Transgrid

People. Power. Possibilities.

Mount Piper to Wallerawang Transmission Line Upgrade Project

EIS Scoping Report

April 2024

Acknowledgement of Country

In the spirit of reconciliation Transgrid acknowledges the Traditional Custodians of the lands where we work, the lands we travel through and the places in which we live.

We pay respects to the people and Elders, past, present and emerging and celebrate the diversity of Aboriginal peoples and their ongoing cultures and connections to the lands and waters of NSW and ACT.

Executive summary

Introduction

Transgrid proposes to upgrade the transmission line network between the Mount Piper 330 kV/500 kV substation and Wallerawang 330 kV substation (the project), within the City of Lithgow local government area (LGA). The project is required to provide increased transmission capacity between renewable energy generators in the Central-West Orana Renewable Energy Zone (CWO REZ) and the Greater Sydney region.

The project would include a new, approximately 8 kilometre (km) 330 (kV) transmission line and double circuit transmission structures, and also incorporate sections of an existing, single-circuit, 132 kV transmission line, sharing an easement and transmission structures between the two substations. The shared portion of the line would be about 4.5 km in length and the easement widened from 45 metres (m) to 60 m. In locations where the transmission line is not proposed to follow the existing 132 kV transmission line easement, new 60 m wide easements would be required. This includes a 500 m section near the Mount Piper 330 kV/500 kV substation and a 3 km section near the Wallerawang substation.

The key objective of the project is to support the NSW Government's delivery of the CWO REZ and the State's energy policies and strategies, including Australia's greenhouse gas emission targets. The project will provide transmission infrastructure of sufficient capacity and reliability to support the change in power flows from the CWO REZ to main load areas and help meet the government's net zero emissions goals.

Transgrid is the proponent for the project (trading as the NSW Electricity Networks Operations Pty Ltd as a trustee for NSW Electricity Operations Trust) and an electricity supply authority for the purposes of the NSW *Environmental Planning and Assessment Act 1979*.

The project is permissible without consent by reason of section 2.44 of the Transport and Infrastructure SEPP as development for the purposes of an electricity transmission network carried out by or on behalf of an electricity supply authority. Transgrid has formed the opinion that the project is likely to significantly affect the environment. Therefore, by reason of section 2.13(1) of the Planning Systems SEPP, the project is declared to be State Significant Infrastructure (SSI) and requires an Environmental Impact Statement (EIS) to be prepared in accordance with Part 5, Division 5.2 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The Minister for Planning and Public Spaces is the consent authority for SSI projects.

Transgrid submitted a request to the Minister for Planning and Public Spaces to declare the project Critical State Significant Infrastructure on 22 February 2024. This request has been made given the critical nature of the project to support the connection of the CWO REZ to the existing transmission network. This will support the integration of renewable energy generation, reducing carbon emissions and driving down wholesale electricity prices.

This Scoping Report has been prepared in accordance with the *State significant infrastructure guidelines – preparing a scoping report*: Appendix A to the State significant infrastructure guidelines (DPE 2022a), to support a request for the Secretary's Environmental Assessment Requirements (SEARs) for the EIS. A review of environmental risks has been carried out and is documented in this report to assist in the identification of matters that will require further assessment in the EIS, and the level of assessment that should be carried out for each matter.

Project need

The CWO REZ is one of five renewable energy zones in NSW and is the first to be established. The CWO REZ is planned to generate at least 3,000 MW by the mid-2020s. This transmission line upgrade project is identified in the NSW Network Infrastructure Strategy (Energy Corporation of NSW, 2023) and contributes to achievement of the NSW Electricity Infrastructure Roadmap. The Roadmap identifies that the expansion of renewable generation must be accompanied by increased transmission capacity to transfer power from REZs in inland NSW to key demand centres. The Energy Corporation of NSW (EnergyCo) is responsible for leading the delivery of REZs as part of the NSW Government's Electricity Infrastructure Roadmap (DPIE, 2020).

Location & route selection

The project is located approximately 14 km north-west of Lithgow. The project is linear in nature and is adjacent to the Castlereagh Highway to the north, the Coxs River to the east, Piper's Flat Road to the south, and Mount Piper 330 kV/ 500 kV substation and power station to the northwest. The project traverses the Gardens of Stone State Conservation Area (SCA) (declared in May 2022) for a portion of the easement.

Eleven route options were assessed within the area of interest across a range of criteria including technical, environmental, social and financial/economic. The preferred route was selected after receiving stakeholder and community feedback, including consultation with NPWS. The preferred route report (Transgrid 2023) is published on Transgrid's website. The preferred route traverses three public landholders and five private landholders. The closest residential sensitive receiver to the project is located to the north of the Castlereagh Highway in Lidsdale, about 100 m from the existing 132 kV line. The location of the existing 132 kV line will become the site of the new shared easement and transmission structures for the proposed 330 kV transmission line.

The area surrounding the project includes a mix of land uses including power stations, the Gardens of Stone SCA, underground mining and associated surface facilities, rural and agricultural grazing, residential, industrial and transport infrastructure (road and rail).

Engagement

Transgrid has engaged with the community and key stakeholders throughout the development of the project. The route selection process (Transgrid 2023) included multiple rounds of community engagement, and the preferred route has been selected based on considerations including technical, environmental, social and financial, including feedback received from stakeholders.

The route traverses the Gardens of Stone SCA (NSW National Parks and Wildlife Service estate), directly adjacent to the Centennial Springvale Coal Services facility. Impacts to the SCA and Centennial Coal during construction and operation of the project will be managed in close consultation with NPWS and Centennial Coal. Measures to minimise and mitigate impacts on NPWS and Centennial Coal will be developed through detailed design and further engagement with these stakeholders.

Key environmental matters

A preliminary environmental assessment has identified the following key environmental matters relevant to the assessment of the project. These key matters have been identified through a risk-based approach based on available information of the existing environment and studies and investigations completed to date:

- Biodiversity
- Aboriginal heritage
- Historic heritage
- Land use and property
- Visual amenity
- Noise and vibration
- Social impacts.

Other matters that would also require assessment but are considered likely to result in lower risk to the environment include:

- Soils and contamination
- Hydrology/flooding
- Water – surface water and groundwater
- Air quality and greenhouse gas
- Waste management
- Traffic and access
- Hazard and risk e.g. bushfire, electric, and magnetic fields, and mine subsidence.

For each environmental matter, an assessment will be undertaken to inform the EIS. The level of assessment for each matter has been identified in this Scoping Report as either ‘detailed’ or ‘standard’ as guided by the S*tate significant infrastructure guidelines – preparing a scoping report* (DPE 2022a).

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Abbreviations and glossary of terms

Term	Definition
AEMO	Australian Energy Market Operator Public company that manages the National Electricity Market.
AHIMS	Aboriginal Heritage Information Management System
BAM	Biodiversity Assessment Method
BC Act	*Biodiversity Conservation Act 2016*
BDAR	Biodiversity Development Assessment Report
Conductor	The material that conducts electricity from one substation to another.
Construction footprint	Direct ground disturbance footprint proposed by construction activities.
CSSI	Critical State Significant Infrastructure
CTMP	Construction Traffic Management Plan
CWO REZ	The Central-West Orana Renewable Energy Zone
DCCEEW	Commonwealth Department of Climate Change, Energy, the Environment and Water
DPE	The former NSW Department of Planning and Environment (now known as the Department of Planning, Housing and Infrastructure).
DPHI	NSW Department of Planning, Housing and Infrastructure
Easement	An area surrounding the transmission line which is a 'legal right of way' and allows for the development, ongoing access and maintenance of the transmission line.
Shared easement	The portion of the project approximately 4.5 km in length that will accommodate the existing 132 kV 94E transmission line and the proposed new 330 kV transmission line on shared transmission structures, and will be widened from 45 m to 60 m.
EIS	Environmental Impact Statement
EnergyCo	Energy Corporation of NSW
EP&A Act	NSW *Environmental Planning and Assessment Act 1979*
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
ISP	Integrated System Plan The Australian Energy Market Operator's whole-of-system plan for the efficient development of the National Electricity Market power system that achieves power system needs for a planning horizon of at least 20 years for the long-term interests of the consumers of electricity.
Km	kilometre
kms	kilometres
kV	kilovolt one thousand volts
LEP	Local Environmental Plan
m	metre
MVA	Mega volt ampere A measure of the capacity of the transmission line

Term	Definition
MNES	Matters of National Environmental Significance
NEM	National Electricity Market The connected electricity transmission grid of Queensland, New South Wales, Australian Capital Territory, Victoria, Tasmania and South Australia.
NPWS	National Parks and Wildlife Service
NSW	New South Wales
OPGW	Optical Ground Wire A cable that shields the conductors from lighting strikes on the transmission structures and can also be used for telecommunication purposes.
Planning Systems SEPP	*State Environmental Planning Policy (Planning Systems) 2021*
RAP	Registered Aboriginal Parties
REZ	Renewable Energy Zone Renewable Energy Zones combine new renewable energy infrastructure, including generators (such as solar and wind farms) with storage (such as batteries and pumped hydro) and high-voltage transmission infrastructure.
SCA	State Conservation Area
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SSI	State Significant Infrastructure
the project	Construction and operation of a new 330kV transmission line between existing substations at Mount Piper and Wallerawang.
The project area	Includes the easement and route of the proposed transmission line, transmission structures, a widened easement, substations, potential access tracks to/from the easement and temporary construction compounds and laydown areas. Access tracks, construction compounds and laydown areas are indicative and subject to design changes and further investigation.
The Regulation	*NSW Environmental Planning & Assessment Regulation 2021*
the study area	The investigation area for identifying potential direct and indirect impacts of activities as a result of the project. The study area includes the investigation area for potential access tracks, the location of which are yet to be confirmed. The study area will differ across the various environmental matters being investigated.
T+I SEPP	*State Environmental Planning Policy (Transport and Infrastructure) 2021*
Transgrid	The manager and operator of the high voltage electricity transmission network in New South Wales and the Australian Capital Territory with connections to Victoria and Queensland. Transgrid manages the network that is the backbone of the National Energy Market, which enables energy trading between Australia's three largest states along the east coast.

1. Introduction

1.1. Overview of the project

Transgrid proposes to upgrade the transmission line network between Mount Piper and Wallerawang substations (the project), within the City of Lithgow local government area (LGA). The project is required to provide increased transmission capacity between renewable energy generators in the Central-West Orana Renewable Energy Zone (CWO REZ) and the Greater Sydney region. The project would include a new 330 kilovolt (kV) transmission line and double circuit transmission structures, and incorporate sections of the existing, single-circuit 132 kV transmission line (known as Line 94E), where the two transmission lines would share a widened easement and transmission structures, between these two locations (Figure 2).

The key components of the project would include:

- Construction and operation of a new, approximately 8 kilometre (km) long, 330 kV transmission line and double circuit transmission structures between the Mount Piper 330 kV/500 kV substation and the Wallerawang 330 kV substation, comprising:
    - Establishment of a 60 m easement along the route of the new 330 kV transmission line.
    - Widening of the existing 132 kV line easement from 45 m (metre) to 60 m, for the 4.5 km section that is to be shared with the new 330 kV transmission line. This section would incorporate shared transmission structures for the existing 132 kV transmission line and the proposed 330 kV transmission line.
    - A new 60 m wide easement for a 500 m section where the transmission line does not follow the existing easement near the Mount Piper 330 kV/500 kV substation.
    - A new 60 m wide easement for a 3 km section where the transmission line does not follow the existing easement near the Wallerawang substation.
- Demolition and removal of redundant timber support poles from sections of the existing 132 kV transmission line 94E, occurring in the shared easement with the 330 kV transmission line, and incorporation of the existing 132 kV transmission line conductors onto the new transmission structures.
- Adjustment of transmission structures in the vicinity of the Mount Piper 330 kV/500 kV substation to minimise crossover of transmission lines.
- Use of existing roads and access tracks where possible, and establishment of new and upgraded access tracks to the transmission line easement for construction and maintenance during operation.
- Other ancillary works required to support construction of the project, including establishment of temporary laydown areas and site compounds.

These key project components are further described in Section 3.

1.2. Project context

The area through which the project would be constructed is bounded by the Castlereagh Highway to the north, the Coxs River to the east, Gardens of Stone State Conservation Area (SCA), Pipers Flat Road to the south, and the Mount Piper Power Station to the northwest. It is located approximately 14 km north-west of Lithgow situated on the western fringes of the Blue Mountains. The regional and local context of the project is shown in Figure 1 and Figure 2 respectively.

The Mount piper 330 kV/500 kV and Wallerawang 330 kV substations are situated in the towns of Portland and Wallerawang respectively and are approximately 8 km apart. The Mount Piper 330 kV/500 kV substation is located directly south of the Mount Piper Power Station and is owned and operated by EnergyAustralia.

The Wallerawang 330 kV substation is located directly south of the Main Western Railway Line and south-east of the Wallerawang Power Station, which was decommissioned in 2014. Greenspot has plans to develop the decommissioned Wallerawang Power Station site into a multi-use precinct, including a battery energy storage facility and employment zone.

Two existing transmission line easements currently traverse the Gardens of Stone SCA between the two substations of Mount Piper and Wallerawang. Transmission line 70/71 (330 kV) runs in an easement to the south, while transmission line 94E (132 kV) runs in an easement to the north (Figure 3). Transmission line 94E is supported on timber 'H' poles through the project area ranging in height from 11 m to 23 m (average height of 18.5 m) (Figure 4).

The Gardens of Stone SCA within the project area is a separate parcel of land, located about 3 km west of the larger Gardens of Stone SCA land parcel. The two conservation areas are separated by the township of Lidsdale, various land uses including mining, agriculture and the Castlereagh Highway. The smaller section of the SCA within the project area was added to the Gardens of Stone SCA from the former Ben Bullen State Forest in April 2022. This section of the Gardens of Stone SCA is bordered by the Centennial Springvale Coal Services facility. The larger Gardens of Stone estate, which is outside the project area, is well known for its significant cultural and scenic landscapes and heritage values and is managed by the NSW National Parks and Wildlife Service (NPWS) through the *Gardens of Stone State Conservation Area – Plan of Management* (NPWS 2022). Consideration would be given to the objectives and management outcomes of the plan during the assessment of this project.

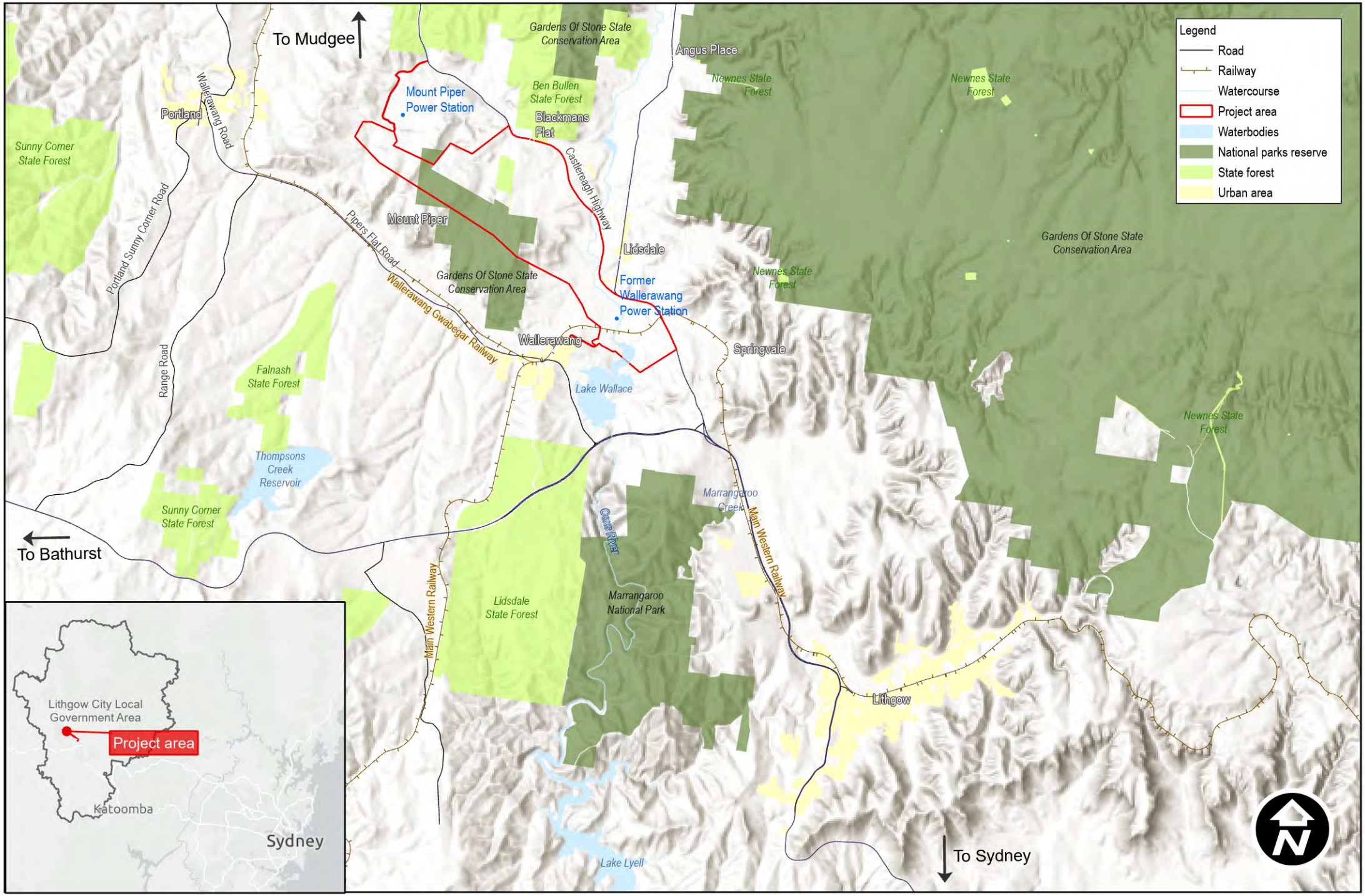

FIGURE 1 - Regional context

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FIGURE 2 - Local project context and project area

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Data source: Construction boundary, substation - GHD2023; Transmission route, site access - TransGrid2023; Light Gray Base: Esri, TomTom, Garmin, FAO, NOAA, USGS;Tiled service layer: © OpenStreetMap (and) contributors, CC-BY-SA;Light Gray Reference: Esri, TomTom, Garmin, FAO, NOAA, USGS. Created by: schen4

Figure 3 Existing infrastructure in the easements near Mount Piper: timber poles supporting the 132 kV Line 94E (left) and steel transmission structures supporting the 330 kV Line 70/71 (right).

Figure 4 Existing maintenance track along the easement of the 132 kV Line 94E, showing timber ‘H’ support poles

1.3. Project justification

The Australian and NSW governments have both established targets to achieve net-zero emissions by 2050. Achieving these targets requires low emissions technologies to be deployed at scale across all sectors of the economy, including the electricity generation sector, currently Australia's largest source of greenhouse gas emissions.

The NSW Transmission Infrastructure Strategy (DPE 2018) aims to engage the private sector to invest in priority energy infrastructure projects, which can deliver low-cost, clean and reliable energy to consumers. As part of the Strategy, the NSW government has developed a plan to establish five REZs to increase renewable energy generation, reduce carbon emissions, and help deliver lower wholesale electricity costs to consumers. These five REZs are identified in Figure 5. The CWO REZ, being the first REZ established, is planned to generate at least 3,000 MW by the mid-2020s. The Energy Corporation of NSW (EnergyCo) is responsible for leading the delivery of REZs as part of the NSW Government's Electricity Infrastructure Roadmap (DPIE, 2020).

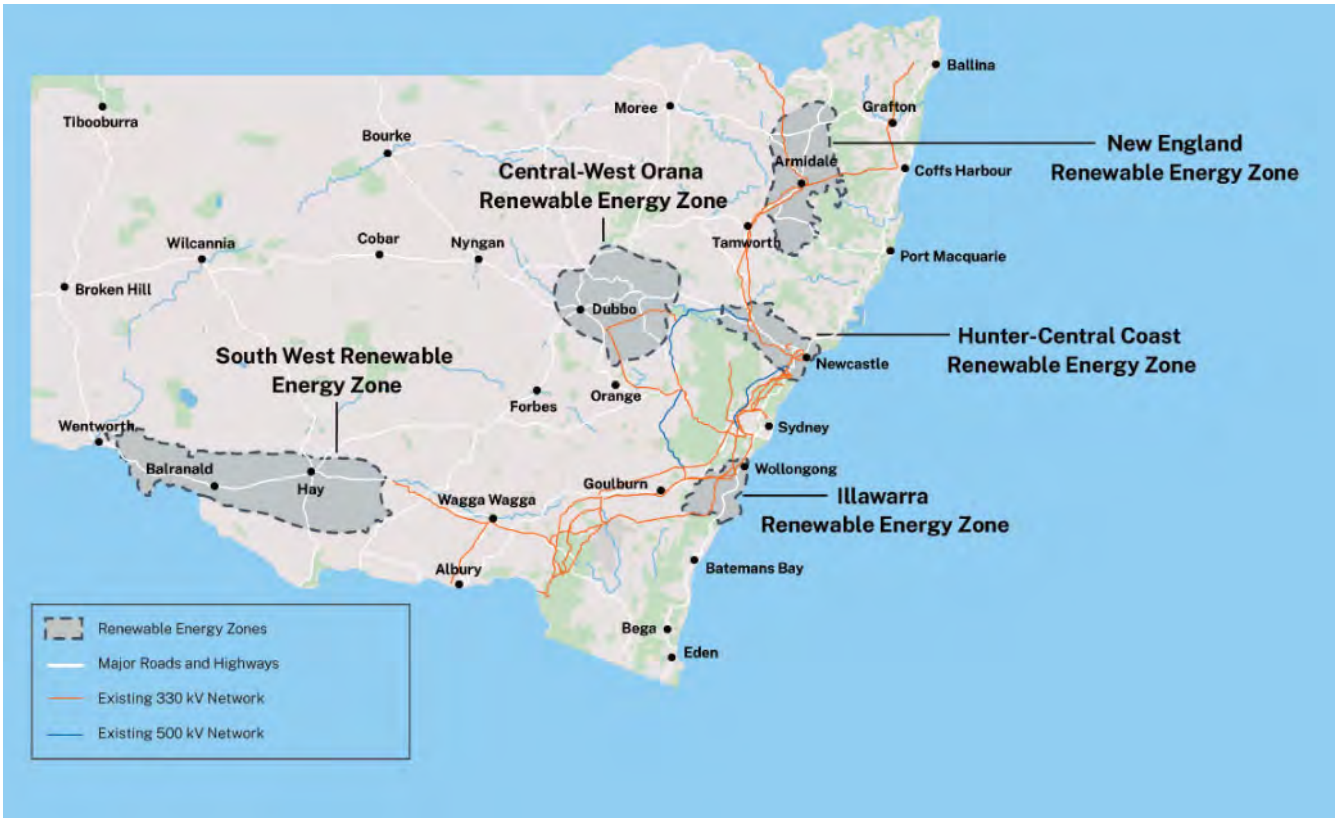

Figure 5 NSW Renewable Energy Zones (EnergyCo 2024)

Current interest in new energy generation projects in the National Energy Market (NEM) exceeds existing transmission network capacity in several locations. The transmission grid therefore needs targeted augmentation to balance energy resources and unlock REZs in new regions, given the existing transmission network is not capable of transferring the scale of new electricity generation identified for the Central-West Orana REZ.

The existing transmission line connections between Mount Piper and Wallerawang substations, which include transmission lines 70/71 and 94E, have a combined capacity of approximately 1,550 MVA. To

provide sufficient capacity and reliability to enable the forecast output from renewable generators in the CWO REZ, additional transmission capacity is required.

The project is identified in the NSW Network Infrastructure Strategy (EnergyCo 2023) and also supports the key tenets of the NSW Electricity Infrastructure Roadmap (DPIE 2020). The Roadmap identifies that the expansion of renewable generation must be accompanied by increased transmission capacity to transfer power from REZs in inland NSW to key demand centres.

For the reasons outlined above, Transgrid has submitted a request to the Minister for Planning and Public Spaces to declare the project Critical State Significant Infrastructure, as detailed in Section 4. Further information on the strategic context for the project is provided in Section 2.

1.4. The proponent

Transgrid is the proponent for the project (trading as the NSW Electricity Networks Operations Pty Ltd as a trustee for NSW Electricity Operations Trust) and an electricity supply authority, i.e. a public authority, for the purposes of the NSW *Environmental Planning and Assessment Act 1979*.

Transgrid operates and manages over 13,000 km of high voltage transmission lines and 121 substations in NSW and the Australian Capital Territory (ACT), with connections to Victoria and Queensland. Transgrid manages the network that is the backbone of the NEM, which enables energy trading between Australia's three largest states along the east coast.

Company details	
Company Name	Transgrid (t/a NSW Electricity Networks Operations Pty Ltd)
ABN	70 250 995 390
Registered address	180 Thomas Street, Haymarket, NSW, 2000

1.5. Project objectives

The key objective of the project is to support the NSW Government's delivery of the CWO REZ and the State's policy and strategies, including:

- Provide transmission infrastructure of sufficient capacity and reliability to support the change in power flows from the CWO REZ to main load areas.
- Help meet the government's net zero emissions goals.
- Enact the Australian Energy Market Operator's actionable elements as presented in the 2020 Integrated System Plan (AEMO 2022).
- Deliver new and upgraded transmission infrastructure at a modest cost.

1.6. Purpose and structure of this report

This report presents a description of the project and a preliminary assessment of potential impacts to the environment and community. The matters and issues identified during the scoping phase will be addressed in the Environmental Impact Statement (EIS).

This report has been prepared to support an application to the NSW Department of Planning, Housing and Infrastructure (DPHI) to request the Secretary's Environmental Assessment Requirements (SEARs) and has been developed in accordance with the *State significant infrastructure guidelines – preparing a scoping report* (DPE 2022a). The report is structured as follows:

- **Section 1 – Introduction**: Outlines the background of the project, information about the proponent, the purpose and structure of the report.
- **Section 2 – Strategic context**: Provides an overview of the strategic and regulatory context for the project, the justification for the project and the alternatives considered. An assessment of the strategies to minimise project impacts is also provided.
- **Section 3 – Project description**: Provides a brief description of the project, and an outline of the key components of the project.
- **Section 4 – Statutory context**: Outlines the principal legislation and other statutory approvals applicable for the project, such as key planning policies.
- **Section 5 – Engagement**: Presents an overview of the stakeholder engagement and consultation activities conducted regarding the project. Future engagement activities are also outlined.
- **Section 6 – Preliminary environmental assessment**: Provides a preliminary assessment of the potential impacts of the project, and the proposed scope for further assessment in the EIS.
- **Section 7 – Conclusion**.

2. Strategic context

2.1. National policies

2.1.1. Integrated System Plan 2022

In June 2022, the Australian Energy Market Operator (AEMO) published the 2022 Integrated System Plan (2022 ISP), a whole-of-system plan, which provides a coordinated generation and transmission investment plan to transition the NEM over the next 30 years.

Under the 'Step Change' scenario, identified in the 2022 ISP as the most likely scenario, the NEM will need to cater for significant investment in generation capacity, storage, firming generation and transmission augmentation, as coal-fired generation ceases. The scenario predicts that 23 gigawatts (GW) of coal-fired generation will cease (14 GW by 2030), and 45 GW/620 gigawatt hours (GWh) of new battery and hydro storage (distributed and utility-scale) will be required to help firm the renewable energy sources entering the market.

To support new storage, there will also be an increased need for the network to transmit electricity from where it is produced to where it is needed, to maximise the value of geographic diversity and efficiently share resources across the NEM.

In addition to the 2022 ISP, AEMO published the Draft 2023 Transmission Expansion Options Report for consultation in May 2023. This report forms background information to AEMO's upcoming 2024 Integrated System Plan. The Draft 2023 Transmission Expansion Options Report identifies the need for the project and anticipates that *"an additional 330 kV single-circuit line from Mount Piper to Wallerawang"* will be part of the Central-West Orana REZ Transmission Link project.

The project would be developed consistent with and for the purpose identified in the 2022 ISP. This new 330 kV transmission line is the project outlined in this Scoping Report.

2.2. NSW policies

2.2.1. NSW Electricity Infrastructure Roadmap 2020

The NSW Electricity Infrastructure Roadmap (DPIE, 2020) (the Roadmap) is the NSW Government's plan to transition the electricity sector from fossil fuel generation towards renewable generation and deliver the major infrastructure needed to modernise our electricity system and power the economy. With this transition to renewable energy, there is a need to augment the existing electricity transmission network to strengthen connections between areas of renewable energy generation and major electricity demand centres, such as Greater Sydney. Under the Roadmap, consumers will benefit from low cost, clean electricity generation backed up by 24-hour power sources.

The Roadmap is a coordinated framework to modernise the electricity system and deliver new generation, transmission, long duration storage and firming that will also deliver on the ambition of net zero emissions by 2050.

The modernisation of the electricity system will be built on five pillars:

1. Driving investment in regional NSW.
2. Delivering energy storage infrastructure.
3. Delivering Renewable Energy Zones.
4. Keeping the grid secure and reliable.
5. Harnessing opportunities for industry.

The Roadmap identifies that the expansion of renewable generation must be accompanied by increased transmission capacity to bring these new, clean sources of power from REZs in inland NSW to demand centres that are predominantly located along the eastern, coastal regions of the State.

EnergyCo is responsible for leading the delivery of REZs as part of the Roadmap.

2.2.2. NSW Network Infrastructure Strategy 2023

The NSW Network Infrastructure Strategy (EnergyCo 2023) is a strategy for the practical coordination of NSW network infrastructure to connect new generation, firming and storage in NSW's five REZs. The strategy proposes options to add between 14 GW and 24 GW of network capacity over the next 20 years, in the three categories of 'deliver now', 'secure now' and 'plan for the future'.

Network infrastructure in the 'deliver now' category is to be progressed as quickly as possible for delivery by 2033 at the latest. This infrastructure is required in the near term to support grid-scale generation and storage in REZs and maintain supply of electricity as coal-fired plants close. The NSW Network Infrastructure Strategy identifies the network arrangements required to meet the declared, modelled and potential long-term needs of the CWO REZ.

Network infrastructure identified in the 'deliver now' category for the CWO REZ includes a new 330 kV transmission line between the Mount Piper and Wallerawang substations. This new 330 kV transmission line is the project outlined in this Scoping Report.

2.2.3. NSW Draft Transmission Guideline

The former NSW DPE (now Department of Planning, Housing and Infrastructure (DPHI)) released a Draft Transmission Guideline in November 2023. This guideline has been prepared to support major upgrades and expansions to the NSW transmission network and provides the community with clear and consistent information and guidance on the planning and development of this infrastructure. The EIS for the project would be prepared in accordance with the final version of the Transmission Guideline, once it is released.

2.3. Local and regional policies

2.3.1. Central West and Orana Regional Plan 2041

The Central West and Orana Regional Plan 2041 (DPE 2022b) is intended to guide sustainable growth in the region, including Lithgow, through a strategic framework, vision and direction for land use planning for the next two decades. The Regional Plan addresses the future needs for housing, jobs, infrastructure, a healthy environment, access to green spaces and connected communities. The Plan is supported by Local Strategic Planning Statements (LSPS) that set a 20-year vision that will guide Councils on land use planning and enhancing values for community.

The Regional Plan recognises the importance of the REZ and emphasises the importance of making 'the best use of existing transmission infrastructure, transforming places such as Lithgow into a clean energy and logistics hub'. This project is in line with the Regional Plan and utilises existing easements, as much as possible.

Key priorities for the councils in the region are outlined in the Regional Plan. Five key priorities are identified for Lithgow City Council including the following which is relevant to the project:

- Identifying new economic opportunities to leverage Lithgow's existing transport, mining and energy generation and transmission infrastructure and network connectivity, including exploring opportunities for renewable energy, high-tech manufacturing, green hydrogen and energy storage (including pumped hydro and batteries).

2.3.2. Lithgow Strategic Community Plan 2035

In November 2022, Lithgow City Council published the Strategic Community Plan 2035 that sets out the community's vision over the next decade for a sustainable and viable region. The Plan includes the '*Lithgow 2040 Local Strategic Planning Statement Vision*' and identifies areas of focus including transitioning the local economy to strengthen it and enhancing the natural environment.

The Strategic Community Plan is based on community engagement feedback and research. Through this feedback, a priority issue for the local government area (LGA) over the next decade is setting a direction for transition from a coal-based economy.

The project contributes to this transition away from a coal-based economy by developing the required transmission infrastructure to support the CWO REZ and renewable generators located there.

2.4. Site setting

The project is located in the Central West and Orana region of New South Wales, about 14 km north-west of Lithgow. The project area largely aligns with existing transmission line infrastructure between the Mount Piper 330 kV/500 kV and Wallerawang 330 kV substations. It traverses a mixture of land uses including agriculture, industry and native vegetation (including land forming part of the Gardens of Stone State Conservation Area).

2.4.1. Land use and infrastructure

Key land uses and infrastructure within and adjacent to the project area between the Mount Piper (330kV/500kV) and Wallerawang (330kV) substations includes the following which are shown on Figure 1 and Figure 2:

- Town of Wallerawang, located about 300 m south of the project area at its closest point
- Town of Lidsdale, located about 100 m east of the project area at its closest point
- Town of Portland, located about 3.5 km west of the project area at its closest point
- Former Wallerawang Power Station, which was decommissioned in 2014
- Mount Piper Power Station operated by EnergyAustralia
- Centennial Springvale Coal Services facility
- Agricultural land used for grazing
- Castlereagh Highway to the north, connecting Lithgow and Mudgee
- Main Western Railway Line connecting Lithgow and Bathurst

- Gardens of Stone SCA.

2.4.2. Natural environment

The project area is generally undulating, with an elevation difference of up to 100 m between the highest and lowest points. Land within the immediate vicinity of the proposed transmission line is mostly cleared as a result of being part of existing transmission line easements.

The project area traverses a portion of the Gardens of Stone SCA. The SCA includes areas of undisturbed and disturbed vegetation and also existing infrastructure such as existing transmission lines and access tracks.

The Coxs River flows from the north-east into the project area, passing directly adjacent to the former Wallerawang Power Station and the Wallerawang 330 kV substation before flowing into Lake Wallace south of the project area.

2.4.3. Key risks and natural hazards

Key risks and natural hazards associated with the project area include:

- Bushfire – the majority of the project area is mapped as bushfire prone land
- Flooding – the proximity of the project area to Coxs River indicates a potential risk of flooding and inundation
- Mine subsidence – the area surrounding the site has a long history of underground coal mining. A section of the shared easement is located over an area of historic underground coal workings.

2.5. Alternatives and options considered

2.5.1. Strategic alternatives

Transgrid, in collaboration with EnergyCo, has conducted network studies to define strategic alternatives and options to augment the existing transmission network. There are currently two key network connections needed to support the renewable generator growth in the CWO REZ; one from the Wollar substation to Newcastle via the Bayswater Power Station, and one from the Mount Piper Power Station to Sydney via Wallerawang. This project is proposed to address the second of these two key connections by providing a new 330 kV transmission line between Mount Piper and Wallerawang.

Concurrently with this project, EnergyCo proposes the CWO REZ Transmission Project, which proposes new transmission infrastructure in and around the Wollar substation. EnergyCo's project includes the development of new, twin double circuit 500 kV transmission lines between Wollar and proposed new substations at Merotherie and Elong Elong, across the LGAs of Warrumbungle, Mid-Western Regional, Dubbo Regional and Upper Hunter Shire. EnergyCo's project is being assessed by DPHI as State Significant Infrastructure (SSI-48323210).

The Mount Piper and Wallerawang Transmission Line Project forms one of many projects required to increase the transmission capacity between renewable energy generators in the CWO REZ to areas of major electricity demand. Transgrid continues to work with EnergyCo to support the NSW Government's delivery of the CWO REZ.

A 'do nothing' alternative was also initially considered. The 'do nothing' alternative would involve not constructing and operating the project. Not undertaking the project would mean the energy from the CWO

REZ would not be available to be used by residents and businesses in the energy demand centres. The 'do nothing' alternative is therefore considered unacceptable as it would be inconsistent with the various Australian and NSW Government policy documents identified in Sections 2.1 and 2.2, that identify the need for the project.

2.5.2. Route options

Transgrid adopted a structured route selection process, summarised in Figure 6, to assess potential route options for the proposed transmission line. Early phases of the project's design development have included an iterative process of identifying and evaluating route options within the broader area of interest, seeking stakeholder and community feedback and using the evaluation and feedback process to refine options and determine a preferred transmission route. A detailed Preferred Route Report (Transgrid 2023) has been prepared to document the route selection process, which is available on Transgrid's website. Community and stakeholder feedback played a key role in shaping the preferred route .

