watercourse

Substation

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

1:200,000

0 4 8 km

Projection: GDA 1994 MGA Zone 55

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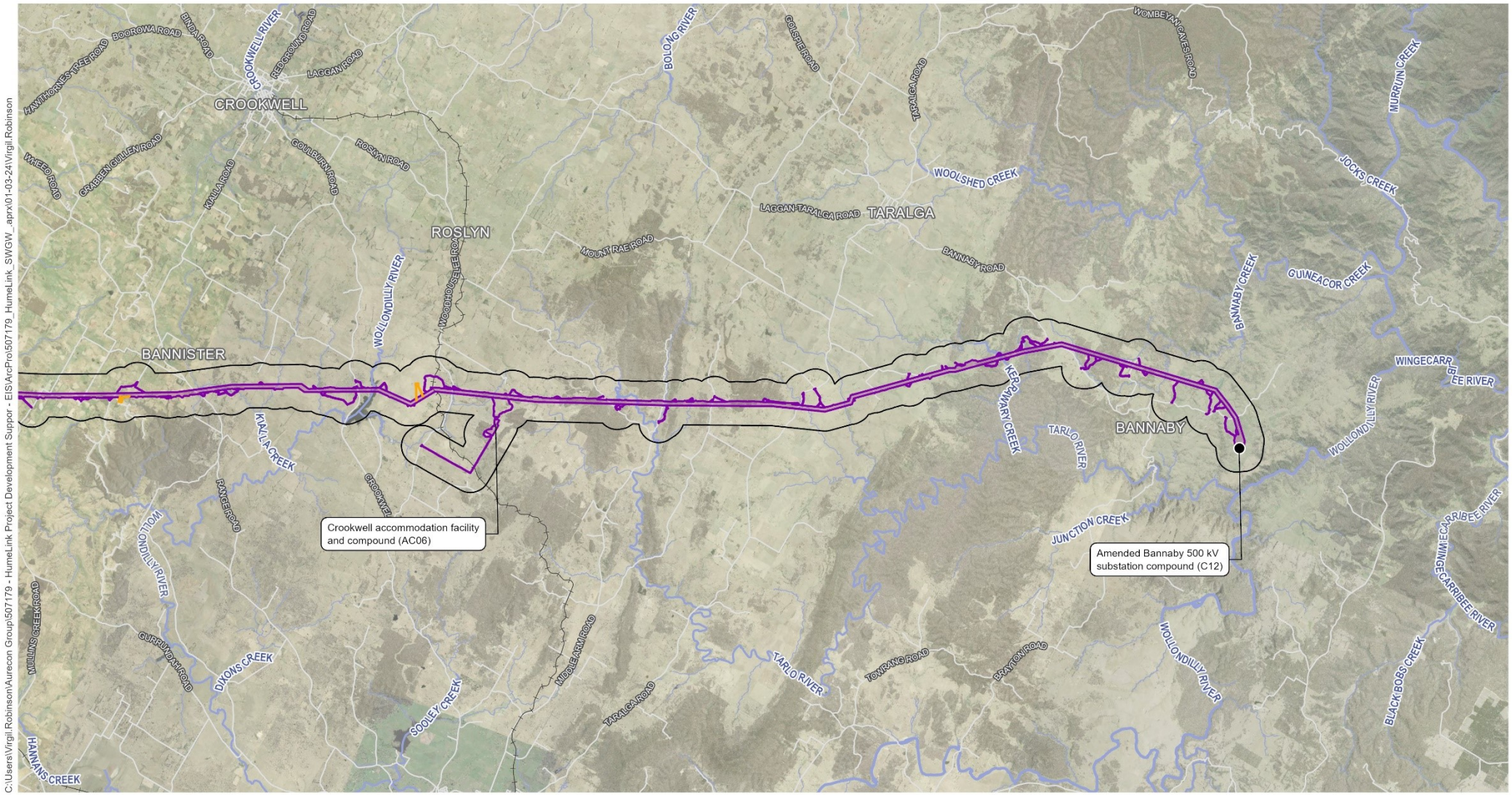
HumeLink **Surface Water and Groundwater**

Figure 5-3c: Waterways and waterbodies



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Amended project footprint

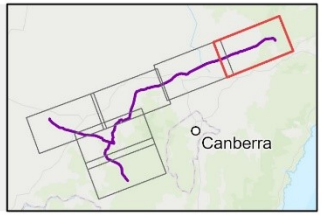
Amended surface water and groundwater study area

Telecommunications connection

Railway

Watercourse

Substation



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

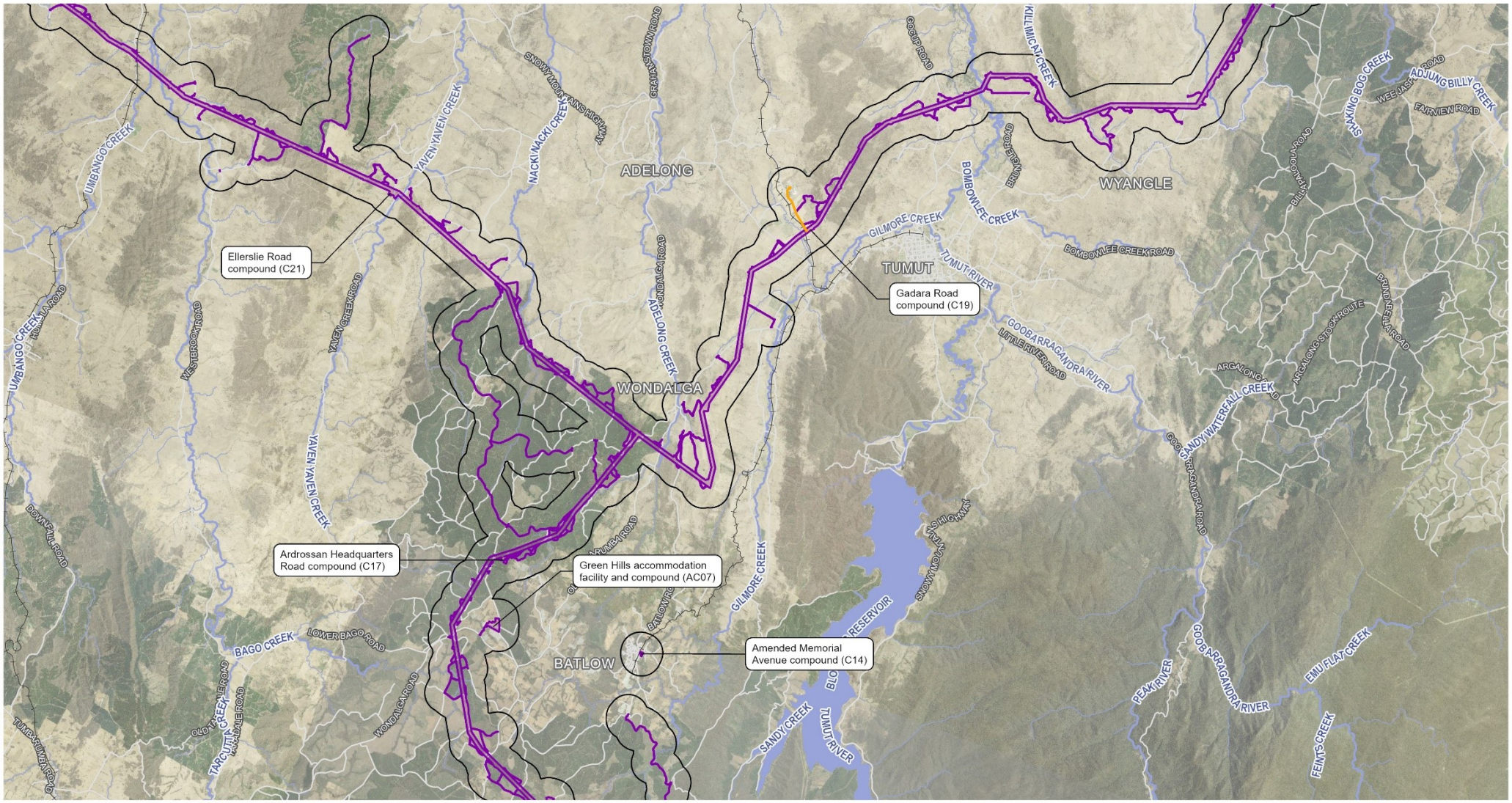
1:200,000

0 4 8 km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-3d: Waterways and waterbodies



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

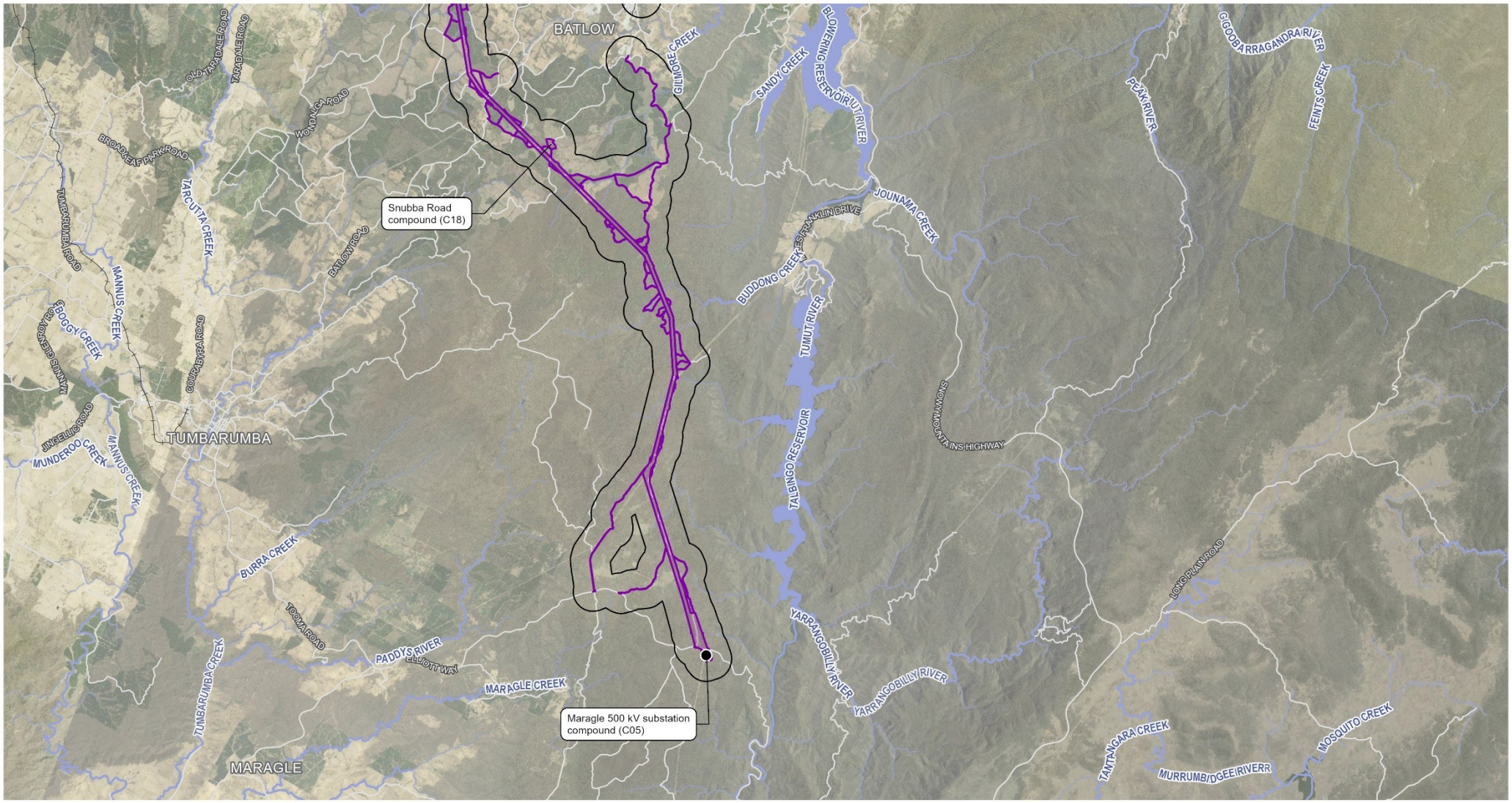
1:200,000

0 4 8km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-3e: Waterways and waterbodies



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

1:200,000

0 4 8km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-3f: Waterways and waterbodies

5.2.3 Surface water supply and water resources

Surface water supply and available water resources for the EIS project footprint were presented in Section 5.3.3 of the *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS. This section provides an updated review of water allocation for each of the major surface water catchments within the amended project footprint.

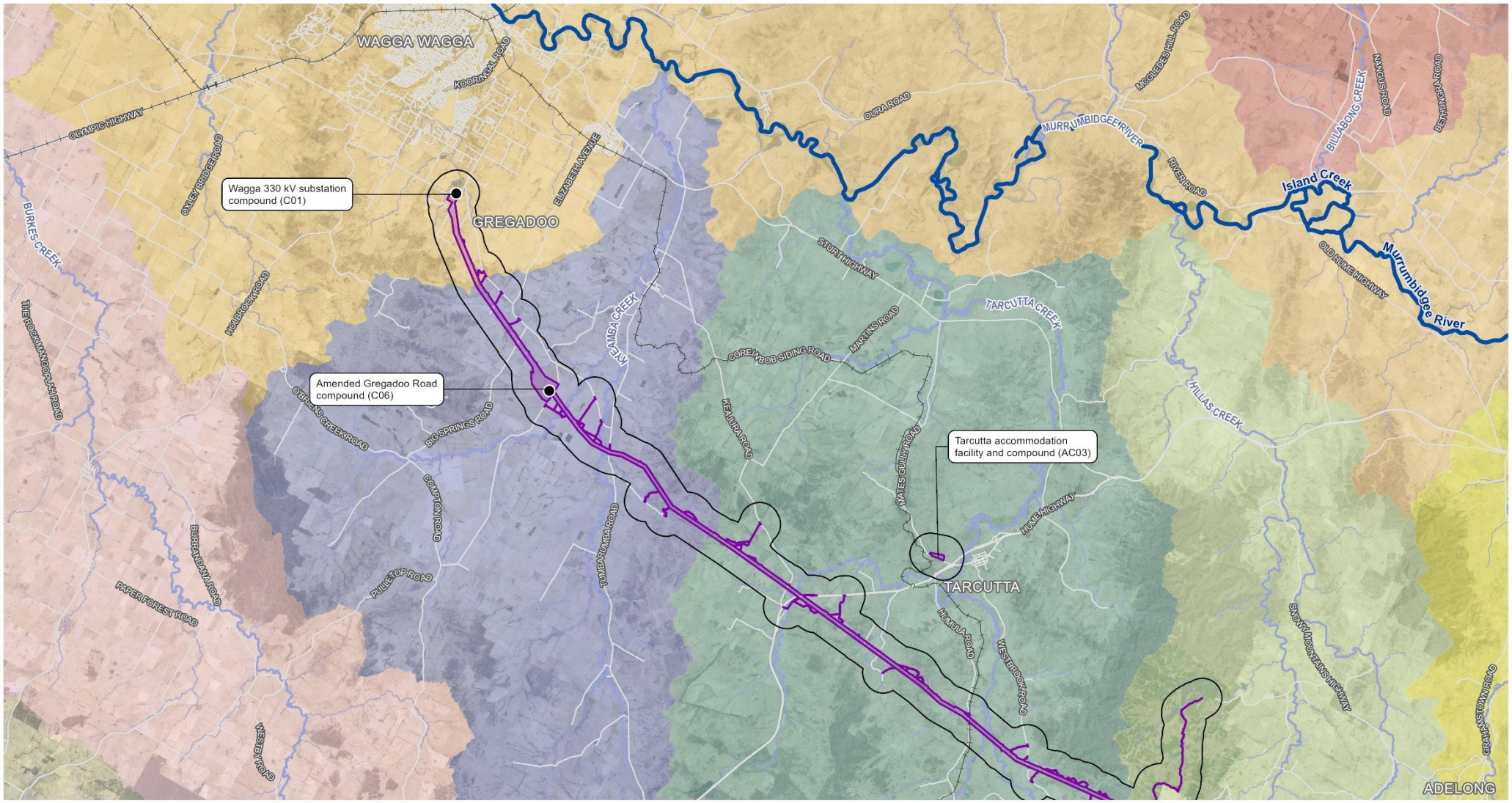
WSPs are in place (enacted) for all catchments within the amended project footprint. The relevant WSPs and a summary of their existing water supply is presented in Table 5-2.

Table 5-2 Summary of Water Supply from Surface Water

Major Catchment	Water Sharing Plan	Water Source	Water Allocation in Water Sharing Plan (ML/year)
Murrumbidgee	Murrumbidgee Regulated River Water Source 2016	Murrumbidgee Regulated River Water Source	■ Domestic and stock: 19,260 ■ Local water utility: 23,816 ■ High security: 346,207 ■ General security: 870,331 ■ Conveyance: 322,391 ■ Supplementary: 945,780
	Murrumbidgee Unregulated River Water Sources 2012	Murrumbidgee Central (Burrinjuck to Gogeldrie) Water Source	■ Domestic and stock: 121 ■ Unregulated river: 6,390
		Kyeamba Water Source	■ Domestic and stock: 10 ■ Unregulated river: 388
		Tarcutta Creek Water Source	■ Domestic and stock: 42 ■ Local water utility: 1 ■ Unregulated river: 86
		Hillas Water Source	■ Domestic and stock: 28 ■ Unregulated river: 1,513
		Adelong Creek Water Source	■ Domestic and stock: 63 ■ Unregulated river: 3,778
		Gilmore/Sandy Water Source	■ Domestic and stock: 61 ■ Unregulated river: 4,429
		Upper Tumut Water Source	■ Domestic and stock: 160 ■ Unregulated river: 272
		Adjungbilly / Bombowlee/ Brungle Water Source	■ Domestic and stock: 9 ■ Unregulated river: 18
		Jugiong Water Source	■ Domestic and stock: 89 ■ Unregulated river: 2,205
		Burrinjuck Dam Catchment Water Source	■ Unregulated river: 12
		Yass Lower Water Source	■ Domestic and stock: 1,723 ■ Unregulated river: 447
		Yass Upper Water Source	■ Domestic and stock: 52 ■ Unregulated river: 1,605
Murray	Murray Unregulated River Water Sources 2011	Maragle Water Source	■ Domestic and stock: 9 ■ Unregulated river: 402
		Tumbarumba Water Source	■ Domestic and stock: 55 ■ Local water utility: 499 ■ Unregulated river: 993
Lachlan	Lachlan Unregulated River Water Sources 2012	Lachlan River above Reids Flat Water Source	■ Domestic and stock: 33 ■ Local water utility: 110 ■ Unregulated river: 1,872

Major Catchment	Water Sharing Plan	Water Source	Water Allocation in Water Sharing Plan (ML/year)
Hawkesbury	Greater Metropolitan Region Unregulated River Water Sources 2023	Upper Wollondilly River Water Source	■ Domestic and stock: 54 ■ Local water utility: 5,100 ■ Unregulated river: 949
		Lower Wollondilly River Water Source	■ Domestic and stock: 299 ■ Unregulated river: 5,111

The updated WSP figure for the amended project is presented in Figure 5-4.

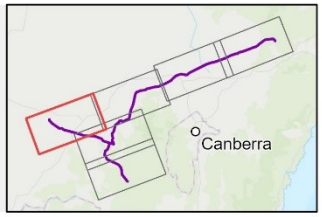


Amended project footprint
Amended surface water and groundwater study area
Telecommunications connection
Railway
Watercourse

Substation
Water Sharing Plan - Regulated River

Water Sharing Plan - Surface Water Sources

Adelong Creek Water Source
Billabung Water Source
Burkes / Bullenbung Water Source
Hillas Water Source
Kyeamba Water Source
Murrumbidgee Central (Burrinjuck to Gogeldrie) Water Source
Tarcutta Creek Water Source



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

1:200,000
0 4 8km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-4a: Water Sharing Plan - Surface Water Sources

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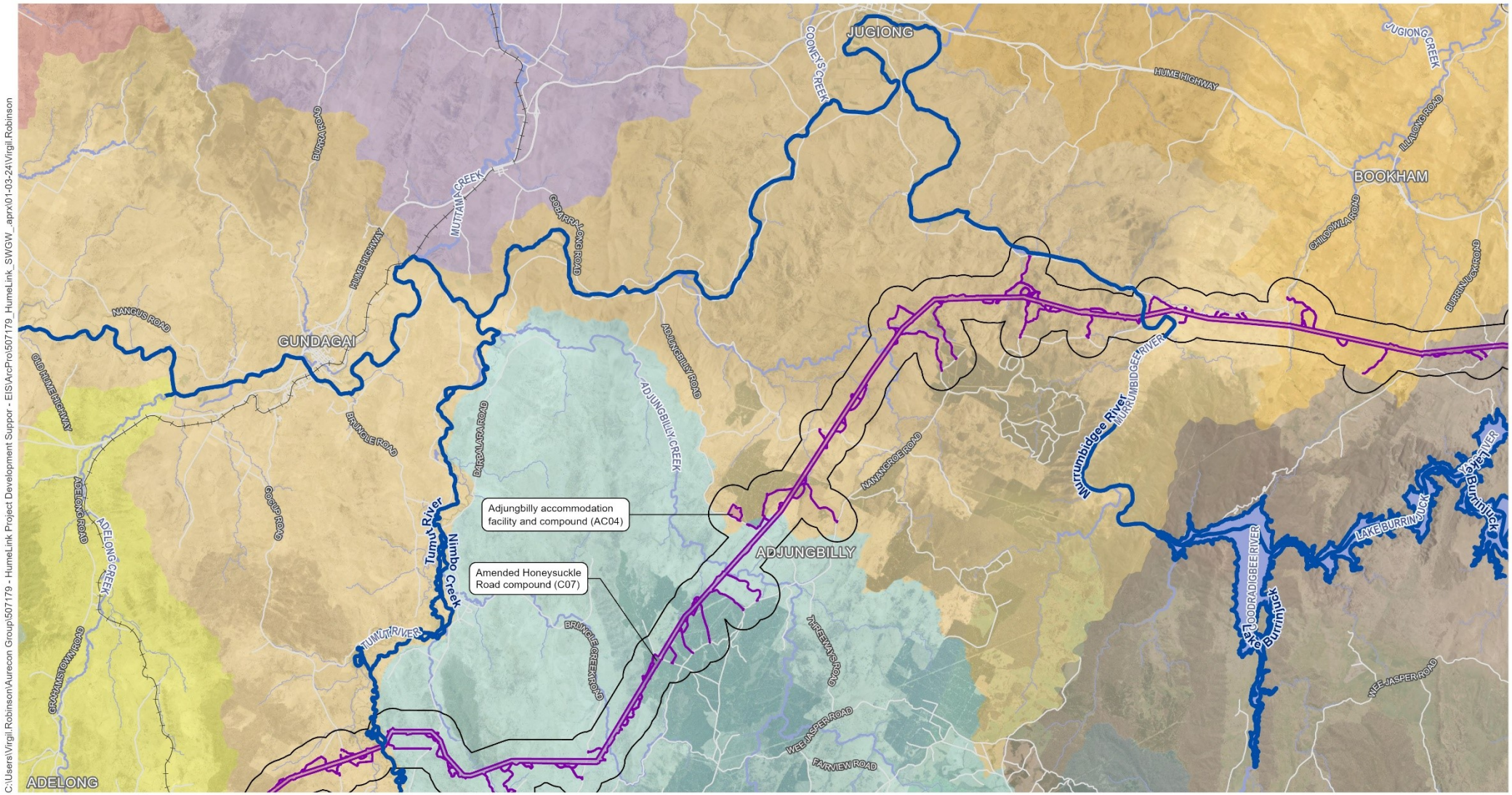

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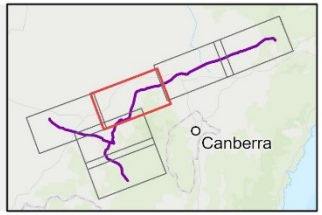
- Amended project footprint
- Amended surface water and groundwater study area
- Telecommunications connection
- Railway
- Watercourse
- Substation
- Water Sharing Plan - Regulated River

Water Sharing Plan - Surface Water Sources

- Adelong Creek Water Source
- Adjungbilly / Bombowlee / Brungle Water Source
- Billabung Water Source
- Burrinjuck Dam Catchment Water Source
- Gilmore / Sandy Water Source
- Goodradigbee Water Source
- Hillas Water Source
- Jugiong Water Source
- Murrumbidgee Central (Burrinjuck to Gogeldrie) Water Source
- Muttama Water Source



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

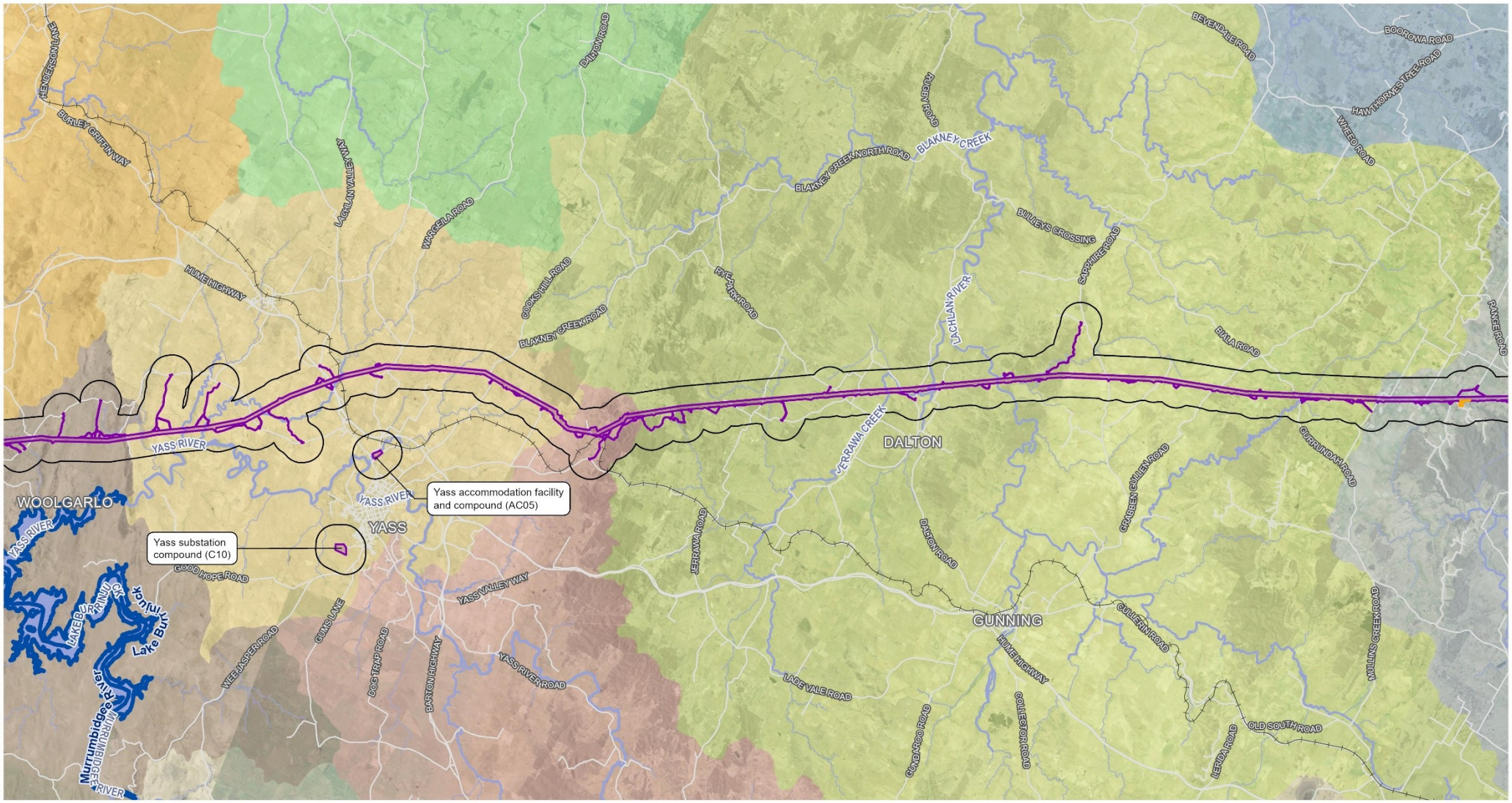
1:200,000

0 4 8 km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-4b: Water Sharing Plan - Surface Water Sources



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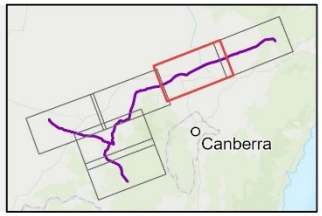
Amended project footprint
Amended surface water and groundwater study area
Telecommunications connection
Railway
Watercourse
Substation
Water Sharing Plan - Regulated River

Water Sharing Plan - Surface Water Sources

Boorowa River and Hovells Creek Water Source
Burrinjuck Dam Catchment Water Source
Crookwell River Water Source
Jugiong Water Source
Lachlan River above Reids Flat Water Source
Upper Nepean and Upstream Warragamba Water Source
Yass Lower Water Source
Yass Upper Water Source



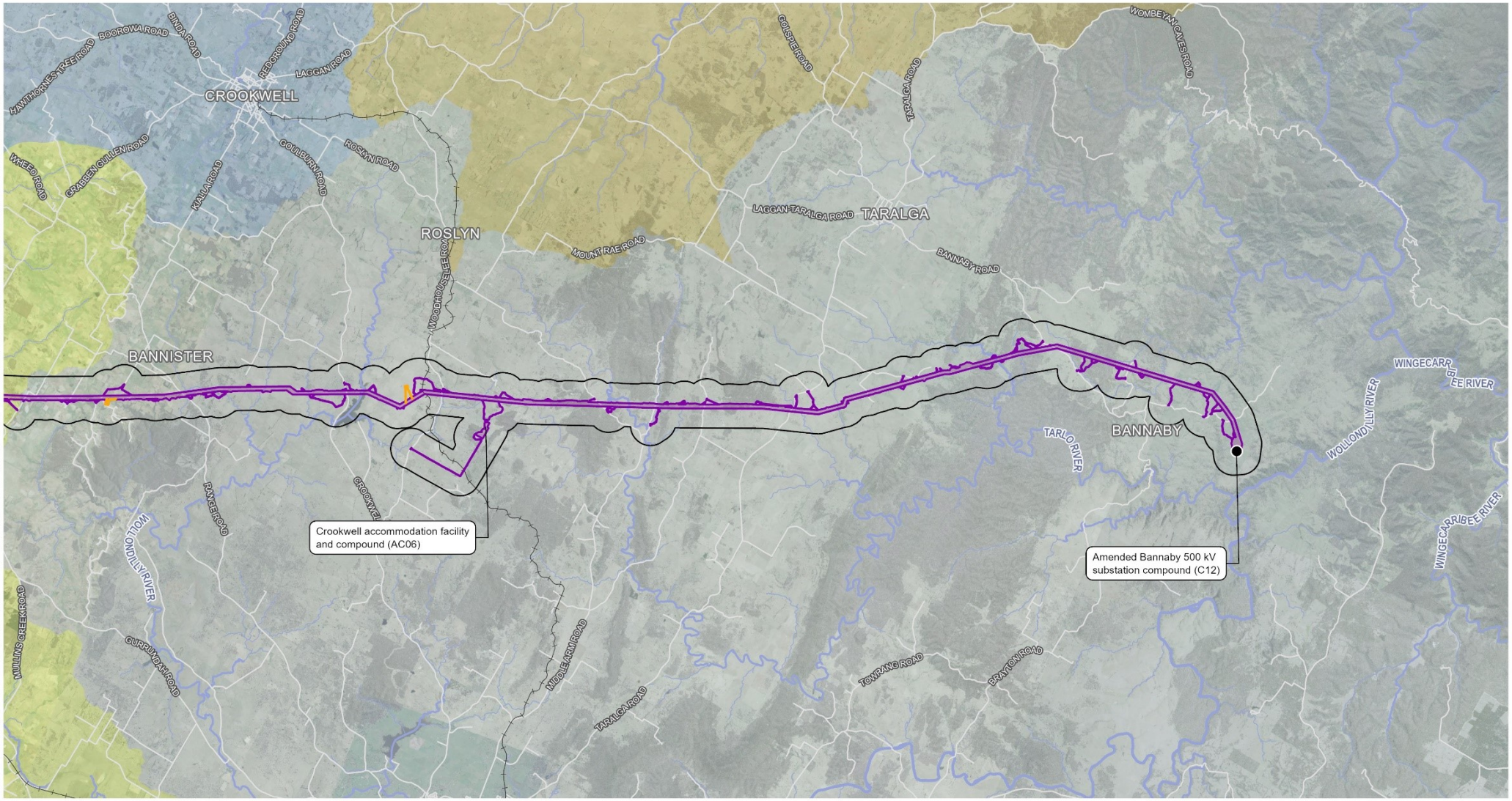
Source: *Aurecon, Transgrid, DPE, Spatial Services (DCS), ESRI Basemap*

1:200,000
0 4 8km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-4c: Water Sharing Plan - Surface Water Sources



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- Amended project footprint
- Amended surface water and groundwater study area
- Telecommunications connection
- Railway
- Watercourse
- Substation
- Water Sharing Plan - Regulated River

Water Sharing Plan - Surface Water Sources

- Abercrombie River above Wyangala Water Source
- Crookwell River Water Source
- Lachlan River above Reids Flat Water Source
- Upper Nepean and Upstream Warragamba Water Source

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

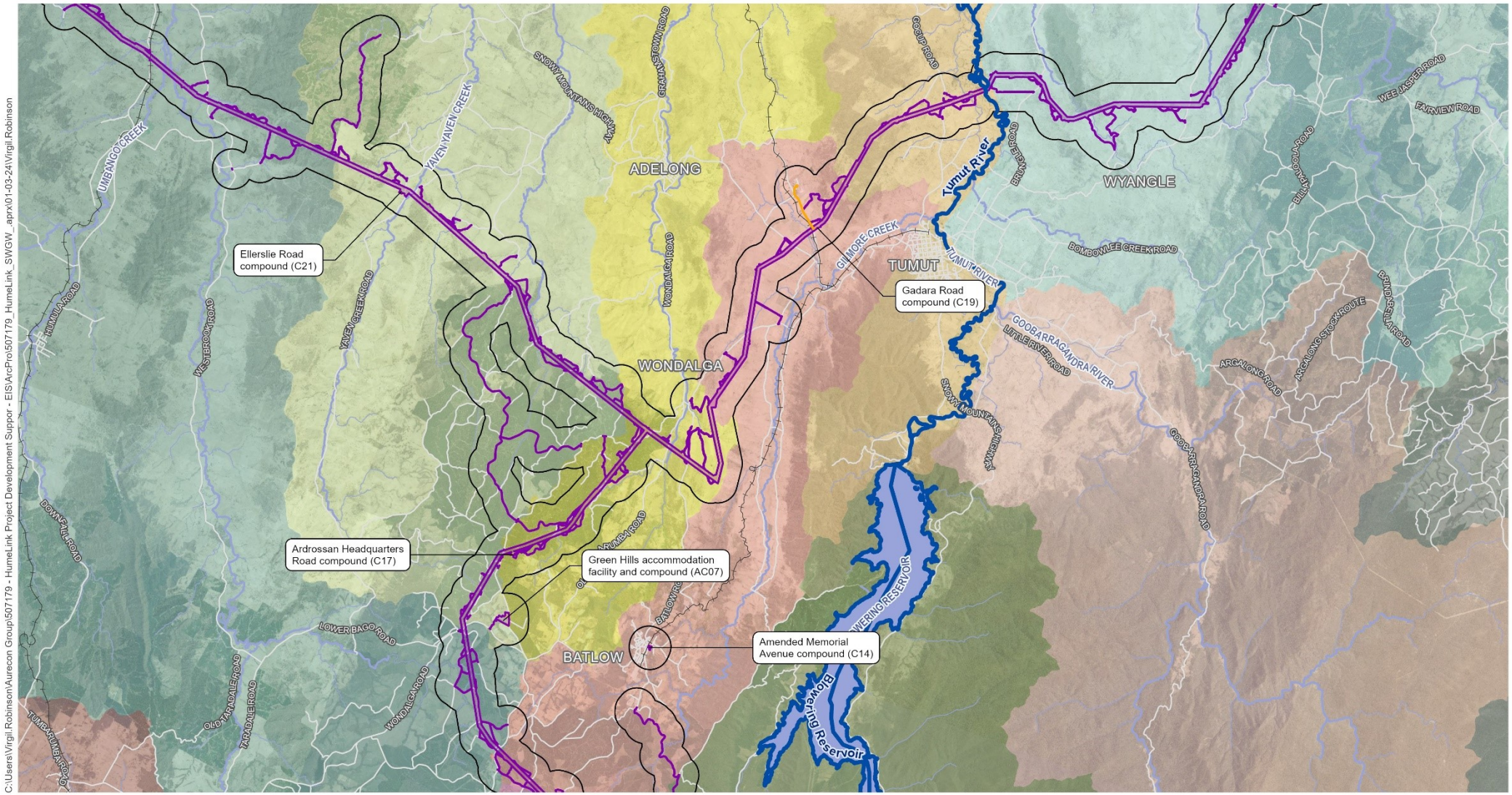
1:200,000

0 4 8km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-4d: Water Sharing Plan - Surface Water Sources



Amended project footprint
Amended surface water and groundwater study area
Telecommunications connection
Railway

Watercourse
Substation
Water Sharing Plan - Regulated River

Water Sharing Plan - Surface Water Sources

Adelong Creek Water Source
Adjungbilly / Bombowlee / Brungle Water Source
Gilmore / Sandy Water Source
Goobarragandra Water Source
Goodradigbee Water Source
Hillas Water Source
Mannus Water Source
Murrumbidgee Central (Burrinjuck to Gogeldrie) Water Source
Tarcutta Creek Water Source
Tumbarumba Water Source
Upper Tumut Water Source

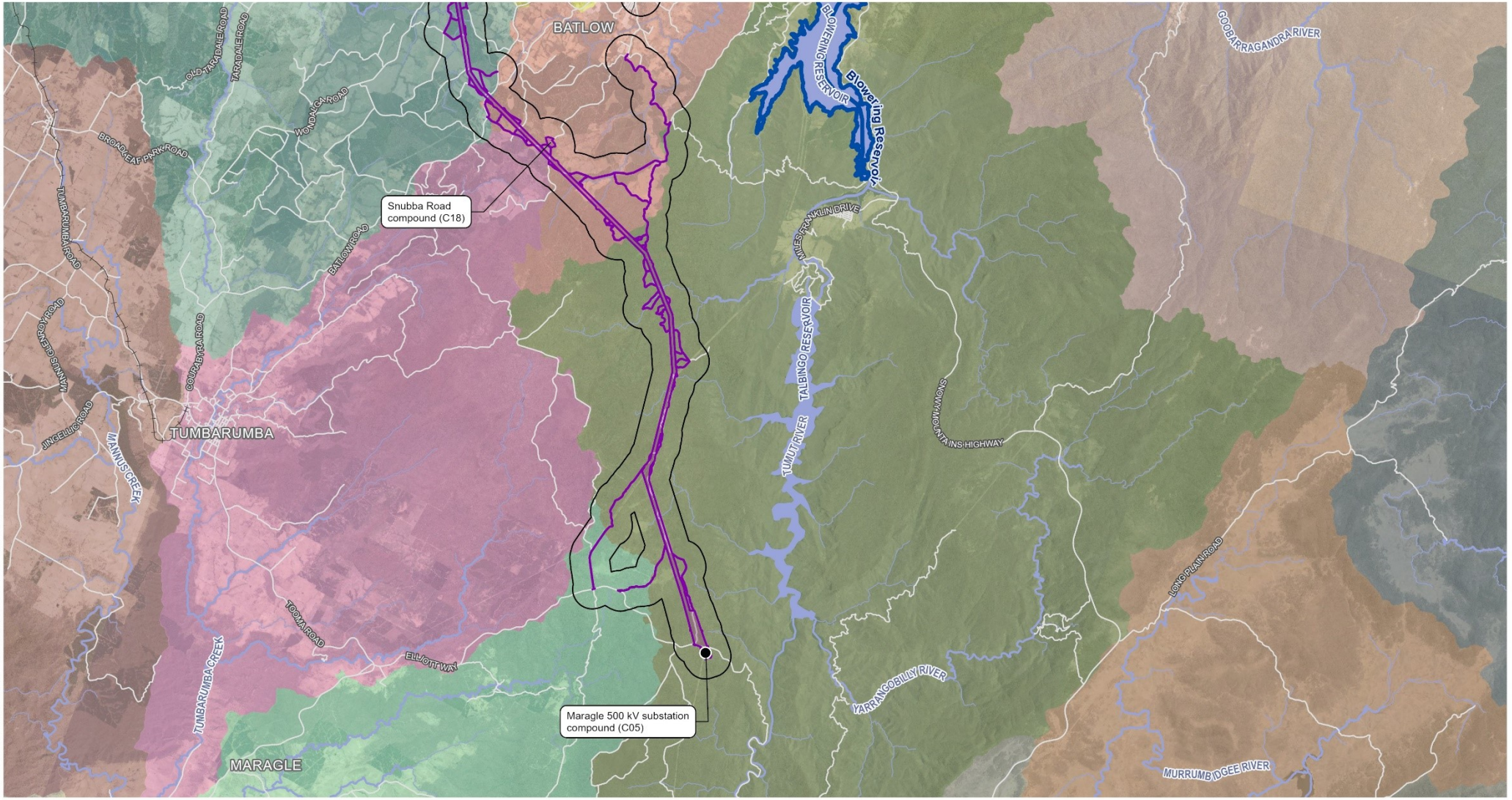
Source: *Aurecon, Transgrid, DPE, Spatial Services (DCS), ESRI Basemap*

1:200,000
0 4 8km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-4e: Water Sharing Plan - Surface Water Sources



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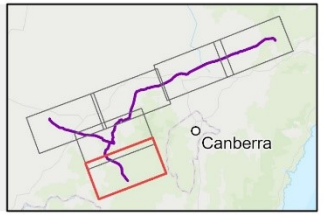
Amended project footprint
Amended surface water and groundwater study area
Telecommunications connection

Railway
Watercourse
Substation
Water Sharing Plan - Regulated River

Water Sharing Plan - Surface Water Sources

Adelong Creek Water Source
Gilmore / Sandy Water Source
Goobarragandra Water Source
Goodradigbee Water Source
Mannus Water Source
Maragle Water Source
Tantangara Water Source
Tarcutta Creek Water Source
Tumbarumba Water Source
Upper Tumut Water Source



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

1:200,000
0 4 8km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-4f: Water Sharing Plan - Surface Water Sources

5.2.4 Surface water quality

Surface water quality within the major surface water catchments for the amended project footprint are unchanged for amended project and are described in Section 5.3.5 of the *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS .

5.3 Geomorphology

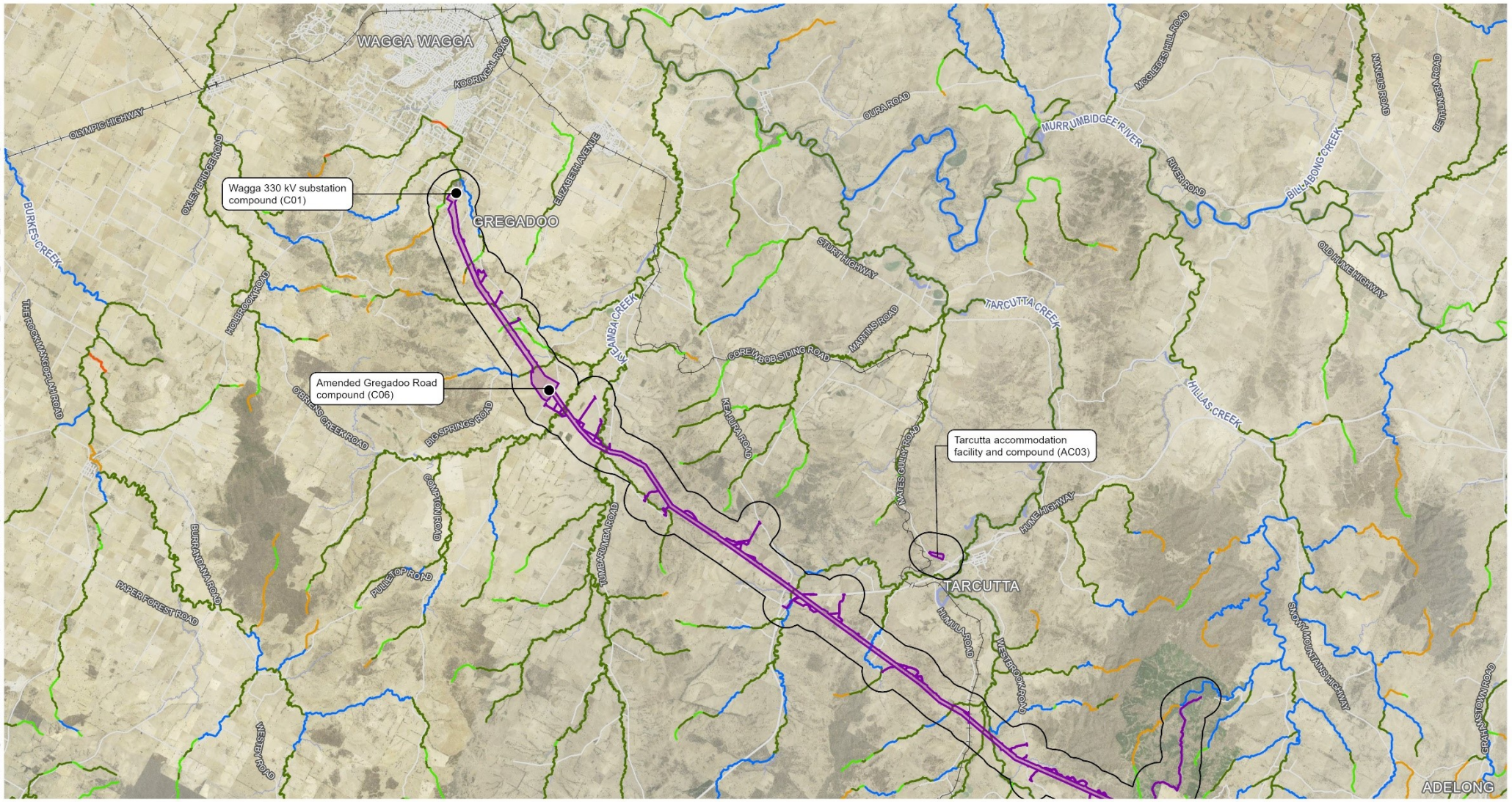
River geomorphology is described in Section 5.3.5 of the *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS and is still relevant to the amended project footprint.

Major waterways (Strahler order 6 and above) crossed by the amended project are presented in Table 5-3. There is a reduction of Strahler order 6 and above waterways crossed by the amended project footprint. The updated table is presented below.

Table 5-3 River Styles of major waterway crossings

Waterway	Stream order	NSW river style	Existing condition	Recovery potential
Murrumbidgee River	9	Bedrock controlled, gravel	Moderate condition Moderate fragility	Moderate
Lachlan River	6	Floodplain pockets, gravel	Moderate condition Moderate fragility	High
Tumut River	8	Meandering, gravel	Poor condition High fragility	Moderate
Kyeamba Creek	7	Meandering, fine grained	Moderate condition High fragility	High
Keajura Creek	6	Meandering, fine grained	Poor condition High fragility	Low
O'Briens Creek	6	Meandering, sand	Poor condition High fragility	Moderate
Tarcutta Creek	6	Low sinuosity, sand	Poor condition High fragility	Low
Adjungbilly Creek	6	Planform controlled, low sinuosity, sand	Poor condition High fragility	Moderate

The updated river styles figure for the amended project is presented in Figure 5-5.



Amended project footprint

Amended surface water and groundwater study area

Railway

Watercourse

Substation

NSW River Styles

CVS

LUV CC

LUV DC

PCVS

SMG

Anthropogenic

None

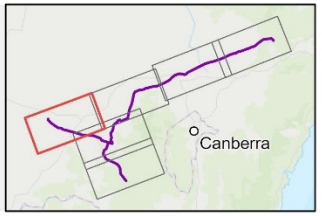
CVS - Confined Valley Setting

LUV CC - Laterally Unconfined Valley Setting – Continuous Channel

LUV DC - Laterally Unconfined Valley Setting – Discontinuous Channel

PCVS - Partly Confined Valley Setting

Anthropogenic - Water Storage



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

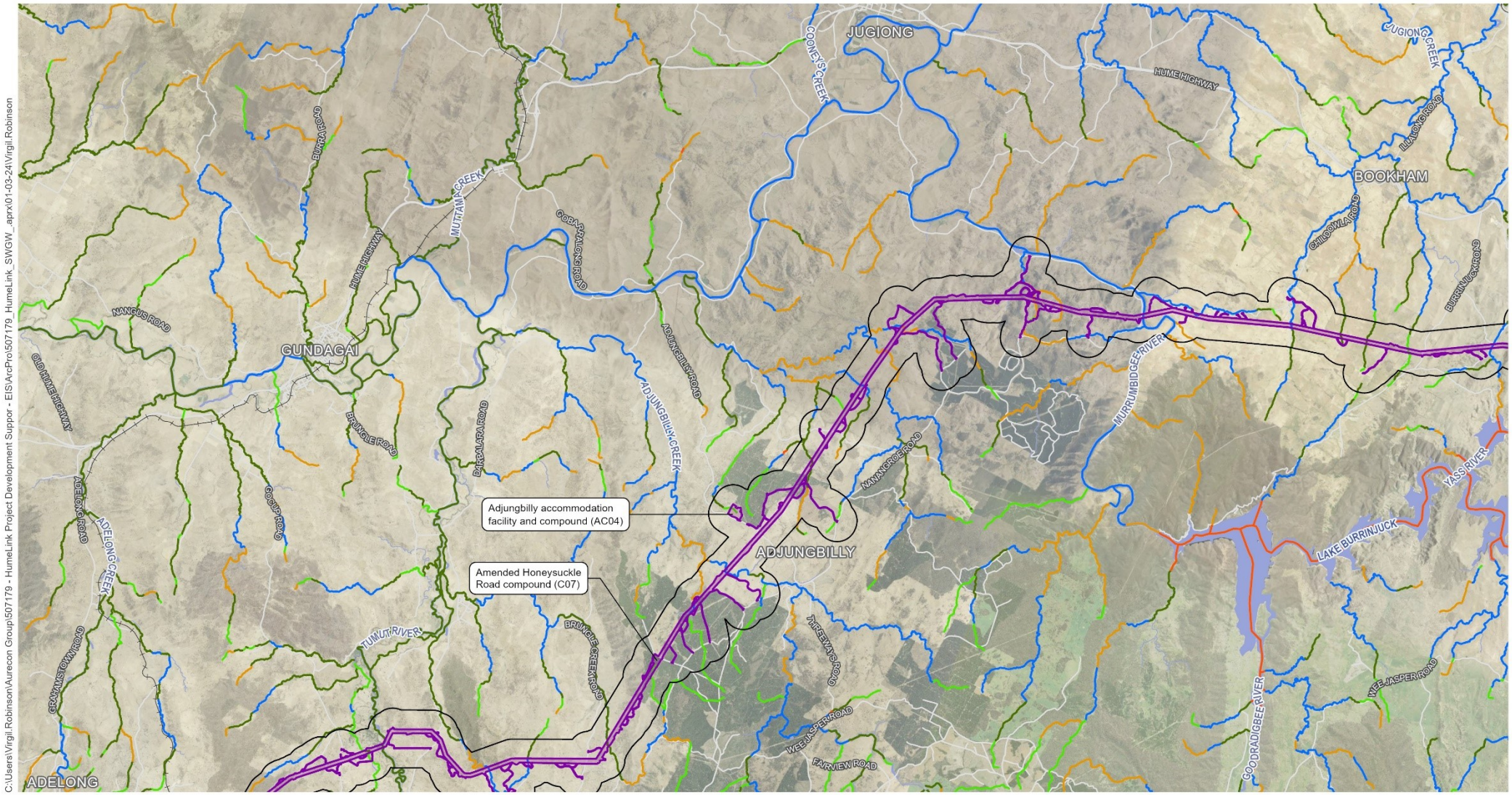
1:200,000

0 4 8km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-5a: NSW River styles



Amended project footprint

Amended surface water and groundwater study area

Railway

Watercourse

Substation

NSW River Styles

CVS

LUV CC

LUV DC

PCVS

SMG

Anthropogenic

None

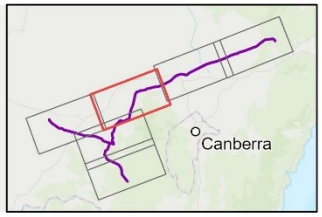
CVS - Confined Valley Setting

LUV CC - Laterally Unconfined Valley Setting – Continuous Channel

LUV DC - Laterally Unconfined Valley Setting – Discontinuous Channel

PCVS - Partly Confined Valley Setting

Anthropogenic - Water Storage



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

1:200,000

0 4 8km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-5b: NSW River styles

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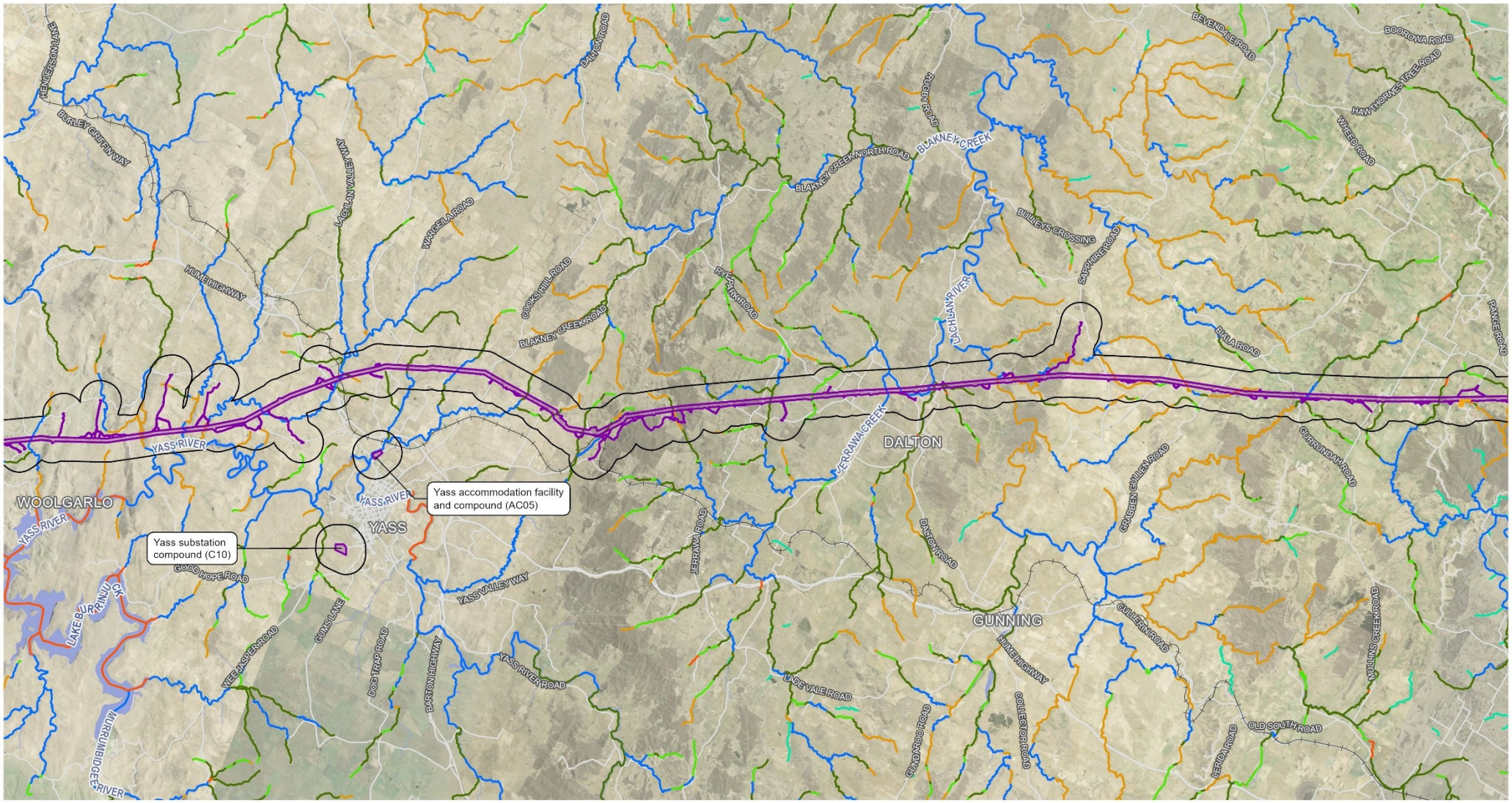

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Amended project footprint

Amended surface water and groundwater study area

Telecommunications connection

Railway

Watercourse

Substation

NSW River Styles

CVS

LUV CC

LUV DC

PCVS

SMG

Anthropogenic

None

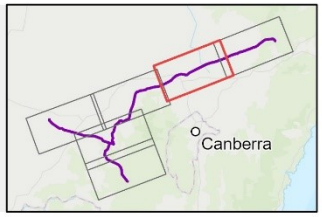
CVS - Confined Valley Setting

LUV CC - Laterally Unconfined Valley Setting – Continuous Channel

LUV DC - Laterally Unconfined Valley Setting – Discontinuous Channel

PCVS - Partly Confined Valley Setting

Anthropogenic - Water Storage



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

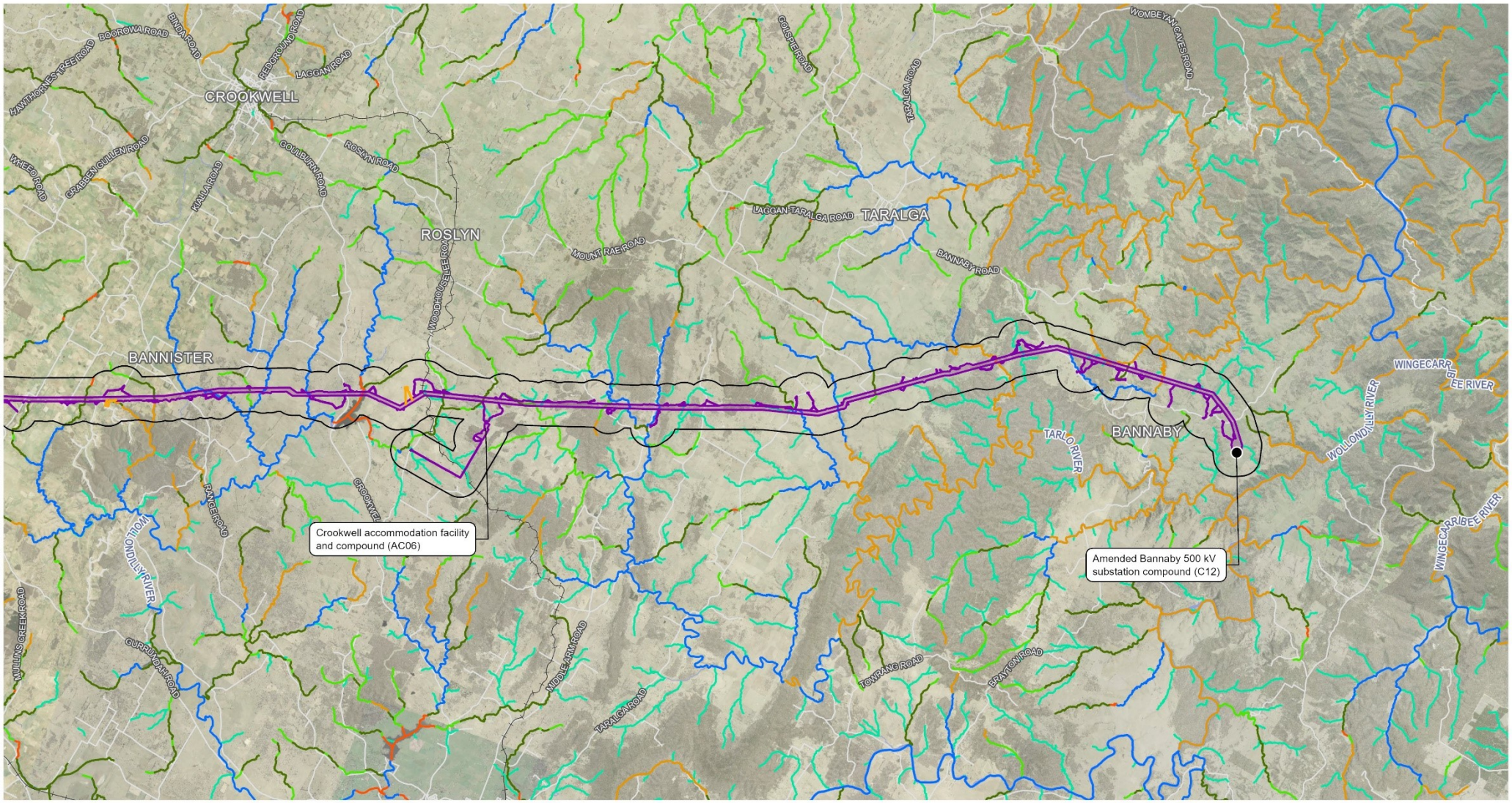
1:200,000

0 4 8km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-5c: NSW River styles



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Amended project footprint

Amended surface water and groundwater study area

Telecommunications connection

Railway

Watercourse

Substation

NSW River Styles

CVS

LUV CC

LUV DC

PCVS

SMG

Anthropogenic

None

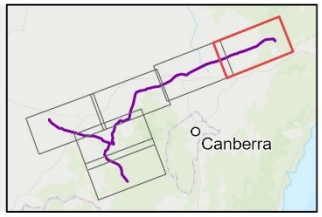
CVS - Confined Valley Setting

LUV CC - Laterally Unconfined Valley Setting – Continuous Channel

LUV DC - Laterally Unconfined Valley Setting – Discontinuous Channel

PCVS - Partly Confined Valley Setting

Anthropogenic - Water Storage



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

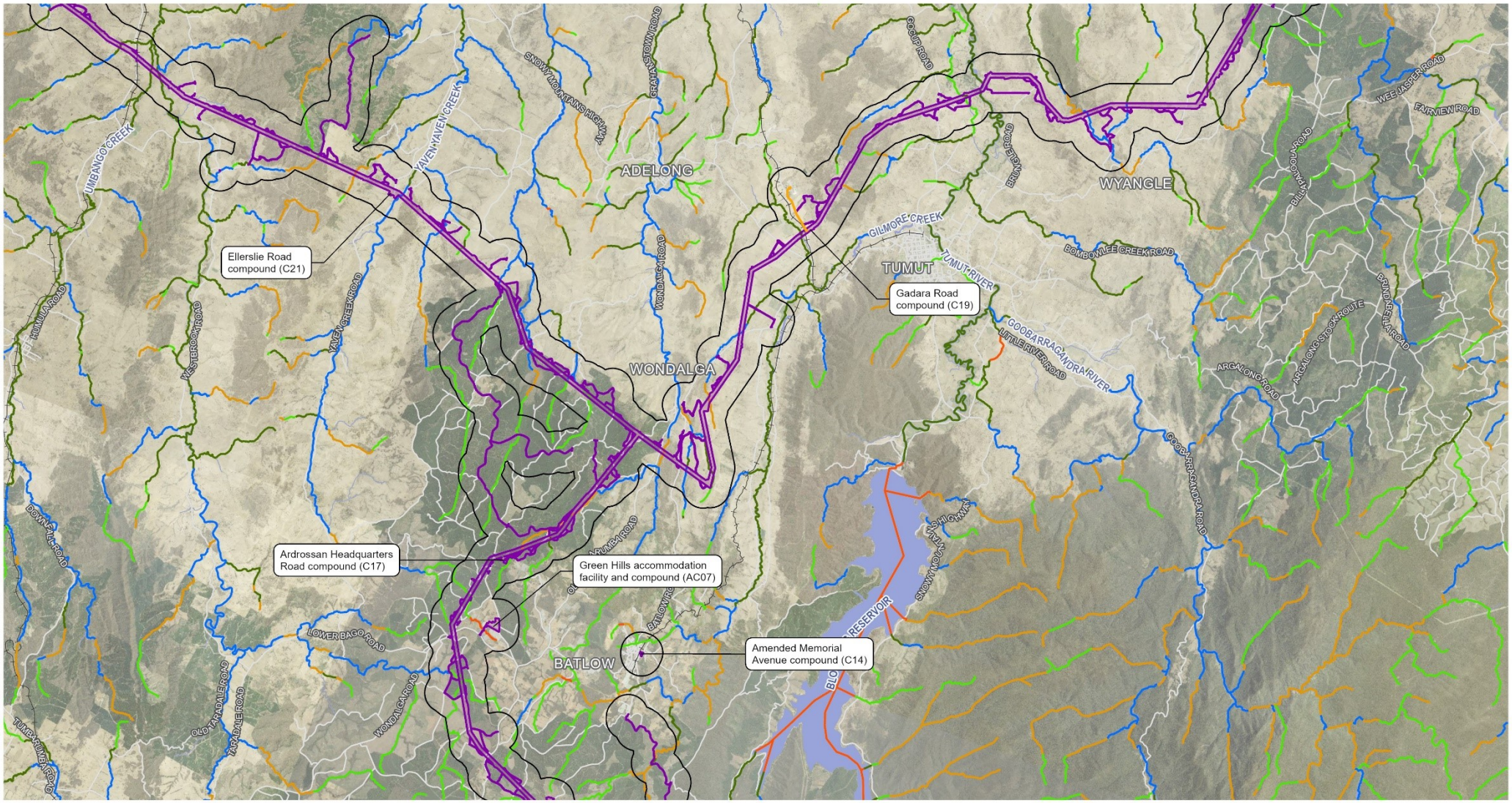
1:200,000

0 4 8km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-5d: NSW River styles



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Amended project footprint

Amended surface water and groundwater study area

Telecommunications connection

Railway

Watercourse

Substation

NSW River Styles

CVS

LUV CC

LUV DC

PCVS

SMG

Anthropogenic

None

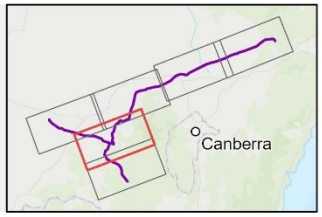
CVS - Confined Valley Setting

LUV CC - Laterally Unconfined Valley Setting – Continuous Channel

LUV DC - Laterally Unconfined Valley Setting – Discontinuous Channel

PCVS - Partly Confined Valley Setting

Anthropogenic - Water Storage



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

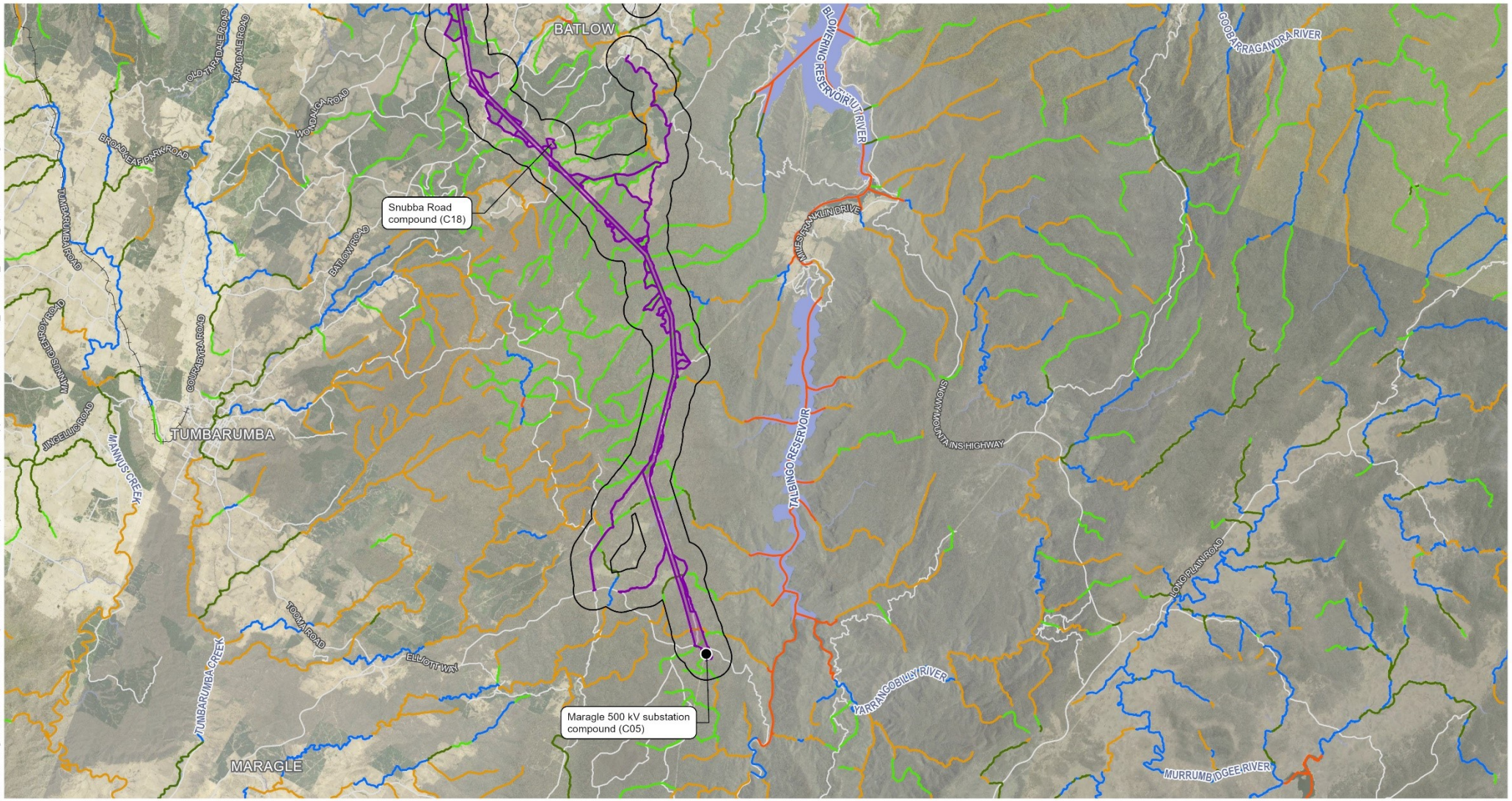
1:200,000

0 4 8km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-5e: NSW River styles



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Amended project footprint

Amended surface water and groundwater study area

Railway

Watercourse

Substation

NSW River Styles

CVS

LUV CC

LUV DC

PCVS

SMG

Anthropogenic

None

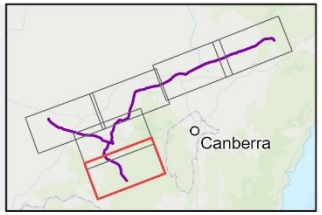
CVS - Confined Valley Setting

LUV CC - Laterally Unconfined Valley Setting – Continuous Channel

LUV DC - Laterally Unconfined Valley Setting – Discontinuous Channel

PCVS - Partly Confined Valley Setting

Anthropogenic - Water Storage



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

1:200,000

0 4 8 km

Projection: GDA 1994 MGA Zone 55

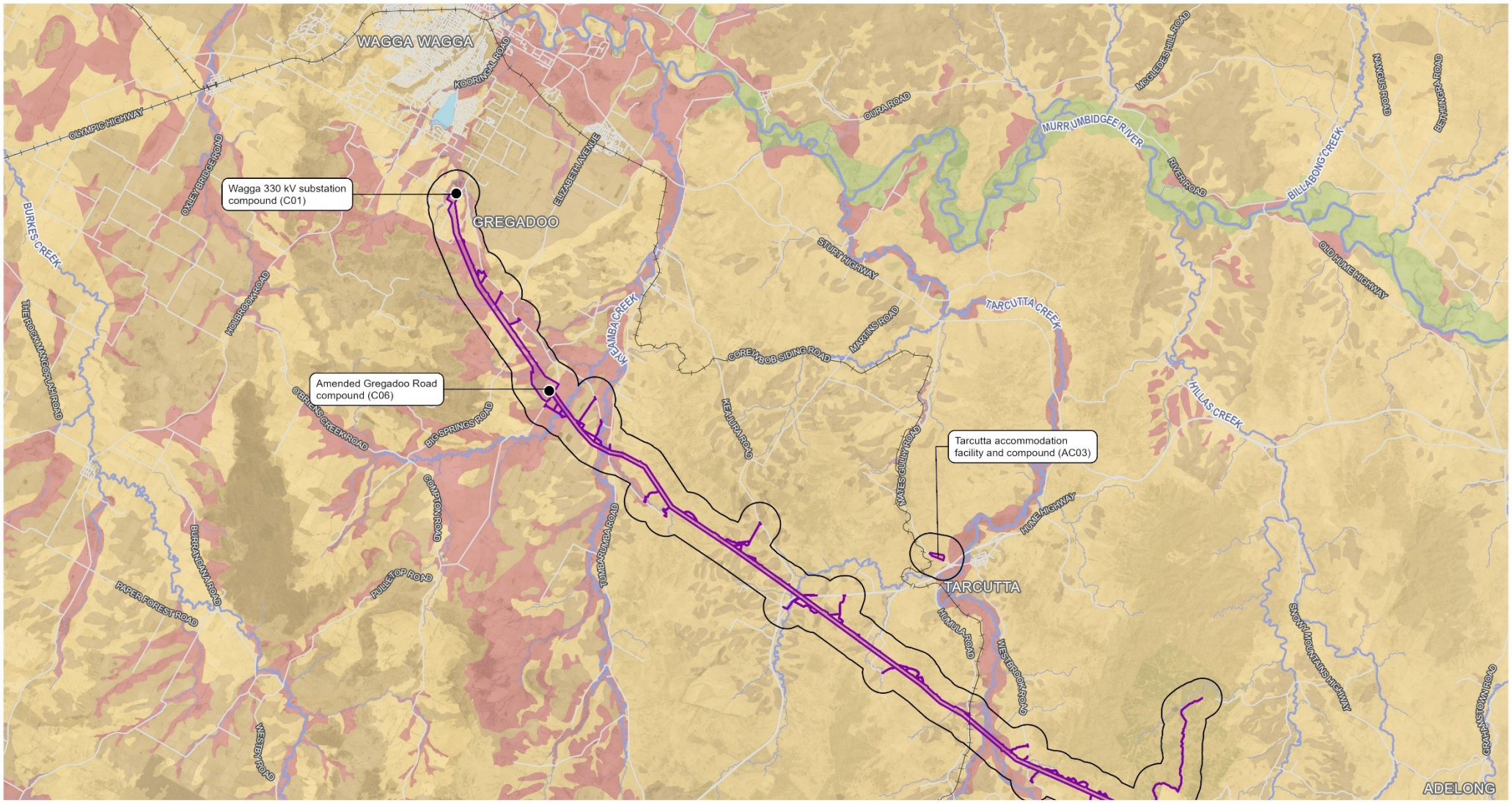
HumeLink **Surface Water and Groundwater**

Figure 5-5f: NSW River styles

5.4 Soils and geology

5.4.1 Hydrologic soil groups

The hydrologic groups of soil within NSW are described in Section 5.4.2 of the *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS and do not differ for the amended project. The updated Hydrologic Soil Groups figure for the amended project is presented in Figure 5-6.