Within the broader area of interest, five main route options were identified connecting the existing Mount Piper 330 kV/500 kV substation and Wallerawang 330 kV substation. This included Options A, B, C, D and E, as shown in Figure 7. These main route options were broken into further sub-options to differentiate and avoid local constraints. After an initial assessment and consideration of stakeholder feedback, an additional four sub-options were investigated. Overall, eleven possible routes were assessed including Options A-1, A-2, B-1 to B-5, C-1, C-2, D and E. Options A-1, A-2, D, and E were discontinued early in the assessment phase due to environmental, cost and operational constraints.

The route selection and assessment process considered technical, environmental, social and financial factors, including:

- Design efficiency and constructability
- Alignment to existing infrastructure, such as roads and transmission lines
- Cost constraints
- Network resilience
- Community and stakeholder views
- Land use considerations, including existing and planned use for agriculture, tourism and industry
- Aboriginal heritage, including significant cultural heritage sites
- Biodiversity, including flora and fauna
- Hazards such as bushfire and extreme weather
- Topography, such as gradient and valleys
- Other environmental features like soils and hydrology

The capital cost of each option has been estimated at a desktop level based on 2023 database rates, industry data from previous and current projects, design information available at this stage of the project and high-level technical assumptions.

Phase	Phase 1 Identify need and potential technical options	Phase 2 Evaluate technical options | area of interest	Phase 3 Corridor identification	Phase 4 Preferred route identification	Phase 5 Environmental assessment	Phase 6 Detailed design and easement finalisation
Diagrammatic Example						
Area		Typically between 10 and 50 kilometres (depending on project scale)	Typically between one and 10 kilometres wide	Typically up to around one kilometre wide	Typically up to 200 metres wide (with the potential for wider area(s) up to one or more kilometres wide where further investigation may be required)	Typically around 80 metres (depending on project requirements)
Purpose	To confirm the project requirements and identify technical options to address those requirements	To investigate the range of technical options in order to define a prudent and efficient project solution that aligns with the identified functional requirements for the project within a broad area of interest.	To identify and assess feasible corridor or site location options within the area of interest based on community/stakeholder feedback and high level environmental, technical, social and cost considerations in order to identify a preferred corridor or site area.	To identify a preferred route for the project that can be used to undertake appropriate environmental assessment.	To further refine the route through specific landowner consultation and additional data gathered during the environmental impact assessment.	To finalise the project easement or site boundary in consultation with the landowner.

Figure 6 Transgrid's transmission line route selection process

A summary of the options and the key outcomes of the evaluation is provided in Table 1.

Table 1 Summary of route options evaluation

Option ID	Option description and evaluation
A-1 and A-2	Options A-1 and A-2 are located to the south, adjacent to the existing 330 kV Line 70/71. Option A-1 takes a route north and east of the former Wallerawang Power Station while Option A-2 takes a route west and south of the former Wallerawang Power Station, Brays Lane and the Wallerawang Substation. These options both require a new 60 m easement through vegetated areas within the Gardens of Stone SCA. A key factor that resulted in these options being considered less acceptable when compared to the other options was the removal of a greater area of vegetation compared to other options, resulting in potentially significant biodiversity impacts and offsets. These were the lowest cost options considered, with the highest biodiversity impacts.
B-1	Option B-1 exits the Wallerawang substation following the 132 kV Line 94E to the northwest. This option crosses over Main Street near the entrance to the Wallerawang township. The key factors resulting in Option B-1 being considered less acceptable compared to other options included the proximity to the Wallerawang township, the potential for increased visual and other impacts on sensitive receivers compared to other options. The cost of this option is approximately 22% greater than the lowest cost option.
B-2 and B-4	Options B-2 and B-4 generally head northeast from the Wallerawang substation and follow the 330 kV Line 70/71, then follow the 132 kV Line 94E with a diversion into the Centennial Springvale Coal Services facility, north of the Gardens of Stone SCA. On initial consideration, Options B-2 and B-4 did not present any potentially unacceptable impacts on the environment or sensitive receivers. They were considered further and evaluated in a multi-criteria analysis (together with Option C-2, described further below). Options B-2 and B-4 are very similar; both requiring widening of the existing 45 m easement through the Gardens of Stone SCA to achieve a 60 m wide easement. Overall, Option B-4 achieves this by widening the easement 15 m to the north into the Centennial Springvale Coal property, whereas Option B-2 achieves this by adding 7.5 m to each side of the existing 45 m easement (i.e. into both the Centennial Springvale Coal property and the Gardens of Stone SCA). Option B-4 therefore results in less vegetation removal within the Gardens of Stone SCA than Option B-2. This was a key differentiating factor resulting in Option B-2 being considered less acceptable. The costs of these options are approximately 36% and 48% greater than the lowest cost option respectively, however had less social, environmental and biodiversity impacts. An underground variant of Option B-4 was estimated to be almost five times the cost of the above ground Option B-4.
B-3	Option B-3 heads northwest from the Wallerawang 330 kV substation and generally follows the 330 kV Line 70/71 for the first 3 km. It then follows the 132 kV Line 94E with a diversion into the Centennial Springvale Coal Services facility, north of the Gardens of Stone SCA. This option utilises the southern area of the Centennial Springvale Coal Services facility, including space currently occupied by a Reject Emplacement Area. Stakeholder consultation with Centennial Coal indicated that relocating the Reject Emplacement Area would render the facility inoperable. As a result, this option was not considered further. The cost of this option is approximately 50% greater than the lowest cost option.

Option ID	Option description and evaluation
B-5	Option B-5 was developed following stakeholder feedback received on Option B-4. Option B-5 was developed specifically to avoid the Gardens of Stone SCA. It does this by following the same route as Option B-4, but then traverses further north when it reaches the Gardens of Stone SCA, crossing into the Centennial Springvale Coal Services facility and private landowners. This option utilises the southern area of the Centennial Springvale Coal Services facility, including space currently occupied by a Reject Emplacement Area and coal conveyor belt. Consultation with Centennial Coal indicated that relocating the Reject Emplacement Area and coal conveyor belt would render the facility inoperable. The detour moves the transmission line approximately 100 m closer to a private dwelling. It contains sharp bends on the transmission line, crosses above a local dam, which impacts access and transmission structure design. As a result, this option was not considered further. The cost of this option is approximately 67% greater than the lowest cost option.
C-1 and C-2	Option C-1 exits the Wallerawang substation following the 132 kV Line 94E to the northwest. This option is similar to Option B-1 and also crosses over Main Street near the entrance to the Wallerawang township. The key factors influencing Option C-1 being less acceptable compared to other options included the proximity to the Wallerawang township, the potential for visual and other impacts on sensitive receivers. Option C-2 exits northeast of the Wallerawang 330 kV substation and is adjacent to the existing 330kV Line 70/71, before heading southwest after Main Street (generally avoiding the Gardens of Stone SCA), then traversing agricultural land to the south along Pipers Flat Road, to where it then connects to the Mount Piper 330 kV/500 kV substation. Option C-2 lies outside of the Gardens of Stone SCA. On initial consideration, Option C-2 did not present any potentially unacceptable impacts on the environment. Option C-2 was considered further and evaluated in a multi-criteria analysis together with Options B-2 and B-4. On balance, the key factors resulting in Option C-2 being less preferred compared with other options included the potential significant removal of vegetation for a new easement adjacent to the existing 500 kV line and the greater impacts on private landowners. Option C-2 was therefore not considered further. The costs of these options are approximately 26 and 57% greater than the lowest cost option respectively.
D and E	Options D and E considered two underground routes. Underground transmission lines are complex and expensive to construct and maintain. Various factors were considered across both options, including a comparative analysis against aboveground options. The key factor rendering the underground options unfeasible was the potential cost being up to six times the cost of overhead lines. As the cost of this project will be passed onto consumers, implementing these options at such a cost premium to aboveground options would not meet the test of being prudent and efficient investment for consumers. The costs of these options are approximately four to six times the cost of the lowest cost option.

Following a consideration of technical, environmental, social and economic factors, combined with stakeholder consultation feedback (see Section 5.3), Option B-4 is considered the preferred option. In particular it:

- impacts the smallest number of landowners compared to other options
- utilises the existing easement as far as possible
- has the least impact on private properties

- minimises impacts on the Gardens of Stone SCA (compared to other options within the SCA), and therefore potentially minimises biodiversity impacts; and
- is more cost-effective when compared to an underground transmission line.

2.5.3. Route refinement

Transgrid is continuing to consult with Centennial Coal and NPWS to confirm the alignment of the shared easement near to the Springvale Coal Services facility and the Gardens of Stone SCA respectively. Further minor amendments of the route are expected to occur as Transgrid proceeds through the detailed design phase.

2.5.4. Strategies to avoid or minimise impacts

A key strategy to avoid or minimise potential impacts during the route selection process was to consider proximity to sensitive receivers, potential visual impacts, utilising disturbed areas as much as possible to minimise potential heritage impacts and direct impacts on biodiversity within the Gardens of Stone SCA.

Substantial impacts are avoided on biodiversity, sensitive receivers and visual amenity by adopting route Option B-4. This avoids the majority of vegetation impacts associated with establishing a new easement.

The preferred option maximises the opportunity to utilise areas already developed for transmission infrastructure and existing easements. Ongoing stakeholder consultation on the location of easement widening would also aim to further reduce biodiversity impacts.

FIGURE 7 - Summary of route option corridors

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Data source: Construction boundary, substation - GHD2023; Transmission route, site access - TransGrid2023; Tiled service layer: © OpenStreetMap (and) contributors, CC-BY-SA;Nearmap WMS Server: . Created by: schen4

3. Project description

3.1. Design and operational components

The key elements of the project are detailed in Table 2 and shown on Figure 8. The description is indicative of the project based on the current status of the design. There are likely to be some changes to the design as the project develops in consultation with affected landowners, for example the locations of construction compounds, laydown areas, access tracks and the easement. The design will be further refined during the EIS process and detailed design phase to further reduce identified impacts where possible.

Table 2 Key project elements (subject to detailed design)

Proposed Key Feature	Description
Transmission line and transmission structures	Approximately 8 km of new 330 kV transmission line and double circuit transmission structures between the existing Mount Piper and Wallerawang substations, comprising: • Transmission structures ranging in height from about 30 to 60 m. The structure type may include a combination of towers and poles, which will be confirmed during detailed design. • Modification of some existing transmission structures to take the additional angles and loadings of the lines. • Stringing new overhead conductors and earth wires on both circuits of the new transmission line. • Demolition and removal of redundant timber poles and conductors within a section of the existing 132 kV Line 94E, occurring in the shared easement with the 330 kV transmission line, and incorporation of the existing 132 kV transmission line conductors onto the new transmission structures. • Minor modifications to the location of some existing timber poles of the 132 kV Line 94E nearest to the Mount Piper and Wallerawang substations. • Adjustments to existing transmission structures (Line 70/71) to cater for the new 330 kV transmission line (at Mount Piper substation). • Installing an optical ground wire (OPGW) for communications and earthing/ grounding of the new 330 kV transmission line.
Easement	• General increase in width of the existing 132 kV Line 94E easement by 15 m, from 45 m to 60 m, in parts, to form a shared easement for the new 330 kV transmission line. The shared easement would be approximately 4.5 km in length and largely occurs through the Gardens of Stone SCA. • New 60 m wide easement: - For a 500 m section of the route approaching the Mount Piper substation between Castlereagh Highway and 132 kV Line 94E. - For the first 3 km of the route from the Wallerawang substation.
Access tracks	• Access to each transmission structure would be required during construction and operation. Wherever possible, existing roads, tracks and other existing disturbed areas would be used to minimise vegetation clearing or disturbance. This may include utilising existing access through Centennial Coal operational areas, performing upgrades to existing tracks and roads, and constructing temporary waterway and railway crossings. • Access routes to the transmission structures will be developed further as the design progresses. While indicative access tracks are shown in Figure

Proposed Key Feature	Description
	8, they will evolve as the design progresses in consultation with impacted landowners.

3.2. Construction

Construction of the project would be undertaken in stages over a period of up to 24 months. Construction is anticipated to commence at the end of 2025, subject to approvals.

An indication of the construction staging is provided in Table 3 and would be confirmed and developed further by the construction contractor, prior to construction commencing.

Table 3 Indicative construction staging and activities

Activity	Description
Pre-construction enabling works	• Establishment of construction compound sites and laydown areas at Mount Piper and Wallerawang substations. Compound sites would include site offices, crib rooms and ablutions. • Installation of environmental controls, including site demarcation, sediment fencing and exclusion zone signage. • Relocation of any existing services and utilities, e.g. Telstra telecommunication assets. • Upgrade of existing tracks, creating new access tracks (if required) and stabilisation of these tracks required for construction access. This may also include constructing temporary waterway and railway crossings. • Clearing of vegetation identified for removal. • Enabling works will be carried out in accordance with an Enabling Works Management Plan.
Civil works	• Earthworks and establishment of construction benches for each transmission structure. • Delivery of materials, structural elements and conductors. • Construction of footings and foundation works for new transmission structures which can include boring, excavation, steel fabrication, and concrete pours.
Structure, conductors and OPGW installation	• Assembly and erection of transmission structures including fittings and insulators using crane(s) and elevated work platforms. • Replacement and adjustment to transmission structures and transmission lines that feed into the substations to avoid crossovers. • Setup of facilities and equipment adjacent to the transmission structures to pull the conductors from drums in sections. The number of sections required will be determined during detailed design. • Stringing of conductors and overhead earth wires (OPGW) for protection against lightning strikes and for telecommunications. • Installing earthing conductors.

Activity	Description
Demobilisation	• Removal of temporary buildings and structures. • Site restoration and stabilisation of construction benches, including removal of environmental controls. • Stabilisation of access tracks and maintenance for ongoing use. • Removal of any temporary waterway or railway crossings.

The workforce required for construction is expected to peak at about 100 workers, with an average workforce of about 30 workers (depending on the stage of construction).

Working hours are proposed to be across a 7 day work week, between 7am and 7pm. The construction methodology and construction working hours will be further developed during design development and refined based on stakeholder consultation outcomes and the results of the EIS noise impact assessment.

3.3. Commissioning

Prior to operation of the project, several pre-commissioning activities would take place. Key activities included in the pre-commissioning phase include:

- Testing of transmission line equipment.
- Earth testing.
- High voltage testing.
- High voltage equipment operational checks.
- Protection, control, and metering system testing.

3.4. Operation and maintenance

The new transmission line would be inspected by field staff and contractors on a regular basis, with other operational and maintenance activities occurring as required. Likely operation and maintenance activities include:

- Regular inspection (ground and aerial) and maintenance of electrical equipment.
- Vegetation maintenance along the easement.
- Fire detection system inspection and maintenance.
- Stormwater maintenance.

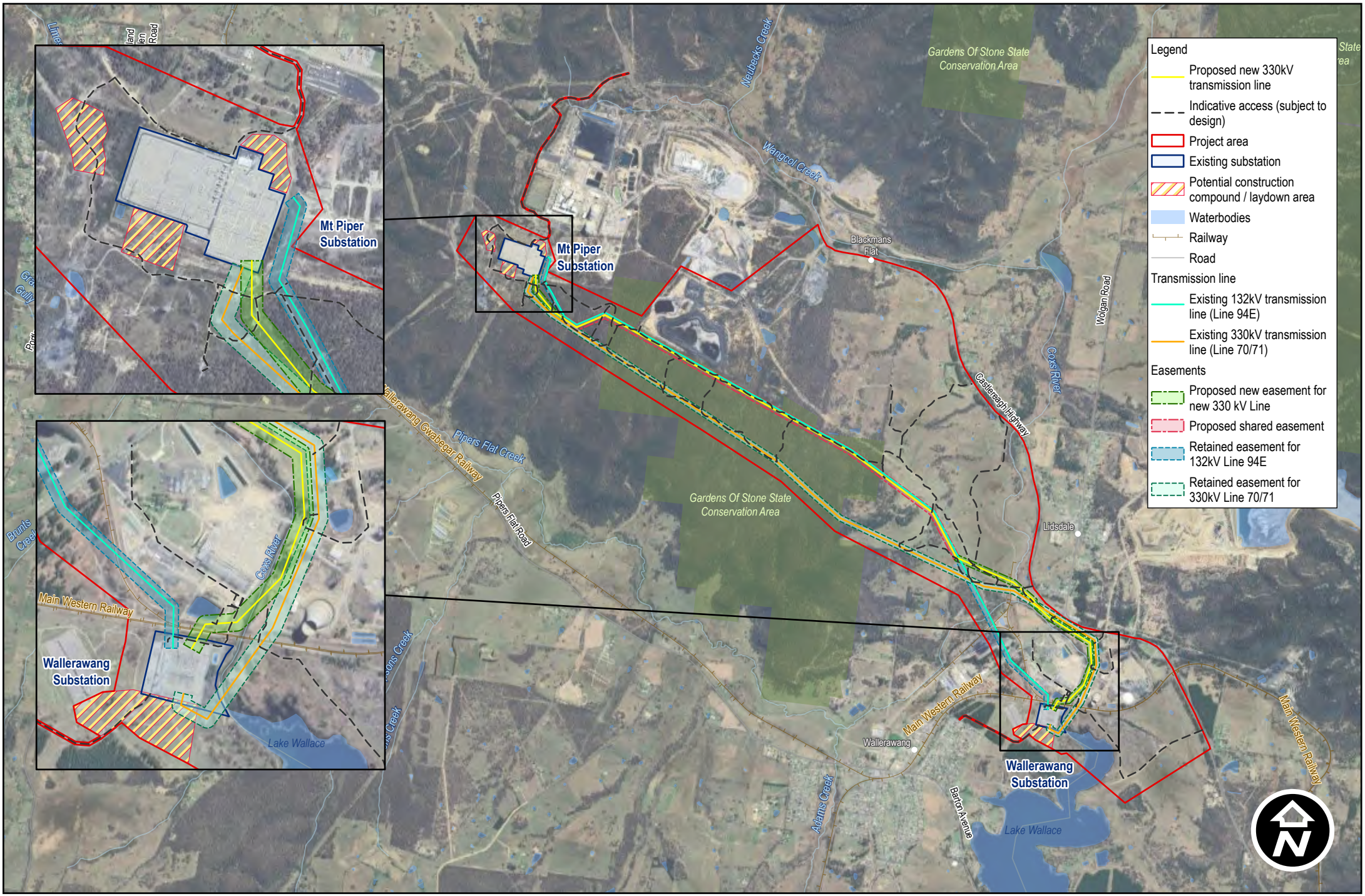

FIGURE 8 - Key project elements

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Data source: Construction boundary, substation - GHD2023; Transmission route, site access - TransGrid2023; Tiled service layer: © OpenStreetMap (and) contributors, CC-BY-SA. Created by: schen4

4. Statutory context

4.1. Overview

The key requirements of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) and the *Environmental Planning and Assessment Regulation 2021* (the Regulation) in relation to the approval and assessment of the project are summarised in Table 4.

Table 4 Summary of statutory requirements for the project

Matter	Comment
Power to grant consent	**State Environmental Planning Policy (Planning Systems) 2021** Section 5.12(2) of the EP&A Act provides that a state environmental planning policy may declare any development, or any class or description of development, to be State significant infrastructure (SSI). In accordance with section 5.14(1) of the EP&A Act, the consent authority for SSI is the Minister for Planning and Public Spaces. The following paragraph explains the basis on which the project is declared to be SSI. The project is permissible without consent by reason of section 2.44 of the T+I SEPP as development for the purposes of an electricity transmission network carried out by or on behalf of a public authority or an electricity supply authority. As an authorised network operator, Transgrid is prescribed as a public authority by Schedule 1 of the Regulation for this purpose. Transgrid is also an electricity supply authority for this purpose. Transgrid has formed the opinion that the project is likely to significantly affect the environment as a result of direct impacts on the Gardens of Stone SCA and biodiversity impacts. Accordingly, by reason of section 2.13(1) and Section 1(1) of Schedule 3 (General Public Authorities) of the Planning Systems SEPP, the project is declared to be SSI. As a result, the project requires an Environmental Impact Statement (EIS) to be prepared under Part 5, Division 5.2 of the EP&A Act. In accordance with section 2.4(3)(b) of the EP&A Act, the Minister for Planning and Public Spaces is the consent authority. Transgrid submitted a request for the project to be declared Critical State Significant Infrastructure (CSSI) in accordance with Section 5.13 of the EP&A Act to the Minister for Planning and Public Spaces on 22 February 2024.
Permissibility	**State Environmental Planning Policy (Transport and Infrastructure) 2021** Clause 2.44 of the Transport and Infrastructure SEPP provides that development for the purpose of an electricity transmission or distribution network may be carried out by or on behalf of an electricity supply authority or public authority without consent on any land. However, such development is only permitted without consent on land reserved under the *National Parks and Wildlife Act 1974* if the development meets the requirements of one of the subclauses of 2.44(1). New sections of easement and widening of an existing easement is required for the project. Widening of the existing easement is being undertaken in consultation with NPWS. The project is therefore considered permissible without consent. Transgrid is an Authorised Network Operator under the Electricity Network Assets (Authorised Transactions) Act 2015 and also fulfills the definition of a public authority in section 1.4(1) and Schedule 1 of the EP&A Act and Regulations respectively.

Matter	Comment
Other approvals	**Consistent approvals** An authorisation under certain legislation, identified in Section 5.24 of the EP&A Act, cannot be refused if it is necessary for carrying out an approved CSSI project and is to be substantially consistent with the CSSI approval. In relation to the project, these authorisations could include: • An approval under section 22 of the *Coal Mine Subsidence Compensation Act 2017*. • An environment protection licence under Chapter 3 of the *Protection of the Environment Operations Act 1997.* • A consent under section 138 of the *Roads Act 1993*. **Approvals not required** An authorisation under certain legislation, identified in Section 5.23 of the EP&A Act, is not required for approved CSSI. In relation to the project, these authorisations could include: • A permit under section 201, 205 or 219 of the *Fisheries Management Act 1994.* • An approval under Part 4, or an excavation permit under section 139, of the *Heritage Act 1977.* • An Aboriginal heritage impact permit under section 90 of the *National Parks and Wildlife Act 1974.* • A bush fire safety authority under section 100B of the *Rural Fires Act 1997.* • A water use approval under section 89, a water management work approval under section 90 or an activity approval (other than an aquifer interference approval) under section 91 of the *Water Management Act 2000*. **EPBC Act approval** The project may result in a significant impact on Matters of National Environmental Significance (threatened species and/or communities) under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), therefore a referral under the EBPC Act will be made for the project.
Pre-conditions to exercising the power to grant approval	***Biodiversity Conservation Act* 2016** Section 7.9 of the *Biodiversity Conservation Act 2016* (BC Act) provides that any application under Division 5.2 of the EP&A Act for CSSI must be accompanied by a Biodiversity Development Assessment Report, unless the Planning Agency Head or the Environment Agency Head determine that the proposed development is not likely to have any significant impact on biodiversity values. Section 7.14 requires the consent authority to take into consideration the likely impact of the proposed development on biodiversity values as assessed in the Biodiversity Development Assessment Report prepared as part of the EIS.

Matter	Comment
Mandatory matters for consideration	**Environmental Planning & Assessment Act 1979** Section 5.22 of the EP&A Act states that environmental planning instruments do not apply to SSI and CSSI projects. Notwithstanding, the following key environmental planning instruments will be considered in the EIS in so far as the SEARs require specific analysis or assessments to be undertaken. **State Environmental Planning Policy (Biodiversity and Conservation) 2021** The Biodiversity and Conservation SEPP contains provisions for the conservation and management of natural vegetation areas that provide habitat for koalas. Koalas have been previously recorded and/or are likely to occur within the locality (10 km) of the project area (Section 6.2). Potential impacts on koala populations will be assessed in the Biodiversity Development Assessment Report prepared as part of the EIS. **State Environmental Planning Policy (Resilience and Hazards) 2021** Section 4.6 stipulates that a consent authority must not consent to the carrying out of development unless: • It has considered whether the land is contaminated, and • If the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and • If the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose. The project would impact on a variety of current land uses, including existing uses for transmission lines, coal mining and agriculture. It is possible, but considered unlikely that the project would encounter contaminated land. **State Environmental Planning Policy (Biodiversity and Conservation) 2021** Part 6.5 of the SEPP (Biodiversity and Conservation) 2021 contains provisions to protect and manage healthy water catchments to deliver high quality water while permitting development that is compatible with that goal. The project occurs within the Sydney Drinking Water Catchment and the EIS will include consideration of the catchment objectives under section 6.58 of the SEPP (see Section 6.9).

5. Engagement

5.1. Engagement approach

Transgrid is committed to engaging with communities and other stakeholders through the life of the project. Our aim is to build trusted and beneficial relationships with the communities where we work. Transgrid recognises the vital role that landowners and our stakeholders have as we plan and deliver upgrades to our network.

The International Association of Public Participation (IAP2) has been endorsed by Transgrid as the best-practice approach to community engagement and our engagement approach is guided by the IAP2 public participation spectrum. The spectrum is an internationally recognised tool for planning public participation in infrastructure projects.

Our engagement approach is detailed in a project-specific Community and Stakeholder Engagement Plan.

The engagement approach also aligns with the principles outlined in *The Landholder and Community Better Practice Engagement Guide* (The Energy Charter 2021). Transgrid's approach for the project will ensure engagement is undertaken as follows:

- Has a clear purpose by:
  - Ensuring all communication contains clear information on the need for the project and how the project may affect stakeholders during planning, construction and operation.
  - Outlining how community and stakeholder feedback is sought and considered as part of the corridor refinement process, the environmental assessment process, design development and construction planning.
- Is accessible and inclusive by:
  - Providing community and stakeholders with just and fair opportunities to participate meaningfully in this process using different channels such as digital, hardcopy and in-person.
  - Using plain English language that is easy to understand.
- Is accurate and timely by:
  - Monitoring all potential community and social impacts and identifying these early so that they are understood and included in project planning.
  - Inviting consultation and feedback early to allow potential issues to be identified or avoided.
- Is genuine by:
  - Aligning engagement with the International Association for Public Participation (IAP2) framework of engagement.
  - Ensuring engagement and communication processes provide stakeholders with just and fair opportunities to understand and provide input into transmission planning, through the provision of consultation outputs.
- Closes the loop by:
  - Ensuring that the project planning, design and project approval processes are transparent and that it is clear how community and stakeholder feedback is considered in these processes.

- Shares other options by:
    - Actively listening to stakeholder feedback on route options, following up on queries and issues, and reporting back in a timely manner.

5.2. Engagement undertaken to date

As part of the initial route selection process, Transgrid undertook early consultation with key stakeholders from April 2022, to understand constraints and opportunities and to identify the preferred route options. Key stakeholders included NPWS, Greenspot, Energy Australia and Centennial Coal. Following this initial engagement, a proposed route (Option B-2) was identified and presented to the broader community in November 2022 for consultation and feedback, including at a community information session.

After receiving and analysing feedback, particularly from NPWS, four further route sub-options were identified and assessed. Further consultation occurred on each of these sub-options prior to identifying Option B-4 as the preferred route (see Section 2.4). The following stakeholders were provided detailed briefings and/or regular meetings in 2023 to inform them of the route selection process and project progress:

- Centennial Coal (owner of Springvale Colliery and Ivanhoe Coal Pty Ltd)
- Banpu Energy
- National Parks and Wildlife Service
- EnergyAustralia
- Greenspot
- WaterNSW
- Transport Asset Holding Entity of NSW
- UGL Regional Linx
- Relevant private landowners
- Lithgow City Council
- NSW Member for Bathurst and Federal Member for Calare
- Bathurst Local Aboriginal Land Council
- Warrabinga Native Title Claimants Aboriginal Corporation
- Mingaan Wiradjuri Aboriginal Corporation
- Environmental advocacy groups.

Further details of the consultation conducted as part of the preferred route selection process can be found in the Preferred Route Report in Appendix B.

In addition, Transgrid has been actively engaging with EnergyCo since April 2022. On a monthly basis, Transgrid meet with EnergyCo's stakeholder and engagement team providing project updates. Outside of these meetings, EnergyCo are advised via email each time a significant project milestone occurs.

5.2.1. Key stakeholders

Transgrid has identified key stakeholders for the project as outlined in Table 5. Engagement and consultation activities are planned for the duration of the project (see Section 5.5), with some of these stakeholders already consulted to inform the selection of the preferred route option.

Table 5 Key stakeholders identified

Stakeholder group	Stakeholder
Customer (project partner)	EnergyCo NSW
Project approval authority	NSW Department of Planning, Housing and Infrastructure Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW)
State and Federal Governments	NSW Minister for Climate Change, Energy, the Environment and Heritage NSW Minister for Planning and Public Spaces NSW Premier and Deputy Premier NSW Shadow Minister for Energy Federal Minister for Energy and Emissions Reduction State Member for Bathurst Federal Member for Calare NSW State Training Services NSW Aboriginal Affairs Department of Employment and Workplace Relations Regional Development Australia National Indigenous Australians Agency
Local Government	Lithgow City Council
Directly impacted landowners and land managers	NSW National Parks and Wildlife Service Greenspot Wallerawang Pty Ltd EnergyAustralia (Mount Piper Power Station) Centennial Coal (Springvale Colliery and Ivanhoe Coal Pty Ltd) Banpu Energy (who own Centennial Coal) Transport Asset Entity Holdings (Transport for NSW) UGL (partner of Transport Asset Entity Holdings) WaterNSW Private landowners
Community and community groups	Local businesses, groups and owners who may be impacted by the project including: • Bulktrans • GoodEarth • Barrinang Community Group • Pied Piper Preschool • St John the Evangelist Church • Lithgow Rangers Soccer Club • Jannei Goat Dairy • United Petroleum Lidsdale • Wallerawang Friendly Grocer & Newsagency • Wallerawang Auto Electrics • Wallerawang Bakery • Wallerawang Community & Sports Club • Portland Hospital • Wallerawang Lidsdale Progress Association • NSW Rural Fire Service

Stakeholder group	Stakeholder
	• Generator Property Management Pty Ltd • Gracey Enterprises Pty Ltd • Coates Hire Operations Pty Ltd • HY-Tec Industries Pty Ltd • Pebblecrete Precast Pty Ltd.
Traditional Owners and other Aboriginal Groups	Mingaan Wiradjuri Aboriginal Corporation Bathurst Local Aboriginal Land Council Warrabinga Native Title Claimants Aboriginal Corporation
Environment groups	The Gardens of Stone Alliance made up of: Lithgow Environment Group, Wilderness Australia, Blue Mountains Conservation Society, Nature Conservation Council, Blue Mountains World Heritage Institute, and National Parks Association of NSW.
Industry bodies	Energy Networks Australia Australian Energy Council Clean Energy Council Australian Industry Group Industry Capability Network Indigenous Business Chamber Yarpa Hub Supply Nation
Energy regulator/operator	Australian Energy Market Operator Australian Energy Regulator Australian Energy Market Commission Australian Energy Infrastructure Commissioner and Energy Security Board

5.3. Summary of feedback received

Feedback from stakeholders consulted during the route selection process is summarised below across key issues and themes.

Table 6 Consultation feedback received from the route selection process

Issue/ Theme	Feedback
Land use and property	NPWS sought that direct impacts on the Gardens of Stone SCA should be avoided. If not possible, widening of the easement is to minimise impacts. Centennial Coal sought that major impacts on Centennial Coal's proposed and future operations should be avoided. A portion of the new transmission line easement could occur on Centennial Coal property but not the entire easement as this would render Springvale Coal Services as inoperable. Direct impacts on private property should be avoided. Community and private landowners not affected by the route option were in support of the project. Conversely, route options that significantly impacted private property (e.g. Option C-2) were not favoured by the community or landowners along that route.

Issue/ Theme	Feedback
Aboriginal cultural values	Bathurst LALC, Native Title claimant corporation Warrabinga, and Mingaan, an indigenous group involved in heritage around the Lithgow area, expressed their willingness to be involved in the project, particularly in relation to cultural heritage. Impacts on Aboriginal cultural and heritage sites are a concern to Aboriginal representatives. Gardens of Stone SCA is recognised by the community and stakeholders in having high Aboriginal cultural heritage value.
Biodiversity	NPWS and local First Nations community groups raised concerns relating to clearing of vegetation for construction of the new transmission line in the Gardens of Stone SCA. Transgrid has taken this feedback into account by identifying a proposed route which is located adjacent to an existing, operational coal mine with existing disturbed vegetation. Transgrid will avoid and minimise vegetation removal as much as possible with mitigation measures being implemented during construction and operation. This will include the reuse of existing access tracks where possible to minimise biodiversity impacts. Transgrid invited local representatives from Wilderness Australia and Lithgow Environmental Group to view the current easement on 94E and provide feedback on the proposed route option B-4. They expressed their satisfaction that the proposed option would utilise the existing cleared easement and the new 60 m easement would be shared equally with Centennial Coal. The representatives urged Transgrid to be mindful of vegetation clearing and prefer an option with little or no clearing. There was agreement that they are unsupportive of Option A that traverses through the middle of the Gardens of Stone SCA.

5.4. How the feedback has been used

Feedback received from community and stakeholder consultation has been used to select the preferred route option and apply appropriate mitigation measures. Stakeholders expressed support for Options B-2 and B-4 subject to further information relating to potential environmental impacts. Both options were carried forward into a route selection process where they were evaluated against project level objectives. As described in Section 2.4, Option B-4 was considered the preferred option when compared to all other options.

Engagement with Centennial Coal and NPWS is ongoing to refine the location for Option B-4 that minimises direct impacts to the Gardens of Stone SCA, includes measures to minimise biodiversity impacts without disturbing the current and future operation of the Springvale Coal Services facility.

5.5. Ongoing engagement

Transgrid is committed to ongoing engagement on the project so that it is robust, transparent and effective. Engagement will continue on specific issues and opportunities relevant to the project to inform the preparation of the EIS, as well as engagement regarding the project more broadly.

The identified landowners will continue to be engaged directly and wider stakeholders will be consulted. To support effective engagement with all communities and stakeholders along the proposed route, a

Community and Stakeholder Engagement Plan will be developed to guide the EIS development, public exhibition and post-EIS phases of the project.

The objectives of this phase will be to:

- Demonstrate Transgrid's commitment to improved community and stakeholder engagement to ensure a transparent, respectful and effective process.
- Provide clear and timely information on the EIS and relevant technical reports.
- Provide an opportunity for community members and stakeholders to meet the project team and specialist in their given areas.
- Meaningful engagement through the creation of an open and safe channel for community and stakeholders to raise questions and concerns.
- Provide an opportunity for community members and stakeholders attending in-person events to provide feedback on the project and the engagement to date.

Engagement and communication processes will be monitored continuously to:

- Ensure the techniques being used are effective.
- Identify new stakeholders.
- Respond to any new issues.

This will be achieved by:

- Creating clear, two-way communications that effectively collect and inform the project planning.
- Reviewing enquiries and complaints data to identify unresolved or recurring issues and emerging trends.
- Discussion and briefings with stakeholders and the community.
- Effective discussions with members of the project team.
- Media and social media monitoring.
- Discussions with elected representatives.
- Local Aboriginal Land Council briefings.
- Community Partnership Program participation (community benefit scheme).

The following community and stakeholder engagement mechanisms and activities will continue to occur during the preparation of the EIS, either in person or via digital platforms:

- One-to-one meetings.
- Stakeholder briefings.
- Community information sessions.
- Stakeholder and community group presentations and briefings.
- Aboriginal local community group briefings.
- Project toll-free community information number.
- Project email address.
- Project webpage.
- Communications materials (newsletters, letters and factsheets).
- E-Newsletter.
- Media and advertisements.
- Social media.
- Community Partnership Program (community benefits).

- Survey access communications (e.g. for biodiversity and Aboriginal heritage surveys, noise monitoring, etc).

All stakeholder engagement will continue to be collected in Transgrid's Customer Relationship Management database. Comments and feedback received on the project will be reviewed and given appropriate consideration in the design of the project and in the EIS, with the aim to avoid, minimise and mitigate environmental, community and social impacts where possible. Engagement approaches will be evaluated and reviewed on a quarterly basis to ensure they are providing adequate participation opportunities and responding to stakeholder needs and expectations.

6. Preliminary environmental assessment

6.1. Overview

To identify the key matters to be addressed in the EIS, a risk-based assessment approach has been adopted based on the description of the project and in accordance with Appendix A of the *State Significant Infrastructure Guidelines – Preparing a Scoping Report* (DPE 2022a). This has drawn on information from desktop searches of environmental databases, consideration of early findings from biodiversity field investigations and other site inspections as well as reviews of other similar, recent major infrastructure project applications. The purpose of this discussion is to provide an understanding of the key environmental matters relevant to the project, so the need for further environmental assessment and mitigation measures can be identified.

A summary of key and other matters based on data available and desktop review are provided in the following sections. Key matters identified that would be most likely to occur and potentially result in the greatest change to the existing environment include:

- Biodiversity
- Aboriginal heritage
- Historic heritage
- Land use and property
- Visual amenity
- Noise and vibration
- Social.

Other matters that would also require assessment but are considered likely to result in lower risk to the environment include:

- Soils and contamination
- Hydrology/flooding
- Surface water
- Groundwater
- Air quality and greenhouse gas
- Waste
- Traffic and access
- Hazard and risk e.g. bushfire, electric and magnetic fields and mine subsidence.

For each environmental matter, an assessment will be undertaken to inform the EIS. The level of assessment for each matter has been identified in the Scoping Report as either ‘detailed’ or ‘standard’ as guided by the S*tate significant infrastructure guidelines – preparing a scoping report* (DPE 2022a).

Sections 6.2 to 6.8 summarise the key environmental matters identified for assessment. Other matters for consideration are summarised in Section 6.9, while a summary of the cumulative impacts is detailed in Section 6.10. A scoping summary table is attached in Appendix A.

6.2. Biodiversity

6.2.1. Existing environment

Ecological constraints in the area were initially identified to inform the route selection and identify potential impacts, risks and opportunities for avoidance and minimisation of impacts. Tasks undertaken to date include desktop assessment, preliminary BAM credit calculations, site-scale vegetation mapping and several targeted flora and fauna survey rounds (August, September, October and November 2023, and February 2024). Field surveys and BAM calculations to date have focussed on the transmission line easement, construction compounds and laydown areas. A broader investigation area will be adopted for the full project footprint that includes potential locations for access tracks and temporary works sites. Further surveys will be conducted to complete vegetation mapping and seasonal surveys across the entire project footprint (as defined for the EIS).

Vegetation communities

Plant community types (PCTs) and condition classes were identified and mapped in the project area to yield the vegetation zones listed in Table 7. Table 7 provides an assessment of whether mapped PCTs are commensurate with endangered ecological communities (EECs) or critically endangered ecological communities (CEECs) listed under the BC Act and/or EPBC Acts. It further notes whether the PCT is associated with a threatened ecological community (TEC) identified as an entity at risk of serious and irreversible impacts (SAII). It should be noted that additional PCTs and vegetation zones may be identified and impact areas will change when all potentially disturbed areas are surveyed as part of the EIS.

Table 7 Plant community types found within the project area

Vegetation zone	Plant Community Type	Condition	Area in project area** (ha)	BC Act Status	EPBC Act Status	SAII entity
3369_Central Tableland Ranges Peppermint-Gum Grassy Forest	Central Tableland Ranges Peppermint-Gum Grassy Forest	Good	50.89	-	-	No
		Shrubland	85.04	-	-	No
		Yet to be surveyed	11.06	TBC	TBC	TBC
3385_Southern Tableland Creekflat Swamp Woodland	Southern Tableland Creekflat Swamp Woodland	Good	26.03	-	-	No
		Poor	83.00	-	-	No
		Paddock trees	0.57	-	-	No
		Yet to be surveyed	30.01	TBC	TBC	TBC

Vegetation zone	Plant Community Type	Condition	Area in project area** (ha)	BC Act Status	EPBC Act Status	SAII entity
3735_Central Tableland Peppermint Shrub-Grass Forest	Central Tableland Peppermint Shrub-Grass Forest	Good	12.71	-	-	No
		Shrubland	3.96	-	-	No
3747_Southern Tableland Western Hills Scribbly Gum Forest	Southern Tableland Western Hills Scribbly Gum Forest	Good	157.75	-	-	No
		Shrubland	39.14	-	-	No
		Poor	32.02	-	-	No
		Yet to be surveyed	104.23	TBC	TBC	TBC
3749_Western Blue Mountains Scribbly Gum Forest	Western Blue Mountains Scribbly Gum Forest	Good	7.33	-	-	No
		Shrubland	2.02	-	-	No
		Yet to be surveyed	0.35	TBC	TBC	TBC
3932-Moderate_Central and Southern Tableland Swamp Meadow Complex	Central and Southern Tableland Swamp Meadow Complex	Moderate	5.52	-	-	No
3376-Moderate_Southern Tableland Grassy Box Woodland*	Southern Tableland Grassy Box Woodland	Moderate	0.97	CEEC	CEEC	Yes
4083_Southeast Tableland Rocky Riparian Scrub	Southeast Tableland Rocky Riparian Scrub	Yet to be surveyed	0.21	TBC	TBC	TBC
3695_Western Blue Mountains Peppermint Sheltered Forest	Western Blue Mountains Peppermint Sheltered Forest	Yet to be surveyed	0.24	TBC	TBC	TBC
3367_Central Tableland Granites Grassy Box Woodland	Central Tableland Granites Grassy Box Woodland	Yet to be surveyed	3.33	TBC	TBC	TBC
3347_Southern Tableland Creekflat Ribbon Gum Forest	Southern Tableland Creekflat Ribbon Gum Forest	Yet to be surveyed	0.24	TBC	TBC	TBC

Vegetation zone	Plant Community Type	Condition	Area in project area** (ha)	BC Act Status	EPBC Act Status	SAII entity
Planted native vegetation	-	-	2.82	-	-	-
Non-native	-	-	22.63	-	-	-
Waterbody	-	-	0.95	-	-	-
Not classified	-	-	553.26	-	-	-

Notes: * Does not occur in close proximity to key project elements but occurs in the broader project area.
** Surveys are ongoing. The final size of the project area will change as additional elements of the project construction footprint are defined and further surveys are completed which will include these additional areas.

Threatened Ecological Communities

TECs mapped in the State Vegetation Type Map (DPE 2023a) within a 2 km buffer around the project area are listed below in Table 8. None of the PCTs in the project area comprise part of an occurrence of these TECs. A patch of PCT 3376 Tableland Grassy Box Woodland in the project area comprises an occurrence of the BC Act-listed CEEC White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland but is unlikely to meet the condition criteria to comprise part of the related CEEC listed under the EPBC Act. This TEC is also an SAII entity under the BAM. This patch of PCT 3376 is identified in Figure 9E.

Wherever possible, the siting of access tracks and temporary construction compounds/ laydown areas would prioritise areas of lower biodiversity value that surround the existing CEEC and Derived Native Grassland. Therefore, it is considered unlikely that the project would have significant direct impacts on TECs.

Table 8 Threatened ecological communities recorded in the vicinity of the study area (DPE 2023a)

Threatened ecological community *	BC Act	EPBC Act	SAII entity
Tableland Basalt Forest in the Sydney Basin and South Eastern Highlands Bioregions	EEC	-	Yes
Upland Basalt Eucalypt Forests of the Sydney Basin Bioregion	-	EEC	Yes
White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner	CEEC	-	Yes
White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland	-	CEEC	Yes
Natural Temperate Grasslands of the South Eastern Highlands	-	EEC	No

Threatened species

The NSW BioNet Wildlife Atlas (DPE 2023a) and EPBC Act Protected Matters Search Tool (DCCEEW 2023) were interrogated to identify threatened and migratory biota that are known or are predicted to occur

within the locality (10 km radius from the project area, to capture mobile fauna that may travel through the site). Table 9 presents a summary of the threatened species previously recorded within the locality and/or likely to occur.

The following biodiversity survey activities have occurred to date or are planned:

- August 2023: Preliminary biodiversity survey, including mapping of vegetation zones.
- Late August/early September 2023: Preliminary fauna habitat mapping.
- September 2023: Threatened flora traverses and BAM plots.
- October 2023: Fauna surveys.
- November 2023: Threatened flora traverses and BAM plots.
- February 2024: Threatened flora traverses and BAM plots.
- February 2024: Fauna surveys.
- March to September 2024 (planned): Ongoing flora and fauna surveys.

Several threatened species have been recorded in the project area during the site inspection by Umwelt (2022) and/or more recent surveys by GHD. The following threatened fauna species were recorded within or in proximity to the project area: Gang-gang Cockatoo (*Callocephalon fimbriatum*); Powerful Owl (*Ninox strenua);* White-bellied Sea-eagle (*Haliaeetus leucogaster*); Scarlet Robin (*Petroica boodang)*; Brown Treecreeper (eastern subspecies) (*Climacteris picumnus victoriae*) and the Dusky Woodswallow (*Artamus cyanopterus cyanopterus*). Black Gum (*Eucalyptus aggregata*) and Capertee Stringybark (*Eucalyptus cannonii*) were also recorded within or in proximity to the project area. The locations where some of these threatened species were identified are shown in Figure 9E. Note that this mapping will continue to evolve as surveys progress and will be more complete at the EIS stage.

Table 9 Summary of threatened species previously recorded and/or likely to occur within the locality (10 km) of the study area

Species	BC Act status	EPBC Act status	SAII entity	Recorded during surveys*
Flora				
Bynoe's Wattle (*Acacia bynoeana*)	Endangered	Vulnerable	No	No
Deane's Boronia (*Boronia deanei)*	Vulnerable	Vulnerable	No	No
Leafless Tongue-orchid (*Cryptostylis hunteriana*)	Vulnerable	Vulnerable	No	No
Black Gum (*Eucalyptus aggregata*)	Vulnerable	Vulnerable	No	**Yes**
Capertee Stringybark (*Eucalyptus cannonii*)	Vulnerable	-	No	**Yes**
Silver-leafed Gum (*Eucalyptus pulverulenta*)	Vulnerable	Vulnerable	No	No
Robertson's Peppermint (*Eucalyptus robertsonii* subsp. *hemisphaerica*)	Vulnerable	Vulnerable	Yes	No

Species	BC Act status	EPBC Act status	SAII entity	Recorded during surveys*
Euphrasia arguta	Critically endangered	Critically endangered	Yes	No
Haloragodendron lucasii	Endangered	Endangered	Yes	No
Hibbertia acaulothrix	-	Endangered	No	No
Hibbertia cistiflora quadristaminea	-	Endangered	No	No
Kunzea cambagei	Vulnerable	Vulnerable	No	No
Basalt Pepper-cress (*Lepidium hyssopifolium*)	Endangered	Endangered	No	No
Hoary Sunray (*Leucochrysum albicans var. tricolor*)	Endangered	Endangered	No	No
Woronora Beard-heath (*Leucopogon exolasius*)	Vulnerable	Vulnerable	No	No
Hairy Geebung (*Persoonia hirsuta*)	Endangered	Endangered	Yes	No
Clandulla Geebung (*Persoonia marginata*)	Vulnerable	Vulnerable	No	No
Rufous Pomaderris (*Pomaderris brunnea*)	Vulnerable	Vulnerable	No	No
Cotoneaster Pomaderris (*Pomaderris cotoneaster*)	Endangered	Endangered	No	No
Tarengo Leek Orchid (*Prasophyllum petilum*)	Endangered	Endangered	No	No
A leek-orchid (*Prasophyllum sp. Wybong*) (C.Phelps ORG 5269)	-	Critically endangered	Yes	No
Smooth Bush-pea (*Pultenaea glabra*)	Vulnerable	Vulnerable	No	No
Pultenaea parrisiae	Vulnerable	Vulnerable	Yes	No
Eastern Underground Orchid (*Rhizanthella slateri*)	Vulnerable	Endangered	Yes	No
Small Purple-pea (*Swainsona recta*)	Endangered	Endangered	No	No
Austral Toadflax (*Thesium australe*)	Vulnerable	Vulnerable	No	No
Velleia perfoliata	Vulnerable	Vulnerable	No	No

Species	BC Act status	EPBC Act status	SAII entity	Recorded during surveys*
Veronica blakelyi	Vulnerable	-	No	No
Swamp Everlasting (*Xerochrysum palustre*)	-	Vulnerable	No	No
Fauna – Birds				
Regent Honeyeater (*Anthochaera phrygia*)	Critically endangered	Critically endangered	Yes	No
Southern Whiteface (*Aphelocephala leucopsis*)	-	Vulnerable	No	No
Dusky Woodswallow (*Artamus cyanopterus cyanopterus*)	Vulnerable	-	No	**Yes**
Australasian Bittern (*Botaurus poiciloptilus*)	Endangered	Endangered	No	No
Gang-gang Cockatoo (*Callocephalon fimbriatum*)	Vulnerable	Endangered	No	**Yes**
South-eastern Glossy Black-Cockatoo (*Calyptorhynchus lathami lathami*)	Vulnerable	Vulnerable	No	No
Speckled Warbler (*Chthonicola sagittata*)	Vulnerable	-	No	No
Brown Treecreeper (*Climacteris picumnus victoriae*)	Vulnerable	Vulnerable	No	**Yes**
Varied Sittella (*Daphoenositta chrysoptera*)	Vulnerable	-	No	No
Grey Falcon (*Falco hypoleucos*)	Vulnerable	Vulnerable	No	No
Little Lorikeet (*Glossopsitta pusilla*)	Vulnerable	-	No	No
Painted Honeyeater (*Grantiella picta*)	Vulnerable	Vulnerable	No	No
White-bellied Sea-Eagle (*Haliaeetus leucogaster*)	Vulnerable	-	No	**Yes**
Little Eagle (*Hieraaetus morphnoides*)	Vulnerable	-	No	No
Swift Parrot (*Lathamus discolor*)	Endangered	Critically endangered	Yes	No

Species	BC Act status	EPBC Act status	SAII entity	Recorded during surveys*
Hooded Robin (*Melanodryas cucullata*)	Vulnerable	Endangered	No	No
Orange-bellied Parrot (*Neophema chrysostoma*)	Vulnerable	Vulnerable	Yes	No
Powerful Owl (*Ninox strenua*)	Vulnerable	-	No	**Yes**
Blue-billed Duck (*Oxyura australis*)	Vulnerable	-	No	No
Scarlet Robin (*Petroica boodang*)	Vulnerable	-	No	**Yes**
Flame Robin (*Petroica phoenicea*)	Vulnerable	-	No	No
Superb Parrot (*Polytelis swainsonii*)	Vulnerable	Vulnerable	No	No
Pilotbird (*Pycnoptilus floccosus*)	-	Vulnerable	No	No
Australian Painted Snipe (*Rostratula australis*)	Endangered	Endangered	No	No
Diamond Firetail (*Stagonopleura guttata*)	Vulnerable	Vulnerable	No	No
Freckled Duck (*Stictonetta naevosa*)	Vulnerable	-	No	No
Masked Owl (*Tyto novaehollandiae*)	Vulnerable	-	No	No
Fauna – Fishes				
Trout Cod (*Maccullochella macquariensis*)	-	Endangered	No	NA
Murray Cod (*Maccullochella peelii*)	-	Vulnerable	No	NA
Macquarie Perch (*Macquaria australasica*)	-	Endangered	No	NA
Australian Grayling (*Prototroctes maraena*)	-	Vulnerable	No	NA
Fauna – Frogs				
Giant Burrowing Frog (*Heleioporus australiacus*)	Vulnerable	Vulnerable	No	No
Booroolong Frog (*Litoria booroolongensis*)	Endangered	Endangered	No	No

Species	BC Act status	EPBC Act status	SAII entity	Recorded during surveys*
Littlejohn's Tree Frog (*Litoria littlejohni*)	Endangered	Endangered	No	No
Stuttering Frog (*Mixophyes balbus*)	Endangered	Vulnerable	Yes	No
Fauna – Insect				
Purple Copper Butterfly (*Paralucia spinifera*)	Endangered	Vulnerable	No	No
Fauna – Mammals				
Large-eared Pied Bat (*Chalinolobus dwyeri*)	Vulnerable	Vulnerable	Yes	No
Spot-tailed Quoll (*Dasyurus maculatus*)	Vulnerable	Endangered	No	No
Eastern False Pipistrelle (*Falsistrellus tasmaniensis*)	Vulnerable	-	No	No
Large Bent-winged Bat (*Miniopterus orianae oceanensis*)	Vulnerable	-	Yes	**Yes****
Corben's Long-eared Bat (*Nyctophilus corbeni*)	Vulnerable	Vulnerable	No	No
Southern Greater Glider (*Petauroides Volans*)	Endangered	Endangered	No	No
Yellow-bellied Glider (*Petaurus australis*)	Vulnerable	Vulnerable	No	No
Brush-tailed Rock-wallaby (*Petrogale penicillate*)	Endangered	Vulnerable	Yes	No
Koala (*Phascolarctos cinereus*)	Endangered	Endangered	No	No
New Holland Mouse (*Pseudomys novaehollandiae*)	-	Vulnerable	No	No
Grey-headed Flying-fox (*Pteropus poliocephalus*)	Vulnerable	Vulnerable	No	No
Yellow-bellied Sheathtail-bat (*Saccolaimus flaviventris*)	Vulnerable	-	No	**Yes****

Species	BC Act status	EPBC Act status	SAII entity	Recorded during surveys*
Greater Broad-nosed Bat (*Scoteanax rueppellii*)	Vulnerable	-	No	No
Pink-tailed Worm-lizard (*Aprasia parapulchella*)	Vulnerable	Vulnerable	No	No
Striped Legless Lizard (*Delma impar*)	Vulnerable	Vulnerable	No	No
Blue Mountains Water Skink (*Eulamprus leuraensis*)	Endangered	Endangered	Yes	No
Broad-headed Snake (*Hoplocephalus bungaroides*)	Endangered	Vulnerable	Yes	No

Notes: * Surveys not completed or not undertaken as yet for all candidate species. For some species the appropriate habitat is not present.

** Probable record (Anabat analysis).

FIGURE 9A - Threatened biodiversity (recorded during surveys)

\\ghdnet\ghd\AU\Sydney\Projects\21\12612502\GIS\Maps\Deliverables\SR.aprx\12612502_SR008_ThreatenedBiodiversity_Recorded
Print date: 18 Apr 2024 - 17:03

Data source: Subject Land - TransGrid, 2023; Railway, Roads, LGAs, Lots, Watercourses, Waterbodies - NSW SS, 2023; State Conservation Areas - NSW DFSI, 2023; Vegetation (Seamless SVTM, Dec 2022) - DPIE, 2023; Tiled service layer: © OpenStreetMap (and) contributors, CC-BY-SA;World Terrain Base: Esri, TomTom, Garmin, Foursquare, FAO, METI/NASA, USGS;World Hillshade: Esri, Geoscience Australia, NASA, NGA, USGS. Created by: schen4

FIGURE 9B - Threatened biodiversity (recorded during surveys)

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Print date: 18 Apr 2024 - 17:04

Data source: Subject Land - TransGrid, 2023; Railway, Roads, LGAs, Lots, Watercourses, Waterbodies - NSW SS, 2023; State Conservation Areas - NSW DFSI, 2023; Vegetation (Seamless SVTM, Dec 2022) - DPIE, 2023; Tiled service layer: © OpenStreetMap (and) contributors, CC-BY-SA;World Terrain Base: Esri, TomTom, Garmin, Foursquare, FAO, METI/NASA, USGS;World Hillshade: Esri, Geoscience Australia, NASA, NGA, USGS. Created by: schen4

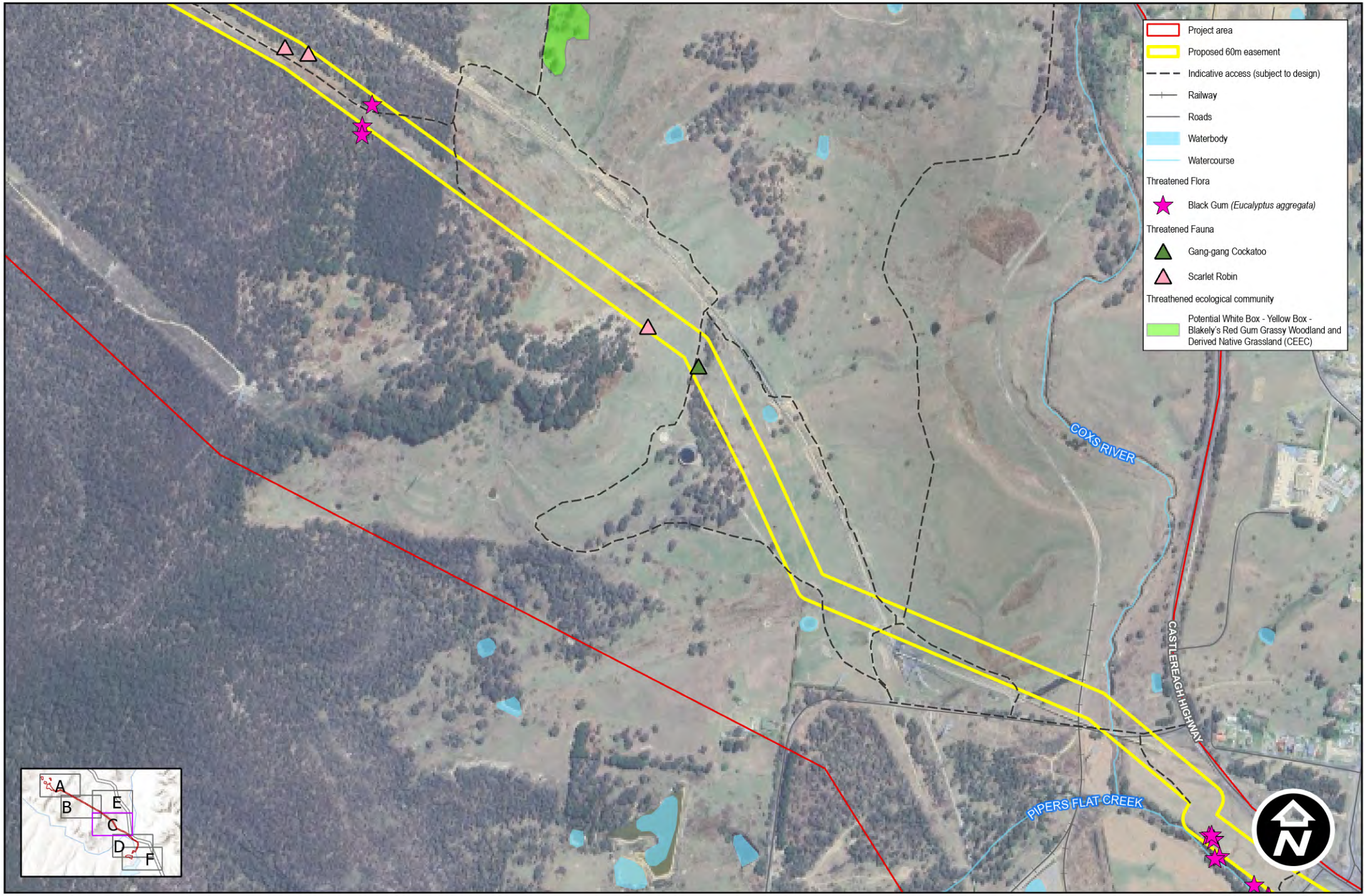

FIGURE 9C - Threatened biodiversity (recorded during surveys)

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Data source: Subject Land - TransGrid, 2023; Railway, Roads, LGAs, Lots, Watercourses, Waterbodies - NSW SS, 2023; State Conservation Areas - NSW DFSI, 2023; Vegetation (Seamless SVTM, Dec 2022) - DPIE, 2023; Tiled service layer: © OpenStreetMap (and) contributors, CC-BY-SA;World Terrain Base: Esri, TomTom, Garmin, Foursquare, FAO, METI/NASA, USGS;World Hillshade: Esri, Geoscience Australia, NASA, NGA, USGS. Created by: schen4

FIGURE 9D - Threatened biodiversity (recorded during surveys)

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Data source: Subject Land - TransGrid, 2023; Railway, Roads, LGAs, Lots, Watercourses, Waterbodies - NSW SS, 2023; State Conservation Areas - NSW DFSI, 2023; Vegetation (Seamless SVTM, Dec 2022) - DPIE, 2023; Tiled service layer: © OpenStreetMap (and) contributors, CC-BY-SA;World Terrain Base: Esri, TomTom, Garmin, Foursquare, FAO, METI/NASA, USGS;World Hillshade: Esri, Geoscience Australia, NASA, NGA, USGS. Created by: schen4

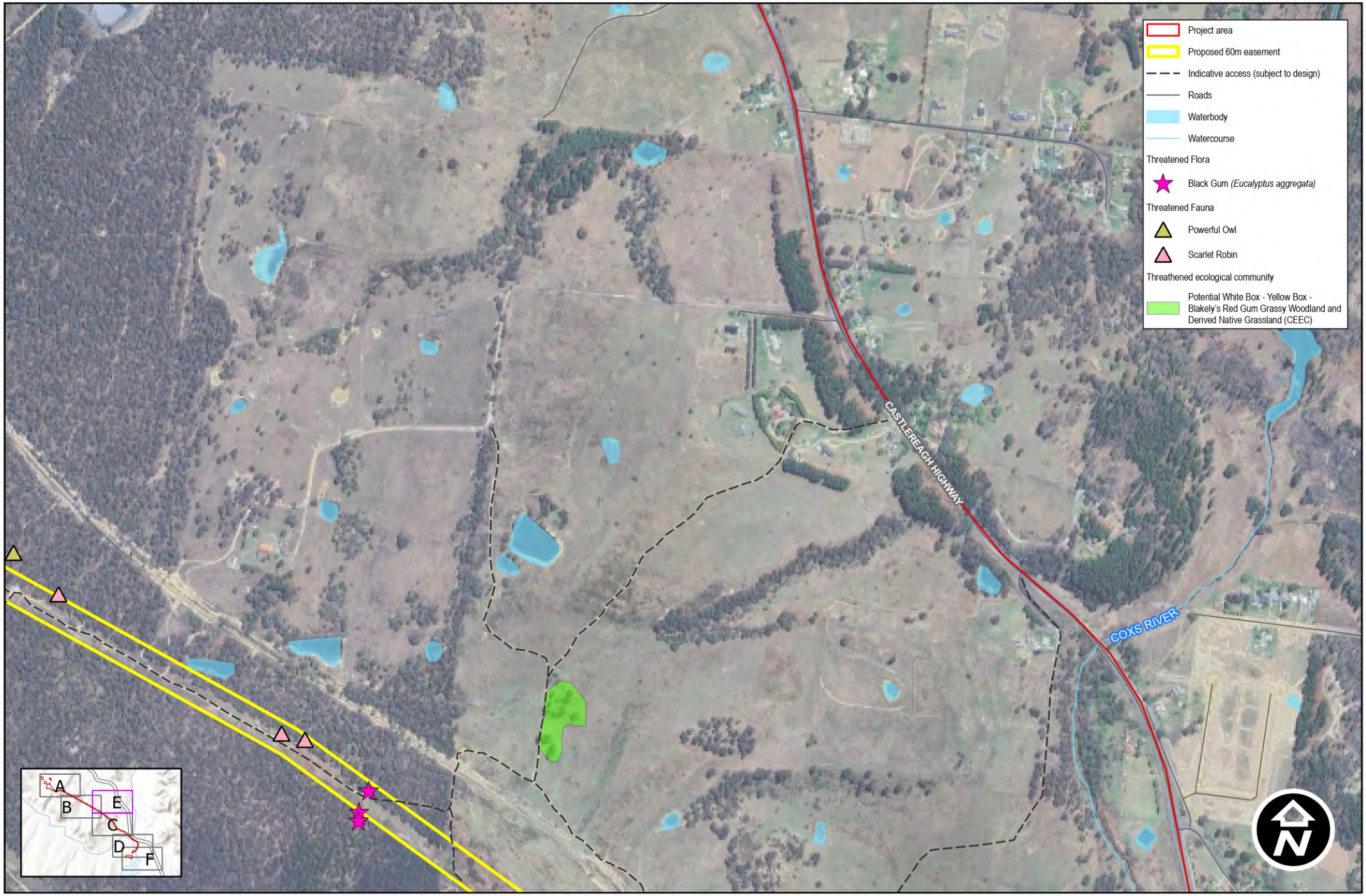

FIGURE 9E - Threatened biodiversity (recorded during surveys)

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Print date: 18 Apr 2024 - 17:04

Data source: Subject Land - TransGrid, 2023; Railway, Roads, LGAs, Lots, Watercourses, Waterbodies - NSW SS, 2023; State Conservation Areas - NSW DFSI, 2023; Vegetation (Seamless SVTM, Dec 2022) - DPIE, 2023; Tiled service layer: © OpenStreetMap (and) contributors, CC-BY-SA;World Terrain Base: Esri, TomTom, Garmin, Foursquare, FAO, METI/NASA, USGS;World Hillshade: Esri, Geoscience Australia, NASA, NGA, USGS. Created by: schen4

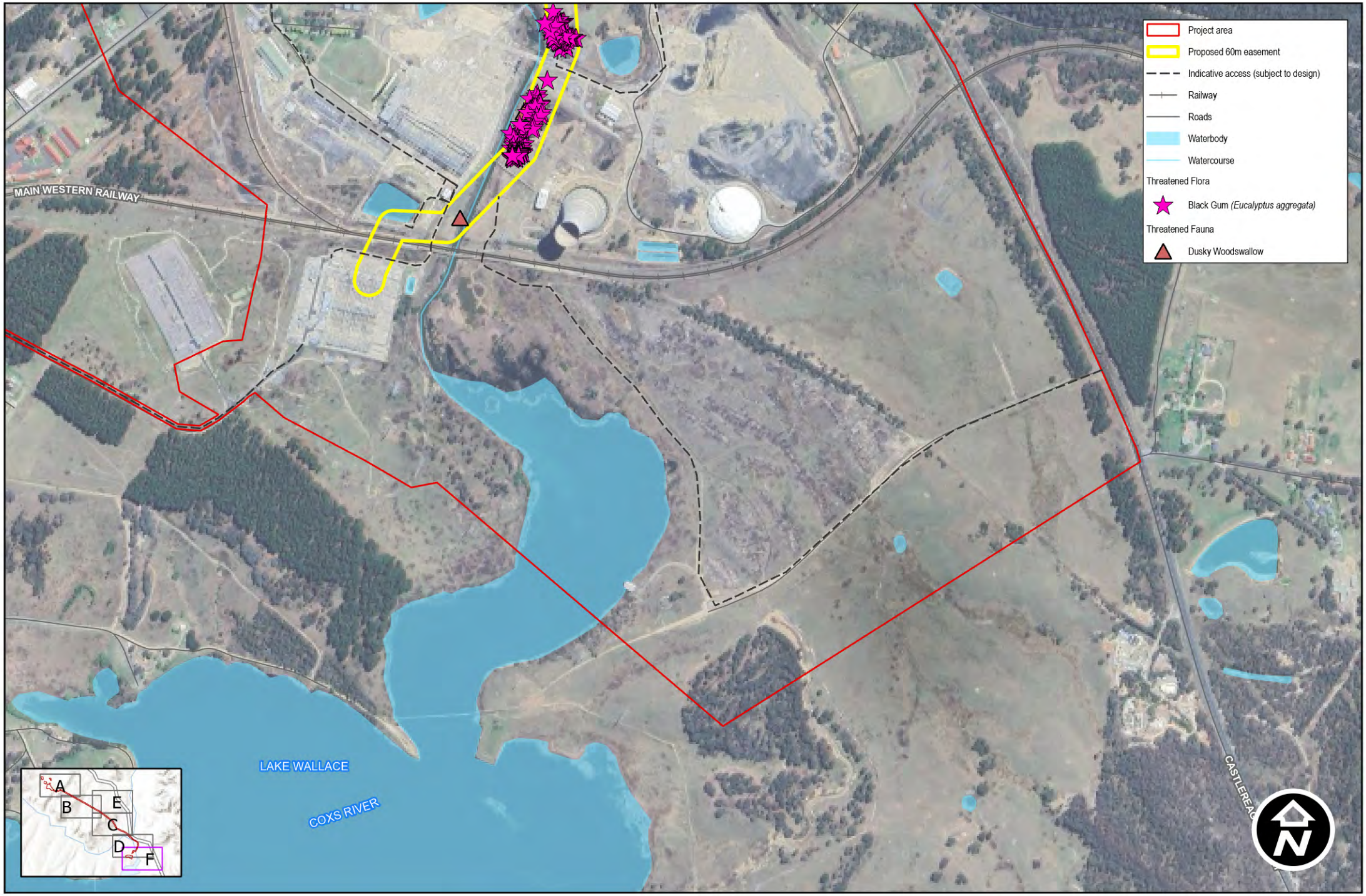

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FIGURE 9F - Threatened biodiversity (recorded during surveys)

Data source: Subject Land - TransGrid, 2023; Railway, Roads, LGAs, Lots, Watercourses, Waterbodies - NSW SS, 2023; State Conservation Areas - NSW DFSI, 2023; Vegetation (Seamless SVTM, Dec 2022) - DPIE, 2023; Tiled service layer: © OpenStreetMap (and) contributors, CC-BY-SA;World Terrain Base: Esri, TomTom, Garmin, Foursquare, FAO, METI/NASA, USGS;World Hillshade: Esri, Geoscience Australia, NASA, NGA, USGS. Created by: schen4

Migratory species

The EPBC listed migratory species that are known or likely to occur in the locality are detailed in Table 10. Limited potential habitat is present for migratory wetland species. Some migratory terrestrial species may occur in the study area on occasion. However, surveys to date have not identified any migratory species in the project area, noting that surveys are ongoing.

Table 10 Migratory species likely to occur in the study area (DCCEEW 2023)

Common name	Species name
Migratory – Terrestrial	
Rufous Fantail	*Rhipidura rufifrons*
Black-faced Monarch	*Monarcha melanopsis*
White-throated Needletail	*Hirundapus caudacutus*
Yellow Wagtail	*Motacilla flava*
Satin Flycatcher	*Myiagra cyanoleuca*
Migratory – Wetlands	
Sharp-tailed Sandpiper	*Calidris acuminata*
Pectoral Sandpiper	*Calidris melanotos*
Curlew Sandpiper	*Calidris ferruginea*
Common Sandpiper	*Actitis hypoleucos*
Latham's Snipe	*Gallinago hardwickii*
Eastern Curlew	*Numenius madagascariensis*
Migratory – Marine	
Fork-tailed Swift	*Apus pacificus*

Conservation Areas

Conservation areas and important habitat in the study area include the Gardens of Stone SCA, Coxs River and Lake Wallace.

6.2.2. Potential impacts

The study area includes existing disturbed areas such as the two easements already in place between Mount Piper and Wallerawang substations for the 132 kV Line 94E and the 330 kV Line 70/71, access tracks and fence lines. As described in Section 2.4, route selection has considered opportunities to avoid and minimise impacts where possible. Despite the new 330 kV transmission line sharing an easement with the existing 132 kV Line 94E for most of its length, the widening of the shared easement by 15 m and construction of new transmission structures will result in direct removal of vegetation.

Sections of new easement on approach to the Wallerawang substation will be located next to and within the floodplain of the Coxs River. Construction of new transmission structures and waterways crossing/s to provide access to structures will have the potential to result in direct and indirect impacts to aquatic habitats.

While access tracks will be sited to avoid areas of good condition vegetation wherever possible, access track establishment/upgrades and the establishment of compound and laydown areas would also result in the direct removal of vegetation. This would include locations near waterways, such as Coxs River and Lake Wallace. The condition of vegetation to be impacted varies between good to poor.

Overall, the project has the potential to directly impact the biodiversity values of the study area due to the removal of native vegetation, including vegetation within the Gardens of Stone SCA. Direct impacts on BC Act and EPBC Act threatened species, their habitat and threatened communities are likely.

The project may also have indirect impacts to biodiversity values including aquatic habitats. Indirect impacts may include erosion, hydrological changes, spread of weeds and exotic species along with pathogens and diseases, edge effects, and fragmentation and loss of connectivity.

While some impacts to native vegetation and habitat for threatened species are anticipated, opportunities to avoid and minimise impacts wherever possible, including consideration of clearing methods and procedures, will be further considered during design development and reported in the EIS.

6.2.3. Assessment approach

A Biodiversity Development Assessment Report (BDAR) will be prepared for the EIS in accordance with the Biodiversity Assessment Method (BAM). Consideration will be given to relevant aspects of the *Gardens of Stone State Conservation Area – Plan of Management* (NPWS 2022) that may be applicable to the study area. The BDAR will be a detailed assessment and will include:

- Identification of vegetation and fauna within the project area, inclusive of mapping, as recorded from seasonal surveys undertaken in accordance with the BAM.
- Identification of measures to avoid and minimise potential impacts.
- Assessment of impacts on SAII entities, threatened species, populations, and communities in accordance with the BC Act and the EPBC Act.
- Assessment of impacts on the biodiversity of the Gardens of Stone SCA.
- Assessment of potential impacts on aquatic habitats.
- Identification of biodiversity credits required on offset the proposed potential impacts.