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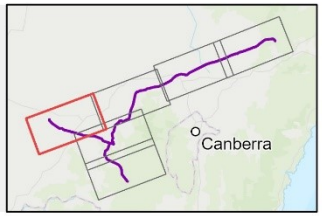
Amended project footprint
Amended surface water and groundwater study area
Telecommunications connection
Railway
Watercourse
Substation

Hydrologic Soil Group

A - High infiltration
B - Moderate infiltration
C - Slow infiltration
D - Very slow infiltration
Water
Not assessed



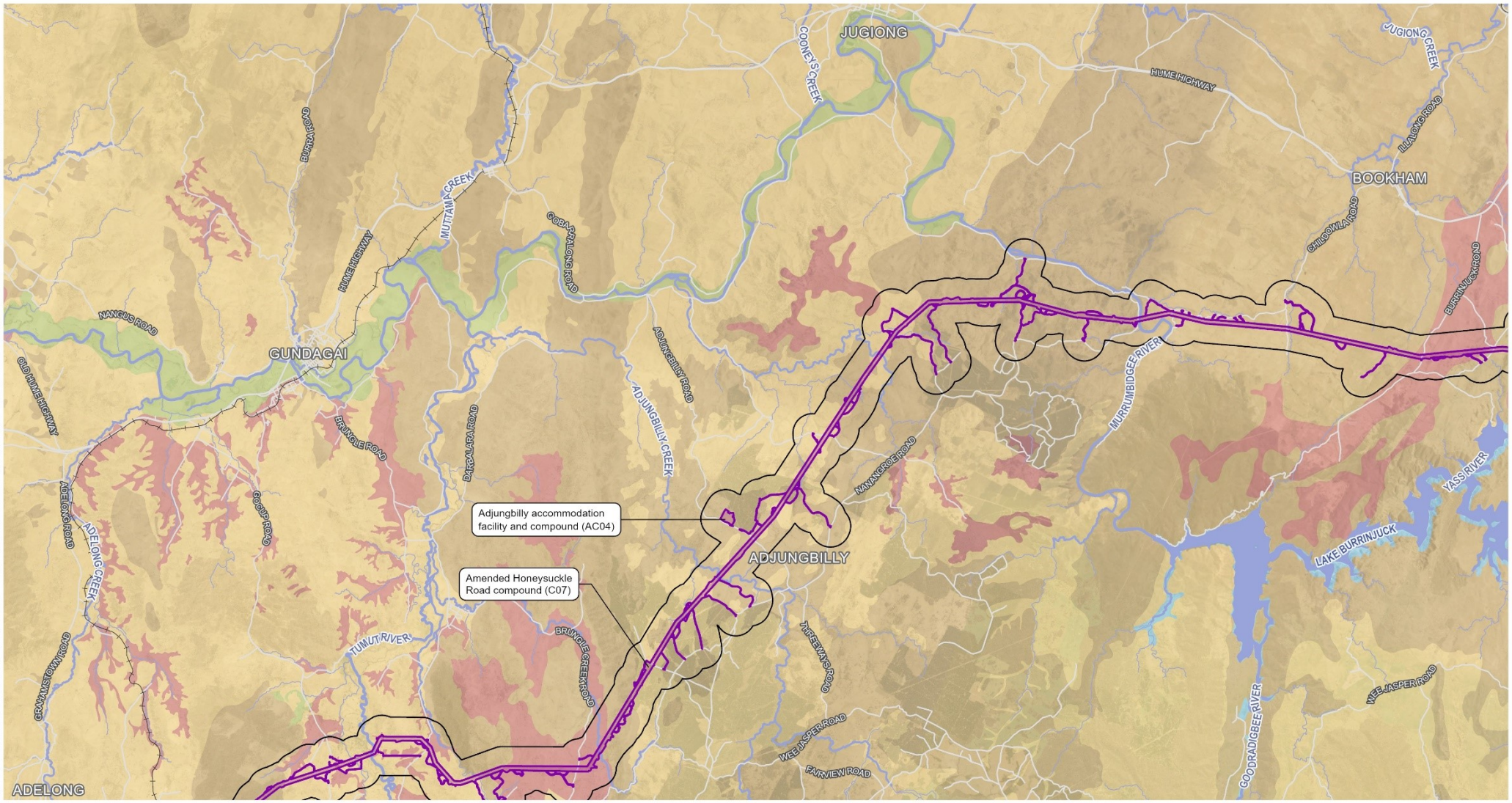
Source: *Aurecon, Transgrid, DPIE, Spatial Services (DCS), ESRI Basemap*

1:200,000
0 4 8km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-6a: Hydrologic Soil Groups (HSG) of NSW



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Amended project footprint

Amended surface water and groundwater study area

Telecommunications connection

Railway

Watercourse

Substation

Hydrologic Soil Group

A - High infiltration

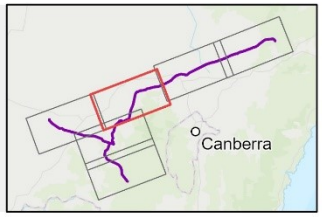
B - Moderate infiltration

C - Slow infiltration

D - Very slow infiltration

Water

Not assessed



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

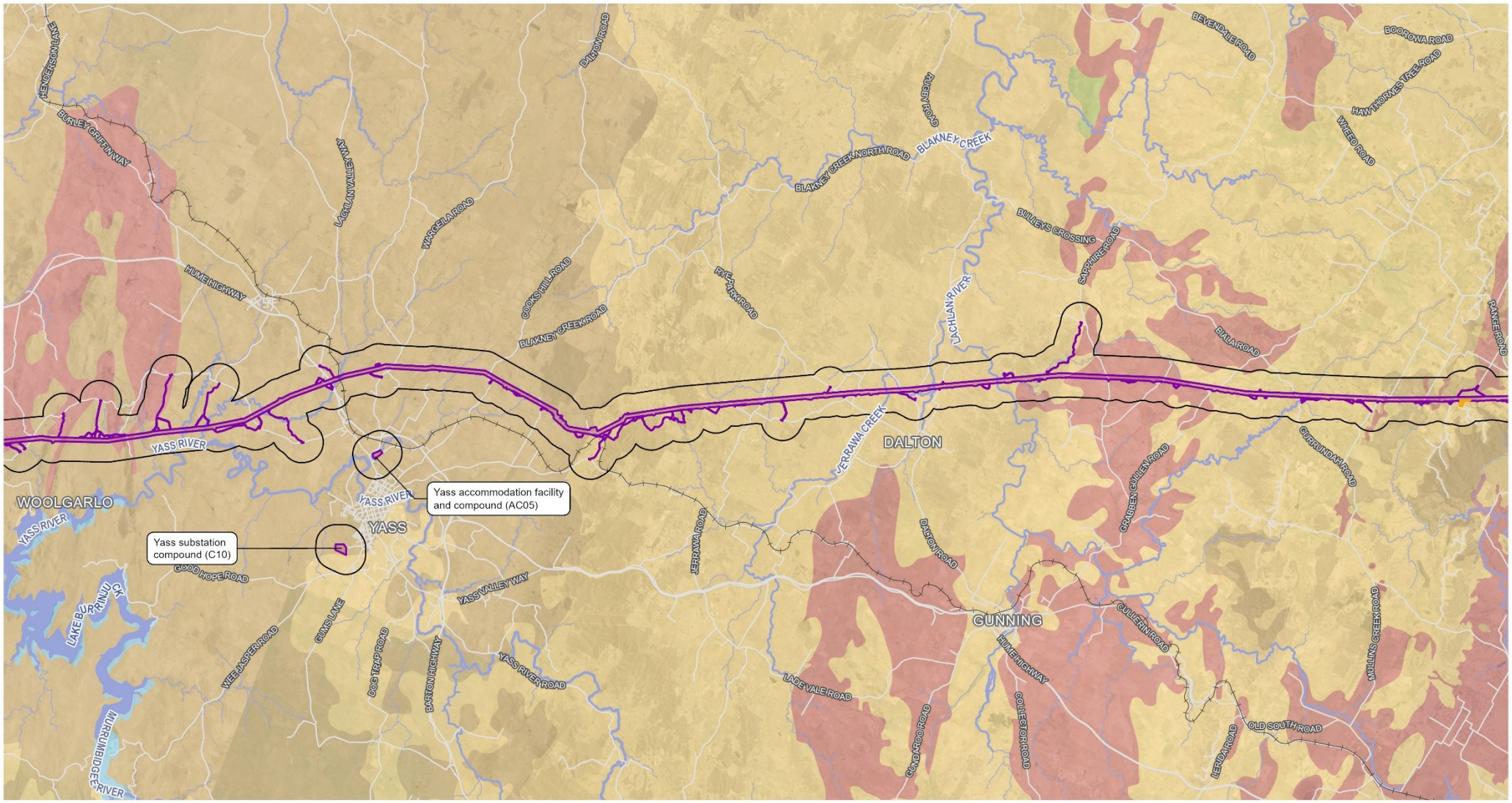
1:200,000

0 4 8km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-6b: Hydrologic Soil Groups (HSG) of NSW

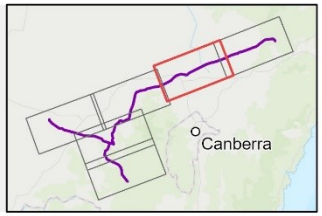


Amended project footprint
Amended surface water and groundwater study area
Telecommunications connection

Railway
Watercourse
Substation

Hydrologic Soil Group

A - High infiltration
B - Moderate infiltration
C - Slow infiltration
D - Very slow infiltration
Water
Not assessed



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

1:200,000
0 4 8km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-6c: Hydrologic Soil Groups (HSG) of NSW

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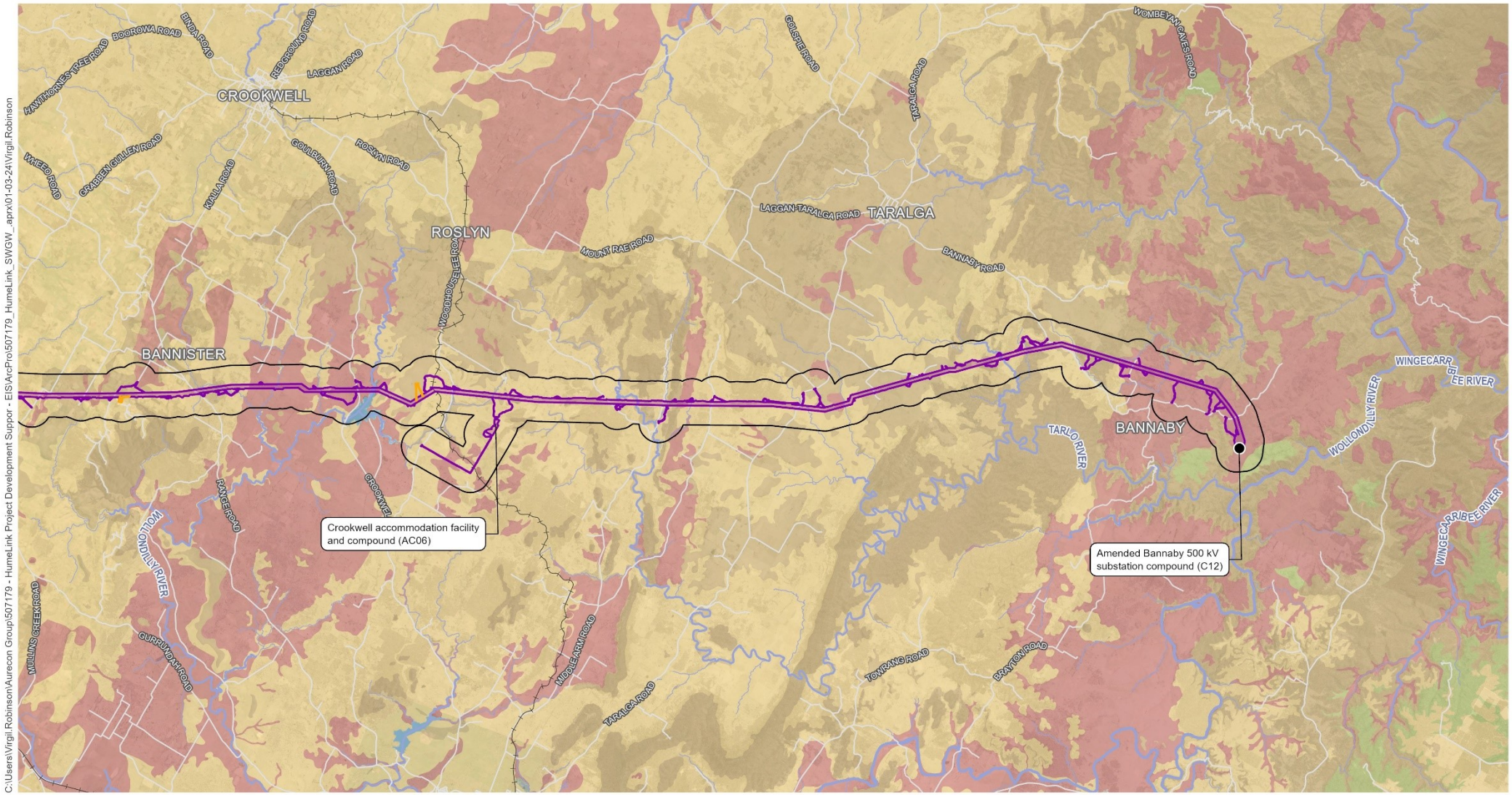


Source: *Aurecon, Transgrid, DPIE, Spatial Services (DCS), ESRI Basemap*

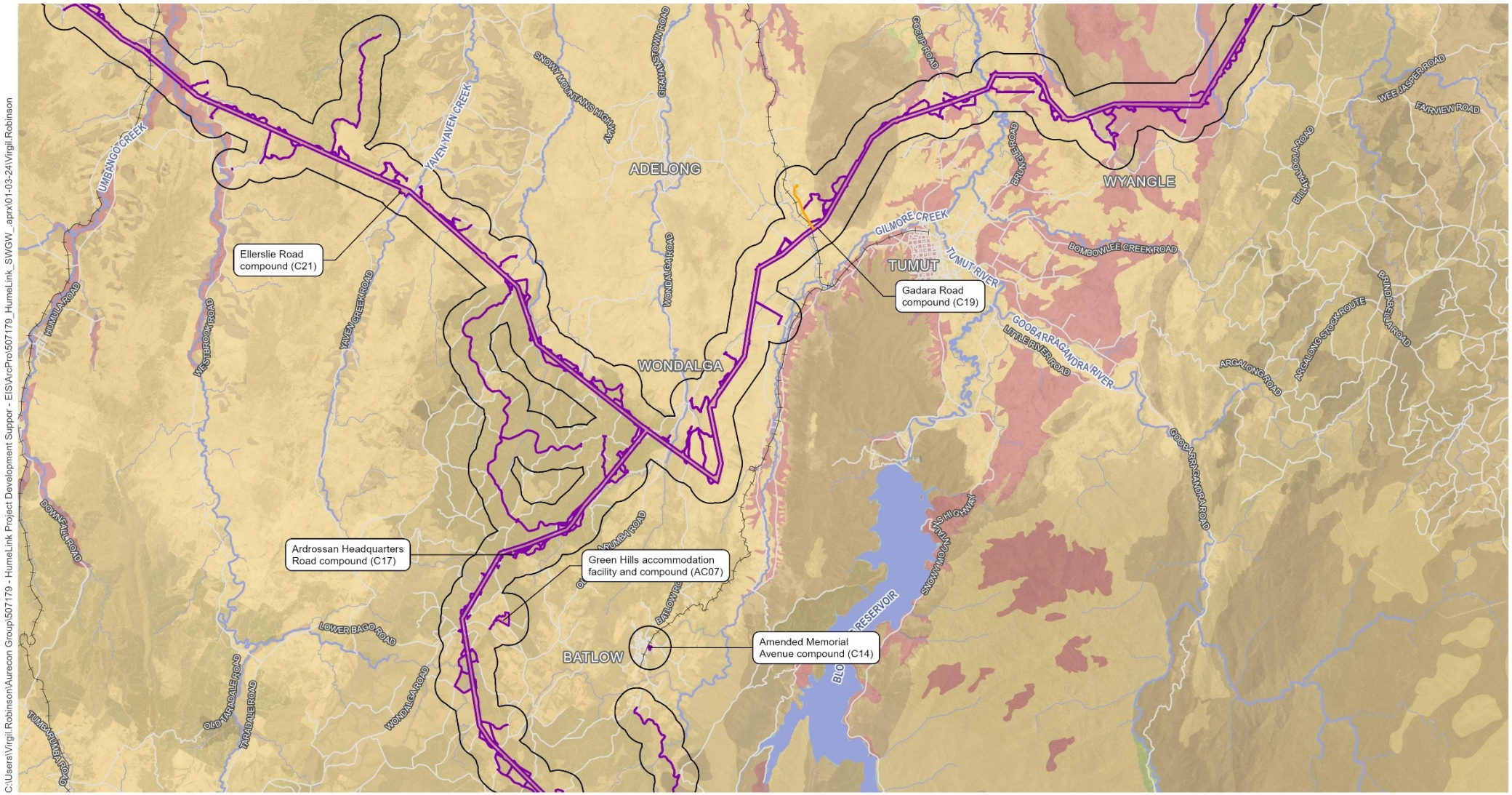
1:200,000

0 4 8 km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-6d: Hydrologic Soil Groups (HSG) of NSW



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

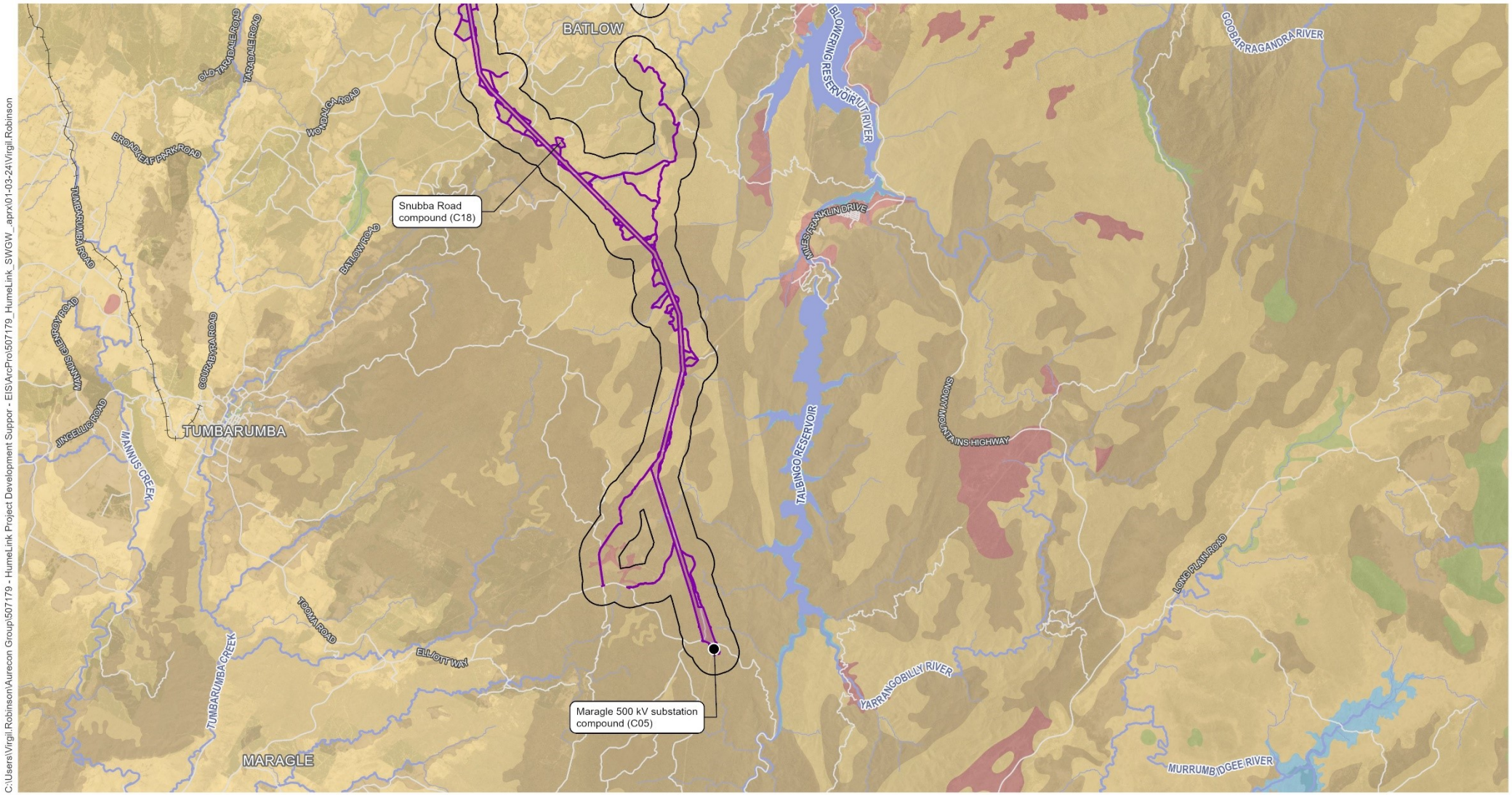
1:200,000

0 4 8km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-6e: Hydrologic Soil Groups (HSG) of NSW



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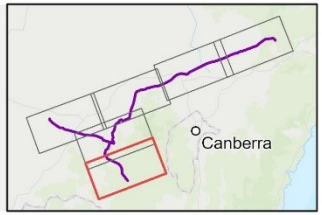
Amended project footprint
Amended surface water and groundwater study area
Telecommunications connection
Railway
Watercourse
Substation

Hydrologic Soil Group

A - High infiltration
B - Moderate infiltration
C - Slow infiltration
D - Very slow infiltration
Water
Not assessed



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

1:200,000
0 4 8 km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-6f: Hydrologic Soil Groups (HSG) of NSW

5.4.2 Modelled soil erosion

The methodology to calculate soil erosion potential is described in Section 5.4.3 of the *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS.

The updated modelled soil erosion figure for the amended project is presented in Figure 5-7. A percentage breakdown of the amended project footprint area for each erosion risk category is provided in Section 6.1.8.1 and Attachment E.

Amended project footprint

Amended surface water and groundwater study area

Railway

Watercourse

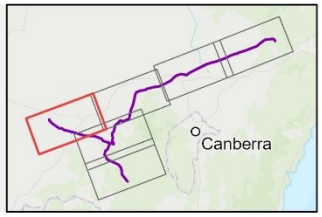
Substation

Soil erosion, bare

Low: up to 200 t ha^{-1} yr^{-1}

Moderate: between 200 and 1000 t ha^{-1} yr^{-1}

High: greater than 1000 t ha^{-1} yr^{-1}



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

1:200,000

0 4 8km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-7a: Modelled soil erosion

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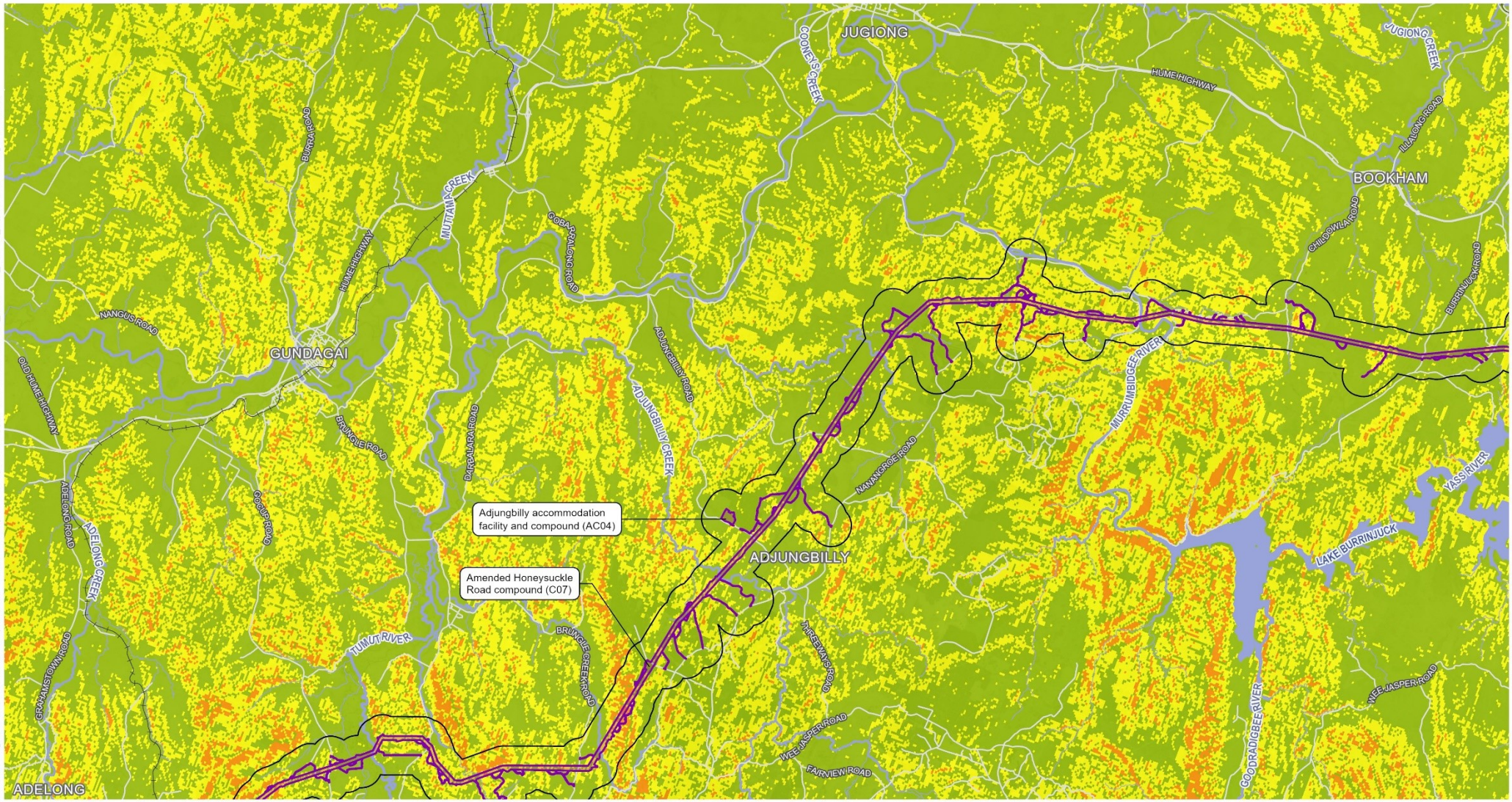


Amended project footprint

Amended surface water and groundwater study area

Railway

Watercourse

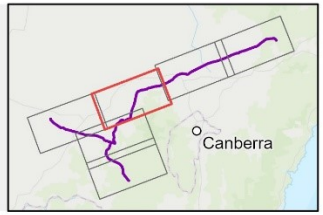
Substation

Soil erosion, bare

Low: up to 200 t ha^{-1} yr^{-1}

Moderate: between 200 and 1000 t ha^{-1} yr^{-1}

High: greater than 1000 t ha^{-1} yr^{-1}



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

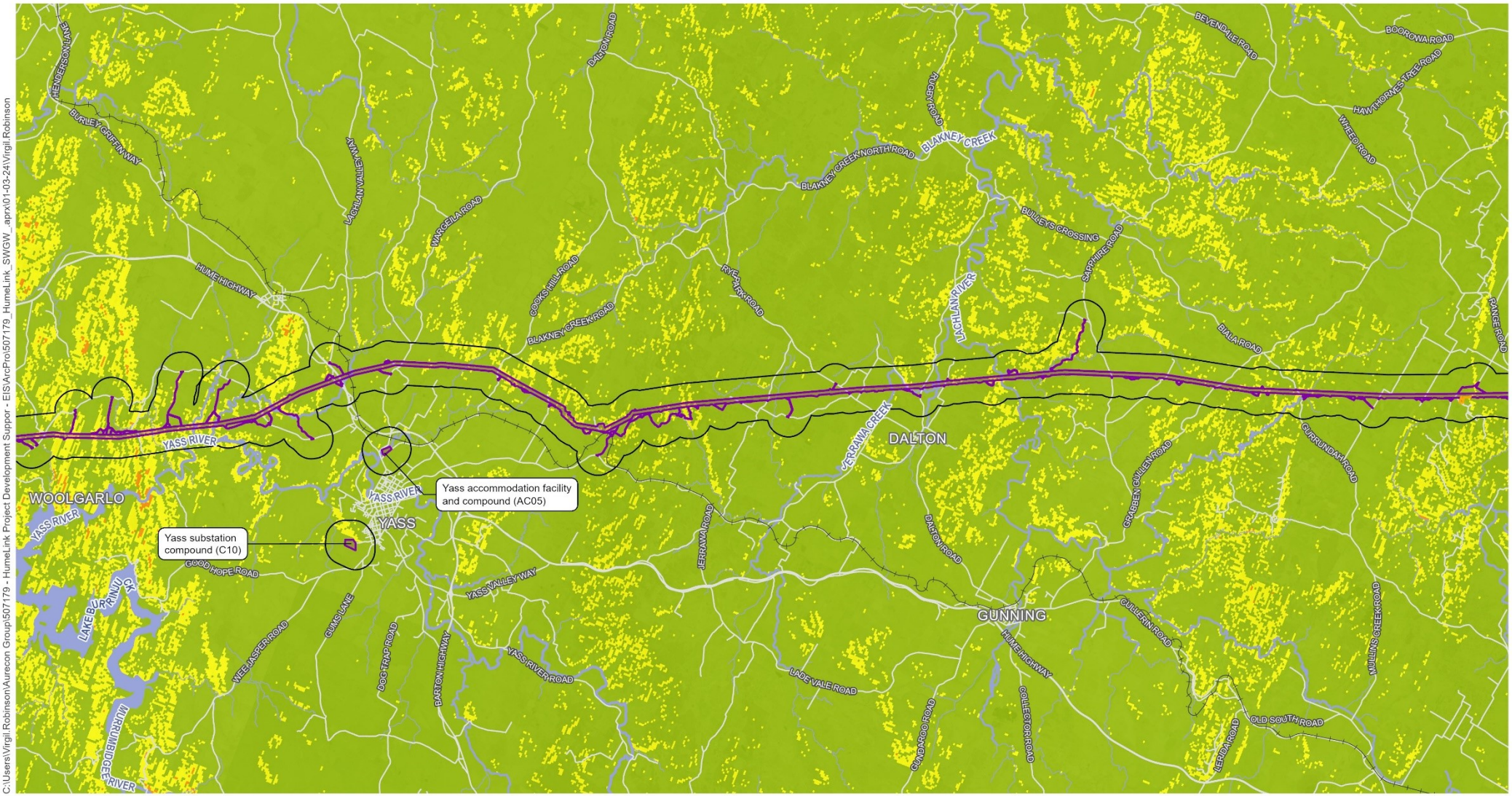
1:200,000

0 4 8 km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-7b: Modelled soil erosion



Amended project footprint

Amended surface water and groundwater study area

Telecommunications connection

Railway

Watercourse

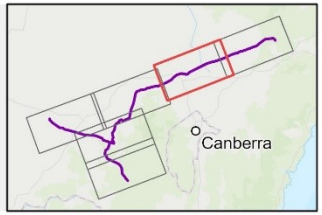
Substation

Soil erosion, bare

Low: up to 200 t ha^{-1} yr^{-1}

Moderate: between 200 and 1000 t ha^{-1} yr^{-1}

High: greater than 1000 t ha^{-1} yr^{-1}



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

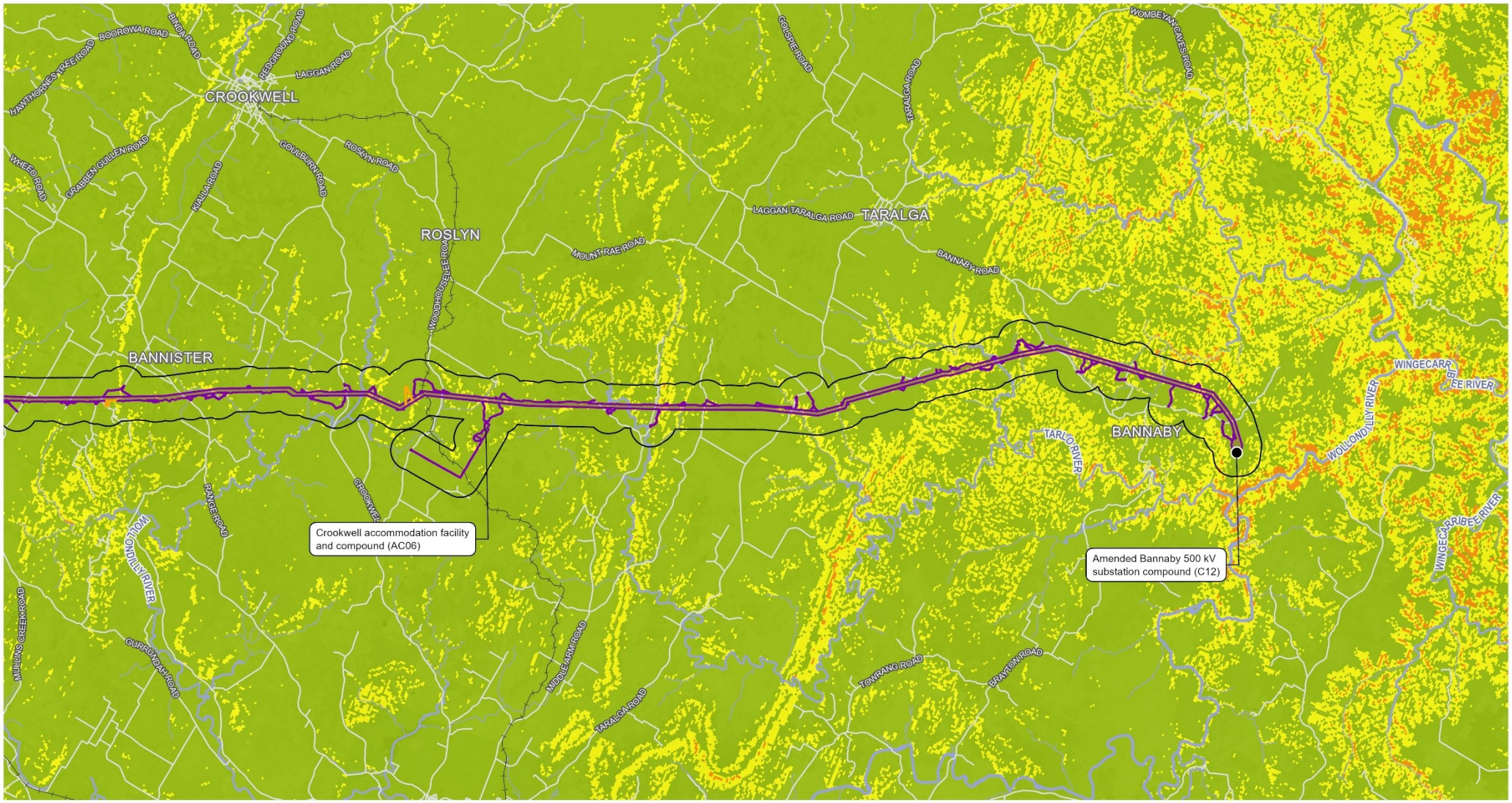
1:200,000

0 4 8 km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-7c: Modelled soil erosion



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

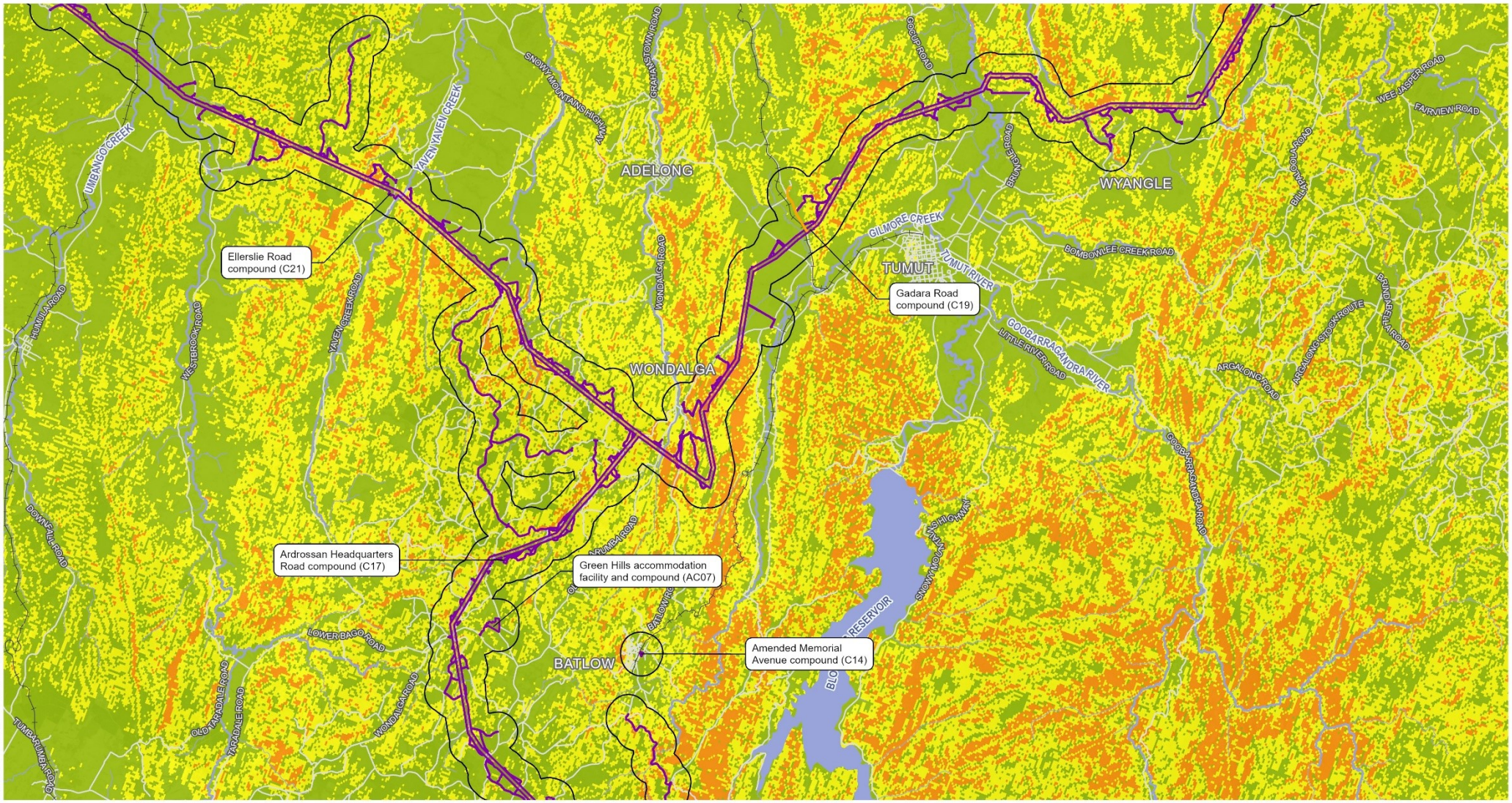
1:200,000

0 4 8km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-7d: Modelled soil erosion



Amended project footprint

Amended surface water and groundwater study area

Telecommunications connection

Railway

Watercourse

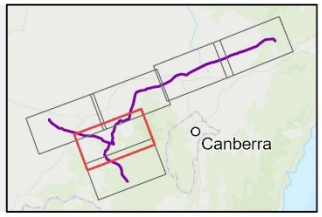
Substation

Soil erosion, bare

Low: up to 200 t ha^{-1} yr^{-1}

Moderate: between 200 and 1000 t ha^{-1} yr^{-1}

High: greater than 1000 t ha^{-1} yr^{-1}



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

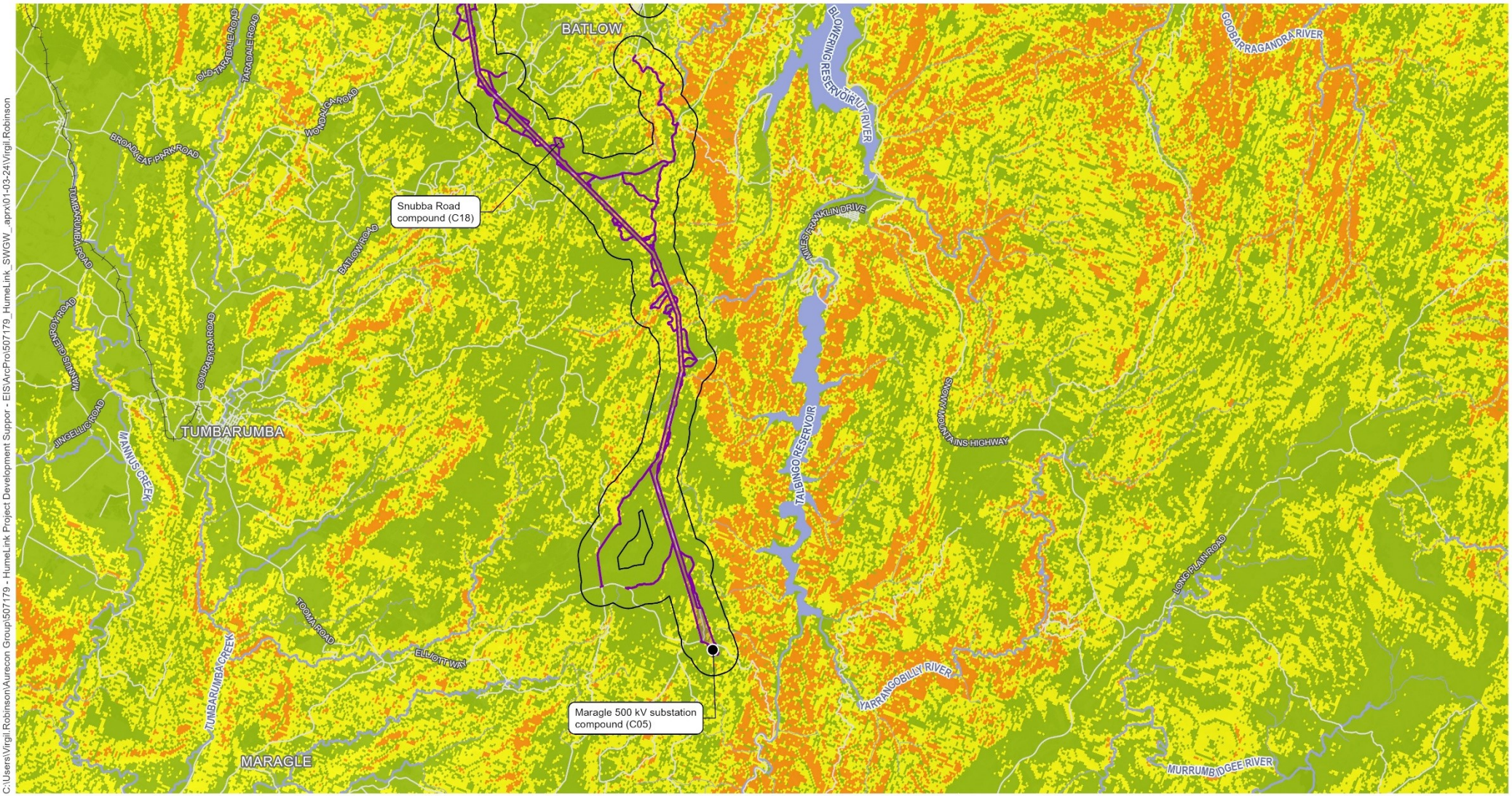
1:200,000

0 4 8km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-7e: Modelled soil erosion



Amended project footprint

Amended surface water and groundwater study area

Railway

Watercourse

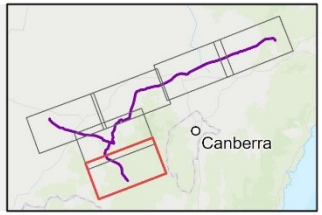
Substation

Soil erosion, bare

Low: up to 200 t ha^{-1} yr^{-1}

Moderate: between 200 and 1000 t ha^{-1} yr^{-1}

High: greater than 1000 t ha^{-1} yr^{-1}



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

1:200,000

0 4 8 km

Projection: GDA 1994 MGA Zone 55

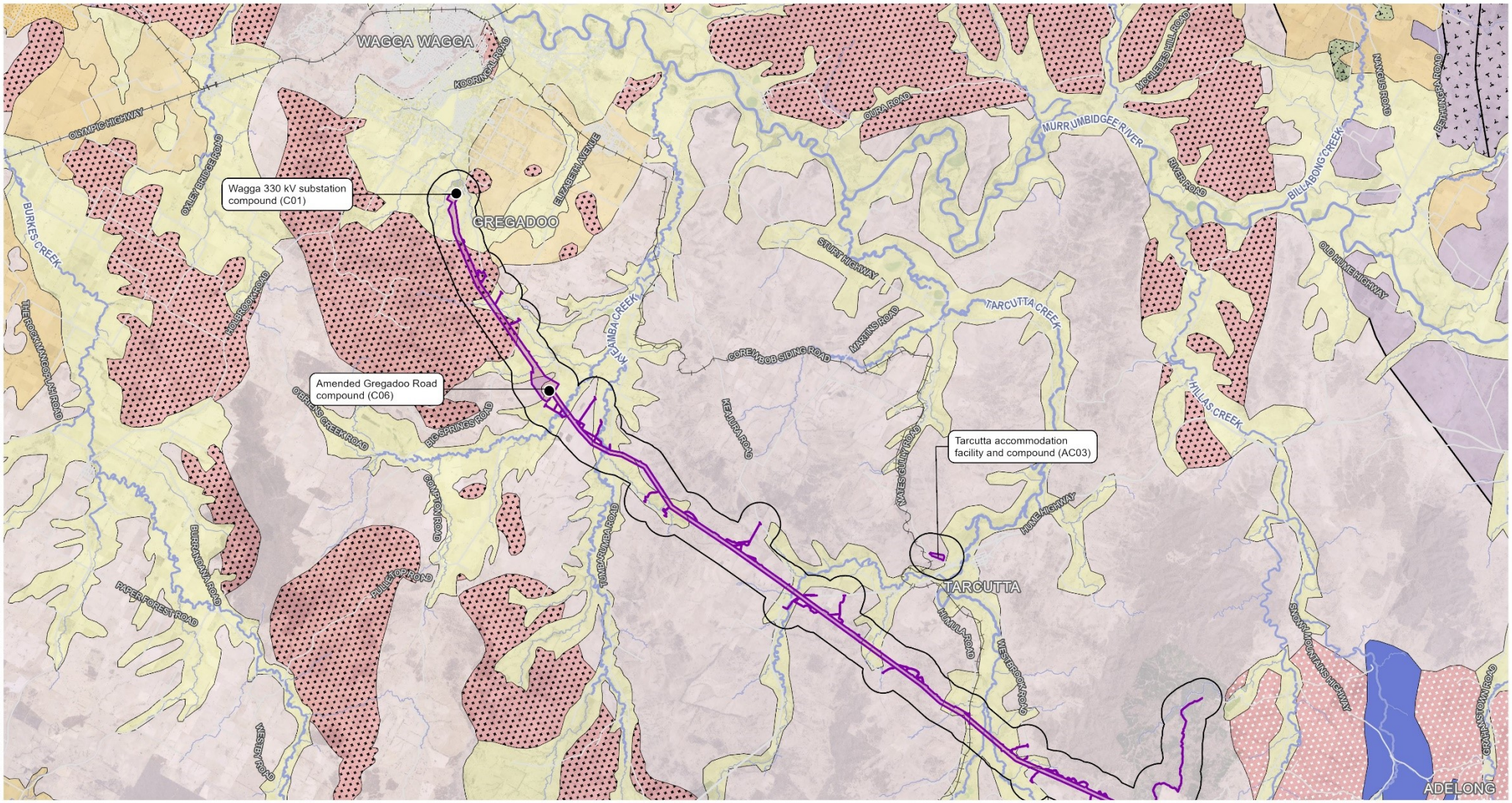
HumeLink **Surface Water and Groundwater**

Figure 5-7f: Modelled soil erosion

5.4.3 Geology

The geology of the amended project footprint is described in Section 5.4.4 of the *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS. A detailed assessment of the amended project's geology is presented in *Technical Report 10 – Phase 1 Contamination Assessment Addendum*.

An extract of the seamless geology map (Department of Regional NSW, 2021) across the amended surface water and groundwater study area is presented in Figure 5-8.



Amended project footprint

Amended surface water and groundwater 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

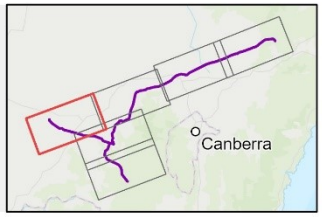
Silurian-Devonian sedimentary and volcanic rocks

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*

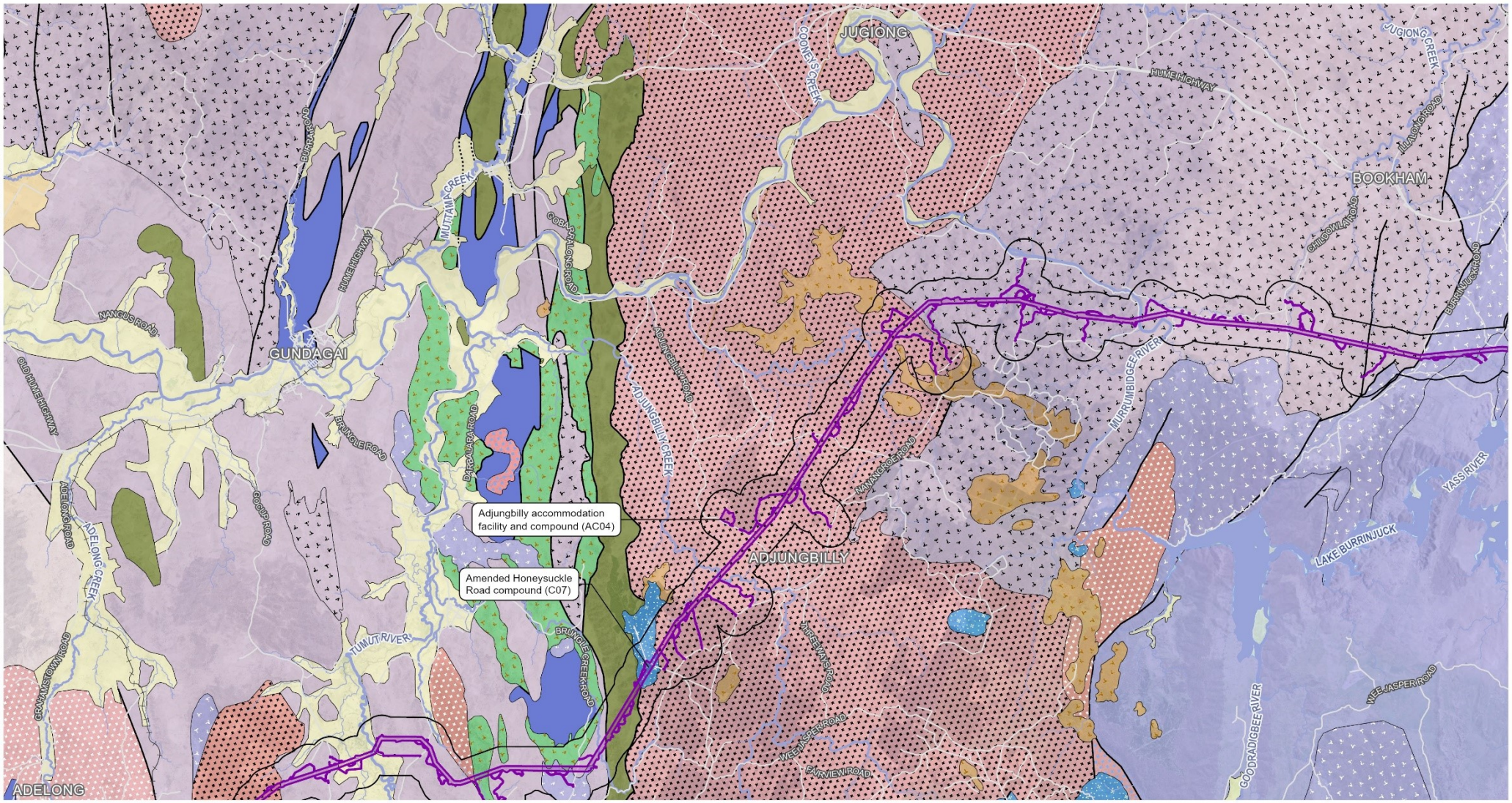
1:200,000

0 4 8km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

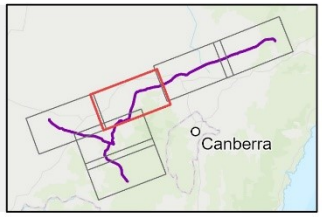
Figure 5-8a: Seamless geology



Amended project footprint
Amended surface water and groundwater study area
Railway
Watercourse
Substation

NSW Simplified Surface Geology (1:1500k)

Dyke or vein
Fault
Fault, concealed
Geological boundary
Shear zone
Shear zone - concealed
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
Silurian-Devonian sedimentary and volcanic rocks
Cenozoic mafic volcanic rocks
Ordovician sedimentary and volcanic rocks
Palaeozoic ultramafic rocks and serpentinized ultramafic rocks
Cenozoic undifferentiated sediments/sedimentary rocks
Devonian silicic to intermediate intrusives
Silurian silicic to intermediate intrusives
Carboniferous to Ordovician 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

HumeLink **Surface Water and Groundwater**

Figure 5-8b: Seamless geology

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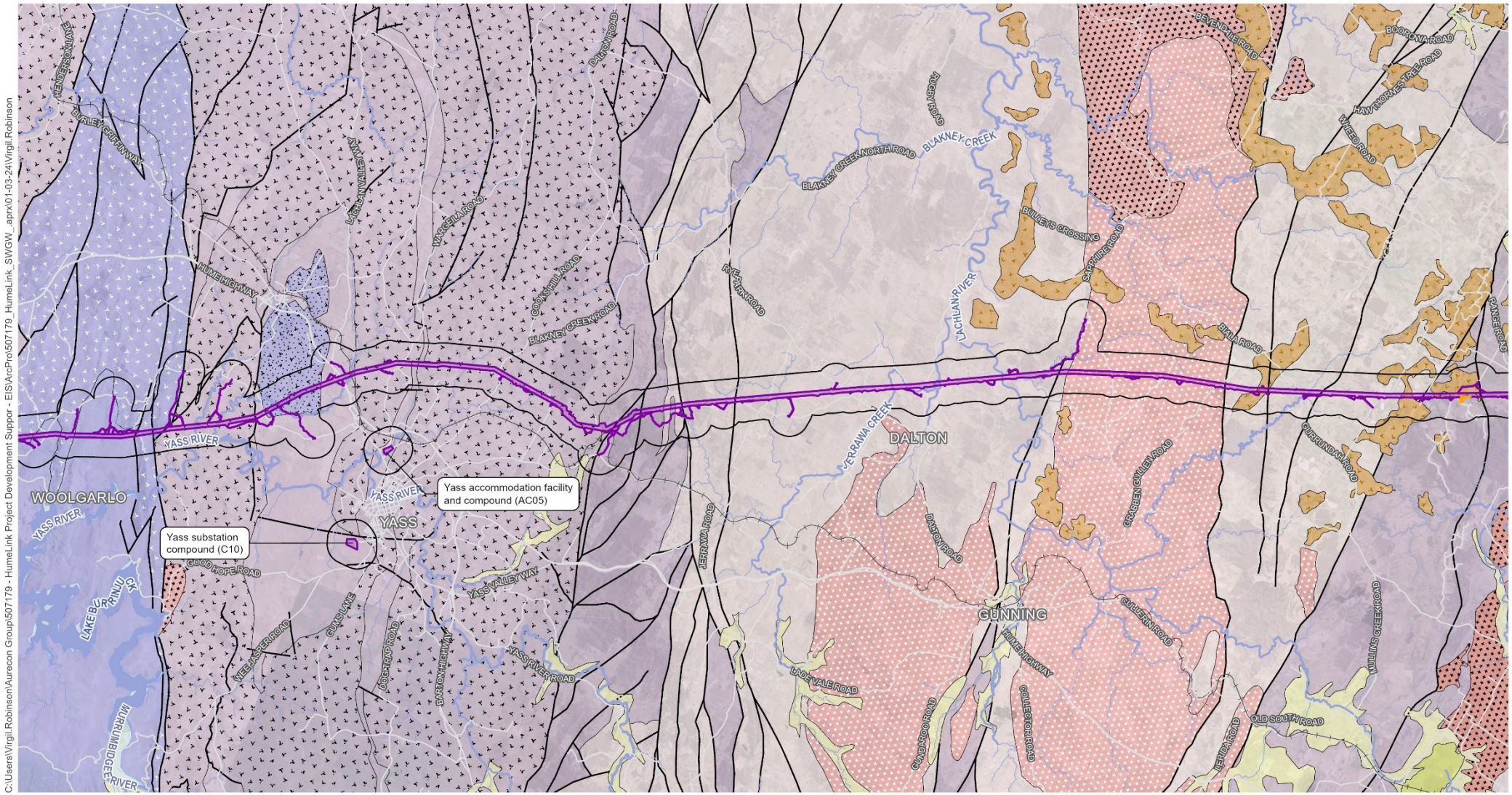


Amended project footprint
Amended surface water and groundwater study area
Telecommunications connection
Railway
Watercourse

Substation

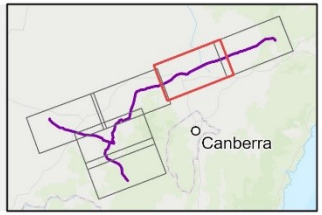
NSW Simplified Surface Geology (1:1500k)

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 8 km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-8c: Seamless geology

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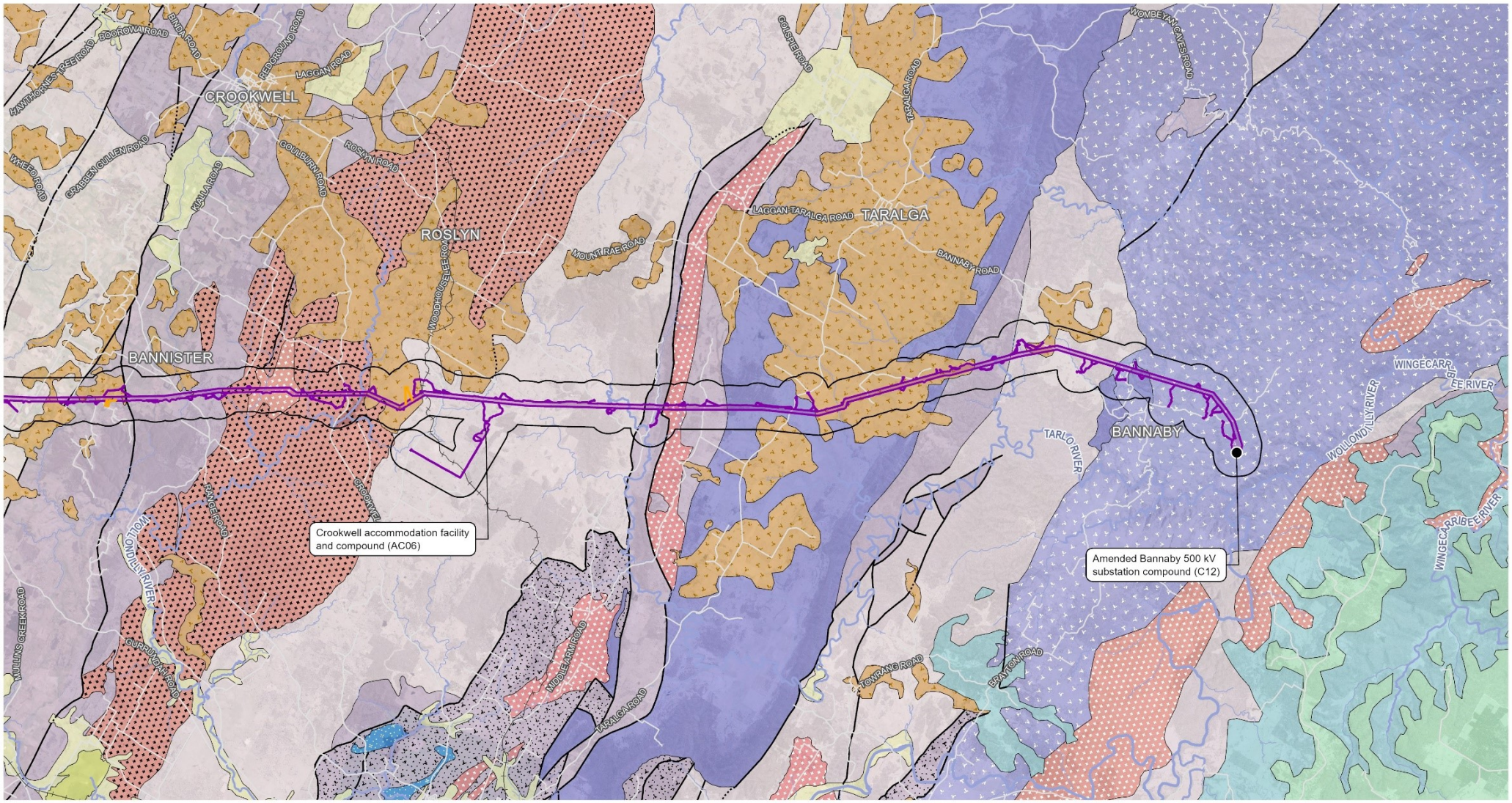


Amended project footprint
Amended surface water and groundwater study area
Telecommunications connection
Railway
Watercourse

Substation

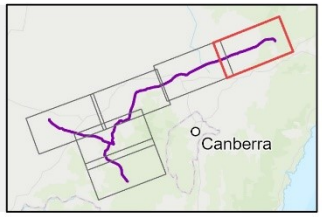
NSW Simplified Surface Geology (1:1500k)

Fault
Fault, concealed
Geological boundary - concealed
Geological boundary

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

Quaternary alluvial deposits
Quaternary lacustrine deposits
Triassic sedimentary rocks
Permian sedimentary rocks
Ordovician mafic intrusives
Devonian sedimentary and volcanic rocks

Late Devonian sedimentary rocks
Ordovician sedimentary rocks
Silurian sedimentary and volcanic rocks
Cenozoic mafic volcanic rocks
Devonian silicic to intermediate intrusives
Carboniferous to Ordovician silicic to intermediate intrusives



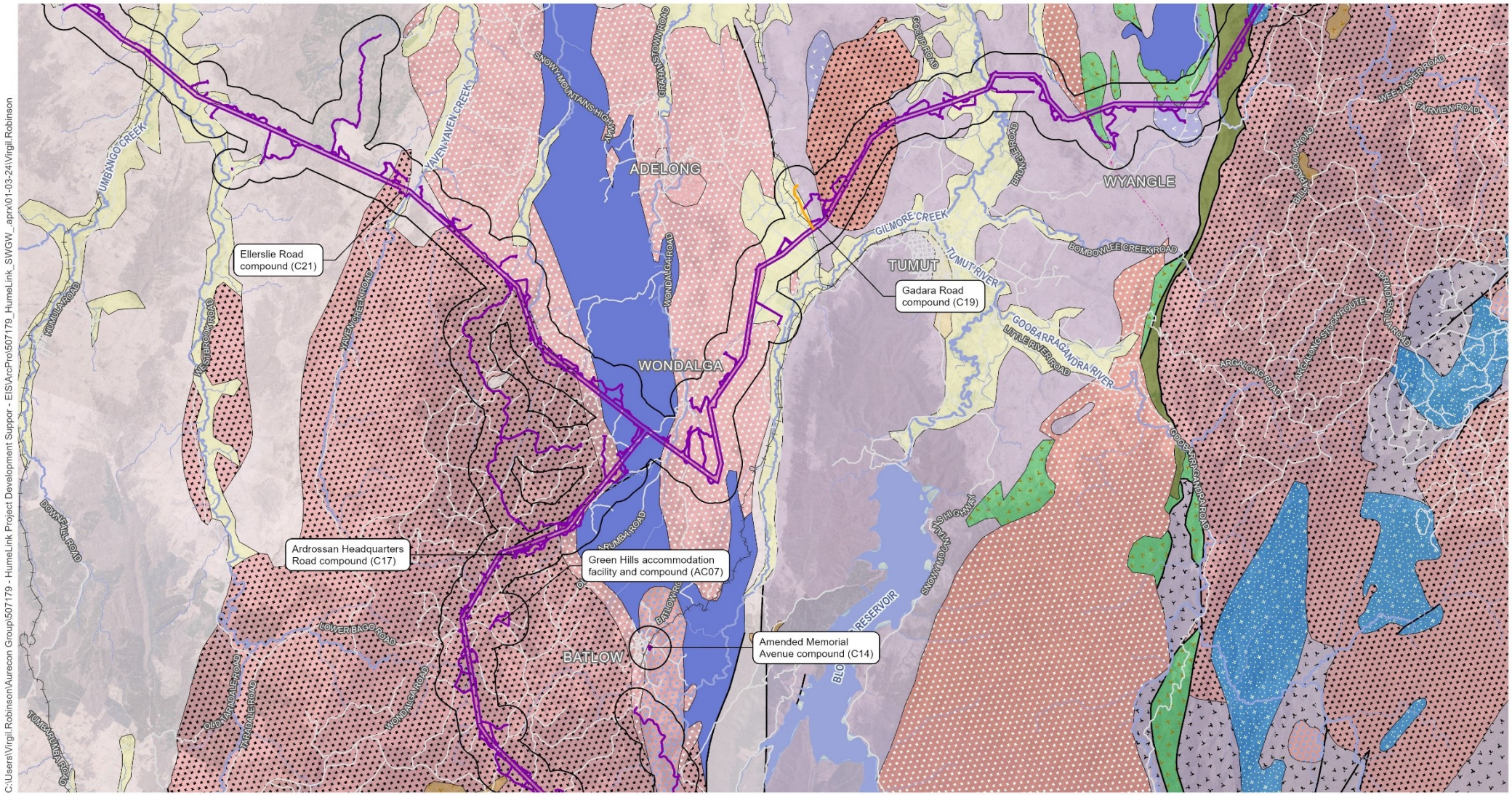
Source: *Aurecon, Transgrid, Department of Regional New South Wales, Spatial Services (DCS), ESRI Basemap*

1:200,000
0 4 8km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-8d: Seamless geology



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

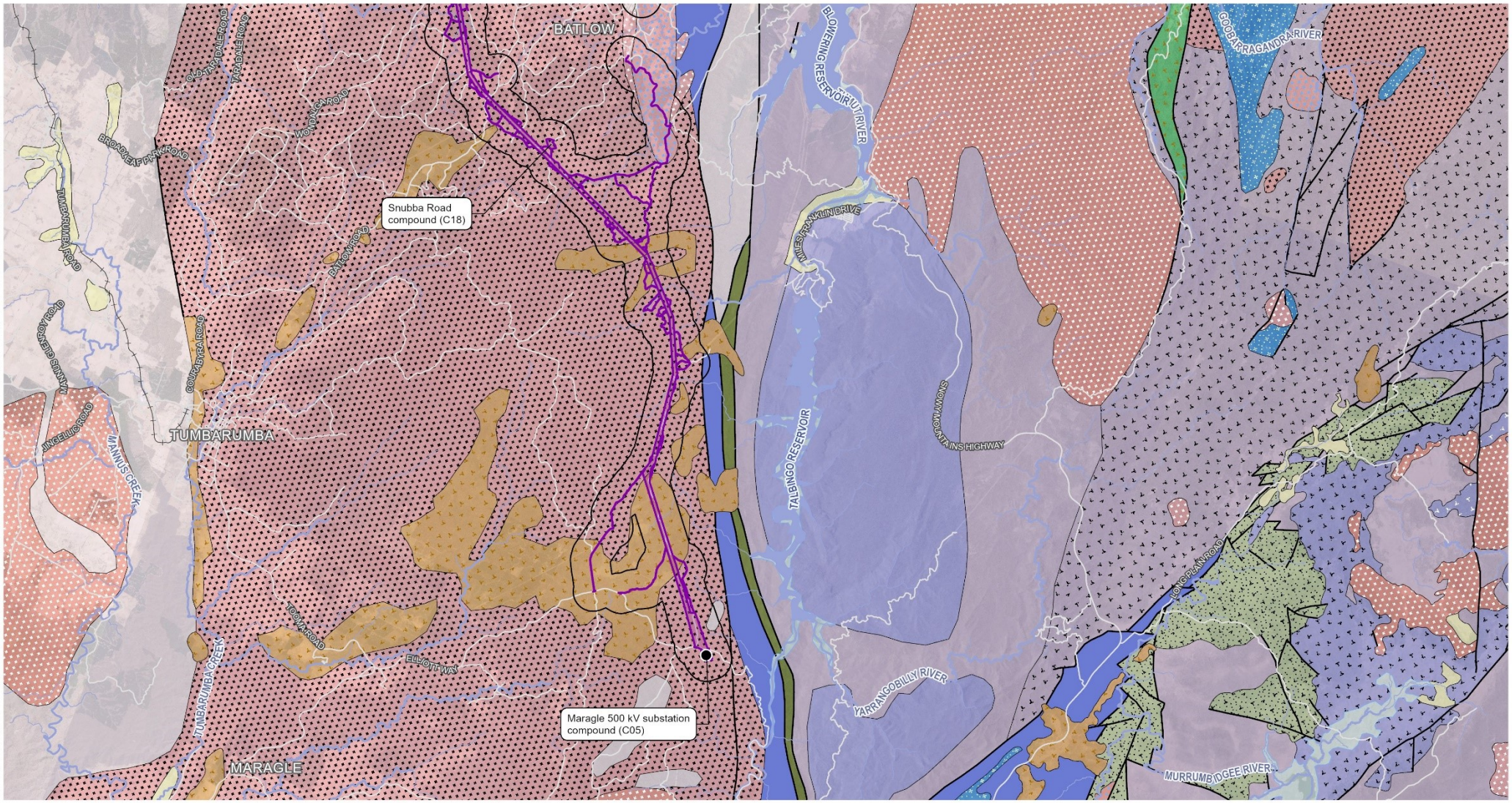
1:200,000

0 4 8 km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

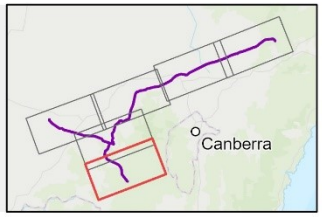
Figure 5-8e: Seamless geology



Amended project footprint
Amended surface water and groundwater 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

HumeLink **Surface Water and Groundwater**

Figure 5-8f: Seamless geology

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5.5 Hydrogeology

5.5.1 Groundwater sources

Groundwater sources were presented in Section 5.5.1 of the *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS. This section provides an updated review of groundwater sources and associated groundwater users (registered groundwater bores) for the amended project.

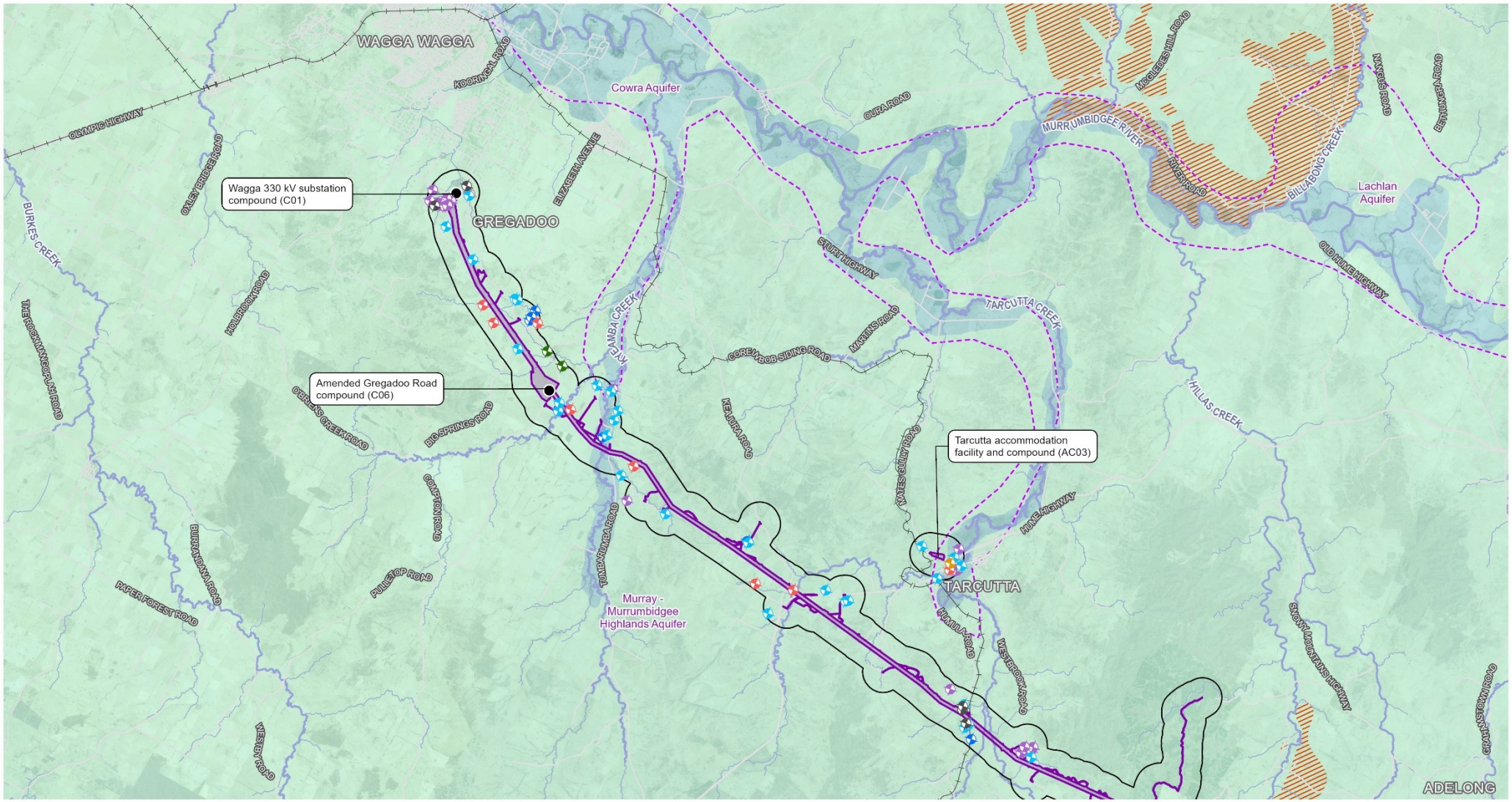
The amended project footprint intercepts the Water Resource Plans (WRPs) and WSPs listed in Table 5-4. Registered bore counts have been included within a five kilometre radius of the amended project footprint to support the water supply assessment (refer to Section 6.1.7). The WRPs are not in force at the time of this investigation, however they provide insight into groundwater occurrence, usage and regulation across the amended project footprint.

Table 5-4 Groundwater sources within five kilometres of amended project footprint

Groundwater source	Water Sharing Plan	2023/2024 Licenced Water Usage (ML/year and number of Water Access Licences (WAL))	Bore count within 5 km
Kyeamba Alluvial Groundwater Source	Murrumbidgee Alluvial Groundwater Sources Order 2020	■ Aquifer: 2,070 ML/year (14 WALs) ■ Total: 2,070 ML/year (14 WALs)	71
Gundagai Alluvial Groundwater Source	Murrumbidgee Alluvial Groundwater Sources Order 2020	■ Aquifer: 2,292 ML/year (16 WALs) ■ Aquifer (high security): 1,182 ML/year (30 WALs) ■ Local water utility: 100 ML/year (1 WAL) ■ Total: 3,574 ML/year (47 WALs)	61
Lachlan Fold Belt MDB Groundwater Source	NSW Murray–Darling Basin Fractured Rock Groundwater Sources Order 2020	■ Aquifer: 74,175 ML/year (1,067 WALs) ■ Aquifer (general security): 0 ML/year (1 WAL) ■ Aquifer (town water supply) 467 ML/year (6 WALs) ■ Local water utility: 3,436 ML/year (38 WALs) ■ Salinity and water table management: 236 ML/year (1 WAL) ■ Total: 78,314 ML/year (1,113 WALs)	638
Lachlan Fold Belt Greater Metropolitan Groundwater Source	Greater Metropolitan Region Groundwater Sources 2023	■ Aquifer: 7,999 ML/year (174 WALs) ■ Aquifer (town water supply): 100 ML/year (2 WALs) ■ Total: 8,099 ML/year (176 WALs)	78
Yass Catchment Fractured Rock Groundwater Sources	Murray Alluvial Groundwater Sources Order 2020	■ Aquifer: 3,534 ML/year (163 WALs) ■ Aquifer (town water supply): 29 ML/year (3 WALs) ■ Domestic and stock: 18 ML/year (2 WALs) ■ Local water utility: 227 ML/year (4 WALs) ■ Total: 3,808 ML/year (172 WALs)	272

Note: Water Resource Plans are not in force at the time of writing and are therefore not included in this table.

The updated figure for WSPs for groundwater for the amended project is presented in Figure 5-9.