6.3. Aboriginal heritage

OzArk Environment and Heritage (OzArk) undertook a preliminary (desktop) Aboriginal Cultural Heritage assessment to support this Scoping Report. The findings of this assessment are provided below.

6.3.1. Existing environment

The project area falls within the Bathurst Local Aboriginal Land Council (LALC) boundary and the Warrabinga Native Title Group traditional lands. An AHIMS search was conducted on 19 September 2023 by OzArk consisting of a 10 km square area centred on the project area. The search reported 114 results for Aboriginal sites, as indicated in Figure 10. Of the 114 records, six records are located within proximity to key project elements (Figure 11) and comprise:

- Three open sites (Site IDs: 45-1-0215, 45-1-0206, 45-1-0237).
- Two isolated finds (Site IDs: 45-1-2602, 45-1-2715).
- One grinding groove and shelter with deposit (Site ID: 45-1-0019).

Site 45-1-0237 is the only site of the six within the proposed transmission line easement. The remaining five sites are located within the project area.

Table 11 provides the details of the six AHIMS sites within close proximity to key project elements.

Table 11 AHIMS sites within close proximity to key project elements

Site Name	AHIMS Site ID	Site Type	Location	Description
WCU1	45-1-2602	Isolated find	Mount Piper	One quartzite flake. Located on a gentle slope in proximity to an ephemeral watercourse.
SU1a-A4	45-1-2715	Isolated find	Lidsdale	Single silcrete core showing three scars. Located along a light vehicle track in proximity to a drainage line.
Lamberts Creek 5	45-1-0215	Open site	Mount Piper	Seven artefacts identified along a vehicle track on gentle sloping landform.
Site 9	45-1-0206	Open site	Lidsdale	Twenty-six artefacts recorded on the ground surface. They included 3 cores, 4 complete flakes, 11 broken flakes and 8 flaked pieces. Located on flat land between two drainage lines.
Springvale Colliery	45-1-0237	Open site	Lidsdale	Subsurface; 50 artefacts identified including debitage and a possible hearth.
Irondale	45-1-0019	Grinding groove & shelter with deposit	Ben Bullen State Forest[1]	Shelter of sandstone outcrop located on a low ridge. Three grinding grooves are present within the shelter.

[1] The former Ben Bullen State Forest is now within the Gardens of Stone State Conservation area, AHIMS data is outdated.

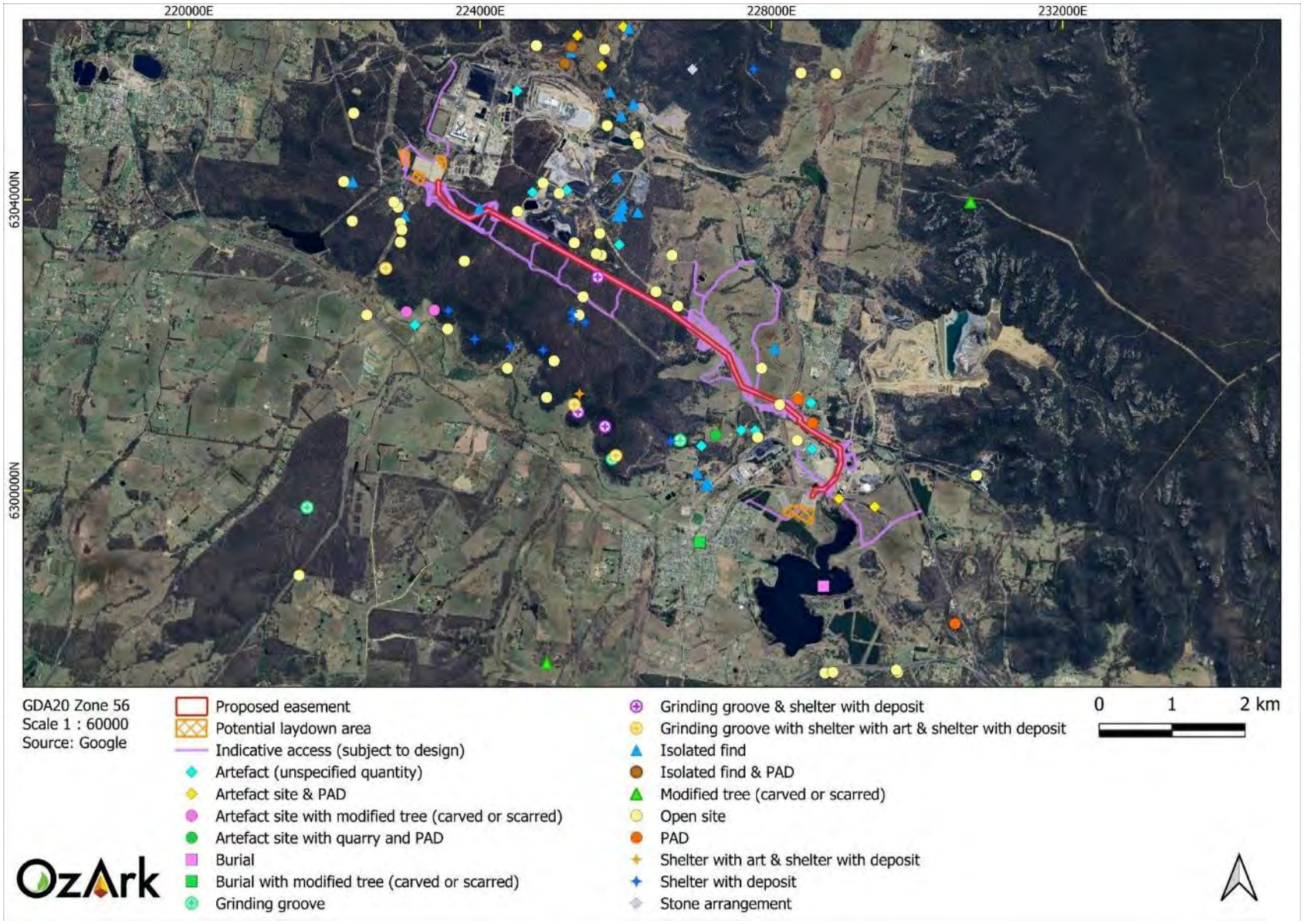

Figure 10 AHIMS records within and surrounding the project area

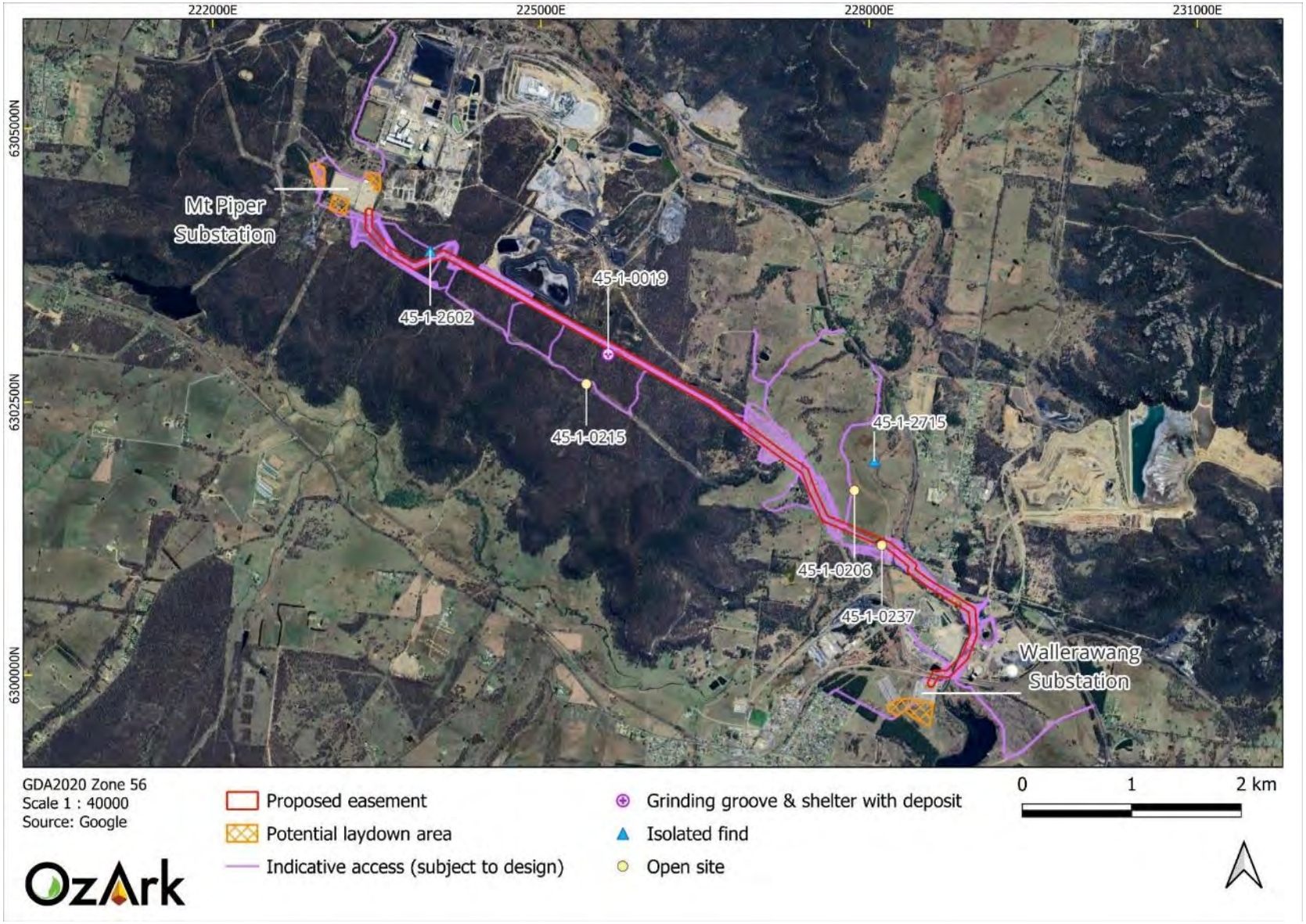

Figure 11 AHIMS sites in close proximity to key project elements

6.3.2. Potential impacts

Based on the number and location of previously recorded sites, there is a high likelihood that unrecorded Aboriginal sites or areas of Aboriginal archaeological sensitivity may exist within and surrounding the project area. The most likely areas are on ridgelines, gentle slopes, flats and near drainage lines or watercourses (Table 12). The likelihood of certain types of sites which may be found in accordance with these landforms is detailed in Table 13.

Table 12 Likelihood of landforms within and surrounding the project area to contain Aboriginal objects

Landform Type	Likelihood to contain Aboriginal objects
Ridgelines and crest landforms	Archaeological studies in the region indicate that crest and spur landforms with proximity to water were favoured occupation locations. Due to tree clearance and long-term grazing in the parts of the project area, soils in these landforms tend to be thin and degrading. Should Aboriginal objects be recorded in these landforms, they are likely to be surface manifestations and likely displaced from their primary depositional context.
Steep slopes	Steep slopes are a degrading landform. These landforms are unsuitable for occupation and Aboriginal objects recorded in such landforms are likely to be in a secondary context. The exception is in localised flat benches, if present, where occupation may have been possible, or if stone overhangs are present.
Gentle slopes	Archaeological studies in the region indicate that gently undulating to flat landforms were favoured occupation locations particularly where adjacent to permanent or semi-permanent water sources. Due to the relatively uncleared state of the land (Gardens of Stone SCA) and the frequency of watercourses in and around the project area, Aboriginal sites associated with these landforms, i.e., artefact scatters, may comprise low-high densities and a complexity of artefacts.
Watercourses	Archaeological studies in the region indicate that banks and elevated terraces adjacent to drainage lines or watercourses were favoured occupation locations and therefore have high potential for occupation sites to be present. The project area and its surrounds contain the confluence of two permanent watercourses, Coxs River and Pipers Flat Creek, marking an area of comparatively high archaeological sensitivity. Several first and second order unnamed waterways traverse the project area in a northeasterly direction to ultimately flow into Wangcol Creek, a tributary of Coxs River approximately 1.5 km north of the project area. The overall frequency of watercourse landforms within and surrounding the project area indicate that low-density artefact scatters are the most likely site type to be recorded. Previous studies in the district also indicate that these landforms may contain intact deposits.
Flats	Archaeological studies in the region indicate that flat and plains landforms were favoured occupation locations particularly when adjacent to permanent or semi-permanent water sources. However, in areas across this landform distant from water, occupation is less likely to have occurred.

Table 13 Likelihood of certain site types being present within and surrounding the project area

Site type	Likelihood of being present within and surrounding the project area
Isolated finds	As isolated finds can occur anywhere, particularly within disturbed contexts, it is predicted that this site type could be recorded within and surrounding the project area.
Open artefact scatters	Stone artefact distributions of variable artefact densities are some of the most common Aboriginal objects found within the region. A general correlation between landform and the nature of the evidence of past Aboriginal occupation is evident. Higher artefact density sites are located on elevated landforms adjacent to waterways. The project area and its surrounds contain several unnamed drainage lines which flow into permanent watercourses, (i.e. Wangcol Creek and Cox's River). Where these waterways intersect with the project area should be considered as holding elevated potential for artefact sites and/or scatters to occur.
Culturally modified trees	This site type is represented in a relatively low density in the surrounding area, possibly due to the extent of land clearing conducted in post-settlement times for agricultural land use. It is feasible to identify this site type within the project area if endemic trees of an appropriate age are present, particularly near the permanent or semi-permanent water sources.
Quarry sites	One quarry site has been recorded in surrounding similar landforms, and, should the project area contain outcropping materials suitable for stone tool procurement, this site type could be recorded.
Grinding grooves	This site type is relatively highly represented in the search area. If there is suitable outcropping rock (most likely sandstone), there is the possibility for there to be grinding grooves.
Burials	Two burials have been identified in the surrounding region. Although it is possible, it is considered a rare site type given the topography.
Bora/Ceremonial sites	The distribution of ceremonial sites and Bora grounds across the landscape is somewhat unpredictable as the choice of their location appears to be based on spiritual reasons rather than simply landscape features and resources. As site types such as modified trees and art sites have been recorded in the district, although in low numbers, their presence in the project area and surrounds cannot be discounted. Overall, this site type is rare with a low likelihood of being present and remaining extant. These sites are generally identified through consultation with the RAPs.

6.3.3. Assessment approach

An Aboriginal Cultural Heritage Assessment Report (ACHAR) will be prepared for the EIS in accordance with the *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (DECCW 2011), *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010a), and the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010b).

The ACHAR will be a detailed assessment including the key components of field survey, engagement with the registered Aboriginal community members, assessment of potential impacts, determining the requirement for test excavations, and identification of mitigation measures.

Systematic surveys of the proposed disturbance footprint will be undertaken by archaeologists and members of the Aboriginal community. In September 2023, Transgrid advertised an invitation for the

Aboriginal community to register their interest and involvement in the project. A total of thirteen Registered Aboriginal Parties have been confirmed.

Consultation with the Registered Aboriginal Parties will also be undertaken during the cultural heritage survey to gain an understanding of the cultural significance of any Aboriginal objects found and an understanding of cultural values held by Aboriginal people for the project area. The results of the cultural heritage survey will indicate whether test excavation at any specific landforms is warranted.

The ACHAR will describe and record the outcomes of the field survey, Aboriginal cultural heritage values conveyed by the Registered Aboriginal Parties during consultation, the cultural significance of any Aboriginal objects found, the assessment of potential impacts to tangible and intangible heritage values, and provide recommendations to avoid or minimise impacts, where possible.

6.4. Historic heritage

OzArk Environment and Heritage (OzArk) undertook a preliminary Historic Heritage Assessment to support this Scoping Report. The findings of this assessment are provided below.

6.4.1. Existing environment

A desktop search of heritage databases was conducted on 21 September 2023, including:

- Australian Heritage Database
- State Heritage Register
- Lithgow Local Environment Plan 2014.

The heritage databases identified three places within the project area and five places adjacent the project area (Table 14). The results of the database search indicate that most non-Aboriginal heritage is centred on settlements and infrastructure. No records of non-Aboriginal heritage were found for the Mount Piper (northern) sections of the project area.

Table 14 Historic heritage database search results for the project area

Database	Listed Place/ Site ID
Australian Heritage Database	No records for the project area.
State Heritage Register	One place located within the project area: • Wallerawang rail bridges over Cox's River, Main Western Railway, Wallerawang, NSW (SHR 01064). One place located adjacent to the project area: • St John the Evangelist Church, Main Street, Wallerawang, NSW (SHR 01702).

Database	Listed Place/ Site ID
Lithgow Environment Plan 2014	Two places located within the project area: • Old Wallerawang School House, Main Street Wallerawang, NSW (#I113). • Stone Viaduct Cox's River (#I440). Four places are adjacent to the project area: • Braemi House, Castlereagh Highway, Lot 3 DP 650334, Lidsdale, NSW (#I193) • Meadowside Cottage, 200 Castlereagh Highway, Lidsdale, NSW (#I192) • Uniting Church, 23 Wolgan Road, Lidsdale, NSW (#I194) • Cottage, 25 Wolgan Road, Lidsdale, NSW (#I195).

Of interest, the Old Wallerawang School House has been recently refurbished for hospitality and tourism purposes. Since May 2023, it is being utilised as a concierge and transport transition point for a local resort (Greenspot 2023).

6.4.2. Potential impacts

The project has the potential to indirectly impact non-Aboriginal heritage items from ground disturbance activities and vibration generating activities during construction. No direct impacts on heritage listed structures are expected. However, the proposed transmission line, access tracks and transmission structures are likely to occur within heritage curtilage of the heritage items identified to be within the project area in Table 14. As a result, potential impacts on heritage values will require further investigation and assessment. Where possible, the siting of transmission structures will avoid heritage curtilages.

6.4.3. Assessment approach

A Historic Heritage Impact Assessment report (HHIA) will be prepared for the EIS in accordance with the Heritage Council's *Historical Archaeological Code of Practice* (Heritage Council 2006) and the updated codes and guides that relate to the NSW Heritage Manual. A standard level of assessment will be adopted.

The HHIA will include the:

- Identification of listed items, areas of heritage significance, existing and potential heritage values and areas of heritage archaeological potential of built, archaeological and landscape items.
- Assessment of potential direct and indirect impacts on non-Aboriginal heritage items, values and determine the significance of the potential impacts.
- Identification of management options and mitigation measures.

6.5. Land use and property

6.5.1. Existing environment

The project is located on Warrabinga Native Title Group traditional lands and within the City of Lithgow LGA. The following land uses are within the project area:

- The Mount Piper 330 kV/500 kV substation and Wallerawang 330 kV substation, and associated transmission lines and access tracks.
- Gardens of Stone SCA.
- Agricultural grazing lands.

- Former site of the Wallerawang power station (adjacent to the Coxs River), which is subject to a redevelopment proposal.

The following land uses are adjacent to the project area:

- The Mount Piper Power Station.
- Former site of the Wallerawang Power Station, which is subject to a redevelopment proposal.
- Gardens of Stone SCA.
- Coal mining operations and facilities, including overland conveyor belts for the transport of coal, Reject Emplacement Area, access roads and historic underground mining.
- State and local road reserves.
- Rail corridors.

Table 15 and Figure 12 identify the land use zoning and key property information respectively relevant to the project area.

Table 15 Land use zoning and key property information

Proposed feature	Ownership of affected properties	Current land use	Land use zoning of affected properties (Lithgow LEP 2014)
Potential construction laydown area at Mount Piper substation	EnergyAustralia	Vacant land	SP2 Infrastructure (electricity generating works)
Transmission line (new easement) (Mount Piper section)	EnergyAustralia	Mount Piper power station and substation	SP2 Infrastructure (electricity generating works)
Transmission line (shared easement) (132 kV and 330 kV)	The State of NSW (represented by NPWS)	Gardens of Stone SCA	RU3 Forestry
	Centennial (Springvale Pty Ltd and Boulder Mining Pty Ltd)	Historic underground mining, coal Reject Emplacement Area and access roads.	RU1 Primary Production
	Centennial (Ivanhoe Coal Pty Ltd)	Coal transfer conveyor belt and agricultural grazing. Proposed site for the Pinecrest solar farm.	RU1 Primary Production
	Private landholdings	Agricultural grazing	RU1 Primary Production
	WaterNSW	Tank storage	RU1 Primary Production

Proposed feature	Ownership of affected properties	Current land use	Land use zoning of affected properties (Lithgow LEP 2014)
Transmission line (new easement) (Wallerawang section)	Transport for NSW	Castlereagh Highway	SP2 Infrastructure (roads and traffic)
	Transport Asset Holding Entity of NSW	Rail corridor	SP2 Infrastructure (rail infrastructure facility)
	Lithgow Council	Brays Lane and Main Street	RU1 Primary Production (road reserve)
	Greenspot Wallerawang Pty Ltd	Redevelopment site	SP2 Infrastructure (electricity generating works) IN1 General Industrial
	Centennial (Ivanhoe Coal Pty Ltd)	Coal transfer conveyor belt and agricultural grazing. Proposed site for the Pinecrest solar farm.	RU1 Primary Production
	EnergyAustralia	Agricultural grazing	IN1 General Industrial
	Transgrid	Wallerawang substation	RU1 Primary Production
	Private landholding	Agricultural grazing	RU1 Primary Production
Potential construction laydown area at Wallerawang substation	Greenspot Wallerawang Pty Ltd	Redevelopment site	SP2 Infrastructure (electricity generating works)
	Transgrid	Vacant land, temporary laydown and storage	RU1 Primary Production

The detailed location of access tracks to be constructed or existing access tracks to be upgraded is not confirmed at this stage. Indicative access as currently proposed is shown in Figure 8, however this will evolve as the design progresses. Access track construction or upgrades would occur within the project area as shown in Figure 8. Indicative access occurs over existing land uses including the Gardens of Stone SCA, existing transmission line easements and agricultural land, including the proposed Pinecrest Solar Farm.

The shared easement is located within the Gardens of Stone SCA, which was established from the former Ben Bullen State Forest in April 2022. Since mid-2022, the management of the Gardens of Stone SCA has been undertaken by the NPWS. The management of transmission line easements in this area continues to be undertaken by Transgrid.

The Gardens of Stone SCA within the project area lies about 3 km west of the larger Gardens of Stone SCA separated by the township of Lidsdale, various land uses including mining, agriculture and the Castlereagh Highway. The larger Gardens of Stone estate is well known for its significance, as described by the *Gardens of Stone State Conservation Area – Plan of Management* (NPWS 2022) and contains the following:

- Wiradjuri cultural landscape

- Pagoda landscapes
- Biodiversity
- Historic heritage
- Recreation and tourism.

The surrounding area has a long history of underground coal mining, which continues today. A section of the shared easement is located over an area with historic underground coal workings. The potential for mine subsidence is further discussed in Section 6.9. Transgrid is consulting with Centennial Coal to minimise impacts of the widened easement on current coal operations and facilities at the Western Main Colliery.

Agricultural land uses in the project area southwest of the Castlereagh Highway near Lidsdale include grazing. No biophysical strategic agricultural land (BSAL) occurs within or nearby to the project area. The nearest BSAL land parcel is about 15 km to the north of Mount Piper at Ben Bullen. Agricultural grazing occurs unrestricted alongside both the Centennial Ivanhoe Coal's coal transfer conveyor and Transgrid's existing transmission line easements in the project area.

The property held by Centennial (Ivanhoe Coal Pty Ltd) (Figure 12) is subject to a current State significant development application for the Pinecrest Solar Farm, proposed by Banpu Energy Australia.

The project bisects the site of the former Wallerawang Power Station, which was decommissioned in 2014 and is being redeveloped by Greenspot into a multi-use precinct. Lake Wallace is south of the Wallerawang substation and is a local campground which includes a playground, toilets and showers, barbecue facilities, and an accessible fishing pontoon.

Residential land uses associated with the township of Lidsdale are within about 100 m of the transmission line alignment on the northern side of Castlereagh Highway. Similarly, low density residential (land use zone R2) and the local centre of Wallerawang (land use zone B2) are nearby to the proposed Wallerawang construction laydown areas, with the closest residential sensitive receiver being about 300 m away.

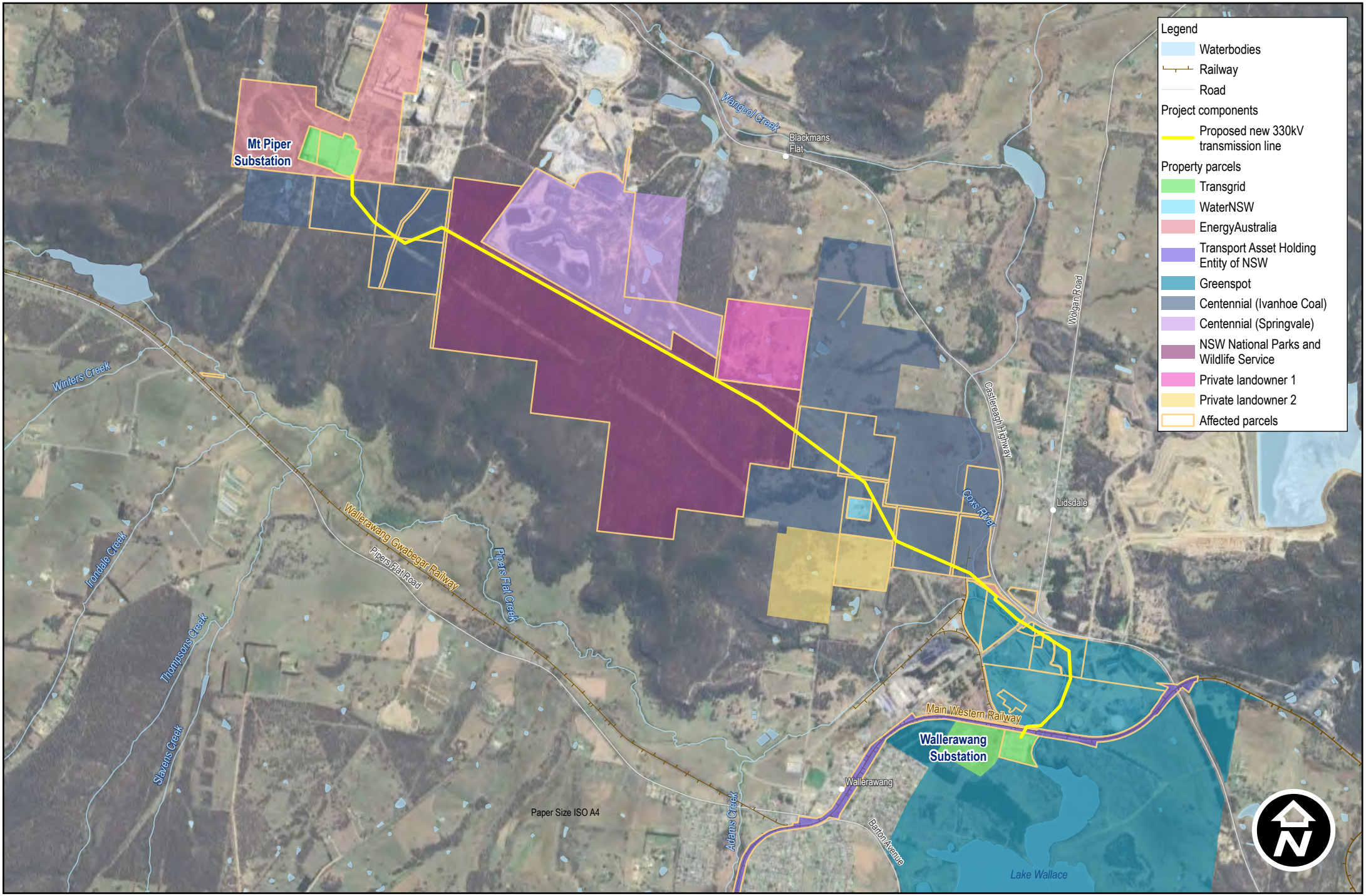

FIGURE 12 - Directly affected properties

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Data source: Construction boundary, substation - GHD2023; Transmission route, site access - TransGrid2023; Tiled service layer: © OpenStreetMap (and) contributors, CC-BY-SA. Created by: schen4

6.5.2. Potential impacts

The widening of the existing 132 kV easement by an additional 15 m along a 4.5 km section would result in impacts to both the Gardens of Stone SCA and Centennial Coal's Western Main Colliery. The direct impacts would result in land use changes from vegetation conservation in the Gardens of Stone SCA to vegetation maintenance along the transmission line easement. The widened easement would also aim to minimise current and future operational impacts to Centennial Coal's facility. Transgrid's early consultation with Centennial Coal has indicated that the loss of a 7.5 m strip of land along the south-western boundary of the facility would not result in material impacts on mining or facility operations.

The new 3 km-section of the proposed 330 kV transmission line easement from the Wallerawang substation, near the corners of the Centennial Ivanhoe Coal's property and adjacent private landholding (Figure 12 and Figure 17), would potentially interact with the Pinecrest Solar Farm's transmission line and substation area (EMM 2023). The development proposal for the Pinecrest Solar Farm will be considered in the land use assessment and stakeholder consultation with the developer will also be undertaken.

Access to cleared grazing land and farm paddocks in the south-east of the transmission line alignment will be temporarily affected during construction and to a lesser extent during operation. Agricultural grazing and cropping would not be restricted in the easement during operation, although other agricultural practices would be restricted such as the erection of buildings within or in proximity to the easement for maintaining electrical safety.

No impacts are proposed on biophysical strategic agricultural land.

Temporary ancillary construction compounds and laydown areas would occur next to the two existing 330 kV substations. Temporary ancillary areas used during construction would be rehabilitated and restored to their original condition.

Overall, construction activities would have the largest impacts on land use and property, as a result of the proposed new transmission line and associated access tracks, and temporary disturbance to agricultural land uses while building the transmission structures. Conversely, the project would likely result in a small operational footprint on surrounding lands, mainly being the encroachment onto Centennial Coal's facility, the physical presence of transmission structures while still enabling ongoing agricultural grazing or cropping activities. As a result, the project is unlikely to impact the viability of surrounding lands.

6.5.3. Assessment approach

A Land Use Assessment will be undertaken which will assess the potential impacts during construction and operation on existing and future land uses. Consideration will be given to relevant aspects of the *Gardens of Stone State Conservation Area – Plan of Management* (NPWS 2022) that may be applicable to the project area. A standard level of assessment will be adopted and document existing land uses in the area, include consultation feedback with potentially affected landholders and leaseholders, identify and assess the land use impacts, and develop required mitigation measures to avoid and minimise impacts.

6.6. Visual amenity

6.6.1. Existing environment

The project is characterised by large areas of native vegetation of the Gardens of Stone SCA, within the north-western portion of the project area, which have been dissected by existing cleared easements for

various existing electricity transmission infrastructure (Figure 13). From the Gardens of Stone SCA are views of existing mining operations and areas of grassland plains in low lying, level areas used for agriculture (Figure 14). The project occurs in an undulating landscape with the highest elevations near Mount Piper (Figure 15) down to the valley at Wallerawang and the Coxs River (Figure 16).

The closest towns with a view of the project are Wallerawang, 300 m to the south, and Lidsdale, 100 m to the east. The project will not be visible from Portland that is located about 3.5 km to the west. The viewshed in areas that are publicly accessible, including Brays Lane, (Wallerawang), the nearest main intersection of Castlereagh Highway/ Main Street and the locality near the Wallerawang substation, are dominated by large steel transmission structures and conductors (Figure 17).

The existing 132 kV Line 94E is visible from these locations and is supported by timber poles ranging in height from 11 m to 23 m (average height of 18.5 m). The existing steel transmission structures supporting the 330 kV Line 70/71 in the locality are about 50 m in height and are more visually dominant.

Other prominent structures that are clearly visible include the tall power station stacks at both Mount Piper and Wallerawang (Figure 15, Figure 16 and Figure 17). The stacks and other tall structures of the former Wallerawang power station are clearly visible from the town of Wallerawang and public view points from nearby roads. The Mount Piper Power Station is expected to be less visible at sensitive receivers as it is surrounded by large parcels of native vegetation and has a greater separation distance to residents in the town of Portland (about 3 km, although the closest single residence is about 1.5 km to the northwest).

Figure 13 View from the existing 132 kV Line 94E easement looking to the south-east to adjacent coal mining operations (LHS) and Gardens of Stone SCA (RHS)

Figure 14 View of agricultural areas north-east of the existing 132 kV Line 94E easement

Figure 15 View of the Mount Piper Power Station from Mount Piper 330 kV/500 kV substation

Figure 16 View from the existing 132 kV Line 94E easement to adjacent agricultural land, looking towards the Castlereagh Highway and the former Wallerawang Power Station.

Figure 17 View from the existing 132 kV Line 94E easement towards Brays Lane and the former Wallerawang Power Station, showing existing transmission infrastructure.

6.6.2. Potential impacts

As there are views of the project from Wallerawang, Lidsdale and the Castlereagh Highway, the potential visual impacts of the project, including impacts on scenic values, would need to be considered during the EIS phase.

Construction of the transmission line, transmission structures, access tracks and vegetation removal to widen the existing 132 kV easement in parts have the potential to result in a visual impact in the landscape. The removal of vegetation from the Gardens of Stone SCA for easement widening may be discernible to sensitive viewpoints in the distance as the area is elevated in the landscape. It is possible that minimal direct line of sight to this section of the transmission line and associated cleared easement from sensitive public viewpoints further afield could occur, including from any look-out points or walking trails from the ranges of the larger Gardens of Stone SCA, about 3 km away, on the opposite side of Castlereagh Highway (Figure 17).

Construction work areas for each location of a transmission structure would result in minor temporary visual impacts for the new section of easement at Wallerawang, due to its proximity to Castlereagh Highway and Main Street in Wallerawang. The proposed construction hours would require lighting during evening hours to provide safe working areas, with the potential to result in light spill impacts to nearby residences at Lidsdale. Light spill impacts would be minimised by implementing standard mitigation measures.

The location of the construction compound and laydown areas are also not clearly visible from sensitive viewpoints. Visual amenity impacts from these areas during construction are expected to be minor.

The construction of new transmission structures, particularly in sections of the new easement at Wallerawang, will be visible and result in permanent localised visual impacts and an incremental cumulative impact. The transmission structures reaching up to 60 m in height, would contribute to the existing visual landscape already impacted by transmission infrastructure. The number of transmission structures in the area approaching the Wallerawang substation would increase as a result of the project. It is expected that the new transmission structures would be visible up to around 5 km from areas such as Wallerawang, Lidsdale, Pipers Flat Road and the Castlereagh Highway as shown by the zone of visual influence in Figure 18.

The location of each steel transmission structure will be identified during the detailed design phase, however they would generally be placed approximately 300-600 m apart along the alignment.

No new permanent lighting is proposed as part of the operational phase of the transmission line or substation works.

The project has sought to minimise visual amenity impacts by utilising existing easements and the existing transmission structures within these easements, wherever possible. Visual amenity impacts are expected as a result of the addition of new transmission structures in the easement at Wallerawang and the incremental cumulative impact.

6.6.3. Assessment approach

A Visual Impact Assessment will be undertaken and included in the EIS, to identify the visual impacts of the project from sensitive receivers and public vantage points addressing both the construction and operational phases of the project. A standard level of assessment will be adopted and include:

- Description of the existing landscape character, including major items of existing infrastructure.
- Identification of potentially sensitive receivers and locations.
- Potential impacts of the project during the construction and operational stages.
- Identification of measures to be used to minimise visual impacts.

The assessment will be prepared in accordance with the *Guideline for landscape character and visual impact assessment*, Version 2.2 (Transport for NSW 2023) and include photomontages to demonstrate the views to the proposed infrastructure relative to existing conditions. The assessment will also be subject to the requirements of the final version of the *Draft Transmission Guideline* (DPE 2023b) once published. This guideline incorporates a *Technical Supplement for Landscape and Visual Impact Assessment* (DPE 2023c).

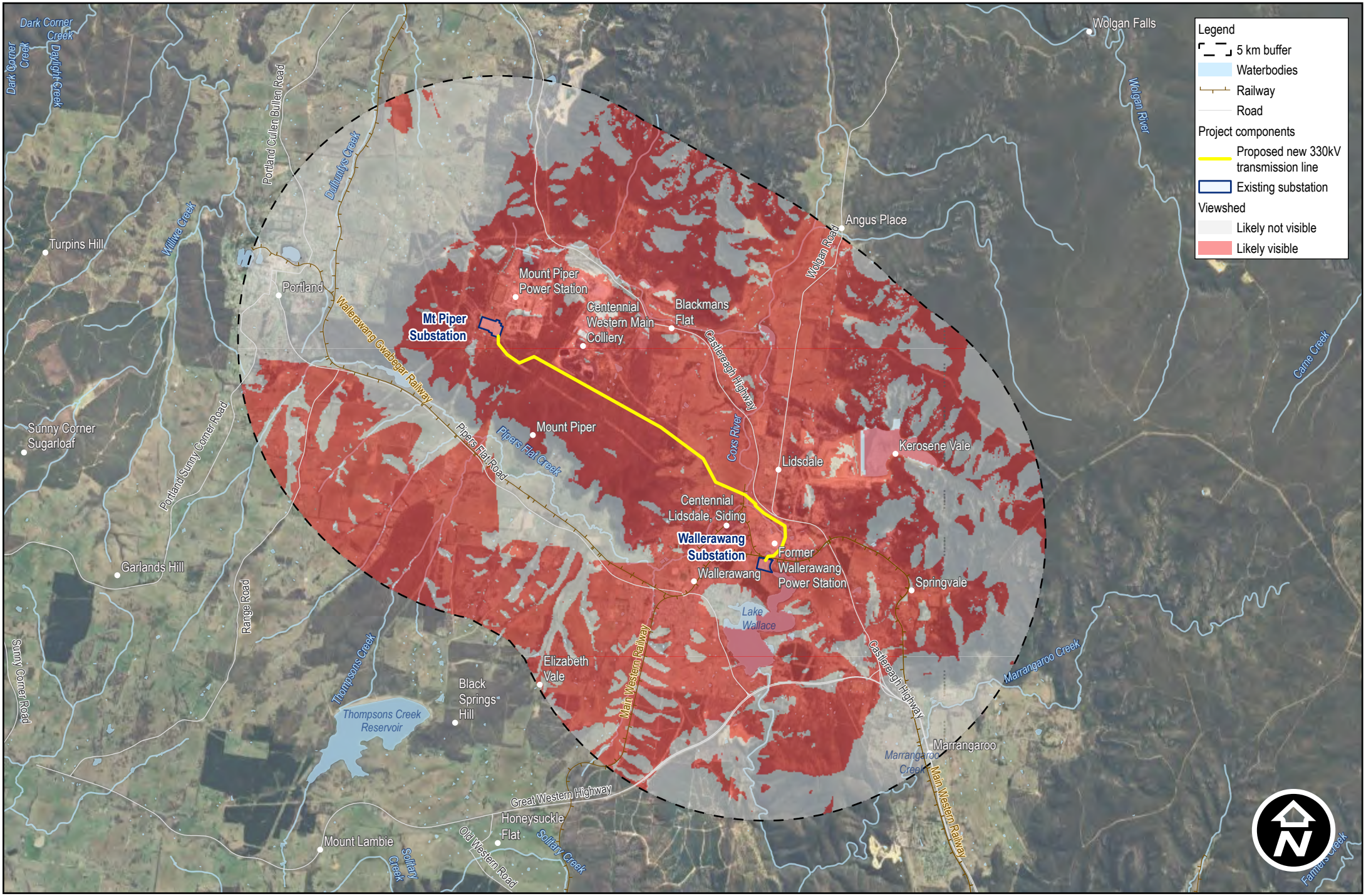

FIGURE 18 - Zone of visual influence

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Data source: Construction boundary, substation - GHD2023; Transmission route, site access - TransGrid2023; Tiled service layer: © OpenStreetMap (and) contributors, CC-BY-SA. Created by: schen4

6.7. Noise and vibration

6.7.1. Existing environment

Sensitive receivers have been identified within 1.5 km of the project area, as shown in Figure 19. The nearest sensitive receivers are:

- Residential sensitive receivers at Duncan Street, Lidsdale, located approximately 100 m from the proposed transmission line.
- Old Wallerawang School (used for commercial activities), located about 170 m west of the proposed transmission line.
- The St John the Evangelist Church, Wallerawang, located about 500 m south-west of the proposed transmission line.
- The Black Gold Motel, Wallerawang, located about 750 m west of the Wallerawang substation.
- Pied Piper Preschool, located about 1 km south-west of the Wallerawang substation.
- Wallerawang Public School, located about 1.5 km south of the Wallerawang substation.

Existing noise and vibration sources that are present in the vicinity of the project include traffic on the Castlereagh Highway and freight operations on the Main Western Railway, operational activities of the Springvale Coal Mine, including the operation of the conveyor belt and rail transport of coal, and operation of the two substations. The Mount Piper Power Station is remote from these sensitive receivers and would not be expected to be audible.

6.7.2. Potential impacts

During construction, noise and vibration has the potential to be generated as a result of the following activities:

- Movement of heavy and light vehicles to and from the project (i.e. construction traffic).
- Loading and unloading of materials and waste.
- Excavation and compaction when upgrading existing or constructing new access tracks (if required).
- Piling activities.
- Construction of the transmission structures including excavation and stringing of the lines.
- Vegetation removal.

FIGURE 19 - Sensitive receivers surrounding the project

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Data source: Construction boundary, substation - GHD2023; Transmission route, site access - TransGrid2023; Tiled service layer: © OpenStreetMap (and) contributors, CC-BY-SA. Created by: schen4

Assessment of potential construction noise impacts will be undertaken in the EIS against relevant noise management limits defined in the *Interim Construction Noise Guideline* (DECC 2009). The loudest noise source during construction is expected to be piling for transmission structure foundations.

Sources of vibration during construction are expected to be limited to heavy vehicle movements, compaction of access tracks (if required) and piling. It is anticipated that bored piling will be the preferred piling methodology which emits a lower source of vibration than alternate methods.

No significant noise and vibration impacts are anticipated during the operation of the new transmission line. Noise may be generated from ad hoc maintenance of the transmission line and access tracks undertaken from time to time. However such noise would be of short duration and temporary.

6.7.3. Assessment approach

A quantitative assessment of the potential construction noise and vibration impacts on sensitive receivers will be undertaken to support the EIS. The significance of these impacts will be assessed in accordance with relevant guidelines. A standard level of assessment will be undertaken and will include:

- Baseline noise monitoring to identify the background noise levels.
- Modelling of noise levels from construction activities and noisy equipment.
- Identification of noise minimisation measures and modelling the effectiveness of these measures.

If required, consultation will be undertaken with sensitive receivers identified as being highly affected by proposed noise levels from the project.

6.8. Social

A preliminary social impact scoping study was undertaken for this Scoping Report in accordance with the *Social Impact Assessment Guideline* (DPE 2023d).

6.8.1. Existing environment

The project is located in the City of Lithgow LGA. The LGA covers approximately 4500 square kilometres with a current population of about 20,854 (in 2021) (Lithgow City Council 2021; ABS 2022). The town of Lithgow is the largest population centre near the project area (about 15 km south-east). The median age of the LGA's current population is 46 years, which is older than the NSW median age of 38 (ABS 2022).

Geographically, the LGA boundaries are within the Wiradjuri Aboriginal nation, while the southern region is within the Gundungurra Aboriginal nation, and the eastern region is within the Darug Aboriginal nation (Lithgow City Council, 2021). About 7.8% of the population identifies as Aboriginal or Torres Strait Islander, which is higher than the NSW rate (3.4%) (ABS 2022). The proportion of the population at working age and identifying as Indigenous is 7%.

The population centres of the LGA are Lithgow and surrounding suburbs, Wolgan, Newnes, and Wallerawang; with the remainder of the population living predominantly rural lifestyles on large properties (Lithgow City Council, 2021). The project is located within Wallerawang and is surrounded by other small towns of Lidsdale and Blackmans Flat.

Major industries of employment in the Lithgow LGA include mining, contributing $489 million value added to the economy, and the largest employment industry is healthcare and social assistance (Lithgow City Council, 2021).

6.8.2. Potential impacts

Based on community and stakeholder consultation feedback and potential impacts described in previous sections, construction of the project may result in the following potential social impacts:

- Potential cultural heritage or spiritual loss for local Aboriginal communities.
- Disturbance to existing land use activities, potential disruption to landholder's daily activities and ability to undertake agricultural activities.
- Impacts to amenity of nearby residential receivers.
- Impacts to scenic values of the Gardens of Stone SCA from sensitive viewpoints.
- Temporary increased demand for housing, accommodation, health services, retail, hospitality and emergency services and waste facilities for the construction workforce.
- Changes to community cohesion and sense of community.
- Enhanced community social and economic livelihoods associated with Community Partnership Scheme (Transgrid's grant giving initiative).
- Potential for a non-residential workforce to increase demand on social infrastructure and facilities, including emergency services and health facilities.
- Temporary traffic disruptions to users of the Castlereagh Highway for any construction activities adjacent to the highway.
- Generation of employment and business opportunities for local residents and businesses.
- Improved access roads and tracks for landowners in some areas.

The operation of the project may result in the following potential social impacts:

- Restrictions and permanent change to land use activities affecting how landholders are able to use the land burdened by an easement.
- Permanent changes to visual amenity and scenic values for surrounding sensitive receivers.
- Potential for a small number of direct employment opportunities.
- Improved local employment opportunities due to the encouragement of investment into renewable projects and associated industries within the region.
- Cheaper electricity prices, by increasing bulk supply and driving down wholesale electricity prices.
- Reliable power: NSW households will have greater access to reliable and affordable electricity.
- Cleaner, sustainable future: the project will enable more renewable energy generation to enter the market, supporting Australia's emissions reduction targets.
- Improved energy reliability, through strengthening and reinforcing the grid in the local region.
- Economic growth: the project will reinforce the Central West Orana transmission network, enable greater sharing of energy between the eastern states and will contribute to economic activity in regional NSW, generating major benefits for local communities.
- Benefits at the local, regional and State level resulting from the decarbonisation of the economy, resulting in reduced carbon emissions and improved air quality.

6.8.3. Assessment approach

A Social Impact Assessment will be prepared for the EIS at a standard level of assessment. This will include:

- Desktop research and review of relevant secondary data sources, including population and economic data and research. This includes identification of likely positive and negative social impacts to include:
    - the scale and nature of the project

- who may be impacted and their social, cultural and demographic populations
- community values and cultural diversity of the community
- vulnerable or marginalised populations
- amenities that will be impacted including jobs and business opportunities
- community facilities and provisions
- health, wellbeing and environment surroundings

- Review of consultation outcomes for the project from community engagement activities and targeted consultation with relevant local stakeholder representative groups such as local Aboriginal stakeholders, Lithgow City Council, recreation groups and the Lithgow Chamber of Commerce.
- Review of community sentiment tracking through project communication and engagement activities such as survey, face to face events, landowner engagement and community group webinar briefings.
- Identification and assessment of potential social impacts during construction and operation, with consideration to consultation outcomes and assessment outcomes of other specialist studies.
- Identification of mitigation measures to avoid or minimise potential social impacts.

6.9. Other matters

Table 16 provides a summary of other environmental matters that would also require assessment but are considered likely to result in a lower risk to the environment. The level of assessment for each matter has been identified as either ‘detailed’ or ‘standard’ as guided by the *State significant infrastructure guidelines – preparing a scoping report* (DPE 2022a).

Table 16 Summary of relevant information for matters other than key matters for the project

Environmental matter	Existing environment	Potential impacts	Level of assessment / assessment approach
Soils and contamination	Local soil landscapes are mapped as Lithgow, Pipers Flat, Hassans Walls, Wollangambe and Cullen Bullen on the NSW Environment & Heritage eSpade site (NSW Government 2023a). These landscapes exhibit moderate to severe gully and/or sheet erosion. Elevation change in the project area is about 100 m; the maximum elevation being about 1,000 m near Mount Piper substation, and the minimum elevation about 900 m near Wallerawang substation. The project area is not mapped as containing acid sulphate soils under the Lithgow LEP. A search of the NSW Environment Protection Authority (EPA) contaminated sites and notified sites database undertaken in August 2023 did not identify any contaminated sites. However, sites identified in the EPA's list of contaminated land notified under section 60 of the *Contaminated Land Management Act 1997* within or adjacent to the project area are: • Western Coal Services (former Lamberts Gully Mine/ listing for the Springvale Coal Mine). • Wallerawang Power Station. • Mount Piper Power Station.	Construction of the project could result in: • Soil erosion and mobilisation of sediment off-site and into sensitive waterways, particularly resulting from a potential temporary waterway crossing. • Compaction of soils. • Loss of topsoil. • Potential interaction with contaminated land or soil, including unexpected finds of contamination. • Accidental leaks and spills associated with refuelling and maintenance of plant and equipment. Erosion and sediment control measures in the Gardens of Stone SCA will be undertaken in consultation with and in accordance with relevant NPWS guidelines and procedures. While it is anticipated that contamination risks would be minimal, there is the potential that unexpected contamination sites and materials may be encountered. If significant unexpected contamination is identified, this would need to be managed in accordance with the *Guidelines on the Duty to Report Contamination* (NSW EPA 2015) under the *Contaminated Land Management Act 1997*. Once operational, the potential for erosion to occur across the new and	A desktop contamination assessment will be undertaken for the EIS, with reference to *Consultants Reporting on Contaminated Land – Contaminated Land Guidelines* (NSW EPA 2020). A standard level of assessment will be undertaken and will include: • A site walkover. • Identification of Areas of Environmental Concern and contaminants of potential concern. • Potential impacts from mobilisation of sediment off-site. Specific consideration will be given to the design of a temporary waterway crossing, if this is employed. • Operational impacts related to managing and maintaining access tracks. • Identification of mitigation measures to manage these potential impacts, including reference to the 'The Blue Book' (Landcom 2004). The project will not result in any ongoing risk of contamination during its operation.

Environmental matter	Existing environment	Potential impacts	Level of assessment / assessment approach
	In addition, farmland traversed by the project could be subject to historic pesticide use.	upgraded access tracks is expected to be reduced, based on drainage design and stabilisation works. Access tracks would be maintained on an ad hoc basis, as needed. No ongoing contamination impacts or risks are anticipated during operation.	
Hydrology/ flooding	The key surface waterbodies within or near the project are the Coxs River, Pipers Flat Creek and Lake Wallace. The Coxs River flows from north of Lidsdale, southwards through the project area and into Lake Wallace located directly south of the project area. Pipers Flat Creek originates west of the project area, flowing into Coxs River south of Brays Lane. The proposed transmission line is located within the Coxs River catchment, and a 2 km section is located directly adjacent to the Coxs River, near the former Wallerawang Power Station. The project area is not identified as flood prone on the Lithgow LEP's Flood Planning Map. Additionally, the catchment falls outside of the current *Draft Lithgow Floodplain Risk Management Study and Plan* (Lithgow City Council 2023).	Several transmission structures will be located in proximity to the Coxs River and within the 1% Annual Exceedance Probability flood level. Construction activities in flood risk areas, including access tracks, a potential temporary waterway crossing and establishment of work benches for the transmission structures, would be undertaken in a manner that includes measures to minimise flood risk to the immediate work area, prevents the damage/loss of equipment and material during a flood event, provides for worker safety, minimises the potential for pollution, and maintains existing flood regimes and behaviours in the locality.	A Water Resources Impact Assessment will be undertaken for the EIS. A standard level of assessment will address potential impacts associated with proposed construction activities and the permanent presence of the transmission structures. The assessment will qualitatively assess the potential for flooding to impact on the project, and for the project to impact on flooding regimes and behaviours of the Coxs River during operation.

Environmental matter	Existing environment	Potential impacts	Level of assessment / assessment approach
	Notwithstanding the lack of flood mapping, the proximity of the proposed easement to Coxs River, in the locality of Wallerawang, indicates a potential risk of periodic flooding and inundation. A desktop review of a flood assessment for the Pinecrest Solar Farm Scoping Report (EMM 2023) indicates that the new easement would experience inundation greater than 1 m during a 1% Annual Exceedance Probability event. A minor tributary bisects the proposed Wallerawang laydown area.	The proposed temporary construction compounds and laydown areas on the southern side of the Wallerawang substation occur on land which may be subject to ponding and may be inundated during major flood events. These compound sites may store equipment, erodible materials and hazardous materials (such as oils, lubricants and paints). During a major flood event (e.g. 1% Annual Exceedance Probability event), loose materials would have the potential to impact on water quality. Concrete piled foundations finished at ground level will support the transmission structures. The structure may take the form of a pole or a four-legged structure comprised of several metal members that make a lattice style framework. The overall dimensions of the structure are expected to be in a form that would not noticeably obstruct flows in a flood event and would also not be expected to create turbulence around the foundations during a flood event. Overall, the project is not expected to adversely impact on existing flood regimes and behaviours during the operational phase.	

Surface water and quality	The Coxs River catchment lies within the Greater Metropolitan Region Unregulated River Water Sources 2023 Water Sharing Plan. The Coxs River contributes catchment flows to Lake Burragorang and is part of the Sydney Water Drinking Catchment for Warragamba Dam. Lake Wallace is identified as a sensitive waterway under the Environmentally Sensitive Areas – Water Overlay Map of the Lithgow Local Environmental Plan 2014 (Lithgow LEP). WaterNSW's 2022 Annual Water Quality Monitoring Report (WaterNSW 2022) indicates that the upper Coxs River near the project area is characterised by historically poor water quality. The report identifies that in the upper catchment, the Coxs River continues to show significant effects of pollution, and that near the Wallerawang Power Station, the Coxs River shows regular exceedances for conductivity, an indicator used for characterising water quality conditions.	Construction of the project will involve upgrading existing and creating new access tracks (if required) to the easement, potentially including a waterway crossing of the Coxs River, and creating work benches at each location for proposed transmission structures. Water will be required during certain construction activities including for concrete works and for dust suppression. The volumes of water required is yet to be determined, however it is likely to be relatively modest given the localised nature of the construction and the generally small volume of earthworks likely to be required at each bench site. The sources of water needed for construction and the amount of water needed for the project will be documented in the EIS. There is also potential for disturbed soil from access track upgrades, waterway crossing/s and work benches to be mobilised during rainfall events and result in sediment-laden water entering the Coxs River directly or via minor tributaries. Standard erosion and sediment control measures will be required to avoid and mitigate potential erosion, sedimentation and water quality impacts. Erosion and sediment control measures in the Gardens of Stone SCA will be undertaken in consultation with and in accordance with relevant NPWS guidelines and procedures.	A Water Resources Impact Assessment will be undertaken for the EIS, addressing potential impacts associated with construction impacts on surface water quality (including erosion and sediment control measures), impacts on waterways, water sourcing and water security. A standard level of assessment will be undertaken based on potential impacts being short-term, temporary and typical of standard construction activities. Based on the project locality being within the Sydney drinking water catchment, the assessment will consider the objectives of section 6.58 (Sydney Drinking Water Catchment) of the State Environmental Planning Policy (Biodiversity and Conservation) 2021. During operation, the project will have very minor impacts on surface water quality, due to minor erosion from infrequent light vehicle use of access tracks for inspection and maintenance. As a result, an assessment of potential impacts on surface water during operation is not required.

Environmental matter	Existing environment	Potential impacts	Level of assessment / assessment approach
Groundwater and quality	The project area is located within the Greater Metropolitan Region Groundwater Sources 2023 Water Sharing Plan. There are a number of groundwater bores located within and surrounding the project area; the majority of which are for monitoring purposes. The nearest groundwater bore is directly adjacent to the easement within the Gardens of Stone SCA. A groundwater monitoring bore GW110520 located about 200 m southwest of the confluence of Pipers Flat Creek and Coxs River in the lower reaches of the project area (and with a likely higher groundwater table) indicates a groundwater level of about 1.7 m below ground level (WaterNSW 2023). The majority of the project area is mapped as groundwater vulnerable under the Environmentally Sensitive Areas – Water Overlay Map of the Lithgow LEP. This means there is a contamination vulnerability for the underlying aquifer due to the water table and soil type. Groundwater quality is expected to be influenced by surrounding land uses and activities including the Mount Piper Power Station, former Wallerawang Power Station, Springvale water treatment plant, mining operations and surrounding agriculture.	Construction of piled foundations for new transmission structures in proximity to the Coxs River may intersect groundwater and require dewatering during construction. The release of untreated dewatered groundwater would have the potential to result in sediment-laden water and other pre-existing groundwater pollutants entering Coxs River. Dewatering of groundwater from piling activities would also contain suspended solids. The operation of the project will not interact with the groundwater and therefore impacts are not expected.	A Water Resources Impact Assessment will be undertaken for the EIS to assess potential impacts associated with piling activities and propose mitigation measures to avoid and minimise impacts on the groundwater resource and groundwater quality. A standard level of assessment will be undertaken as groundwater interactions during construction are not considered complex. The project will not have ongoing interactions with groundwater during operation. As a result, an assessment of potential impacts on groundwater during operation is not required.

Environmental matter	Existing environment	Potential impacts	Level of assessment / assessment approach
Air quality and greenhouse gas	A search of the National Pollution Inventory identified four facilities within an area of 80 km^2. Existing air quality would be expected to be dominated by dust from agricultural activities and coal operations as well as the operation of Mount Piper Power Station. Other influences would include emissions from vehicle movements (road traffic and freight trains) and domestic wood fires for heating. The air quality in the region of the project is good, as indicated by trends from the air quality monitoring station at Bathurst.	Construction activities, particularly vegetation clearing and earthworks for new and upgraded access tracks have the potential to generate dust emissions that can be carried by the wind. Movements of vehicles on unsealed tracks can also result in dust generation. Elevated levels of $PM_{2.5}$ and PM_{10} particulates (dust) is likely to occur temporarily during construction. Emissions associated with the combustion of fuel (vehicles, construction plant, etc) and use of construction equipment and manufacture of materials would consume resources associated with greenhouse gas emissions. During operation, no significant dust generation is expected as maintenance activities will be infrequent. Additionally, no emissions would be generated from the operational infrastructure. Overall, the objective of the project is to help enable Australia to meet its' carbon emission reduction targets by accelerating the transition to renewable energy generation.	A qualitative assessment of air quality will be undertaken for the EIS focussing on the construction stage in accordance with the UK risk-based assessment, *Guidance on the Assessment of Dust from Demolition and Construction (*IAQM 2016) and consideration to the *Approved Methods for Modelling and Assessment of Air Pollutants in NSW* (NSW EPA 2022), as relevant. A qualitative assessment of greenhouse gas emissions from construction will be undertaken. An estimate of greenhouse gas emissions from the project will be prepared. As the project would be unlikely to generate air quality impacts during operation, an operational air quality impact assessment is not proposed.

Environmental matter	Existing environment	Potential impacts	Level of assessment / assessment approach
		The project would be unlikely to have a significant impact on local air quality due to the low intensity of works and the remote nature of receivers. Construction and operational impacts are likely to be manageable through the application of standard environmental management measures.	
Waste	The project area does not contain any known areas of stockpiled waste or receptacles for waste.	Construction activities would generate vegetation waste, excess spoil from earthworks and levelling activities, concrete washout waste, surplus construction materials, maintenance waste (oils, lubricants, oily rags), paint and food and organic (general) waste from construction personnel. Waste generated in the Gardens of Stone SCA would be managed in accordance with relevant NPWS guidelines and procedures, and in consultation with NPWS. Although the construction team would be small (peak of about 100 workers) and the construction period would be up to 24 months, appropriate site offices, crib rooms and ablutions would be provided at compound sites/laydown areas at the Mount Piper and Wallerawang substations. These facilities would be managed appropriately to store and dispose of domestic waste at licenced facilities.	Proper storage and control of waste materials will be important to minimise potential impacts to the environment and human health. Opportunities for reuse and recovery of key waste streams would be identified and implemented for the construction phase of the project. A key focus will be the recycling/ reuse of recovered timber support poles from the existing 132 kV transmission line where no longer required. Standard mitigation measures will be adopted for other issues to avoid and minimise impacts. Potential impacts associated with waste generation and disposal are unlikely to be significant, given the characteristics of the project. Excess spoil would be locally respread in preference to removal off-site. Waste generation and management issues will be qualitatively assessed in the EIS for the construction phase.

Environmental matter	Existing environment	Potential impacts	Level of assessment / assessment approach
		Wastewater would be generated from laydown sites, dewatering water and amenities. Minimal waste would be generated during operation from maintenance activities.	Assessment of waste for the operational phase is not proposed.
Traffic and access	Access to the project locality is from the Castlereagh Highway via Lithgow from the east, Bathurst from the west or Capertee from the north. The Castlereagh Highway is a State Road and is the main road between Lithgow and Mudgee. The north-western end of the project area is accessed via the Mount Piper Power Station and Mount Piper substation off Boulder Road. The south-eastern end of the project area is accessed from Main Street in Wallerawang. The central part of the alignment is accessed via a network of private unsealed tracks that follow the easement of the existing transmission line. In addition, there is a network of tracks that connect the existing two transmission line easements that traverse the Gardens of Stone SCA. The existing tracks within the easement are navigable by four wheel drive and will require upgrades to provide safe, level access for construction vehicles and equipment (e.g. cranes and concrete trucks).	Where possible, existing roads and tracks will be used to minimise vegetation clearing or disturbance for access. However, upgrades to some existing access tracks and construction of new tracks are required for safe, level access for construction vehicles, machinery and plant (e.g. small cranes, concrete trucks and delivery vehicles). Upgrades will provide a nominal 6 m wide formation, requiring ground disturbance, vegetation removal and earthworks for regrading and suitable aggregate for surfacing. Access tracks will be constructed to avoid sheet flow and minimise the development of ruts and water damage. The project does not involve any required upgrades to any public or State roads. A temporary railway crossing may be constructed over the rail siding that crosses Brays Lane, for construction access to transmission structures. Engagement with Centennial Coal will continue to determine the feasibility of such a crossing.	A standard Traffic and Transport Impact Assessment will be undertaken for the construction phase of the project. The assessment will: • Assess the potential impacts from construction traffic on the existing road network, using a number of conservative assumptions on existing traffic volumes and construction vehicle traffic. • Outline information and requirements for a detailed Construction Traffic Management Plan (CTMP) to be developed and implemented by the construction contractor. • Provide recommendations on traffic management and mitigation measures, in addition to the CTMP, if required. • Assess the impact of any temporary railway crossing.. No additional traffic would be generated during operation. As a result, an assessment of operational traffic impacts is not proposed.

Environmental matter	Existing environment	Potential impacts	Level of assessment / assessment approach
	A rail siding forming part of the Centennial Coal operations crosses the transmission line easement at Brays Lane.	Construction traffic will be generated by the project, accessing the compound and laydown areas, and the easement. The peak number of construction workers is not expected to result in adverse impacts on local roads, intersections and the Castlereagh Highway and would not occur for a large proportion of the overall construction period. Additionally, work would be undertaken at multiple sites in parallel so workers' vehicles are unlikely to be concentrated at any particular location at any time. Prefabricated components and heavy equipment would be delivered to the project area by low-loader and semi-trailer. It is considered unlikely OSOM loads will be needed. During operation of the project, no increase in vehicle movements is expected. Existing traffic movements associated with typical maintenance regimes are expected to continue.	
Bushfire	Bushfires can be caused by a variety of factors, including lightning strikes, sparks from farm machinery and incinerators, vehicle crashes, and electrical incidents such as fallen transmission lines. The majority of the project area is currently designated as a bushfire prone area, including: • Vegetation Category 1 (high bushfire risk) for the Gardens of Stone SCA.	Being in a bushfire prone area, there is potential for ignition as a result of hot works (e.g. sparks from plant and equipment) during construction, which may escalate to a bushfire and may pose a risk to construction equipment and plant, and the safety of personnel and the surrounding community. Transgrid's risk approach to operational asset management assumes that every transmission line has the potential to be impacted by fire, or to initiate fire, including bush fire. The proposed	A bushfire risk assessment will be prepared as part of the EIS and in accordance with *Planning for Bushfire Protection 2019* (NSW RFS 2019). The assessment will be a standard level of assessment and will consider the bushfire hazards of the proposed infrastructure and risks of ignition and document the measures to be taken during design, operation and maintenance approaches to minimise ignition risks.

Environmental matter	Existing environment	Potential impacts	Level of assessment / assessment approach
	• Vegetation Category 3 (medium bush fire risk) for cleared agricultural areas near Wallerawang. The area around the former Wallerawang Power Station is not identified as bushfire prone land. The existing transmission line infrastructure, easement and asset protection zones around existing substations are important considerations to existing bushfire risk.	infrastructure would be designed to withstand a level of bushfire intensity. Operation and maintenance would consider vegetation management within the transmission line easement and substations to minimise bushfire risk and maintain other safety protection zones. Regular and sufficient maintenance would be undertaken, especially prior to the fire season, so that common causes of ignition are eliminated.	

Environmental matter	Existing environment	Potential impacts	Level of assessment / assessment approach
Electric and magnetic fields	Electric and magnetic fields are a part of the natural environment. Electric and magnetic fields are produced wherever electricity or electrical equipment is in use. The higher the voltage, the stronger the electric field. Electric fields are strongest closest to the wires and their level reduces quickly with distance. Magnetic fields are produced by the flow of an electric current through a wire. The higher the current, the greater the magnetic field. Like electric fields, magnetic fields are highest closest to the wire and their level reduces quickly with distance. Together, these electric and magnetic fields are referred to as EMF. Potential exposure to EMF is a situation currently experienced in the project area as a result of existing (multiple) transmission lines as well as substations and other electrical infrastructure.	The closest sensitive receivers to the transmission line easement are located about 100 m adjacent to the Castlereagh Highway in Lidsdale. The new 330 kV transmission line, including sections where it will be integrated with the existing 132 kV line, may result in increased EMFs. However, this is not expected to result in exposure to unacceptable levels of risk. A 60 m wide easement will apply across the whole alignment of the new 330 kV transmission line. The proposed transmission line would be designed and constructed to ensure that exposure levels are within the limits recommended by the *International Commission on Non-Ionizing Radiation Protection (ICNIRP) Guidelines for limiting exposure to electromagnetic fields* (ICNIRP 2020).	A standard level of assessment of EMF will be undertaken for the EIS. The assessment will present the predicted levels of electric and magnetic fields at representative locations along the alignment. The report would document the comparison of predicted levels against those recommended by the ICNIRP Guidelines and demonstrate how the principles of prudent avoidance have been incorporated into the design.
Mine subsidence	The area surrounding the site has a long history of underground coal mining, which continues today. A section of the shared easement is located over an area of historic underground coal workings.	Subsidence may occur during construction and operation of the project, potentially compromising the stability of the transmission structures.	The risk of mine subsidence will be qualitatively assessed in the EIS. Engagement with Subsidence Advisory NSW and Centennial Coal will be undertaken to understand the nature of historic coal operations under the proposed transmission line.

6.10. Cumulative impacts

Cumulative impacts of the project would be assessed in the EIS. The assessment would focus on the project's key matters that have the potential to:

- Generate cumulative impacts with other projects in the vicinity, which are likely to have concurrent construction and/or operational timeframes.
- Generate cumulative effects (benefits and impacts) with the broader development of the Central-West Orana REZ.

A search of the DPHI Major Projects database was undertaken in August 2023 to identify major projects within the vicinity of the project that may be relevant for the EIS cumulative impact assessment. Projects identified in this search are outlined in Table 17. In addition, it is noted that a number of other renewable energy and transmission projects are currently in various stages of development within the CWO REZ. These other projects may also be constructed concurrently with the project.

The project may result in cumulative biodiversity, social, visual, Aboriginal heritage, water quality, noise and traffic impacts with the projects identified in Table 17. The biodiversity, social, visual, Aboriginal heritage, water quality, noise and traffic assessments for the project would include consideration of cumulative impacts, and these would be summarised in the EIS in accordance with the *Cumulative Impacts Assessment Guidelines for State Significant Projects* (DPE 2022c).

The project also has the potential to generate significant cumulative benefits in conjunction with other renewable energy and transmission projects in the CWO REZ to connect new renewable energy generators to the load centres of Greater Sydney. It is anticipated that the combined renewable energy and transmission projects in the region including the CWO REZ will result in a financial stimulus of the Lithgow, Orange and Bathurst economies from expenditure on local goods, services and employment.

Table 17 Major projects in the vicinity of the project area for consideration of cumulative impacts

Application number	Project name	Project description	Project status	Location
SSD-12346552	Great Western Battery Energy Storage System	Development of a 500 MW battery energy storage facility with associated infrastructure	Approved	500 m southwest of project transmission line alignment, near Brays Lane
SSD-14540514	Wallerawang Battery Energy Storage System	Development of a 500 MW / 1,000 MW/h battery energy storage system with associated infrastructure and connection works	Approved	500 m southeast of project, east of Coxs River near Wallerawang Substation
SSD-26254212	Angus Place West	Development of bord and pillar mining in two new mining areas and continued operation of the Angus Place Colliery pit top	Prepare EIS	2.5 km northeast of project, north of Lidsdale
SSD-57642207	Pinecrest Solar Farm	The development of a 100 MW solar farm and associated infrastructure	Prepare EIS	Project sites overlap, majority of proposed solar farm is north-east of proposed transmission line alignment near the Castlereagh Highway
SSD-50903958	Mount Piper Battery Energy Storage System	Development of a standalone 500 MW battery storage system and ancillary infrastructure	Prepare EIS	Directly north of project area at Mount Piper substation
SSD-60598738	Lake Lyell Pumped Hydro	Development of a 350 MW / 2,800 MWh pumped hydro energy storage and generation project, grid connection and ancillary infrastructure	Prepare EIS	About 8 km south of project area

7. Conclusion

As described in this report, Transgrid proposes to upgrade the transmission line network between the Mount Piper 330 kV/500 kV substation and Wallerawang 330 kV substation. The project will provide transmission infrastructure of sufficient capacity and reliability to connect the new renewable generators in the CWO REZ to the main load areas and will help meet the government's net zero emissions goals. A number of route options have been considered in the development of the project. The preferred route has been selected following stakeholder and community feedback.

The project is subject to assessment under Division 5.2 of the EP&A Act and as such, this document supports an application seeking the SEARs for the EIS.

The key environmental assessment matters identified for the project which would be assessed in more detail during the preparation of the EIS are:

- Biodiversity
- Aboriginal heritage
- Historic heritage
- Land use and property
- Visual amenity
- Noise and vibration
- Social.

Other matters that would also require assessment but are considered likely to result in lower risk to the environment include:

- Soils and contamination
- Hydrology/flooding
- Surface water
- Groundwater
- Air quality and greenhouse gas
- Waste
- Traffic and access
- Hazard and risk e.g. bushfire, electric, and magnetic fields and mine subsidence.

As part of the preparation of the EIS, further assessment would be carried out in conjunction with project design development. In assessing the project, the key focus would be avoidance and minimisation of impacts on the environment and local communities, where reasonable and feasible, when taking into consideration engineering constraints and cost implications.

The assessment would identify mitigation and management measures to minimise impacts on the environment.

Consultation with affected property owners, stakeholders and the local community would continue throughout the EIS assessment, design and construction phases. Impacts to the SCA and Centennial Coal during construction and operation of the project will be managed in close consultation with NPWS and Centennial Coal. Measures to minimise and mitigate impacts on the NPWS estate and Centennial Coal will be developed through detailed design and further engagement with these stakeholders.

8. References

ABS 2022, Australian Bureau of Statistics. https://www.abs.gov.au/.

DCCEEW 2023, *Protected Matters Search Tool*, https://www.dcceew.gov.au/environment/epbc/protected-matters-search-tool, Department of Climate Change, Energy, the Environment and Water.

DECC 2009, *Interim Construction Noise Guideline*, NSW Department of Environment & Climate Change, Sydney.

DECCW 2010a, *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (April 2010) NSW Department of Environment, Climate Change, and Water.

DECCW 2010b, *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (September 2010), NSW Department of Environment, Climate Change, and Water.

DECCW 2011, G*uide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (*April 2011) NSW Department of Environment, Climate Change, and Water.

DPIE 2020, *NSW Electricity Infrastructure Roadmap (Detailed Report, November 2020)*, NSW Department of Planning, Industry and Environment, Sydney.

DPE 2018, *NSW Transmission Infrastructure Strategy*, NSW Department of Planning and Environment, Sydney.

DPE 2022a, *State significant infrastructure guidelines – preparing a scoping report.* Department of Planning and Environment.

DPE 2022b, *Central West and Orana Regional Plan 2041* (December 2022), NSW Department of Planning and Environment.

DPE 2022c, *Cumulative Impact Assessment Guidelines for State Significant Projects,* (October 2022), Department of Planning and Environment, Sydney.

DPE 2023a NSW BioNet Vegetation Classification Database and Threatened Biodiversity Data Collection. https://www.environment.nsw.gov.au/NSWVCA20Prapp/LoginPR.aspx?ReturnUrl=%2fNSWVCA20Prapp%2fdefault.aspx.