Amended project footprint

Amended surface water and groundwater study area

Railway

Substation

Groundwater Vulnerability (EPI)

Aquifer Boundary (AHGF)

Registered Groundwater Bores (NGIS) within Groundwater study area

Irrigation

Monitoring

Stock and Domestic

Water Supply

Exploration

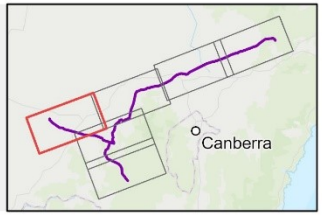
Commercial and Industrial

Unknown

Water Sharing Plan - Groundwater Sources

Lachlan Fold Belt

Mid Murrumbidgee Alluvium (upstream of Narrandera)



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

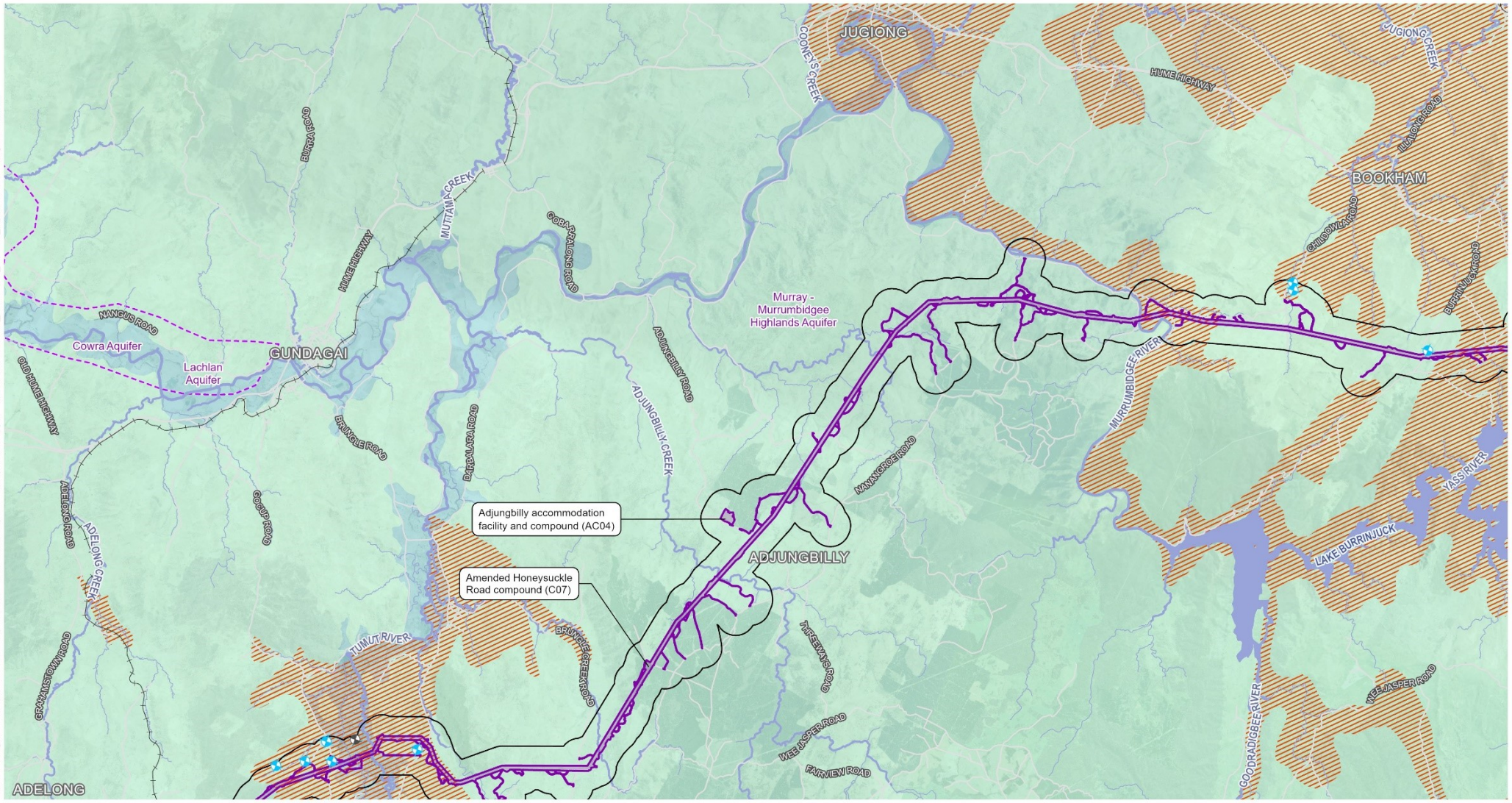
1:200,000

0 4 8km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-9a: Water Sharing Plan - Groundwater Sources



Amended project footprint

Amended surface water and groundwater study area

Railway

Groundwater Vulnerability (EPI)

Aquifer Boundary (AHGF)

Registered Groundwater Bores (NGIS) within Groundwater study area

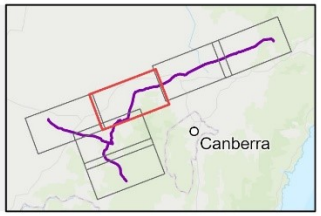
Water Supply

Unknown

Water Sharing Plan - Groundwater Sources

Lachlan Fold Belt

Mid Murrumbidgee Alluvium (upstream of Narrandera)



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

1:200,000

0 4 8km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-9b: Water Sharing Plan - Groundwater Sources

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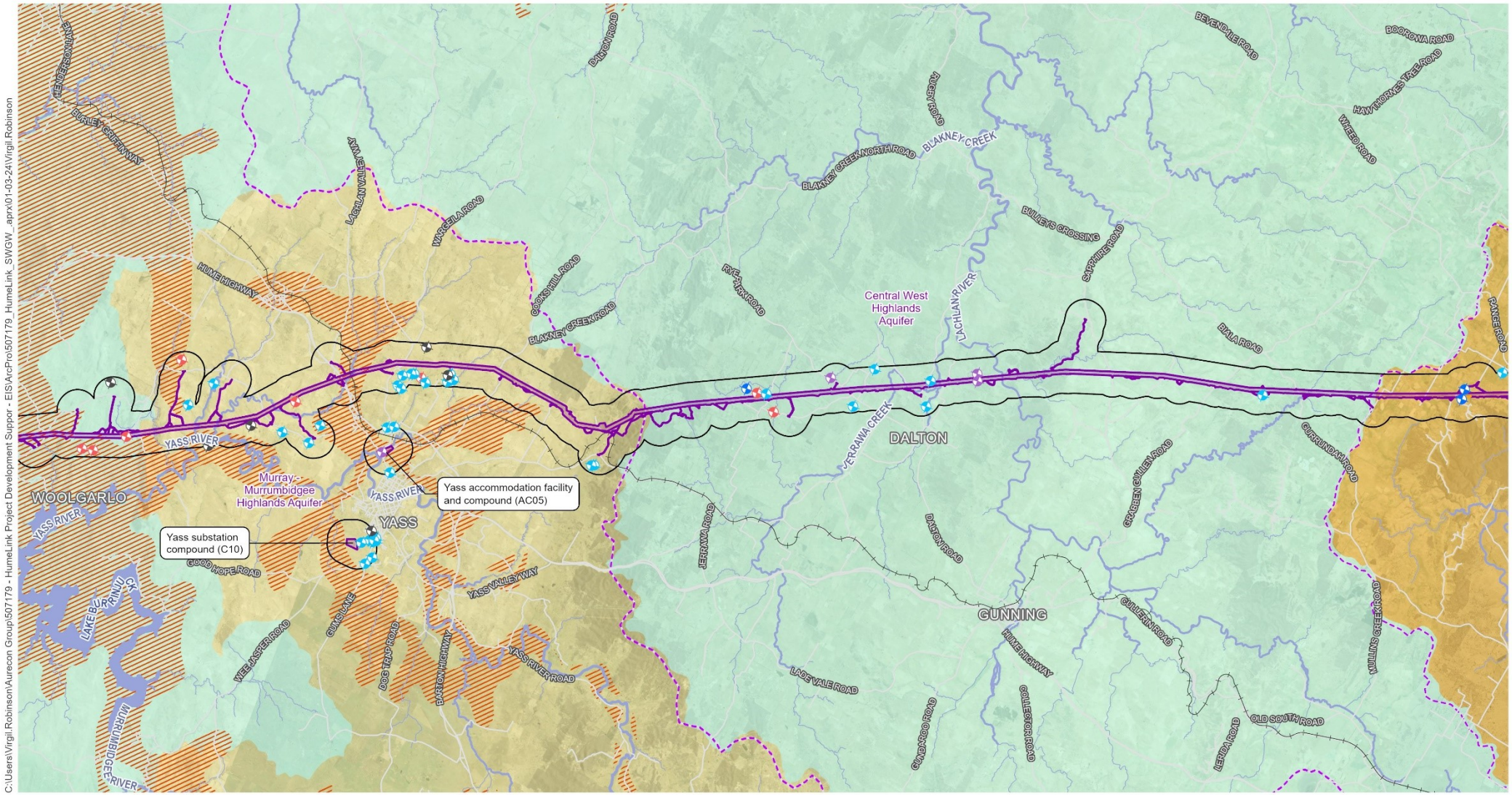


Source: *Aurecon, Transgrid, DPE, Spatial Services (DCS), ESRI Basemap*

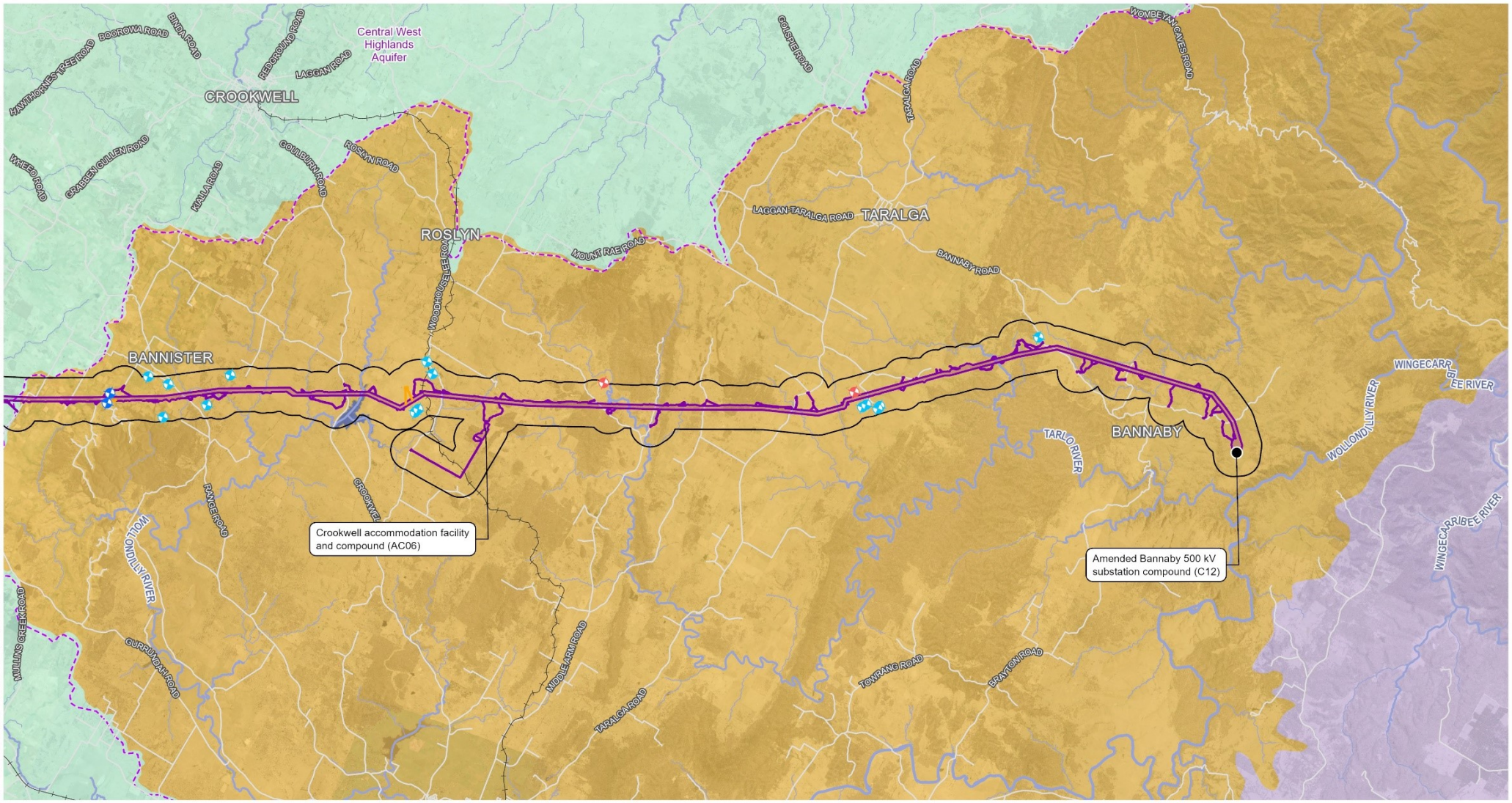
1:200,000

0 4 8 km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-9c: Water Sharing Plan - Groundwater Sources



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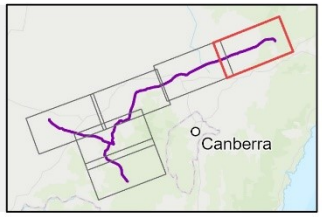
- Amended project footprint
- Amended surface water and groundwater study area
- Telecommunications connection
- Railway
- Substation
- Aquifer Boundary (AHGF)

Registered Groundwater Bores (NGIS) within Groundwater study area

- Irrigation
- Stock and Domestic
- Water Supply

Water Sharing Plan - Groundwater Sources

- Goulburn Fractured Rock
- Lachlan Fold Belt
- Sydney Basin - Nepean Sandstone
- Water



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

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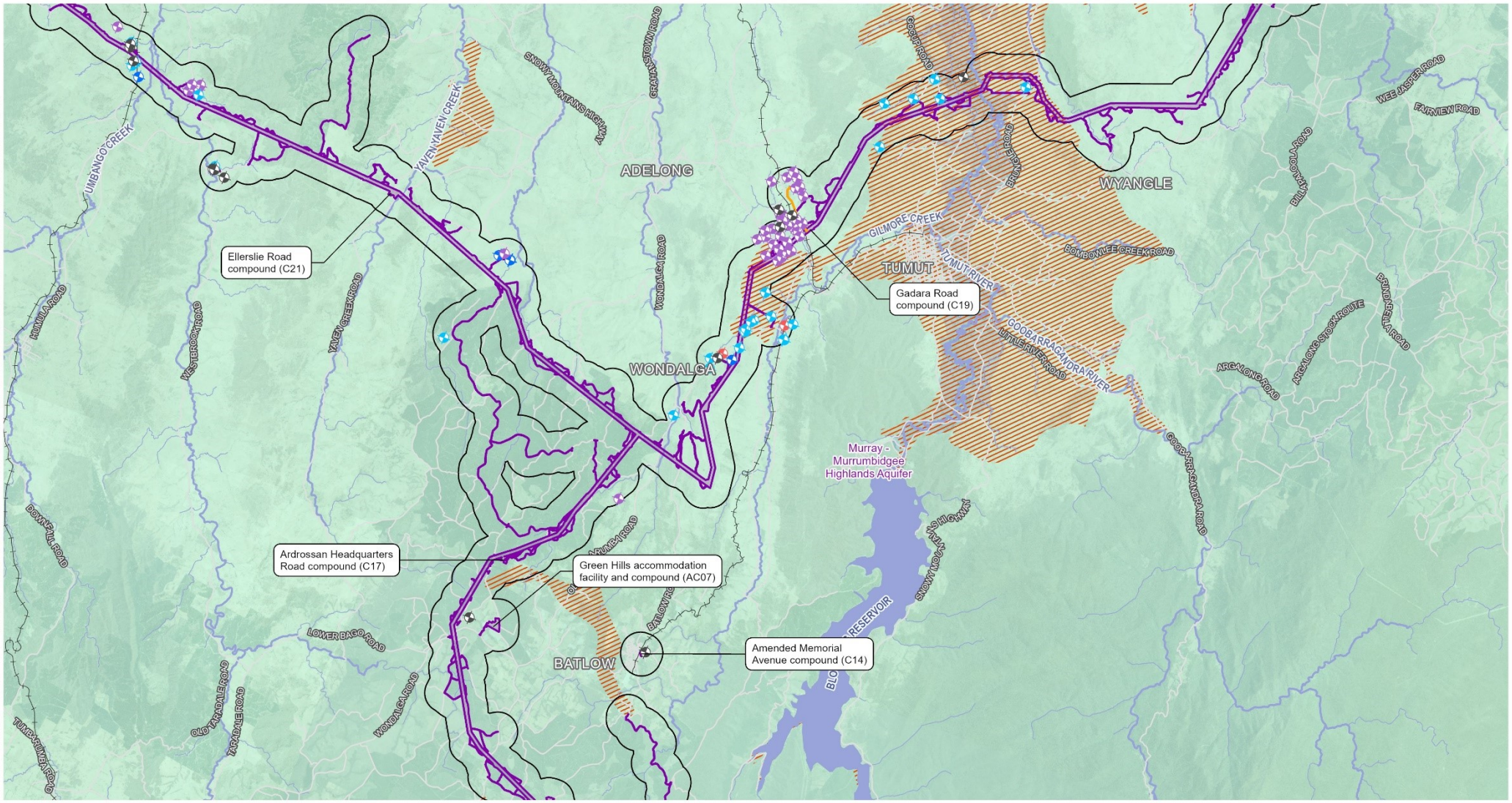
0 4 8 km

Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-9d: Water Sharing Plan - Groundwater Sources



Amended project footprint
Amended surface water and groundwater study area
Telecommunications connection
Railway

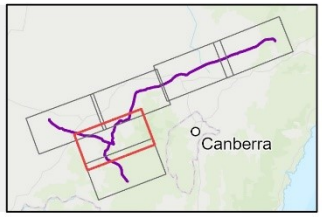
Groundwater Vulnerability (EPI)
Aquifer Boundary (AHGF)

Registered Groundwater Bores (NGIS) within Groundwater study area

Irrigation
Monitoring
Stock and Domestic
Water Supply
Unknown

Water Sharing Plan - Groundwater Sources

Lachlan Fold Belt
Mid Murrumbidgee Alluvium (upstream of Narrandera)



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

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Projection: GDA 1994 MGA Zone 55

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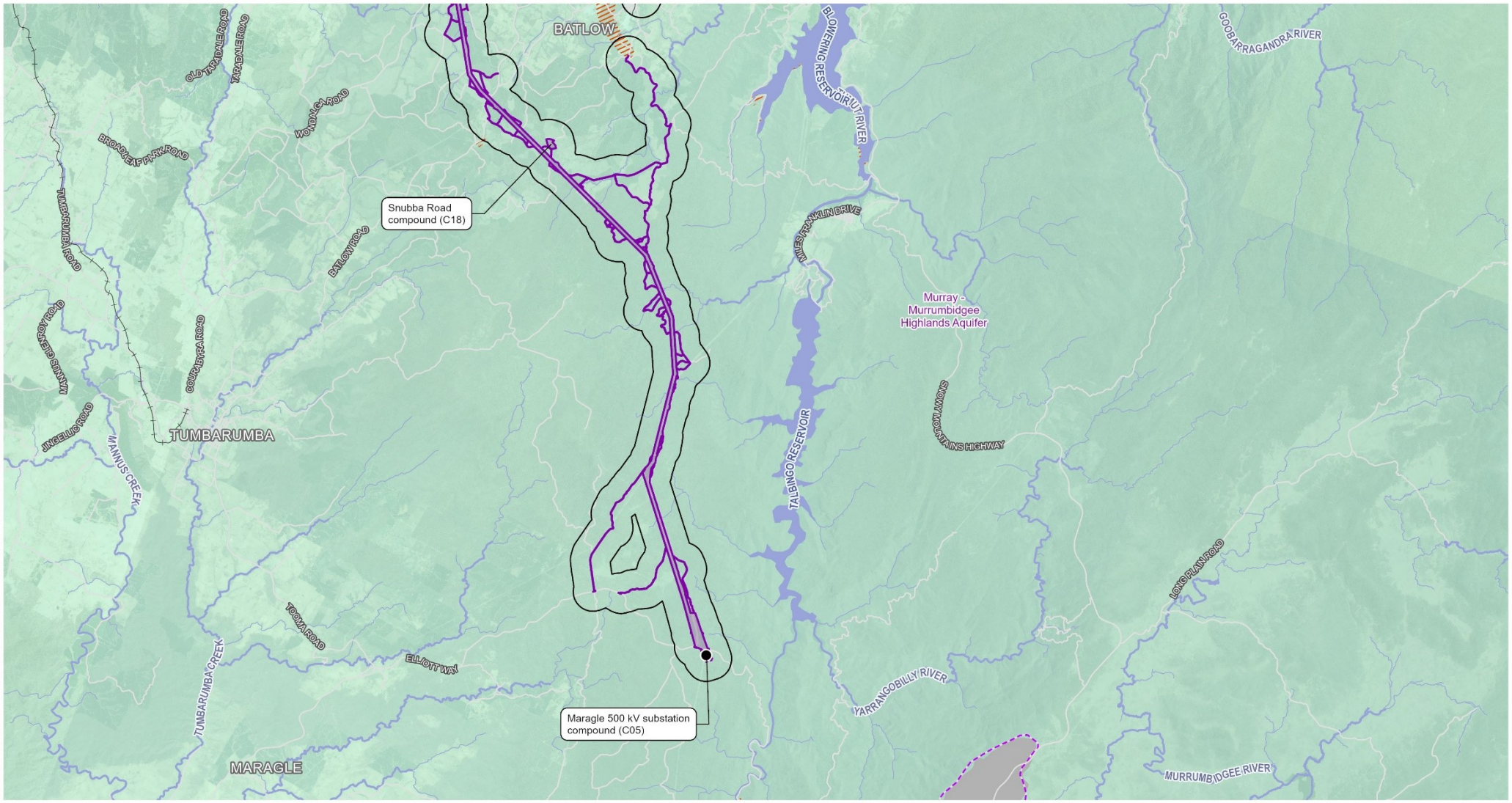
HumeLink **Surface Water and Groundwater**

Figure 5-9e: Water Sharing Plan - Groundwater Sources



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Amended project footprint

Amended surface water and groundwater study area

Railway

Substation

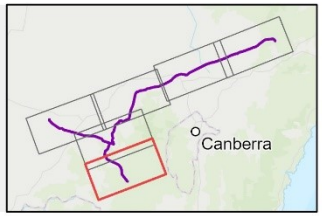
Groundwater Vulnerability (EPI)

Aquifer Boundary (AHGF)

Water Sharing Plan - Groundwater Sources

ACT

Lachlan Fold Belt



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

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Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

Figure 5-9f: Water Sharing Plan - Groundwater Sources

5.5.2 Registered bores

A count of bores and their respective applications within the amended surface water and groundwater study area is shown in Table 5-5. In addition, registered bore counts within a five kilometre radius of the amended project footprint have been included to support the water supply assessment (refer to Section 6.1.7). Attachment D has a comprehensive list and description of the licensed groundwater bores that are within the amended surface water and groundwater study area.

Table 5-5 Count of bores and their application within one kilometre and within five kilometres of the amended project footprint

Bore applications	Number of bores within 1 km	Number of bores within 5 km
Monitoring	164	282
Exploration or research	13	27
Household	209	471
Manufacturing and industry	6	14
Irrigated agriculture	36	97
Water supply for livestock	43	93
Unknown	44	103
Water supply	18	32
Water supply, monitoring	0	1
Total	533	1,120

Salinity and groundwater levels from the NGIS database have also been investigated and a summary is presented in Table 5-6.

Table 5-6 Summary of salinity and water levels for bore types within the amended surface water and groundwater study area

Bore applications	Salinity ranges (µS/cm)	Bore Count with Salinity	Water Level (mbgl)	Bore Count with Water Level
Monitoring	10 - 227	1	0.32 – 227.15	8
Exploration or research	248 – 1,090	4	1.8 – 218.61	5
Household	320 – 2,570	4	6.00 – 10.55	2
Manufacturing and industry	ND	ND	ND	ND
Irrigated agriculture	275 – 2,530	4	0.27 – 16.60	2
Water supply for livestock	690 – 3,678	2	ND	ND
Unknown	698 – 1,070	2	0.29 – 0.69	2
Water supply	195 – 1,470	6	1.73 – 7.63	2
Water supply, monitoring	ND	ND	ND	ND

Note:
ND = No Data

6 Assessment of impacts

The proposed amendments and refinements, their respective activities and the associated risks on key environmental aspects and amended project timing are summarised in Table 6-1. Additional information on key environmental aspects potentially impacted is provided in Section 6.1 and Section 6.2, for construction and operational impacts, respectively.

Table 6-1 Identification of amendments and refinements and potential impacts to surface water and groundwater

Amendment / refinement	Construction	Operation	Surface Water	Groundwater
Changes to the transmission line corridor including the realignment of the route through Green Hills State Forest to the west of Batlow	Y	Y	Y	Y
Gugga substation design refinements	Y	N/A	Y	N/A
Additional underground fibre cable connections to existing substations	Y	Y	Y	Y
Change to the number and location of construction ancillary facilities including worker accommodation facilities and construction compounds	Y	N/A	Y	Y
Nomination of access tracks to support the construction and operation of the amended project	Y	Y	Y	Y
Use of helicopters and drones	N/A	N/A	N/A	N/A
Identification of areas where controlled blasting may be required	Y	N/A	Y	Y
Access to water sources	Y	N/A	Y	Y

Note:

N/A = Not Applicable - amendment/ refinement does not have potential impact or impact does not change from EIS, Y = amendment/ refinement has potential impacts

6.1 Construction impacts

This section assesses the project amendments and refinements and describes their potential impacts to surface water and groundwater.

6.1.1 Transmission line corridor

The amended project includes the Green Hills corridor amendment. The new 32.5 kilometre route extends from Wondalga through the Green Hills State Forest before travelling to the west and south of Batlow and connecting to the transmission line corridor in Bago State Forest. Due to the amendments and refinements the waterways impacted are different along the alignment compared to the EIS. The updated list of named waterways for the amended project are presented in Attachment C.

The impact associated with the transmission line corridor is the erosion and sedimentation risk, which is discussed in Section 6.1.8 with a full analysis is presented in Attachment E.

6.1.2 Proposed Gugaa 500 kV substation design refinements

The amended project also involves changes to the layout of the proposed Gugaa 500 kV substation. The split bench arrangement proposed in the amended project may alter overland flows at this location, however, these changes are considered minor and there is considered no change to the impacts assessed in Section 6.2.1 of the *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS. Overall, the impacts are related to erosion and sedimentation risk, which is discussed in Section 6.1.8 with a full analysis presented in Attachment E.

6.1.3 Additional telecommunications connections to existing substations

Additional telecommunications connections to existing substations have been included in the amendments as described in Table 2-1. Construction activities for this amendment would mainly include vegetation removal and earthworks, which have the potential to impact both surface water and groundwater.

The three proposed additional telecommunications connections to existing substations were investigated. Generally, the areas impacted by the additional telecommunications connections to existing substations have already been cleared of vegetation as they are located on agricultural land, however, there are localised areas of riparian vegetation at two of these locations (Gullen Range and Gadara) that are related to waterways.

Their locations in relation the nearest waterfront land are presented in Table 6-2, with the Gullen Range and Gadara locations intercepting Strahler order 1 and 2 waterways. These Strahler order waterways are generally ephemeral drainage lines. Earthworks that intercept these drainage lines have the potential to increase risks associated with erosion and sedimentation, geomorphology and water quality during rainfall events. Given the ephemeral nature of these drainage lines, impacts to GDEs are not expected.

Table 6-2 Additional telecommunications connections to existing substations locations within waterfront land

Name	Distance to nearest waterfront land (m)				Strahler order of closest waterway
Strahler order	**1**	**2**	**3**	**4+**	
Additional telecommunications connection to existing - Gullen Range 330 kV substation	0	961	2,212	3,084	4
Additional telecommunications connection to existing - Crookwell 2 330 kV substation	112	753	693	1,437	5
Additional telecommunications connection to existing – Gadara 132 kV substation	0	0	496	198	5

Note:

0 indicates it is within 40 metres of waterway of corresponding Strahler order

In addition, earthworks during construction of the additional telecommunications connections to existing substations have the potential to intercept groundwater and therefore may require temporary dewatering to provide a dry excavation for infrastructure installation. Drawdowns from dewatering activities and/or trenching have the potential to reduce groundwater availability for surrounding GDEs and groundwater users.

A review of registered groundwater bores within five kilometres of the additional telecommunications connections to existing substations reveal there is no groundwater level data available to carry out this assessment.

Potential impacts because of the installation of the additional telecommunications connections to existing substations are discussed further in Section 6.1.8.

6.1.4 Changes to ancillary facilities

Changes to construction compound and combined worker accommodation facility and construction compound locations are described in Table 2-1. There are five combined worker accommodation facilities and construction compounds and eleven construction compounds.

Construction compounds and combined worker accommodation facility and construction compound locations could pose a high risk to surface water as fuel, chemicals and waste are stored and/or used at these locations, and construction may be more intensive in terms of activities and vehicle movements. Due to the movement of vehicles and equipment, these areas are also likely to be subject to mechanical erosion.

The distances between combined worker accommodation facilities and construction compounds or construction compounds and waterways, and whether they are within waterfront land were determined and are presented in Table 6-3.

Table 6-3 Potential construction compound and combined worker accommodation facility and construction compound locations within waterfront land

Amended project component	Highest Strahler order stream	Waterway name (if applicable)
Maragle 500 kV substation compound (C05)	1	New Zealand Gully
Amended Gregadoo Road compound (C06)	2	
Yass substation compound (C10)	2	
Amended Bannaby 500 kV substation compound (C12)	1	
Amended Memorial Avenue compound (C14)	1	
Gadara Road compound (C19)	2	
Ellerslie Road compound (C21)	5	Yaven Yaven Creek
Tarcutta accommodation facility and compound (AC03)	2	
Adjungbilly accommodation facility and compound (AC04)	2	
Yass accommodation facility and compound (AC05)	5	Bango Creek
Crookwell accommodation facility and compound (AC06)	2	

Generally, streams with a Strahler order of 4 or higher are perennial waterways and potentially contain aquatic ecosystems and species and the consequence of any potential impacts would be higher. Therefore, the sensitivity of environmental values at each of the facilities was determined based on the following:

- **High sensitivity:** Facilities that are located within waterfront land of streams with a Strahler order of 4 or higher.
- **Moderate sensitivity:** Facilities that are located within waterfront land of streams with a Strahler order of 1 to 3.
- **Low sensitivity:** Facilities that are not located within waterfront land.

Table 6-4 summarises the sensitivity of environmental values and distances between amended project components and nearest waterfront land.

Table 6-4 Distance to waterways from construction compounds and combined worker accommodation and construction compounds

Amended project component	Distance to nearest waterfront land (m)				Sensitivity of environmental values
Strahler order	1	2	3	4+	
Wagga 330 kV substation compound (C01)	127	830	59	234	Low
Maragle 500 kV substation compound (C05)	Within	149	762	1,674	Moderate
Amended Gregadoo Road compound (C06)	Within	Within	763	568	Moderate
Amended Honeysuckle Road compound (C07)	22	179	934	1,128	Low
Yass substation compound (C10)	11	Within	532	582	Moderate
Amended Bannaby 500 kV substation compound (C12)	Within	27	115	852	Moderate
Amended Memorial Avenue compound (C14)	Within	269	412	1,255	Moderate
Ardrossan Headquarters Road compound (C17)	177	106	45	2,095	Low
Snubba Road compound (C18)	8	466	818	2,157	Low
Gadara Road compound (C19)	Within	Within	459	214	Moderate
Ellerslie Road compound (C21)	53	Within	Within	1	High
Tarcutta accommodation facility and compound (AC03)	Within	Within	604	20	Moderate
Adjungbilly accommodation facility and compound (AC04)	Within	Within	737	2,037	Moderate

Amended project component	Distance to nearest waterfront land (m)				Sensitivity of environmental values
Strahler order	**1**	**2**	**3**	**4+**	
Yass accommodation facility and compound (AC05)	Within	Within	779	Within	High
Crookwell accommodation facility and compound (AC06)	Within	Within	199	897	Moderate
Green Hills accommodation facility and compound (AC07)	93	253	1,101	2,698	Low

Note: 'Within' indicates the project feature is within 40 metres of a waterway of corresponding Strahler order

The highest risk locations are Ellerslie Road compound (C21) and Yass accommodation facility and compound (AC05) as both locations are located within waterfront land of Strahler order 5 waterways, namely Yaven Yaven Creek and Bango Creek, respectively.

There are several construction compounds within waterfront land of Strahler order 1 or 2 order waterways; however, generally these waterways have no defined bed and banks and no evidence of flow and geomorphic features. These waterways are generally less sensitive; however, management is still required to ensure that surface water quality impacts do not occur downstream to higher Strahler order waterways. Several construction compounds and combined worker accommodation facilities and construction compounds may require a smaller area than the amount of land that has been assessed, and therefore the adopted impact assessment approach is considered conservative.

Potential surface water and groundwater impacts related to combined worker accommodation facilities and construction compounds are discussed further in Section 6.1.8.

6.1.5 Nomination of access tracks

The locations and types of works required to construct access tracks from the transmission line corridor to the road network have been provided for the amended project. Based on detailed construction contractor inputs and as described in Table 2-1 this information is now assessed in the Amendment Report. Construction activities for the access tracks have been categorised as follows:

- **Existing tracks/roads:** include well-established unsealed local roads, forest roads and tracks maintained by FCNSW or unsealed property access tracks, generally suitable for heavy vehicles. Some existing access tracks/roads may be subject to maintenance activities or minor upgrades along the formation, such as resurfacing or grading or drainage work. Minor vegetation pruning/trimming may be required in some locations or where vegetation may be considered a roadside hazard. Where pruning/trimming is required, it would be undertaken to avoid impacts on the long-term viability of the vegetation.
- **Upgraded tracks:** Upgraded access tracks typically consist of unsealed property access tracks of varying conditions, from well-established sections to rarely used, barely visible sections (ie requiring substantial upgrade). The existing gradient of upgraded access tracks varies and may only be suitable for light vehicles without these upgrades. Upgraded access tracks are expected to require more substantial work to allow their use during construction compared with existing tracks/roads. Work may include earthworks to improve gradients, grading or resurfacing, formation widening to 8 metres or realignment, drainage work or upgrades to waterway crossings. Vegetation clearing or pruning/trimming may be required for widening/formation work or where vegetation may be considered a roadside hazard. The total clearing width would generally be up to 10 metres, with some limited areas (ie steep terrain) requiring a clearing width of up to 20 metres for batters.
- **New tracks:** The locations of new access tracks haves generally been selected in consultation with affected landowners to minimise property impacts, including running the track along fence lines, using movement paths preferred by landowners, and going through existing property gates. Establishing the new tracks would typically include earthworks, grading, drainage work and construction of waterway crossings. Fill material may be imported to provide a suitable capping material. To establish the new tracks, vegetation clearing or pruning/trimming may be required. The total clearing width would generally be up to 10 metres, with some limited areas (i.e. steep terrain) requiring a clearing width of up to 20 metres for batters.

New tracks are likely to have the greatest impact in terms of erosion and sedimentation as they would require the greatest ground disturbance activities. Upgraded tracks are likely to have similar impacts but to a lesser extent compared to the new tracks. Existing tracks would also involve ground disturbance, however substantially less than new and upgraded tracks. Access tracks have the greatest potential to impact waterways when they are located within waterfront land or cross waterways. Therefore, potential impact significance for each nominated access track has been determined based on the following:

- **New tracks:** Potentially high impact significance if crossing a waterway or when located within waterway buffer, potentially moderate impact significance when located outside of waterway buffer.
- **Upgraded tracks:** Potentially high impact significance if crossing a waterway, potentially moderate impact significance when located within waterway buffer, low impact significance when located outside of waterway buffer.
- **Existing tracks/roads:** Potentially moderate impact significance if crossing a waterway, low impact significance when located outside of waterway buffer.

Waterway buffers are defined based on the following distances:

- Within 50 metres from Strahler order 1
- Within 100 metres from Strahler order 2
- Within 150 metres from Strahler order 3
- Within 200 metres from Strahler order 4 or higher

To assess potential impact significance, each access track location was analysed based on their proximity to waterfront land and for potential waterway crossings. The results of the access track analysis are presented in Attachment F. A summary of this analysis is presented in Table 6-5 for the tracks within waterfront land.

Table 6-5 Count of access tracks intercepting waterfront land

Track Category	Inside/ Outside Corridor	Total Tracks	Strahler 1 Intersect	Strahler 2 Intersect	Strahler 3 Intersect	Strahler 4+ Intersect	Strahler 4+ Within 10m
Existing tracks/roads	Inside	0	0	0	0	0	0
	Outside	3	3	1	1	1	0
Subtotal		3	3	1	1	1	0
Upgraded tracks	Inside	151	29	6	4	5	0
	Outside	390	213	99	65	48	4
Subtotal		541	242	105	69	53	4
New tracks	Inside	154	59	15	4	5	1
	Outside	330	169	63	30	33	3
Subtotal		484	228	78	34	38	4
Total		**1028**	**473**	**184**	**104**	**92**	**8**

Potential impacts resulting from access tracks within waterfront land and waterway crossings are discussed further in Section 6.1.8.

The requirement to retain or remove access tracks will be determined in consultation with landholders once the access tracks are constructed. Existing access tracks may be upgraded, as required, to facilitate HumeLink construction activities and may remain in place (pending further consultation and noting existing usage). The use of new and substantially upgraded tracks will be discussed with individual landholders once constructed, with substantially upgraded tracks on existing alignments having a higher likelihood of retention than new access tracks. All requirements will be documented within the property specific property management plans (PMPs).

6.1.6 Changes to construction methodology

6.1.6.1 Controlled blasting

Controlled blasting has been identified as a potential construction activity as described in Table 2-1. Controlled blasting activities would involve a single blast or a series of blasts (using smooth blasting techniques) for the tower pad construction. Smooth blasting is a blasting technique using a row of closely spaced drill holes with decoupled charges (charges with a smaller diameter than the drill hole) fired simultaneously to produce an excavation contour without fracturing or damaging the rock behind or adjacent to the blasted face.

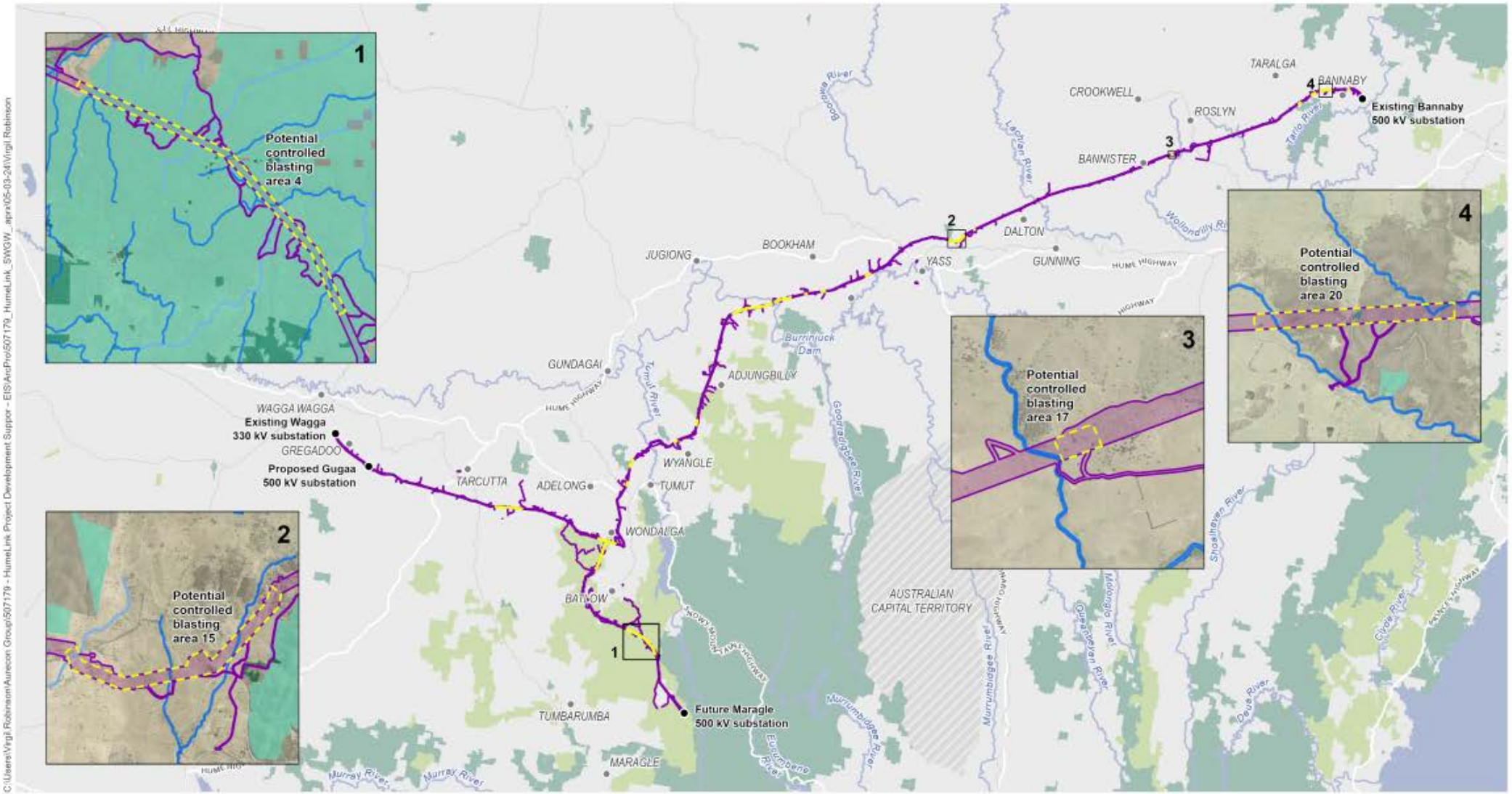
There are 21 locations in the amended project footprint that have been identified for potential controlled blasting. NSW Department of Climate Change, Energy, the Environment and Water – Water (NSW DCCEEW Water) (formerly DPE Water) requested that higher risk locations and activities such as blasting/excavating within 50 metres of high potential GDEs, registered bores or surface water bodies require further assessment against the minimal impact considerations of the NSW Aquifer Interference Policy (AIP) (NSW Government, 2012). The potential controlled blasting locations have been spatially analysed and are expected to be located within 50 metres of the following sensitive receivers (refer to Figure 6-1):

- one high potential terrestrial GDEs (from regional studies): Montane wet heath and bog of the eastern tablelands, South Eastern Highlands Bioregion
- twelve high potential aquatic GDEs (from national assessment), including:
  - Bannaby Creek
  - First Creek
  - Connors Creek
  - Clydes Creek
  - Stockmans Creek
  - Mandys Creek
  - Sandy Creek
  - Mantons Creek
  - Weir Gully
  - Three Waterholes Creek
  - Sheepyard Creek
  - Adelong Creek
- no existing water users (registered bores)
- no waterbodies (HydroArea).

All sensitive receivers identified above have been attributed to four (4) potential controlled blasting areas as follows:

- Potential controlled blasting area 4 (within the Bago State Forest)
- Potential controlled blasting area 15 (11 kilometres north-east of Yass, in the vicinity of Coolallie)
- Potential controlled blasting area 17 (1.5 kilometres west of Pejar Dam)
- Potential controlled blasting area 20 (13 kilometres east of Taralga).

Site-specific controlled blasting design and parameters would determine the magnitude of potential surface water and groundwater impacts (ie extent of rock breakage changing existing shallow groundwater flow pathways). Potential impacts because of controlled blasting are discussed further in Section 6.1.8.



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

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Projection: GDA 1994 MGA Zone 55

HumeLink **Surface Water and Groundwater**

FIGURE 6-1: Location of potential controlled blasting locations

6.1.7 Construction water supply

During construction, the amended project would require potable and non-potable water and will generate wastewater. The following section assesses the:

- volumes and potential sources of water required for construction
- volumes of wastewater generated and potential options for management and disposal
- potential impacts on other water users and water supply infrastructure
- potential impacts from the disposal of wastewater.

This section expands upon the high-level water supply discussion previously presented in the EIS based on the following:

- refined/updated construction water demand estimates
- development of performance-based criteria to assess, select and establish water supply options for the amended project
- additional assessment and discussion on the feasibility of each of the identified potential non-potable and potable water sources.

6.1.7.1 Construction water demand

An estimate of the total volumes of water required for the construction of the amended project are detailed in Table 6-6. The largest need for water during construction (about 60 per cent of total water need) is for dust suppression, which would generally be non-potable water. Potable water would only be used for dust suppression if there is no other option available. Potable water is required for the combined worker accommodation facilities and construction compounds, and for concrete production.

These estimates indicate a total non-potable water demand of 429 ML and a potable water demand of 286 ML. The estimated non-potable water demand of the amended project is 68.4 ML less than the estimates presented in the EIS (amended non-potable water demand is approximately 86 per cent of the EIS estimates). Conversely, the estimated potable water demand of the amended project is 218.7 ML greater than the estimates presented in the EIS (amended non-potable water demand is approximately 425 per cent of the EIS estimates). These changes reflect improved estimates for the combined worker accommodation facilities and construction camps and additional allowance for concrete production.

Table 6-6 Estimated total water volume required during construction

Activity/Item	Estimated total volume required (ML) - EIS	Estimated total volume required (ML) - Amended	Type of water
Dust suppression and civil work	496.5	428.1	Preferably non-potable
Concrete batching	23.4	77.9	Potable
Equipment and vehicle washdown	1.1	1.1	Non-potable
General worker facilities	43.8	208	Potable
Total	**564.8**	**715.1**	

Note:

Water demand estimates provided by Transgrid (Request for Information # 222)

6.1.7.2 Non-potable water supply options

The viability of non-potable water sources is dependent on the location and nature of the construction activity. It is likely that a combination of water sources would be required to meet the total non-potable water demand outlined in Table 6-6.

The overview of the decision-making process recommended order based on assumed reliability/feasibility of each source is provided in Figure 6-2 below.

The various non-potable water sources would include:

- The preference is that on-site water sources (ie sediment basins, farm dams, wastewater and/or rainwater tanks) already located within the amended project footprint or on a property already impacted by the amended project footprint be used, as agreed to with the relevant landowner.
- Groundwater bores assessed as a potential water source are registered (as outlined in Section 5.5.2) with an existing licensed extraction volume and are located within five kilometres of the amended project footprint. Groundwater bores with the lowest distance to the water demand point would preferably be used over bores further away (to reduce costs and truck movements). In addition, groundwater source areas have been assessed based on the following criteria:
  - unconfined alluvial aquifers given preference over fractured rock aquifers due to higher potential yields
  - groundwater sources with higher number of registered water supply bores given preference over groundwater sources with relatively low number of registered bores due to general correlation between number of bores and expected yields
  - groundwater bores with highest existing licensed extraction volumes given preference
  - groundwater bores with the lowest distance to the water demand point given preference
  - groundwater bores with the highest expected groundwater quality given preference. This is generally defined by the salinity measurements within the bore (discussed in Section 5.5.2) with lower salinity and hardness measurements indicating higher groundwater quality.
- Surface waterways assessed as a potential water source are located within five kilometres of the amended project footprint and have a Strahler order six or above (as they are considered most likely to have sufficient flows to meet amended project's water demands). Surface waterways with the lowest distance to the water demand point would preferably be used over waterways further away (to reduce costs and truck movements). Waterways with existing access/extraction points would preferably be used in accordance with their existing Water Supply Works approval, rather than establishing new extraction points which would require a new Water Supply Works approval.

Water extraction and transportation from the source to the water demand point should minimise the need for heavy vehicle movements through residential areas and be undertaken during standard construction hours (7am to 6pm Monday to Friday, 8am to 1pm Saturday), unless otherwise undertaken in accordance with an Out-of-Hours Work (OOHW) Protocol.

Water extraction and transportation should not unreasonably impact sensitive receivers or other sensitive land uses (as defined by the Interim Construction Noise Guideline (DECC, 2009)), unless otherwise agreed with the impacted sensitive receiver.

The feasibility of each of these sources would be confirmed as part of further detailed design and construction planning.

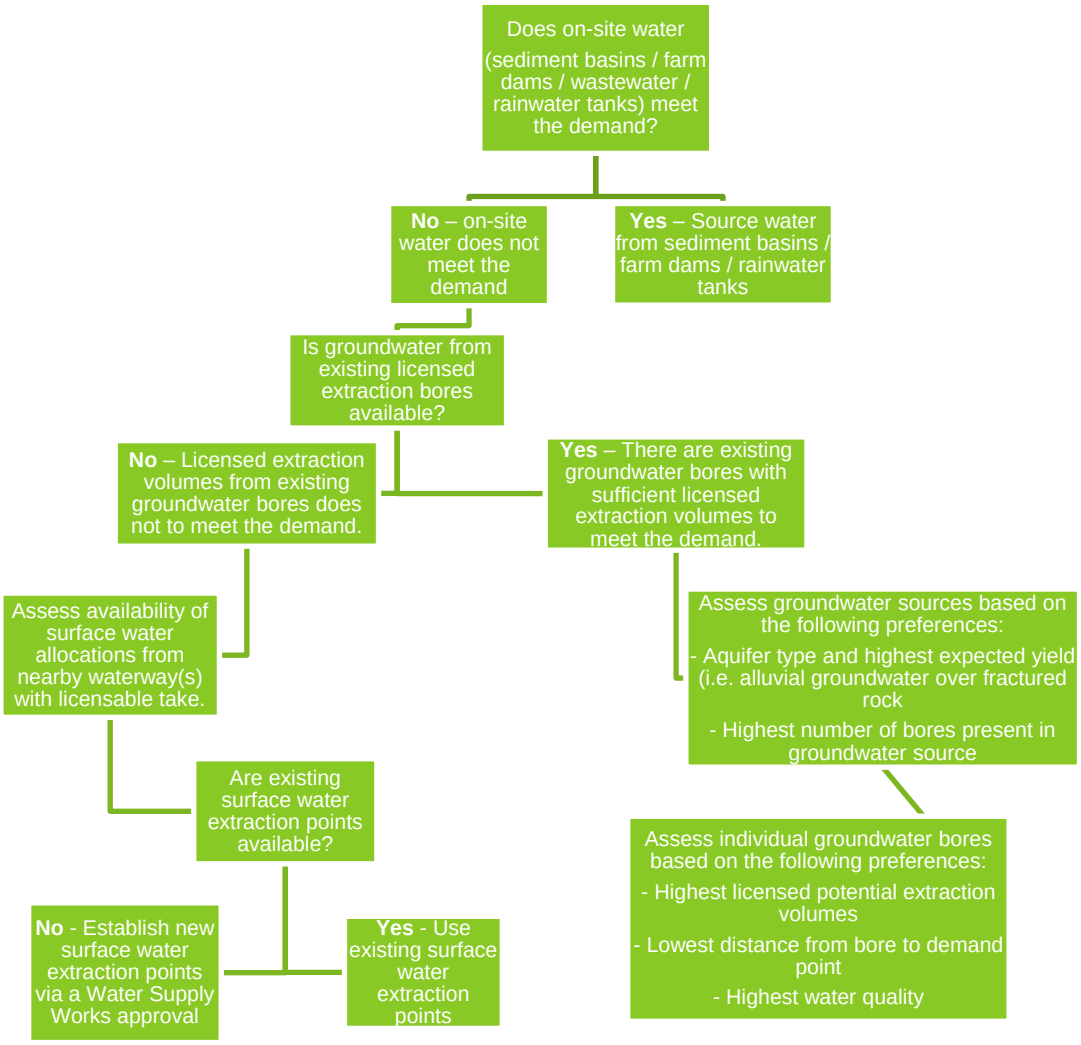


Figure 6-2 Non-potable water sources – overview of decision-making process recommended order based on assumed feasibility and reliability

6.1.7.2.1 Sediment basins / farm dams / wastewater / rainwater tanks

Where possible, non-potable water would be sourced from construction sedimentation basins, farm dams and/or rainwater tanks in agreement with the relevant landowners or from within the amended project footprint. However, these sources of water are unlikely to be able to meet the non-potable water demands in all locations across the amended project footprint and would be sporadic and potentially unreliable (ie limited supply during prolonged dry periods without rain). For the purposes of this assessment, a conservative "worst-case" scenario where no water is available from these sources has been considered. The opportunity for using sedimentation basins, farm dams, wastewater and/or rainwater tanks would be explored further during the detailed design and construction planning phases of the amended project.

6.1.7.2.2 Groundwater (from existing licensed extraction bores)

A search of the NGIS database indicates that 63 registered bores within five kilometres of the amended project footprint have licensed extraction volume information available (5.6 per cent of the total number of registered bores within five kilometres of the amended project footprint). An overview of licensed extraction volume information is provided in Table 6-7 below.

Table 6-7 Overview of NGIS bore licensed extraction volumes within 5 kilometres of the amended project footprint

Bore applications	Amount
Licensed extraction volume information available	63 out of 1,120 (5.6%)
Minimum bore licensed extraction volume	1 ML
Average bore licensed extraction volume	72 ML
Maximum bore licensed extraction volume	336 ML
Total bore licensed extraction volume	4,546 ML
Non-potable water demand as a percentage of total bore licensed extraction volume within 5 kilometres of amended project footprint.	11%

Transgrid or the construction contractor may purchase a zero allocation Water Access Licence (WAL) in a specific WSP area, which would enable them to buy water from existing groundwater allocation holders who may wish to temporarily sell their water allocation (or part of their water allocation). A WAL with a zero-share component means that the licence holder has no specific shares in the WSP area but is allowed to have a water allocation account and to buy or transfer allocation water on an annual basis or share component from another licence holder (NSW Government, 2024b).

It should be noted that the use of groundwater from existing licensed abstraction bores would be subject to the allocation holders desire to temporarily sell their water allocation (or a portion of their water allocation) and water trading market conditions. It is recommended that the selection of groundwater bores considers the performance-based criteria outlined above.

Groundwater impacts from purchasing and using existing groundwater allocations are expected to be negligible under the assumption that the existing WALs and licensed extraction volumes have already been evaluated and deemed to be acceptable against the AIP during the application process. Any groundwater extraction must be carried out in compliance with the conditions stated in the existing WALs.

The distribution of licensed groundwater extraction volumes is variable across the amended project footprint. There are areas with a relatively high concentration of groundwater bores with high licensed extraction volumes (ie numerous bores within the Kyeamba Alluvial Groundwater Source with licensed extraction volumes up to 336 ML/year) and areas with relatively low concentration of groundwater bores with licensed extraction volumes (ie no bores with licensed extraction volumes in the vicinity of the amended project footprint between Killimicat and Yass and no bores with licensed extraction volumes within the Lachlan Fold Belt Greater Metropolitan Region Groundwater Source area). A summary of the available bore licensed extraction volumes for each groundwater source is summarised in Table 6-8 below. The location of these groundwater sources is illustrated in Figure 5-9.

Table 6-8 Bores and licenced extraction volumes by groundwater source

Groundwater source	Name of plan	Bore count within 5 km	Total bore licensed extraction volume within 5 km (ML)	Assessment of potential groundwater usage and distance to nearest compound/accommodation area.
Kyeamba Alluvial Groundwater Source	Water Sharing Plan for the Murrumbidgee Alluvial Groundwater Sources Order 2020	71	1,654	Bore cluster present approximately 10 km by road to Gregadoo Road compound (C06) with a total licensed extraction volume of 1,340 ML/year.
Gundagai Alluvial Groundwater Source	Water Sharing Plan for the Murrumbidgee Alluvial Groundwater Sources Order 2020	61	560	Bore cluster present approximately 1.5 km by road to Tarcutta accommodation facility and compound (AC03) with a total licensed extraction volume of 400 ML/year.
Lachlan Fold Belt MDB Groundwater Source	Water Sharing Plan for the NSW Murray–Darling Basin Fractured Rock Groundwater Sources Order 2020	638	2,071	Bore cluster present approximately 1 km by road to Gadara Road compound (C19) with a total licensed extraction volume of 260 ML/year.

Groundwater source	Name of plan	Bore count within 5 km	Total bore licensed extraction volume within 5 km (ML)	Assessment of potential groundwater usage and distance to nearest compound/accommodation area.
Lachlan Fold Belt Greater Metropolitan Groundwater Source	Greater Metropolitan Region Groundwater Sources 2023	78	0	No licensed extraction volumes within 5 km of amended project footprint.
Yass Catchment Fractured Rock Groundwater Sources	Water Sharing Plan for the Murray Alluvial Groundwater Sources Order 2020	272	261	Bore present approximately 300 m by road to Yass substation compound (C10) with a total licensed extraction volume of 100 ML/year.

Note:

Water Resource Plans not in force at the time of writing, therefore not included

Due to the variable distribution of registered bores with licensed extraction volume information along the amended project footprint, there are areas where sourcing non-potable water supply from existing bores is feasible and other areas where it may not be feasible. Based on the information presented in Table 6-8, the following general comments can be made regarding groundwater water supply:

- potentially feasible in the vicinity of the Kyeamba Alluvial Groundwater Source, Gundagai Alluvial Groundwater Source and Lachlan Fold Belt MDB Groundwater Source areas
- unlikely to be feasible for the amended project between Killimicat and Yass
- unlikely to be feasible in the Lachlan Fold Belt Greater Metropolitan Groundwater Source area.

In using groundwater, the quality of groundwater would also need to be considered (ie salinity and hardness), to avoid contamination or salinisation of surface soils from land application. However, the risk of this occurring would be relatively low as land application of groundwater would be short-term until groundcover is established (unlike activities such as irrigated agriculture).

For areas where sourcing non-potable water supply from existing bores is not feasible, the availability of surface water allocations from nearby waterway(s) with licensable take would be assessed in future planning (discussed below).

6.1.7.2.3 Surface waterways (purchasing water from existing allocation holders from existing extraction points)

Another non-potable water supply option would be the temporary purchase of surface water allocations from water allocation holders with an existing WAL from existing extraction points. General security licence allocations are the most commonly traded water allocation and most likely to provide a dependable high-volume source of non-potable water. Transgrid or the construction contractor may purchase a WAL in a with a zero-share component for a specific WSP area, which would enable them to buy water from other existing water allocation holders who wish to temporarily sell their water allocation (or a portion of their allocation). A WAL with a zero-share component means that the licence holder has no specific shares in the WSP area but is allowed to have a water allocation account and to buy or transfer allocation water on an annual basis or share component from another licence holder.

The availability and existing use of surface water resources is variable across the amended project and is outlined in Section 5.2.3. A summary of waterways within five kilometres of the amended project footprint with a Strahler order 6 or above (considered most likely to have sufficient flows to meet amended project water demand) is provided in Table 6-9 below.

Where possible, the preference would be to use existing water extraction points, subject to agreement with the relevant landowners. Constructing/installing new extraction points along an identified surface waterway may be required if there are constraints (ie if the existing extraction point is not accessible for a water cart/tanker etc). A Water Supply Work Approval would be required to construct and use a water supply work at a specified location (ie to install and operate a pump or dam). A Water Supply Work Approval allows you to use water from a river, lake, or groundwater source, and to construct infrastructure to do this. This is in addition to a WAL (described above) which would also be required to account for the water taken.

Table 6-9 Waterways Strahler order 6 and above within 5 kilometres of the amended project footprint with current surface water allocations

Waterway	Strahler order	Assessment of potential usage and distance to nearest construction compound or combined worker accommodation facility and construction compound.	Water source	2023/2024 licenced water usage (ML/year)
Adjungbilly Creek	6	■ intersected by transmission line corridor ■ 2.5 km from Adjungbilly accommodation facility and compound (AC04) ■ 5.5 km from Amended Honeysuckle Road compound (C07)	Adjungbilly / Bombowlee/ Brungle Water Source	643 ML/year (18 unregulated river access licences)
Gilmore Creek	6	■ 1.5 km east of transmission line corridor ■ 2 km from Gadara Road compound (C19) ■ 3 km from Amended Memorial Avenue compound (C14) ■ 4 km from Snubba Road compound (C18)	Gilmore/Sandy Water Source	4,429 ML/year (85 unregulated river access licences)
Yaven Yaven Creek	6	■ intersected by transmission line corridor ■ 50 -100 m from Ellerslie Road compound (C21)	Hillas Water Source	1,513 ML/year (18 unregulated river access licences)
Kyeamba Creek	7	■ intersected by transmission line corridor ■ 3 km from Amended Gregadoo Road compound (C06)	Kyeamba Water Source	388 ML/year (3 unregulated river access licences)
O'Briens Creek	6	■ intersected by transmission line corridor ■ 1 km from Amended Gregadoo Road compound (C06)		
Tooles Creek	6	■ 0.5 km south of transmission line corridor ■ 4.5 km from Amended Gregadoo Road compound (C06)		
Lachlan River	6	■ intersected by transmission line corridor	Lachlan River above Reids Flat Water Source	1,872 ML/year (28 unregulated river access licences)
Bannaby Creek	6	■ 1 km north of transmission line corridor ■ 4.5 km from Amended Bannaby 500 kV substation compound (C12)	Lower Wollondilly River Water Source	5,111 ML/year (78 unregulated river access licences)
Melamalong Creek	6	■ 1 km south of transmission line corridor ■ 3.5 km from Crookwell accommodation facility and compound (AC06)		
Myrtle Creek	6	■ intersected by transmission line corridor		
Tarlo River	6	■ intersected by transmission line corridor ■ 7.5 km from Crookwell accommodation facility and compound (AC06) ■ 2 km from Amended Bannaby 500 kV substation compound (C12)		
Wollondilly River (east)	8	■ approx. 2 km from Amended Bannaby 500 kV substation compound (C12)		

Waterway	Strahler order	Assessment of potential usage and distance to nearest construction compound or combined worker accommodation facility and construction compound.	Water source	2023/2024 licenced water usage (ML/year)
Wollondilly River (west)	6	▪ intersected by transmission line corridor ▪ 6.5 km from Crookwell accommodation facility and compound (AC06)		
Crooked Creek	6	▪ 2 km from Wagga 330 kV substation compound (C01)	Murrumbidgee Central (Burrinjuck to Gogeldrie) Water Source	6,390 ML/year (50 unregulated river access licences)
Nimbo Creek	8	▪ 3.5 km north of transmission line corridor		
Oak Creek	6	▪ intersected by transmission line corridor ▪ 8 km from Adjungbilly accommodation facility and compound		
Murrumbidgee River	9	▪ intersected by transmission line corridor ▪ 23 km from Adjungbilly accommodation facility and compound (AC04)	Murrumbidgee Regulated River Water Source	1,892,090 ML/year (884 general security access licences)
Tumut River	8	▪ intersected by transmission line corridor ▪ 3 km from Maragle 500 kV substation compound (C05) ▪ 14 km from Amended Honeysuckle Road compound (C07)		
Keajura Creek	6	▪ intersected by transmission line corridor ▪ 1 km from Tarcutta accommodation facility and compound (AC03)	Tarcutta Creek Water Source	5,170 ML/year (86 unregulated river access licences)
Tarcutta Creek	7	▪ intersected by transmission line corridor ▪ approx. 1 km from Tarcutta accommodation facility and compound (AC03)		
Umbango Creek	7	▪ intersected by transmission line corridor ▪ 13.5 km from Ellerslie Road compound (C21)		
Yass River	6	▪ 1 km south of transmission line corridor ▪ 2.5 km from Yass substation compound (C10) ▪ 0.5 km from Yass accommodation facility and compound (AC07)	Yass Lower Water Source	447 ML/year (15 unregulated river access licences)

6.1.7.3 Potable water supply options

The viability of potable water sources is dependent on the location (ie distance to nearest town/population centre with a potable water supply). It is likely that a combination of water sources would be required to meet the total potable water demand outlined in Table 6-6. The various potable water sources are outlined in recommended order below.

6.1.7.3.1 Direct connection to council water reticulation system

Where possible, it is recommended that potable water be sourced via direct connection with existing council water reticulation systems. However, council water reticulation systems would only be present in the vicinity of towns/population centres and therefore direct connection is unlikely to meet the potable water demands in all locations across the amended project footprint. Further consultation would be undertaken with local councils to ensure there is sufficient capacity within the existing water reticulation systems to meet the potable water demand.

6.1.7.3.2 Transported from nearby town via water cart/tanker

Where direct connection to existing council water reticulation systems is not available/feasible, potable water could be transported from a nearby town/population centre to the point of usage via water carts/tankers.

Availability of this potable water source is expected to be identical to that outlined in Section 6.1.7.3.1 above. Further consultation would be undertaken with local councils to ensure there is sufficient capacity within the nearby town/population centre to meet the potable water demand.

6.1.7.3.3 Purchased from third party commercial supplier(s)

If the potable water supply options outlined above are not feasible, potable water could be purchased from a third-party commercial supplier(s). Further consultation would be undertaken with potential suppliers to ensure compliance with health, safety, and environmental regulations. Procurement processes would consider the supplier(s) capability of meeting the projects water demands, including the quantity and frequency of water deliveries and water quality control measures.

6.1.7.3.4 On-site water treatment systems in conjunction with non-potable sources (outlined above)

If the potable water supply options outlined above are not feasible, on-site water treatment systems should be considered to treat non-potable water sources to potable water quality. Treatment requirements would be determined based on the receiving quality of the non-potable water source and the relevant water quality criteria for the intended usage (ie Australian Drinking Water Guidelines, NRMHC (2011)) would need to be adhered to for consumption at construction compounds and combined worker accommodation facilities and construction compounds.

Establishing temporary on-site treatment systems during construction would likely involve containerised and/or skid mounted water treatment plants which would be decommissioned upon completion of construction. These would require additional power supplies and would generate another waste stream that would require disposal. As such, this is the least desirable option.

6.1.7.4 Water disposal

Proper management and disposal of wastewater is essential in protecting the health and quality of surrounding waterways and the environment. Daily estimates for wastewater generation have been considered for the amended project footprint. Wastewater treatment facilities may be used to treat wastewater from amenities at the nominated worker accommodation facilities and at the Amended Gregadoo Road compound (C06) and Amended Bannaby 500 kV substation compound (C12). Daily volumes of wastewater at each site (assuming a conservative 200 L per person) would range from 50 kL to 100 kL depending on the site and occupancy levels.

The annual volumes to be generated by all the construction activities apart from the combined worker accommodation facilities and construction compounds would be generally low. Wastewater would be collected in tanks or field portaloos – which would be pumped out by tanker. The tanker would dispose of the wastewater at local sewage treatment plants.

Wastewater generated at the combined worker accommodation facilities and construction compounds would require a connection into the town sewerage networks, where possible. However, in most instances, this would wastewater from these facilities would be collected in tanks which would be pumped out into a tanker. The tanker would dispose of any wastewater at local sewage treatment plants. Further consultation would be undertaken with councils to ensure there is sufficient capacity within the nearby wastewater treatment plants to meet the water disposal demand.

6.1.8 Summary of construction impacts

6.1.8.1 Erosion risk and sedimentation

The potential erosion risk and sedimentation impact for the amendments/refinements is generally consistent with the impacts described in Section 6.2.1 of *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS. For a summary of potential erosion risk and sedimentation, refer to Table 6.4 of *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS. Table 6-12 provides information on the erosion and sedimentation impacts for the project amendments and refinements. The full analysis is presented in Attachment E, including the comparison to the analysis conducted in the EIS.

The sensitivity analysis for erosion risk and subsequent sedimentation has been reassessed for the amended project footprint and the results are summarised in Table 6-10 and Table 6-11.

Table 6-10 Sensitivity risk based on erosion category and proximity to waterways

	Erosion risk category		
	Low	**Moderate**	**High**
Outside waterway buffer zone	Low sensitivity	Low sensitivity	Moderate sensitivity
Inside waterway buffer zone	Moderate sensitivity	High sensitivity	High sensitivity

Table 6-11 Percentage of amended project footprint in sensitivity categories

	Sensitivity category		
	Low	**Moderate**	**High**
Outside waterway buffer zone	47.8%	14.6%	1.7%
Inside waterway buffer zone	26.1%	9.0%	0.7%

Of the total amended project footprint area, an area comprising 35.8 per cent is within the buffer zone of a waterway, of which 26.1 per cent is considered to have moderate sensitivity due to its low erosion risk and 9.7 per cent is considered to have high sensitivity due to its moderate or high erosion risk.

Outside the waterways buffer zone 62.4 per cent of the amended project footprint is considered to have low sensitivity due to its low or moderate erosion risk and 1.7 per cent is considered to have moderate sensitivity due to its high erosion risk.

The erosion risk mapping in Figure 5-7 indicates the location of the erosion risk categories along and within the amended project footprint. An additional series of erosion risk maps with zoomed in callout boxes to highlight the locations with high erosion risk is provided in Attachment E. Generally, the higher erosion risk is related to steeper topography which includes the area in the south between Maragle and Woolgarlo and in the north around Bannaby.

The impact significance for each amended project component has been determined using the methodology described in Section 4.4 of the *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS and is shown in Table 6-12. As noted previously, amended project components would have a range of impact significances depending on the location and individual locational characteristics. For example, an area of the transmission line easement adjacent to a waterway with high erosion risk soils would have a high impact significance – whereas an area of the transmission line easement on land away from a waterway with low erosion risk soils would have a low impact significance. Also, the sensitivity of the waterway would need to be considered. Perennial waterways containing KFH would generally have a higher potential impact significance compared to an ephemeral drainage line. Generally, waterways with a Strahler order 4 or higher are perennial and consequently work within these waterway buffer zones would have a potentially moderate or high impact significance.

The impact significance of a specific location would determine the approach to erosion and sedimentation control.

Table 6-12 Erosion risk and sedimentation impacts to surface water for the project amendments and refinements

Amended project component and activities	Impact magnitude	Sensitivity	Impact significance without mitigation
Changes to construction ancillary facilities – involves vegetation removal	Vegetation removal would be required within the new transmission line easement, which would typically be 70 m wide. However, a few locations (such as transposition locations) may require easements up to 110 m wide and up to 130 m. In some locations, vegetation removal would be negligible (ie where the transmission line route is through cleared pasture land), whereas vegetation removal in other locations would be more substantial where the existing vegetation is tall and required to be cleared as per the requirements for vegetation management. The magnitude of the impact of vegetation removal to erosion risk would vary depending on the specific location, ranging from low to high.	Low to high based on a location's soil erosion risk – refer to Table 6-10 and Attachment E.	Ranges from low to high based on location - mapping provided in Figure 5-7, with further detail in Attachment E.
Construction of access tracks – involves vegetation removal and earthworks	New tracks and upgraded tracks would be required outside the transmission line easement to connect to existing roads and other access points. Construction of new tracks have the largest potential impact to waterways due to ground disturbance activities. Wherever possible, existing roads, tracks and other existing disturbed areas would be used to minimise vegetation clearing or disturbance. The construction of access tracks would have the similar location-based variation in the magnitude in risk as the transmission line easement. Areas of higher modelled erosion risks are likely to have higher magnitude of impacts but generally ranging from low to high.	Low to high based on a location's soil erosion risk – refer to Table 6-10 and Attachment E.	Ranges from low to high based on location - mapping provided in Figure 5-7, with further detail in Attachment E.
Construction of access tracks (waterfront land and waterway crossing) – involves vegetation removal and earthworks	New tracks and upgraded tracks would be required outside the transmission line easement to connect to existing roads and other access points. Several proposed access tracks have been identified as being located within waterfront land and a series of waterway crossings as presented in Table 6-5 and Attachment F. Construction of new tracks within waterfront land and waterway crossings would have the largest potential impact to waterways due to ground disturbance activities in proximity to waterways. The magnitude of erosion risk would vary depending on the specific location, from moderate to high. As discussed in Section 6.1.5, the potential impact significance for each nominated access track has been determined based on the type of track and its proximity to waterways.	Moderate to high based on proximity to waterways – refer to Attachment F.	Ranges from low to high based on proximity to waterway. Impact significance for each access track is presented in Attachment F.

Amended project component and activities	Impact magnitude	Sensitivity	Impact significance without mitigation
Construction of ancillary facilities including worker accommodation facilities and construction compounds – involves vegetation removal, earthworks and material storage	The 11 construction compounds proposed as part of the amended project vary in size (the exact area to be used at each construction compound would be confirmed by the construction contractor). There are also five combined worker accommodation facilities and construction compounds. Out of a total of 16 facilities, 11 of these locations are located within waterfront land. Two of the facilities are located within waterfront land of streams of Strahler order 3 or above. Due to their proximity to a higher order stream, there is a higher risk of sedimentation and therefore higher impact magnitude. Nine of the facilities are located within waterfront land of streams with Strahler Order 3 or lower and therefore moderate impact magnitude. Five of the locations are not located within waterfront land, as such they have low impact magnitude on sedimentation of the waterways. In addition, the smaller construction compounds (less than 4 ha) would have a moderate impact magnitude and the larger construction compounds (4 ha or greater) would have a high impact magnitude.	Low or high based on a location's proximity to waterways - refer to Table 6-4.	Ranges from low to high based on location, as follows: **High:** ■ Ellerslie Road compound (C21) ■ Yass accommodation facility and compound (AC05) **Moderate:** ■ Maragle 500 kV substation compound (C05) ■ Amended Gregadoo Road compound (C06) ■ Yass substation compound (C10) ■ Amended Bannaby 500 kV substation compound (C17) ■ Amended Memorial Avenue compound (C14) ■ Gadara Road compound (C19) ■ Tarcutta accommodation facility and compound (AC03) ■ Adjungbilly accommodation facility and compound (AC04) ■ Crookwell accommodation facility and compound (AC06) **Low:** ■ Amended Honeysuckle Road compound (CO7) ■ Ardrossan Headquarters Road compound (C17) ■ Snubba Road compound (C18) ■ Wagga 330 kV substation compound (C01) ■ Green Hills accommodation facility and compound (AC07)
Additional telecommunications connection to existing Gullen Range 330 kV substation (waterfront land and waterway crossing) – involves vegetation removal and earthworks	The areas identified for cabling have mostly already been cleared of vegetation due to being agricultural land. There are localised areas of vegetation that appear to be related to Ryans Creek a Strahler order 1 waterway. Earthworks have the potential to increase erosion risk and sedimentation of Ryans Creek. Therefore, the impact magnitude is moderate.	Moderate based on proximity to waterways and soil erosion risk – refer to Table 6-10.	Moderate

Amended project component and activities	Impact magnitude	Sensitivity	Impact significance without mitigation
Additional telecommunications connection to existing Crookwell 2 330 kV substation – involves vegetation removal and earthworks	The areas identified for cabling have mostly already been cleared of vegetation due to being agricultural land, there is no identified vegetation either at this location. Earthworks have the potential to increase erosion risk and sedimentation, however there are no waterways identified in proximity, so the magnitude of impact is low.	Low based on proximity to waterways and soil erosion risk – refer to Table 6-10.	Negligible
Additional telecommunications connection to existing Gadara 132 kV substation (waterfront land and waterway crossing) – involves vegetation removal and earthworks	The areas identified for cabling have mostly already been cleared of vegetation due to being agricultural land, there are localised areas of vegetation that appear to be related to Ryans Creek a Strahler order 1 waterway. Earthworks have the potential to increase erosion risk and sedimentation of Ryans Creek. Therefore, the magnitude of impact is moderate.	Moderate based on proximity to waterways and soil erosion risk – refer to Table 6-10.	Moderate

6.1.8.2 Geomorphology

The potential geomorphology impacts for the amendments and refinements is generally consistent with the impacts described in Section 6.2.1 of the *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS. For a summary of potential geomorphology impacts refer to Table 6.5 of the *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS, and where amendments or refinements have occurred, additional information is provided in Table 6-13.