DPE 2023b, *Draft Transmission Guideline*, Department of Planning and Environment, Sydney.

DPE 2023c, *Technical Supplement for Landscape and Visual Impact Assessment*, Department of Planning and Environment, Sydney.

DPE 2023d, *Social Impact Assessment Guideline*, Department of Planning and Environment, Sydney.

Economy ID 2023, Lithgow City Council economic profile, https://economy.id.com.au/lithgow, .id, Collingwood.

EnergyCo 2022, Central-West Orana Renewable Energy Zone geographical area, (October 2022).

EMM 2023, *Pinecrest Solar Farm Scoping Report*, EMM, St Leonards.

Greenspot 2023, Emirates breathe new life into heritage listed Wallerawang Schoolhouse. https://www.Greenspot.com.au/newsroom/greenspot-and-emirates-wallerawang-schoolhouse/.

Heritage Council 2006, *Historical Archaeology Code of Practice*, Heritage Council of New South Wales.

IAQM 2016, *Guidance on the Assessment of Dust from Demolition and Construction*, Institute of Air Quality Management.

ICNIRP 2010, *Guidelines for limiting exposure to time-varying electric and magnetic fields (1Hz – 100kHz)*, International Commission on Non-Ionizing Radiation Protection (ICNIRP), Munich.

ICNIRP 2020, *International Commission on Non-Ionizing Radiation Protection Guidelines for limiting exposure to electromagnetic fields*, International Commission on Non-Ionizing Radiation Protection.

Landcom 2004, *Managing Urban Stormwater: Soils and Construction (Volume 1, 4th edition)*, Landcom, Parramatta.

Lithgow City Council 2021, *The Lithgow Economy*. https://www. Invest.lithgow.com/the-lithgow-economy/#:~:text=The%20Lithgow%20Economy.%20Lithgow%20covers%20a%20region%20of,the%20south%2C%20and%20Meadow%20Flat%20in%20the%20west.

Lithgow City Council 2023, *Draft Lithgow Floodplain Risk Management Study and Plan*, https://council.lithgow.com/download/121550/?tmstv=1678337823, Lithgow City Council, Lithgow.

NSW EPA 2022, *Approved Methods for Modelling and Assessment of Air Pollutants in New South Wales*, NSW Environment Protection Authority.

NSW EPA 2020, *Consultants Reporting on Contaminated Land – Contaminated Land Guidelines*, NSW Environment Protection Authority.

NSW EPA 2015, *Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997*, NSW Environment Protection Authority.

NSW Government 2023a, eSpade online viewer, Environment and Heritage Division, NSW Government, Sydney.

NSW Government 2023b, Air Quality Interactive Map, https://www.airquality.nsw.gov.au/interactive-map, NSW Government, Sydney.

NSW National Parks and Wildlife Service (NPWS) 2022, Gardens of Stone State Conservation Area – Plan of Management. November 2022. Published by Department of Planning and Environment, Environment and Heritage Group.

NSW RFS 2019, *Planning for Bushfire Protection*, NSW Rural Fire Service.

The Energy Charter 2021, *Landower and Community Better Practice Engagement Guide* (September 2021).

Transgrid 2023, *Preferred Route Report*, https://www.transgrid.com.au/media/eynnh1ud/mount-piper-to-wallerawang-preferred-route-report.pdf, December 2023, Transgrid.

Transport for NSW 2023, *Guideline for landscape character and visual impact assessment*, Version 2.3, Transport for New South Wales.

WaterNSW 2023, Real Time Water Data, https://realtimedata.waternsw.com.au/water.stm, WaterNSW.

Appendix A Scoping summary table

This scoping summary table is provided in accordance with DPHI's *State significant infrastructure guidelines – preparing a scoping report* (DPE 2022a). The level of assessment for each matter has been identified as either 'detailed' or 'standard' as guided by Appendix D of the guideline.

Matter	Level of Assessment	Cumulative impact assessment?	Engagement	Relevant government plans, policies, and guidelines	Scoping report reference
Biodiversity	Detailed	Yes	Specific	Department of Planning, Industry, and Environment (DPIE), 2020 Biodiversity Assessment Method (BAM) BAM 2020 Operational Manual – Stage 1 (DPE 2022) BAM 2020 Operational Manual – Stage 2 (DPE 2023a) DPIE 2020, Determining serious and irreversible impacts DPIE 2020, Surveying threatened plants and their habitats: NSW survey guide for the Biodiversity Assessment Method Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities – Working Draft (DEC 2004) Commonwealth EPBC Act Significant Impact Guidelines 1.1 – Matters of National Environmental Significance (Commonwealth of Australia 2013) Commonwealth EPBC Act – Survey Guidelines for Nationally Threatened Species (various)	Section 6.2
Aboriginal heritage	Detailed	Yes	Specific	Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW 2010) Guide to investigating, assessing, and reporting on Aboriginal cultural heritage in NSW (OEH 2011) Aboriginal Cultural Heritage Consultation Requirements (ACHCRs; DECCW 2010)	Section 6.3
Historic heritage	Standard	No	General	Assessing Significance for Historical Archaeological Sites and 'Relics' (Heritage Branch of the Department of Planning 2009)	Section 6.4
Land use and property	Standard	Yes	Specific	Land Use Conflict Risk Assessment Guide (Department of Primary Industries 2011)	Section 6.5

Matter	Level of Assessment	Cumulative impact assessment?	Engagement	Relevant government plans, policies, and guidelines	Scoping report reference
				NSW DPI Primefact 1063: Infrastructure proposals on rural land	
Visual amenity	Standard	Yes	General	Guideline for landscape character and visual impact assessment, Version 2.2 (Transport for New South Wales 2020)	Section 6.6
Noise and vibration	Standard	Yes	General	Interim Construction Noise Guideline (DECCW 2009) Noise Policy for Industry (EPA 2017) Assessing Vibration: a technical guideline (DEC 2006) Road Noise Policy (DECCW 2011)	Section 6.7
Social	Standard	Yes	Specific	Social Impact Assessment Guidelines for State Significant Projects (DPE, 2023)	Section 6.8
Hydrology/ Flooding	Standard	Yes	General	NSW Floodplain Development Manual	Section 6.9
Surface water and Groundwater	Standard	No	General	Managing Urban Stormwater, Soils and Construction 'The Blue Book' Australian Rainfall and Runoff 2019 Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2018 NSW Water Quality Objectives	Section 6.9
Traffic and access	Standard	Yes	General	Traffic Modelling Guideline TfNSW 2013	Section 6.9

Matter	Level of Assessment	Cumulative impact assessment?	Engagement	Relevant government plans, policies, and guidelines	Scoping report reference
Soil and contamination	Standard	No	General	National Environmental Protection (Assessment of Site Contamination) Measure 1999 (amended 2013) NSW EPA (2015) Contaminated Sites: Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997 NSW EPA (2020) Consultants Reporting on Contaminated Land – Contaminated Land Guidelines	Section 6.9
Air quality and greenhouse gas	Standard	No	General	Approved Methods for Modelling and Assessment of Air Pollutants in NSW (2022) Guidance on the Assessment of Dust from Demolition and Construction, Institute of Air Quality Management (IAQM) (2016)	Section 6.9
Waste	Standard	No	General	EPA (2016) Waste Classification Guidelines NSW EPA (2022) NSW Waste and Sustainable Materials Strategy 2041	Section 6.9
Hazard and risk – Bushfire, EMF and mine subsidence	Standard	No	Specific	Planning for Bushfire Protection 2019 Department of planning and environment 2011, Hazard Industry Planning Advisory Paper No. 6 – Guidelines for Hazard Analysis Department of planning and environment 2011, Multi-Level Risk Assessment International Commission on Non-Ionizing Radiation Protection, 2010, Guidelines for limiting exposure to Time-varying Electric, Magnetic, and Electromagnetic Fields	Section 6.9
Cumulative impacts	Standard	Yes	General	Cumulative Impact Assessment Guidelines for State Significant Projects (2022)	Section 6.10

Appendix B Preferred Route Report

Transgrid

People. Power. Possibilities.

Mount Piper to Wallerawang Transmission Line Upgrade Project

Preferred Route Report

December 2023

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Acknowledgement of Country

Transgrid acknowledges the Wiradjuri, Gundungurra and Darug people as the Traditional Owners of the lands on which the proposed transmission line has been considered and pays respect to Elders past, present and future. Traditional Owners of these lands have lived in the area for thousands of years and have an enduring custodianship and connection over the land and waterways of this region.

In the 2021 Census, 7.8% of the population of Lithgow LGA, identified their background as Aboriginal and/or Torres Strait Islander. Transgrid acknowledges Australia's First Nations Peoples as the traditional owners of the lands, waters and communities where we live, work, learn and play today. We pay our respects to Elders past, present and emerging.

Community, stakeholder and landowner engagement summary

Transgrid recognises the vital role that landowners and the community have in the planning and delivery of our projects. We are committed to talking to the community to help us shape the best possible solution.

After initial assessments were completed, we went out to stakeholders and the community to consult on potential route options in mid-late 2022. As a result of the feedback received, we developed and investigated further options and consulted with key stakeholders on all options over the next 12 months to mid-late 2023.

Key feedback which emerged repeatedly were that the preferred route should:

- use existing transmission line routes and easements
- minimise disturbance to Gardens of Stone State Conservation Area
- minimise environmental impacts and vegetation clearing
- minimise impacts to business operations
- avoid private residential land

Some stakeholders requested that we investigate the viability of undergrounding the line, which is addressed in this report.

Community and stakeholder feedback has played a key role in shaping our preferred route. The route selection process must strike a balance between stakeholder preferences and various constraints including engineering, constructability, environmental impacts and cost, to ensure that the outcome is prudent and efficient.

Overall, eleven possible routes were assessed. Through this process we have now identified one of these options as the preferred route.

Executive Summary

The NSW Government plans to develop five Renewable Energy Zones (REZs) in the state, aiming to increase renewable energy generation and reduce emissions from traditional energy sources e.g. coal and gas.

The first REZ is being developed in the Central-West Orana region with the goal of adding new energy generation capacity to NSW. To support the connection of this REZ, upgrades are required within Transgrid's existing transmission network.

The Mount Piper to Wallerawang Transmission Line Upgrade Project proposes to construct a new 330 kV (kilovolt) transmission line between the existing Mount Piper and Wallerawang substations. The transmission line must be located on an easement or corridor of land suitably wide enough to protect public safety, ensure the line can be maintained and operate safely and reliably. Certain activities are restricted on easements, and while we look to minimise impacts, route selection can potentially affect future land uses. The typical easement width for a 330 kV transmission line is 60 m.

The project area is situated in the Lithgow City Council Local Government Area (LGA), bounded by the Castlereagh Highway, Coxs River, Gardens of Stone State Conservation Area (SCA) and Mount Piper

Power Station. The surrounding area consists of industrial, rural and residential land uses, as well as coal mines that have historically provided employment in the region.

Transgrid used a structured route selection process to assess all potential route options on a number of different constraints and opportunities. In 2022, the project was launched publicly, and stakeholder and community feedback guided the route options assessment process. We listened to views on all viable options that are described in detail within this report and acted on their feedback.

The eleven possible routes were labelled using letters and numbers. Options A-1, A-2, D, and E were discontinued earlier in the assessment phase due to environmental, cost and operational constraints. The remaining feasible options assessed in the latter stages were Options B-2, B-4, B-5 and C-2.

After careful assessment and consultation, Transgrid selected a preferred route that utilises an existing 132 kV transmission line easements and lines between Mount Piper and Wallerawang. Existing easements will be widened from 45 m to 60 m to accommodate the new infrastructure, which is unavoidable and necessary to ensure the safe and reliable operation of the line and to enable CWOREZ. The route will traverse the Gardens of Stone State Conservation Area and Centennial Coal land, which has been disturbed by past activities. Environmental offsets will help mitigate this impact. No new private landowners will be impacted by a new easement or infrastructure.

This report outlines the process to select the preferred route and outlines the key role community and stakeholder feedback has played in the process.

1. Introduction

Transgrid is proposing to deliver a new 330 kV (kilovolt) transmission line between the existing Mount Piper and Wallerawang substations, located in the LGA of Lithgow and on the lands of the Wiradjuri, Gundungurra and Darug people.

Why is this project needed?

The NSW Government's *Electricity Strategy*[1] and *Electricity Infrastructure Roadmap*[2] plans to deliver the state's first five Renewable Energy Zones (REZs). This builds on the *NSW Transmission Infrastructure Strategy*[3] and supports the implementation of the Australian Energy Market *Operator's Integrated System Plan*.[4]

The NSW Government is in the development phase for the first REZ in the Central-West Orana region, which is around Dubbo and Wellington on the land of the Wiradjuri, Wailwan and Kamilaroi people. Other REZ areas include Bathurst, Forbes, Dubbo and Coonabarabran. New transmission infrastructure will allow electricity to flow from these new renewable energy generators, such as solar and wind farms, to the rest of the NSW network.

The Mount Piper to Wallerawang Transmission Line Project is located outside of the REZ area but is impacted by the power flows that will be generated by the new renewable energy generators coming online. Therefore, Transgrid is required to upgrade a number of transmission lines within its existing network.

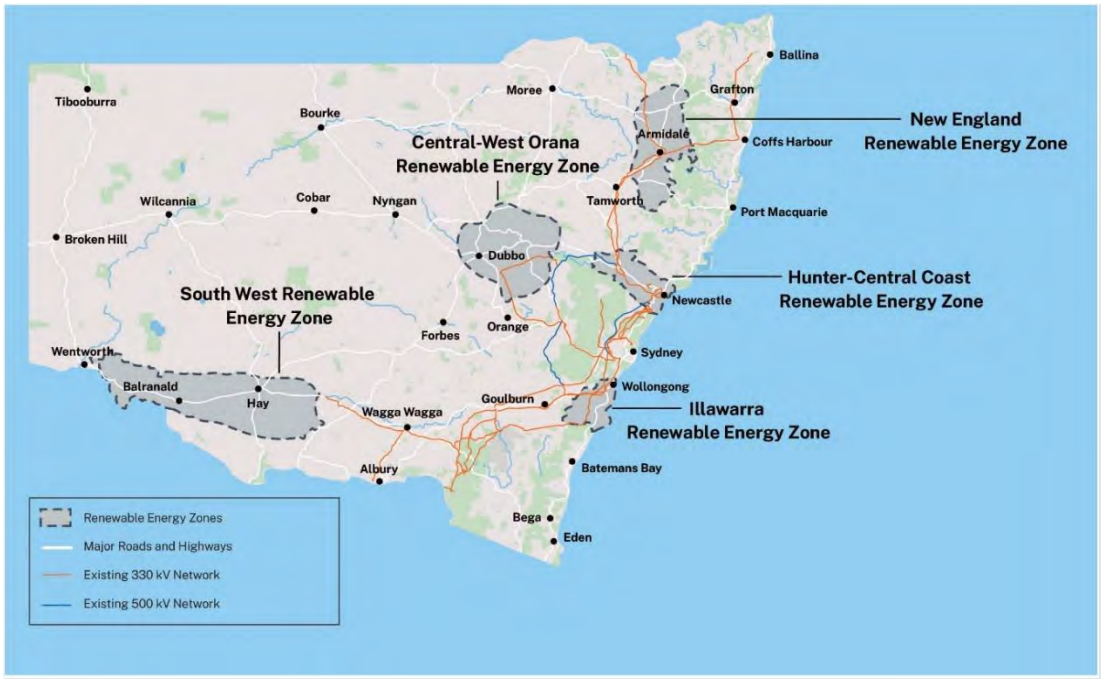


Figure 1. NSW Renewable Energy Zones (EnergyCo, 2023)

[1] www.energy.nsw.gov.au/nsw-plans-and-progress/government-strategies-and-frameworks/nsw-electricity-strategy
[2] www.energy.nsw.gov.au/nsw-plans-and-progress/major-state-projects/electricity-infrastructure-roadmap
[3] www.energy.nsw.gov.au/nsw-plans-and-progress/government-strategies-and-frameworks/nsw-transmission-infrastructure
[4] https://aemo.com.au/en/energy-systems/major-publications/integrated-system-plan-isp

What prompted the need for this project?

The development of the Central West Orana REZ (CWOREZ) has created a current and future demand for more electrical infrastructure to facilitate the growth in electricity generation in the Central Tablelands area. The Mount Piper to Wallerawang Transmission Line Project will increase the capacity of electrical infrastructure to support the CWOREZ.

EnergyCo is responsible for ensuring that the new network infrastructure is developed to connect the CWOREZ to the existing grid, delivering affordable electricity to NSW. To achieve this outcome, EnergyCo is leading the delivery of the CWOREZ Transmission Project. EnergyCo has appointed Transgrid in its capacity as the State's jurisdictional transmission planner to coordinate the delivery of complementary upgrades to Transgrid's existing infrastructure network.

What are the expected benefits?

The project will strengthen and reinforce the grid in the Central Tablelands region and help to ensure that power from the CWOREZ can flow into the grid and to consumers.

The project will deliver a range of benefits including:

- Cheaper electricity – improving the affordability of electricity for consumers by increasing supply and driving down electricity prices
- Improved reliability – by delivering large amounts of new energy and, strengthening and reinforcing the grid in the local region
- Reduced emissions and a greater mix of renewable energy in the National Electricity Market
- New local jobs – opportunities for local workers and businesses during construction

How is a potential route identified?

Transgrid applies a structured route selection process when identifying proposed options for transmission lines, which is influenced by stakeholder and community input throughout (see Figure 2). The project developed a multi criteria analysis relevant to the local area, investigated and assessed a number of different factors when investigating routes that included:

- Social and community views
- Aboriginal heritage, including significant cultural heritage sites
- Biodiversity including flora and fauna
- Other environmental features like soils and hydrology
- Intensive agriculture
- Impacts to the community and local industries
- Licensed airstrips
- Engineering e.g., where it can be built and length of corridor
- Alignment to existing infrastructure like roads and power lines
- Hazards such as bushfire and extreme weather

- Cost constraints
- Network resilience
- Topography, the features of the land e.g., gradient, valleys, rivers
- Land use considerations, including existing or planned use for agriculture, tourism and industry.

The final assessment of route options is accompanied by early field studies where possible.

We are currently in Phase 4 (preferred route identification) of the process and will commence Phase 5 (environmental assessment) in early 2024.

Phase	Phase 1 Identify need and potential technical options	Phase 2 Evaluate technical options | area of interest	Phase 3 Corridor identification	Phase 4 Preferred route identification	Phase 5 Environmental assessment	Phase 6 Detailed design and easement finalisation
Diagrammatic Example						
Area		Typically between 10 and 50 kilometres (depending on project scale)	Typically between one and 10 kilometres wide	Typically up to around one kilometre wide	Typically up to 200 metres wide (with the potential for wider area(s) up to one or more kilometres wide where further investigation may be required)	Typically around 80 metres (depending on project requirements)
Purpose	To confirm the project requirements and identify technical options to address those requirements	To investigate the range of technical options in order to define a prudent and efficient project solution that aligns with the identified functional requirements for the project within a broad area of interest.	To identify and assess feasible corridor or site location options within the area of interest based on community/stakeholder feedback and high level environmental, technical, social and cost considerations in order to identify a preferred corridor or site area.	To identify a preferred route for the project that can be used to undertake appropriate environmental assessment.	To further refine the route through specific landowner consultation and additional data gathered during the environmental impact assessment.	To finalise the project easement or site boundary in consultation with the landowner.

Figure 2. Transgrid's transmission line route selection process, adopted in 2023.

What is in the area of interest?

The area of interest is bounded by the Castlereagh Highway to the north, Coxs River to the east, Gardens of Stone State Conservation Area with Pipers Flat Road to the south and the Mount Piper Power Station to the west.

Transgrid already operates transmission lines and other infrastructure within the area of interest. We have substations located at Mount Piper and Wallerawang. The two existing transmission lines between the substations are:

- Line 70/71, with a 60 m wide easement with 330 kV double circuit lines (yellow line below)
- Line 94E, with a 45 m wide easement with a single 132 kV line (red line below)

Wallerawang 330 kV substation is located directly south of the Main Western Railway Line and south-east of the Wallerawang Power Station, which was decommissioned in 2014. There is also a second 132 kV substation in Wallerawang that is located approximately 350 m west of the 330 kV substation and provides the infrastructure for Transmission Line 94E.

Figure 3. Map of existing Transgrid transmission lines in area of interest

Figure 4 below shows the typical width of easements and tower heights that Transgrid considers when planning transmission lines. The Mount Piper to Wallerawang Transmission Line project is proposing to build new 330 kV double circuit towers. There are two tower structures in the image below that are double

circuit 330 kV and Transgrid will confirm which structure is applicable to this project once detailed design has been completed in 2024.

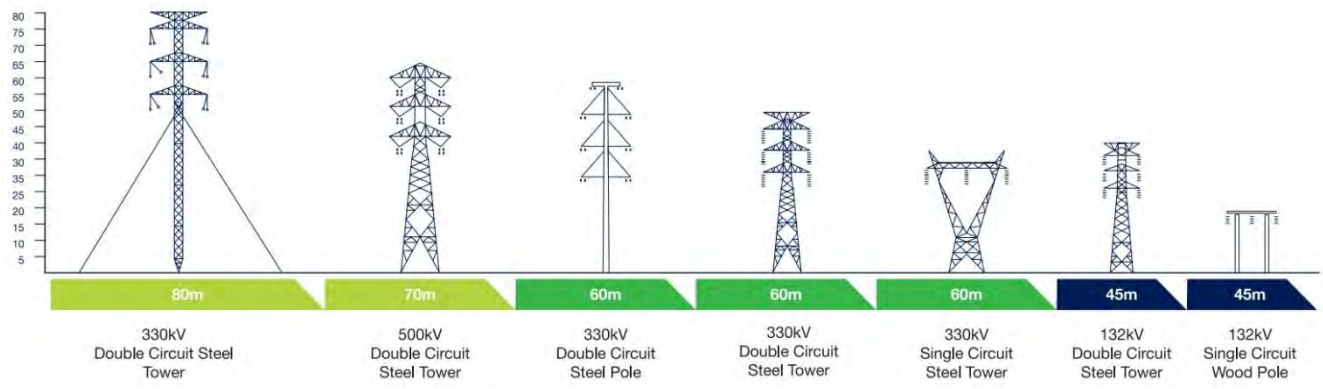


Figure 4. Indicative figures showing typical width of easements and tower heights

Why is the project needed?

The strategic objectives of the project are to:

- Support the NSW Government's development of the CWOREZ
- Increase the transmission capacity of the existing network at modest cost to consumers

At a project level, we aim to:

- Identify and assess impacts and benefits against community and stakeholder, environment and planning approvals, property access and acquisition, technical and design, construction and operation, program and scope, as well as cost and regulatory considerations
- Develop a route that balances the different project constraints and opportunities with the aim to minimise impacts by:
  - Where possible, utilise or parallel existing transmission easements or use other complementary land use areas such as those that have been previously disturbed.
  - Keep the transmission line as straight as possible by selecting the shortest possible route between two points (substations)
  - Deliver a solution that delivers value for consumers.

2. How engagement has shaped route selection

What are our engagement objectives when selecting a preferred route?

The objectives for engaging with the community to identify a preferred route was focused on:

- Ensuring that the engagement and communication process provides stakeholders with just and fair opportunities to understand and provide input into transmission planning through consultation

- Ensuring that potential community and social impacts are identified early, understood and included in balanced route and corridor selection process
- Engaging early to allow potential concerns, issues and community knowledge to be identified
- Identify First Nation's people that have a connection to the lands on which the project is on and engage on the route options
- Establish a reputation for transparency and two-way communication by providing clear information about the project and route selection process

Our aim was to achieve this by:

  - Providing opportunities for the community to comment on the project route options
  - Engaging the community through a wide range of accessible and inclusive channels and platforms
  - Collecting key sentiment, ideas, thoughts and considerations from the community and key stakeholders through multiple communication channels

What stakeholder and community engagement framework did we use?

Transgrid developed an internal Communication and Stakeholder Engagement Plan to guide the engagement process. This document is typical in projects of this size and provides a structure on how we should be engaging with community and stakeholders.

The engagement and consultation process followed the International Association for Public Participation (IAP2) Spectrum of Public Participation. The Spectrum is an internationally recognised tool for planning public participation in infrastructure projects. The Spectrum helps to establish the public's role in the engagement process and their impact on the decision-making outcomes of a project. The consultation activities for this phase of engagement have been delivered within Inform, Consult and Involve stages. This means the project team has:

- Provided the public with balanced and objective information.
- Kept stakeholders informed, listened to, and acknowledged, concerns and aspirations and provided feedback on how public input influenced the decision.
- Worked with the community to ensure concerns and aspirations are directly reflected in the alternatives developed and provided feedback on how public input directly influenced the decision.

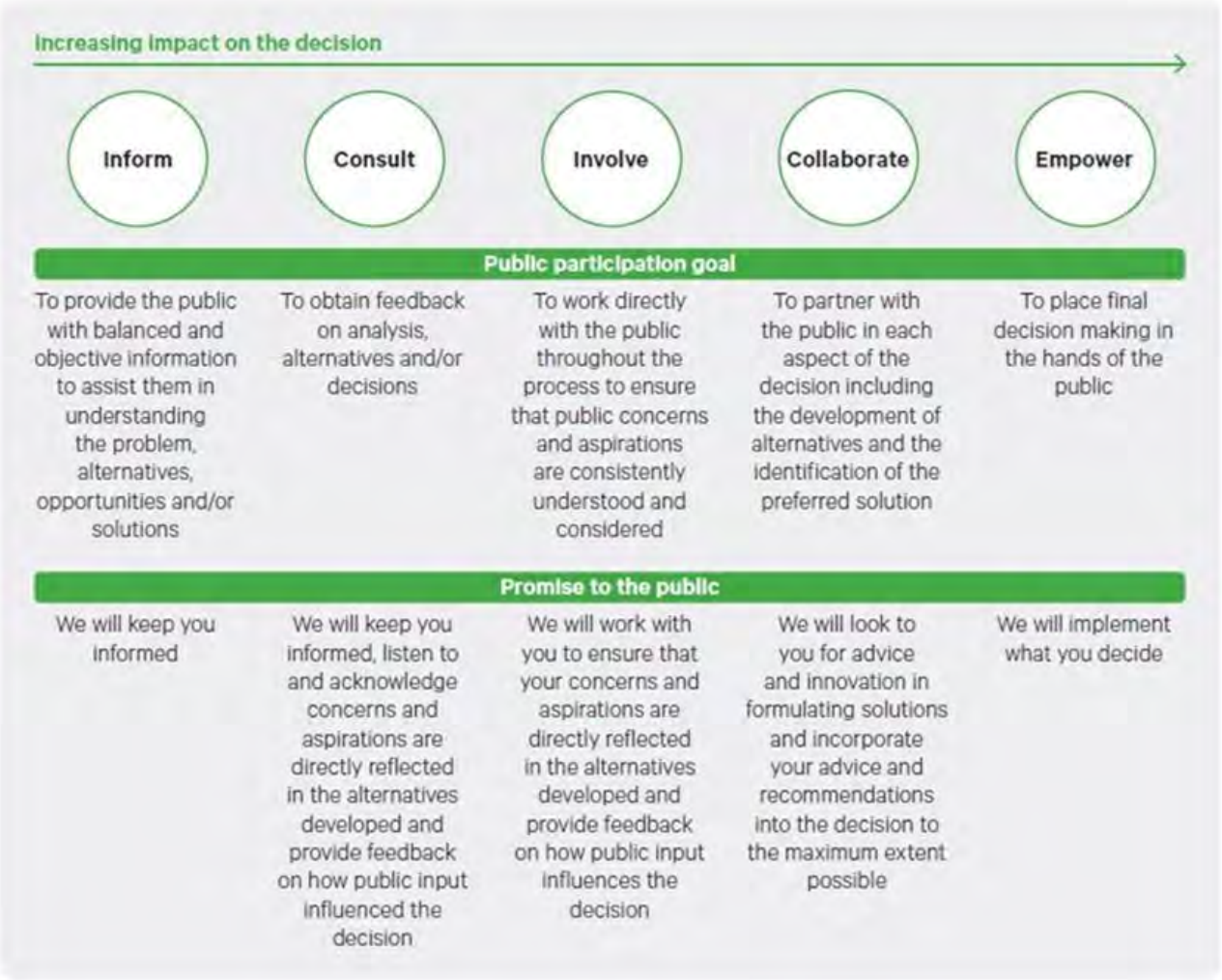


Figure 5. IAP2 Public Participation Spectrum

Who did Transgrid consult and what were their concerns?

Early in the planning phase, Transgrid identified stakeholders who would reasonably be expected to have an interest in the project or be directly or indirectly impacted by possible route options and Transgrid's operations in the region.

Once we identified stakeholders, we focused on effective and meaningful engagement to inform and support our decision making.

To obtain feedback, a number of stakeholders were contacted for their direct input. These included:

Stakeholder group	Detail
Landowner	National Parks and Wildlife Service
Landowner	Centennial Coal (Owner of Springvale Colliery and Ivanhoe Coal Pty Ltd)
Landowner	Greenspot Wallerawang Pty Ltd
Landowner	EnergyAustralia (owner of Mount Piper Power Station)
Landowner	Banpu Energy (owner of Pinecrest Solar Farm)
Landowner	Transport Asset Holding Entity of NSW (TAHE) and UGL (partner of Transport for NSW)
Landowner	WaterNSW
Landowner	Private residential landowners have not been named to protect privacy
Traditional Owners	Bathurst Local Aboriginal Land Council
Traditional Owners	Mingaan Wiradjuri Aboriginal Corporation
Traditional Owners	Warrabinga Native Title Claimants Aboriginal Corporation
Elected representative	Lithgow Shire Council
Elected representative	Paul Toole (State Member for Bathurst)
Elected representative	Andrew Gee (Federal Member for Calare)
Environmental advocacy group	Lithgow Environment Group
Environmental advocacy group	Wilderness Australia

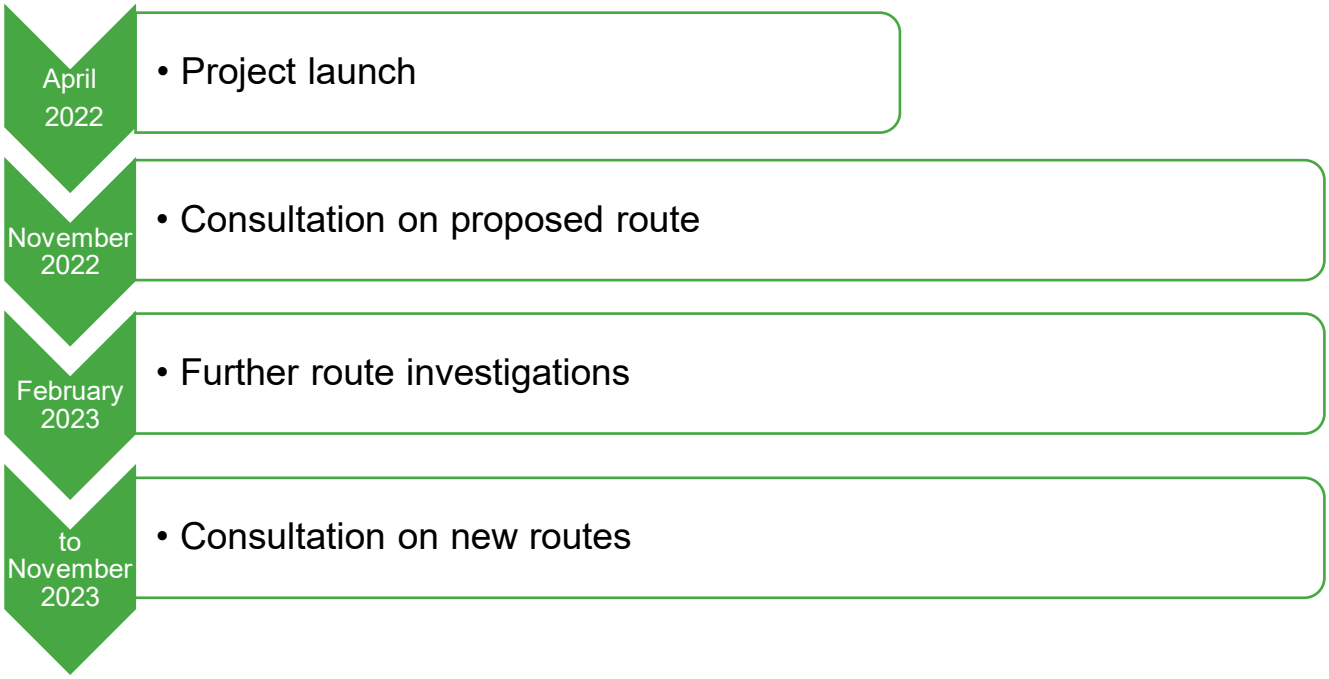
Nearby landowners, businesses and wider community members have not been identified in the table above but were included in the consultation process.

The detail feedback gathered from stakeholders can be found in Appendix – Summary of meetings.

When did Transgrid seek community and stakeholder feedback?

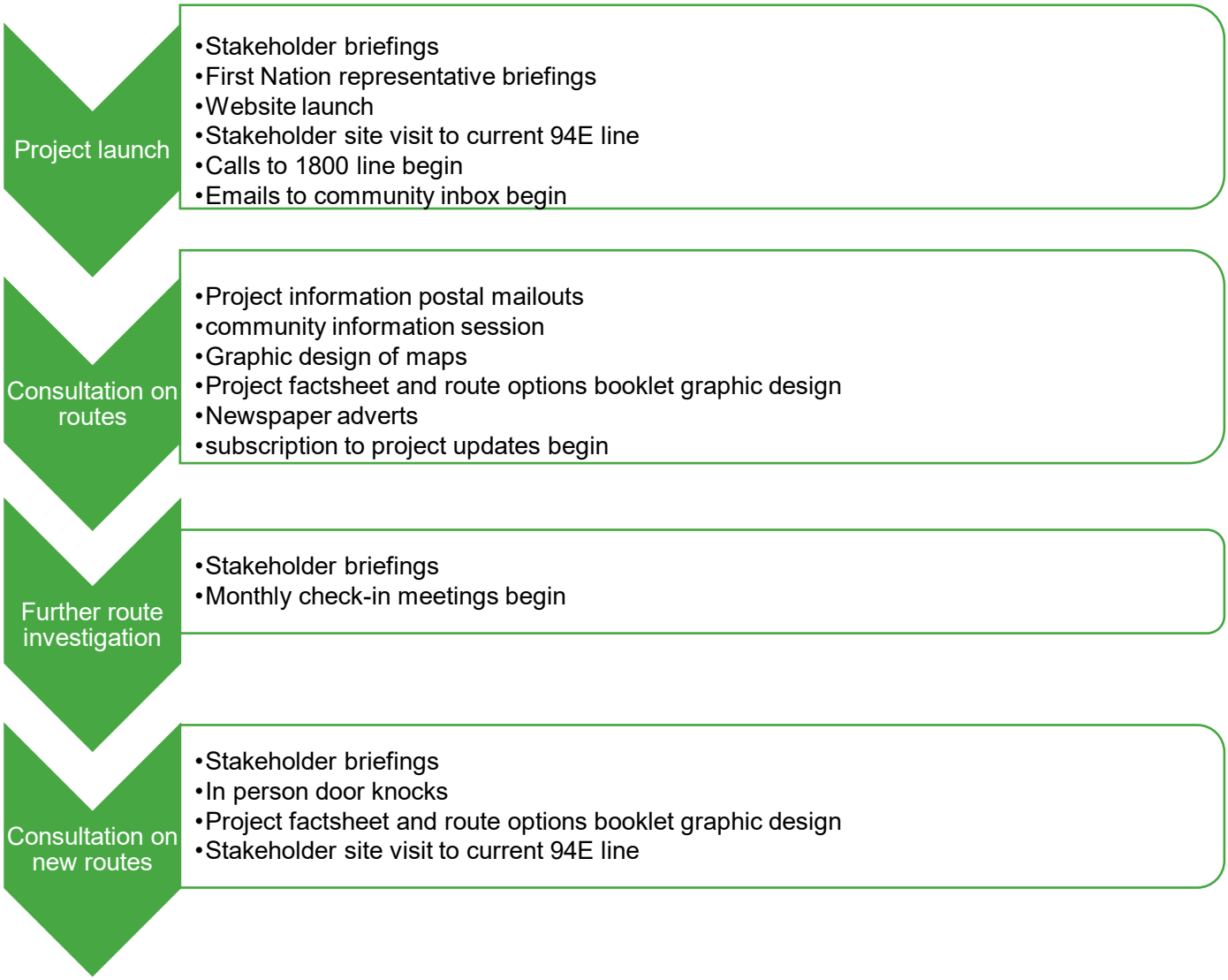
Engagement activities have been ongoing throughout all phases of the project. The focus of this phase of engagement is to provide an overview to key stakeholders of what route options are being proposed and seek feedback. Feedback was used to help select a preferred route option that minimise impacts.