Table 6-13 Geomorphology risk impacts to surface water for the project amendments and refinements

Construction activity	Impact magnitude	Sensitivity	Impact significance without mitigation
Construction of ancillary facilities including worker accommodation facilities and construction compounds (waterfront land) – involves vegetation removal and earthworks, material storage	Two of the ancillary facilities are located within waterfront land of Strahler order 5 streams, namely Ellerslie Road compound (C21) and Yass accommodation facility and compound (AC05). Due to their proximity to higher order streams and the risk of sedimentation, this may have an indirect geomorphological impact on Yaven Yaven Creek and Bango Creek respectively. Therefore, the magnitude of impact is moderate.	Moderate based on proximity to waterways and soil erosion risk – refer to Table 6-10.	Moderate
Construction of access tracks (waterway crossing / waterfront land) – involves vegetation removal and earthworks	New tracks and upgraded tracks would be required outside the transmission line easement to connect to existing roads and other access points. New tracks have the largest potential impact to waterways due to ground disturbance activities and their proximity to waterways. Several proposed access tracks have been identified at being located within waterfront land and cross waterways as presented in Table 6-5 and Attachment F. As discussed in Section 6.1.5, the potential impact significance for each nominated access track has been determined based on the type of track and its proximity to waterways	Low to high based on a location's proximity to waterways – refer to Attachment F.	Ranges from moderate to high based on proximity to waterway. Impact significance for each access track is presented in Attachment F.
Additional telecommunications connection to existing Gullen Range 330 kV substation (waterfront land and waterway crossing) – involves vegetation removal and earthworks	The areas identified for cabling have mostly already been cleared of vegetation due to being agricultural land, there are localised areas of vegetation that are related to Ryans Creek, a Strahler order 1 waterway. The cables would have to cross the waterway, and earthworks may be required to run cabling through the waterway. Therefore, the magnitude of impact is moderate.	Moderate based on proximity to waterways and soil erosion risk – refer to Table 6-10.	Moderate
Additional telecommunications connection to existing Gadara 132 kV substation (waterfront land and waterway crossing) – involves vegetation removal and earthworks	The areas identified for cabling have mostly already been cleared of vegetation due to being agricultural land, there are localised areas of vegetation that are related to Ryans Creek, a Strahler order 1 waterway. The cables would have to cross the waterways, and earthworks may be required to run cabling through the waterways. Therefore, the magnitude of impact is moderate.	Moderate based on proximity to waterways and soil erosion risk – refer to Table 6-10.	Moderate

6.1.8.3 Water quality

The potential water quality impact for the amendments and refinements is generally consistent with the impacts described in Section 6.2.1 of the *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS. For a summary of potential water quality impacts, refer to Table 6.6 of the *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS. Table 6-14 details the amended project components and activities resulting in water quality impacts.

Table 6-14 Water quality risk impacts to surface water for the project amendments and refinements

Amended project component and activity	Impact magnitude	Sensitivity	Impact significance without mitigation
Construction of access tracks – involves vegetation removal and earthworks	Several proposed access tracks have been identified as being located within waterfront land and cross waterways as presented in Table 6-5 and Attachment F. As discussed in Section 6.1.5, the potential impact significance for each nominated access track has been determined based on the type of track and its proximity to waterways.	Low to high based on a location's proximity to waterways – refer to Attachment F.	Ranges from moderate to high based on proximity to waterway. Impact significance for each access track is presented in Attachment F.
Construction of access tracks (waterfront land and waterway crossing) – involves vegetation removal and earthworks	Several proposed access tracks have been identified at being located within waterfront land and cross waterways as presented in Table 6-5 and Attachment F. As discussed in Section 6.1.5, the potential impact significance for each nominated access track has been determined based on the type of track and its proximity to waterways.	Low to high based on a location's proximity to waterways – refer to Attachment F.	Ranges from moderate to high based on proximity to waterway. Impact significance for each access track is presented in Attachment F.
Construction of ancillary facilities including worker accommodation facilities and construction compounds – involves vegetation removal, earthworks and material storage	These ancillary facilities may include concrete batching plants and would involve the storage of chemicals, fuels, and material. Consequently, the magnitude of potential impacts is moderate.	Low to high based on proximity to waterways – Refer to Table 6-4.	Ranges from low to high based on location, as follows: **High:** ■ Ellerslie Road compound (C21) ■ Yass accommodation facility and compound (AC05) **Moderate:** ■ Maragle 500 kV substation compound (C05) ■ Amended Gregadoo Road compound (C06) ■ Yass substation compound (C10) ■ Amended Bannaby 500 kV substation compound (C17) ■ Amended Memorial Avenue compound (C14) ■ Gadara Road compound (C19) ■ Tarcutta accommodation facility and compound (AC03)

Amended project component and activity	Impact magnitude	Sensitivity	Impact significance without mitigation
			■ Adjungbilly accommodation facility and compound (AC04) ■ Crookwell accommodation facility and compound (AC06) **Low:** ■ Amended Honeysuckle Road compound (CO7) ■ Ardrossan Headquarters Road compound (C17) ■ Snubba Road compound (C18) ■ Wagga 330 kV substation compound (C01) ■ Green Hills accommodation facility and compound (AC07)
Transmission lines and structures - involves vegetation clearing, earthworks, machinery/vehicle use and concreting	Given the large number of transmission line structures and that earthworks and concreting would be required at each structure, the magnitude of impact is moderate.	Low to moderate based on a location's proximity to a waterway	Moderate
Transmission line easements – involves vegetation clearing, land machinery/vehicle use	Any potential impacts are likely to be minor and localised. The water impacts associated with activities are also likely to be low in scale. The overall potential impact is low in magnitude.	Low to moderate based on a location's proximity to a waterway	Low
Additional telecommunications connection to existing Gullen Range 330 kV substation (waterfront land and waterway crossing) – involves vegetation removal and earthworks	Due to the small size of the area required for the cabling and relatively minor work, the impact magnitude is low.	High	Moderate
Additional telecommunications connection to existing Crookwell 2 330 kV substation – involves vegetation removal and earthworks	No surface water bodies in proximity to the works, therefore, the magnitude of potential impacts is low.	Low	Negligible

Amended project component and activity	Impact magnitude	Sensitivity	Impact significance without mitigation
Additional telecommunications connection to existing Gadara 132 kV substation (waterfront land and waterway crossing) – involves vegetation removal and earthworks	Due to the small size of the area required for the cabling and relatively minor work, the impact magnitude is low.	High	Moderate

6.1.8.4 Groundwater

Overall, the potential construction impacts on groundwater as described in Section 6.3 of the *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS are still relevant to the amended project. The potential construction impacts on groundwater as a result of the amendments or refinements are presented in Table 6-15 below.

Table 6-15 Potential groundwater impacts during construction for the project amendments and refinements

Amended project component and activity	Impact magnitude	Sensitivity	Impact significance without mitigation
Identification of areas where controlled blasting may be required	Vibration from controlled blasting activities could potentially loosen silt/sand/rock particles and chemical precipitates lining fractures which can increase the turbidity of groundwater. In addition, the use of nitrates (ie ammonium nitrate) in controlled blasting operations could leach into groundwater and impact groundwater quality. Controlled blasting activities could also change existing shallow (ie less than 2 mbgl) groundwater flow pathways by generating new fractures in previously intact rock, dilating existing fractures and/or promote rock slip along existing joints/fracture surfaces. Potential controlled blasting impacts are expected to be highly localised, as literature suggests that the distance over which the near-field permanent damage to the rock slope in the form of breakage of intact rock and the formation of new fractures would be limited. For example, Hoek and Bray (1981), suggests that the onset of rock breakage to be within 20 m of the blast hole for a 100 kg charge weight. The magnitude of impact is moderate.	Low to high based on a location's proximity to groundwater users and/or GDEs	Low to high based on controlled blasting location – refer to Section 6.1.6.1. ■ Low: blasting locations 1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, 19, and 21 ■ High: blasting locations 4, 15, 17, and 20.
Additional telecommunications connections to existing substations	Earthworks during construction of the additional telecommunications connections to existing substations, as described in Section 6.1.3, are expected to range between 0.8 to 3.0 mbgl. Therefore, the trenches have the potential to intercept groundwater and require temporary dewatering to provide a dry excavation for cable installation. Should shallow groundwater (ie less than 2 mbgl) be encountered, dewatering activities could have the potential to reduce groundwater availability for surrounding GDEs and groundwater users. No groundwater level data is available from registered bores within the vicinity of the proposed telecommunications connections (summarised in Section 5.5) for assessing the likelihood that dewatering would be required. Dewatering would be possible if groundwater levels are shallow (ie less than 2 mbgl).	Low to moderate based on a location's proximity to groundwater users and/or GDEs	Low

Amended project component and activity	Impact magnitude	Sensitivity	Impact significance without mitigation
	As groundwater level information is not available, the following conservative scenario has been adopted to assess impact magnitude: ■ Trenching for additional telecommunications connections to existing substations extends to a maximum depth of 3 mbgl and shallow groundwater is encountered at 2 mbgl. ■ The trench is immediately adjacent to a high priority GDE and/or an existing water supply works/bore. The minimal impact consideration in the NSW AIP would be exceeded in this scenario (discussed further in Table 6-16, Table 6-17 and Table 6-18. However, it should be noted that excavation of the trenches for the additional telecommunications connections to existing substations are expected to be undertaken as a moving system aimed at minimising exposure time, progressing in daily stages (ie approximately 20m/day). Due to this, dewatering along sections of the telecommunications connections alignments would be short in duration and after cessation of dewatering as the excavation progresses, the water table is expected to recover to original levels rapidly resulting in no long-term impacts. Therefore, groundwater drawdowns associated with telecommunications connections construction dewatering would be temporary only and would not prevent the long-term viability of the potentially affected GDE or water supply work. The magnitude of impact is low.		
Access to water sources	Groundwater impacts from purchasing and using existing groundwater allocations are expected to be negligible under the assumption that the existing WALs and licensed extraction volumes have already been evaluated and deemed to be acceptable against the NSW AIP during the application process. Any groundwater extraction must be carried out in compliance with the conditions stated in the existing WALs. The magnitude of impact is negligible.	Low	Low

6.1.8.5 Aquifer Interference - Minimal impact considerations

The NSW AIP includes minimal impact considerations for assessing the impacts of all aquifer interference activities. NSW groundwater sources are categorised as being either highly productive or less productive. A groundwater source is considered highly productive based on both of the following criteria:

- a total dissolved concentration of less than 1,500 mg/L (approximately equivalent to EC of 960 µS/cm based on a general conversion factor of 0.64), and
- contains water supply works that can yield water at a rate greater than 5 L/s.
- If only one of the above criteria is met, the groundwater source would be considered as being less productive. This categorisation applies to a groundwater source as it is defined in a WSP. Previously, in the EIS, the categorisation was applied to each WSP (which generally encompasses numerous groundwater sources). To provide a greater level of detail for the amended project, the categorisation has been applied to each intersected groundwater source area in this report, as follows:
- Kyeamba Alluvial Groundwater Source - highly productive. This groundwater source is considered as highly productive given the water quality is expected to be generally fresh, with an EC range of 195 – 1,160 µS/cm. Groundwater yields are expected to be high based on the number of registered bores with relatively high licenced extraction volumes present within this groundwater source. Alluvial groundwater sources are typically highly connected to surface water sources.
- Gundagai Alluvial Groundwater Source - highly productive. This groundwater source is considered as highly productive given the water quality is expected to be generally fresh, with an EC range of 195 – 2,570 µS/cm. Groundwater yields are expected to be high based on the number of registered bores with relatively high licenced extraction volumes present within this groundwater source. Alluvial groundwater sources are typically highly connected to surface water sources.
- Lachlan Fold Belt MDB Groundwater Source - less productive. These groundwater sources are categorised as less productive as the bore yields are generally low, supplying less than 3 L/s. The water table in the Lachlan Fold Belt is typically deep and not linked to surface water flow.
- Lachlan Fold Belt Greater Metropolitan Groundwater Source - less productive. These groundwater sources are categorised as less productive as the bore yields are generally low, supplying less than 3 L/s. The water table in the Lachlan Fold Belt is typically deep and not linked to surface water flow.
- Yass Catchment Fractured Rock Groundwater Sources - highly productive. As there is limited information on the total dissolved solids and groundwater yield, a conservative approach has been applied and this groundwater source is classified as a highly productive fractured rock water source.

An assessment against the AIP minimal impacts considerations is shown in Table 6-16, Table 6-17 and Table 6-18. The assessment includes consideration of the project amendments and refinements not previously considered in the EIS, including:

- additional assessment on the potential usage of groundwater as a non-potable water supply source during construction
- temporary dewatering potentially required during construction of the additional telecommunications connections to existing substations
- controlled blasting undertaken in areas of shallow hard rock.

Table 6-16 Aquifer Interference Policy Minimal impact considerations for 'highly productive alluvial groundwater sources' – Kyeamba and Gundagai Alluvial Groundwater Sources

Feature	Minimal impacts considerations (NSW Government, 2012)	Response
Water table	*Less than or equal to a 10% cumulative variation in the water table, allowing for typical climatic "post-water sharing plan"[1] variations, 40 metres from any:* ■ *high priority groundwater dependent ecosystem* ■ *high priority culturally significant site[2]* *A maximum of a two metre decline cumulatively at any water supply work.*	Groundwater impacts from purchasing and using existing groundwater allocations are expected to be insignificant under the assumption that the existing WALs and licensed extraction volumes have already been evaluated and deemed to be acceptable against the NSW AIP during the application process. Temporary dewatering during construction of the additional telecommunications connections to existing substations could potentially exceed the minimal impact considerations under a "worst-case" scenario. However, as discussed in Table 6-15, the induced drawdowns would be temporary only and would not prevent the long-term viability of the potentially affected GDE or water supply work.
	If more than 10% cumulative variation in the water table, allowing for typical climatic "post-water sharing plan" variations, 40 metres from any: ■ *high priority groundwater dependent ecosystem* ■ *high priority culturally significant site* ■ *listed in the schedule of the relevant WSP then appropriate studies[3] would need to demonstrate to the Minister's[4] satisfaction that the variation would not prevent the long-term viability of the dependent ecosystem or significant site.* *If more than two metre decline cumulatively at any water supply work, then make good provisions should apply.*	
Water pressure	*A cumulative pressure head decline of not more than 40% of the post-water sharing plan pressure head above the base of the water source to a maximum of a two-metre decline, at any water supply work.* *If the predicted pressure head decline is greater than the water pressure requirement above, then appropriate studies are required to demonstrate to the Minister's satisfaction that the decline would not prevent the long-term viability of the affected water supply work unless make good provisions apply.*	Pressure heads are not anticipated to be lowered (or raised) due to the expected depth of the confined aquifers in the surface water and groundwater study area and selection of appropriate construction methodologies. Groundwater impacts from purchasing and using existing groundwater allocations are expected to be insignificant under the assumption that the existing WALs and licensed extraction volumes have already been evaluated and deemed to be acceptable against the NSW AIP during the application process.
Water quality	*(a) Any change in the groundwater quality should not lower the beneficial use category of the groundwater source beyond 40 metres from the activity; and* *(b) No increase of more than 1% per activity in long-term average salinity in a highly connected surface water source at the nearest point to the activity. Redesign of a highly connected surface water source that is defined as a "reliable water supply" is not an appropriate mitigation measure to meet considerations (a) and (b) above.* *(c) No mining activity to be below the natural ground surface within 200 metres laterally from the top of high bank or 100 metres vertically beneath (or the three-dimensional extent of the alluvial water source - whichever is the lesser distance) of a highly connected surface water source that is defined as a "reliable water supply".* *(d) Not more than 10% cumulatively of the three-dimensional extent of the alluvial material in this water source to be excavated by mining activities beyond 200 metres laterally from the top of high bank and 100 metres vertically beneath a highly connected surface water source that is defined as a "reliable water supply".*	The amended project is not anticipated to result in: ■ a change in groundwater quality which would lower the beneficial use category ■ increase of more than 1% per activity in long-term average salinity in connected surface water sources. The amended project does not include mining activities.

Feature	Minimal impacts considerations (NSW Government, 2012)	Response
	If condition (a) above is not met then appropriate studies will need to demonstrate to the Minister's satisfaction that the change in groundwater quality will not prevent the long-term viability of the dependent ecosystem, significant site or affected water supply work. *If condition (b) or (d) above are not met, then appropriate studies are required to demonstrate to the Minister's satisfaction that the River Condition Index category of the highly connected surface water source will not be reduced at the nearest point to the activity.* *If (c) or (d) above are not met, then appropriate studies are required to demonstrate to the Minister's satisfaction that: there will be negligible riverbank or high wall instability risks:* ■ *during the activity's operation and post-closure, levee banks and landform design should prevent the Probable Maximum Flood from entering the activity's site; and* ■ *low-permeability barriers between the site and the highly connected surface water source will be appropriately designed, installed, and maintained to ensure their long-term effectiveness at minimising interaction between saline groundwater and the highly connected surface water supply.*	

Notes:

(1) Post water sharing plan" refers to the period after the commencement of the first water sharing plan in the water source, including the highest pressure head (allowing for typical climatic variation) within the first year after the commencement of the first water sharing plan.
(2) Culturally significant sites as identified on the Aboriginal Heritage Information Management System (NSW Office of Environment and Heritage, n.d.)
(3) Appropriate studies" are to include an identification of the extent and location of the asset, the predicted range of water table changes at the asset due to the activity, the groundwater interaction processes that affect the asset, the reliance of the asset on groundwater, the condition and resilience of the asset in relation to water table changes and the long-term state of the asset due to these changes;
(4) NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW)

Table 6-17 Aquifer Interference Policy Minimal impact considerations for a 'highly productive fractured rock aquifer' – Yass Catchment Fractured Rock Groundwater Sources

Feature	Minimal impacts considerations (NSW Government, 2012)	Response
Water table	*Less than or equal to 10% cumulative variation in the water table, allowing for typical climatic "post water sharing plan" (1) variations, 40 metres from any:* ■ *high priority groundwater dependent ecosystem* ■ *high priority culturally significant site(2)* ■ *listing in the schedule of the relevant WSP.* *A maximum of a two-metre decline cumulatively at any water supply work unless make good provisions should apply.*	Groundwater impacts from purchasing and using existing groundwater allocations are expected to be insignificant under the assumption that the existing WALs and licensed extraction volumes have already been evaluated and deemed to be acceptable against the NSW AIP during the application process. Temporary dewatering during construction of the additional telecommunications connections to existing substations could potentially exceed the minimal impact consideration under a "worst-case" scenario. However, as discussed in Table 6-15, the induced drawdowns would be temporary only and would not prevent the long-term viability of the potentially affected GDE or water supply work.
	If more than 10% cumulative variation in the water table, allowing for typical climatic "post water sharing plan" variations, 40 metres from any: ■ *high priority groundwater dependent ecosystem* ■ *high priority culturally significant site* ■ *listing in the schedule of the relevant WSP then appropriate studies(3) will need to demonstrate to the Minister's(4) satisfaction that the variation will prevent the long-term viability of the dependent ecosystem or significant site* ■ *if more than a two-metre decline cumulatively at any water supply work, then make good provisions should apply.*	
Water pressure	*A cumulative pressure head decline of not more than a 2 m decline, at any water supply work.* *If the predicted pressure head decline is greater than the requirement above, then appropriate studies are required to demonstrate to the Minister's satisfaction that the decline will not prevent the long-term viability of the affected water supply work unless make good provisions apply.*	Pressure heads are not anticipated to be lowered (or raised) due to the expected depth of the confined aquifers in the surface water and groundwater study area and selection of appropriate construction methodologies. Groundwater impacts from purchasing and using existing groundwater allocations are expected to be insignificant under the assumption that the existing WALs and licensed extraction volumes have already been evaluated and deemed to be acceptable against the NSW AIP during the application process.
Water quality	*Any change in the groundwater quality should not lower the beneficial use category of the groundwater source beyond 40 m from the activity.* *If the condition above is not met then appropriate studies will need to demonstrate to the Minister's satisfaction that the change in groundwater quality will not prevent the long-term viability of the dependent ecosystem, significant site or affected water supply works.*	The amended project is not anticipated to result in: ■ a change in groundwater quality which would lower the beneficial use category ■ increase of more than 1% per activity in long-term average salinity in connected surface water sources. The amended project does not include mining activities.

Notes:

(1) Post water sharing plan" refers to the period after the commencement of the first water sharing plan in the water source, including the highest pressure head (allowing for typical climatic variation) within the first year after the commencement of the first water sharing plan.
(2) Culturally significant sites as identified on the Aboriginal Heritage Information Management System (NSW Office of Environment and Heritage, n.d.).
(3) Appropriate studies" are to include an identification of the extent and location of the asset, the predicted range of water table changes at the asset due to the activity, the groundwater interaction processes that affect the asset, the reliance of the asset on groundwater, the condition and resilience of the asset in relation to water table changes and the long-term state of the asset due to these changes.
(4) NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW).

Table 6-18 Aquifer Interference Policy Minimal impact considerations for a 'less productive fractured rock aquifer' – Lachlan Fold Belt Groundwater Sources

Feature	Minimal impacts considerations (NSW Government, 2012)	Response
Water table	*Less than or equal to 10% cumulative variation in the water table, allowing for typical climatic "post water sharing plan" (1) variations, 40 metres from any:* ■ *high priority groundwater dependent ecosystem* ■ *high priority culturally significant site(2)* ■ *listing in the schedule of the relevant WSP.* *A maximum of a two-metre decline cumulatively at any water supply work unless make good provisions should apply.*	Groundwater impacts from purchasing and using existing groundwater allocations are expected to be insignificant under the assumption that the existing WALs and licensed extraction volumes have already been evaluated and deemed to be acceptable against the NSW AIP during the application process. Temporary dewatering during construction of the additional telecommunications connections to existing substations could potentially exceed the minimal impact considerations under a "worst-case" scenario. However, as discussed in Table 6-15, the induced drawdowns would be temporary only and would not prevent the long-term viability of the potentially affected GDE or water supply work.
	If more than 10% cumulative variation in the water table, allowing for typical climatic "post-water sharing plan" variations, 40 metres from any: ■ *high priority groundwater dependent ecosystem* ■ *high priority culturally significant site* ■ *listing in the schedule of the relevant WSP then appropriate studies(3) will need to demonstrate to the Minister's(4) satisfaction that the variation will prevent the long-term viability of the dependent ecosystem or significant site* ■ *if more than a two-metre decline cumulatively at any water supply work, then make good provisions should apply.*	
Water pressure	*A cumulative pressure head decline of not more than 40% of the "post-water sharing plan" pressure head above the base of the water source to a maximum of a two metres decline, at any water supply work.* *If the predicted pressure head decline is greater than requirement above, then appropriate studies are required to demonstrate to the Minister's satisfaction that the decline will not prevent the long-term viability of the affected water supply work unless make good provisions apply.*	There is generally low risk of the amended project causing a cumulative pressure head decline of two metres at any supply work as groundwater take is not anticipated for the construction or operation of the amended project. Subject to the appropriate mitigation measures identified in Section 7, controlled blasting undertaken in areas of shallow hard rock, is not expected to result in a cumulative pressure head decline of two metres at any supply work.
Water quality	*Any change in the groundwater quality should not lower the beneficial use category of the groundwater source beyond 40 m from the activity.* *If the above condition is not met then appropriate studies will need to demonstrate to the Minister's satisfaction that the change in groundwater quality will not prevent the long-term viability of the dependent ecosystem, significant site or affected water supply work.*	The amended project is not anticipated to result in: ■ a change in groundwater quality which would lower the beneficial use category ■ increase of more than 1% per activity in long-term average salinity in connected surface water sources.

Notes:

(1) Post water sharing plan" refers to the period after the commencement of the first water sharing plan in the water source, including the highest pressure head (allowing for typical climatic variation) within the first year after the commencement of the first water sharing plan.

(2) Culturally significant sites as identified on the Aboriginal Heritage Information Management System (NSW Office of Environment and Heritage, n.d.)

(3) Appropriate studies" are to include an identification of the extent and location of the asset, the predicted range of water table changes at the asset due to the activity, the groundwater interaction processes that affect the asset, the reliance of the asset on groundwater, the condition and resilience of the asset in relation to water table changes and the long-term state of the asset due to these changes;

(4) NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW)

6.1.8.6 Impacts on specific waterways identified in the SEARs

There are no material changes in impact to the specified waterways compared to the EIS project. The EIS Planning Secretary's Environmental Assessment Requirements (SEARs) for the project identify major waterways that are potentially impacted by the amended project. These are presented and assessed in Table 6-19 as per the project amendments and refinements. The waterways are shown in Figure 5-3.

Table 6-19 Potential impacts to major waterways

Waterway	Distance to amended project footprint	Assessment
Goobarragandra River	6.6 kilometres	The amended project footprint is located about 6.6 kilometres downstream of the Goobarragandra River. Therefore, no impacts are anticipated to the river from the amended project.
Lachlan River	Crosses river	The transmission line corridor crosses the waterway near Dalton. Construction activities (described in Section 2.2 of the *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS) within 200 m of the waterway would be considered high risk and require the preparation and implementation of site-specific ESCPs. The area impacted by any work would be relatively small in comparison to river catchment and with implementation of mitigation measures, the overall impacts are expected to be minor.
Murrumbidgee River	Crosses river	The transmission line corridor crosses the waterway near Bookham. Construction activities (described in Section 2.2 of the *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS) within 200 m of the waterway would be considered high risk and require the preparation and implementation of site-specific ESCPs. The area impacted by any work would be relatively small in comparison to river catchment and with implementation of mitigation measures, the overall impacts are expected to be minor.
Tarlo River	Crosses river	The transmission line corridor crosses the waterway near Bannaby. Construction activities (described in Section 2.2 of the *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS) within 200 m of the waterway would be considered high risk and require the preparation and implementation of site-specific ESCPs. The area impacted by any work would be relatively small in comparison to river catchment and with implementation of mitigation measures, the overall impacts are expected to be minor.
Tumut River	Crosses river	The transmission line corridor crosses the waterway near Batlow. Construction activities (described in Section 2.2 of the *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS) within 200 m of the waterway would be considered high risk and require the preparation and implementation of site-specific ESCPs. The area impacted by any work would be relatively small in comparison to river catchment and with implementation of mitigation measures, the overall impacts are expected to be minor.
Wollondilly River	Crosses river	The transmission line corridor crosses the waterway near Bannister. Construction activities (described in Section 2.2 of the *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS) within 200 m of the waterway would be considered high risk and require the preparation and implementation of site-specific ESCPs. The area impacted by any work would be relatively small in comparison to river catchment and with implementation of mitigation measures, the overall impacts are expected to be minor.
Yass River	Crosses river	The transmission line corridor crosses the waterway near Yass. Construction activities (described in Section 2.2 of the *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS) within 200 m of the waterway would be considered high risk and require the preparation and implementation of site-specific ESCPs. The area impacted by any work would be relatively small in comparison to river catchment and with implementation of mitigation measures, the overall impacts are expected to be minor.

Waterway	Distance to amended project footprint	Assessment
Blowering Dam	1.3 kilometres	The transmission line corridor would traverse the upper catchment of Blowering Dam – about 19.55 kilometres upstream of the dam itself. Given the relatively small area of transmission corridor within the catchment and the distance upstream of the dam, there are unlikely to be any impacts on Blowering Dam.
Burrinjuck Dam	1.3 kilometres	A small section of transmission line corridor is within the dam catchment (about 11.5 kilometres from the dam), however does not cross the dam itself. The amended project moves most of the transmission line corridor further away from the dam or outside the dam's catchment. There is increased sedimentation and erosion risk associated with construction. However, given the small area of land impacted and mitigation measure that would be implemented, the risk of impacts remain low.
Wyangala Dam	69 kilometres	The transmission line corridor would traverse the upper catchment of Wyangala Dam – about 69 kilometres upstream of the dam itself. Given the relatively small area of transmission line corridor within the catchment and the distance upstream of the dam, there are unlikely to be any impacts on Wyangala Dam.

Overall, the potential impacts and risks of the amended project to surface water and groundwater have increased compared to potential impacts and risks identified for the EIS project. This is due to a more detailed understanding of amended project design, along with the project amendments and refinements, which includes:

- changes to the transmission line corridor
- an increase in the number and size of construction compounds and combined worker accommodation facilities and construction compounds
- inclusion of additional infrastructure in the assessment such as nominated access tracks, and additional telecommunications connections to existing substations. Some of this infrastructure is located within waterfront land (ie within 40m of a waterway) and/or crosses waterways
- an increase in potable water requirements
- inclusion of potential controlled blasting locations for transmission line structures construction.

For potential water quality, erosion and sedimentation and geomorphology impacts on surface water, the increase in potential impacts would require the development and implementation of more site specific Erosion and Sediment Control Plans (ESCPs) and Soil and Water Management Plan (SWMPs) to mitigate any impacts.

The increase in potable water requirements would require further consultation with councils to ensure that supplies are adequate to meet demands.

The changes to the transmission line route do not result in any overall change in potential impact significance but may have minor localised impacts in some areas.

Overall, with the implementation of the proposed mitigation measures (discussed in Chapter 7), the amended project is expected to have minimal additional impacts, compared to impacts identified in the EIS, on existing surface water and groundwater resources during construction.

6.2 Operational impacts

6.2.1 Erosion risk and sedimentation impacts

The amended project involves changes to the transmission line corridor in some locations (including the Green Hills corridor amendment) as well as nomination of additional access tracks/waterway crossings that may be retained during operation for maintenance activities. This may have resulted in slight changes to the location of erosion risk and sedimentation during operation, however overall the potential operational erosion risk and sedimentation impacts of the amended project are generally consistent with the impacts described in Section 7.1.1 of the *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS. For a summary of potential erosion risk and sedimentation impacts refer to Table 7.1 of the *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS.

6.2.2 Geomorphology

The amended project involves nomination of additional access tracks/waterway crossings that may be retained during operation for maintenance activities. This may have resulted in slight changes to the location of geomorphology risks during operation, however overall the potential operational geomorphological impacts of the amended project are generally consistent with the impacts described in Section 7.1.2 of the *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS. For a summary of potential geomorphological impacts refer to Table 7.2 of the *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS.

6.2.3 Water quality

The amended project also involves changes to the transmission line corridor in some locations (including the Green Hills corridor amendment) as well as nomination of additional access tracks/waterway crossings that may be retained during operation for maintenance activities. For these aspects, the potential operational water quality impacts of the amended project are generally consistent with the impacts described in Section 7.1.3 of the *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS. For a summary of water quality and sedimentation impacts refer to Table 7.3 of the *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS.

The amended project removes potential water quality risks from the telecommunications hut as this is no longer proposed in the amended project.

The proposed amendments to the Gugaa 500 kV substation layout (including the split bench arrangement proposed in the amended project) and equipment is unlikely to result in any changes to water quality risks that were assessed in the EIS due to the location of the substation and the proposed construction activities remain unchanged.

6.2.4 Operational water supply

The potential operational water supply impacts of the amended project are generally consistent with the impacts described in Section 7.1.4 of the *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS. For a summary of water supply impacts refer to Table 7.4 of the *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS. None of the amendments or refinements have the potential to change the impacts to water supply during operation as the operational water requirements would be consistent with the EIS project.

6.2.5 Wastewater disposal

The potential operational wastewater disposal impacts of the amended project are generally consistent with the impacts described in Section 7.1.5 of the *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS. For a summary of potential wastewater disposal impacts refer to Table 7.5 of the *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS. None of the amendments or refinements have the potential to change the impacts relating to wastewater operational requirements as operational wastewater management would be consistent with the EIS project.

6.2.6 Groundwater

The amended project involves changes to the transmission line corridor in some locations (including the Green Hills corridor amendment) and has marginally increased the maximum expected transmission line structure piling depth to up to 28 metres below ground level. The substation bench layout at the proposed Gugaa 500 kV substation and nominated access track locations have also been amended. However, these changes are considered minor and therefore the potential operational groundwater impacts of the amended project are generally consistent with the impacts described in Section 7.1.6 of the *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS. For a summary of potential operational groundwater impacts refer to Table 7.6, Table 7.7 and Table 7.8 of the *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS.

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:

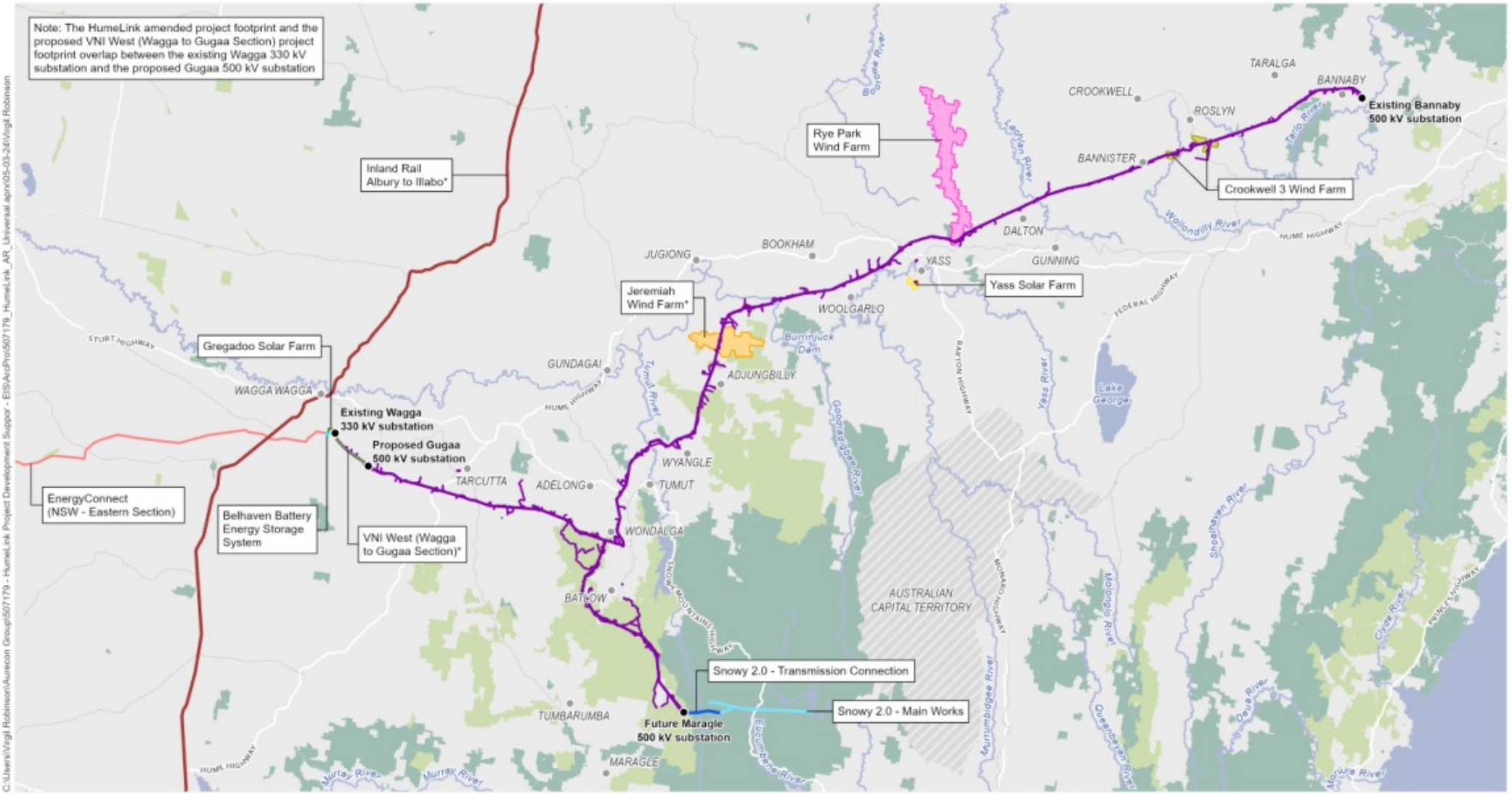
- Belhaven Battery Energy Storage System
- Yass Solar Farm.

Table 6-20 presents the cumulative impacts of the amended project for these two newly identified proposed projects.

The location of projects for which cumulative impacts were considered relative to the amended project are shown in Figure 6-3.

Table 6-20 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 (Ramboll, 2023) outlines potential impacts to surface and groundwater. Potential water quality impacts include: ■ increased flow volumes and mobilising soils into waterways ■ increased localised flooding due to change in overland flow paths ■ intercepting groundwater and impacts to quality, quantity and recharge. Potential mitigation measures include: ■ avoiding works withing 40 metres of watercourse ■ installing sediment and erosion controls ■ minimising depth of excavations. Therefore, with proposed mitigation measures no expected cumulative impacts are expected.
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. However, given the proximity and likely impacts, cumulative impacts are likely limited to the establishment and use of HumeLink's combined worker accommodation facility and construction compound proposed at Yass during construction only.	The Yass Solar Farm Scoping Report (Ramboll, 2023) provides a summary of potential impacts to surface water and groundwater. The potential water impacts include: ■ increase in impervious areas, reducing site drainage potential ■ mobilising sediments into nearby waterways, impacting water quality ■ chemical spills (including hydrocarbons and concrete), impacting water quality ■ intercepting groundwater, impacting on quality, quantity and/or recharge Potential mitigation measures include: ■ avoiding works withing 40 metres of watercourse ■ spill protection ■ installing sediment and erosion controls ■ minimising depth of excavations. Therefore, with the proposed mitigation measures no cumulative impacts are expected.



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

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HumeLink **Surface Water and Groundwater**

FIGURE 6-3: Relevant future projects

7 Management of impacts

The management of impacts are described in Section 11 of the *Technical Report 12 – Surface Water and Groundwater Impact Assessment* prepared for the EIS. These processes and mitigation measures are still relevant to the amended project and are presented below.

7.1 Overview of approach

7.1.1 Construction

A SWMP would be prepared and implemented as part of the Construction Environmental Management Plan (CEMP). The SWMP would identify all reasonably foreseeable risks relating to soil erosion, water pollution and any potential dewatering during construction and describe how these risks would be managed. The SWMP would contain appropriate measures (as a minimum) to:

- minimise the extent of ground disturbance
- divert surface water runoff around construction locations
- install erosion controls within construction locations
- collect and filter sediment from surface water runoff within construction locations
- store/stockpile materials away from receiving waters and overland flow paths
- manage stockpiles to minimise erosion and sediment transport
- manage saline and acid sulfate soils (if present)
- minimise the potential of soil and water quality impacts during storage of project wastes and potentially polluting substances
- minimise the duration of soil exposure and progressively rehabilitate and stabilised disturbed areas
- manage unexpected finds of contaminated materials
- manage dewatering processes to ensure appropriate handling, storage, transport, disposal and monitoring of dewatering/discharge volumes and quality
- manage dewatering in line with the minimal impact criteria listed within the NSW AIP, relevant WSPs and licencing requirements where relevant
- manage spills to reduce and address soil and water contamination.

Site-specific SWMPs would also be prepared where amended project components may have greater impacts than just erosion and sedimentation. Site specific SWMPs may be developed, where relevant, for:

- substation sites
- construction compounds
- combined worker accommodation facilities and construction compounds.

SWMPs would include ESCPs to detail erosion and sediment controls to be implemented at specific sites and for specific construction activities and would include rehabilitation and/or restoration requirements. SWMPs and ESCPs would be prepared in accordance with *Managing Urban Stormwater – Soils and Construction, Volume 1* (Landcom, 2004) as well as other relevant guidelines. ESCPs would include both site-specific and activity-based ESCPs depending on the erosion risk. Construction in low erosion risk areas would generally use activity-based ESCPs whereas construction in a high erosion risk area would require a site-specific ESCP (ie waterway crossings of higher order streams). In areas where there is a moderate risk of erosion and sedimentation impacts, further assessment would be required to determine whether a site specific or activity-based ESCPs would be used.

In addition, SWMPs would include water quality monitoring requirements, detailing routine water quality monitoring and other monitoring to be undertaken during certain construction activities (ie Construction of major project elements adjacent to waterways) to detect any potential water quality impacts. The water quality monitoring objectives and guideline values would be specific to the major catchments and consider relevant legislation and include surface water and groundwater monitoring depending on the construction activity.

An Emergency Spill Procedure would be developed to manage spill events during construction as part of the CEMP. The procedure would include spill emergency response measures. Refer to *Technical Report 10 – Phase 1 Contamination Assessment* prepared for the EIS and *Technical Report 10 – Phase 1 Contamination Assessment Addendum* for management of contamination impacts.

Water supply options and management would be undertaken in accordance with agreements between the construction contractor and relevant existing license holders or water suppliers.

7.1.2 Operation

Operational impacts would be further considered and mitigated during detailed design for the following infrastructure:

- substations
- permanent access tracks
- permanent waterway crossings
- transmission line structures.

Relevant guidelines, legislation and standards would be considered during this process.

In addition, Transgrid has operational procedures and management plans to manage and mitigate environmental impacts and risks from the ongoing management and maintenance of its assets and these would be implemented during operation.

7.2 Summary of mitigation measures

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.~~ Environmental management measures identified in the EIS that are relevant to the amended project that remain unchanged, have been omitted, but will still be captured in the revised environmental management measures for the amended project as a whole.

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Table 7-1 Revised and new mitigation measures

Impact	Mitigation measures	Timing	Relevant location
SW2 Water quality and geomorphology	~~Design~~ **Consideration** of scour protection will be included in any infrastructure that is within a waterway ~~channel~~. The design will incorporate features that minimise impact on flow conditions and natural functioning of the waterway, where ~~possible~~ **feasible and reasonable**. For work within or near waterways consider and adhere to the following guidelines: ~~• Guidelines for controlled activities (Riparian corridors and Watercourse crossings) (DPI, 2012)~~ ■ ***Guidelines for Controlled Activity - In-stream works*** **(Department of Planning and Environment,)** ■ ***Guidelines for Controlled Activity - Watercourse crossings*** **(Department of Planning and Environment,)** ■ *Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings* (DPI, 2003) ■ *Policy and Guidelines for Fish Habitat Conservation and Management* (Update 2013) (DPI, 2013).	Detailed design and construction	Waterways
SW4 Water supply	Water supply ~~options and~~ management will be undertaken in accordance with agreements between the construction contractors**, relevant landowners**, and relevant water users and suppliers. **Groundwater and surface water allocations purchased from existing registered bores/users must be extracted in accordance with the conditions stated in the associated Water Access Licence(s) (WAL(s)) and Water Supply Works approval(s).**	Detailed design and construction	All locations
SW5 Groundwater flow paths, levels and users	Alternative construction methodologies will be investigated and implemented as required to minimise impacts to **groundwater dependent ecosystems** (GDEs) and registered groundwater bores, if identified to be directly impacted during detailed design. Make good provisions will need to be made to the groundwater user(s) for bores that will be affected **in line with the minimal impact criteria listed within the NSW Aquifer Interference Policy.** **Where groundwater dewatering is required, the following will be conducted:** ■ **dewatering assessment (including dewatering volume estimates)** ■ **dewatering procedures will be included in the Soil and Water Management Plan (SWMP) in line with the minimal impact criteria listed within the NSW Aquifer Interference Policy, relevant water sharing plans (WSPs) and licencing requirements where relevant** ■ **Water Supply Works Approval (where needed)** ■ **Water Access Licence (WAL) (if dewatering volumes exceed 3ML/year).**	Detailed design and construction	All locations
SW6 Surface water and groundwater	**Where controlled blasting is required, a suitably qualified blasting specialist will be engaged to carry out a detailed blasting assessment and trial blasts (if required) to determine blasting design and site-specific parameters.** **The blasting assessment should identify measures to limit vibrations to the recommended "safe" levels (defined in *AS 2187.2-2006 Explosives - Storage and use*), limit rock mass damage, avoid "over-blasting" and consider potential impacts to:** ■ **groundwater dependant ecosystems** ■ **groundwater users** ■ **surface water bodies.**	**Detailed design and construction**	**Controlled blasting locations**

8 Conclusion

Overall, the potential impacts and risks of the amended project to surface water and groundwater have increased compared to potential impacts and risks identified for the EIS project due a more detailed understanding of project design along with amendments and refinements, which include:

- changes to the transmission line corridor
- increased number and size of combined worker accommodation facilities and construction compounds
- inclusion of additional infrastructure in the assessment such as access tracks, additional telecommunications connections, some of which are located within waterfront land (ie within 40 metres of a waterway) and/or cross waterways
- increased potable water requirements (non-potable water demand has decreased from the EIS (498 ML to 429 ML); and potable water has increased (66 ML to 286 ML))
- inclusion of controlled blasting for some construction activities where hard rock has been identified.

The increase in potable water requirements would require further consultation with councils to ensure that the supplies are adequate to meet demands, noting that the overall volume is minor in comparison to available supplies.

The changes to the transmission line route does not result in any overall change in potential impact significance but may have minor localised impacts in some areas.

Overall, with the implementation of the proposed mitigation measures, the amended project is expected to have minimal additional impacts on existing surface water and groundwater resources, compared to the EIS project, during construction and operation.

9 References

Department of Environment and Climate Change NSW (2006) Interim Construction Noise Guideline Available at: **https://www.environment.nsw.gov.au/resources/noise/09265cng.pdf**

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 Planning and Environment (2022) Controlled activities – Guidelines for instream works on waterfront land. Available at: **https://water.dpie.nsw.gov.au/__data/assets/pdf_file/0005/386204/licensing_approvals_controlled_activities_instream_works.pdf**

Department of Planning and Environment (2022) Controlled activities – Guidelines for laying pipes and cables in watercourses on waterfront land. Available at: **https://water.dpie.nsw.gov.au/__data/assets/pdf_file/0006/386205/licensing_approvals_controlled_activities_laying_pipes_cables.pdf**

Department of Planning and Environment (2022) Controlled activities – Guidelines for outlet structures on waterfront land. Available at: **https://water.dpie.nsw.gov.au/__data/assets/pdf_file/0007/386206/licensing_approvals_controlled_activities_outlet_structures.pdf**

Department of Planning and Environment (2022) Controlled activities – Guidelines for riparian corridors on waterfront land. Available at: **https://water.dpie.nsw.gov.au/__data/assets/pdf_file/0008/386207/licensing_approvals_controlled_activities_riparian_corridors.pdf**

Department of Planning and Environment (2022) Controlled activities – Guidelines for vegetation management plans on waterfront land. Available at: **https://water.dpie.nsw.gov.au/__data/assets/pdf_file/0009/386208/Fact-sheet-Guidelines-for-vegetation-management-plans-on-waterfront-land-May-2022.pdf**

Department of Planning and Environment (2022) Controlled activities – Guidelines for watercourse crossings on waterfront land. Available at: **https://water.dpie.nsw.gov.au/__data/assets/pdf_file/0010/386209/licensing_approvals_controlled_activities_watercourse_crossings.pdf**

Department of Planning and Environment (2022) Fact sheet - Determining stream order. Available at: **Determining strahler stream order fact sheet (nsw.gov.au)**

Department of Primary Industries (2003) *Why do fish need to cross the road? fish passage requirements for waterway crossings*.

Department of Primary Industries (2013) *Policy & Guidelines for Fish Habitat Conservation & Management*.

Department of Regional NSW (2021) Seamless Geology Dataset. Available from: **https://data.nsw.gov.au/data/dataset/nsw-seamless-geology**

International Erosion Control Association (2008) *Best Practice Erosion and Sediment Control.* Available from: **https://www.austieca.com.au/publications/best-practice-erosion-and-sediment-control-bpesc-document**

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**

Hoek, E. and Bray, J.W, (1981), *Rock Slope Engineering. Revised 3rd Edition,* The Institution of Mining and Metallurgy, London, 341-351.

NHMRC (2011) Australian Drinking Water Guidelines. Version 3.8 Updated September 2022. Available at: **https://www.nhmrc.gov.au/about-us/publications/australian-drinking-water-guidelines**

NSW Government (2012), NSW Aquifer Interference Policy: NSW Government policy for the licensing and assessment of aquifer interference activities

NSW Government (2020a) Water Sharing Plan for the Murrumbidgee Alluvial Groundwater Sources 2020, Sydney, NSW, Australia.

NSW Government (2020b) Water Sharing Plan for the Murray Alluvial Groundwater Sources 2020, Sydney, NSW, Australia.

NSW Government (2021) Water Sharing Plan for the NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020.

NSW Government (2023) Water Sharing Plan for the Greater Metropolitan Region Groundwater Sources 2023.

NSW Government (2024a) Guidelines for controlled activity approvals. Available at: **https://water.dpie.nsw.gov.au/licensing-and-trade/controlled-activity-approvals/guidelines**

NSW Government (2024b) Zero share licence. Available at: **https://water.dpie.nsw.gov.au/licensing-and-trade/water-access-licences-and-approvals/zero-share-licence**

Office of Environment and Heritage (n.d.), Aboriginal Heritage Information Management System (AHIMS), Available at: **https://www.environment.nsw.gov.au/topics/heritage/search-heritage-databases/aboriginal-heritage-information-management-system**

Ramboll (2023) Belhaven Battery Energy Storage System Scoping Report. Available at: **https://www.venaenergy.com.au/wp/wp-content/uploads/2023/04/20230414-Belhaven-BESS-Scoping_Final_v4.0.WebsiteV.pdf**

Parsons, M, Ransom, G, Thoms, M, Norris, R (2002), *Australian River Assessment System: AusRivAS Physical and Chemical Assessment Module, Monitoring River Health Initiative Technical Report no 23.* University of Canberra.

Premise (2020) Yass Solar Farm Scoping Report. Available at: **https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=PDA-1001%2120200204T102906.010%20GMT**

Attachment A
Amended sections of the project

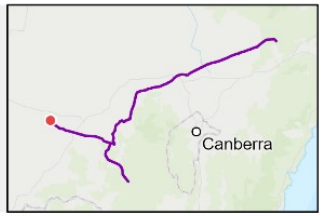
C:\Users\Virgil.Robinson\Aurecon Group\507179 - HumeLink Project Development Suppor - EIS\ArcPro\507179_HumeLink_SWGW_aprx\05-03-24

Amended project footprint

EIS project footprint

Existing Transgrid transmission line

Substation



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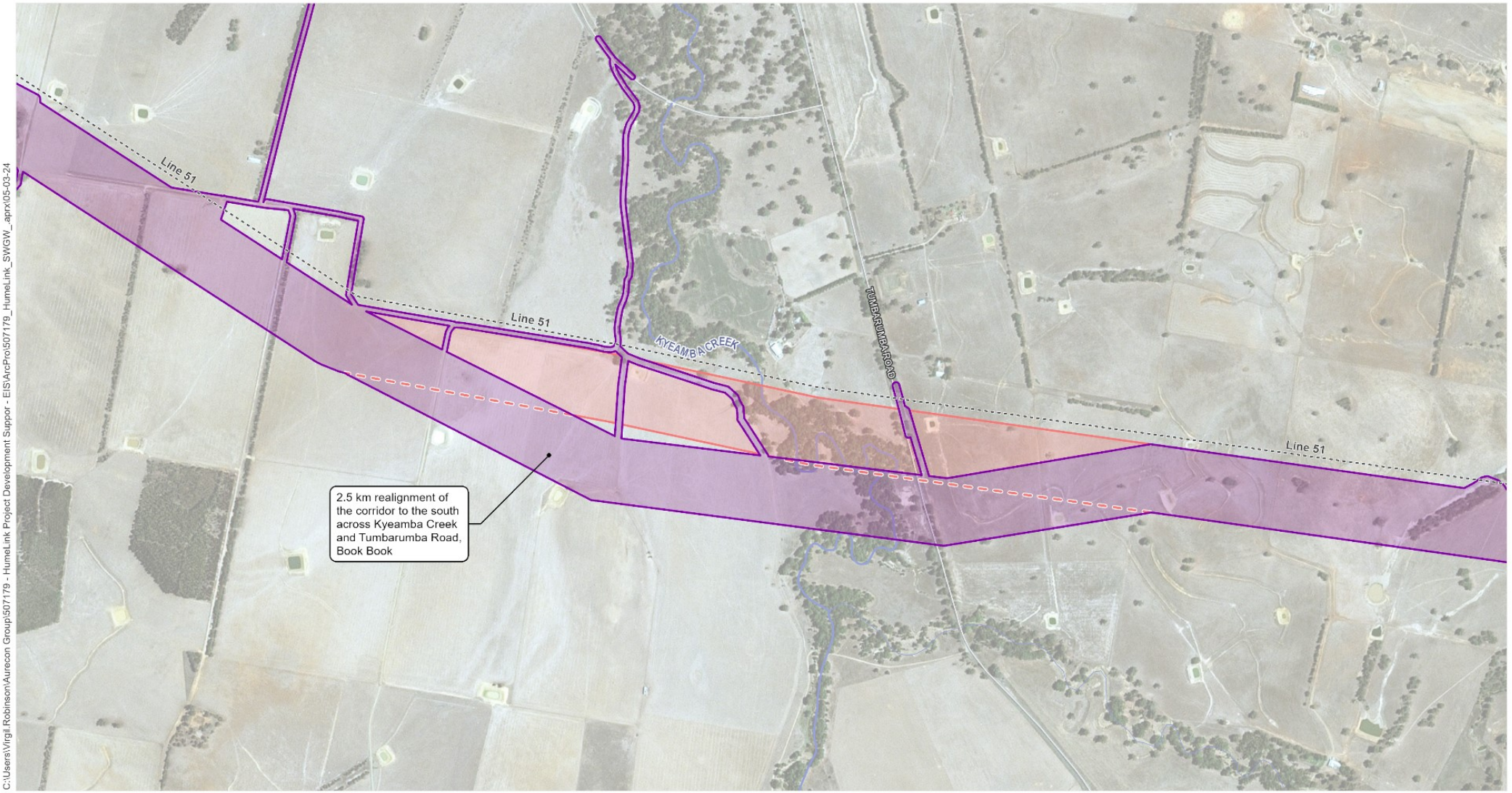

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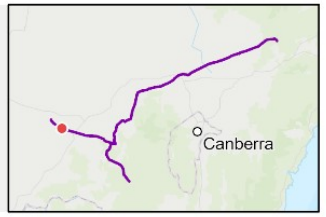
Amended project footprint

EIS project footprint

Existing Transgrid transmission line



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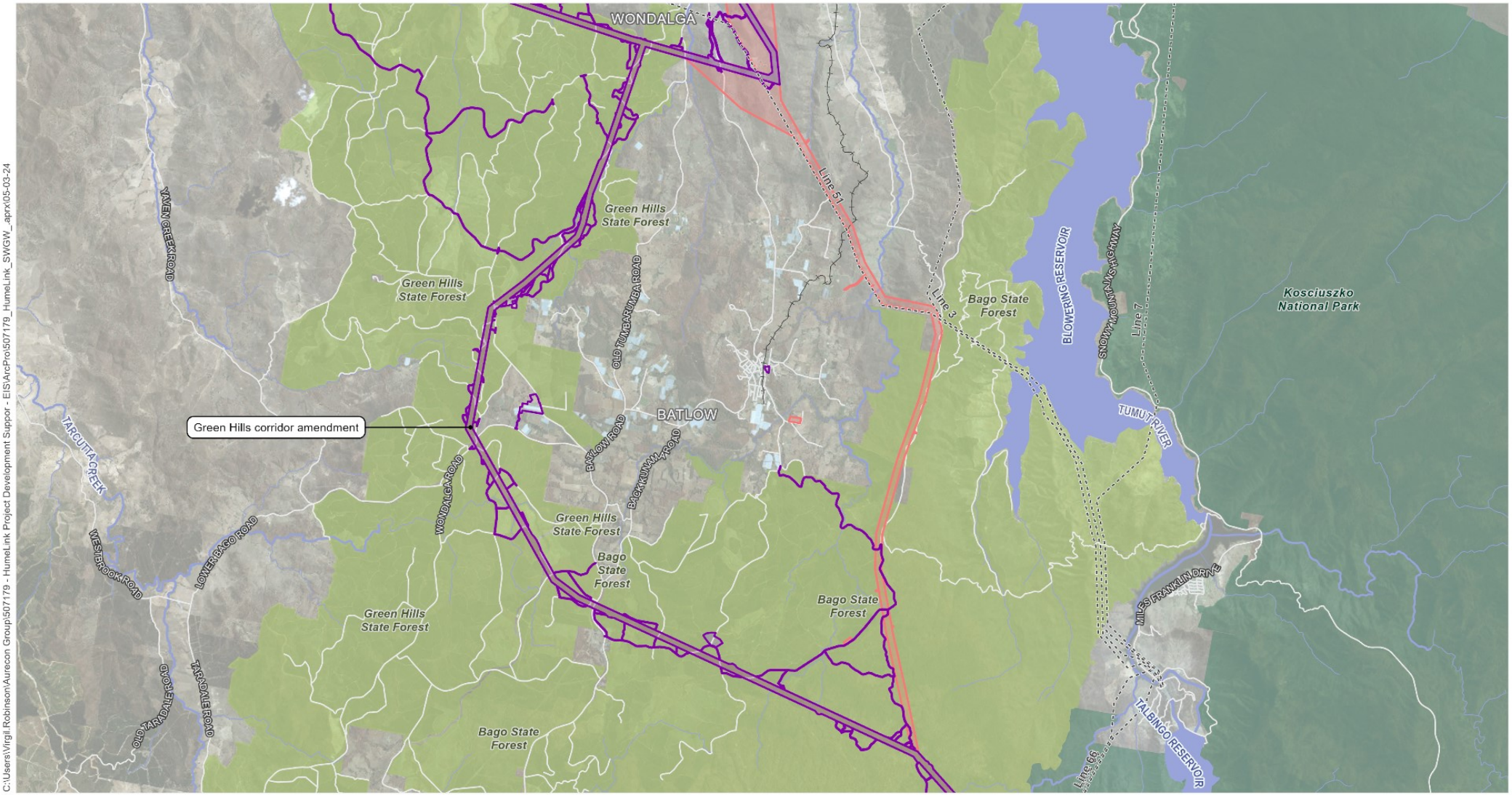
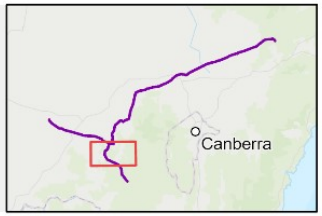


Amended project footprint
EIS project footprint
National park and reserve
State forest
Waterbody
Existing Transgrid transmission line
Railway



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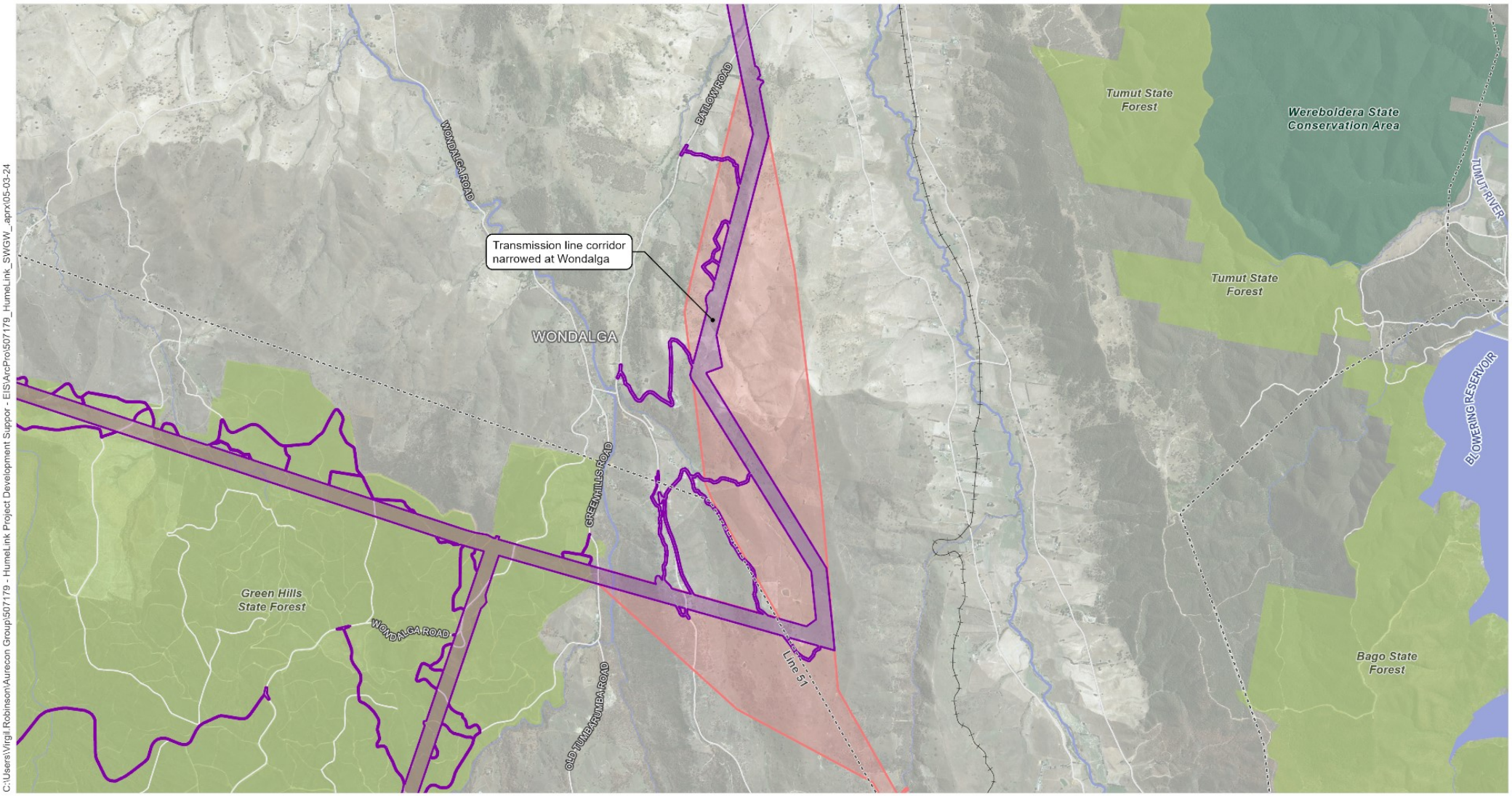

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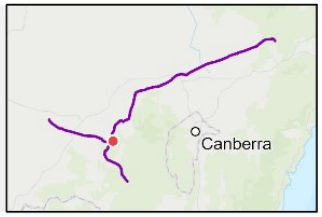
Amended project footprint
EIS project footprint
National park and reserve
State forest
Waterbody
Existing Transgrid transmission line
Railway



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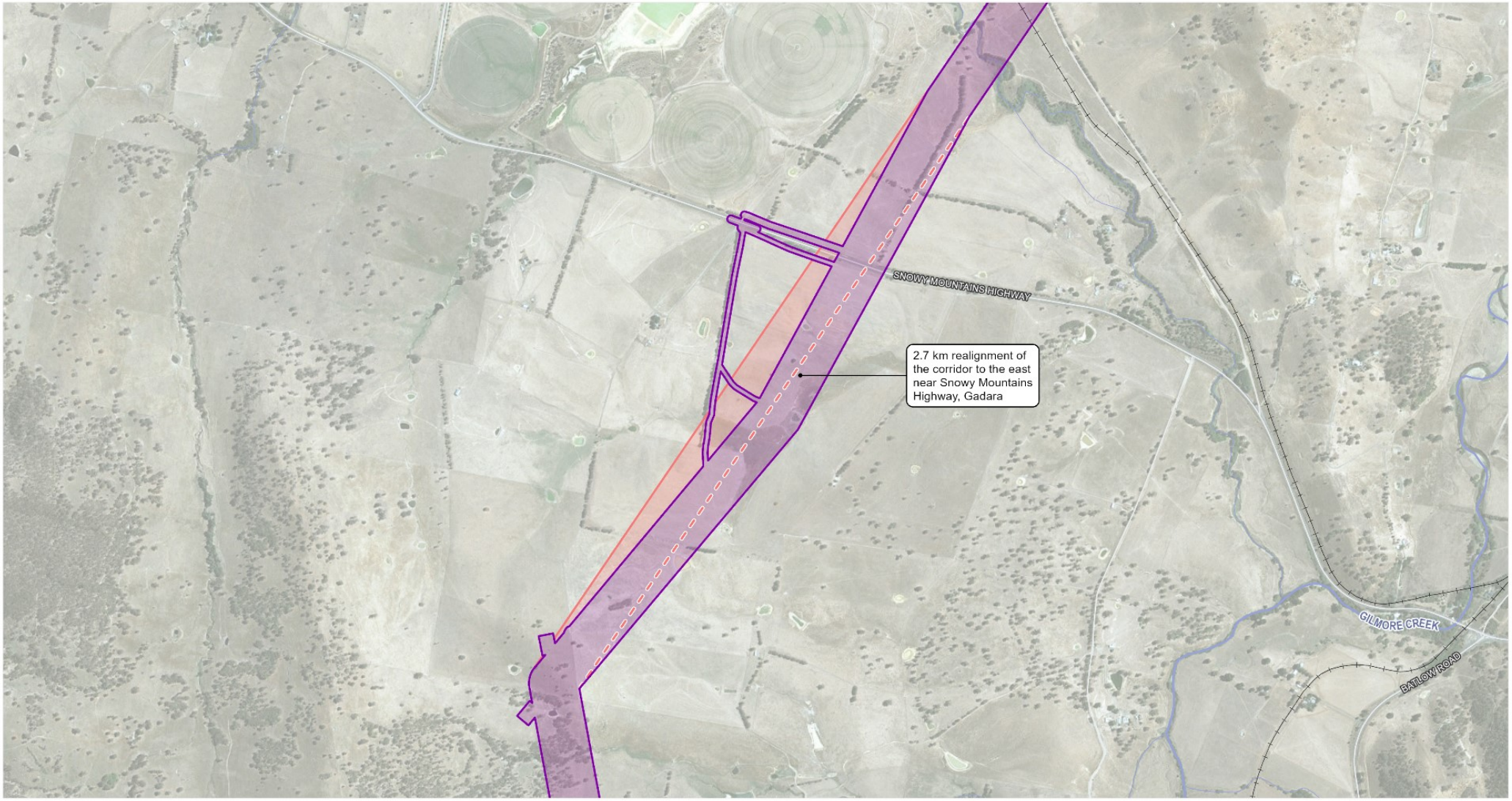

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Amended project footprint

EIS project footprint

Railway

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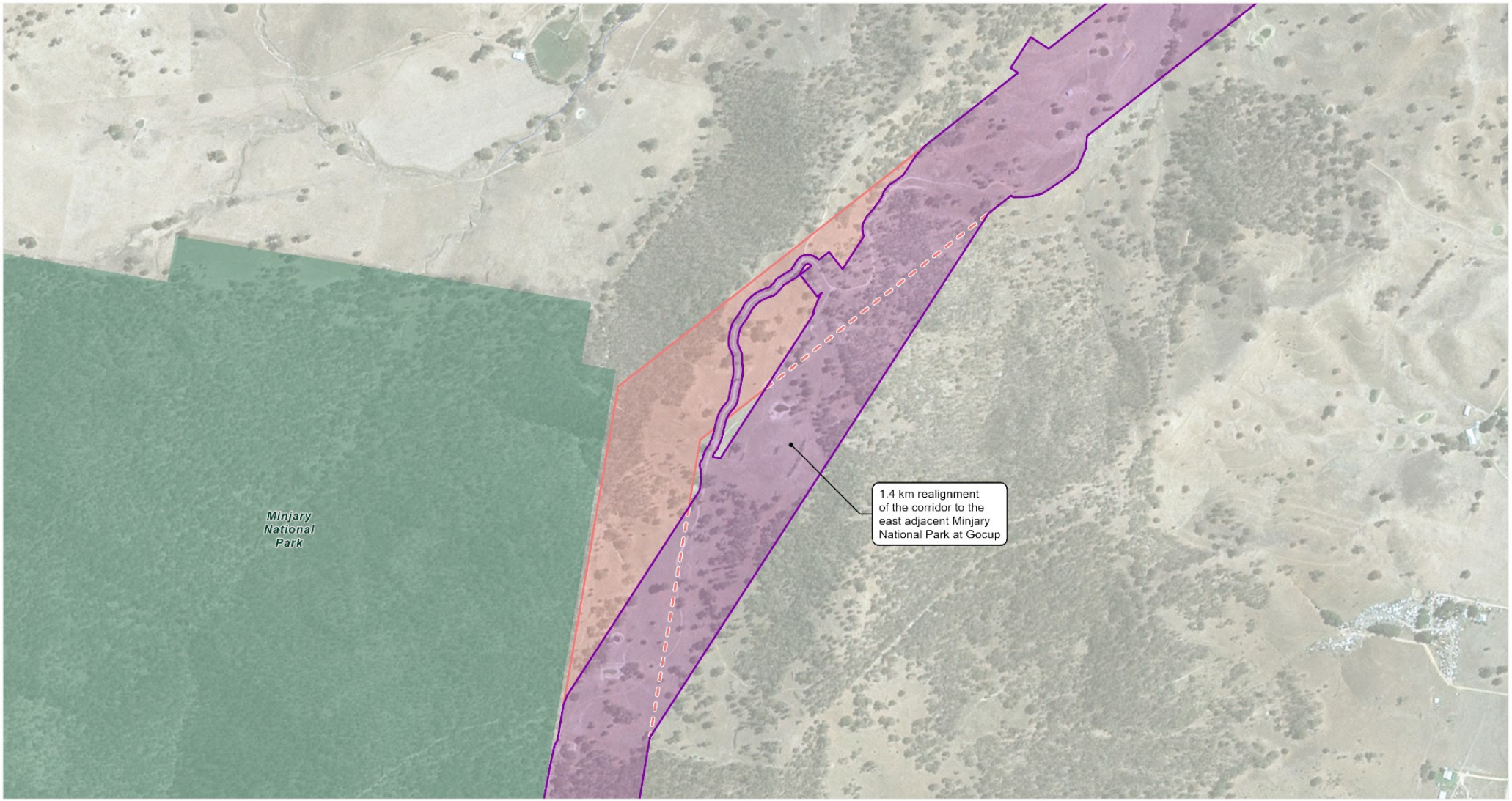

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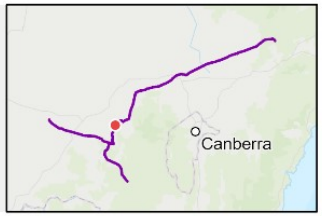
Amended project footprint

EIS project footprint

National park and reserve



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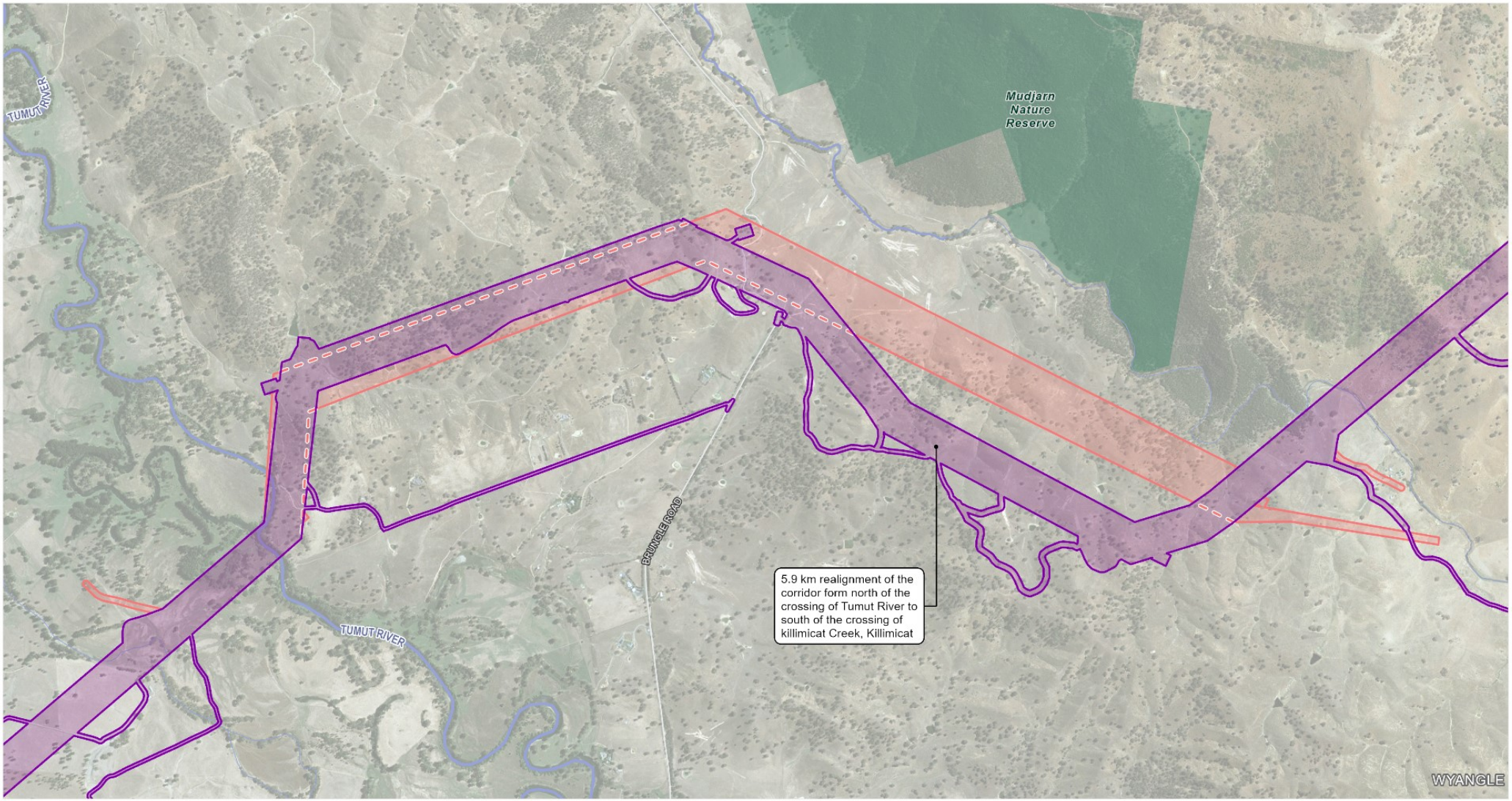

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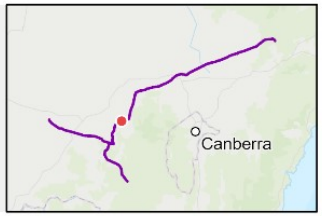
Amended project footprint

EIS project footprint

National park and reserve



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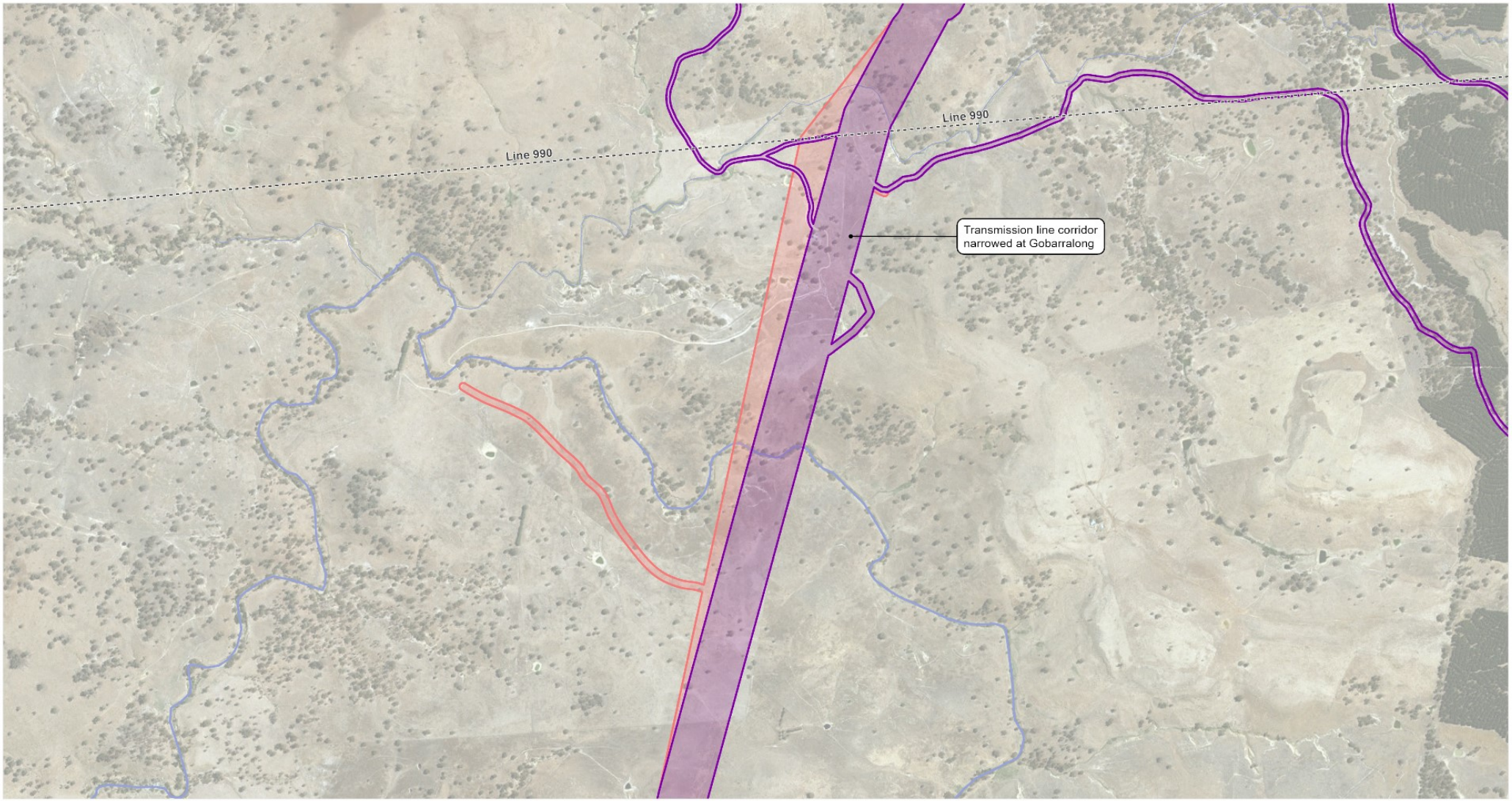

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Amended project footprint

EIS project footprint

Existing Transgrid transmission line

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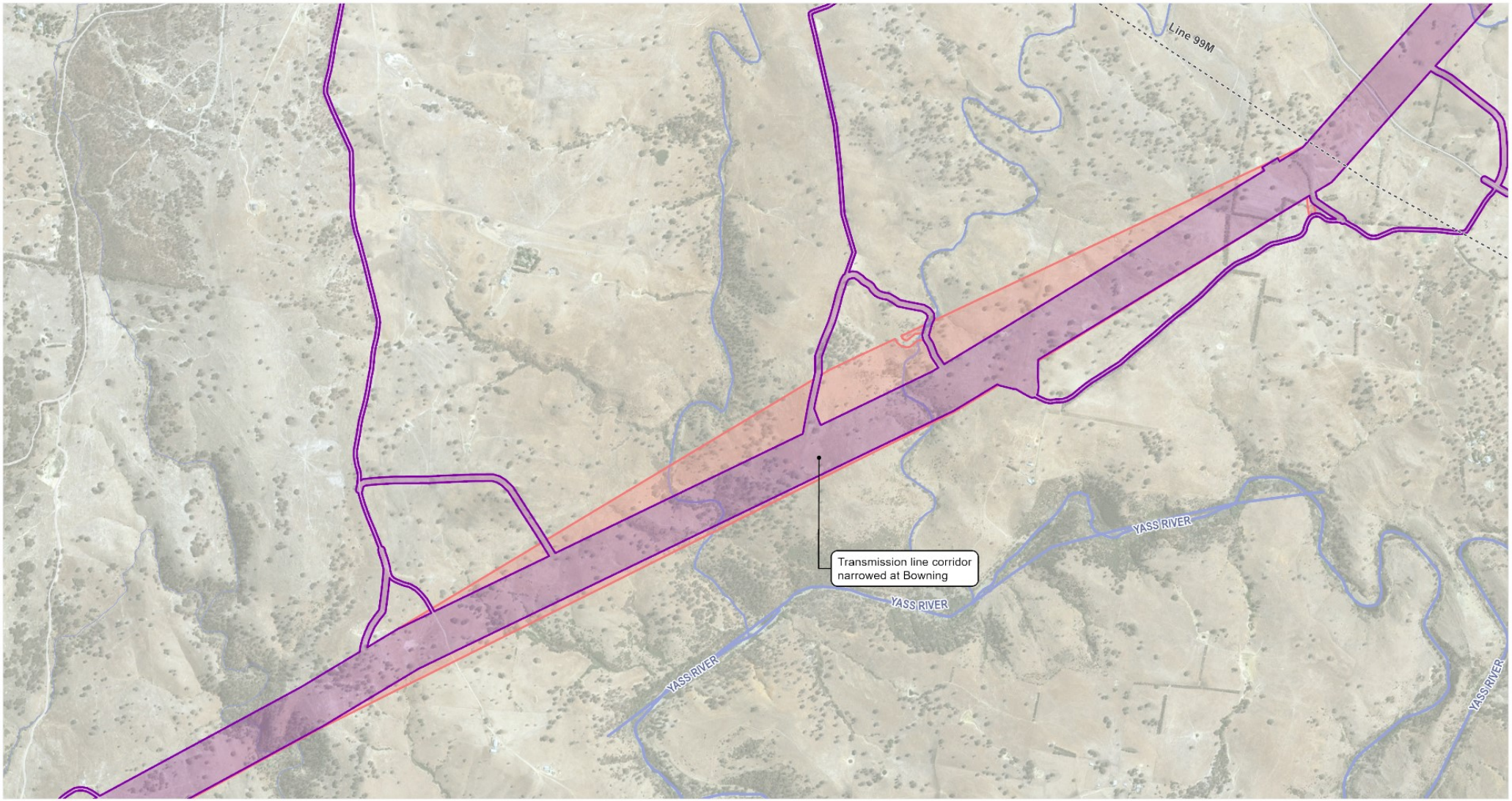

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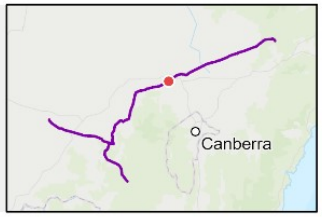
Amended project footprint

EIS project footprint

Existing Transgrid transmission line



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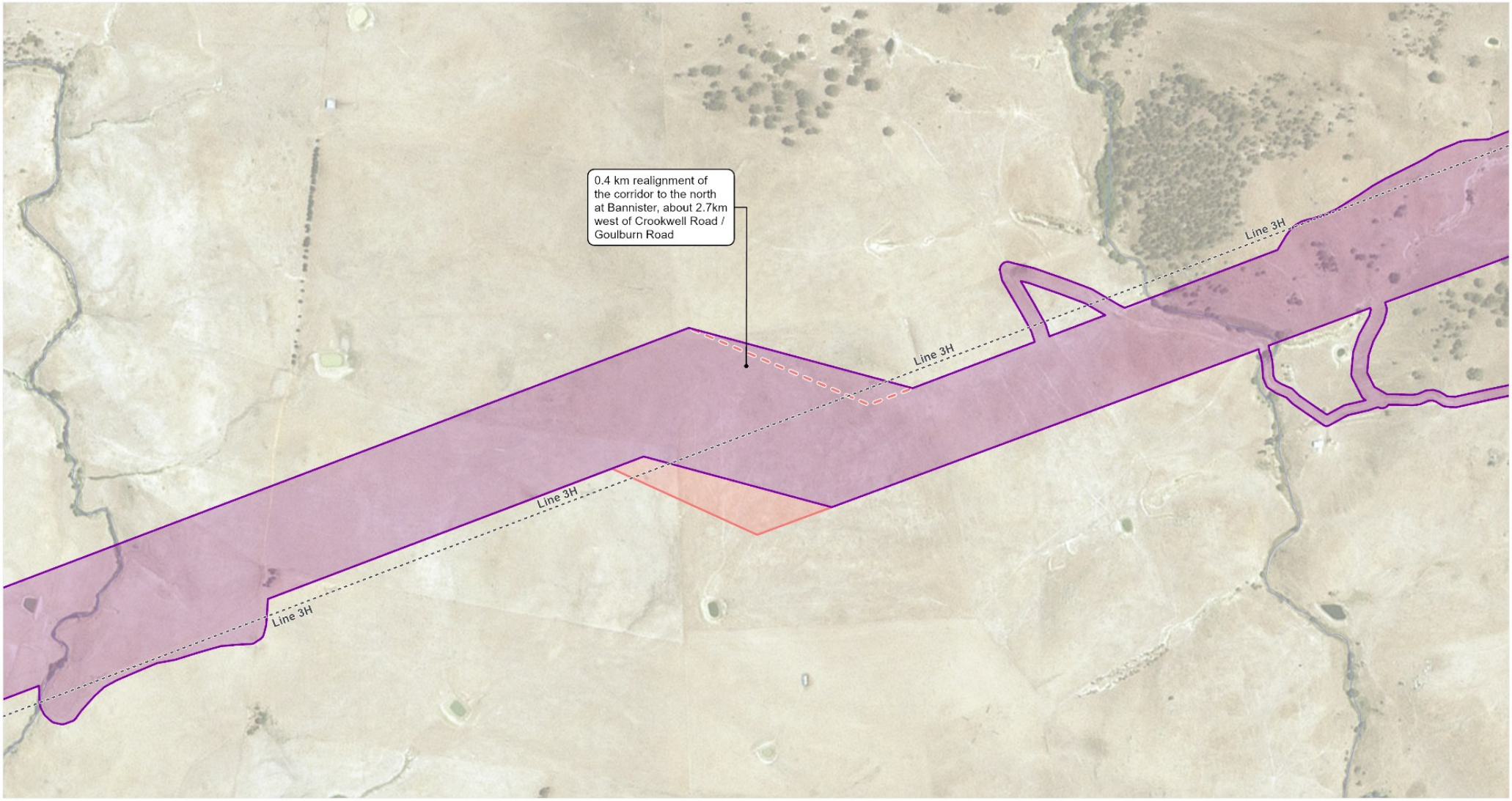

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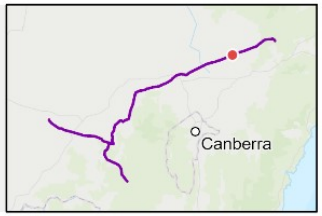
Amended project footprint

EIS project footprint

Existing Transgrid transmission line



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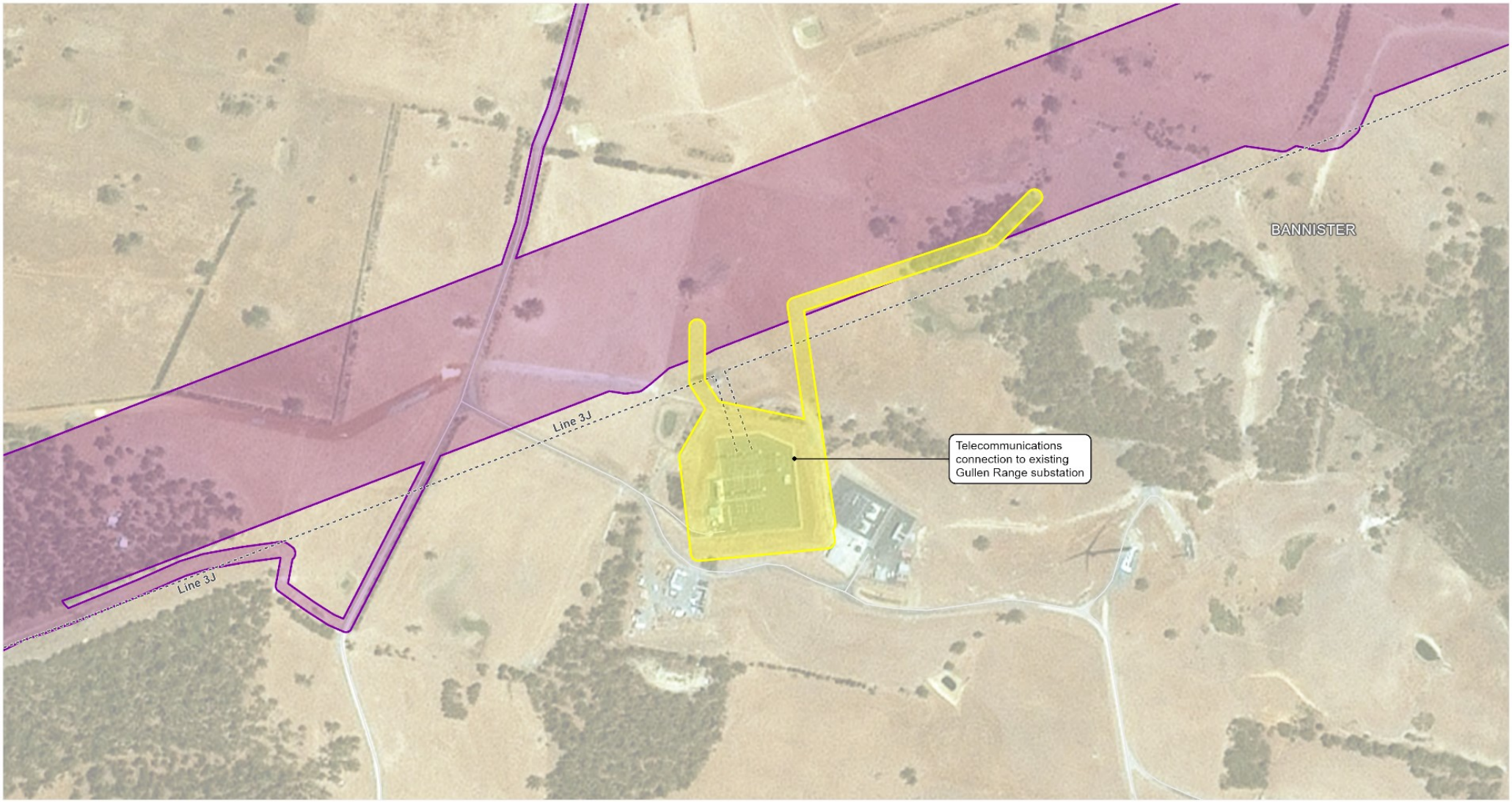

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Amended project footprint

Telecommunications connection

Existing Transgrid transmission line

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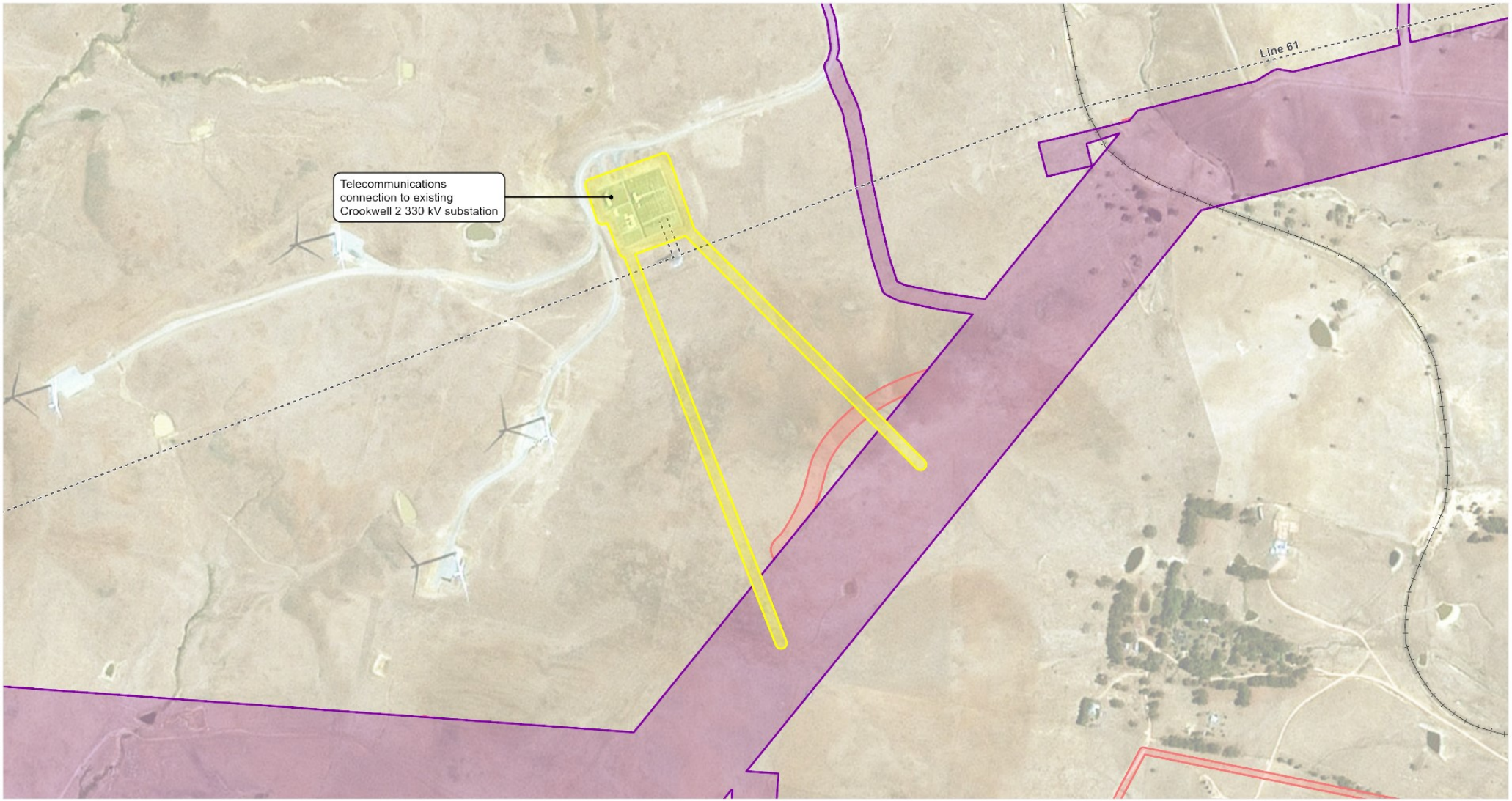

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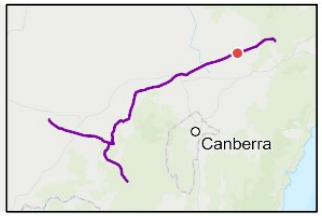
Amended project footprint

EIS project footprint

Telecommunications connection

Existing Transgrid transmission line

Railway



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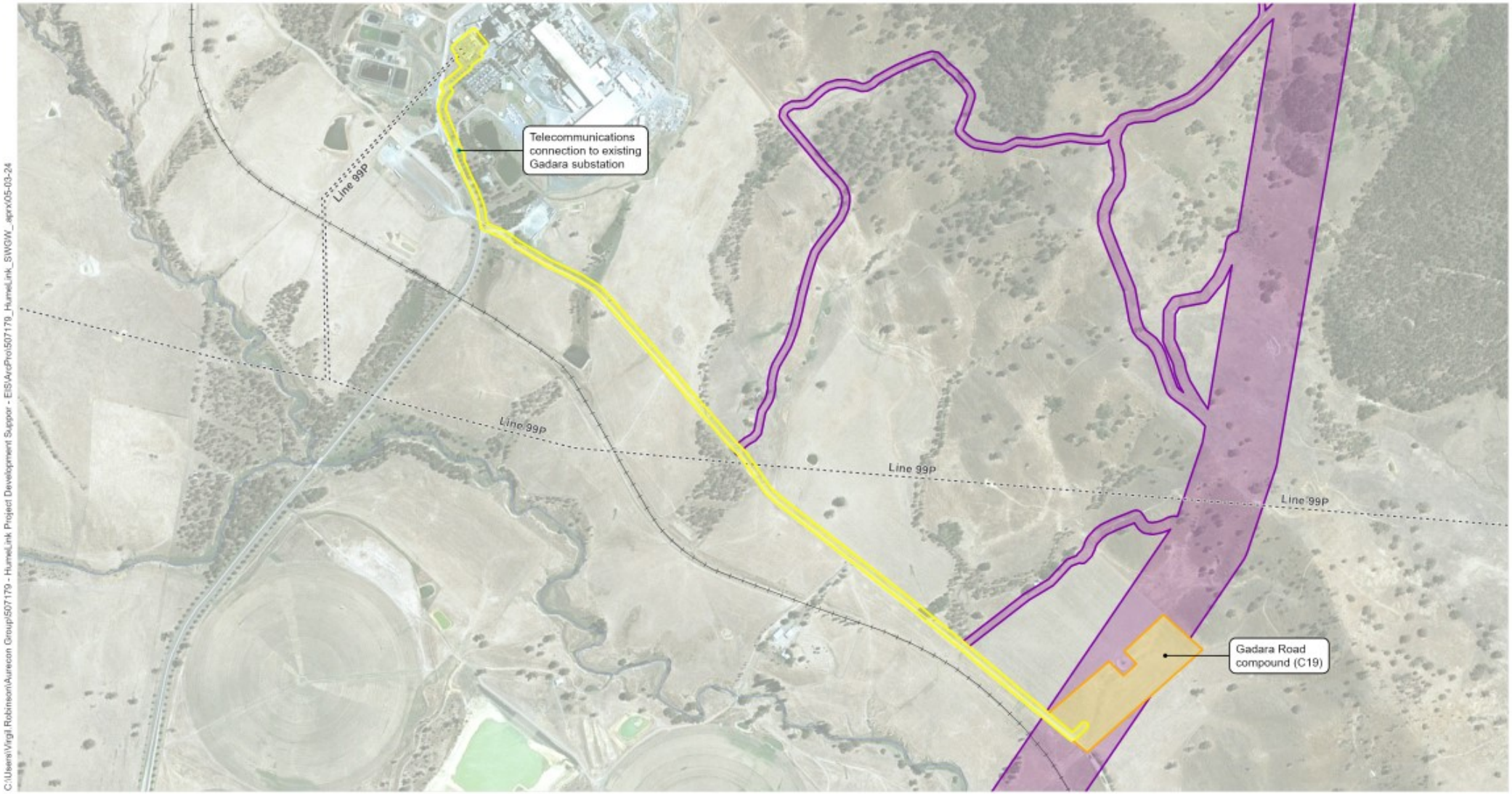

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Amended project footprint

Construction compound site

Telecommunications connection

Existing Transgrid transmission line

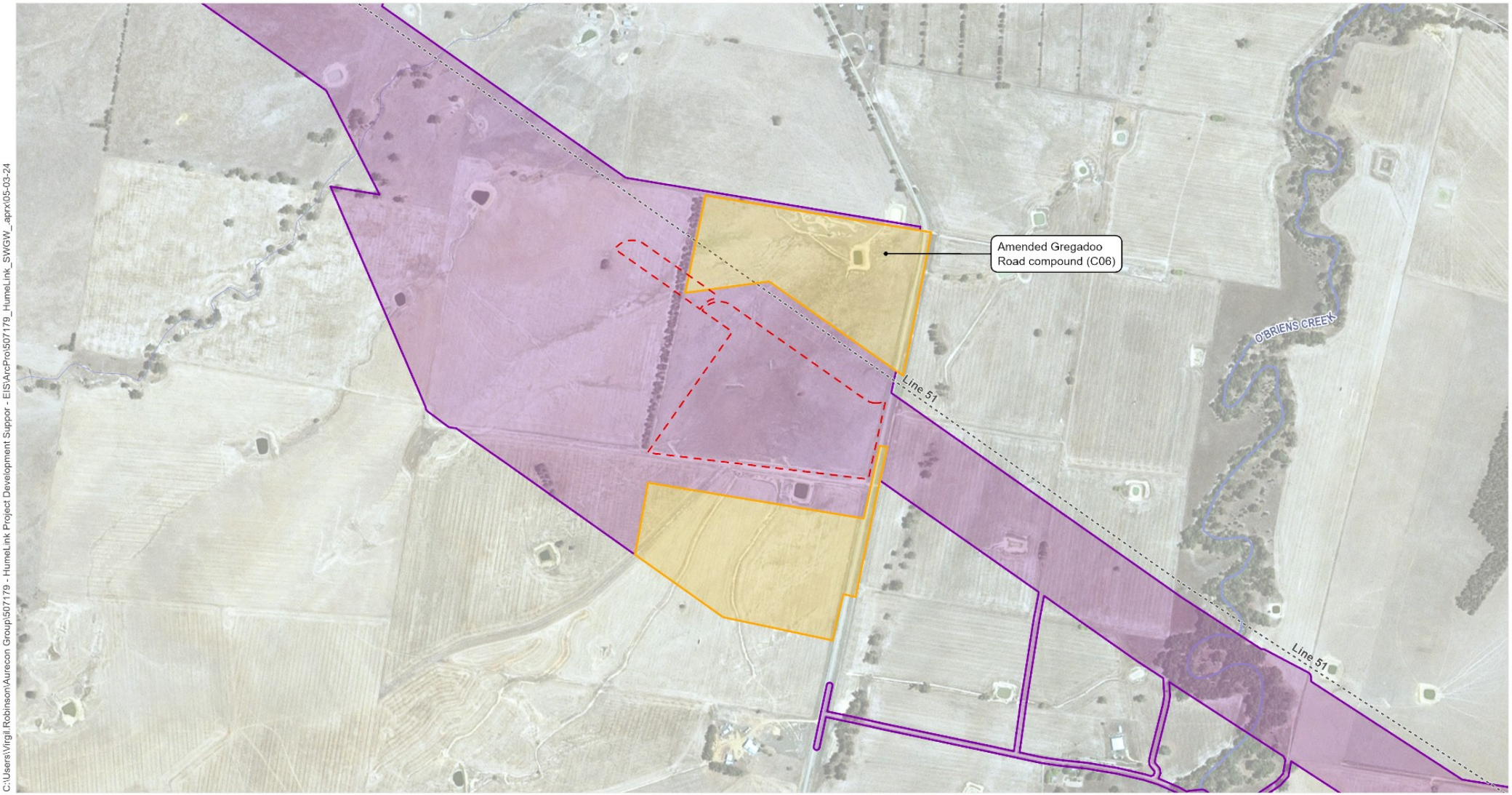
Railway

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

1:10,000

0 0.2 0.4 km

Projection: GDA 1994 MGA Zone 55



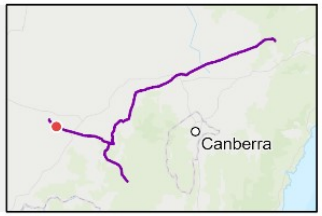
C:\Users\Virgil.Robinson\Aurecon Group\507179 - HumeLink Project Development Suppor - EIS\ArcPro\507179_HumeLink_SWGW_aprx\05-03-24

Amended project footprint

Construction compound site

Gregadoo Road compound (C06) as shown in EIS

Existing Transgrid transmission line

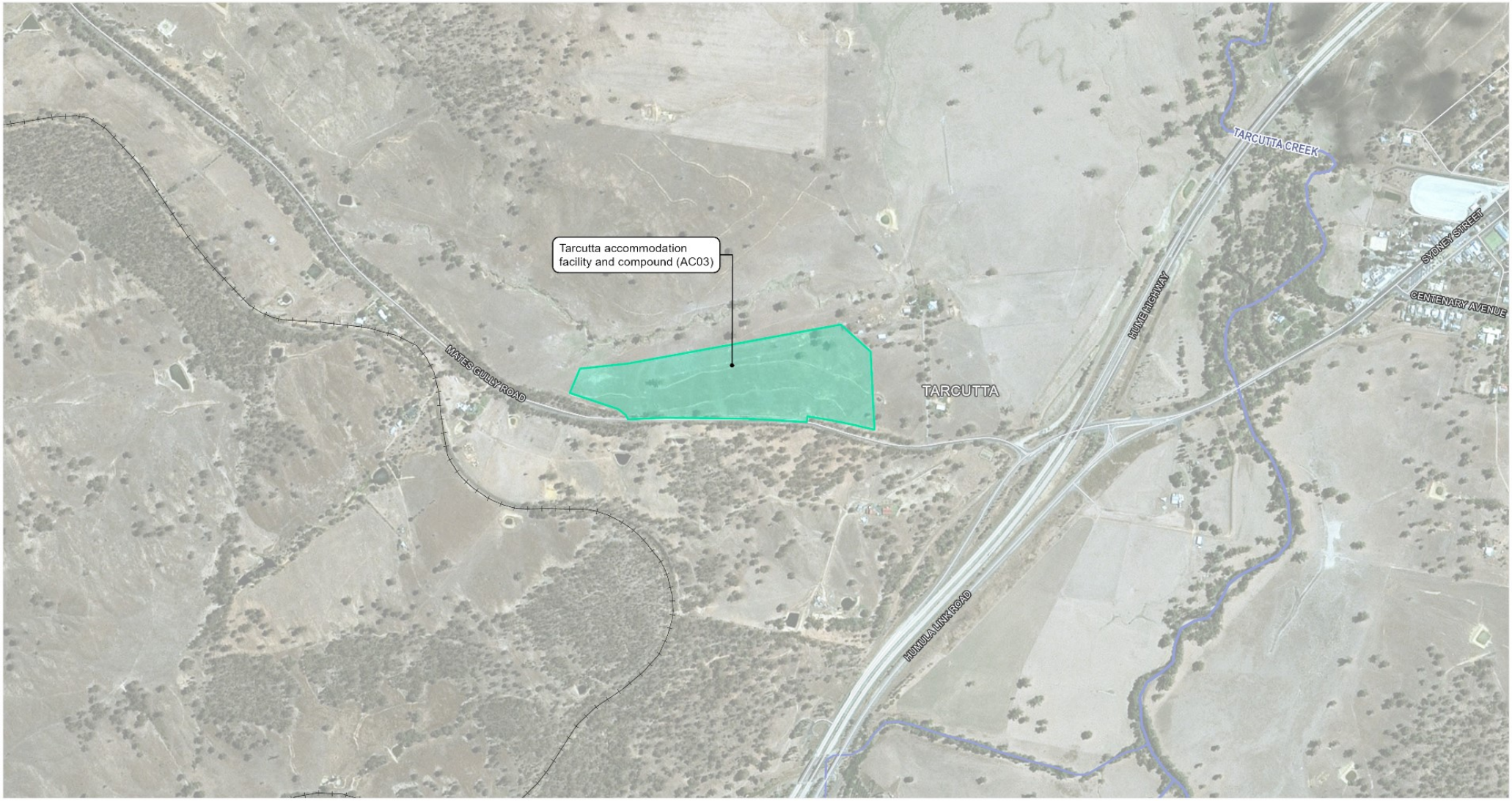


Source: *Aurecon, Transgrid, Spatial Services (DCS), ESRI Basemap*

1:10,000

0 0.2 0.4 km

Projection: GDA 1994 MGA Zone 55



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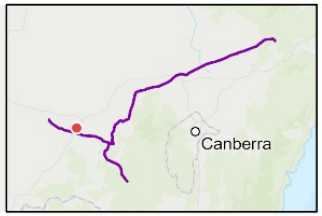
Amended project footprint

Construction compound and worker accomodation site

Railway

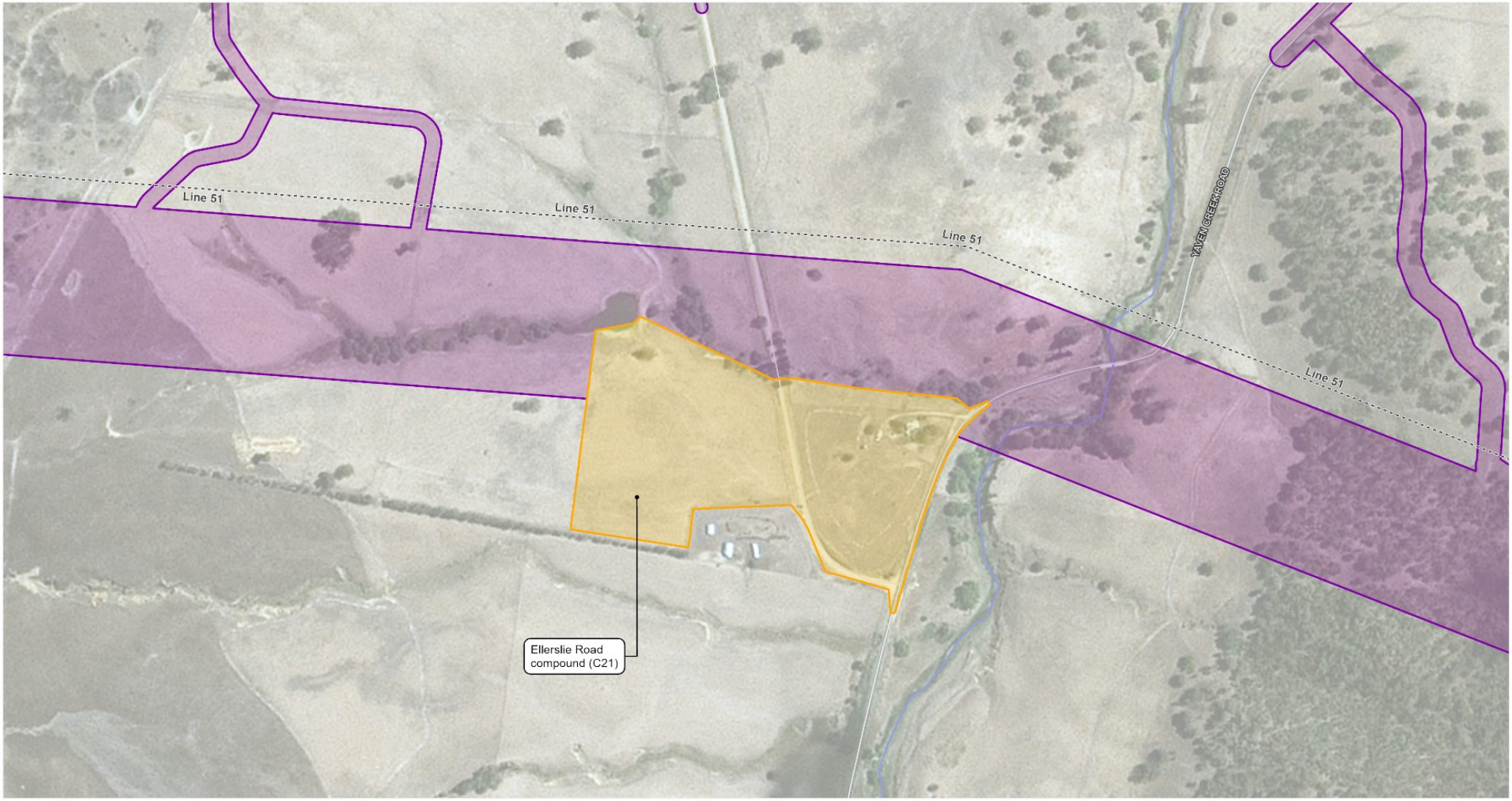


Source: *Aurecon, Transgrid, Spatial Services (DCS), ESRI Basemap*

1:10,000

0 0.2 0.4 km

Projection: GDA 1994 MGA Zone 55



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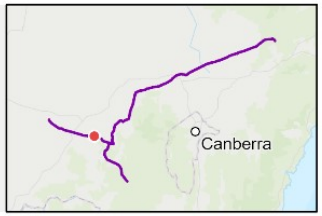
Amended project footprint

Construction compound site

Existing Transgrid transmission line

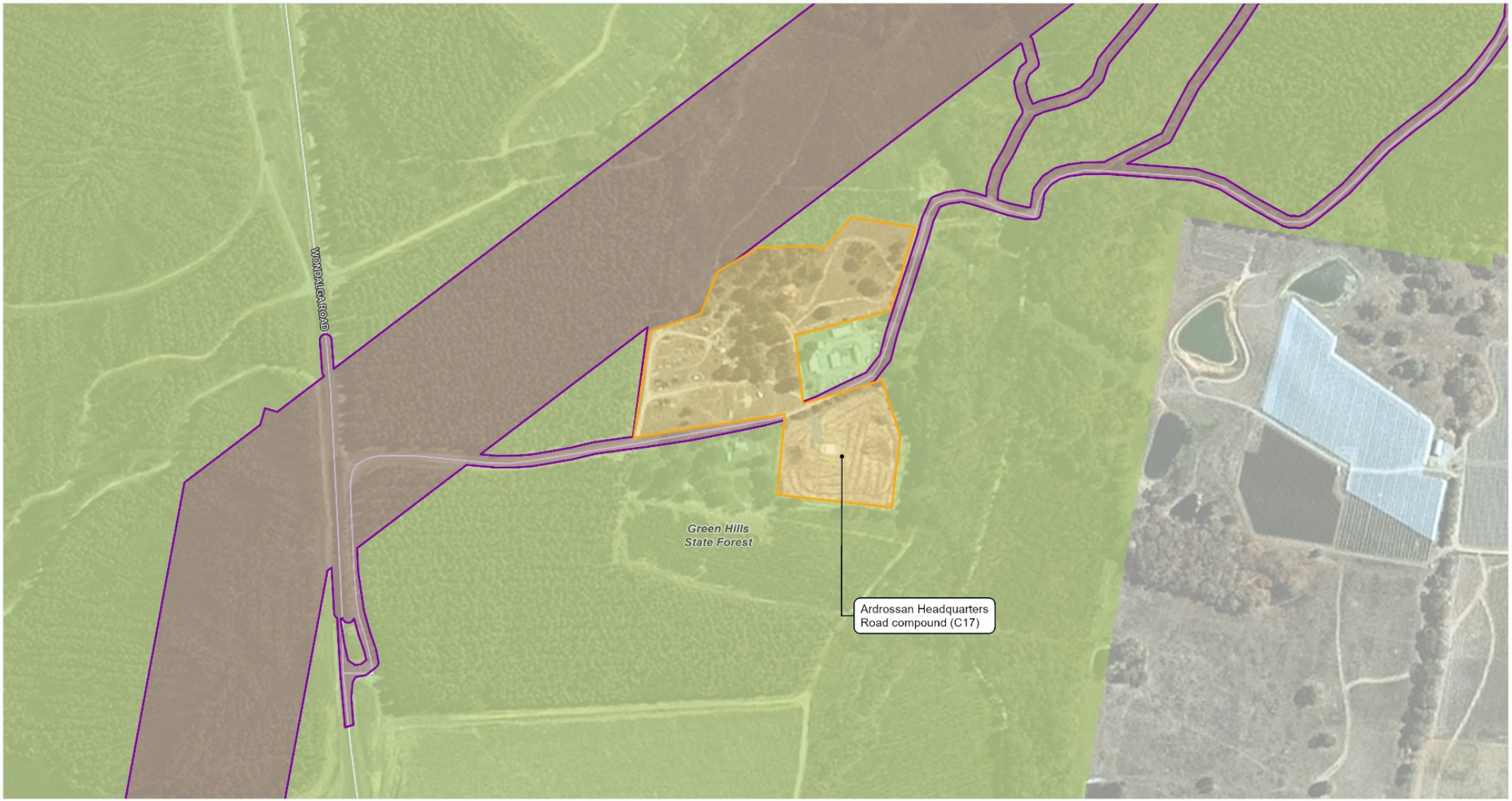


Source: *Aurecon, Transgrid, Spatial Services (DCS), ESRI Basemap*

1:5,000

0 0.1 0.2 km

Projection: GDA 1994 MGA Zone 55



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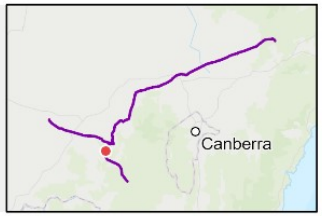
Amended project footprint

Construction compound site

State forest

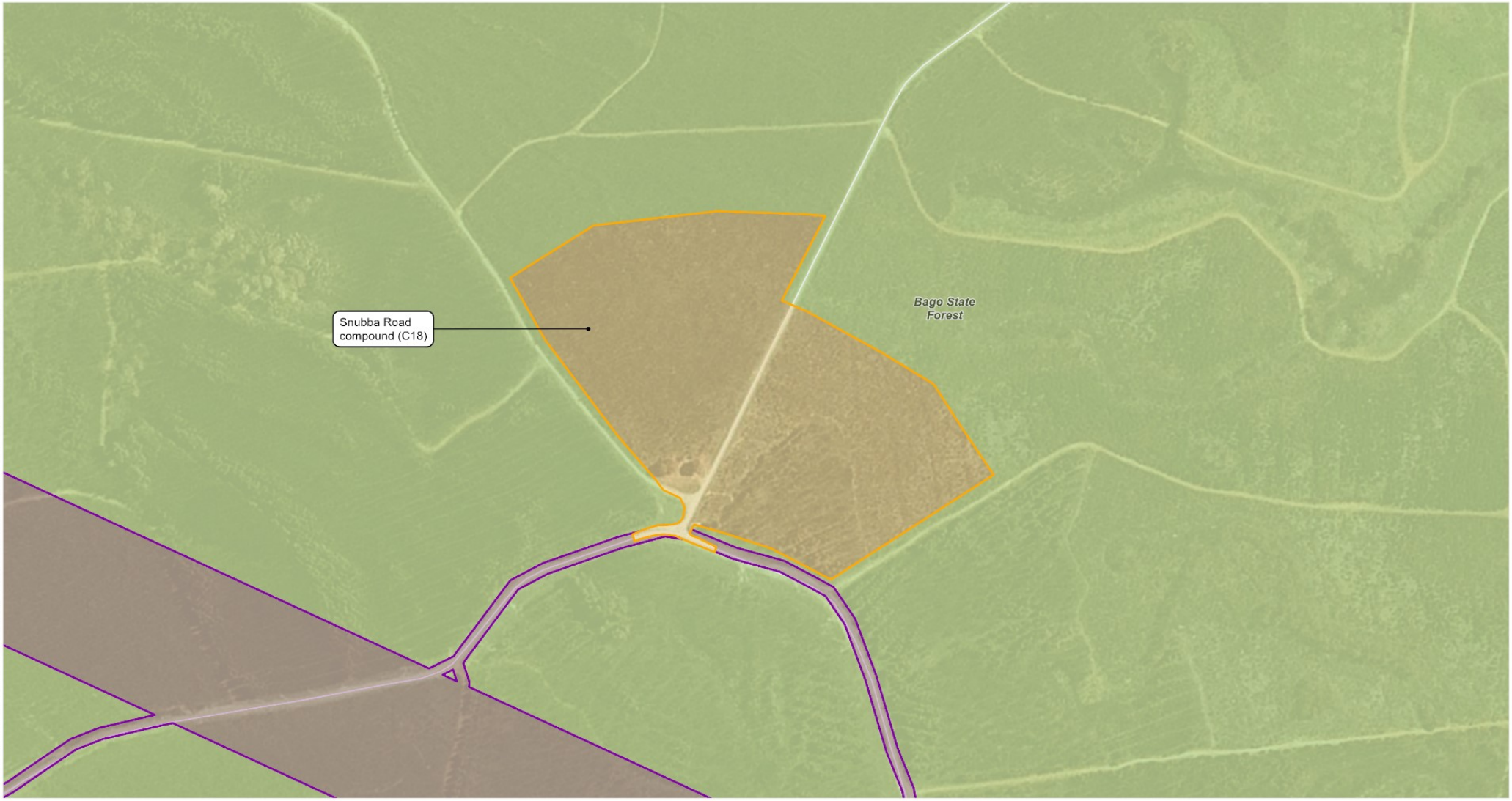


Source: *Aurecon, Transgrid, Spatial Services (DCS), ESRI Basemap*

1:5,000

0 0.1 0.2 km

Projection: GDA 1994 MGA Zone 55



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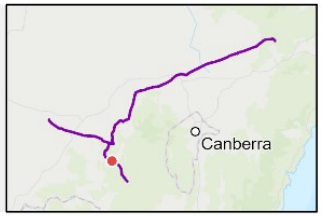
Amended project footprint

Construction compound site

State forest

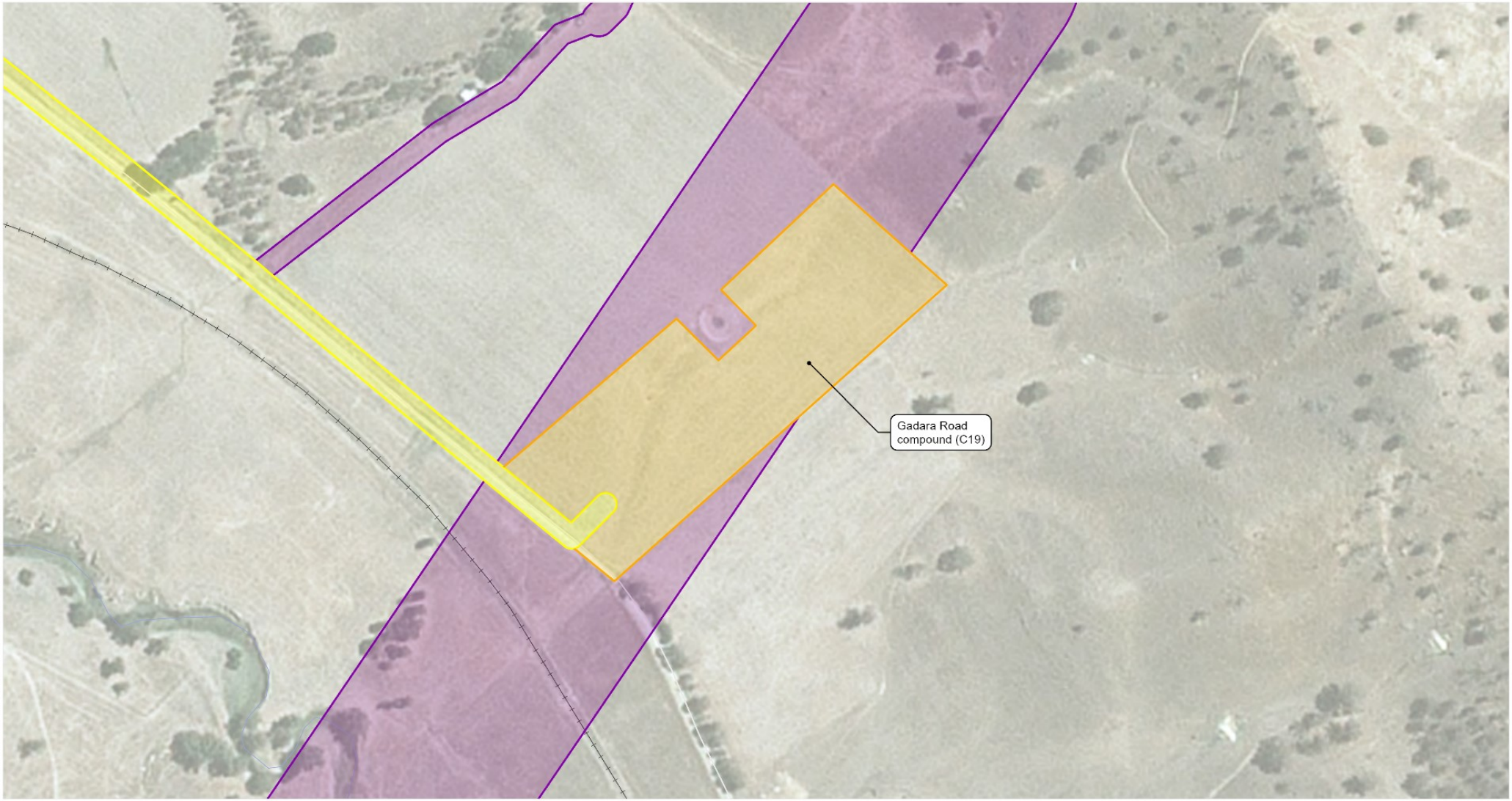


Source: *Aurecon, Transgrid, Spatial Services (DCS), ESRI Basemap*

1:5,000

0 0.1 0.2 km

Projection: GDA 1994 MGA Zone 55



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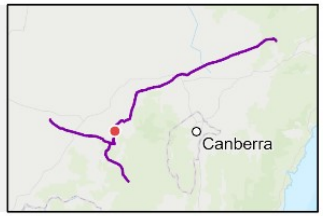
Amended project footprint

Construction compound site

Telecommunications connection

Railway

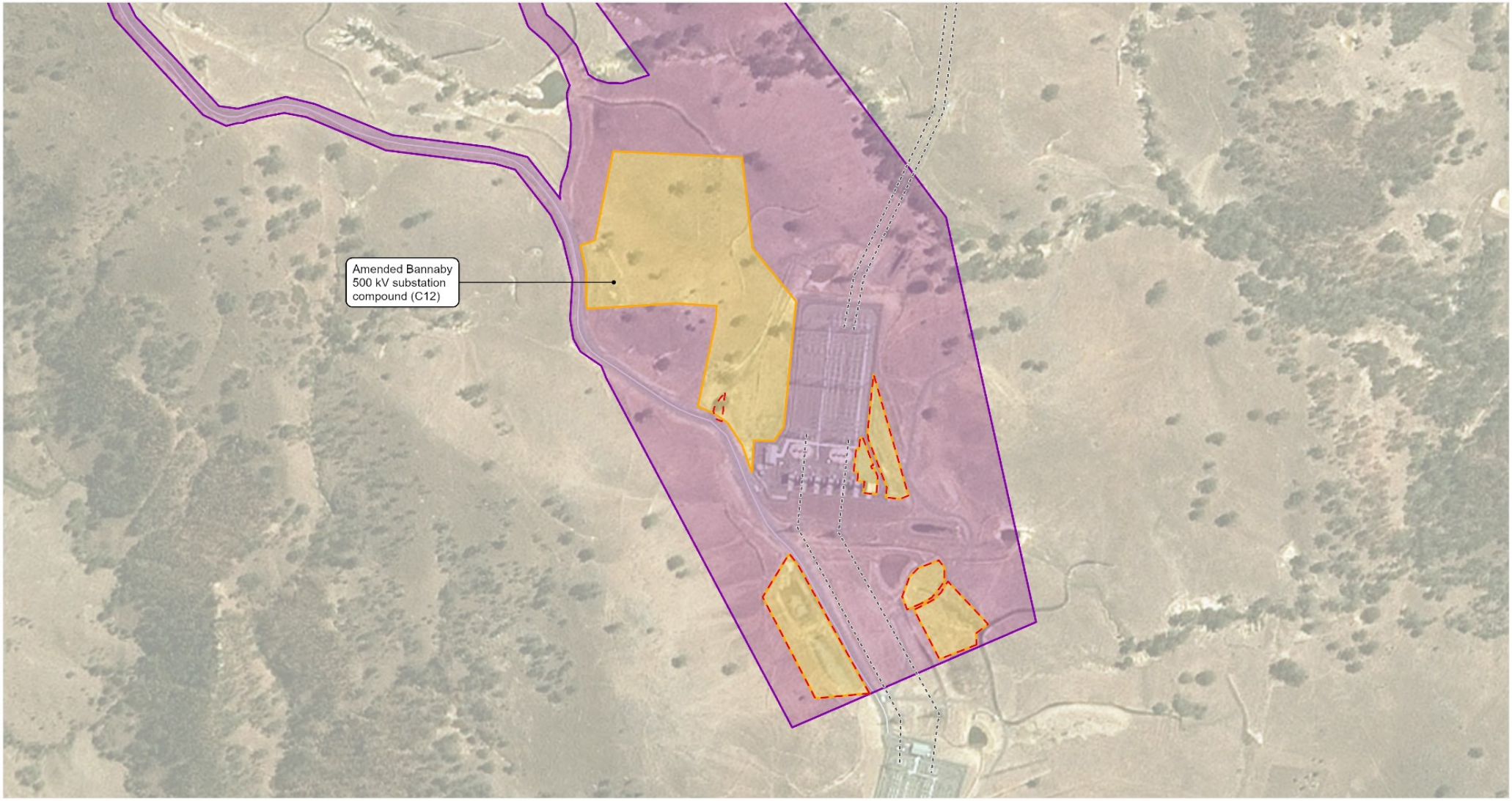


Source: *Aurecon, Transgrid, Spatial Services (DCS), ESRI Basemap*

1:3,500

0 0.07 0.15 km

Projection: GDA 1994 MGA Zone 55



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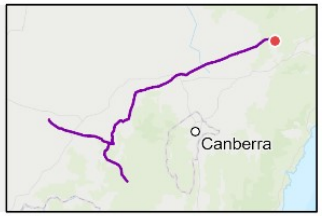
Amended project footprint

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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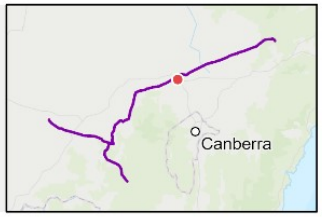
Amended project footprint

Construction compound and worker accomodation site

Existing Transgrid transmission line

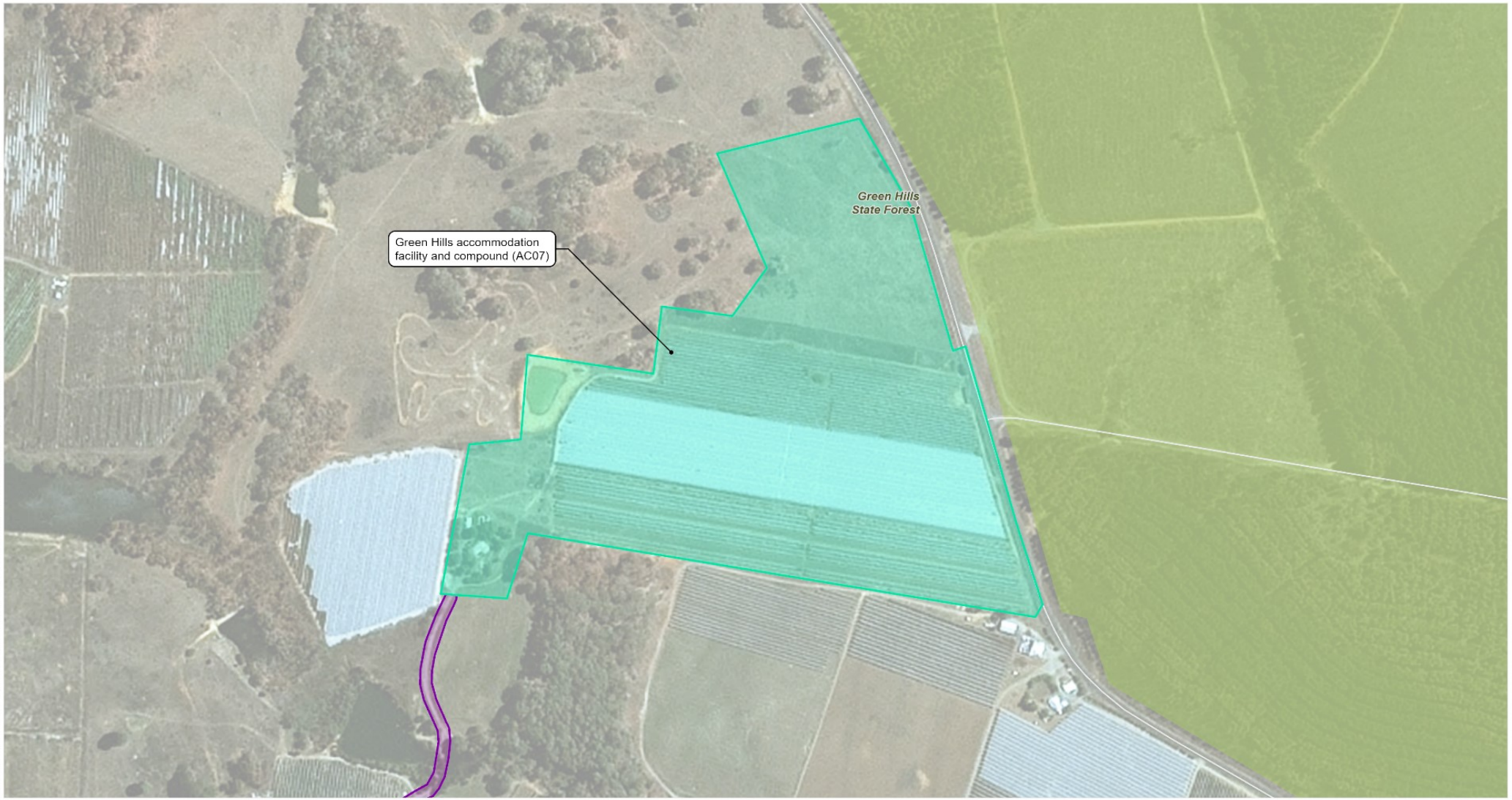


Source: *Aurecon, Transgrid, Spatial Services (DCS), ESRI Basemap*

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

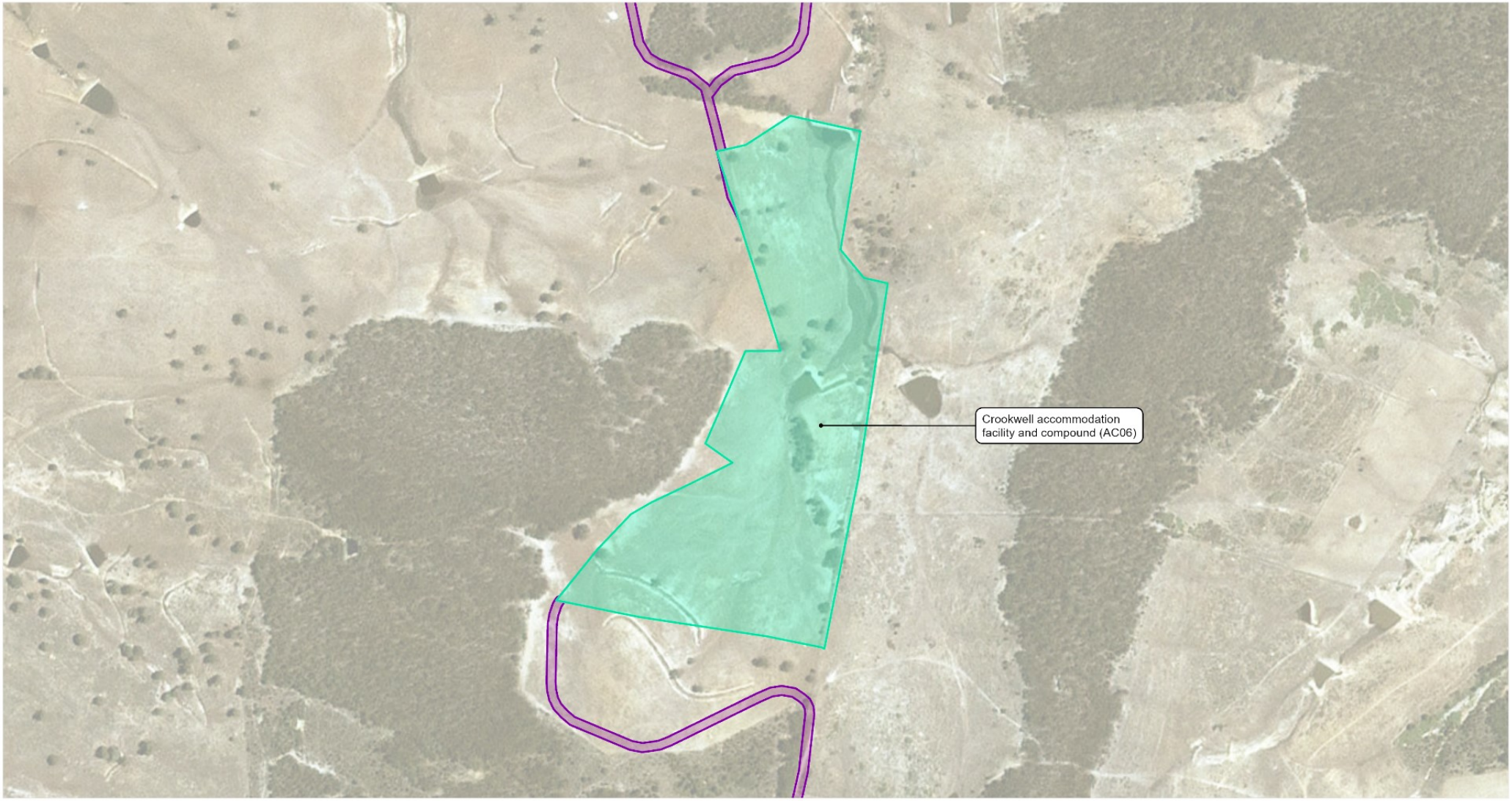
State forest

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

1:5,000

0 0.1 0.2 km

Projection: GDA 1994 MGA Zone 55



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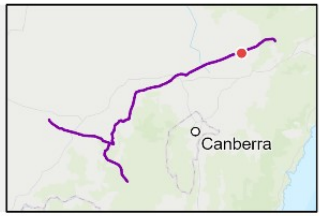
Amended project footprint

Construction compound and worker accomodation site



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

1:6,500

0 0.1 0.2km

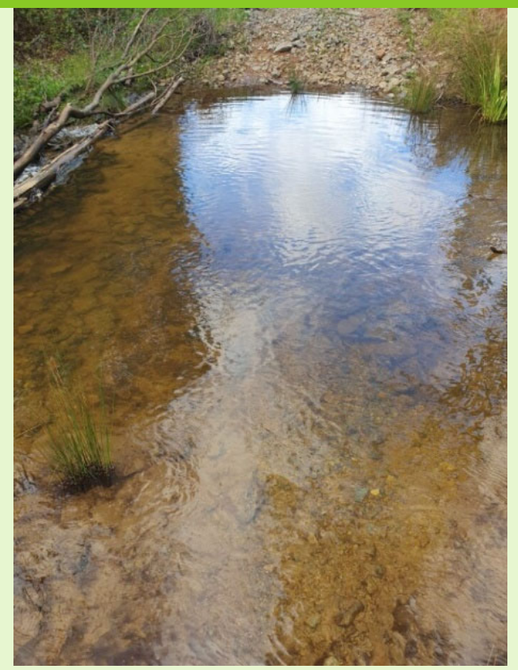
Projection: GDA 1994 MGA Zone 55

Attachment B
Waterway survey results

Bago Creek Date/time: 17/10/2023 14:55 GPS Coordinates: -35.570677, 148.059674

Photograph 1

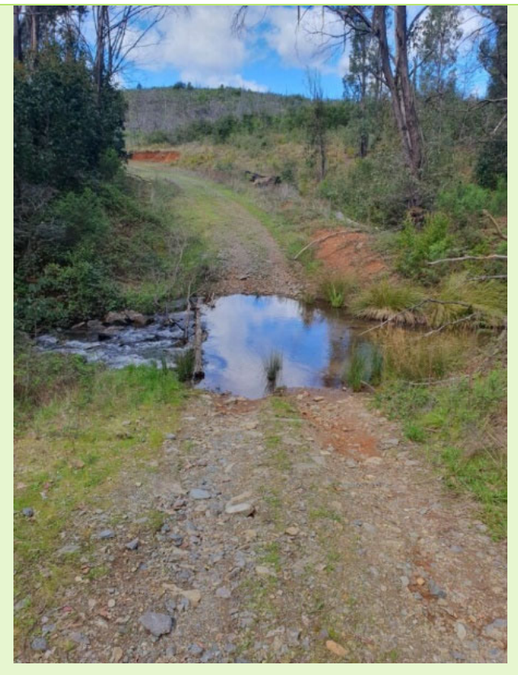
Photograph 2



Photograph 3

Photograph 4

Photograph 5



Photograph 6

Bago Creek

Date/time: 17/10/2023 14:55

GPS Coordinates: -35.570677, 148.059674

Water quality parameters:

Temperature (°C)	9.8
Electrical Conductivity (µS/cm)	20.0
Dissolved oxygen (mg/L)	8.12
Dissolved oxygen sat. (%)	81.2
pH	7.58
Turbidity (NTU)	5.6
Oxygen reduction potential (mV)	73.4
Oils	Not visible
Odours	None

Description:

- **Local impacts on streams:**

Road/causeway, forestry activities.

- **Banks:**

Left and right convex banks and moderately sloped (30-60°).

- **Notes:**

High flow, brown, slightly turbid.

- **Valley shape:**

Shallow valley.

- **Riparian vegetation:**

90% native, 10% exotic.

- **Overall vegetation disturbance rating:**

Moderately disturbed vegetation along banks, however forestry activities (50-100m from creek) beyond. Some invasive weeds present.

- **Factors affecting bank stability:**

Human access, road/causeway and cleared vegetation. Cleared forestry areas surrounding creek.

Buddong Creek	Date/time: 18/10/2023 12:08	GPS Coordinates: -35.655348, 148.214619
		
Photograph 1	Photograph 2	Photograph 3
		
Photograph 4	Photograph 5	Photograph 6

Buddong Creek

Date/time: 18/10/2023 12:08

GPS Coordinates: -35.655348, 148.214619

Water quality parameters:

Temperature (°C)	8.0
Conductivity (µS/cm)	10.3
Dissolved oxygen (mg/L)	7.79
Dissolved oxygen sat. (%)	77.9
pH	7.87
Turbidity (NTU)	3.9
Oxygen reduction potential (mV)	122.4
Oils	Not visible
Odours	None

Description:

- **Local impacts on streams:**

Bridge/culvert, state forest.

- **Banks:**

Left and right convex and moderately sloped (30-60°) banks.

- **Notes:**

Brown, slightly turbid, moderate flow.

- **Valley shape:**

Shallow valley.

- **Riparian vegetation:**

90% native, 10% exotic.

- **Overall vegetation disturbance rating:**

Low disturbance of vegetation. State forest. Mostly native vegetation/bushland, moderately dense. Dry/burnt vegetation.

- **Factors affecting bank stability:**

Culvert/bridge

Comatawa Creek	Date/time: 16/10/2023 12:30	GPS Coordinates: -35.339029, 147.711737
		
Photograph 1	Photograph 2	Photograph 3
		
Photograph 4	Photograph 5	Photograph 6

Comatawa Creek

Date/time: 16/10/2023 12:30

GPS Coordinates: -35.339029, 147.711737

Water quality parameters:

Temperature (°C)	15.5
Conductivity (µS/cm)	404.3
Dissolved oxygen (mg/L)	6.72
Dissolved oxygen sat. (%)	69.9
pH	7.46
Turbidity (NTU)	15.1
Oxygen reduction potential (mV)	109.5
Oils	Not visible
Odours	None

Description:

- **Local impacts on streams:**

Culvert, grazing.

- **Banks:**

Left and right wide lower bench and low sloped (10-30°) banks.

- **Notes:**

Brown, turbid, low flow/baseflow. Visible erosion along banks.

- **Valley shape:**

Shallow valley, broad valley.

- **Floodplain features:**

Floodplain scours, scour holes formed by the concentrated clearing and digging action of flowing water.

- **Riparian vegetation:**

95% native, 5% exotic.

- **Overall vegetation disturbance rating:**

Very high disturbance to vegetation. Surrounding land cleared for grazing. Erosion evident along both banks.

- **Factors affecting bank stability:**

Stock access, human access, culvert and cleared vegetation.

Darlows Creek

Date/time: 17/10/2023 10:55

GPS Coordinates: -35.347283, 147.950710

Photograph 1

Photograph 2

Photograph 3

Photograph 4

Photograph 5

Photograph 6

Darlows Creek

Date/time: 17/10/2023 10:55

GPS Coordinates: -35.347283, 147.950710

Water quality parameters:

Temperature (°C)	12.1
Conductivity (µS/cm)	85.2
Dissolved oxygen (mg/L)	7.12
Dissolved oxygen sat. (%)	71.2
pH	7.43
Turbidity (NTU)	103.4
Oxygen reduction potential (mV)	141.5
Oils	Not visible
Odours	None

Description:

- **Local impacts on streams:**

Bridge, grazing.

- **Banks:**

Left and right convex and moderately sloped (30-60°) banks.

- **Notes:**

Moderate flow, slightly turbid, light brown.

- **Valley shape:**

Shallow valley.

- **Riparian vegetation:**

30% native, 70% exotic.

- **Overall vegetation disturbance rating:**

Very high disturbance: Very high disturbance of vegetation. Surrounding land cleared for grazing. Vegetation mostly non-native. Erosion evident along banks.

- **Factors affecting bank stability:**

Stock access, bridge and cleared vegetation.

Foleys Gully Date/time: 16/10/2023 16:15 GPS Coordinates: -35.247835, 147.456750

Photograph 1

Photograph 2

Photograph 3

Photograph 4

Photograph 5

Photograph 6

Foleys Gully

Date/time: 16/10/2023 16:15

GPS Coordinates: -35.247835, 147.456750

Water quality parameters:

Temperature (°C)	15.4
Conductivity (µS/cm)	111.2
Dissolved oxygen (mg/L)	6.78
Dissolved oxygen sat. (%)	67.8
pH	7.33
Turbidity (NTU)	145.2
Oxygen reduction potential (mV)	107.8
Oils	Not visible
Odours	None

Description:

- **Local impacts on streams:**

Road/culvert, grazing.

- **Banks:**

Left and right concave and flat (<10°) banks.

- **Notes:**

Farm dam upstream not flowing, turbid, grassed gully.

- **Valley shape:**

Broad valley

- **Riparian vegetation:**

Grasses

- **Overall vegetation disturbance rating:**

Extreme disturbance: extreme disturbance to vegetation. Native/exotic vegetation mostly absent. Surrounding land cleared for grazing/cropping.

- **Factors affecting bank stability:**

Stock access, culvert, and cleared vegetation. Farm dam upstream.

Galvins Creek | Date/time: 17/10/2023 09:30 | GPS Coordinates: -35.380827, 147.832433

Photograph 1

Photograph 2

Photograph 3

Photograph 4

Photograph 5

Photograph 6

Galvins Creek

Date/time: 17/10/2023 09:30

GPS Coordinates: -35.380827, 147.832433

Water quality parameters:

Temperature (°C)	11.4
Conductivity (µS/cm)	475.2
Dissolved oxygen (mg/L)	6.90
Dissolved oxygen sat. (%)	69
pH	7.99
Turbidity (NTU)	2.7
Oxygen reduction potential (mV)	117.7
Oils	Not visible
Odours	None

Description:

- **Local impacts on streams:**

Culvert, grazing.

- **Banks:**

Left and right stepped and moderately (30-60°) sloped banks.

- **Notes:**

Clear, low flow, bank erosion.

- **Valley shape:**

Broad valley.

- **Riparian vegetation:**

90% native, 10% exotic

- **Overall vegetation disturbance rating:**

Very high disturbance: very high disturbance of vegetation. Surrounds cleared for grazing. Minor native vegetation present along banks. Visible erosion.

- **Factors affecting bank stability:**

Stock access, culvert and cleared vegetation.

Gilmore Creek

Date/time: 18/10/2023 13:10

GPS Coordinates: -35.602613, 148.170796

Photograph 1

Photograph 2

Photograph 3

Photograph 4

Photograph 5

Photograph 6

Gilmore Creek

Date/time: 18/10/2023 13:10

GPS Coordinates: -35.602613, 148.170796

Water quality parameters:

Temperature (°C)	8.8
Conductivity (µS/cm)	10.8
Dissolved oxygen (mg/L)	7.77
Dissolved oxygen sat. (%)	77.7
pH	6.66
Turbidity (NTU)	8.3
Oxygen reduction potential (mV)	132.8
Oils	Not visible
Odours	None

Description:

- **Local impacts on streams:**

Road bridge, forestry activities.

- **Banks:**

Left and right convex and low (10-30°) sloped.

- **Notes:**

Moderate flow, slightly turbid, light brown, sandy bed, fish present.

- **Valley shape:**

Shallow valley.

- **Riparian vegetation:**

80% native, 20% exotic.

- **Overall vegetation disturbance rating:**

Very high disturbance: very high vegetation disturbance (forestry). Cleared land surrounding creek. Mix of native/exotic vegetation along banks.

- **Factors affecting bank stability:**

Human access, road/bridge and cleared vegetation (forestry area).

Gocup Creek

Date/time: 19/10/2023 09:41

GPS Coordinates: -35.247916, 148.215863

Photograph 1

Photograph 2

Photograph 3

Photograph 4

Photograph 5

Photograph 6

Gocup Creek

Date/time: 19/10/2023 09:41

GPS Coordinates: -35.247916, 148.215863

Water quality parameters:

Temperature (°C)	14.3
Conductivity (µS/cm)	102.5
Dissolved oxygen (mg/L)	6.03
Dissolved oxygen sat. (%)	60.3
pH	7.26
Turbidity (NTU)	17.1
Oxygen reduction potential (mV)	41.1
Oils	Not visible
Odours	None

Description:

- **Local impacts on streams:**

Culvert, grazing.

- **Banks:**

Left and right wide lower bench and vertically (80-90°) sloped.

- **Notes:**

Moderate flow, clear, slightly turbid.

- **Valley shape:**

Shallow valley

- **Riparian vegetation:**

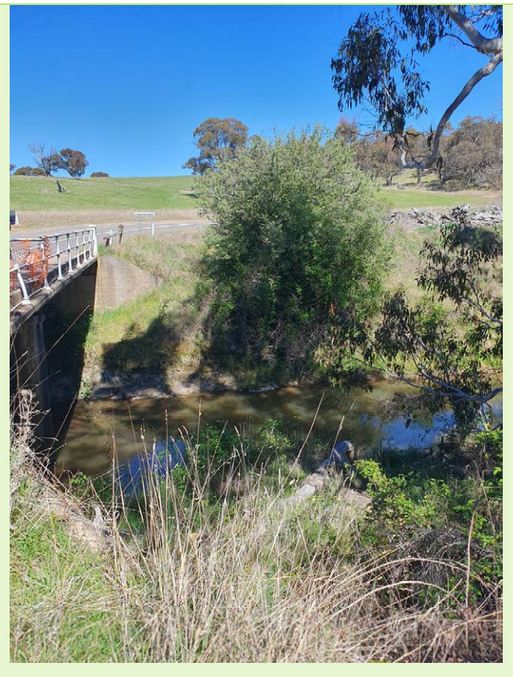
20% native, 80% exotic.

- **Overall vegetation disturbance rating:**

Extreme disturbance: very high disturbance to vegetation. Cleared for grazing + roadway. Minimal native vegetation.

- **Factors affecting bank stability:**

Stock access, cleared vegetation. Visible erosion along downstream banks.

Humes Creek	Date/time: 19/10/2023 15:00	GPS Coordinates: -34.639263, 149.374974
		
Photograph 1	Photograph 2	Photograph 3
		
Photograph 4	Photograph 5	Photograph 6

Humes Creek

Date/time: 19/10/2023 15:00

GPS Coordinates: -34.639263, 149.374974

Water quality parameters:

Waterway fenced off with steep banks (inaccessible). Water quality parameters unable to be collected.

Temperature (°C)	-
Conductivity (µS/cm)	-
Dissolved oxygen (mg/L)	-
Dissolved oxygen sat. (%)	-
pH	-
Turbidity (NTU)	-
Oxygen reduction potential (mV)	-
Oils	Not visible
Odours	None

Description:

- **Local impacts on streams:**

Bridge, grazing

- **Banks:**

Left and right convex banks and moderately (30-60°) sloped.

- **Notes:**

Low flow, brown, moderately turbid

- **Valley shape:**

Shallow valley

- **Riparian vegetation:**

90% native, 10% exotic

- **Overall vegetation disturbance rating:**

Moderate disturbance Cleared for grazing to the east. Native species present in surrounding areas and along banks

- **Factors affecting bank stability:**

Bridge, cleared grazing land (east).

Jerrawa Creek	Date/time: 19/10/2023 16:00	GPS Coordinates: -34.702019, 149.167271
		
Photograph 1	Photograph 2	Photograph 3
		
Photograph 4	Photograph 5	Photograph 6

Jerrawa Creek

Date/time: 19/10/2023 16:00

GPS Coordinates: -34.702019, 149.167271

Water quality parameters:

Temperature (°C)	19.1
Conductivity (µS/cm)	1401
Dissolved oxygen (mg/L)	5.83
Dissolved oxygen sat. (%)	58.3
pH	8.00
Turbidity (NTU)	10.1
Oxygen reduction potential (mV)	69.3
Oils	Not visible
Odours	None

Description:

- **Local impacts on streams:**

Road/causeway, grazing.

- **Banks:**

Left and right convex and moderately (30-60°) sloped banks.

- **Notes:**

Brown with green tinge low flow, moderately turbid.