The following timeline summarises the engagement activities during 2022 and 2023.



What did Transgrid do during consultation?

A key aim of community and stakeholder consultation was to engage through a wide range of accessible and inclusive channels and platforms. We used the following communication channels to share information and receive feedback:



During the consultation period, Transgrid announced two rounds of community grant funding and produced communication materials to promote this scheme. Local community members were encouraged to apply. This grant scheme was kept separate from the route refinement process.

3. Exploring the different route options.

The below section outlines all the route options we explored and the reasons behind why they were rejected or accepted.

What are the route options Transgrid investigated?

This section sets out a high-level summary of analysis for each option Transgrid assessed and key reasons for rejecting or pursuing each route option.

Options A-1 and A2

Options A-1 and A-2 are located adjacent to the existing 330 kV Line 70/71 and require a new 60 m easement.

These options include travelling approximately 3 km through the Gardens of Stone SCA and through heavily vegetated areas with a new 60 m wide easement. Therefore, to enable the new easement, significant clearance of vegetation would be required. This clearance would have the potential for significant biodiversity impacts. We received feedback from stakeholders that the amount of vegetation clearing required in the Gardens of Stone SCA was unacceptable.

Therefore, Options A-1 and A-2 are deemed not feasible and are not considered further.

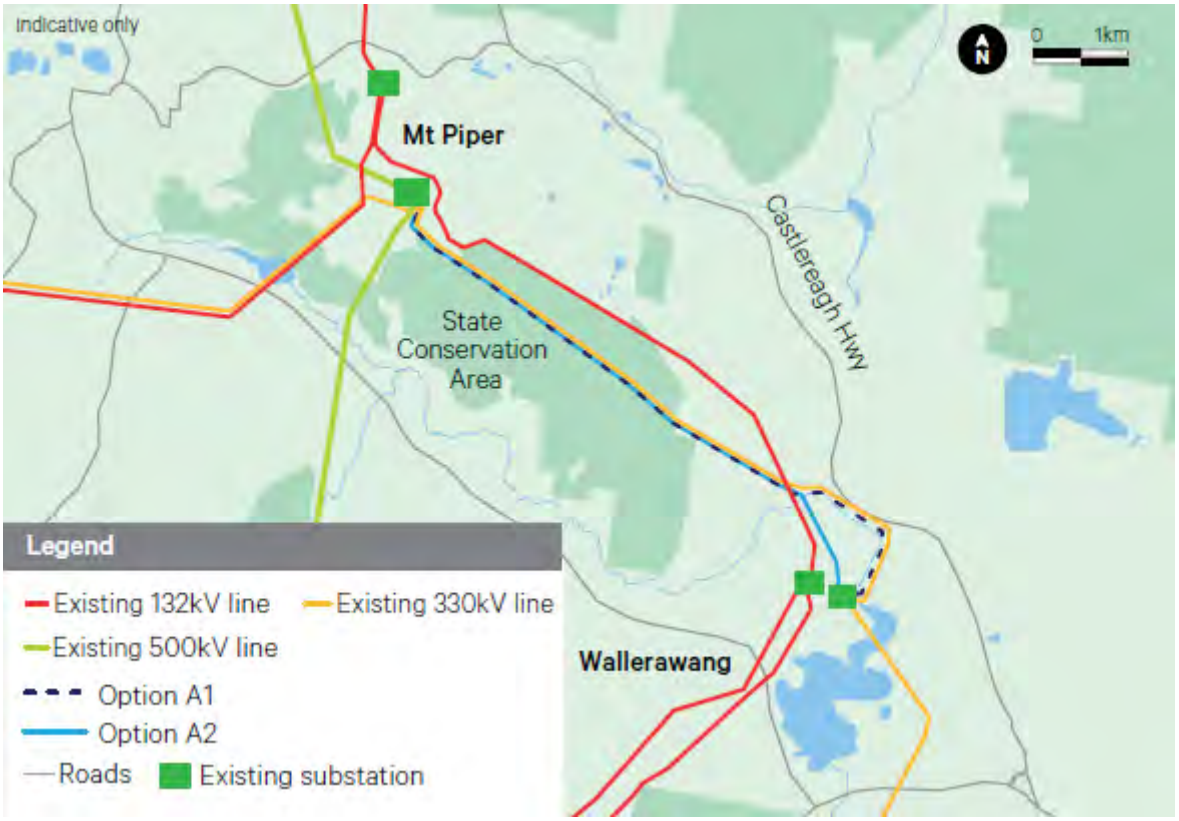


Figure 6. Indicative map of Option A-1 and A-2

Options B-1 and B-2

Option B-1 exits the Wallerawang substation following the 132 kV Line 94E to the northwest and crosses over Main Street. This direct route impacts the entrance of the township of Wallerawang and in particular:

- the St. John the Evangelist Church (State heritage listed church on Main Street)
- the Black and Gold Motel
- private residences

The combined impact to the items, landholders and community members listed above, deemed this option as unacceptable in comparison to other options.

Therefore, Option B-1 is deemed not feasible and not considered further.

Option B-2 starts northeast of the Wallerawang 330 kV Substation and runs west alongside an existing transmission line 94E. It then crosses over to the north side between Main Street and the rail line. The route continues until it reaches the existing 132 kV Line 94E. This route passes along the northern boundary of the Gardens of Stone SCA and adjacent to the Springvale Coal Services facility. Option B-2 was chosen to minimise impacts to landowners by following existing transmission line easements.

Option B-2 then reaches 132 kV Line 94E. The new double circuit would require increasing this existing 45 m wide easement to 60 m. This 15 m increase adds 7.5 m to each side of the existing 45 m easement of 132 kV Line 94E.

After consulting on this route with stakeholders and community, we received feedback that this option would result in a degree of vegetation clearing that was unacceptable in the Gardens of Stone SCA when compared to other options. Transgrid are committed to finding the best possible solution for landowners and took the decision to reject B-2 as the preferred route due to stakeholder opposition and potential environmental impacts.

Therefore, Option B-2 is deemed not feasible and not considered further.

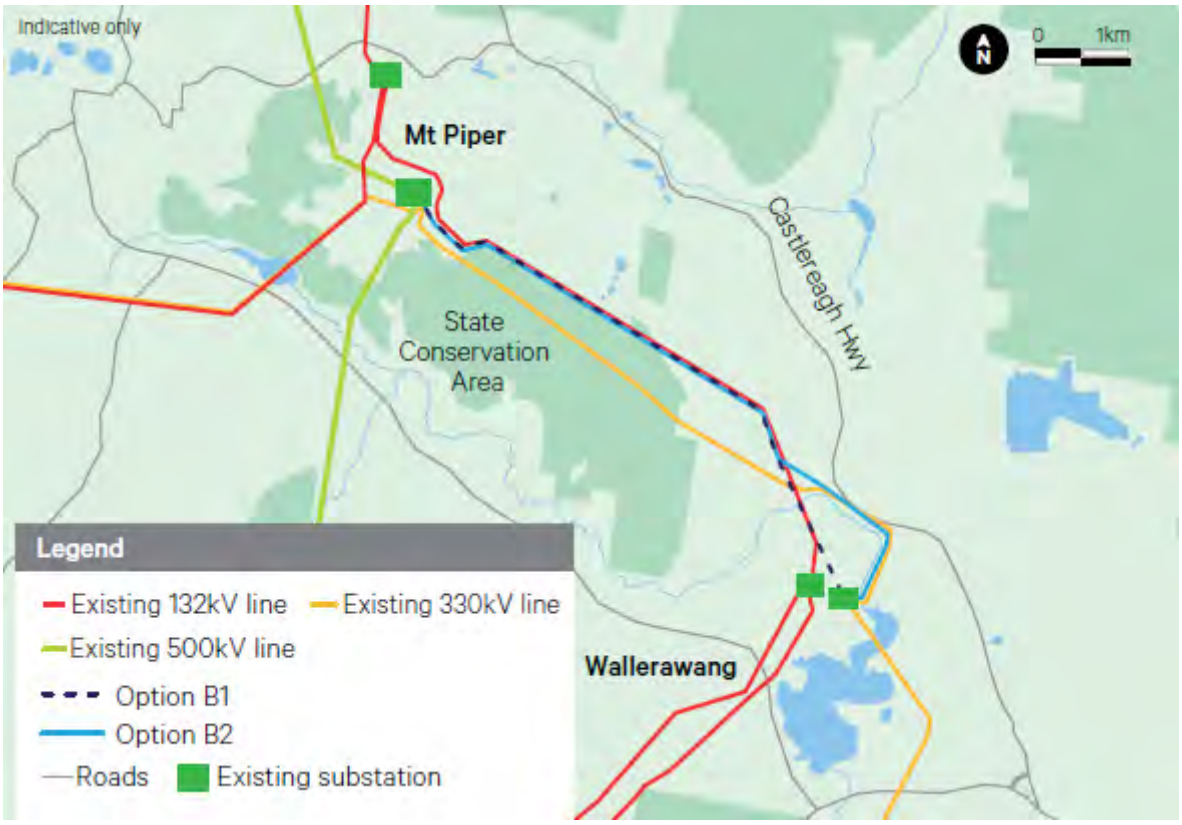


Figure 7. Indicative map of Options B-1 and B-2

Option B-3

Option B-3 (Figure 8) heads northeast from the Wallerawang substation and generally follows the 330 kV Line 70/71 for the first 3km. It then follows Line 94E with a diversion into the Springvale Coal Services facility, north of the Gardens of Stone SCA.

Within the Springvale Coal Services facility (directly north of the Gardens of Stone SCA) there is a large Reject Emplacement Area (REA). After stakeholder feedback, Transgrid were advised that the option involving moving the REA would require several years lead time and significantly impact their operations to the extent that it would become inoperable.

Therefore, Option B-3 is deemed not feasible and not considered further.

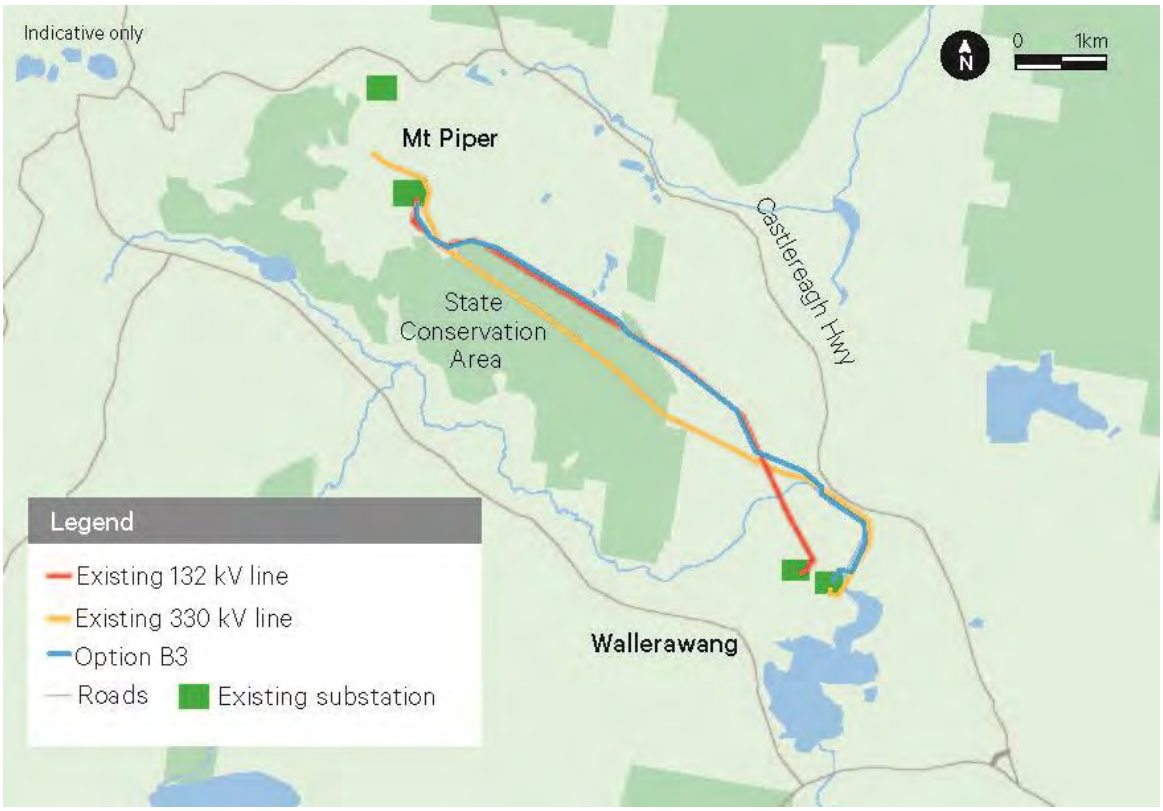


Figure 8. indicative map of Option B-3

Option B-4

Transgrid received valuable feedback on proposed Option B-2 (Figure 9) and as a result, investigated a new Option B-4.

It follows the similar route as Option B-2, however, when Option B-4 reaches 132 kV Line 94E, the new double circuit would require increasing this existing 45 m wide easement to the required 60 m easement. This increase will be achieved by adding 15 m to the north of the existing 45 m easement of Line 94E. Due to the proximity of the shared property boundary of Springvale Coal Services facility and the Gardens of Stone SCA, this extension of the existing easement to the north represents the lowest impact overall because it uses an existing transmission line easement, which would impact the smallest number of landowners and minimises impact on the environment.

Therefore, Option B-4 is the preferred option.

Figure 9. indicative map of Option B-4

Figure 10. Photo of current 45 m easement within Gardens of Stone SCA. Option B-4 proposes to increase the easement by 15 m to the north (left hand side).

Option B-5

Transgrid received stakeholder feedback on proposed Option B-4 and investigated a new Option B-5 (Figure 11) to avoid the Gardens of Stone SCA. It follows a similar route as Option B-4, however, when Option B-5 reaches a section of the Gardens of Stone SCA, it traverses north to avoid this portion of land. This detour moves approximately 100 m closer to a private dwelling and increases the visual impact for this landowner. It requires 32 Ha of vegetation clearing, similar to the flora found within the Gardens of Stone SCA. It also contains sharp bends in the line and crosses above local dam(s) which impacts access and tower structure design.

Centennial Coal stated that this option would impact future land uses and other operational facilities such as their coal conveyor belt that could require outages during maintenance. Transgrid is committed to finding the best possible solution for all landowners and took the decision to reject B-5 due to technical, environmental, landowner and cost constraints.

Therefore, Option B-5 is deemed not feasible and not considered further.

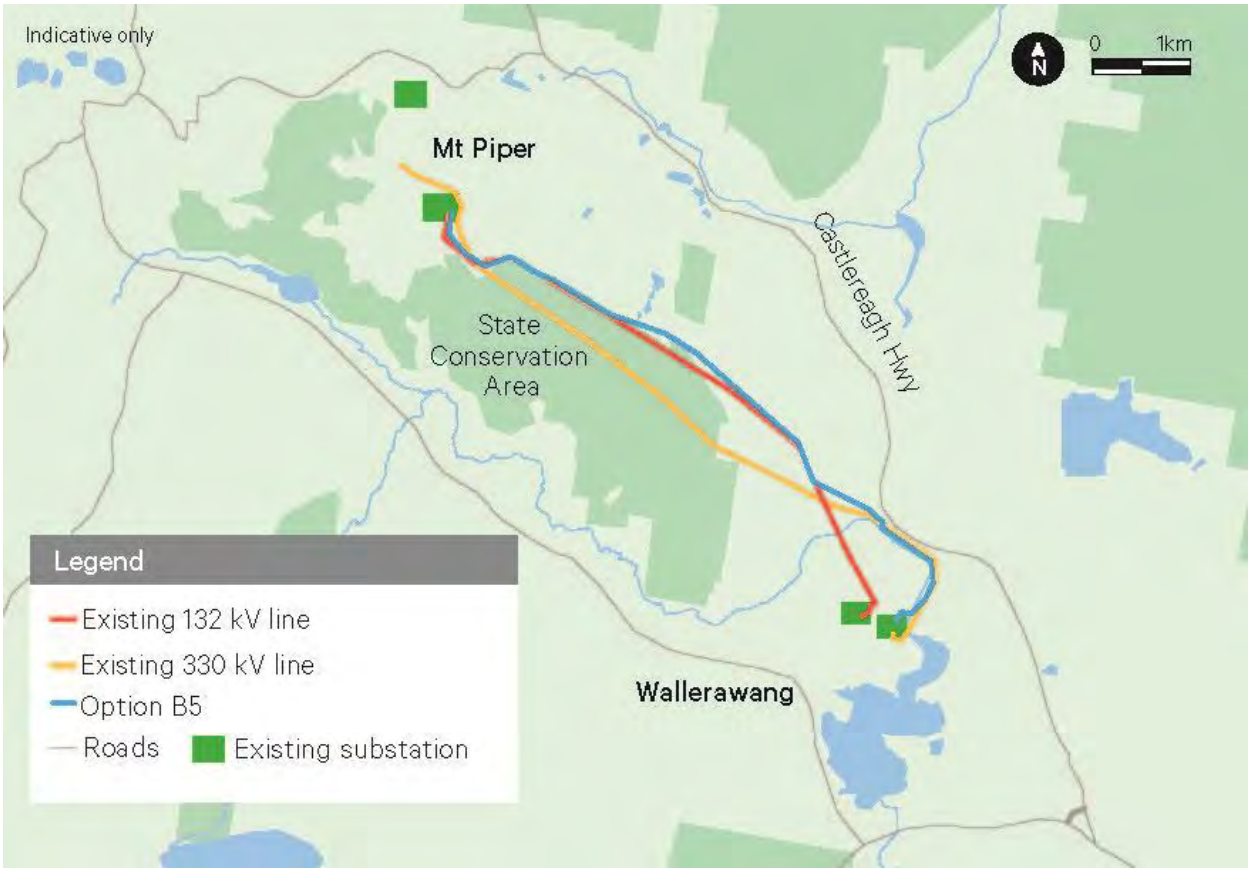


Figure 11. Indicative map of Option B-5.

Option C-1

Option C-1 (Figure 12) exits the Wallerawang substation following the 132 kV Line 94E to the northwest and crosses over Main Street. It follows the existing Line 94E for about 1 km, then travels southwest near the Wallerawang coal loader traversing close to Pipers Flat Road (staying on the northern side of the adjoining rail line) to the existing 500 kV Line 5A7 to Mount Piper substation.

This direct route impacts the entrance of the township of Wallerawang and in particular:

- the St. John the Evangelist Church (State heritage listed church on Main Street)
- the Black and Gold Motel
- private residences

This option would also impact multiple landowners south of the Gardens of Stone SCA as well as require a new 60 m wide easement adjacent to the existing 500 kV transmission line easement through vegetated area owned by Ivanhoe Coal. The combined impact to heritage items, the Wallerawang township and other residential landowners, as well as vegetation clearance, deemed this option as unacceptable.

Therefore, Option C-1 is deemed not feasible and not considered further.

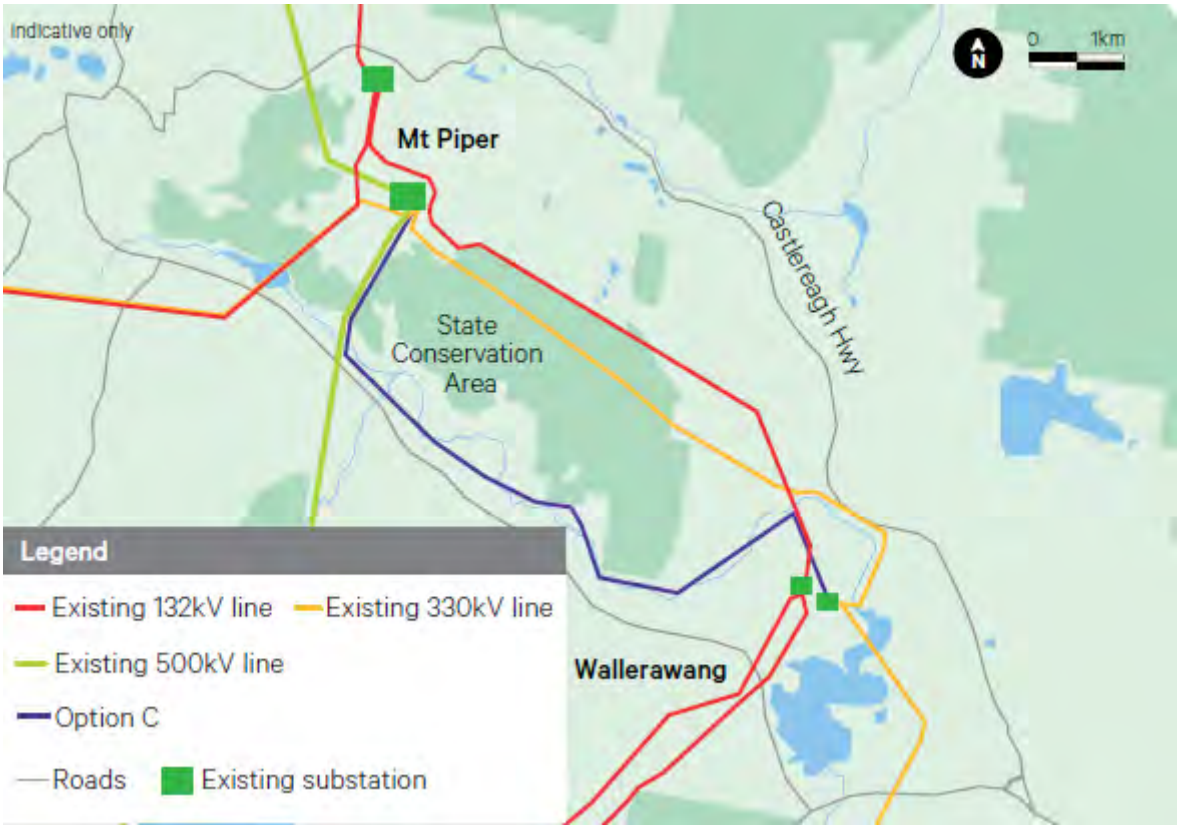


Figure 12. Indicative map of Option C-1

Option C-2

Transgrid received valuable feedback on proposed Option B-2 and potential impacts to the Gardens of Stone SCA. As a result, we investigated other options including Option C-2 (Figure 13). Option C-2 exits north-east of Wallerawang 330 kV substation and runs adjacent to the existing 330 kV Line 70/71 before heading southwest after Main Street. It then heads in a north westerly direction paralleling Pipers Flat Road and be east of the road and railway. This would avoid transmission line over-crossings.

Option C-2 generally avoids the Gardens of Stone SCA (except for a small area of a Lot near Pipers Flat Road) and instead largely traverses rural land. Option C-2 will generally require a new 60 m-wide easement including adjacent to the existing 500 kV transmission line easement through vegetated area.

Transgrid consulted with community, stakeholders and impacted landowners on this option. Consulting the proposed landowners allows Transgrid to make a fully informed decision on the preferred route, having heard from a wide range of stakeholders. There was strong opposition to this route across the different stakeholder groups and would result in severe impacts to project delivery.

Therefore, Option C-2 is deemed unfeasible and not considered further.

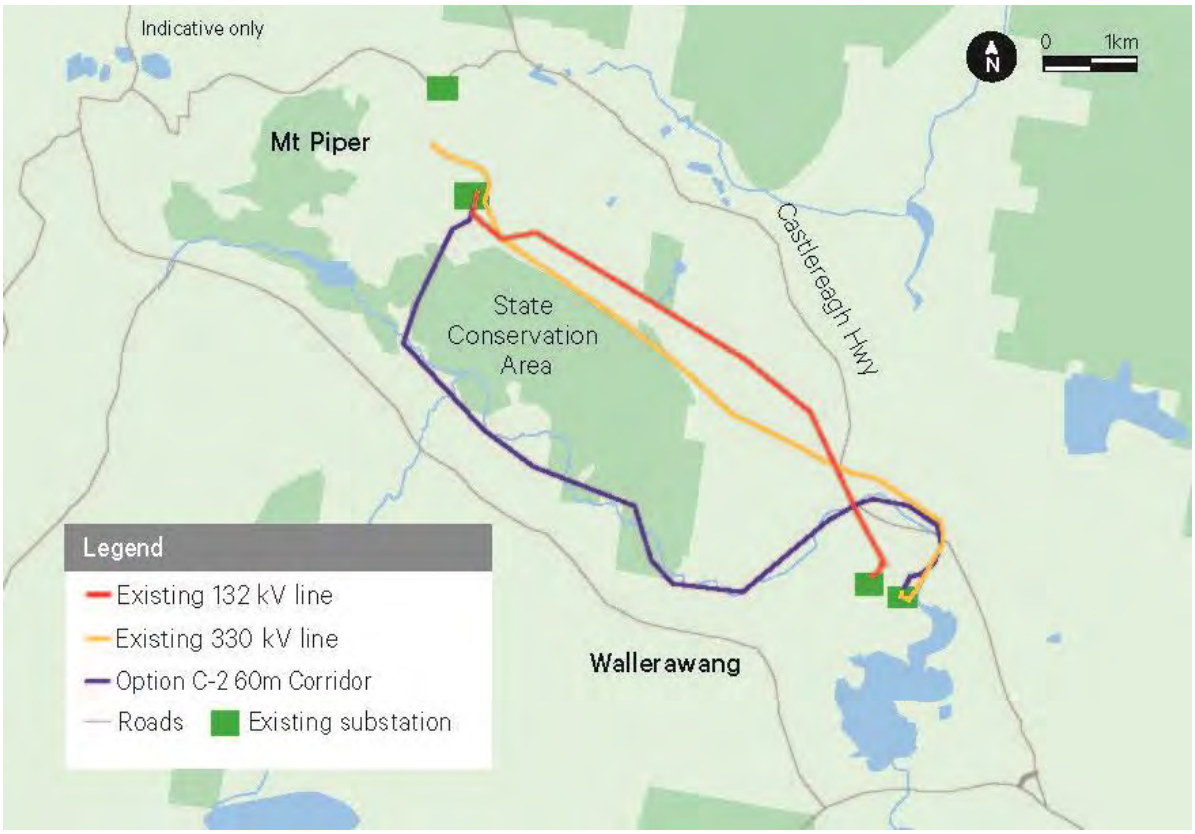


Figure 13. Indicative map of Option C-2.

Options D and E

Transgrid considered undergrounding the line and labelled these two Options D and E. Undergrounding high voltage electricity lines refers to the installation of electrical cables in underground conduits, as opposed to the traditional method of installing overhead power lines supported by poles or towers.

While undergrounding has some advantages, such as reducing the visual impact of power lines, there are a number of factors determining the suitability of undergrounding of transmission lines that need to be considered. These factors include delivery timeframe, cost considerations, social considerations and environmental issues. There are also technical aspects to consider when designing and constructing transmission line infrastructure including voltage levels to be transmitted, the distance of the line being installed and the terrain and environment that is crossed. While underground transmission lines are often chosen to reduce visual impact, their installation can still have environmental impacts.

Options D and E were investigated and found to have:

- Significant cost to consumers. Based on a high-level cost estimate, they were found to be up to four times the cost of overhead construction. The cost of transmission lines is passed onto consumers through their electricity bills and there are strict regulations around the affordability of new infrastructure, and cost is therefore a significant factor in the decision-making process.
- Short asset life expectancy. Most underground cables have a maximum design life of 40 years compared to 80-100 years with overhead lines.
- Construction can cause greater land disturbance. Due to the amount of clearing, trenching, soil and fill disposal, installation and backfilling with slurry.
- Maintenance and repairs are more costly and time consuming. The average time taken to locate and repair an underground fault is approximately 3-6 months and can involve excavation of hundreds of metres of cable.
- Experts in underground cable installation are limited. High voltage underground transmission cable installation is a specialised field and there are a limited number of experts with the necessary qualifications to install and repair the cables.

Therefore, Options D and E are deemed not feasible and are not considered further.

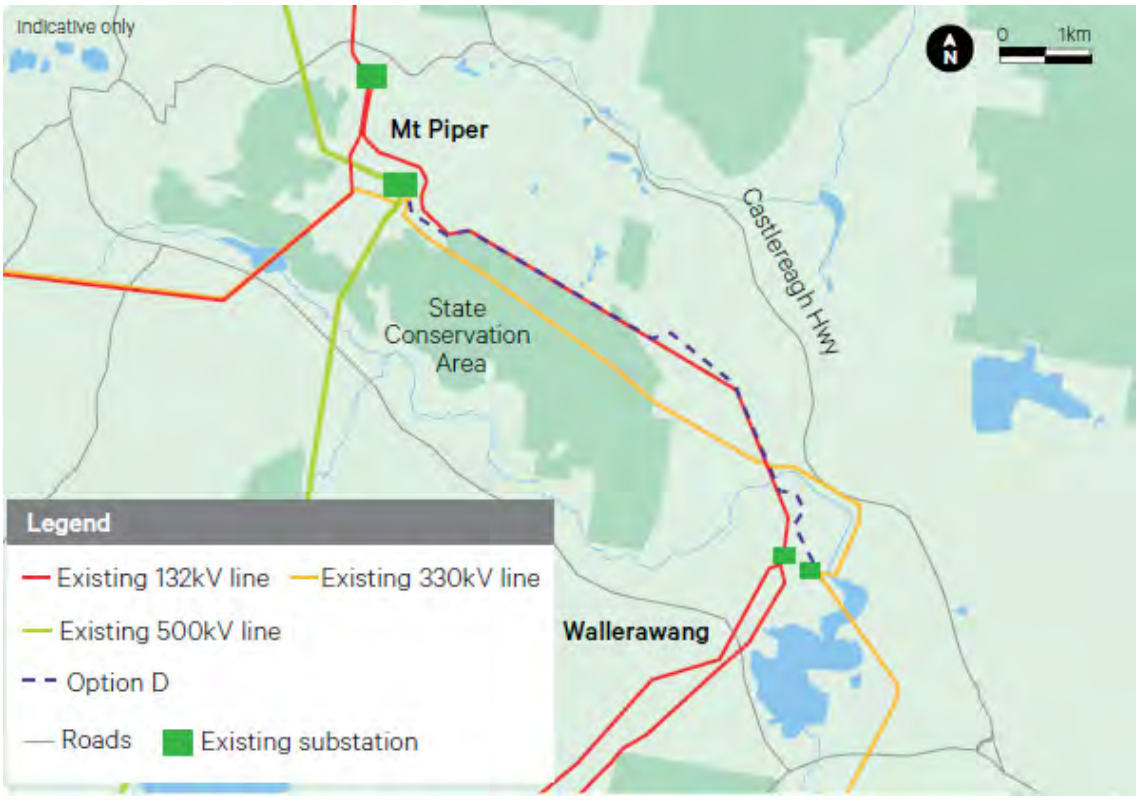


Figure 14. Indicative map of Option D

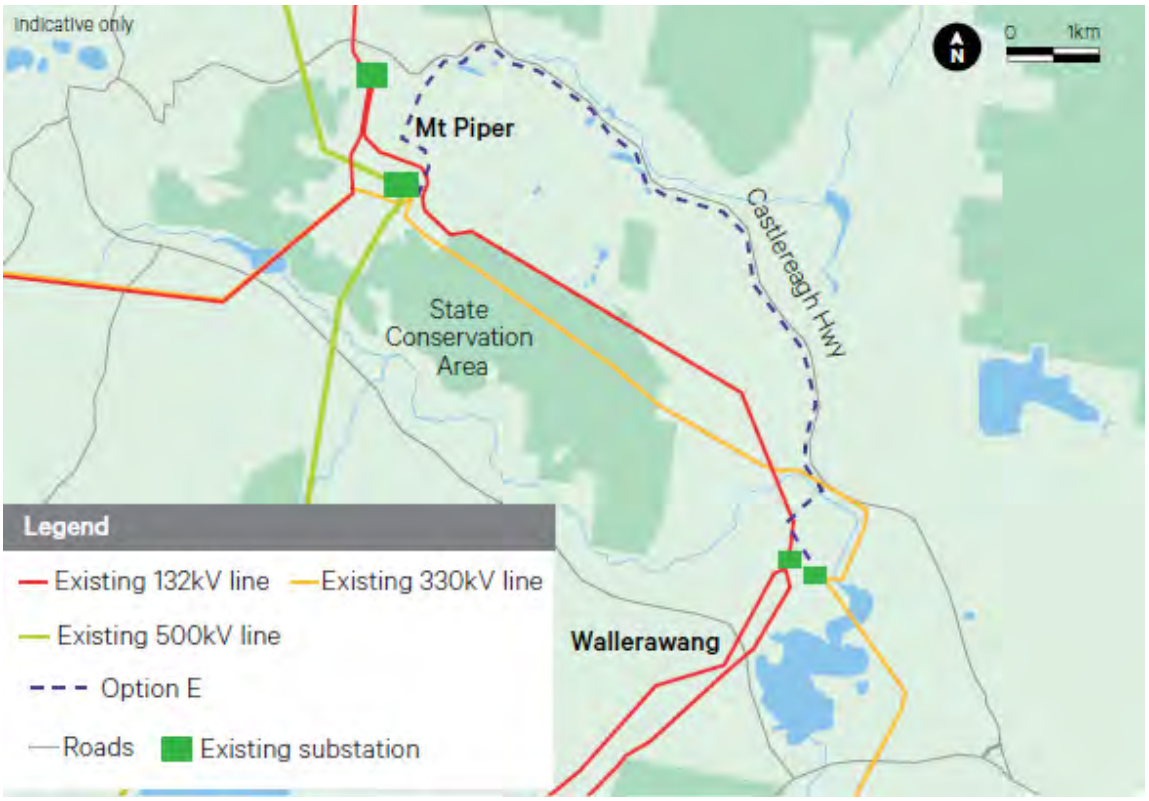


Figure 15. Indicative map of Option E

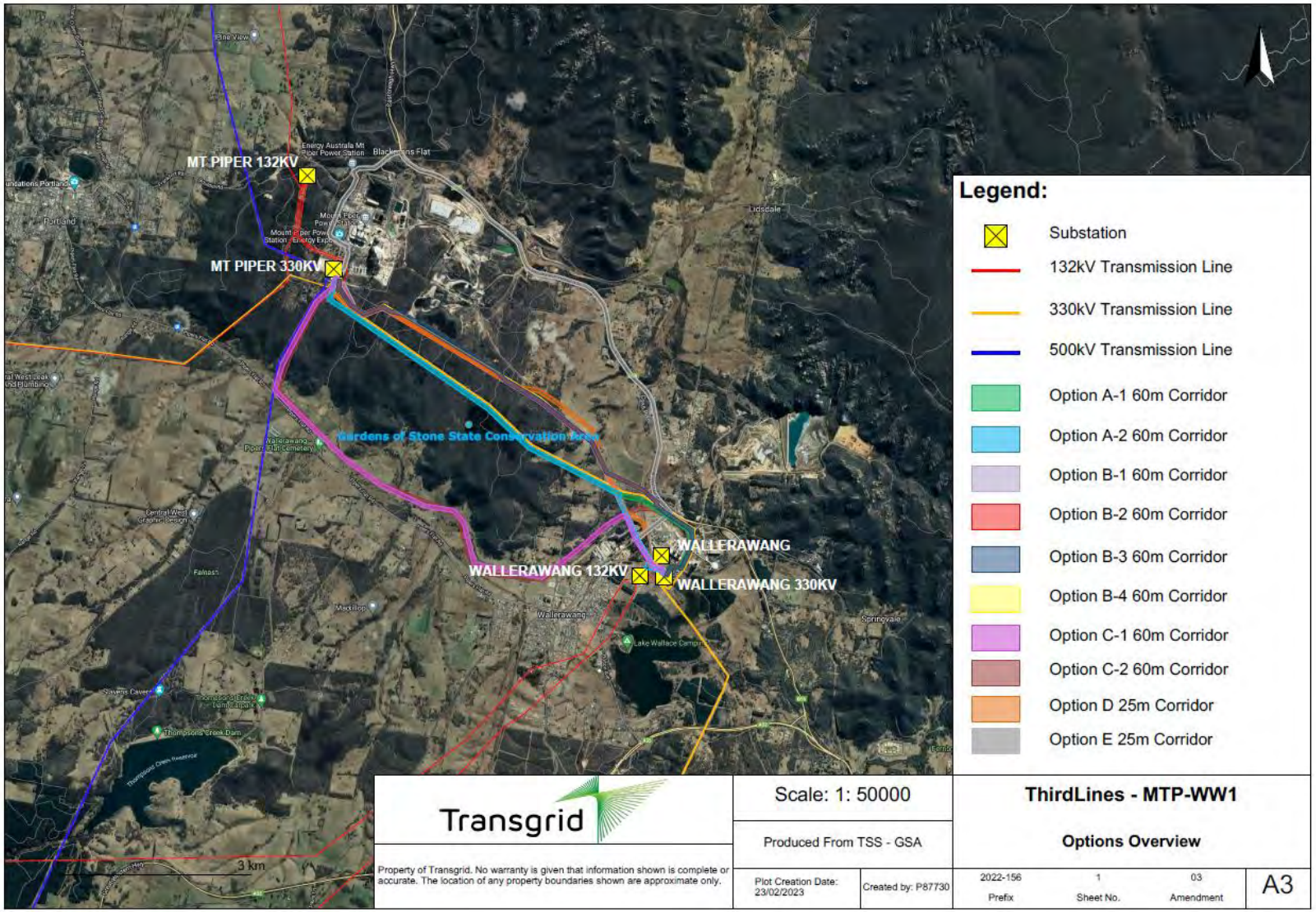


Figure 16. Detailed GIS map of route options

Did Transgrid speak with Traditional Owners?