- **Valley shape:**

Shallow valley

- **Riparian vegetation:**

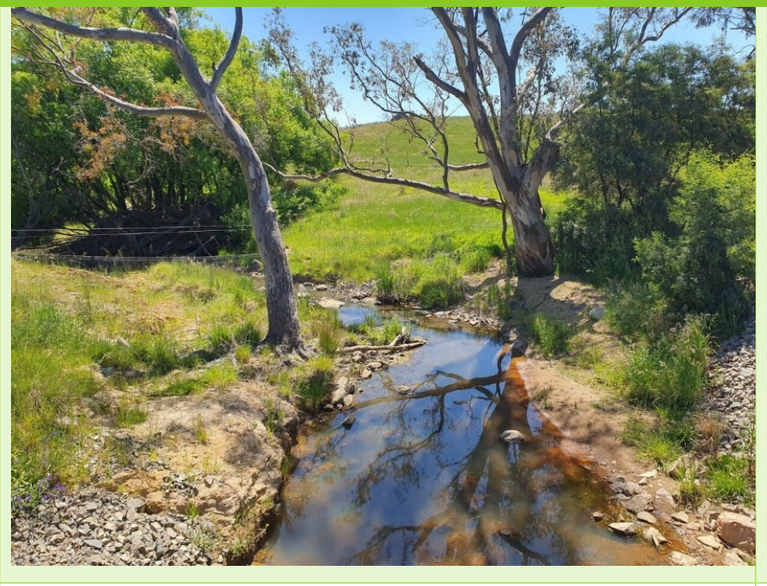
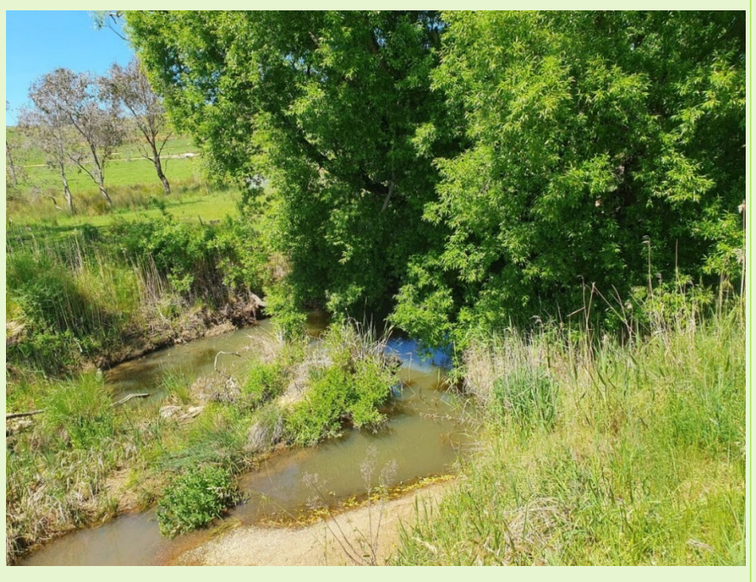
90% native, 10% exotic

- **Overall vegetation disturbance rating:**

Very high disturbance: very high disturbance to vegetation. Surrounding land cleared for grazing. Some nature vegetation along banks.

- **Factors affecting bank stability:**

Stock access, human access, road/causeway and cleared vegetation.

Jugiong Creek	Date/time: 19/10/2023 13:45	GPS Coordinates: -34.870193, 148.605145
		
Photograph 1	Photograph 2	Photograph 3
		
Photograph 4	Photograph 5	Photograph 6

Jugiong Creek

Date/time: 19/10/2023 13:45

GPS Coordinates: -34.870193, 148.605145

Water quality parameters:

Temperature (°C)	15.7
Conductivity (µS/cm)	521
Dissolved oxygen (mg/L)	6.51
Dissolved oxygen sat. (%)	65.1
pH	7.36
Turbidity (NTU)	9.2
Oxygen reduction potential (mV)	20.5
Oils	Not visible
Odours	None

Description:

- **Local impacts on streams:**

Bridge, grazing.

- **Banks:**

Left and right convex and low (10-30°) sloped banks.

- **Notes:**

Low flow, light brown, moderate turbidity.

- **Valley shape:**

Shallow valley

- **Riparian vegetation:**

80% native, 20% exotic

- **Overall vegetation disturbance rating:**

High disturbance: high disturbance to vegetation. Clearing for grazing,+ roadway. Mostly native vegetation along banks.

- **Factors affecting bank stability:**

Stock access, bridge and cleared vegetation.

Keajura Creek

Date/time: 16/10/2023 13:00

GPS Coordinates: -35.323365, 147.649912

Photograph 1

Photograph 2

Photograph 3

Photograph 4

Photograph 5

Photograph 6

Keajura Creek

Date/time: 16/10/2023 13:00

GPS Coordinates: -35.323365, 147.649912

Water quality parameters:

Temperature (°C)	14.7
Conductivity (µS/cm)	1275
Dissolved oxygen (mg/L)	6.71
Dissolved oxygen sat. (%)	67.1
pH	7.54
Turbidity (NTU)	8.3
Oxygen reduction potential (mV)	89.5
Oils	Not visible
Odours	None

Description:

- **Local impacts on streams:**

Road/bridge, grazing.

- **Banks:**

Left and right stepped and moderately (30-60°) sloped banks.

- **Notes:**

Moderate flow, slow turbidity. Organics/moss coverage. Vegetation (roads etc.) lining banks.

- **Valley shape:**

Broad valley

- **Riparian vegetation:**

90% native, 10% exotic

- **Overall vegetation disturbance rating:**

High disturbance: high disturbance of vegetation. Surrounds cleared for cropping/grazing. Highway nearby bank erosion visible.

- **Factors affecting bank stability:**

Stock access, human access, bridge and cleared vegetation. Visible erosion/flood debris along banks.

Kyeamba Creek

Date/time: 16/10/2023 15:30

GPS Coordinates: -35.276663, 147.516339

Photograph 1

Photograph 2

Photograph 3

Photograph 4

Photograph 5

Photograph 6

Kyeamba Creek

Date/time: 16/10/2023 15:30

GPS Coordinates: -35.276663, 147.516339

Water quality parameters:

Temperature (°C)	15.0
Conductivity (µS/cm)	723
Dissolved oxygen (mg/L)	7.01
Dissolved oxygen sat. (%)	70.1
pH	7.63
Turbidity (NTU)	65.7
Oxygen reduction potential (mV)	128.9
Oils	Not visible
Odours	None

Description:

- **Local impacts on streams:**

Bridge, grazing.

- **Banks:**

Left and right convex and low (10-30°) sloped banks.

- **Notes:**

Moderate to low flow, moderate turbidity, brown.

- **Valley shape:**

Broad valley

- **Riparian vegetation:**

90% native, 10% exotic

- **Overall vegetation disturbance rating:**

High disturbance: high disturbance to vegetation. Native vegetation along banks. Surrounding land cleared for cropping/grazing.

- **Factors affecting bank stability:**

Bridge and cleared vegetation.

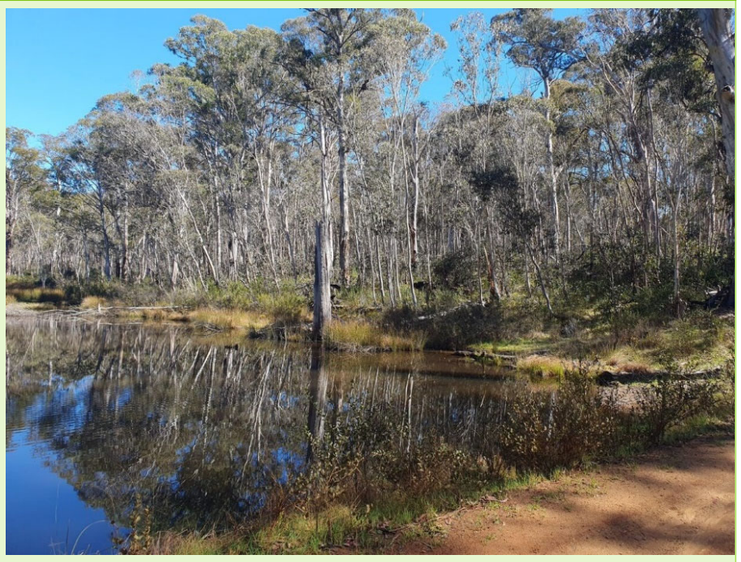
Long Creek

Date/time: 18/10/2023 10:08

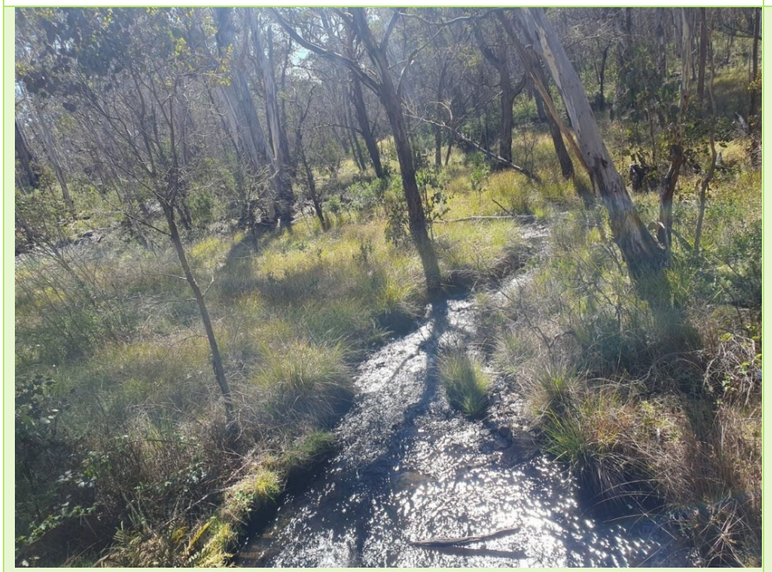
GPS Coordinates: -35.726626, 148.244658

Photograph 1

Photograph 2



Photograph 3



Photograph 4

Photograph 5

Photograph 6

Long Creek

Date/time: 18/10/2023 10:08

GPS Coordinates: -35.726626, 148.244658

Water quality parameters:

Temperature (°C)	6.6
Conductivity (µS/cm)	13.0
Dissolved oxygen (mg/L)	7.84
Dissolved oxygen sat. (%)	78.4
pH	7.56
Turbidity (NTU)	3.1
Oxygen reduction potential (mV)	87.7
Oils	Not visible
Odours	None

Description:

- **Local impacts on streams:**

Culvert, state forest.

- **Banks:**

Left and right concave and low (10-30°) sloped banks.

- **Notes:**

Clear, flowing, dammed section, west of causeway. Culvert under road.

- **Valley shape:**

Shallow valley

- **Riparian vegetation:**

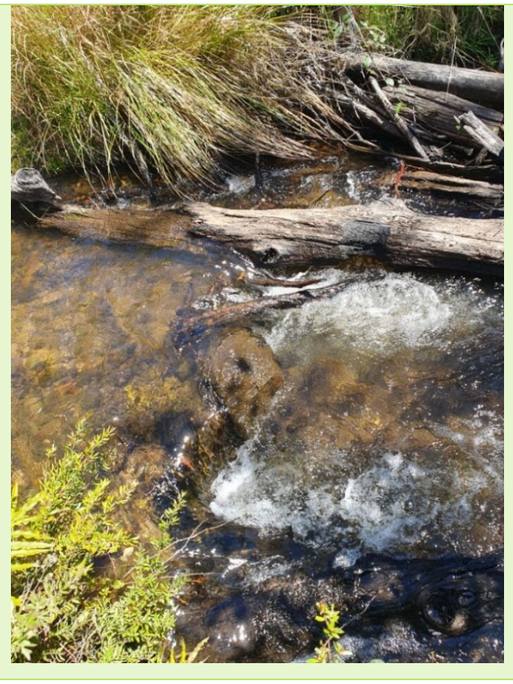
90% native, 10% exotic.

- **Overall vegetation disturbance rating:**

Low disturbance: low disturbance of vegetation. State forest. Mostly native vegetation/bushland, moderately dense.

- **Factors affecting bank stability:**

Culvert

Mandys Creek	Date/time: 18/10/2023 13:19	GPS Coordinates: -35.605606, 148.171192
		
Photograph 1	Photograph 2	Photograph 3
		
Photograph 4	Photograph 5	Photograph 6

Mandys Creek

Date/time: 18/10/2023 13:19

GPS Coordinates: -35.605606, 148.171192

Water quality parameters:

Temperature (°C)	8.6
Conductivity (µS/cm)	11.2
Dissolved oxygen (mg/L)	7.59
Dissolved oxygen sat. (%)	75.9
pH	6.48
Turbidity (NTU)	3.9
Oxygen reduction potential (mV)	126.1
Oils	Not visible
Odours	None

Description:

- **Local impacts on streams:**

Forestry activities.

- **Banks:**

Left and right convex and moderately (30-60°) sloped banks.

- **Notes:**

Moderate flow, clear, low turbidity, turbulent rapids with small waterfalls.

- **Valley shape:**

Shallow valley

- **Riparian vegetation:**

70% native, 30% exotic

- **Overall vegetation disturbance rating:**

Very high disturbance: very high disturbance (forestry). Cleared land surrounding creek. Mix of native/exotic vegetation along banks.

- **Factors affecting stability:**

Cleared vegetation (forestry area).

Merrill Creek	Date/time: 19/10/2023 15:30	GPS Coordinates: -34.653546, 149.257408
		
Photograph 1	Photograph 2	Photograph 3
		
Photograph 4	Photograph 5	Photograph 6

Merrill Creek

Date/time: 19/10/2023 15:30

GPS Coordinates: -34.653546, 149.257408

Water quality parameters:

Temperature (°C)	17.2
Conductivity (µS/cm)	967
Dissolved oxygen (mg/L)	6.4
Dissolved oxygen sat. (%)	64
pH	7.75
Turbidity (NTU)	13.6
Oxygen reduction potential (mV)	78.2
Oils	Not visible
Odours	None

Description:

- **Local impacts on streams:**

Bridge, grazing.

- **Banks:**

Left and right concave and low (10-30°) sloped banks.

- **Notes:**

Low flow, brown, moderately turbid.

- **Valley shape:**

Shallow valley

- **Riparian vegetation:**

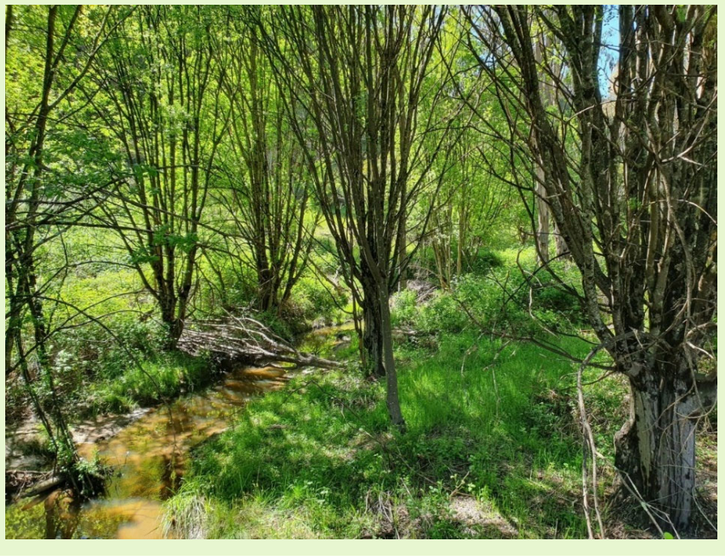
80% native, 20% exotic.

- **Overall vegetation disturbance rating:**

Very high disturbance: very high disturbance to vegetation. Surrounding land cleared for grazing. Some native and exotic species along banks.

- **Factors affecting bank stability:**

Stock access, bridge and cleared vegetation.

Saw Mill Creek	Date/time: 19/10/2023 10:42	GPS Coordinates: -35.109019, 148.352053
		
Photograph 1	Photograph 2	Photograph 3
		
Photograph 4	Photograph 5	Photograph 6

Saw Mill Creek

Date/time: 19/10/2023 10:42

GPS Coordinates: -35.109019, 148.352053

Water quality parameters:

Temperature (°C)	11.8
Conductivity (µS/cm)	110.5
Dissolved oxygen (mg/L)	6.75
Dissolved oxygen sat. (%)	67.5
pH	7.37
Turbidity (NTU)	9.0
Oxygen reduction potential (mV)	109.0
Oils	Not visible
Odours	None

Description:

- **Local impacts on streams:**

Road/culvert forestry activities. Forestry area levees + pump house present.

- **Banks:**

Left and right concave and low (10-30°) sloped banks.

- **Notes:**

Moderate flow, slightly turbid, light brown. Levees/culvert. Pump house downstream of culvert.

- **Valley shape:**

Steep valley.

- **Riparian vegetation:**

60% native, 40% exotic.

- **Overall vegetation disturbance rating:**

High disturbance: high disturbance to vegetation from forestry activities. Exotic species/weeds present along banks.

- **Factors affecting stability:**

Culvert and cleared vegetation. Levees/pump house present. Forestry area.

Sawpit Gully

Date/time: 19/10/2023 10:11

GPS Coordinates: -35.215321, 148.298297

Photograph 1

Photograph 2

Sawpit Gully

Date/time: 19/10/2023 10:11

GPS Coordinates: -35.215321, 148.298297

Water quality parameters:

Waterway inaccessible due to private driveway with anti-Transgrid/Humelink signage. Water quality parameters unable to be collected.

Temperature (°C)	-
Conductivity (µS/cm)	-
Dissolved oxygen (mg/L)	-
Dissolved oxygen sat. (%)	-
pH	-
Turbidity (NTU)	-
Oxygen reduction potential (mV)	-
Oils	-
Odours	-

Description:

- **Local impacts on streams:**

Grazing

- **Banks:**

Left and right concave and moderate (30-60°) sloped banks.

- **Notes:**

N/A

- **Valley shape:**

Shallow valley.

- **Riparian vegetation:**

20% native, 80% exotic

- **Overall vegetation disturbance rating:**

Extreme disturbance: Both sides cleared for grazing. Severely reduced riparian vegetation

- **Factors affecting stability:**

Cleared vegetation for grazing

Sheepyard Creek

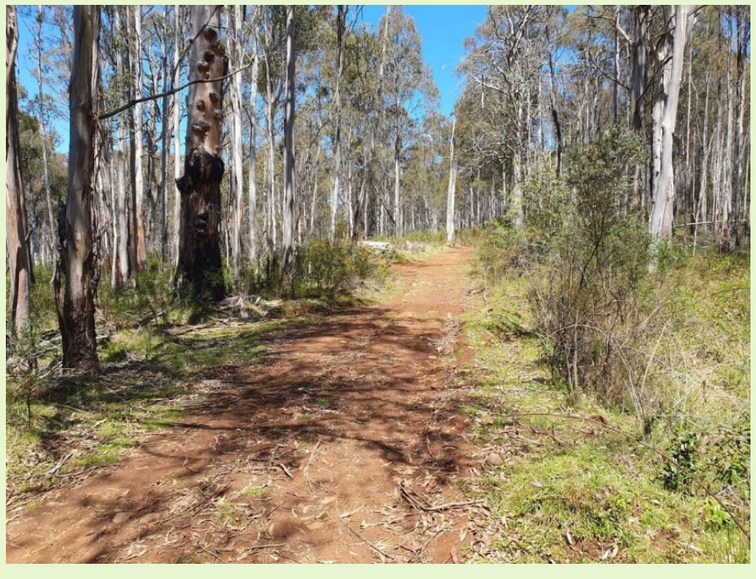
Date/time: 18/10/2023 12:30

GPS Coordinates: -35.643128, 148.219840

Photograph 1

Photograph 2

Photograph 3



Photograph 4

Photograph 5

Photograph 6

Sheepyard Creek

Date/time: 18/10/2023 12:30

GPS Coordinates: -35.643128, 148.219840

Water quality parameters:

Temperature (°C)	8.7
Conductivity (µS/cm)	13.0
Dissolved oxygen (mg/L)	7.38
Dissolved oxygen sat. (%)	73.8
pH	6.76
Turbidity (NTU)	2.9
Oxygen reduction potential (mV)	130.3
Oils	Not visible
Odours	None

Description:

- **Local impacts on streams:**

Culvert, state forest.

- **Banks:**

Left and right convex and low (10-30°) sloped banks.

- **Notes:**

Clear, moderate flow, low turbidity. Dense vegetation/debris weeds (thorny).

- **Valley shape:**

Shallow valley.

- **Riparian vegetation:**

80% native, 20% exotic.

- **Overall vegetation disturbance rating:**

Low disturbance: low disturbance of vegetation. State forest. Mostly native vegetation/bushland with some non-native weeds. Dry/burnt vegetation.

- **Factors affecting stability:**

Culvert

Snubba Creek

Date/time: 18/10/2023 13:32

GPS Coordinates: -35.589836, 148.192259

Photograph 1

Photograph 2

Photograph 3

Photograph 4

Photograph 5

Photograph 6

Snubba Creek

Date/time: 18/10/2023 13:32

GPS Coordinates: -35.589836, 148.192259

Water quality parameters:

Temperature (°C)	9.9
Conductivity (µS/cm)	12.6
Dissolved oxygen (mg/L)	7.46
Dissolved oxygen sat. (%)	74.6
pH	6.51
Turbidity (NTU)	4.4
Oxygen reduction potential (mV)	127.5
Oils	Not visible
Odours	None

Description:

- **Local impacts on streams:**

Culvert, forestry activities.

Banks:

Left and right convex and steep (60-80°) sloped banks.

- **Notes:**

High/rapid flow. Rocky, turbulent. Clear, light brown, low turbidity.

- **Valley shape:**

Steep valley.

- **Riparian vegetation:**

70% native and 30% exotic.

- **Overall vegetation disturbance rating:**

Very high disturbance: very high disturbance. Forestry area. Cleared land surrounding creek. Mix of native/exotic vegetation along banks.

- **Factors affecting bank stability:**

Human access, culvert and cleared vegetation (forestry area).

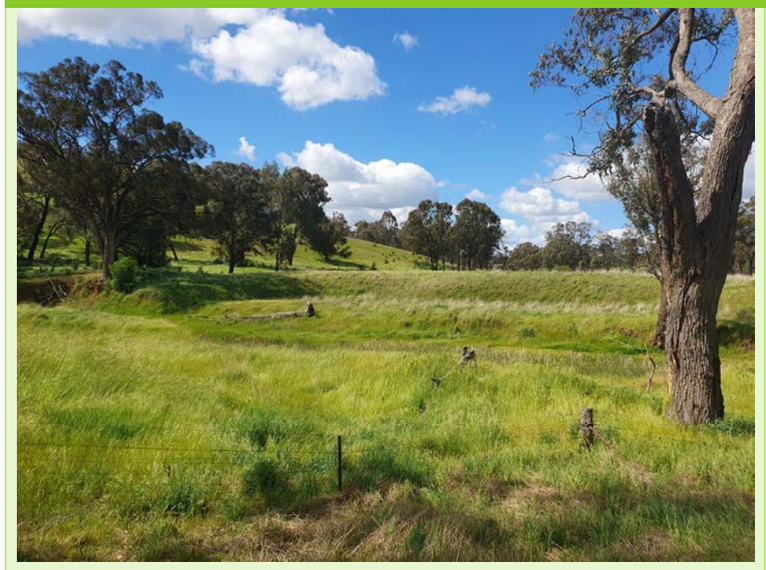
- **Bed outcrops:**

Left and right banks 30% bedrock outcrops.

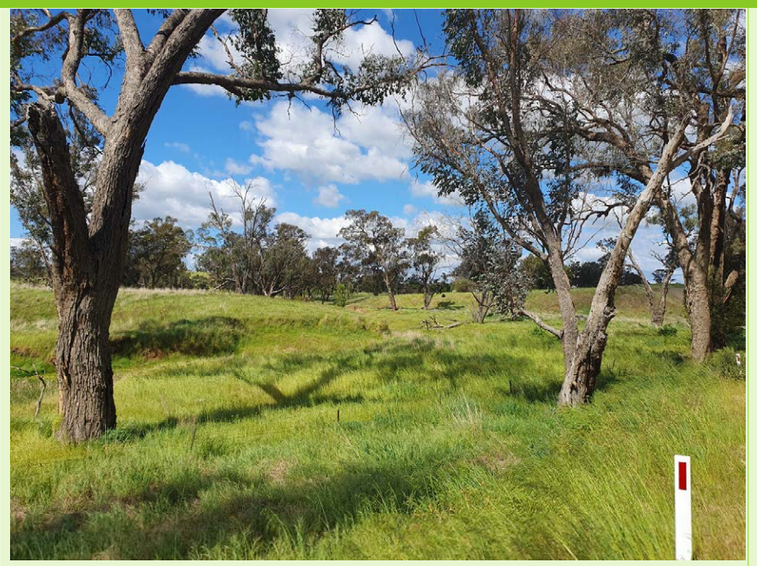
Tooles Creek

Date/time: 16/10/2023 14:26

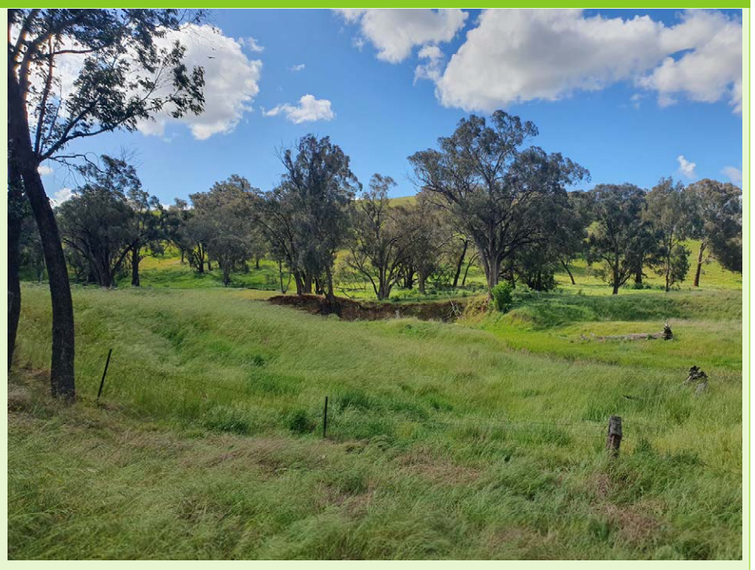
GPS Coordinates: -35.305065, 147.561122



Photograph 1



Photograph 2



Photograph 3

Photograph 4

Photograph 5

Photograph 6

Tooles Creek

Date/time: 16/10/2023 14:26

GPS Coordinates: -35.305065, 147.561122

Water quality parameters:

Waterway inaccessible due to private property. Water quality parameters unable to be collected.

Temperature (°C)	-
Conductivity (µS/cm)	-
Dissolved oxygen (mg/L)	-
Dissolved oxygen sat. (%)	-
pH	-
Turbidity (NTU)	-
Oxygen reduction potential (mV)	-
Oils	-
Odours	-

Description:

- **Local impacts on streams:**

Grazing

Banks:

Left and right wide lower bench and steep (60-80°) sloped banks.

- **Notes:**

N/A

- **Valley shape:**

Shallow valley.

- **Riparian vegetation:**

80% native and 20% exotic.

- **Overall vegetation disturbance rating:**

High disturbance of vegetation. Surrounding land cleared for grazing. Some native riparian vegetation present along banks.

- **Factors affecting bank stability:**

Human access, stock access and cleared vegetation (grazing area). Visible erosion along banks.

Unnamed waterway 2 (tributary to Adjungbilly Creek)	Date/time: 19/10/23 11:13	GPS Coordinates: -35.102130, 148.372612
		
Photograph 1	Photograph 2	Photograph 3
		
Photograph 4	Photograph 5	Photograph 6

Unnamed waterway 2 (tributary to Adjungbilly Creek)

Date/time: 19/10/23 11:13

GPS Coordinates: -35.102130, 148.372612

Water quality parameters:

Temperature (°C)	15.3
Conductivity (µS/cm)	158.3
Dissolved oxygen (mg/L)	6.14
Dissolved oxygen sat. (%)	61.4
pH	7.22
Turbidity (NTU)	10.9
Oxygen reduction potential (mV)	-10.5
Oils	Not visible
Odours	None

Description:

- **Local impacts on streams:**

Culvert, forestry activities. Cleared vegetation.

- **Banks:**

Left and right stepped and low (10-30°) sloped banks.

- **Notes:**

Moderate – low flow. Orange/brown, slightly turbid. Culvert under road. Bank erosion.

- **Valley shape:**

Shallow valley.

- **Riparian vegetation:**

90% exotic, 10% native.

- **Overall vegetation disturbance rating:**

High disturbance: high disturbance to vegetation from forestry activities. Minor exotic/weeds vegetation present, mostly cleared land.

- **Factors affecting bank stability:**

Culvert and cleared vegetation (forestry area). Rocky outcrops.

- **Bedrocks outcrops:**

Left and right banks 10% bedrock outcrops.

Unnamed Waterway 4 (tributary to Pejar Creek)

Date/time: 20/10/2023 11:04

GPS Coordinates: -34.581751, 149.624699

Photograph 1

Photograph 2

Photograph 3

Photograph 4

Photograph 5

Photograph 6

Unnamed Waterway 4 (tributary to Pejar Creek)

Date/time: 20/10/2023 11:04

GPS Coordinates: -34.581751, 149.624699

Water quality parameters:

Temperature (°C)	13.0
Conductivity (µS/cm)	1464
Dissolved oxygen (mg/L)	6.09
Dissolved oxygen sat. (%)	60.9
pH	8.43
Turbidity (NTU)	17.9
Oxygen reduction potential (mV)	81.1
Oils	Not visible
Odours	None

Description:

- **Local impacts on streams:**

Culvert, grazing farmland and windfarms.

- **Banks:**

Left and right concave and flat (<10°) sloped banks.

- **Notes:**

Brown/green, moderately turbid. Algae present. Low flow/stagnant (baseflow).

- **Valley shape:**

Shallow valley.

- **Riparian vegetation:**

90% native, 10% exotic.

- **Overall vegetation disturbance rating:**

Very high disturbance: very high disturbance to vegetation. Clearing for grazing and roadway. Mostly native with some exotic vegetation.

- **Factors affecting banks stability:**

Stock access, culvert and cleared vegetation.

- **Artificial bank protection measures:**

Fenced from human access.

Windowie Creek	Date/time: 17/10/2023 13:00	GPS Coordinates: -35.386515, 148.128071
		
Photograph 1	Photograph 2	Photograph 3
		
Photograph 4	Photograph 5	Photograph 6

Windowie Creek

Date/time: 17/10/2023 13:00

GPS Coordinates: -35.386515, 148.128071

Water quality parameters:

Waterway fenced off with steep banks (inaccessible). Water quality parameters unable to be collected.

Temperature (°C)	-
Conductivity (µS/cm)	-
Dissolved oxygen (mg/L)	-
Dissolved oxygen sat. (%)	-
pH	-
Turbidity (NTU)	-
Oxygen reduction potential (mV)	-
Oils	Not visible
Odours	None

Description:

- **Local impacts on streams:**

Bridge, grazing farmland.

- **Banks:**

Left and right wide lower bench and steep (60-80°) sloped banks.

- **Notes:**

Moderate flow, clear, low turbidity

- **Valley shape:**

Steep valley.

- **Riparian vegetation:**

60% native, 40% exotic.

- **Overall vegetation disturbance rating:**

Very high disturbance: Clearing for grazing and roadway. Exotic weeds and vegetation present along banks.

- **Factors affecting banks stability:**

Bridge, steep banks with visible erosion.

Attachment C
Named Waterways

Table C-1 Strahler order and location of named waterways intercepted by the amended transmission line corridor

Waterway	Catchment	Strahler order	Within SDWC?
ADELONG	Murrumbidgee	4-5	No
ADJUNGBILLY	Murrumbidgee	6	No
BACK	Hawkesbury-Nepean	3	Yes
BAGO	Murrumbidgee	3-4	No
BANGO	Murrumbidgee	4	No
BANNABY	Hawkesbury-Nepean	3-4	Yes
BIG ROCK	Murrumbidgee	2	No
BIG SRING	Murrumbidgee	4	No
BLACK	Murrumbidgee	1	No
BLACK RANGE	Murrumbidgee	2	No
BOGOLONG	Murrumbidgee	2	No
BOWNING	Murrumbidgee	5	No
BRUNGLE	Murrumbidgee	5	No
BUDDONG	Murrumbidgee	5	No
CART ROAD	Murrumbidgee	1-4	No
CATHERINES	Lachlan	3	No
COCKATOO	Murrumbidgee	1-5	No
COLLEGE	Murrumbidgee	5	No
COMATAWA	Murrumbidgee	4	No
CONNORS	Hawkesbury-Nepean	4	Yes
COOKS	Murrumbidgee	4	No
COWPERS	Hawkesbury-Nepean	3-4	Yes
COXS	Murrumbidgee	2	No
DARLOWS	Murrumbidgee	4	No
DAWSONS FLAT	Hawkesbury-Nepean	2	Yes
DERRINGULLEN	Murrumbidgee	5	No
DICKS	Murrumbidgee	2	No
DOWLINGS	Lachlan	2-3	No
EXCURSION	Murrumbidgee	1	No
FAIRY HOLE	Murrumbidgee	2	No
FELLED TIMBER	Lachlan	3	No
FIRST	Hawkesbury-Nepean	3	Yes
FLACKNELL	Lachlan	4	No
FOLEYS	Murrumbidgee	1	No

Table C-1 Strahler order and location of named waterways intercepted by the amended transmission line corridor

Waterway	Catchment	Strahler order	Within SDWC?
FOXES	Murrumbidgee	3	No
GALVINS	Murrumbidgee	1	No
GERMANS	Murrumbidgee	3	No
GILMORE	Murrumbidgee	4	No
GOCUP	Murrumbidgee	1-4	No
GREGADOO	Murrumbidgee	1	No
GURRUNDAH	Hawkesbury-Nepean	2	Yes
HEFFERNANS	Hawkesbury-Nepean	1	Yes
HONEYSUCKLE	Murrumbidgee	4	No
HUMES	Lachlan	3	No
JERRAWA	Lachlan	5	No
JOHNSONS	Murray	1	No
JUGIONG	Murrumbidgee	4	No
KEAJURA	Murrumbidgee	6	No
KERRAWARY	Hawkesbury-Nepean	4	Yes
KIALLA	Hawkesbury-Nepean	3	Yes
KILEY	Murrumbidgee	2	No
KILLIMICAT	Murrumbidgee	5	No
KYEAMBA	Murrumbidgee	7	No
LACHLAN	Lachlan	6	No
LITTLE GILMORE	Murrumbidgee	2	No
LOGBRIDGE	Murrumbidgee	2-3	No
LONG	Murrumbidgee	4	No
MANDYS	Murrumbidgee	4	No
MANTONS	Murrumbidgee	2	No
MCGREGORS	Murrumbidgee	3	No
MELAMALONG	Hawkesbury-Nepean	1-4	Yes
MERRILL	Lachlan	1-4	No
METTYS	Murrumbidgee	2	No
MIDDLE	Lachlan	1	No
MIDDLE	Hawkesbury-Nepean	2-5	Yes
MURRUMBIDGEE	Murrumbidgee	9	No
MYRTLE	Hawkesbury-Nepean	4	Yes
NACKI NACKI	Murrumbidgee	4-5	No

Waterway	Catchment	Strahler order	Within SDWC?
NEW ZEALAND	Murrumbidgee	1	No
OAK	Murrumbidgee	4-5	No
O'BRIENS	Murrumbidgee	1-6	No
OOLONG	Lachlan	4	No
PEGMILL	Murrumbidgee	2	No
PEJAR	Hawkesbury-Nepean	4	Yes
PLAIN	Murrumbidgee	3	No
RIGHT ARM	Murrumbidgee	4	No
ROCKY	Murrumbidgee	2	No
RYANS	Hawkesbury-Nepean	1	Yes
SAILORS	Murrumbidgee	3	No
SAMS	Lachlan	1	No
SANDY	Murrumbidgee	1-5	No
SAW MILL	Murrumbidgee	3-4	No
SAWPIT	Murrumbidgee	2-4	No
SHARPS	Murrumbidgee	3	No
SHEEPYARD	Murrumbidgee	4	No
SOD HUT	Murrumbidgee	2	No
STEEVES	Hawkesbury-Nepean	3	Yes
STOCKMANS	Murrumbidgee	3	No
TARCUTTA	Murrumbidgee	6	No
TARLO	Hawkesbury-Nepean	5	Yes
THREE WATERHOLES	Murrumbidgee	3	No
TOMNEYS PLAIN	Murrumbidgee	2-3	No
TUMUT	Murrumbidgee	8	No
TURNERS	Murrumbidgee	2	No
TURRALLO	Hawkesbury-Nepean	5	Yes
TYWONG	Murrumbidgee	4	No
UMBANGO	Murrumbidgee	7	No
UNCLES	Murrumbidgee	3	No
WALKER	Murrumbidgee	2	No
WASHPEN	Murrumbidgee	4	No
WEIR	Murrumbidgee	3	No
WILLS	Hawkesbury-Nepean	2	Yes

Table C-1 Strahler order and location of named waterways intercepted by the amended transmission line corridor

Waterway	Catchment	Strahler order	Within SDWC?
WILSONS	Murrumbidgee	2	No
WINDOWIE	Murrumbidgee	3-4	No
WOLLONDILLY	Hawkesbury-Nepean	5	Yes
WOOLGARLO	Murrumbidgee	3	No
YAVEN YAVEN	Murrumbidgee	3-5	No
YELLOW	Murrumbidgee	3	No
YELLOW CLAY	Murrumbidgee	3	No
YELLOWIN	Murrumbidgee	3	No
YORKERS	Murrumbidgee	2	No

Attachment D
Registered bores

Bore ID	Easting	Northing	Final depth (m)	Mean Groundwater Elevation (mAHD)	Salinity description	Licenced Extraction Volume (ML/year)	Yield (L/s)	Bore use	Water Sharing Plan
GW000925	540844	6103902	90.5					Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW000955	540284	6102980	86.9					Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW005379	566753	6095923	43.9			0		Exploration	Murrumbidgee Alluvial Groundwater Sources 2020
GW007787	675064	6136852	32.6					Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW007809	670008	6138026	18.6					Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW007814	671009	6137268	67.4					Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW007848	673851	6151885	32.3					Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW007850	667269	6141066	23.2	508.0				Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW007851	665470	6142732	13					Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW008567	676646	6137223	21.9					Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW008569	651450	6135301	19.3	604.1				Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW008570	657370	6144477	30.5	600.6				Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW008581	552416	6098020	56.7	306.6		0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW008838	647620	6143376	27.4	479.0				Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW008871	665386	6142302	43.5					Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW009137	672962	6151994	21.9					Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW009818	656120	6142681	17.5					Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW009915	672210	6152563	22.6					Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW009950	677920	6146599	25	546.7				Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW010742	547442	6098848	36.6	220.7		0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW010812	547325	6095676	11		Fresh water	0		Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW011096	739352	6176901	30.5			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW011274	546119	6101967	7.6			0		Unknown	Murrumbidgee Alluvial Groundwater Sources 2020
GW011519	560512	6092054	46.6		Brackish water	0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW011648	666083	6151236	24.7		Fresh water	0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW011721	542008	6093114	45.7	228.9		0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW012486	566879	6095829	19.5	226.4	Fresh water			Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW012998	696913	6153825	15.9			0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW013408	545130	6096272	30.5		Fresh water	0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW013490	566879	6095829	6.4			100		Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW014114	684365	6148536	40.8			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW014115	684493	6148596	41.1			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW014319	566879	6095829	20.1					Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW014677	547247	6100112	71.3	218.2	Fresh water	0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW014697	541713	6100386	12.2					Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW014698	541636	6100017	16.8					Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW014706	541609	6099832	5.2					Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW014707	536524	6104752	76.2		Fresh water			Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW014845	541194	6097308	67.1	230.3	Fresh water			Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW014955	546251	6092650	35.1		Brackish water			Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW014971	630379	6138646	26.5		Brackish water			Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW015385	620132	6106740	16.8	405.7		0		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW015433	723990	6172691	22.1			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW015626	543454	6094432	27.7			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW015774	543964	6100776	34.7			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW015794	691325	6153079	30.5	595.0		0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW015985	700110	6155729	23.5		Fresh water	50		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW016032	549138	6094649	45.1			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW016258	536550	6104844	48.8			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW016309	546345	6101688	9.1		Fresh water	0		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW016310	547247	6100112	21.9			0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW016311	546414	6100301	9.8			0		Unknown	Murrumbidgee Alluvial Groundwater Sources 2020
GW016313	546983	6098050	18			0		Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW016314	547106	6102115	32.3	221.3		0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW016402	540927	6094105	72.5	236.3		0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW016406	539107	6099751	11.6			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW016407	545926	6093804	56.1		Brackish water	0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW016409	542239	6093914	45.1	227.6		0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW016410	541122	6092594	39.3	236.6	Fresh water	0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW016414	543565	6101794	45.1	224.5		0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW016416	544036	6093781	38.7			0		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW016492	696613	6151704	25			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW016538	699655	6155862	24.1			0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW016883	673128	6154056	24.7	563.8		0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW017453	549045	6096129	25.3	266.0		0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW017740	611671	6105801	36.6		Fresh water	0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW018040	612841	6104277	27.7			0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW018364	561430	6093373	7.6			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW018404	558150	6089944	24.4	284.2		0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW019366	691110	6154964	27.4			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW019370	690525	6154976	26.8			0		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW019452	688828	6155381	32			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW019630	723603	6170388	74.7			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW020821	680599	6147132	36.6					Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW020822	671490	6145334	27.9					Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW020823	676748	6146467	31.7					Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW020824	667179	6144458	31.7					Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW020825	679352	6148328	32.9					Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW020826	675831	6150368	46					Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW020842	674101	6135607	39.6					Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW020843	673367	6135744	21.5	544.4				Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW020863	674298	6151353	44.2					Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW020883	672193	6139434	24.4					Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW020927	569699	6088137	39.6			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW020963	655719	6137048	11.6	568.6	Fresh water			Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW020969	659625	6144069	19.8					Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW021565	555653	6090268	39.3	303.1		0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW021596	670531	6145691	39			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW021961	575347	6084332	9.8	258.4	Fresh water	0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW021962	575246	6084364	8.8		Fresh water	0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW021963	575951	6084142	8.5			0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW021969	660324	6136136	13.1			0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW022393	532610	6106307	70.1			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW023972	542039	6099830	5.8			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW024123	541678	6092746	1.8			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW024605	659969	6140488	30.8			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW025450	547172	6095522	37.5		Fresh water	34		Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW025737	548020	6093361	18.3			0		Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW025920	659408	6140374	20.4			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW026033	762392	6180256	23.8			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW026586	540489	6092258	2.7					Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020

Bore ID	Easting	Northing	Final depth (m)	Mean Groundwater Elevation (mAHD)	Salinity description	Licenced Extraction Volume (ML/year)	Yield (L/s)	Bore use	Water Sharing Plan
GW027251	612259	6096088	6.1					Unknown	Murrumbidgee Alluvial Groundwater Sources 2020
GW027252	612125	6095473	5.5			0		Unknown	Murrumbidgee Alluvial Groundwater Sources 2020
GW027343	612098	6095350	15.2			0		Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW027883	615286	6097652	31.7			0		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW027923	570734	6084955	4.9	244.1		0		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW027964	566096	6095866	25.4		Fresh water	0		Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW027978	661337	6141727	15.5			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW028024	612415	6098489	4.6			0		Unknown	Murrumbidgee Alluvial Groundwater Sources 2020
GW028427	756383	6183662	24.7			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW028509	547028	6092073	40.8			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW028519	546114	6100919	8.2			0		Stock and Domestic	Murrumbidgee Alluvial Groundwater Sources 2020
GW028971	563819	6091877	4.6		Brackish water	0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW029041	699501	6155834	46.9			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW029086	569573	6088137	25.6			0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW029087	569148	6088726	19.5			0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW029279	674591	6144239	26.8			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW029285	555111	6088330	39.6			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW029289	557022	6091152	28			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW029404	704334	6166024	35.7	674.1		0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW030351	546800	6097986	26.8	212.4	Fresh water			Monitoring	Murrumbidgee Alluvial Groundwater Sources 2020
GW030351	546800	6097986	26.8	212.4	Fresh water			Monitoring	Murrumbidgee Alluvial Groundwater Sources 2020
GW030353	545189	6098028	26.5					Exploration	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW030354	544760	6098092	22.8					Exploration	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW030355	543970	6098211	61.2	215.3				Exploration	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW030355	543970	6098211	61.2	215.3				Exploration	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW030355	543970	6098211	61.2	215.3				Exploration	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW030355	543970	6098211	61.2	215.3				Exploration	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW030382	542994	6098655	35					Exploration	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW031100	662411	6140691	54.9			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW031358	665875	6151029	35.9		Brackish water	0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW031359	665733	6151128	30.4			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW031561	699752	6155675	29.9			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW031789	566854	6097522	9.1		Fresh water	0		Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW031893	567091	6097214	17.1	221.1		0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW032490	675861	6141337	13.7			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW033557	536248	6105184	121.3			0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW033572	536327	6105923	121.9			0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW033573	537493	6106658	118.9			0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW033704	535785	6109776	121.9			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW034785	694577	6151655	24.3			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW035289	561774	6091953	42.6			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW035581	569258	6083303	21.3	261.6		0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW035745	603835	6086544	21.3			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW035848	569735	6082960	9.7		Fresh water	0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW035916	676961	6139066	22.8			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW036000	566185	6096358	27.4	223.0	Fresh water			Monitoring	Murrumbidgee Alluvial Groundwater Sources 2020
GW036000	566185	6096358	27.4	223.0	Fresh water			Monitoring	Murrumbidgee Alluvial Groundwater Sources 2020
GW036997	534147	6104700	53					Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW037183	710897	6161099	42.6	671.5		0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW037391	545963	6101043	45.5		Fresh water	248		Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW037600	569151	6089003	15.8		Fresh water	0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW037697	761621	6180062	37.7		Fresh water	0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW038083	607211	6090202	68.5		Saline water	0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW038145	546132	6099563	18.2			0		Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW038373	697014	6153761	35			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW038374	697253	6155420	35	523.1		0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW038674	697275	6154094	53.3	532.3				Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW038832	606880	6089990	54.8			0		Exploration	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW039395	566961	6095989	23	225.6				Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW039399	566777	6095738	23		Fresh water			Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW039444	566623	6095645	23		Fresh water	100		Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW040850	566603	6095595	23		Fresh water	100		Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW040896	566903	6095835	22		Fresh water	100		Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW042297	609650	6101851	2.1	249.8				Unknown	Murrumbidgee Alluvial Groundwater Sources 2020
GW042298	609399	6101977	2.4	247.6				Unknown	Murrumbidgee Alluvial Groundwater Sources 2020
GW042299	609325	6102163	2.3	247.2				Unknown	Murrumbidgee Alluvial Groundwater Sources 2020
GW042309	611946	6099389	2.7	251.9				Monitoring	Murrumbidgee Alluvial Groundwater Sources 2020
GW042313	612538	6098272	2.5	252.8				Exploration	Murrumbidgee Alluvial Groundwater Sources 2020
GW042316	611675	6069472	1.8	465.1				Exploration	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW042319	611109	6099214	3	251.6				Unknown	Murrumbidgee Alluvial Groundwater Sources 2020
GW042351	609897	6106423	5.2	240.5				Monitoring	Murrumbidgee Alluvial Groundwater Sources 2020
GW042352	609840	6106601	4.3	239.7				Monitoring	Murrumbidgee Alluvial Groundwater Sources 2020
GW042352	609840	6106601	4.3	239.7				Monitoring	Murrumbidgee Alluvial Groundwater Sources 2020
GW042353	609635	6106471	4.9	240.7				Monitoring	Murrumbidgee Alluvial Groundwater Sources 2020
GW042354	609600	6106876	3.6	240.8				Monitoring	Murrumbidgee Alluvial Groundwater Sources 2020
GW042355	609393	6107088	4.9	241.0				Monitoring	Murrumbidgee Alluvial Groundwater Sources 2020
GW042356	609263	6107068	4.7	240.4				Exploration	Murrumbidgee Alluvial Groundwater Sources 2020
GW042356	609263	6107068	4.7	240.4				Exploration	Murrumbidgee Alluvial Groundwater Sources 2020
GW042672	546436	6099624	46.6		Fresh water	308		Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW042727	546361	6099809				0		Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW042902	574930	6085845	15.2			0		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW043057	546261	6100025	45.7			0		Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW043058	545907	6099996	35.9			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW043059	545832	6100212	54.2			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW043217	569571	6087891	33.8		Fresh water	0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW043356	606809	6090361	60.9			0		Exploration	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW043867	546385	6099562	54.8			0		Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW043868	545854	6099596	34.4			0		Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW043869	546688	6099561	27.5			0		Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW043870	546485	6099438	17.3			0		Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW043871	546411	6099716	42.6			0		Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW043872	546713	6099468	42.6			0		Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW043904	672424	6147690	33.2			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW043917	543506	6100100	30.4	231.1	Brackish water	0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW044284	573970	6088749	25			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW044502	546159	6099841	7.6			0		Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW044503	547220	6099897	47			2		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW044629	670283	6144648	83.8	525.3		0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW044791	545986	6100766						Exploration	Murrumbidgee Alluvial Groundwater Sources 2020
GW044813	694410	6156991	30.5	555.3	Brackish water	0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW045042	605062	6103015	6.7			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020

Bore ID	Easting	Northing	Final depth (m)	Mean Groundwater Elevation (mAHD)	Salinity description	Licenced Extraction Volume (ML/year)	Yield (L/s)	Bore use	Water Sharing Plan
GW045459	675293	6141162	49.4			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW045886	546253	6098515	21.3			0		Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW045887	546354	6098546	23.8			0		Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW045888	546430	6098607	42.1			0		Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW045889	546557	6098637	54.9			0		Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW045890	546506	6098607	15.6			0		Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW045891	546759	6098698	36.5		Fresh water	0		Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW046736	543645	6102749	42.7	229.9		0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW047098	677100	6147570	31.5		Fresh water	0		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW047174	699934	6155856				0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW047175	700309	6155508						Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW047202	700082	6155637	61.5		Fresh water	50		Exploration	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW047413	739515	6168417	41.2		Brackish water	0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW047880	546363	6100332	59		Fresh water	0		Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW048080	546658	6098667	53			0		Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW048653	676720	6142399	86.9			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW048895	598674	6094644	7.3			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW048930	716392	6167322	32			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW049310	546409	6099285				0		Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW049314	546083	6099872						Unknown	Murrumbidgee Alluvial Groundwater Sources 2020
GW049634	618083	6099002	31.4			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW049663	675776	6142171	91.5			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW049795	545372	6099198	7.9			0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW050382	668242	6149770	61			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW050501	546059	6100088	15.2					Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW050502	546464	6100240	59.4					Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW050503	546413	6100240	54.3					Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW050504	546363	6100209	57.6					Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW050505	546337	6100209	53.3					Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW050506	546312	6100179	42.7					Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW050507	546160	6100149	18.3					Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW050508	546261	6100179	30.5					Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW050964	606837	6097047	30		Fresh water	0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW051058	610574	6098820	24.4			0		Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW051300	567693	6093297	7			0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW051819	604539	6071129	49			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW051842	542538	6093112	15.2			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW051843	546269	6091861				0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW051870	603904	6088084	15.2		Fresh water	0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW052227	757620	6183104	94.5			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW052351	570383	6085204	5.5	253.0		0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW052625	665188	6139748	60			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW052880	669908	6151741	53.5		Fresh water	0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW052982	676805	6142860	61			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW053088	600376	6070592	3.6		Fresh water	0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW054033	699533	6157282	54			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW054246	741185	6167911	68.6			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW054368	756318	6174813	39.6			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW054380	541373	6092254	18.3			0		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW054827	691570	6155078	32.6		Brackish water	0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW054861	668917	6146399	22.9		Fresh water	0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW055063	665877	6151276	36.6			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW055162	675622	6142081	54			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW055408	665903	6151132	24.4			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW055438	600581	6070897	21.3			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW055511	606436	6088763	45.7			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW055660	675668	6140539	31			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW055698	599608	6071833	15.2			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW056041	665845	6150818	53.3					Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW056065	607443	6101801				0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW056131	675708	6139953	36			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW056176	760390	6182626	22.9			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW056231	676762	6136635	51		Fresh water	0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW056339	676848	6142458	91.4			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW056380	674526	6139236	18	508.5		0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW056569	606549	6079117	45.7			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW056619	673247	6154948	24			0		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW056977	568203	6097237	61			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW057174	606459	6082138	36					Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW057371	739775	6169582	22.9			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW057440	601518	6091501	42			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW057454	603625	6085838	66			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW057455	603602	6085992	20			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW057693	606670	6089284	36			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW057841	672766	6155080	43.6		Fresh water	0		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW057844	605602	6073613	2			0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW057986	674965	6148936	49.7		Brackish water	0		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW058114	602927	6084398	24			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW058178	722984	6172222	54.9					Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW058194	676883	6140300	21.3			0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW058338	666575	6151107	24			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW058430	692242	6154324	30.4		Brackish water	0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW058482	639487	6141470	42			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW058523	546883	6098266	33.5			0		Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW058526	611223	6098165	6			0		Unknown	Murrumbidgee Alluvial Groundwater Sources 2020
GW058591	666302	6151349	30.4			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW058727	603550	6085870	36			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW058744	665420	6138511	91.4			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW058817	666575	6151641	40			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW058904	666382	6151257	45.7			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW059276	570684	6084955	6	242.7		0		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW059368	546862	6098944	15.2		Fresh water	0		Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW059380	538080	6108042	61					Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW059402	546786	6098975	46.5		Fresh water	19		Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW059473	598781	6065371	4			0		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW059663	546812	6099036	42					Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW059664	546837	6098975	46.5					Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW059665	546887	6098974	46					Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW059666	546761	6098944	46					Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW059744	666152	6151164	47			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW059747	555897	6093039	45	286.5		0		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020

Bore ID	Easting	Northing	Final depth (m)	Mean Groundwater Elevation (mAHD)	Salinity description	Licenced Extraction Volume (ML/year)	Yield (L/s)	Bore use	Water Sharing Plan
GW059774	768855	6186487	45.7		Fresh water	0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW059781	607630	6099934	25		Brackish water	0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW060453	676455	6147089	40		Brackish water	0		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW060687	675316	6141413	24			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW060787	666982	6151797	38.1		Fresh water	0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW060798	661136	6147679	30			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW060994	699349	6155838	48.1			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW061000	666467	6151666	26.2			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW061013	608061	6097926	33			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW061024	680954	6154830	18			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW061065	531832	6107789				0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW061213	646679	6140125	23.8			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW061646	676557	6136577	36					Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW061655	547893	6093270	71.6			0		Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW062297	676600	6142771	90			0		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW062559	675452	6141191	24			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW062650	666416	6151365	45.7			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW062823	666978	6151581	38.1			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW063548	535656	6108945	18			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW063608	607623	6078242	36.6		Fresh water	0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW064063	604598	6087028	54			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW064210	739266	6178537	22.5			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW064218	547918	6093239	59.4			0		Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW064229	740353	6172219	41.1			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW064251	677976	6140310	75.6			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW064376	739702	6175658	41.1			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW064422	541373	6092254	36.7			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW064581	606307	6099210	24			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW064835	739297	6177735	24					Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW064872	546488	6099993	47		Fresh water	143		Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW064941	676740	6136851	40					Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW065218	607452	6095622	18			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW065480	611414	6095205	5			6		Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW065565	739806	6166868	57					Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW065566	739829	6166744	57					Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW066295	671808	6140582	48.1			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW066323	585654	6090987	26			0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW066478	674380	6143839	40			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW066480	676826	6146589	32		Fresh water	0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW066483	675008	6147209	72		Fresh water	0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW066487	675684	6140046	60			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW066492	675109	6143170	29					Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW066498	638615	6140897	139			0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW066768	610335	6097929	30					Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW068045	612672	6096626	6			0		Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW068387	717341	6168931	27.4			0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW068577	586661	6088020	26			1		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW068774	535960	6102875	32.6		Brackish water	0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW068808	604425	6068750	37		Fresh water	0	1.39	Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW068952	608303	6101251						Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW069088	758848	6182191	40					Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW069176	600778	6092363	30					Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW070051	701743	6155909	42			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW070239	674506	6142195	25.4			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW070426	681691	6148343	33					Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW070627	615259	6097591	32			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW070628	615789	6097642	32					Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW071514	546766	6098259	38.8		Fresh water	0		Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW072077	690322	6148877	24.3			0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW072719	673992	6152542	24			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW072882	761766	6180251	61		Fresh water			Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW072886	725329	6167075	54			0		Irrigation	Greater Metropolitan Region Groundwater Sources 2023
GW085030	670813	6153784	9.28					Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW085031	670814	6153784	3.78					Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW085034	669313	6153584						Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW085035	699313	6153684						Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW085036	699313	6154284						Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW085040	673513	6151884	4.9					Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW100202	674913	6138900	33			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW100992	728264	6167376	41		Fresh water	0	1.25	Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW101998	764008	6186992	42.7			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW103359	674346	6143927	5.7			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW103374	674293	6143880	3.3			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW103375	674363	6143904	7			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW103376	674375	6143918	6.9			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW103478	730816	6165534	37			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW104281	754026	6172818	55		Fresh water	0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW104729	763011	6186236	28			0		Stock and Domestic	Greater Metropolitan Region Groundwater Sources 2023
GW104918	737349	6177535	37			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW105023	742615	6178606	30			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW105359	725231	6170696	68			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW105362	731325	6172428	80			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW105364	741651	6175308	73			0		Stock and Domestic	Greater Metropolitan Region Groundwater Sources 2023
GW105570	765045	6188826	180			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW105640	757290	6173316	138		Fresh water	0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW105829	731197	6175065	82			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW105857	730845	6174206	104			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW106230	771669	6189213	73			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW106523	757397	6182438	30			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW106639	742755	6178567	54		Fresh water	0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW106749	731495	6165475	200			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW106750	741310	6177813	102		Fresh water	0		Stock and Domestic	Greater Metropolitan Region Groundwater Sources 2023
GW106782	233285	6185110	79.5		Fresh water	0		Irrigation	Greater Metropolitan Region Groundwater Sources 2023
GW106818	752877	6180173	97			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW107043	752730	6181297	54			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW107271	740795	6178491	70			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW107503	726004	6169352	36			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW107610	762440	6180417	48			0	2.5	Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW108079	726809	6169465	48			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW108751	233200	6184732	103			0		Irrigation	Greater Metropolitan Region Groundwater Sources 2023
GW108818	760444	6184429	66			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023

Bore ID	Easting	Northing	Final depth (m)	Mean Groundwater Elevation (mAHD)	Salinity description	Licenced Extraction Volume (ML/year)	Yield (L/s)	Bore use	Water Sharing Plan
GW109133	726840	6169061	48		Fresh water	0	0.563	Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW109146	730146	6168721	54			0	0.875	Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW109188	233598	6182712	85		Fresh water	0		Irrigation	Greater Metropolitan Region Groundwater Sources 2023
GW109192	233983	6184298	103		Fresh water	0		Irrigation	Greater Metropolitan Region Groundwater Sources 2023
GW109289	725304	6167598	66		Fresh water	0	0.375	Irrigation	Greater Metropolitan Region Groundwater Sources 2023
GW109931	740427	6174155	180		Brackish water	0	0.3	Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW110438	727941	6169047	60		Fresh water	0	0.25	Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW110672	739943	6174639	132			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW110806	734948	6174474	132		Fresh water	0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW111154	743953	6176904	48		Fresh water	0		Stock and Domestic	Greater Metropolitan Region Groundwater Sources 2023
GW111157	732714	6167147	78			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW111210	740260	6172000	54			0	0.075	Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW111478	752971	6180562	90			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW111640	741158	6167735	46			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW111734	728502	6172920	167			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW111759	741660	6167599	78			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW111761	741734	6178228	20			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW111777	730752	6170563	50			0	0.019	Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW112354	752823	6174348	48			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW112472	755076	6183154	60			0		Stock and Domestic	Greater Metropolitan Region Groundwater Sources 2023
GW112522	752901	6173477	42			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW114815	733433	6173576	56			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW114878	769555	6189950	80			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW115438	758655	6182321	38					Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW115701	760971	6180642	18		Fresh water		2.125	Stock and Domestic	Greater Metropolitan Region Groundwater Sources 2023
GW115756	198023.4	6175130.6	60					Stock and Domestic	Greater Metropolitan Region Groundwater Sources 2023
GW115829	754167	6171873	110					Stock and Domestic	Greater Metropolitan Region Groundwater Sources 2023
GW116184	725278	6170573	54					Stock and Domestic	Greater Metropolitan Region Groundwater Sources 2023
GW116634	233093.1	6184946.9	126					Stock and Domestic	Greater Metropolitan Region Groundwater Sources 2023
GW400001	546313	6100333	48			336		Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW400026	590479	6085208	61		Fresh water	0		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400059	610108	6097932	31			0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400063	674185	6152095	24			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400105	546591	6100270	60			0		Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW400139	608683	6092927	8.5			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400140	608708	6092896	3			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400141	608733	6092926	9			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400142	608682	6092834	11			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400143	608707	6092834	11.5			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400144	608733	6092865	11.5			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400145	608731	6092741	12			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400146	608757	6092772	5			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400147	608782	6092802	13.5			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400148	608816	6092646	13.5			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400149	608664	6092517	15.1			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400150	608657	6092416	14.6			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400151	608591	6092552	15.2			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400152	608754	6092818	30		Fresh water	0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400202	549207	6088402	36		Fresh water	0		Monitoring	Murrumbidgee Alluvial Groundwater Sources 2020
GW400308	547028	6090799	8.8			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400315	549514	6088985	7.95			0		Monitoring	Murrumbidgee Alluvial Groundwater Sources 2020
GW400317	549714	6089085	5.57			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400319	550114	6088885	5.13			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400320	549414	6092885	7.95	247.1		0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400322	549114	6092885	10.05	236.2		0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400323	548814	6093085	9.93	231.6		0		Monitoring	Murrumbidgee Alluvial Groundwater Sources 2020
GW400324	548614	6093585	10.4	230.4		0		Monitoring	Murrumbidgee Alluvial Groundwater Sources 2020
GW400331	553414	6098385	4.92			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400381	591113	6085184	70.1			30		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400391	612367	6070449	54.8			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400397	549155	6088426	36		Fresh water	90		Unknown	Murrumbidgee Alluvial Groundwater Sources 2020
GW400409	603620	6084969	24			0	2	Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400416	676293	6153256	55.8			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400426	548812	6090217	37.5			100		Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW400470	535159	6109491	13			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400471	534762	6108454	30			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400476	533382	6107617	11.8			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400477	534331	6107559	5.91			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400478	534333	6107526	12.41			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400479	534914	6107538	5.13			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400480	534899	6107584	12.3			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400481	535220	6107591	5.84			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400482	535246	6107591	11.96			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400483	534590	6106851	5.04			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400484	534491	6101917	12.01			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400485	535116	6106698	5.91			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400486	535116	6106698	12.2			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400487	534380	6106085	5.87			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400488	534380	6106085	12.4			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400509	562243	6097711	67		Fresh water	0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400510	561969	6098329	61		Fresh water	0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400535	610394	6092382	26			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400569	567226	6095878	14	223.9		0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400570	565634	6092577	6.1			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400571	565562	6092725	5.2	247.3		0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400572	565560	6092852	4.85	246.3		0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400573	565560	6092853	2.27	245.9		0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400574	565480	6092844	5	246.6		0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400575	565419	6092841	10.8	243.2		0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400576	565875	6093226	3	237.0		0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400577	565875	6093225	1.95	237.2		0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400578	565921	6093208	11.3	233.6		0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400579	566018	6093369	6.8	231.8		0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400580	566193	6093305	4.2	233.8		0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400581	566193	6093306	1.9	231.5		0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400582	565765	6093186	2.3			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400583	565684	6092979	4.25	244.8		0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400586	573163	6087985	3.68	294.9		0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400587	573198	6088155	4.85	299.9		0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400588	573193	6088160	6.65	298.8		0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400589	572913	6087835	8.46	268.7		0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020

Bore ID	Easting	Northing	Final depth (m)	Mean Groundwater Elevation (mAHD)	Salinity description	Licenced Extraction Volume (ML/year)	Yield (L/s)	Bore use	Water Sharing Plan
GW400590	572777	6088026	4.8	272.4		0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400591	572773	6088026	8.4	272.2		0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400592	572713	6087685	5.22	262.6		0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400593	569595	6090094	4.9	243.8		0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400594	569562	6090586	6.7	237.0		0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400595	569562	6090590	5.4	237.0		0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400596	569932	6090382	6.7	226.7		0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400597	569185	6090359	9.05	240.6		0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400598	569156	6089792	7			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400599	568565	6089798	8.1	254.2		0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400600	568203	6089498	7.4	265.1		0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400607	546863	6099065	46.5		Fresh water	19		Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW400608	546863	6099065	34		Fresh water	0		Unknown	Murrumbidgee Alluvial Groundwater Sources 2020
GW400612	608771	6092814	24			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400613	608771	6092809	24			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400617	566678	6095760	20			0		Monitoring	Murrumbidgee Alluvial Groundwater Sources 2020
GW400659	672300	6146707	50		Fresh water	0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400675	602133	6066694	93			0		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400676	602143	6066619	93			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400698	672154	6151105	40			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400704	564352	6095848	30			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400716	623788	6105634	30			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400723	674735	6143799	66.6			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400729	674743	6141952	56			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400733	545677	6101736	57.8			0		Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW400734	606550	6082496	54.9			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400738	567699	6084023	84			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400754	575311	6084512	10			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400755	543629	6099357	33			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400757	554395	6095922	36			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400797	609872	6097257	61.8			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400798	610272	6096882	43.5			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400802	555973	6092997	60			0	1.25	Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400812	570211	6091090	5			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400817	547405	6096519	13			0		Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW400821	675396	6141314	20			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400833	605588	6086134	6			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400840	668162	6149514	48.78			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400850	608439	6097829	25.3			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400851	606295	6085375	25.3			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400870	678238	6140934	48			0		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400882	669332	6153757						Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400952	601063	6076334	90			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW400971	575563	6082104	4.2		Fresh water	0		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401008	597665	6085473	49			15		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401022	546713	6098685	37		Fresh water	248		Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW401031	540371	6105475	125			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401049	600451	6094539	32			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401111	678050	6139039	53			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401130	608177	6089543	43.5			0	3	Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401131	607798	6089517	10			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401132	607783	6089517	46			0	1.8	Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401146	590713	6085384	192			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401155	543974	6102686	15.29			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401156	543974	6102686	5.7			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401157	544503	6102437	5.52			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401158	544455	6102899	14.58			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401159	544455	6102899	5.28			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401160	544155	6103486	6.01			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401162	544859	6102681	4.66			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401168	544155	6103486	6.12			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401200	675113	6141084	30			0	1.29	Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401201	573280	6087646	31		Fresh water	0	0.625	Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401218	675303	6141559	18.6			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401219	603738	6086409	21.34		Fresh water	0	0.38	Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401273	544363	6098835	54			180		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401274	544363	6098685	45			180		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401336	675263	6141084	36.36		Fresh water	0	1.8	Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401342	600663	6092434	30			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401360	612888	6096459	7.2			0		Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW401380	600463	6075634	73			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401381	600944	6074719	70			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401384	574538	6084935	73			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401385	574938	6082984	31			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401400	535663	6103910	7.3			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401401	535663	6103910	5			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401402	535663	6103910	9			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401403	535663	6103910	9			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401404	535663	6103910	8.2			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401405	535663	6103910	13.5			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401406	535663	6103910	10.3			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401407	535663	6103910	12.7			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401408	535663	6103910	9.6			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401409	535663	6103910	9.7			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401410	535663	6103910	11.5			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401411	535663	6103910	8			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401412	535663	6103910	16			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401413	535663	6103910	8.5			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401414	535663	6103910	8.7			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401415	535663	6103910	8.6			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401416	535663	6103910	11.6			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401417	535663	6103910	8			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401418	535663	6103910	8			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401419	535663	6103910	8			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401420	535663	6103910	8			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401421	535663	6103910	8			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401422	535663	6103910	8.15			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401423	535663	6103910	8			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401424	535663	6103910	8			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401425	535663	6103910	8			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401426	535663	6103910	8			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020

Bore ID	Easting	Northing	Final depth (m)	Mean Groundwater Elevation (mAHD)	Salinity description	Licenced Extraction Volume (ML/year)	Yield (L/s)	Bore use	Water Sharing Plan
GW401427	535663	6103910	8			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401431	568063	6095185	42			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401488	605638	6086134	5.5			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401495	608963	6097634	41.45			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401527	564463	6094185	14.5			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401557	604421	6090515	31			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401558	604421	6090515	10.5			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401559	603446	6090514	31			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401560	603529	6093602	31			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401561	604482	6092029	18			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401562	603455	6092047	31			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401563	674330	6143979	5			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401564	674319	6143930	5			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401565	674310	6143885	5.3			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401566	674305	6143869	5.1			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401567	674455	6144012	6			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401568	674407	6143896	5.8			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401569	674419	6143836	4.5			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401570	674339	6143857	4.2			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401571	674362	6143902	5.8			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401572	674347	6143875	4.5			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401573	674362	6143878	5.3			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401619	602563	6066584	66.7			0		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401642	566930	6095944	5			0		Monitoring	Murrumbidgee Alluvial Groundwater Sources 2020
GW401643	566917	6095952	4.5			0		Monitoring	Murrumbidgee Alluvial Groundwater Sources 2020
GW401644	566874	6095967	4			0		Monitoring	Murrumbidgee Alluvial Groundwater Sources 2020
GW401676	676563	6142784	85.1		Brackish water	0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401682	599280	6065444	4.8			0		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401684	608303	6101251	79.24			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401690	666063	6150984	27			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401708	546913	6098945	34		Fresh water	19		Unknown	Murrumbidgee Alluvial Groundwater Sources 2020
GW401717	613063	6098484	7			0		Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW401771	600383	6070594	3			0		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401832	678037	6138152				0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401833	678400	6138594	55			0		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401848	677643	6139565	78			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401861	548698	6094000	48.76			0	1.77	Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401883	677790	6143200	111			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401888	565645	6094581	13			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401892	677571	6138844	104			0		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401913	609827	6096854	45.4			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401914	603711	6100765	50			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401915	609669	6098350	56			0		Stock and Domestic	Murrumbidgee Alluvial Groundwater Sources 2020
GW401924	674291	6142845	110			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401932	674871	6141494	60.8			0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401950	675484	6143796	80			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401958	606302	6083710	2			0		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401961	605280	6071371	191			0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401962	595370	6067350	80			0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401965	562695	6093711	3			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW401970	678194	6139490	90			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402021	576293	6081328	7			27		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402082	629045	6123416	54.86					Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402089	675224	6143270	66			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402090	675733	6145145	36			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402091	675478	6145170	48			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402107	568729	6097046	146			44		Commercial and Industrial	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402120	595310	6084981	130			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402121	595281	6084985	18			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402142	676487	6142134	30		Fresh water	0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402153	611402	6095376	2.8			36		Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW402171	608073	6078438	76			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402183	675160	6141231	38			0	1.6	Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402188	598901	6085136	51			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402190	666531	6151621	30			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402197	676878	6142032	60			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402198	675459	6143679	92			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402224	608673	6092534	12			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402226	676578	6136673	36			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402227	676946	6136595	36			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402230	672890	6146812	36			0		Commercial and Industrial	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402237	677229	6148014	78.8			0		Commercial and Industrial	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402270	672754	6142438	60			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402279	675166	6141088	74			0	0.4	Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402281	674994	6141049	49			0	0.563	Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402282	674970	6141028	90			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402304	675488	6140982	37			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402324	675917	6150042	48			0	1.77	Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402325	674823	6142135	57			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402326	676789	6142111	83			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402327	676445	6142746	47			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402335	576315	6081328	6.4			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402337	549136	6088441	42			90		Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW402340	613024	6096371	26			0		Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW402354	677450	6143849	99			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402356	544648	6101591	13.9	211.5				Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402357	544640	6101959	6.3	208.2				Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402358	544640	6101961	13.8	208.3				Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402359	544610	6102179	9.45	208.9				Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402360	544596	6102296	10					Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402361	544260	6101850	17	214.3				Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402379	674839	6143166	61			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402386	670057	6151030	40			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402392	612810	6102451	52		Fresh water	0	2.5	Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402416	675237	6142367	78			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402419	569403	6098792	40.53			44		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402436	677210	6140742	55			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402437	677071	6140729	72			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402442	576514	6079752	7			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402452	672785	6142293	92			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402462	676396	6143166	65			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020

Bore ID	Easting	Northing	Final depth (m)	Mean Groundwater Elevation (mAHD)	Salinity description	Licenced Extraction Volume (ML/year)	Yield (L/s)	Bore use	Water Sharing Plan
GW402463	673989	6145489	103		Fresh water	0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402464	675288	6141204	51		Fresh water	0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402465	674615	6141832	103		Fresh water	0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402466	674209	6143171	103		Fresh water	0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402467	674613	6143228	72		Fresh water	0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402468	674731	6144640	13			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402471	677958	6139589	61			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402478	674798	6143251	42			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402483	675696	6143436	51			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402484	675476	6141207	30			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402485	620320	6106552	56	431.5		0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402487	541320	6092240	40			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402518	608298	6097505	43.9			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402554	676453	6140760	48			0		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402573	598720	6094399	93			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402618	603472	6084263				0	1.5	Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402623	567128	6095946	5.75			0		Monitoring	Murrumbidgee Alluvial Groundwater Sources 2020
GW402624	566889	6096043	4.15			0		Monitoring	Murrumbidgee Alluvial Groundwater Sources 2020
GW402634	599462	6070407	3.3			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402655	608831	6097877	56			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402690	607526	6089760	42		Fresh water	0	1.1	Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402693	608906	6100398	80		Fresh water	0	0.23	Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402716	620563	6096632	8			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402719	676672	6138179	36.3			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402720	563929	6093179	21			0		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402759	677692	6139003	70			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402785	609144	6098132	25.6			0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402786	609144	6098132	42			0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402827	548656	6098104	60			0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402833	676151	6149585				0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402853	569121	6088899	55.77			30	13.638	Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402869	560406	6095180	15			0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402876	602745	6084106	25.6		Fresh water	0	0.7	Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402891	681876	6148011	60			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402902	577489	6079938	6.4			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402911	547296	6098346				0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402912	546751	6097833				0		Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW402927	674670	6144390	13			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402949	532895	6107281	8.5			0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402972	544219	6103104	15			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW402973	543621	6102845				0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403001	675654	6142443	41			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403024	608376	6092244	17.5			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403025	608701	6092556	14.2			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403026	608915	6092654	25.5			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403027	609003	6092585	23.2			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403028	608911	6092437	17.5			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403029	608675	6092297	21			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403033	675484	6144067	80			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403036	677204	6147075	105			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403067	677087	6142000	60			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403075	678987	6141884	28			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403076	553198	6097309	55			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403117	547276	6098330	48			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403131	674912	6143420	52			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403174	673807	6146769	48			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403180	673713	6147272	24			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403187	672455	6142359	55			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403266	676854	6137505	48			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403274	674598	6138907	51			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403282	674817	6141619				0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403284	533713	6106287	43			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403314	547238	6098098	30			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403374	677416	6141878	48			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403392	676328	6140676	102			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403403	605781.1	6087034.9	80			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403409	535949	6106051	20.5			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403410	535977	6106317	20.5			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403411	536140	6106123	6			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403412	536120	6106020	11.5			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403413	536104	6106159	11.5			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403414	535600	6106234	11.5			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403415	535512	6106401	11.5			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403416	535624	6106321	12.45			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403438	610268	6093478	15			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403439	610283	6093482	15			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403440	610269	6093463	15			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403441	610274	6093443	15			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403442	610271	6093452	15			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403443	610262	6093473	15			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403444	610291	6093477	15			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403445	610296	6093465	15			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403446	610300	6093455	15			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403447	602151	6093312	5.3			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403450	675127	6139793	72			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403452	609066	6092876	6.8			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403463	602920	6092082	4.4			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403464	602662	6091381	6.7			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403465	603803	6091669	4.85			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403466	603622	6091054	7.2			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403467	603115	6091256	6.45			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403468	604073	6090864	7.4			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403469	603463	6091475	5.85			0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403470	603093	6091671	6.85			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403471	603788	6090400	9			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403472	604236	6090375	4.8			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403473	604076	6090049	7.6			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403474	603942	6089797	9			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403475	603269	6089855	7.1			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403476	602951	6090754	8.85			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403477	602582	6090472	9			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020

Bore ID	Easting	Northing	Final depth (m)	Mean Groundwater Elevation (mAHD)	Salinity description	Licenced Extraction Volume (ML/year)	Yield (L/s)	Bore use	Water Sharing Plan
GW403478	602265	6093499	14.5			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403479	603473	6092043	5.4			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403480	603373	6092043	9.3			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403481	604239	6091594	15.4			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403486	604566	6091366	13.5			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403487	602806	6091040	5.4			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403488	602806	6091040	13.8			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403489	603412	6091862	5			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403491	603437	6091846	5			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403492	603484	6091812	6.7			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403493	603109	6092274	5.4			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403494	603109	6092274	16.9			0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403505	676133	6142454	68			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403514	542247	6099514	33			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403545	676774	6141671	56			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403553	674953	6141031	43		Saline water	0	10	Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403586	568618	6087422	37		Fresh water	55		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403621	585472	6090821	7			30		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403642	577057	6081054	168			72		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403677	604920	6073397	120		Fresh water	30		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403678	603994	6072964	42			30		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403679	605544	6068740	90		Brackish water	19		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403703	665754	6151705	81			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403727	605065	6102722	85			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403728	605682	6103144	78			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403736	602578	6069766	66		Fresh water	12		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403745	575392	6079589	5.7			30		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403749	577057	6081138	152			72		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403750	577032	6080857	152			72		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403755	677804	6143109	65			6		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403790	603157	6094345	80			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403791	603154	6094345	50			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403792	602923	6093972	61.8			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403793	603419	6094098	56			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403794	603720	6093728	92			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403795	604040	6093355	50			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403796	603179	6092150	50			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403797	603419	6091964	43		Fresh water	0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403798	603838	6092243	56		Fresh water	0	1.4	Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403799	604129	6092115	56		Fresh water	65	6	Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403800	604103	6091694	50		Fresh water	65	6	Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403801	604410	6091557	56		Fresh water	65	1.5	Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403802	604454	6091928	50		Fresh water	65	1.5	Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403803	607795	6092778	44			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403804	608203	6092460	30			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403810	605405	6086837	6			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403816	674178	6149836	61			0	1.3	Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403831	674576	6140748	120			100		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403838	531332	6107089	10		Brackish water	0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403839	531895	6107404	15.3			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403840	532232	6106662	8.6		Brackish water	0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403841	533938	6106972	9		Brackish water	0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403843	676987	6140102	120		Fresh water	70		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403844	676991	6139967	110		Fresh water	70		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403853	600118	6064585	85			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403871	671180	6137988	83			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403901	676994	6141697	81		Fresh water	0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403939	675931	6150456	80			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403944	613484	6096987	55			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW403980	671437	6152260	65			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404017	676344	6143227	70			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404022	566947	6095951	5.5		Brackish water	0		Monitoring	Murrumbidgee Alluvial Groundwater Sources 2020
GW404023	566917	6095952	5.5		Brackish water	0		Monitoring	Murrumbidgee Alluvial Groundwater Sources 2020
GW404024	566923	6095934	5.45		Brackish water	0		Monitoring	Murrumbidgee Alluvial Groundwater Sources 2020
GW404025	543250	6103100	15			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404026	543216	6103201	6			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404087	678271	6137874	120			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404110	675369	6142476	56			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404111	567939	6095190	70			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404124	571649	6083808	73.15			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404128	557321	6094091	61			0		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404132	675117	6140972	43		Saline water	0	50	Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404178	532491	6102126	30			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404203	583374	6083141	175			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404204	566716	6097672	34		Fresh water			Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW404205	566644	6097788	54		Fresh water	108		Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW404239	675549	6141142	31			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404247	675215	6141222	23			0	1.248	Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404259	676098	6140577	90			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404261	674914	6141580	33			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404263	674883	6141580	50			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404268	674958	6141586	36			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404269	566448	6095267	19	224.4	Fresh water			Monitoring	Murrumbidgee Alluvial Groundwater Sources 2020
GW404270	598970	6094491	36			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404294	545821	6101067	49		Fresh water	0		Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW404297	673978	6147143	59			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404299	558315	6089465	24			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404305	563909	6091355	36			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404311	674884	6139134	39			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404341	609706	6098419	3			0		Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW404372	567815	6084003	15			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404407	673635	6149549	64			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404473	679470	6140368	50			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404487	646827	6139761	47			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404586	565541	6094423	100			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404592	673798	6148900	36		Fresh water	0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404608	606295	6104422	61.8			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404633	680283	6154298	64			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404641	603991	6094526	320			85		Commercial and Industrial	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404642	603457	6094893	245			85		Commercial and Industrial	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404658	674028	6149786	60		Fresh water	0	0.625	Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020

Bore ID	Easting	Northing	Final depth (m)	Mean Groundwater Elevation (mAHD)	Salinity description	Licenced Extraction Volume (ML/year)	Yield (L/s)	Bore use	Water Sharing Plan
GW404660	677824	6139441	81			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404670	537455	6108179	11			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404671	537749	6109334	13.5			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404697	545983	6097887	63			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404739	540659	6100597	6.6			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404765	611445	6107042	4			5		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404766	577700	6079957	115			75		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404767	570086	6092500	40			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404773	568118	6094279	48			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404780	600778	6092363	30			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404782	570836	6091153	23			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404784	673157	6142041	70			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404852	549799	6088545	66		Brackish water	0		Stock and Domestic	Murrumbidgee Alluvial Groundwater Sources 2020
GW404892	569970	6090143	68.5			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404893	534835	6102146	79.24			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404916	598263	6070527	93			30		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404929	570086	6087461	51			55	4.38	Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404930	678010	6138190	66			15		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404931	668959	6148679	66			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404941	551492	6092913	84		Brackish water	0	1.1	Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404946	545226	6098817	45			200		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404948	548912	6088852	28		Fresh water	0		Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW404957	576280	6080452	6.6			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404968	547415	6097043	98		Brackish water	0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW404979	620454	6096554	4			10		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW405010	617326	6099768	31.4			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW405011	619315	6100016	37.5			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW405018	607988	6078221	56			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW405033	616045	6097858	37.5			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW405041	553462	6097008	112			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW405048	607634	6078237	73			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW405061	684531	6144473	30			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW405096	537824	6101752	165			0	0.74	Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW405122	577147	6081357	86			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW405135	569116	6098451	72			150		Commercial and Industrial	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW405136	566025	6095527	94			10		Commercial and Industrial	Murrumbidgee Alluvial Groundwater Sources 2020
GW405268	548352	6100718	9			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW405283	567438	6096002	54		Fresh water	0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW405393	654341	6139227	76			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW405885	566019	6095521	66			0		Monitoring	Murrumbidgee Alluvial Groundwater Sources 2020
GW405888	566109	6095576	12			0		Monitoring	Murrumbidgee Alluvial Groundwater Sources 2020
GW405891	568929	6098239	54			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW408737	676181	6150242	90			0	2.5	Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW409415	541541	6098264	96			0	3.159	Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW409459	555312	6097951	30		Brackish water	0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW409575	539406	6095870	79			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW409576	656344	6137727	41			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW409592	602403	6083959	37.5		Fresh water	0	1.5	Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW409854	601163	6094788	43.5			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW411128	679428	6154466	21			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW411945	673587	6148997	60			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW414375	612816	6104294	30			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW414382	534558	6106361	75			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW414423	675765	6149680	108			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW414439	678289	6138341	66			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW414450	602889	6069562	52			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW414537	670544	6142531	30			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW414576	678495	6138724	54			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW414578	674604	6142844	72			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW414594	674269	6143074	15			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW414600	674271	6143082	14.5			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW414602	561290	6097961	79			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW414604	674280	6143082	14.5			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW414605	674275	6143070	15			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW414613	581954	6094164	33			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW414656	535115	6106153	140			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW414683	563872	6093078	20			30		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW414687	599101	6064959	4.8			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW414690	663769	6144355	125			0	0.5	Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW414702	606971	6101249	40			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW414706	664635	6145850	60			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW414715	599007	6096245	40			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW414717	567040	6097219	16			0		Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW414744	674277	6142258	50			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW414804	668803	6144692	85			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW414805	675996	6143529	60			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW415062	676873	6140667	40			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW415345	675562	6144426	113			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW415701	675509	6141160	27			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW415727	674091	6142623	123			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW415874	675685	6143417	56			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW415892	546223	6092708	63			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW415894	674131	6146932	66			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW415910	543842	6100752	60			0		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW415920	617619	6098985	76			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW415935	665198	6151278	90			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW415938	677381	6142446	30			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW415969	535539	6103826	20			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW415970	535342	6103779	22			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW415971	535110	6103862	20			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW415972	535310	6103885	23			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW415973	535293	6103884	12			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW415974	535061	6103677	22			0		Unknown	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW415975	534732	6103824	25			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW415975	534732	6103824	25			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW415976	534211	6103452	21.8			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW415977	535764	6104180	25			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW415978	535766	6104182	10.6			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW415979	535505	6104226	19			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW415980	534688	6104383	7			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW415982	534690	6104385	22			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020

Bore ID	Easting	Northing	Final depth (m)	Mean Groundwater Elevation (mAHD)	Salinity description	Licenced Extraction Volume (ML/year)	Yield (L/s)	Bore use	Water Sharing Plan
GW416032	666606	6149992	100			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416054	605630	6082976	72			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416074	604395	6071717	39.5			0		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416102	678669	6155188	110			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416110	577679	6079850	105			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416173	604397	6072232	24			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416182	661234	6145110	54			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416207	608418	6097253	86.2			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416221	674832	6142552	5.6			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416222	674872	6142535	6.9			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416223	674868	6142546	6.3			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416224	674889	6142552	6.2			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416225	674851	6142547	5.9			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416226	674844	6142533	5.9			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416251	611120	6099611	17			0		Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW416252	608190	6091806	54			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416253	614161	6098311	54			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416254	614158	6098078	77			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416264	675530	6141132	25			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416268	675380	6140218	65			0	1	Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416309	540531	6100614	85			0	5	Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416358	561658	6091886	100			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416362	531739	6107523	216			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416394	602550	6083474	60			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416399	612630	6096856	17			0		Water Supply	Murrumbidgee Alluvial Groundwater Sources 2020
GW416400	676391	6143066	73			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416410	680078	6154352	48			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416449	674871	6149603	102			0	1	Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416457	607196	6105209	175			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416459	617643	6098980	76			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416469	676858	6141077	46			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416475	589275	6080305	164.5		Brackish water	0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416506	536384	6107619	192			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416517	546425	6099667	48.5			0		Irrigation	Murrumbidgee Alluvial Groundwater Sources 2020
GW416525	591092	6085159	192			0		Irrigation	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416546	674955	6142457	4			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416547	674979	6142438	6			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416548	674986	6142423	6			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416552	675304	6142077	50			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416588	625144	6106763	51			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416662	544473	6096395	56		Fresh water	0	0.5	Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416663	544567	6095984	56		Fresh water	0	5	Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416722	662659	6146420	72					Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416725	679517.967	6154335.029	58					Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416726	679517.967	6154335.029	58					Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416745	566099.3	6095201	14					Stock and Domestic	Murrumbidgee Alluvial Groundwater Sources 2020
GW416787	601794.5	6092068.1	42					Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416810	679458	6154379	30					Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416813	567797	6084050	19					Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416819	670578	6153443	50					Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416846	669454	6151210	84					Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416869	556539.4	6089458.7	72					Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416921	539921.5	6099083.4	162					Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW416927	672854.4	6142186.1	102					Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW417000	601636.5	6080591.9	51					Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW417042	664186.2	6151155.3	120					Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW417071	558942.7	6091506.8	150					Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW417087	602220	6096381	73					Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW417304	540545	6095898.8	101					Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW417317	539537.6	6096742.8	150					Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW417321	671844.2	6138311.9	42					Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW417321	671844.2	6138311.9	42					Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW417365	554454.1	6088667.4	102					Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW417417	675453	6144065	78					Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW417543	658378.1	6143855.1	48					Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW417577	674575	6149775	48					Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW417607	561182	6085948	54					Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW417940	609310	6092719	10					Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW417941	609289	6092774	10					Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW417942	609284	6092754	10					Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW417970	544466	6102909	15					Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW417970	544466	6102909	15					Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW417978	544466	6102909	15					Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW417997	594665	6086616	77					Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW505395	612282	6034741	90			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW600151	703260	6155225	50		Saline water			Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW700018	695993	6156002	16.6		Brackish water	0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW700381	727182	6169732	38.1			0		Water Supply	Greater Metropolitan Region Groundwater Sources 2023
GW700777	690927	6148587	31			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW700858	696388	6158184	30			0	0.562	Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW700976	691013	6148684	30			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW701221	723663	6170634	102			0		Commercial and Industrial	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW701418	718363	6169434	72			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW701496	718163	6169359	84			0		Commercial and Industrial	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW701643	722338	6168259	109			0		Commercial and Industrial	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW701710	699643	6155699	34			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW702068	718588	6170224	114			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW702165	698898	6153554	24			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW702411	688583	6158964	54			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW702600	690778	6148620	48			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW702612	699648	6161135	21			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW702614	699488	6156670	50			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW702745	723906	6170415	20			0		Commercial and Industrial	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW703096	690965	6148556	72			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW703118	691414	6156053	64			0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW703450	699301	6158595	18.6			0	0.502	Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW703454	699625	6154539	18			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW703582	690621	6148831	32			0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW703832	715629	6163756	86			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW703849	699812	6154765	30			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW703880	710641	6164184	42		Fresh water	0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020

Table A.3-1 Registered bores within 5km of the amended project footprint

Bore ID	Easting	Northing	Final depth (m)	Mean Groundwater Elevation (mAHD)	Salinity description	Licenced Extraction Volume (ML/year)	Yield (L/s)	Bore use	Water Sharing Plan
GW704032	722428	6168050	24			8		Commercial and Industrial	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW704228	723874	6170426	102			3		Commercial and Industrial	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW704234	701029	6155907	24		Fresh water	0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW704457	701570	6165119	66			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW704528	710008	6168002	32			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW704532	701426	6159761	114		Brackish water	0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW704533	701574	6159409	120		Brackish water	0		Monitoring	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW704542	701274	6155941	42			0		Water Supply	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020
GW704578	696931	6151178	60		Fresh water	0		Stock and Domestic	NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020

Attachment E

Erosion and sedimentation risk

An additional series of erosion risk and sedimentation impact figures with zoomed in callout boxes to highlight the location of high erosion risk categories along and within the amended project footprint is provided below.

A spatial sensitivity analysis was conducted using the modelled soil erosion potential for waterways with Strahler order 1 to 4 and their proximity to the amended project footprint. The following tables present the percentage of footprint and their sensitivity. Waterways within the one kilometre buffer surface water and groundwater study area were identified. First to fourth order streams were extracted and given the following buffer distances:

- 50 metres from Strahler order 1
- 100 metres from Strahler order 2
- 150 metres from Strahler order 3
- 200 metres from Strahler order 4.

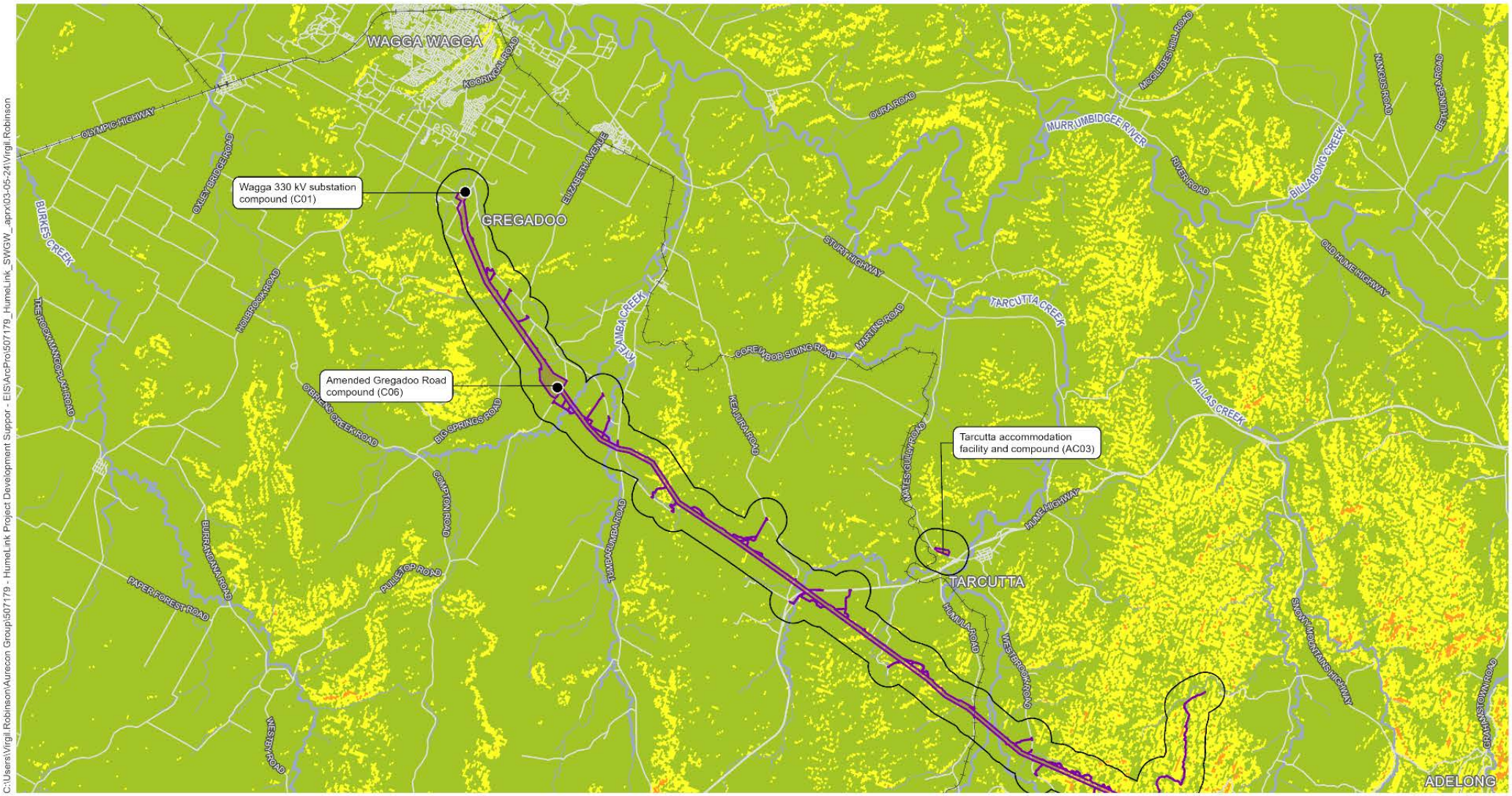
Where there were overlapping buffers, the higher order stream was given precedence ie Strahler order 4 was assigned the buffer over Strahler order 3. These buffers were overlaid onto the amended project footprint and soil erosion risk models to calculate with their respective areas and erosion risk. These results are provided in Table E-1 and Table E-2.

Table E-1 Percentage of waterway buffer within amended project footprint by area

Name	EIS Area (ha)	Amended project footprint Area (ha)	% of footprint
Footprint (excluding Strahler order 1-4 buffers)	5,342.3	5,669.56	64.17%
Strahler order 1 buffer within footprint	1,141.0	1,124.74	12.73%
Strahler order 2 buffer within footprint	922.0	877.44	9.93%
Strahler order 3 buffer within footprint	596.1	569.53	6.45%
Strahler order 4 buffer within footprint	547.9	593.42	6.72%

Table E-2 Soil erosion classification within waterway buffer by area

Buffer	Soil erosion (t/ha/yr)	Sensitivity	EIS Area (ha)	Amended project footprint Area (ha)	% of total amended project footprint
Strahler order 1 (50 m buffer)	<20	Low	115.97	125.19	1.42%
	20 - <50	Low	179.20	201.88	2.29%
	50 - <200	Low	431.43	492.24	5.57%
	200 - <500	Moderate	208.61	191.14	2.16%
	500 - <1000	Moderate	107.05	81.12	0.92%
	1000 - <2000	High	79.05	28.13	0.32%
	2000 - <3000	High	18.72	4.98	0.06%
Strahler order 2 (100 m buffer)	<20	Low	0.99	99.86	1.13%
	20 - <50	Low	90.79	161.70	1.83%
	50 - <200	Low	137.03	389.47	4.41%
	200 - <500	Moderate	380.24	158.12	1.79%
	500 - <1000	Moderate	190.78	56.87	0.64%
	1000 - <2000	High	80.03	11.39	0.13%
	2000 - <3000	High	42.14	0.00	0.00%
Strahler order 3 (150 m buffer)	<20	Low	1.04	78.75	0.89%
	20 - <50	Low	68.43	90.69	1.03%
	50 - <200	Low	84.20	224.31	2.54%
	200 - <500	Moderate	229.34	126.30	1.43%
	500 - <1000	Moderate	144.27	40.27	0.46%
	1000 - <2000	High	42.39	7.82	0.09%
	2000 - <3000	High	24.53	1.36	0.02%
Strahler order 4 (200 m buffer)	<20	Low	2.94	95.73	1.08%
	20 - <50	Low	89.62	105.04	1.19%
	50 - <200	Low	94.44	241.38	2.73%
	200 - <500	Moderate	202.01	113.76	1.29%
	500 - <1000	Moderate	111.97	30.08	0.34%
	1000 - <2000	High	39.17	7.32	0.08%
	2000 - <3000	High	10.69	0.07	0.00%
Footprint (outside of buffer)	<20	Low	947.21	1,084.11	12.27%
	20 - <50	Low	873.40	1,042.23	11.80%
	50 - <200	Low	1,758.05	2,100.99	23.78%
	200 - <500	Moderate	857.76	880.95	9.97%
	500 - <1000	Moderate	513.71	406.83	4.60%
	1000 - <2000	High	336.22	134.70	1.52%
	2000 - <3000	High	55.96	19.03	0.22%
	>3000	High	1.19	0.42	0.00%



Amended project footprint

Amended surface water and groundwater study area

Railway

Watercourse

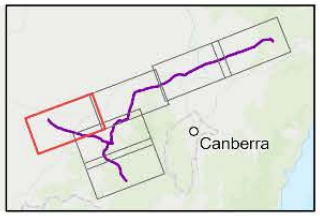
Substation

Soil erosion, bare

Low: up to 200 t ha^{-1} yr^{-1}

Moderate: between 200 and 1000 t ha^{-1} yr^{-1}

High: greater than 1000 t ha^{-1} yr^{-1}



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

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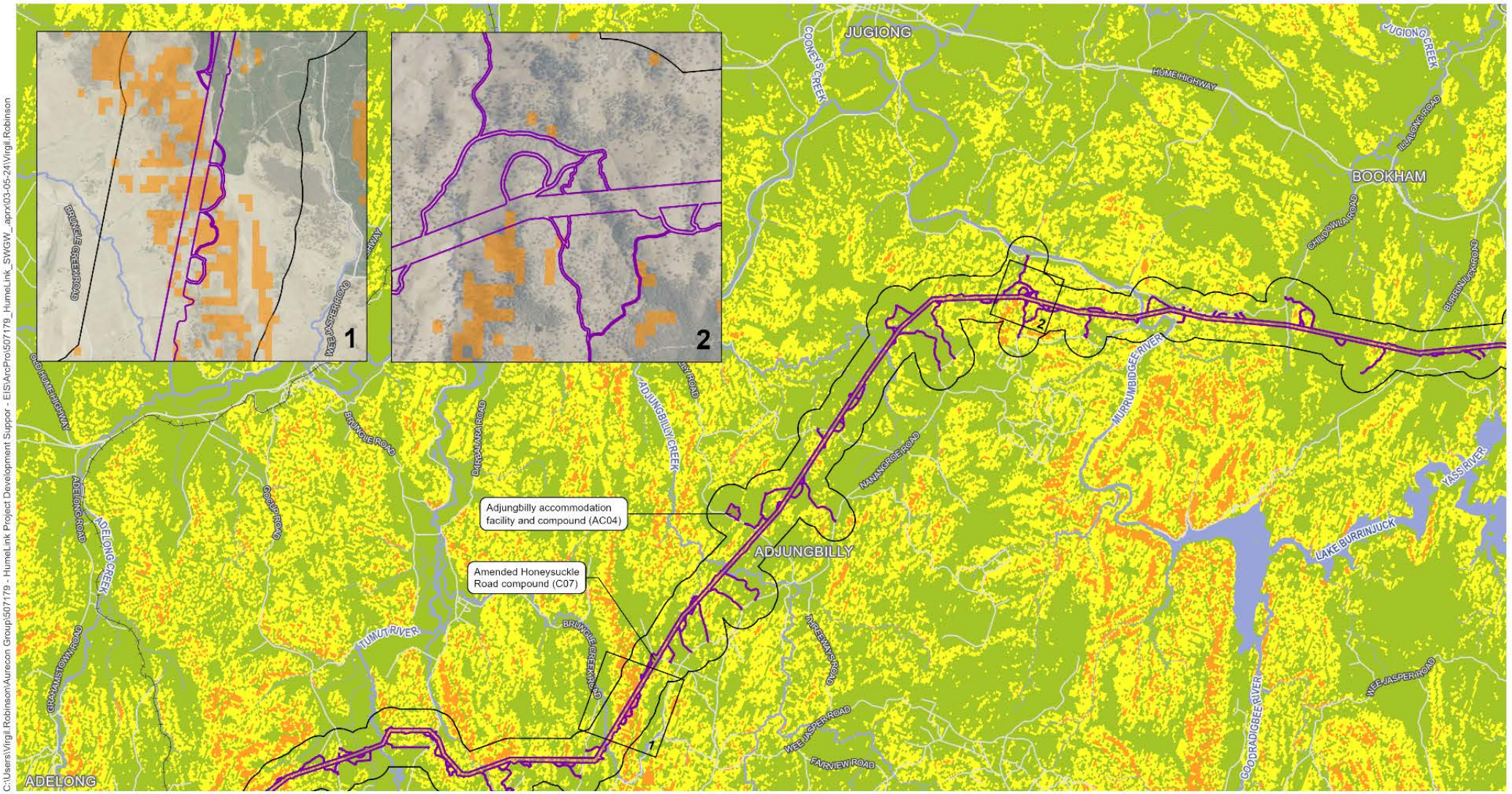
Projection: GDA 1994 MGA Zone 55



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Amended project footprint

Amended surface water and groundwater study area

Railway

Watercourse

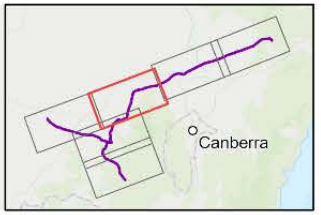
Substation

Soil erosion, bare

Low: up to 200 t ha^{-1} yr^{-1}

Moderate: between 200 and 1000 t ha^{-1} yr^{-1}

High: greater than 1000 t ha^{-1} yr^{-1}



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

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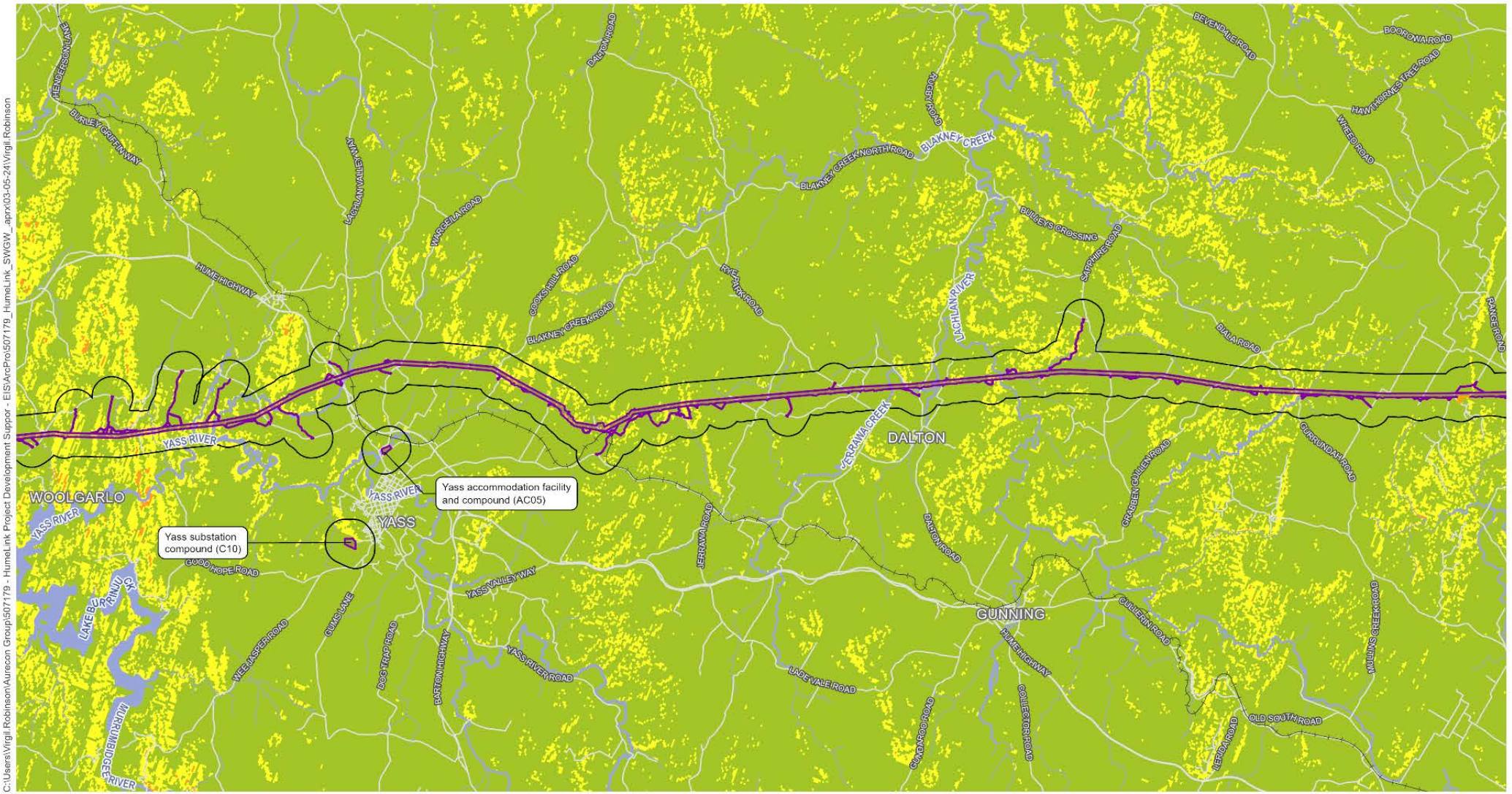
Projection: GDA 1994 MGA Zone 55



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Amended project footprint

Amended surface water and groundwater study area

Telecommunications connection

Railway

Watercourse

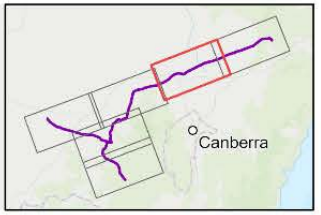
Substation

Soil erosion, bare

Low: up to 200 t ha^{-1} yr^{-1}

Moderate: between 200 and 1000 t ha^{-1} yr^{-1}

High: greater than 1000 t ha^{-1} yr^{-1}



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

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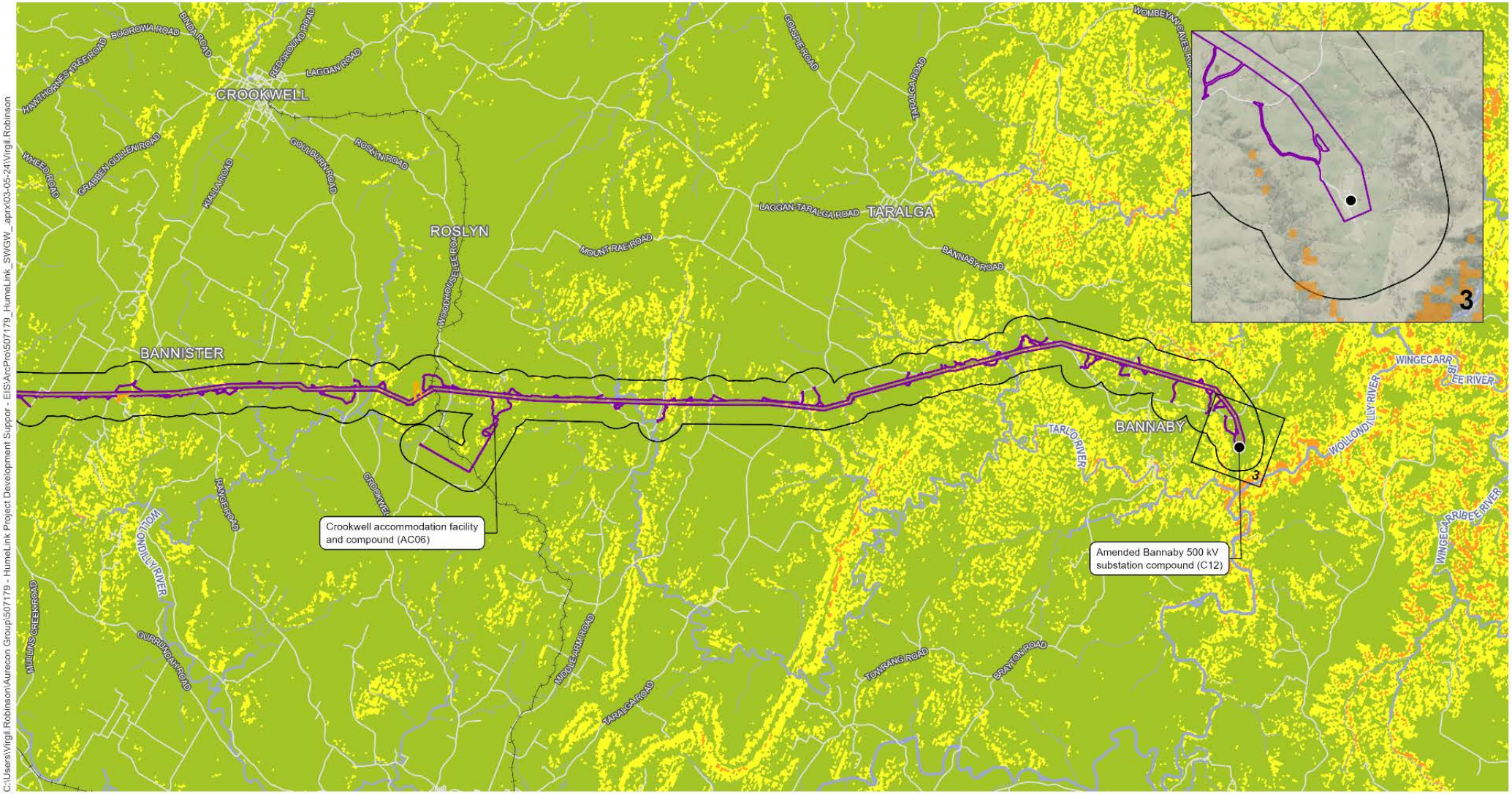
Projection: GDA 1994 MGA Zone 55



Amended project footprint

Amended surface water and groundwater study area

Telecommunications connection

Railway

Watercourse

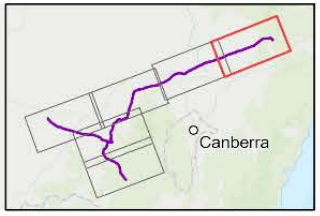
Substation

Soil erosion, bare

Low: up to 200 t ha^{-1} yr^{-1}

Moderate: between 200 and 1000 t ha^{-1} yr^{-1}

High: greater than 1000 t ha^{-1} yr^{-1}



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

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Projection: GDA 1994 MGA Zone 55

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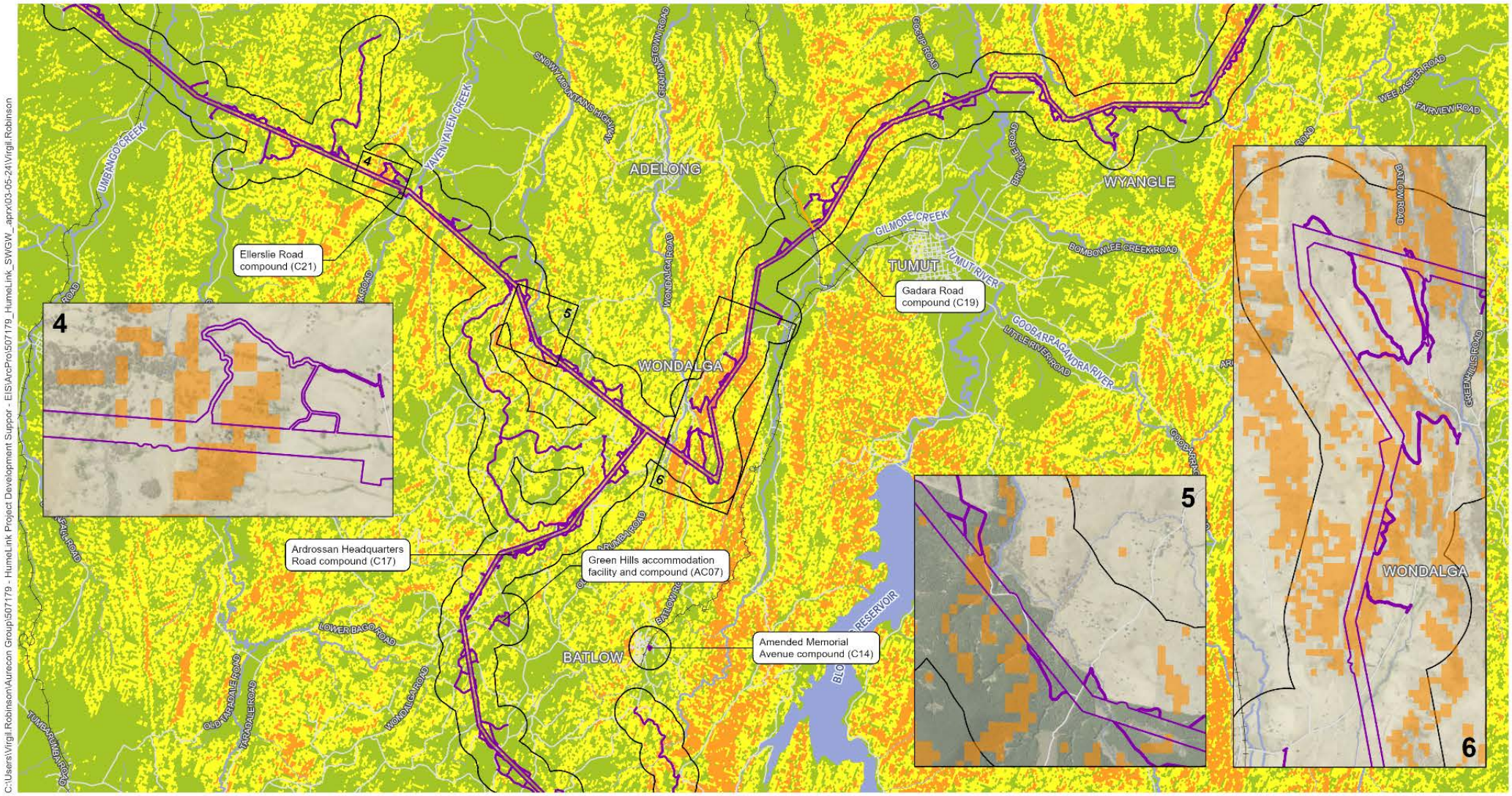

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Source: *Aurecon, Transgrid, DPE, Spatial Services (DCS), ESRI Basemap*

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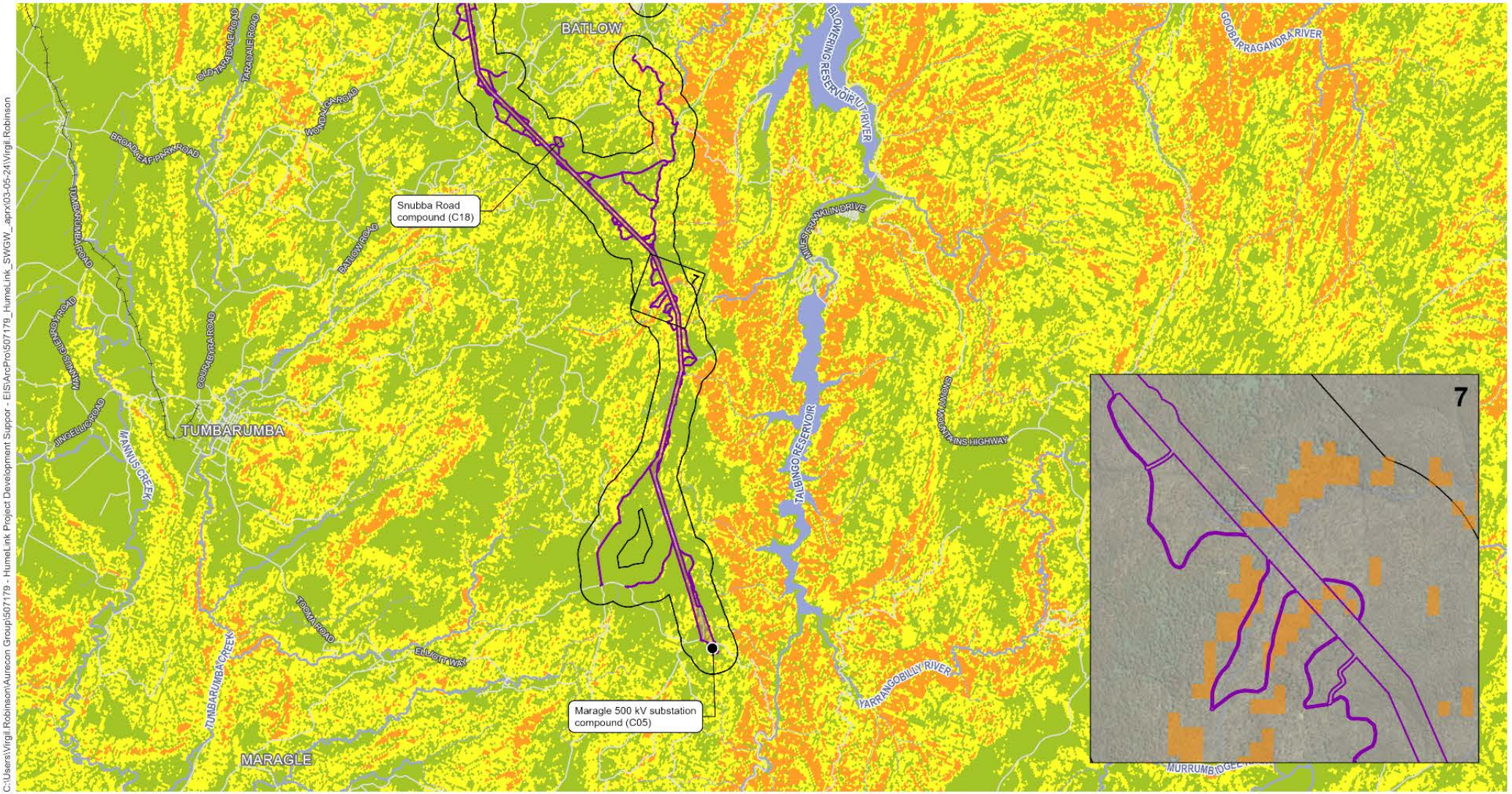
Projection: GDA 1994 MGA Zone 55



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Amended project footprint

Amended surface water and groundwater study area

Railway

Watercourse

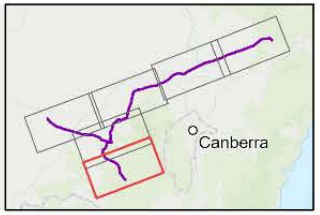
Substation

Soil erosion, bare

Low: up to 200 t ha^{-1} yr^{-1}

Moderate: between 200 and 1000 t ha^{-1} yr^{-1}

High: greater than 1000 t ha^{-1} yr^{-1}



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

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Projection: GDA 1994 MGA Zone 55

Attachment F
Access track analysis

Access Track ID	Track Category	Closest Distance to Strahler1 (m)	Strahler1 Intersected?	Closest Distance to Strahler2 (m)	Strahler2 HYDRONAME	Strahler2 Intersected?	Closest Distance to Strahler3 (m)	Strahler3 HYDRONAME	Strahler3 Intersected?	Closest Distance to Strahler4 (m)	Strahler4 HYDRONAME	Strahler4 Intersected?	Inside Corridor?	Potential Impact Significance without mitigation
1	Upgraded track	0	Y	0		Y	52	SNUBBA	N	0	SNUBBA	Y	N	High
2	Upgraded track	0	Y	0		Y	0		Y	0	GOCUP	Y	N	High
3	Upgraded track	0	Y	0		Y	902		N	0	TYWONG	Y	N	High
4	Upgraded track	0	Y	46		N	26		N	0	SNUBBA	Y	N	High
5	Upgraded track	0	Y	49		N	58		N	0		Y	N	High
6	Upgraded track	0	Y	53		N	480	BAGO	N	0	BAGO	Y	N	High
7	Upgraded track	105	N	0		Y	15		N	0	SNUBBA	Y	N	High
8	Upgraded track	0	Y	0		Y	242		N	0	NACKI NACKI	Y	N	High
9	Upgraded track	0	Y	0		Y	0		Y	0	RIGHT ARM	Y	N	High
10	Upgraded track	0	Y	0		Y	0	SHARPS	Y	0	NACKI NACKI	Y	N	High
11	Upgraded track	4	N	0		Y	0		Y	0	KEAJURA	Y	N	High
12	Upgraded track	0	Y	89	TOMNEYS PLAIN	N	0	TOMNEYS PLAIN	Y	0	LONG	Y	N	High
13	Upgraded track	0	Y	0		Y	0	SNUBBA	Y	0	BUDDONG	Y	N	High
14	Upgraded track	0	Y	0	METTYS	Y	0		Y	0	HONEYSUCKLE	Y	N	High
15	Upgraded track	0	Y	0		Y	0		Y	0	GILMORE	Y	N	High
16	Upgraded track	0	Y	0		Y	645	UNCLES	N	0	NACKI NACKI	Y	N	High
17	Upgraded track	0	Y	0	WALKER	Y	528		N	0	GILMORE	Y	N	High
18	Upgraded track	0	Y	661	DEEP	N	628	OAKY	N	0	OAK	Y	N	High
19	Upgraded track	43	N	331		N	385		N	0	KILLIMICAT	Y	N	High
20	Upgraded track	0	Y	0		Y	105		N	0		Y	N	High
21	Upgraded track	0	Y	0		Y	56		N	0		Y	N	High
22	Upgraded track	0	Y	0		Y	0		Y	0	O'BRIENS	Y	N	High
23	Upgraded track	0	Y	0		Y	0		Y	0	DERRINGULLEN	Y	N	High
24	Upgraded track	0	Y	0		Y	1258	DOWLINGS	N	0	JERRAWA	Y	N	High
25	Upgraded track	124	N	0		Y	48		N	0	O'BRIENS	Y	N	High
26	Upgraded track	0	Y	0		Y	0	RIGHT ARM	Y	0	RIGHT ARM	Y	N	High
27	Upgraded track	32	N	0		Y	528		N	0	COMATAWA	Y	N	High
28	Upgraded track	0	Y	0		Y	1048	MIDDLE	N	0	MERRILL	Y	N	High
29	Upgraded track	344	N	701		N	0		Y	0	O'BRIENS	Y	N	High
30	Upgraded track	0	Y	0		Y	0	GERMANS	Y	0	ADELONG	Y	N	High
31	Upgraded track	236	N	214		N	6	MCGREGORS	N	0	LONG	Y	Y	High
32	Upgraded track	29	N	314		N	228	MCGREGORS	N	0	LONG	Y	Y	High
33	Upgraded track	0	Y	186		N	183		N	0	GALVINS	Y	N	High
34	Upgraded track	0	Y	102		N	18	CLYDES	N	0	MANDYS	Y	N	High
35	Upgraded track	0	Y	22	PEGMILL	N	719	CLYDES	N	0	GILMORE	Y	N	High
36	Upgraded track	0	Y	0		Y	469		N	0		Y	N	High
37	Upgraded track	0	Y	45		N	423		N	0	SAWPIT	Y	N	High
38	Upgraded track	159	N	0		Y	0		Y	0	BRUNGLE	Y	N	High
39	Upgraded track	98	N	706		N	742	CART ROAD	N	0	CART ROAD	Y	N	High
40	Upgraded track	0	Y	255		N	0		Y	0	ROCKY	Y	N	High
41	Upgraded track	26	N	131		N	2066		N	0	MERRILL	Y	N	High
42	Upgraded track	79	N	117		N	0	COWPERS	Y	0	COWPERS	Y	N	High
43	Upgraded track	0	Y	150		N	1135		N	0	TYWONG	Y	N	High
44	Upgraded track	0	Y	0	FOLEYS	Y	617		N	0	FOLEYS	Y	N	High
45	Upgraded track	0	Y	116		N	47		N	0	TOOLES	Y	N	High
46	Upgraded track	0	Y	223		N	0		Y	0	COLLEGE	Y	N	High
47	Upgraded track	302	N	72		N	208		N	0	TARCUTTA	Y	Y	High
48	Upgraded track	0	Y	71		N	307		N	0		Y	N	High
49	Upgraded track	0	Y	156		N	208		N	0	DARLOWS	Y	N	High
50	Upgraded track	0	Y	0		Y	0		Y	0	DARLOWS	Y	N	High
51	Upgraded track	112	N	160		N	86		N	0	ADELONG	Y	Y	High
52	Upgraded track	379	N	340		N	322	GERMANS	N	0	ADELONG	Y	Y	High
53	New track	0	Y	109		N	431		N	0		Y	Y	High
54	New track	46	N	955		N	131		N	0	O'BRIENS	Y	N	High
55	New track	0	Y	277		N	174		N	0	TOOLES	Y	N	High
56	New track	0	Y	208		N	0	MCGREGORS	Y	0	LONG	Y	N	High
57	New track	0	Y	257		N	231		N	0	BANNABY	Y	Y	High
58	New track	0	Y	81		N	346		N	0	WINDOWIE	Y	N	High
59	New track	74	N	605		N	82		N	0	GOCUP	Y	Y	High
60	New track	0	Y	672		N	97		N	0	GOCUP	Y	N	High
61	New track	0	Y	103		N	0		Y	0		Y	N	High
62	New track	97	N	143		N	305		N	0	SAWPIT	Y	N	High
63	New track	438	N	0		Y	566		N	0	BRUNGLE	Y	N	High
64	New track	149	N	52		N	668		N	0	BRUNGLE	Y	N	High
65	New track	42	N	92		N	1076	O'BRIENS	N	0	O'BRIENS	Y	Y	High
66	New track	454	N	365		N	158		N	0	OAK	Y	N	High
67	New track	103	N	164		N	1593		N	0	JUGIONG	Y	N	High
68	New track	0	Y	5		N	5		N	0	COOKS	Y	Y	High
69	New track	0	Y	39		N	0		Y	0	BANGO	Y	N	High
70	New track	404	N	0		Y	1758	DOWLINGS	N	0	JERRAWA	Y	N	High
71	New track	10	N	608	SAMS	N	379	DOWLINGS	N	0	JERRAWA	Y	N	High
72	New track	124	N	834		N	1711		N	0	MERRILL	Y	N	High
73	New track	50	N	1		N	0		Y	0	HUMES	Y	N	High
74	New track	0	Y	265		N	549	BACK	N	0	MIDDLE	Y	N	High
75	New track	91	N	0		Y	48		N	0	PEJAR	Y	N	High
76	New track	0	Y	0	MELAMALONG	Y	0	MELAMALONG	Y	0	MELAMALONG	Y	N	High
77	New track	63	N	0	MELAMALONG	Y	0	MELAMALONG	Y	0	MELAMALONG	Y	N	High

Access Track ID	Track Category	Closest Distance to Strahler1 (m)	Strahler1 Intersected?	Closest Distance to Strahler2 (m)	Strahler2 HYDRONAME	Strahler2 Intersected?	Closest Distance to Strahler3 (m)	Strahler3 HYDRONAME	Strahler3 Intersected?	Closest Distance to Strahler4 (m)	Strahler4 HYDRONAME	Strahler4 Intersected?	Inside Corridor?	Potential Impact Significance without mitigation
78	New track	0	Y	0		Y	338		N	0	TURRALLO	Y	N	High
79	New track	0	Y	125		N	243		N	0		Y	N	High
80	New track	0	Y	0		Y	565		N	0	KERRAWARY	Y	N	High
81	New track	0	Y	9		N	872		N	0	KERRAWARY	Y	N	High
82	New track	0	Y	206		N	277		N	0		Y	N	High
83	New track	0	Y	0		Y	0		Y	0		Y	N	High
84	New track	0	Y	0		Y	460		N	0	BIG SRING	Y	N	High
85	New track	36	N	35		N	504		N	0		Y	N	High
86	New track	0	Y	110		N	0	WILSONS	Y	0	COCKATOO	Y	N	High
87	New track	408	N	814		N	293		N	0	O'BRIENS	Y	N	High
88	Upgraded track	0	Y	0		Y	0	SAW MILL	Y	0	SAW MILL	Y	N	High
89	New track	0	Y	515	ALTON	N	1286		N	0	MERRILL	Y	N	High
90	New track	0	Y	0		Y	415		N	0	DERRINGULLEN	Y	N	High
91	Existing tracks/roads	0	Y	0		Y	0		Y	0		Y	N	Moderate
92	New track	0	Y	118		N	220		N	0	TOOLES	Y	N	High
93	New track	0	Y	13		N	166		N	2	SAW MILL	N	N	High
94	New track	0	Y	684		N	626	OAK	N	2	OAK	N	N	High
95	Upgraded track	0	Y	697		N	507		N	3	KYEAMBA	N	N	High
96	Upgraded track	0	Y	0		Y	0		Y	5	ADELONG	N	N	High
97	New track	400	N	602		N	485	WEIR	N	7	BUDDONG	N	Y	High
98	Upgraded track	899	N	335		N	318		N	8	BIG SRING	N	N	Moderate
99	Upgraded track	107	N	32		N	10		N	9	ADELONG	N	N	Moderate
100	New track	0	Y	411		N	0		Y	9		N	N	High
101	New track	409	N	432		N	1935	OAK	N	11	JUGIONG	N	Y	High
102	New track	29	N	370		N	171	BACK	N	11	MIDDLE	N	Y	High
103	New track	6	N	206		N	66	COWPERS	N	11	COWPERS	N	N	High
104	New track	29	N	646		N	186		N	12	KILLIMICAT	N	N	High
105	Upgraded track	58	N	732		N	324	FOXES	N	14	HONEYSUCKLE	N	N	Moderate
106	Upgraded track	0	Y	370		N	576		N	14	KYEAMBA	N	N	High
107	New track	0	Y	0		Y	298		N	16	CONNORS	N	N	High
108	Upgraded track	116	N	500		N	60		N	17		N	N	Moderate
109	Upgraded track	338	N	552		N	1531		N	18		N	Y	Moderate
110	Upgraded track	0	Y	15		N	339		N	18	KYEAMBA	N	N	High
111	Upgraded track	30	N	438		N	64	CLYDES	N	19	MANDYS	N	Y	Moderate
112	Upgraded track	0	Y	375		N	1087		N	19	TYWONG	N	Y	High
113	New track	0	Y	3		N	266		N	20	ADJUNGBILLY	N	N	High
114	Upgraded track	0	Y	0		Y	582	O'BRIENS	N	21	O'BRIENS	N	N	High
115	New track	0	Y	0		Y	0	WILSONS	Y	`	WILSONS	N	N	High
116	New track	0	Y	0		Y	572	O'BRIENS	N	25	O'BRIENS	N	N	High
117	New track	32	N	456		N	898		N	25	OAK	N	N	High
118	Upgraded track	0	Y	0		Y	0		Y	27	STOCKMANS	N	N	High
119	New track	0	Y	20		N	265		N	27	OAK	N	N	High
120	Upgraded track	0	Y	46	TULLERAH	N	420		N	28	DERRINGULLEN	N	N	High
121	New track	68	N	413	ALTON	N	1963		N	28	MERRILL	N	N	High
122	Upgraded track	0	Y	0		Y	815	RIGHT ARM	N	30	NACKI NACKI	N	N	High
123	Upgraded track	84	N	0		Y	518		N	33	O'BRIENS	N	N	High
124	Upgraded track	264	N	158		N	629		N	33	KEAJURA	N	Y	Moderate
125	New track	156	N	370		N	897	DOWLINGS	N	33	JERRAWA	N	N	High
126	New track	0	Y	208		N	202		N	33	TARCUTTA	N	N	High
127	New track	0	Y	143		N	457	SHARPENING	N	35	DERRINGULLEN	N	Y	High
128	New track	0	Y	203		N	53		N	37	COCKATOO	N	Y	High
129	New track	0	Y	340		N	5	SAWPIT	N	39	TARLO	N	N	High
130	Upgraded track	78	N	359		N	282		N	40	ADELONG	N	N	Moderate
131	New track	48	N	55		N	0		Y	40	YAVEN YAVEN	N	Y	High
132	New track	434	N	157		N	1929	DOWLINGS	N	40	JERRAWA	N	Y	High
133	Upgraded track	0	Y	0		Y	0		Y	42	KILLIMICAT	N	N	High
134	New track	0	Y	253		N	652		N	42	DERRINGULLEN	N	N	High
135	New track	69	N	774		N	638		N	44	TUMUT	N	Y	High
136	Upgraded track	129	N	25		N	509	O'BRIENS	N	45	O'BRIENS	N	N	Moderate
137	New track	26	N	527		N	253		N	47	HONEYSUCKLE	N	N	High
138	Upgraded track	0	Y	0		Y	162		N	48	PEJAR	N	N	High
139	Upgraded track	0	Y	136		N	503		N	49	WINDOWIE	N	Y	High
140	Upgraded track	0	Y	815		N	823		N	49	KYEAMBA	N	N	High
141	New track	146	N	452		N	1550	OAK	N	49	JUGIONG	N	Y	High
142	New track	0	Y	0		Y	39		N	49	DARLOWS	N	N	High
143	Upgraded track	0	Y	111		N	231		N	51	ADELONG	N	N	High
144	Upgraded track	0	Y	302		N	39	BAGO	N	51	BAGO	N	N	High
145	Upgraded track	0	Y	230	WILLS	N	947		N	56	CONNORS	N	N	High
146	Upgraded track	167	N	239		N	0		Y	61	GOCUP	N	N	High
147	New track	0	Y	0		Y	8		N	62		N	N	High
148	New track	165	N	24		N	1563	WILSONS	N	64	ADELONG	N	Y	High
149	Upgraded track	20	N	74		N	740	SAW MILL	N	65	SAW MILL	N	N	Moderate
150	Upgraded track	0	Y	0		Y	0		Y	65	MOUNT PLEASANT	N	N	High
151	New track	127	N	72	TULLERAH	N	626		N	65	DERRINGULLEN	N	N	High
152	Upgraded track	159	N	63		N	901		N	66	ADELONG	N	N	Moderate
153	Upgraded track	0	Y	0		Y	75		N	66		N	Y	High
154	New track	22	N	323		N	104		N	67	RIGHT ARM	N	N	High

Access Track ID	Track Category	Closest Distance to Strahler1 (m)	Strahler1 Intersected?	Closest Distance to Strahler2 (m)	Strahler2 HYDRONAME	Strahler2 Intersected?	Closest Distance to Strahler3 (m)	Strahler3 HYDRONAME	Strahler3 Intersected?	Closest Distance to Strahler4 (m)	Strahler4 HYDRONAME	Strahler4 Intersected?	Inside Corridor?	Potential Impact Significance without mitigation
155	New track	0	Y	16		N	399	WINDOWIE	N	70	WILSONS	N	N	High
156	New track	0	Y	0		Y	34	WEIR	N	73	SHEEPYARD	N	Y	High
157	New track	17	N	159		N	565	GALVINS	N	74		N	N	High
158	New track	184	N	147		N	309		N	75	SAWPIT	N	N	High
159	Upgraded track	0	Y	176		N	329	GALVINS	N	76		N	N	High
160	Upgraded track	21	N	523		N	158		N	76	TUMUT	N	N	Moderate
161	New track	46	N	86		N	86		N	77	BANNABY	N	N	High
162	Upgraded track	112	N	692		N	83	FOXES	N	78	HONEYSUCKLE	N	N	Moderate
163	New track	29	N	400		N	498	BUNTON	N	79	FLACKNELL	N	N	High
164	New track	239	N	646		N	772	DOWLINGS	N	79	JERRAWA	N	N	High
165	Upgraded track	0	Y	337		N	99		N	81	TUMUT	N	N	High
166	New track	197	N	587	DEEP	N	629		N	82	OAK	N	N	High
167	Upgraded track	49	N	249		N	1333		N	83		N	Y	Moderate
168	New track	0	Y	0		Y	200		N	86		N	N	High
169	New track	16	N	188		N	0		Y	87	KILLIMICAT	N	N	High
170	Upgraded track	273	N	524		N	498	CART ROAD	N	88	CART ROAD	N	N	Moderate
171	New track	0	Y	200	PEGMILL	N	716	WALKER	N	88	GILMORE	N	Y	High
172	New track	101	N	1239		N	199	OAKY	N	88	MURRUMBIDGEE	N	N	High
173	Upgraded track	185	N	46		N	285		N	89	ADELONG	N	N	Moderate
174	Upgraded track	0	Y	246		N	0		Y	90		N	Y	High
175	New track	0	Y	287		N	514		N	92		N	N	High
176	Upgraded track	278	N	0		Y	216		N	94	BAGO	N	Y	High
177	Upgraded track	22	N	0		Y	174		N	95	KEAJURA	N	N	High
178	New track	122	N	1282		N	233	OAKY	N	95	MURRUMBIDGEE	N	N	High
179	New track	0	Y	165		N	124	SAWPIT	N	95	TARLO	N	N	High
180	Upgraded track	110	N	462		N	185		N	97		N	Y	Moderate
181	Upgraded track	183	N	541		N	644		N	97	COLLEGE	N	N	Moderate
182	Upgraded track	19	N	0		Y	2211		N	97	MERRILL	N	N	High
183	Upgraded track	0	Y	211		N	238		N	97	RIGHT ARM	N	N	High
184	Upgraded track	168	N	271		N	204	MCGREGORS	N	98	LONG	N	N	Moderate
185	New track	0	Y	36		N	534		N	104	KERRAWARY	N	N	High
186	New track	52	N	0		Y	0		Y	105	OAK	N	N	High
187	New track	0	Y	12		N	780		N	105		N	N	High
188	New track	53	N	118		N	202		N	106	TARLO	N	Y	High
189	Upgraded track	0	Y	100		N	547		N	107	ADELONG	N	N	High
190	New track	89	N	215		N	309		N	108	YAVEN YAVEN	N	N	High
191	Upgraded track	0	Y	0		Y	460		N	109	ADELONG	N	N	High
192	Upgraded track	203	N	121		N	1186		N	109	ADELONG	N	Y	Moderate
193	Upgraded track	0	Y	60		N	550		N	109	ADELONG	N	Y	High
194	New track	129	N	0	PEGMILL	Y	776	CLYDES	N	113	GILMORE	N	Y	High
195	New track	0	Y	0		Y	930		N	113	O'BRIENS	N	Y	High
196	Upgraded track	0	Y	0		Y	159		N	114	SOD HUT	N	N	High
197	New track	0	Y	97		N	407		N	114	MYRTLE	N	N	High
198	Upgraded track	0	Y	0	SOD HUT	Y	0		Y	115	DARLOWS	N	N	High
199	Upgraded track	120	N	303		N	1219		N	116	ADELONG	N	Y	Moderate
200	New track	328	N	181		N	1284	RIGHT ARM	N	116	NACKI NACKI	N	Y	High
201	Upgraded track	0	Y	0		Y	138		N	119	TURRALLO	N	N	High
202	New track	90	N	643		N	1138	YELLOW CLAY	N	120	CART ROAD	N	Y	High
203	Upgraded track	309	N	257		N	229	MCGREGORS	N	121	LONG	N	Y	Moderate
204	New track	0	Y	417		N	368	OAK	N	121	OAK	N	N	High
205	New track	37	N	57	MELAMALONG	N	28		N	121		N	N	High
206	Upgraded track	32	N	389	FOLEYS	N	1022		N	127	TYWONG	N	Y	Moderate
207	New track	468	N	203		N	813	RIGHT ARM	N	127	NACKI NACKI	N	N	High
208	Upgraded track	0	Y	15		N	143	SHARPENING	N	131	DERRINGULLEN	N	N	High
209	New track	13	N	7		N	2256		N	132	MERRILL	N	N	High
210	Upgraded track	161	N	192		N	2023		N	133	NACKI NACKI	N	Y	Moderate
211	Upgraded track	0	Y	0		Y	1573	WILSONS	N	138	ADELONG	N	N	High
212	Upgraded track	153	N	525		N	1355		N	139		N	N	Moderate
213	New track	0	Y	248		N	540	MCCULLUMS	N	140	WASHPEN	N	Y	High
214	New track	148	N	312		N	0		Y	140	MELAMALONG	N	N	High
215	New track	100	N	116		N	79		N	140	COWPERS	N	N	High
216	Upgraded track	1	N	189		N	1037		N	142		N	N	Moderate
217	New track	34	N	0		Y	0		Y	142	SAW MILL	N	Y	High
218	Upgraded track	0	Y	317		N	10		N	143	ADELONG	N	N	High
219	Upgraded track	313	N	147	SAMS	N	99	DOWLINGS	N	146	OOLONG	N	N	Moderate
220	New track	0	Y	152		N	704	SAW MILL	N	147	SAW MILL	N	N	High
221	New track	0	Y	209		N	406		N	148	SANDY	N	Y	High
222	Upgraded track	0	Y	0		Y	790		N	150	SAW MILL	N	N	High
223	New track	78	N	0		Y	195		N	158	BANGO	N	N	High
224	New track	0	Y	153		N	1337		N	158	WOLLONDILLY	N	Y	High
225	Upgraded track	0	Y	184		N	368		N	159	ADELONG	N	Y	High
226	New track	0	Y	32		N	719		N	159	CONNORS	N	N	High
227	Upgraded track	0	Y	468		N	1133		N	161	WINDOWIE	N	Y	High
228	Upgraded track	0	Y	187		N	490		N	161	KEAJURA	N	N	High
229	New track	0	Y	0		Y	0		Y	163	STOCKMANS	N	Y	High
230	New track	0	Y	101	GRAYS	N	1250		N	163	WOLLONDILLY	N	N	High
231	Upgraded track	525	N	0		Y	0		Y	166	BIG SRING	N	N	High

Access Track ID	Track Category	Closest Distance to Strahler1 (m)	Strahler1 Intersected?	Closest Distance to Strahler2 (m)	Strahler2 HYDRONAME	Strahler2 Intersected?	Closest Distance to Strahler3 (m)	Strahler3 HYDRONAME	Strahler3 Intersected?	Closest Distance to Strahler4 (m)	Strahler4 HYDRONAME	Strahler4 Intersected?	Inside Corridor?	Potential Impact Significance without mitigation
232	Upgraded track	171	N	383		N	406		N	166	COMATAWA	N	Y	Moderate
233	New track	0	Y	0		Y	8	WINDOWIE	N	167	WINDOWIE	N	N	High
234	New track	559	N	576	DEEP	N	1056		N	167	OAK	N	Y	High
235	New track	23	N	284	GRAYS	N	1464		N	167	WOLLONDILLY	N	N	High
236	New track	0	Y	338		N	187	MANDYS	N	169	MANDYS	N	N	High
237	Upgraded track	0	Y	102		N	0	BANNABY	Y	170	CONNORS	N	N	High
238	New track	0	Y	290		N	68		N	170	KILLIMICAT	N	Y	High
239	Upgraded track	0	Y	542		N	0		Y	171	COMATAWA	N	Y	High
240	New track	29	N	368		N	263		N	171	TARLO	N	Y	High
241	Upgraded track	0	Y	384		N	331		N	173	TURRALLO	N	N	High
242	New track	0	Y	170		N	613		N	175	KERRAWARY	N	N	High
243	New track	0	Y	463		N	732		N	177	WINDOWIE	N	Y	High
244	New track	45	N	491		N	412	COCKATOO	N	179	COCKATOO	N	Y	High
245	Upgraded track	0	Y	29		N	886		N	182		N	N	High
246	Upgraded track	0	Y	121		N	275		N	188		N	N	High
247	Upgraded track	75	N	233		N	1673	RIGHT ARM	N	190	NACKI NACKI	N	N	Moderate
248	Upgraded track	112	N	736		N	1165		N	190		N	N	Moderate
249	New track	0	Y	0	DICKS	Y	0		Y	190	ROCKY	N	N	High
250	Upgraded track	152	N	72		N	1908		N	194	NACKI NACKI	N	Y	Moderate
251	Upgraded track	0	Y	1186		N	416		N	195	O'BRIENS	N	N	High
252	Upgraded track	742	N	348		N	0		Y	195	O'BRIENS	N	N	High
253	Upgraded track	176	N	187		N	89		N	198	HONEYSUCKLE	N	Y	Moderate
254	New track	199	N	588	DEEP	N	506		N	198	OAK	N	Y	High
255	New track	113	N	319		N	589		N	198	DERRINGULLEN	N	N	High
256	Upgraded track	64	N	32		N	2	SAW MILL	N	198	SAW MILL	N	N	Moderate
257	New track	113	N	227		N	1276	COWRIDGE	N	201	DERRINGULLEN	N	N	Moderate
258	New track	0	Y	36		N	545		N	205	BRUNGLE	N	N	High
259	New track	82	N	436		N	867	WEIR	N	206	BUDDONG	N	Y	Moderate
260	Upgraded track	19	N	146		N	386		N	207		N	Y	Moderate
261	New track	0	Y	43	DEEP	N	566		N	209	MURRUMBIDGEE	N	N	High
262	Upgraded track	0	Y	235		N	296		N	211	MYRTLE	N	N	High
263	Upgraded track	139	N	177		N	474	GERMANS	N	211	ADELONG	N	N	Low
264	Upgraded track	8	N	221		N	211		N	212	TARLO	N	N	Moderate
265	Upgraded track	0	Y	169		N	787		N	214	BOWNING	N	N	High
266	New track	51	N	2		N	494		N	214	SANDY	N	Y	High
267	New track	537	N	595	DEEP	N	1120		N	214	OAK	N	Y	Moderate
268	New track	11	N	83		N	278		N	216	DERRINGULLEN	N	N	High
269	New track	30	N	0		Y	147		N	217	PEJAR	N	N	High
270	Upgraded track	0	Y	78		N	218		N	218		N	N	High
271	New track	12	N	671	DEEP	N	815	OAKY	N	219	MURRUMBIDGEE	N	Y	High
272	New track	0	Y	0		Y	6		N	223	TURNERS	N	N	High
273	Upgraded track	0	Y	178		N	224		N	224		N	N	High
274	New track	181	N	479		N	1505	RIGHT ARM	N	228	NACKI NACKI	N	Y	Moderate
275	Upgraded track	0	Y	0		Y	283		N	230	WINDOWIE	N	N	High
276	Upgraded track	0	Y	81	FOLEYS	N	1082		N	230		N	Y	High
277	Upgraded track	19	N	196		N	235		N	232		N	N	Moderate
278	Upgraded track	54	N	198		N	167		N	237	RIGHT ARM	N	N	Low
279	New track	39	N	618		N	546		N	237		N	N	High
280	Upgraded track	430	N	96		N	285		N	240	BAGO	N	N	Moderate
281	Upgraded track	103	N	525		N	212	CLYDES	N	241	MANDYS	N	Y	Low
282	Upgraded track	0	Y	0		Y	347		N	242	KEAJURA	N	N	High
283	Upgraded track	0	Y	109		N	287	SAW MILL	N	246	SAW MILL	N	N	High
284	New track	283	N	329		N	156		N	247	GOCUP	N	Y	Moderate
285	Upgraded track	0	Y	136		N	193	UNCLES	N	252	SHARPS	N	N	High
286	Upgraded track	0	Y	0		Y	820		N	252	SANDY	N	N	High
287	New track	86	N	0		Y	630		N	252	ADJUNGBILLY	N	N	High
288	New track	35	N	0		Y	99		N	256	STOCKMANS	N	Y	High
289	New track	0	Y	0		Y	636		N	256	ADJUNGBILLY	N	N	High
290	New track	42	N	241		N	403		N	257	BOWNING	N	Y	High
291	New track	0	Y	208		N	376		N	258	TARCUTTA	N	N	High
292	Upgraded track	31	N	196		N	1355		N	264	WOLLONDILLY	N	N	Moderate
293	New track	0	Y	434		N	441		N	264	LONG	N	Y	High
294	Upgraded track	40	N	212		N	433		N	265	MYRTLE	N	Y	Moderate
295	New track	34	N	73		N	408	MCCULLUMS	N	265	WASHPEN	N	Y	High
296	New track	10	N	669		N	443	YELLOW CLAY	N	273	OAK	N	N	High
297	Upgraded track	97	N	155		N	1021		N	275	UMBANGO	N	N	Low
298	New track	78	N	345		N	1154	WINDOWIE	N	275	WINDOWIE	N	N	Moderate
299	Upgraded track	0	Y	0		Y	1450	WILSONS	N	277	ADELONG	N	N	High
300	Upgraded track	0	Y	816		N	1030		N	277	COLLEGE	N	N	High
301	Upgraded track	502	N	122		N	485	HUMES	N	286	HUMES	N	N	Low
302	Upgraded track	59	N	134	PEGMILL	N	569	CLYDES	N	288	GILMORE	N	Y	Low
303	Upgraded track	0	Y	0		Y	56		N	288		N	N	High
304	Upgraded track	36	N	297		N	428		N	290	MYRTLE	N	N	Moderate
305	New track	10	N	279		N	754	COWPERS	N	290	COWPERS	N	N	High
306	Upgraded track	28	N	754		N	565	FOXES	N	291	HONEYSUCKLE	N	N	Moderate
307	New track	0	Y	86		N	293		N	291	MYRTLE	N	N	High
308	New track	0	Y	568		N	1597		N	302	LACHLAN	N	N	High

Access Track ID	Track Category	Closest Distance to Strahler1 (m)	Strahler1 Intersected?	Closest Distance to Strahler2 (m)	Strahler2 HYDRONAME	Strahler2 Intersected?	Closest Distance to Strahler3 (m)	Strahler3 HYDRONAME	Strahler3 Intersected?	Closest Distance to Strahler4 (m)	Strahler4 HYDRONAME	Strahler4 Intersected?	Inside Corridor?	Potential Impact Significance without mitigation
309	Upgraded track	68	N	5		N	0		Y	303	YAVEN YAVEN	N	Y	High
310	New track	81	N	403		N	310	GERMANS	N	303	ADELONG	N	Y	Moderate
311	New track	202	N	632		N	1040		N	304	OAK	N	Y	Moderate
312	Upgraded track	132	N	319		N	281	CART ROAD	N	306	CART ROAD	N	N	Low
313	New track	144	N	598		N	759	FIRST	N	307	MIDDLE	N	Y	Moderate
314	Upgraded track	108	N	621		N	219	CLYDES	N	311	MANDYS	N	Y	Low
315	New track	110	N	404	BACK	N	0	BACK	Y	314	MIDDLE	N	N	High
316	Upgraded track	0	Y	240		N	0		Y	315	MELAMALONG	N	N	High
317	Upgraded track	0	Y	41	MERRILL	N	592		N	317	HUMES	N	N	High
318	Upgraded track	175	N	215		N	30	SHARPS	N	317	SHARPS	N	N	Moderate
319	Upgraded track	0	Y	192		N	802		N	321	BAGO	N	N	High
320	New track	73	N	647		N	504	BUNTON	N	323	FLACKNELL	N	N	Moderate
321	Upgraded track	309	N	318		N	81	BAGO	N	327	BAGO	N	N	Moderate
322	New track	92	N	62		N	536		N	330	BRUNGLE	N	N	High
323	Upgraded track	106	N	671		N	633		N	332	BOILING DOWN	N	Y	Low
324	Upgraded track	0	Y	434		N	828		N	332	KEAJURA	N	N	High
325	Upgraded track	206	N	5		N	114		N	335	HONEYSUCKLE	N	N	Moderate
326	New track	0	Y	0		Y	0		Y	335		N	N	High
327	New track	47	N	211		N	339		N	335	COOKS	N	N	High
328	New track	0	Y	0		Y	0	WEIR	Y	338	SHEEPYARD	N	N	High
329	Upgraded track	182	N	660		N	395	RIGHT ARM	N	344	RIGHT ARM	N	N	Low
330	New track	240	N	0		Y	154	WOOLGARLO	N	346	WOOLGARLO	N	N	High
331	New track	0	Y	0		Y	0	SAW MILL	Y	347	SAW MILL	N	N	High
332	New track	0	Y	0		Y	959		N	350	BRUNGLE	N	N	High
333	New track	216	N	9		N	1661		N	351	JERRAWA	N	N	High
334	Upgraded track	24	N	23		N	0	SAW MILL	Y	354	SAW MILL	N	N	High
335	Upgraded track	0	Y	54		N	0		Y	355	GOCUP	N	N	High
336	New track	0	Y	129		N	457	FELLED TIMBER	N	355	FLACKNELL	N	N	High
337	New track	0	Y	100		N	693		N	355	SAWPIT	N	N	High
338	Upgraded track	0	Y	0		Y	468		N	358	COMATAWA	N	N	High
339	Upgraded track	0	Y	443		N	43		N	360	COMATAWA	N	N	High
340	Upgraded track	244	N	458		N	662	RIGHT ARM	N	364	NACKI NACKI	N	N	Low
341	New track	0	Y	258		N	802	COTWAY	N	364	O'BRIENS	N	Y	High
342	Upgraded track	241	N	460		N	659	RIGHT ARM	N	366	NACKI NACKI	N	Y	Low
343	New track	171	N	100		N	51		N	366	COWPERS	N	N	High
344	New track	0	Y	144		N	543	BUNTON	N	367	FLACKNELL	N	N	High
345	Upgraded track	155	N	690		N	542		N	369	BOILING DOWN	N	Y	Low
346	New track	555	N	794	O'BRIENS	N	801	CART ROAD	N	372	CART ROAD	N	Y	Moderate
347	Upgraded track	256	N	723		N	246		N	376	COXS	N	N	Low
348	Upgraded track	0	Y	59		N	142		N	376		N	N	High
349	Upgraded track	0	Y	0		Y	0		Y	377	MEADOW	N	N	High
350	Upgraded track	299	N	0		Y	186		N	378	BAGO	N	N	High
351	New track	7	N	1218		N	455	OAKY	N	379	MURRUMBIDGEE	N	N	High
352	New track	0	Y	252		N	121	COCKATOO	N	380	COCKATOO	N	Y	High
353	Upgraded track	49	N	282		N	419		N	381	YASS	N	N	Moderate
354	Upgraded track	17	N	550		N	467		N	381		N	N	Moderate
355	New track	34	N	277		N	681	MCCULLUMS	N	382	WASHPEN	N	N	High
356	Upgraded track	0	Y	922		N	977		N	383	KYEAMBA	N	N	High
357	Upgraded track	326	N	0		Y	1101		N	384	BIG SRING	N	Y	High
358	New track	0	Y	0		Y	247		N	388	PEJAR	N	N	High
359	New track	0	Y	0		Y	353		N	390	TURRALLO	N	N	High
360	Upgraded track	0	Y	60		N	2134	MIDDLE	N	392	MERRILL	N	N	High
361	Upgraded track	36	N	61		N	0	STEEVES	Y	393	STEEVES	N	N	High
362	New track	41	N	48		N	334		N	395		N	N	High
363	New track	14	N	247		N	1271	COWRIDGE	N	395	DERRINGULLEN	N	N	High
364	Upgraded track	0	Y	0	DOWLINGS	Y	28	DOWLINGS	N	400	OOLONG	N	N	High
365	Upgraded track	0	Y	428		N	434	WILSONS	N	401	WILSONS	N	N	High
366	Upgraded track	11	N	0	DOWLINGS	Y	0	DOWLINGS	Y	401	OOLONG	N	N	High
367	Upgraded track	0	Y	0		Y	605		N	401	BRUNGLE	N	N	High
368	New track	0	Y	6		N	270		N	407	COOKS	N	Y	High
369	Upgraded track	59	N	740		N	515	BUNTON	N	410	FLACKNELL	N	N	Low
370	Upgraded track	0	Y	383		N	323		N	412	BOILING DOWN	N	Y	High
371	Upgraded track	0	Y	0		Y	582		N	417	SANDY	N	N	High
372	Upgraded track	0	Y	122		N	566		N	418	TARLO	N	N	High
373	New track	66	N	129		N	1226		N	418	WOLLONDILLY	N	N	Moderate
374	Upgraded track	0	Y	0		Y	0	FIRST	Y	420	WOLLONDILLY	N	N	High
375	Upgraded track	0	Y	51		N	611		N	423	BRUNGLE	N	N	High
376	New track	167	N	337		N	453		N	424	YAVEN YAVEN	N	N	Moderate
377	New track	39	N	271		N	453		N	424	YAVEN YAVEN	N	N	High
378	Upgraded track	52	N	204		N	1326		N	426	WOLLONDILLY	N	N	Low
379	New track	0	Y	371		N	502		N	430	JUGIONG	N	Y	High
380	Upgraded track	0	Y	56		N	470		N	431	ADELONG	N	Y	High
381	New track	0	Y	498		N	618		N	433	BANNABY	N	Y	High
382	Upgraded track	0	Y	434		N	236		N	435	MYRTLE	N	Y	High
383	New track	167	N	141		N	399		N	436	KILLIMICAT	N	N	Moderate
384	New track	0	Y	464		N	1156		N	443	BUDDONG	N	Y	High
385	New track	0	Y	382		N	565		N	443	BANNABY	N	N	High