Early engagement has been conducted with representatives of Wiradjuri, Gundungurra and Darug peoples. Initial feedback indicated there were no immediate objections from the First Nations groups to the route options presented but they expressed their desire to be kept informed throughout the life of the project. Regular ongoing engagement with First Nations groups will continue for future phases of the project.

What feedback did stakeholders provide about the route options?

Transgrid acknowledges the importance of maintaining positive relationships and engaging with the community and stakeholders in a transparent and responsible manner. By actively listening to stakeholders and incorporating their input, Transgrid has demonstrated a commitment to responsible decision-making and a willingness to consider different perspectives. Considering business operations alongside community interests and values is essential for a sustainable and mutually beneficial outcome. Transgrid's commitment to address these concerns indicates a recognition of the importance of supporting local businesses, minimising disruptions to livelihoods and respecting the values and aspirations of the communities affected by the transmission line.

We received to feedback from impacted landowners; the National Parks and Wildlife Service (responsible for Gardens of Stone SCA), Centennial Coal (responsible for several impacted land parcels), Greenspot, EnergyAustralia and private residential landowners. All landowners understood the many constraints involved when identifying a suitable route option. National Parks and Wildlife Service (NPWS) indicated a strong preference for minimising impacts to the Gardens of Stone SCA and use Centennial Coal property as much as possible. Transgrid is working closely with Centennial Coal to determine the most appropriate easement alignment that reduces impact to the Gardens of Stone SCA while retaining ongoing operations of the mine.

Lithgow City Council supported Transgrid’s in-depth consultation with local community and have requested to see the environmental assessment when this becomes available. Council considered the options presented in 2022 and early 2023 and prefers the alignment that is the least impactful to the local community and residential properties.

Local Member for Bathurst, Paul Toole and Federal Member for Calare, Andrew Gee, have expressed that they are generally in support of Option B-2 and Option B-4 as they utilise the existing easements. Concerns were raised about the impact Option C-2 will have on the local community and landowners.

The residents within 500 m of the easements were notified via a letterbox drop and invited to attend the community session and subscribe for future Project newsletters. To date there have been over 30 subscriptions registered.

During the community information session held on 12 November 2022, the Wallerawang community members who attended expressed that Option B-2 does not significantly affect their property and they support its route (note that Option B-4 was not identified at this point).

The stakeholder and community engagement activities to date have enabled Transgrid to gain a better understanding of local concerns and potential impacts. Ongoing dialogue with local authorities and the community will further inform project decisions and improve the route design. More community engagement particularly with impacted landowners, residents within 500 m, the local Wallerawang community and First Nations groups is planned from early 2024 onwards.

Feedback from the community about the route options

Throughout the consultation, recurring themes and sentiments were recorded and categorised as positive, neutral, or negative. This analysis highlights the concerns, issues, and opportunities that were highlighted to us as very important to those impacted by the proposed new transmission line. A breakdown of these key themes is provided below.

- **Impacted landowner livelihoods, business activity and property requirements**

Consultation with impacted stakeholders (including landowners and businesses) was completed. A summary of the themes and sentiment are provided in Table 1. Community sentiment legend below.

Table legend		
Positive	Neutral	Negative

Table 1. Community sentiment legend

Comments	Related route option
Key stakeholder advised, discussions would need to be had around access, so REA can still be maintained.	B-4
Community member said the Project is a good thing because it's good for transmission and supporting the State Government project	B-2/B-4
Community member has no concerns on where the proposed route is as it won't affect them and there's already powerlines there	B2
Community member said it makes sense to put the transmission line through the National Park as it minimises impacts and is much easier to widen an already existing easement	B2
Key stakeholder advised, there are service utilities in the area as well as drains that they would need to maintain.	B-4
To move the entire 60 m easement to Centennial Coal property will impact the REA and cease their operations	B-3, B-5
Private landowner has no objection to the Project as impacts will be minimal to their land,	B-2/B-4
Private landowner has no objection to the Project but was interested in the visual impacts to their land	B-2/B-4
Concerns about land clearing that would need to be completed. No plans to develop the area	B-2
Concerned that feedback / sentiment from the community may be incorrect as they may only have been looking at Option B-2	B-2
NPWS stated they are not able to approve any development within the Gardens of Stone SCA unless there are no other viable options	B-2, B-4
Key stakeholder asked why the option to traverse through Centennial Coal land was not in the Route Selection Booklet and they would like more information on this option	B-3
NPWS advised that they consider it would be best to hold off on broader community engagement on Option B-4 until there is more certainty in the form of an agreement with Centennial Coal.	B-4
NPWS would like a formal letter issued detailing upcoming environmental, heritage and Geotech works.	B-4
NPWS acknowledged that Option B-4 is an improvement over Option B-2	B-4
NPWS acknowledged that it is not their role to rule out Option C-2, but that they recognise Option C-2 is not an appropriate option to pursue further, in comparison to Option B-4	C-2, B-4

Comments	Related route option
NPWS highlighted that Transgrid need to fully investigate opportunities for the Option B-4 easement	B-4
NPWS reiterated that moving forward they need to see an analysis of all route options and that it's essential that the analysis demonstrates that minimum impact has been applied/considered to the National Park Estate.	B-2, B-3, B-4
Landowner was distressed at the proposal that option C-2 would cut through their private property. They expressed their desire to organise the community together or do anything possible, against building the transmission line via this route. They indicated their route preference is the 'A or B' route that runs in a straight line and does not disturb private land.	C-2
Environmental groups highlighted the significance of the Gardens of Stone State Conservation Area and not disturbing it. Stated there is an immense amount of Aboriginal history, caves, artefacts that need to be considered in the SCA. Stated there is a creek near to the proposed easement that has a lot of different flora and fauna.	B-2
Environmental groups highlighted that transmission line should be pushed onto coal mining land to avoid the State Conservation Area completely	B-2, B-4,

Table 2. Feedback relating to landowner livelihoods, business activity and property requirements

- **Environmental disturbance in the Gardens of Stone State Conservation Area**

NPWS and local First Nations community groups raised concerns relating to clearing of vegetation relating to construction of the new transmission line in the Gardens of Stone SCA. Transgrid has taken this feedback into account by identifying a proposed route which is located adjacent to an existing, operational coal mine with existing disturbed vegetation. Transgrid will avoid and minimise vegetation removal as much as possible with mitigation measures being implemented during construction and operation.

Transgrid invited local representatives from Wilderness Australia and Lithgow Environmental Group to view the current easement on 94E and feedback on the proposed route option B-4. They expressed their satisfaction that the proposed option would utilise the existing cleared easement and the new 60 m easement would be shared equally with Centennial Coal. The representatives urged Transgrid to be mindful of vegetation clearing and prefers an option with little or no clearing. There was agreement that they are unsupportive of Option A that traverses through the middle of Gardens of Stone SCA.

- **First Nations cultural values and traditional ecological knowledge**

Recognising and respecting First Nations cultural values is vital in ensuring a more inclusive and sustainable approach to transmission line development. Representatives from Traditional Owners within the project area visited the existing 45 m easement and highlighted to Transgrid the importance of heritage surveys in the environmental assessment process.

Table legend		
Positive	Neutral	Negative

Table 3 Community sentiment legend

Comments	Related route option
NPWS flagged the importance of Indigenous heritage assessment to include all three First Nations groups that have been engaged with (Bathurst Local Aboriginal Land Council, Mingann Wiradjuri Aboriginal Corporation and Warrabinga).	All
NPWS flagged the importance of indigenous sites and would like to be kept informed about what sites could potentially be impacted as Transgrid refines the route option	All
First Nations representatives expressed concerns over Indigenous sites that may be impacted	All

Table 4. Feedback relating to First Nations cultural values and practices and traditional ecological knowledge.

- **Local community concerns, issues and land uses to inform the route selection options**

Community and stakeholder feedback contributes to the improvement of transmission line projects by providing insights and suggestions for better design, routing options and infrastructure placement. Stakeholders such as Council highlighted the importance of engaging meaningfully with community on all route options.

Table legend		
Positive	Neutral	Negative

Table 5 Community sentiment legend.

Comments	Related route option
At the Information Session, community members stated that as the project does not affect their property, they were accepting of it.	A-1
Declaration of the park land becoming a State Conservation Area recently was a high profile process and there would be huge backlash from environmental groups about the Project	B-2 ,B-4
Council stated they do not wish to take a position on the matter until they are reassured as to the environmental impact on the Gardens of Stone SCA with respect to the most direct alignment option.	B-4
NPWS would also like to see part of the current easement re-vegetated if Transgrid no longer require the land once the new easement is established	B-2, B-4
Stakeholder expressed concern if a transmission line was to come directly through their property that their business would be impacted significantly.	C1

Table 6. Feedback relating to community concerns, issues and land uses to inform the route selection options

- **Stakeholder sentiment towards transmission lines and easement requirements**

- Feedback towards the transmission lines and easement requirements can provide community sentiments towards the Project easement and potentially valuable information relating to the easements prior to progressing to the next phase of the Project. Table 7. Community sentiment legend.
- below summarises community sentiment towards transmission lines and easement requirements.

Table legend		
Positive	Neutral	Negative

Table 7. Community sentiment legend.

Comments	Related route option
It still stands that the most direct route that minimises impact on residential properties might be most logical. However, the Council will need some further information regarding environmental impact before formally endorsing this option	C-2
Community member contacted Transgrid via email asking why the transmission line is going through a National Park	B-2, B-4
Community member highlighted that it makes sense to put the transmission line in the proposed location as there is already an easement there and it minimises impacts by using part of the existing easement	B-2
Community member highlighted their approval based off the idea that the transmission line would primarily avoid private landowner property	B-2

Table 8. Feedback relating to sentiment towards transmission lines and easement requirements.

4. The preferred route

Transgrid listened to feedback from community and stakeholders in identifying and assessing routes for this project and are grateful for feedback provided. Following Transgrid's route selection process, community input and assessment of route options, the preferred route selected is Option B-4 (Figure 17). The selected route minimises visual impact for community and the local township and balances landowner preferences and various constraints including engineering, constructability, environmental impacts and cost, to ensure that the outcome is prudent and efficient. More detail is provided below.

Why was this route selected?

Key aspects of why Option B-4 was selected as the preferred route are summarised below.

Minimised impacts to private residential landowners

Eight individual parties are directly impacted by the proposed easement. Of these eight parties, two of them are private residents whose land equates to 0.44% or 1,107m² of the proposed easement.

Since Option B-4 exits Wallerawang substation to the northeast and parallels the existing 330 kV Line 70/71, impacts in the township (notably the Black and Gold Motel) and heritage item (St John the Evangelist Church) are reduced.

Transgrid are committed to further consultation with relevant stakeholders to discuss concerns and further refine the design.

Impacts to key landowners

Due to ongoing consultation with key stakeholders, the easements proposed for Option B-4 continue to be under consideration. In accordance with the stated desired outcomes expressed by the National Parks and Wildlife Service, the easement will, wherever possible, be minimised in the Gardens of Stone SCA. As consultation between stakeholders and further environmental assessments are completed for Option B-4, the route will continue to be narrowed as more stakeholder and environmental constraints are identified.

Co-locating with existing easements in the State Conservation Area

An objective of the project is to use the existing easements to reduce impacts.

Existing easements traverse through the Gardens of Stone SCA, which is managed under the Gardens of Stone State Conservation Area Plan of Management (November 2022). This is a legal document which outlines strategic, ongoing management objectives for the park. Section 5 of the Plan of Management states that the following is an authorised activity within the Gardens of Stone SCA, quoted in the call out box:

Approximately 37% of the preferred route assessment area passes through the Gardens of Stone SCA.

The preferred route minimises vegetation clearing within the SCA. Based on a review of mapped vegetation, reusing the existing easement results in the least area of potential native vegetation (comprising of grassy woodlands and dry sclerophyll forests) estimated to be cleared. Further detailed ecology assessments will be required to confirm the quality of the vegetation.

> "The grant of relevant authorisations for utility infrastructure (including but not limited to) pipelines, telecommunications infrastructure and access purposes may be considered on a case-by-case basis in accordance with the NPW Act"

Listening to Traditional Owners

First Nations representatives understood the project need and did not oppose Option B-4. There will be continuous engagement with the indigenous groups in the area to identify any potential constraints that are unknown.

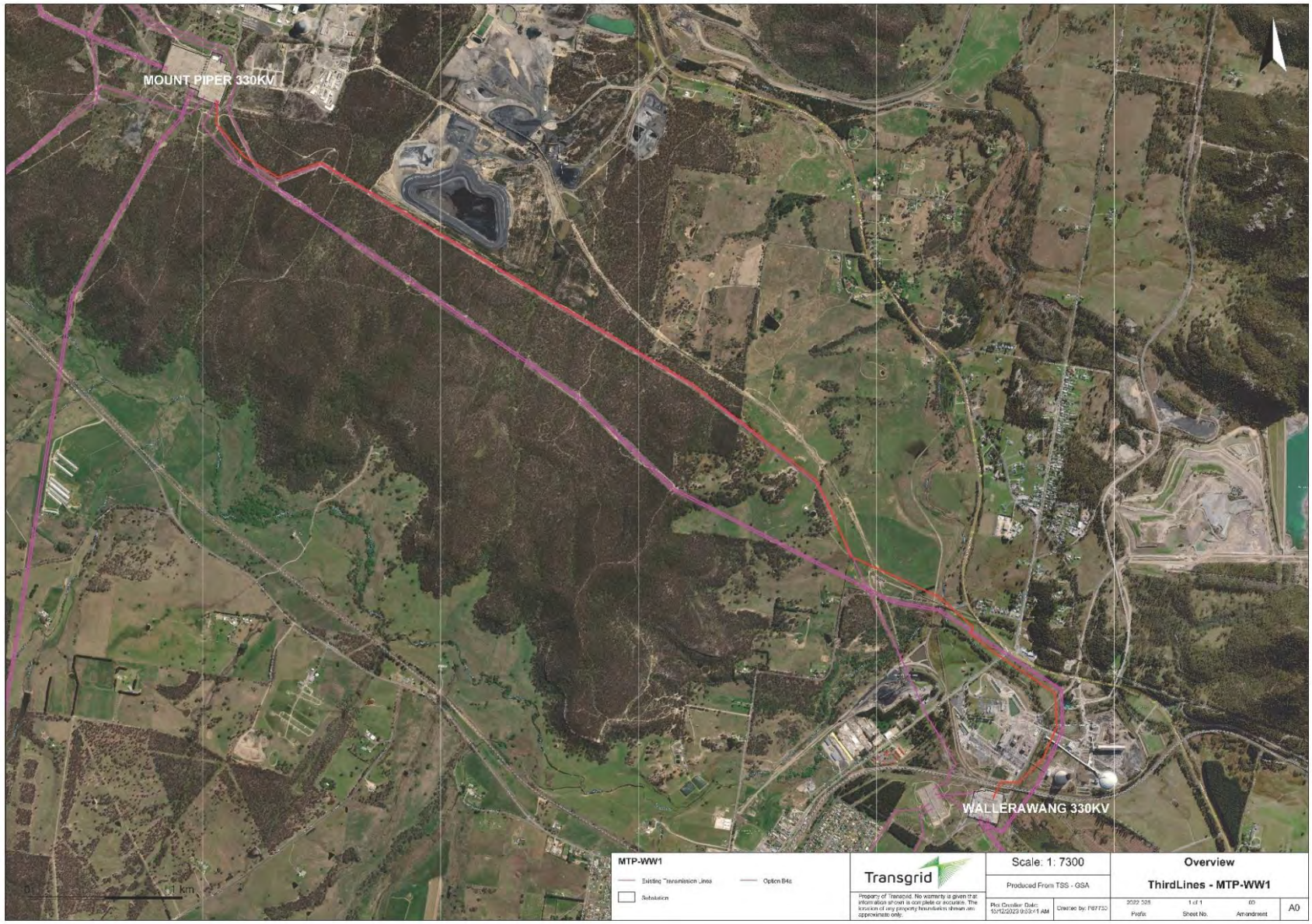


Figure 17. Map of preferred route option B4

5. Next Steps

Transgrid has now identified a preferred route (B-4). This recommended route option will be placed on public display in early 2024 to give the community and stakeholders an opportunity to review the recommended route and provide feedback. Using the landowner feedback, detailed field studies and engineering concept designs, the project team will further refine the route as far as practicable during preparation of the detailed environmental assessment.

What is the process for getting this project approved?

The Mount Piper to Wallerawang Transmission Line Upgrade Project will follow a comprehensive environmental assessment process. We are at the start of the process and are currently drafting a Scoping Report for the Department of Planning and Environment that will be formally submitted in early 2024. The timeline below outlines the entire process, with community and stakeholder feedback, a vital part of the decision-making process.

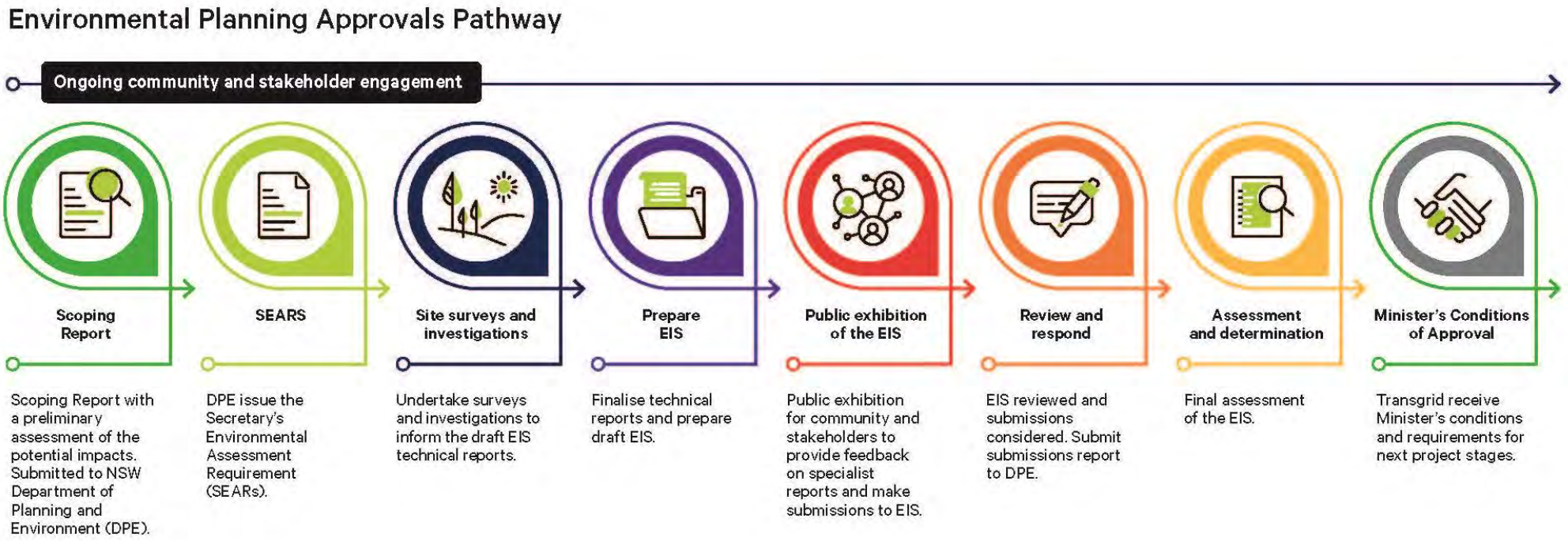


Figure 18. Project approval pathway.

What is included in the Environmental Assessment?

To ensure that Transgrid can identify all potential constraints and impacts of the project, the assessment area is larger than the transmission line easement. This larger area captures all the different factors that might need to be considered within the detailed design of the project and would include an assessment of environmental considerations such as heritage, biodiversity, water catchments, land use, air quality, noise, traffic and transport, visual amenity and much more. This area will be used for the environmental assessment called the Environmental Impact Statement (EIS), which will be submitted to the Department of Planning and Environment. This detailed review of the environmental constraints will help refine the design and identify measures to further reduce the project's impact.

Social Impact Assessment

Community and stakeholder engagement in 2024 will inform a broader Social Impact Assessment, which is a requirement for projects of this scale. The Social Impact Assessment will look at potential areas of concern raised, such as impacts to local community facilities, along with less tangible impacts to community cohesion that can accompany large scale developments and the changes to local economic conditions they can bring.

This would include issues such as:

- How the local labour and supply markets respond to opportunities created by the project and what this means for existing industries
- How the local housing and accommodation supply responds to an influx of labour and how accommodation camps can be used to offset adverse impacts
- How to prepare local communities to participate in major project opportunities in a sustainable way
- How to provide enduring community benefits through skills development, education and training, and investment opportunities.

How can I provide my feedback?

We welcome community and stakeholder feedback throughout the life of the project. Your feedback is important to us and essential for us to understand project impacts at any point.

You can get in touch with us by emailing the project team at community@transgrid.com.au or on 1800 222 537 (free call).

Appendix – Summary of meetings

Summary of engagement for Option A-1 and Option A-2

Stakeholder	Date of Engagement	Summary of Engagement
Lithgow City Council (LCC)	Apr 2022	Provide project overview, route selection methodology and summary of potential route options. Transgrid met with the General Manager of LCC as well as the Director of Infrastructure Services of the Council to walk them through the Project and proposed route options.
Greenspot	July 2022	Provide project overview, route selection methodology and summary of potential route options.
All residents within 500m buffer of project area	Aug 2022	Provide project overview, route selection methodology and considered options All residents within a 500 m buffer of Project area received a project introduction letter and project fact sheet.
Lithgow City Council	Aug 2022	Council was updated on the status of the Project and included providing examples of letters to residents (within 500 m of the Project) as well as the location and level of information available on the Transgrid website.
Greenspot	Aug 2022	Greenspot were updated on the status of the Project and included providing examples of letters to residents (within 500 m of the Project) as well as the location and level of information available on the Transgrid website.
NPWS	Aug 2022	NPWS were updated on the status of the Project and included providing examples of letters to residents (within 500 m of the Project) as well as the location and level of information available on the Transgrid website.
Centennial Coal	Aug 2022	Centennial Coal were updated on the status of the Project and included providing examples of letters to residents (within 500 m of the Project) as well as the location and level of information available on the Transgrid website.
EnergyAustralia	Aug 2022	Formal letter issued to EnergyAustralia in relation to the Project and in response to queries they had from initial meeting. EnergyAustralia were updated on the status of the Project and included providing examples of letters to residents (within 500 m of the Project) and the location and level of information available on the Transgrid website.
All residents within 500 m buffer of project area	Oct 2022	All residents within 500 m buffer received a project update letter which advised them that Transgrid have proposed route options and notified of the upcoming information session.
Wallerawang Community	Nov 2022	Community Information Session Resources available on the day: • Route Selection Booklet, which outlines the initial route options that were considered viable originally • Proposed Route Fact Sheet The sentiment was positive on the day with the majority of community members stating that as the Project does not affect their property, they were accepting of it. A representative from Lithgow Environment Group was in attendance who was keen to understand exactly where the line is proposing to go. This was demonstrated on the large maps made available.

Summary of engagement for Option B-2, Option B-3 and Option B-4

Stakeholder	Date of Engagement	Summary of Engagement
NPWS	Jun 2022	Provided Project overview, route selection methodology and summary of potential route options. Option A-1 and A-2, D and E were deemed unacceptable for the adverse environmental and community impacts.
NPWS	Nov 2022	Explanation of route selection process and how this process has identified a proposed route Option B-2. NPWS was concerned that feedback / sentiment from the community may be incorrect as they may only have been looking at Option B-2. NPWS requested further route options be considered to reduce impact of 15m easement solely on NPWS land identified by the proposed route of Option B-2.
Centennial Coal	Feb 2023	Following meeting with NPWS, Transgrid developed Options B-3 and B-4 as follows: Option B-3 houses the entire 60 m easement on Centennial Coal land within the central part of the SCA (adjacent to the REA). Option B-4 splits the easement 7.5m each side with NPWS and Centennial Coal At this meeting Centennial Coal opposed Option B-3 as it would render their site inoperable. Centennial Coal were open to further explore Option B-4 as a favourable option.
NPWS	Mar 2023	Transgrid Project team met with NPWS to discuss Options B-4 and C-2 following completion of the route options report. NPWS agreed to consider further site investigations (environmental survey/geotech) to develop Option B-4. NPWS acknowledged Option C-2 would not be acceptable to local community. Transgrid to complete CSE due diligence and complete engagement with Option C-2 property owners. To progress Option B-4 with NPWS, it was requested that new transmission line easement should be allocated to Centennial Coal property as much as possible to limit impact to NPWS land.
Centennial Coal	Mar 2023	Transgrid continued conversations with Centennial Coal to further understand operational impacts and technical limitations associated with Option B-4. Centennial Coal agree to provide documentation relating to future operational plans and further site investigations relating to B-4 option.
NPWS	Apr 2023	Transgrid and NPWS complete site visit to discuss B-4 route and potential easement design. NPWS agreed to consider permit entry for site investigations (mainly geotechnical) and environmental surveys. Transgrid to continue conversations with Centennial Coal to progress Option B-4 and provide update NPWS
Centennial Coal	Apr 2023	Transgrid Project team meet with Centennial Coal to discuss Option B-4 following completion of the route options report. Centennial Coal agreed to further site investigations (environmental survey/geotech) to determine feasibility of allocating larger portion of Option B-4 easement on their site. Centennial Coal cannot agree to easement allocation/ route design that will significantly impact their operations. Transgrid to schedule further meetings with Centennial Coal to discuss easement options following site investigations and pegging activities.
Lithgow City Council	May 2023	Transgrid provided Council Project update and overview of route options development report. Two feasible options remain: Options C-2 and B-4. Council were concerned Option C-2 will have significant impact to the local community. Council most supportive of Option B-4 and would provide letter of support
Paul Toole	May 2023	Transgrid Government Relations team provided Project update and overview of route options development report. Two feasible options remain: Options C-2 and B-4.

Stakeholder	Date of Engagement	Summary of Engagement
(NSW State Government member for Bathurst)		Mr Toole raised concerns pertaining to impacts associated with Option C-2 was too significant to the community and expressed strong support for Option B-4. Mr Toole also advised Transgrid to reach out to impacted the five landowners to ensure that they were aware of Option C-2 and Transgrid's pursuance of Option B-4 as the preferred route.
NPWS	Jun 2023	Transgrid met with NPWS 1 June 2023 (site visit). Transgrid provided the Route Options Development Report to NPWS and asked if they had any feedback / questions. NPWS requested a clearer PDF map of the option along the boundary (Option B-4). NPWS requested an update on any agreement with Centennial Coal and could not consider the feasibility of Option B-4 without this agreement in place. Transgrid advised an in-principle agreement with Centennial Coal was planned, however they have been supportive to determine a feasible easement on their property that will not impede on their operations.
Centennial Coal	Jun 2023	Transgrid and Centennial Coal discussed marking out of investigation locations for the geotechnical works and easement feasibility during a site visit. The Centennial Coal Operations Manager confirmed no impacts have been identified. Further discussion to progress memorandum of understanding and signatory in principle approvals.
Andrew Gee (Federal Member for Calare)	Sept 2023	Transgrid met with Mr Gee and discussed the options, including B-4. The main issues raised were that transmission towers and lines were increasingly troublesome for landowners across NSW and this should be considered for the Project. Mr Gee was satisfied about the option review process.

Summary of engagement with First Nations groups

Stakeholder	Date of Engagement	Attendees	Summary of Engagement
Warrabinga	May 2023	3 x Transgrid representatives 4 x Warrabinga representatives	Meeting was conducted over Teams and Transgrid gave an overview of the Project and summary of the preferred routes. The Warrabinga members were very interested in the cultural heritage studies and to be involved where they can. A site visit discussed and will be organised in the future.
Bathurst Local Aboriginal Land Council (BLALC)	May 2023	2 x Transgrid representatives 1 x representative from Bathurst LALC	This meeting was a chance to introduce the Transgrid community and engagement team and discuss the Project with the BLALC . The route selection booklet was distributed and discussed with BLALC. The BLALC representative said they would discuss the Project with their staff and email Transgrid any sensitivities or issues of note. The question was asked whether other Aboriginal organisations in the area that work with cultural heritage, and the BLALC representative mentioned that Mingaan corporation in Lithgow were in the area. BLALC are keen to be involved in the Project were ever they can and ask to be informed with up-to-date information.
Mingaan Wiradjuri Aboriginal Corporation	May 2023	2 x Transgrid representatives 1 x representative from Mingaan Wiradjuri Aboriginal Corporation	The meeting was held with a member of MWAC. The meeting was about the Project and route selection. The member will discuss with their team and provide comments about the Project. Further meetings with other members are to be scheduled.

Summary of engagement for Option C-2

Stakeholder	Date of Engagement	Summary of Engagement
Lithgow Local Council	May 2023	Transgrid provided Council with a Project update and overview of route options development report and presented further information on Options C-2 and B-4. Council concerned that Option C-2 will have significant impact to the local community.
Paul Toole (NSW State Government member for Bathurst)	May 2023	Transgrid Government Relations and Stakeholder engagement team provided a Project overview and presented Options C-2 and B-4. Mr Toole raised concerns pertaining to impacts associated with Option C-2 was too significant to the community and expressed strong support for Option B-4. Mr Toole also advised Transgrid to reach out to impacted the five landowners to ensure that they were aware of Option C-2 and Transgrid's pursuance of Option B4 as the proposed route.
Andrew Gee (Federal Member for Calare)	Sept 2023	Transgrid met with Mr Gee and discussed the options, including C-2. The main issues raised were that transmission towers and lines were increasingly troublesome for landowners across NSW and this should be considered for the Project. Mr Gee was satisfied about the option review process.
Landowner 1*	Oct 2023	Multiple attempts were made to collect feedback from this landowner; however, the team received no response. Sentiment: None
Landowner 2*	Oct 2023	Landowner 2 noted that while he understands the need for the project, he would like more information on exactly where on his property the transmission line would traverse. While the property is currently used for business purposes as a site for a storage facility. Landowner 2 intends to build a home towards the front of the property in the near future for members of his family to live on. Landowner 2 acknowledged that he would not want the project getting in the way of his plans for the land. Sentiment: Negative
Landowner 3*	Oct 2023	Landowner 3's grandson who resides on the property expressed deep concern if option C-2 were to go ahead. The family grow oats on the farm and run cattle and highlighted that there is no need to go through their property at all when there's already an option that makes sense and has existing infrastructure on it. The landowner expressed concern that they would have difficult subdividing their property for their children in years to come and noted that they already have powerlines on their land. He also noted that this option would upset the community and decrease a number of residents property value. Sentiment: Negative
Landowner 4*	Oct 2023	Landowner 4 expressed neutral sentiment towards C-2 transmission line entering their property. Sentiment: Neutral
Landowner 5*	Oct 2023	Landowner 5 was distressed at the proposal that option C-2 would cut through their private property. They expressed their desire to organise the community together or do anything possible, against building the transmission line via this route. They indicated their route preference is the 'A or B' route that runs in a straight line and does not disturb private land. Sentiment: Negative

*landowners' personal information is protected

Summary of engagement for Option D and Option E

Stakeholder	Date of Engagement	Summary of Engagement
All residents within 500m buffer of project area	Oct .2022	All residents within 500m buffer received a Project update letter and the proposed route option fact sheet which advised them that Transgrid had determined a proposed route option and notified of the upcoming information session.
Wallerawang Community	Nov.2022	Community Information Session, Transgrid consulted with approximately 11 people at the session and discussed general considerations for the Project options.
Greenspot	Nov 2022	Greenspot were issued with the Mount Piper to Wallerawang Transmission Network Project Route Selection Booklet for information which included Options D and E.
NPWS	Nov 2022	NPWS were issued with the Mount Piper to Wallerawang Transmission Network Project Route Selection Booklet for information which included Options D and E.
Lithgow Conservation Society	Nov 2022	Lithgow Conservation Society was issued with the Mount Piper to Wallerawang Transmission Network Project Route Selection Booklet for information which included Options D and E.

Feedback relating to landowner livelihoods, business activity and property requirements

Sentiment	Comments	Related route option
Positive	Key stakeholder advised, discussions would need to be had around access, so REA can still be maintained.	B-4
Positive	Community member said the Project is a good thing because it's good for transmission and supporting the State Government project	B-2/B-4
Neutral	Community member has no concerns on where the proposed route is as it won't affect them and there's already powerlines there	B2
Neutral	Community member said it makes sense to put the transmission line through the National Park as it minimises impacts and is much easier to widen an already existing easement	B2
Neutral	Key stakeholder advised, there are service utilities in the area as well as drains that they would need to maintain.	B-4
Negative	To move the entire 60 m easement to Centennial Coal property will impact the REA and cease their operations	B-3
Neutral	Private landowner has no objection to the Project as impacts will be minimal to their land,	B-2/B-4
Neutral	Private landowner has no objection to the Project but was interested in the visual impacts to their land	B-2/B-4
Neutral	Concerns about land clearing that would need to be completed. No plans to develop the area	B-2
Negative	Concerned that feedback / sentiment from the community may be incorrect as they may only have been looking at Option B-2	B-2
Neutral	NPWS stated they are not able to approve any development within the Gardens of Stone SCA unless there are no other viable options	B-2, B-4
Neutral	Key stakeholder asked why the option to traverse through Centennial Coal land was not in the Route Selection Booklet and they would like more information on this option	B-3
Negative	NPWS advised that they consider it would be best to hold off on broader community engagement on Option B-4 until there is more certainty in the form of an agreement with Centennial Coal.	B-4

Sentiment	Comments	Related route option
Neutral	NPWS would like a formal letter issued detailing upcoming environmental, heritage and Geotech works.	B-4
Positive	NPWS acknowledged that Option B-4 is an improvement over Option B-2	B-4
Neutral	NPWS acknowledged that it is not their role to rule out Option C-2, but that they recognise Option C-2 is not an appropriate option to pursue further, in comparison to Option B-4	C-2, B-4
Neutral	NPWS highlighted that Transgrid need to fully investigate opportunities for the Option B-4 easement	B-4
Neutral	NPWS reiterated that moving forward they need to see an analysis of all route options and that it's essential that the analysis demonstrates that minimum impact has been applied/considered to the National Park Estate.	B-2, B-3, B-4
Negative	Environmental groups highlighted the significance of the Gardens of Stone State Conservation Area and not disturbing it. Stated there is an immense amount of Aboriginal history, caves, artefacts that need to be considered in the SCA. Stated there is a creek near to the proposed easement that has a lot of different flora and fauna.	B-2

Feedback relating to community concerns, issues and land uses to inform the route selection options

Sentiment	Comments	Related route option
Neutral	Declaration of the park land becoming a State Conservation Area recently was a high profile process and there would be huge backlash from environmental groups about the Project	B-2, B-4
Neutral	Council stated they do not wish to take a position on the matter until they are reassured as to the environmental impact on the Gardens of Stone SCA with respect to the most direct alignment option. Council have previously shown their support of Option B-2	B-4
Neutral	NPWS would also like to see part of the current easement re-vegetated if Transgrid no longer require the land once the new easement is established	B-2, B-4
Neutral	NPWS is requesting for a more detailed map of the assessment coverage	B-2, B-4