Access Track ID	Track Category	Closest Distance to Strahler1 (m)	Strahler1 Intersected?	Closest Distance to Strahler2 (m)	Strahler2 HYDRONAME	Strahler2 Intersected?	Closest Distance to Strahler3 (m)	Strahler3 HYDRONAME	Strahler3 Intersected?	Closest Distance to Strahler4 (m)	Strahler4 HYDRONAME	Strahler4 Intersected?	Inside Corridor?	Potential Impact Significance without mitigation
386	Upgraded track	13	N	113		N	90		N	445	CONNORS	N	N	Moderate
387	New track	0	Y	75		N	1172	COWRIDGE	N	445	DERRINGULLEN	N	Y	High
388	Upgraded track	221	N	685		N	432		N	448	BOILING DOWN	N	Y	Low
389	New track	4	N	27		N	17		N	448	MEADOW	N	N	High
390	Upgraded track	0	Y	8		N	86		N	454	PEJAR	N	N	High
391	Upgraded track	0	Y	251	MIDDLE	N	1143	MIDDLE	N	455	MERRILL	N	N	High
392	Upgraded track	3	N	86		N	242		N	456		N	N	Moderate
393	New track	0	Y	196	WILSONS	N	380	WILSONS	N	457	WILSONS	N	N	High
394	New track	0	Y	84		N	895		N	457	SAW MILL	N	N	High
395	Upgraded track	646	N	29		N	24		N	458	BIG SRING	N	Y	Moderate
396	Upgraded track	123	N	291		N	226	UNCLES	N	464	SHARPS	N	Y	Low
397	New track	53	N	383		N	1968	JUGIONG	N	465	JUGIONG	N	N	Moderate
398	New track	0	Y	186		N	329	STEEVES	N	465	STEEVES	N	N	High
399	New track	0	Y	54		N	667	SHARPENING	N	466	DERRINGULLEN	N	Y	High
400	New track	0	Y	89		N	0		Y	467	MEADOW	N	N	High
401	New track	15	N	82		N	248		N	467	TARLO	N	N	High
402	Upgraded track	44	N	130		N	434		N	470	O'BRIENS	N	N	Moderate
403	Upgraded track	167	N	0		Y	221		N	471	GREGADOO	N	N	High
404	New track	122	N	231		N	543	MCGREGORS	N	474	LONG	N	Y	Moderate
405	New track	54	N	156		N	289		N	479		N	N	Moderate
406	New track	91	N	172	DICKS	N	110	ROCKY	N	480	ROCKY	N	N	High
407	Upgraded track	0	Y	311		N	206	HUMES	N	481	HUMES	N	N	High
408	New track	0	Y	442	WILSONS	N	482	WILSONS	N	488	ADELONG	N	N	High
409	Upgraded track	334	N	1260		N	1273		N	490	KYEAMBA	N	Y	Low
410	Upgraded track	0	Y	0		Y	280		N	492		N	N	High
411	New track	198	N	90		N	1535	UNCLES	N	498	NACKI NACKI	N	Y	High
412	Upgraded track	166	N	442		N	1638		N	507	TYWONG	N	Y	Low
413	New track	0	Y	0		Y	19		N	508	MEADOW	N	N	High
414	Upgraded track	46	N	12		N	1881	WILSONS	N	510	ADELONG	N	Y	Moderate
415	Upgraded track	0	Y	1391		N	997		N	512	KYEAMBA	N	N	High
416	Upgraded track	99	N	179		N	929		N	514	FOLEYS	N	N	Low
417	New track	223	N	121		N	913		N	514	FOLEYS	N	Y	Moderate
418	Upgraded track	0	Y	52		N	325		N	518		N	N	High
419	New track	122	N	7		N	564	O'BRIENS	N	522	O'BRIENS	N	Y	High
420	New track	0	Y	185		N	261		N	523	DERRINGULLEN	N	Y	High
421	Upgraded track	0	Y	155		N	461		N	525	KILLIMICAT	N	N	High
422	Upgraded track	9	N	124		N	234		N	526	MEADOW	N	Y	Moderate
423	New track	0	Y	0		Y	419		N	526	STOCKMANS	N	Y	High
424	Upgraded track	0	Y	199		N	535		N	529	BANNABY	N	N	High
425	New track	0	Y	209		N	907	WINDOWIE	N	529	WINDOWIE	N	N	High
426	Upgraded track	0	Y	316		N	344		N	530	ADELONG	N	Y	High
427	Upgraded track	0	Y	0		Y	324		N	531	O'BRIENS	N	N	High
428	Upgraded track	131	N	274		N	516	MANDYS	N	536	MANDYS	N	Y	Low
429	Upgraded track	0	Y	159		N	534	MEADOW	N	536	MEADOW	N	N	High
430	New track	17	N	239		N	462		N	536	BOWNING	N	N	High
431	New track	0	Y	286		N	522		N	537	COOKS	N	N	High
432	New track	0	Y	0		Y	578		N	539	KILLIMICAT	N	N	High
433	New track	0	Y	145		N	677		N	540	BOWNING	N	Y	High
434	New track	0	Y	0		Y	318	BURNT HUT	N	542	WOOLGARLO	N	N	High
435	Upgraded track	45	N	381		N	808		N	544		N	N	Moderate
436	Upgraded track	45	N	505		N	581	WALKER	N	546	GILMORE	N	Y	Moderate
437	Upgraded track	0	Y	0		Y	5		N	552	TOOLES	N	N	High
438	New track	9	N	512		N	259		N	557	COMATAWA	N	Y	High
439	New track	44	N	216		N	582		N	557	STEEVES	N	Y	High
440	Upgraded track	47	N	102		N	34		N	559	KILLIMICAT	N	Y	Moderate
441	Upgraded track	0	Y	232		N	1639	MERRILL	N	559	MERRILL	N	N	High
442	Upgraded track	0	Y	182		N	332		N	559	KEAJURA	N	N	High
443	Upgraded track	0	Y	0	LITTLE SANDY	Y	618		N	561	WASHPEN	N	N	High
444	Upgraded track	98	N	175		N	1159		N	562	FOLEYS	N	Y	Low
445	Upgraded track	0	Y	336		N	673		N	566	TOOLES	N	Y	High
446	New track	0	Y	337		N	702		N	566	SANDY	N	N	High
447	New track	23	N	387		N	1024		N	566	KERRAWARY	N	Y	High
448	New track	395	N	598	O'BRIENS	N	704	CART ROAD	N	567	CART ROAD	N	N	Moderate
449	Upgraded track	48	N	221		N	130	THREE	N	571	MANTONS	N	N	Moderate
450	New track	0	Y	422		N	14	WOOLGARLO	N	572	WOOLGARLO	N	Y	High
451	New track	0	Y	79		N	816		N	575	SANDY	N	N	High
452	Upgraded track	73	N	106		N	516		N	577	DERRINGULLEN	N	N	Low
453	New track	0	Y	135		N	297		N	583	BANNABY	N	Y	High
454	New track	0	Y	82		N	157		N	583	KILLIMICAT	N	N	High
455	New track	34	N	203		N	404	MCCULLUMS	N	583	WASHPEN	N	Y	High
456	New track	0	Y	0		Y	364		N	584	WINDOWIE	N	N	High
457	Upgraded track	18	N	282		N	794		N	587	WOLLONDILLY	N	N	Moderate
458	Upgraded track	14	N	201		N	66	MCCULLUMS	N	590	WASHPEN	N	N	Moderate
459	New track	65	N	380	WILSONS	N	1179	WILSONS	N	591	ADELONG	N	N	Moderate
460	New track	6	N	874		N	487	BUNTON	N	598	FLACKNELL	N	N	High
461	Upgraded track	25	N	331		N	421		N	601	YAVEN YAVEN	N	N	Moderate
462	New track	2	N	368		N	0	BACK	Y	602	MIDDLE	N	N	High

Access Track ID	Track Category	Closest Distance to Strahler1 (m)	Strahler1 Intersected?	Closest Distance to Strahler2 (m)	Strahler2 HYDRONAME	Strahler2 Intersected?	Closest Distance to Strahler3 (m)	Strahler3 HYDRONAME	Strahler3 Intersected?	Closest Distance to Strahler4 (m)	Strahler4 HYDRONAME	Strahler4 Intersected?	Inside Corridor?	Potential Impact Significance without mitigation
463	New track	0	Y	272		N	778	FOREST	N	607	KERRAWARY	N	N	High
464	Upgraded track	144	N	71		N	0	SHARPS	Y	609	SHARPS	N	N	High
465	Upgraded track	0	Y	87		N	419		N	609	KILLIMICAT	N	N	High
466	New track	114	N	20		N	680		N	610	BANGO	N	N	High
467	Upgraded track	355	N	192		N	848		N	613	BAGO	N	Y	Low
468	Upgraded track	38	N	911		N	547	BUNTON	N	614	FLACKNELL	N	N	Moderate
469	Upgraded track	125	N	467		N	1325		N	614	UMBANGO	N	N	Low
470	New track	48	N	286		N	1012	WINDOWIE	N	614	WINDOWIE	N	Y	High
471	Upgraded track	185	N	293		N	280		N	617		N	N	Low
472	Upgraded track	0	Y	400		N	881	FOXES	N	619	HONEYSUCKLE	N	N	High
473	Upgraded track	50	N	302		N	650	FOREST	N	621	KERRAWARY	N	N	Moderate
474	Upgraded track	0	Y	96		N	366		N	624	KILLIMICAT	N	N	High
475	Upgraded track	0	Y	26		N	335		N	625	KILLIMICAT	N	Y	High
476	Upgraded track	91	N	340		N	794	MCCULLUMS	N	626	WASHPEN	N	N	Low
477	New track	0	Y	423		N	0	WOOLGARLO	Y	626	WOOLGARLO	N	Y	High
478	Upgraded track	0	Y	81		N	585		N	627	BRUNGLE	N	N	High
479	Upgraded track	0	Y	95		N	0		Y	628		N	N	High
480	Upgraded track	20	N	29		N	357		N	628	DARLOWS	N	N	Moderate
481	Upgraded track	224	N	123		N	0	SHARPS	Y	630	SHARPS	N	N	High
482	Upgraded track	0	Y	364		N	304	GERMANS	N	638	ADELONG	N	N	High
483	Upgraded track	0	Y	93		N	865	COWPERS	N	638	COWPERS	N	N	High
484	New track	0	Y	49	COCKATOO	N	71	COCKATOO	N	639	COCKATOO	N	Y	High
485	New track	0	Y	0		Y	0		Y	639	COWPERS	N	N	High
486	New track	0	Y	326		N	624		N	641	LONG	N	N	High
487	Upgraded track	191	N	507		N	120		N	643	ADELONG	N	Y	Moderate
488	New track	0	Y	481		N	685	MEADOW	N	644	MEADOW	N	N	High
489	New track	0	Y	252		N	304		N	645	DERRINGULLEN	N	N	High
490	New track	24	N	182		N	716		N	654	BUDDONG	N	N	High
491	New track	0	Y	57		N	379		N	655	KILLIMICAT	N	N	High
492	Upgraded track	222	N	1525		N	878		N	656	O'BRIENS	N	N	Low
493	Upgraded track	0	Y	0	WALKER	Y	305	WALKER	N	659	GILMORE	N	N	High
494	New track	0	Y	124		N	2118	CART ROAD	N	659	JUGIONG	N	N	High
495	Upgraded track	0	Y	180		N	528		N	662	KILLIMICAT	N	N	High
496	Upgraded track	0	Y	0		Y	0		Y	663		N	N	High
497	Upgraded track	0	Y	0		Y	328		N	664	MELAMALONG	N	N	High
498	Upgraded track	0	Y	0		Y	255		N	666	YAVEN YAVEN	N	N	High
499	New track	0	Y	120		N	461		N	666	KILLIMICAT	N	N	High
500	Upgraded track	0	Y	21		N	284		N	667	TARLO	N	N	High
501	Upgraded track	0	Y	0		Y	1200		N	671	WOLLONDILLY	N	N	High
502	Upgraded track	256	N	341		N	583		N	673	O'BRIENS	N	Y	Low
503	New track	0	Y	0		Y	59		N	674		N	N	High
504	New track	0	Y	49		N	885		N	678	BRUNGLE	N	N	High
505	New track	2	N	376	DOWLINGS	N	1313	DOWLINGS	N	681	LACHLAN	N	N	High
506	Upgraded track	0	Y	300		N	418		N	686	DERRINGULLEN	N	N	High
507	New track	16	N	511		N	728		N	687	BANNABY	N	Y	High
508	Upgraded track	0	Y	110		N	195		N	688	KILLIMICAT	N	N	High
509	Upgraded track	0	Y	350		N	779		N	690	TARCUTTA	N	N	High
510	Upgraded track	0	Y	55		N	221		N	693		N	N	High
511	Upgraded track	0	Y	0		Y	0		Y	699	GOCUP	N	N	High
512	Upgraded track	21	N	149		N	271		N	706		N	N	Moderate
513	New track	5	N	178	WEIR	N	237	WEIR	N	706	SHEEPYARD	N	N	High
514	New track	56	N	88		N	369	FOREST	N	707	KERRAWARY	N	N	High
515	New track	0	Y	75		N	1021		N	711	SAWPIT	N	Y	High
516	Upgraded track	508	N	531		N	277	BAGO	N	713	BAGO	N	Y	Low
517	Upgraded track	0	Y	0		Y	66		N	713	COMATAWA	N	N	High
518	Upgraded track	70	N	555		N	371	YELLOW CLAY	N	714	OAK	N	Y	Low
519	New track	0	Y	249		N	870	WINDOWIE	N	717	WINDOWIE	N	N	High
520	New track	0	Y	0		Y	284		N	717	DERRINGULLEN	N	N	High
521	New track	1	N	40		N	227		N	725		N	N	High
522	Upgraded track	59	N	398		N	432		N	727	DERRINGULLEN	N	Y	Low
523	New track	0	Y	254		N	291		N	728	DERRINGULLEN	N	N	High
524	New track	0	Y	155		N	637	MEADOW	N	742	MEADOW	N	N	High
525	Upgraded track	55	N	112		N	0	BAGO	Y	744	BAGO	N	N	High
526	Upgraded track	0	Y	0		Y	642	MEADOW	N	746	MEADOW	N	N	High
527	New track	13	N	297		N	12		N	748	PEJAR	N	Y	High
528	Upgraded track	195	N	184		N	640		N	756	TOOLES	N	Y	Low
529	Upgraded track	0	Y	0		Y	0		Y	760	RIGHT ARM	N	N	High
530	New track	6	N	117		N	861	CART ROAD	N	762	O'BRIENS	N	N	High
531	Upgraded track	0	Y	481		N	1964	MIDDLE	N	767	MERRILL	N	N	High
532	Upgraded track	71	N	51		N	550		N	775	COMATAWA	N	N	Moderate
533	New track	0	Y	37		N	0	WINDOWIE	Y	776	WILSONS	N	N	High
534	New track	0	Y	136		N	557	O'BRIENS	N	776	O'BRIENS	N	N	High
535	New track	0	Y	54		N	79		N	791	CONNORS	N	N	High
536	Upgraded track	218	N	615		N	385	TURNERS	N	792	TURNERS	N	N	Low
537	Upgraded track	0	Y	57		N	538		N	794	COMATAWA	N	N	High
538	Upgraded track	69	N	559	TURNERS	N	384	TURNERS	N	794	TURNERS	N	N	Low
539	New track	0	Y	0		Y	105	FIRST	N	800	WOLLONDILLY	N	N	High

Access Track ID	Track Category	Closest Distance to Strahler1 (m)	Strahler1 Intersected?	Closest Distance to Strahler2 (m)	Strahler2 HYDRONAME	Strahler2 Intersected?	Closest Distance to Strahler3 (m)	Strahler3 HYDRONAME	Strahler3 Intersected?	Closest Distance to Strahler4 (m)	Strahler4 HYDRONAME	Strahler4 Intersected?	Inside Corridor?	Potential Impact Significance without mitigation
540	New track	0	Y	250		N	1014		N	802	WOLLONDILLY	N	N	High
541	New track	0	Y	60		N	312		N	804	DERRINGULLEN	N	Y	High
542	Existing tracks/roads	0	Y	76		N	262		N	806		N	N	Moderate
543	New track	44	N	253	MELAMALONG	N	412		N	807		N	Y	High
544	New track	0	Y	0		Y	157		N	808	MEADOW	N	Y	High
545	Upgraded track	0	Y	110		N	623	BAGO	N	809	LITTLE GILMORE	N	N	High
546	Upgraded track	86	N	177		N	309	TOMNEYS PLAIN	N	810	LONG	N	Y	Low
547	Upgraded track	0	Y	80		N	269		N	812		N	N	High
548	Upgraded track	40	N	501		N	165		N	812	ADELONG	N	Y	Moderate
549	Upgraded track	0	Y	194		N	415		N	813	MELAMALONG	N	N	High
550	Upgraded track	0	Y	99		N	218		N	815		N	N	High
551	Upgraded track	7	N	154		N	919	UNCLES	N	815	NACKI NACKI	N	N	Moderate
552	New track	17	N	120		N	424		N	815	KILLIMICAT	N	N	High
553	New track	0	Y	5		N	446		N	817	MELAMALONG	N	N	High
554	Upgraded track	59	N	266		N	658		N	818	O'BRIENS	N	Y	Low
555	Upgraded track	75	N	390		N	85		N	822	COXS	N	N	Moderate
556	Upgraded track	0	Y	39		N	0	BANNABY	Y	824	CONNORS	N	N	High
557	Upgraded track	0	Y	48		N	217		N	824		N	Y	High
558	New track	103	N	359	DICKS	N	409		N	825	ROCKY	N	N	Moderate
559	Upgraded track	0	Y	47		N	0		Y	828	STEEVES	N	N	High
560	New track	165	N	519		N	316	YELLOW CLAY	N	828	OAK	N	Y	Moderate
561	Upgraded track	172	N	348		N	35	YELLOW CLAY	N	835	OAK	N	N	Moderate
562	New track	0	Y	95		N	229	STEEVES	N	835	STEEVES	N	N	High
563	Upgraded track	13	N	158	TURNERS	N	285		N	848	TURNERS	N	Y	Moderate
564	Upgraded track	3	N	91		N	798		N	852	BIG SRING	N	Y	Moderate
565	New track	0	Y	391		N	931	WINDOWIE	N	857	WINDOWIE	N	Y	High
566	Upgraded track	32	N	227		N	385		N	859	WOOLGARLO	N	N	Moderate
567	New track	0	Y	48		N	95		N	862		N	Y	High
568	New track	275	N	0	DICKS	Y	89	ROCKY	N	868	ROCKY	N	N	High
569	Upgraded track	71	N	36		N	0	YELLOW CLAY	Y	872	OAK	N	N	High
570	Upgraded track	0	Y	148		N	311		N	876	COOKS	N	Y	High
571	Upgraded track	51	N	285		N	1155		N	877	BAGO	N	Y	Low
572	New track	92	N	321		N	468	SAW MILL	N	879	SAW MILL	N	N	Moderate
573	New track	0	Y	0		Y	214	SPRING GROVE	N	881	DERRINGULLEN	N	N	High
574	New track	84	N	517		N	456		N	884	WOOLGARLO	N	N	Moderate
575	Upgraded track	24	N	364		N	426	SAW MILL	N	885	SAW MILL	N	N	Moderate
576	New track	0	Y	10		N	1426	FELLED TIMBER	N	888	JERRAWA	N	N	High
577	New track	26	N	40	MANTONS	N	513	MANTONS	N	890	MANTONS	N	N	High
578	Upgraded track	183	N	0	MANTONS	Y	406	THREE	N	892	MANTONS	N	N	High
579	New track	0	Y	239		N	576	MANDYS	N	893	MANDYS	N	N	High
580	New track	0	Y	293		N	512		N	893	COOKS	N	Y	High
581	Upgraded track	41	N	205		N	737		N	900	SANDY	N	N	Moderate
582	New track	0	Y	288		N	308	KIALLA	N	902	MIDDLE	N	Y	High
583	Upgraded track	198	N	511		N	1149	COXS	N	903	TYWONG	N	N	Low
584	New track	0	Y	6		N	322	FOREST	N	909	KERRAWARY	N	N	High
585	New track	0	Y	128		N	251		N	910		N	N	High
586	New track	0	Y	150		N	300		N	911	DERRINGULLEN	N	Y	High
587	Upgraded track	0	Y	145		N	818		N	912	BIG SRING	N	Y	High
588	New track	0	Y	3		N	114		N	917	GOCUP	N	N	High
589	New track	0	Y	0		Y	588	CART ROAD	N	926	O'BRIENS	N	Y	High
590	Upgraded track	0	Y	73		N	710		N	931	BRUNGLE	N	N	High
591	Upgraded track	186	N	273		N	0	GERMANS	Y	932	ADELONG	N	N	High
592	Upgraded track	33	N	619		N	826	NACKI NACKI	N	945	NACKI NACKI	N	N	Moderate
593	Upgraded track	66	N	369		N	0		Y	945	COXS	N	Y	High
594	New track	37	N	267		N	219	YELLOW	N	946	BANGO	N	N	High
595	Upgraded track	29	N	230		N	234		N	947	COMATAWA	N	N	Moderate
596	Upgraded track	11	N	193	TOMNEYS PLAIN	N	0		Y	948	TOMNEYS PLAIN	N	N	High
597	New track	95	N	263	TOMNEYS PLAIN	N	129	TOMNEYS PLAIN	N	949	TOMNEYS PLAIN	N	N	High
598	Upgraded track	0	Y	0	DICKS	Y	94	ROCKY	N	951	ROCKY	N	N	High
599	New track	0	Y	3	DOWLINGS	N	523	DOWLINGS	N	951	OOLONG	N	N	High
600	Upgraded track	244	N	542		N	409		N	953	ADELONG	N	Y	Low
601	Upgraded track	52	N	278		N	346		N	956	ADELONG	N	N	Low
602	Upgraded track	22	N	44		N	607		N	965	TARLO	N	N	Moderate
603	New track	63	N	319	O'BRIENS	N	527	CART ROAD	N	966	CART ROAD	N	Y	Moderate
604	Upgraded track	11	N	701		N	825		N	967	SANDY	N	N	Moderate
605	Upgraded track	0	Y	56		N	0		Y	967		N	N	High
606	Upgraded track	235	N	468	TOMNEYS PLAIN	N	339	TOMNEYS PLAIN	N	971	TOMNEYS PLAIN	N	N	Low
607	New track	0	Y	148	WINDOWIE	N	224	WINDOWIE	N	971	WILSONS	N	N	High
608	Upgraded track	2	N	211		N	800		N	972	BIG SRING	N	Y	Moderate
609	New track	0	Y	73		N	539		N	973	LONG	N	N	High
610	Upgraded track	0	Y	205		N	540		N	976	YAVEN YAVEN	N	N	High
611	New track	0	Y	41		N	530	FIRST	N	976	WOLLONDILLY	N	N	High
612	New track	0	Y	179		N	693		N	977	BANGO	N	N	High
613	Upgraded track	123	N	426		N	34		N	981	COXS	N	Y	Moderate
614	Upgraded track	0	Y	164		N	815		N	986	SPLITTERS	N	N	High
615	New track	66	N	326		N	920	WINDOWIE	N	986	WINDOWIE	N	Y	Moderate
616	New track	0	Y	937		N	664	OAKY	N	988	MURRUMBIDGEE	N	N	High

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617	Upgraded track	30	N	48		N	420	SAW MILL	N	989	SAW MILL	N	N	Moderate
618	Upgraded track	0	Y	0		Y	313		N	991		N	N	High
619	New track	149	N	219		N	635	SPRING GROVE	N	994	DERRINGULLEN	N	N	Moderate
620	Upgraded track	0	Y	52		N	434		N	995		N	N	High
621	New track	0	Y	114		N	382		N	997	DERRINGULLEN	N	Y	High
622	New track	190	N	360	WILSONS	N	456	COCKATOO	N	999	COCKATOO	N	N	Moderate
623	New track	0	Y	0		Y	65	FIRST	N	999	WOLLONDILLY	N	N	High
624	New track	0	Y	398		N	614		N	1004	DERRINGULLEN	N	Y	High
625	Upgraded track	0	Y	0		Y	840		N	1005	SANDY	N	N	High
626	New track	0	Y	132		N	572		N	1007	KILLIMICAT	N	N	High
627	New track	4	N	321		N	257	BANNABY	N	1014	CONNORS	N	Y	High
628	New track	0	Y	178		N	63	MCCULLUMS	N	1017	WASHPEN	N	N	High
629	New track	37	N	0		Y	154		N	1018	MEADOW	N	Y	High
630	Upgraded track	110	N	285		N	441	CART ROAD	N	1019	CART ROAD	N	Y	Low
631	New track	317	N	238		N	181	GERMANS	N	1019	ADELONG	N	Y	Moderate
632	New track	166	N	340		N	660		N	1021	HONEYSUCKLE	N	N	Moderate
633	New track	81	N	149		N	670	STOCKMANS	N	1025	HONEYSUCKLE	N	Y	Moderate
634	Upgraded track	0	Y	142		N	41	YAVEN YAVEN	N	1026	YAVEN YAVEN	N	N	High
635	New track	109	N	279		N	767		N	1028	SANDY	N	N	Moderate
636	New track	0	Y	284		N	640	WINDOWIE	N	1033	WINDOWIE	N	N	High
637	New track	0	Y	160	TURNERS	N	159		N	1034	TURNERS	N	Y	High
638	Upgraded track	0	Y	125		N	752		N	1036	SANDY	N	Y	High
639	Upgraded track	289	N	680		N	215	SAILORS	N	1043	BAGO	N	Y	Low
640	Upgraded track	0	Y	146		N	404		N	1045		N	N	High
641	New track	0	Y	183		N	2124		N	1047	ADELONG	N	Y	High
642	New track	0	Y	132		N	845		N	1051	SANDY	N	N	High
643	Upgraded track	0	Y	0		Y	0	YELLOW CLAY	Y	1054	OAK	N	N	High
644	New track	0	Y	129		N	543		N	1056	DERRINGULLEN	N	Y	High
645	New track	105	N	0		Y	550	FOREST	N	1063	KERRAWARY	N	N	High
646	New track	0	Y	0		Y	266		N	1067		N	Y	High
647	Upgraded track	0	Y	0		Y	0		Y	1069	COWPERS	N	N	High
648	New track	0	Y	6	KILEY	N	266	KILEY	N	1069	SPLITTERS	N	N	High
649	New track	0	Y	0		Y	22		N	1069		N	N	High
650	Upgraded track	0	Y	453		N	286	FELLED TIMBER	N	1070	FELLED TIMBER	N	N	High
651	Upgraded track	24	N	186		N	417		N	1070	KILLIMICAT	N	Y	Moderate
652	New track	0	Y	0		Y	0		Y	1070	GOCUP	N	N	High
653	New track	0	Y	140		N	777	BURNT HUT	N	1070	WOOLGARLO	N	N	High
654	Upgraded track	0	Y	505		N	396		N	1074		N	N	High
655	Upgraded track	106	N	87	TOMNEYS PLAIN	N	50	TOMNEYS PLAIN	N	1076	TOMNEYS PLAIN	N	Y	Moderate
656	New track	32	N	122	DOWLINGS	N	1019	DOWLINGS	N	1076	LACHLAN	N	Y	High
657	New track	0	Y	69	KILEY	N	759	KILEY	N	1082	SPLITTERS	N	N	High
658	Upgraded track	0	Y	74		N	668	STOCKMANS	N	1083	HONEYSUCKLE	N	N	High
659	New track	34	N	1023		N	715	BUNTON	N	1088	FLACKNELL	N	N	High
660	New track	111	N	397		N	610		N	1105		N	Y	Moderate
661	Upgraded track	161	N	10	WALKER	N	344	WALKER	N	1107	GILMORE	N	Y	Moderate
662	New track	16	N	264		N	591	KILEY	N	1107	BRUNGLE	N	N	High
663	Upgraded track	0	Y	196		N	662		N	1113	COMATAWA	N	N	High
664	Upgraded track	419	N	284		N	80	YELLOW CLAY	N	1119	OAK	N	Y	Moderate
665	New track	110	N	328		N	381		N	1123	WOOLGARLO	N	Y	Moderate
666	New track	30	N	28		N	778		N	1123		N	N	High
667	Upgraded track	0	Y	14		N	274		N	1124	COXS	N	N	High
668	Upgraded track	14	N	148		N	0		Y	1125	COXS	N	N	High
669	New track	119	N	213		N	368	KILEY	N	1125	SPLITTERS	N	N	Moderate
670	Upgraded track	54	N	153		N	230		N	1127	COXS	N	Y	Low
671	New track	10	N	9		N	447		N	1134	MELAMALONG	N	N	High
672	New track	202	N	643		N	511	FIRST	N	1137	MIDDLE	N	Y	Moderate
673	New track	0	Y	31		N	779	MANTONS	N	1149	MANTONS	N	N	High
674	Upgraded track	4	N	840		N	638	BUNTON	N	1153	FLACKNELL	N	N	Moderate
675	Upgraded track	46	N	435		N	444	KILEY	N	1156	SPLITTERS	N	N	Moderate
676	Upgraded track	0	Y	0		Y	0		Y	1162		N	N	High
677	New track	271	N	164		N	500	CART ROAD	N	1166	O'BRIENS	N	Y	Moderate
678	New track	0	Y	0		Y	0	KIALLA	Y	1166	MIDDLE	N	N	High
679	New track	74	N	166		N	658		N	1168		N	Y	Moderate
680	Upgraded track	0	Y	10		N	662	MEADOW	N	1172		N	N	High
681	Upgraded track	133	N	721		N	629		N	1178		N	N	Low
682	New track	38	N	421		N	282	YELLOW	N	1180	BANGO	N	N	High
683	Upgraded track	10	N	89		N	405	YELLOWIN	N	1185	MANDYS	N	N	Moderate
684	New track	0	Y	95		N	369		N	1186		N	N	High
685	Upgraded track	0	Y	32		N	368		N	1191		N	N	High
686	Upgraded track	64	N	346		N	134	YELLOW	N	1192	BANGO	N	N	Moderate
687	New track	0	Y	0		Y	578		N	1196	COMATAWA	N	N	High
688	New track	195	N	372	KILEY	N	999		N	1198	SPLITTERS	N	N	Moderate
689	New track	0	Y	9		N	269		N	1198	BANGO	N	N	High
690	Upgraded track	0	Y	403		N	1464		N	1201	BAGO	N	N	High
691	New track	109	N	275		N	435	CART ROAD	N	1206	CART ROAD	N	Y	Moderate
692	New track	133	N	419		N	378		N	1210	PEJAR	N	N	Moderate
693	Upgraded track	69	N	150		N	131	CART ROAD	N	1213	CART ROAD	N	N	Moderate

Access Track ID	Track Category	Closest Distance to Strahler1 (m)	Strahler1 Intersected?	Closest Distance to Strahler2 (m)	Strahler2 HYDRONAME	Strahler2 Intersected?	Closest Distance to Strahler3 (m)	Strahler3 HYDRONAME	Strahler3 Intersected?	Closest Distance to Strahler4 (m)	Strahler4 HYDRONAME	Strahler4 Intersected?	Inside Corridor?	Potential Impact Significance without mitigation
694	New track	128	N	445		N	479	WINDOWIE	N	1215	WINDOWIE	N	N	Moderate
695	Upgraded track	189	N	529		N	925		N	1225	ADELONG	N	N	Low
696	New track	0	Y	524		N	499	FELLED TIMBER	N	1226	FELLED TIMBER	N	N	High
697	New track	338	N	107		N	34	YELLOW CLAY	N	1229	OAK	N	Y	High
698	New track	49	N	200		N	0	FIRST	Y	1230	WOLLONDILLY	N	N	High
699	Upgraded track	163	N	214		N	223	CART ROAD	N	1237	O'BRIENS	N	N	Low
700	Upgraded track	101	N	40		N	801		N	1240	MANDYS	N	Y	Moderate
701	New track	31	N	449		N	472	YELLOWIN	N	1241	SHEEPYARD	N	Y	High
702	Upgraded track	0	Y	203		N	0	THREE	Y	1245	MANTONS	N	N	High
703	Upgraded track	17	N	107	KILEY	N	420	KILEY	N	1249	SPLITTERS	N	N	Moderate
704	New track	0	Y	313	WINDOWIE	N	0	WINDOWIE	Y	1250	WINDOWIE	N	N	High
705	New track	10	N	30		N	128	CART ROAD	N	1251	O'BRIENS	N	N	High
706	Upgraded track	30	N	635		N	774	YAVEN YAVEN	N	1252	YAVEN YAVEN	N	Y	Moderate
707	New track	0	Y	409		N	1027		N	1255	SAWPIT	N	N	High
708	New track	0	Y	132		N	754	O'BRIENS	N	1255	O'BRIENS	N	N	High
709	Upgraded track	0	Y	0		Y	82		N	1259	COMATAWA	N	N	High
710	New track	55	N	290		N	1045		N	1260	KILLIMICAT	N	N	Moderate
711	New track	34	N	224		N	447		N	1262	PEJAR	N	Y	High
712	New track	0	Y	334		N	2161		N	1264	JUGIONG	N	Y	High
713	Upgraded track	76	N	32		N	571		N	1265	MELAMALONG	N	N	Moderate
714	New track	96	N	859		N	200		N	1266	ROCKY	N	Y	Moderate
715	Upgraded track	140	N	538		N	420	BANNABY	N	1269		N	N	Low
716	New track	29	N	0		Y	539		N	1269	SAW MILL	N	Y	High
717	New track	169	N	258		N	133	THREE	N	1276	MANTONS	N	Y	High
718	New track	43	N	607	KILEY	N	1080		N	1278	SPLITTERS	N	N	High
719	Upgraded track	0	Y	60		N	0		Y	1286		N	N	High
720	New track	95	N	0		Y	92		N	1289	COOKS	N	N	High
721	New track	15	N	100		N	251		N	1291		N	N	High
722	Upgraded track	510	N	768		N	1163		N	1292	ADELONG	N	Y	Low
723	Upgraded track	61	N	254		N	632		N	1294		N	N	Low
724	Upgraded track	62	N	0		Y	17		N	1301		N	Y	High
725	New track	0	Y	244		N	1094	FELLED TIMBER	N	1305	FELLED TIMBER	N	N	High
726	New track	232	N	792		N	1060	FELLED TIMBER	N	1308	FELLED TIMBER	N	N	Moderate
727	Upgraded track	20	N	556		N	797		N	1309	YAVEN YAVEN	N	Y	Moderate
728	New track	96	N	0	MIDDLE	Y	1276	MIDDLE	N	1318	MERRILL	N	N	High
729	New track	0	Y	129		N	1019	OAKY	N	1321	MURRUMBIDGEE	N	N	High
730	Upgraded track	0	Y	0	LITTLE GILMORE	Y	428	LITTLE GILMORE	N	1327	LITTLE GILMORE	N	N	High
731	Upgraded track	0	Y	412		N	904	COXS	N	1329	TYWONG	N	N	High
732	Upgraded track	24	N	512		N	494	YAVEN YAVEN	N	1331	YAVEN YAVEN	N	Y	Moderate
733	New track	43	N	164		N	509		N	1338		N	N	High
734	New track	2	N	240	FAIRY HOLE	N	490		N	1339	COOKS	N	Y	High
735	New track	127	N	281		N	309	YELLOWIN	N	1341	SHEEPYARD	N	Y	Moderate
736	Upgraded track	179	N	557		N	1521		N	1350	ADELONG	N	N	Low
737	Upgraded track	167	N	628		N	112		N	1353	TOMNEYS PLAIN	N	Y	Moderate
738	Upgraded track	0	Y	295		N	231	YAVEN YAVEN	N	1355	YAVEN YAVEN	N	Y	High
739	Upgraded track	154	N	0		Y	458		N	1359	COXS	N	Y	High
740	Upgraded track	53	N	343	DICKS	N	774	ROCKY	N	1360	ROCKY	N	N	Low
741	Upgraded track	0	Y	0		Y	624		N	1374	COMATAWA	N	N	High
742	New track	0	Y	233		N	1283		N	1374	SANDY	N	N	High
743	Upgraded track	103	N	112		N	105	CART ROAD	N	1376	CART ROAD	N	N	Moderate
744	New track	0	Y	0		Y	0	KIALLA	Y	1382	MIDDLE	N	N	High
745	Upgraded track	60	N	123		N	928	LITTLE GILMORE	N	1383	LITTLE GILMORE	N	N	Low
746	Upgraded track	20	N	290		N	558	LITTLE GILMORE	N	1385	LITTLE GILMORE	N	N	Moderate
747	Upgraded track	217	N	644		N	370	SAILORS	N	1385	BAGO	N	N	Low
748	Upgraded track	0	Y	170		N	599	BAGO	N	1389	LITTLE GILMORE	N	N	High
749	Upgraded track	180	N	80		N	59		N	1395		N	N	Moderate
750	Upgraded track	13	N	193	LITTLE GILMORE	N	487	LITTLE GILMORE	N	1401	LITTLE GILMORE	N	Y	Moderate
751	Upgraded track	2	N	184	LITTLE GILMORE	N	487	LITTLE GILMORE	N	1403	LITTLE GILMORE	N	Y	Moderate
752	Upgraded track	221	N	574		N	2158		N	1410	ADELONG	N	N	Low
753	Upgraded track	0	Y	560		N	1896		N	1410	ADELONG	N	N	High
754	New track	7	N	211		N	901		N	1414	WINDOWIE	N	N	High
755	Upgraded track	341	N	824		N	1073		N	1416	ADELONG	N	N	Low
756	Upgraded track	261	N	239		N	0	GERMANS	Y	1418	ADELONG	N	N	High
757	New track	56	N	774		N	900	OAKY	N	1421	MURRUMBIDGEE	N	N	Moderate
758	New track	10	N	156		N	650	YELLOW	N	1421	MANTONS	N	Y	High
759	Upgraded track	211	N	528		N	721		N	1423	YAVEN YAVEN	N	N	Low
760	Upgraded track	0	Y	54		N	594		N	1429		N	N	High
761	Upgraded track	0	Y	98		N	81	YELLOWIN	N	1432	YELLOWIN	N	N	High
762	Upgraded track	56	N	459		N	748	LITTLE GILMORE	N	1434	LITTLE GILMORE	N	N	Low
763	Upgraded track	118	N	587		N	600		N	1438	LONG	N	Y	Low
764	New track	0	Y	295		N	402		N	1438		N	N	High
765	New track	2	N	56		N	110	MCCULLUMS	N	1439	WASHPEN	N	N	High
766	New track	0	Y	9		N	0	FELLED TIMBER	Y	1443	FLACKNELL	N	N	High
767	New track	40	N	163	DICKS	N	575	ROCKY	N	1446	ROCKY	N	N	High
768	Upgraded track	304	N	501		N	425		N	1450		N	Y	Low
769	Upgraded track	193	N	641		N	377		N	1458	LONG	N	Y	Low
770	New track	132	N	141		N	15	YELLOW	N	1458	BANGO	N	N	High

Access Track ID	Track Category	Closest Distance to Strahler1 (m)	Strahler1 Intersected?	Closest Distance to Strahler2 (m)	Strahler2 HYDRONAME	Strahler2 Intersected?	Closest Distance to Strahler3 (m)	Strahler3 HYDRONAME	Strahler3 Intersected?	Closest Distance to Strahler4 (m)	Strahler4 HYDRONAME	Strahler4 Intersected?	Inside Corridor?	Potential Impact Significance without mitigation
771	Upgraded track	15	N	0		Y	921		N	1460	SANDY	N	N	High
772	New track	10	N	278		N	482	SPRING GROVE	N	1461	DERRINGULLEN	N	Y	High
773	New track	104	N	143		N	46	FELLED TIMBER	N	1461	FELLED TIMBER	N	N	High
774	Upgraded track	199	N	605		N	875		N	1462	LONG	N	Y	Low
775	Upgraded track	46	N	173		N	224	YELLOWIN	N	1463	SHEEPYARD	N	Y	Moderate
776	Upgraded track	0	Y	130		N	906		N	1466	WINDOWIE	N	N	High
777	Upgraded track	87	N	204		N	217	YELLOWIN	N	1471	SHEEPYARD	N	N	Low
778	New track	6	N	203		N	242	COW HORN	N	1471	KERRAWARY	N	N	High
779	New track	0	Y	257		N	246	COW HORN	N	1471	KERRAWARY	N	N	High
780	Upgraded track	12	N	222		N	912		N	1472	WINDOWIE	N	N	Moderate
781	Upgraded track	195	N	678		N	1422	YAVEN YAVEN	N	1473	BAGO	N	Y	Low
782	Upgraded track	0	Y	56		N	182	SHARPS	N	1474	SHARPS	N	N	High
783	New track	60	N	253		N	815	MOUNT PLEASANT	N	1476	MOUNT PLEASANT	N	Y	Moderate
784	Upgraded track	0	Y	299	COW HORN	N	592	COW HORN	N	1481	KERRAWARY	N	N	High
785	Upgraded track	95	N	24	LITTLE GILMORE	N	575	LITTLE GILMORE	N	1484	LITTLE GILMORE	N	Y	Moderate
786	New track	0	Y	375		N	780	BURNT HUT	N	1491	WOOLGARLO	N	N	High
787	Upgraded track	10	N	0		Y	568	LITTLE GILMORE	N	1492	LITTLE GILMORE	N	N	High
788	Upgraded track	289	N	816		N	958		N	1497	PEJAR	N	N	Low
789	Upgraded track	0	Y	96		N	689	LITTLE GILMORE	N	1498	LITTLE GILMORE	N	N	High
790	Upgraded track	103	N	252		N	739	YELLOW	N	1498	MANTONS	N	Y	Low
791	Upgraded track	0	Y	293		N	950	LITTLE GILMORE	N	1501	LITTLE GILMORE	N	Y	High
792	New track	7	N	227		N	491	WALKER	N	1503	GILMORE	N	N	High
793	New track	0	Y	110		N	394	MOUNT PLEASANT	N	1503	MOUNT PLEASANT	N	N	High
794	New track	0	Y	27	COW HORN	N	187	COW HORN	N	1507	KERRAWARY	N	N	High
795	Upgraded track	0	Y	65		N	642	MOUNT PLEASANT	N	1512	MOUNT PLEASANT	N	Y	High
796	Upgraded track	4	N	0		Y	35	THREE	N	1512	MANTONS	N	N	High
797	Upgraded track	0	Y	0		Y	113	THREE	N	1514	MANTONS	N	N	High
798	New track	117	N	726		N	1266		N	1522	KILLIMICAT	N	N	Moderate
799	Upgraded track	147	N	731		N	1154	YAVEN YAVEN	N	1531	BAGO	N	N	Low
800	New track	140	N	13	DAWSONS FLAT	N	326	DAWSONS FLAT	N	1540	MYRTLE	N	N	High
801	Upgraded track	0	Y	0		Y	418	MODDER	N	1545	LONG	N	N	High
802	Upgraded track	215	N	262		N	32	YELLOW	N	1553	BANGO	N	N	Moderate
803	New track	68	N	433		N	854		N	1564	O'BRIENS	N	Y	Moderate
804	New track	18	N	672		N	461		N	1573	ROCKY	N	N	High
805	Upgraded track	171	N	745		N	1063		N	1574	PEJAR	N	Y	Low
806	New track	95	N	464		N	560		N	1574	ROCKY	N	Y	Moderate
807	New track	0	Y	241		N	204	BANNABY	N	1574		N	Y	High
808	Upgraded track	0	Y	0		Y	731	JOHNSONS	N	1586	GILMORE	N	N	High
809	Upgraded track	31	N	348		N	203		N	1589		N	N	Moderate
810	New track	50	N	232		N	374	YELLOW	N	1592	MANTONS	N	N	High
811	Upgraded track	0	Y	435		N	734	GERMANS	N	1593	YAVEN YAVEN	N	N	High
812	Upgraded track	164	N	88		N	47	YAVEN YAVEN	N	1601	YAVEN YAVEN	N	Y	Moderate
813	Upgraded track	225	N	89		N	0	YELLOW	Y	1602	BANGO	N	N	High
814	New track	0	Y	0		Y	0	YELLOWIN	Y	1618	SHEEPYARD	N	N	High
815	New track	101	N	428		N	376	WINDOWIE	N	1618	WINDOWIE	N	N	Moderate
816	Upgraded track	0	Y	2		N	0	YAVEN YAVEN	Y	1624	YAVEN YAVEN	N	N	High
817	New track	0	Y	412		N	137	WINDOWIE	N	1624	ADELONG	N	Y	High
818	New track	0	Y	41		N	592	COCKATOO	N	1625	HINDMARSH	N	N	High
819	Upgraded track	4	N	153		N	617	PLAIN	N	1627	LONG	N	N	Moderate
820	New track	0	Y	0	OAKY	Y	610	OAKY	N	1629	MURRUMBIDGEE	N	N	High
821	New track	0	Y	121		N	404		N	1637		N	N	High
822	New track	88	N	179	BIG ROCK	N	734	MEADOW	N	1645		N	N	Moderate
823	Upgraded track	209	N	294		N	146	GERMANS	N	1647	ADELONG	N	Y	Moderate
824	New track	14	N	344		N	756		N	1648		N	Y	High
825	New track	50	N	611		N	997		N	1652	SAWPIT	N	Y	High
826	New track	0	Y	461		N	633		N	1655		N	Y	High
827	New track	0	Y	102	MIDDLE	N	1482	MIDDLE	N	1658	MERRILL	N	N	High
828	Upgraded track	11	N	100		N	74	YELLOWIN	N	1659	SNUBBA	N	N	Moderate
829	Upgraded track	0	Y	595		N	459	BUNTON	N	1662	FLACKNELL	N	N	High
830	Upgraded track	336	N	849		N	2018		N	1663	ADELONG	N	N	Low
831	Upgraded track	0	Y	0		Y	760		N	1673	COMATAWA	N	N	High
832	New track	95	N	332		N	519	SPRING GROVE	N	1674	DERRINGULLEN	N	Y	Moderate
833	Upgraded track	0	Y	151	BLACK RANGE	N	1094	BOGOLONG	N	1677	CARROLLS	N	N	High
834	Upgraded track	128	N	436		N	837	GERMANS	N	1687	YAVEN YAVEN	N	Y	Low
835	Upgraded track	0	Y	0	COXS	Y	755	COXS	N	1687	TYWONG	N	N	High
836	Upgraded track	0	Y	92		N	452	MOUNT PLEASANT	N	1693	MOUNT PLEASANT	N	N	High
837	New track	111	N	565		N	2363		N	1698	JUGIONG	N	Y	Moderate
838	New track	14	N	364		N	721		N	1699		N	Y	High
839	New track	0	Y	167		N	338		N	1703	WOOLGARLO	N	Y	High
840	Upgraded track	286	N	876		N	1141	SHARPS	N	1711	ADELONG	N	N	Low
841	Upgraded track	331	N	878		N	2006		N	1717	ADELONG	N	Y	Low
842	New track	0	Y	284	ROCKY	N	825	ROCKY	N	1724	ROCKY	N	N	High
843	Upgraded track	11	N	162	COXS	N	914	COXS	N	1728	TYWONG	N	Y	Moderate
844	New track	24	N	350		N	654		N	1737		N	Y	High
845	New track	44	N			N	505	BAGO	N	1742	BAGO	N	Y	High
846	Upgraded track	0	Y	678		Y	515	BAGO	N	1746	LITTLE GILMORE	N	N	High
847	Upgraded track	35	N	0		N	552		N	1751		N	N	Moderate

Access Track ID	Track Category	Closest Distance to Strahler1 (m)	Strahler1 Intersected?	Closest Distance to Strahler2 (m)	Strahler2 HYDRONAME	Strahler2 Intersected?	Closest Distance to Strahler3 (m)	Strahler3 HYDRONAME	Strahler3 Intersected?	Closest Distance to Strahler4 (m)	Strahler4 HYDRONAME	Strahler4 Intersected?	Inside Corridor?	Potential Impact Significance without mitigation
848	New track	146	N	319		N	283	YELLOW CLAY	N	1753	OAK	N	N	Moderate
849	Upgraded track	0	Y	308		N	35		N	1759		N	Y	High
850	Upgraded track	44	N	447		N	570	COCKATOO	N	1761	COCKATOO	N	Y	Moderate
851	New track	0	Y	124		N	562		N	1763		N	Y	High
852	Upgraded track	160	N	265		N	0	YELLOW	Y	1764	BANGO	N	N	High
853	Upgraded track	317	N	71		N	1237	PLAIN	N	1772	LONG	N	Y	Moderate
854	New track	76	N	709		N	54	YELLOW	N	1775	BANGO	N	N	High
855	Upgraded track	49	N	150		N	1052	LITTLE GILMORE	N	1781	LITTLE GILMORE	N	Y	Moderate
856	Upgraded track	67	N	445		N	1051	LITTLE GILMORE	N	1781	LITTLE GILMORE	N	Y	Low
857	Upgraded track	117	N	447		N	187	YAVEN YAVEN	N	1791	YAVEN YAVEN	N	Y	Low
858	New track	0	Y	114		N	333		N	1796	TURNERS	N	N	High
859	New track	0	Y	177		N	686		N	1801	ROCKY	N	N	High
860	Upgraded track	222	N	32	JOHNSONS	N	739	WALKER	N	1803	GILMORE	N	Y	Moderate
861	Upgraded track	0	Y	410	DICKS	Y	967	ROCKY	N	1803	ROCKY	N	N	High
862	New track	0	Y	0	FAIRY HOLE	N	601	SPRING GROVE	N	1816	DERRINGULLEN	N	Y	High
863	New track	0	Y	184		N	212	MCCULLUMS	N	1819	WASHPEN	N	N	High
864	New track	78	N	28		N	1366	OAKY	N	1831	MURRUMBIDGEE	N	N	High
865	Upgraded track	0	Y	352		N	0	PLAIN	Y	1832	LONG	N	N	High
866	Upgraded track	131	N	134		N	0	GERMANS	Y	1834	ADELONG	N	N	High
867	New track	14	N	394		Y	77	KIALLA	N	1834	MIDDLE	N	N	High
868	New track	35	N	0		N	336	YELLOWIN	N	1843	SNUBBA	N	Y	High
869	New track	56	N	261		N	358	YELLOW	N	1846	MANTONS	N	Y	Moderate
870	Upgraded track	88	N	135		Y	129	PLAIN	N	1851	LONG	N	N	High
871	Upgraded track	109	N	0		N	762	GERMANS	N	1891	YAVEN YAVEN	N	Y	Moderate
872	New track	135	N	622		Y	316	DAWSONS FLAT	N	1893	MYRTLE	N	N	High
873	New track	0	Y	0		N	882	BURNT HUT	N	1898	WOOLGARLO	N	N	High
874	New track	0	Y	327		N	1139		N	1899	SAW MILL	N	Y	High
875	New track	0	Y	202		N	388	BUNTON	N	1902	FLACKNELL	N	N	High
876	New track	0	Y	333		N	582	YELLOW CLAY	N	1923	OAK	N	N	High
877	Upgraded track	113	N	247		N	276	BANNABY	N	1937		N	Y	Low
878	Upgraded track	424	N	284		N	850	PLAIN	N	1952	LONG	N	N	Low
879	New track	101	N	405		N	1643	OAKY	N	1956	MURRUMBIDGEE	N	Y	Moderate
880	New track	41	N	542		N	554	COCKATOO	N	1958	COCKATOO	N	N	High
881	Upgraded track	353	N	147	YORKERS	N	569	LOGBRIDGE	N	1975	YORKERS	N	Y	Low
882	Upgraded track	153	N	14		N	139	YELLOW	N	1979	BANGO	N	N	Moderate
883	Upgraded track	0	Y	111	COXS	Y	735	COXS	N	1988	TYWONG	N	N	High
884	Upgraded track	0	Y	0		N	179		N	1989	COWPERS	N	N	High
885	Upgraded track	0	Y	201		N	760	MEADOW	N	2006	SANDY	N	N	High
886	Upgraded track	176	N	342		N	977	YAVEN YAVEN	N	2010	BAGO	N	Y	Low
887	Upgraded track	288	N	910	YORKERS	Y	106	LOGBRIDGE	N	2013	YORKERS	N	Y	High
888	Upgraded track	48	N	0		N	60	MCCULLUMS	N	2015	WASHPEN	N	N	Moderate
889	Upgraded track	0	Y	236	MOUNT PLEASANT	N	741	MOUNT PLEASANT	N	2019	MOUNT PLEASANT	N	N	High
890	Upgraded track	159	N	465		N	625	COCKATOO	N	2021	COCKATOO	N	Y	Low
891	Upgraded track	0	Y	126		N	1810	ROCKY	N	2021	MURRUMBIDGEE	N	Y	High
892	New track	358	N	164		Y	0	THREE	Y	2025	MANTONS	N	N	High
893	Upgraded track	47	N	0		N	650	COCKATOO	N	2035	COCKATOO	N	Y	Moderate
894	Upgraded track	21	N	72		N	738		N	2047		N	N	Moderate
895	New track	39	N	490		Y	59	THREE	N	2048	MANTONS	N	N	High
896	Upgraded track	186	N	0	GERMANS	N	605	GERMANS	N	2052	YAVEN YAVEN	N	Y	Moderate
897	Upgraded track	0	Y	551		Y	0	NACKI NACKI	Y	2056	ADELONG	N	N	High
898	Upgraded track	54	N	0		N	753	BAGO	N	2098	BAGO	N	Y	Moderate
899	Upgraded track	0	Y	484		N	184	YAVEN YAVEN	N	2099	YAVEN YAVEN	N	Y	High
900	Upgraded track	154	N	125		N	106	LOGBRIDGE	N	2101	YORKERS	N	Y	Moderate
901	Upgraded track	178	N	122	COTWAY	N	783		N	2102		N	N	Low
902	Upgraded track	78	N	327		N	0		Y	2123	WOOLGARLO	N	N	High
903	New track	28	N	392	MERRILL	Y	2307		N	2125	HUMES	N	N	High
904	New track	0	Y	0	CART ROAD	N	2178	BLACK RANGE	N	2138	JUGIONG	N	N	High
905	New track	38	N	700	MIDDLE	N	1650	MERRILL	N	2141	MERRILL	N	N	High
906	Upgraded track	90	N	74		N	629	SHARPS	N	2142	SHARPS	N	N	Moderate
907	Upgraded track	0	Y	519		N	885	JOHNSONS	N	2146	TUMBARUMBA	N	N	High
908	Upgraded track	66	N	356		N	595	SHARPS	N	2156	SHARPS	N	Y	Low
909	Existing tracks/roads	0	Y	478		N	1102	YAVEN YAVEN	N	2171	BAGO	N	N	Moderate
910	Upgraded track	0	Y	320		Y	1318	ROCKY	N	2183	MURRUMBIDGEE	N	N	High
911	Upgraded track	205	N	0		N	494	PLAIN	N	2197	LONG	N	N	Moderate
912	Upgraded track	243	N	71		N	1772	SHARPS	N	2200	ADELONG	N	Y	Moderate
913	New track	0	Y	1315		Y	1273		N	2203	ROCKY	N	N	High
914	Upgraded track	0	Y	0	YORKERS	N	0	LOGBRIDGE	Y	2240	YORKERS	N	N	High
915	Upgraded track	181	N	2		N	580	BAGO	N	2246	LITTLE GILMORE	N	Y	Moderate
916	Upgraded track	66	N	152		N	831		N	2247	TURNERS	N	N	Low
917	New track	88	N	608	JOHNSONS	N	755	JOHNSONS	N	2251	GILMORE	N	Y	Moderate
918	New track	0	Y	265		N	341	BUNTON	N	2253	FLACKNELL	N	N	High
919	Upgraded track	136	N	278		N	1183		N	2268	LITTLE GILMORE	N	Y	Low
920	Upgraded track	97	N	575	GERMANS	N	368	GERMANS	N	2268	YAVEN YAVEN	N	N	Low
921	New track	0	Y	386		N	574	YELLOW CLAY	N	2271	OAK	N	Y	High
922	Upgraded track	38	N	725		N	835	YAVEN YAVEN	N	2277	BAGO	N	Y	Moderate
923	Upgraded track	0	Y	775		N	817		N	2286	LITTLE GILMORE	N	N	High
924	Upgraded track	196	N	351	LOGBRIDGE	N	204	LOGBRIDGE	N	2300	YORKERS	N	Y	Low

Access Track ID	Track Category	Closest Distance to Strahler1 (m)	Strahler1 Intersected?	Closest Distance to Strahler2 (m)	Strahler2 HYDRONAME	Strahler2 Intersected?	Closest Distance to Strahler3 (m)	Strahler3 HYDRONAME	Strahler3 Intersected?	Closest Distance to Strahler4 (m)	Strahler4 HYDRONAME	Strahler4 Intersected?	Inside Corridor?	Potential Impact Significance without mitigation
925	Upgraded track	218	N	247	LOGBRIDGE	N	67	LOGBRIDGE	N	2312	YORKERS	N	Y	Moderate
926	Upgraded track	55	N	110		N	206	YAVEN YAVEN	N	2322	YAVEN YAVEN	N	Y	Low
927	Upgraded track	200	N	157		N	25	LOGBRIDGE	N	2329	YORKERS	N	Y	Moderate
928	Upgraded track	111	N	130		Y	1478		N	2346	ROCKY	N	N	High
929	Upgraded track	132	N	0		N	796	JOHNSONS	N	2355	TUMBARUMBA	N	Y	Moderate
930	Upgraded track	0	Y	494		N	1084	JOHNSONS	N	2364	TUMBARUMBA	N	N	High
931	New track	0	Y	413	MERRILL	N	1119	MERRILL	N	2369	HUMES	N	N	High
932	Upgraded track	137	N	114		N	1234		N	2372	LITTLE GILMORE	N	Y	Low
933	New track	0	Y	496		Y	1173	BURNT HUT	N	2374	WOOLGARLO	N	N	High
934	Upgraded track	235	N	0		N	544	YAVEN YAVEN	N	2387	BAGO	N	N	Moderate
935	New track	59	N	477	BIG ROCK	N	604	MEADOW	N	2411		N	N	Moderate
936	Upgraded track	176	N	411	JOHNSONS	N	770	JOHNSONS	N	2412	TUMBARUMBA	N	N	Low
937	Upgraded track	96	N	393		N	1837		N	2417	HUMES	N	N	Low
938	New track	0	Y	859		N	113	THREE	N	2427	MANTONS	N	N	High
939	Upgraded track	90	N	73	LOGBRIDGE	N	69	LOGBRIDGE	N	2435	YORKERS	N	Y	Moderate
940	Upgraded track	0	Y	41		N	345	BUNTON	N	2441	FLACKNELL	N	N	High
941	New track	0	Y	191	MIDDLE	N	1288	MERRILL	N	2447	MERRILL	N	Y	High
942	Upgraded track	158	N	80		N	1281		N	2464	LITTLE GILMORE	N	Y	Moderate
943	New track	226	N	420	SAWPIT	Y	1364	KIALLA	N	2493	RYANS	N	N	High
944	Upgraded track	62	N	0		N	1912		N	2519	HUMES	N	N	Moderate
945	Upgraded track	0	Y	900		N	233	LOGBRIDGE	N	2537	YORKERS	N	Y	High
946	New track	394	N	117	SAWPIT	N	1073	KIALLA	N	2551	RYANS	N	N	Moderate
947	Upgraded track	289	N	129		N	497	YAVEN YAVEN	N	2559	BAGO	N	Y	Low
948	New track	73	N	452	SAWPIT	N	1541	RYANS	N	2621	RYANS	N	N	Moderate
949	New track	9	N	292		N	979	GOCUP	N	2624	GILMORE	N	N	High
950	New track	352	N	816		N	1125	SHARPS	N	2625	ADELONG	N	Y	Moderate
951	New track	88	N	981		N	1641		N	2628	ROCKY	N	Y	Moderate
952	New track	84	N	2	SAWPIT	N	504	KIALLA	N	2659	RYANS	N	N	High
953	New track	0	Y	452		N	217	KIALLA	N	2677	MIDDLE	N	N	High
954	Upgraded track	228	N	262		N	1023	SHARPS	N	2684	SHARPS	N	Y	Low
955	Upgraded track	220	N	890	SAWPIT	N	908	KIALLA	N	2696	RYANS	N	N	Low
956	New track	72	N	597	BLACK RANGE	N	1992	BLACK RANGE	N	2717	JUGIONG	N	Y	Moderate
957	Upgraded track	0	Y	486		N	500	LOGBRIDGE	N	2727	YORKERS	N	Y	High
958	Upgraded track	0	Y	253	SAWPIT	N	1639	RYANS	N	2728	RYANS	N	N	High
959	Upgraded track	0	Y	712		N	597	MEADOW	N	2765		N	Y	High
960	New track	0	Y	360		N	822	MEADOW	N	2783	GILMORE	N	N	High
961	Upgraded track	165	N	515		N	142	PLAIN	N	2805	LONG	N	N	Moderate
962	Upgraded track	0	Y	159		N	254	PLAIN	N	2806	YORKERS	N	N	High
963	Upgraded track	0	Y	293		N	0	YELLOW CLAY	Y	2811	OAK	N	N	High
964	Upgraded track	209	N	89		N	180	PLAIN	N	2813	LONG	N	N	Moderate
965	New track	63	N	189		N	350	BUNTON	N	2852	FLACKNELL	N	Y	Moderate
966	New track	18	N	166		N	569	THREE	N	2856	MANTONS	N	Y	High
967	New track	170	N	34	HEFFERNANS	N	2017	HUMES	N	2866	HUMES	N	N	High
968	New track	146	N	948	SAWPIT	N	1843	RYANS	N	2901	RYANS	N	N	Moderate
969	New track	137	N	1011		N	1100	YELLOW CLAY	N	2908	OAK	N	Y	Moderate
970	New track	26	N	447		N	226	KIALLA	N	2928	RYANS	N	N	High
971	Upgraded track	44	N	792		N	702	LOGBRIDGE	N	2932	YORKERS	N	Y	Moderate
972	Upgraded track	270	N	439	HEFFERNANS	N	2062	HUMES	N	2947	HUMES	N	N	Low
973	Upgraded track	8	N	861	SAWPIT	N	1875	RYANS	N	2953	RYANS	N	N	Moderate
974	New track	73	N	777	SAWPIT	N	1934	RYANS	N	2963	RYANS	N	N	Moderate
975	New track	0	Y	1207		N	955	BOGOLONG	N	2965	WOOLGARLO	N	N	High
976	New track	0	Y	29		N	1983		N	2981	ROCKY	N	N	High
977	New track	46	N	212		N	430	BUNTON	N	2983	FLACKNELL	N	N	High
978	New track	0	Y	63		Y	941	MERRILL	N	3001	MERRILL	N	N	High
979	Upgraded track	216	N	0		N	491	PLAIN	N	3058	LONG	N	N	Moderate
980	Upgraded track	0	Y	502		N	755	MEADOW	N	3069	GILMORE	N	Y	High
981	Upgraded track	0	Y	445		Y	143	CATHERINES	N	3092	BOUGH YARD	N	N	High
982	New track	53	N	0		N	169	KIALLA	N	3113	KIALLA	N	N	High
983	Upgraded track	9	N	653		N	989	LOGBRIDGE	N	3133	YORKERS	N	N	Moderate
984	Upgraded track	0	Y	592		N	0	CATHERINES	Y	3152	BOUGH YARD	N	N	High
985	Upgraded track	18	N	22	THREE	N	796	THREE	N	3165	MANTONS	N	N	Moderate
986	New track	101	N	233	BLACK RANGE	N	1922	BLACK RANGE	N	3174	JUGIONG	N	Y	Moderate
987	New track	18	N	24	GURRUNDAH	N	2243	RYANS	N	3185	RYANS	N	Y	High
988	Upgraded track	186	N	1022	BLACK RANGE	N	1964	BLACK RANGE	N	3227	CARROLLS	N	Y	Low
989	New track	0	Y	184	BLACK RANGE	Y	1465	BOGOLONG	N	3261	CARROLLS	N	Y	High
990	New track	0	Y	0		N	1048	BOGOLONG	N	3291	CARROLLS	N	N	High
991	Upgraded track	28	N	510		N	964	BOGOLONG	N	3299	CARROLLS	N	N	Moderate
992	New track	0	Y	514		N	1059	THREE	N	3315	MANTONS	N	N	High
993	Upgraded track	0	Y	180		N	592	PLAIN	N	3342	LONG	N	N	High
994	Upgraded track	0	Y	828		N	619	CATHERINES	N	3344	FLACKNELL	N	N	High
995	New track	0	Y	114	BLACK RANGE	N	1166	BOGOLONG	N	3354	CARROLLS	N	Y	High
996	Upgraded track	101	N	527		N	915	PLAIN	N	3356	YORKERS	N	N	Low
997	New track	172	N	825	HEFFERNANS	N	2078	HUMES	N	3366	HUMES	N	N	Moderate
998	New track	261	N	732	GURRUNDAH	N	2514		N	3384	RYANS	N	N	Moderate
999	New track	32	N	636	MERRILL	N	705	MERRILL	N	3394	HUMES	N	Y	High
1000	New track	0	Y	153		N	1471	YELLOW CLAY	N	3455	ROCKY	N	N	High
1001	New track	127	N	439		N	903	BOGOLONG	N	3482	WOOLGARLO	N	N	Moderate

Access Track ID	Track Category	Closest Distance to Strahler1 (m)	Strahler1 Intersected?	Closest Distance to Strahler2 (m)	Strahler2 HYDRONAME	Strahler2 Intersected?	Closest Distance to Strahler3 (m)	Strahler3 HYDRONAME	Strahler3 Intersected?	Closest Distance to Strahler4 (m)	Strahler4 HYDRONAME	Strahler4 Intersected?	Inside Corridor?	Potential Impact Significance without mitigation
1002	New track	0	Y	523		N	634	BOGOLONG	N	3500	CARROLLS	N	Y	High
1003	Upgraded track	0	Y	255		N	3	CATHERINES	N	3505	BOUGH YARD	N	N	High
1004	New track	0	Y	187		Y	337	BOGOLONG	N	3511	CARROLLS	N	N	High
1005	Upgraded track	79	N	0	GURRUNDAH	N	2526		N	3513	RYANS	N	N	Moderate
1006	New track	33	N	439	MERRILL	N	307	MERRILL	N	3538	MERRILL	N	N	High
1007	New track	9	N	137		N	1324	YELLOW CLAY	N	3561	OAK	N	N	High
1008	Upgraded track	317	N	353	PLAIN	N	744	PLAIN	N	3582	YORKERS	N	N	Low
1009	New track	210	N	1071	BOGOLONG	N	546	BOGOLONG	N	3590	WOOLGARLO	N	N	Moderate
1010	New track	258	N	261	MERRILL	Y	322	MERRILL	N	3591	HUMES	N	N	High
1011	New track	143	N	0		N	1324	YELLOW CLAY	N	3606	OAK	N	N	High
1012	New track	70	N	521		N	1799	YELLOW CLAY	N	3618	ROCKY	N	N	Moderate
1013	Upgraded track	454	N	481	GURRUNDAH	N	2642		N	3624	RYANS	N	N	Low
1014	Upgraded track	0	Y	161		N	670	CATHERINES	N	3680	BOUGH YARD	N	N	High
1015	New track	0	Y	463	HEFFERNANS	N	2183	HUMES	N	3711	HUMES	N	N	High
1016	New track	375	N	693		Y	283	BOGOLONG	N	3728	CARROLLS	N	Y	High
1017	New track	130	N	0		N	680	CATHERINES	N	3785	BOUGH YARD	N	N	High
1018	Upgraded track	24	N	459	GURRUNDAH	Y	2799		N	3819	RYANS	N	N	High
1019	New track	0	Y	0		N	58	CATHERINES	N	3856	BOUGH YARD	N	Y	High
1020	Upgraded track	22	N	535		N	294	CATHERINES	N	3858	BOUGH YARD	N	Y	Moderate
1021	New track	69	N	616		N	999	CATHERINES	N	3876	MANTONS	N	N	Moderate
1022	New track	260	N	663	BOGOLONG	Y	279	BOGOLONG	N	3889		N	Y	High
1023	New track	0	Y	0	GURRUNDAH	N	3157		N	4201	RYANS	N	N	High
1024	Upgraded track	270	N	174	GURRUNDAH	N	3054	HUMES	N	4438	RYANS	N	N	Low
1025	New track	438	N	520	HEFFERNANS	N	2461	HUMES	N	4461	HUMES	N	N	Moderate
1026	New track	290	N	1039	GURRUNDAH	N	3396	HUMES	N	4490	RYANS	N	N	Moderate
1027	New track	813	N	512	GURRUNDAH	N	2718	HUMES	N	4917	HUMES	N	Y	Moderate
1028	New track	741	N	1196	GURRUNDAH	N	2995	HUMES	N	4932	RYANS	N	Y	Moderate

Table F-2 Strahler order 4+ waterway crossing of upgraded and new tracks

Access Track ID	Track Category	Waterway name	Catchment	Strahler order at crossing
1	Upgraded track	SNUBBA	Murrumbidgee	4
2	Upgraded track	GOCUP	Murrumbidgee	4
3	Upgraded track	TYWONG	Murrumbidgee	4
6	Upgraded track	BAGO	Murrumbidgee	4
7	Upgraded track	SNUBBA	Murrumbidgee	4
8	Upgraded track	NACKI NACKI	Murrumbidgee	4
9	Upgraded track	RIGHT ARM	Murrumbidgee	4
10	Upgraded track	NACKI NACKI	Murrumbidgee	4
11	Upgraded track	KEAJURA	Murrumbidgee	6
12	Upgraded track	LONG	Murrumbidgee	4
13	Upgraded track	BUDDONG	Murrumbidgee	5
14	Upgraded track	HONEYSUCKLE	Murrumbidgee	4
15	Upgraded track	GILMORE	Murrumbidgee	5
17	Upgraded track	GILMORE	Murrumbidgee	5
19	Upgraded track	KILLIMICAT	Murrumbidgee	5
20	Upgraded track		Murrumbidgee	4
21	Upgraded track		Murrumbidgee	4
22	Upgraded track	O'BRIENS	Murrumbidgee	4
23	Upgraded track	DERRINGULLEN	Murrumbidgee	5
24	Upgraded track	JERRAWA	Lachlan	5
25	Upgraded track	O'BRIENS	Murrumbidgee	6
28	Upgraded track	MERRILL	Lachlan	4
30	Upgraded track	ADELONG	Murrumbidgee	4
53	New track		Murrumbidgee	4
56	New track	LONG	Murrumbidgee	4
57	New track	BANNABY	Hawkesbury-Nepean	4
58	New track	WINDOWIE	Murrumbidgee	4
60	New track	GOCUP	Murrumbidgee	4
62	New track	SAWPIT	Murrumbidgee	4
63	New track	BRUNGLE	Murrumbidgee	5
67	New track	JUGIONG	Murrumbidgee	4
69	New track	BANGO	Murrumbidgee	4
73	New track	HUMES	Lachlan	4
74	New track	MIDDLE	Hawkesbury-Nepean	5
75	New track	PEJAR	Hawkesbury-Nepean	4
76	New track	MELAMALONG	Hawkesbury-Nepean	4
79	New track		Hawkesbury-Nepean	4
80	New track	KERRAWARY	Hawkesbury-Nepean	4
82	New track		Hawkesbury-Nepean	4
83	New track		Hawkesbury-Nepean	4
86	New track	COCKATOO	Murrumbidgee	4
87	New track	O'BRIENS	Murrumbidgee	6
89	New track	MERRILL	Lachlan	4
90	New track	DERRINGULLEN	Murrumbidgee	5
92	New track	TOOLES	Murrumbidgee	5
31	Upgraded track	LONG	Murrumbidgee	4
32	Upgraded track	LONG	Murrumbidgee	4
33	Upgraded track	GALVINS	Murrumbidgee	4
34	Upgraded track	MANDYS	Murrumbidgee	4
35	Upgraded track	GILMORE	Murrumbidgee	4
37	Upgraded track	SAWPIT	Murrumbidgee	4
39	Upgraded track	CART ROAD	Murrumbidgee	4
40	Upgraded track	ROCKY	Murrumbidgee	4
41	Upgraded track	MERRILL	Lachlan	4
44	Upgraded track	FOLEYS	Murrumbidgee	4
45	Upgraded track	TOOLES	Murrumbidgee	6
46	Upgraded track	COLLEGE	Murrumbidgee	5
47	Upgraded track	TARCUTTA	Murrumbidgee	6
88	Upgraded track	SAW MILL	Murrumbidgee	4
48	Upgraded track		Murrumbidgee	4
49	Upgraded track	DARLOWS	Murrumbidgee	4
49	Upgraded track	DARLOWS	Murrumbidgee	4

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